Lepidico Chemicals Namibia (Pty) Ltd

DRAFT

Final Draft Karibib Project Closure Plan (KPMP) for the Proposed Rubicon and Helicon 1 Lithium Mining and Ongoing Exploration Operation in the Mining License (ML) No. 204 Karibib District, Erongo Region **West Central Namibia**

July 2020

Lepidico Chemicals Namibia (Pty) Ltd
P. O. Box 90898
Klein Windhoek
WINDHOEK, NAMIBIA

PROPONENT, LISTED ACTIVITIES AND RELATED INFORMATION SUMMARY

TYPE OF AUTHORISATIONS

Lepidico Karibib Project Closure Plan for Mining License (ML) No. 204

COMPETENT AUTHORITY

Ministry of Mines and Energy (MME)

NAME AND ADDRESS OF THE PROPONENT

Lepidico Chemicals Namibia (Pty) Ltd
(80% Owned by Lepidico Limited)

C/- L&B Secretarial Services
Unit 3, 2nd Floor, Dr Agostinho Neto Road,
Ausspann Plaza, Ausspannplatz, Windhoek

P. O Box 90898,
KLEIN WINDHOEK, NAMIBIA

Contact Person: Mr. Chris Movirongo
Country Manager (Namibia)
Mobile: +264 811480937
Email: chris.movirongo@lepidico.com

DRAFT

PROPOSED PROJECT

Proposed Mining and Ongoing Exploration Operations in the Mining License (ML) No. 204, Karibib Project, Karibib District, Erongo Region, Namibia

PROJECT LOCATION

Karibib District, Erongo Region, West Central Namibia
Latitude: -22.102132, Longitude: 15.998186

ENVIRONMENTAL CONSULTANTS

Risk-Based Solutions (RBS) CC
(Consulting Arm of Foresight Group Namibia (FGN) (Pty) Ltd)
41 Feld Street Ausspannplatz
Cnr of Lazarett and Feld Street
P. O. Box 1839, **WINDHOEK, NAMIBIA**
Tel: +264 - 61- 306058. Fax: +264 - 61- 306059
Mobile: + 264-811413229. Email: smwiya@rbs.com.na
Global Office / URL: www.rbs.com.na

ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

Dr Sindila Mwiya
PhD, PG Cert, MPhil, BEng (Hons), Pr Eng

Summary Profile and Qualification of the Environmental Assessment Practitioner (EAP) / International Consultant Projects Director – Dr Sindila Mwiya

Dr Sindila Mwiya has more than eighteen (18) years of practical field-based technical industry experience in Environmental Assessment (SEA, EIA, EMP, EMS), Energy (Renewable and Non-renewable energy sources), onshore and offshore resources (minerals, oil, gas and water) exploration / prospecting, operation and utilisation, covering general and specialist technical exploration and recovery support, Health, Safety and Environment (HSE) permitting for Geophysical Surveys such as 2D, 3D and 4D Seismic, Gravity and Electromagnetic Surveys for mining and petroleum (oil and gas) operations support, through to engineering planning, layout, designing, logistical support, recovery, production / operations, compliance monitoring, rehabilitation, closure and aftercare projects lifecycles. The great array of highly technical specialist knowledge and field-based practical experiences of Dr Sindila Mwiya has now been extended to supporting the development of Environmentally Sustainable, automated / smart and Climate Change resilient homes, towns and cities.

Through his companies, Risk-Based Solutions (RBS) CC and Foresight Group Namibia (FGN) (Pty) Ltd which he founded, he has undertaken more than 200 projects for Local (Namibian), Continental (Africa) and International (Global) based clients. He has worked and continue to work for Global, Continental and Namibian based reputable resources (petroleum and mining / minerals) and energy companies such as EMGS (UK/ Norway), CGG (UK/ France/Namibia), BW Offshore (Norway/Singapore /Namibia), Shell Namibia B. V. Limited (Namibia/ the Netherlands), Tullow Oil (UK/Namibia), Debmarine (DBMN) (Namibia), Reconnaissance Energy Africa Ltd (ReconAfrica) (UK/Canada/Namibia), Osino Resource Corporation (Canada/Germany/Namibia), Desert Lion Energy Corporation (Canada/ Australia/ Namibia), Petrobras Oil and Gas (Brazil) / BP (UK)/ Namibia, REPSOL (Spain/ Namibia), ACREP (Namibia/Angola), Preview Energy Resources (UK), HRT Africa (Brazil / USA/ Namibia), Chariot Oil and Gas Exploration (UK/ Namibia), NABIRM (USA/ Namibia), Serica Energy (UK/ Namibia), Eco (Atlantic) Oil and Gas (Canada / USA/ Namibia), ION GeoVentures (USA), PGS UK Exploration (UK), TGS-Nopec (UK), Maurel & Prom (France/ Namibia), GeoPartners (UK), PetroSA Equatorial Guinea (South Africa / Equatorial Guinea/ Namibia), Preview Energy Resources (Namibia / UK), Sintezneftegaz Namibia Ltd (Russia/ Namibia), INA Namibia (INA INDUSTRIJA NAFTE d.d) (Croatia/ Namibia), Namibia Underwater Technologies (NUTAM) (South Africa/Namibia), InnoSun Holdings (Pty) Ltd and all its subsidiary renewable energy companies and projects in Namibia (Namibia / France), HopSol (Namibia/Switzerland), Momentous Solar One (Pty) Ltd (Namibia / Canada), OLC Northern Sun Energy (Pty) Ltd (Namibia) and more than 100 local companies. Dr Sindila Mwiya is highly qualified with extensive practical field-based experience in petroleum, mining, renewable energy (Solar, Wind, Biomass, Geothermal and Hydropower), Non Renewable energy (Coal, Petroleum, and Natural Gas), applied environmental assessment, management and monitoring (Scoping, EIA, EMP, EMP, EMS) and overall industry specific HSE, cleaner production programmes, Geoenvironmental, geological and geotechnical engineering specialist fields.

Dr Sindila Mwiya has undertaken and continue to undertake and manage high value projects on behalf of global and local resources and energy companies. Currently, (2020-2023) Dr Sindila Mwiya is responsible for permitting planning through to operational and completion compliance monitoring, HSE and engineering technical support for multiple major upstream onshore and offshore petroleum, minerals and mining projects, Solar and Wind Energy Projects, manufacturing and environmentally sustainable, automated / smart and Climate Change resilient homes developments in different parts of the World including Namibia. Currently, Dr Sindila Mwiya is developing a 16 Ha commercial and residential Mwale Mwiya Park in the Town of Katima Mulilo, Zambezi Region, Namibia as one of first advanced Environmentally Sustainable, automated / smart and Climate Change resilient development in Namibia. He continue to worked as an International Resources Consultant, national Environmental Assessment Practitioner (EAP) / Environmentally Sustainable, automated / smart and Climate Change resilient homes developer, Engineering / Technical Consultant (RBS / FGN), Project Manager, Programme Advisor for the Department of Natural and Applied Sciences, Namibia University of Science and Technology (NUST) and has worked as a Lecturer, University of Namibia (UNAM), External Examiner/ Moderator, NUST, National (Namibia) Technical Advisor (Directorate of Environmental Affairs, Ministry of Environment, Forestry and Tourism (MEFT) / DANIDA – Cleaner Production Component) and Chief Geologist for Engineering and Environment Division, Geological Survey of Namibia, Ministry of Mines and Energy and a Field-Based Geotechnician (Specialised in Magnetics, Seismic, Gravity and Electromagnetics Exploration and Survey Methods) under the Federal Institute for Geoscience and Natural Resources (BGR) German Mineral Exploration Promotion Project to Namibia, Geophysics Division, Geological Survey of Namibia, Ministry of Mines and Energy.

He has supervised and continue to support a number of MScs and PhDs research programmes and has been a reviewer on international, national and regional researches, plans, programmes and projects with the objective to ensure substantial local skills development, pivotal to the national socioeconomic development through the promotion of sustainable natural resources coexistence, management, development, recovery, utilisation and for development policies, plans, programmes and projects financed by governments, private investors and donor organisations. Since 2006 until 2017, he has provided extensive technical support to the Department of Environmental Affairs (DEA), Ministry of Environment, Forestry and Tourism (MEFT) through GIZ in the preparation and amendments of the Namibian Environmental Management Act, 2007, (Act No. 7 of 2007), new Strategic Environmental Assessment (SEA) Regulations, preparation of the updated Environmental Impact Assessment (EIA) Regulations as well as the preparation of the new SEA and EIA Guidelines and Procedures all aimed at promoting effective environmental assessment and management practices in Namibia.

Among his academic achievements, Dr Sindila Mwiya is a holder of a PhD (Engineering Geology/Geotechnical / Geoenvironmental / Environmental Engineering and Artificial Intelligence) – Research Thesis: Development of a Knowledge-Based System Methodology (KBSM) for the Design of Solid Waste Disposal Sites in Arid and Semiarid Environments, MPhil/PG Cert and BEng (Hons) (Engineering Geology and Geotechnics) qualifications from the University of Portsmouth, School of Earth and Environmental Sciences, United Kingdom. During the 2004 Namibia National Science Awards, organised by the Namibian Ministry of Education, and held in Windhoek, Dr Sindila Mwiya was awarded the Geologist of the Year for 2004, in the professional category. Furthermore, as part of his professional career recognition, Dr Sindila Mwiya is a life member of the Geological Society of Namibia, Consulting member of the Hydrogeological Society of Namibia and a Professional Engineer registered with the Engineering Council of Namibia.

Windhoek, Namibia June 2020

DRAFT

Content List

DRAFT

DRAFT

DRAFT

List of Figures

List of Tables

DRAFT

List of Plates

DRAFT

EXECUTIVE SUMMARY

Lepidico Chemicals Namibia (Pty) Ltd ("**Proponent**") holds mineral rights for the Karibib Project under the Mining License (ML) No. 204, situated in the Karibib District, Erongo Region, west-central Namibia. The ML 204 covering a total area of 6931Ha was granted by the Ministry of Mines and Energy ("**Component Authority**") on the 19th June 2018 and will expire on the 18th June 2028. The ML 204 is granted for base and rare metals, industrial minerals, precious metals, precious stones and semi-precious stones. The company has completed the Definitive Feasibility Study and is currently moving to the project funding stage to be followed by preconstruction, construction, mine operations with ongoing rehabilitation and monitoring and mine closure, decommissioning, final rehabilitation, aftercare and monitoring.

In accordance with the provisions of the Minerals (Prospecting & Mining) Act, 1992, Act No. 33 of 1992, the Environmental Management Act, 2007, Act No. 7 of 2007, the Water Act, 1956, Act No. 54 of 1956, the Atmospheric Pollution Prevention Ordinance, 11 of 1976 and Labour Act, 1992, Act No. 6 of 1992, Lepidico Chemicals Namibia (Pty) Ltd is required to have prepared a rehabilitation and final mine closure and aftercare plan for the Karibib Project.

This Karibib Project Closure Plan (KPCP) has been prepared by Risk-Based Solutions (RBS) CC in accordance with the provisions of all the applicable legislations and in line with the Namibian Mine Closure Framework (NMCF) developed by the Chamber of Mines of Namibia. This Karibib Project Closure Plan covers the following key areas:

(i) Scope and purpose.

(ii) Summary of the proposed mine project.

(iii) Regulatory framework.

(iv) Baseline data for pre-and post-mining \ aftercare.

(v) Stakeholder engagement process.

(vi) Karibib Project Closure Plan business plan, and.

(vii) Conclusion and recommendations.

DRAFT

The implementation of the Karibib Project closure will take place when there will be no returns from the operation of the mine and with little value in the remaining assets. The objective of establishing financial provision as detailed in this mine closure plan is to ensure that adequate funds are available at the time premature or planned mine closure. The financial provision for closure should reflect the real costs, and needs to be sufficient to reduce the liabilities and residual risks to an acceptable level at mine closure.

In the event of a default (Company going into administration) the Government and stakeholders will thus have a set of costed detailed design works and will be able to issue a tender and pay for works via the Karibib Project Environmental Rehabilitation Fund or any other funding instrument that has been capitalised during the operational stage of the Karibib Project. This includes any outstanding rehabilitation at mine closure that has not been completed to the satisfaction of the regulators and to enable the formal relinquishment of the Mining License (ML).

The Karibib Project Closure Plan Mine activities consist of following five (5) steps that will be implemented in consultation with the key stakeholders:

(i) Ongoing rehabilitation: This will be implemented during the exploration phase and from day one (1) of the mine starting to produce coupled with the recruitment of a new workforce.

(ii) Mine closure: Once production stops, the number of workers will be reduced and a small labour force will be retained to permanently shut down the mine.

(iii) Decommissioning: Will be undertaken by a small crews or contractors who will be responsible for decommissioning or taking apart the mining supporting infrastructure such as the processing facilities and equipment.

(iv) Final rehabilitation/Remediation/reclamation: The objective of reclamation will be to return the Mining License (ML) area to an acceptable standard of socioeconomic use, ensuring that any landforms and structures are stable, and any watercourses are of acceptable water quality, and.

(v) Post-closure and aftercare including monitoring: Monitoring programmes will be used to assess the effectiveness of the reclamation measures and to identify any corrective action that may be needed during the post closure and aftercare stage.

Lepidico Chemicals Namibia (Pty) Ltd is committed to minimising the impact of its operations on the local receiving environment covering physical, biological, socioeconomic environments and ecosystem functions, services, use and non-use values or passive uses. This Karibib Project Closure Plan and the estimated final mine rehabilitation, closure and aftercare costs are based on a number of technical reports for the development of the Karibib Project prepared by various consultants.

The final mine rehabilitation, closure and aftercare aspects considered with cost estimate covers the following components:

(i) Stakeholder engagement (**N$500, 000.00**).

(ii) Social development (**N$4, 000, 000.00**).

(iii) Decommissioning, rehabilitation and removal (**N$ 34,112,483.00**).

(iv) Environmental management (**N$ 600,000.00**), and.

(v) Environmental Monitoring **(N$86,642.00).**

The current estimated cost for permanent closure of the Karibib Project is **Thirty-Nine Million Two Hundred and Ninety Thousand, One Hundred and Twenty-Five Namibia Dollar (N$39,299,125.00)**.

Lepidico Chemicals Namibia (Pty) Ltd will provide for expenditures associated with Karibib Project final rehabilitation, closure and aftercare costs and shall comply with statutory obligations and stipulated requirements of both the Ministry of Mines and Energy and the Ministry of Environment, Forestry and Tourism (MEFT).

Lepidico Chemicals Namibia (Pty) Ltd shall make sure that the provision covers all the aspects of the envisaged environmental liabilities at mine closure.

The ongoing rehabilitation shall be undertaken during the operational phase of the mine and shall be funded from the annual ongoing operational budget.

The monitoring of the Karibib Project Closure Plan shall be undertaken in order to measure the achievement of outcomes for both the ongoing rehabilitation and final mine closure and aftercare activities. Both the ongoing rehabilitation and final mine closure and aftercare monitoring activities shall cover air quality and dust emissions, fauna and flora recovery in ongoing and final rehabilitated areas and short and long-term stability of the engineered structures such as tailings and waste rock co-disposal Waste Management Area (WMA), excavated areas, drainage systems, sedimentation basin and surface and groundwater quality.

The implementation of ongoing rehabilitation activities while the mine is still operational is vital to the successful final mine closure, decommissioning, remediation/reclamation and post-closure and aftercare. The ongoing rehabilitation should involve the demolishing of redundant infrastructure and facilities, clean-up activities of waste and litter, removal of buried waste, landscaping (slope stability and erosion protection) and ecological restoration through landscape reshaping and re-vegetation

DRAFT

works to be undertaken during the life of the Karibib Project as soon as practicable following the cessation of use of an area.

The following is the summary of the other key recommendations to be implemented by Lepidico Chemicals Namibia (Pty) Ltd for the successful implementation of this Karibib Project Closure Plan:

1. Lepidico Chemicals Namibia (Pty) Ltd commits that each year the Company will review this Karibib Project Closure Plan and costs and make annual contributions to provide for the final Karibib Project rehabilitation, closure and aftercare costs. It's important that an updated Karibib Project Closure Plan containing more technical detail and higher cost-estimation accuracy than the current plan is prepared as part of the updated project feasibility during the operational stage of the Karibib Project as may be applicable.

2. All the drawings and designs of the Karibib Project closure supporting infrastructure such as sedimentation basin, Waste Management Area (WMA), concrete walls and pits shall be undertaken by a qualified engineer and once such drawings are available, they shall be included in the updated versions of this Karibib Project Closure Plan.

3. Continuous monitoring of the following key areas during the Karibib Project preconstruction, construction, operation with ongoing rehabilitation and monitoring and final rehabilitation and decommissioning, closure and aftercare shall be undertaken around the mine site and ML areas:

    (a) The long-term stability of the surface excavations (pits, working faces, other evacuation and Waste Management Area (WMA).

    (b) Short and long-term waste water management.

    (c) Long-term impacts on surface and groundwater sources (water quality), and.

    (d) Fauna and flora recoveries and diversity.

DRAFT

1. SCOPE AND PURPOSE

1.1 Introduction

Lepidico Chemicals Namibia (Pty) Ltd ("**Proponent**") holds mineral rights for the Karibib Project under the Mining License (ML) No. 204, situated in the Karibib District, Erongo Region, west-central Namibia (Fig. 1.1). The ML 204 covering a total area of 6931Ha was granted by the Ministry of Mines and Energy ("**Component Authority**") on the 19th June 2018 and will expire on the 18th June 2028. The ML 204 is granted for base and rare metals, industrial minerals, precious metals, precious stones and semi-precious stones.

The Proponent is 80% owned by Lepidico Limited ("**Lepidico**") a lithium exploration and development company focused on unlocking the value of hard rock lithium-rich mica deposits. Lepidico is listed on the Australian Securities Exchange and 100% owner and developer of the L-Max® process technology and has the exclusive rights to the LOH-Max™ technology. proprietary processes which have the potential to commercially extract lithium chemicals and other valuable by-products from unconventional mineral sources.

The construction of the proposed mine, processing plant and all the supporting infrastructure will only be implemented once all the relevant permits have been issued by the various Government regulators including: the ML being granted by the Ministry of Mines and Energy (MME) (**the Competent Authority**), the Environmental Clearance Certificate (ECC) issued by the Environmental Commissioner in the Ministry of Environment, Forestry and Tourism (MEFT) and the freshwater and waste water discharge permits issued by the Ministry of Agriculture, Water and Land Reform (MAWLR).

The following is the summary of the proposed mine developmental stages that will be implemented by the Proponent as covered in this Karibib Project Closure Plan (KPCP):

- Preconstruction.
- Construction.
- Operation with ongoing rehabilitation and monitoring, and.
- Mine closure, decommissioning, final rehabilitation and aftercare including monitoring.

Lepidico Chemicals Namibia (Pty) Ltd is committed to minimising the impact of its operations on the local receiving environment covering physical, biological, socioeconomic environments and ecosystem functions, services, use and non-use values or passive uses. The company will also be developing a comprehensive Environmental Management System (EMS), that will be based on the International Standards. This Karibib Project Closure Plan is a component of the Mine EMS.

1.2 Historical Background

According to Diehl, (1992), exploration of the Karibib Project pegmatite, mainly for beryl, started in 1930 and since 1951, Rubicon has been selectively mined for petalite, amblygonite, lepidolite, beryl, quartz and accessory pollucite and bismuth as well as the oxidation products of the latter. The lithium orebodies within the Erongo Region are believed to be one of the most extensive pegmatite field in the World first mined in the 1950s by a German mining company, Kloechner. Within the general EPL 5439 area, there are three known historic mining sites, respectively. Rubicon, Helikon and Otjua.

Recent previous minerals rights holders of the Rubicon Lithium mine, mined beryl, tantalum, amblygonite, petalite and lepidolite with target head grades of between 1.7% and 3.8% Li_2O. Mining methods applied included a combination of open pit and room-and-pillar stopping to a depth of about c.30 m. The ore was handpicked, sorted and processed to a final concentrate. Material that was either not required or did not meet the exceptionally high in-situ grades was discarded in multiple waste dumps surrounding the mine. These dumps have been recovered as part of the ongoing exploration activities and preparation of the feasibility study for the current proposed mining operations in the ML 204.

DRAFT

1.3 Objectives of Karibib Project Closure Plan (KPCP)

The objective of this KPCP is to provide the framework for the following:

- ❖ Ensuring compliance with all legislative requirements with respect to mine closure.
- ❖ Forms the basis for consulting with a variety of stakeholders to derive a widely acceptable social, economic and environmental closure outcome through the implementation of tools and practices to manage and minimise the impact of the mine closure on the environment and land.
- ❖ Describes a closure strategy based on envisaged final post-mining / aftercare ecosystem (Physical, Biological, Socioeconomic Environments) conditions, stakeholder expectations, future potential use of disturbed areas, closure risks and preferred sustainable Karibib Project closure business plan alternatives.
- ❖ Provide for all the necessary resources (financial and human) for the implementation and monitoring of a sustainable Karibib Project closure and aftercare business plan, and.
- ❖ Basis for formal relinquishment process in place releasing the mining company from future obligations when closure outcomes have been accepted and achieved.

1.4 Project Location, Land Use, Infrastructure and Services

1.4.1 Site Description

The Karibib Project falls within the Karibib District with the town of Karibib, which is approximately 27 km northwest of ML being the nearest major town (Figs. 1.1 and 1.2). Swakopmund, the regional centre of the Erongo Region and Walvis Bay the main Port, are situated about 193 km and 236 km along the B2 road and to the west of the Karibib Project area. Namibia's capital city, Windhoek, is located approximately 211 km via the B2 and B1 Roads and falls to the southeast of Project Area (Fig. 1.1). Locally, the 6930 Ha ML 204 area falls within the 15160 Ha Farm Okongava Ost No. 72 area, which is a Government owned Farm purchased in 2014 from a private owner for resettlement purpose of landless Namibian (Figs. 1.3 and 1.4). The footprint of the proposed Karibib Project is 800Ha of the 15160Ha farm area (Fig. 1.5). Currently, some portions of the farm are occupied by few subsistence cattle and small stock farmers from the local area of Otjimbingwe.

1.4.2 Current Land Uses

The main key land use of the ML 204 area is agriculture comprising cattle and small stock farming. The area covered by the ML 204 is not pristine and is dominated by a number of old excavations, waste rock and tailings dumps linked to the historical exploration and mining operations of the only lithium ore deposit in Namibia that has been mined in the past and associated with the Rubicon and Helikon pegmatites swarms found within the ML area (Fig. 1.5 and Diehl, 1992). A number of lodges are found in the general surrounding areas but not within the proposed project boundary, the ML 204. Bush thickening or encroachment is viewed as an economic problem in the general area but does not seem to be an issue within the proposed project area. The area is not part of the communal conservancy system in Namibia with no protected area nearby the ML area.

1.4.3 Supporting Infrastructure and Services

The project area is accessed via the maintained C32 gravel road heading south out of Karibib for 2 km and then joining with the local D1953 gravel road for 6 km before turning into the gated Okongava Ost No. 72 farm where approximately 24km of a series of maintained local farm roads service the project areas of Rubicon and Helikon Mine Sites. Rubicon will be the main mining and mineral processing facility supported by all the infrastructure. The ML 204 area is serviced by a number of internal local network of historical mining and prospecting roads, some of which require high clearance 4 x 4 vehicles that will all need to be upgraded. The total driving distance from Karibib to the ML 204 is approximately 30 km.

DRAFT

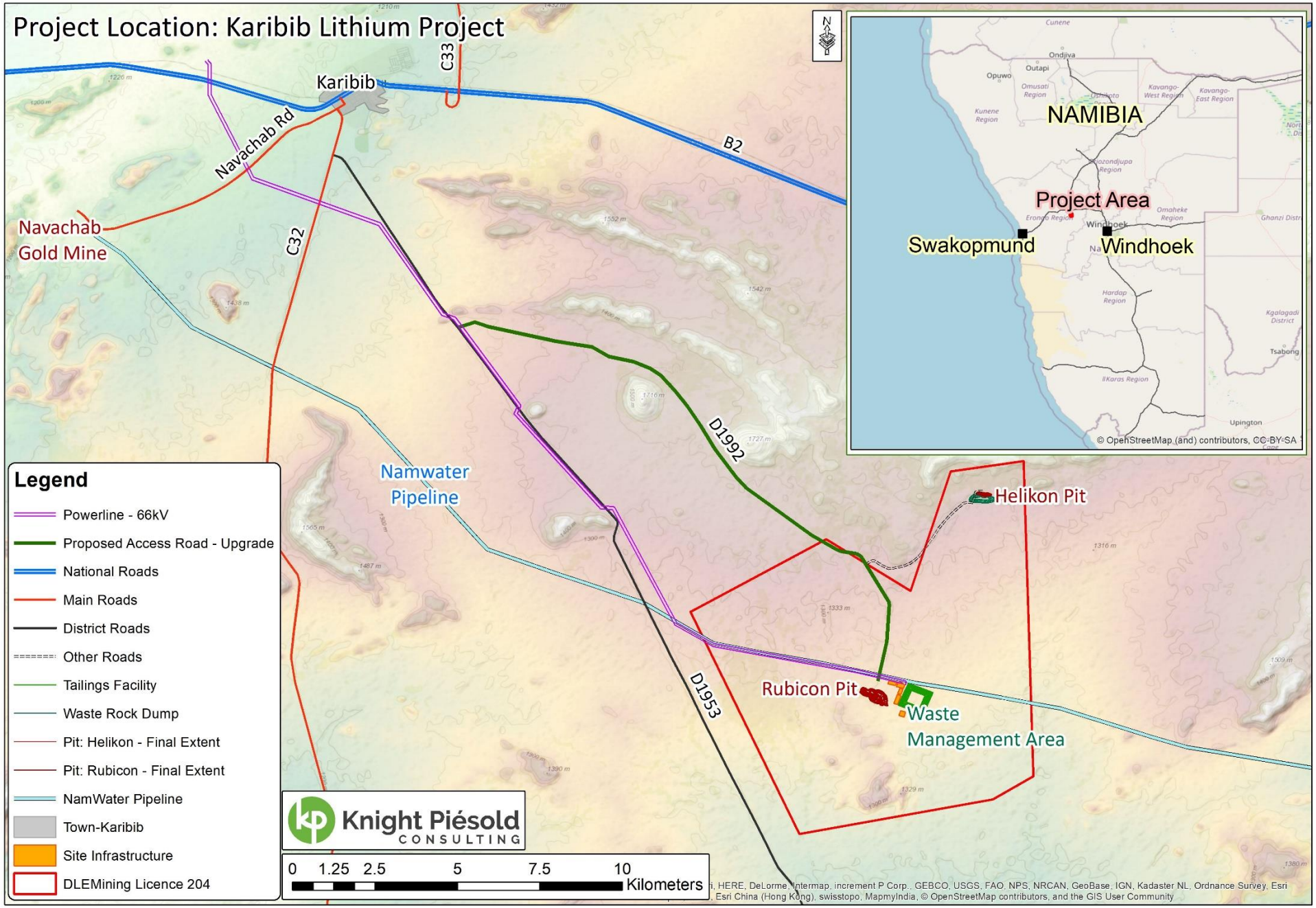

Figure 1.1: Location of the Karibib Project (Source: Knight Piésold, 2020).

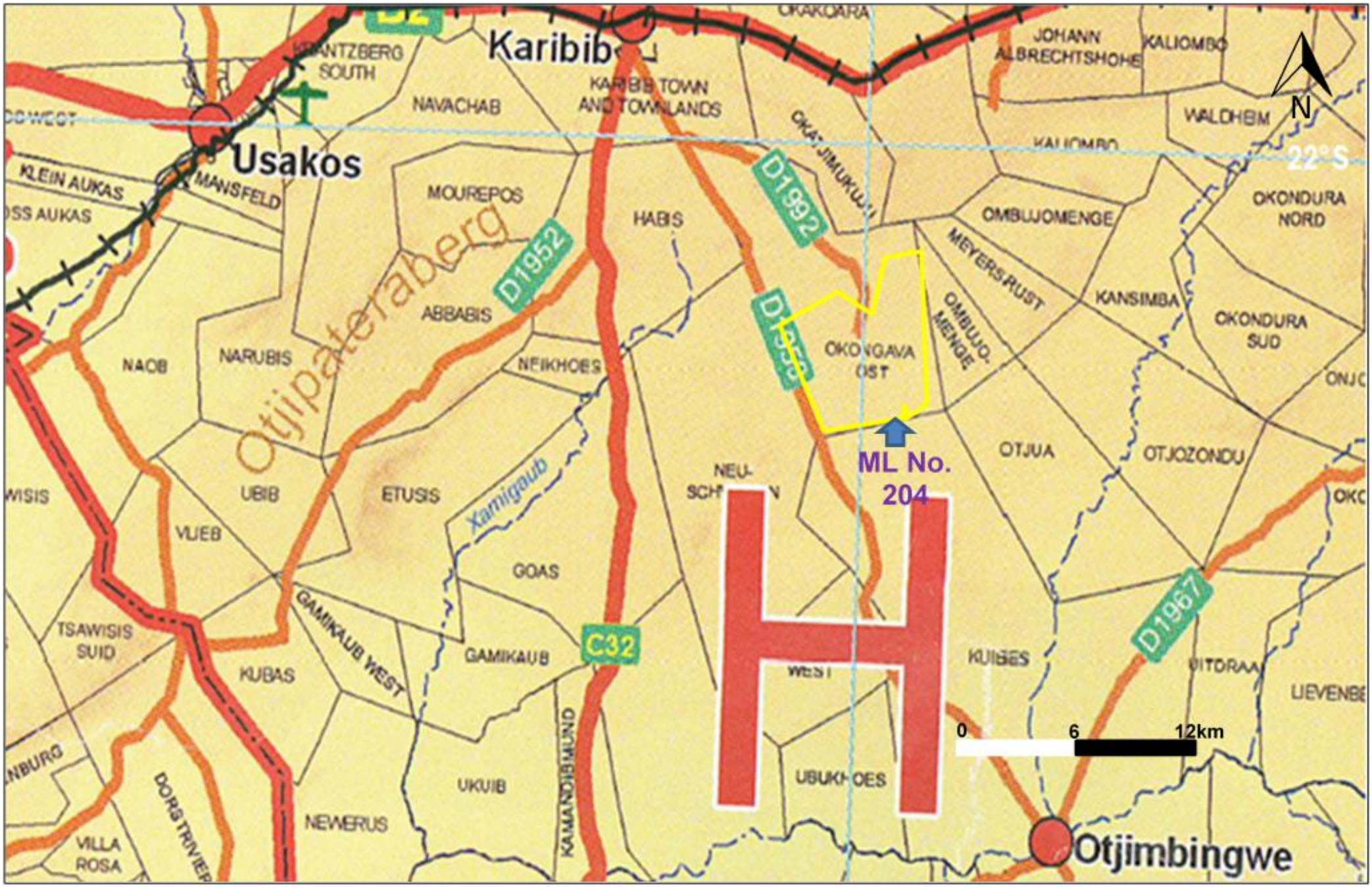

Figure 1.2: Commercial farmland covered by the ML 204 (Source: Namibia 1:1000000 Registration Divisions Extract).

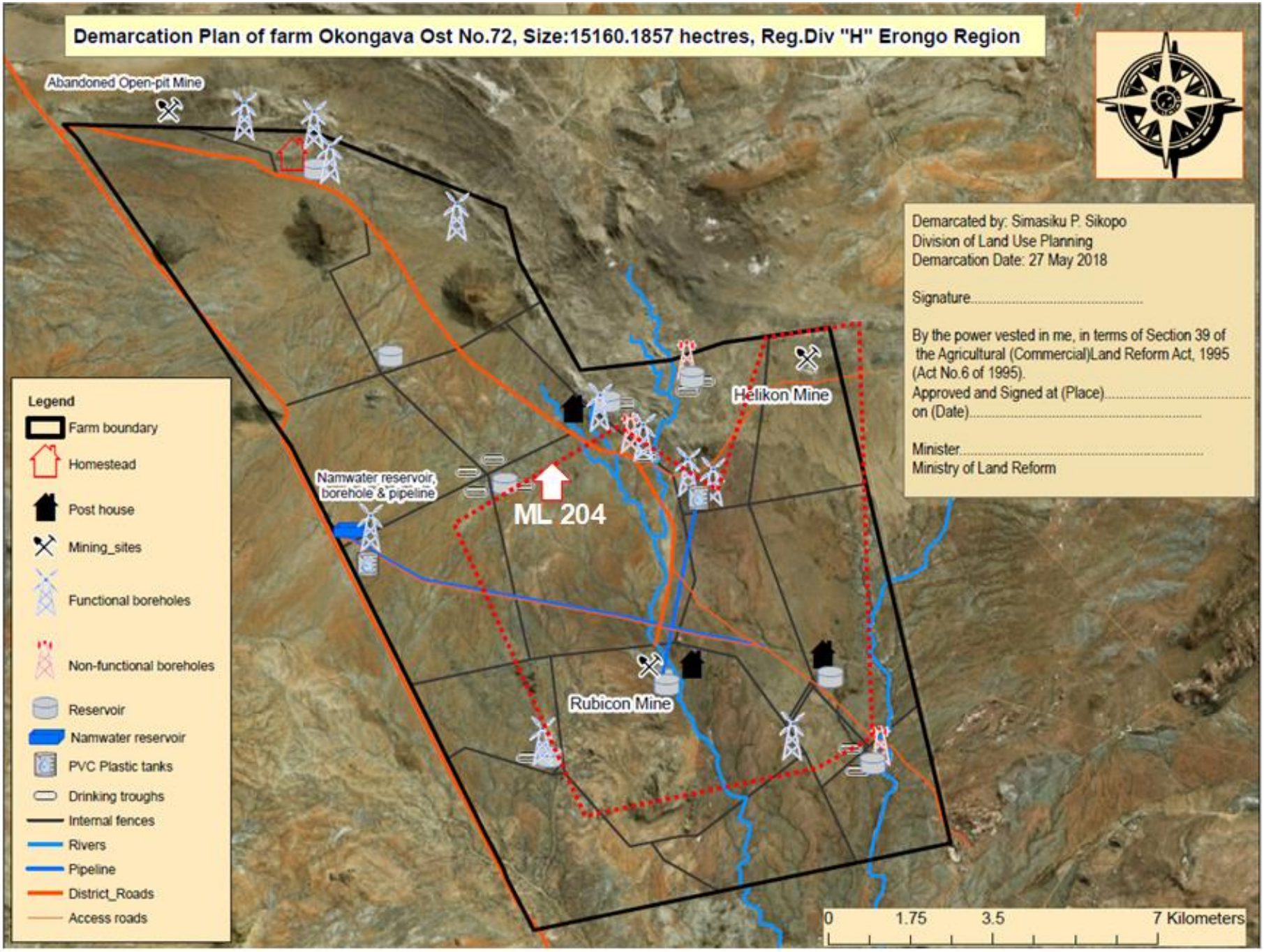

Figure 1.3: Detailed overview of the 15160 Ha Farm Okongava Ost No.72 area with respect to the 6930 Ha area of the ML 204 (Source: Lepidico, Base map Department of Land Reform, Ministry of Agriculture, Water and Land Reform, 2020).

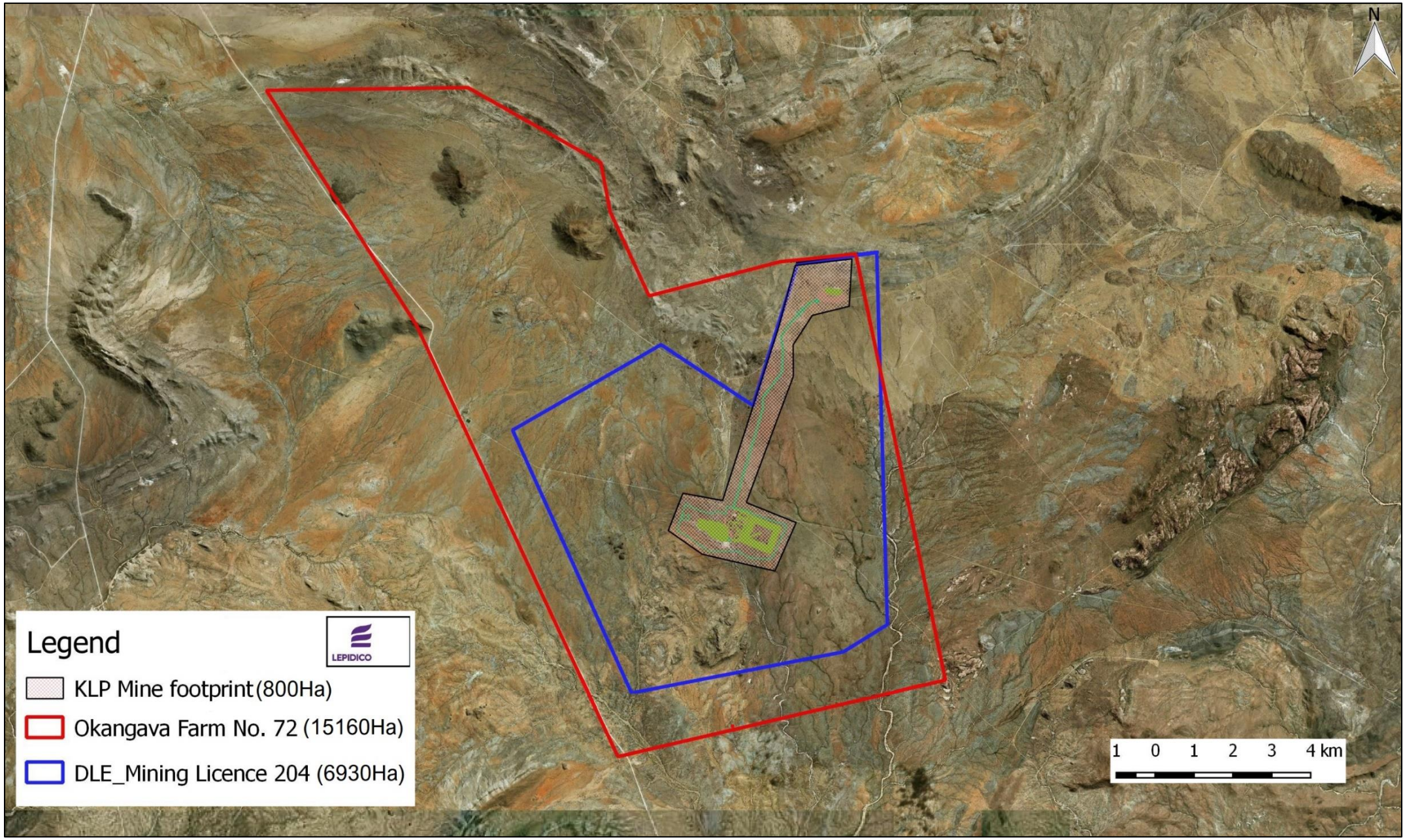

Figure 1.4: The 800Ha area footprint of the proposed Karibib Project with respect to the 6930 Ha area of the ML 204 and 15160Ha area of the Farm Okongava Ost No.72 (Source: Lepidico, 2020).

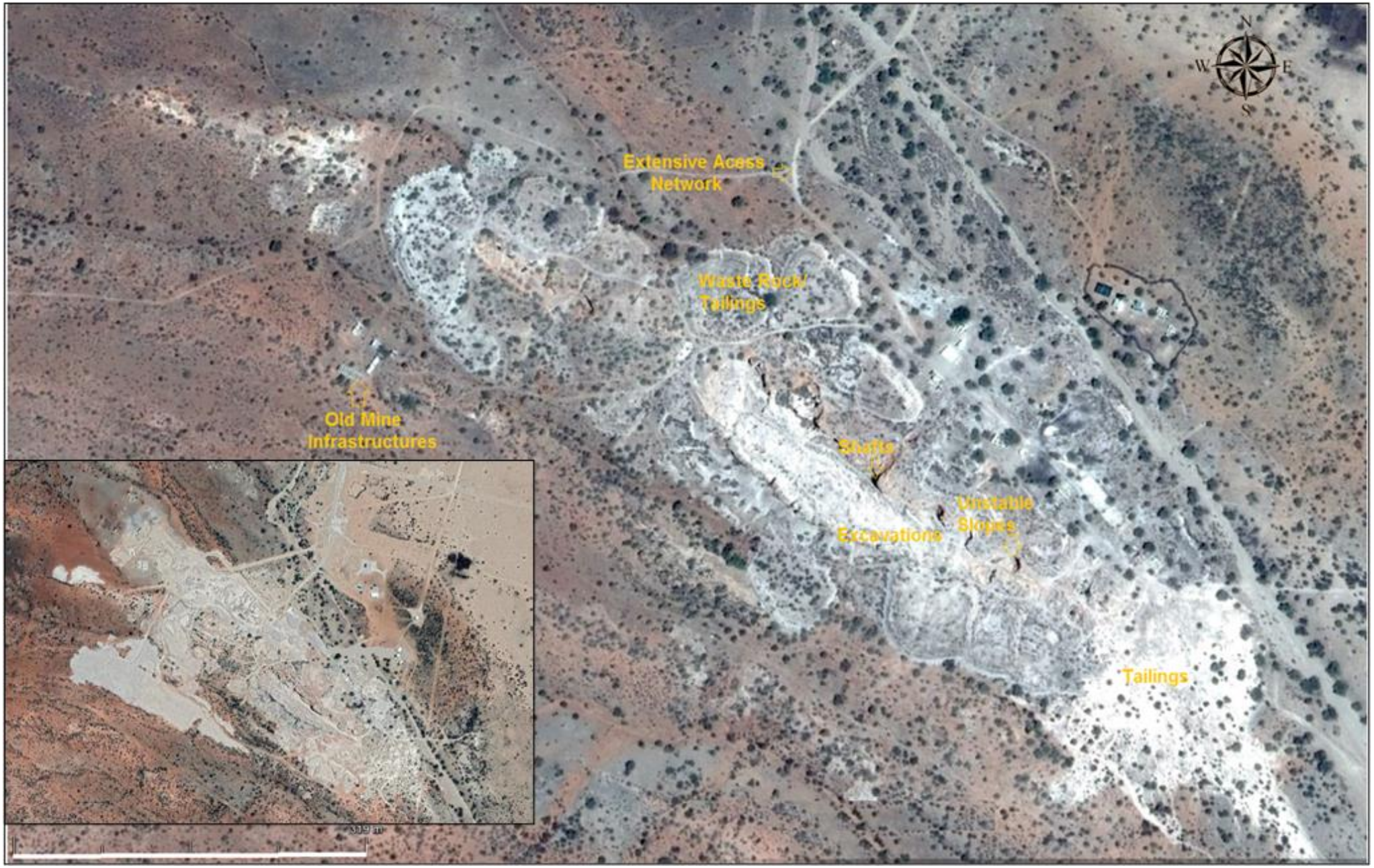

Figure 1.5 Example of the current poor state of the environment around the Rubikon Old Mine Area (main target) within the ML 204 with historic open shafts, tailings, waste rock and excavation dating back to the 1950s when mining started in the area (Google Earth, 2016 and Google Map insert image, 2020).

2. PROPOSED KARIBIB PROJECT

2.1 Overview

Lepidico Chemicals (Namibia) (Pty) Ltd (the Proponent) is proposing to develop the Karibib Project which will encompass two open pit mines at Rubicon and Helikon 1, a processing plant (mineral concentrator) producing a lithium rich mineral concentrate, and the associated infrastructure to support the operation.

The development is based on established mineral resources of 8.87 million tonnes grading 0.43% Li_2O with additional exploration potential upside. The proposed operations will be developed concurrently with ongoing exploration activities. Production is planned to start in the first quarter of 2022.

The Proponent completed an in-fill drilling exploration program in 2019. The mineral resources defined are sufficient to support a project development of a minimum of 18 years including up to two years of construction, 14 years of production and the mine closure and rehabilitation program. The Proponent is planning to extend the production life of the project though near mine exploration to define additional resources and the reprocessing of approximately 0.7Mt of existing surface stockpiles which have an estimated grade of 0.7% Li_2O. Processing of these stockpiles alone will extend the production life of the Project by up to three years and facilitate rehabilitation of pre-existing disturbed land.

The scope of the proposed operation includes conventional open pit mining of ore from the deposits at Rubicon and Helikon 1. Ore will be transported to a mineral concentrator located at Rubicon. The concentrator will use crushing, grinding and froth flotation to produce a lithium rich concentrate. The concentrate will be transported from the Karibib Project to export facilities in Walvis Bay. From there it will be exported to the United Arab Emirates for downstream conversion to lithium chemicals and associated coproducts. The Proponent intends to recruit its own workforce for the Karibib Project supported by Namibian logistics and supply contractors. To support the operation the existing access road will be upgraded, and a new power line will be constructed from the Marble substation at Karibib. The existing water infrastructure will be utilised.

2.2 Exploration and Feasibility Study

2.2.1 Exploration Stage

The exploration phase for the proposed development has been completed even though near mine and regional exploration will be undertaken to define additional resources to support longer Project life or expansions.

In 2019 an in-fill drilling programme was completed on the two larger Rubicon and Helikon deposits. The drilling programme consisted of 90 diamond holes totalling a depth of 5,254 metres. Lepidico initiated a reinterpretation of the mineralisation within the pegmatites into three distinct types: high-grade massive lepidolite zone, lower-grade disseminated lepidolite zone, and a zone dominated by clusters of dark lithium-bearing mica. All previous drilling was re-logged according to these domains. This greatly assisted in understanding the distribution of lithium within the pegmatites, and the subsequent interpretation of mineralised domains, resulting in greater confidence in resource classification.

The confirmed Mineral Resource Estimate from October 2018 was updated with the results from the infill drilling programme. The resultant Mineral Resource Estimate was published in January 2020 as per Table 2.1 under the Australian mineral resources Joint Ore Reserve Committee (JORC) reporting code.

DRAFT

Table 2.1: Karibib Project mineral resource estimates (Source: Lepidico, 2020).

Deposit	Resource Category	Tonnes (M)	Li_2O (%)	Rb (%)	Cs (ppm)	Ta (ppm)	K (%)	Cut-off (% Li_2O)	Effective Date
Rubicon	Measured	1.56	0.53	0.28	335	47	2.24	0.15	28.01.2020
	Indicated	5.72	0.36	0.20	232	37	2.11	0.15	28.01.2020
	Total	**7.29**	**0.40**	**0.22**	**254**	**39**	**2.13**	0.15	28.01.2020
Helikon1	Measured	0.64	0.65	0.25	520	61	1.90	0.15	28.01.2020
	Indicated	0.94	0.50	0.22	531	74	1.81	0.15	28.01.2020
	Inferred	0.17	0.70	0.29	1100	150	2.18	0.15	28.01.2020
	Total	**1.75**	**0.58**	**0.24**	**584**	**77**	**1.88**	0.15	28.01.2020
Rubicon + Helikon 1	Measured	2.20	0.57	0.27	389	51	2.14	0.15	28.01.2020
	Indicated	6.66	0.38	0.22	274	42	2.06	0.15	28.01.2020
	Inferred	0.17	0.70	0.29	1100	150	2.18	0.15	28.01.2020
	Total	**9.04**	**0.43**	**0.23**	**318**	**46**	**2.08**	0.15	28.01.2020
Helikon2	Inferred	0.216	0.56					0.20	18.10.2018
Helikon3	Inferred	0.295	0.48					0.20	18.10.2018
Helikon4	Inferred	1.510	0.38					0.20	18.10.2018
Helikon5	Inferred	0.179	0.31					0.20	18.10.2018
Global	**Measured**	**2.20**	**0.57**	**0.27**	**389**	**51**	**2.14**		28.01.2020
	Indicated	**6.66**	**0.38**	**0.22**	**274**	**42**	**2.06**		28.01.2020
	Inferred	**2.37**	**0.43**						28.01.2020
	Total	**11.24**	**0.43**						28.01.2020

2.2.2 Feasibility Study

The Feasibility Study into the proposed development has been completed and comprises the following key elements:

1. Open pit geotechnical drilling to inform the mine design.
2. Production planning for ore and concentrate.
3. Metallurgical test work to design the concentrator processing facilities.
4. Engineering design of the mineral concentrator.
5. Engineering design of the support facilities including workshops and all buildings.
6. Geotechnical site investigations and characterisation of the process plant tailings to inform the storage requirements.
7. Design of a Waste Management Area to co-dispose of mine waste from Rubicon and process plant tailings. The process pant tailings will be filtered to recover water and dry stacked with the mine waste.
8. Design of a mine waste facility for the Helikon 1 pit.
9. Engagement with NamPower to provide grid power supply. Design of the power line and substations.
10. Access road upgrade design.
11. Human resources planning.
12. Engagement with Namibian equipment and services providers for mining, construction, logistics and consumables.

DRAFT

13. Development of community and social programs.
14. Downstream facilities design and product marketing studies.
15. Project development planning, and.
16. Development of environmental and social management programs for the operational phase of the project.

2.3 Project Planning, Design and Construction

2.3.1 Overview

The project planning, design and preconstruction stage of the project development will cover the following components:

- Preparation of designs, plans, field-based surveying and layouts.
- Engagement of Namibian construction contractors.
- General site clearing of the plant site area, waste management area, supporting infrastructure, workshops, stores and the power supply.
- Access road upgrading as required.
- Topsoil removal and storage and stockpiling of potential key resources material for rehabilitation, and.
- Development of the temporary facilities, including offices and stores.

2.3.3 Proposed Project Layout and Supporting Infrastructure

2.3.3.1 Overview

The proposed new project layout will be confined to the existing disturbed area as far as practically possible (Figs. 2.1 -2.3). The following is the summary of the proposed mine and infrastructure to be developed:

- Pit areas for Rubicon and Helikon.
- Ore stockpile area (Run of Mine pad).
- Processing plant – crushing, grinding, flotation and water recovery sections.
- Rubicon waste management area.
- Helikon waste dump.
- Administration, car park, offices, workshops, storerooms, ablution block, training / meeting room, canteen, clinic / First Aid and stores etc.
- New powerline and substation.
- Wastewater treatment plant / storage, and.
- Fuel storage.

Note: appropriate permits will be obtained for transportation, storage and final disposal of the hazardous substances associated with the construction and operation of the Project.

DRAFT

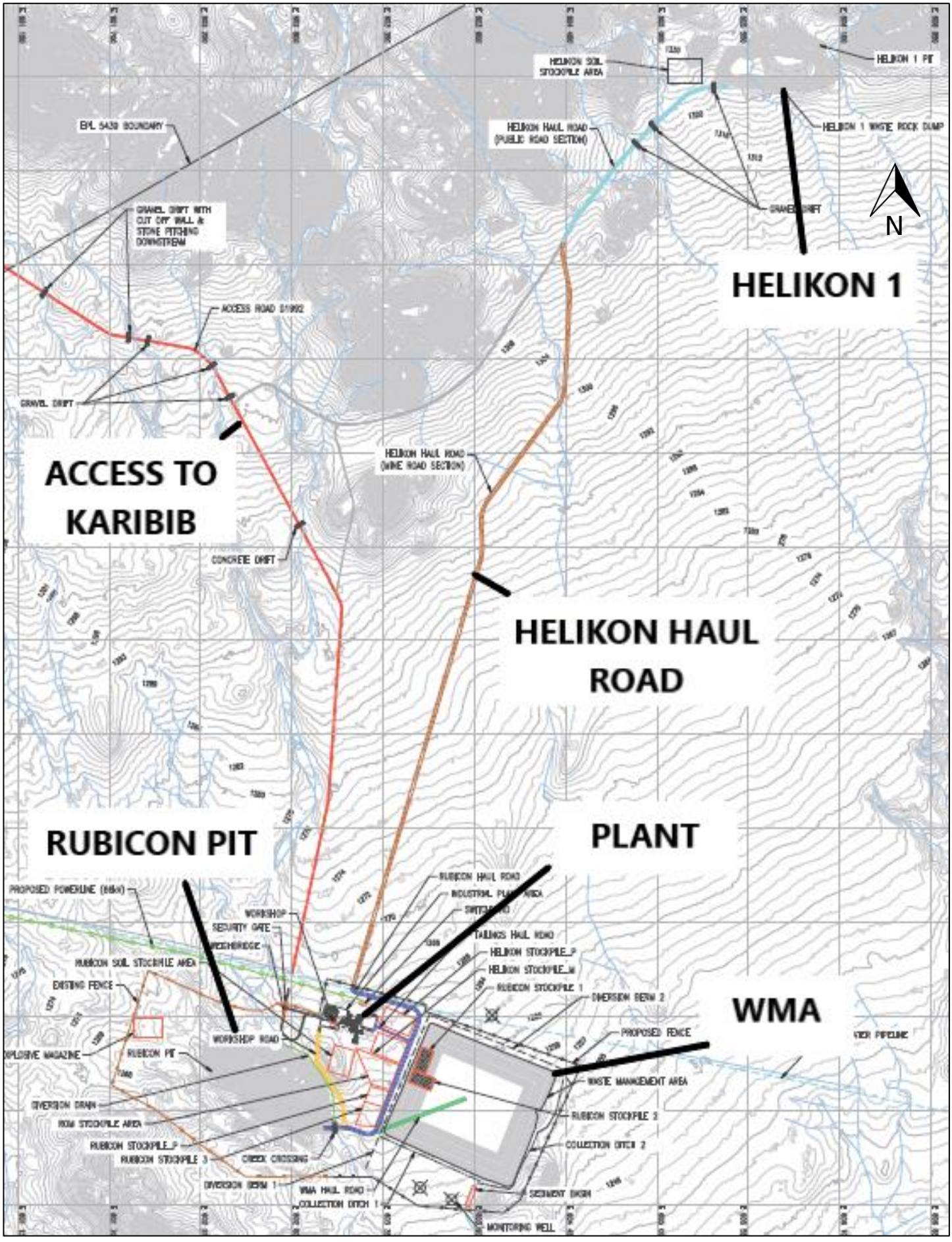

Figure 2.1: Karibib Project Overview on ML 204 (Source: Knight Piésold, 2020).

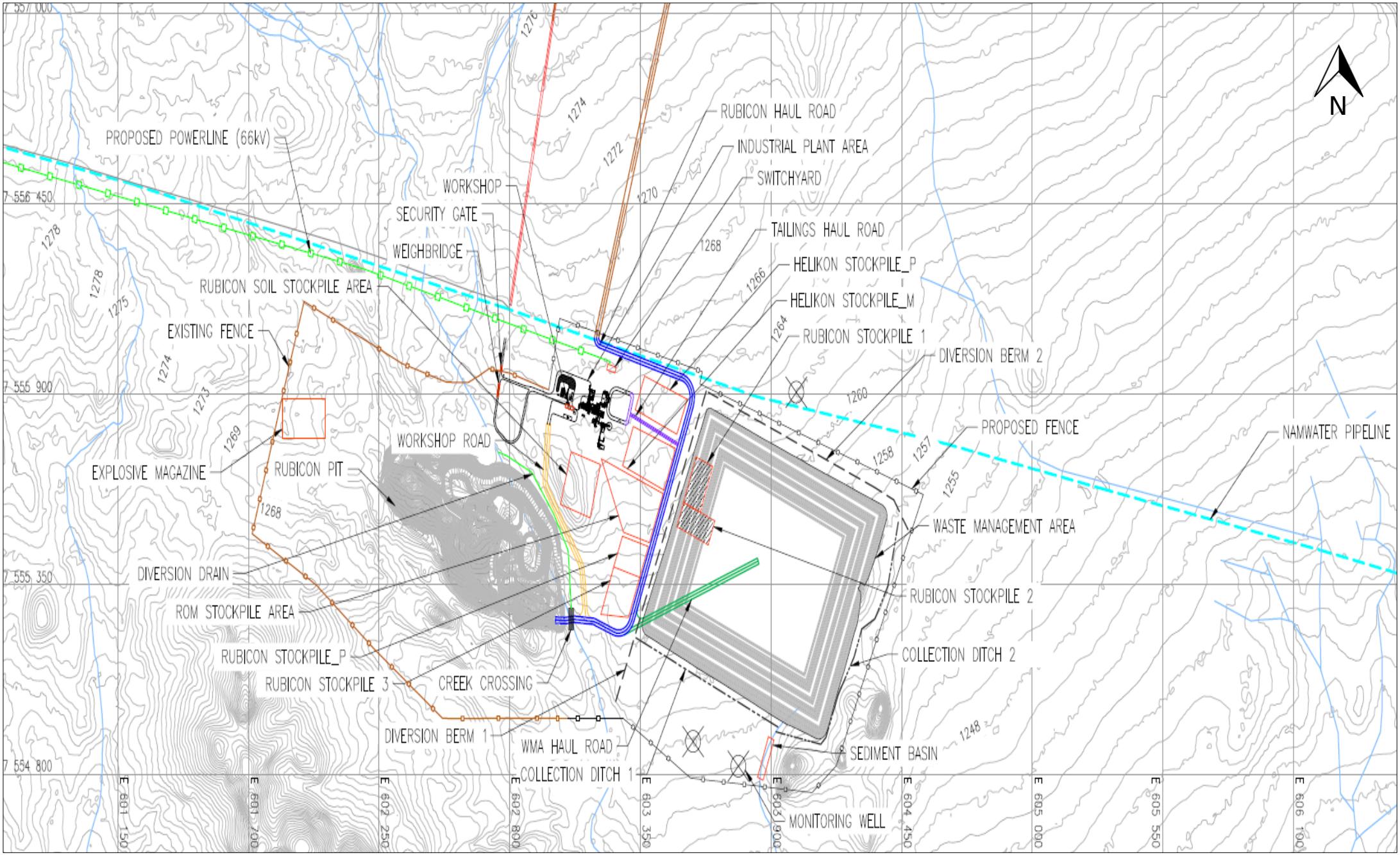

Figure 2.2: Rubicon operations general arrangement (Source: Knight Piésold, 2020).

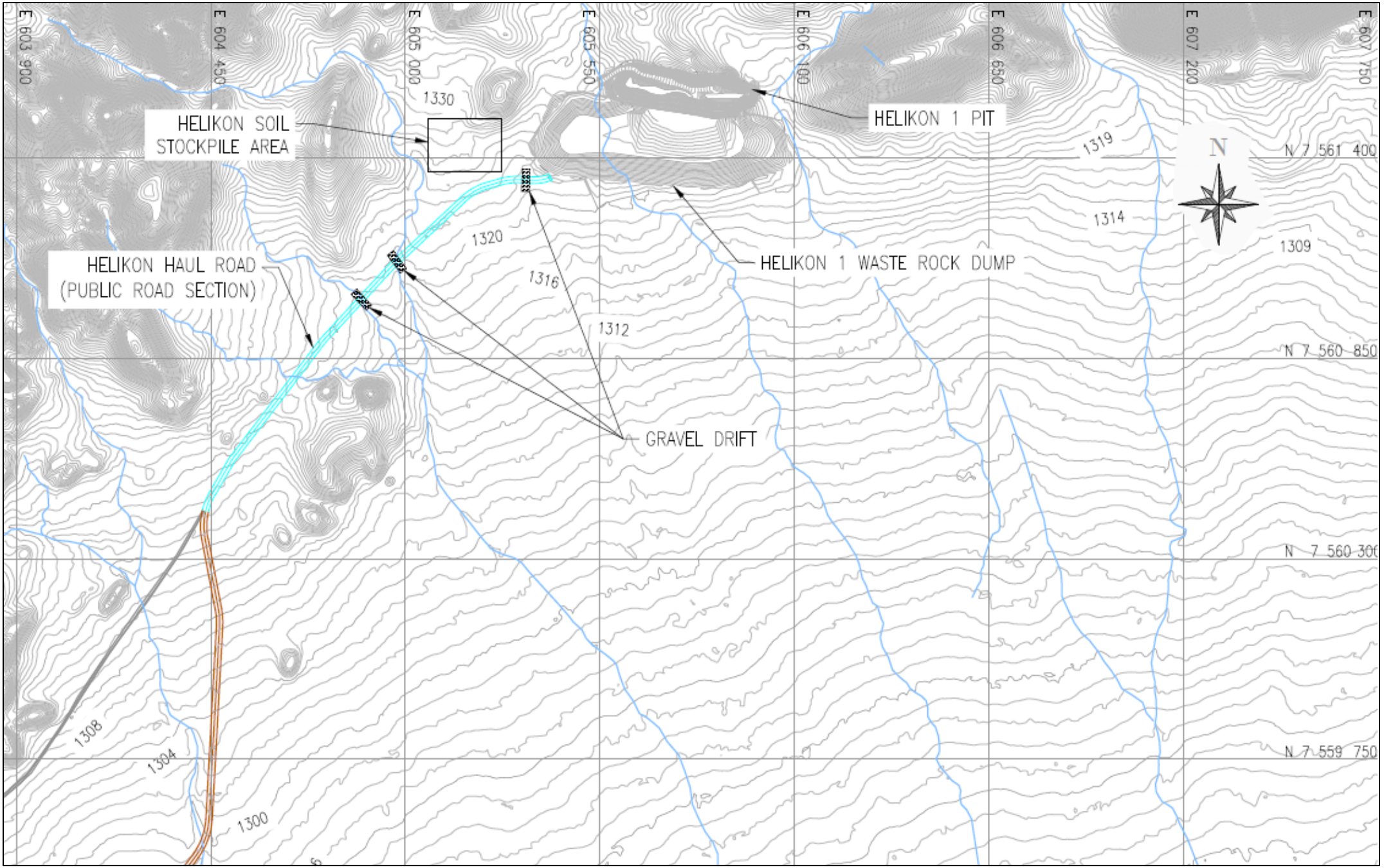

Figure 2.3: Helikon 1 open pit and waste management area general arrangement (Source: Knight Piésold, 2020).

2.3.3.2 Sources of Dust and Noise

Dust will be generated vehicles and equipment movements, mining and processing operations, ore loading and offloading. Where practical hire traffic roads like the main access road will be sealed using salt and compacted and watered regularly.

During the planning process, it's important to make sure that stripped topsoil layer from disturbed areas is stockpiled as it contains a seedbank highly relevant for final rehabilitation of disturbed areas and the waste management areas.

2.3.3.3 Water Supply Management

Water will be sourced from the existing borefield located on ML 204. Water will be used for processing and dust suppression on mine roads that cannot be sealed. Both concentrate and tailings from the process plant will be filtered to circa 15% moisture content. Thus 80% of water will be recycled and usage minimised. Water from the waste management area will be recycled.

Mine dewatering will potentially be available as another source. Water is available from the NamWater supply pipeline, but this will only be accessed as a last resort.

2.3.3.4 Power Supply Sources

Power for the project will be supplied from the NamPower grid. The 66 kV power line will connect to the grid at the Marble switchyard to the west of Karibib township. The power line will then follow the D1992 public road into the Rubicon project site.

2.3.4 Construction of Supporting Infrastructure and Mine

2.3.4.1 Supporting Infrastructure

All supporting infrastructures such as roads, onsite buildings, storage area, powerline route and water supply infrastructure will prioritise the use of the already disturbed areas. All the mining and processing infrastructures will be situated within the Mining License area. The supporting infrastructure such as roads will utilise the already existing roads and tracks. Accommodation for workers will be provided in Karibib and workers will be transported from Karibib to the Project site. Limited administration blocks including office, laboratory and workshop will be situated in the Mining License Area and will utilise the existing structures where possible. The processing plant will also be built next to the potential pit area to tie into to existing infrastructure and minimise vehicle movement to limit dust. Facilities like workshops, stores and offices will be shared throughout the operation. It is not intended to build any of these facilities remotely at Helikon 1.

2.3.4.2 Liquid, Solid, and Hazardous Waste Management

Domestic sewage from the Project facilities will be treated on site and a Fresh Drain System will be used for the management of the wastewater. A solid waste disposal storage / transfer facility shall be developed onsite. Solid waste from offices and canteen will be stored at the waste solid management storage / transfer facility to be removed regularly in containers to the General Waste facility at Karibib Municipal Waste disposal site. No burying of any waste on site will be permitted.

Hazardous waste will have to be disposed of at the Hazardous Waste facility at Walvis Bay. Recycling of suitable, non-combustible materials, such as metals and glass is recommended.

Some of the reagents will be recovered in the process water that will be recovered from the waste management area. This shall be circulated back to the process plant and a little remains in the tailings material or in the concentrates that are produced. No direct release of the reagents to the environment is allowed.

Servicing of vehicles will produce lubrication oils and hydraulic fluid, which will be sent for recycling or disposed of to a hazardous waste facility such as at Walvis Bay.

DRAFT

2.3.4.3 Open Pit Mining Operations

The mining techniques to be employed for the proposed project will be an open pit mining method using conventional diesel-powered equipment and a drill and blast, load and haul operation.

The mining operations will involve extraction of the pegmatite mineralised zone to a depth of approximately 100 metres below surface. The open pits at Rubicon and Helikon 1 will be designed using similar parameters. The bench working heights will be 15m with a typical bench face angle of 75°. An 8m wide safety catch berm will be placed at every bench resulting in an inter ramp slope angle of typically 55°.

Rubicon pit will be mined in three stages and Helikon 1, two stages. The pit staging is determined by the most economic extraction of ore.

The mining sequence will be as follows:

1. Grade control definition of the pegmatite mineralisation to ensure it is suitable for processing and at the planned grade.

2. Drill of production holes and blasting using ammonium nitrate fuel oil emulsions which will be prepared and stored offsite at a facility in Karibib.

3. Excavating of waste and ore.

4. Haulage of ore from both pits to the Run of Mine pad at the Rubicon plant site.

5. Haulage of waste to the waste management area at Rubicon or Helikon, and.

6. Ancillary tasks including scaling of walls, grading and watering of roads, dewatering of open pit workings etc.

The initial mining rate is 330,000 tpa of ore increasing to 540,000 tpa from year 5 of production. For the first two years of production the ratio of waste to ore ratio is 0.3:1. For the first 10 years it is 1.6:1.

DRAFT

2.3.4.4 List of Open Pit Mining Equipment

The following equipment will be used for open pit mining operations:

1. Hydraulic excavator with 2.7 cubic meter bucket for ore and waste mining (1 unit).

2. Off road mining dump trucks with a payload of circa 40t (4 units).

3. Bulldozer (1 unit).

4. Production blast hole drill rig, capable of drilling 76-127mm holes (1 unit).

5. Motor Grader (1 unit).

6. 20 tonne excavators for general duties (1 unit).

7. On road dump trucks with a payload of circa 20t (2 units) for haulage from Helikon to Rubicon
8. Site support vehicles includes a small truck mounted crane and flatbed truck, welding and compressor units, service truck and light vehicles.

The equipment will be serviced and maintained in a purpose-built workshop close to the plant site.

2.3.5 Commissioning, Operations and Ongoing Monitoring

2.3.5.1 Mineral Concentrator Description

The concentrator is designed to recover the main lithium bearing minerals found at Rubicon and Helikon 1 using conventional froth flotation. These minerals include amblygonite, lepidolite and lithian muscovite. Amblygonite is a phosphate mineral and lepidolite and lithian muscovite are micas. The two main mineral types require different flotation conditions for recovery.

The ore from both Rubicon and Helikon 1 open pits will be stockpiled on the Run of Mine pad. On the pad it will be blended and then fed into a two-stage crushing plant consisting of a primary jaw crusher and a secondary cone crusher. This will reduce the size of the ore from 450mm to an 80% passing size of15mm.

The crushed ore will then be ground in water in a rubber lined ball mill using 85mm steel balls for grinding media. In close circuit with hydrocyclones the ore will be ground to an 80% passing size of 180 microns. After grinding the ore is deslimed in two stages of small diameter cyclones which remove ultrafine biotite feldspar as a waste stream. This ultrafine material would otherwise consume flotation reagents and increase process losses.

The deslimed ore is then processed using froth flotation to recover the valuable lithium rich minerals into the froth concentrate. Firstly, amblygonite is floated using soda ash to raise the pH to 9 and a mineral collector designed to recover phosphates. Secondly, the mica minerals are recovered under different conditions, using sulphuric acid to reduce the pH to 2.5 and a mineral collector specific to micas. The mica minerals require two stages of flotation – roughing and cleaning. After flotation the concentrate streams are combined, and the pH is adjusted to greater than 7 using hydrated lime. The stream is then thickened and filtered to produce a filter cake of 15% and to recover the water for recycling.

The concentrate is then bagged into 1.2 tonne capacity super sacks and placed in a storage area prior to transport to Walvis Bay on flat bed trucks. At Walvis Bay the concentrate bags are containerised (20 bags per container) prior to export.

The tailings stream from flotation is combined with the deslime cyclone overflows and neutralised prior to dewatering using thickening and pressure filtration to a water content of 15%. The filter will discharge the cake into a concrete bunker from where it will be handled by front end loader and trucked to the waste management area.

Process plant services will include process water, fire water, potable water and low and high pressure compressed air.

Water for the process plant will be supplied from the existing water storage tank and borefield.

Power will be supplied into the site from Karibib at a voltage of 66kV. The voltage will be stepped down to 11kV for use in the process plant. The 66/11kV substation will be located adjacent to the process plant.

The ancillary buildings including offices, crib rooms, first aid facilities, workshops and stores will be integrated into the process plant area to minimise impact from construction and vehicle movement.

The processing plant general view is shown in Fig. 2.4 with a simplified schematic of the process plant flowsheet shown in Fig. 2.5.

DRAFT

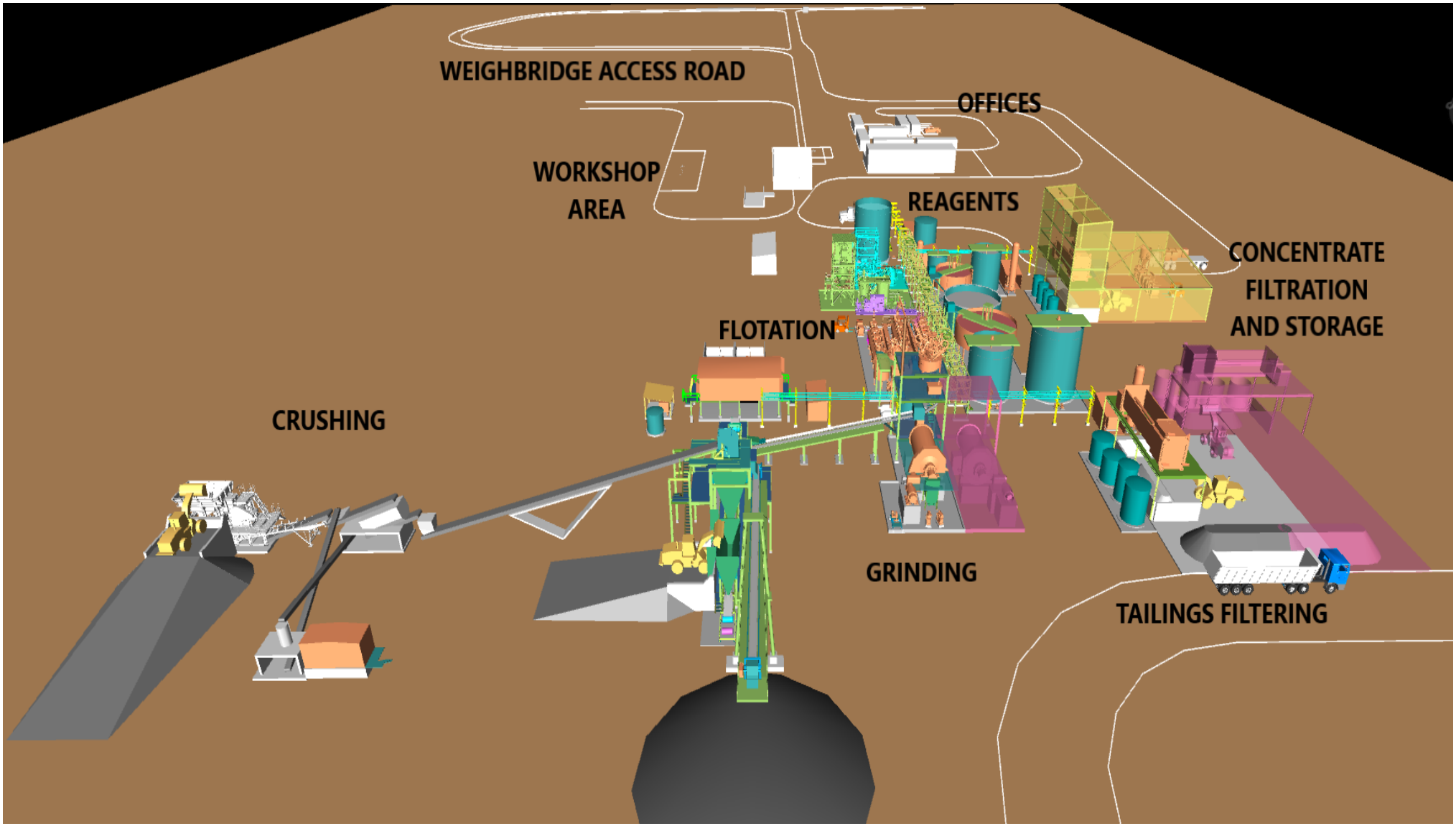

Figure 2.4: Processing Plant general view (Source: Lepidico, 2020).

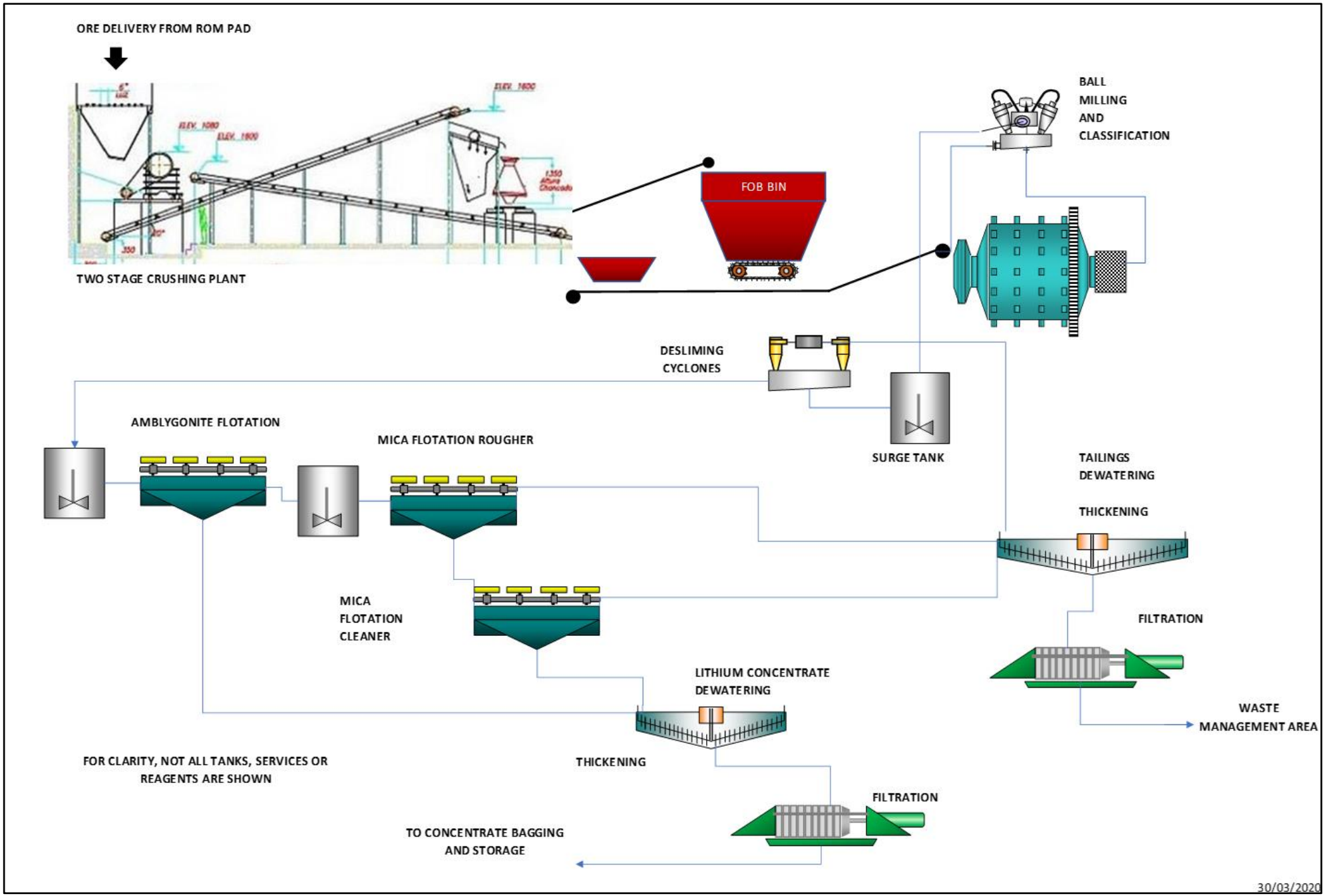

Figure 2.5: Simplified processing plant flowsheet (Source: Lepidico, 2020).

2.3.5.2 Storage, Transport to Walvis Bay

The lithium rich concentrate will be bagged to minimise dust, losses and contamination. It will be stored on site and then transported to Walvis Bay on flat bed trucks carrying 36 tonnes net weight. On average five trucks will depart per day.

2.3.5.3 Waste Management Area

The tailings from the process plant will be co-disposed with the waste rock from the Rubicon mining operation is a facility called the Waste Management Area (WMA). This is combining of fine material from the plant with coarse waste rock from the mine results in a single landform structure which is much more structurally stable than a conventional tailings dam. It also enables progressive rehabilitation of the external walls of the structure and rapid final rehabilitation at project closure.

The Waste Management Area will be constructed adjacent to the process plant and Rubicon mine exits and be built in five stages progressively over the life of the project. The main design criteria are as follows:

- Storage of approximately 15.1 Mm^3 of waste rock and 4.5 Mm^3 of filtered tailings over the Project life in a combined waste facility.
- Overall waste rock to tailings ratio of 3.15:1.
- Placement of waste immediately to the east of the Rubicon Open Pit.
- WMA Geometry:
    - 3H:1V outer slopes, interior slopes ranging from 2.5H:1V to 1.5H:1V.
    - 10 m high lifts, where appropriate, and.
    - 5 m wide benches between lifts.
- WMA Placement Strategy, per Stage and Lift:
    - Placement of a perimeter embankment of waste rock, at least 10 m wide, to create a paddock for the filtered tailings, keep the tailings away from the WMA face and maintain overall slope stability, and.
    - Co-disposal of waste rock and/or tailings within the created basin. The co-disposed material will be placed in 1 m thick lifts, blended (if appropriate) and compacted.

The proposed storage and raising plan for the WMA includes 5 lifts of material, occupying an area of approximately 68 ha. The staged expansion of the WMA is summarised below.

- Stage 1: Storage Requirement (Years 1 through 4 of operations): Approximately 214,000 m3 of waste rock and 640,000 m3 of tailings. The waste rock and tailings are stored in a 10 m lift (Lift 1A) of the WMA. Initially some in-situ material will be excavated from the footprint of Stage 1.
- Stage 2: Storage Requirement (Years 5 through 7 of operations): Approximately 925,000 m3 of waste rock and 1.02 Mm3 of tailings. The waste rock and tailings are stored in a 10 m lift (Lift 1B) of the WMA.
- Stages 3 and 4: Storage Requirement (Years 8 through 10 of operations): Approximately 3.2 Mm3 of waste rock and 1.06 Mm3 of tailings Storage Solution: The waste rock and tailings are stored in two lifts of the WMA, as follows:

DRAFT

- Lift 1C (10 m lift): Approximately 826,000 m3 of waste rock is required for embankment construction, and.
- Lift 2A (2.5 m lift): Approximately 169,000 m3 of waste rock is required for embankment construction.

❖ Stage 5: Storage Requirement (Years 11 through 13 of operations): Approximately 10.7 Mm3 of waste rock and 1.8 Mm3 of tailings. Stage 5 will include the capping of the structure using mine waste, so the tailings is not left exposed in any area. The WMA will then be covered using the pre-stripped stockpiled soils and revegetation using local species based on the seedbank of the soils.

Geochemical testwork has demonstrated that the tailings are benign and is none acid forming and any seepage that occurs will have no impact on the underlying groundwater quality. Any supernatant water will be recovered and returned to the process. The waste rock is also benign and does not contain sulphides.

Downstream monitoring bores will be installed to measure ground water levels and quality throughout the project.

Fig. 2.6 shows the schematic demonstration of the envisaged co-disposal process.

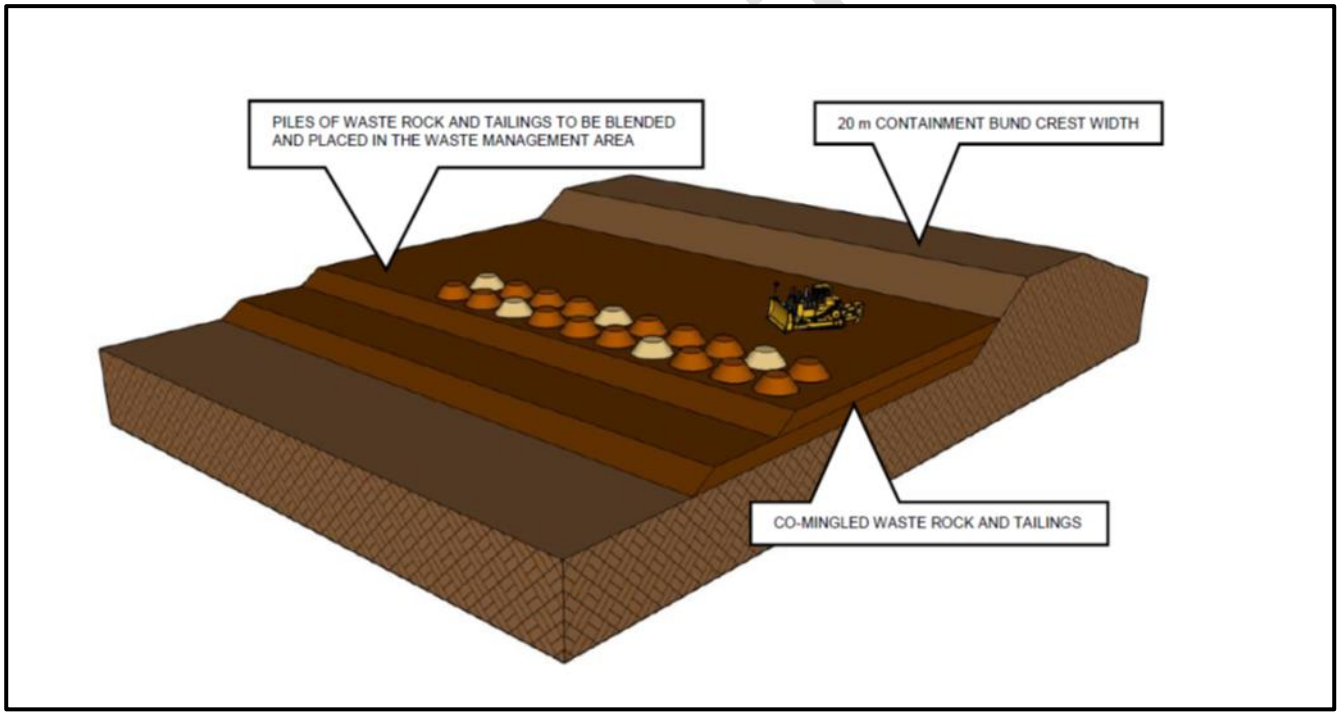

Figure 2.6: Waste Management Area Co-Disposal Schematic (Source: Lepidico, 2020).

3. REGULATORY FRAMEWORK

3.1 Mining Legislation

The national regulations governing minerals prospecting and mining activities in Namibia fall within the jurisdiction of the Ministry of Mines and Energy (MME). The Minerals (Prospecting and Mining) Act (No 33 of 1992) is the most important legal instrument governing the mining industry.

Section 54 (3) obliges licence holders, on announcement of abandonment, to demolish accessory works, remove all debris and other objects brought onto the land, and to take the necessary steps to remediate 'to the reasonable satisfaction' of the Minister of Mines any damage to the environment.

Section 57(1) of the Minerals Act requires licence holders to apply 'good mining practices' with respect to environmental protection, natural resource conservation and the removal of accessory works or other goods that were erected, constructed or brought on the land for the mining activities.

Section 91 regulates applications for mining licences. Section 91(f iii) requires the application to include the manner in which the applicant intends to: prevent pollution, deal with any waste, safeguard the mineral resources, reclaim and rehabilitate land disturbed by way of the prospecting operations and mining operations, and minimise the effect of such operations on land adjoining the mining area.

Section 99 (1) requires that licence holders:

(a) inform the Minister in writing before it intends to reduce or to stop mining:

- 6 months prior to permanent cessation of operations.
- 30 days before temporarily cessation of operations, and.
- 7 days before an intended reduction of operations.

(b) in the event of unexpected reduction or cessation of mining operations outside the mine's control, inform the Minister as soon as possible after the event has occurred.

Section 101(2) (2) stipulates that the licence holder must, no later than 180 days after cancellation or expiration of a mining licence, deliver to the MC:

(c) all records kept in terms of the provisions of subsection (1)(a). (b) all maps and plans referred to in subsection (1)(b).

(d) all reports, photographs, tabulations, tapes and discs prepared by or on behalf of such person in the course of such prospecting operations, and.

(e) such other books, documents, records and reports as the commissioner may require by notification, in writing, addressed and delivered to such person.

Section 128 (1) states that if a ML is cancelled or expired, the Minister may, by notification in writing, require:

(a) the demolition of buildings and structures, and removal of debris and objects, and.

(b) the remedying of damage to the surface and the environment.

Although the provision is kept general, its importance and consequence for any mine closure should not be underestimated.

Section 128 (3) stipulates that failure to rehabilitate a mined area properly is an offence carrying a penalty of N$100 000 or five years imprisonment.

DRAFT

Section 130 relates to pollution control. Licence holders have a general duty of environmental care and are expected to practice continuous rehabilitation at own cost in that they should immediately clean up a mineral spill or other form of pollution of the environment. If a company fails to do so, the Minister may order the company to comply and, if it still fails to comply, the Minister may instruct a third party to rehabilitate the area, and claim the cost from the polluter. the ML holder will be liable for spilling, pollution, loss or damage.

3.2 Other Application Legislations

3.2.1 Environmental Legislation

The Environmental Management Act (EMA) has three main purposes, namely to ensure that:

(i) People consider the impacts of activities on the environment carefully and in good time.

(ii) All interested and affected parties have a chance to participate in EAs, and.

(iii) Findings of EAs are considered before decisions are made to undertake certain activities. Activities that are subject to EAs are listed in Section 27, and include resource removal, such as mining.

The EMA does not refer specifically to decommissioning or rehabilitation of a site once an activity ceases to operate. However, the draft regulations (May 2010) provide clear reference regarding the compilation and implementation of rehabilitation and closure plans.

In the regulations the definition of “rehabilitation and closure plan” is a plan which describes the process of rehabilitation of an activity at any stage of that activity up to and including closure.

Section 29(j) stipulates that a scoping report must have a draft rehabilitation and closure plan, containing matters set out in regulation 31.

Section 31 outlines in detail what a rehabilitation or closure plan must contain, namely:

(a) information on any proposed, management mitigation, protection or remedial measures that will be undertaken to address the environment¬ impacts that have been identified including environmental impacts or objectives in respect of -

(i) the rehabilitation of the environment. and

(ii) closure, if applicable. (b) details of -
(i) the person who prepared the plan, and.

(ii) the expertise of that person to prepare the plan.

(b) a detailed description of the aspects of the activity that are covered by the plan.

(c) information identifying the persons who will be responsible for the implementation of the measures contemplated in paragraph (a).

(d) information in respect of the mechanisms proposed for monitoring compliance with the aim for reporting on the compliance.

(e) as far as is reasonably practicable, measures to rehabilitate the environment affected by the undertaking of any listed activity or specified activity to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development, and.

(f) a description of the manner in which it intends to -

DRAFT

(i) modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation.

(ii) remedy the cause of pollution or degradation and migration of pollutants.

(2) The environmental commissioner may accept a rehabilitation and closure plan with or without the changes he or she may require.

(3) If closure begins on a site the proponent must -

(a) notify the environmental commissioner that closure has begun, and.

(b) comply with the requirements of the rehabilitation and closure plan.

(4) If a proponent intends to change the method of closure of a project, the proponent must file with the environmental commissioner an amended rehabilitation and closure plan which the commissioner may accept with or without changes.

3.2.2 Water Legislation

The Water Act, 1956, Act No. 54 of 1956 does not make specific reference to mine closure. However, it does make reference to long-term protection of water resources in the following sections:

Section 21(5a) states that if a user cannot treat effluent to the desired standard or cannot return it to the appropriate public stream an exemption permit must be obtained from the Minister.

Section 23(2) also allows the Minister to recover any costs from the licence holder to prevent the pollution of public or private water (including ground water) that occurs after mine closure as a result of seepage or drainage from mining or industrial activities.

Regulation 21.1 made under Section 26 of the Water Act requires that areas used as depositing sites for tailings and waste (whether in operation or not) need to be adequately fenced and shall not without the approval of the Permanent Secretary / Minister of Water Affairs be used for any other purpose.

3.2.3 Atmospheric Pollution Prevention

For the purposes of mine closure, Licence Holders should, in terms of Section 28 of the Atmospheric Pollution Prevention Ordinance, 11 of 1976, compile and submit to the Director of Health Services a dust prevention and management plan. thereafter the Director will issue a dust prevention certificate confirming that the licence holder has made adequate provision for dust pollution emanating from those parts of the mine that are due for closure.

The licence holder may not commence with mine closure, nor dispose of any of its asses as part thereof, without such a certificate.

3.2.4 Labour Legislations

The Labour Act, 1992, Act No. 6 of 1992 as amended makes reference to severance allowances for employees on termination of a contract of employment in certain circumstances.

In addition, if the employer has provided for a gratuity, an insurance policy, a savings or other bank account, or any other investment which is payable, in a lump sum, to the dismissed employee in the event of, or at the time of, the termination, the employer shall, in so far as such provision has been made at the employer's expense, subtract this sum from the amount calculated in terms of severance pay due to the employee.

DRAFT

The Labour Act, 1992, Act No. 6 of 1992 also addresses maters related Health and Safety of the employees and safe working environment.

3.3 Standards and Guidelines

Industrial effluent likely to be generated by the proposed mine must comply with provisions of the Government Gazette No 217 dated 5 April 1962 (Table 3.1) with the water quality comparative guidelines shown in Table 3.2. In the absence of national gaseous, liquid and solid emission limits for Namibia, the proposed project shall target the Multilateral Investment Guarantee Agency (MIGA) gaseous effluent emission level and liquid effluent emission levels (Table 3.2).

Noise abatement measures must target to achieve either the levels shown in Table 3.3 or a maximum increase in background levels of 3 dB (A) at the nearest receptor location off-site (MIGA guidelines).

Table 3.1: R553 Regional Standards for Industrial Effluent, in Government Gazette No 217 dated 5 April 1962.

Colour, odour and	The effluent shall contain no substance in	
taste	concentrations capable of producing colour, odour or taste	
pH	Between 5.5 and 9.5	
Dissolved oxygen	At least 75% saturation	
Typical faecal coli	No typical faecal coli per 100 ml	
Temperature	Not to exceed 35 °C	
Chemical demand oxygen	Not to exceed 75 mg/l after applying a correction for chloride in the method	
Oxygen absorbed	Not to exceed 10 mg/l	
Total dissolved solids (TDS)	The TDS shall not have been increased by more than 500 mg/l above that of the intake water	
Suspended solids	Not to exceed 25 mg/l	
Sodium (Na)	The Na level shall not have been increased by more than 50 mg/l above that of the intake water	
Soap, oil and grease	Not to exceed 2.5 mg/l	
Other constituents	Residual chlorine	0,1 mg/l as Cl
	Free & saline ammonia	10 mg/l as N
	Arsenic	0,5 mg/l as As
	Boron	1,0 mg/l as B
	Hexavalent Cr	0,05 mg/l as Cr
	Total chromium	0,5 mg/l as Cr
	Copper	1,0 mg/l as Cu
	Phenolic compounds	0,1 mg/l as phenol
	Lead	1,0 mg/l as Pb
	Cyanide and related compounds	0,5 mg/l as CN
	Sulphides	1,0 mg/l as S
	Fluorine	1,0 mg/l as F
	Zinc	5,0 mg/l as Zn

DRAFT

Table 3.2: Comparison of selected guideline values for drinking water quality (after Department of Water Affairs, 2001).

Parameter and Expression of the results			WHO Guidelines for Drinking-Water Quality 2nd edition 1993		Proposed Council Directive of 28 April 1995 (95/C/13-1/03) EEC	Council Directive of 15 July 1980 relating to the quality intended for human consumption 80/778/EEC		U.S. EPA Drinking water Standards and Health Advisories Table December 1995		Namibia, Department of Water Affairs Guidelines for the evaluation of drinking-water for human consumption with reference to chemical, physical and bacteriological quality July 1991			
			Guideline Value (GV)		Proposed Parameter Value	Guide Level (GL)	Maximum Admissible Concentration (MAC)	Maximum Contaminant Level (MCL)		Group A Excellent Quality	Group B Good Quality	Group C Low Health Risk	Group D Unsuitable
Temperature	t	°C		-	-	12	25		-	-	-	-	-
Hydrogen ion concentration	pH, 25° C	-	R	<8.0	6.5 to 9.5	6.5 to 8.5	10		-	6.0 to 9.0	5.5 to 9.5	4.0 to 11.0	<4.0 to >11.0
Electronic conductivity	EC, 25° C	mS/m		-	280	45	-		-	150	300	400	>400
Total dissolved solids	TDS	mg/l	R	1000	-	-	1500		-	-	-	-	-
Total Hardness	$CaCO_3$	mg/l		-	-	-	-		-	300	650	1300	>1300
Aluminium	Al	µ g/l	R	200	200	50	200	S	50-200	150	500	1000	>1000
Ammonia	NH_4^+	mg/l	R	1.5	0.5	0.05	0.5		-	1.5	2.5	5.0	>5.0
	N	mg/l		1.0		0.04	0.4		-	1.0	2.0	4.0	>4.0
Antimony	Sb	µ g/l	P	5	3	-	10	C	6	50	100	200	>200
Arsenic	As	µ g/l		10	10	-	50	C	50	100	300	600	>600
Barium	Ba	µ g/l	P	700	-	100	-	C	2000	500	1000	2000	>2000
Berylium	Be	µ g/l		-	-	-	-	C	4	2	5	10	>10
Bismuth	Bi	µ g/l		-	-	-	-		-	250	500	1000	>1000
Boron	B	µ g/l		300	300	1000	-		-	500	2000	4000	>4000
Bromate	BrO_3^-	µ g/l		-	10	-	-	P	10	-	-	-	-
Bromine	Br	µ g/l		-	-	-	-		-	1000	3000	6000	>6000
Cadmium	Cd	µ g/l		3	5	-	5	C	5	10	20	40	>40
Calcium	Ca	mg/l		-	-	100	-		-	150	200	400	>400
	$CaCO_3$	mg/l		-	-	250	-		-	375	500	1000	>1000
Cerium	Ce	µ g/l		-	-	-	-		-	1000	2000	4000	>4000
Chloride	Cl^-	mg/l	R	250	-	25	-	S	250	250	600	1200	>1200
Chromium	Cr	µ g/l	P	50	50	-	50	C	100	100	200	400	>400
Cobalt		µ g/l		-	-	-	-		-	250	500	1000	>1000
Copper after 12 hours in pipe	Cu	µ g/l	P	2000	2	100	-	C	TT##	500	1000	2000	>2000
		µ g/l		-	-	3000[1]	-	S	1000	-	-	-	-
Cyanide	CN^-	µ g/l		70	50	-	50	C	200	200	300	600	>600
Fluoride	F^-	mg/l		1.5	1.5	-	at 8 to 12 °C: 1.5	C	4	1.5	2.0	3.0	>3.0
		mg/l		-	-	-	at 25 to 30 °C: 0.7	P,S	2	-	-	-	-
Gold	Au	µ g/l		-	-	-	-		-	2	5	10	>10
Hydrogen sulphide	H_2S	µ g/l	R	50	-	-	undetectable		-	100	300	600	>600
Iodine	I	µ g/l		-	-	-	-		-	500	1000	2000	>2000
Iron	Fe	µ g/l	R	300	200	50	200	S	300	100	1000	2000	>2000
Lead	Pb	µ g/l		10	10	-	50	C	TT#	50	100	200	>200
Lithium	Li	µ g/l		-	-	-	-		-	2500	5000	10000	>10000
Magnesium	Mg	mg/l		-	-	30	50		-	70	100	200	>200
	$CaCO_3$	mg/l		-	-	7	12		-	290	420	840	>840
Manganese	Mn	µ g/l	P	500	50	20	50	S	50	50	1000	2000	>2000
Mercury	Hg	µ g/l		1	1	-	1	C	2	5	10	20	>20
Molybdenum	Mo	µ g/l		70	-	-	-		-	50	100	200	>200
Nickel	Ni	µ g/l		20	20	-	50		-	250	500	1000	>1000
Nitrate*	NO_3^-	mg/l	P	50	50	25	50		45	45	90	180	>180
	N	mg/l		-	-	5	11	C	10	10	20	40	>40
Nitrite*	NO_2^-	mg/l		3	0.1	-	0.1		3	-	-	-	-
	N	mg/l		-	-	-		C	1	-	-	-	-
Oxygen, dissolved	O_2	% sat.		-	50	-	-		-	-	-	-	-
Phosphorus	P_2O_5	µ g/l		-	-	400	5000		-	-	-	-	-
	PO_4^{3-}	µ g/l		-	-	300	3350		-	-	-	-	-
Potassium	K	mg/l		-	-	10	12		-	200	400	800	>800
Selenium	Se	µ g/l		10	10	-	10	C	50	20	50	100	>100
Silver	Ag	µ g/l		-	-	-	10	S	100	20	50	100	>100
Sodium	Na	mg/l	R	200	-	20	175		-	100	400	800	>800
Sulphate	SO_4^{2-}	mg/l	R	250	250	25	250	S	250	200	600	1200	>1200
Tellurium	Te	µ g/l		-	-	-	-		-	2	5	10	>10
Thallium	Tl	µ g/l		-	-	-	-	C	2	5	10	20	>20
Tin	Sn	µ g/l		-	-	-	-		-	100	200	400	>400
Titanum	Ti	µ g/l		-	-	-	-		-	100	500	1000	>1000
Tungsten	W	µ g/l		-	-	-	-		-	100	500	1000	>1000
Uranium	U	µ g/l		-	-	-	-	P	20	1000	4000	8000	>8000
Vanadium	V	µ g/l		-	-	-	-		-	250	500	1000	>1000
Zinc after 12 hours in pipe	Zn	µ g/l	R	3000	-	100	-	S	5000	1000	5000	10000	>10000
		µ g/l		-	-	5000	-		-	-	-	-	-
			P: Provisional R: May give reason to complaints from consumers					C: Current. P: Proposed. S: Secondary. T#: Treatment technique in lieu of numeric MCL. TT##: treatment technique triggered at action level of 1300 µ g/l					

DRAFT

Table 3.3: Liquid effluent emission levels (MIGA /IFC).

Pollutant	**Max. Value**
pH	6-9
Total suspended solids	50 mg/l
Total metals	10 mg/l
Phosphorous (P)	5 mg/l
Fluoride (F)	20 mg/l
Cadmium (Cd)	0.1 mg/l

Table 3.4: Noise emission levels (MIGA /IFC).

	Maximum Allowable Leq (hourly), in dB(A)	
Receptor	Day time (07:00 – 22:00)	Night time (22:00 – 07:00)
Residential, institutional, educational	55	45
Industrial, commercial	70	70

DRAFT

3.4 Recommendations on Regulatory Framework

The proposed Karibib Project shall meet all the applicable national legislation, regulations, policies, initiatives and strategies as well as regional (SADC) and international guidelines such the EPs 1-10, standards, treaties and protocol. It is hereby recommended that the developer shall follow the provisions of all relevant national regulatory frameworks as described in this Chapter for mine closure and aftercare requirements.

4. BASELINE DATA FOR PRE-AND POST-MINING \ AFTERCARE

4.1 Regional Physical Geography

The proposed Karibib Project area falls within the Erongo Region in the west-central part of Namibia within the Damara Orogen that dominates the structural basement of most central part of Namibia. On the Western part of the region is the Atlantic Ocean with Ugab River in the North and Kuiseb River as the southern boundary (Ministry of Mines and Energy (MME), 2010). The Namib Desert borders the Namibian coastline with Atlantic Ocean and stretching inwards to about 120-150 km. The Topography of Land rises steadily from sea level to about 1000m across the Namib Desert. Most of the land within Namib Desert is flat to undulating gravel plains, with occasional ridges and isolated inselberg hills and mountains. In the far north of the Erongo Region lies the Brandberg at a highest peak of 2579 m, making it the country's highest mountain.

Ephemeral rivers in Erongo region run from their inland catchment to seawards direction. These rivers include the Swakop River with its main tributary the Khan River, the Omaruru River, Kuiseb and Ugab River (Fig. 1.1). The surface flows of the ephemeral rivers in the region are short-lived during the rainy season from November to April but their alluvial aquifers are a good source of groundwater. Palaeochannels in the Omaruru River form the underground Omaruru delta providing a significant source of surface water for the central Namib. There are two water supply schemes in the Kuiseb (Gobabeb) namely, Swartbank and Rooibank which are supplying water to the town of Walvis Bay.

The project area falls within the Great Escarpment. The area is characterized by relatively flat topography, with the exception of local ridges and hills where more competent rocks occur, forming conspicuous topographic elevated surface expressions. Small, ephemeral rivers that flow only when it rains and dry most of the year dominate the general ML area. The elevation above mean sea level (amsl) ranges from 1,250 m, at the lowest point in the project area, to 1,709 m at the top of Jiperekkeneberg ridge to the northeast part of ML area, with an average elevation of 1,300 m.

4.2 Climatic Settings

4.2.1 Overview

The climate of the Karibib Project area comprises warm to hot daytime temperatures throughout the year, while the nights are mild to cool in winter. The mean annual rainfall is highly variable and may range between 200 - 300 mm (Fig. 4.1). The distribution of rainfall is extremely seasonal with almost all the rain falling in summer - from November to April with occasional with mean annual gross evaporation of about 3300 mm (Fig. 4.1). The local project area has the following three distinct seasonal characteristics:

- A dry and relatively cool season from April to August with average daytime highs of 23°C and virtually no rainfall during this period.

- A hot and dry season from September to December with minimal and variable rainfall falling (<20mm per month) and average daytime highs of 30°C, which regularly exceed 40°C, and.

- A hot and rainy season from January through to March with >50mm per month falling during this period (although this is extremely variable) and average high temperatures of 29°C.

The prevailing wind in the area seems to be dominated by winds from the north eastern and southwest quadrants. Locally, the situation may be different dues various influences including topographic effects.

DRAFT

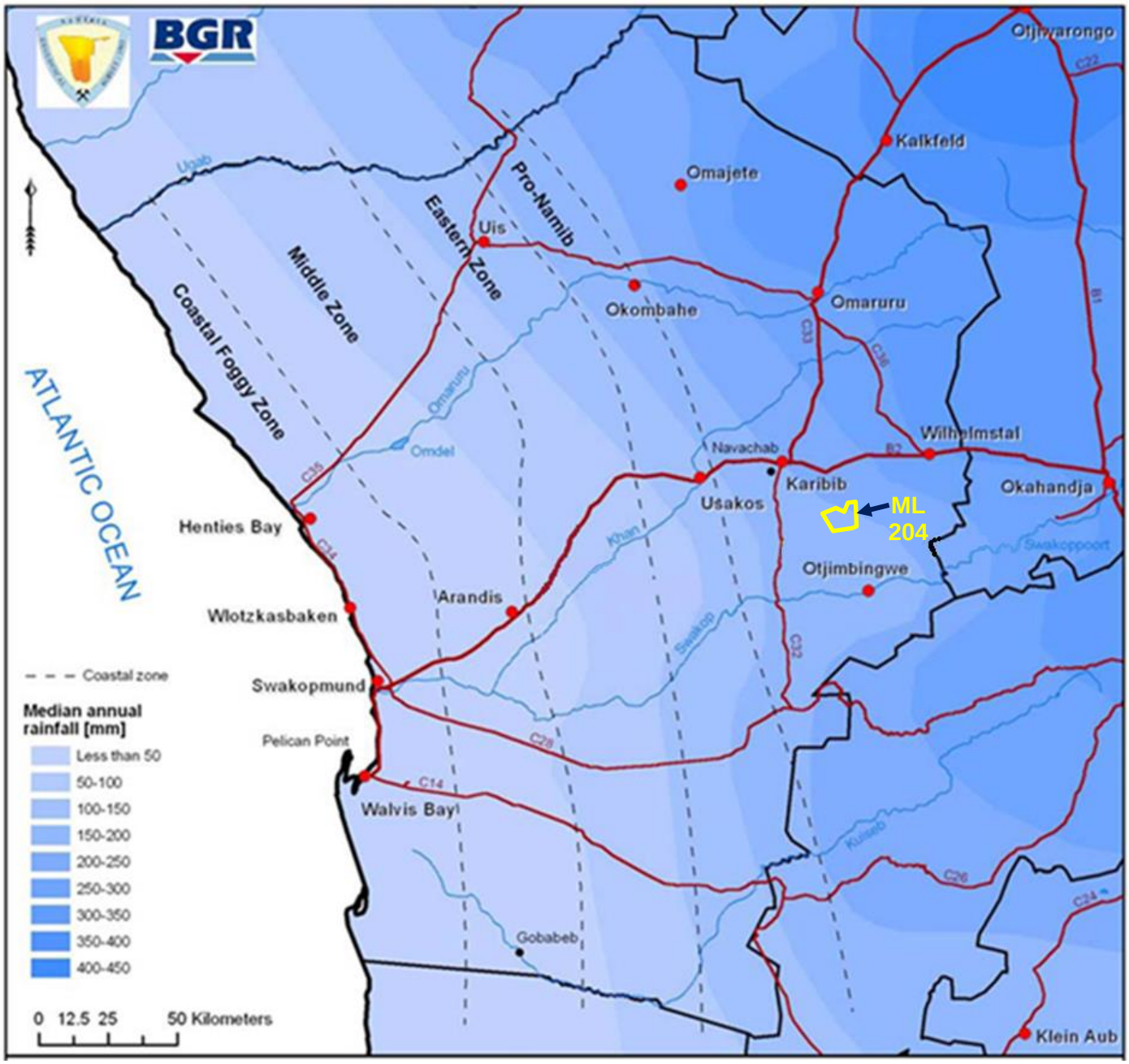

Figure 4.1: Median annual rainfall of central Namib Desert showing the location of the Karibib Project area, ML 204 (Source: Ministry of Mines and Energy (MME), 2010).

4.2.2 Wind Patterns

The Namib Desert is heavily influenced by high pressure systems, the sub continental high and the South Atlantic high. The coastal winds are driven by the South Atlantic high-pressure systems, resulting in strong winds prevailing from the south or south-west (Fig. 4.2). The cold Banguel Current on the Namibian coastline influences the South-westerly winds.

The Stronger winds experienced in the coastal towns and surroundings are mainly north-easterly or east winds. These winds are usually dry and hot with a wind speed of about 27km/hour. This influence is experience to up to 50 days annually between the months of April to September. Within the project area, stronger winds are dominated by the south-westerly or a north-easterly component. The wind is stronger in winter due to high pressure system of inland regions.

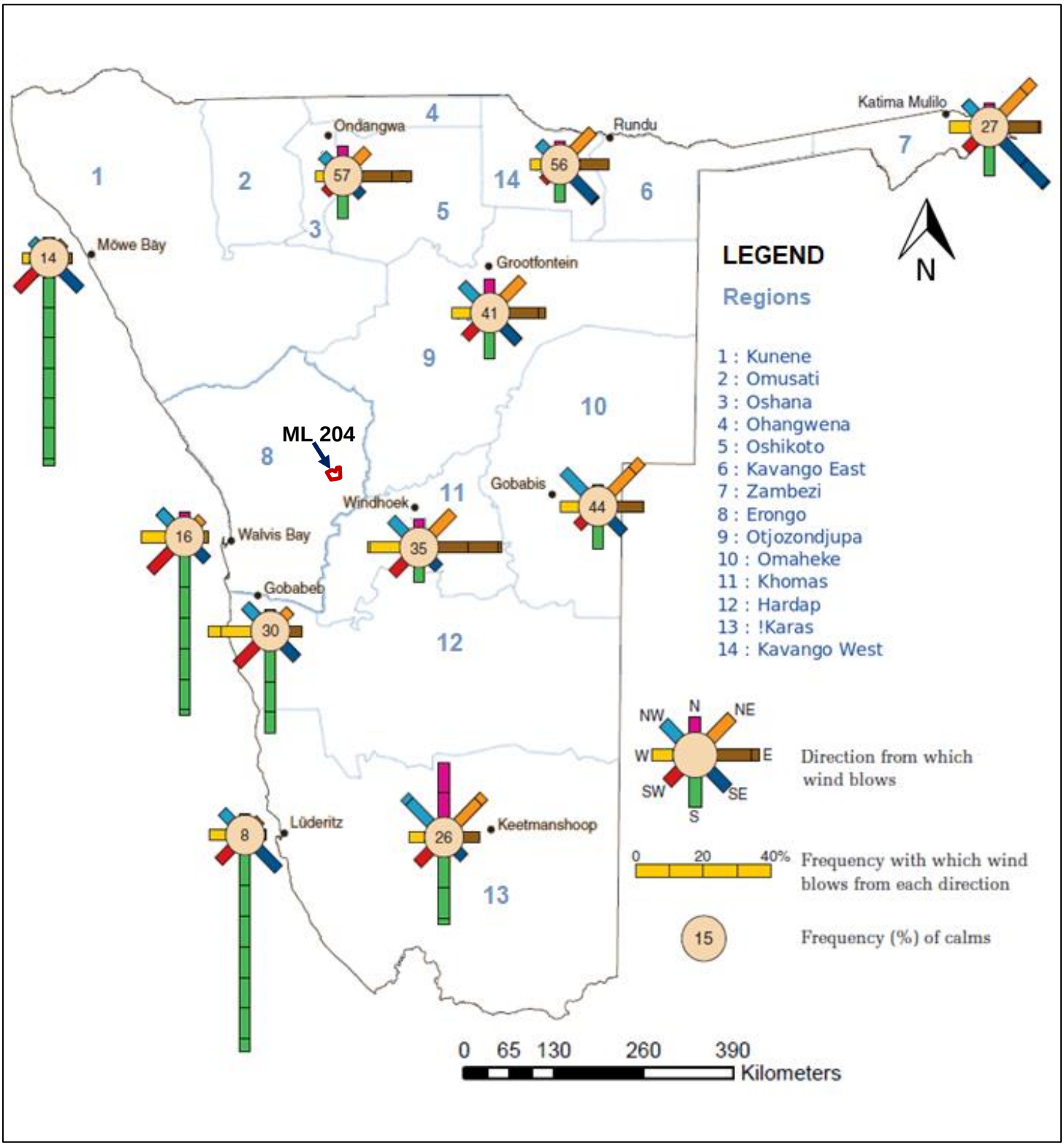

Figure 4.2: Regional wind patterns relative to the ML 204 location.

4.2.3 Regional and Local Air Quality Assessment

The need for air quality monitoring is important and shall be focused on evaluating the likely influence of any pollutant that may be associated with the proposed project activities. Ambient air quality monitoring for suspended particulate matter, sulphur dioxide, and nitrogen oxides should be carried out

over a longer period during the operation of the mine. The aim should be to study diurnal and seasonal variation and spatial distribution of said pollutants. Dust fall rate measurements should also be carried out for a period of one month out of each season and for all the four seasons of the year. Mining and associated activities may raise the background levels of particulate pollution in the local area. Material handling and processing plant, poorly maintained roads, resulting in transport of fine mined and processed materials dust by means of wind, are potential sources of particulate pollution in mining operations. Burning of fuel and transportation activities could be among the major sources of SO2 and NO_x in mining operations.

Erongo Strategic Environmental Assessment (SEA) project has developed 20 Dust fallout monitoring networks with inclusion of existing mining projects across the Erongo region. In addition to the regional dust monitoring station, a total ten (10) dust monitoring station have been established within the ML 204 area.

The focal point for the dust monitoring station within the proposed project areas has been the old Rubicon and Helikon 1mine sites (Plate 4.1). The dust monitoring programme has been established in order to provide a trend analysis of dust deposition over a period of time. The recorded dust fallout results have been compared to the dust fallout limits as provided by Germany and South Africa as SANS (South African National Standard, 2005).

The main findings and the ongoing dust monitoring associated with the Erongo Strategic Environmental Assessment (SEA), (MME, 2010) as well as those implemented for the proposed project dust fallout activities in the Erongo Region can be summarised as in the slight impact range (< 150 mg/m²/day). Overall, the dust fallout was below the SANS residential limit of 600 mg/m²/day and most are below the German standard of 350 mg/m²/day for the general area.

4.2.4 Noise and Air Emissions

4.2.4.1 Assessment Overview and Approach

A specialist assessment of baseline and future noise and air emission trends were undertaken as part of the environmental assessment conducted in 2017 (Plate 4.1) and monitoring activities undertaken since October 2019. To achieve the project objectives, noise monitoring of current levels on noise at the two (2) respective mining sites (Rubicon and Helicon) was conducted using an Integrating Sound Level Meter Class 2, with a C band filter for environmental monitoring.

A windshield was used to control the impact of wind speed and measurements were conducted at 1.8-meter height and an interval of 15 minutes and results were extrapolated to an hour rating to the continuous rating. The two sites' air quality was assessed using American Society for Testing and Materials standard method for collection and analysis of dust fallout (ASTM D1739). A portable Microdust Pro Real-time Dust Monitor serial number 1749391(Casella) was also used to account for hours and possible monthly dust concentration at the sites.

Since October 2019, Environmental Compliance Consultancy (ECC) has been conducting different work packages prior to mining, which includes baseline environmental monitoring, specifically air quality. For the air quality component, ECC did deploy eight (8) depositional dust monitoring stations on the 29th October 2019 at locations within and around the ML 204.

4.2.4.2 Results and Findings of the Specialist Study

The main aim of the air quality assessment and modelling of the likely impact of the proposed project in the ML 204 determined the likely contaminant sources, possible pathways and targets with respect to the likely final process designs efficiency.

The completed study found that the general air quality at the sites ranged from 16.61 to 101.88 (mg/m^{2}day) for Rubicon mine and 23.26 to 47.62 (mg/m^{2}day) for Helicon mine while noise levels ranged from 59.8 - 76.2 (dBA) for Rubicon mine and 56.6 - 67.9 (dBA) for Helicon mine. The study has found that the existing air quality and noise pollution are below acceptable limit hence following or adopting the proposed recommendations will help to improve compliance during mining.

DRAFT

Plate 4.1: Rubicon and Helikon dust monitoring stations established within the ML 204 as part of the EIA process (RBS Geotagged Image Series, 2017).

4.2.5 Recommendations on the Climatic Components

Based on the regional climatic data sets and the results of the specialist study, it's likely that a proportion of windblown dust will be generated during the proposed project lifecycle covering exploration, preconstruction, construction, operation, rehabilitation, closure and aftercare stages.

It is hereby recommended that a weather station with dust fallout monitoring equipment be installed at Karibib Project before the implementation of the full-scale mining operations in order to generate long-term local data sets that could be used in the air quality modelling. The Weather station was installed in 2018 and is currently operational. Due to the proximity of other mines and quarries in the area, there will be potential for cumulative impacts on the air quality occurring. This is likely to occur when the threshold wind speed of 4.5 m/s is exceeded. The threshold wind speed is dependent on the erosion potential of the exposed surface, which is expressed in terms of availability of erodible material per unit area. Any factor that binds the erodible material will significantly reduce the availability of erodible material on the surface, thus reducing the erosion potential of the surface. Namibia does not have air quality standards. Nonetheless, the proponent, shall aim at reducing hazardous air pollutant (HAPs) emissions to levels that comply with long-term regional (SADC) and international standards air quality guidelines.

4.3 Ground Component

4.3.1 Topography

The ML 204 falls within the foothills of the escarpment, more specifically within the Otjipatera Mountain Range which has a highest point of 1,989 mamsl. The elevation above sea level ranges from 1,250 m, at the lowest point in the Project area, to 1,709 m at the top of Jiperekkeneberg ridge northeast of the ML area, with an average elevation of 1,300 m. The terrain is rocky and rugged in nature with steep slopes characterising the mountainous sections whilst the foothills of the mountains are flat and gently undulating. The drainage of the area is dendritic in nature with ephemeral streams, often steeply incised, forming small early stage tributaries into the Swakop River which one of the major ephemeral rivers of western Namibia.

4.3.2 Hydrology

The Karibib Project area lies in the Swakop River catchment, a large west flowing ephemeral river of the Country. Southwards flowing ephemeral tributaries of the Swakop River, namely the Audawib and the Omusema, drain the ML 204 area. Elevated areas to the north with exposed basement rocks form a surface water divide. Arid Region Rivers typically show extreme variability with extended dry periods followed by runoff that is rapidly initiated in response to summer rain. Groundwater recharge occurs during these flow events. The safeguarding of the ephemeral drainage system is therefore important for groundwater recharge. There are no natural permanent surface water bodies in the project area. The only large water body on the vicinity is the Swakoppoort Dam built on the Swakop River and is situated 80 km southeast of the ML area.

4.3.3 Regional Geology

The Karibib Project area falls within the Central Zone of the Damara Sequence which underlies most of Namibia (Miller, 1992). The oldest rocks within the Central Zone are the pre-Damaran basement that consists of gneiss and granite lithologies found in different parts of the zone (Miller, 1992).

According to Miller, (1983a), the sequence was deposited during successive phases of rifting, spreading, subduction and continental collision. Much of the basal succession (Nosib Group), laid down in or marginal to intracontinental rifts, consists of quartzite, arkose, conglomerate, phyllite, calc-silicate, subordinate, limestone and evaporitic rocks. Local alkaline ignimbrites with associated subvolcanic intrusions ranging from 840 to 720 million years in age also form part of the regional geology (Miller, 1992).

DRAFT

According to Miller, (1992), widespread carbonate deposition followed and overlapped far beyond early rift shoulders (Kudis, Ugab and basal Khomas Subgroups). interbedded mica and graphitic schist, quartzite (some ferruginous), massflow deposits, iron-formation and local within-plate basic lava point to fairly variable depositional conditions south of a stable platform where only carbonates with very minor clastics occur (Otavi Group). Near the southern margin of the orogen, deep-water fans, facies equivalents of the carbonates were deposited on either side of a Southern Zone ocean separating Kalahari and Congo Cratons (Auas and Tinkas Formations). Thick schistose metagreywacke and metapelite (Kuiseb Formation) overlie the above rocks.

The lithostratigraphy of the Damara Sequence in the Central Zone (CZ) in which the EPL 5439 falls has been reviewed and significantly revised by Badenhorst (1987), who has also correlated the stratigraphy across the Omaruru Lineament. The stratigraphy of the CZ taken from Steven (1993) as slightly modified after Badenhorst, (1987) and (1988) is given in Table 4.1.

Table 4.1: Partial Lithostratigraphy of the Damara Sequence in Central Namibia (Karibib-Swakopmund Area) (Source: Venmyn Deloitte, 2014).

GROUP	SUB-GROUP	FORMATION	THICKNESS (m)	LITHOLOGICAL DESCRIPTION
Swakop	Khomas	Kuiseb	3,000	Biotite-rich quartzo-feldspathic schist, biotite-garnet-cordierite schist, minor amphibolite schist, quartzite, calc-silicate rock and marble.
		Karibib	700	Marble, biotite schist, quartz schist and calc-silicate rock.
		Chuos	700	Diamictite, pebble- and boulder-bearing schist and minor quartzite
	Discordance			
	Ugab	Rössing	200	Very variable marble, quartzite, conglomerate, biotite schist, biotite cordierite schist and gneiss, aluminous gneiss, biotite-hornblende schist and calc-silicate schist.
Unconformity or conformable transition				
Nosib		Khan	1,100	Various gneisses, quartzite, schist, conglomerate, minor marble, amphibolite and calc-silicate rock.
		Etusis	3,500	Layered light-red to greyish-brown quartzites with high feldspar content. In-between para-gneisses, biotite schists and conglomerates occur.

DRAFT

4.3.4 Local Geological Setting

The local geology of the proposed ML area comprises the Karibib Pegmatite Field with pegmatite intrusions hosted in biotite schists and carbonate lithologies of the Karibib Formation, in quartzites of the Chuos Formation, in basement gneisses of the Abbabis Complex and in granites of Damaran age.

According to Smith (1965), Brant (1983) and De Cock (1987), the local geology of the ML area comprises the following lithologies:

- Abbabis Metamorphic Complex made of quartz biotite schists (basement).

- ❖ Damaran Supergroup consisting of metasediments, ortho-amphibolites, markle, quartzite, schists (mica schist, biotite schist, graphitic schist).

- ❖ Various intrusions (gabbros, diorites, granites, pegmatities, and dolerites), and.

- ❖ Alluvival and quaternary sediments overly the local hard rock.

The rocks have undergone polyphase folding with a NE–SW trend. An earlier phase of deformation produced NW trending folds which were later subjected to more powerful stresses producing the dominant NE fold trend.

The mineralised structures within the Karibib Project area are large, internally zoned Lithium- Caesium - Tantalum (Li-Cs-Ta), (LCT) pegmatite. The recent geology map compiled by the Proponent (based on detailed surface geological and structural mapping and on ground magnetic data) indicates that the pegmatite body comprises of stacked sills emplaced within pegmatitic granite. Additionally, large parts of the mineralized areas are covered by thick calcrete and alluvium, thus making surface mapping unreliable in those areas. The geology of the project area consists of:

- ❖ Overburden consists mainly of calcrete and alluvial.

- ❖ The Okongava Diorite: a medium grained diorite displaying evidence of syn-tectonic deformation, and containing xenoliths of older meta-sedimentary.

- ❖ Pegmatitic granites: 2 types occur within the area:

    (i) A porphyritic biotite granite, light orange in colour with centimetre size of K Feldspar or perthite. A medium grained size facies also exists. Most of the pegmatites associated with this type of porphyritic granite are zoned and with lepidolite +- petalite, beryl, tantalite etc. mineralisation, and.

    (ii) A porphyritic leucogranite often associated with black tourmaline. Pegmatites associated to this granite are un-zoned and not mineralised.

Detailed information on the local geology including maps of the ML area for is contained in the Feasibility Study Report and associated supporting Technical Reports available from the Proponent on request.

DRAFT

4.3.5 Geotechnical Engineering Considerations

Rocks of varying geotechnical characteristics are expected within the pegmatite zones and alternating bands within the banded dolomitic marble and biotite-quartz schist country rock and covered by a variety of sediments in some places. No field and laboratory assessment of rock mass and detailed discontinuities survey were undertaken as part of this study. Table 4.2 outlines an indicative classification of the various discontinuities that are likely to be found in the area. Both low and high order discontinuities are likely to be found around the ML area.

Generally, dolomitic marble and biotite-quartz schist have good bearing capacities and depending on the dip and intersections of the various discontinuities, can withstand near vertical steep slopes. The rocks are also suitable for coarse concrete aggregate and some of the more quartz-rich varieties of the country rocks can be used for rock fills in various mine support infrastructural construction activities. The fine aggregates are generally available. The alluvium in the surrounding ephemeral river channels could be used as fine concrete aggregate for potential future mine development. However, these alluvial materials may also be too fine-graded with possibly too high clay content, hence must to be tested before final used in the construction of various structures. Clay and silt are quite common constituents of the alluvial terraces. Salt encrustations on the surface are indicating of the presence of a high content of soluble salts in these formations, which may endanger buried metal drainage pipes.

It's highly recommended that a field-based geotechnical engineering assessment followed by laboratory assessments must be undertaken before the implementation deep excavation in order to have accurate figures of all the key geotechnical parameters.

Table 4.2: General rock structure scheme (Source: Mwiya, 2004).

GEOMETRY				CHARACTERISTIC				
DISCONTINUITY	LENGTH m	SPACING m	WIDTH m	TRANSMISSIVITY m^2/s	HYDRAULIC CONDUCTIVITY m/s	INFILLING THICKNESS m	EXAMPLE	INFLUENCE INDICATOR
LOW ORDER DISCONTINUITIES. ZONES OUTCROPS								
1^{ST} ORDER	$>10^4$	$>10^3$	$>10^2$	10^{-5} - 10^{-2}	10^{-7}- 10^{-5} AV. [10^{-6}]	10^0	Regional major fault systems	4 V. High
2^{ND} ORDER	10^3 - 10^4	10^2- 10^3	10^1 – 10^2	10^{-7} - 10^{-4}	10^{-8} – 10^{-6} AV. [10^{-7}]	10^{-1}	Local major fault zones	
3^{RD} ORDER	10^2 – 10^3	10^1 – 10^2	10^0 - 10^1	10^{-9} – 10^{-6}	10^{-9} – 10^{-7} AV. [10^{-8}]	$\leq 10^{-2}$	Local minor fault zones	
HIGH ORDER DISCONTINUITIES: INDEPENDENT OUTCROPS								
4^{TH} ORDER	10^1 – 10^2	10^0- 10^1	-	-	10^{-11}-10^{-9} AV.[10^{-10}]	-	Local major joint set or bedding	3 High
5^{TH} ORDER	10^0 - 10^1	10^{-1} - 10^0	-	-	10^{-12}-10^{-10} AV. [10^{-11}]	-	Local minor joints/ fractures	
6^{TH} ORDER	10^{-1} - 10^0	10^{-2} – 10^{-1}	-	-	10^{-13}-10^{-11} AV. [10^{-12}]	-	Local minor fissures / schistosity	2 Low
7^{TH} ORDER	$<10^{-1}$	$<10^{-2}$	-	-	$<10^{-13}$	-	Crystalline voids	1 V. Low

4.3.6 Sources of Water Supply

Groundwater as well as surface water (only during the rainy season) from ephemeral river channels is the sources of water supply in the area as well as much of the Erongo Region. According to the Department of Water Affairs, (2001), the Erongo Region and in particular the Karibib and the ML area generally has a low groundwater potential. The area with aquifer potential, more or less reflects the rainfall distribution, decreasing westwards. Knowledge of the aquifers in this area is sparse, due to the low number of boreholes and few on groundwater.

Recharge from rainfall is an important parameter determining the groundwater potential, but the degree of metamorphism affects the groundwater potential too. The groundwater potential of rocks decreases, as the degree of metamorphism increases. Crystalline rocks normally exhibit a very low tendency to store water, typical of the pegmatite zones and the alternating bands within the banded dolomitic marble and biotite-quartz schist found within the project area. The groundwater potential of these rock units is generally low, to locally moderate.

Possible targets for water resources in this area are mainly fractured zones and faults that outcrop on the surface without impermeable infillings. But the success rate and yields for these rock types are generally low. The area along major ephemeral rivers may be more promising due to well developed fractures and faults that give rise to good recharge potential during the rainy season, typical of the local ephemeral spring found within the ML area.

There is a NamWater pipeline from the Swakoppoort Dam which dams the ephemeral Swakop River in the area which supplies water to the Navachab mine. The water supply pipeline dedicated for Navachab Gold Mine is located within the ML area and close to the Rubicon mine site. Arrangements have already been made for NamWater to supply water to the Karibib Project and a pipeline linking the project area to the NamWater pipeline has been installed and operational.

According to the hydrogeological study under undertaken by Hydrosearch in 2017, additional sources of water for the proposed mining operations could be obtained from the available limited groundwater. The groundwater resources are associated with the localised compartments of fractured rock and karstified carbonates. The hard-rock aquifer can supply sustainably at yields of up to 5 m^3/h per borehole as seen from past drilling records.

4.3.7 Evaluation of Water Vulnerability

4.3.7.1 Overview

Vulnerability assessment of surface water covered possible runoff, the presence of source factors and major flow routes such as ephemeral river channels, valleys and gullies as pathways and the presence of surface water body as a target. The groundwater assessments covered hydraulic properties and thickness of the unsaturated and saturated zones derived from geological and hydrogeological data. The assessment of the unsaturated characteristics was based on the ability for source factors to influence the system through known pathway factors such as discontinuities. The combined effects of unsaturated and saturated flow probabilities were used as indicator for groundwater vulnerability. However, groundwater or surface water will only be vulnerable to contamination if there are contaminant sources, if there are pathways for contaminant migration and there are targets (surface water or groundwater) present within the project area.

Overall, the limited local groundwater resources found in the area form part of the unconfined aquifer system that is highly vulnerable to any sources of pollution that maybe associated with the proposed mining operations. During the rainy season, surface water bodies can be found along the major ephemeral river systems in the area with an active local spring. This surface water often recharges the local groundwater resources along the faults, solutions holes and other discontinuities along the ephemeral rivers in the area. Therefore, surface water in the area could be vulnerable to pollution sources from the mining activities. It is important that all polluting activities such as tailings dump for, waste rock stockpile, dirty water pond and ore stockpile must not be placed or undertaken in areas with high discontinuities, valleys or gullies connected to major ephemeral rivers systems in the area.

Management of wastewater from the onsite administration blocks and related infrastructures will utilise French Drains and upgraded waste water treatment during the construction and operational phases respectively. Effective monitoring will need to be put in place to avoid under designing of the facilities that may results in overflow of waste water into the surrounding receiving environment.

4.3.7.2 Water and Phases 1 - 3 Preconstruction and Construction Stages

Based on the hydrogeological baseline assessment and groundwater exploration specialist study undertaken by Hydrosearch 2017, the surface construction of the tailings, dirty water pond, ore stockpile, waste rock dump, plant, haul roads as well as all the various potential seepages that could be associated with the various activities linked to the proposed mine preconstruction and construction activities will not breach to the groundwater levels and into key Ephemeral River channels in the area if all key mitigation measure are implemented as detailed in the ESMP. Therefore, the proposed mining preconstruction and construction activities are not expected to have major negative impacts on the quality and groundwater levels of the proposed project site and surrounding areas.

4.3.7.3 Water and Phases 1 - 3 Operational Stages

The estimated water demand for the proposed Karibib Project is 214 m^3/day. The zone of influence of the likely groundwater level drawdown is not expected to notably impact the water in storage associated with the alluvium of the river channel that flows through the mine area due to the limited hydraulic connection between the alluvial aquifer and the proposed mine workings. This is based on the fact that the river channel material and some of the underlying country rocks are known to have low natural hydraulic conductivity (transmissivity) which will likely limits the interactions between the water contained within the alluvial sands in the river channel, the poor hydraulic properties country rock and the underlying aquifers.

DRAFT

The mine pit surface inflows during the rainy season as well as minor seepage from the waste management area with 15% moisture content and waste rock stockpile, dirty water pond and ore stockpile are likely to be limited and localised. Little contamination is expected to migrate away from the mining area towards the surrounding aquifers. Overall, the proposed mine operational activities are not expected to have major negative impacts on the quality and groundwater levels of the proposed project site and surrounding areas.

4.3.7.4 Water and Rehabilitation, Closure and Aftercare Stages

During the rehabilitation, closure and aftercare stages of the surface construction of the tailings, dirty water pond, ore stockpile, waste rock dump, plant, haul roads as well as all the various potential seepages that could be associated with the various activities of the proposed Karibib Project will not breach to the groundwater levels and into key Ephemeral River channels in the area if all key mitigation measure are implemented as detailed in the ESMP Repot.

4.3.7.5 Groundwater Monitoring Program

A groundwater monitoring program will be implemented for the proposed Karibib Project. Dedicated groundwater level and quality monitoring boreholes around the ML 204 and water abstraction area as well as key surface infrastructure points including the WMA will be installed. The boreholes should aim to monitor the relevant aquifers parameters as detailed in the ESMP Report.

Groundwater samples should be collected for chemical analysis and the depth to groundwater level should be measured on a monthly basis during the first year of monitoring in order to build a baseline that characterise the natural seasonal changes that take place on site. It is recommended that during the first year of monitoring, a full suite of chemical parameters be analysed. Once the initial database is compiled the groundwater level and quality monitoring can be reduced to quarterly intervals. The number of chemical elements that shall be analysed can also be reduced to either reflect the elements as may be specified in both the freshwater and waste water abstraction permits to be issued by the Department of Water Affairs in the Ministry of Agriculture, Water and Land Reform (MAWLR).

4.4 Fauna

4.4.1 Reptiles

The high percentage of endemic reptile species (45.3%) associated with the rocky escarpment region of central western Namibia underscores the importance of this area without formal state protection. The most important species expected to occur in the general area are viewed as the tortoises *Stigmochelys pardalis* and *Psammobates oculiferus*. pythons – *P. anchietae* and *P. natalensis*. Namibian wolf snake (*Lycophidion namibianum*) – *Varanus albigularis* and some of the endemic and little-known gecko species – e.g. *Pachydactylus* species. Tortoises, snakes and monitor lizards are routinely killed for food or as perceived threats. Other important species are those viewed as “rare” – i.e. *Rhinotyphlops lalandei*, *Mehelya vernayi* & *Afroedura africana* – although very little is known about these species.

4.4.2 Amphibians

Of the seven species of amphibians that potentially could occur in the general area of which 2 species are endemic (*Poyntonophrynus hoeschi* and *Phrynomantis annectens*) (Griffin 1998b) and 1 species is classified as “near threatened” (*Pyxicephalus adspersus*) (Du Preez and Carruthers 2009) – i.e. high level (42.9%) of amphibians of conservation value from the general area. With the exception of these important species and due to the fact that there is no open permanent surface water in the area, amphibians are not viewed as very important in the general area.

4.4.3 Mammals

Of the 87 species of mammals known and/or expected to occur in the general Karibib area, 9 species (10.3%) are classified as endemic. Rodents (of which 6 species – 23.1% – are endemic) and bats (of which 1 species is classified as “rare”) are the groups least studied. Species of greatest concern in the

DRAFT

general area are those viewed as “rare” in Namibia – i.e. Namibian wing-gland bat and Southern African hedgehog – and species classified as “near threatened” – i.e. Commerson’s roundleaf bat, striped leaf-nosed bat and brown hyena, leopard – and “vulnerable” by the IUCN (2016) – i.e. cheetah & Hartmann’s mountain zebra.

4.4.4 Birds

At least 217 bird species [mainly terrestrial “breeding residents”] occur and/or could occur in the general Karibib area at any time and include 12 of the 14 Namibian endemics (85.7% of all Namibian endemic species or 5.6% of all the species expected to occur in the area). The most important bird species from the general area are those classified as endemic to Namibia of which the Damara hornbill and Herero chat are viewed as the most important due to the overall lack of knowledge of these species. Although also viewed as important, Rüppels korhaan is migratory throughout its range while the rockrunner inhabits inaccessible terrain and is widespread throughout mountainous areas in Namibia. Other species of concern are those classified as endangered (violet wood-hoopoe, Ludwig’s bustard, white-backed vulture, black harrier, tawny eagle, booted eagle, martial eagle, black stork), vulnerable (lappet-faced vulture, secretarybird) and near threatened (Rűppel’s parrot, kori bustard, Verreaux’s eagle, peregrine falcon, marabou stork) (Simmons *et al.* 2015).

4.5 Flora

4.5.1 Trees/Shrubs and Grasses

At least 91 to 101 larger species of trees and shrubs are known and/or expected to occur in the general area of which 8 species (7.9%) expected to occur in the general Karibib area are classified as endemics, 4 species as near endemics, 23 species (22.8%) are protected by the Forest Act No 12. of 2001 and another 2 species by various other Forestry laws (Curtis and Mannheimer 2005 and Mannheimer and Curtis 2009), 5 species (4.9%) are protected under the Nature Conservation Ordinance No. 4 of 1975 while 6 species (5.9%) are classified as CITES Appendix 2 species. The endemic grass – *Eragrostis omahekensis* – is viewed as the most important species potentially occurring in the general area.

4.5.2 Aloes

Aloes are protected throughout Namibia and potentially occur in the general area. Other Aloes also viewed as important are *Aloe asperifolia*, *A. hereroensis* and *A. zebrina* (Rothmann 2004).

4.5.3 Commiphora

Many endemic Commiphora species are found throughout Namibia with Steyn (2003) indicating that *Commiphora crenato-serrata* potentially also occurring in the general area.

4.5.4 Lithops

Lithops species – all protected (See Nature Conservation Ordinance No. 4 of 1975) – are also known to occur in the general area and often difficult to observe, especially during the dry season when their aboveground structures wither. The closest species are currently only known to occur west of Usakos and include *Lithops gracilidelineata* var. *gracilidelineata* and *L. werneri* (Cole and Cole 2005).

4.5.5 Ferns

At least 64 species of ferns, of which 13 species being endemic, occur throughout Namibia. Ferns in the general Karibib area include at least 15 indigenous species (*Actiniopteris radiata*, *Asplenium cordatum*, *Cheilanthes dinteri*, *C. eckloniana*, *C. marlothii*, *C. parviloba*, *Marselia aegyptiaca*, *M. ephippiocarpa*, *M. farinosa*, *M. macrocarpa*, *M. nubica*, *M. unicornis*, *M. vera*, *Ophioglossum polyphyllum* & *Pellaea calomelanos*) (Crouch *et al.* 2011). The general area is under collected with more species probably occurring in the general area than presented above.

DRAFT

4.5.6 Lichens

The overall diversity of lichens is poorly known from Namibia, especially the coastal areas and statistics on endemicity is even sparser (Craven 1998). More than 100 species are expected to occur in the Namib Desert with the majority being uniquely related to the coastal fog belt (Wirth 2010). Lichen diversity is related to air humidity and generally decreases inland form the Namibian coast (Schults and Rambold 2007). Off road driving is the biggest threat to these lichens which are often rare and unique to Namibia. To indicate how poorly known lichens are from Namibia, the recent publication by Schultz *et al.* (2009) indicating that 37 of the 39 lichen species collected during BIOTA surveys in the early/mid 2000's was new to science (i.e. new species), is a case in point. Lichens are known to occur on rocky terrain in the mountainous terrain in the general area.

4.5.7 Other species

Other species with commercial potential that could occur in the general Karibib area include *Harpagophytum procumbens* (Devil's claw) – harvested for medicinal purposes and often over-exploited and *Citrullus lanatus* (Tsamma melon) which potentially has a huge economic benefit (Mendelsohn *et al.* 2002).

4.5.8 Important Habitat Areas

The most important areas in the Helikon and Rubicon mining areas are:

(i) **Hills**: Rocky areas generally have high biodiversity and consequently viewed as important habitat for all vertebrate fauna and flora. A hill in the Helikon area has a high density of *Aloe litoralis* (protected) as well as *Ficus cordata* (protected), *Sterculia africana* (protected) and *Commiphora glaucescens* (near endemic) individuals (Plate 4.2, Figs. 4.3 and 4.4).

(ii) **Ephemeral drainage lines**: The various ephemeral drainage lines are important habitat to larger trees, especially *Acacia erioloba* (protected), *Euclea pseudebenus* (protected), *Faidherbia albida* (protected) and *Ziziphus mucronata* (protected) (Figs. 4.3 and 4.4).

4.5.9 Conclusions

As all developments have potential negative environmental consequences, identifying the most important faunal species including high risk habitats beforehand, coupled with environmentally acceptable mitigating factors, lessens the overall impact of such development.

Vertebrate fauna species most likely to be adversely affected by the proposed mining/prospecting in the Helikon/Rubicon areas would be sedentary species (i.e. species with limited mobility) such as unique reptiles, Namibian wolf snake, and some of the endemic and little known gecko species, which have not been observed in the proposed mining and processing areas.

Amphibians are not viewed as important in the area and mammals are more mobile and although important species are known to occur and/or pass through the area none are expected to be specifically associated and/or expected to be negatively affected by the developments. Although general disturbances could affect bird species of concern are also mobile and not limited to the area.

Protected flora species are not associated with the development sites. Important areas in the general vicinity are viewed as hills and ephemeral drainage lines.

It is not expected that mining/prospecting developments will adversely affect any unique vertebrate fauna and flora in the Helikon and Rubicon areas.

DRAFT

Plate 4.2: Hill with a high density of *Aloe litoralis* and other protected species on its northern aspect.

Figure 4.3: The patch of *Aloe litoralis* (and other protected species is located on the northern aspect of the hill (red oblong) in the Helikon area. Other important habitats are the hills indicated in white and the ephemeral drainage lines in blue.

Figure 4.4: The important habitats in the Rubicon mining area are the hills indicated in white and the ephemeral drainage lines in blue.

4.6 Socioeconomic Environment of ML Area

4.6.1 Overview

The proposed Karibib Project in the ML 204 falls within the Karibib Constituency, Erongo Region in Namibia. The total area of Karibib Constituency covers 14 535.8 km² amounting to 22.8 percent of the total area of Erongo Region (Republic of Namibia, 2014b). Karibib Constituency is bordered by the Omaruru Constituency in the north, Daures Constituency in the northwest, Arandis Constituency in the southwest and Otjozondjupa and Khomas Regions to the east.

The ML area falls within the Government owned resettlement farmland. The neighbouring farms are privately owned commercial farmland. Cattle and small stock farming are the dominant farming activity in the general ML area.

The risk of farming is viewed as relatively high with the carrying capacity viewed as 20-30 kg/Ha (Mendelsohn *et al.* 2002) or 18-24ha/LAU (van der Merwe 1983). The tourism potential of this area is viewed as moderate to low (Mendelsohn *et al.* 2002, van der Merwe 1983).

The nearest Town to the ML 204 is the mining Town of Karibib. The development of this project will have some socioeconomic contributions to the Town of Karibib which currently is dependent on the Navachab Gold Mine. There will be temporary employment opportunities and workers from the project area will be staying in the Town of Karibib.

Potential for the development of a viable mining project will bring added local benefits and will contribute to the national economy through taxes, royalty and direct investment.

DRAFT

4.6.2 Socioeconomic Baseline Summary

The population of Karibib Constituency is 13 320 which is 8.8 percent of the total Erongo Region population. The Karibib Project is located in the sparsely populated freehold farming area. Karibib Constituency is among the least densely populated area in Erongo Region with a population density of approximately 0.9 persons per km^2. According to socioeconomic baseline report conducted by Lepidico in 2020 covering Karibib, Namdeb, Usakos and Otjimbingwe, the following is the summary of the key socioeconomic information associated with the Karibib Project:

(i) Household socio-demographic characteristic:

- The study revealed a diverse socio-economic profile of inhabitants in the study area while portraying similarities in social setups and lifestyle characteristics.

- In terms of gender of head of household, the study indicated that across target communities 55% and 44.7% of households interviewed were headed by males and females, respectively.

- Households in Usakos (43%) and Otjimbingwe (40.6%) were headed by relatively older people (>56 years of age) whereas the majority of heads of households in Karibib (42%) and Namdeb (30%) were in the age group of 31–40 years.

- In line with the observation that majority (59.4%) of residents in the study area were relatively younger people in the age groups of 18–35 years (accounting for 26.1%) and 36–60 years (33.2%), it turned out that majority of the households (57.9%) were headed by unmarried (single) persons.

- Across target communities, the average size of the household was 5.15, and ranged between 3.6 and 6.3 persons – being slightly higher than the national average. Otjimbingwe had larger household sizes, the largest being 26 members in one household.

- In terms of household composition, Usakos and Otjimbingwe had relatively more female than male adults, accounting for 19.6% vs. 17.1% and 15.3% vs. 12.7%, respectively. In contrast, Karibib and Namdeb had more male than female adults in the ratio of 19.6% vs. 17.2% and 19.6% vs. 11.8%, respectively

- The same trend was noticed for male and female youths across the study areas, with the exception of Karibib where male youths accounted for 10.7% and female youths 15.7%.

- Children accounted for 30.7% (Usakos) to 38.1% (Otjimbingwe), whereas pensioners accounted for 1.3% (Namdeb) to 9.2% (Otjimbingwe) of households.

- Notably, overall the larger segment of persons in households consisted of able bodied persons (59.4%) than children (35.5%) – indicating availability of the critical mass that could be relied upon as labour for various household or community development activities and/or to be tapped into by potential employers, subject to skill-to-job matching.

- The study revealed that out of a total of 767 children, 89 (11.6%) were orphans. Within the study area, Usakos (with 20.5% of children in the household being orphans) had the highest orphans, followed by Namdeb (10.3%), Otjimbingwe (10.2%) and Karibib (4.8%).

- As for disability, the study showed that 3% (65 persons) of the sampled population (n = 2,188) had some form of disability. This figure is slightly lower than the national average of 4.7%.

DRAFT

- In terms of education level of heads of households, one quarter of household heads in Otjimbingwe did not attend any formal education, followed by Usakos (21%), Namdeb (16%) and Karibib (2%). On the same trend, a further 24.4%, 19.5%, 18% and 9.3% of household heads in Otjimbingwe, Usakos, Namdeb and Karibib respectively, ended their academic careers at primary school level.

- Attendance of secondary/high school by unemployed youth in target communities shows statistics that are higher than the national average. For example, on average 40.8% and 46.1% of unemployed female youth (UFY) and unemployed male youth (UMY) respectively, reached Grade 10. A further 34.8% and 34% of UFY and UMY respectively, reached Grade 12.

- In light of education levels as well as the diverse skills and experiences possessed by members of the target community, the study revealed that the target communities would have an abundance of low-skilled and unskilled labour – some of whom can be trained through e.g. on-the-job training, short-courses, and adult learning to assume various roles in different sectors and industries.

- Of particular relevance to Lepidico is the proportion of residents (Karibib – 28%. Namdeb – 18%. and Usakos – 17%) who indicated possession of key experience in mining and/or related fields.

- For convenience and ease of access, over 90% of pre-primary and primary school learners attended schools in their respective towns/places. However, for Namdeb most pre-primary (61.5%) and primary school (92.3%) learners attended pre-primary and primary schools in Karibib because education institutions are non-existent at that settlement.

- As regards to Junior and Senior Secondary (High) School, a similar trend in which town-based (local) schools were generally preferred over schools in other places was observed.

- Of the children (all being in the school-going age) segment within households, 96.8% were enrolled in formal education system, being in concurrence with national average for that age group.

- On average 14%, 34.4%, 21.2%, 24.8% and 2.4% were in pre-primary, primary, junior secondary and senior secondary (high) schools respectively, mainly across the study area.

- The study revealed that income sources were diverse, with a strong bias on social grants which sustained 27.8% of the households.

- Further, study noted that a relatively high number of heads of household in Namdeb (72%), Karibib (38%) and Otjimbingwe (18.9%) had no income. Similarly, majority of other household members did not have incomes – Namdeb (86%), Otjimbingwe (63.9%), Karibib (63.3%) and Usakos (46%).

- The only notable exception was 15% of households who had own businesses for additional income in Usakos. 15% in Otjimbingwe who had members employed as civil servants. and 14.7% who had own businesses in Karibib.

- Social grants were relied upon as the main income source by 52.8%, 41% and 15.3% of households in Otjimbingwe, Usakos and Karibib, respectively. Interestingly, despite having no reliable income, households in Namdeb also do not draw much from social grants, with only 2% drawing benefits from this grant mechanism of the state.

- Formal employment accounted for incomes of only 10.7%, 6.5%, 4% and 0.6% of household heads in Karibib, Usakos, Namdeb and Otjimbingwe, respectively.

DRAFT

- ❖ Reliable farming income was recorded by only 8.3%, 2.5% and 2% of households in Otjimbingwe, Usakos and Namdeb, respectively.

- ❖ Nearly half (48.3%) of the sampled households had a combined monthly income in the range of NAD 0 to 999. This was followed by the income bracket of NAD 1,000 to 2,999 which represented the average of income of 34% of households.

- ❖ Notably, nearly all income-earners (84%) residing at Namdeb are in the lowest income category. On the same trend, 93.9% of income-earners in Otjimbingwe were in the bottom two income categories.

- ❖ These observations, coupled with other findings pertaining to the socio-economic situation of residents, clearly confirm Namdeb and Otjimbingwe (and Usakos, to some extent) as multiple deprivation hotspots requiring massive investments and programs in the social development space to effectively address the plight of those in need.

(ii) Service provision and community needs

- ❖ Majority households and key informants are unsatisfied with municipal services due to a magnitude of reasons. At present, the town/village councils in the target communities do not have the financial resources or the professional and administrative capabilities to fulfil their mandate as perceived by communities.

- ❖ Based on survey findings, 52.5%, 40%, 12% and 36.7% of households in Usakos, Karibib, Namdeb and Otjimbingwe respectively, had access to formal credit facilities and/or financial services (mainly reputable commercial banks, Nampost and a few micro-lenders).

- ❖ Despite the importance of roads, it was evident that the maintenance of roads within the towns of Usakos and Karibib as well as the gravel road between Karibib and Otjimbingwe was sub-standard as per respondent's assertions.

- ❖ About 28.1% of households across the study area owned transport assets.

- ❖ In line with the aspirations of the government – which is to ensure that all Namibians have access to basic services especially water – none of the households confirmed total deprivation from water services.

- ❖ In Usakos, the main water source was piped water connected to dwellings (74.5%) and centralized public taps (24.5%). In Karibib, majority (76%) of residents obtained water from public taps and only 22.7% had piped water (22.7%). Namdeb households largely depended on water provided through water tankers (58%) and natural open water sources e.g. ponds and rivers (28%). In Otjimbingwe, 82.8% obtained water from a public tap, and only 11.1% had water piped into their dwellings.

- ❖ As regards to sanitation, and as judged from the broadest sense of the word, LAs in Karibib and Usakos as well as the settlement administration in Otjimbingwe try their level best to ensure adequate public health conditions, including clean drinking water and acceptable treatment and disposal of human excreta and sewage. However, the LAs have been facing financial challenges which cripple effective service delivery – a key concern being ablution facilities.

- ❖ Considering that a significantly high number of households (Namdeb – 96%. Karibib – 72% and Otjimbingwe – 64.4%) did not have access/own ablution facilities and the fact that most households in the target communities resorted to 'bush/veld toilet' when nature calls, there is a looming danger which may see a repeat of outbreaks (e.g. Hepatitis E) such as those experienced in Windhoek and a few other towns in the recent years.

DRAFT

- ❖ As part of taking early action including associated preventative measures, the above calls for collection action and expedited investments in servicing new townships and settlements while managing rural-urban migration issues – the root cause of the mushrooming of these settlements or "shanty towns".

- ❖ A lot need to be done in the health domain, with staffing, ambulance, mortuary, pharmacies, availability of drugs/vaccines, general health care service (which was reported as poor by some respondents as poor) being among the list of key issues requiring urgent attention.

- ❖ Overall, the main issues that were raised regarding LAs, and on which Lepidico could capitalize included, but not limited to:

  (i) Economic aspects (unemployment, poverty).

  (ii) Insufficient or lack of basic infrastructure (potable water, agro-marketing, irrigation, roads, ablution and sewage, electricity).

  (iii) Amenities (sports and playgrounds, public green areas).

  (iv) Law and order (police station, vehicles).

  (v) Education (teachers, classrooms, equipment, transportation), and.

  (vi) Health (staffing, ambulance, mortuary, pharmacies).

(iii) Prioritised needs of target communities:

- ❖ Target communities had very diverse opinions on development priorities – most of which discern from the perspective of service delivery and general destitution. Below are the top 3 broad categories of prioritized needs:

  (i) Mega projects/investments with high employment creation potential – to be aligned to the relatively abundant and diverse local labour.

  (ii) Well-equipped vocational centres for tailor-made trainings/skills enhancement, targeting unemployed youth, women or any interested community member(s), and.

  (iii) Diversification and value addition initiatives for food security enhancement and poverty alleviation, targeting vulnerable groups and farmers.

4.7 Archaeology

4.7.1 Regional Archaeological Setting

Modern humans and their ancestors have lived in Namibia for more than one million years, and there are fossil remains of lineal hominin ancestors as early as the Miocene Epoch. Namibia has a relatively complete sequence covering the mid-Pleistocene to Recent Holocene period, represented by thousands of archaeological sites mainly concentrated in the central highlands, escarpment and Namib Desert (Fig. 4.5).

The Recent Holocene archaeological sequence in Namibia, i.e. the last 5 000 years, is of particular importance because it provides the background evidence for the development and recent history of the indigenous peoples of Namibia before the advent of written historical records during the colonial era. Many archaeological sites from this period are of great significance to the understanding of Namibian history, and some are considered to be of global importance.

DRAFT

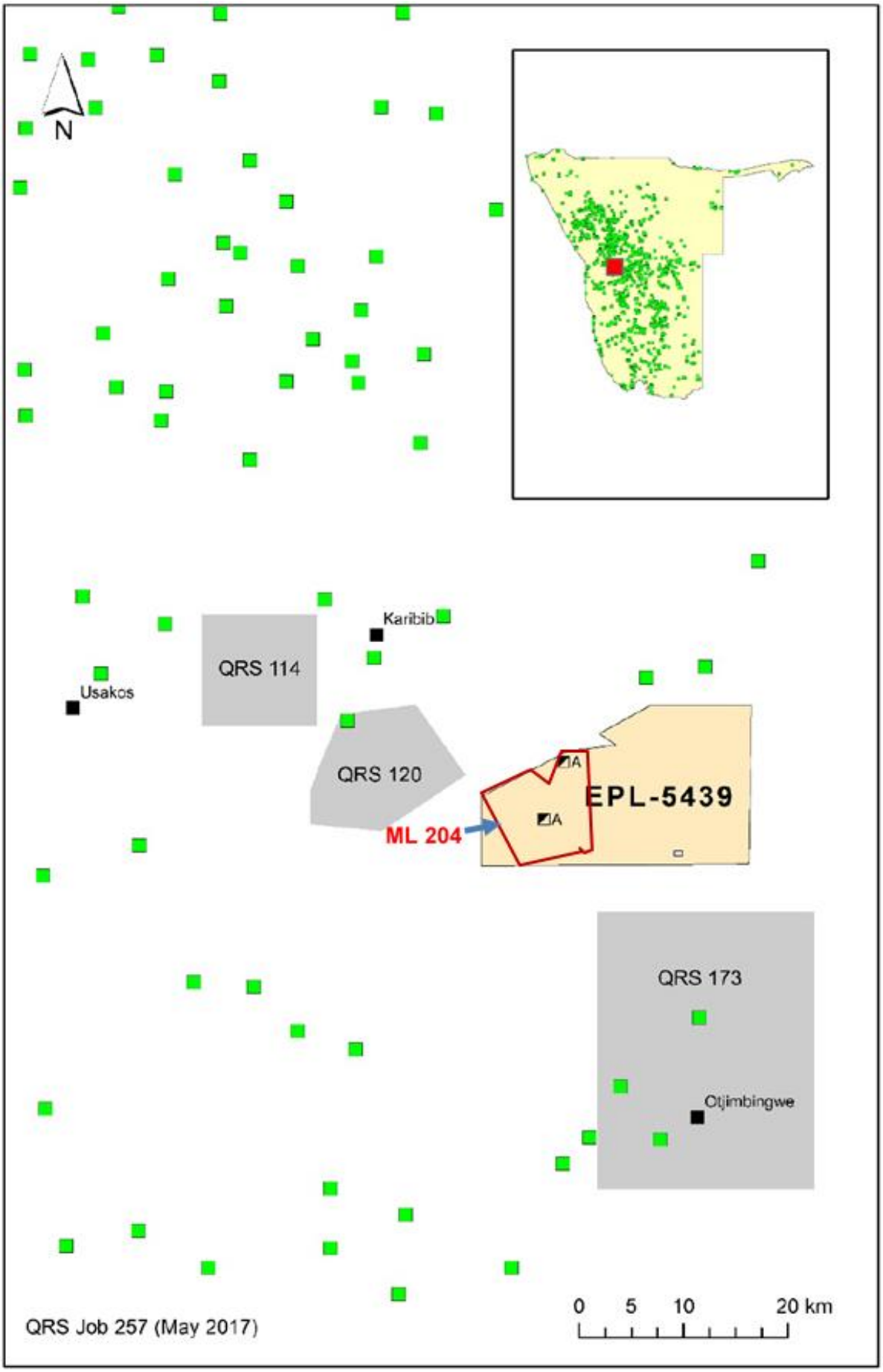

Figure 4.5: The location of the study area in relation to the general distribution of known archaeological sites in west central Namibia (green squares), and showing areas of intensive survey in the vicinity of the license area (represented as shaded grey polygons). The two sites marked A within ML 204 area are the Helikon and Rubicon mines.

4.7.2 Local Archaeological Setting

In summary, the three area surveys previously undertaken in the vicinity of the ML 204 provide new evidence relating to the last one thousand years, with little indication of earlier occupation. The pre-colonial evidence points to impermanent settlement by groups of probably Khoe pastoralists. These people formed part of a regional-scale network with links to the Atlantic coast and inland sites where copper was produced. The large assemblage of ceramic vessels from Habis represent an important addition to the regional archaeological picture. Evidence from the early colonial period relates to mining in the Karibib area and a combination of trade, missionary activity and wagon repair in the Otjimbingwe area. Both Karibib and Otjimbingwe are centres of historical importance and have a number of National Monument sites recognized under the National Heritage Act.

4.7.3 Archaeological Desk Assessment

On the basis of the three previous field surveys it is safe to assume that ML 204 will have some sites of archaeological significance and that these will probably date to the late pre-colonial and early colonial periods. Early colonial remains are expected to be relatively abundant on ML 204, although it is likely that if these are related to historical mining activity, they will form part of the general area of mining interest in the vicinity of the now abandoned Helikon and Rubicon mines. It is expected that the area of mining interest will be extensively disturbed and that little might remain of either pre-colonial or early colonial sites in the near vicinity. It is possible that rocky outcrop areas in the ML 204 will have rock shelters containing stratified archaeological deposits and that there may be some highly significant sites that would require detailed documentation and possibly mitigation measures to be adopted in the event of encroachment by mining activity.

4.7.4 Archaeological Conclusions and Recommendations

According to the archaeological assessment that was undertaken in 2017, the general ML 204 area probably has archaeological potential, although no archaeological sites have been recorded so far from within the ML 204 area itself. The expectation is therefore:

(i) A high likelihood of Holocene age archaeological sites, including rock art, associated with outcropping granite.

(ii) A high likelihood of late precolonial settlement sites throughout the entire tenement, especially in the vicinity of springs and seepages, and.

(iii) A high likelihood of early colonial settlement remains relating to the historical occupation of Karibib and Otjimbingwe.

The following are the key recommended actions related to archelogy in the ML 204area:

(i) Contractors working on the site should be made aware that under the National Heritage Act any items protected under the definition of heritage found in the course of development should be reported to the National Heritage Council.

(ii) The Chance Finds procedure as outlined in the ESMP must be implemented at all times, and.

(iii) Detailed field survey should be carried out when the licence holder has identified specific targets for exploration, and before invasive exploration commences.

DRAFT

5. STAKEHOLDER ENGAGEMENT PROCESS

5.1 Overview

Public consultation and engagement process have been part of the environmental assessment process for this project in line with the provisions of the Environmental Assessment (EA) process in Namibia is governed by the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 gazetted under the Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007) as well as in compliance with Good International Industry Practice (GIIP) as provided for in the EPs 1-12 guidelines.

5.2 Consultation Process

5.2.1 Stakeholders Identification

According to the national EIA Regulations, IFC (2007) and the Equator Principles (www.equator-principles.com), a stakeholder is a persons or group/s who are directly or indirectly affected by a project, as well as those who may have interests in a project and/or the ability to influence its outcome, either positively or negatively

During the life of the Karibib Project, this Mine Closure Plan will be subjected to ongoing stakeholder consultation process with the key stakeholders such as the land owner (the Government), Ministry of Mines and Energy (MME), Ministry of Environment, Forestry and Tourism (MEFT), Ministry of Agriculture, Water and Land Reform (MAWLR). Institutional and key stakeholders will be invited to submit written comments / inputs / comments with respect to the Karibib Project Closure Plan and this will be a process that will be repeated during each annual reviews and updates that will be undertaken annually, as may be applicable.

During each annual reviews and updates as may be applicable, stakeholders identification process will be undertaken. The overall rational of undertaking stakeholders identification process will be to make sure that a clear picture of who should be involved/consulted in the engagement process and at the earliest stage of the proposed project implementation stage. The main aim is to find the right mix of participants, and ensure that no group is inadvertently (or perhaps, intentionally) excluded, in order to provide legitimacy and credibility to the engagement process and the Karibib Project Closure Plan.

5.2.2 Defining Stakeholders

Whilst no engagement process is the same (being determined by the individual context and scope of the project or issue), there are some general principles for identifying appropriate participants.

Based on past experiences and in line with new Environmental Regulations, below are some specific questions which Risk-Based Solutions (RBS) uses to ensure that no important stakeholder is forgotten:

- Who is directly responsible for the decisions on the issues?
- Who is influential in the area, community and/or organisation?
- Who will be affected by any decisions on the issue (individuals and organisations)?
- Who runs organisations with relevant interests?
- Who is influential on this issue?
- Who can obstruct a decision if not involved?
- Who has been involved in this issue in the past?
- Who has not been involved, but should have been?

DRAFT

- It is also useful to consider categories of participants, which would include:
    - A sample representative from the wider public (whether or not they directly affected by the issue).
    - Those particular sections of the public directly affected by the issue.
    - Statutory consultees.
    - Relevant government organisations.
    - Special interest groups, local or national NGOs, trade associations, and unions representatives, and.
    - Individuals with particular expertise (technical or personal).

5.3 Stakeholders

5.3.1 Key Stakeholders List

In accordance with the provisions of the national regulations and EPs requirements, the identification and assessment of stakeholders, and issues of importance to them, is key step in the implementation of the Karibib Project Closure Plan.

Stakeholders identified have been split into various categories as shown in Table 5.1. Table 5.1 shows a list of potential stakeholder institutions / organisation/ community that will be annually contacted / engaged / consulted as part of the implementation of the Karibib Project Closure Plan.

Table 5.1: List of stakeholders that will be annually contacted / engaged / consulted as part of the implementation of the Karibib Project Closure Plan.

STAKEHOLDER GROUP	STAKEHOLDERS CATEGORY
Land owner	Government of the Republic of Namibia (Ministry Agriculture, Water and Land Reform)
Central Government Ministries	Ministry of Mines and Energy
	Ministry of Environment, Forestry and Tourism (MEFT)
	Ministry Agriculture, Water and Land Reform
	Ministry of Health and Social Services
	Ministry Labour and Social Welfare
	Ministry of Urban and Rural Development
Regional Government	Erongo Regional Council
Local Government	Karibib Town Council
Local Farm Okongava Stakeholders	Local farmers, Otjimbingwe Community Leaders / Traditional Authority / Ministry Agriculture, Water and Land Reform
State Owned Enterprises	NamWater
	NamPower
	Namibia University of Science and Technology (NUST) and University of Namibia (UNAM)
Employees and Labour matters	Mine Employees and Trade Unions
National Non-Governmental Organisations (NGOs) and Community Based Organisations (CBOs)/ Individual Activist/ Advocates	Environmental and community activist and advocates

DRAFT

5.3.2 Detailed Review and Analysis of Stakeholders

Risk-Based Solutions has identified the following stakeholder groups with respect to the implementation of the Karibib Project Closure Plan by Lepidico Chemicals Namibia (Pty) Ltd, and each of these groups is discussed in greater detail below:

- Land owner.
- Central, regional and local Governments.
- Local Farm Okongava Stakeholders.
- Project personnel / employees, and.
- Trade unions, NGOs and conservation organisations \ groups.

The identification and assessment of the above listed stakeholders groups and issues of importance to them, is key step in the implementation of the Karibib Project Closure Plan. Table 5.2 summarises the assessment of the key stakeholders in terms of their likely interests and roles to the implementation of the Karibib Project Closure Plan.

Central government, local governments, politicians, local communities as well as local and perhaps even international environmental groups will all be part of the consultative process with respect to the implementation of the Karibib Project Closure Plan as indicated in Table 5.2.

Very often, however, the outcome of conflicts in the planning process will depend on the relative strength or power of the contestants rather than knowledge and understanding of the problem. Political conflicts involve ideologies, institutions and interests. Ideological conflicts can be divided into political, environmental and communities' segments based on the author's working experience in Namibia.

Institutional conflict often occurs at different levels of authority between local, regional and central Governments, labour unions, environmental groups and international agencies. In every environmental conflict opposing interests are often represented, -on the one-hand interests in profits, jobs and wealth creation and on the other, interests in amenity, health, sustainable utilisation of natural resources and the survival of ecosystems.

These interests though frequently the source of conflict, are not always mutually exclusive. In general, current political trends appear to focus on job creations, wealth, environmental sustainability and climate change resilient.

However, environmental and climate change resilient interests are also economic interests and the conservation of resources, the survival of ecosystems and the health of the population all have essential roles in the maintenance of the local, national, regional and global economies.

DRAFT

Table 5.2: Results of the stakeholders groups in terms of interest and roles with respect to the implementation of the Karibib Project Closure Plan.

STAKEHOLDER GROUP	STAKEHOLDERS CATEGORY	INTEREST (Positive / Negative)	POTENTIAL ROLE IN THE PROJECT	IS IT A KEY STAKEHOLDER
Land Owners	The Government of the Republic of Namibia (Ministry of Agriculture, Water and Land Reform)	Positive / Neutral	Ministry of Agriculture, Water and Land Reform have legitimate concerns \ key issues that could affect the sustainability of their livelihood with respect to the pre and post mining land uses. The key roles of the land owners with respect to the implementation of the Karibib Project Closure Plan will be protect all their business\ investments, environmental, socioeconomic interests during and after mining operations	YES
Central Government Ministries	Ministry of Mines and Energy	Positive	The Competent Authority with respect to minerals prospecting and mining activities in Namibia through the administration of the Minerals (Prospecting and Mining) Act (No 33 of 1992) as the most important legal instrument governing the mining industry and specifically the implementation of the Karibib Project Closure Plan. According to Section 54 (3) of the Act it obliges licence holders, on announcement of abandonment, to demolish accessory works, remove all debris and other objects brought onto the land, and to take the necessary steps to remediate 'to the reasonable satisfaction' of the Minister of Mines any damage to the environment. Section 57(1) of the Minerals Act requires licence holders to apply 'good mining practices' with respect to environmental protection, natural resource conservation and the removal of accessory works or other goods that were erected, constructed or brought on the land for the mining activities.	YES
	Ministry of Environment, Forestry and Tourism (MEFT)	Neutral	Oversees the EIA Permitting process, reviews and issues Environmental Clearances Certificate in line with the requirements of the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 and Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007). Has a major role and need to be consulted in the implementation of the Karibib Project Closure Plan with respect to the pre-and post-mining environmental management and monitoring as well as funding and management of the aftercare environmental liabilities	YES
	Ministry of Agriculture, Water and Land Reform	Neutral / Negative	The Competent Authority responsible for the promotion, development, management and utilisation of agriculture, water and land resources. Has a major role and need to be consulted on the implementation of the Karibib Project Closure Plan with respect the post mining land use for agriculture, water resources protection and monitoring as well as permitting requirements for freshwater abstraction and waste water discharges.	YES
	Ministry of Health and Social Services	Neutral	Is the public provider of health and social welfare services in Namibia with respect to: Primary health care services, integrated system of referral and supervisory support for primary health care services, provision of social welfare and rehabilitative services and health and social services reforms. The short and long-term health and care of Namibians who will be working for the Karibib Project and the subsequent closure of the mine is of vital important. The Ministry shall be consulted with respect to the implementation of the Karibib Project Closure Plan on matters related to the long-term health and social welfare of the employees.	YES
	Ministry of Labour, Industrial Relations and Employment Creation	Neutral	All labour matters during the operation of the mine and the mine closure compensation and social welfare of the employees are handled by the laws and regulations under this Ministry. The Ministry shall be consulted at all times in implementation and review of the Karibib Project Closure Plan with respect to employees issues including the need for retrenchments at mine closure.	YES
	Ministry of Urban and Rural Development	Positive/ Neutral	Responsible for coordination and spearheading the decentralisation process. It provides administration support to regional and local governments and can provide a supporting role where there need to engage a regional or local authority on matters related to the proposed project and implementation of the Karibib Project Closure Plan. Has very limited role in the project but need to be consulted as part of the awareness of issues involved in implementation of Karibib Project Closure Plan especially the management of environmental liabilities.	YES

DRAFT

Table 5.2: *Cont.*

STAKEHOLDER GROUP	STAKEHOLDERS CATEGORY	INTEREST (Positive / Negative)	POTENTIAL ROLE IN THE PROJECT	IS IT A KEY STAKEHOLDER
Regional Government	Erongo Regional Council	Positive	Responsible for driving regional socioeconomic development and economic diversifications. Need to be consulted as part of the awareness of issues involved in proposed project and implementation of the Karibib Project Closure Plan and are always very supportive to any regional development. Will likely issue supportive opinion on successful implementation of the Karibib Project Closure Plan.	YES
Local Government	Karibib Municipality	Positive	Renders local services and runs the affairs of the local government and supports business development. All the local governments support development including the diversification of their local economies. They provide key services necessary for the proposed project and implementation of the Karibib Project Closure Plan. Need to be consulted as part of the awareness of issues involved in the implementation of the Karibib Project Closure Plan and will likely issue opinion which are supportive to the local development but also critical of local community unemployment after mine closure. Employees re-skilling will be vital in the implementation of the implementation of the Karibib Project Closure Plan.	YES
Local Farm Okongava Stakeholders	Local farmers, Otjimbingwe Community Leaders / Traditional Authority / Ministry Agriculture, Water and Land Reform	Negative / Positive	Local Farm Okongava Stakeholders comprising of the local farmers currently occupying some parts of the farm although without the authority of the land owner, the Ministry Agriculture, Water and Land Reform. The Otjimbingwe Community Leaders / Traditional Authority come authorised the local farmers to settle on the Farm. As such the potential roles of the Local Farm Okongava Stakeholders group in the proposed Karibib Project is mixed because the group comprises different subgroup with different interests, authority and assumed authority	YES
Selected Key State-Owned Enterprises	NamPower and NamWater	Negative	Responsible for bulk electricity and water supply respectively. The implementation of the Karibib Project Closure Plan will require the inputs of NamPower and NamWater with respect to the safety and security of high voltage electricity and bulk water supply infrastructures. Prior to the removal of all the bulk electricity and water supply infrastructures, NamPower and NamWater will be required to switch-off the power and water supplies to the mine and remove their infrastructures as may be required.	YES
	Namibia University of Science and Technology (NUST) and University of Namibia (UNAM)	Neutral	Namibia University of Science and Technology (NUST) and University of Namibia (UNAM) will have great research interest in the implementation, short and long-term outcomes of the Karibib Project Closure Plan.	YES
Mine Employees and Trade Unions	Mine Workers Union and Employees	Negative	Trade unions will want to protect the interest of the workers and the employees will also want to be sure that their interests are protected within the framework of the Karibib Project Closure Plan. The implementation of the Karibib Project Closure Plan and the subsequent reviews and updates must always involve the inputs of the workers and mine workers union for transparency. The need for retrenchments at mine closure shall always be discussed with the employees and unions well in advance where possible before such retrenchment processes are implemented.	YES
NGOs and CBOs/ Individual Activist/ Advocates	Environmental and community activist and advocates	Negative	Environmental and community activist and advocates will strive for the long-term sustainable of the receiving environment and greater socioeconomic benefits to the local community. The implementation of the Karibib Project Closure Plan and the subsequent reviews and updates must always involve the inputs of the Non-Governmental Organisations (NGOs) and Community Based Organisations (CBOs) for transparency.	YES

DRAFT

5.4 Stakeholders Analysis Matrix Results

5.4.1 Stakeholders Analysis Matrix

Stakeholder matrix analysis has been conducted in line with the provisions of the EIA Regulations 2012 and is based on the results of the stakeholder identification and assessments shown in Tables 5.1 and 5.2 respectively.

The analysis has been done by defining the capacity of each stakeholder group to influence the proposed project, the potential impact that the proposed project activities may have on each stakeholder group with respect to the implementation of the Karibib Project Closure Plan (Table 5.3).

Fig. 5.1 shows how each stakeholder group is located on an analysis grid depending on their relative influence and potential impact received from the project and the anticipated role with respect to the implementation of the Karibib Project Closure Plan.

Table 5.3: Results of the stakeholder analysis matrix.

Number	Stakeholder Group	Stakeholders Category	Stakeholder Influence on the Project	Potential Impacts on the Stakeholder
1.	Land owner	Government of the Republic of Namibia (Ministry Agriculture, Water and Land Reform (MAWLR))	Negative	Negative \ Positive
2.	Central Government Ministries	Ministry of Mines and Energy (MME)	Positive	Positive
		Ministry of Environment, Forestry and Tourism (MEFT)	Neutral	
		Ministry Agriculture, Water and Land Reform (MAWLR)	Neutral \ Negative	
		Ministry of Health and Social Services (MHSS)	Neutral	
		Labour, Industrial Relations and Employment Creation (MOL)	Neutral	
		Ministry of Urban and Rural Development	Neutral	
3.	Regional Government	Erongo Regional Council	Positive	Positive
4.	Local Government	Karibib Municipality	Positive	Positive
5.	Local Farm Okongava Stakeholders	Local farmers, Otjimbingwe Community Leaders / Traditional Authority / Ministry Agriculture, Water and Land Reform	Negative / Positive	Negative / Positive
6.	State Owned Enterprises	NamWater	Positive	Positive
		NamPower	Positive	Positive
		Namibia University of Science and Technology (NUST) and University of Namibia (UNAM)	Positive	Positive
7.	Mine Employees and Trade Unions	Labour matters	Positive \ Negative	Positive \ Negative
8.	National Non-Governmental Organisations (NGOs) and Community Based Organisations (CBOs)/ Individual Activist/ Advocates	Environmental and community activist and advocates	Negative	Negative

DRAFT

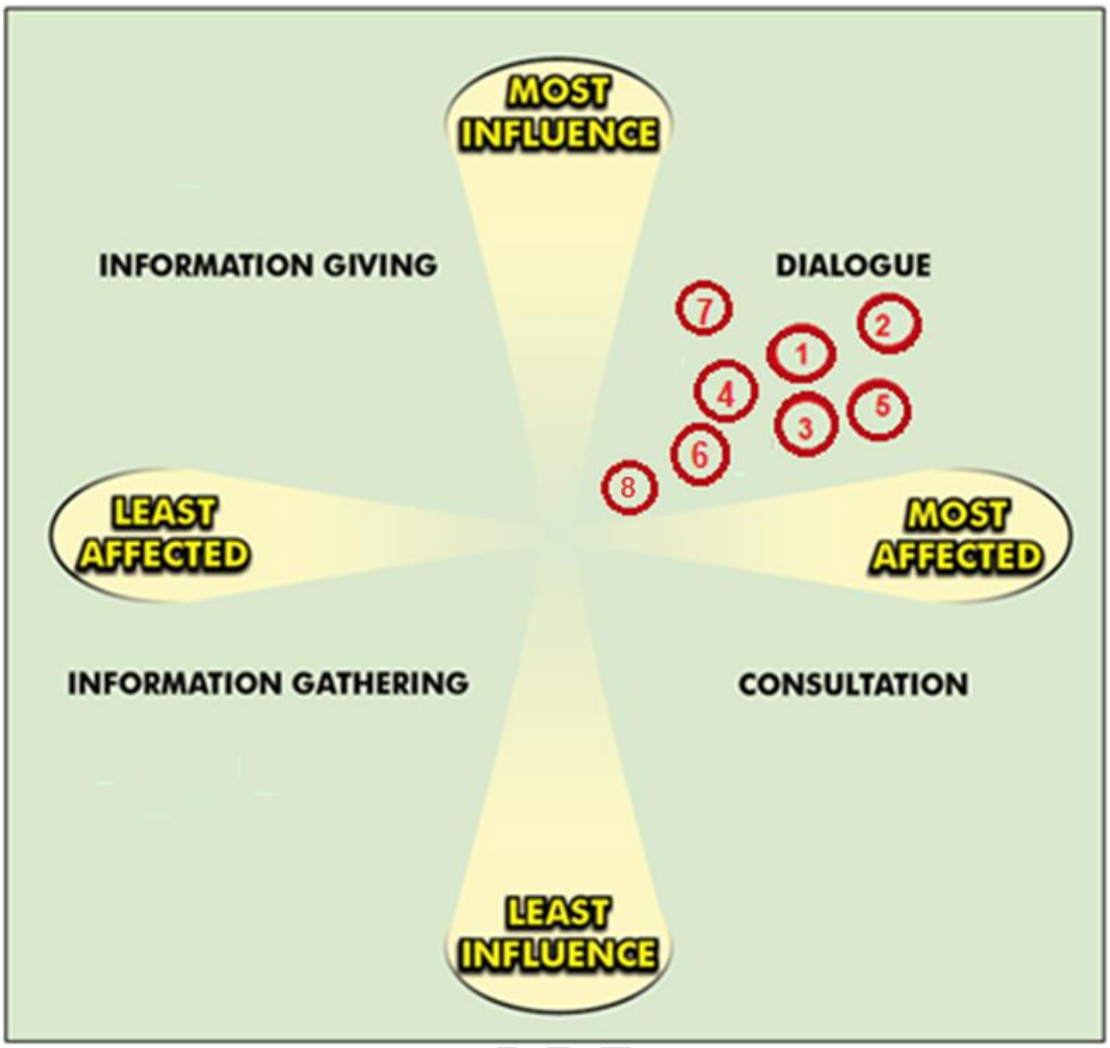

Figure 5.1: Analyses grid of stakeholders groups.

5.4.2 Overall Results of the Stakeholders Analysis Matrix

The following conclusions have been drawn from the stakeholder analysis matrix shown in Table 5.3 and Fig. 5.1 with respect to the implementation of the Karibib Project Closure Plan:

(i) The project should focus on establishing a fluent dialogue with all the stakeholders groups, and.

(ii) The project should establish an interactive consultation with all the stakeholders groups.

5.5 Key Issues

5.5.1 Summary of Key Issues

Overall, the proposed Karibib Project mine will address the environmental scars created by historical exploration and mining dating back to the 1930s that left open inclined shafts, scrap materials and decaying buildings around some portions of the local Farm area within the ML 204.

Furthermore, the proposed Karibib Project will have the following socioeconomic effects on the local farm area, Town of Karibib, Erongo Region and Namibia:

(i) **Positive Impact**

- Provide direct and many more indirect jobs to local Namibians.

- Socioeconomic benefits including upgrading and installation of road and water infrastructures in the local farm area for greater benefits of the local community.

- Greater environmental benefits and Government financial savings through remediation of the targeted previously abandoned and unrehabilitated mine sites around the ML area.

- Value addition to the tailings and in-situ potential underground minerals resources in the area which otherwise would not have been known if the proposed mining and ongoing exploration activities in ML 204 did not take place.

- Through ongoing exploration and the potential discovery of additional economic minerals resources and the expansion of the proposed mining and minerals processing operations will have much greater local (Karibib Area), regional (Erongo Region) and national (Namibia) socioeconomic benefits.

- Additional socioeconomic benefits will also be realised at regional and national levels in terms of capital investments, license rental fees, royalties payable to Government, export earnings, foreign direct investments and various taxes payable to the Government, and.

- Contribute to the realisation of the industrialisation agenda for Namibia through the establishment of a lithium concentrate processing plant in Namibia with lithium being critical to the global development of the lithium battery and electric vehicle industry which is highly vital to the global Climate Change adaption and mitigation measures.

(ii) **Negative Impacts:**

- Land use changes from historical exploration and mining to agriculture and now from agriculture back to exploration and mining.

- Large construction developments could cause sudden in-flux of jobseekers to the Town of Karibib and potential illegal land occupiers of the local farm area around the mine, increasing the already large informal populations with resultant higher HIV/Aids risks, crime rates, poaching incidences, deforestation and increased demand for limited local resources such as land, water and energy.

- An increase in workforce will result in an increase in the need for housing, school placements, infrastructure and health services in the Town of Karibib.

- Increased demand for water and the wise use of water needs to be promoted, and.

- Increased traffic, especially heavy vehicles using public roads and road safety concerns.

The summary assessment of the key potential environmental concerns during the site preparation and the construction of mine infrastructures including test mining operations are shown in Table 5.4.

Table 5.5 summarise the key potential environmental concerns during mine operation, ongoing monitoring and rehabilitation, decommissioning, closure and aftercare stages.

DRAFT

Table 5.4: Summary of key potential environmental concerns during site preparation and the construction of mine infrastructures including test mining operations.

Potential Sources of Concern	Nature of Potential Concern	Assessment	Significance
Climate Change and Air Quality			
1. Operation and maintenance of vehicles and any on-site power generation facilities	❖ Potential releases of particulate matter, carbon monoxide, oxides of nitrogen, sulphur dioxide, and volatile organic compound	Negative Impacts	Localised Low Impacts
2. Fuel and chemical transportation, handling and storage	❖ Potential releases of volatile organic compounds and other harmful substances		
3. Site preparation and construction activities	❖ Potential releases of particulate matter		
Surface (Local Ephemeral River) and Ground Water Vulnerability			
1. Operation and maintenance of vehicles and any on-site power generation facilities	❖ Potential releases of substances such as suspended solids, trace metals, oil, degreasers, and detergents and other harmful substances that could affect water quality and aquatic ecosystems	Negative Impacts	Localised Low Impacts
2. Fuel and chemical transportation, handling and storage	❖ In the event of spills, potential releases of petroleum products or chemicals that could affect surface waters or groundwater as well as aquatic ecosystems		
3. Site preparation and construction activities	❖ Potential release of sediments, increasing concentrations of total suspended solids in receiving waters		
4. Sewage and wastewater disposal	❖ Potential releases of nutrients and other contaminants		
5. Construction of site access roads, water supply infrastructure and powerlines	❖ Potential release of sediments along the routes, increasing total suspended solids in receiving waters ❖ Potential for acidic drainage if sulphide-bearing minerals are exposed during construction ❖ Stream crossings for access roads may affect aquatic ecosystems ❖ Increased road access in remote areas may lead to increased illegal hunting, poaching and collection of exotic fauna and flora species		
Soil Quality and Terrestrial Ecosystems			
1. Fuel and chemical transportation, handling and storage	❖ In the event of spills, potential releases of petroleum products or chemicals that could affect soils, vegetation and wildlife	Negative Impacts	Localised Low Impacts
2. Operation of vehicles	❖ Vehicle operations may result in collisions with wildlife ❖ Increased noise could disrupt wildlife		
3. Site preparation and construction activities associated with the proposed mining and exploration activities	❖ Clearing of vegetation around mining and exploration sites may have impacts on biodiversity, particularly if any rare, threatened or keystone species are present ❖ Activities may disrupt and dislocate local wildlife and any migratory wildlife in the area ❖ Some animals may be drawn to the site as a result of improper waste disposal or kitchen odours, which could lead to potential hazards for both workers and the animals		
4. Construction / upgrading of the main access, new powerlines and water supply infrastructure	❖ Construction activities may disrupt and dislocate wildlife and any migratory wildlife in the area ❖ Increased road access in remote areas may lead to increased hunting, stressing wildlife populations ❖ Vehicle operations may result in collisions with wildlife		
Noise			
1. Noise from construction activities, including vehicle operations, drilling and blasting	❖ Noise may affect local wildlife populations, and well as people living in communities near the exploration / mining activity	Negative Impacts	Localised Low Impacts

DRAFT

Table 5.5: Summary of key potential environmental concerns during mine operation, ongoing monitoring and rehabilitation, decommissioning, closure and aftercare stages.

Potential Sources of Concern	Nature of Potential Concern	Assessment	Significance
All others Impacts			
Land disturbance	Footprints of the mining and minerals processing facilities, exploration and mine supporting infrastructures	Negative Impacts	Localised Low to Medium Impacts
New waste management area	Can require large area. involves movement of materials, runoff and leachate management during the rainy season, dusting and aesthetic considerations		
Reclamation	Both mine and waste rock area can represent major concerns due to the extent of the waste rock and pit areas and other mine supporting infrastructure footprints.		
Slope Instability / Rock falls	Mining pits, waste management area and other excavations slope stability and potential failures are major challenges		
Noise and dust	Pits operations, haulage roads, waste rock / stock piles and normal plant operations, equipment and vehicles movement around the mine site and between pit areas and waste rock dumps and mill can be a source of dust and noise		
Blasting effects	Noise and vibration can be a concern requiring careful management		
Mine water	Mine water volume influenced by precipitation, surface and groundwater ingress. Elevated metals levels from the operations is a concern. Mine water may contain high metals contents.		

DRAFT

5.5.2 Mine Closure Mitigation Measures

The implementation of the Karibib Project Closure Plan shall aim at minimising and maximising the likely effects of negative and positive impacts respectively. The following is the summary of the Karibib Project Closure Plan mitigation measures to be adopted in order of preference:

(i) Enhancement, e.g. provision of new habitats.

(ii) Avoidance, e.g. sensitive design to avoid effects on ecological receptors.

(iii) Reduction, e.g. limitation of effects on receptors through design changes. and

(iv) Compensation, e.g. community benefits.

5.5.3 Stakeholder Complaints and Response Process

All complaints received in relation to the implementation of the Karibib Project Closure Plan will be handled through the Complaints Management Procedure of completing a formal grievance form as shown in Table 5.6. Complaints for example could be the land owner not happy with the dust being generated from the mine during rehabilitation post closure, or just dust generated because rehabilitation outcomes have not been achieved. It is the responsibility of the Site Manager or Community Liaison Officer to file and provide responses to stakeholders complaints.

Table 5.6: Sample of the grievance form.

Name of Commenter/Aggrieved			
Name of Organisation/Position			
Address			
Telephone/Fax			
Email Address			
Most Effective Means to Send a Response	Hand Delivery	Email	Phone
Date of Comment/Grievance			
Date Inputted			
Nature and Location of Comment/Grievance			
Received By			
Initial Response Details and Sent By:			
Date of Initial Response			
Resolved/Addressed By			
Nature of Resolution			
Date of Resolution			
Signed By: CLO?			

DRAFT

6. KARIBIB PROJECT CLOSURE PLAN BUSINESS PLAN

6.1 Implementation Steps of the Karibib Project Closure Plan

The Karibib Project Closure Plan provides a detailed plan of actions and commitments required in the implementation of the mitigation measures for minimising and maximising the identified negative and positive impacts respectively, throughout the lifecycle of the proposed Karibib Project.

The Karibib Project Closure Plan gives commitments including financial and human resources for effective management of the likely environmental liabilities throughout the proposed Karibib Project lifecycle.

Regular assessments and evaluation of the environmental liabilities during the mining stage shall be undertaken to ensure that adequate provision of the necessary resources towards good environmental management at various stages of the project development.

The Karibib Project Closure Plan Mine activities consist of following five (5) steps that will be implemented by Lepidico and where applicable in consultation with the key stakeholders:

(i) Ongoing rehabilitation: This will be implemented during the exploration phase and from day one (1) of the mine starting to produce coupled with the recruitment of a new workforce. Unwanted exploration and mine sites excavated or disturbed during the mine operation phase will not wait the final mine closure rehabilitation but will be attended to as ongoing activities and financed within an ongoing annual mine operational budget allocation.

(ii) Mine closure: Once production stops, the number of workers will be reduced and a small labour force will be retained to permanently shut down the mine. The mining company may have to provide re-training or early retirement options to their workers before the mine is closed. The cost of the re-skilling, early retirement and retrenchments will be funded from the Final Karibib Project Closure Plan budget allocations.

(iii) Decommissioning: Will be undertaken by a small crews or contractors who will be responsible for decommissioning or taking apart the mining supporting infrastructure such as the processing facilities and equipment. Pipelines will be drained, equipment and valuable parts will be cleaned and may be sold, buildings will be repurposed or demolished, warehouse materials will be recovered, and waste will be disposed of. The cost of the decommissioning will be funded from the Final Karibib Project Closure Plan budget allocations.

(iv) Final rehabilitation\Remediation\reclamation: The objective of reclamation will be to return the Mining License (ML) area to an acceptable standard of socioeconomic use, ensuring that any landforms and structures are stable, and any watercourses are of acceptable water quality. Reclamation will involve a number of activities such as removal of any hazardous materials, reshaping the land, restoring topsoil, and planting native grasses, trees, or ground cover as may be applicable. The cost of the remediation/reclamation will be funded from the Final Karibib Project Closure Plan budget allocations, and.

(v) Post-closure and aftercare including monitoring: Monitoring programmes will be used to assess the effectiveness of the reclamation measures and to identify any corrective action that may be needed during the post closure and aftercare stage. In addition, the Karibib Project will also require long-term care and maintenance after mine closure such as ongoing treatment of mine discharge water, periodic monitoring and maintenance of tailings containment structures, and monitoring any ongoing remediation technologies that have been implemented. The aftercare period will run for period of between two (2) to five (5) years or as may be agreed with the stakeholders especially the land owners and relevant Government regulators such as MME, MEFT and MAWLR. The cost for post-closure and aftercare will be funded from the Final Karibib Project Closure Plan budget allocations.

Table 6.1 provided a summary of components to be addressed in the ongoing and final mine closure phase.

DRAFT

Table 6.1: Mitigatory measures that will address ongoing and final mine Closure Plan.

Components	Aspects to be Addressed
Rubicon and Helikon 1 Pit Areas	○ Pits stability ○ Groundwater and rainwater management ○ Security and unauthorised access ○ Wildlife entrapment ○ Effects of drainage into and from the workings
Ore Processing Facilities	○ Removal of buildings and foundations ○ Clean-up of workshops, fuel and reagent ○ Disposal of scrap and waste materials ○ Re-profiling and revegetation of site
Waste Management Areas	○ Slope stability ○ Effects of leaching and seepage on surface and groundwater ○ Dust generation ○ Visual impact
Water Management Facilities	○ Restoration or removal of dams, reservoirs, settling ponds, culverts, pipelines, spillways or culverts which are no longer needed ○ Surface drainage of the site and discharge of drainage waters ○ Maintenance of water management facilities
Landfill / Waste Disposal Facilities	○ Disposal or removal from site of hazardous wastes ○ Disposal and stability of treatment sludge ○ Removal of sewage treatment plant ○ Prevention of groundwater contamination ○ Prevention of illegal dumping ○ Security and unauthorized access
Infrastructure	○ Removal of power and water supply ○ Removal of haul and access roads ○ Reuse of transportation and supply depots

DRAFT

6.2 Roles and Responsibilities

6.2.1 Project Manager (PM)

The **Project Manager (PM)** will have the following responsibilities with respect to the Karibib Project Closure Plan implementation and monitoring for ongoing rehabilitation, mine closure, decommissioning, remediation/reclamation and post-closure and aftercare activities:

- ❖ Act as the site project manager and implementing agent.
- ❖ Ensure that the responsibilities of Lepidico Chemicals Namibia (Pty) Ltd are executed in compliance with the relevant legislation.
- ❖ Ensure that all the necessary environmental authorisations and permits have been obtained.
- ❖ Assist the contractor/s in finding environmentally responsible solutions to challenges that may arise.
- ❖ Should the PM be of the opinion that a serious threat to, or impact on the environment may be caused by the ongoing Karibib Project Closure Plan activities, he/she may stop work and Lepidico Chemicals Namibia (Pty) Ltd and key stakeholders as may be applicable shall be informed of the reasons for the stoppage as soon as possible.

- ❖ The PM has the authority to institute disciplinary proceedings in accordance with the provisions of the national laws for transgressions of basic conduct rules and/or contravention of the site policy.

- ❖ Should the Contractor or his/her employees fail to show adequate consideration for the environmental aspects related to the Karibib Project Closure Plan, the PM can have person(s) and/or equipment removed from the site or work suspended until the matter is remedied.

- ❖ Maintain open and direct lines of communication between the stakeholders, as well as any other identified Stakeholders with regards to environmental matters of the Karibib Project Closure Plan, and.

- ❖ Attend regular site meetings and inspections as may be required with respect to the ongoing activities of the Karibib Project Closure Plan.

6.2.2 Stakeholders

According to the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 and EPs, stakeholders are entitled to provide inputs in writing to the Karibib Project Closure Plan implementation and monitoring for ongoing rehabilitation, mine closure, decommissioning, remediation/reclamation and post-closure and aftercare activities. It's the duty of the stakeholders to bring to the attention of Lepidico Chemicals Namibia (Pty) Ltd and the regulators any issues which that party, believes may be of significance to the successful implementation of the Karibib Project Closure Plan activities.

6.2.3 Environmental Control Officer (ECO)

Lepidico Chemicals Namibia (Pty) Ltd is to appoint an Environmental Control Officer (ECO)with the following responsibilities with respect to the Karibib Project Closure Plan implementation and monitoring for ongoing rehabilitation, mine closure, decommissioning, remediation/reclamation and post-closure and aftercare activities:

- ❖ Assist the PM in ensuring that the necessary environmental authorisations and permits have been obtained.

- ❖ Assist the PM in finding environmentally responsible solutions to challenges that may arise.

- ❖ Conduct environmental monitoring as per Karibib Project Closure Plan requirements.

- ❖ Carry out regular site inspections (on average once per week) of all exploration areas with regards to compliance with the Karibib Project Closure Plan, and report any non-compliance(s) to the PM as soon as possible.

- ❖ Organise for an independent internal audit on the implementation of and compliance to the Karibib Project Closure Plan to be carried out annually and audit reports to be submitted to the PM for distribution to the stakeholders.

- ❖ Continuously review the Karibib Project Closure Plan and recommend additions and/or changes to the document with respect to the ongoing rehabilitation, mine closure, decommissioning, remediation/reclamation and post-closure and aftercare activities.

- ❖ Monitor the Contractor's environmental awareness training for all new personnel coming onto site.

- ❖ Keep records of all activities related to environmental control and monitoring. the latter to include a photographic record and a register of all major incidents with respect to the ongoing rehabilitation, mine closure, decommissioning, remediation/reclamation and post-closure and aftercare activities, and.

DRAFT

- ❖ Attend regular site meetings linked to the Karibib Project Closure Plan.

6.2.4 Contractors and Subcontractors

The responsibilities of the **Contractors and Subcontractors** that may be appointed by the Lepidico Chemicals Namibia (Pty) Ltd to undertake certain activities of the Karibib Project Closure Plan include implementation and monitoring of the ongoing rehabilitation, mine closure, decommissioning, remediation/reclamation and post-closure and aftercare activities:

- ❖ Comply with the relevant legislation and site requirements with respect to no-go zones.
- ❖ Preparation and submission to the Project HSE of the following Management Plans:
  - o Environmental Awareness Training and Inductions.
  - o Emergency Preparedness and Response.
  - o Waste Management, and.
  - o Health and Safety.
- ❖ Ensure adequate environmental awareness training for senior site personnel.
- ❖ Environmental awareness presentations (inductions) to be given to all site personnel prior to work commencement. the Project HSE shall provide the course content not limited to the following topics:
  - o The importance of complying with the regulations and site requirements.
  - o Roles and responsibilities, including emergency preparedness.
  - o Basic Rules of Conduct (Do's and Don'ts).
  - o Objectives of the Karibib Project Closure Plan.
  - o Fines for failure to adhere to the site requirements, and.
  - o Health and safety requirements.
- ❖ Record keeping of all environmental awareness training and induction presentations, and.
- ❖ Attend regular site meetings and environmental inspections with respect to the Karibib Project Closure Plan.

6.3 Conditions of the Karibib Project Closure Plan Implementation

6.3.1 Air Quality

Lepidico Chemicals Namibia (Pty) Ltd shall ensure that there is no public health and/or public nuisance impacts from air emissions and/or dust generated by the implementation of the ongoing rehabilitation, mine closure, decommissioning, remediation/reclamation and post-closure and aftercare stages of the Karibib Project Closure Plan.

6.3.2 Visual Amenity

Unless the Mining Commissioner in the Ministry of Mines and Energy has approved (in writing) an alternative agreement between the Lepidico Chemicals Namibia (Pty) Ltd and a land owner relating to

DRAFT

the removal of infrastructure, the Lepidico Chemicals Namibia (Pty) Ltd shall ensure that all infrastructure is decommissioned and removed from the mining site /ML area at mine completion.

6.3.3 Soil and Land Disturbance

Lepidico Chemicals Namibia (Pty) Ltd commits and shall ensure that there will no contamination of ML area and soils either on or off site after mine completion occurs as a result of mining operations. The existing (pre-mining) soil quality and quantity shall be maintained to the satisfaction of the Mining Commissioner where feasible, the pre-mining land use within the ML area can be recommenced after mine completion.

6.3.4 Surface Water

Lepidico Chemicals Namibia (Pty) Ltd shall ensure that inundation of third-party property and infrastructure by water (to a greater extent than would be expected to occur prior to mining operations commencing) after mine completion is not caused by mining operations. There will be no surface water contaminated as a result of mining operations and Lepidico shall ensure that, apart from water contained in the pit void, no surface water contaminated prior to mine completion remains within the mine site / ML area after mine completion and no contamination of surface water occurs after mine completion as a result of mining operations within the mine site /ML area.

6.3.5 Groundwater

Lepidico Chemicals Namibia (Pty) Ltd shall ensure there is no adverse change to the environmental values of the basement fractured rock aquifer within or outside of the ML area as a result of mining operations after mine completion.

6.3.6 Flora and Fauna

Lepidico Chemicals Namibia (Pty) Ltd shall, in construction, operation and post mine completion, ensure no loss of abundance or diversity of native vegetation on or off the mine site /ML area through:

- Unnecessary clearance.
- Dust/contaminant deposition.
- Fire.
- Reduction in water supply, or, and.
- Other damage.

Lepidico Chemicals Namibia (Pty) Ltd shall ensure that no loss of abundance and diversity of flora and fauna from contaminants and dust deposition during the ongoing rehabilitation, mine closure, decommissioning, remediation/reclamation and post-closure and aftercare stages of implementing the Karibib Project Closure Plan.

6.3.7 Land Use

Lepidico Chemicals Namibia (Pty) Ltd shall ensure that the implementation of the Karibib Project Closure Plan covering the ongoing rehabilitation, mine closure, decommissioning, remediation / reclamation and post-closure and aftercare activities will have no impacts to agricultural productivity for third party land users on or off the mine site /ML area including adverse health impacts to livestock and wildlife. The company shall ensure that there are no adverse impacts to third party land use on property adjacent to and on the ML area as a result of mining operations, other than those agreed between the Lepidico Chemicals Namibia (Pty) Ltd and the affected user/s.

DRAFT

6.3.8 Visual Amenity

Lepidico Chemicals Namibia (Pty) Ltd shall ensure that the implementation of the Karibib Project Closure Plan covering the ongoing rehabilitation, mine closure, decommissioning, remediation/reclamation and post-closure and aftercare activities aimed at addressing the local landform, contrasting aspects and reflective aspects of mining operations are visually softened to blend in with the surrounding landscape.

6.3.9 Co-Disposal of Tailings and Waste Rock Waste

Lepidico Chemicals Namibia (Pty) Ltd shall ensure that the Waste Management Area (WMA that will be used for the co-disposal of the tailings and rock waste shall have a physically stable final landform with no geotechnical failure that could have been prevented during the implementation of the ongoing rehabilitation, mine closure, decommissioning, remediation/reclamation and post-closure and aftercare activities of the Karibib Project Closure Plan. Lepidico Chemicals Namibia (Pty) Ltd shall ensure that water seepage from the WMA or ore stockpiles, especially during rainy season, does not result in adverse impacts on adjacent land uses including, but not limited to, growth of native vegetation and surrounding Ephemeral River channels of which some are key habitats in their area.

6.3.10 Weeds, Pest and Pathogens

Lepidico Chemicals Namibia (Pty) Ltd shall ensure that during the ongoing rehabilitation, mine closure, decommissioning, remediation/reclamation and post-closure and aftercare stages of implementing the Karibib Project Closure Plan, no introduction of new species of weeds, plant pathogens or pests including cats and dogs, nor sustained increase in abundance of existing weed or pest species in the ML area compared to adjoining land.

6.3.11 Public and Visitors Health and Safety

Lepidico Chemicals Namibia (Pty) Ltd shall demonstrate that post mine completion, the risks to the health and safety of the public / visitors so far as it may be affected by mining operations are as low as reasonably practicable. The company shall further ensure that there no unauthorised entry to the mining site / ML Area that could result in public / visitors' injuries and or deaths that could have been reasonably prevented. There shall be no adverse impacts to adjacent land use and no unauthorised damage to public or private property and infrastructure as a result of uncontrolled fires caused by mine site operations.

DRAFT

6.4 Rehabilitation Actions by Lepidico Chemicals Namibia (Pty) Ltd

6.4.1 Overview

Infrastructures such as water, power, buildings, roads, fences and others may remain for future use as may be agreed with the stakeholders such the local farmers, Erongo Regional Council or the Ministry of Agriculture, Water and Land Reforms.

6.4.2 No Go Areas of the ML

Within the ML area, there shall be no-go zones which will not be physically disturbed and some portions of this land may be used temporary for stockpiling materials from various excavation during the operational phase of the Karibib Project. Prior to Karibib Project closure, any remaining stockpiled material will be removed and used for various rehabilitation activities.

The ML will include agricultural land that will be held as buffer for the mining activities. During the operational stage of the mine, this land will be managed in a manner compatible with local agricultural requirements. Mining vehicles, personnel or equipment will generally not need to access these no-go zones, other than to access monitoring sites or for the purpose of monitoring the ML environmental monitoring conditions and outcomes and will generally be delineated by stock fences.

As mine completion nears, any unnecessary fences separating the undisturbed land from the mining operations will be removed or relocated. A weeds and pest inspection will be conducted and any remedial action required will be undertaken. Any degraded pasture will be supported to survive as required to ensure that the pasture species diversity and density is compatible with local practice.

6.4.3 Surface and Subsurface Excavated Areas

It is assumed that the actual mining site and immediate surrounding areas of the ML area will be disturbed during the mining operation. The purpose of excavated areas closures is to ensure the pits become safe for humans and animals and for the purpose of the liability assessment it has been assumed that the shaping of the pit area slopes will be undertaken during the operational phase of the mine to reduce closure costs.

After the mining activities are completed, up to 300mm thick of topsoil will be spread on the disturbed areas except the pit areas that may be left open but secure and safe. Once placed, the “soil” should then be ripped off and aided for the natural revegetation.

The pits area and other excavated areas that cannot be filled, shall be left secured at the entrances and stabilised with concrete reinforcements as may be required to avoid collapse / slope failures. All unstable slopes shall be reinforced to avoid collapses that could results major failures. Following mine closure access to the pit areas and all other surface excavated areas shall be restricted by the construction of a stock proof fence and abandonment bund. The abandonment bund shall be constructed and positioned around the unsafe excavated areas.

6.4.4 Processing Plant

All the infrastructure associated with the processing plant shall be stripped and broken down at closure. Following the removal of the processing plant, the former processing plant area shall be rehabilitated. The processing plant general surface rehabilitation shall ensure the following:

- Surface topography that emulates the surrounding areas and aligned to the general landscape character.
- Landscaping that would facilitate surface runoff and result in free draining areas. If possible, drainage lines should be reinstated, and.
- An area without unnecessary remnants of structures and surface infrastructure to give the rehabilitated area a neat appearance. Special attention shall be given to the shape and/or removal of heaps of excess material and the area should be made suitable for vegetation or aid the natural revegetation.

The processing plant and all above ground infrastructure and buildings will be dismantled and sold, recycled or disposed of in an appropriate manner. All tarmac and compacted road base material from sealed roads in and around the processing plant will be ripped up, removed and reinstated with topsoil. All sedimentation dams, drains and excavations that are not required following closure, shall be filled in and rehabilitated. Unwanted concrete pads and footings shall be removed down to an appropriate depth ~1 m compatible with the proposed agricultural land use of the general area.

The magazine compounds, sheds and shipping containers shall be dismantled / removed from the mine site and all other infrastructure shall also be removed from site for reuse or recycling. All fittings, pipes, lining and pumps, etc. shall be disposed in accordance with Karibib Project waste management plan operating at the time of mine closure.

The land shall be rehabilitated to be used for agricultural purposes. In general, any concrete, compacted clay, asphalt, plastic liners or any materials used to cover or seal the ground shall be removed and recycled or disposed in an approved manner. Concrete may be removed, placed in the open pits and buried. If there is a downstream benefit to the land owner / local community or add value to any subsequent land use, for example storage sheds, dams and associated water and power reticulation,

DRAFT

these structures shall be left in place and handed over to the new owner on relinquishment who shall be responsible for any future maintenance and liability as may be applicable.

6.4.5 Waste Management Area (WMA)

At mine completion, the tailings and waste rock co-disposal Waste Management Area closure design shall mimic the proposed deposited waste surface which is a concave surface that slopes towards the decant location. The overall closure shape shall tie in with the overall closure surface to be designed by a geotechnical engineer. All surface storm water run-offs shall be collected and removed from the facility via the central outlet drain. The surface shall be capped with a low water flux cover system consisting of a waste rock layer covered with topsoil and revegetated as may be practicable possible. Topsoil stripped from within the impoundment area at the time of construction shall have been stockpiled for this purpose. A spillway, with appropriate erosion protection, shall be constructed to cater for the peak flood. The purpose of a soil cover above the tailings is to minimise ingress of surface water and reduce the development of downwards flow through the tailings which may carry contaminants to the underlying strata and the groundwater.

The design of the WMA shall result in the flattening of the embankment profile to an average overall slope of approximately 1:50 (vertical: horizontal). Long-term infiltration shall be reduced through the placement of the capping and revegetation requirements. The capping layer will act as a store and release cover that will assist to capture storm water run-off thereby reducing erosion.

6.4.6 Domestic Solid Waste Recycling and Disposal

No new Domestic Solid Waste Disposal site shall be developed within the ML area and all domestic waste including hazardous waste shall be disposed of at the Karibib Municipal Waste Disposal site. The Karibib Municipal Waste Disposal Site is a simple dumpsite and is not well engineered and organised to handle hazardous waste. The mining company is highly encouraged to assist the Karibib Municipality in developing a suitable waste disposal site, which will not only be utilised by the mining company but also the community of Karibib. The support to the development of suitable waste disposal site for the Town of Karibib by the mining company will be within the expected Corporate Social Responsibility (CSR) of the mining company to the local community. The cost of the waste disposal support shall be determined by the Lepidico Chemicals Namibia (Pty) Ltd based on the variable funds within the CSR budget allocation. Mine closure waste will consist of concrete, scrap metal, plastics (mostly HDPE), batteries, tyres, wood, putrescibles and domestic waste sewage, reagent containers and packaging materials. Concrete waste will be disposed in the pit or WMA depending on the location and availability at the time of removal. All metals, plastics and cardboard/wood and containers will be recycled where possible, some non-recyclable materials will be sent in a closed truck for safe disposal at the Karibib Municipal Waste disposal facilities. A program for separating domestic waste into bottles and cans, recyclables and organic waste established during the operational phase of the Karibib Project shall be continued through to mine closure. This source sorting and separation practice will ensure that no chemically unstable waste will remain at mine closure after all the rehabilitation works have been complete.

6.4.7 Waste Water Management

Sewage shall continue to be processed through the treatment plant at the processing site which shall remain in place until all other rehabilitation works have been completed. After completion of rehabilitation activities on the Project site the sewerage treatment plants shall be removed.

6.4.6 Main Access, Internal Roads and Fences

Roads shall remain and be used by other land users after the mine closure, provided this is agreed upon by all parties involved. For the rehabilitation of roads, a cost has been allocated to rip the area, add 300 mm topsoil and support the natural re-vegetation process. All non-essential internal haul roads, access tracks, concrete pads borrow pits and hard stands will be dismantled using a dozer, loader and trucks and disposed of in the pit, or broken up and disposed off. Any compacted ground shall be ripped

DRAFT

to support native vegetation. All fences and signage and any instrumentation on the surface shall be removed and the land returned to the original land use.

6.4.9 Borefield

Unless, required by the land owner / land users after mining, all surface infrastructure shall be removed, and all unwanted boreholes by the land owner / users shall be plugged below surface, covered and the pre-mining land use of agriculture re-established. The buried section of the pipeline will remain in place for future boreholes re-entry if required.

6.4.10 Water and Powerline Infrastructures

The main linear water pipeline infrastructure if build to support the water supply of the mine shall remain as property of NamWater while the local water distribution lines shall also remain for use by the local land owner / users as may be required / agreed. All unwanted internal water pipelines by the land owner / users shall be removed.

On closure of the Karibib Project, the Lepidico Chemicals Namibia (Pty) Ltd owned and operated local onsite power supply infrastructures shall be considered a valuable asset and shall be handed over to the state power utilities (Erongo Red or NamPower). The Project will be supplied by a 66kV powerline to be developed by Lepidico Chemicals Namibia (Pty) Ltd and operated by Namibia Power Corporation (NamPower) (Pty) Ltd Power. The voltage will be stepped down to 11kV for use in the process plant. The 66/11kV substation will be located adjacent to the process plant. NamPower expects to supply power sourced from 80% renewable sources by 2025

6.4.11 Site Drainage

During operations of the Karibib Project, run-off generated from Waste Management Area (WMA) and other infrastructure shall be separated from the natural drainage systems, where possible. This run-off has the potential to carry contaminants (especially sediment) and shall be directed into sediment dam and then reused where appropriate for process water or site maintenance. The mine is situation in a semi-arid environment and collection of any baseline water will only occur after a 5% Annual Exceedance Probability (AEP) event.

Diversion drains and stilling basins shall stay post closure and they are designed to do this. The sediment ponds shall either be backfilled with top soil and revegetated or dam embankments removed when the mine runoff water from the mine created landforms is considered not contaminated compared to the established baseline quality from water flowing into immediately downstream from the sediment ponds during operations after a precipitation event.

This will allow the non-contaminated water to join the natural drainage systems. If no flow occurs in the local Ephemeral Rivers within the mine site or ML area during the life of the mine, then Lepidico Chemicals Namibia (Pty) Ltd shall still continue to maintain the sediment ponds until it establishes the baseline for comparison. All water draining from the WMA closure emergency spillway shall be directed into the drain diversion.

Run-off from the WMA will potentially have a high sediment load during the operational phase this water shall be diverted to the process water management system or a system of sediment settlement dams and sumps to settle the sediment. The operational and mine closure designs of the surface water infrastructure shall be designed by a qualified engineer and once such drawings are available, they be included in the updated versions of this report.

DRAFT

6.4.12 Biophysical Closure and Rehabilitation

6.4.12.1 Final Landform and Ecological Functionality

The excavated WMA shall be reshaped to create a gently sloping, free-draining topography leading to the sedimentation basin during the operational phase. The topsoil and sub soil that will be removed during the construction phase shall be returned/replaced (as the final top layer), fertilised and ripped. After these tasks have been completed the open cut site can be included in the rehabilitation process for re-vegetation, monitoring and maintenance.

6.4.12.2 Soil Replacement

Once the final land-form has been created, soil replacement can begin. All the stripped soil types are to be replaced into the original locations of the soils. The following shall be taken into considerations:

(i) Compaction Avoidance: Compaction limits the effectiveness of replaced soils. The equipment used during the replacement of the soils has a major impact on the compaction levels. Ideally heavy machinery should not be used to spread and level soils during replacement. The truck and shovel method should be used since it causes less compaction than, for example, a bowl scraper. When using trucks to deposit soils, the full thickness of the soil required can be placed in one lift. This does, however, require careful management to ensure that the correct volumes of soil are replaced. The soil piles deposited by the trucks will have to be smoothed before re-vegetating the area. The soil that is deposited with trucks need to be smoothed before re-vegetation can take place. A dozer (rather than a grader) should preferably be used to smooth the soil since it exerts a lower bearing pressure and thus compacts less than wheeled systems.

(ii) Soil Amelioration: Replaced soils require both physical and chemical amelioration as the actions of soil removal, stockpiling and replacement result in high levels of soil compaction and a dilution of the fertility of the soil originally present and concentrated in the surface layers. The actions that should be taken during the amelioration of soils are as follows:

- The deposited soils must be ripped to ensure reduced compaction.
- An acceptable seed bed should be produced by surface tillage.
- Restore soil fertility.
- Incorporate the immobile fertilisers in to the plant rooting zone before ripping, and.
- Apply maintenance dressing of fertilisers on an annual basis until the soil fertility cycle has been restored.

6.4.12.3 Re-Vegetation and Biodiversity Establishment

During the operational and mine closure phases and right through to relinquishment the native vegetation in the area will be upgraded through a combination of weed management, pest control and selective plantings of native vegetation endemic to the local area.

The main aim of re-vegetation or support to the natural revegetation process around the mining site / ML area is to restore the area to the indigenous setting as practical possible. The overall objectives for the re-vegetation or aiding the natural revegetation process of reshaped and top- soiled land are to:

- Prevent erosion.
- Restore the land to the agreed land capability as practical possible.
- Re-establish eco-system processes to ensure that a sustainable land use can be established, and.

DRAFT

- ❖ Restore the biodiversity of the area as far as possible.

The rehabilitated areas need to be stabilised with vegetation, mainly grasses at first. Long- term post-closure rehabilitation will allow the re-vegetation of the grasses, bushes and trees.

6.4.13 Air Quality

The improvement of the air quality of the mine site and ML area can be linked to the successfully revegetation programme. Re-vegetation is critical for acceptable closure of the area and to achieve sustainable and good air quality. It is recommended to minimise the erosion to reduce the potential for fugitive dust generation.

6.4.14 Maintenance and Aftercare

Maintenance and aftercare must be planned for five (5) years after the land preparation and replanting of vegetation has been completed. Maintenance will specifically focus on annual fertilising the rehabilitated area, control of all other alien plants and general maintenance, including rehabilitation of cracks, slope failures, subsidence and erosion gullies. Continuous erosion monitoring of rehabilitated areas and slopes should be undertaken and zones with excessive erosion should be identified. The cause of the erosion should be identified, and rectified. Zones with erosion will need to be repaired with topsoil and re-vegetated or aided for natural revegetation process.

6.4.15 Post-Closure Monitoring and Management

The purpose of monitoring is to ensure that the objectives of the rehabilitation programme are met and that the rehabilitation process is followed. The following is the summary of the key post closure monitoring activities that shall be implemented:

(i) Groundwater and Surface Water: The post-closure monitoring should take place for five years or until a long-term acceptable trend can be determined.

(ii) Flora: Biodiversity assessments mid wet season should be undertaken by a qualified ecologist / botanist to monitor the rehabilitation progress with regards to flora. Mid wet season surveys are recommended to undertake the following suggested activities:

- Vegetation: Transects (500m) through disturbed areas. Sample plots to be identified and monitored.
- Alien vegetation: Transects (500m) through disturbed areas. Sample plots to be identified and monitored.
- Identify possible areas of poor vegetation cover which might lead to erosion. Any evidence of erosion should be attended to, by planting species with a dense root system.
- Alien invasive species tend to out-compete the indigenous vegetation. this is due to the fact that they are vigorous growers that are adaptable and able to invade a wide range of ecological niches. They are tough, can withstand unfavourable conditions and are easily spread. Alien invasive control methods should be employed for the species that will be identified during the flora assessment. For the removal of alien species, the following is recommended:
    - Physical chopping of the bushes and then painting the stumps with herbicide. A follow up of this activity will be essential, and.
    - Chemical control is suggested – herbicides. A follow up of this activity is suggested.

  Invasive alien plant species are difficult to control. Methods should be used that are appropriate for the species concerned, as well as to the ecosystem in which they occur.

DRAFT

When performing the controlling methodology for weeds and invaders, damage to the environment must be limited to a minimum. The methodology must be performed for at least three growing seasons to ensure the seed bank is depleted. Continual monitoring will be needed for seeds that are likely to be blown in from adjacent areas.

- The satisfactory control of weeds and other invasive species is usually only achieved when several complementary methods, including biological control, improved land management practices, herbicides and mechanical methods, are carefully integrated. Such a strategy is termed an Integrated Control Strategy (ICS). Follow-up control of alien plant seedlings, saplings and coppice re-growth is essential to maintain the progress made with initial control work, and to prevent suppression of planted or colonizing grasses. Before starting new control operations on new infestations, all required follow-up control and rehabilitation work must be completed in areas that are originally prioritized for clearing and rehabilitation. The following additional measures are recommended to prevent the future introduction or spread of alien species, and to ensure the rehabilitation of transformed areas:

    - There must be no planting of alien plants (e.g. black wattle, eucalyptus and pampas grass) anywhere within the ML area.

    - Annual surveys, aimed at updating the alien plant list and establishing and updating the invasive status of each of the alien species, should be carried.

    - The transportation of soils or other substrates infested with alien species should be strictly controlled.

    - Benefits to local communities as a result of the alien plant control programme should be maximised by not only ensuring that local labour is employed, but by also ensuring that cleared alien trees becomes valuable wood resource that can be utilised, and.

    - It is considered essential that appropriate veld management (particularly appropriate grazing levels and burning frequencies) should be applied to areas of secondary indigenous vegetation (e.g. secondary grassland of historically cultivated areas), and especially the grassland and wetland vegetation of untransformed habitats.

(iii) Fauna: Mid wet season surveys are similarly recommended to undertake the following suggested activities:

- Large mammals: Use of camera traps along transect (every 100m) for 2 nights.
- Mammals: Sherman along transect (every 100m) for 2 nights.
- Avifauna: Bird counts.
- Herpetofauna: Pitfall traps along transect (every 100m) for 2 nights, and.
- Invertebrates: Pitfall traps along transect (every 100m) for 2 nights.

6.5 Uncertainty Assessment

6.5.1 Key Risks

The following is the summary of the key risks identified for this Karibib Project Closure Plan:

(i) The long-term stability of the surface excavations (pits, slopes and working faces) and Waste Management Area.

(ii) Long-term impacts on surface and groundwater sources, and.

(iii) Company insolvency prior to mine closure.

DRAFT

Effective monitoring activities and review and diversification of the mine closure fund are likely to minimise the above listed risks.

6.6 Karibib Project Rehabilitation Costs

6.6.1 Estimate of the Final Rehabilitation, Closure and Aftercare Costs

This Karibib Project Closure Plan and the estimated final mine rehabilitation, closure and aftercare costs are based on a number of technical reports for the development of the Karibib Project prepared by various consultants. The final mine rehabilitation, closure and aftercare aspects considered in the cost estimate covers the following components as detailed in Table 6.2:

(i) Stakeholder engagement (**N$500, 000.00**).

(ii) Social development (**N$4, 000, 000.00**).

(iii) Decommissioning, rehabilitation and removal (**N$ 34,112,483.00**).

(iv) Environmental management (**N$ 600,000.00**), and.

(v) Environmental Monitoring **(N$86,642.00).**

The cost to permanently close the Karibib Project at the end the operations phase has been estimated at Thirty-Nine Million Two Hundred and Ninety Thousand, One Hundred and Twenty-Five Namibia Dollar (**N$39,299,125.00**) (Table 6.2). Lepidico Chemicals Namibia (Pty) Ltd hereby commits that each year the Company will review the mine closure plan and cost and make annual contributions to provide for a complete final Karibib Project rehabilitation, closure and aftercare costs.

Table 6.2: Estimated Karibib Project final rehabilitation, closure and aftercare components.

	Activity	Mine Closure (Rehabilitation) and Aftercare Costs (To Be Validated Annually)
MINE CLOSURE ACTIVITIES	**A. Decommissioning, Rehabilitation and Removal**	**Amount (NAD)**
	1. Removal of the processing plant and related infrastructure	14,417,910
	2. Cleaning equipment to enable sale	500,000
	3. Waste Management Area - Rubicon	7,607,855
	4. Waste Management Area - Helikon	1,788,919
	5. Final rehabilitation of other surface excavations	3,776,857
	6. Removal of offices, administration facilities, support areas	1,500,000
	7. Water infrastructure	360,285
	8. Exploration pits and other excavations	585,278
	9. Running costs for the mine site during closure activities	3,275,380
	10. Access roads	300,000
SUBTOTAL		**34,112,483**
AFTERCARE ACTIVITIES	**B. Environmental Management**	
	11. Environmental awareness for closure and post closure	100,000
	12. Professional environmental consulting and auditing	500,000
	SUBTOTAL	**600,000**
	C. Monitoring	
	13. Air quality	15,000
	14. Surface water monitoring	10,000
	15. Groundwater monitoring	25,821
	16. Erosion control and management	35,821
	SUBTOTAL	**86,642**
	D. Social Development	
	17. Retrenchment and long service	2,000,000
	18. Training for re-skilling	1,000,000
	19. Health continuation programme	1,000,000
	SUBTOTAL	**4,000,000**
	E. Stakeholder Engagement	
	20. Community engagement committee's venue and catering	200,000
	21. Authorities engagement forum	100,000
	22. Special interest group forum	100,000
	23. Advertisements and media requirements	100,000
	SUBTOTAL	**500,000**
1st YEAR GRAND TOTAL ENVIRONMENTAL LIABILITY		**39,299,125**

DRAFT

6.6.2 Funding Mechanisms for Final Rehabilitation, Closure and Aftercare Costs

Lepidico Chemicals Namibia (Pty) Ltd will provide for expenditures associated with Karibib Project final rehabilitation, closure and aftercare costs and will comply with statutory obligations and stipulated requirements of both the Ministry of Mines and Energy and the Ministry of Environment, Forestry and Tourism (MEFT).

It is expected that no post mine closure residual liability once all rehabilitation has been completed. However, if any residual liability is identified then the transfer of such liability is to be negotiated between Lepidico Chemicals Namibia (Pty) Ltd and the landowner or third-party service provider. Residual liability would include ongoing maintenance or monitoring.

In the event of the Lepidico Chemicals Namibia (Pty) Ltd being insolvent, then any residual liability would be negotiated between the administrator and the landowner or third-party service provider, notwithstanding the fact that the Namibian Government and stakeholders will hold the rights to the Karibib Project Environmental Rehabilitation Fund that should cover the complete costs for final rehabilitation, closure and aftercare activities including monitoring.

6.7 Ongoing Rehabilitation, Monitoring and Reporting

6.7.1 Progressive Rehabilitation

The ongoing rehabilitation to be undertaken during the operational phase of the mine will be funded from the annual ongoing operational budget. Lepidico Chemicals Namibia (Pty) Ltd will undertake ongoing rehabilitation activities as soon as possible on land that is no longer needed for current or future operational requirements.

6.7.2 Karibib Project Closure Monitoring Program

Environmental monitoring with respect to the implementation of the Karibib Project Closure Plan will be undertaken in order to measure the achievement of outcomes for both the ongoing rehabilitation and final mine closure and aftercare activities. Both the ongoing rehabilitation and final mine closure and aftercare monitoring activities will cover the following components:

(i) Air quality and dust emissions.

(ii) Stability of the following engineered structures:

  (a) Waste Management Area (WMA)

  (b) Excavated areas.

  (c) Drainage systems, and.

  (d) Sedimentation basin

(iii) Surface and groundwater quality, and.

(iv) Fauna and flora recovery in ongoing and final rehabilitated areas.

6.7.3 Monitoring Performance Reporting

6.7.3.1 Overview

Lepidico Chemicals Namibia (Pty) Ltd will report on the technical and financial monitoring performances of the Karibib Project Closure Plan and this will be provided to all the key stakeholders. The monitoring report will also be made available to the public on the website of Lepidico Chemicals Namibia (Pty) Ltd.

DRAFT

6.7.3.2 Performance Indicators

The following performance indicators will be measured against the Karibib Project Closure Plan implementation and monitoring of the ongoing rehabilitation and final mine closure and aftercare activities:

(i) Compliance to the national regulations.

(ii) Compliance to the conditions of the ML, ECC, freshwater abstraction and wastewater discharge permits as well as all other granted statutory permits/ authorisations/consents.

(iii) Compliance to the key Agreements / contracts with key stakeholders such as the land owners / unions /employees, and.

(iv) Compliance with this Karibib Project Closure Plan, as indicated by internal and statutory reporting.

6.7.3.3 Continual Improvement

Lepidico Chemicals Namibia (Pty) Ltd will strive to continually improve on the mine's environmental performance by applying the precautionary principles as enshrined in the Environmental Management Act, 2007, Act No. 7 of 2007 and the principles of best practice to mining operations, including where cost-effective and practicable, the adoption of new best practice technologies and improved ongoing rehabilitation and final mine closure and aftercare control measures.

6.8 Annual Reviews of the Karibib Project Closure Plan

6.8.1 Technical Review

This Karibib Project Closure Plan will be reviewed, and if necessary revised, to the satisfaction of all the stakeholders and in consultation with stakeholders, in accordance with the requirements of the Environmental Management Act, 2007, Act No. 7 of 2007 with respect to the review, update and approval of environmental reporting. Technical reviews will be undertaken annually and or as a result of the following:

- Following changes to project approval or licence conditions relating to mine closure management or monitoring.
- Following any significant mine closure related incident.
- When a relevant/significant improvement has been identified.
- For necessary or any unforeseen changes to mine closure domains.
- Where a risk assessment identifies the requirement to alter the Plan, and.
- Annually.

6.8.2 Financial Reviews

Closure cost estimates should be reviewed regularly to reflect changing circumstances that may be linked to the technical review.

Lepidico Chemicals Namibia (Pty) Ltd must annually review the cost estimates contained in this Karibib Project Closure Plan and must account for the following:

DRAFT

(i) Inflation and escalation.

(ii) Changes in legislation.

(iii) Changes in available technology to better address ongoing rehabilitation and final closure and aftercare risks.

(iv) Changes in the 'Life of Mine' plan (for instance, expansions, changes in process or new activities), and.

(v) Changes in stakeholder and / or public expectations.

DRAFT

7. CONCLUSION AND RECOMMENDATIONS

7.1 Karibib Project Closure Plan Strategy

The overall business plan strategy of the Karibib Project Closure Plan with respect to the Karibib Project ongoing rehabilitation, mine closure, decommissioning, remediation/reclamation and post-closure and aftercare activities is centred on the following principles:

(i) A drive for employees' re-skilling and alternative employment opportunities at mine closure.

(ii) Local economic diversification centred on mine rehabilitation and aftercare services.

(iii) Support upliftment of community and employees through projects during mine operational, rehabilitation and aftercare stages as part of the mine's social responsibility programme.

(iv) Management of short and long-term Health and Safety and Environment (HSE) by adopting durable, safe and responsible ongoing rehabilitation and mine closure and aftercare practices, and.

(v) Risk management of short and long-term aftercare liabilities through the implementation of effective ecosystem-based-approaches covering sustainable physical, chemical, biological, socioeconomic environmental stabilities of disturbed areas.

As the stages of mining progress, the mine closure plan will be able to provide greater detail regarding the timing of the associated ongoing rehabilitation, mine closure, decommissioning, remediation/reclamation and post-closure and aftercare activities of the following aspects:

(i) Workforce retrenchment, relocation, re-training and seed funding for alternative economic activities.

(ii) Sustainability of associated communities:

- ❖ Social transition process of communities that will be dependent on the Karibib Project and such communities shall receive support for transition to new economic activities where possible through the Corporate Social Responsibility of Lepidico Chemicals Namibia (Pty) Ltd, and.
- ❖ Social exit from communities, which is the process by which the Karibib Project cease to support community initiatives and social transition.

(iii) Decommissioning of the site:

- ❖ Infrastructure demolition at the site or transition to end uses.
- ❖ Removal and disposal of waste, and.
- ❖ Making areas safe.

(iv) Rehabilitation of the site:

- ❖ Rehabilitation of the site, during and post life of mine, in accordance with accepted final post mining use of disturbed areas.

(v) Aftercare monitoring and maintenance:

- ❖ Should not be limited to biophysical parameters (affecting human, animal and plant life and the physical environment, and.

DRAFT

- ❖ Should include progress towards the meeting of socio-economic objectives (affecting the social well-being and economic stability of the community).

7.2 Recommendations

The implementation of ongoing rehabilitation activities while the mine is still operational is vital to successful final mine closure, decommissioning, remediation/reclamation and post-closure and aftercare.

The ongoing rehabilitation should involve the demolishing of redundant infrastructure and facilities, clean-up activities of waste and litter, removal of buried waste, landscaping (slope stability and erosion protection) and ecological restoration through landscape reshaping and re-vegetation works to be undertaken during the life of the Karibib Project as soon as practicable following the cessation of use of an area.

The following is the summary of the other key recommendations to be implemented by Lepidico Chemicals Namibia (Pty) Ltd for the successful implementation of this Karibib Project Closure Plan:

1. Lepidico Chemicals Namibia (Pty) Ltd commits that each year the Company will review this Karibib Project Closure Plan and costs and make annual contributions to provide for the final Karibib Project rehabilitation, closure and aftercare costs. It's important that an updated Karibib Project Closure Plan containing more technical detail and higher cost-estimation accuracy than the current plan is prepared as part of the updated project feasibility during the operational stage of the Karibib Project.

2. All the drawings and designs of the Karibib Project closure supporting infrastructure such as sedimentation basin, Waste Management Area (WMA), reinforced slopes around the pits or excavated areas shall be undertaken by a qualified engineer and once such drawings are available, they shall be included in the updated versions of this Karibib Project Closure Plan, and.

3. Continuous monitoring of the following key areas during the Karibib Project preconstruction, construction, operation with ongoing rehabilitation and monitoring and final rehabilitation and decommissioning, closure and aftercare shall be undertaken around the mine site and ML areas:

   (a) The long-term stability of all major excavations (pits, excavated areas, working faces and slopes) and Waste Management Area (WMA).

   (b) Long-term impacts on surface and groundwater sources, and.

   (c) Fauna and flora recoveries and diversity.

DRAFT

8. REFERENCES AND BIBLIOGRAPHY

Department of Water Affairs, 2001. Groundwater in Namibia: An explanation to the hydrogeological map. MAWRD, Windhoek, 1, 128 pp.

Diehl, M., 1992. Lithium, Beryllium and Caesium. In: Mineral Resources of Namibia, pp. 6.15-1 – 6.15-18. Namibia: Geological Survey of Namibia. Special Publication.

Geological Survey of Namibia., 1999. The Simplified Geological Map of Namibia, Windhoek.

Knight Piésold, 2020. Karibib Project layout and design materials supplied by Lepidico Chemicals Namibia (Pty) Ltd for the ESIA and ESMP Process.

Lepidico Chemicals Namibia (Pty) Ltd, 2020. Karibib Project materials supplied by Lepidico Chemicals Namibia (Pty) Ltd for the ESIA and ESMP Process.

Miller, R. McG., 1992. Stratigraphy. The mineral resource of Namibia, Geological Survey of Namibia, MME, Windhoek, 1.2 .1 -1.2.13.

Venmyn Deloitte, 2014. Independent Competent Persons' Report on the Material Mineral Assets of Unimin African Resources Limited (Unimin), SR1.1A(i), Final Draft Report, Johannesburg, South Africa.

DRAFT