



Haib Mine

Mine Closure Plan Framework

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EXECUTIVE SUMMARY

The Haib Copper Project is a proposed large open-pit copper and molybdenum mine in southern //Karas Region, Namibia, near the Orange River and the B1 national highway. The Project is being advanced by Haib Minerals (Pty) Ltd, a subsidiary of Koryx Copper, and is currently at an advanced conceptual stage. It will operate for an estimated 33 years (plus a two to three-year construction phase) using trolley assisted truck-and-shovel, drill-and-blast open-pit methods, with a 40 million tonnes per annum (Mtpa) concentrator with an optional heap leach / solvent extraction–electrowinning (SX–EW) circuit. Outputs will be copper concentrate, molybdenum concentrate and optional Grade A copper cathode for export by road and rail. The mine is expected to contribute materially to Namibia’s Gross Domestic Product (GDP), government revenue (taxes, royalties and levies), export earnings and regional employment.

This Conceptual Closure Plan Framework defines an early closure vision: to transform the operational site into a safe and stable landscape that provides ecosystem services similar to the surrounding area and allows low-intensity, nomadic livestock grazing, while maintaining selected infrastructure (notably the solar PV plant and bulk water supply system) for post-mining regional benefit, where financially feasible. The plan is aligned with Namibian legislation and guidelines (including the Chamber of Mines Mine Closure Framework and Best Practice Guide Part 5), and international good practice such as the International Council on Mining and Metals (ICMM) Integrated Mine Closure Guide, ISO 21795 on mine closure and reclamation planning, and the Global Industry Standard on Tailings Management (GISTM).

Bulk water (up to 20 million cubic metres per year) will be supplied by Namibia Water Corporation (NamWater) from the Orange River, and about 30% of power demand will be met via a 150 megawatt-peak (MWp) solar photovoltaic (PV) plant developed by an Independent Power Producer (IPP), with the balance supplied by NamPower’s grid.

Key infrastructure includes a single large open pit, a Waste Rock Dump (WRD), a large Tailings Storage Facility (TSF), run-of-mine (ROM) pads and stockpiles, concentrator and optional heap leach plants, stormwater attenuation dams, off-channel storage dam, a sealed access road from the B1 and various internal roads. Power supply will be via a 220 kilovolt (kV) transmission line and internal 33 kV reticulation. Mine support facilities will include offices, workshops, fuel and explosives facilities, waste management facilities and an operations-phase housing development in Noordoewer. A parallel NamWater project will provide Orange River abstraction works and delivery pipelines.

The mine is located in an arid, hot desert climate with very low rainfall, extreme temperatures and high evaporation. Surface water is limited to ephemeral streams (Haib and Volstruis Rivers) draining towards the Orange River, which is the only perennial waterbody. Groundwater occurs in shallow alluvial and fractured-rock aquifers, has very low recharge and is generally saline and unsuitable for drinking. Baseline air quality and ambient noise levels are low and typical of a remote rural setting.

The broader landscape comprises Karas Dwarf Shrubland with gravel plains, rocky hills and ephemeral drainage lines. Overall terrestrial diversity is moderate, but endemism is average to high, particularly for reptiles and plants. Sensitive habitats include rocky hills and plateaus with protected succulents and quiver trees, rock potholes and depressions used by amphibians, ephemeral drainage lines with seeps and temporary pools, and riparian woodland along the Orange and Haib Rivers with protected trees

and important bird habitat. A number of protected and near-endemic plant species and sensitive fauna occur or are expected in the area, some of which are vulnerable to transmission lines and habitat disturbance.

The Project lies within Karasburg West Constituency of the //Karas Region. The regional economy depends on mining, ports, irrigated agriculture along the Orange River, livestock farming and tourism. Population growth is driven by in-migration to agricultural hubs (Noordoewer and Aussenkehr), resulting in a young, mobile workforce and small households (average 2.4 persons). While literacy rates and secondary school completion are relatively high, access to basic services is poor in Karasburg West. Youth unemployment is high and incomes are low, with many people dependent on seasonal work. Vulnerable groups include women and female-headed households, unemployed youth, children, persons with disabilities and households living in poverty. Community health services are limited, with primary-care clinics at Noordoewer and Aussenkehr and referrals to regional hospitals for more complex care.

The Haib Copper Mine will bring significant economic benefits but will also create long-term closure challenges. The Project will disturb large areas of arid land with shallow, nutrient-poor soils and inherently slow natural recovery, and will create permanent landforms (pit, TSF, waste rock dumps and heap leach residues) that must be made physically and chemically stable in an environment with very low rainfall. Geochemical characterisation shows that most mined materials are non-acid generating, although some low-grade oxidised and high-grade materials may generate acid or metal-rich leachate under certain conditions. Kinetic testing results currently show there appears to be sufficient buffering capacity in the material that will be stored on the WRD and TSF. Results show low quality leachate to impact local aquifers (on site) with low risk to regional resources. The TSF and heap leach landforms will require designs that minimise infiltration and manage seepage and runoff, with long-term monitoring and possible contingency measures (e.g. cut-off trenches or interception wells) to protect groundwater and the Orange River.

A domain-based approach was applied to identify post-mining land uses as follows:

- Pit: safe and stable void with restricted access; potential small pit lake with limited future uses.
- TSF: capped and shaped landform, with erosion control and revegetation where feasible; potential future integration with solar PV.
- Waste rock dump: reshaped, capped and revegetated to provide stable “wilderness” land with controlled access.
- Process plant and industrial areas: demolition, decontamination and return to low-intensity grazing, except where infrastructure is repurposed.
- Solar PV plant and water supply system: continued operation by third parties (IPP, NamWater) for regional power and water supply.

The Closure Framework proposes the following criteria:

- Geotechnical stability criteria (e.g. factor of safety ≥ 1.5 for major landforms).
- Climate-change-resilient flood and erosion design (e.g. 1:10 000 annual exceedance probability for critical stormwater and TSF conditions).
- Clean/dirty water separation and water quality targets aligned with Namibian standards and pre-mining conditions.
- Strategies to limit acid generation and metal leaching (selective placement and encapsulation of potentially acid forming material, low-infiltration covers, seepage interception and treatment where required).

- Preference for landforms that can transition to a low-maintenance “passive care” state within 10–12 years after closure (5 years active, 5–7 years passive).

A high-level closure risk and opportunities register identifies high-risk items as follows:

- Complicated revegetation in an arid climate with minimal topsoil.
- Pit lake water quality and potential toxicity.
- Long-term seepage from the unlined TSF and heap leach facility.
- Social transition risks (loss of jobs, dependence on mine-supported services, in-migration and post-closure land pressure).
- Limited hazardous waste disposal options in Namibia.

Opportunities exist to repurpose infrastructure and support long-term livelihoods (e.g. housing, water, power, workshops and clinic).

Social transition planning should include human resources ramp-down, workforce transition and re-skilling, and a Post-closure Sustainable Development Plan to strengthen community resilience and well-being, support diversified livelihoods, protect vulnerable groups and hand over viable social projects and infrastructure to government and/or community partners.

Stakeholder engagement principles must be tailored to closure, including early and continuous engagement, inclusivity, cultural sensitivity, transparency on closure costs and financial provision, and joint planning of realistic post-closure land uses and economic opportunities.

A first-order closure cost estimate was compiled and determined the closure liability as approximately **N\$ 1.84 billion** (capital costs and closure management), based on high-level quantities, benchmarked unit rates and allowances for further studies, social transition, human resources, high-risk mitigation, and post-closure monitoring and maintenance.

Early, iterative closure planning is essential for designing mine landforms, infrastructure and social programmes with the end state in mind, thereby reducing long-term liabilities and supporting sustainable post-mining outcomes. This Closure Framework is an initial step and it will be refined into a Conceptual Closure Plan in the early years of operation, and then into progressively more detailed closure plans as additional environmental, geotechnical, hydrogeological, geochemical and social data become available. Through this process, Haib Minerals aims to achieve a safe, stable and beneficial post-closure landscape, minimise residual environmental and social risks and, ultimately, meet the conditions for relinquishment of the Haib Copper Mine.

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ABBREVIATIONS

Acronym	Definition
ABA	Acid–Base Accounting
ARD	Acid Rock Drainage
BoQ	Bill of Quantities
CCP	Conceptual Closure Plan
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CoM	Chamber of Mines (of Namibia)
DWAF	Department of Water Affairs and Forestry (South Africa)
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPCM	Engineering, Procurement Construction Management
EPL	Exclusive Prospecting Licence
FOS	Factor of Safety
GDP	Gross Domestic Product
GISTM	Global Industry Standard on Tailings Management
ha	Hectare
HLP	Heap Leach Pad
HPGR	High-Pressure Grinding Rolls
HR	Human Resources
ICMM	International Council on Mining and Metals
IFC	International Finance Corporation
IPP	Independent Power Producer
ISO	International Organization for Standardization
ITRB	Independent Tailings Review Board
IUCN	International Union for Conservation of Nature
kV	Kilovolt
KPI	Key Performance Indicator
LAeq	Equivalent Continuous Sound Level (A-weighted)
LoA	Life of Asset
LoM	Life of Mine
MAP	Mean Annual Precipitation
ML	Mining Licence
MSB	Modified Single Buyer (electricity market framework)
Mt	Million Tonnes
Mtpa	Million Tonnes per Annum

Acronym	Definition
MWp	Megawatt-peak
NAD	Namibian Dollar
NamWater	Namibia Water Corporation
NGO	Non-Governmental Organisation
OHTL	Overhead Transmission Line
PAG	Potentially Acid Generating
PM ₁₀	Particulate Matter with aerodynamic diameter < 10 micrometres
PM _{2.5}	Particulate Matter with aerodynamic diameter < 2.5 micrometres
PSHA	Probabilistic Seismic Hazard Assessment
PV	Photovoltaic
ROM	Run-of-Mine
SARDB	South African Red Data Book
SEP	Stakeholder Engagement Plan
SMME	Small, Medium and Micro-sized Enterprise
SO ₂	Sulphur Dioxide
SWAD	Storm Water Attenuation Dam
SX/EW	Solvent Extraction–Electrowinning
TCT0	Total Concentration Threshold0
TSF	Tailings Storage Facility
TSS	Total Suspended Solids
USD	United States Dollar
WAL	Water Abstraction Licence
WRD	Waste Rock Dump

GLOSSARY

The basic glossary below is intended to facilitate a common understanding of general closure terminology.

- Vision
 - High-level description of aim of the Closure Plan
 - Guides strategy and objectives
- Objectives
 - Qualitative description of outcome of closure activities
 - Can be specific to domains
- Domains
 - Site features that have similar closure requirements
 - Divide mine into distinct domains
- Rehabilitation
 - Return land to stable, productive and self-sustaining condition
 - Beneficial uses
 - Where restoration is not the objective
- Revegetation
 - Introduce and establish new vegetation following disturbance
 - Seeding, planting or natural colonisation
- Demolition
 - Physically taking apart infrastructure
 - May need heavy equipment or explosives
- Decommissioning
 - Taking infrastructure out of service
- Success criteria
 - Specifications or measurements denoting success of activities meeting objectives
 - Linked to monitoring / management activities
- Relinquishment
 - End of ownership by mining company
 - Transition of ownership and residual liability
 - All obligations completed.

1.0 INTRODUCTION

1.1 Background

The Haib Copper Mining Project ("the Project") is being developed by Haib Minerals (Pty) Ltd (Haib Minerals), a subsidiary of Koryx Copper (Koryx). The Haib Copper Mine is a porphyry copper exploration project located in the //Karas Region of southern Namibia. The target resources for mining activities include copper and molybdenum. Haib Minerals holds Exclusive Prospecting License (EPL) 3140, which allows for the exploration of base, rare and precious metals over an area of 36 571 hectares (ha). The Project is located in the south of Namibia, approximately 9 km (from the south-western boundary) from Noordoewer. The B1 Road forms the north-western boundary of the EPL. The Orange River runs immediately to the south of the EPL.

The Project is currently in the exploration and studies phase, whereby the feasibility of the Project is being defined through ongoing investigations and analysis. The design concepts are being considered and project optimisations are underway. This is the ideal time to start integrated mine closure planning to ensure closure planning is incorporated in the design of landforms. This ultimately reduces risk and long-term liability.

1.2 Purpose of this Report

This Closure Framework ("the Framework") has been prepared to support the Project's Environmental Impact Assessment (EIA) and Mining Licence application and reflects the level of detail appropriate for a Preliminary Feasibility Study (PFS).

Given the limited engineering design definition, mine planning, stakeholder inputs, and closure-specific investigations typically available at this, PFS stage, the closure strategy, rehabilitation measures, liabilities, success criteria, and associated costs presented herein are preliminary in nature. The closure cost estimate is considered equivalent to a Class 5 estimate and should be regarded as an order-of-magnitude assessment, generally subject to an accuracy range of approximately -50% to +100%. This accuracy level will improve as the design advances into feasibility to execution stages and commissioning.

The purpose of this framework is to identify potential closure obligations, key closure risks, and indicative closure costs to support project evaluation and decision-making. As a live management document, it will be refined as additional technical, environmental, social, operational, and regulatory information becomes available.

Accordingly, the closure measures, rehabilitation objectives, closure liabilities, success criteria, and cost estimates presented in this report should not be interpreted as fixed commitments or final closure obligations, but rather as the current best estimate based on information available at the PFS stage.

1.3 Closure Planning Process

Figure 1 illustrates the progressive evolution of mine closure planning throughout the life of the project, showing how the level of detail and confidence increases as more project-specific information becomes available. Closure planning begins with a Preliminary Closure Plan/Framework during the early project stages (>25–15 years before closure), followed by a Conceptual Closure Plan (15–10 years), and a Detailed Closure Plan (10–5 years), where closure objectives, liabilities, rehabilitation measures and completion criteria are progressively refined. As mining approaches cessation, a Final Closure Plan is prepared (5–0 years), providing the detailed basis for implementation. Following

cessation of operations, Decommissioning activities (0–5 years) are undertaken, after which a period of Monitoring and Maintenance (typically 5–15 years) is required to demonstrate that closure objectives and agreed completion criteria have been achieved.

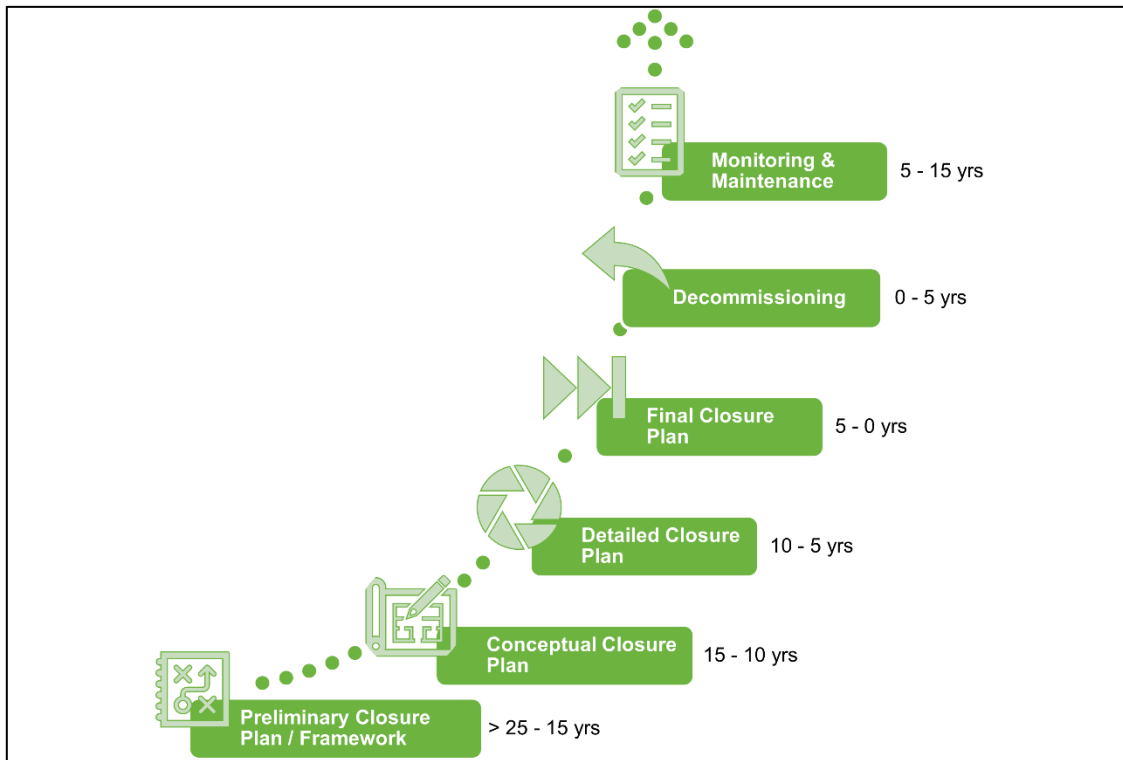


Figure 1: Typical Closure Planning Timeframes

The framework highlights that mine closure is an iterative process, with plans reviewed and updated throughout the mine life to reflect changes in project design, operational performance, stakeholder expectations, and regulatory requirements.

This Closure Framework will be followed by a Conceptual Closure Plan (CCP) during the initial years of operation. Each level of closure planning builds on the previous level, as more information becomes available through studies or trials. As such, the final chapter of this report is a Closure Action Plan with forward work items to be completed to inform the Conceptual Closure Plan.

1.4 Closure Vision

The closure vision is defined as follows:

The closure vision for the Haib Copper Mine is to transform the operational site to a safe and stable landscape that provides ecosystem services similar to the surrounding landscape and allows nearby communities to utilise the site for nomadic, low-intensity livestock grazing. Beneficial infrastructure such as the solar facilities can continued to be used productively to provide electricity to Noordoewer and/or other users (by the Independent Power Producer) and the water pipelines will continue to supply water for domestic and agricultural purposes. Due to the arid climate, closure is expected to take at least 10 years and during this time, and throughout Haib Minerals will pursue that socio-economic initiatives are sustainable.

1.5 Life Of Asset and Closure Planning Timeframes

The current Life of Asset is 33 years. This may be refined through further studies during the Project's Feasibility Study. Once production starts, mines are often able to add to the reserve / resource estimate, thereby extending Life of Asset.

2.0 LEGAL AND REGULATORY FRAMEWORK

2.1 Namibian Legal Requirements

2.1.1 Minerals Prospecting & Mining Act, No.33 of 1992

The Minerals Prospecting and Mining Act, No. 33 of 1992 is the main legislation that govern the mineral exploration and exploitation. However, the legislation does not contain specific requirements for mine closure or financial assurance for mine closure. According to research (Isipinge, Salom, Mapani, & Sims, 2021), the following sections apply:

- Section 54(2) (b) is strongly related to the issue of managing mine closure and abandonment. Under the abandonment of reconnaissance areas, prospecting areas, retention areas and mining areas, the holder of the mineral licence to which the area relates shall *"take all steps necessary to the satisfaction of the Minister. There should not be any damage caused by any prospecting operations and mining operations carried on by such a holder to the environment in the area in question."* The similar obligation of the mineral licence holder is stated in Section 128 (1).
- Section 57(1) indicates that the Minister may give a directive to the mineral licence holder in writing demanding the licence holder to apply good mining practices regarding environmental protection, natural resources conservation and removal of accessory works or other goods that were erected, constructed, or brought on the land for the mining activities. If the licence holder fails to comply, the penalty is N\$8 000 or imprisonment for a period of 12 months or both.
- Section 128(3) of the Minerals Act stipulates that the penalty for those failing to rehabilitate their mine sites upon completing mining is N\$100 000 or five years imprisonment or both.
- Section 130 states that the mineral licence holder is liable for pollution of environment or other damages or losses caused by their mining activities. It is therefore imperative that they take remedial steps to control spilling, pollution, any losses or damages and to ensure environmental management at the mines. The section also indicates the penalty for non-compliance.

2.2 Other legislation and policies

Apart from the Minerals Prospecting and Mining Act, supporting legal instruments include:

- Environmental Assessment Policy for Sustainable Development and Environmental Conservation (1994)
- Minerals Policy of Namibia (2002)
- Environmental Management Act, No.7 of 2009
- Water Act, No.54 of 1956.

2.3 Namibian Guidelines

2.3.1 Chamber of Mines of Namibia Mine Closure Framework

The Namibian Chamber of Mines published a Mine Closure Framework to guide mine closure planning in Namibia (Chamber of Mines of Namibia, 2010). In terms of this guideline, mines in the Feasibility and Detailed Design stages are required to compile a Mine Closure Strategy many years before closure, in consultation with stakeholders, which strategy is to be reviewed periodically, particularly when there are changes to mine planning and operations. This Mine Closure Strategy will provide high level guidance and foundation on which the mine closure strategy should be built. As much thought should go into this process as is dedicated to the design and development proposal. The Strategy should include:

- Key objectives (e.g., housing, community integration, future use of disturbed areas)
- Main closure aspects and associated components
- Closure risks
- Stakeholder expectations
- Identification and evaluation of alternatives.

2.3.2 Best Practice Guide in Mining Part 5: Care and Maintenance, Closure and Completion

The Namibian Chamber of Mines, in collaboration with other organisations, compiled a best practice guideline series. Part 5 pertains specifically to mine closure (Chamber of Mines of Namibia, 2019). This CCP draws from the requirements of this guideline and also addresses all required components.

2.4 International Guidelines

2.4.1 International Council on Mining and Metals (ICMM)

The ICMM published a revised Good Practice Guide on Integrated Mine Closure in 2025 (ICMM, 2025). The guideline aims to provide mining companies with guidance to promote integrated closure planning across the mining sector. Key elements of mine closure planning and implementation include:

- Integrating closure into life of mine planning
 - Short-, medium and long-term Life of Mine (LoM) planning process
 - Managing expectations, risks and opportunities
- Development of a knowledge base (information repository) for collecting and updating data applicable to closure
 - Environmental and social data
 - Operational data such as volumes of waste, material characteristics, etc.
 - Closure commitments
 - Regulatory requirements
- Definition of closure vision, principles and objectives
 - Formulated early in the closure planning process and refined as more information becomes available
 - Closure principles will contain components such as: safety, physical stability, chemical stability, socio-economic transition, ecological stability, risk limitation, cost-effectiveness and long-term care
 - Objectives will define concrete goals to be achieved through implementing the closure planning activities
- Identifying sustainable post-closure land use(s) for the mine site
 - Identify land uses early in the closure process and refine based on information collected in the knowledge base

- Land use(s) should be compatible with the land capability, socio-economic context, land ownership and regional plans
- Stakeholder engagement during closure planning
- Identifying and assessing risks and opportunities associated with closure
 - Setting priorities and defining closure activities
 - Identifying potential cost savings
- Implementation of progressive closure during the operating life of a mine to provide opportunities to:
 - Test the effectiveness of closure activities
 - Validate success criteria
 - Build trust with communities and the regulators
 - Generate learnings that can be incorporated into closure planning throughout the mining life cycle
- Monitoring, maintenance and management in order to:
 - Document and evaluate the effectiveness of closure activities, objectives and success criteria
 - Demonstrate that success criteria are being met or on a pathway to be achieved
 - Identify maintenance needs
 - Manage rehabilitated areas as part of the broader ecosystem
- Planning and preparation for social transition of the workforce and communities associated with the mine
- Determining financial liabilities associated with closure and updating the closure costs as more information becomes available
- Planning for temporary or unplanned closure
- Developing a Closure Execution Plan (CEP) with actions and resources required to plan for and implement closure. The CEP identifies actions to be carried out during the operational phase in support of closure planning
- Planning for relinquishment of the mining site once successfully completing post-closure activities:
 - Engagement with the Regulator
 - Stakeholder engagement
 - Agreeing on relinquishment criteria to be achieved.

2.4.2 ISO Standard 21795: Mine Closure and Reclamation Planning

ISO 21795 provides the basis for the objectives and implementation of mine closure, with the overarching objective to promote consistency and quality in the planning for mine closure and reclamation internationally.

Mine closure and reclamation planning is required for all areas affected or potentially affected by the mining infrastructure and operations. The potentially affected areas include those on which the mine facilities are located, and adjacent areas that can potentially be impacted by surface water, groundwater and air quality from the mining facilities. The affected and potentially affected areas should be clearly defined in the closure and reclamation plan.

ISO 21795 provides the closure and reclamation requirements for all necessary infrastructure associated with mines, and in relevance to the Mufulira Mine disaster, these include the following closure and reclamation plan requirements:

- **Tailings Storage Facilities**
 - General description of the TSF, deposition plans and history (where available), construction techniques used and operational processes
 - Description of the general status of the structure and its contained tailings
 - Current landform and its relationship to the final storage geometry, as well as to the closure and reclamation design
 - Current survey plan of the facility (showing past and future staged earthworks)
 - Condition of embankment used to contain the tailings, including an assessment of the impacts on stability of long-term weathering of the fill materials, as well as the performance of any drains needed to limit water pressures in the embankment
 - Overall long-term water balance of the facility
 - Considerations of climate change and the necessary design adjustments
 - General water management plans including, as necessary, seepage collection and management, surface water management, the design of treatments to manage seepage and to dispose of any water treatment residuals
 - Long-term flood management strategies, as well as the strategy for containment or deposition of rainfall from the design flood event
 - Sources and properties of materials that should be used as part of the decommissioning, closure and reclamation cover, and rehabilitation process
 - Proposed surface drainage works, including civil engineering design, construction and ongoing maintenance needs
 - Consideration and risk management of extreme events (e.g., drought, flood, fire, earthquake) during post-closure and reclamation
 - Overall closure and reclamation strategy for the TSF landform, addressing factors such as retention or drainage of incident rainfall, cover types required, and revegetation of covered or uncovered tailings
 - Surface treatment to minimise erosion (via rock cover and/or vegetation), sustain vegetation and support proposed rehabilitation design and stabilisation works
 - Monitoring and audit requirements for closure and post-closure.
- **Water Storage Facilities**
 - General description of the complete facility, deposition plans and history (where available), construction techniques used, and operational processes
 - Description of the general status of the structure
 - Current landform and its relationship to the final storage geometry, as well as to the closure and reclamation plan
 - Current survey plan of the facility (showing past and future staged earthworks)
 - Requirements or facilities which will be used
 - Condition of the embankment used to contain the water, including an assessment of the impacts on stability of long-term weathering of the fill materials and the performance of any drains needed to limit water pressures in the embankment
 - Overall long-term water balance of the facility
 - Long-term flood management strategies, as well as the strategy for containment or deposition of rainfall from the design flood event
 - Proposed surface drainage works, including civil engineering design, construction and in consideration of risk, storm events, and ongoing maintenance needs
 - Monitoring and audit requirements for the implementation, post-closure and reclamation phases
 - Requirements or facilities which will be removed:

- Demolition plans including removed materials disposal plans
 - Plans for the removal and disposal of mechanical facilities, pipelines, sediment accumulation, any liners
 - Design of restored flow channel
 - Reclamation of the previous water storage area and dam footprint.
- Waste Rock Dumps
 - General description of the complete facility, deposition plans and history (where available), construction techniques used, and operational processes
 - Description of the general status of the WRD, including the material's physical and geochemical characteristics
 - Current landform and its relationship to the final storage geometry, as well as to the mine closure and reclamation design
 - Current survey plan of the facility (showing past and future staged earthworks)
 - Condition of waste rock fill, including an assessment of the impacts on stability of long-term weathering of the fill materials and the performance of any drains needed to limit water pressures in the WRD
 - Consideration of climate change and the necessary design adjustments
 - General water management plans including, as necessary, leachate collection and management, surface water management, the design of the systems to manage leachate and to dispose of any water treatment residuals
 - Long-term flood management for the design flood event
 - Sources and properties of materials to be used as part of the decommissioning process, as well as the mine closure and reclamation cover and rehabilitation process
 - Proposed surface drainage works, including civil engineering design, construction and ongoing maintenance needs
 - Consideration and risk management of extreme events (e.g., drought, flood, fire, earthquake) during post-closure and reclamation
 - Overall mine closure and reclamation strategy for the WRD landform, addressing factors such as cover types required, as well as revegetation of covered or uncovered WRD
 - Surface treatment to minimize erosion (via rock cover and/or vegetation), sustain vegetation and support proposed rehabilitation design and stabilization works, monitoring and audit requirements for the implementation, post-mine closure and reclamation phases.
- Heap Leach Facilities (HLF)
 - Chemical stability of the HLF: The water quality of any seepage generated should not pose a threat to the receiving water quality (both surface water and groundwater). Measures that may be needed include (but are not limited to) low infiltration covers, segregation and clay encapsulation of the more geochemically active wastes, and water collection and treatment.
 - Physical stability: Surface and larger-scale slides and slumps, as well as erosional material losses, should be prevented. Measures that may be needed include (but are not limited to) slope flattening (best completed during the operations phase), buttress construction, surface grading to direct flows to erosion protected swales, and placement of erosion-resistant covers.
 - Landform design approaches that can be implemented: Successful application of land forming for visual reasons, erosion control, stability, and reclamation/revegetation. This requires that the process be started during the design and operations phase of the project.
 - Consideration of climate change and the necessary design adjustments.

- Surface water controls (including water collection and conveyance structures) that provide for transfer of surface water from one location to another. Natural erosion-resistant materials should be used in these structures to minimize long-term maintenance. Consideration can be given to using cementation products or components to stabilise channels.
- Leakage collection and/or groundwater capture and management plans, if necessary. The design of the systems to manage seepage and for the disposal of any water treatment residuals should also be provided as necessary. The existing solution ponds can be used to create bioreactors for leachate treatment
- Covers (as needed) for dust control, vegetation establishment, reducing infiltration of precipitation moisture or multiples compound covers that have multiple layers
- Establishment of vegetation as applicable
- Monitoring plan, data analysis and reporting.
- Mine Infrastructure – Buildings / Equipment
 - All equipment, wiring, insulation, and other materials should be removed from buildings. These materials should be sorted for disposal. Incineration and landfilling can be used to dispose of some materials/waste. All metals should be sorted and taken off-site for recycling/reuse. Items that can be recycled/reused should be taken off-site to a designated facility
 - Buildings should be dismantled, deconstructed or demolished. Materials should be assessed for contamination and potential re-use/recycling. Wood may be burned or allowed to decompose, which can be addressed in local regulations. Metal cladding, roofing and other similar materials should be sorted and taken off-site for recycling / reuse
 - Concrete foundations should be cleaned, where contaminated, with water and/or chemicals as required. Foundations should be broken and removed off-site or buried with clean soil or non-acid generating rock
 - Pipes, wires, poles and exterior lighting should be dismantled. Materials should be sorted for disposal, which can include landfilling, incineration or recycling/reuse, which can be covered in regulations. Some buried pipelines may not be removed.
- Mine Infrastructure – Chemicals
 - All chemicals on-site should be sorted and labelled. They should be taken off-site to a designated facility for recycling/reuse or disposed of if recycling/reuse is not available options. Records of handling should be kept.
- Mine Infrastructure – Fuel Tanks
 - Fuel tanks should be emptied. Remaining fuel should be taken off-site to a designated facility for recycling/reuse. Fuel tanks should be cleaned. Once cleaned, tanks should be dismantled and taken off-site for recycling/reuse. Records of handling should be kept.
- Mine Infrastructure – Lubricants, Fuels and Greases
 - Prior to removal / dismantling of equipment, fuels, greases and lubricants should be removed from equipment – including from transformers, mining equipment, generators and any other equipment. These compounds should be placed in secure and labelled containers. The containers should be removed off-site and taken to a designated facility for disposal/recycling/reuse. Records of handling should be kept.
- Mine Infrastructure – Sediment Ponds

- Sediment ponds should be drained unless maintained for a longer period while landforms stabilise. Contaminated sediment should be taken to a designated land fill on-site or off-site. Liners should be breached to eliminate ponding or removed.

2.4.3 Global Industry Standard on Tailings Management (GISTM)

The Global Industry Standard on Tailings Management (GlobalTailingsReview.org, 2020) incorporates the concept of tailings facility lifecycle in several of the key Principles and various of the Requirements. The definition of tailings facility lifecycle includes:

- Interim closure (including care and maintenance)
- Closure / active closure (regrading, demolition and reclamation)
- Post-closure / passive care closure (including relinquishment, reprocessing, relocation, removal).

Safe closure is defined as “a closed tailings facility that does not pose ongoing material risks to people or the environment which has been confirmed by an Independent Tailings Review Board (ITRB) or senior independent technical reviewer and signed off by the Accountable Executive” (directly accountable to the Chief Executive Officer of the mine) (GlobalTailingsReview.org, 2020).

GISTM integrates closure planning into all phases of the life of a TSF, as illustrated in Figure 2.

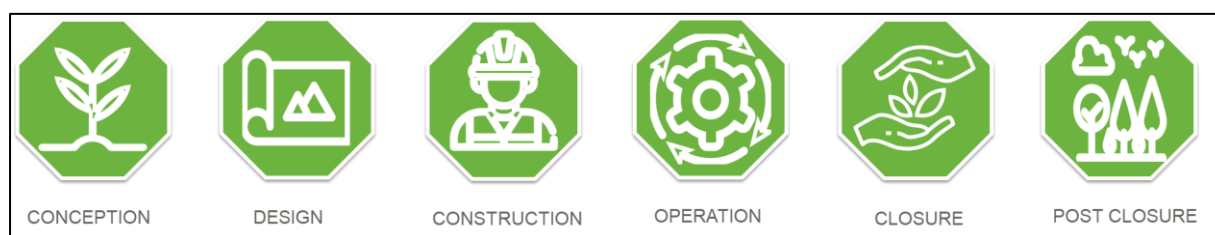


Figure 2: Phases of the life of a TSF

Closure is covered in various components of GISTM; however, the following section numbers highlight the most pertinent requirements in terms of TSF closure planning:

- **Section 5.2:** TSFs designs must be robust and the feasibility of safe closure should be demonstrated in the Design Basis Report or Closure Plan Report.
- **Section 5.6:** Elements of the closure design should be incorporated during construction and operation of the TSF.
- **Section 9.1:** The expertise of the Engineer of Record (EOR) will continue to be required for TSFs with ‘High’, ‘Very high’ or ‘Extreme’ consequence classifications during their active closure phase.
- **Section 10.7:** Financial provisioning for TSF closure – cost estimates should be prepared and be reviewed periodically, and public disclosure made annually to confirm that adequate financial capacity (including insurance, to the extent commercially reasonable) is in place to meet the closure requirements and expected timing for the tailings facility in their current state.

2.5 Corporate Governance Commitments

Haib Minerals’ responsible mining commitments are covered in a suite of supporting policies and procedures. These policies will be available on the Koryx Copper website from quarter four, 2026, and will be updated periodically, as the Haib Copper Project is developed. Foundational policies and supporting public documents, will include, among others, Code of Business Conduct and Ethics; Human

Rights Policy; Anti-Bribery and Corruption Policy; Whistleblowing Policy; Grievance Mechanism; Child Labour Policy; Diversity, Equity and Inclusion Policy; Harassment and Bullying Policy; Sexual Harassment Policy; Tailings Storage Facility Policy; Environmental and Water Stewardship Policy; Sustainability Policy and Local Content Policy.

3.0 DESCRIPTION OF PROPOSED OPERATIONS

The Haib Copper Project is a proposed large open-pit copper and molybdenum mine in southern //Karas Region, Namibia, near the Orange River and the B1 national highway. The deposit has been explored and partially mined since the early 1900s and is now being advanced by Haib Minerals towards a Mining Licence. The Project will operate for about 33 years (plus a two to three-year construction phase), using trolley assisted conventional truck-and-shovel, drill-and-blast open-pit methods, operating 24 hours per day.

Processing will combine a 40 million tonnes per annum (Mtpa) concentrator (crushing, milling and flotation). This will produce copper concentrate, molybdenum concentrate for export by road and rail via Namibian ports.

The Project is expected to make a material contribution to Namibia's Gross Domestic Product (GDP), government revenue (taxes, royalties and levies), export earnings and employment (direct, indirect and induced), while also driving local infrastructure and skills development. Water requirements are up to 20 million cubic metres per year and will be supplied by Namibia Water Corporation (NamWater) from the Orange River. Approximately 30% of power demand will be met through a solar photovoltaic (PV) plant, supplemented by grid power from NamPower.

Table 1 provides a summary of key infrastructure.

Table 1: Summary of Proposed Operations

Infrastructure component	Brief Description
Open pit mine	Large, single open pit designed around the Haib deposit, with haul ramps, benches and geotechnical controls
Mining fleet and haul roads	Conventional truck-and-shovel fleet (hydraulic shovels, 240-tonne haul trucks, drills, loaders, dozers and support equipment) and in-pit and surface haul roads with dust suppression
Run-of-Mine (ROM) pads and stockpiles	ROM tipping areas and paired stockpiles for grade and oxidation control, feeding both concentrator and heap leach circuits
Concentrator processing plant (40 Mtpa)	Crushing, high-pressure grinding rolls (HPGR), milling, flotation, thickening and filtration to produce copper and molybdenum concentrates for export
Optional heap leach and hydrometallurgical plant	Crushing, agglomeration, heap leach pads, bacterial leaching, SX/EW to produce copper cathode
Tailings storage facility (TSF)	Engineered impoundment (TSF 4) for approximately 1 100 million tonnes of tailings, with ring embankments, decant and water return systems

Infrastructure component	Brief Description
Waste rock dump (WRD)	Northern and south-western dumps located near pit exits for waste rock deposition, infrastructure construction material and progressive rehabilitation
Storm Water Attenuation Dams (SWADs) and drainage	Dams and cut-off drains to manage contact and non-contact stormwater, protect the pit and plant areas, and reduce erosion
Power supply and distribution	220 kilovolt (kV) overhead transmission line from NamPower's Harib Substation to a mine substation, with 33 kV site-wide reticulation and emergency diesel generators
Solar photovoltaic (PV) plant (about 150 megawatt-peak (MWp))	Independent Power Producer (IPP) facility supplying approximately 30% of the mine's energy demand under Namibia's Modified Single Buyer (MSB) framework
Off-channel water storage dam	A concrete faced rockfill dam (CFRD) is proposed with a capacity of up to 20 Mm3 and with a total surface footprint of approximately 160 ha at full supply level (FSL) with spillway. It will be supplied by a pipeline and booster stations connecting supply to abstraction works outside the EPL.
Bulk water abstraction and supply (NamWater)	Orange River abstraction and pipelines (authorised under a separate Environmental Clearance Certificate (ECC)), providing raw water for processing and dust suppression
Potable water and sewage treatment	Limited groundwater abstraction for potable use. Sewage treatment plant producing treated effluent for potential dust suppression, irrigation and process water, with sludge reused in rehabilitation
Access and internal roads	Upgraded sealed access road from the B1 via the Haib River corridor, formalised intersection and approximately 60 km of internal gravel access roads to the pit, TSF and utilities
Product transport infrastructure	On-site loading facilities and road and rail link options via Grunau or Karasburg to ports (Lüderitz, Walvis Bay)
Mine housing and construction camp	Permanent housing development in Noordoewer for about 1 350 operations personnel, plus temporary on-site construction camp and associated services for about 5 000 construction personnel
Site offices and workshops	Mining and plant offices, change houses, core shed, warehouses and heavy and light vehicle workshops for maintenance and administration
Fuel and explosives facilities	Diesel storage and dispensing infrastructure and licensed magazines and bulk emulsion facilities for explosives, compliant with Namibian legislation
Communications infrastructure	Masts, fibre or microwave links and on-site networks to support operations, safety and emergency response
Quarries and borrow pits	Local borrow areas for construction aggregates, located to minimise additional environmental footprint

Infrastructure component	Brief Description
Waste management facilities	Centralised waste management and recycling yard, including segregation, temporary storage, hazardous waste handling and likely an on-site incinerator

Closure and rehabilitation will be planned and implemented progressively, with concurrent rehabilitation of waste dumps and disturbed areas where feasible, using indigenous vegetation, topsoil management and landform design shaped by agreed post-mining land uses and closure objectives.

4.0 SUMMARY OF RECEIVING ENVIRONMENT

The project's Environmental Assessment (EIA) (Knight Piesold Consulting (Pty) Ltd, 2026) contains a detailed description of the environmental and socio-economic receiving environment. Table 2 provides a summary of the baseline chapter.

Table 2: Summary of Receiving Environment

Environmental Aspect	Brief Description
Climate	
Type and temperature	- Hot desert climate (Köppen-Geiger BWh) - Summer peaks in the mid-40°C; winter minima around 0°C
Rainfall and evaporation	- Very low mean annual rainfall (25 – 50 mm) with no distinct rainy season - High annual evaporation (~1 900 mm) greatly exceeds rainfall
Rainfall and wind patterns	- Winter: generally soft rain - Summer: short, intense thunderstorms - Dominant winds from the west-south-west
Land Use	
Current land use	- Subsistence livestock grazing (mainly goats and sheep) on very low carrying-capacity rangeland - Small livestock facilities concentrated along the Orange River
Surrounding economic activity	- Intensive irrigation agriculture (grapes, vegetables) along the Orange River near Noordoewer and Aussenkehr. - Wider region used for livestock farming and some tourism
Topography and Drainage (Surface Water)	
Topography	- Elevation ranges from about 200 to 700 metres above mean sea level - Western areas: relatively flat plains - Eastern areas: rugged hills and dolerite sills
Drainage characteristics	Ephemeral, dendritic drainage with no permanent surface water bodies in the project area

Environmental Aspect	Brief Description
	Haib River and Volstruis River are non-perennial tributaries of the Orange River, flowing only after significant storms
Hydrological behaviour	- High infiltration and steep gradients result in rapid runoff and limited surface retention - Recharge is focused in valley bottoms and structurally controlled depressions
Visual Character and Tourism	
Landscape character	- Harsh, arid, mountainous desert with sparse vegetation and prominent rock formations - Strong contrast between barren uplands and the green, irrigated Orange River corridor
Tourism receptors	- Noordoewer: border town and small adventure-tourism hub (rafting, fishing, birdwatching, 4x4 trails) - Key visual receptors include travellers on the B1 highway, river users, and residents along the Orange River
Geology and Seismicity	
Regional geology	- Located in the Namaqua-Natal Metamorphic Belt with high-grade metamorphic rocks and granitoids - Haib Subgroup volcanics and Vioolsdrif intrusives overlain by localised Karoo sediments and cross-cut by dolerite-gabbro dykes and sills
Seismic regime	- Tectonically stable craton with generally low to moderate seismicity - Probabilistic Seismic Hazard Assessment (PSHA) indicates low design ground motions (peak ground acceleration ~0.014 g for 475-year return period) - Maximum credible events on distant faults (e.g. Pofadder fault is 50 km away) could generate higher but very low-probability peak ground accelerations (0.2 g)
Soils	
Soil characteristics	- Very shallow, rocky, immature desert soils with low nutrient content - Soils concentrated in crevices and depressions, often covered by gravel and stones
Agricultural potential	Generally poor, with limited capability for cultivation outside irrigated riverbanks
Biodiversity – Flora and Sensitive Habitats	
Vegetation and communities	- Arid Karas Dwarf Shrubland with dwarf shrubs, grasses and succulents on gravel plains and rocky hills - Higher diversity along ephemeral drainage lines and in riparian zones
Diversity and endemism	At least 54 larger tree/shrub species and about 49 grass species; many shrubs and succulents

Environmental Aspect	Brief Description
	High proportion of plant and reptile species are Namibian endemics
Sensitive habitats	<u>Gravel plains</u> - Extensive, sparsely vegetated plains, including solar PV and TSF 4 areas - Lower overall diversity with scattered important species such as quiver trees (<i>Aloidendron dichotomum</i>) and <i>Hoodia gordonii</i> <u>Rocky hills, plateaus and potholes</u> - More diverse and sensitive habitats with protected and near-endemic succulents and trees (e.g. <i>Aloe gariepensis</i>, <i>Euphorbia</i> spp.) - Rock potholes and depressions act as moisture refuges for amphibians and small fauna <u>Ephemeral drainage lines</u> - Ecologically important corridors with denser vegetation and occasional seeps and temporary pools - Some drainage systems have higher sensitivity due to seeps and amphibian habitat <u>Riparian habitats</u> - Orange River: perennial riparian woodland with protected trees and very high ecological importance, but low recovery potential - Haib River: ephemeral riparian zone with protected trees and notable habitat value, sensitive to disturbance and <i>Prosopis</i> invasion <u>Bird flyways</u> - Major movement pathways follow the Orange River and mountain ranges - Certain large raptors and bustards are at risk from overhead transmission lines and pylons
Key flora and protection status	- Numerous protected or near-endemic trees and shrubs (e.g. <i>Aloidendron dichotomum</i>, <i>Boscia albitrunca</i>, <i>Ozoroa namaquensis</i>) - Several species protected under the Forest Act, Nature Conservation Ordinance, International Union for Conservation of Nature (IUCN) Red List or Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) - Grass communities dominated by <i>Stipagrostis</i> and <i>Eragrostis</i> with grass composition mainly rainfall-driven
Faunal diversity	
Reptiles and amphibians	- About 53 reptile and 11 amphibian species expected, where >50% of reptiles are endemic - Sensitive species include Bushmanland tent tortoise (<i>Psammobates tentorius veroxii</i>), Nile monitor (<i>Varanus niloticus</i>), and endemic frog <i>Phrynomantis annectens</i>
Mammals	Approximately 64 species expected, mostly mobile and at low densities

Environmental Aspect	Brief Description
	Vulnerable or near-threatened species include leopard (<i>Panthera pardus</i>), Hartmann's mountain zebra (<i>Equus zebra hartmannae</i>) and African clawless otter (<i>Aonyx capensis</i>)
Birds	- Around 153 breeding bird species expected, one being endemic, namely the rosy-faced lovebird (<i>Agapornis roseicalis</i>) - Several species of high conservation concern (e.g. white-backed vulture, martial eagle, Ludwig's bustard, tawny eagle), some sensitive to powerlines and pylons
Aquatic Ecosystems (Orange River)	
System context	- Orange River is the only permanent waterbody, therefore a critical aquatic lifeline in an arid landscape - Downstream Orange River Mouth is a Ramsar wetland of international importance
Habitat condition	- Dominated by stone habitat with limited marginal vegetation, often invaded by <i>Prosopis</i> - Macroinvertebrate habitat quality low to moderate - Biotic assemblages dominated by tolerant taxa.
Aquatic biota and ecological status	- Fish communities show low to moderate richness with many tolerant species - Ecological Category D – E (largely to severely modified) - Near-threatened largemouth yellowfish (<i>Labeobarbus kimberleyensis</i>) present, indicating residual conservation value. - Diatom indices suggest moderate to poor water quality (Ecological Category C – D) with nutrient enrichment and elevated salinity, mainly from upstream agriculture
Hydrology (Surface Water)	
Catchments and flows	- Deposit straddles the Volstruis River (22.6 km²) within the larger Haib River catchment (3 610 km²) - All local streams are ephemeral, flow occurs only after intense storms
Runoff and sediment	- Very low runoff for small storms - Higher runoff only in larger, rare events - Volstruis River contributes <1% of Haib River runoff and has modest sediment yield
Orange River Water Quality	
General quality	- Multiple parameters exceed International Finance Corporation (IFC) and South African Department of Water Affairs and Forestry (DWAF) ecosystem guidelines - Elevated aluminium, iron, zinc, mercury and copper across sites and seasons
Nutrients and solids	High nitrate and total suspended solids (TSS) downstream, primarily from agricultural inputs and drainage

Environmental Aspect	Brief Description
	Evidence of increased salinity and nutrient enrichment, contributing to algal growth
Microbiological status	- Elevated total coliforms and <i>Escherichia coli</i> at all sites, with highest counts downstream - Likely sources include agricultural runoff and upstream faecal contamination
Hydrogeology	
Aquifer types	- Shallow alluvial aquifers along river channels with relatively high potential yields - Upper fractured rock aquifer (to ~40 m depth) with interconnected fractures and moderate yields - Deeper fractured rock aquifer with generally low yields, except along discrete structures
Groundwater levels and flow	- Water tables close to surface in alluvium (0 – 5 m below ground) and 12 – 40 m below ground in fractured rocks - Groundwater flow broadly follows surface topography toward the Orange River, modified locally by structures
Recharge and quality	- Very low recharge (typically <2% of mean annual precipitation; modelling suggests as low as 0.2%) - Groundwater quality generally poor and saline, with high sodium, chloride and sulphate; unsuitable for drinking in most cases
Conceptual model implications	- Fractures and faults could both transmit and locally block flow - Leaks from facilities (HLP, TSF, WRD, water storage dam) would cause localised mounding and southward migration towards rivers, if not contained
Geochemistry	
Material types and testing	- Static geochemical tests conducted on high-grade ore, low-grade ore, waste rock and tailings - Analyses included Acid–Base Accounting (ABA), mineralogy, whole rock chemistry and leach testing
Acid generation and leachate	- Most samples non-acid generating, but high-grade materials show potentially acid generating behaviour - High-grade non-oxidised ore poses the greatest potential risk if stored for long periods, but will be processed relatively quickly
Guideline comparison and follow-up	- Some leachates exceed Namibian, IFC and South African guideline thresholds for selected metals - Kinetic testing results currently show there appears to be sufficient buffering capacity in the material that will be stored on the WRDs and TSF. Results show low quality leachate to impact local aquifers (on site) with low risk to regional resources.
Air Quality	

Environmental Aspect	Brief Description
Baseline conditions	- Baseline monitoring of particulate matter smaller than 10 micrometres (PM₁₀) and 2.5 micrometres (PM_{2.5}) shows very low concentrations - PM₁₀: 2.7 – 14.7 µg/m³ - PM_{2.5}: 1.1 – 3.2 µg/m³ - All well below European Union Ambient Air Quality Standards
Source characteristics	- Dominated by natural dust from rocky, sparsely vegetated terrain; minimal anthropogenic contributions - Conditions typical of remote arid regions and provide a robust baseline for impact and closure assessments
Noise	
Daytime baseline	- Equivalent continuous noise levels (LAeq) ~30–49 decibels A-weighted [dB(A)], all below IFC daytime guideline of 55 dB(A) - Characteristic of a quiet, rural environment with limited activity
Night-time baseline	- LAeq ranges from ~28 to 63 dB(A) – most locations quiet and below 45 dB(A), but some boundary and town points exceed the IFC night-time guideline - Exceedances relate to local community activity, traffic and natural sources, not mining
Traffic and Transport	
Road network	- Primary access via the B1 national highway (principal arterial) with links to C13 and local access roads (D316, D213) - B1 and C-class roads are surfaced and in good condition; D-roads are unsealed and carry low volumes of traffic
Traffic volumes and performance	- Current traffic volumes very low (highest 12-hour total 537 vehicles at B1/C13) - All intersections operate at good Levels of Service (A–B) with limited delays - Baseline provides significant capacity headroom for mine-related traffic
Archaeology and Cultural Environment	
Recorded heritage	- Fifty-one sites (78 features) were identified, including graves, cairns, hut circles, battlefields, stone tools and historic farmsteads - Several graves and battle-related sites are of high significance under the National Heritage Act
Key heritage types	- Prehistoric stone artefact scatters and pastoralist structures are present, indicating long-term occupation - Historical features linked to German colonial campaigns against Jakob Marenga and Abraham Morris
Planning implications	Most sites are low significance, but some are high and directly or closely intersect mine infrastructure (e.g. near TSF 4)

Environmental Aspect	Brief Description
	Site locations are being used to guide avoidance, buffering and mitigation in layout plans
Socio-Economic	
Demography and economy	- Located in Karasburg West Constituency, //Karas Region; nearest settlements are Noordoewer and Aussenkehr - Regional economy based on mining, ports, irrigated agriculture, livestock and tourism - Orange River agriculture is locally critical
Population and migration	- Regional population growing at about 3% per year, but Karasburg West/East are growing faster (~5.5% per year) due to in-migration - Working-age migrants dominate populations near agricultural hubs - Households are small (average 2.4 persons)
Education, health and services	- High literacy (~95.6%) and relatively strong secondary school completion in Karasburg West - Health services are sparse, but include district hospitals and clinics, with only primary care in Noordoewer and Aussenkehr - Access to electricity, sanitation, safe water and waste services is poor in Karasburg West, with many households using informal solutions
Poverty, income and unemployment	- Regional multidimensional poverty relatively low compared to other regions, but pockets of vulnerability remain - High youth unemployment (around 48% in Karasburg West), low average incomes and significant dependence on seasonal work
Vulnerable groups	- Female-headed households, unemployed youth, children, people with disabilities and households in poverty identified as most vulnerable - Women have lower labour force participation and weaker access to land, credit and formal financial services
Community health baseline	- Closest communities: Noordoewer, Vioolsdrif and Aussenkehr - Health facilities provide basic care, with referrals to larger centres for complex cases - Children, the elderly and those with existing respiratory or chronic illnesses are particularly sensitive to environmental changes - Construction and operations workforce (up to 5 000 then ~1 500) will interact with local communities, with implications for service demand, disease transmission and social dynamics

5.0 CLOSURE RISKS AND OPPORTUNITIES

5.1 Risk assessment methodology

KP applied a typical 5x5 risk matrix, presented below in Figure 3, to rank consequence and probability. The resulting risk levels (low, medium, high and very high) can be used to prioritise the management and reduction of closure risks.

	E - Rare	D - Unlikely	C - Possible	B - Likely	A - Almost Certain
5 Catastrophic	15(M)	19(H)	22(H)	24(VH)	25(VH)
4 Major	10(M)	14(M)	18(H)	21(H)	23(VH)
3 Moderate	6(L)	9(M)	13(M)	17(H)	20(H)
2 Minor	3(L)	5(L)	8(M)	12(M)	16(M)
1 Negligible	1(L)	2(L)	4(L)	7(M)	11(M)

Figure 3: Risk Matrix

5.2 Evaluation of risks and opportunities

The closure risks and opportunities associated with the closure of the proposed Haib Copper Mine are summarised within Table 3 below. The opportunities that have been identified are in green shading.

Haib Minerals should update closure risks and opportunities at every level of design and then during construction and operations on an annual basis to prioritise the actions / further studies related to managing closure risks.

The controls / actions should be integrated in ongoing projects and programmes (with budgets allocated) to ensure that risks are reduced over time, as more information becomes available and uncertainties are reduced.

Table 3: Closure Risks and Opportunities

Haib conceptual closure risk assessment						
Aspect	Area of risk / opportunity	Description	Likelihood	Consequence	Risk level	Actions / further studies
Economic	Premature closure	Political, economic or health factors leading to premature or temporary closure.	C Possible	3 Moderate	13 Medium	Regular consultation with Ministry of Mines and Energy regarding closure, financial provisioning and relinquishment
Regulatory	Regulatory uncertainty regarding mine closure planning and financial provisioning	The processes of closure planning, financial provisioning and relinquishment are not specified withing Namibian legislation. However, the process will be governed by the Ministry of Mines and Energy. The legislation gaps and inexperience of regulatory authorities pose a risk. Relinquishment may therefore be delayed or not granted.	D Unlikely	3 Moderate	9 Medium	
Bio-physical	Dispersion of dust and inhalable particulates, visual impact of dust plumes	Dust impacts during decommissioning and post-closure will depend on the extent of rehabilitation efforts. The TSF and WRDs will be the biggest sources of inhalable particulates and dust. Sensitive receptors are located a fair distance from the mine, but may be affected.	C Possible	2 Minor	8 Medium	
Bio-physical	Complicated revegetation due to arid climate and limited soil horizon	Revegetation will be complex and slow due to the harsh climatic conditions, low rainfall and minimal topsoil horizon. This may result in a prolonged active closure phase.	A Almost certain	3 Moderate	17 High	Implement trials with native plants and seed mixes combined with ameliorants and organic matter
Bio-physical	Erosion	Ineffective and unsuccessful rehabilitation measures could result in erosion taking place. The areas of concern are the TSF, WRD and infrastructure areas that must be rehabilitated. The prolonged revegetation period increases the risk.	B Likely	2 Minor	12 Medium	Rehabilitation trials on TSF and WRDs

Haib conceptual closure risk assessment						
Aspect	Area of risk / opportunity	Description	Likelihood	Consequence	Risk level	Actions / further studies
Bio-physical	Rehabilitation failure	If rehabilitation of the area is not performed correctly, this may result in poor re-growth of vegetation and loss of biodiversity. If maintenance of the sites is limited, an increase in invasive species will occur and ultimately have a negative impact on surrounding vegetation. Premature access of people and livestock to rehabilitated areas may compromise success.	C Possible	2 Minor	8 Medium	
Bio-physical	Groundwater and surface water quality	The TSFs and WRDs will be permanent structures. Runoff and seepage from these facilities may contribute to contamination of the local and general surface water quality. Seepage may contribute to groundwater contamination.	C Possible	3 Moderate	13 Medium	Contaminant plume modelling of TSF and WRDs
Bio-physical	Acid Rock Drainage (ARD)	Current kinetic test work indicates a low ARD risk and suggests adequate buffering capacity within the WRD and TSF materials. However, uncertainty remains due to material variability and the scale of the operation.	D Unlikely	3 Moderate	9 Medium	Develop a PAG/NAG management strategy and incorporate material classification into mine scheduling and waste placement to support encapsulation and minimise long-term ARD risk.
Bio-physical	Sedimentation	The rehabilitation and water management of the Volstruis area could increase sedimentation in the Haib and Orange Rivers if not successfully implemented.	C Possible	2 Minor	8 Medium	
Bio-physical	Land use	Final land uses must take cognisance of the sensitivity of the local environment. High-intensity land uses are unlikely to be achievable due to water scarcity (aridity) and the rugged topography. Over-	C Possible	3 Moderate	13 Medium	Regulatory and local stakeholder consultation to discuss future land uses

Haib conceptual closure risk assessment						
Aspect	Area of risk / opportunity	Description	Likelihood	Consequence	Risk level	Actions / further studies
		utilisation may damage rehabilitation and revegetation efforts.				
Bio-physical	Pit lake acidity / toxicity	Pit lake water levels are likely to remain low, which will prevent contaminant migration away from the pit. With low rainfall and high evaporation rates, pit lake may become saline and toxic, limiting post-closure uses. If pit lake water quality is not acceptable, post-closure water treatment may be needed.	B Likely	3 Moderate	17 High	Pit lake study
Technical and Financial	Closure objectives not integrated into mine planning	If closure objectives (PAG/NAG separation and sequencing, Waste facilities designed per closure design etc.) are not integrated at the early stages of mining planning it may result into the following: • loss of encapsulation opportunities • higher closure cost • reduced closure flexibility • increased water and geochemical liabilities-post closure	B Likely	3 Moderate	17 High	Integrate closure requirements into WRD and TSF design, mine scheduling and material placement strategies. Assess closure implications during all major design trade-off studies and update closure cost estimates accordingly.
Technical	TSF or WRD failure	Geotechnical instability leads to erosive, unsafe and unstable landforms that will impact the natural environmental and local communities.	E Rare	5 Catastrophic	15 Medium	Stakeholder engagement Emergency Preparedness and Response Plan
Technical	No concurrent rehabilitation of TSF, long-term contamination risk	The TSF (Option 4) will be located in an area characterised by a sand cover in the northern portion of the TSF, and outcropping fractured rock in the southern portion. With the TSF being unlined,	A Almost certain	3 Moderate	20 High	Rehabilitation trials on similar substrates Capping TSF as soon as practical

Haib conceptual closure risk assessment						
Aspect	Area of risk / opportunity	Description	Likelihood	Consequence	Risk level	Actions / further studies
		it is expected that leachate from the TSF may enter the underlying sand and migrate away from the TSF footprint. The hydraulic characteristics of the sand are not known, but it is expected that the sand will have a relatively high permeability, allowing for contaminant migration away from the TSF. Similarly, the outcropping rock in the southern section is expected to have a relatively high permeability, and leachate from the TSF will enter the upper fractured rock aquifer, leading to contaminant migration away from the TSF in the southern section as well.				
Financial	TSF remains dependent on seepage interception post closure	Long-term dependency on seepage interception and water management infrastructure due to wet TSF footprint long after closure execution.	A Almost certain	3 Moderate	20 High	Develop an integrated LoM and closure water balance to assess the long-term behaviour of the TSF, including seepage generation, drying rates and post-closure water management requirements. Evaluate opportunities to reduce seepage and stored water at source through alternative tailings and deposition strategies. Quantify the expected duration of any post-closure management phase (e.g. seepage interception, pumping and/or evaporation) and

Haib conceptual closure risk assessment						
Aspect	Area of risk / opportunity	Description	Likelihood	Consequence	Risk level	Actions / further studies
						incorporate this into closure planning and cost estimates.
Social	Communities and social development initiatives	The role of the mine and associated institutions in the management of social development initiatives and infrastructure will cease post closure, making social initiatives unsustainable if not considered during the closure planning process. This could undermine the ability of the initiatives and infrastructure to continue without the support of the mine.	C Possible	4 Major	18 High	Post-closure Sustainable Development Plan
Social	Human resources / workforce	The mine will gradually decrease the number of permanently employed during the process of decommissioning. This will lead to a loss of household incomes in the Noordoewer and Karasburg area and in Oranjemund / Keetmanshoop / Windhoek, as many of the skilled workers may originate from these towns. Opportunities to find alternative employment, especially in the local area, are limited. Job opportunities in the mining sector are also limited. Several members of the household of each employee are likely to be dependent on the income generated through employment. Employment also provides opportunities for secondary economic development and these will reduce once the workforce is redundant.	B Likely	4 Major	21 High	Integrate closure planning into human resources plan

Haib conceptual closure risk assessment						
Aspect	Area of risk / opportunity	Description	Likelihood	Consequence	Risk level	Actions / further studies
Social	Safety and security	Even though bunds, berms, and fences will be constructed to prevent access to the open pits and waste management facilities, it still poses a risk to humans and/or animals from falling into or from such infrastructure.	D Unlikely	4 Major	14 Medium	Stakeholder engagement/ Signage
Social	Influx	A possible, small-scale uncontrolled influx of people into the operational area vacated by the mine and the associated development could result in competition for social services and natural resources (grazing land and other ecosystem services). The results would be impacts on local people in the area and environmental degradation, which would impact the natural environment.	D Unlikely	3 Moderate	9 Medium	Post-closure Sustainable Development Plan
Socio-economic	Outmigration from Noordoewer	The development of the mine and associated Social Development Framework (SDF) initiatives may stimulate significant economic growth and population expansion within Noordoewer over the life of mine. Following mine closure, the loss of direct, indirect, and induced employment opportunities may result in out-migration of workers and their dependants, leading to reduced economic activity, declining demand for local services and businesses, and potential socioeconomic contraction within the town.	B Likely	4 Major	21 High	Develop a post-mining economic diversification strategy early in the mine life to reduce dependence on mining-related economic activity
Social	Communities and social development initiatives	Opportunity to create ongoing sources of revenue and livelihood activities through planning and economic re-development of infrastructure such as the re-development of operational housing, offices, warehouses and workshops for third party businesses.	B Likely	2 Minor	7 Medium	

Haib conceptual closure risk assessment						
Aspect	Area of risk / opportunity	Description	Likelihood	Consequence	Risk level	Actions / further studies
Social	Health facilities	Opportunity to contribute to regional healthcare infrastructure by handing over site clinic equipment to provincial health authorities.	B Likely	2 Minor	7 Medium	
Waste	Management of general waste	The on-site landfill will be unlikely to accommodate all waste generated during demolition. Alternative waste disposal sites / options will be needed. This requires planning and further costs.	B Likely	3 Moderate	17 High	Waste study for general and hazardous waste management at closure
Waste	Management of hazardous waste	There are limited hazardous waste sites in Namibia and therefore any hazardous waste generated during decommissioning and closure will require off-site disposal or alternative solutions.	B Likely	3 Moderate	17 High	
Waste	Disposal of plant infrastructure	Plant infrastructure may be either dismantled and resold to other operations or salvaged and sold as scrap. Prior to removal, all plant infrastructure components will require decontamination. The volume of materials poses a risk in terms of waste management.	C Possible	2 Minor	8 Medium	

6.0 FINAL LAND USE PLANNING

The Haib Project area and surrounds are arid, with a limited soil profile. Agricultural post-mining land uses are unlikely to be feasible or sustainable. The water storage dam may provide possible options for continued water use, but the soil profile and rugged topography over most of the site will remain as a limitation. Therefore, land use options are provided in Table 4 below with the **most feasible** land uses in bold text (remain flagged options at this point). Where low impact grazing is proposed, this would entail only nomadic grazing, in line with the pre-mining land use. Detailed feasibility and comparative studies would need to be conducted on all these options, prior to decisions being made.

Table 4: Potential land use options

Project area / domain	Potential land use options and ideas
Orange River abstraction: pumping system, pipeline and storage dam	Demolish and return the area to low impact grazing
	Repurpose dam for tourism use – water sport, bird watching, fishing, etc.
	Repurpose for agricultural support to surrounding farmers – low flow season water supplement
Solar farm	Demolish and return the area to low impact grazing
	Repurpose for electricity supply to Noordoewer via an Independent Power Producer (IPP)
Tailings Storage Facility	Cap with waste rock and revegetate as far as possible. The facility won't support grazing, therefore cordon off as unused / wilderness land
	Cap with waste rock and level surface. Extend the solar farm onto the TSF top surface and integrate with the original solar farm to provide local / regional power
Waste Rock Dumps	Sell / donate material to potential road building / aggregate projects in the area
	Level / shape in line with closure criteria. The facility won't support grazing, therefore cordon off as unused / wilderness land
Open pit	Pit lake with limited future use due to safety and potential geochemistry concerns. Cordon off with a safety berm
Plant	Sell the plant for reuse or demolish and recycle metals, and return the area to low impact grazing
Industrial support infrastructure (fuel tanks, workshops, water treatment facilities)	Demolish and return the area to low impact grazing
	Re-purpose for post-mining industrial use
Offices and administrative buildings	Demolish and return the area to low impact grazing
	Re-purpose for post-mining industrial / commercial use

Project area / domain	Potential land use options and ideas
Remainder of mining area	Demolish all infrastructure and return the area to low impact grazing

Future closure plans, i.e. the Conceptual Closure Plan, should formally demarcate closure domains, identify further potential uses and investigate the most feasible land use for each domain.

7.0 CLOSURE FRAMEWORK DESIGN BASIS

7.1 Closure Framework Summary

KP applied the principles of design basis for closure planning (Landform Design Institute, 2024) and the principles of integrated mine closure planning (ICMM, 2025). The closure planning process is iterative, with this document (Table 5) setting the framework for further detail to follow in the CCP.

Table 5: Closure Framework Summary

Goal	Objective	Design and performance criteria
Regulatory requirements, best practice and corporate commitments		
Meet all applicable legal and corporate policy requirements	Determine Namibian requirements and strive to meet international best practice	Consult with Ministry of Mines and Energy regarding closure and financial provision Once Environmental Clearance is received, include permit conditions in future closure planning processes
Landform construction and operation		
Create safe and stable landforms	Maintain factor of safety (FOS) for slope stability	FOS ≥ 1.5 for WRDs and TSF Passive closure phase seismic design annual exceedance probability 1:10 000 Encapsulate spent heap leach material in NAF waste rock to maintain slope stability
	Create an off-channel dam that is safe and stable	Design, if feasible, a robust facility with lifespan that will exceed the LoM so that it could provide post-mining benefits
	Create a final pit void that is safe and stable.	Identify the optimum pit closure strategy by evaluating the potential development of a pit lake, taking into consideration different backfill scenarios (no backfilling to near complete backfilling if there is enough material available). Determine the potential impact associated with the different closure scenarios, and prepare for impact management and mitigation measures.
Design landforms that make progressive rehabilitation possible	Design WRDs to expand horizontally and vertically in terms of the valley topography, rather than expanding horizontally in all directions.	Design and construct WRDs for closure enabling concurrent rehabilitation. Ensure the following: - Waste rock deposition in strips or bands; encapsulating PAG with NAG - If possible, place the outer NAG shell first per closure design to enable concurrent rehabilitation of lifts.

Goal	Objective	Design and performance criteria
		- Angle of deposition $\leq 1:3$ - Where possible in the valley topography, establish benches and berms to enable concurrent rehabilitation of WRD faces - Manage erosion as it arises to determine the best methods for long-term erosion management
Surface water quality and quantity		
Design for climate change	Determine the most likely climate change scenarios for southern Namibia and tie in with international best practice	Passive closure phase flood design on TSF for annual exceedance probability 1:10 000
Design surface water infrastructure to minimise long-term impacts on runoff quantity and quality	Passive closure phase surface water quality must meet Namibian standards or pre-mining water quality	Continue surface water monitoring during passive closure to determine trends and if closure objectives are being achieved Clean / dirty water separation until monitoring results demonstrate compliance to Namibian standards or pre-mining water quality Maintain adequate capacity in dirty water systems until water can be discharged
Geochemistry, groundwater quality and quantity		
Limit generation of Acid Rock Drainage (ARD) and Metal Leaching (ML)	Isolate all reactive materials with low permeability base layers and covers Passive closure phase groundwater quality must meet Namibian standards or pre-mining water quality	Isolate all Potentially Acid Forming (PAF) material by depositing on a Non-Acid Forming (NAF) base and applying a NAF cover during concurrent rehabilitation Contain poor quality leach runoff from pit walls in pit Continue groundwater monitoring during passive closure to determine trends and if closure objectives are being achieved Capture seepage from spent heap leach pads for 5 years after capping, or until runoff meets Namibian standards

Goal	Objective	Design and performance criteria
Manage contaminant migration away from potential pollution sources (WRDs, TSF, HLP, pit)	Early detection of contaminant migration away from the potential pollution sources Implement management plan that intercepts, collects, and removes contamination from the groundwater resource and limited impacts on downgradient receptors	Implement a groundwater level and quality monitoring program Identify contamination migrating away from pollution sources Install cut-off trenches and/or interceptor wells to remove contaminated groundwater from the aquifers
Land use and ecosystem services		
Rehabilitate final landforms to provide a mix of ecosystem services	Determine the best way to rehabilitate the mining area by conducting trials during operations	Re-establish low-intensity nomadic grazing land using native grasses Allow free-roaming wildlife to utilise the area
Monitoring and maintenance		
Avoid landforms that require ongoing maintenance and monitoring beyond a finite monitoring period	Implement an active closure period of 5 years and a further passive closure period of 10 years to enable effective monitoring and maintenance.	No spillway on TSF Remove stormwater attenuation dams at closure and reinstate natural drainage Slope angles on TSF and WRDs $\geq 1:3$ Build a record of maintenance requirements and monitoring data to enable the mine to demonstrate active maintenance requirements and timeframes required to achieve a passive state
Social and workforce transitioning		
Design all social development programmes with closure in mind	Compile a Post-closure Sustainable Development Plan	Transitioning and post-closure management plan for each social development programme (e.g. training and skills development, supplier dependence, etc.)
Continued use of solar farm	Continued use of solar farm	It is anticipated, if financially feasible, that the solar PV supply (solar farm, inverters and batteries) will be developed and owned by an IPP, providing power

Goal	Objective	Design and performance criteria
		to the Mine under an agreed contractual framework. After mine closure, the IPP can continue to supply power to other users, possibly including NamPower, and including via wheeling through the grid
Continued use of water supply infrastructure	Ensure beneficial use of the abstraction and pumping infrastructure from Orange River	The abstraction and pumping scheme will be developed by NamWater, with funding by Haib Minerals. After mine closure, NamWater can continue using the scheme (intake works, pipeline which is to remain buried and pump stations) to supply water to communities and other users in the surrounding area(s)
	Ensure beneficial use of the off-channel water storage dam	
Plan post-closure employment opportunities for the workforce	Compile a Human Resources Management Plan to guide ramp-down, re-skilling, redeployment, retirement or retrenchment.	Conduct a closure-phase skills assessment to retain or recruit personnel needed to execute closure Implement training and re-skilling of employees in preparation for closure Redeploy workers to other Haib Minerals (through Koryx Copper) operations (if applicable) Implement early retirement or retrenchment in line with Namibian labour law and international good practice Provide financial planning training to all employees affected by closure

8.0 SOCIAL TRANSITIONING

8.1 Human Resources Planning

The management of staff and contractors are critical to successful mine closure. The mine must ensure the future well-being of employees and surrounding communities. Employees are key stakeholders in the closure planning process and must be consulted during the closure planning process. To this end, mine closure planning should be incorporated in the mine's human resources management plan.

Human resources planning for closure should focus on three main areas:

Workforce ramp-down plan – in line with mining and processing schedules to ensure that adequate labour is available for final mining and processing, but that redundancies can be managed before planned closure.

Industrial relations plan – review of relevant workplace legislation and open dialogue / negotiations with relevant unions. This should include procedures for management of downscaling and retrenchments. Such approaches should be planned and negotiated with the mine workers union as part of industrial relations related to closure planning.

Workforce transition programme – to support employees approaching redundancy and to ensure that employees are provided with information, support and training to minimise the effect of the closure of the operations. The overall goal of the programme should be to build transferable skills to be better placed to look for work and re-enter the workforce post closure.

8.2 Principles for Social Investment in Support of Social Transition

According to international good practice (ICMM, 2025), the following basic principles will apply to social transitioning to mine closure:

- Align social investment to a shared vision for a post-mining future that supports long-term community resilience and well-being
- Focus social investment for closure on building resilience and capacity in stakeholders
- Start early and implement progressively
- Integrate and coordinate social transition with other closure initiatives
- Develop a strategic, planned and resourced approach to social investment for closure
- Partner with others to develop long-term economic opportunities.

8.3 Sustainability Considerations and Partnerships

Community transition refers to the shift of the host community from life with an active mine as a neighbour to life without support from the mine. As part of this transition, the following aspects need to be addressed and managed in a Post-closure Sustainable Development Plan:

- Economic impacts from loss of employment and business opportunities
- Changes to population dynamics and characteristics
- Changing levels of support for services and infrastructure supported by the mine.

There are two avenues through which social transition to closure should be managed:

1. An effective stakeholder engagement strategy for closure: Ensuring close engagement with communities during the closure planning process will allow the voices of affected stakeholders to inform closure plans.
2. Use of community development programmes to focus on closure and post closure sustainability within affected communities.

All planned social development projects should be developed and implemented with closure in mind. Initial implementation and management of the projects should be done in partnership with NGOs, Government and the communities concerned.

8.4 Assets that could be Handed Over to Third Parties

In line with international best practice, any assets to be handed over to third parties must be supported by appropriate assessments and with agreements / Memoranda of Understanding with suitable parties. Planning such handover from the onset will minimise uncertainties and maximise benefits. Examples of useful infrastructure / assets may include:

- Canteens, cold stores and other camp support infrastructure
- Workshops, stores, fuel storage facilities
- Water treatment facilities
- Office buildings
- Mine clinic
- Substation and power infrastructure, including solar farm (in association with an IPP)
- Certain roads
- Access road from the B1 road
- Water storage dam
- Orange River abstraction and pumping infrastructure (in association with NamWater).

8.5 Socio-economic Impacts of Closure

The following socio-economic impacts associated with closure:

Loss of direct employment – Decommissioning will result in the gradual but significant retrenchment of the mine-related operational workforce down to a small post-closure-maintenance workforce.

Loss of secondary economic benefits – There are two categories of secondary loss of employment and benefits: (1) Contractors and suppliers will lose their contracts and demobilise from the area / region and downsize, leading to secondary job losses through them leaving. (2) the loss of jobs in the secondary supply and service economy (not contract-based) – shops, accommodation, services (barbers, laundries, kindergartens, etc. etc.).

Psychological trauma for retrenched employees and their dependents

Out-migration from Noordoewer and associated economic losses – Businesses, shops, accommodation, creches, schools and hospitality establishments will lose clientele and the benefits of increased disposable income in the Project area.

Outmigration impacting viability of school(s) in Noordoewer

Loss of contribution to GDP of Namibia – As Haib is expected to provide a significant contribution to GDP, the closure of the mine will result in a loss to the fiscus.

Cessation of support to Social Development Initiatives – Once the mine closes, the Corporate Social Responsibility projects will come to an end. If not operated sustainably, these projects may cease to function and provide benefits to the community.

8.6 Closure Planning Stakeholder Engagement Plan (SEP)

Stakeholder engagement for closure should start as early as possible and should continue throughout the life of mine. The following principles must be adhered to when designing and implementing the closure planning SEP:

- **Early and continuous engagement:** Involve stakeholders from the earliest conceptual closure stage and maintain regular engagement through operation, closure and post-closure.
- **Inclusivity:** Proactively include local communities, traditional authorities, land users, vulnerable groups, workers, government, NGOs and downstream water users.
- **Transparency:** Share clear, non-technical information on closure options, risks, timeframes, financial provision and post-closure land uses.
- **Cultural sensitivity and respect:** Recognise local customs, decision-making processes and cultural heritage.

The SEP should create mechanisms for stakeholders to ask questions, lodge concerns and propose ideas. Attention should be given to vulnerable groups to ensure that women, youth, elderly people and persons with disabilities are specifically consulted and that closure decisions do not disadvantage them or exclude them from benefits.

The ultimate objective of the SEP is to identify, plan and realise beneficial post-mining land uses and livelihoods. The Haib closure planning SEP must jointly develop realistic post-closure land uses (e.g. grazing, conservation, tourism and/or agriculture) to mitigate the economic downturn inevitable when the mine closes.

9.0 CLOSURE CRITERIA

9.1 Relinquishment Definitions

The ICMM Integrated Mine Closure Guideline describes relinquishment as follows: “*Relinquishment occurs when ownership, residual liabilities and responsibility for a former mine site can be returned to the corresponding jurisdiction or original owner, or transferred to a third party, following completion of closure activities and satisfying the agreed success criteria. If ongoing maintenance and management is required, the responsibility for this under relinquishment would also transition to the new responsible party.*” (ICMM, 2025).

9.2 Relinquishment Process

Once the mine meets the required completion criteria and objectives to the satisfaction of the relevant authorities, relinquishment is in the form of a final mine closure certificate. For relinquishment, the following need to be completed (Chamber of Mines of Namibia, 2019):

- Documentation indicating a detailed account of the entire implementation process.
 - An acceptable outcome from a mine closure audit or review has been achieved.
 - The holder of the licence has been issued with a mine closure certificate.
-

- The issuing of the mine closure certificate has been discussed with the stakeholders.
- A records retention strategy has been employed.

9.3 Closure and Relinquishment Criteria

Closure criteria define the conditions that must be achieved to demonstrate that closure objectives have been met. Once these criteria have been agreed with and signed off by the relevant stakeholders, they become relinquishment criteria. Relinquishment criteria therefore represent the agreed standards against which closure performance is assessed and provide the basis for demonstrating that the site is suitable for relinquishment and that closure obligations have been met.

The matrix in Table 6 provides Key Performance Indicators (KPIs) of the Closure Criteria to be met for each site component / landform in order to achieve potential relinquishment when agreed with the relevant stakeholders.

Table 6: Closure criteria matrix

Relinquishment criteria	Pit	WRDs	Process plant areas	Heap leach	TSF	Workshops and stores	Offices	Change houses	Power infrastructure	Roads	Boreholes	Water abstraction pipes, pump stations, water storage dam,	Other areas / remainder of EPL	Social / community infrastructure	Workforce
Pit walls safe and stable for a period of five years	x														
Abandonment bund intact	x														
Pit slopes and pit lake water inaccessible to local communities and livestock	x														
Slopes stable and non-eroding ¹		x		x	x										
Surface areas stable and non-eroding			x			x	x	x	x	x	x	x	x		
Vegetation is sustainable ²		x	x		x			x		x	x		x		
No alien / invasive vegetation	x	x	x		x	x		x		x	x	x	x		
Run-off water quality meets legislative / permit requirements		x	x	x	x										
Groundwater monitoring meets legislative / permit requirements		x	x	x	x						x				
Groundwater levels return to an equilibrium	x										x				
TSFs meet the GISTM closure criteria					x										

Relinquishment criteria	Pit	WRDs	Process plant areas	Heap leach	TSF	Workshops and stores	Offices	Change houses	Power infrastructure	Roads	Boreholes	Water abstraction pipes, pump stations, water storage dam,	Other areas / remainder of EPL	Social / community infrastructure	Workforce
Dust fallout levels meet legislative / permit requirements		x	x	x	x								x		
All infrastructure ³ removed, footprint decontaminated and cleaned			x		x	x	x	x		x	x		x		
Contamination study indicates no residual metals, acidity or hydrocarbons ⁴			x	x	x	x	x	x	x						
Independent specialist audit verifies landform safe, stable and non-contaminating	x	x	x	x	x										
No public safety risk ⁵	x	x	x	x	x	x	x	x	x	x	x	x	x		
Refurbish infrastructure to make them suitable for post-closure land uses						x	x	x	x	x	x	x		x	
Signed agreements with third parties to take over infrastructure that will be used post-closure ⁵						x	x	x	x	x	x	x			
Signed agreements with Government or third parties to manage social / community infrastructure in terms of maintenance and operational expenditure ⁵														x	

Relinquishment criteria	Pit	WRDs	Process plant areas	Heap leach	TSF	Workshops and stores	Offices	Change houses	Power infrastructure	Roads	Boreholes	Water abstraction pipes, pump stations, water storage dam,	Other areas / remainder of EPL	Social / community infrastructure	Workforce
Workforce communication, workforce ramp-down and workforce transition up to final relinquishment															x

10.0 CLOSURE COST FRAMEWORK

A first order, high-level closure cost model was compiled in support of this closure framework. The model considers the capital costs required for physical site rehabilitation and is based on a high-level Bill of Quantities (BoQ). Closure areas, lengths or volumes were calculated using the latest proposed site layout plan by using Geographic Information System (GIS) layers. Closure cost items were then assigned unit rates. In the absence of project or contractor rates for Haib, KP has applied mostly South African rates, escalated by a factor of 10% to account for the remoteness of the mine and harsh environment. Certain rates were informed by international mine closure planning rates for projects in Africa. These were converted to Namibian Dollar (NAD) from United States Dollar (USD).

In addition to capital items, the model makes provision for closure management costs. These include:

- Further studies
- Contractors and Engineering, Procurement Construction Management (EPCM)
- Corporate requirements
- Social Development (refer to section 8.0 of this report)
- Human Resources (refer to section 8.0 of this report)
- Post closure maintenance and monitoring
- Risk management: HIGH risks only (refer to section 5.0 of this report)

Table 7 contains a summary of the closure cost.

Table 7: Closure cost summary

Item nr	Area	Cost (NAD)
1	Pit	4 907 608.99
2	WRDs	249 117 229.90
3	Stockpiles	84 638.29
4	ROM Pad	4 115 829.61
5	Process plant	228 894 978.11
6	TSF & RWD	363 793 495.96
7	Process ponds	11 754 676.54
8	Roads	767 898.82
9	Boreholes	30 000.00
10	Decontamination and disposal	2 766 500.00
11	Buildings and infrastructure: demolition	33 753 360.84
12	Buildings and infrastructure: foundations	48 104 279.57
13	Buildings and infrastructure: earthworks	5 616 380.77
14	Linear infrastructure	17 591 319.28
15	Fence removal	44 005.50
16	Revegetation	136 914 185.66
17	Weeding and erosion control	68 457 092.83
	Subtotal: capital costs	1 176 713 480.66

Item nr	Area	Cost (NAD)
	Contingency on capital costs (30%)	353 014 044.20
	TOTAL: Capital Costs	1 529 727 524.85
18	Closure management costs	312 422 935.34
	Subtotal: closure management costs	312 422 935.34
	GRAND TOTAL	1 842 150 460.19

11.0 CLOSURE ACTION PLAN

The action execution plan presented within Table 8 below stems from the risk assessment (refer to section 5.0) and provides actionable items that should be undertaken prior to closure, highlighting the priority for specific areas of risk.

Table 8: Closure Action Plan

Aspect / Area of Risk	Closure Action	Priority
Groundwater and surface water quality	Contaminant plume modelling of TSF and WRDs	High – finalise during EIA phase
Premature closure Regulatory uncertainty	Regular consultation with Ministry of Mines and Energy regarding closure, financial provisioning and relinquishment	Medium – detailed design phase
Pit lake acidity / toxicity	Pit lake study	Medium – detailed design phase
Social / Influx / Outmigration	Post-closure Sustainable Development Plan	Medium – during design of Corporate Social Responsibility initiatives
Human resources / workforce	Integrate closure planning into human resources plan	Medium – during workforce planning
Complicated revegetation due to arid climate and limited soil horizon	Implement trials with native plants and seed mixes combined with ameliorants and organic matter	Low – operational phase
Erosion	Rehabilitation trials on TSF and WRDs	Low – operational phase
Land use	Regulatory and local stakeholder consultation to discuss future land uses	Low – operational phase
TSF or WRD failure	Stakeholder engagement Emergency Preparedness and Response Plan	Low – operational phase
Waste	Waste study for general and hazardous waste management at closure	Low – operational phase

12.0 CONCLUSION AND RECOMMENDATIONS

Early closure planning is essential for sustainable post-mining land uses, resilient communities and an informed workforce. The Haib Copper Project presents a valuable opportunity to incorporate closure requirements into project design from an early stage, allowing potential risks and liabilities to be identified and managed before they become embedded in the operation. The Haib Copper Project provides a rare opportunity to design a mine with closure in mind. As such, the criteria in this Closure Framework were designed with input from the engineering, hydrogeology, environmental and social teams.

As the proposed Mine development and design advances, the following recommendations are outlined to ensure the design process is implemented with closure in mind:

1. Optimise layout for closure (WRD–TSF–pit integration)

- Map out long term material flows over the entire life of the mine (LoM)
- Encase acid generating PAG material at dumps and TSF
- Check for in-pit dumping/backfilling opportunities

2. TSF strategy from long-term (Closure and Post-closure) perspective

- The current TSF concept (valley containment with wet slurry disposal and cut-off trenches returning water to the plant) presents some long-term closure liability. This needs to be tested through the site water balance and included as a time-bound closure cost, rather than assumed as a passive solution.
- Progressive rehabilitation of the TSF is inherently limited due to its valley-contained and saturated nature. Full rehabilitation of the surface is not achievable during operations however, targeted measures can be implemented, including rehabilitation of outer embankments once completed, and managing deposition to allow progressive drying of inactive beach areas.
- The overall tailings strategy should be reviewed to consider process and deposition approaches that reduce the volume of fine, saturated tailings at source. This includes potential flowsheet and deposition changes that could improve long-term closure performance and reduce dependence on interception systems. All options should be assessed based on full lifecycle cost and closure liability, not capital cost alone. The key objective should be to achieve a stable, low-seepage system that can transition to closure without long-term active water management, or with only a clearly defined and time-bound post-closure phase.

3. Integrated water balance (LoM + post closure)

- A site-wide water balance model (pit, TSF, WRDs, storage dam, process, catchments) must be developed for LoM and extended into closure. The model should be run under climate variability and extreme events to confirm aspects such as i) long-term TSF moisture condition, ii) pit water levels and behaviour, iii) seepage pathways and volumes.

5. Infrastructure transfer / social transition opportunity

- Infrastructure should be assessed early to identify elements that can be transferred rather than removed, such as housing, solar and water infrastructure. Engagement with relevant authorities (e.g. NamPower, IPPs, NamWater and regional stakeholders) is required upfront to define realistic transfer pathways and responsibilities. Any post-closure use must be practical, funded and institutionally supported to be viable.

6. Landform resilience and cover design

- In the arid environment, closure should not rely on conventional revegetation as the primary measure. The focus should instead be on developing stable, erosion-resistant landforms that replicate natural desert conditions especially on TSFs and waste rock dumps. Priority should be given to erosion resistance, dust control and long-term stability, with minimal maintenance requirements. Progressive rehabilitation should therefore focus on functional stability, rather than vegetation targets.

7. Financial and decision framework

- Closure liability should be incorporated into all option trade-off analyses on a NAD/t basis, and decisions should be based on full lifecycle cost, not discounted closure cost alone. Preference should be given to designs that provide a clear pathway to passive or walkaway closure, reducing long-term risk and liability.

This Closure Framework is the first step towards iterative closure planning and should be updated regularly as the project progresses into final design, construction and operation. Each step will build on the preceding closure planning document and consider the growing knowledge base, as further studies are undertaken. Future updates should incorporate the findings of ongoing technical, environmental, hydrogeological and social studies, with particular focus on integrating closure considerations into mine planning, waste and tailings management, water management, landform design and social transition planning. Through this process, risks can be avoided or minimised. During operations, controls can be implemented to further reduce risks so that the transition from operations, to decommissioning and then closure occurs seamlessly with the lowest possible impact on the environment, the town of Noordoewer, the //Karas Region and the Haib Copper Mine workforce.

The ultimate objective is to leave a safe, and stable and non-polluting environment and to achieve successful relinquishment of EPL 3140.

13.0 REFERENCES

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14.0 CERTIFICATION

This report was prepared and reviewed by the undersigned.

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