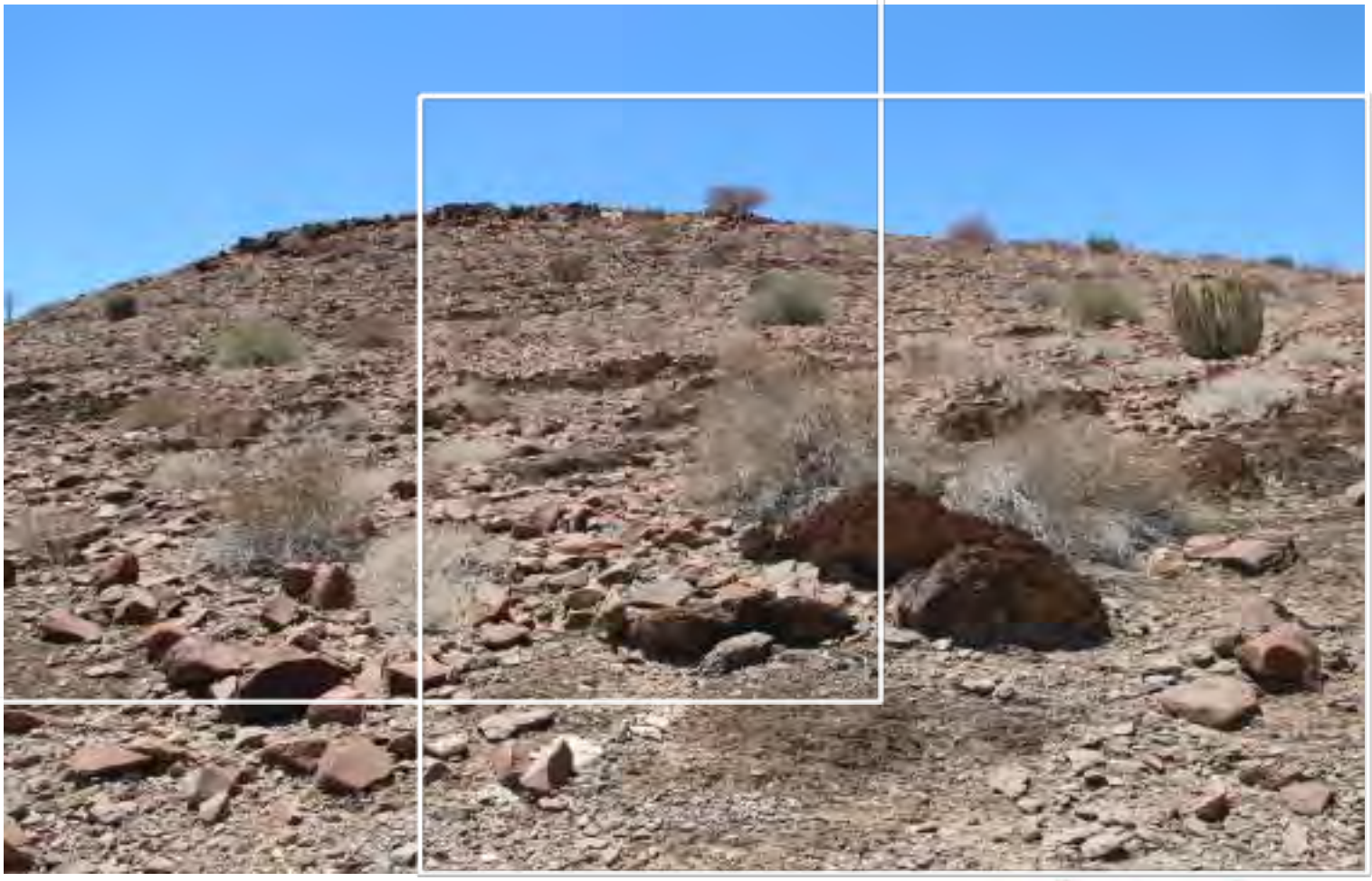


UIS TIN MINING COMPANY

**Submitted to: Uis Tin Mining Company (Pty) Ltd.**
**Attention: Mr Ephraim Tourob**
4th Avenue East, Number 1, Uis
P O Box 30
Uis, Namibia.

# ESIA SCOPING REPORT:

## STAGE II EXPANSION OF THE PILOT TIN PROCESSING PLANT PROJECT ON ML 134

PROJECT NUMBER: ECC-84-284-REP-12-D

REPORT VERSION: REV 02

DATE: 11 MARCH 2022

## TITLE AND APPROVAL PAGE

| | |
|---|---|
| Project Name: | Stage II Expansion of the Pilot Tin Processing Plant Project on ML 134 |
| Client Company Name: | Uis Tin Mining Company (Pty) Ltd. |
| Client Name: | Mr Ephraim Tourob |
| Ministry Reference: | APP-002964 |
| Authors: | Lester Harker, Jessica Bezuidenhout, and Matthew Bliss |
| Status of Report | Final for government submission |
| Project Number: | ECC-84-284-REP-12-D |
| Date of issue: | 11 March 2022 |
| Review Period | N/A |

## ENVIRONMENTAL COMPLIANCE CONSULTANCY CONTACT DETAILS:

We welcome any enquiries regarding this document and its content. Please contact:

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

## DISCLAIMER

Environmental Compliance Consultancy (ECC) (Reg. No. CC 2013/11401) has prepared this scoping report and the preliminary EMP on behalf of the Proponent. This report has been authored by employees of ECC, who have no material interest in the outcome of this report, nor do any of the ECC team have any interest that could be reasonably regarded as being capable of affecting their independence in the preparation of this report. ECC is independent from the Proponent and has no vested or financial interest in the Project, except for fair remuneration for professional fees rendered based upon agreed commercial rates. Payment of these fees is in no way contingent on the results of this report or the assessment, or a record of decision issued by Government. No member or employee of ECC is, or is intending to be, a director, officer, or any other direct employee of Uis Tin Mining. No member or employee of ECC has, or has had, any shareholding in Uis Tin Mining. Any personal views or opinions expressed by the writer may not necessarily reflect the views or opinions of Environmental Compliance Consultancy or its client.

*Please note at ECC we care about lessening our footprint on the environment; therefore, we encourage that all documents are printed double sided.*

# EXECUTIVE SUMMARY

Environmental Compliance Consultancy (ECC) has been contracted by Uis Tin Mining Company (Pty) Ltd., a subsidiary of AfriTin Mining (Pty) Ltd. to undertake an environmental and social impact assessment (ESIA). Uis Tin Mining Company (Pty) Ltd. is the Proponent for the proposed Project, referred to as "the Proponent".

ECC is conducting an ESIA for the proposed stage II expansion of the pilot tin processing plant and mining activities on Mining Licence (ML) 134 in the Erongo Region, Namibia. The proposed Project will be referred to as the "Uis Stage II Project" or the "Project" herein.

In terms of the Namibian Environmental Management Act, 2007 and its regulations, the Ministry of Mines and Energy (MME) is the competent authority for the proposed Project. Mining operations trigger listed activities in terms of the Act, and as such, requires an environmental clearance certificate.

## SCREENING PHASE

A high-level ESIA formed part of the company's recently published preliminary economic assessment (PEA) and was incorporated into the screening phase. Alternatives considered on the Project were limited to technological designs of the comminution and processing machinery, and placement within the already disturbed footprint. Water supply alternatives were also considered.

The screening phase determined that the most likely potential environmental and social impacts could include:

- Surface and groundwater impacts
- Impacts on road users
- Visual impacts affecting the sense of place
- Impacts to air quality
- Social impacts during construction, operations, and post-closure
- Cumulative local industry impacts
- Habitat alteration and impacts on biodiversity.

### SCOPING PHASE

The objective of the scoping phase is to obtain an understanding of the biophysical and socioeconomic environment in which the Project is located. It also provides an opportunity for the public to have input into the scope of the assessment. The technical inputs combined with the inputs from the I&APs led to the development of the Terms of Reference (ToR) for the assessment phase. The following were consulted during the preparation of the scoping report:

- Desktop and literature research
- Site visits by ECC and specialists
- Environmental monitoring data
- Specialist baseline studies, including:

- Acid-base accounting (ongoing study)
- Air quality
- Biodiversity study
- Heritage and archaeology study
- Noise
- Road traffic study
- Socioeconomic baseline
- Soil sampling and analysis
- Surface and groundwater studies
- Visual impacts on sense of place.

## TERMS OF REFERENCE

The ToR within the scoping report that is proposed for the assessment phase will cover the following:

- Soil impact assessment
- Acid mine drainage impact assessment
- Surface and groundwater impact assessment
- Biodiversity impact assessment
- Noise impact assessment
- Air quality impact assessment
- Traffic impact assessment
- Visual impact assessment
- Socioeconomic impact assessment
- Heritage impact assessment
- Blast and vibration assessment.

The methodology used for assessing impacts is described in the scoping report. A hierarchical decision-making process is followed, to prevent or eliminate, reduce, or offset, mitigate, or manage potential impacts. The draft scoping report and draft environmental management plan (EMP) will be provided to the public for review prior to submission to the competent authority, including MME and MEFT.

The next stage of this assessment will be the impact assessment phase. No comments were received on the circulated scoping report and EMP. Comments are considered if received, and where they are deemed to be material to the decision-making, or might enhance the ESIA, they will be incorporated.

The final ESIA report and its appendices will be available to all stakeholders, and all I&APs will be informed of its availability for review.

The ESIA report, appendices and addendum will be formally submitted to the competent authority, first the MME and then to the MEFT as part of the application for an environmental clearance certificate for the proposed Project once finalised.

# TABLE OF CONTENTS

**1 Introduction ... 14**

1.1 Company background ... 14
1.2 Purpose of the scoping report ... 16
1.3 The Proponent of the proposed Project ... 16
1.4 Environmental and social assessment practitioner ... 16
1.5 Environmental requirements ... 17

**2 Approach to the Assessment ... 21**

2.1 Purpose and scope of the assessment ... 21
2.2 The assessment process ... 21
2.3 Study area ... 24
2.4 Public consultation ... 24
2.5 Identification of key stakeholders and interested or affected parties ... 24
2.6 Summary of issues raised ... 27

**3 Review of the Legal Environment ... 28**

3.1 National regulatory framework ... 29
3.2 National polices and plans ... 33
3.3 World bank standards ... 36

**4 Project description ... 37**

4.1 Need for the Project ... 37
4.2 Background ... 37
4.3 The transition from historical to current mining ... 38
4.4 Access ... 40
4.5 Mining and pit design parameters ... 40
4.6 Mining fleet ... 42
4.7 Geology and mineralisation ... 42
4.8 Blasting ... 43
4.9 Drilling ... 44
4.10 Haul Roads ... 44
4.11 Site layout: materials handling and concentrating plant ... 45
4.12 Comminution area ... 46
4.13 Metallurgy and processing ... 46
4.14 Support infrastructure and services ... 49

4.14.1 Mining office block ... 49
4.14.2 UTMC Workshop and warehouse ... 49
4.14.3 Heavy mobile equipment workshop ... 49
4.14.4 Fuel facility ... 49
4.14.5 Explosive magazine ... 49

4.14.6 Communication ... 50
4.15 Utilities ... 50
4.15.1 Power supply ... 50
4.15.2 Stand-by power ... 50
4.15.3 Water supply ... 51
4.15.4 Water demand ... 53
4.16 Mineral and non-mineralised waste ... 54
4.16.1 Waste rock ... 54
4.16.2 General waste ... 55
4.16.3 Effluent and wastewater ... 55
4.17 Alternatives considered ... 55
4.18 Water supply ... 55
4.19 Rehabilitation and closure ... 56
**5 Environmental and Social Baseline ... 57**
5.1 Baseline data collection ... 57
5.2 Desktop and field surveys ... 57
5.3 Specialist studies ... 57
5.4 Location ... 58
5.5 Land use ... 58
5.6 Geological setting ... 60
5.7 Topography ... 60
5.8 Soils ... 63
5.9 Hydrology and geohydrology ... 65
5.10 Biodiversity ... 68
5.11 vegetation ... 68
5.12 Fauna species ... 70
5.13 Built environment and infrastructure ... 71
5.14 Traffic and transport ... 73
5.15 Socioeconomic baseline ... 73
5.16 Governance ... 74
5.17 Demographic profile ... 74
5.18 Health ... 75
5.19 Employment ... 76
5.20 Crime ... 77
5.21 Economic and business activities ... 77
5.22 Heritage and culture ... 78
5.23 Noise and vibration ... 79
5.24 Atmospheric absorption and meteorology ... 81
5.25 Terrain, ground absorption and reflection ... 82
5.26 Visual and sense of place ... 82

5.27 Lighting ..... 83
5.28 Biophysical environment baseline ..... 83
5.28.1 Climate and meteorology ..... 83
5.28.2 Air quality ..... 85
5.28.3 Stormwater control ..... 87
*5.28.3.1* STORMWATER MANAGEMENT PRINCIPLES PROPOSED ..... 87
**6 Impact identification and evaluation methodology ..... 89**
6.1 Introduction ..... 89
6.2 Assessment guidance ..... 89
6.3 Limitations, uncertainties and assumptions ..... 90
6.4 Assessment methodology ..... 90
6.5 Mitigation ..... 93
6.6 Terms of reference for the assessment ..... 94
**7 Conclusion ..... 95**
**8 References and consulted documents ..... 96**

# LIST OF TABLES

Table 1 – Proponents details ..... 16
Table 2 – Listed activities potentially triggered by the proposed Project ..... 18
Table 3 – Details of the regulatory framework as it applied to the proposed Project ..... 29
Table 4 – National polices and plans applicable to the proposed Project ..... 33
Table 5 – Specific permits and licence requirements for the proposed Project under the various applicable Acts ..... 34
Table 6 – Applicable IFC performance standards ..... 36
Table 7 - Current Mining Fleet (Source: Nexus-Ino Mining, 2021) ..... 42
Table 8 - Specialist studies conducted for the ESIA ..... 57

# LIST OF FIGURES

Figure 1 – A map showing the location of the Uis tin mining area and ML 134 ..... 15
Figure 2 – ESIA processing showing the current phase ..... 23
Figure 3 – Stakeholders to the mining licence area ..... 26
Figure 4 - Historical open pits, pegmatite-tin ore, and waste dumps ..... 39
Figure 5 - UTMC Mine and Ore Processing Infrastructure (Source: Minxcon, 2020) ..... 41
Figure 6 - Proposed Mining Method (Source: Minxcon, 2021) ..... 41
Figure 7 - Diagrammatic layout of the processing plant and comminution areas ..... 46
Figure 8 - Flow diagram of processing methodology ..... 48
Figure 9 - Main power supply off take (Source: ECC, 2021) ..... 50
Figure 10 - Genset stand-by power source (Source: Minxcon, 2021) ..... 51
Figure 11 - Borehole locations ..... 52
Figure 12 - A map showing the Project location within the Okombahe Reserve and in proximity to nearby villages. ..... 59
Figure 13 - A map showing the Project location geological setting ..... 61
Figure 14 - Elevation map for ML 134. ..... 62
Figure 15 – Soil map of ML 134 ..... 64
Figure 16 - Borehole locations with coordinates ..... 66
Figure 17 - Hydrology map of ML 134 ..... 67
Figure 18 - Vegetation map of ML 134 ..... 69
Figure 19 – A map showing the power line infrastructure ..... 72
Figure 20 - Noise sampling points ..... 80
Figure 21 - View of the airfield from the west facing slopes of the mountain ridge ..... 83
Figure 22 - Average temperatures and precipitation at Uis (source: Meteoblue) ..... 84
Figure 23 - Solar radiation Namibia (source: atlas of Namibia) ..... 84
Figure 24 - Wind direction and speed for Uis, Erongo Region (source: Meteoblue, 2021) ..... 85
Figure 25 – A map showing the dust-fall monitoring locations ..... 86
Figure 26 – ECC ESIA methodology based on IFC standards ..... 91
Figure 27 – ECC ESIA methodology based on IFC standards ..... 92

# LIST OF APPENDICES

Appendix A – Draft Environmental Management Plan..... 98
Appendix B – Public Consultation Records..... 99
Appendix C – EAP CV's ..... 102

# DEFINITIONS AND ABBREVIATIONS

| ABBREVIATIONS | DESCRIPTION |
|---|---|
| CBNRM | community based natural resource management |
| CC | Close Corporation |
| CEO | Chief Executive Officer |
| CIA | cumulative impact assesment |
| COVID | Coronavirus |
| COVID-19 | Coronavirus 2019 |
| CUPB | Cape Cross–Uis Pegmatite Belt |
| CWC | clean water channel |
| dBA | decibels |
| DEA | Directorate of Environmental Assessment |
| DMS | dense medium separation |
| DWA | Department Water Affairs |
| EAP | environmental assessment practitioner |
| ECC | Environmental Compliance Consultancy |
| ECC | environmental clearance certificate |
| EHS | environmental health and safety |
| EIA | environmental impact assessment |
| EMA | Environmental Management Act |
| EMP | environmental management plan |
| EPLs | exclusive prospecting licences |
| ESIA | environmental and social impact assessment |
| g/t | grams per tonne |
| GDP | gross domestic product |
| GG | government gazatte |
| GN | government notice |
| HCV | high conservation value |
| HDPE | high density polyethylene |
| HIV/AIDS | human immunodeficiency virus / acquired immunodeficiency syndrome |
| I&APs | interested and affected parties |
| IFC | International Finance Corporation |
| ITS | ITS Global - traffic engineering consultants |
| km | kilometers |
| km/h | kilometres per hour |
| km2 | kilometres squared |
| kV | kilovolts |
| kW | kilowatt |
| LOM | life of mine |
| Ltd | Limited |
| m | metre |

| ABBREVIATIONS | DESCRIPTION |
|---|---|
| m/s | metre per second |
| m3 | cubic metres |
| m3/day | cubic metres per day |
| Ma | million years ago |
| masl | metres above sea level |
| MAWLR | Ministry of Agriculture, Water and Land Reform |
| MEFT | Ministry of Environment, Forestry and Tourism |
| mg/m2/day | milligrams per metres squared per day |
| ML | mining licence |
| mm | millimetre |
| Mm3 | million cubic metres |
| MME | Ministry of Mines and Energy (competent authority) |
| MoWT | Ministry of Works and Transport |
| Mt | million tonnes per annum |
| Mtpa | million tonnes per annum |
| MW | million watts |
| N$ | Namibian dollar |
| Na | sodium |
| NBRI | National Botanical Research Institute |
| NDP | national development plan |
| NHC | National Heritage Council |
| NSR | noise sensitive receptor |
| NT | near-threatened |
| OECD | Organisation for Economic Co-operation and Development |
| PCD | pollution control dam |
| pH | acidity alkalinity unit |
| PM | partiulate matter |
| PM10 | particulate matter with an aerodynamic diameter of less than 10 µm (thoracic particles) |
| PM2.5 | particulate matter with an aerodynamic diameter of less than 2.5 µm (respirable particles) |
| Project | Uis Tin Mine Stage II Project |
| Proponent | Uis Tin Mining Company (Pty) Ltd |
| Pty | propriety |
| Reg | registration |
| ROM | run of mine |
| RWD | return water dam |
| t | tonnes |
| TB | tuberculosis |
| ToR | terms of reference |
| Tph | tonnes per hour |
| TSF | tailings storage facility |

| ABBREVIATIONS | DESCRIPTION |
|---|---|
| WHO | World Health Organisation |
| WRD | waste rock dump |
| Zn | zinc |

# 1 INTRODUCTION

## 1.1 COMPANY BACKGROUND

Environmental Compliance Consultancy (ECC) has been contracted by Uis Tin Mining Company (Pty) Ltd, the Proponent, a subsidiary of AfriTin Mining (Pty) Ltd. to undertake an environmental and social impact assessment (ESIA) and an Environmental Management Plan (EMP) in terms of the Environmental Management Act, No 7 of 2007 and its regulations of 2012.

AfriTin Mining is a mining company with a portfolio of tin assets in Namibia and South Africa. Uis Tin Mining Company, the Namibian registered subsidiary, proposes to undertake mechanical and process flow upgrades to its existing tin extraction systems. The Project objectives are to increase production throughput by expanding the pilot tin processing plant on mining licence (ML) 134 located near Uis in the Erongo Region, Namibia. Uis can be accessed by the C36 road from Omaruru, the C35 from Henties Bay or the C35 from Khorixas. Refer to Figure 1 for the project location.

The proposed Project upgrades to the current pilot plant's processing and supporting infrastructure will expand production from the current 80 tons per hour (tph) in stage 1 to 120 tph in Stage II. As part of this project the following upgrades will also be made: upgrades to the dense medium separation (DMS) cyclone feed, inlet pressure system, and constant moisture control of feed material, etc.

Ore (cassiterite) will continue to be extracted from the current two open pit mines, which will supply the Stage II operations within the ML 134 area. Open-pit 1 will continue to be mined and opened in a southerly direction and will eventually join with Open-pit 2.

The Proponent intends to upgrade on-site supporting infrastructure to be able to sustain the planned expansion Project. The additional changes include:

- Upgrades to the existing sewage effluent water collection and treatment system
- Building a clean stormwater channel (CWC) and berm around the pilot plant for water re-use in the processing plant
- An upgrade of the existing settling and evaporation ponds
- Increased water supply (from 75 000 to 150 000 cubic litres per year).

These upgrades are designed to consistently achieve a targeted tin recovery of 64% and they form an integral part of the 20 year life of mine (LOM).

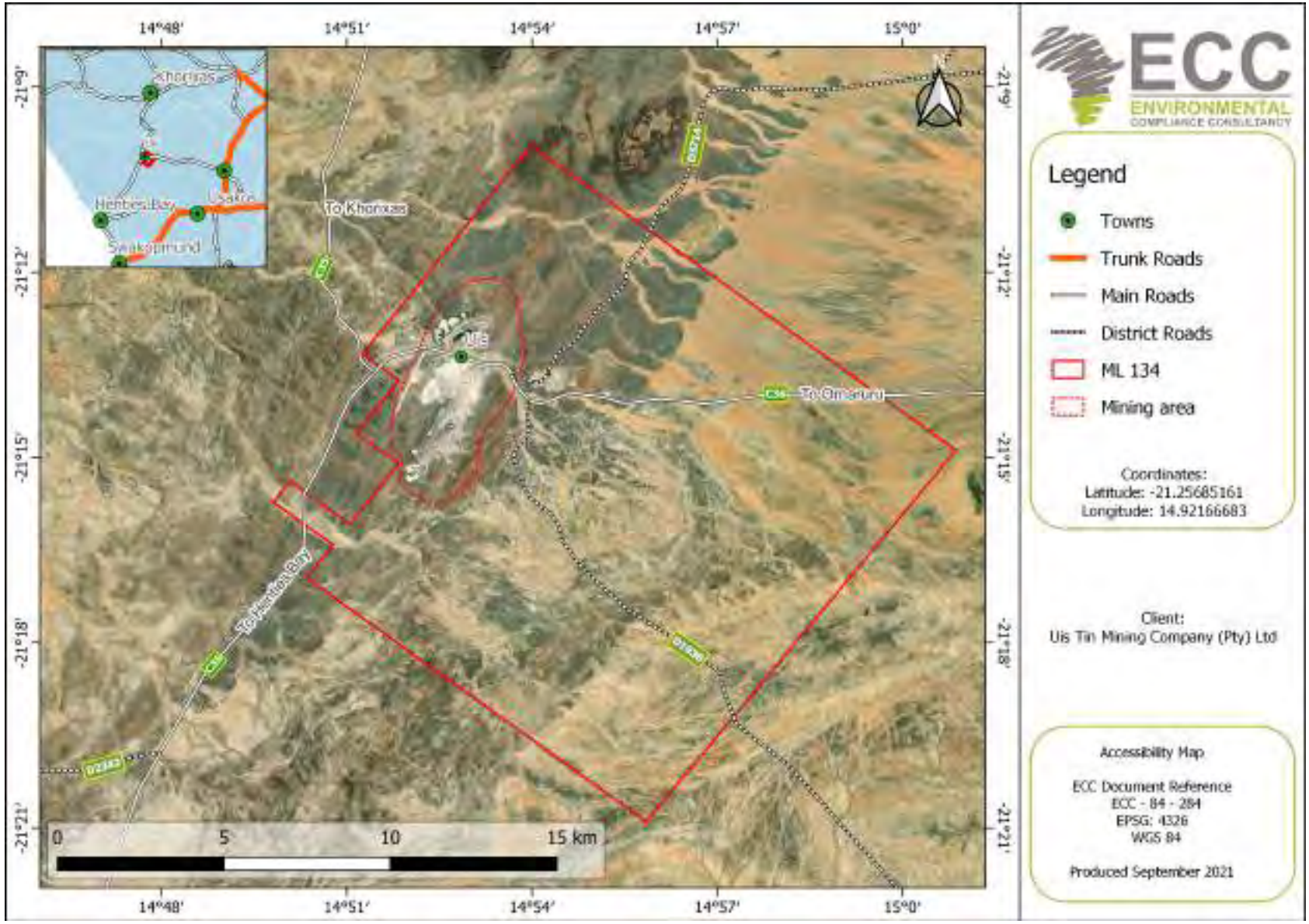



**Figure 1 – A map showing the location of the Uis tin mining area and ML 134**

## 1.2 PURPOSE OF THE SCOPING REPORT

The purpose of this report is to present the findings of the scoping study phase that forms part of the ESIA process.

The scoping report summarises the prescribed ESIA process that has been followed; it provides information on the baseline biophysical and socioeconomic environments, Project description and details; it outlines the terms of reference for the assessment phase; and it also includes a preliminary environmental management plan (EMP), which is provided as Appendix A.

The scoping report and appendices was submitted to the public for review between 23 February and 9 March 2022. This stage provided an opportunity for interested and affected parties (I&APs) to provide input, comments, and suggestions on the proposed Project, and in so doing, guide the impact assessment phase. The scoping report, inclusive of any public comments, will then be submitted to the competent authorities, Ministry of Mines and Energy (MME) for the Project. Thereafter, it will be submitted to the Ministry of Environment, Forestry and Tourism (MEFT) - Directorate of Environmental Affairs (DEA) for a record of decision.

## 1.3 THE PROPONENT OF THE PROPOSED PROJECT

The Uis Tin Mining Company is the Proponent for the proposed Project. The Proponent holds the rights to the mining licence 134 located in Uis, Erongo Region, Namibia. The Proponents' details are provided in Table 1.

**Table 1 – Proponents details**

| COMPANY REPRESENTATIVE: | CONTACT DETAILS: |
|---|---|
| Efraim Tourob | Uis Tin Mining Company (Pty) Ltd:<br>4th Avenue East, Number 1, Uis<br>PO Box 30, Uis<br>efraim.tourob@afritinmining.com<br>+264 (64) 504 404 |

## 1.4 ENVIRONMENTAL AND SOCIAL ASSESSMENT PRACTITIONER

Environmental Compliance Consultancy (ECC) (Reg. No. CC 2013/11401) has prepared this scoping report and the preliminary EMP on behalf of the Proponent.

This report was authored by employees of ECC, who have neither material interest in the outcome of this report, nor any interest that could be reasonably regarded as being capable of affecting their independence in the preparation of this report. ECC is independent from the Proponent and has no vested or financial interest in the Project, except for fair remuneration for professional fees rendered based upon agreed commercial rates. Payment of these fees is in no way contingent on the results of this report or the assessment, or a record of decision issued by Government. No member or employee of ECC is, or is intending

to be, a director, officer, or any other direct employee of Uis Tin Mining Company (Pty) Ltd. No member or employee of ECC has, or has had, any shareholding in the Uis Tin Mining Company (Pty) Ltd.

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

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

## 1.5 ENVIRONMENTAL REQUIREMENTS

The Environmental Management Act, 2007, and its regulations, stipulate that an environmental clearance certificate is required before undertaking any of the listed activities that are identified in the Act and its regulations. Potential listed activities triggered by the Project are provided in Table 2.

**Table 2 – Listed activities potentially triggered by the proposed Project**

| LISTED ACTIVITY | AS DEFINED BY THE REGULATIONS OF THE ACT | RELEVANCE TO THE PROJECT |
|---|---|---|
| Energy generation, transmission, and storage activities | The construction of facilities for:<br>(1a) The generation of electricity.<br>(1b) The transmission and supply of electricity. | - External diesel generators are in use on site as emergency back-up power supply sources to skeleton operations in the event of a power failure.<br>- An existing 66 kilovolt powerline and associated infrastructure located within the Accessory Work Permit area of the ML will continue to be used. No upgrades are needed for the proposed Project. |
| Waste management, treatment, handling, and disposal activities | 2.1 The construction of facilities for waste sites, and the treatment and disposal of waste.<br>2.2 Any activity entailing a scheduled process referred to in the Atmospheric Pollution Prevention Ordinance Act, 1976.<br>2.3 The importing, processing, use and recycling, temporary storage, transit, or exporting, of waste. | - The following fall within provision 2.2: Any activity entailing a scheduled process referred to in the Atmospheric Pollution Prevention Ordinance, 1976.<br>- Mining activities generate dust, monitored monthly.<br>- Potential for noxious gas generation and emission.<br>- The following aspects fall within this provision: (2.3). The import, processing, use and recycling, temporary storage, transit, or export of waste.<br>- A Clarus Fusion Waste Water Treatment Plant, or WWTP sewage effluent water collection and treatment system is being operated and maintained by an external service provider and must be upgraded as part of the expansion to accommodate additional volume. Sewage waste is collected monthly, and as needed, by a local contractor and disposed at the local sewage plant.<br>- Industrial waste collection facility is in use within the processing plant physical boundaries. |

| LISTED ACTIVITY | AS DEFINED BY THE REGULATIONS OF THE ACT | RELEVANCE TO THE PROJECT |
|---|---|---|
| | | - Overburden and processing plant waste minerals (>6mm) are transported and co-disposed on the WRD site located within the mining licence footprint.<br>- Solid and Hazardous waste collection points are in use on the site. Hazardous waste is disposed of at an approved facility, or in an approved manner as per permitting. |
| Mining and quarrying activities | 3.1 The construction of facilities for any process or activities that require a license, right or other form of authorisation, and the renewal of a licence, right or other form of authorisation, in terms of the Minerals (Prospecting and Mining) Act, 1992.<br>3.2 Other forms of mining or extraction of any natural resources, whether regulated by law or not.<br>3.3 Resource extraction, manipulation, conservation, and related activities. | - The current operations are permitted under an approved mining licence (ML134).<br>- The resource, tin ore within pegmatite is mined and extracted within the processing plant to produce a tin concentrate. The process crushes the ore and separates the denser tin and related minerals from the pegmatite, primarily through gravity type separation. No chemicals are used in the separation process. |
| Water resource developments | 8.1 The abstraction of ground or surface water for industrial or commercial purposes.<br>8.2 The abstraction of groundwater at a volume exceeding the threshold authorised in terms of the law relating to water resources.<br>8.5 Construction of dams, reservoirs, levees, and weirs.<br>8.6 Construction of industrial and domestic wastewater treatment plants and related pipeline systems.<br>8.8 Construction and other activities in watercourses within flood lines. | - Mining operations will continue to utilize groundwater and surface water sources for their processing requirements, dust suppression and human consumption.<br>- Currently, there is an abstraction permit that allows for 75 000 cubic meters abstraction threshold per year valid for two years. An amendment application will be submitted to increase abstraction to 150 000 cubic meters per year to supply production needs. |

| LISTED ACTIVITY | AS DEFINED BY THE REGULATIONS OF THE ACT | RELEVANCE TO THE PROJECT |
|---|---|---|
| | 8.9 Construction and other activities within a catchment area. | - The Project will entail the installation of a new clean water channel (CWC) stormwater channel and berm around the processing plant as well as an upgrade of the existing settling and evaporation ponds, all to increase the availability of recycle and reusable water.<br>- The Project falls within the Ugab catchment area. |
| Hazardous substance treatment, handling, and storage | 9.1 The manufacturing, storage, handling, or processing of hazardous substance defined in the Hazardous Substances Ordinance, 1974.<br>9.2 Any process or activity that requires a permit, licence, or other form of authorisation, or the modification of, or changes to, existing facilities for any process or activity that requires amendment of an existing permit, licence or authorisation, or which requires a new permit, licence or authorisation in terms of governing the generation or release of emissions, pollution, effluent, or waste.<br>9.4 The storage and handling of dangerous goods, including petrol, diesel, liquid petroleum, gas, or paraffin, in containers with the combined capacity of more than 30 cubic meters at one location. | - Explosives will be stored safely on site for use in the mine.<br>- Licences will be obtained for hazardous substances and their storage and use on site.<br>- Petrol, diesel, liquid petroleum gas or paraffin will be stored for use in vehicles and equipment.<br>- A diesel storage tank is installed and properly bunded on site. |

# 2 APPROACH TO THE ASSESSMENT

## 2.1 PURPOSE AND SCOPE OF THE ASSESSMENT

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

## 2.2 THE ASSESSMENT PROCESS

The ESIA methodology applied to this assessment has been developed using the International Finance Corporation (IFC) standards and models, in particular Performance Standard 1: Assessment and management of environmental and social risks and impacts (International Finance Corporation, 2012 and 2017); Namibian Draft Procedures and Guidance for EIA and EMP (Republic of Namibia, 2008); international and national best practice guidelines; and combined relevant ESIA experience.

This assessment was undertaken for the Proponent in accordance with Namibian legal requirements.

This assessment is a formal process. The potential effects that the Project will have on the biophysical, social, and economic environments are identified, assessed, and documented so that the breadth and significance of potential impacts can be taken into account when considering a record of decision for the proposed Project.

Final mitigation measures and recommendations are based on the cumulative experience of the consulting team and the client, taking into consideration the potential environmental and social impacts. The process followed, through the basic assessment, is illustrated in Figure 2 and is detailed further in the following sections.

## 1. Project screening

Complete

The first stages in the ESIA process are to undertake a screening exercise to determine whether the Project triggers listed activities under the Environmental Management Act, 2007, and its regulations.

The screening phase of the Project is a preliminary analysis, in order to determine ways in which the Project might interact with the biophysical, social, and economic environments.

Stakeholder engagement:
- Registration of the project
- Preparation of the BID

## 2. Establishing the assessment scope

In Progress

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

The scope of this assessment was determined through undertaking a preliminary assessment of the proposed Project against the receiving environment.

Feedback obtained from consultation with the public and the Proponent informs this process.

Impacts that are identified as potentially significant during the screening and scoping phase are taken forward for further assessment in the ESIA process.

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

**SOCIOECONOMIC ENVIRONMENT**
- Employment
- Local businesses
- Visual impacts on sense of place

**BIOPHYSICAL ENVIRONMENT**
- Noise and air quality, including dust emissions
- Surface and ground water
- Heritage and culture
- Topography and soil
- Biodiversity and
- Mine waste characterisation

The following topics were scoped out of the ESIA, and they are therefore not discussed further in this report.
- An assessment of safety impacts or risks associated with developing the mine are not included within the scope of this assessment, and will be addressed by the Proponent in a site-specific safety management plan.

## 3. Baseline studies

In Progress

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

The region and general area have been studied extensively for various projects and assessments, therefore there is a vast volume of literature available to be referenced. The Project site-specific area has no yet been studied as part of the ESIA process to date, but field studies will be conducted as part of this assessment and may include but are not limited to the following:
- Field surveys
- Desktop studies
- Consultation with stakeholders
- Specialist field visits, monitoring, and ongoing studies

The environmental and social baselines will be provided in the next update of the scoping study.

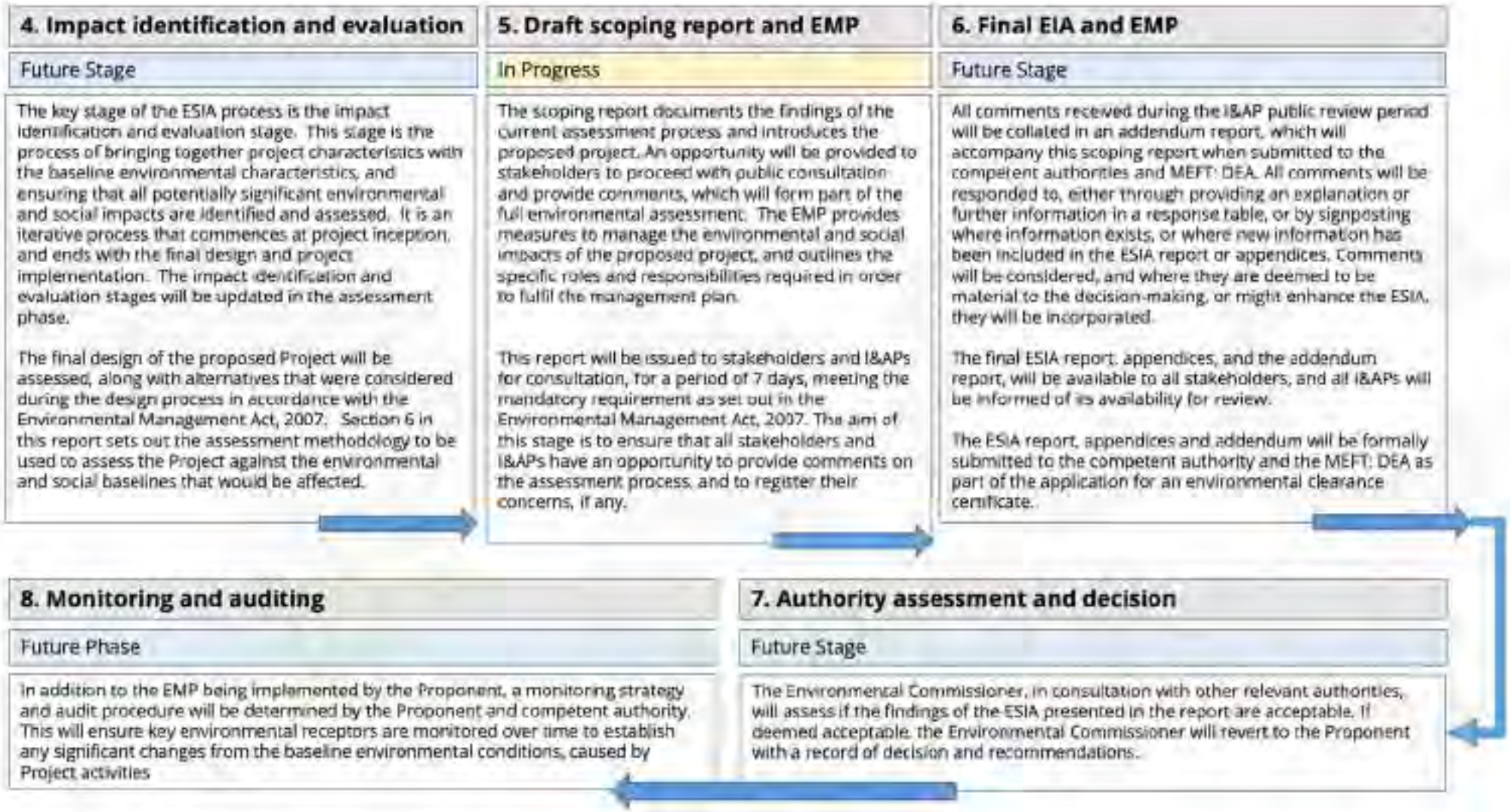



**Figure 2 – ESIA processing showing the current phase**

## 2.3 STUDY AREA

This ESIA study area has been defined according to the geographic scope of the receiving environment, and potential impacts that could arise because of the proposed Project. The study area encompasses the interior of ML 134, the Uis townlands and the general mining area's spatial footprint.

## 2.4 PUBLIC CONSULTATION

Public participation and consultation are requirements stipulated in Section 21 of the Environmental Management Act, 2007, and its regulations, for a Project that requires an environmental clearance certificate. Consultation is a compulsory and critical component of the ESIA process for achieving transparent decision-making and can provide many benefits. Consultation is ongoing during the ESIA process.

The objectives of the public participation and consultation process are to:

- Provide information on the Project and introduce the overall Project concept and plan in the form of a background information document (BID) Appendix B)
- Determine the relevant government, regional and local regulating authorities
- Listen to and understand community issues, record concerns, and questions
- Explain the process of the ESIA and timeframes involved
- Establish a platform for ongoing consultation.

## 2.5 IDENTIFICATION OF KEY STAKEHOLDERS AND INTERESTED OR AFFECTED PARTIES

A stakeholder mapping exercise was undertaken to identify individual or groups of stakeholders, and the method in which they will be engaged during the ESIA process. Stakeholders were approached through direct communication (letters and phone calls), the national press, site notices, or directly by email. The list of stakeholders is included in Appendix B.

A summarised list of stakeholders that were engaged during the public consultation process is given below:

- Directly and indirectly affected landholders
- The general public with an interest in the Project
- Ministry of Environment, Forestry and Tourism (MEFT)
- Ministry of Agriculture, Water and Land Reform (MAWLR)
- Ministry of Mines and Energy (MME)
- Ministry of Works and Transport (MWT) and the Roads Authority
- Erongo Regional Council
- Town residents and business owners
- Uis Village Council

- Okombahe Traditional Authority
- NamWater and NamPower.

Appendix B provides a list of interested and affected parties, evidence of consultation, including minutes of public meetings, advertisements in two national newspapers, and a summary of the comments or questions raised by the public.

A map of the identified stakeholders for the Mining Licence is illustrated in Figure 3.

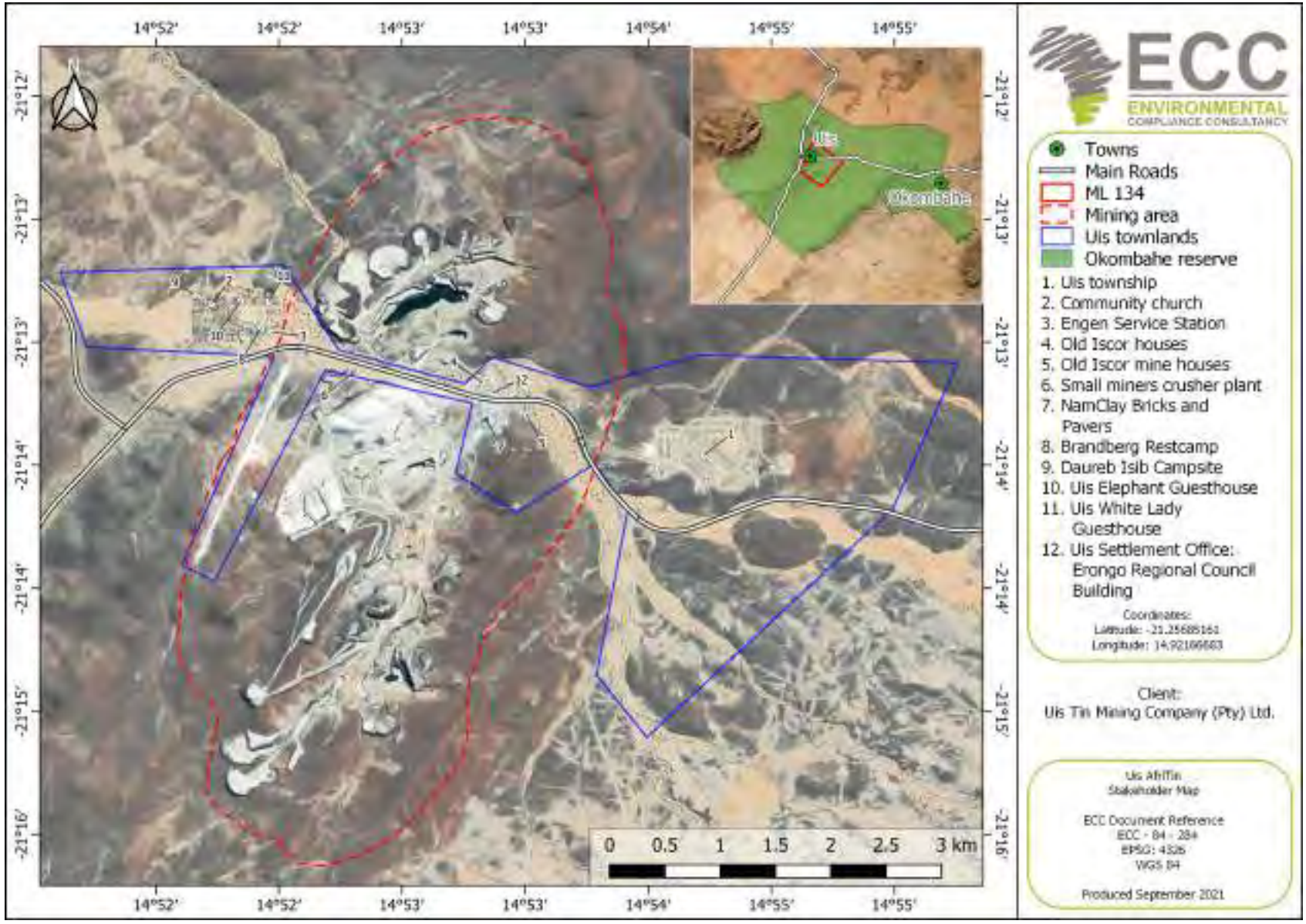



**Figure 3 – Stakeholders to the mining licence area**

## 2.6 SUMMARY OF ISSUES RAISED

During the compilation of this report, several stakeholders were engaged for input and feedback into potential issues or concerns regarding the proposed Project. A focus group meeting was held on the 16th of September 2021 at the Uis Settlement Office, but only one attendee showed up for the meeting. A follow-up public meeting was held at the same venue on the 19th of October 2021. Minutes of this meeting and attendance registers can be found in Appendix B. Overall, the proposed Project received significant positive feedback, and was well received by the public during the meeting.

The matters raised could be considered typical concerns for this scale of Project, and these can be summarised as follows:

- Heritage impacts
- Power and water supply
- Waste management
- Waste resource management
- Visual impacts
- Biodiversity impacts
- Socioeconomic and social impacts, such as job creation, training opportunities skills development for youth and unskilled workers, staff housing and accommodation, local housing overall, in migration and informal settlement growth, and the lack of amenities in Uis
- Potential pollution impacts
- Mine closure, and ideas for the site and related assets (pits, mine rock, etc.).

To ensure that interested and affected parties have the opportunity to comment and provide feedback on this assessment, the completed report was circulated (23 February – 9 March 2022) to all neighbouring landholders, potentially interested and/or affected parties, and stakeholders of the Project. Should stakeholders have comments or questions, or areas that concern them, that they feel require further assessment, ECC will address these in the assessment phase or through an addendum report to the final document. The public review period has not delivered up any comments from the public.

# 3 REVIEW OF THE LEGAL ENVIRONMENT

As stated in Section 1, an environmental clearance certificate is required for any activity listed in the Government Notice No. 29 of 2012 of the EMA. The Proponent holds a valid environmental clearance certificate for its current mining (Phase I) activities.

The Project area is located outside of any national parks, heritage listed areas, or areas of significance. The Project area is not located within a groundwater-controlled area, as regulated under the Water Management Act of 1956.

A thorough review of relevant legislation has been conducted for the proposed Project. Table 3 below identifies relevant legal requirements specific to the Project. Table 4 provides the national policies and plan and Table 5 specific permits for the Project. This chapter outlines the regulatory framework applicable to the proposed Project.

## 3.1 NATIONAL REGULATORY FRAMEWORK

**Table 3 – Details of the regulatory framework as it applied to the proposed Project**

| NATIONAL REGULATORY FRAMEWORK | SUMMARY | APPLICABILITY TO THE PROJECT |
|---|---|---|
| Constitution of the Republic of Namibia (1990) | The constitution defines the country's position in relation to sustainable development and environmental management.<br>The constitution refers that the state shall actively promote and maintain the welfare of the people by adopting policies aimed at the following:<br>"Maintenance of ecosystems, essential ecological processes and biological diversity of Namibia, and the utilisation of living, natural resources on a sustainable basis for the benefit of all Namibians, both present, and future." | The proposed Project is committed to the sustainable use of the environment, and has aligned its corporate mission, vision, and objectives within the ambit of the Constitution of the Republic of Namibia (1990). |
| Minerals (Prospecting and Mining) Act No. 33 of 1992 | The Act provides for the granting of various licences related to mining and exploration.<br>Section 50 (I) requires: "An environmental impact assessment indicating the extent of any pollution of the environment before any prospecting operations or mining operations are being carried out, and an estimate of any pollution, if any, likely to be caused by such prospecting operations or mining operations."<br>The Act sets out the requirements associated with licence terms and conditions, such that the holder of a mineral licence shall comply with.<br>The Act also contains relevant provisions for pollution control related to mining activities and land access agreements and provides provisions that mineral licence holders are liable for any damage to | The proposed mining activity requires an EIA to be carried out, as it triggers listed activities in the Environmental Management Act's regulations.<br>The Project shall be compliant with Section 76 of the Act with regards to records, maps, plans and financial statements, information, reports, and returns submitted. |

| NATIONAL REGULATORY FRAMEWORK | SUMMARY | APPLICABILITY TO THE PROJECT |
|---|---|---|
| | land, water, plant, or animal life, caused by spilling or pollution, and must take all such steps as may be necessary to remedy such spilling, pollution, loss, or damage, at its own costs. | |
| Environmental Management Act, 2007 (Act No. 7 of 2007) and its regulations, including the Environmental Impact Assessment Regulation, 2007 (No. 30 of 2011) | The Act aims to promote sustainable management of the environment and use of natural resources. The Act requires certain activities to obtain an environmental clearance certificate prior to Project development.<br>The Act states that an EIA should be undertaken and submitted as part of the environmental clearance certificate application process.<br>The MEFT is responsible for the protection and management of Namibia's natural environment. The Department of Environmental Affairs, under the MEFT, is responsible for the administration of the EIA process. | This environmental scoping report documents the findings of the scoping phase of the environmental assessment undertaken for the proposed Project.<br>The process has been undertaken in line with the requirements under the Act and its regulations. |
| Water Act, 1956 (Act No. 54 of 1956) | Although the Water Resources Management Act (No. 11 of 2013), has been billed, but not promulgated, it cannot be enacted, as the regulations have not been passed – therefore the Water Act of 1956 remains the current piece of legislation relating to water management in Namibia.<br>This Act provides for the control, conservation, and use of water for domestic, agricultural, urban, and industrial purposes; and to make provision for the control of certain activities on or in water.<br>The Department of Water Affairs, within the Ministry of Agriculture, Water and Land Reform (MAWLR), is responsible for the administration of the Act. | The Act stipulates obligations to prevent the pollution of water.<br>Measures to minimise potential surface and groundwater pollution are contained in the EMP.<br>The Project is obliged to have all permits relevant to its operations under this Act.<br>Abstraction of water from boreholes requires an abstraction permit to be obtained from the Ministry of Agriculture, Water and Land Reform.<br>The placement of mining infrastructure, such as the tailings storage facility, and the location of industrial effluent storage ponds, require consideration in terms of the Water |

| NATIONAL REGULATORY FRAMEWORK | SUMMARY | APPLICABILITY TO THE PROJECT |
|---|---|---|
| | | Act. This will be considered in the assessment phase of the ESIA. |
| Soil Conservation Act, No. 76 of 1969 | This Act makes provision for the prevention and control of soil erosion, and for the protection, improvement, and conservation of soil and vegetation. | The proposed Project is already on an existing and disturbed area, and land may be cleared were necessity. Planned activities will take place within the boundaries of the mining licence.<br>Measures for potential impact due to land clearing will be included in the EMP to ensure conservation of soil and vegetation that will be affected by or used as part of the rehabilitation phase of the Project. |
| The Forestry Act, No. 12 of 2001 as amended by the Forest Amendment Act, No. 13 of 2005 | Section 22 deals with the protection of natural vegetation that is not part of the surveyed erven of a local authority area as defined.<br>Section 23 requires a permit from the Director for the clearance of vegetation on more than 15 hectares on any piece of land or several pieces of land situated in the same locality as that which has predominantly woody vegetation; or cut or remove more than 500 cubic metres of forest produce from any piece of land in a period of one year. | The Project activities may require limited land clearing where necessary.<br>The Proponent will ensure that all required permits are in place before vegetation removal commences. |
| National Heritage Act, No. 27 of 2004. | The Act provides provision for the protection and conservation of places and objects with heritage significance.<br>Section 55 compels mining companies to report any archaeological findings to the National Heritage Council.<br>Subsection 9 allows the NHC to issue consent, subject to any conditions that the Council deems necessary. | Since the proposed Project area is an already operational area, it is unlikely that there is potential for heritage related objects to be found in the mining licence area. However, the relevant stipulations in the Act will be taken into consideration and incorporated into the EMP.<br>In cases where heritage sites are discovered, a generic *Chance Find Procedure* will be used. |

| NATIONAL REGULATORY FRAMEWORK | SUMMARY | APPLICABILITY TO THE PROJECT |
|---|---|---|
| Labour Act, No. 11 of 2007 | The Labour Act, No. 11 of 2007 (Regulations relating to the Occupational Health & Safety provisions of Employees at Work, promulgated in terms of Section 101 of the Labour Act, No. 6 of 1992 - GN156, GG 1617 of 1 August 1997) | The Project shall adhere to all labour provisions and guidelines, as enshrined in the Labour Act.<br>Separate from the EMP, the Project Proponent shall also develop and implement a comprehensive occupational health and safety plan to ensure adequate protection for its personnel throughout the Project lifecycle. |
| Road Traffic and Transport Act, No. 22 of 1999 | This Act makes provision for the control of traffic on public roads, the licensing of drivers, the registration and licensing of vehicles, and the control and regulation of road transport users across Namibia. | The Project will involve transportation activities in support of mining activities.<br>The employees and support business shall adhere to national road regulations on public roads. |
| Hazardous Substances Ordinance, No. 14 of 1974 | This Ordinance provides for the control of toxic substances and can be applied in conjunction with the Atmospheric Pollution Prevention Ordinance, No. 11 of 1976.<br>This applies to the manufacture, sale, transport, handling, use, and disposal of hazardous substances, as well as their import and export. | The planned Project will involve the handling and storage of hazardous substances such as fuels, reagents, and industrial chemicals. The Proponent shall ensure safe handling, transfer, storage, use, and disposal protocols are developed, implemented, and audited throughout its operations.<br>The Proponent is obliged to ensure that all permits under this Ordinance are obtained prior to Project commencement. |
| The Atmospheric Pollution Prevention Ordinance, No. 11 of 1976 | The Ordinance pertains to the prevention of air pollution, with particular focus on public health, and contains detailed provisions on air pollution matters, including the control of noxious or offensive gases, atmospheric pollution by smoke, dust control, motor vehicle emissions, and other general provisions. | The nature of mining activities does generate dust. Activities within the mining operations and processing plant will generate gases, odours, and air pollution. The Proponent will ensure that all measures reasonably practicable will be implemented to reduce and mitigate impacts to air quality, and this will be included in the EMP. |

## 3.2 NATIONAL POLICES AND PLANS

**Table 4 – National polices and plans applicable to the proposed Project**

| POLICY OR PLAN | DESCRIPTION | RELEVANCE TO THE PROJECT |
|---|---|---|
| Vision 2030 | Vision 2030 sets out the nation's development targets and strategies to achieve its national objectives.<br>Vision 2030 states that the overall goal is to improve the quality of life of the Namibian people aligned with the developed world. | The proposed Project shall aim to meet the objectives of Vision 2030 and shall contribute to the overall development of the country through continued employment opportunities and ongoing contributions to the gross domestic product (GDP). |
| Fifth National Development Plan (NDP5) | The NDP5 is the fifth in a series of seven five-year national development plans that outline the objectives and aspiration of Namibia's long-term vision.<br>The NDP5 pillars are economic progression, social transformation, environmental sustainability, and good governance. | The planned Project supports meeting the objectives of the NDP5 through creating opportunities for continued employment. |
| The Harambee Prosperity Plan ii (2021 – 2025) | Second Pillar: Economic advancement – ensuring increasing productivity of priority key sectors (including mining) and the development of additional engines of growth, such as new employment opportunities. | The Project will contribute to the continued advancement of the mining industry and provide additional employment generation within the regional and national landscape. |
| Minerals Policy | The Minerals Policy was adopted in 2002 and sets guiding principles and direction for the development of the Namibian mining sector, while communicating the values of the Namibian people.<br>The Policy strives to create an enabling environment for local and foreign investments in the mining sector and seeks to maximise the benefits for the Namibian people from the mining sector, while encouraging local participation. | The planned Project conforms to the Policy, which has been considered through the ESIA process and the production of this report.<br>The Proponent intends to continue to support local spending and procurement.<br>The Project will comply with the general guidelines of the Policy through the adoption of various legal mechanisms to manage all aspects of the environment effectively and sustainably from |

| POLICY OR PLAN | DESCRIPTION | RELEVANCE TO THE PROJECT |
|---|---|---|
| | The objectives of the Minerals Policy are in line with the objectives of the Fifth National Development Plan that include reduction of poverty, employment creation, and economic empowerment in Namibia. | the start. The ESIA is one such mechanism to ensure environmental integrity throughout the planned Project's lifecycle. |

**Table 5 – Specific permits and licence requirements for the proposed Project under the various applicable Acts**

| PERMIT OR LICENCE | ACT/REGULATION | RELATED ACTIVITIES REQUIRING PERMITS | RELEVANT AUTHORITY |
|---|---|---|---|
| Environmental clearance certificate | Environmental Management Act, No. 7 of 2007. | Required for all listed activities shown in Table 2. | Ministry of Environment, Forestry and Tourism (MEFT). |
| Mining licence | Section 90 (2) (A) of the Minerals Act, No. 33 of 1992. | Written permission from the mining commissioner. | Ministry of Mines and Energy (MME). |
| Surface rights agreements (mine, infrastructure corridors) | Section 52(1)(A) of the Minerals Act, No. 33 of 1992. | Also required in the permit application for accessory works areas. | Ministry of Mines and Energy (MME). |
| Exclusive prospecting licences | Section 68 (2) (A) of the Minerals Act, No. 33 of 1992. | Written permission from the mining commissioner before prospecting can commence. | Ministry of Mines and Energy (MME). |
| Accessory work permit | Section 90(3) of the Minerals Act, No. 33 of 1992. | Written permission from the mining commissioner before accessory works can be erected on an EMP or mining licence area. | Ministry of Mines and Energy (MME). |
| Permit for boreholes (exploration and water boreholes) | A permit is issued under the Water Act, No. 54 Of 1956 (enforced). | Required before the drilling of boreholes for exploration and the abstraction of water. | Ministry of Agriculture, Water and Land Reform (MAWLR). |
| Tailings waste disposal permit | A permit is issued under the Water Act, No. 54 of 1956 (enforced). | Required for the disposal of tailings. | Ministry of Agriculture, Water and Land Reform (MAWLR). |

| PERMIT OR LICENCE | ACT/REGULATION | RELATED ACTIVITIES REQUIRING PERMITS | RELEVANT AUTHORITY |
|---|---|---|---|
| Wastewater discharge permit | A permit is issued under the Water Act, No. 54 Of 1956 (enforced) but form types that fall under the Water Act, No. 24 of 2004 are used. | Required for discharge of sewage and/or excess industrial or mine wastewater. | Ministry of Agriculture, Water and Land Reform (MAWLR). |
| Permit for the clearing of land | The Forest Act, 2001 (Act No. 12 of 2001) | This Act governs the removal of vegetation within 100 m of a water course, or removal of more than 15 ha of woody vegetation, or the removal of any protected plant species. | Ministry of Agriculture, Water and Land Reform (MAWLR). |
| Permit for the destruction, protection or relocation of heritage objects and artefacts | The Heritage Act, No. 27 of 2004. | This Act relates to interference with heritage artefacts during the Project life. Heritage sites could potentially be located within the proposed mining licence footprint. | National Heritage Council (NHC). |
| Consumer installation certificate for bulk fuel storage | Petroleum Products Regulations. | A consumer installation certificate is available for bulk fuel storage and dispensing on site. | Ministry of Mines and Energy (MME). |
| Licence for explosives magazine | Minerals (Prospecting and Mining) Act, No. 33 of 1992; Mine Safety Regulations. | This is also covered under the accessory works application. | Ministry of Mines and Energy (MME). |
| Permit for the storage and use of explosives, and the burning of packaging | Minerals (Prospecting and Mining) Act, No. 33 of 1992; Mine Safety Regulations. | Part x (10), explosives and blasting. | Ministry of Mines and Energy (MME). |

## 3.3 WORLD BANK STANDARDS

The International Finance Corporation (IFC) is a member of the World Bank Group and is the largest global development institution focusing on the private sector in developing countries. Its standards have become a global benchmark for environmental and social performance. They form the basis for the Equator Principles (IFC, 2013); a voluntary environmental and social risk-management framework used globally by 90 financial institutions and 32 export credit agencies of the OECD, among others.

The Equator Principles are a framework and set of guidelines for evaluating social and environmental risks in Project finance and apply to all new Projects with a total capital cost of US$10 million or more, no matter what industry sectors are considered. Depending on the funding mechanism for the Project, the Equator Principles may be applicable to this Project. If so, the IFC performance standards that may be applicable are provided in Table 6 below.

**Table 6 – Applicable IFC performance standards**

| IFC STANDARDS | RELEVANCE |
|---|---|
| Performance standard 1 | Assessment and management of environmental and social risks and impacts |
| Performance standard 2 | Labour and working conditions performance standard |
| Performance standard 3 | Resource efficiency and pollution prevention performance |
| Performance standard 4 | Community health, safety, and security |
| Performance standard 5 | Land acquisition and involuntary resettlement |
| Performance standard 6 | Biodiversity conservation and sustainable management of living natural resources |
| Performance standard 8 | Cultural heritage |

# 4 PROJECT DESCRIPTION

## 4.1 NEED FOR THE PROJECT

Mining activities could contribute to the national and local economies of Namibia. UTMC expects the development and operation of the proposed Phase 1 Stage II mining activities to have a positive impact on the Namibian economy. Mining is a significant economic driver and source of investment in Namibia (Uusiku, 2021). The Namibian economy can expect sustained benefits from revenues created during the operational phase of the Stage II expansion program, in the form of royalties and taxes during the life of mine (LoM), in addition to a positive contribution towards employment.

UTMC has achieved steady-state production with the Phase I pilot plant and recorded a month on month increase in Plant throughput. Regardless, current production remains below the allowable design capacity of the Plant. UTMC plans to enhance its profitability by increasing the plant's production capacity further and in three successive stages. The scope of the ESIA is limited to the proposed Stage II operations (ore extraction and processing only).

## 4.2 BACKGROUND

In 2018 the Uis Tin Mine infrastructure development commenced on the historical Uis Tin Mine located adjacent to the Uis mining village which was built and developed to support the historical mine.

A Definitive Feasibility Study (DFS) herein after referred to as DFS was conducted between October 2020 and December 2020 for the expansion of production at Uis Tin Mine Company with the intention to fast-track opportunities to implement Stage II of Phase I by leveraging the mine's existing capabilities.

The expansion of the materials handling and concentrating plant (Plant) is being designed to increase the average monthly production from 80 to 120 tonnes of tin concentrate which form the basis for the Stage II expansion methodology. To achieve the increased production, selected mechanical systems upgrades within the Plant will be applied. For example, the ore feed rate will increase by 50%. Improvements to the operation of the concentrating circuit will continue to achieve a consistent recovery tin (DFS, 2021). This will be achieved by:

- Increasing the throughput capacity by 50% from 80tph to 120tph, which can be achieved by modular expansion of individual circuits
- Improving the overall recovery of tin from 60% to 70% (currently at 64%) by adding beneficiation capacity for tailings streams in the concentrator, which are currently discarded

- Improving the overall recovery of tantalum from 15% to 30% by optimising liberation between the tin- and tantalum-bearing minerals, which includes improved magnetic separation efficiency.

The Project requires a capital investment of approximately N$100 million and will be financed by a financial investment institution.

## 4.3 THE TRANSITION FROM HISTORICAL TO CURRENT MINING

The historical tin mine extracted ore from 14 different pegmatite ore bodies spread over an area of approximately 2km east-west and 4km north-south (Figure 4). The historical mine did not conduct rehabilitation work on its open pits and waste rock dumps leaving access to previously developed mining faces. These open pit faces are currently being mined further under ML 134 issued to UTMC, therefore eliminating the need for major pre-stripping or costly mining development work (DFS, 2021).

Since Uis Tin Mining Company (Pty) Ltd took ownership of the mine in 2018 construction of the Pilot Phase I Stage I ore processing and concentrating infrastructure and establishing supporting infrastructure for the mining and processing operations was developed and completed in 2019.

This strategy allowed UTMC to initially focus on the production of tin concentrate (cassiterite mineral) which also contains tantalum (columbite-tantalite) and lithium (as petalite). Tantalum and lithium concentrate streams can be added later for potential by-product production. Such a modification to a system of several concentrate streams will likely wait until after ramp-up to nameplate capacity. By the end of December 2020, more than 312 tonnes of tin concentrate at a grade exceeding 60% Sn had been produced and exported to the Thailand Smelting and Refining Company Ltd ("Thaisarco") under a fixed off take agreement (DFS, 2021). The ramp-up construction work is anticipated to take approximately six months to complete.

**Figure 4 - Historical open pits, pegmatite-tin ore, and waste dumps**

## 4.4 ACCESS

Access to the Project is obtained via an established road network that connects the Project to larger towns and cities with modern infrastructure. The two main access routes to the Project are via the C36 from the town of Omaruru and the C35 from the town of Henties Bay. Both roads are two-way gravel roads that are maintained by the local road authorities. The condition of the roads is good and allows for easy and efficient traveling and transport. From the towns of Henties Bay and Omaruru access can be gained to larger towns and cities via tarred roads. The closest large town to the Project is Swakopmund and is located 165km by road from the Project. Walvis Bay is a port city 40km from Swakopmund by road, with an international airport, and import and export infrastructure. Swakopmund is also connected to the town of Omaruru via rail. Uis is located approximately 270km northwest of the Namibian capital, Windhoek (DFS, 2021).

Imports of industrial goods and equipment from South Africa are done via Windhoek via the B1 and B6 main roads, while most imports from overseas come by sea through Walvis Bay. Concentrate export from UTMC is by road and sea via Walvis Bay. The location of the Project in relation to other towns, cities, and access routes are illustrated in Figure 1 above.

## 4.5 MINING AND PIT DESIGN PARAMETERS

Typical opencast mining is used to excavate cassiterite-bearing pegmatite ore. The pegmatite is present as large, sub-vertical and outcropping veins up to 100m in thickness. Phase 1 Stage I and Stage II mining activities will take advantage of the exposed outcrops and accessible mine workings (historical) through conventional open pit mining methods. At a current stripping ratio of 1:1.5 due to the necessity of increased waste removal as pegmatite is mined at depth. The current plan provides a LoM of 18 years with 20 years of processing (DFS, 2021). An overall pit slope angle design of 55 degrees (crest to crest) was selected using digital measurements on the generated digital terrain model (DTM) therefore limiting mining bench heights to 10 m for stability and operational reasons. The approach forms part of a five-year mine plan that prioritises the reduction of overburden stripping in the initial stages, extracting higher volumes of pegmatite and conversion of ore into saleable tin concentrate for export (DFS, 2021). See Figure 5 illustrating the current ore mining and processing infrastructure placement from an aerial perspective.

**Figure 5 - UTMC Mine and Ore Processing Infrastructure (Source: Minxcon, 2020)**

The proposed mining method is illustrated below (Figure 6). All mining is done by contractors. The mining production schedule has been tested and is set to achieve a fixed target per production quarter.

**Figure 6 - Proposed Mining Method (Source: Minxcon, 2021)**

## 4.6 MINING FLEET

Mining operations are contracted to Nexus-Ino who is responsible for pit work and haulage. Table 7 lists the current fleet of mining equipment proposed for the Stage II expansion operations. More mining equipment will be brought in once production is consistently on target, in line with the design capacities, and in consideration of future stages. Drilling and blasting will be on 10 m benches and loading will take place in 2.5 m flitches in the mineralised zones, intended to enhance dilution control.

**Table 7 - Current Mining Fleet (Source: Nexus-Ino Mining, 2021)**

| No. | Plant Number | Make | Description |
|---|---|---|---|
| 1 | TT126 | Scania GX460 | 40t Tipper Truck |
| 2 | TT127 | Scania GX460 | 40t Tipper Truck |
| 3 | AD008 | Bell B30 | 30t Tipper Truck |
| 4 | AD009 | Bell B30 | 30t Tipper Truck |
| 5 | AD010 | Bell B30 | 30t Tipper Truck |
| 6 | TT084 | Powestar 2628 | 10m3 Tipper Truck |
| 7 | TT097 | Powestar 2628 | 10m3 Tipper Truck |
| 8 | EX009 | New Holland E305B | 30t Excavator |
| 9 | EX015 | Kobelco SK500 | 50t Excavator |
| 10 | EX017 | Kobelco SK380 | 38t Excavator |
| 11 | LD020 | Cat 950 | Front End Loader |
| 12 | LD022 | Cat 950 | Front End Loader |
| 13 | LD024 | Cat 226B3 | Skid Steer |
| 14 | TLB05 | JCB 3Dx 4WD | Tractor Bachoe Loader |
| 15 | TLB08 | Cat 426F2 | Tractor Bachoe Loader |
| 16 | BD010 | Cat D7 | Track Bulldozer |
| 17 | WT121 | Powerstar 2628 | 18000l Watertruck |
| 18 | GR022 | LuiGong CLG425 | Wheel Grader |
| 19 | Workshop | Fima 40055 | 500l Compressor |
| 20 | Workshop | Rato | 420cc Welder |

## 4.7 GEOLOGY AND MINERALISATION

The tin-bearing pegmatite intrusions occurring at the Uis Tin Mine are part of the Pan-African Damara Belt, which is the northeast-trending branch of the Damara Orogen in Namibia. The Damara Supergroup comprises metasedimentary and metavolcanic lithologies of the Damara Belt and is divided into various tectonostratigraphic zones. Economically mineralised pegmatites are post-tectonic and represent highly evolved magmatic systems. The pegmatites of the Damara Belt are grouped into various northeast-trending pegmatite belts and occur in a variety of morphologies (DFS, 2021).

The Uis Tin Mine occurs at the north-eastern extent of the 120-km long Cape Cross–Uis Pegmatite Belt (CUPB), or the northern tin belt, extending from Cape Cross to the town of Uis and is known for its abundant tin mineralisation. The CUPB is separated from the Northern Central Zone which hosts the Nainais-Kahero pegmatite belt, or central tin belt, by the Autseib Fault. ML 134 and ML 129, known as Uis and Tsaurob respectively, occur in the CUPB, while ML 133, known as Nai-nais, occurs in the Nai-naisKahero pegmatite belt. The CUPB hosts a variety of mineralised to barren, syn- to post-tectonic pegmatites (DFS, 2021).

The mining licence ML 134 is approximately 200 $km^2$ in size and includes a large portion of the Sn-Nb-Ta type granitic pegmatites in the Uis swarm. The pegmatites strike to the northeast and east, dipping between 30°NW and 70°NW, and are discordant to the country rocks which generally dip to the southeast. The larger pegmatite bodies appear to pinch out along strike or splay out into different pegmatite veins (DFS, 2021).

The V1/V2 pegmatite is the only orebody for which a Mineral Resource estimate compliant with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (2012 Edition) ("JORC Code") has been completed. Sixteen historically drilled dykes were mined from eight principal open pits until mine closure in 1990. The pits were named: K3/K5 pit, the K6 pit, the K8/K10 pit, the P4/P5 pit, the P6 pit, the V1/V2 pit, the V4/V5/V12 pit, and the V9/V10/V13 pit. The surrounding unmined pegmatite intrusions were also considered in this economic assessment where pegmatite size and observed mineralisation matched predetermined specifications. For the JORC study, only surficial data such as geological mapping and structural measurements were available for this latter group of pegmatites (DFS, 2021).

The Uis pegmatites are granitic in composition, containing abundant quartz, orthoclase, muscovite and albite. Minor mineralogy includes tourmaline, garnet, apatite, microcline and beryl. Li-bearing phases include petalite, spodumene (Karlowa Swarm), lepidolite, hectorite, eucryptite and amblygonite. Sn is present in the form of cassiterite, whereas Ta-Nb-oxides occur as columbite (-tantalite) group minerals, tapiolite with minor wodginite, and ixolite (DFS, 2021).

The central cluster of the Uis swarm encompasses approximately 180 standalone pegmatite bodies at various scales and sizes. Figure 4 illustrates a plan view of the previously mined V1 and V2 pegmatites (DFS, 2021).

## 4.8 BLASTING

Rock fragmentation is undertaken by drilling and blasting, with the weathered zones requiring blasting with lower powder factors. Blasting is a core component of the mining operation, impacting all downstream mining and comminution (crushing) processes, and also affecting dilution factors, the plant's operation and ore recovery.

UTMC concluded a contract for blast-hole drilling operations. Blasting is sourced through a down-the-hole service rendered by Bulk Mining Explosives ("BME") based on separate orders for each blast and conducted on a bi-weekly basis. Blast notices are created and put up at key locations around the Uis settlement as well as at the entrance to the mine site notifying the community of the time and duration of each blast event. The blasting method that exerts the least amount of environmental and social influence on Project receptors as well as to produce smaller rock fragments should be recommended through specialist input. A blast and vibration specialist study was commissioned by UTMC and contracted to Blast Management & Consulting. The results of which will be presented in the impact assessment report.

Owing to the slow ramp-up of the plant, current mining progressed well ahead of processing, which resulted in a large build-up of inventory on the RoM stockpile, negating any future risks of mining interruptions (DFS, 2021). The blasting cycle may increase to a weekly event during Phase II.

## 4.9 DRILLING

UTMC drilled 26 additional drillholes in addition to historical drilling by Iscor in the 1970's and 1980's to form a combined dataset of 177 diamond and percussion drillholes which informed the resource estimation of the Uis deposit.

Continuous drilling takes place on the mining benches within the open pits (V1 and V2) in tandem with blasting operations by an independent contractor. Drilling and blast optimisation using accurate data will assist in determining improved ore blasting outcomes. Observations of numerous oversize ore were made in October in the haul trucks and at the feed hopper to the mill crusher. A rock breaker appears to be employed full time at the hopper to manage the oversize. Improvements in terms of ore size could be achieved with drilling and blasting adjustments.

## 4.10 HAUL ROADS

The available space within the pit was used for safe haul roads wherever possible instead of expanding the pit walls. The haul road width was reduced at the lower levels of the pit to minimise waste stripping as much as possible. The exit positions of the ramps were determined based on the proposed positions of the primary crusher and the waste co-placement facility (DFS, 2021). On surface haul roads are dual directional separated by a course gravel-based island. The width of one lane (18m x 18m) is wide enough to accommodate the width of the largest mobile plant on site i.e. 40t tipper truck.

It is not envisaged that the ramp to surface will need additional protective measures to ensure stability whilst in use.

Haul road dust suppression is conducted for the Project and is handled through a comprehensive dust management system.

## 4.11 SITE LAYOUT: MATERIALS HANDLING AND CONCENTRATING PLANT

An optimal site layout is based on designing the site around critical landform features such as topography and sensitive areas, while considering the efficiencies required for the mining operation. The proposed site layout is provided in Figure 9. Optimal use of available space was considered in the placement of additional comminution and process infrastructure

The layout (Figure 7) of the Plant illustrates the limited spatial extent to which the modifications will be applied. The Figure also shows all new elements to be added during Stage II and future elements in subsequent development stages.

The processing plant is strategically placed to allow ore throughput of 80 tph. The anticipated expansion of production volume will not require the Plant to re-locate only modified. The engineering adjustments and additions to be made within the current footprint of the processing plant will allow a throughput of 120 tph.

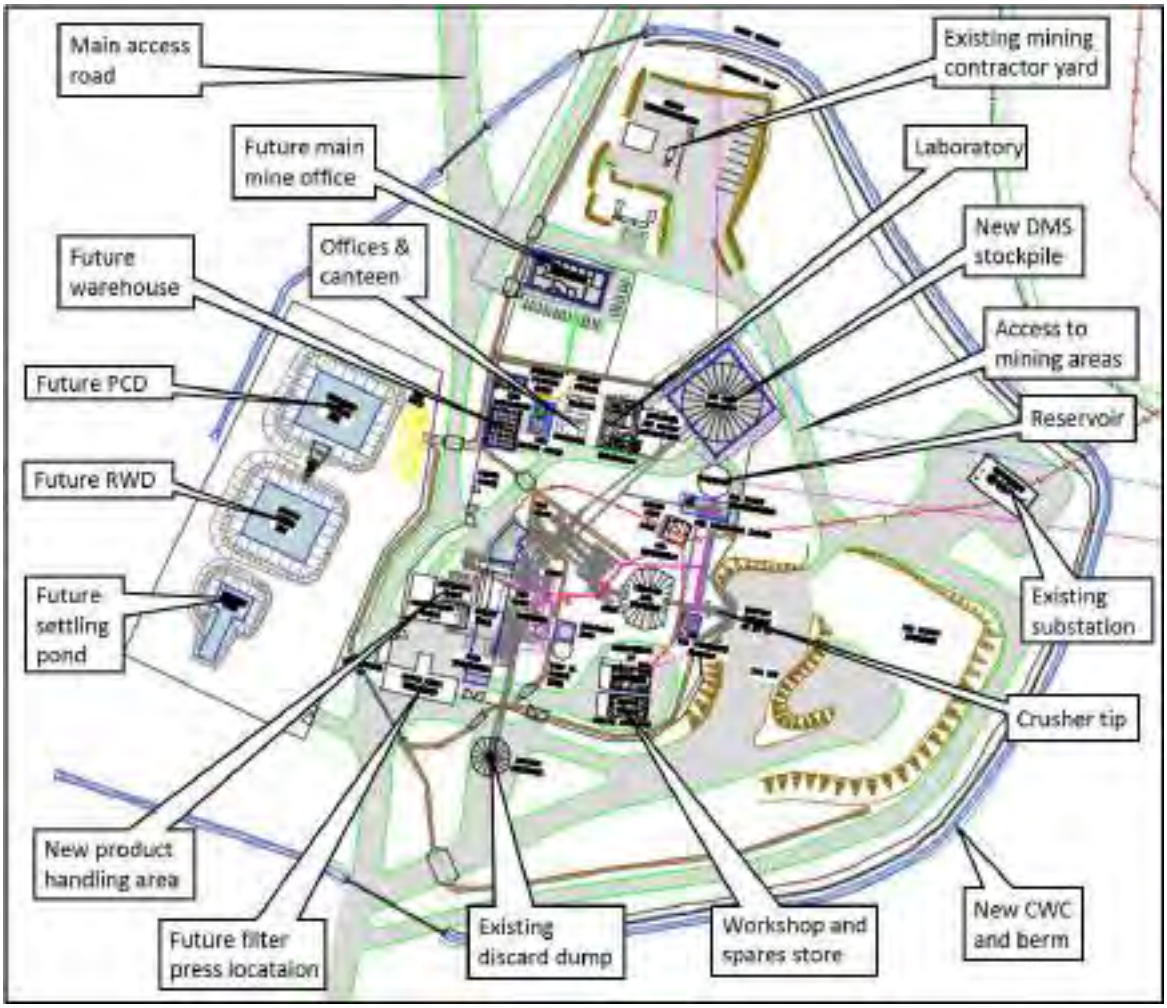



**Figure 7 - Diagrammatic layout of the processing plant and comminution areas**

## 4.12 COMMINUTION AREA

The processing plant consists of a comminution section and a concentrator section. At the start of the concentrating section, ore is screened into a coarse fraction (larger than 0.65 mm) and a fine fraction. Crushing to a top size of 6.4 mm is done in four stages. From the primary crusher, ore is conveyed to the primary stockpile, from where it is fed to the secondary crushing plant, in which the ore passes through another three stages of comminution (DFS, 2021).

## 4.13 METALLURGY AND PROCESSING

No chemicals are used in the ore beneficiation process. The process plant employs 4-stage crushing followed by gravity concentration (pre-concentration, concentration, and scavenging). The coarser fraction is processed with dense media separation (DMS) and the finer fraction with scavenging spirals. Concentrates from the DMS and spirals are cleaned on a shaking table to separate the heavier dense metals from the waste rock granules. Discards (waste rock granules) are dewatered and co-disposed with mine waste rock. Coarse and fine

tailings are dewatered on vibrating screens, while slimes are dewatered through a thickener and filter press combination. Recovered water is reused in the process. Dewatered tailings are co-disposed with mining waste rock (DFS, 2021).

The following changes are envisioned to be made to the process flow in various sections of the plant as part of the additions under the Phase I Stage II development:

- A crusher and screen to be added to Area 100 in feed preparation
- A stockpile has been added between crushing and beneficiation in Area 300
- Densifier capacity has been increased in Area 320
- The medium circuits for DMS2 and DMS3 have been combined to improve operability of DMS 3 and maximise Sn recovery from DMS2 floats
- The DMS 2 floats re-crush circuit has been converted to a closed circuit in Area 350. In addition, bins have been added before roll crushers to improve operability
- Additional spirals to re-process middlings will be installed in Area 440
- An additional shaking table will be installed to improve capacity and the shaking tables will be relocated. The shaking tables will be replaced with ones with higher separation efficiency.

A simplified summary of the plant flow diagram of the Stage II process is shown in Figure 8.

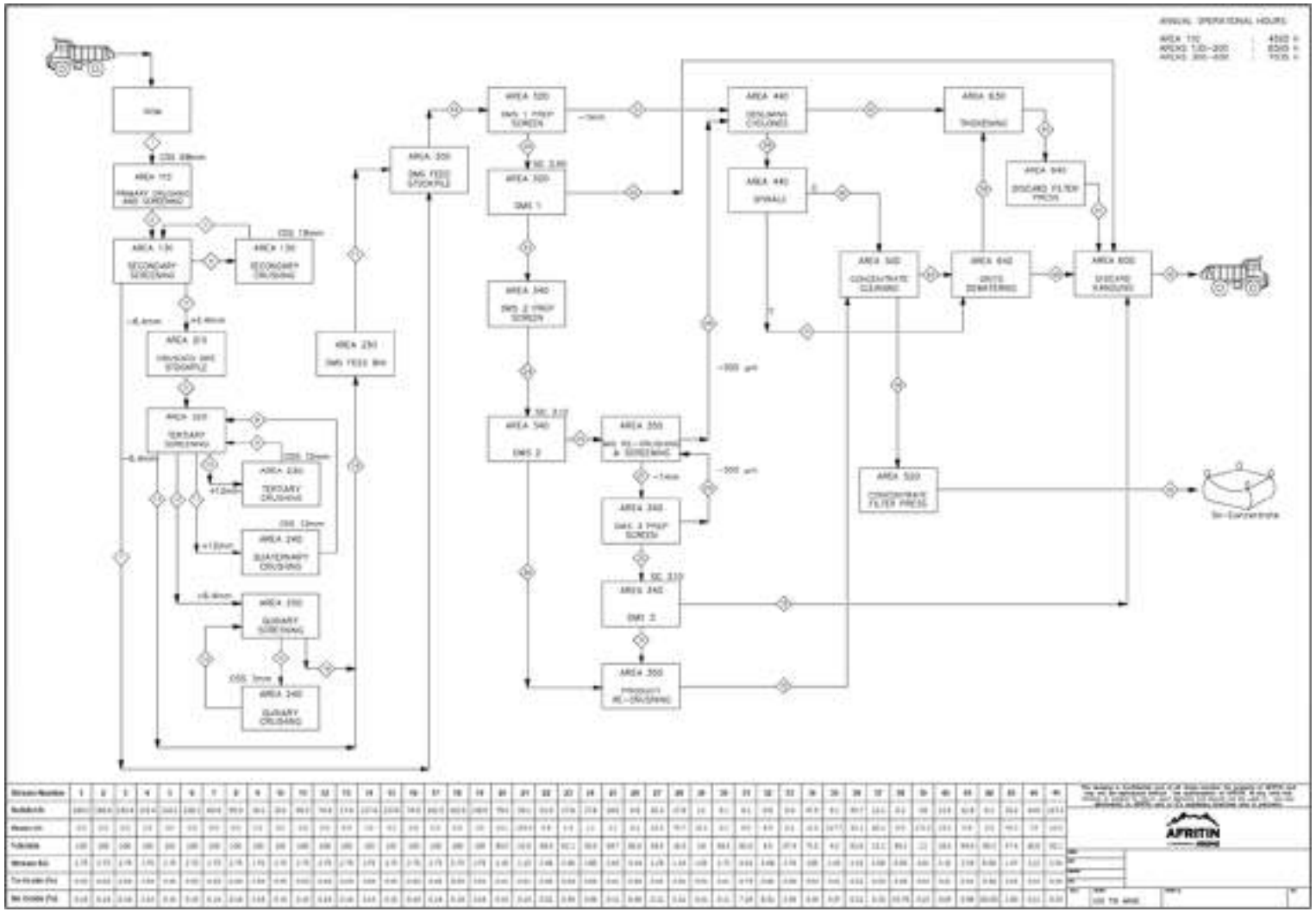


**Figure 8 - Flow diagram of processing methodology**

## 4.14 SUPPORT INFRASTRUCTURE AND SERVICES

### 4.14.1 MINING OFFICE BLOCK

The mining office block is a modular structure installed on a mesh reinforced concrete slab. The building provides office space to technical personnel, including the process manager the technical services manager, geology personnel, surveyors, maintenance engineers, and mining support staff. The building has a meeting room, male and female ablutions, a kitchen, a pit control room, a first aid room, and an open quadrant used as seating space for personnel.

### 4.14.2 UTMC WORKSHOP AND WAREHOUSE

The mining warehouse (or stores) is a steel sheeted high wall structure. The warehouse is used for the storage of all critical and operational spares, as well as office and other consumables. Goods will be received by the stores' personnel through the east facing receiving bay prior to storage in the main building. Access to the stores building is limited to stores personnel. Acetylene gas, oil, paint, and other flammable materials are stored in separate areas within the main building on shelves and designed accordingly to store dangerous goods.

### 4.14.3 HEAVY MOBILE EQUIPMENT WORKSHOP

The heavy equipment workshop is managed by Nexus-Ino which is the main shop for maintenance and rebuilds of mining equipment. The building design is capable of handling maintenance work for 40t ADT trucks and support equipment as per the maintenance plan. The structure is steel sheeted on the sides supported on concrete plinths, with modular container offices. The workshop is bunded with an internal drainage system into a suitable hydrocarbon collection and treatment system. This facility is also used to maintain light vehicles used on site. One wash bay is available for equipment, before, during and after maintenance, and therefore settling dams/ponds are installed as part of the wastewater treatment system in the wash bay.

### 4.14.4 FUEL FACILITY

Diesel for mine operations is contained in a designated and designed site fuel facility. Northern Fuel has erected infrastructure and facilities for the storage and handling of fuel. The service provider is responsible for the supply, delivery, and management of stock for the life of mine. The Proponent does ensure the facility has the required installation certificates prior to commissioning the fuel facility and is audited monthly for operational compliance.

### 4.14.5 EXPLOSIVE MAGAZINE

The appointed contractor, BME, based in Arandis, provides explosives and blasting services to the mine on the day of blasting. The contractor has established and is responsible for its satellite explosive magazine infrastructure, located next to the Nexus-Ino workshop. Space provision was made for both sites, and the siting of the explosive magazine is in conformance with the requirements of the Namibian Labour Act, Namibian Mining Legislation, and Regional Explosives Standards or regulations.

### 4.14.6 COMMUNICATION

Radio, telephone, and internet connections are already functional for the mining operation. Communication infrastructure, including masts, is installed.

## 4.15 UTILITIES

### 4.15.1 POWER SUPPLY

A 1,500 kVA supply agreement was signed with NamPower, with a 66 kV supply take-off from the Uis NamPower substation. An extension to the existing substation was constructed, with the associated switchgear, metering, and a 66 kV feeder bay. A 66 kV overhead line feeds an existing 66/11 kV substation situated outside the safe blast radius of the open pit mine, close to the current plant area. The capacity of the 66/11 kV transformer is 2,000 kVA, with a protection circuit breaker in the 66 kV circuit. See Figure 9.

**Figure 9 - Main power supply off take (Source: ECC, 2021)**

### 4.15.2 STAND-BY POWER

Standby power supply consists of two 635 kVA containerised Perkins and one 600 kVA MAN diesel generating sets. These are installed in the power station area, and power from each is fed onto a common generator busbar. An automatic centralised synchronisation controller, that interfaces with the individual generator control panels, will allow for the switching and running of the generators in parallel. The standby power station has the capacity to supply the full backup power

requirements of the processing plant. The standby power- generating sets is illustrated in Figure 10 (DFS, 2021).

**Figure 10 - Genset stand-by power source (Source: Minxcon, 2021)**

### 4.15.3 WATER SUPPLY

Phase I of the operations sources its water supply from within the Ugab catchment area, utilising the Uis River alluvial aquifer system. The current mine design indicates a water requirement for Phase I Stage I to be between 10 $m^3$/h and 15 $m^3$/h, but actual water consumption has recently exceeded 20 $m^3$/h. Borehole water levels are monitored monthly to keep track of the utilisation of the water source and to manage its sustainability. The largest water demand occurs at start-up of the plant, as the facility is run on water only, this demand is then reduced with the feeding of the ore into the plant (DFS, 2021).

The abstraction of groundwater from existing boreholes are permitted under two abstraction permits issued for industrial (mining) purposes by the Ministry of Agriculture, Water and Land Reform (MAWLR) since 2019. An amendment application was submitted by UTMC in August 2021 to the MAWLR to amend the allowable abstraction volume from boreholes to 75 000 $m^3$ per annum. The permit was issued [October 2021] and is valid for two years therefore a total volume of 150 000 $m^3$ over a two-year period was granted (Appendix C).

The borehole locations are presented in Figure 11.

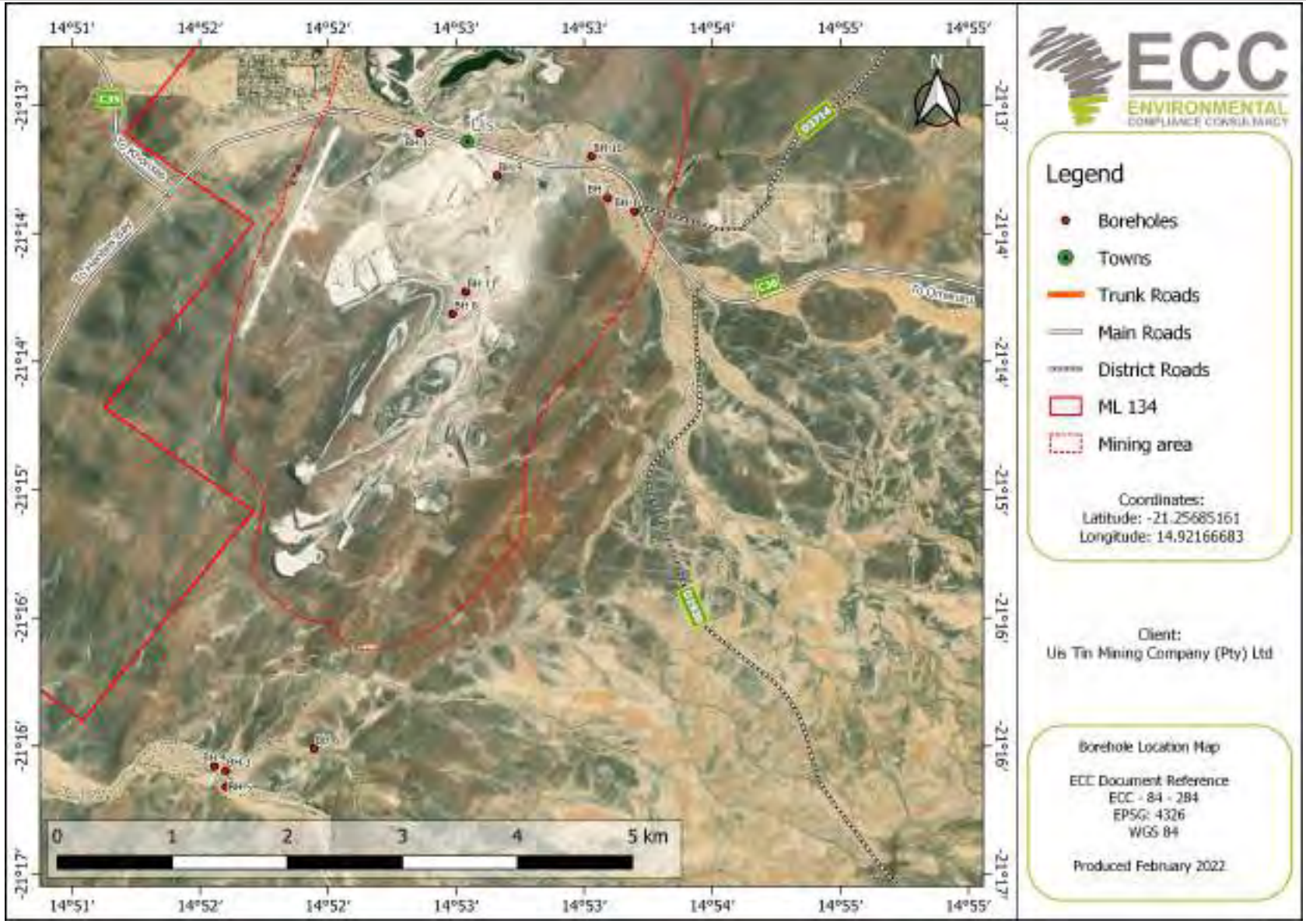



**Figure 11 - Borehole locations**

Process water is supplied from well fields and an open-pit lake (K5) north of the mining area through a pipeline network. Raw water is pumped into a 1,000 $m^3$ bulk reservoir located at the process plant, from where make-up water is pumped to another 250 $m^3$ process make-up water tank, close to the wet part of the plant.

Potable water to the production areas is supplied through a 35 mm municipal water-supply pipeline that was installed during construction. This water is not used for processing needs (DFS, 2021).

#### 4.15.4 WATER DEMAND

The Base Case results from a site wide water balance study done by ECC in early 2021 estimate that the operations (based on a peak production rate of 87 726 tonnes per month from October 2022 until end of December 2034) will use:

- Approximately 244 $m^3$ of potable water per month - supplied from NamWater;
- The average external water supply required during the peak production period will be approximately 2 500 $m^3$/month;
- The peak demand of this externally sourced water per month is estimated at approximately 5250 $m^3$ per month. It is recommended that provision be made for a supply of 6300 $m^3$ per month , offering a 20 % safety buffer;
- Approximately 370 $m^3$ per month of process water from Ralf's pond;
- Approximately 630 $m^3$ per month of raw water from the open pit – south pit;
- Approximately 1500 $m^3$ per month of raw water from the K5 open pit; and
- Approximately 6000 $m^3$ per month of raw water from the various boreholes currently in operation.

The above is particularly dependent on the functionality and performance of the filter press to return 80 % of the tailings water to the Plant. The above figures are the average values per month during the peak production period (October 2022 to end of December 2034).

However, the ground water resources are in the process of being verified and the boreholes to be used tested to calculate their long-term sustainable yields (Hubbard, Gouws, Smit, & Botha, 2021). This is done in conjunction with a groundwater survey and an updated groundwater model by Digby Wells.

Water supply for the Project is proposed from a combination of surface and groundwater sources and supply optimisation studies are ongoing. Further studies by Digby Wells currently underway will inform this aspect and will be reported on in the final impact assessment report.

## 4.16 MINERAL AND NON-MINERALISED WASTE

### 4.16.1 WASTE ROCK

The proposed waste dumps are located northeast and northwest of the open pit, as shown in Figure 7 (page 39). The site has three separate dumps which can store an estimated total of 26.66 $Mm^3$ of waste rock and plant waste fines: A (8.75 $Mm^3$), B (14.82 $Mm^3$) and C (3.09 $Mm^3$). This is a 10% overcapacity when compared to the LoM co-disposal volume requirement of 23.85 $Mm^3$ (DFS, 2021).

The current mine plan, taking the 15 Mt pit design into consideration, will produce a total of 23.9 Mt of waste rock and 14.7 Mt of dewatered plant waste fines over the LoM. Dewatered plant waste fines are co-disposed with mining waste rock on a co-disposal facility (DFS, 2021). The co-disposal facility has capacity to be expanded upon and will be used to store Stage II waste rock and plant waste fines. The definitive feasibility study outlines and describes the design and operating philosophy behind this operation. The parameters taken into consideration are:

- The angle of repose of the outer slope to be 36° for each 20 m lift and a minimum rock crest width of 10 m. This will provide a stable outer shell of waste rock that is erosion-resistant
- Interior paddock embankment slopes ranging from 2.5 H : 1 V to 1.5 H : 1 V 10 m high lifts with 5 m wide benches between lifts. This approach will establish an overall slope angle of 3.5 H : 1 V
- Diversion ditches to route runoff from the upstream catchment areas (non-contact water) to the environment, and collection ditches to route contact water from the co-disposal facility to the sediment ponds
- Rock drain to convey flows from upstream catchment area to a sediment pond located downstream of the co-disposal facility and maintain a low phreatic surface within the co-disposal facility
- Strategically placed sediment ponds to collect all contact water from the co-disposal facility and rock drain. Collected water will be recycled for use in the process or for other uses on site to reduce makeup water requirements
- Appropriate waste dump volume requirement of 13.92Mm3 and the overall plant waste fines dump volume requirement is 9.93 Mm3 (DFS, 2021).

Rehabilitation requirements are considered in dump location and design, and all dumping areas will undergo an ore sterilisation campaign prior to waste dumping. The waste rock dumping strategy is to reduce the hauling distance and similarly enable progressive rehabilitation of the waste dumps wherever possible. In-pit dumping has not been considered for this stage. Waste dumps will be sloped to 3:1 near the top and 4:1 at the bottom covered with finer material, then soils, then ripped and planted. The co-disposal facilities should be re-sloped in this manner as soon as possible in a progressive rehabilitation program. The shallow slopes provide increased stability should the increase fines content create problems with pore pressures. The approach is designed to maintain a low phreatic surface, as noted above.

### 4.16.2 General waste

Waste is separated at source, stored in a manner to avoid discharge of contaminants to the environment, and either recycled or reused where possible. On-site facilities will be provided at a dedicated waste storage facility for sorting and temporary storage prior to removal and disposal to appropriate recycling or disposal facilities off-site (Windhoek for general waste and Walvis Bay for hazardous waste).

Industrial waste will be sorted on-site and disposed of at appropriate facilities. Hazardous waste includes, but is not limited to, the following: fuels, chemicals, lubricating oils, hydraulic and brake fluid, paints, solvents, acids, detergents, resins, brine, solids from sewage, and sludge. A waste specification will be developed and included in the assessment phase and incorporated into the EMP.

### 4.16.3 Effluent and wastewater

Project generated sewage is collected and uses gravity reticulation via buried sewer pipes and transported to the Clarus treatment facility. Sewage is treated in this purpose-built sewage treatment plant. Prior to the ESIA being conducted, the Clarus system displayed indications of limited capacity to failure. UTMC commissioned a root cause analysis of the capacity issues and requested an upgraded sewage treatment facility to be installed. The new plant will have the capacity to treat the sewage generated on-site per day. The water output from the plant will be suitable for use in dust suppression, vehicle washing, irrigation, fire suppression water, and process water.

The wastewater treatment plant will also produce a small quantity of sludge, which will be dried in a sludge-drying bed located at a point lower than the plant. Dried sludge could be used as fertiliser for rehabilitation of mining landforms.

## 4.17 Alternatives considered

The primary alternative to be assessed is the water supply for mining operations in Stage II. For every alternative option there is a trade-off or an impact on another aspect of the Project. The environmental baseline chapter, provide further information to the decision-making process.

## 4.18 Water supply

The alternatives for water supply are discussed in the utilities section above. The alternatives for water supply are as follows:

- NamWater supply to the Uis reservoir
- Surface water dammed in the K5
- Groundwater boreholes within the mining licence area (P11429)
- Possible desalination option could be to obtain water from the Orano Desalination Plant from Henties Bay

- Another option could be to develop an abstraction plant near Cape Cross where seawater will be abstracted and used.

Water supply optimisation strategies are currently in progress and will be included in the assessment phase.

## 4.19 REHABILITATION AND CLOSURE

The Proponent will commit to establishing a rehabilitation plan as part of the mine closure plan. A conceptual mine closure plan with costing is under development by UTMC in association with ECC and forms part of the EMP requirements and will be updated into the assessment phase.

# 5 ENVIRONMENTAL AND SOCIAL BASELINE

## 5.1 BASELINE DATA COLLECTION

Initial desktop baseline studies relevant to the Project formed part of the initial environmental assessments conducted for the mining licence on which the Project is situated. As part of this assessment, baseline conditions were studied in detail, with inputs from specialist studies commissioned as part of the environmental and social impact assessment process.

## 5.2 DESKTOP AND FIELD SURVEYS

Initial desktop baseline studies were completed between 2018 and 2021 for the Project. Additional desktop and field-based baseline studies were conducted between March and November 2021 and builds onto the dataset of site environmental monitoring data being collected since 2019.

This section sets out the biophysical and socioeconomic environments in which the Project is situated. It is an important part of the scoping component of the assessment, as it determines if there are any knowledge gaps that require additional information prior to the assessment phase being completed.

## 5.3 SPECIALIST STUDIES

The specialist studies as outlined in Table 8 were commissioned, some completed some still underway, to determine the current state of the baseline environments:

**Table 8 - Specialist studies conducted for the ESIA**

| STUDY AREA | PURPOSE | SPECIALISTS |
|---|---|---|
| Terrestrial ecology | - Biodiversity and habitat.<br>- Identification of species of concern and sensitive areas.<br>- Impacts of mining construction and operations on habitats and biodiversity (if any). | - Peter Cunningham |
| Hydrology | - Water supply.<br>- Storm protection.<br>- Impact on heritage aspects.<br>- Clean and dirty water management systems. | - Nurizon Consulting (Pty) Ltd |
| Groundwater | - Assess the potential for contamination of aquifers from TSF & WRD.<br>- Provide a model to determine impacts of drawdown and plume mobility.<br>- Assess the sustainability of boreholes for water supply. | - Digby Wells and ECC |
| Air quality | - Provide emission standards and dust suppression requirements.<br>- Assess prevailing wind directions and possible effects of emissions on the process and/or personnel.<br>- Model potential air quality impacts. | - Airshed |

| STUDY AREA | PURPOSE | SPECIALISTS |
|---|---|---|
| Noise and sense of place | - Identification of possible receptors and assess levels of noise to which they may be exposed during construction and operations. | - Airshed<br>- ECC |
| Traffic | - The traffic impact assessment will study the potential traffic impacts and loading on routes associated with the mining activities.<br>- Assessing the capacity of infrastructure and safety aspects of the mine entrance.<br>- Assessing the need for an intersection upgrade at the mine entrance and providing a concept layout plan if necessary. | - ITS Global |
| Heritage and culture | - A heritage assessment is required, in order to comply with Namibian national legislature. | - Dr John Kinahan |
| Visual and tourism | - Assessing the potential visual impacts of a proposed Project on the receiving environment. | - ECC |
| Social and economic | - Includes the assessment of impacts on the social and economic landscape within the sphere of influence of the Project. | - ECC |
| Geochemical sampling and analysis | - The geochemical analysis of waste rock, tailings, and overburden will be undertaken to assess the mineralogical composition, acid mine drainage potential, and metal concentration of the leachate of waste rock and tailings. | - ECC: Mine Waste and Management Consultants |
| Blast vibration impact | - Assessing the impact of blasting on receptors in the area within the measured blast zone. | - Blast Management and Consulting |

## 5.4 LOCATION

The proposed Project is located approximately 120 km inland from the Atlantic coastline. The site is within the settlement of Uis in the northern part of the Erongo Region and not within proximity to any other major town. Omaruru is situated east of Uis by approximately 122 km along the C36 gravel road. A small village called Okambahe is situated approximately 60 km southeast of Uis. The B2 main road can be accessed via the D1930 gravel road heading southeast from Uis toward Usakos for approximately 132 km.

## 5.5 LAND USE

The Project is situated in a predominantly subsistence agricultural region dominated by small stock farming land uses and to a lesser extent small scale mining. Figure 12outlines the proposed mining licence area map with surrounding landownership status. Farming activities on surrounding properties will be able to continue relatively undisturbed by the proposed Project.
The Project area is part of a communal reserve called the Okombahe Reserve and falls within the Tsiseb conservancy.

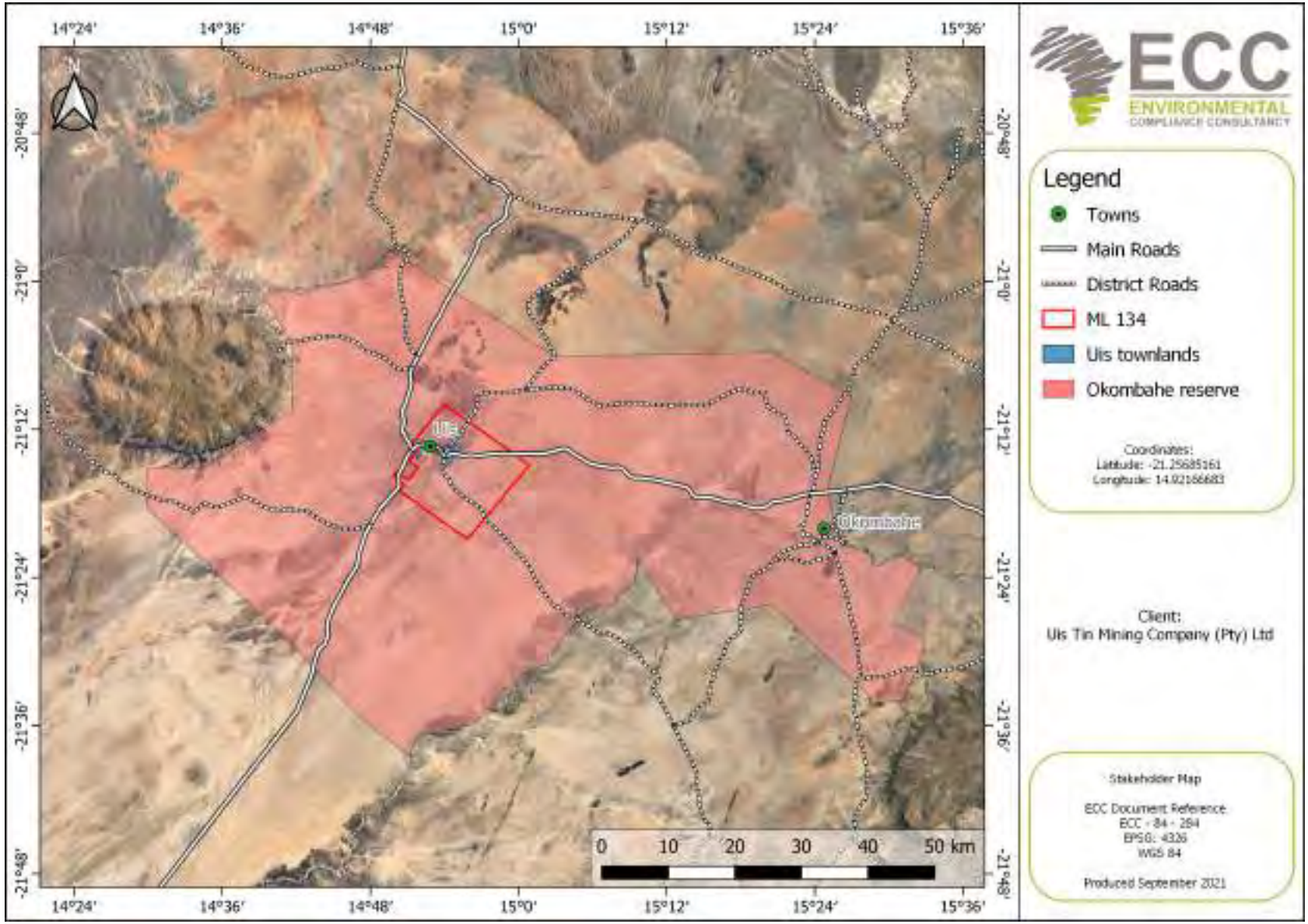



**Figure 12 - A map showing the Project location within the Okombahe Reserve and in proximity to nearby villages.**

## 5.6 GEOLOGICAL SETTING

The regional geology of the ML 134 area consists mainly of the Swakop Group and a very small section to the eastern side of the ML overlap Damara granites. The main rock types of this area are schists, dolomites, and granite. Granite hosts pegmatite dykes, within which are localized occurrences of tin and tantalum minerals, cassiterite and columbite-tantalite group. The Swakop Group is part of the Damara Supergroup and Gariep Complex (Bubenzer, 2002). The Uis Tin Mine focusses its mining activities on the cassiterite bearing pegmatites and produces a tin concentrate that also contains tantalum and lithium. The different geological group formations associated with the ML are illustrated in Figure 13. Additional geology and mineralization details can be found above in Chapter 4.

## 5.7 TOPOGRAPHY

The topography of the ML is relatively flat with various rock outcrops and the elevation gradually decreases from the south-eastern side of the ML towards the north-western side (towards Uis), varying between 1050 m to just below 700 m above mean sea level. This ML is situated close to the Brandberg which is highly elevated at about 2475m above mean sea level. This is illustrated in Figure 14.

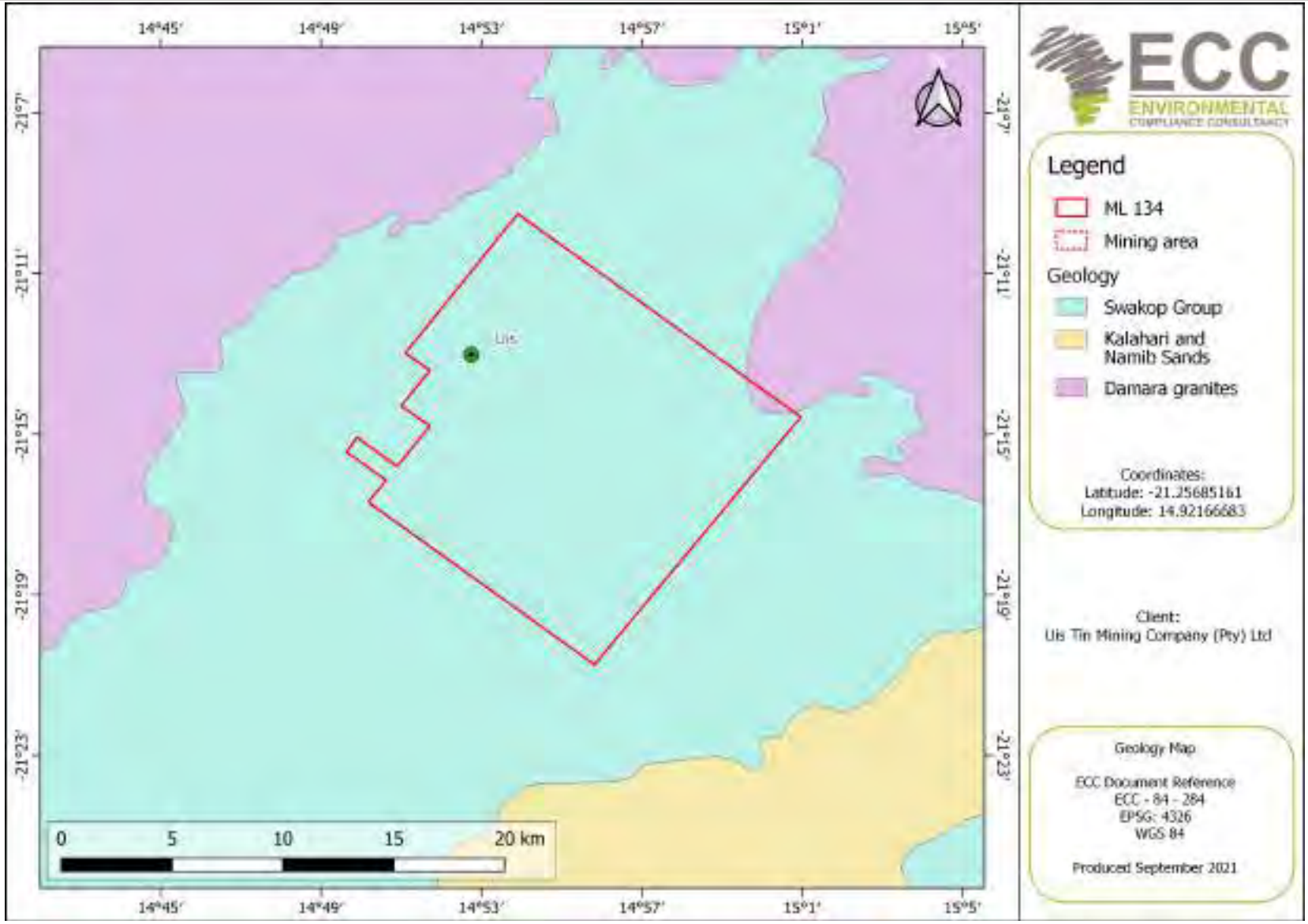



**Figure 13 - A map showing the Project location geological setting**

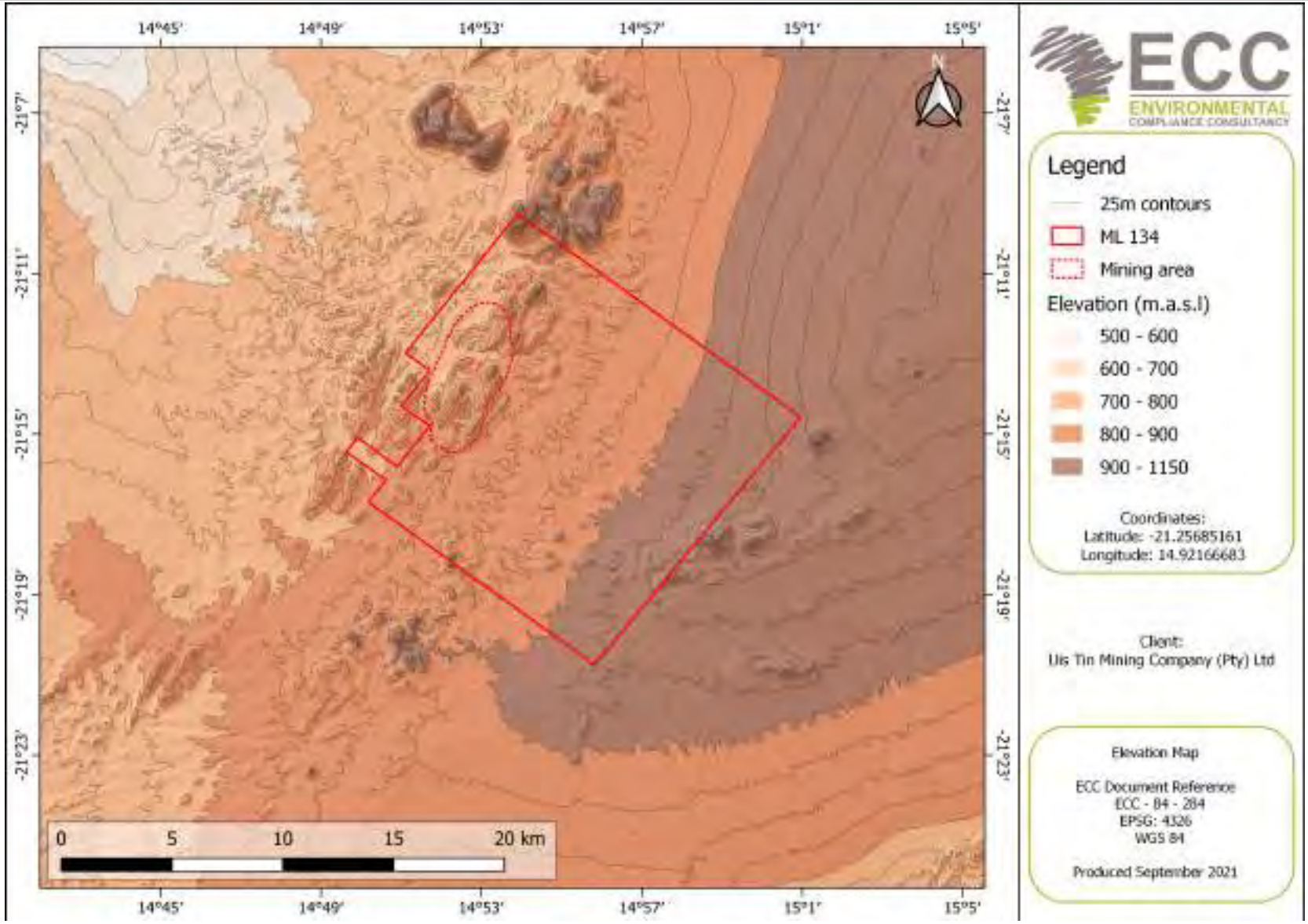



**Figure 14 - Elevation map for ML 134.**

## 5.8 SOILS

ML 134 is largely covered by rock outcrops and the area to the south-eastern side of the ML is covered by Eutric Regosols soil (Figure 15) (Bubenzer, 2002). Namibian soils vary a great deal, variations occur on a broad scale but there is even a great deal of variability at a local level.

The first part of the soil name provides information on the properties of the soil, namely: eutric soils are fertile with high base saturation. The second name reflects the conditions and processes which have led to the formation of the soils (Mendelsohn et al., 2002). Regosols are medium to fine-textured soils of actively eroding landscapes. These soils are not as shallow as Leptosols, but these soils never reach depths of more than 50 cm. This type of soil cannot provide vegetation with sufficient minerals or water (Mendelsohn et al., 2002).

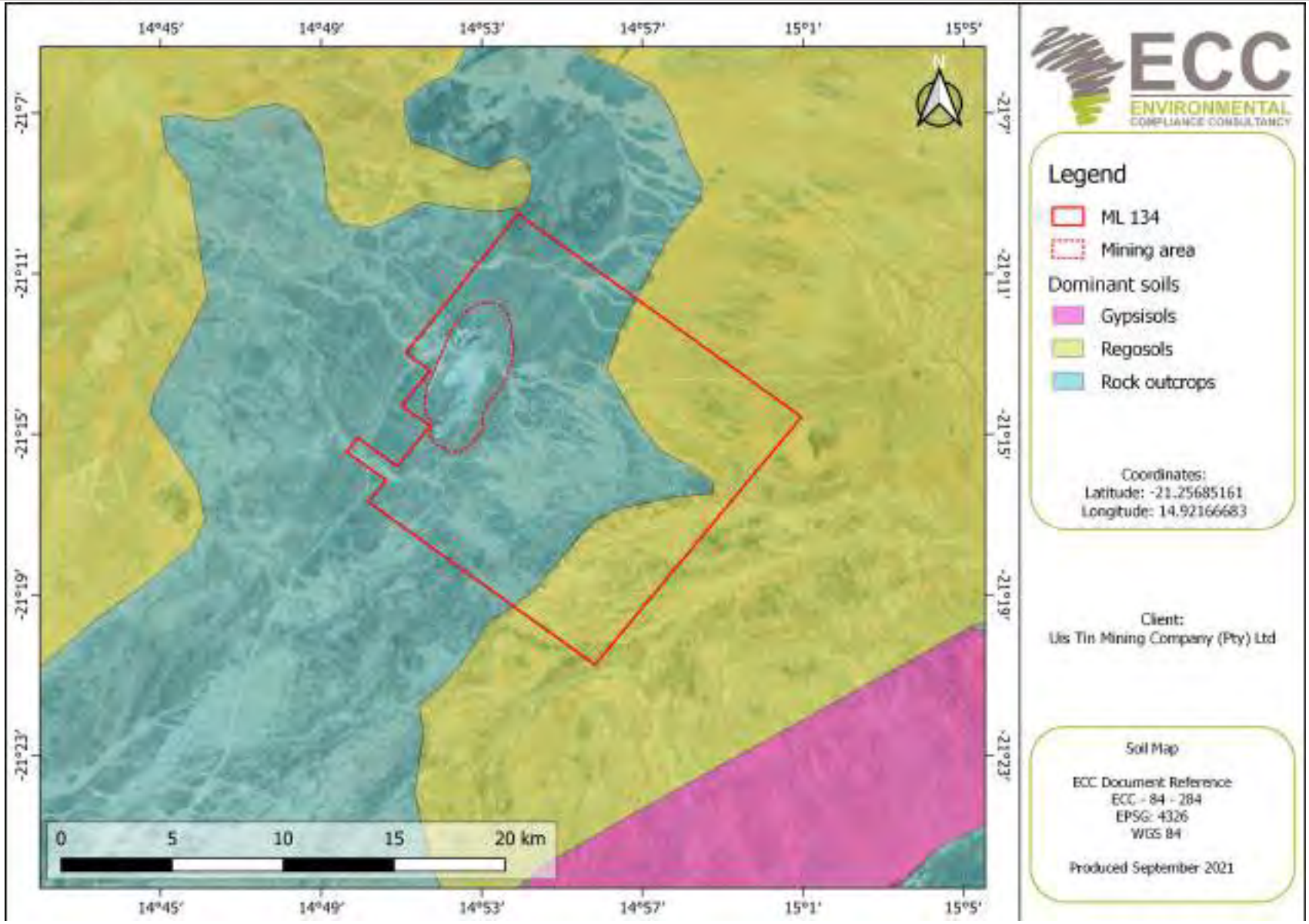



**Figure 15 – Soil map of ML 134**

## 5.9 HYDROLOGY AND GEOHYDROLOGY

The Erongo Region in the central-western part of Namibia receives between 350 to less than 50 mm of rainfall per year. Most of the ML area is in the arid part of the Erongo Region with rainfall of less than 150 mm per year (Bubenzer, 2002). Evaporation is 2100-2240 mm per year. All river courses flow in a south easterly direction through the ML (Figure 17).

ML 134 falls within the Ugab catchment area and over the Kunene South groundwater basin. In general, this region has little groundwater. Groundwater in the Project area (ML 134) is primarily associated with the interception of structures such as factures (joints & faults) within subsurface hard rock (marble) bodies at various depths. On the ML there are a total of 11 boreholes of which four (4) are capped. Water is abstracted from seven production boreholes (Figure 16).

A provisional report (2019) has been issued on the safe yield of water. The results are subject to further bore field testing to deliver a final estimate (Van Wyk, 2019). The report represents the baseline conditions and it will be used as such by Digby Wells in designing its new pump testing regime, planned for early 2022. The current estimate based on the 2019 test pumping exercise conducted by Dawnmin Africa Investments (Pty) Ltd approximates 340 000 to 45 000 m/a over a 5-year cycle (2019-2023).

The results of the additional testing of the bore field by Digby Wells will confirm a final safe yield figure that will be included in the assessment report.

The groundwater hydrochemistry is characterized by high concentrations of sodium chloride and sulphate. Interpretation done by Dawnmin Africa Investments is based on a tri-linear diagram (piper plot) and classifies the Uis groundwater as “sodium chloride” (brackish) type water (Van Wyk, 2019). This is a further indication of the less than frequent recharge in the area which affords groundwater more time to mineralise subsurface.

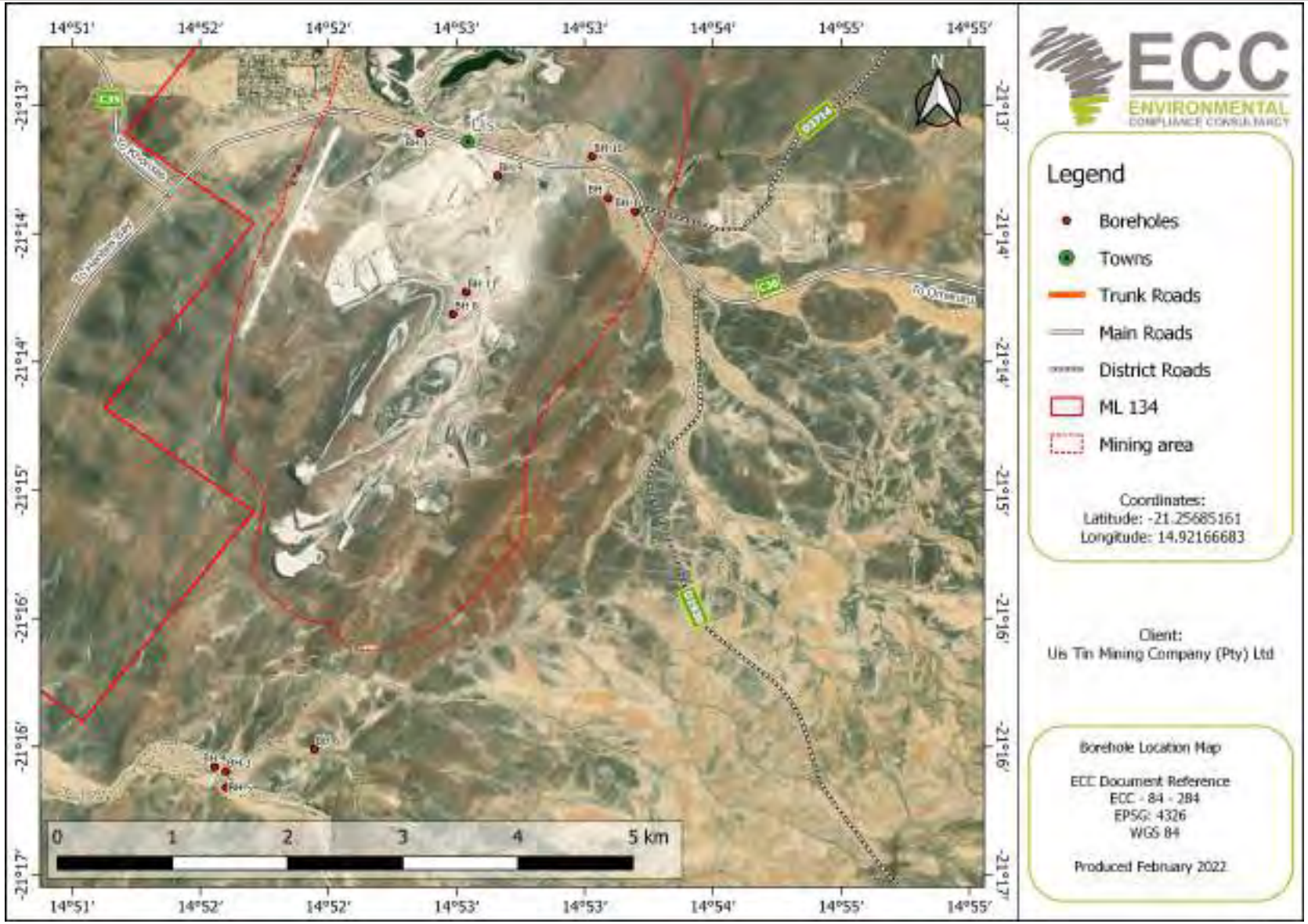



**Figure 16 - Borehole locations**

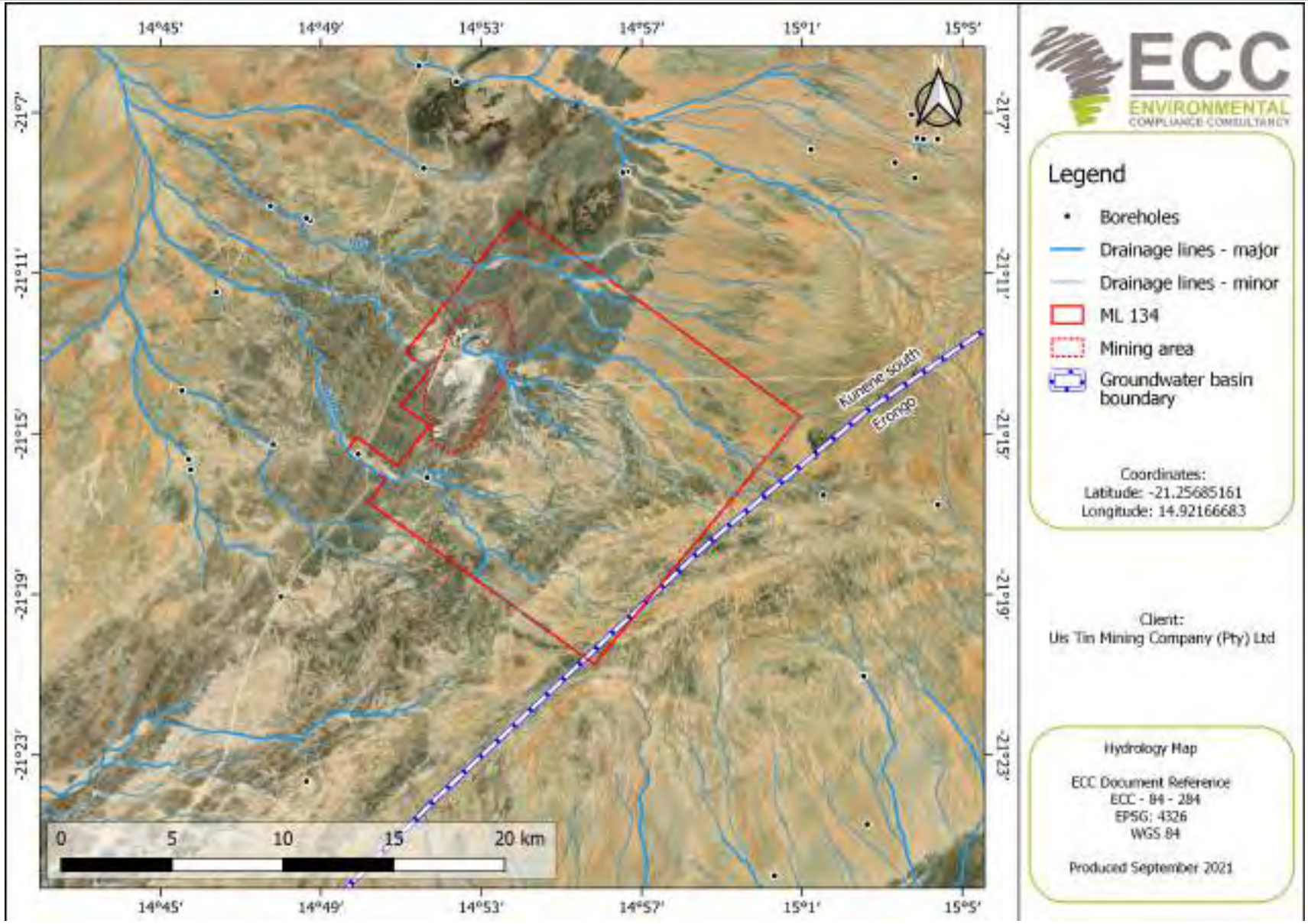



**Figure 17 - Hydrology map of ML 134**

## 5.10 BIODIVERSITY

Environment and Wildlife Consulting (2021) undertook a specialist assessment study of the vertebrate fauna and flora on ML 134. The dry and wet season assessments have been completed. The baseline studies for both seasons is the basis upon which the full assessment will be carried out, notwithstanding the relevant information gathered and recorded in from publicly available information sources. An assessment of the potential impacts will be carried out using the impact assessment methodology used by ECC in the assessment phase.

## 5.11 VEGETATION

Vegetation type and structure in Namibia is strongly influenced by rainfall. The plant diversity and tallest trees are most lush in the north-eastern parts of the country and contrast sparser and shorter to the west and south of the country. This gradient is not simple as other factors such as soil types and landscape also influence the vegetation. The dominant vegetation structure of ML 134 is sparse shrubland and grasses (Figure 18) (Bubenzer, 2002 & Mendelsohn et al., 2002).

The area has unique vegetation and wildlife species including reptiles and avifauna, many of which are endemic to the Namib Desert. ML 134 lies within the Nama-Karoo Biome and central-western escarpment type, which tends to have sparse shrubs and grassland occupying the gravel plains. The grass cover is sparse but dominates the little vegetation that grows on the gravel plains. The plant diversity of the areas is moderate (between 150 to 300 species) and the endemism is moderate to high (between six and 35 endemic species), with the higher number of species estimated to the north-western side of the ML, near the mine site (Bubenzer, 2002 & Mendelsohn et al., 2002).

A list of plant species that could be found within and surrounding ML 134 has been provided by the National Botanical Research Institute (NBRI) and can be seen in Appendix D. As in the NBRI tables, there is a low to moderate plant diversity and high endemism within these areas; of all the species found within these areas, 11 species are near-endemic, 20 species are endemic, and five (5) species are protected.

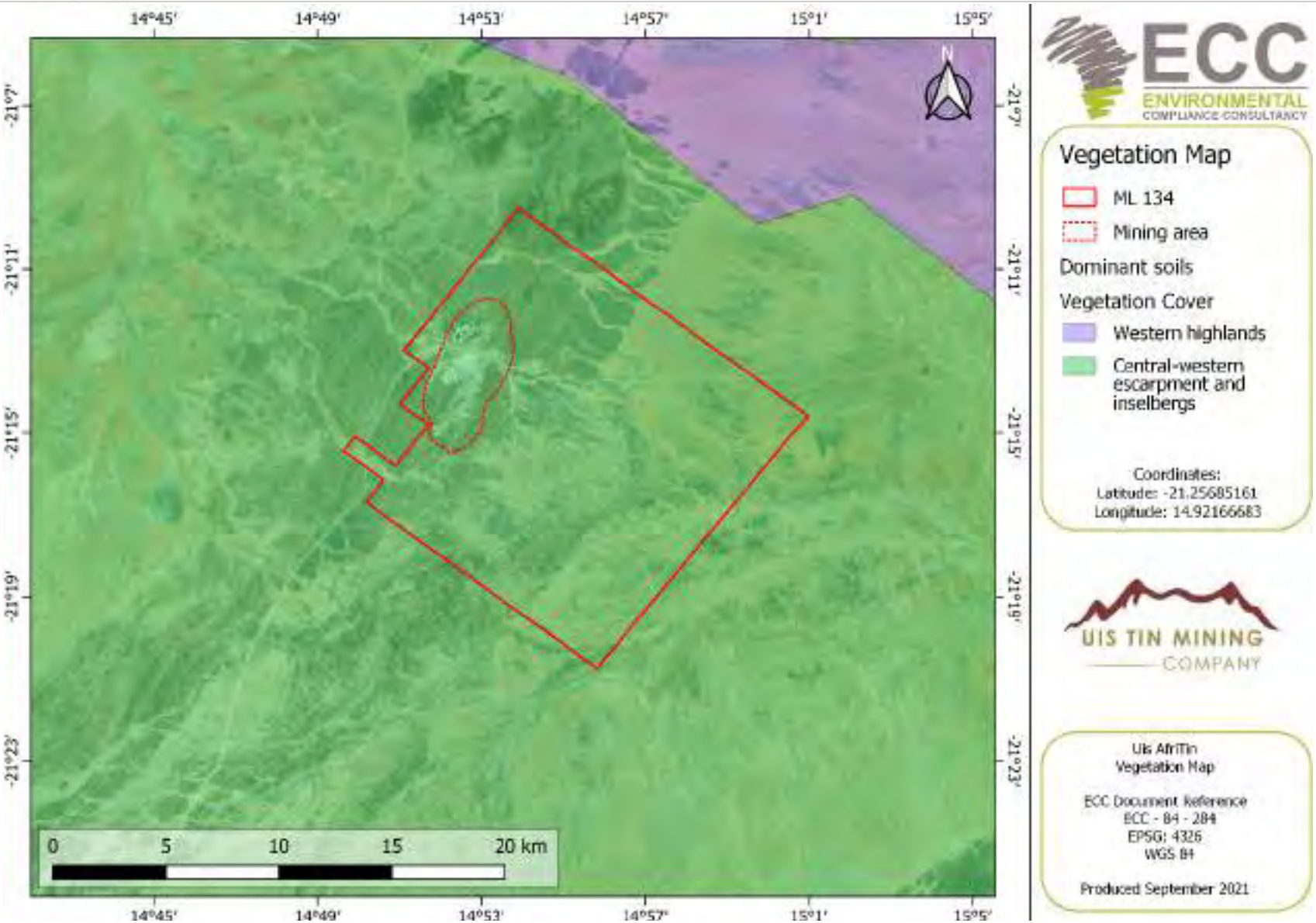



**Figure 18 - Vegetation map of ML 134**

## 5.12 FAUNA SPECIES

The area within and surrounding the ML has 111 to 140 bird species (moderate to high endemism with six to seven species), which is of medium diversity in comparison to the rest of Namibia, which has a total of up to 658 recorded bird species. The number of observed lizard species for this area is between 32 to more than 35 different species (high endemism with 12 to 14 species) and the mammal diversity of this area has been recorded to be from 61 to 75 species (high endemism with 7 to 8 species). The large carnivore diversity is approximately four (4) species for this area, thus the overall terrestrial diversity for this area is low in comparison with the rest of the country, but this area has an overall high species endemism (Bubenzer, 2002 & Mendelsohn et al., 2002).

Furthermore, the rodent diversity ranges between 16 to 23 species as recorded for this area and the different snakes recorded are between 20 to 29 different species (Bubenzer, 2002 & Mendelsohn et al., 2002).

The diversity of mammals and reptiles in the area is generally low and low with respect to the rest of Namibia, but this area is represented by various important species that need to be protected, some of which are critically endangered, such as the White-backed Vulture (Bubenzer, 2002, IUCN, 2021 & Mendelsohn et al., 2002). Although this area does not have the highest diversity of species in Namibia it clearly has a unique and sensitive ecosystem with high endemism and some High Conservation Value (HCVs) species (Bubenzer, 2002, IUCN, 2021 & Mendelsohn et al., 2002).

This part of the Erongo Region is relatively untouched, as most people that live within the area are confined to settlements, lodges/camps or larger towns like Uis. Within this area (Brandberg and Ugab River), there are also desert-adapted Elephants, which is not a distinct species, they are African bush elephants (*Loxodonta africana)*, that are also specifically adapted to these harsh desert environments. There are approximately 62 desert adapted elephants left within the southern Kunene and northern Erongo regions; they mainly move within the ephemeral rivers, where they get water, food, and shelter under larger trees. A 32% decrease was seen since 2016 among the desert-adapted elephants, residents to the Ugab River, which was partly due to anthropogenic and natural reasons (major drought) (Elephant-Human Relations Aid, 2020).

In the Ugab and Huab rivers between 2014 and 2018, nine (9) out of 14 newborn elephant calves died, the exact causes were unknown, but human-caused stress factors and harsh environmental conditions may have contributed to this. These elephants are keystone species that play an essential role within these local desert ecosystems as they usually dig for water, making these resources available to other animals, as they break off large branches from trees, that assists smaller animals to also get access to green fodder in the drier seasons. Their deep tracks in the mud during the short rainy season provide an ideal environment for seedlings, which is essential for vegetation growth. Thus, these desert-adapted ecosystem engineers form an essential part of the balance within the desert ecosystem. The African Bush Elephant is an endangered species which contribute to the annual revenue of Namibia through tourism (Elephant-Human Relations Aid, 2020).

## 5.13 BUILT ENVIRONMENT AND INFRASTRUCTURE

### 5.13.1 INFRASTRUCTURE AND BULK SERVICES

The tarred C36 road transecting the town carries significant traffic volumes between Windhoek and Henties Bay and is considered an important tourism route to the Brandberg massif and surrounding attractions. This is also the primary access route to the site.

The D1930 and D3714 gravel roads converge on the town from the east and northeast and connect to the C36 tarred road. The D1930 is used to connect to the B2 main road that runs between Swakopmund and Windhoek. The D3714 branches off onto the D3715 and connects to Omatjete in the Kunene Region further northeast.

NamWater currently has an unused wellfield in the upper Uis River, with an associated reservoir and pipeline laid towards Uis.

Bulk water to Uis is pumped by NamWater from the Nei-Neis Water Supply Scheme south of Uis to a reservoir within Uis. This is used to supply potable water to the residents of Uis.

The town is supplied by a 66kV overhead power line by ErongoRED. The power supply for the Uis Tin Mine is derived from the grid consisting of a 66kv power line (approximately 1 km long) and a substation with associated infrastructure (Figure 19).

The power line and infrastructure are located within the Accessory Works Permit area, permitted by the Ministry of Mines and Energy (16 October 2018) in terms of Section 90 (3) of the Minerals Act 33, 1992 and has a valid environmental clearance certificate.

**Figure 19 – A map showing the power line infrastructure**

## 5.14 TRAFFIC AND TRANSPORT

Innovative Transport Solutions (ITS Global) was commissioned by ECC to assess the road traffic baseline. The traffic study is still underway, at a time when there were no COVID-related travel restrictions or lockdowns, which would have affected the accuracy of the baseline study.

The major existing roadways in proximity to the Project area include:

- C36 Road (T0203) – Class 2 major arterial, with a surfaced lane (approx. 3.5 meters wide) per direction. Gravel shoulders and a speed limit 80 km/h within Uis
- D1930 and D3714 Roads – Class 4 distributor, with a gravel lane per direction.

The current site access road from the C36 is for approximately 500 m. The width of this road is approximately seven meters.

The condition of the C36 road, near the development, is in a relatively poor condition with various spots of cracking and failure. There are various reasons for this type of failure to occur, but the most likely cause is that the traffic load exceeds the design capacity of the roadway as well as excessive travel speeds (ITS, 2021). Further details of how the Project could impact these roads and mitigation measures will be provided in the impact assessment phase.

## 5.15 SOCIO-ECONOMIC BASELINE

Namibia's GDP is recorded at 14 billion US Dollars as of 2019 (Plecher, 2020). The development of the services sector, which directly includes tourism-related products and services have created a significant positive impact on domestic and national economic growth levels; employment; and local and regional development. Examples of this are the continued development of small and medium-sized tourism-based accommodation developments throughout the country as well as large-scale tourism developments, including eco-tourism with a strong focus on wildlife marketing.

ML 134 is located within the Erongo Region, named after Mount Erongo, a well-known landmark in Namibia. Erongo contains the municipalities of Walvis Bay, Swakopmund, Henties Bay and Omaruru, as well as the towns Arandis, Karibib and Usakos. All the main centres within this region are connected by tarred roads, the capital is Swakopmund. The area surrounding the town Uis and ML 134 are less developed than some of the larger towns in the Erongo Region, as mentioned above.

The ML overlaps the communal conservancy Tsiseb. A communal conservancy represents a conservation area that is managed by a local community that aims to manage the natural resources within their conservancy in a sustainable way to generate returns and other benefits (MET/NACSO, 2018). The local residents are mainly employed by lodges, rest camps, and livestock or game farms. Tourism and consumptive wildlife use is the main benefit contributor to these local communities, as well as income generated from plant products and local crafts (MET/NACSO, 2018).

According to MET/NACSO (2018), "Wildlife is central in generating returns for conservancies", thus it is essential to ensure that the ecosystem and biodiversity are healthy within these communal conservancies to ensure a bright future for both wildlife and Namibia's local communities. Any major environmental or ecological impacts within these areas could compromise the success and future of the Community Based Natural Resource Management (CBNRM) programme, which mainly depends on healthy wildlife populations for tourism and consumptive wildlife use.

## 5.16 GOVERNANCE

Namibia was established in 1990 and is led by a democratically elected and stable government. The country ranked fifth out of 54 African countries in the Ibrahim Index of African Governance in 2015 for indicators that include: the quality of governance and the government's ability to support human development, sustainable economic opportunity, rule of law, and human rights (National Planning Commission, 2017).

As a result of sound governance and stable macroeconomic management, Namibia has experienced rapid socioeconomic development. Namibia has achieved the level of 'medium human development' and ranks 125$^{th}$ on the Human Development Index out of 188 countries (National Planning Commission, 2017).

Namibia is divided into 14 regions and subdivided into 121 constituencies. The Erongo Region is divided into seven constituencies. The proposed Project is in the Karibib constituency of the Erongo Region. The Erongo Regional Council is responsible for the planning and development of the region in a sustainable manner for the benefit of its inhabitants by establishing, managing, and controlling settlement areas and focusing on core services. The council is accountable for an area of 63,586 km$^2$, which is about 7.7 % of the total area of Namibia (Erongo Regional Council, 2017).

## 5.17 DEMOGRAPHIC PROFILE

Namibia is one of the least densely populated countries in the world (2.8 persons per km$^2$). Vast areas of Namibia are without people, in contrast to areas of dense concentrations, such as the central-north and along the Kavango River. Windhoek, the capital, is not only the main urban area with the largest population, but the concentration of private and public head offices attracts Namibians from all parts of the country in search for a better life.

The national population growth rate is estimated at less than two percent, which is lower than that of most African countries. Namibia's population is young – although 57 % falls into the age group 15 to 59, 37 % of the total population is younger than 15 years old (Namibia Statistics Agency, 2017). Since 2005, there has been a steady improvement in life expectancy, which is currently estimated at 65 years. In 2018, it was estimated that 50 % of all Namibians are urbanised, i.e. living in an urban settlement (retrieved from www.worldpopulationreview.com). The last national census was conducted in 2011, and counted 2.1 million Namibians (Namibia Statistics

Agency, 2011). An inter-censal demographic survey was conducted in 2016, and estimated the total population at 2.3 million (Namibia Statistics Agency, 2017).

It is predicted that urbanisation will continue, with an increase and move from 43 % of the population living in urban areas in 2011, to 67 % in 2041. The populations of the Khomas and Erongo regions are projected to increase the most, with over a third of Namibia's population expected to live in these two regions (Namibia Statistics Agency, 2011).

In the 2011 Census, the population of the Erongo Region was 150 809, with a growth rate of 28.6 % since 2001. The population of Namibia has been growing steadily; the population growth rate between 2001 and 2011 (the two census) was 1.4 %, with urban areas growing quicker than rural areas. The highest growth rate in Namibia was recorded in the Erongo region (3.4 %). This was mainly influenced by in-migration; more than 40 % of residents in these regions were born elsewhere. Situated in the central Namib Desert, Swakopmund is the capital of Erongo and the fourth-largest town in Namibia with 44 725 inhabitants (Namibia Statistics Agency, 2011). In 2010, Uis had a population of approximately 3 600 inhabitants.

The potential impacts associated with the introduction of the Project to the area will be assessed as part of the ESIA, taking the baseline conditions and the Project into consideration during the assessment, to determine the magnitude of change from the baseline, and the potential impacts associated.

## 5.18 HEALTH

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

According to the MoHSS health facility census (MoHSS, 2009), the Erongo Region has a record of approximately 150 facilities which include individual private health care practices, group private health care practices, primary health care clinics and workplace clinics. Erongo has a high life expectancy an as of 2011, it was 63 years.

As with elsewhere in Namibia, HIV/AIDS remains a major reason for low life expectancy and is one of the leading causes of death in the region. HIV/AIDS remains the leading cause of death and premature mortality for all ages, killing up to half of all males and females aged 40 to 44 years in 2013 (IHME, 2016).

Tuberculosis (TB) is a leading killer of people infected by HIV/AIDS, and Namibia had a high burden in 2018 – 35 % of people with TB were infected with HIV. The country is included among the top

30 high-burden TB countries in the world, with an estimated incidence rate of 423 per 100,000 people, and 60 fatalities per 100,000 people in 2018 (retrieved from www.mhss.gov.na).

As at the beginning of 2020, the coronavirus (COVID-19) caused illness in humans at a pandemic scale and has resulted in an increasing number of deaths worldwide. The viral outbreak has adversely affected various socioeconomic activities globally, and with reports of a continually increasing number of people testing positive, it is anticipated that this may have significant impacts on the operations of various economic sectors in Namibia too. The disease caused many countries to enter a state of emergency, which included various levels of lockdown restrictions that had dire economic consequences. In addition, these measures have had a detrimental effect on tourism, and Namibia is, in both cases, no exception.

Furthermore, COVID-19 has also resulted in a loss of learning and socialising opportunities for children in Namibia and there was a lack of access to school feeding programs and parents had to provide or find alternative care for children. There has also been a six percent increase in health worker appointments across Namibia as a result of the pandemic (United Nations Namibia 2020).

## 5.19 EMPLOYMENT

The Erongo Region is one of the most affluent regions in Namibia, with the second highest per capita income in Namibia at N$ 16,819 per annum (Environ Dynamics, 2010). In Walvis Bay, most employment is through the harbour, fishing industry, and the processing of sea salt (Walvis Bay Municipality, 2008).

The labour force participation rate is the proportion of the economically active population, given as a percentage of the working age portion of the population (i.e. older than 15 years of age). The rate of labour force participation for the Erongo Region was 80.9 % compared to the average of 71.2 % for Namibia in 2018 (Namibian Statistics Agency, 2019).

In 2018, 53.4 % of all working Namibians were employed in the private sector, and 21.5 % by the state. State-owned enterprises employ a further 7.6 % and private individuals 16.6 %. Agriculture (combined with forestry and fishing) is the economic sector with the most employees – 23 % of all employed persons in Namibia work in this sector. Wages and salaries represented the main income source of 47.4 % of households in Namibia (Namibian Statistics Agency, 2019).

Low education levels affect employability and prevent many households from earning a decent income. Of all employed people in Namibia, 63.5 % do not have more than a junior secondary level qualification (Grade 10 and lower), and 11.8 % of all employed people have no formal education. In total, 29.1 % of all employed people fall into the category of “elementary occupation”, and 15.2 % into the category of “skilled agriculture”.

Overall, the rate of unemployment is estimated at 33.4 % for Namibia, using the broad definition of unemployment. The unemployment rate in rural and urban areas is almost the same: 33.4 %

in urban areas and 33.5 % in rural areas. The highest unemployment rates are found amongst persons with education levels lower than junior secondary. The unemployment rate of persons with no formal education is 28.6 %, with primary education at 34.6 %, and junior secondary education at 32.7 % (Namibian Statistics Agency, 2019).

According to the Namibian Chamber of Mines 2020 annual review, the mining industry employs over 9,000 people directly in the industry – 800 temporary employees and over 6 500 contractors. The Namibian mining industry spent almost two million Namibian dollars on skills expenditure, including operating mines, and exploration and development companies such as UTMC.

## 5.20 CRIME

Namibia's crime rate has been on the decline, in general and in the Erongo Region, since 2011. Namibia's crime index is 65.49 as at October 2021.

Namibia has a large market for ivory, rhino horn and pangolins. Since 2016 it has lost an average of 50 rhinos per year to poaching. Although it draws less attention than other wildlife species, the poaching of hippos is prevalent in Namibia. Illicit fauna products are often hidden among illegal stacks of timber on smuggling missions. Criminal syndicates appear to be increasingly involved in poaching and wildlife trafficking. While most poachers in the country are Namibians, foreign citizens from countries such as Zimbabwe and Angola are also involved. Illegal fishing also takes place in Namibian waters, primarily by foreign vessels (Global Organised Crime Index).

## 5.21 ECONOMIC AND BUSINESS ACTIVITIES

Key economic activities of the Erongo Region include agriculture, forestry, and fishing, mining and quarrying, manufacturing, tourism, and retail.

Mining plays a pivotal role in the economy of Namibia. Since independence, it has consistently been the biggest contributor to Namibia's economy in terms of revenue, and accounts for 25 % of the country's income. Mining is one of the main contributors to GDP, and one of the largest economic sectors of Namibia. Mining is a prominent industry in the Erongo Region with the main commodities being uranium, gold, salt, and dimension stones.

The economy of the Erongo Region is dominated by the local economies of Swakopmund and Walvis Bay. In the rural parts of the region, extensive livestock farming is a common activity, but intensive farming is also practiced along the lower part of the Swakop River, and at Omaruru. Several fresh crops are produced, mainly for local consumption.

In the Erongo Region, 67.5 % of all households depend on salaries and wages as the main income (Namibian Statistics Agency, 2019). Exact figures do not exist, but this high percentage can be ascribed to the dominance of the mining, fishing, and manufacturing, and processing sectors, together with the prominence of state departments and the administrative sectors in the Erongo

Region. A total of 12.6 % of households receive their income from business activities (Namibian Statistics Agency, 2019).

## 5.22 HERITAGE AND CULTURE

In Namibia, several mountains are closely coupled to heritage values. The Namib Desert has rich archaeological and heritage value and presents valuable information about the occupation of the area dating back 700 000 years. Archaeological remains in Namibia are protected under the National Heritage Act 27 (2004) and National Heritage Regulations (Government Notice 106 of 2005).

An archaeological field site visit and reconnaissance survey was conducted on ML 134 by Dr John Kinahan, from the 18th to 23th October 2021 to identify possible sensitive archaeological sites that could be affected by the proposed Project activities. The surrounding area of the proposed Project is a long-established mining settlement, which lies close to (approximately 40 km west) the Dâures massif or Brandberg Mountain, which is considered a feature of archaeological importance, in the western parts of Namibia.

The archaeological assessment report, issued on the 1st of November 2021, forms the basis of recommended management actions to avoid or reduce potential negative impacts, as part of the environmental assessment. Detailed findings and management measures to protect potential archaeological or heritage sites will be incorporated into the assessment report.

The objectives of the archaeological assessment were to address the following elements:

- Identification and assessment of potential impacts on archaeological/heritage resources, including historical sites arising from the proposed exploration and mining activities
- Identification and demarcation of highly sensitive archaeological/heritage sites requiring special mitigation measures to eliminate, avoid, or compensate for possible destructive impacts
- Formulation and motivation of specific mitigation measures for the Project to be considered by the authorities for the issuance of clearance certificates
- Identify permit requirements as related to the removal and/or destruction of heritage resources.

The archaeological survey on ML 134 documented evidence of mid and late Holocene settlement, as well as evidence of more recent settlement, which is mainly in the form of cemeteries associated with the history of the mining settlement at Uis after 1946. The recent cemetery sites are not of archaeological significance and their conservation would be required under the Burial Place Ordinance (27 of 1966) rather than the National Heritage Act (27 of 2004). The earlier sites fall directly under the protection of the Heritage Act.

The dark red-brown monochrome painting of bundles at Site 312/889 has been identified as an area of potential heritage significance. As with nearby late Holocene seed gathering sites, it is likely

that the focal area to which the rock art at Site 312/889 belongs, lies outside the ML 134 lease and probably to the north. Based on these observations the area's Holocene archaeology is unlikely to be affected by mining activities.

## 5.23 NOISE AND VIBRATION

Noise is generally defined as unwanted sound transmitted through a compressible medium such as air. Sound, in turn, is defined as any pressure variation that the ear can detect. Human response to noise is complex and highly variable, as it is subjective rather than objective.

The IFC General Environmental Health and Safety Guidelines on noise addresses the impacts of noise beyond the property boundary of the facility under consideration and provides noise level guidelines. The IFC states that noise impacts should not exceed levels or result in a maximum increase above background levels of 3dBA at the nearest receptor location off-site (IFC, 2007). For a person with average hearing acuity, an increase of less than 3dBA in the general ambient noise level is not detectable. The 3dBA change is, therefore, a useful significance indicator for a noise impact.

A noise baseline survey was conducted on the 5$^{th}$ to 7$^{th}$ of May 2021, at designated points as shown in Figure 20 for the proposed Project site. The results from the noise impact assessment will be incorporated into the environmental impact assessment report.

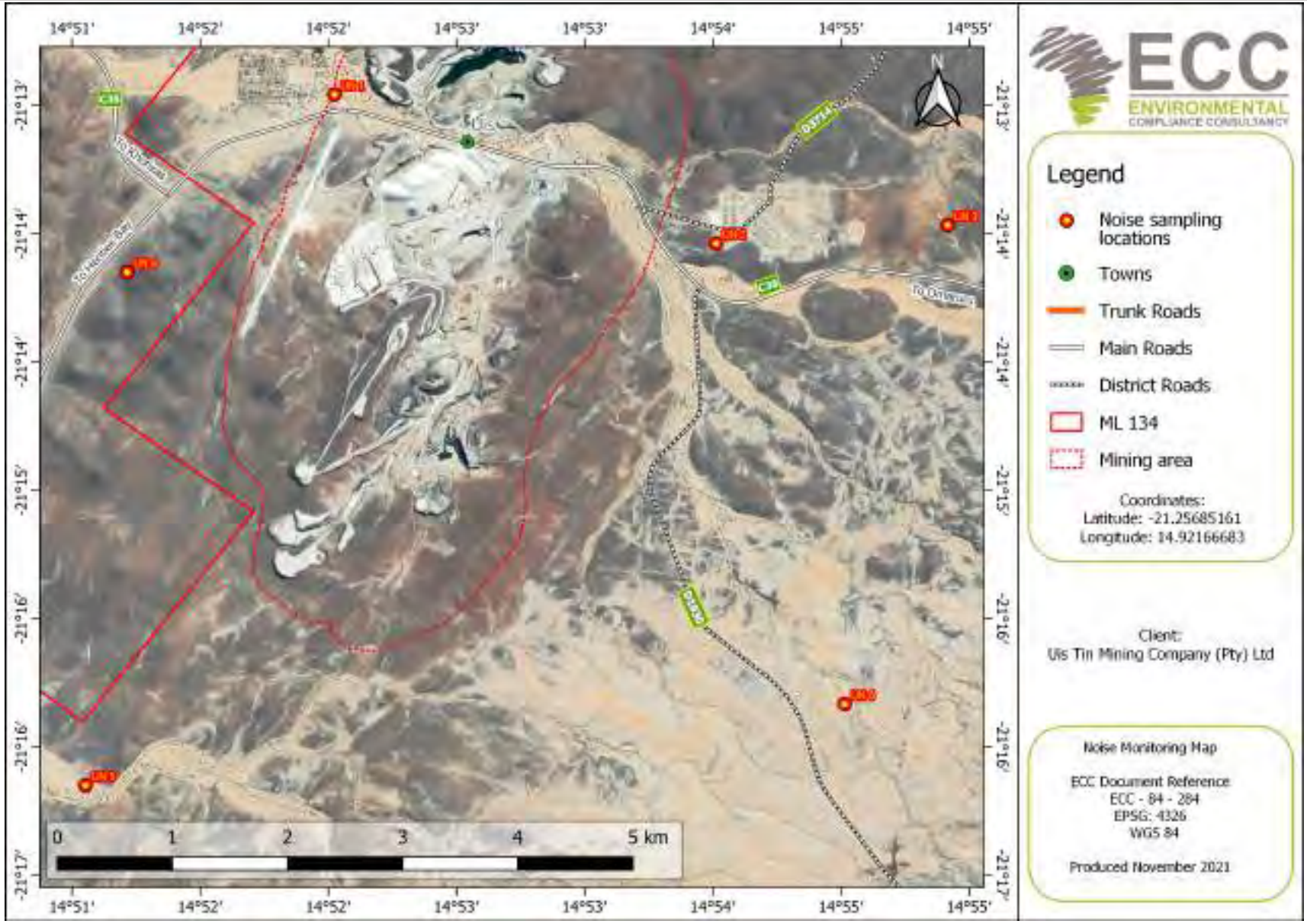



**Figure 20 - Noise sampling points**

Airshed Planning Professionals (Pty) Ltd, a firm that specialises in all aspects of air quality, ranging from neighbourhood concerns to regional air pollution impacts, was appointed to conduct the modelling and assessment process. Airshed identified sites to be monitored for day and night-time noise level measurements, for the noise baseline assessment. Survey sites were selected after careful consideration of future activities, accessibility, potential noise sensitive receptors, and safety restrictions. A total of six survey sites were selected.

These sites were chosen based on the sensitivity of the areas in terms of proximity to properties within the Project site. Noise sensitive receptors (NSRs) generally include private residences, community buildings such as schools and hospitals, and any publicly accessible areas. The ability of the environment to attenuate noise as it travels through the air was studied by considering land use and terrain. The same map shows the sensitive receptors near and at the proposed Project site.

The noise sources of the proposed Project are typical of opencast mining and ore processing facilities. Sources of noise at the Project site will include the following:

- Drilling
- Blasting – the character of noise generated by blasting is mentioned. Blasting can cause noise and vibration, which can have an impact upon neighbouring noise receptors. Blasting usually results in both ground and airborne vibration
- Ore and waste handling (loading, unloading, dozing) in open pits, on waste dumps, and in crusher/plant areas
- Crushing and screening of ore
- Haul truck traffic
- Diesel mobile equipment use (including reverse warnings)
- Ore processing activities such as crushing, screening, and milling.

## 5.24 ATMOSPHERIC ABSORPTION AND METEOROLOGY

Meteorological data purchased by Airshed for the past three years dating back to 2019 and used in their assessment will inform the baseline parameters. The measured data sets will indicate dominant wind flow patterns during day and night-time. Therefore, noise impacts can be predicted for Project activities.

Temperature gradients in the atmosphere create effects that are uniform in all directions from a source. On a sunny day with no wind, temperature decreases with altitude and creates a ‘shadowing’ effect for sounds. On a clear night, temperatures may increase with altitude, thereby ‘focusing’ sound on the ground surface. Noise impacts are therefore generally more notable during the night.

## 5.25 TERRAIN, GROUND ABSORPTION AND REFLECTION

Noise reduction caused by a barrier feature (i.e. natural terrain, installed acoustic barriers, buildings) depends on two factors, namely: the path difference of a sound wave as it travels around the barrier compared with direct transmission to the receiver, and the frequency content of the noise (Brüel & Kjær Sound and Vibration Measurement A/S, 2000). Sound reflected by the ground interferes with the directly propagated sound. The effect of the ground is different for acoustically hard (e.g. concrete or water), soft (e.g. grass, trees or vegetation), and mixed surfaces. Ground attenuation is often calculated in frequency bands, to consider the frequency content of the noise source and the type of ground between the source and the receiver (AirShed, 2021a).

The baseline noise study and impact assessment was conducted by Airshed and the outcomes of the noise assessment will be reported on in the ESIA report.

## 5.26 VISUAL AND SENSE OF PLACE

The proposed UTMC Project is situated in a disturbed area enclosed by high mountain ranges. No residential houses or tourist sites are accessed through the mine area. Therefore, there is no visual impact stemming from the proposed expansion Project on these receptors. The sense of place of the Project area has already been disturbed by the existing mining and processing activities of previous and existing mining as well as other industrial operations north of the mine site. The mountain ridge east of the mine area separates the mine from the informal residential area east of Uis. Similarly, the large WRD historically created by ISCOR effectively screens the viewshed of the western portion of Uis inhabitants and road users from the mine site. All road users of the C36 road driving past the entrance road of UTMC will not be able to see the entrance to the mine or any infrastructure of the mine as their view will be blocked by the infrastructure of the local brick factory.

The presence of the nearby airfield (Figure 21) west of the mine site is also not affected as it is visually screened from view by the interconnected historical WRD dump created by ISCOR and the mountain ridge west of the existing mine pits (V1 and V2).

**Figure 21 - View of the airfield from the west facing slopes of the mountain ridge**

## 5.27 LIGHTING

The night sky in the area is undisturbed. Namibia is known for its clear night skies and excellent stargazing settings. Artificial lighting, floodlights, and lighting for mining activities are not visible, although there are sites in proximity to the Project (north facing onto the C36: local brick factory) that are using lights for security purposes during nightfall. The baseline of undisturbed night skies will not be altered excessively during the construction and operations of the Stage II Project. Impacts associated site lighting, and the management and mitigation measures will be addressed in the assessment phase and EMP.

## 5.28 BIOPHYSICAL ENVIRONMENT BASELINE

### 5.28.1 CLIMATE AND METEOROLOGY

Namibia is arid to semi-arid and locally a hyper-arid country. Regionally, there is a growing demand for water due to climate change, population growth, economic development, and urbanisation, which increases pressure on existing water sources. The proposed Project is in central Namibia, an area that experiences generally hot daytime temperatures throughout the year, while the nights are mild to cool in winter.

Temperatures can reach up to +/- 35˚C in summer in Uis. The winter months, June July and August, are rainless and the average daytime temperatures range between 18 to 22 degrees Celsius. Rain is more frequent in the months from January to March as shown by recent historic data (Figure 22). In general terms the climate of Uis can be described as hot and dry, with more than 300 sunshine days per year. Solar radiation ranges from 6.0-6.4 kWh/m$^2$/day (see Figure 23).

Winds of a westerly direction are predominant with average wind speeds between 12 and 19 km/h, mainly because of its proximity to the Atlantic Ocean and Namib Desert. The months of October to January are known to have the strongest winds. Wind can occur any time of the day and the most predominant wind directions for this area are ENE, SW and SSW (Figure 24).

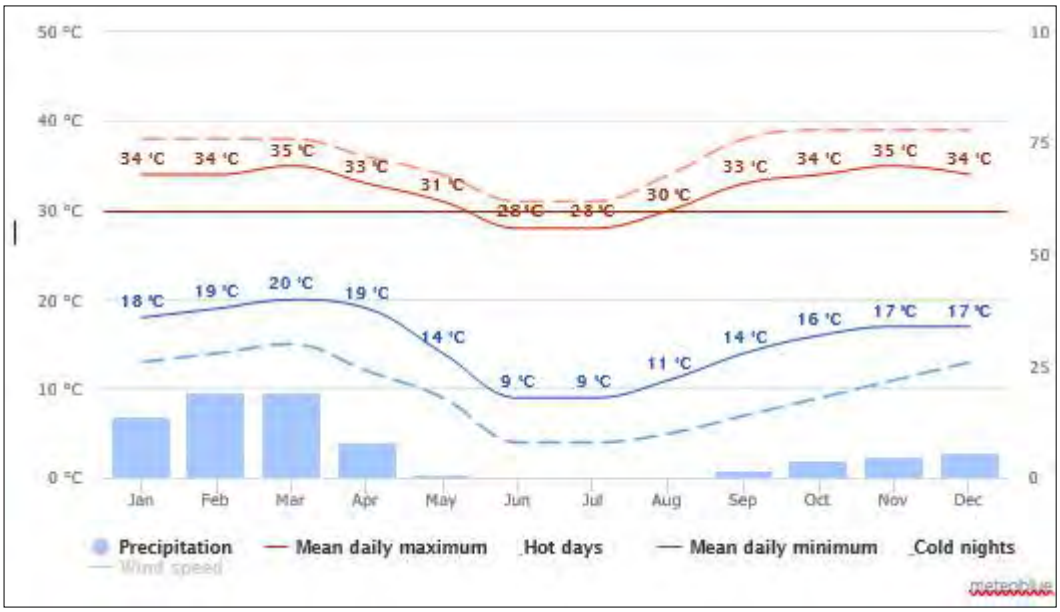



**Figure 22 - Average temperatures and precipitation at Uis (source: Meteoblue)**

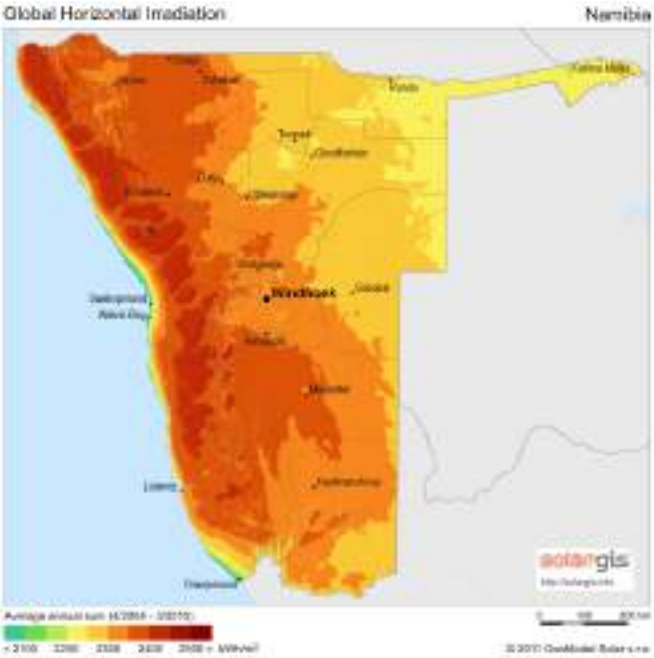



**Figure 23 - Solar radiation Namibia (source: atlas of Namibia)**

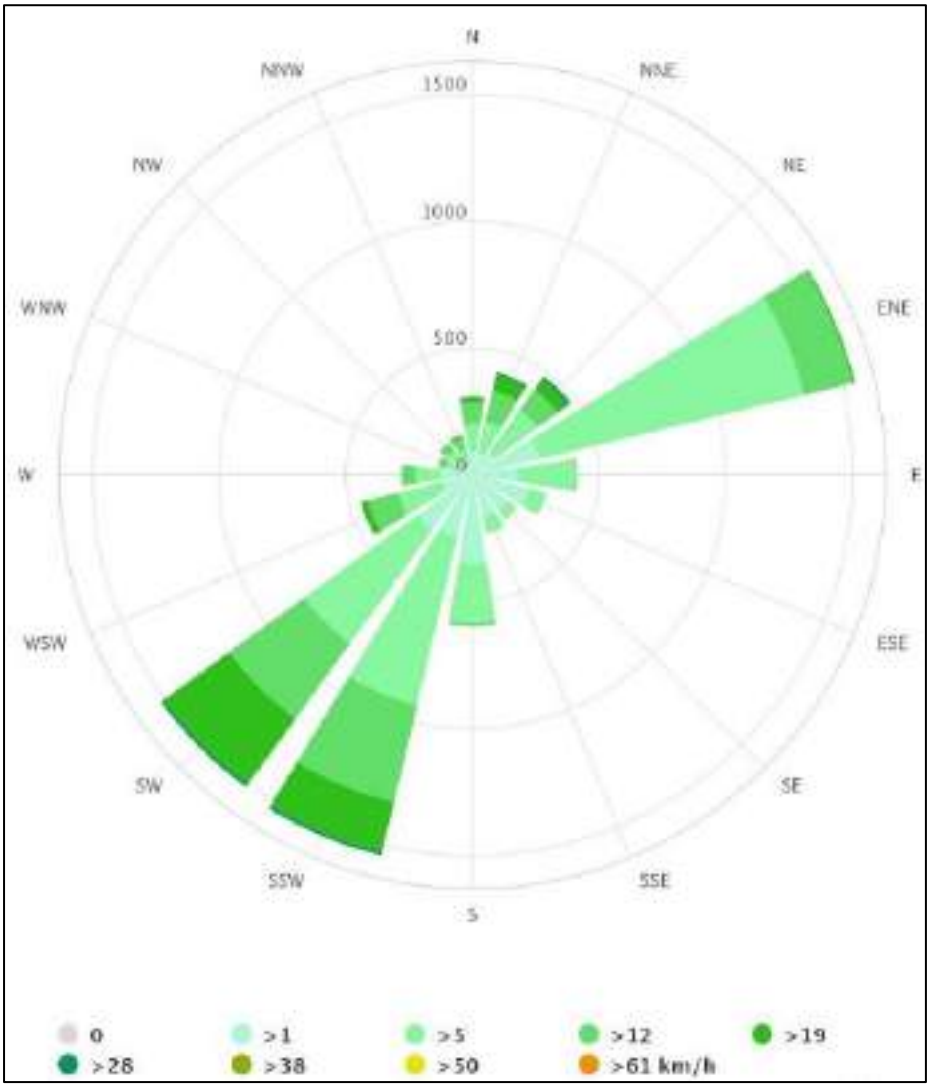



**Figure 24 - Wind direction and speed for Uis, Erongo Region (source: Meteoblue, 2021)**

### 5.28.2 AIR QUALITY

Since February 2019, Environmental Compliance Consultancy has been conducting environmental monitoring and assessments for UTMC, for the purpose of tracking depositional dust, at 14 dust monitoring stations located on the Project site. Air quality monitoring is crucial for determining the potential impacts that planned mining operations may have on an environment.

The potential expected sources of dust particulate matter resulting from the operational activities include but are not limited to: construction activities on settling ponds and return water dam (RWD); mineral material handling and processing; and mining activities such as drilling, blasting, and hauling. Therefore, depositional dust monitoring station locations were based on the proposed infrastructure locations likely to generate dust, considering prevailing wind. Figure 25 shows the locations of the 14 dustfall sampling locations. Initially 8 dust buckets were installed around the site in February of 2019, thereafter 6 buckets were added to the pool of dust monitoring buckets. Airshed undertook an air quality assessment for the project and the results of the assessment will be included in the environmental impact assessment report.

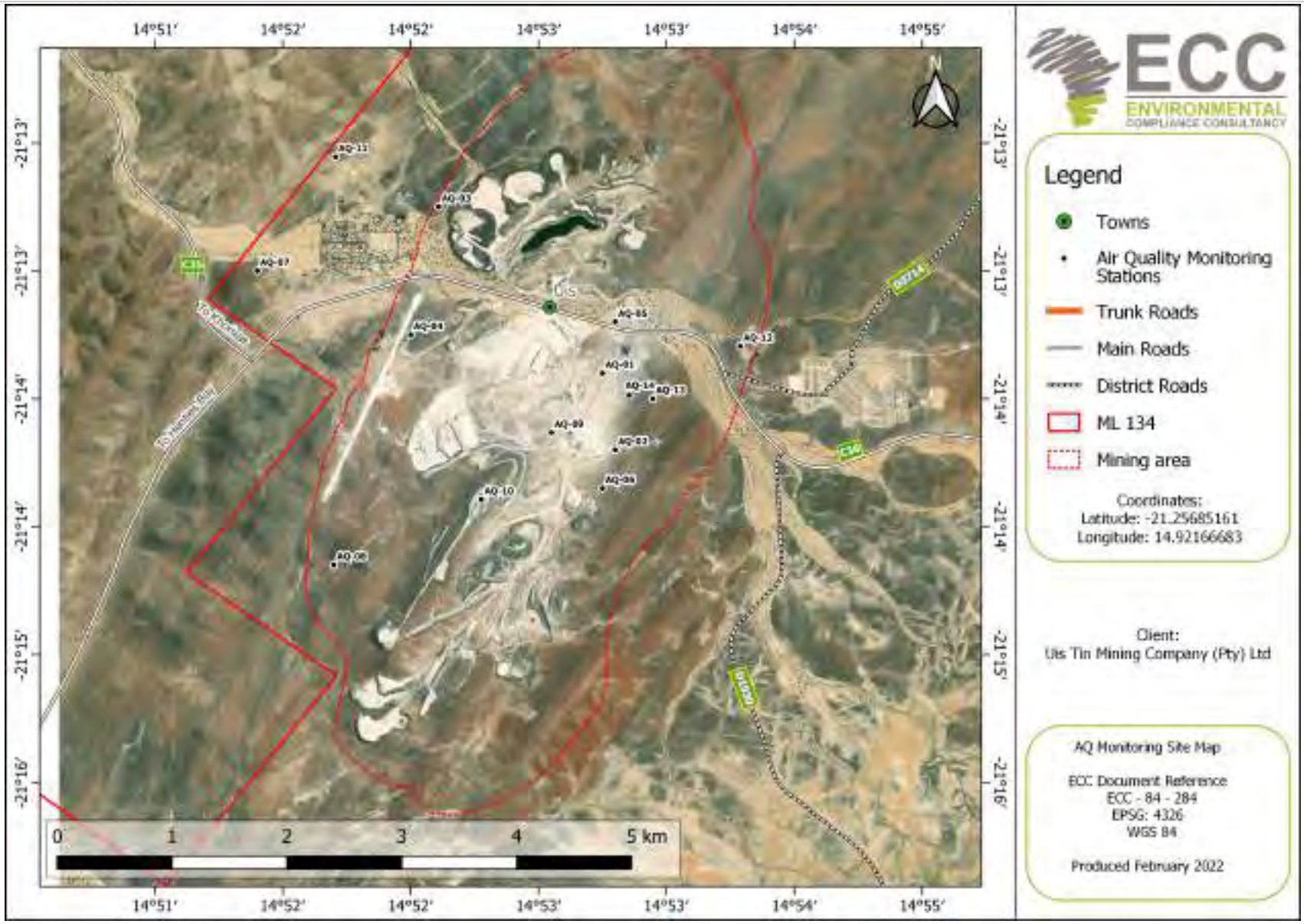



**Figure 25 – A map showing the dust-fall monitoring locations**

Natural environments are complex systems that can be affected by anthropogenic interference such as mining activities, including mineral exploration. To understand the confounding factors and interpret the findings based on the baseline of the receiving environment, deductive and inductive approaches are used. The wind vectors, topography (e.g., mountains and valleys), seasonal rainfall, and drought are identified as the potential factors that are likely to influence air quality. Dust particulate matter fallout can be correlated with wind direction and speed. Wind direction and speed are the primary factors determining the distance of travel of a dust particle and the distribution of particles falling out.

Moreover, as part of the ESIA for the proposed Stage II, an air quality specialist study was deemed necessary to determine the potential impacts of atmospheric pollution from the Project. Airshed Planning Professionals were engaged to model and provide a technical report for the air quality assessment. The baseline report is under development. The full air quality impact assessment will be completed, and the assessment outcomes will be reported on in the assessment report.

The ambient air quality guidelines of the IFC and EHS guidelines of 2007 shall be applied to the assessment. The findings, recommendations, and the way forward will be described in the assessment report.

### 5.28.3 STORMWATER CONTROL

Nurizon Consulting Engineers used the approach of Best Practice Guidelines G1 Stormwater Management as published by the South African Department of Water Affairs (DWA) to formulate the stormwater management plan strategy for the Stage II expansion Project. The strategy is to separate and channel dirty water from clean water. Dirty water will be channelled in a closed system into a pollution control dam (PCD) and clean water will be channelled from the site and discharged into the natural environment.

The facilities are delineated in dirty and clean stormwater run-off areas, with the dirty water collected and conveyed to the PCD for re-use. The mine will be operated as a closed system (in terms of the dirty stormwater run-off); with stormwater run-off within the dirty water areas being collected and conveyed to a silt trap and discharged into the PCD. The water from the PCDs will be transferred to the RWD re-used. No water from the PCDs will be released into the environment. Clean stormwater runoff is diverted away from the Project site into existing streams (Nurizon, 2020).

#### *5.28.3.1* Stormwater management principles proposed

The following basic principles form an integral part of the development of the stormwater management strategy:

- Dirty and clean stormwater catchments shall be delineated and separated so that clean stormwater run-off is diverted around contaminated areas and to natural water courses
- Impacts on the existing groundwater resources, in terms of quality and quantity shall be minimised through the use of impermeable membranes in the design of dirty stormwater

infrastructure, i.e. High-density polyethylene (HDPE) liners for the pollution control and concrete linings for the dirty water drainage channels

- Prevention of erosion of the existing water courses, particularly at clean stormwater system discharge points
- Mitigation of flooding to neighbouring properties in the areas due to the proposed facility's footprint and activities
- The required capacity of the individual elements comprising the dirty water system considered the following:
    - Projected water balance, with the aim of retaining the contaminated (dirty) water within a closed system
    - Maximum estimated stormwater peak flow generated by a storm event with a 1 in 50-year recurrence interval
    - Maximum estimated 24-hour runoff volume with 1 in 50-year recurrence interval.

# 6 IMPACT IDENTIFICATION AND EVALUATION METHODOLOGY

## 6.1 INTRODUCTION

Chapter 2 provides an overview of the approach used in this ESIA process, and details each of the steps undertaken to date. Predication and evaluation of impacts is a key step in the ESIA process. This chapter outlines the methods that will be followed to identify and evaluate the impacts arising from the proposed Project. The findings of the assessment will be presented in the full assessment report.

This chapter provides comprehensive details of the following:

- The assessment guidance that will be used to assess impacts
- The limitations, uncertainties, and assumptions with regards to the assessment methodology
- How impacts will be identified and evaluated, and how the level of significance will be derived
- How mitigation will be applied in the assessment, and how additional mitigation will be identified
- The cumulative impact assessment (CIA) method that will be used.

The aims of this assessment will be to determine which impacts are likely to be significant; to scope the available data and identify any gaps that need to be filled; to determine the spatial and temporal scope; and to identify the assessment methodology.

The scope of the assessment was determined through undertaking a preliminary assessment of the proposed Project against the receiving environment, and was obtained through a desktop review, available site-specific literature, monitoring data, and site reports, as set out in this scoping report.

## 6.2 ASSESSMENT GUIDANCE

The following principal documents will be used to inform the assessment method:

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

## 6.3 LIMITATIONS, UNCERTAINTIES AND ASSUMPTIONS

The following limitations and uncertainties associated with the assessment methodology will be considered in the assessment phase:

- Topic specific assessment guidance has not been developed in Namibia. A generic assessment methodology will be applied to all topics using IFC guidance and professional judgement
- Guidance for CIA has not been developed in Namibia, but a single accepted state of global practice has been established. The IFC's guidance document (International Finance Corporation, 2013) will be used for the CIA.

## 6.4 ASSESSMENT METHODOLOGY

The ESIA methodology applied to this assessment has been developed by ECC using the International Finance Corporation (IFC) standards and models, in particular *Performance Standard 1: 'Assessment and management of environmental and social risks and impacts'* (International Finance Corporation, 2017); Namibian Draft Procedures and Guidance for EIA and EMP (Republic of Namibia, 2008); international and national best practice; and over 25 years of combined ESIA experience. The methodology is set out in Figure 26 and Figure 27.

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

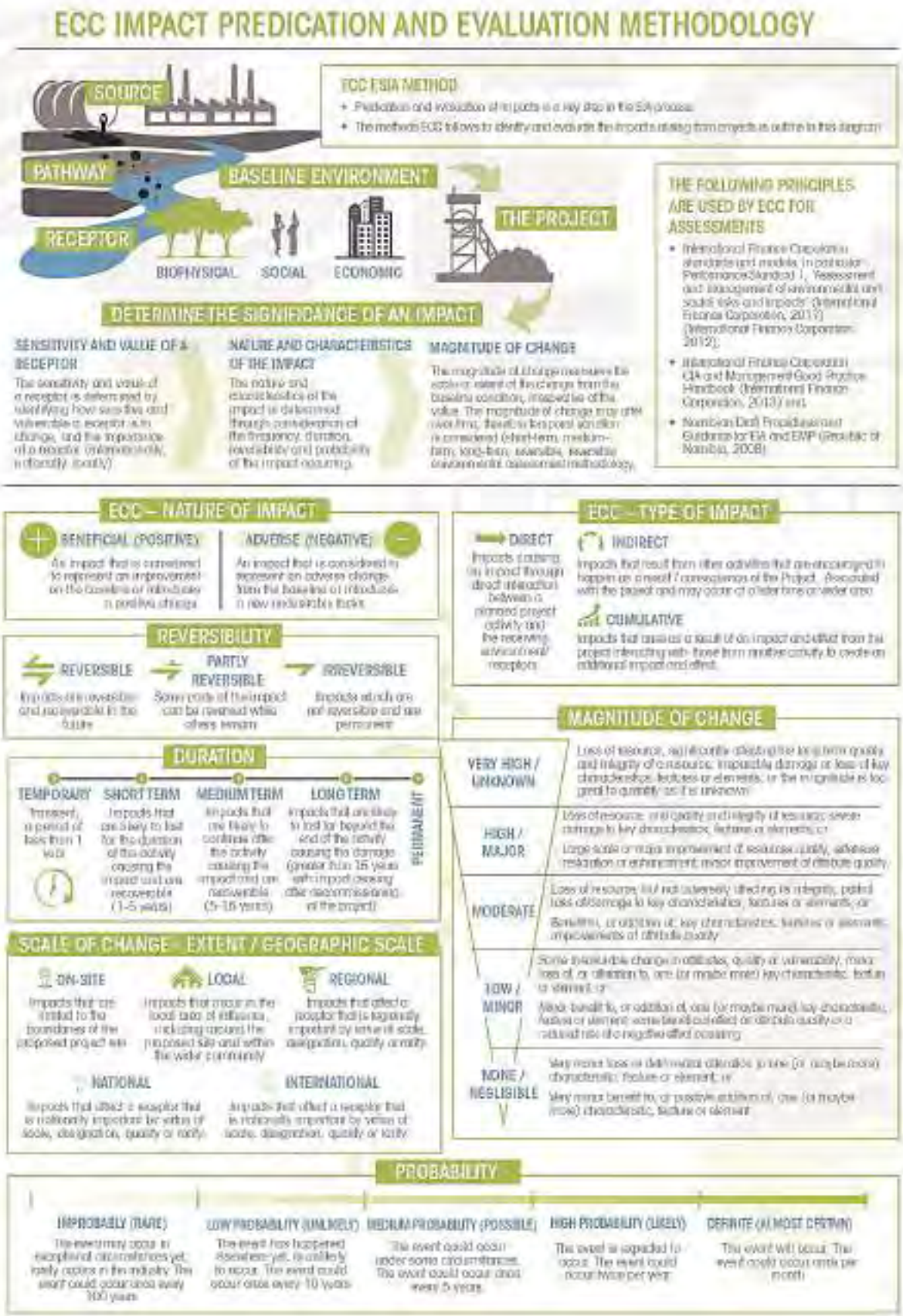



**Figure 26 – ECC ESIA methodology based on IFC standards**

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

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

## SENSITIVITY AND VALUE

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

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

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

## MITIGATION

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

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

- Standard practices and other best practice measures for avoiding and minimizing environmental impacts. These are considered as good practice measures.
- Actions undertaken by the EIA process that influence the design process through implementing design measures that would entirely avoid or eliminate an impact or modifying the design through the inclusion of environmental features to reduce the magnitude of change. These are considered as embedded mitigation.
- Specified additional measures or follow-up action to be implemented to further reduce adverse impacts that remain after the incorporation of embedded mitigation. These are considered as additional mitigation.

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

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

## SIGNIFICANCE DESCRIPTION

***Low - Major Beneficial (All Scores)***
Impacts are considered to be beneficial to the environment and society.

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

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

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

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

© COPYRIGHT & PROPERTY OF ENVIRONMENTAL COMPLIANCE CONSULTANCY | NO PART OF THIS DOCUMENT IS TO BE COPIED OR REPRODUCED

**Figure 27 – ECC ESIA methodology based on IFC standards**

## 6.5 MITIGATION

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

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

1. Actions undertaken by the ESIA process that influence the design process, through implementing design measures that would entirely avoid or eliminate an impact, or modifying the design through the inclusion of environmental features to reduce the magnitude of change. These are considered as embedded mitigation
2. Standard practices and other best practice measures for avoiding and minimising environmental impacts. These are considered as good practice measures
3. Specified additional measures or follow-up action to be implemented, in order to further reduce adverse impacts that remain after the incorporation of embedded mitigation. These are considered as additional mitigation.

The ESIA is an iterative process whereby the outcomes of the environmental assessments inform the Project. Considerable mitigation has been built into the proposed Project, as potentially significant adverse environmental impacts have been identified and design changes have been identified to overcome or reduce them.

The EMP (Appendix A) provides the good practice measures and specified additional measures or follow-up action. The final assessment report will be accompanied by an updated EMP.

Embedded mitigation and good practice mitigation will be considered in the assessment. Additional mitigation measures will be identified when the significance of impact requires it and causes the impact to be further reduced. Where additional mitigation is identified, a final assessment of the significance of impacts (residual impacts) will be carried out, taking into consideration the additional mitigation.

## 6.6 TERMS OF REFERENCE FOR THE ASSESSMENT

A full impact assessment will be completed with input from stakeholders during the public participation phase. Specialist studies that have been received, may be reviewed, or reassessed based on the findings from the public participation phase. A final EMP will be produced to manage residual impacts that cannot be mitigated through the Project evolution process.

A full environmental and social impact assessment (ESIA) is required for a large-scale mining operation like the proposed Project. The scoping phase progress to date has demonstrated that the following components should be included in the assessment phase.

These terms of reference (ToR) for the assessment phase were updated and finalised after the completion of the public review of the scoping report on the 9th of March 2022:

- Air quality impact assessment
- Biodiversity impact assessment
- Groundwater study and surface water impact assessment
- Heritage impact assessment
- Mine blast vibration assessment
- Noise impact assessment
- Socioeconomic impact assessment
- Soil impact assessment
- Traffic impact assessment
- Visual impact assessment.

# 7 CONCLUSION

This draft scoping report provides the baseline data for the assessment phase of the ESIA. The commissioned studies will fill in the data gaps. The following specialist studies have provided sufficient baseline data:

- Biodiversity (dry and wet seasons) baseline studies
- Heritage baseline study
- Stormwater management assessment
- Socioeconomic baseline study
- Traffic impact assessment
- Noise and air quality modelling and assessment based on Project specific parameters.
- Visual baseline study.

The other baseline information included in this scoping report was researched, analysed, and reported on by the ECC team and its partners. Some research is ongoing and will be included and assessed in the assessment phase by the ECC team, namely:

- Blast vibration impact assessment
- Groundwater dynamic source modelling and sustainability assessment as well as a contaminate plume modelling exercise

The finalised baseline studies and information have informed the scope of the terms of reference (ToR) for the assessment phase. Each study will highlight certain sensitivities that need to be assessed.

This draft scoping report with ToR for the assessment phase of the ESIA provides the basis needed, in order for the ESIA to be undertaken. This scoping report was finalised after the public review of the report. No comments were received from the public on the scoping report, therefore this version of the scoping report is deemed as final.

# 8 REFERENCES AND CONSULTED DOCUMENTS

AirShed 2021a. Air Quality Baseline Assessment for the Twin Hills Project near Karibib in Namibia.

Brüel & Kjær Sound & Vibration Measurement A/S, 2000. *www.bksv.com.* [Online] Available at: http://www.bksv.com [Accessed 14 October 2011].

BSI, 2014. *Code of practice for noise and vibration control on construction and open sites - Part 1: Noise.* s.l.:s.n. IFC, 2007. *General Environmental, Health and Safety Guidelines,* s.l.: s.n.

Bubenzer, O. (2002). Project E1 - Atlas of Namibia. [online] Available at: http://www.uni-koeln.de/sfb389/e/e1/download/atlas_namibia/e1_download_physical_geography_e.htm

Christelis, G. & Struckmeier, W. (Eds.) (2001). Groundwater in Namibia – an explanation to the hydrogeological map. Windhoek: Ministry of Agriculture, Water and Rural Development (Department of Water Affairs).

Crime, G. I. (n.d.). Global Organised Crime Index. Retrieved December 1, 2021, from Profile Namibia: https://ocindex.net/country/namibia

Cunningham, 2021a. Baseline Study: Vertebrate Fauna and Flora Associated with the Afrtitin Mining Project: Summer and Winter Observations - Karibib Area

Cunningham, 2021b. Baseline Study: Vertebrate Fauna and Flora Associated with the Afrtitin Mining Project – Karibib Area

Cunningham, P.L. 2021. Vertebrate fauna and flora associated with the Afrtitin Mining Project: summer & winter observations, Karibib area. Unpublished report, Environmental Compliance Consultancy, Windhoek.

Cunningham, P.L., Marais, A. and Van Zyl, N. 2015. Above-ground pipelines as wildlife barriers in the Namib Desert. *Roan News – Special edition on water 2015*: 50-54.

Enviro Dynamics, 2010. Draft scoping/environmental impact assessment report: The water supply improvement project to the Langer Heinrich Uranium Mine. Windhoek: The EIS.

Elephant-Human Relations Aid. (2020). Learn about Desert Elephants. [online] Available at: https://www.ehranamibia.org/about-desert-elephants Downloaded on 27 May 2021.

Hubbard, H. J., Gouws, W. J., Smit, P., & Botha, F. S. (2021). *Integrated water Balance Simulation Model.* Windhoek: Unpublished.

IFC, 2007. *General Environmental, Health and Safety Guidelines.* s.l.:World Bank Group.

IFC, 2007. International Finance Corporation: Environmental Performance and Equator Principals

IFC, 2012. International Finance Corporation: Environmental Performance and Equator Principals

IFC, 2013. International Finance Corporation: Environmental Performance and Equator Principals

IFC, 2017. International Finance Corporation: Environmental Performance and Equator Principals

Institute for Health Metrics and Evaluation (IHME) 2016. Namibia- State of the nation's health: Findings from the global burden of disease. Seattle: IHME

ITS Global, 2021. Twin Hills Mine Project, Transport Impact Assessment, Erongo Region, Namibia. First Draft.

IUCN 2021. IUCN Red List of Threatened Species. <www.iucnredlist.org>.

IUCN 2021. The IUCN Red List of Threatened Species. Version 2021-1. https://www.iucnredlist.org. Downloaded on [20 05 2021].

Kinahan, J. 2021. Archaeological Assessment of the Afrtitin Project, Erongo Region, Namibia.

Komen, L. n.d. The Owls of Namibia – Identification and General Information. NARREC, Windhoek, 16pp.A63

MEAC/MEFT. 2020. National Strategy On Sustainable Heritage Tourism Development & Employment Creation Opportunities At Community Level. MEAC/MEFT, Windhoek.

Mendelsohn, J., Jarvis, A., Roberts, C. and Robertson, T. 2004. Atlas of Namibia – a portrait of the land and its people. David Philip Publishers, Cape Town.

MET/NACSO. 2018. The state of community conservation in Namibia – a review of communal conservancies, community forest and other CBNRM activities (Annual Report 2017). MET/NACSO, Windhoek.

Meteoblue. (2021). *Climate Uis*. [online] Available at: https://www.meteoblue.com/en/weather/historyclimate/climatemodelled/uis_namibia_3352523 [Accessed 14 Jul. 2021].

Ministry of Health and Social Services (MoHSS) (2020). Diseases. Retrieved from www.mhss.gov.na

Ministry of Health and Social Services (MoHSS) [Namibia] and ICF Macro.2010. *Namibia Health Facility Census 2009.* Windhoek, Namibia. MoHSS and ICF Macro.

Minxcon (Pty) Ltd. (2021). *Uis Tin Mine, Phase 1 Fast-Tracked Stage II Definitive Feasibility Study Summary.* Roodepoort: Unpublished.

NACSO, 2010. Namibia's communal conservancies: a review of progress and challenges in 2009. NACSO, Windhoek.

Namibia Inter-censal Demographic Survey (2016). Report. Retrieved from https://cms.my.na/assets/documents/NIDS_2016.pdf

Namibian statistics Agency. (2011). *Namibia Population and Housing Census.* Windhoek: NSA.

NCE, 2020. *Best Practice Guide - Environmental Principles for Mining in Namibia,* Windhoek: Namibian Chamber of Environment.

Nurizon Consulting Engineers. (2020). *Uis Phase 1 Fast Tracked Stage II BFS Stormwater Management Plan.* Pretoria: Unpublished.

Plecher, H. (2020, May 13). Namibia: Inflation rate from 1994 to 2021. Retrieved from Statista: https://www.statista.com/statistics/510131/inflation-rate-in-namibia/

Republic of Namibia. 2008. Namibian Draft Procedures and Guidance for EIA and EMP

Van Wyk, B. (August 2018). Key observations on the test pumping of boreholes and a provisional assessment of the surface and groundwater potential. Swakopmund.

World Health Organization (WHO) 2016. WHO country cooperation strategy 2010 – 2015 Namibia. Windhoek: WHO

World population review. (2020). Namibian Population 2020 retrieved from http://worldpopulationreview.com/countries/namibia-population/

# APPENDIX A – DRAFT ENVIRONMENTAL MANAGEMENT PLAN

# APPENDIX B – PUBLIC CONSULTATION RECORDS

10 Republikein Sun Allgemeine Zeitung Market Watch WEDNESDAY 15 SEPTEMBER 2021

## PUBLIC NOTICE

### LODGING OF ANNUAL RETURNS AND PAYMENT OF ANNUAL DUTIES

The Business and Intellectual Property Authority (BIPA) hereby wish to bring to the attention of business owners of Close Corporations, Companies with share capital (PTY) and Companies incorporated under Section 21, that BIPA is commencing with a public awareness campaign on the submission of annual returns and payment of annual duties for the period 2012-2021. Kindly note the following information.

In terms of Section 181 of the Companies Act, 2004 (Act No. 28 of 2004) the lodging of annual returns is compulsory for all **Companies with a share capital**, and a lodging fee of N$160.00 must accompany the annual return (CM23). The calculation of Annual duties is prescribed in Regulation 40 of the Regulations made under the Companies Act, 2004 (Act 28 of 2004).

Failure to lodge annual returns and the non-payment of annual duties as prescribed by the Companies Act, renders businesses non-compliant with the relevant legislative requirements and may result in entities incurring penalties and/or being subject to deregistration.

Take note that **Section 21 Companies** are obliged to lodge their annual returns, but are not required to pay an annual duty. **Close Corporation (CC)** shall not later than one month after the financial year, pay the prescribed annual duty in terms of Section 13 (2) of the Close Corporations Act, 1988 (Act No. 26 of 1988) as amended, read together with Regulation 11(1) of the Regulations made thereunder. The Corporation must, on the prescribed form (i.e. form CC7) lodge proof of such payment to the Registrar not later than forty-two days after the end of every financial year. Failure to pay annual duties as prescribed by the Close Corporations Act renders businesses non-compliant with the following legislative requirements.

1. The annual duty payable by Close Corporations is fixed at N$ 120.00 as prescribed in terms of Regulation 5 to the Regulations (see Schedule 1 thereto) made under the Close Corporations Act, 1988; and
2. Pay such annual duty subject to the payment of additional fees according to the scales prescribed under Regulation 11(3) of the Regulations made under the Close Corporations Act.

The period for which BIPA is requesting the lodging of annual returns and the payment of annual duties are 2012 – 2021. In order to remain compliant with the relevant legislation and avoid punitive measures, business owners are encouraged to visit the BIPA offices and enquire about outstanding returns and fees.

Businesses that have already paid their annual duties for the period 2012-2021 are requested to assist BIPA in updating its records by submitting proof of payment for the respective years. Any entity with outstanding annual duties WILL NOT be allowed to make any amendments to their entity or be allowed to receive a good standing certificate from BIPA. For more information, kindly contact +264 61 299 4484/64/21 or send an email to debtors@bipa.na.

***VIVIENNE KATJIUONGUA***
***REGISTRAR OF BUSINESS REGISTRATION AND INTELLECTUAL PROPERTY***

*Good Standing makes for Good Business –*
*Submit your annual returns TODAY!*

bipa | BUSINESS AND INTELLECTUAL PROPERTY AUTHORITY
*Protecting Entrepreneurship and Innovation*

allgrove

RE-ADVERTISEMENT

## TENDER

MTC hereby invites appropriately qualified companies to apply for the following tender:

• MTC48-21-0:
**REQUESTING PROPOSALS FOR SUPPLY, DELIVERY, INSTALLATION, COMMISSIONING AND MAINTENANCE OF SPECIALISED AIR CONDITIONING SYSTEMS AT THE MTC HEAD OFFICE IN OLYMPIA, WINDHOEK AND MTC OSHAKATI**

**BRIEFING MEETING:**
24th September 2021
@ 10H00

**BRIEFING MEETING VENUE:**
Microsoft Teams, the link will be on MTC's website

CLOSING DATE:
Friday, 01st October, 2021 by 14H30

The Terms of Reference documents are available at: **www.mtc.com.na**

mtc.com.na

make the connection mtc

NILALEG

The Ministry of Environment, Forestry and Tourism (MEFT), in partnership with the United Nations Development Programme (UNDP) and Environmental Investment Fund of Namibia (EIF), wishes to invite proposals through the Namibia Integrated Landscape Approach for Enhancing Livelihoods and Environmental Governance to Eradicate Poverty (NILALEG) Project Small Grants Facility.

Registered communal conservancies, gazetted community forests, community groups, farmer's associations, women's groups, youth groups and informal community groups (subject certain conditions) are all eligible to apply for a grant under this facility. The grant facility remains limited to the pre-determined landscapes of Omaoipanga (Kunene Region), Ruacana (Omusati Region), Okongo (Ohangwena Region), Nkulivere (Kavango West Region) and Zambezi (Zambezi Region) while the anticipated proposals remain limited to the investment themes of agroforestry, sustainable rangeland/crop management and nature-based enterprises.

Grant proposals should be submitted on the EIF prescribed templates available at the EIF website, www.eif.org.na, or at EIF offices including grant application guidelines, the maps of the focal landscapes and other related forms.

**Grant proposals should be addressed to:**
Environmental Investment Fund of Namibia
NILALEG Project Grant Facility
Heinitzburg Heights
c/o Heinitzburg and Dr. Theo-Ben Gurirab Streets
Klein Windhoek, Windhoek

Proposals should be submitted to the EIF not later than 12 November 2021 at 17h00.
Both hardcopies and emails will be accepted.
For further **queries, kindly contact:**

**Ms. Philadelphia Buys**
EIF: NILALEG Project Coordinator
PBuys@EIF.ORG.NA or
Tel: 061 – 4317705

**Ms. Kredula Shimwandi**
EIF: Gender Intern KShimwandi@EIF.ORG.NA or
Tel: 061 – 4317736

**NOTICE OF AN ENVIRONMENTAL ASSESSMENT & PUBLIC PARTICIPATION PROCESS FOR THE PROPOSED STAGE 2 EXPANSION OF THE PILOT TIN PROCESSING PLANT ON ML 134, ERONGO REGION, NAMIBIA.**

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

**Applicant:** Uis Tin Mining Company (Pty) Ltd
**Environmental Assessment Practitioner (EAP):** Environmental Compliance Consultancy
**Location:** Uis, Erongo Region, Namibia

**Project:** The proposed project involves the stage 2 expansion of the pilot tin processing plant and upgrades to the stormwater and effluent collection and treatment infrastructure around the pilot plant.

**Location:** All activities will take place on Mining Licence (ML) 134, held by Afritin Mining Namibia (Pty) Ltd, Erongo Region.

**Proposed Activities:** Uis Tin Mining Company (Pty) Ltd proposes several mechanical and process flow upgrades to components of the current pilot plant's processing and supporting infrastructure and therefore an expected increase in the production rate from the current 80 Tons Per Hour (TPH) in stage 1 to 120 TPH in stage 2. This equates to a life of Operations of 20 years.

**Purpose of the review and registration period:** The purpose of the review and registration period is to introduce the proposed project and to afford registered Interested and Affected Parties (I&APS) an opportunity to comment on the Background Information Document (BID) to ensure that all issues, and concerns are brought forward, captured and considered further in the assessment.

The registration period is effective from the **8th of September 2021 to 22nd of September 2021**. I&APs and stakeholders are required to register for the project at: www.eccenvironmental.com/projects/ or email ECC to register.

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

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

**website: http://www.eccenvironmental.com**
**Project ID: ECC-128-355-ADT-05-D**

ECC

AL-ANON
**Help for relatives of Alcoholics**

**AL-ANON Family groups offer help for friends and relatives of alcoholics.**

**They provide assistance for people who live with alcoholics.**

**Dawnnam@gmail.com**

**VENUE: cnr Lüderitz and Kasino Street**
**DATE AND TIME: Thursdays at 19H00**

ENVIRONMENTAL COMPLIANCE CONSULTANCY

Meeting Attendance Register

Date: 19/10/2021

Meeting Subject: Public Meeting for the Afritin UTM ESIA

Venue: Uis Settlement Office Boardroom

| | NAME | ORGANIZATION | EMAIL ADDRESS | CONTACT NUMBER | SIGNATURE |
|---|---|---|---|---|---|
| 1 | MR. I Kamenda | FARMERS Elgaris | — | 0817327146 | [signature] |
| 2 | Ranga Toibeb | E/REO | itoibeb@zgmail.com | 0812293976 | [signature] |
| 3 | Julia Garises | Tatamutsi/UIS | Boardroom Warehouse group | 0812464417 | [signature] |
| 4 | RALF SCHOMMARZ | UIS TIN MINE | ralf.schommarz@afritinmining | 081 1267395 | [signature] |
| 5 | Amingo Hannes | UIS-ERC | amingohannes@gmail.com | 0812549970 | [signature] |
| 6 | JOHANNES GARISES | Brandberg sediminer | johannesgariseb@gmail.com | 0813092097 | [signature] |
| 7 | Helen Geingos | Brandberg PS | [illegible] | 0812577133 | [signature] |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | | | | | |

ENVIRONMENTAL COMPLIANCE CONSULTANCY

Meeting Attendance Register

Date: _____

Meeting Subject: Focus Meeting For the Afrotin UTM ESIA

Venue: Uis Settlement Office Boardroom

| | NAME | ORGANIZATION | EMAIL ADDRESS | CONTACT NUMBER | SIGNATURE |
|---|---|---|---|---|---|
| 1 | Jason Amokura | ERC-Uis | jamokura@erc.gov.na | 0813735391 | |
| 2 | Efraim Taurob | UTMC | efraimtaurob@afrotinmining.com | 0818077822 | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | | | | | |

# APPENDIX C – EAP CV'S

# APPENDIX D – TAXA LIST OF SPECIES FROM NBRI

**Submitted to: UIS TIN MINING COMPANY (Pty) Ltd.**
**Attention: Mr. Efraim Tourob**
4th Avenue East, Number 1 Uis
P O Box 30
Uis
Namibia

# REPORT:

# UIS AFRITIN–EXPANSION OF PILOT TIN PROCESS PLANT ON ML 134 - EMP

PROJECT NUMBER: ECC-84-384-REP-13-A

REPORT VERSION: REV 01

DATE: FEBRUARY 2022

## TITLE AND APPROVAL PAGE

| | |
|---|---|
| Project Name: | Uis Afritin–Expansion of pilot tin process plant on ML 134 - EMP |
| Client Company Name: | UIS TIN MINING COMPANY (Pty) Ltd. |
| Client Name: | Mr. Efraim Tourob |
| Ministry Reference: | APP-002964 |
| Authors: | Environmental Compliance Consultancy |
| Status of Report: | Draft for client review /Rev 01 |
| Project Number: | ECC-84-384-REP-13-A |
| Date of issue: | FEBRUARY 2022 |
| Review Period | N/A |

## ENVIRONMENTAL COMPLIANCE CONSULTANCY CONTACT DETAILS:

We welcome any enquiries regarding this document and its content. Please contact:

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

## DISCLAIMER

Environmental Compliance Consultancy (ECC) (Reg. No. CC 2013/11401) has prepared this scoping report and the preliminary EMP on behalf of the proponent. This report has been authored by employees of ECC, who have no material interest in the outcome of this report, nor do any of the ECC team have any interest that could be reasonably regarded as being capable of affecting their independence in the preparation of this report. ECC is independent from the proponent and has no vested or financial interest in the project, except for fair remuneration for professional fees rendered based upon agreed commercial rates. Payment of these fees is in no way contingent on the results of this report or the assessment, or a record of decision issued by Government. No member or employee of ECC is, or is intending to be, a director, officer, or

any other direct employee of Uis Tin Mining Company. No member or employee of ECC has, or has had, any shareholding in Uis Tin Mining Company. Any personal views or opinions expressed by the writer may not necessarily reflect the views or opinions of Environmental Compliance Consultancy or its client.

*Please note at ECC we care about lessening our footprint on the environment; therefore, we encourage that all documents are printed double sided*.

# TABLE OF CONTENTS

**1 Introduction ... 8**

1.1 Project background ... 8
1.2 Environmental regulatory requirements ... 11
1.3 Purpose and scope of this report ... 11
1.4 Management of this EMP ... 12
1.5 Limitations, Uncertainties, and Assumptions related to this EMP ... 12
1.6 Environmental assessment practitioner ... 12

**2 Environmental Management Framework ... 14**

2.1 Objectives and targets ... 14
2.2 Organisational structure, roles and responsibilities ... 14
2.3 Contractors ... 16
2.4 Employment ... 16
2.5 Register of environmental risks and issues ... 17

**3 Environmental management principles ... 27**

3.1 Continual improvement ... 27
3.2 Best practice ... 27
3.3 Environmental monitoring ... 28

**4 Communication and Training ... 29**

4.1 Communications ... 29
4.2 Environmental emergency and response ... 30
4.3 Complaints handling and recording ... 30
4.4 Training and awareness ... 31
4.5 Site induction ... 31

**5 Incident Reporting ... 33**

5.1 Minor incident or “near miss” ... 33
5.2 Serious incident ... 33
5.3 Incident report and close out ... 33

**6 Compliance and Enforcement ... 34**

6.1 Environmental inspections and compliance monitoring ... 34
6.2 Heritage permit ... 34
6.3 Water permits and licence ... 34
6.4 Wastewater discharge permit ... 35

6.5 Reporting ..... 35
6.6 Non- compliance ..... 35
6.7 Disciplinary action ..... 36

**7 Surface and Groundwater Management Programme ..... 37**

7.1 Introduction ..... 37
7.2 Objectives ..... 37
7.3 Responsibilities ..... 37
7.4 Surface and groundwater management measures ..... 38
7.5 Surface and groundwater quality monitoring ..... 40

**8 Waste Management Programme ..... 42**

8.1 Introduction ..... 42
8.2 Objectives ..... 42
8.3 Roles and responsibilities ..... 42
8.4 Solid and liquid non-mineral waste ..... 42
8.5 Waste disposal monitoring ..... 46

**9 Spill Management Programme ..... 47**

9.1 Introduction ..... 47
9.2 Objectives ..... 47
9.3 Roles and responsibilities ..... 47
9.4 Spill prevention measures ..... 47
9.5 Spill response measures ..... 48
9.6 Spill reporting ..... 53
9.7 Rehabilitation of contaminated soils ..... 53

**10 Air Quality Management Programme ..... 54**

10.1 Introduction ..... 54
10.2 Objectives ..... 54
10.3 Responsibilities ..... 54
10.4 Air Quality management procedures ..... 54
10.5 Air Quality monitoring ..... 55
10.6 Odours, noise and vibration impacts ..... 56

**11 Archaeological and Heritage Programme ..... 58**

11.1 Responsibility ..... 59
11.2 Procedure ..... 59

**12 Implementation of the EMP ..... 61**

# LIST OF TABLES

Table 1 – Roles and responsibilities ..... 15
Table 2 – A list of environmental risks and issues, as well as associated mitigation and monitoring measures ..... 18
Table 3 – A list of environmental best practice measures to be implemented ..... 27
Table 3– Emergency Contact details ..... 30
Table 8 - Water Quality Mitigation Measures ..... 38
Table 9- Waste Mitigation Measures ..... 43
Table 10- Spill Mitigation Measures ..... 50
Table 11- Spill of Hazardous Substances ..... 51
Table 12- Air Quality Mitigation Measures ..... 55
Table 13–Noise Aspects ..... 57
Table 14– Archaeological and Heritage Aspects ..... 58

# LIST OF FIGURES

Figure 1: Locality map showing the location of the proposed expansion of the pilot tin processing plant on ML 134 ..... 10

# DEFINITIONS AND ABBREVIATIONS

| ABBREVIATIONS | DESCRIPTION |
|---|---|
| **ECC** | Environmental Compliance Consultancy |
| **EMA** | Environmental Management Act |
| **EMP** | Environmental Management Plan |
| **EMS** | Environmental Management System |
| **EPL** | Exploration Prospecting Licence |
| **EIA** | Environmental Impact Assessment |
| **ESIA** | Environmental Social Impact Assessment |
| **MAWLR** | Ministry of Agriculture, Water and Land Reform |
| **MEFT** | Ministry of Environment, Forestry and Tourism |
| **NHC** | National Heritage Council |
| **TSF** | Tailings Storage Facility |
| **WRD** | Waste Rock Dump |

# 1 INTRODUCTION

## 1.1 PROJECT BACKGROUND

Environmental Compliance Consultancy (ECC) has been retained by Uis Tin Mining Company (Pty) Ltd (herein after referred to as the proponent or UTMC) a Namibian company and subsidiary of AfriTin Mining (Pty) Ltd. ECC, is conducting an environmental impact assessment (EIA) for the proposed stage 2 expansion of the pilot tin processing plant on Mining Licence 134 (ML134), located near Uis in the Erongo Region, Namibia.

The Proponent is a mining company with a portfolio of various tin mines in Namibia and South Africa. The proponent proposes several mechanical and process flow upgrades to components of the current pilot plant's processing and supporting infrastructure (i.e., upgrades to the Dense Medium Separation (DMS) 1 cyclone feed, inlet pressure system rates and constant moisture control within feed material, etc.). This upgrade is expected to increase the production rate from the current 80 tons per hour (TPH) in Stage 1 to 120 (TPH) in Stage 2.

The proponent intends to implement the proposed upgrades, as well on-site supporting infrastructure, to be able to sustain and support the planned expansion project. The additional changes and upgrades include the following:

- Upgrading the existing rudimentary sewerage effluent water collection and treatment system;
- The need for a new Clean Water Channel (CWC) (stormwater channel) and Berm around the pilot plant;
- An upgrade of the existing settling and evaporation ponds; and
- A need for an increased supply of water (water demand of 150 000 cubic litres per year).

These upgrades equate to a life of operations of 20 years and will transform the pilot plant into an ore processing plant with a targeted tin recovery of 64% during operations. The proposed project will be referred to herein as the "Phase 1 Stage 2 Project" or the "Project".

The proposed Stage 2 Project objectives are to increase production activities by expanding the pilot tin processing plant on mining licence (ML) 134 located near Uis in the Erongo Region, Namibia.

Uis can be accessed by the C36 road from Omaruru, the C35 from Hentiesbay or the C35 from Khorixas. Refer to Figure 1 for the location of ML 134 Project.

ECC has compiled this draft environmental management plan (EMP) in terms of the Environmental Management Act (EMA) of 2007 and its regulations of 2012. The purpose of this draft EMP is to support the full environmental impact assessment (EIA) report.

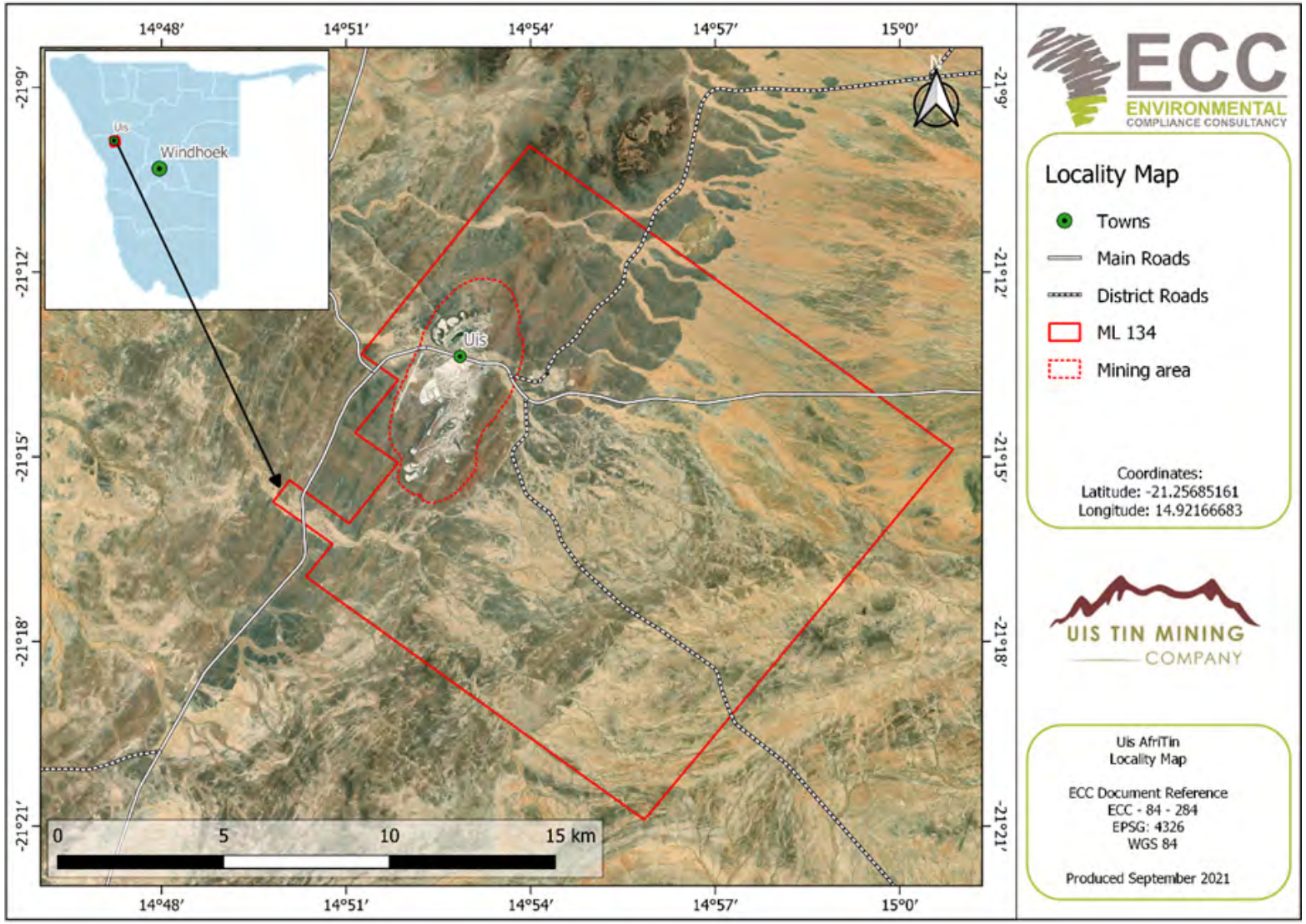



**FIGURE 1: LOCALITY MAP SHOWING THE LOCATION OF THE PROPOSED EXPANSION OF THE PILOT TIN PROCESSING PLANT ON ML 134**

## 1.2 ENVIRONMENTAL REGULATORY REQUIREMENTS

The proposed project is considered as a listed activity in the Environmental Management Act, No. 7 of 2007 and its Regulations, promulgated in 2012. An environmental scoping report, environmental impact assessment (EIA) and environmental management plan (EMP) are required to be submitted as part of the application to support the decision-making process for issuing an environmental clearance certificate.

This report presents the EMP and has been undertaken in terms of the requirements of the Environmental Management Act, 2007 and its Regulations.

## 1.3 PURPOSE AND SCOPE OF THIS REPORT

The draft environmental management plan (hereafter referred to as the EMP) provides a logical framework, mitigation measures and management strategies for the activities associated with the proposed Project. In this way ensuring that the potential environmental impacts are curbed and minimised as far as practically possible and that statutory and other legal obligations are adhered to and fulfilled. Outlined in the EMP are the protocols, procedures and roles and responsibilities to ensure the management arrangements are effectively and appropriately implemented.

This EMP is found among the appendices of the draft environmental scoping report and is based on the findings of the assessments carried out to date. The environmental scoping report should be referred to for further information on the proposed Project, assessment methodology and terms of reference (ToR), applicable legislation, and assessment findings.

This EMP is a live document and shall be reviewed at predetermined intervals, and or updated during the EIA process when or if the scope of work alters, or when further data or information is added. All personnel working on the Project will be legally required to comply with the requirements set out in the final draft EMP that is approved by the competent authorities and Ministry of Environment, Forestry and Tourism (MEFT).

The scope of this EMP includes all activities associated with the expansion and mining activities undertaken.

## 1.4 MANAGEMENT OF THIS EMP

The proponent will hold the environmental clearance certificate for the proposed project and will be responsible for the implementation and management of the EMP. Before the expansion activities commence, this EMP will be reviewed, amended as required and approved ready for implementation. The implementation and management of this EMP, and thus the monitoring of compliance, will be undertaken through daily duties and activities, as well as monthly inspections and related internal and regulatory reporting.

## 1.5 LIMITATIONS, UNCERTAINTIES, AND ASSUMPTIONS RELATED TO THIS EMP

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

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

The information contained in this EMP has been based on the project description as provided in the EIA report. Where the design or construction methods is different, this EMP may require updating and potential further assessment may be undertaken.

## 1.6 ENVIRONMENTAL ASSESSMENT PRACTITIONER

Environmental Compliance Consultancy (ECC) (Reg. No. CC 2013/11401) has prepared this preliminary EMP on behalf of the proponent.

This report has been authored by employees of ECC, who have no material interest in the outcome of this report, nor do any of the ECC team have any interest that could be reasonably regarded as being capable of affecting their independence in the preparation of this report. ECC is independent from the proponent and has no vested or financial interest in the project, except for fair remuneration for professional fees rendered based upon agreed commercial rates. Payment of these fees is in no way contingent on the results of this report or the assessment, or a record of decision issued by Government. No member or employee of ECC is, or is intending to be, a

director, officer, or any other direct employee of Uis Tin Mining Company. No member or employee of ECC has, or has had, any shareholding in Uis Tin Mining Company.

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

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

# 2 ENVIRONMENTAL MANAGEMENT FRAMEWORK

This EMP provides measures, guidelines, and procedures for managing and mitigating potential environmental impacts. The EMP also indicates monitoring and reporting guidelines and sets responsibilities for those carrying out management and mitigation measures.

## 2.1 OBJECTIVES AND TARGETS

Environmental objectives and targets have been developed so that expansion and mining activities can minimise potential impacts on the environment, as far as reasonably practicable.

Environmental objectives for the project are as follows:

- Zero pollution incidents;
- Minimal vegetation clearing and earthworks;
- Minimal impact on regional groundwater users;
- Protect local flora and fauna; and
- Effective and efficient use of natural resources.

## 2.2 ORGANISATIONAL STRUCTURE, ROLES AND RESPONSIBILITIES

The proponent shall provide a project team to oversee and undertake the preparation and expansion activities which will be composed of the proponent's personnel and contractors. A nominated role shall be identified to ensure the management and implementation of this EMP is carried out throughout the Project Life of Mine (LOM). The proponent shall be responsible for:

- Ensuring all members of the project team, including contractors, subcontractors, and suppliers, comply with the procedures set out in this EMP
- Ensuring that all persons are provided with sufficient resources, training, supervision, and instruction to fulfil this requirement
- Ensuring that any persons allocated specific environmental responsibilities are notified of their appointment and confirm that their responsibilities are clearly understood
- Contractors shall be responsible for ensuring and demonstrating that all personnel employed by them are compliant with this EMP, and meet the responsibilities listed herein

Table 1 lists the roles and responsibilities allocated to different management levels in the company and specific personnel.

**TABLE 1 – ROLES AND RESPONSIBILITIES**

| ROLE | RESPONSIBILITIES AND DUTIES |
|---|---|
| **Proponent** | – Responsible for the overall management and implementation of the EMP;<br>– Ensure environmental policies are drafted/updated and communicated to all personnel throughout the company;<br>– Responsible for providing the resources required to effectively run the mine and comply with the EMP;<br>– Appoint all managers needed to ensure effective running of the mine; and<br>– Ensure systems for proper induction and training of personnel and contractors are in place. |
| **Mining management** | – Manage all activities on the mining and expansion project;<br>– Monitor daily operations and ensure systems are in place for implementation of the EMP;<br>– Maintain the community issues and concerns register and keep records of complaints, actions, and responses;<br>– Ensure corrective action is taken and communicated to complainants; and<br>– Maintain up to date records of employees who have completed training and induction. |
| **Site manager** | – Ensure that all contract workers, sub-contractors and visitors to the site are aware of the requirements of this EMP, relevant to their roles and always adhere to this EMP;<br>– Report any non-compliance or accidents;<br>– Receive, record and respond to complaints;<br>– Ensure adequate resources are available for the implementation of the EMP;<br>– Ensure safe and environmentally sound operations; and<br>– Responsible for the management, maintenance, and revisions of this EMP. |
| **HSE Appointed Person** | – Maintain the mine's Environmental Management System (EMS);<br>– Draft and update mine specific environmental procedures<br>– Ensure on-mine induction training is relevant and address issues from this EMP<br>– Do all environmental audits and inspections and report findings to relevant personnel |

| ROLE | RESPONSIBILITIES AND DUTIES |
|---|---|
| | – Check the implementation of corrective action for incidents and complaints<br>– Ensure all environmental monitoring and reporting is done<br>– Conduct environmental monitoring, audits, and inspections; and<br>– Compile draft environmental reports. |
| **Employees** | – Adhere to measures set out in the EMP;<br>– Ensure they have undertaken a site induction; and<br>– Report any operations or conditions which deviate from the EMP as well as any non-compliant issues or accidents to the environmental manager. |

## 2.3 CONTRACTORS

Any contractors, and their subcontractors and suppliers, hired during the expansion and mining activities of the tin process plant operations and accessory works for the Project duration shall be compliant with this EMP and shall be responsible for the following:

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

## 2.4 EMPLOYMENT

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

- In liaison with local government and community authorities, the proponent shall ensure that local people have access to information about job opportunities and are considered first for construction/maintenance contract employment positions;
- The number of job opportunities shall be made known together with the associated skills and qualifications;

- The maximum length of time the job is likely to last for shall be indicated;
- Foreign workers with no proof of permanent legal residence shall not be hired; and
- Every effort shall be made to recruit from the group of unemployed workers living in the surrounding area.

## 2.5 REGISTER OF ENVIRONMENTAL RISKS AND ISSUES

An environmental review of the proposed Project has been completed to identify all the commitments and agreements made. A list of environmental commitments and risks has been produced, which details deliverables including measures identified for the prevention of pollution or damage to the environment during the expansion phase. Together, these were used to and make up this EMP.

Table 2 provides a list of environmental risks and issues, as well as associated mitigation (as derived from the Scoping Report and EIA) and monitoring measures, and the roles responsible for compliance. It will be subject to regular review by the Manager and updated when necessary. The Mine Manager and Environmental Manager will use this register to undertake monthly inspections (see next section) to ensure the project is compliant with this EMP.

**TABLE 2 – A LIST OF ENVIRONMENTAL RISKS AND ISSUES, AS WELL AS ASSOCIATED MITIGATION AND MONITORING MEASURES**

| RECEPTORS | POTENTIAL IMPACTS | MANAGEMENT/MITIGATION MEASURES | MONITORING REQUIREMENTS | RESPONSIBILITY |
|---|---|---|---|---|
| **Surface water** | Sediment loading of surface water from uncontrolled surface discharge of open pit mine wastewater | – Ensure wastewater produced from open pit mining activities is sent to the processing plant for reuse in the processing plant; and<br>– If the volume of water is too large and cannot be handled by the processing plant for reuse, ensure an adequately sized sedimentation pond is constructed for handling the wastewater from the open pit mining operations. Reuse of the water back into the open pit mine can be investigated once operations commence and the water quality is better known and understood. | Mine water balance | – Mining Manager |
| | Discharges of chemicals to surface water | – Ensure correct chemical use and clean-up procedures are in place and followed;<br>– Ensure chemical spills are cleaned up open pit; and<br>– Prevent spills from entering the dewatering system that would be transferred to surface. | – Surface water monitoring | – Environmental Manager |
| | Potential failure of containment dams that hold mine site contact water (open pit mine dewatering water) | – Ensure water storage facilities are constructed and have capacity to hold the volume of water to be pumped from the open pit workings and from run-on water to the site and facilities. | – Mine water balance | – Mining Manager |
| | Contamination of groundwater from | – Ensure correct chemical use and explosive charging practices are in place and followed for open pit | – Groundwater monitoring | – Mining Manager; and |

| RECEPTORS | POTENTIAL IMPACTS | MANAGEMENT/MITIGATION MEASURES | MONITORING REQUIREMENTS | RESPONSIBILITY |
|---|---|---|---|---|
| | open pit mine operations including hydrocarbons and explosives. | mining operations;<br>– Bulk fuel facilities will not be located at the mine site.<br>– Bunded fuel storage facilities on site will be used for mine fleet refuelling at a location with sealed surfaces,<br>– Refuelling of drills and equipment working at the pit wall faces will be done in a controlled manner following standard open pit refuelling procedures, and<br>– Fuel bowsers are to have drip trays for each refuelling event. | | – Environmental Manager |
| **Groundwater** | Modification of hydrologic flow patterns from open pit mining operations. | – The potential to alter hydraulic flow during operations exists as the very nature of mining requires dewatering for the safe access to mining areas, the potential impact associated with dewatering require further studies. | – Groundwater monitoring | – Mining Manager; and<br>– Environmental Manager |
| | Infiltration of potential spills or discharges of chemicals into groundwater | – Ensure correct chemical use and clean up procedures are in place and followed for open pit mining operations;<br>– Fuel storage facilities will not be located at the mine site.<br>– Any petrol stored on site must be stored in bunded underground tanks.<br>– Bunded fuel storage facilities on site will be used for mine fleet refuelling at a location with sealed surfaces.; and<br>– Ensure all operators are trained on spill response for open pit events. | – Groundwater monitoring | – Mining Manager; and<br>– Environmental Manager |

| RECEPTORS | POTENTIAL IMPACTS | MANAGEMENT/MITIGATION MEASURES | MONITORING REQUIREMENTS | RESPONSIBILITY |
|---|---|---|---|---|
| | Potential infiltration of groundwater from aquifers into the open pit mining operation | – Ensure that all approved mine plans and programmes are followed at all times;<br>– Ensure known structures, and water bearing features are mapped and surveyed and are incorporated into the mine plans and programmes;<br>– Ensure monitoring systems are in place to detect potential inflows; and<br>– Ensure the dewatering plan is followed and monitoring and reporting on the dewatering plan is undertaken. | – Groundwater monitoring; and<br>– Mine water balance. | – Mining Manager; and<br>– Environmental Manager |
| | Contamination of an aquifer by the rebounding water table of potentially polluted water in the open pit workings after closure. | – The mine design may allow for the groundwater level to be intersected. The mine will act as a sink of potentially contaminated water from various sources, including the rebounding water table in the open pit workings;<br>– Consider using the water for irrigation after closure (investigate viability). | – Groundwater monitoring | – Environmental Manager |
| | Potential runoff of seepage from the solid waste landfill site as a result of additional solid waste being disposed of in the on-site landfill. | – Acquire permit for an approved waste landfill site from MEFT;<br>– Ensure the landfill is managed in accordance with permit conditions, site procedures and that it is covered and rehabilitated as required; and<br>– Reduce the volume of material entering the landfill by continuing to implement the reduce, reuse, and recycle principle installed on site. | – Waste volume monitoring; and<br>– Groundwater monitoring | – Environmental Manager |
| | Potential for inrush into the open pit mine workings during development and | – Ensure the dewatering plan is followed and monitoring and reporting on the dewatering plan is undertaken;<br>– Ensure all operations are undertaken in accordance | – Groundwater monitoring | – Mining Manager; and<br>– Environmental Manager |

| RECEPTORS | POTENTIAL IMPACTS | MANAGEMENT/MITIGATION MEASURES | MONITORING REQUIREMENTS | RESPONSIBILITY |
|---|---|---|---|---|
| | operations | with the mine and site water management plans;<br>– Ensure all water bearing features are mapped and included in survey plans;<br>– Ensure emergency response procedures are in place in the event of an inrush; and<br>– Ensure adequate pumping capacity with back up pumps as critical spares are kept on site. | | |
| | Creation of jobs during project construction and development | – Ensure that local residents get first opportunity to apply for positions where applicable;<br>– | – | – H R Manager |
| **Socio-economic** | Potential traffic issues during the construction and operational phases | – Minimising individual vehicle engine, transmission, and body noise/vibration by implementing a preventative maintenance program.<br>– Provide large visible road signage indicating the presence of heavy vehicle traffic at least 500 m before, on either side of the mine site access road; The needs of pedestrians should be taken into consideration in the planning and design of the access to the proposed site, as well as the design of the road infrastructure | | – Mining Manager |
| | Economic benefits due to increased investment and investor confidence in the Namibian minerals sector | – In liaison with local government and community authorities, the proponent shall ensure that local people have access to information about job opportunities and are considered first for construction/maintenance contract employment positions.<br>– Advertising job opportunities shall be carried out in a transparent manner in accord with the Namibian Labour Act. | | – HR Manager (with Department Heads) |

| RECEPTORS | POTENTIAL IMPACTS | MANAGEMENT/MITIGATION MEASURES | MONITORING REQUIREMENTS | RESPONSIBILITY |
|---|---|---|---|---|
| | | – Every effort shall be made to recruit staff from the group of unemployed workers living in the surrounding area. | | |
| | Minor disruption to the neighbouring residents and sensitive receptors, including potential increase in dust levels during various phases of the project such as construction, blasting and decommissioning | – Water in the pollution control dams will be used for road watering for dust suppression, make up water where possible, industrial water or for construction<br>– Where possible blasting is to be carried out on less windy days and times in the day<br>– Appropriate speed limits will be set and enforced.<br>– Vehicles and machinery will be maintained to limit exhaust fume emissions. | | – Mining Manager; and<br>– Environmental Manager |
| | Potential poaching/ livestock theft impacts due to the increased movement of people in the area | – Prevent and prohibit the setting of snares (poaching), illegal collecting of veld foods (e.g., tortoises, etc.), indiscriminate killing of perceived dangerous species (e.g., snakes, etc.) | | – Mining Manager; and<br>– Environmental Manager |
| | Further reduction in the water table could affect deep rooted tree survival during droughts | – Monitoring groundwater levels and physiological stress levels in trees to assess anycorrelation ;<br>– Mapping trees that might be at risk using the cone of depression maps; and<br>– Determine feasibility for rescue of these trees and carry out relocation if viable. | – Groundwater monitoring; and Vegetation monitoring | – Environmental Manager |
| **Terrestrial and ecology** | Clearing of vegetation during the expansion of the pilot plant | – Ensure internal land clearing permits are applied for prior to land clearing and through this process the environmental team have the opportunity to | – Vegetation monitoring<br>– | – Environmental Manager |

| RECEPTORS | POTENTIAL IMPACTS | MANAGEMENT/MITIGATION MEASURES | MONITORING REQUIREMENTS | RESPONSIBILITY |
|---|---|---|---|---|
| | | recover or rescue plants of significance or plants that can be used for progressive rehabilitation. Permits obtained from Directorate of Forestry;<br>– Minimal vegetation clearing and earthworks; and<br>– Basic vegetation clearing principals and species ID sheets. | | |
| | Potential Impacts on biodiversity and migratory patterns of fauna | – Avoid development and infrastructure in sensitive areas to minimise the negative effect on the local environment, especially unique features serving as habitat to various vertebrate fauna species;<br>– Remove (e.g., capture) unique fauna and sensitive fauna, before commencing with the development activities, as well as during the operational phase, and or species serendipitously located during this period and relocate to a less affected site in the immediate area; and<br>– Prevent domestic pets – e.g., cats and dogs – accompanying the workers during the construction phase;<br>– All night lighting where possible should be directed downwards to reduce the impact on nocturnal bird movements; and<br>– Use lighting that is less likely to attract insects at night. | Biodiversity monitoring | – Environmental Manager |
| | Risk of spillage of hydrocarbons, chemicals or other dangerous goods/material or | – Tailings, concentrate, chemical, and hydrocarbon spillages from trucks, conveyors and pipelines will be cleaned up timeously to prevent contamination;<br>– Fuel and chemicals are to be handled with care;<br>– Spill kits are to be placed at designated areas across | – Daily visual inspections | – Mining Manager |

| RECEPTORS | POTENTIAL IMPACTS | MANAGEMENT/MITIGATION MEASURES | MONITORING REQUIREMENTS | RESPONSIBILITY |
|---|---|---|---|---|
| | chemicals and contaminants | the site or made available for use during refuelling and during fuel/chemical delivery or use;<br>– Absorption material should be available and at hand. Where sawdust is used it should be cleaned up immediately and not left for long periods as this poses a fire hazard;<br>– Plant and equipment to be well maintained and serviced regularly; and<br>– Funnels or pumps should be available and used to avoid spillage. | | |
| | Erosion of soils and mine wastes into surface water streams or sediment-laden surface run-off that collects in natural channel | – Implement erosion control – i.e., avoid constructing tracks up steep gradients; incorporate erosion furrows (runoff sites) and humps along tracks to channel water off the tracks to minimise erosion problems; cross drainage lines at right angles, etc. The area(s) towards and adjacent the drainage line(s) are easily eroded, and further development may exacerbate this problem. Avoid construction within 100 m of the main drainage line(s) to minimise erosion problems as well as preserving the riparian associated flora and fauna;<br>– Slopes of the stockpiles should be constructed to minimise the chances of erosion of the soils; and<br>– Pollution control dams will be constructed downslope of the mine and plant site to capture all dirty water run-off. | – Mine water balance<br>– Groundwater monitoring | – Mining Manager; and<br>– Environmental Manager |
| | Noise and vibration impact | – Avoid noise generating activities at night by ensuring noisy activities are avoided;<br>– Ensure appropriate measures are in place to rectify | – Noise and vibrational monitoring | – Mining Manager |

| RECEPTORS | POTENTIAL IMPACTS | MANAGEMENT/MITIGATION MEASURES | MONITORING REQUIREMENTS | RESPONSIBILITY |
|---|---|---|---|---|
| | | noise and vibration complaints, should they occur;<br>– Scheduling of works to avoid disturbance between the hours of 7 pm and 5 am; and<br>– Procedures for receiving complaints from nearby land users or residents to be in place and mitigation measures to be implemented should construction and mining generate excessive noise and vibration. | | |
| | Potential impacts on air quality, key indicator sources include mobile, stationary, and fugitive sources within mine and processing operations; | – Ensure mechanical equipment is maintained and serviced to ensure particulate matter is reduced; and<br>– Ensure ventilation systems in enclosed areas are working properly to provid fresh clean air to personnel;<br>– Dust suppression methods should be provided for on all on all road surfaces | – Pre-shift access checklist<br>– Air quality monitoring; and<br>– Personal exposure monitoring. | – Shift supervisor;<br>– Environmental Manager; and<br>– Safety Manager |
| **Air quality** | Air quality and GHG emissions | – Ensure mechanical equipment is maintained and serviced to ensure particulate matter is reduced; and<br>– Ensure efficient waste handling such as backfilling to reduce haul distances and therefore reduce GHG emissions. | – GHG emission reporting | – Environmental Manager |
| | Inefficient use of water resources | – Use water effectively and efficiently by following the reduce-recycle-reuse approach; and<br>– Record volumes of abstraction and supply. | – Daily observations; and<br>– Mine water balance | – Mining Manager;<br>– Environmental Manager; and<br>– Employees |

| RECEPTORS | POTENTIAL IMPACTS | MANAGEMENT/MITIGATION MEASURES | MONITORING REQUIREMENTS | RESPONSIBILITY |
|---|---|---|---|---|
| **Resource use** | Inefficient electricity use increasing carbon footprint | – Rely on the use of a PV solar plant if appropriate; and<br>– Use energy efficient electrical equipment and lighting in work areas. | – Track energy usage | – Mining Manager |
| | | – | – | – |

# 3 ENVIRONMENTAL MANAGEMENT PRINCIPLES

## 3.1 CONTINUAL IMPROVEMENT

The proponent is responsible for reviewing and updating this EMP, which will be supported by the monthly reports from department heads, such as management performance and activities on the Open Pit Mining Domain. As part of this process, the monthly reports will be reviewed, identifying any trends or significant areas of concern, as well as measures implemented to manage / resolve environmental or social issues. Compliance and legislative changes will be reviewed, and lessons learnt will be captured in the reporting and review of the EMP. The EMP will be amended as required, and follow up training, awareness, or updates will be actioned.

Ongoing hazard identification through the review of the EMP and supporting management plans and SOPs will ensure environmental impacts are avoided or minimised to as low as reasonably practicable as part of the continuous improvement of the EMS.

## 3.2 BEST PRACTICE

The best practice management measures that will be complied with across site are listed in Table 3.

**TABLE 3 – A LIST OF ENVIRONMENTAL BEST PRACTICE MEASURES TO BE IMPLEMENTED**

| ENVIRONMENTAL ASPECT | BEST PRACTICE REQUIREMENT |
|---|---|
| Pollution Prevention Control | Plant and equipment maintained and serviced regularly;<br>Refuelling at designated locations;<br>Spill kits available where the risk of loss of containment is identified;<br>Bunds to be at least 110% of the container; and<br>Good housekeeping. |
| Solid Waste Management | Good housekeeping (no littering);<br>Designated waste collection areas around site and one central location;<br>Bins labelled;<br>Waste to be separated and kept clean and tidy; and<br>Waste bins emptied on regular basis. |

| ENVIRONMENTAL ASPECT | BEST PRACTICE REQUIREMENT |
|---|---|
| Ground Contamination | Refuelling will be undertaken in designated areas with spill kits available;<br>Chemical management enforced on site; and<br>Good housekeeping. |
| Storage of Fuels, Oils, Chemicals and other hazardous liquids | Storage tanks will be suitable and labelled for the liquid being stored;<br>Bunds to be at least 110% of the container; and daily inspections of tanks. |
| Energy Efficiency | Plant and equipment to be maintained and serviced regularly; and<br>Turn off plant and equipment when not in use. |
| Air Quality | Maintenance of roads;<br>Turn off plant and equipment when not in use; and<br>Plant and equipment to be maintained and serviced regularly. |

## 3.3 ENVIRONMENTAL MONITORING

A monitoring and evaluation program will be used in line with internal HSE standards and this EMP to evaluate environmental performance and promote continual improvement. Monitoring will support environmental management on site to evaluate environmental management effectiveness over time.

An environmental monitoring schedule will be put in place for the site and its various domains.

The monitoring program comprises:

- Air quality monitoring;
- Noise and vibration monitoring;
- Water monitoring (e.g., surface water, groundwater and discharge water);
- Biodiversity monitoring (e.g., fauna, vegetation); and
- Meteorological monitoring (e.g., rainfall and evaporation).

The Environmental Officer will be tasked with conducting the monitoring within the various domains, such as the open pit domain, with the support of the responsible persons and department heads, such as the mining and process managers.

# 4 COMMUNICATION AND TRAINING

To ensure potential risks and impacts are minimised, it is vital that personnel are appropriately informed and trained on how to properly implement the EMP. It is also important that regular communications are maintained with stakeholders (if applicable) and made aware of potential impacts and how to minimise or avoid them. This section sets out the framework for communication and training in relation to the EMP.

## 4.1 COMMUNICATIONS

During construction and operations, the site manager, process manager, and mine manager shall communicate site-wide environmental issues to the project team through the following means (as and when required):

- Ensure all personal are afforded the opportunity to attend an environmental site induction that sets out their requirements in relation to this EMP
- Ensuring audits and inspections are undertaken regularly on a risk-based schedule
- Toolbox talks, including instruction on incident response procedures
- Deliver project-specific environmental briefings where required
- Ensure all personnel have access to the EMP
- Ensure operators of key activities and environmentally sensitive operations are briefed and understand their requirements.

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

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

## 4.2 ENVIRONMENTAL EMERGENCY AND RESPONSE

An emergency or incident is any abnormal event, which demands immediate attention. It is any unplanned event, which results in the temporary loss of management control at site or one of its functions or facilities, but where functional resources can manage the response. An Emergency Response plan document will be put in place that manages the response in relation to emergencies including environmental emergencies.

**TABLE 4– EMERGENCY CONTACT DETAILS**

| TOWN | AMBULANCE | POLICE | FIRE BRIGADE |
|---|---|---|---|
| Uis | 061 203 9111 / Toll Free 924 | +264 (64) 1-0111 | +264 (64) 54-0231 |

For large-scale spills and other significant environmental incidents, the fire services should be contacted as required and the office of the Ministry of Environment and Tourism (MET) informed of the incident (telephone +264 61 284 2111). All correspondence with MET should be undertaken by the General Manager.

For the clean-up of smaller spills, the relevant Material Safety Data Sheet (MSDS) should be consulted to determine the appropriate clean-up procedure. Basic spill response training will be provided (and regularly tested) as part of the site environmental induction, spill response equipment, including relevant MSDS copies, will be provided in areas where potentially environmentally hazardous chemicals may be used.

## 4.3 COMPLAINTS HANDLING AND RECORDING

Any complaints received verbally by any personnel on the project site shall be recorded by the receiver including:

- The name of the complainant
- The contact details of the complainant
- Date and time of the complaint
- The nature of the complaint

The information shall be given to the process manager or mining manager who is overall responsible for the management of complaints within the sited. The process or mining manager shall do the following:

- Inform the site manager of issues, concerns, or complaints.
- The process/mining manager must maintain a complaint register that required details of the complaint
- The process/mining manager will provide a written response to the complainant of the results of the investigation and action to be taken to rectify or address the matter(s). Where no action is taken, the reasons why are to be recorded in the register

The workforce shall be informed about the complaints register, its location and the person responsible, to refer residents or the public who wish to lodge a complaint. The complaints register shall be kept for the duration of the Project and will be available for government or public review upon request.

## 4.4 TRAINING AND AWARENESS

All personnel working on the project shall be competent to perform tasks that have the potential to cause an environmental impact. Competence is defined in terms of appropriate education, training, skills and experience. Training and toolbox talks will be provided to all employees and contractors.

## 4.5 SITE INDUCTION

All personnel involved in the Project shall be inducted to the site with a specific environmental awareness training, and health and safety issues. The environmental awareness training shall ensure that personnel are familiar with the principles of this EMP, and the environmental impacts associated with their activities, the procedures in place to control these impacts and the consequences of departure from these procedures. The mining manager shall ensure a register of completed training is maintained.

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

- A general site-specific induction that outlines:
    - What is meant by “environment” and the EMP?
    - Why the environment needs to be protected and conserved?
    - How can mining activities impact the environment?
    - What can be done to mitigate against impacts?

- The inductee's role and responsibilities concerning implementing the EMP
- The site’s environmental rules
- Details of how to deal with, and who to contact should any environmental problems occur
- Basic vegetation clearing principals and species ID sheets
- The potential consequences of non-compliance with this EMP and relevant statutory requirements, and
- The role of responsible people for the Project.

# 5 INCIDENT REPORTING

The proponent must have an accident and incident reporting system that covers all applicable statutory requirements. The section below sets out the minimum requirements for incident reporting and should be used as a basis for incident reporting, in the event that no incident reporting system exists.

## 5.1 MINOR INCIDENT OR "NEAR MISS"

Any incident or "near miss" involving the proponent, a nominated representative, any contractor, or its subcontractors or any third party's personnel, property, plant, or equipment, must be:

1) Orally reported to the manager or the manager's nominated representative:
   a) Immediately and without delay
   b) Regardless of whether or not injury to personnel has occurred
   c) Or property or equipment has been damaged.
2) Written up and handed to the manager or the manager's nominated representative by the end of the shift. The written report should:
   a) State all known facts and conditions at the time of the incident and
   b) Includes a preliminary assessment of the most likely potential consequences of the incident under the current circumstances.

## 5.2 SERIOUS INCIDENT

For any serious incident involving a fatality, or permanent disability, the incident scene must be left untouched until witnessed by a representative of the police. This requirement does not preclude immediate first aid being administered and the location being made safe, at the instruction of police if on site.

## 5.3 INCIDENT REPORT AND CLOSE OUT

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

# 6 COMPLIANCE AND ENFORCEMENT

## 6.1 ENVIRONMENTAL INSPECTIONS AND COMPLIANCE MONITORING

Inspections and audits of the site will be managed and undertaken by the process and mining managers to check that the standards and procedures set out in this EMP are being complied with and pollution control measures are in place and working correctly. All equipment will be inspected to ensure they are operating as per specification; no damage has been caused, and no leaks or spills have occurred. Any non-conformance shall be recorded, including the following details: a brief description of non-conformance; the reason for the non-conformance; those involved and their employer; the result (consequence); and the corrective action is taken and any necessary follow up measures required. The application documentation for renewal of the environmental clearance certificate must include an audit report and copies of the 6 bi-annual reports that were submitted every 6 months for the 3 years that the clearance certificate is valid for.

## 6.2 HERITAGE PERMIT

As part of the application for an environmental clearance, an application for a permit must first be submitted to the National Heritage Council (NHC). Once issued the permit must be cited and included in the EIA report and EMP. The contents of the application for the heritage permit can be obtained from the NHC. The requirements to renew the heritage permit can also be obtained from the council's head offices in Windhoek.

## 6.3 WATER PERMITS AND LICENCE

The Water Act of (1956) governs the use of water resources in Namibia and is the enforceable legislation for water related matters. The Water Resources Management Act of (2013), passed but pending regulations (not enforced), provides an improved framework for managing water resources based on the principles of integrated water resource management. While not enforced, it is considered best practice to adhere to its stipulations while ensuring compliance with the Water Act of 1956 at the same time.

## 6.4 WASTEWATER DISCHARGE PERMIT

In the event that the operations produce wastewater, a permit must be obtained from the Department of Water Affairs (DWA). In order to obtain an effluent wastewater permit, the proponent should provide the following information and complete the application form issued by the DWA:

- Specification of the treatment system (type of technology)
- Description of major activities resulting in effluent generation
- List of contaminants (analysis of effluent samples)
- Effluent quality
- Points of discharge
- Show the present average quantities of incoming water, recycled water, final outflow
- Where final effluent will be discharged

## 6.5 REPORTING

Reports shall be submitted to the Mining Commissioner in terms of the Minerals (Mining and Prospecting) Act, No. 33 of 1992.

Bi-annual environmental reports shall be submitted to the Environmental Commissioner. These reports should include records of the monitoring and other deliverables of every aspect or programme described in the EMP.

## 6.6 NON- COMPLIANCE

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

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

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

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

## 6.7 DISCIPLINARY ACTION

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

- Fines / penalties
- Legal action
- Monetary penalties imposed by the proponent on the contractor
- Withdrawal of licence
- Suspension of work

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

# 7 SURFACE AND GROUNDWATER MANAGEMENT PROGRAMME

## 7.1 INTRODUCTION

Chemical and waste spills must be contained, so as not to contaminate the soil or groundwater. Any contact with groundwater must be treated with exceptional care and reported immediately, to minimize the potential for contamination of an aquifer. It is important to limit the potential for wastewater seepage to groundwater.

This surface and groundwater management plan outlines appropriate surface and groundwater water management measures, monitoring programs and reporting procedures to be implemented.

## 7.2 OBJECTIVES

This surface and groundwater management plan has been prepared to minimise potential impacts on surface and groundwater resulting from the mining activities. It is important to report any contact with or contamination of groundwater to the environmental coordinator or site manager as soon as possible.

## 7.3 RESPONSIBILITIES

**WORKFORCE AND ALL CONTRACTORS**

Required to take all reasonable measures to prevent the discharge of sediments and pollutants from the site into surface and groundwater sources. Report any contact with groundwater to the environmental coordinator.

**ENVIRONMENTAL COORDINATOR**

Will ensure that the objectives listed above are being met and provide performance feedback to the manager.

## 7.4 SURFACE AND GROUNDWATER MANAGEMENT MEASURES

The surface and groundwater management plan measures are designed to minimise the runoff of sediment-laden or polluted water/effluent into the surrounding environment. Mining activities that could potentially alter natural surface water and groundwater quality include:

- Chemical spills
- Refuelling
- Seepage of wastewater into groundwater
- Dewatering and mining
- Drainage from mine and process waste facilities
- Poor resource stewardship practices.

The following requirements are to be met to ensure that groundwater is not contaminated:

- Fuel/oil and chemicals must be safely stored and removed.
- Any contact with surface or groundwater must be treated with exceptional care and reported immediately, to minimize the potential for contamination of an aquifer.

**TABLE 5 - WATER QUALITY MITIGATION MEASURES**

| | |
|---|---|
| **Responsibility** | Mining Manager<br>Site Manager<br>Employees |
| **Potential issues or impacts** | – Groundwater contamination due to incidental hydrocarbon spills<br>– Change in the water table<br>– Water contamination due to acid mine drainage (AMD) |
| **Protection of groundwater** | Where the water table is penetrated by drilling and the water flows out onto the surface, a furrow needs to be dug that diverts the water to vegetation. |
| | All boreholes should be capped and labelled. In the instances where water is encountered the water should be sampled and tested and the local farm owner be made aware thereof |
| | Water saving measures should be applicable at all times. No taps or pipes left to run, leaks to be detected immediately. Vehicles only to be washed with buckets, not running water |
| **Sewage and grey water from temporary portable** | Use of the toilets instead of the veld must be strictly adhered to |
| | If grey water can be collected from ablution facilities at the campsite it should be recycled and:<br>– Used for dust suppression |

| | |
|---|---|
| **toilets on site** | – Used to water vegetable gardens or to support a small nursery in local communities (as and when agreed upon by such communities)<br>– Used to clean equipment |
| **Lowering of the groundwater levels** | – Maximise the re-use of water during the construction and operational phases in order to minimise the use of clean water no matter the source<br>– Extraction volumes of water shall be minimal during process expansion and operations, and mining and where possible, water from existing water sources shall be used<br>– Use water effectively and efficiently by following the reduce-recycle-reuse approach<br>– Record volumes of abstraction and supply<br>– A site wide water balance will be developed and kept and updated on a regular basis |
| **Inefficient use of water resources** | – To ensure compliance with all legal obligations<br>– All plant and surface infrastructure (including the TSF and waste rock dumps) to be designed and constructed according to national standards and applicable legislative requirements, to prevent surface water and groundwater contamination<br>– Ensure erosion control and prevention measures are in place during construction<br>– Ensure any new laydown areas that will be used for construction of the mine are located outside of stormwater catchment areas<br>– Installation of diversion structures to divert non-contact surface water away and around the mining operations<br>– Refuelling shall be undertaken in a designated area<br>– All stationary vehicles and machinery must have drip trays to collect leakages of lubricants and oil during any field repairs or emergency maintenance<br>– In the event of pollution, polluted soils must be collected and disposed of at an approved site<br>– A 'good housekeeping' policy shall be adopted across the mining area |
| **Trenching and blasting could penetrate the groundwater table,** | – Dewatering of the mine may be necessary; if suitable this water can either be used in the processing plant or pumped into drainage lines of the catchment downstream of the infrastructure<br>– The impact of mining and any dewatering on the surrounding aquifers will be monitored and reported on. Should there be a reduction of the cone as a direct result of dewatering from the mine then an alternative source of water may need to be identified for the affected users if any. |
| **Any hazardous fluid or lubricating chemicals used could enter the** | – Hazardous waste disposal facilities need to be approved by the MEFT prior to construction and / or meet industry standards to prevent pollution events from occurring<br>– Temporary waste disposal facilities will be provided for the collection of waste, which will be removed regularly by a reputable contractor to the permitted waste disposal site<br>– Tailings, chemical and hydrocarbon spillages from trucks, conveyors and |

| | |
|---|---|
| **aquifer or surface water environment causing pollution** | pipelines will be cleaned up timeously in order to prevent contamination<br>– Water in the pollution control dams will be used for road watering for dust suppression, make up water where possible, industrial water or for construction<br>– The contractors' laydown areas are to be surfaced and will drain to a sump with silt traps and hydrocarbon collectors<br>– All chemicals, bulk fuels, oils and grease and any other hazardous substance, will be stored and handled as per all applicable legislation and national standards<br>– Portable chemical toilets will be provided during the construction phase. They will be routinely cleaned, and sewage disposed of at a licenced sewage treatment plant with the safe disposal certificate to be provided<br>– A sewage plant may be provided for during the operational phase and the treated water will either need to be contained in pollution control dams and will be recycled or if treated water is of high enough standard, it can be flushed into the catchment's water courses<br>– Pollution control dams will be constructed downslope of the mine and plant site to capture all dirty water run-off<br>– Silt traps will be constructed upslope of the pollution control dams and return water dam<br>– The pollution control facilities (pollution control dams, silt traps and return water dam) will be placed on planned maintenance, routine inspections will be implemented, and they will be de-silted periodically to ensure effective performance |
| **Monitoring requirements** | – Take borehole water level at the start of mining and at the end of mining operations.<br>– Keep the records.<br>– Monitor the use of water and keep records of daily requirements. |

## 7.5 SURFACE AND GROUNDWATER QUALITY MONITORING

Every effort must be made throughout to preserve the quality of surface water and groundwater sources that the proponent may impact. Containment of waste and chemicals and the correct disposal thereof must be of an acceptable standard. Personnel must report any unusual conditions and intersection with surface and groundwater immediately to the environmental coordinator.

The Department of Water Affairs require quarterly reporting for water quality of water from the sources for which a permit was required, namely, for abstraction permits and discharge permits:

1. Daily and weekly observations for any leakages
2. Maintain a record of all abstracted volumes and report to DWA / MAWLR as per permit conditions
3. Install water flow meters if required
4. Maintain a monthly water balance
5. Submit quarterly water quality tests for water and monitoring boreholes, effluent discharge points and any surface water bodies.
6. Monitor the integrity of the weir / dam wall in accord with the frequency laid down by engineers who designed the structures.

# 8 WASTE MANAGEMENT PROGRAMME

## 8.1 INTRODUCTION

The construction and mining activities will generate both solid and liquid waste. The types of waste generated at the facility are classified as mineral and non-mineral waste. All non-mineral waste will eventually be removed from the mine site and will either be disposed of at the Walvis Bay landfill site (household or garden waste) or the Walvis Bay hazardous waste disposal site. Mineral waste from mining operations is either deposited on the WRD or TSF or a combination of both.

## 8.2 OBJECTIVES

This waste management programme has been prepared to ensure the proper storage, transport, treatment, and disposal of waste and where possible will follow the waste hierarchy, which encourages waste avoidance and waste reduction followed by reuse, recycling, and reclamation, before waste treatment and waste disposal.

## 8.3 ROLES AND RESPONSIBILITIES

**WORKFORCE AND ALL CONTRACTORS**

- Required to ensure that all waste generated during mining activities is removed and disposed of accordingly including providing evidence in the form of waste transfer receipts for the waste moved off site.
- Ensure no windblown rubbish pollutes the environment, and
- Remove waste on a regular basis to prevent vermin.

**SITE MANAGER AND ENVIRONMENTAL COORDINATOR**

- Required to inspect receipts and evidence of correct waste handling.
- Review waste management practices regularly during the construction and mining operations on site.

## 8.4 SOLID AND LIQUID NON-MINERAL WASTE

The mine site will set up a form of recycling system thus reducing its impacts associated with solid waste generation. Where possible the proponent will implement measures to reduce, reuse and recycle waste generated as part of the operations of the mine. In order to achieve this a temporary waste storage facility will be required.

Waste will be controlled through prevention and mitigation measures as follows:

- Reduce, reuse, and recycle where possible
- Storage of domestic waste on site may result in the attraction of unwanted scavengers and should be disposed of at the accredited site as soon as is feasible, and
- Hydrocarbon and chemical contaminated solids have the potential to cause contamination to the soil, groundwater and/or surface water, thus correct storage and disposal methods are required. Some of these materials can be recycled or used by other facilities.

**TABLE 6- WASTE MITIGATION MEASURES**

| | |
|---|---|
| **Responsibility** | Mining Manager<br>Site Manager<br>Employees |
| **Potential issues or impacts** | – Soil, surface water and ground water contamination due to spillage<br>– Land and water pollution.<br>– Loss of biodiversity<br>– Infectious diseases |
| **Waste Management Plan** | The Proponent should compile a Waste Management Plan that should address as a minimum the mitigation measures included below |
| **Hazardous waste** | All mining vehicles (4x4 vehicles and trucks) and equipment on site should be provided with a drip tray/oil spill kit:<br>- Drip trays and sealable containers are to be transported with vehicles wherever they go<br>- Drip trays should be cleaned daily, and any spillage that is collected should be stored and thenand disposed of with other hazardous waste. |

| | |
|---|---|
| | All mining vehicles should be maintained regularly to prevent oil leakages. Maintenance of vehicles is not permitted to occur on site as far as reasonably possible, but if maintenance is to be undertaken on site, measures need to be put in place to avoid hydrocarbon spillages. |
| | Maintenance and washing of mining vehicles should be conducted at a suitable site/facility which adhere to the following:<br>– The work area/facility should be lined to be impermeable<br>– The work area/facility should have an oil-water separator (oil trap) to collect any run-off from the washing and or maintenance activities, or be equipped with an oil and water separation system |
| | Spilled oil or fuel should be treated as hazardous waste, and stored in hazardous waste containers (i.e. sealable drums) on site, and removed site at regular frequencies. The nearest hazardous waste disposal site is Walvis Bay. Reputable service providers can be used to remove the waste. A waste disposal certificate needs to be kept on file. Alternatively, fuels and oils can be sent to Windhoek to a facility that converts the waste to electrical energy. They will also provide a waste disposal certificate. A company in Walvis Bay specialises in recycling used oil. |
| | All hazardous substances (e.g., fuel, grease, oil, drilling fluids etc.) or chemicals should be stored in a specific location at the mining campsite on an impermeable surface which is bunded. |
| **General waste** | The mining site should practice good housekeeping at all times. Handling of all domestic and general waste that is produced daily should be carried out as follows:<br>– No waste may be buried or burned;<br>– No waste is to be left uncontained, in suitable containers, over night;<br>– Waste containers (bins) should be emptied regularly and removed from site to the nearest official waste disposal site. All recyclable waste needs to be taken to the nearest recycling depot if available<br>– A sufficient number of separate waste containers (bins) for hazardous and domestic/general waste must be provided on site. These should be clearly marked as such;<br>– Mining personnel should be sensitised to dispose of waste in a responsible manner and not to litter; and |

| | |
|---|---|
| | – No waste may remain on site after the completion of the project. |
| **Residual mineral samples** | Samples that will not be used for further analysis, or submitted to MME should be taken off site or used (with the required permission from the affected landowner and/or tenant) to repair any possible damaged roads. No samples are to be dumped at site or in the vicinity of the site as to not affect rehabilitation efficiency through physical and chemical pollution of weathering samples. |
| **Littering and environmental contamination from waste** | – No littering by workers shall be allowed;<br>– All litter on and around the site must be picked up and placed in the bins provided;<br>– The site should be kept tidy and free of litter at all times. All domestic and general waste produced on a daily basis should be cleaned and contained daily;<br>– No solid waste landfill will be established at the site;<br>– No waste shall be burned or buried anywhere unless permitted to do so;<br>– Waste shall be collected and shall be removed regularly to avoid bad odours;<br>– Hazardous and non-hazardous waste shall be stored separately at all times; |
| **Environmental contamination from liquid waste** | Hydrocarbon and chemical contaminated solids must be stored correctly and disposed of by registered companies.<br>Safe disposal certificates must be kept and provided to the mining manager on request. |
| **Sewage and grey water from temporary portable toilets on site** | Portable toilets such as portable camping units, must be provided during mining<br>Discharging of the portable units are to be conducted at an existing suitable facility |
| **Monitoring Requirements** | Monitor whether the provisions set out in this EMP concerning waste management is being applied as per instructions. All non-compliances should be recorded and discussed at weekly site meetings and timeous remedial actions taken. All guilty parties that are in contravention of the provisions set out for managing waste should be given a penalty and according to the severity of the impact appropriate steps taken |

## 8.5 WASTE DISPOSAL MONITORING

Certificates providing the safe disposal of waste from a permitted hazardous waste disposal site must be provided to the manager upon request.

# 9 SPILL MANAGEMENT PROGRAMME

## 9.1 INTRODUCTION

The uncontrolled release of fuels and other chemicals has the potential to result in the contamination of soil, groundwater, and surface water, which may lead to serious environmental harm. On this basis, the storage and use of fuels or other chemicals must be managed to minimise the risk of a release, and measures must be in place to promptly address the release to ensure impacts do not occur, are minimized and are not repeated.

## 9.2 OBJECTIVES

This spill management plan has been prepared to minimise the potential for the uncontrolled release of fuels, oils and other chemicals. Preventative measures to minimise the potential for a spill are listed. Should a spill occur, this plan provides guidance for the proponent on the appropriate spill response measures.

## 9.3 ROLES AND RESPONSIBILITIES

**WORKFORCE AND ALL CONTRACTORS**

Required to implement the spill prevention and response measures listed below.

**SITE MANAGER/ ENVIRONMENTAL COORDINATOR**

Required to ensure that appropriate spill prevention measures (listed below) are implemented and that any spills have been appropriately managed and reported.

## 9.4 SPILL PREVENTION MEASURES

The following management measures are to be implemented by the proponent:

- Spill kits are to be made available throughout the site. The kits are to include, as a minimum, the following items:
    - Absorbent materials
    - Shovels
    - Heavy-duty plastic bags
    - Protective clothing (e.g., gloves and overalls);
- Major servicing of equipment shall be undertaken off site or in appropriately equipped workshops;

- Provision of adequate and frequent training on spill management, spill response and refuelling must be provided to all onsite staff and contractors;
- Fuels, lubricants, and chemicals are to be stored within appropriately sized, impermeable bunds or trays with a capacity not less than 110% of the total volume of products stored;
- All fuel and chemical storage and handling equipment (including transfer hoses, etc.) shall be well maintained;
- Storage and handling of fuels and chemicals shall follow relevant legislation and regulations;
- No refuelling is to take place within 50 metres of groundwater boreholes, surface water, or streams; and
- MSDS are to be kept for each chemical used on site. These must be easily accessible to all personnel.

## 9.5 SPILL RESPONSE MEASURES

The primary concern, in the event of any spill, is the health and safety of any residents/ employees and contractors in the vicinity. Of secondary, but highly significant, importance, is the protection of water sources and then soil and vegetation.

**The following points therefore apply to all areas on the site:**

- Assess the situation for potential hazards;
- Do not come into contact with the spilled substance until it has been characterised and necessary personal protective equipment (PPE) is provided;
- Isolate the area as required; and
- Notify the site manager or safety, health, and environmental coordinator.

**The following measures are to be implemented in response to a spill:**

- Spills are to be stopped at source as soon as possible (e.g., close valve or upright drum);
- Spilt material is to be contained to the smallest area possible using a combination of absorbent material, earthen bunds, or other containment methods;
- Spilt material is to be recovered as soon as possible using appropriate equipment. In most cases, it will be necessary to excavate the underlying soils until clean soils are encountered;
- All contaminated materials recovered subsequent to a spill, including soils, absorbent pads, and sawdust, are to be disposed to appropriately licenced facilities;
- The manager or safety, health and environmental coordinator are to be informed as soon as possible in the event of a spill; and
- A written Incident Report must be submitted to the manager.

**TABLE 7- SPILL MITIGATION MEASURES**

| | |
|---|---|
| **Responsibility** | Mining Manager<br>Site Manager<br>Employees |
| **Potential issues or impacts** | – Surface water, ground water, and soil contamination due to spillage |
| **Stored Hazardous Chemicals** | Hazardous chemicals are to be stored in bunded areas |
| | Hazardous chemicals (such as fuels) are to be handled over areas provided with impervious surfaces |
| | Spills of hazardous chemicals are to be contained and cleaned-up to ensure protection of the environment |
| | All the necessary PPE required for the safe handling and use of petrochemicals and oils shall be provided to, and used or worn by, the onsite staff |
| **Machinery and Equipment Maintenance** | Major servicing of equipment shall be undertaken off site or in appropriately equipped workshops |
| | For small repairs and required maintenance activities all reasonable precautions to avoid oil and fuel spills must be taken (e.g., spill trays, impervious sheets). |
| | Vehicles and machinery are to be regularly serviced to minimise oil and fuel leaks |
| | All the necessary PPE required for maintenance activities must be issued to staff whose duty it is to manage and maintain the machinery and equipment. |

The table below lists the environmental risks and issues, and mitigation and monitoring measures for the Spill of hazardous substances.

**TABLE 8- SPILL OF HAZARDOUS SUBSTANCES**

| | | |
|---|---|---|
| **Responsibility** | - Mining Manager<br>- Site Manager | |
| **Potential issues or impacts** | Hydrocarbon and chemical handling and storage can cause spillages that lead to groundwater contamination and soil contamination. | |
| **Management/ Mitigation measures** | Safe delivery and handling | 1. Training employees and toolbox talks<br>2. Good housekeeping across the site<br>3. Fuel and chemicals are handled with care<br>4. Spill kits to be at designated areas across the site or available for use during refuelling, fuel/chemical delivery, or use. Absorption material should be available and at hand. Where sawdust is used it should be cleaned up immediately and not left for long periods as this poses a fire hazard<br>5. Any major spill is reported once containment has been achieved<br>6. Plant and equipment to be well maintained and serviced regularly<br>7. In the field, the use of hydrocarbons under 200 litres can be used for mobile refuelling or servicing |
| | Storage | 1. All tanks to be stored on a non-porous floor and within a bunded area.<br>2. Bund to be capable of storing at least 110% of the volume of the largest tank, and cleaned out or drained regularly to ensure capacity is maintained<br>3. All containers to be suitable for use and not damaged<br>4. Tanks are locked at all time<br>5. Spill kits available at storage locations and around the site at suitable locations |

| | | |
|---|---|---|
| | Refuelling | 1. Drip tray to be used during refuelling of vehicles and on an impermeable flat surface where possible<br>2. A funnel should be available and used to avoid spillage during decanting |
| | Rehabilitation | Contaminated soils should be removed and deposited on lined storage areas for rehabilitation purposes. Rehabilitation can take place naturally by adding water, air and fertiliser. The process can be accelerated by using special additives that will breakdown the hydrocarbons. Once rehabilitated the soils can be used for revegetating rehabilitated slopes, such as WRD slopes. |
| **Monitoring requirements** | 1. Daily observations when fuels/chemicals are delivered and handled<br>2. Supervision during refueling<br>3. Weekly observations monitor containment and storage<br>4. Establish an internal land clearing permit system that restricts advance clearing.<br>5. Monitor the level of hydrocarbons in contaminated soils after a year of rehabilitation.<br>6. Monitor each year until the soils are ready for re-use in revegetation projects. | |

For large-scale spills and other significant environmental incidents, the fire services should be contacted as required and the office of the Ministry of Environment, Forestry, and Tourism (MEFT) informed of the incident (telephone +264 61 284 2111). All correspondence with MEFT should be undertaken by the manager.

For the clean-up of smaller spills, the relevant material safety data sheet (MSDS) should be consulted to determine the appropriate clean-up procedure. Basic spill response training will be provided as part of the site environmental induction, spill response equipment, including relevant MSDS copies, will be provided in areas where potentially environmentally hazardous chemicals may be used.

## 9.6 SPILL REPORTING

All major petroleum product spills should be reported to the Ministry of Mines and Energy (MME) on Form PP/11 titled “Reporting of major petroleum product spill”, issued by the ministry.

## 9.7 REHABILITATION OF CONTAMINATED SOILS

All soils that are contaminated with chemicals and or hydrocarbons should be taken to the rehabilitation area or an approved hazardous waste disposal facility. A procedural manual for rehabilitating contaminated soils on site should be developed.

# 10 AIR QUALITY MANAGEMENT PROGRAMME

## 10.1 INTRODUCTION

This air quality management plan describes the strategies and procedures that will be implemented to ensure that the health and safety of construction workers and nearby sensitive receptors are protected from elevated concentrations of airborne dust and other gaseous emissions (e.g., oxides of nitrogen; nitrogen dioxide, particulate matter; sulphur dioxide and carbon monoxide). Typically, the gases present in a mining environment include carbon monoxide, hydrogen sulphide, sulphur dioxide, methane, nitrogen dioxide and ammonia. In cases where generators and other machinery are used, there will be some release of exhaust fumes that will impact the immediate vicinity but will be of short duration and are not within confined spaces that would otherwise require ventilation.

## 10.2 OBJECTIVES

This air quality management plan has been prepared to prevent deterioration of air quality and to minimise the potential for emitted dust and airborne pollutants. Preventative measures are listed below.

## 10.3 RESPONSIBILITIES

**WORKFORCE AND ALL CONTRACTORS**

To implement the necessary management practices to meet the objectives listed above.

**SITE MANAGER/ ENVIRONMENTAL COORDINATOR**

To ensure that the objectives listed above are being met and to provide performance feedback to the mining manager.

## 10.4 AIR QUALITY MANAGEMENT PROCEDURES

Activities that may potentially emit dust and airborne pollutants during the operations include the following:

- Vehicle movements
- Machinery operations

Open pit mine activities can contribute to ambient noise and vibration, affecting neighbours.

The proponent will minimise the potential for dust generation and the emission of airborne pollutants by undertaking the following management measures, as required:

- Vehicle movements will be restricted to sealed roads;
- Appropriate speed limits will be set and enforced;
- Ground disturbance will be minimised as far as practical; and
- Vehicles and machinery will be maintained so as to limit exhaust fume emissions.

**TABLE 9- AIR QUALITY MITIGATION MEASURES**

| | |
|---|---|
| **Responsibility** | - Mining Manager<br>- Site Manager |
| **Potential issues or impacts** | – Impaired visibility for drivers and employees<br>– Respiratory related health issues<br>– Contamination of flora, fauna, habitat and ecosystems |
| **Dust and fumes** | Appropriately rated and fitted dust masks should be given to personnel working in areas of dust exposure |
| | Grey water should be used for dust suppression on a constant basis if available and as required |
| | Maintain speed limits |

## 10.5 AIR QUALITY MONITORING

Visual monitoring of mining activities can ensure the minimum discharge of airborne dust and other emissions according to the air quality management programme.

1. Daily observations

2. Air Quality Monitoring:

A dustfall monitoring network, comprising of eight (8) single dustfall units, should be maintained and the monthly dustfall results used as indicators to track and respond to the effectiveness of the applied mitigation measures. Dustfall collection should follow the ASTM method.

## 10.6 ODOURS, NOISE AND VIBRATION IMPACTS

The sensitive receptors within proximity to the site might be the surrounding farmers. Activities related to the mining activities have the potential to generate nuisance odours, noise and vibration that can impact the quality of life for neighbouring residents and tourism activities. However, this potential impact is minimal due to the nature of the mining methods employed.

Notwithstanding the above point, the proponent should continue to ensure potential odours, noise and vibration sources are mitigated through measures such as:

- Avoid noise generating activities at night, by ensuring noisy activities are avoided especially at night;
- Ensure appropriate measures are put in place to mitigate excessive odours, noise, and vibration levels and respond to complaints, should they occur;
- Scheduling of works to avoid disturbance between the hours of 7 pm and 5 am; and
- Procedures for receiving complaints from nearby land users or residents to be in place and mitigation measures to be implemented should construction and mining generate excessive odours, noise, and vibration, which is unexpected.

Occupational noise and vibration are managed through the health and safety management plan and therefore not applicable to this EMP.

Table 13 below shows the environmental risks and issues, and mitigation and monitoring measures for noise aspects

**TABLE 10–NOISE ASPECTS**

| | |
|---|---|
| **Responsibility** | - Mining Manager<br>- Site Manager |
| **Potential issues or impacts** | Environmental noise evaluation criteria for residential, educational, and institutional receptors are potentially exceeded at NSR 1 and NSR 4 due to proposed Project operations. |
| **Management/ Mitigation measures** | Work hours should be restricted to between dawn and dusk where mining involving the use of heavy equipment, power tools, and the movement of heavy vehicles is within 500 m of sensitive receptors. If this is not possible, the affected community need to be consulted well in advance to agree on a mutually acceptable solution |
| **Monitoring requirements** | Sources of excessive noise will be investigated, and recommendations made for mitigation. |

# 11 ARCHAEOLOGICAL AND HERITAGE PROGRAMME

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

**Scope**: The *Chance Finds Procedure* covers the actions to be taken if there is a discovery of a heritage site or item, after which the find is investigated and assessmed by a trained archaeologist or other appropriately qualified person.
**Compliance**: The *Chance Finds Procedure* is intended to ensure compliance with relevant provisions of the National Heritage Act, No. 27 of 2004), especially Section 55 (4):

> "a person who discovers any archaeological object must as soon as practicable report the discovery to the Council".

The procedure of reporting set out below must be observed so that heritage remains reported to the NHC are correctly identified in the field.

Table 14 below shows the environmental risks and issues, and mitigation and monitoring measures for Archaeological and heritage aspects.

**TABLE 11– ARCHAEOLOGICAL AND HERITAGE ASPECTS**

| | |
|---|---|
| **Responsibility** | - Mining Manager<br>- Site Manager |
| **Potential issues or impacts** | Impact on heritage features |
| **Management/ Mitigation measures** | Should a heritage site or archaeological site be uncovered or discovered during either mining phases of the project, a *Chance Finds Procedure* should be applied in the order they appear below:<br>– If operating machinery or equipment, stop work<br>– Demarcate the site with danger tape<br>– Determine GPS position if possible<br>– Report findings to foreman<br>– Report findings, site location and actions taken to superintendent<br>– Cease any works in immediate vicinity<br>– Visit the site and consult with any potentially affected community |

| | |
|---|---|
| | to determine whether work can proceed without damage to findings<br>– Determine and demarcate the exclusion boundary<br>– Site location and details to be added to the project's Geographic Information System (GIS) for field confirmation by an archaeologist<br>– Inspect site and confirm addition to project GIS<br>– Advise the National Heritage Council (NHC) and request written<br>– Request permission to remove findings from work area from the NHC<br>– Recover, package and label findings for transfer to the National Museum |
| | Should human remains be found, the following actions will be required:<br>– Apply the chance find procedure as described above<br>– Schedule a field inspection with an archaeologist to confirm that remains are human<br>– Advise and liaise with the NHC and Police<br>– Remains will be recovered and removed to either the National Museum or the National Forensic Laboratory. |
| **SPECIFIC MITIGATION DETAILS** | |
| **Archaeology** | Obtain inputs from an archaeologist to identify potential archaeological sites in the area and to determine further mitigation where necessary |
| **Monitoring requirements** | 1. Check that the archaeologist has given a written statement about the location of the known archaeological sites in the area vs. the location of the drilling area.<br>2. Make sure no archaeological site is disturbed whilst excavation and recovery take place<br>3. Make sure everything of importance, as identified by an appropriate specialist, is removed from site and that the site is then declared safe for work by an archaeologist before activities continue on the site |

## 11.1 RESPONSIBILITY

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

## 11.2 PROCEDURE

Action by person identifying archaeological or heritage material

a) If operating machinery or equipment stop work
b) Identify the site with flag tape
c) Determine GPS position if possible
d) Report findings to foreman

Action by foreman
a) Report findings, site location and actions taken to superintendent
b) Cease any works in immediate vicinity

Action by superintendent
a) Visit site and determine whether work can proceed without damage to findings
b) Determine and mark exclusion boundary
c) Site location and details to be added to project GIS for field confirmation by archaeologist

Action by archaeologist
a) Inspect site and confirm addition to project GIS
b) Advise NHC and request written permission to remove findings from work area
c) Recovery, packaging and labelling of findings for transfer to National Museum

In the event of discovering human remains
a) Actions as above
b) Field inspection by archaeologist to confirm that remains are human
c) Advise and liaise with NHC and Police
d) Recovery of remains and removal to National Museum or National Forensic Laboratory, as directed.

# 12 IMPLEMENTATION OF THE EMP

This environmental management plan:

A. Has been prepared according to a contract with the proponent

B. Has been prepared based on information provided to ECC up to November 2021

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

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

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

ECC-84-284-BID-05-A

# BACKGROUND INFORMATION DOCUMENT

*PREPARED FOR*

AFRITIN MINING NAMIBIA (PTY) LTD

**AUGUST 2021**

# BACKGROUND INFORMATION DOCUMENT

## PROPOSED STAGE 2 EXPANSION OF THE PILOT TIN PROCESSING PLANT ON ML 134, ERONGO REGION, NAMIBIA.

## 1 PURPOSE OF THIS DOCUMENT

The purpose of this Background Information Document (BID) is to provide Interested and Affected Parties (I&APs) background to the proposed project and to invite I&APs to register as part of the Environmental and Social Impact Assessment (ESIA) process.

The proposed project involves the stage 2 expansion of the pilot tin processing plant on Mining Licence (ML) 134, held by Afritin Mining Namibia (Pty) Ltd, hereafter referred to as "the proponent or Afritin Mining".

Through registering for the project, all I&APs will be kept informed throughout the ESIA process, and a platform for participation will be provided to submit comments/ recommendations pertaining to the project.

This BID includes the following information:

- The proposed expansion of the pilot plant and increased production activities and location;
- The necessity of the project, potential benefits or adverse impacts anticipated;
- The alternatives to the project that will be considered and assessed;
- How the ESIA process works;
- The public participation process and how to become involved; and
- Next steps and the way forward.

## 2 DESCRIPTION OF PROPOSED PROJECT

### 2.1 BRIEF INTRODUCTION

Environmental Compliance Consultancy (ECC) has been engaged by the proponent to undertake an ESIA and an Environmental Management Plan (EMP) in terms of the Environmental Management Act, 2007 and its regulations. An environmental clearance application will be submitted to the relevant competent authorities, the Ministry of Mines and Energy (MME) and the Ministry of Environment, Forestry and Tourism (MEFT). The ESIA will also be conducted following the IFC standards.

### 2.2 LOCATION

The proponent proposes the increase of production activities in stage 2 by expanding the pilot tin processing plant on ML 134 located near Uis in the Erongo Region, Namibia. Uis can be accessed by the C36 road from Omaruru, the C35 from Hentiesbaai or the C35 from Khorixas. The location of ML 134 (where the expansion is proposed) can be seen in Figure 1.

### 2.3 WHAT IS PROPOSED

The proponent is a mining company with a portfolio of tin assets in Namibia and South Africa. The Namibian registered company proposes several mechanical and process flow upgrades to components of the current pilot plant's processing and supporting infrastructure (i.e., upgrades to the Dense Medium Separation (DMS) 1 cyclone feed, inlet pressure system rates and constant moisture control within feed material, etc.) and therefore, an expected increase in the production rate from the current 80 Tons Per Hour (TPH) in stage 1 to 120 TPH in stage 2.

To implement the proposed upgrades, various other supporting infrastructure on-site require an upgrade to be able to sustain and support the planned expansion project. The additional changes and upgrades include the following:

- Upgrading the existing rudimentary sewerage effluent water collection and treatment system;
- The need for a new Clean Water Channel (CWC) (stormwater channel) and berm around the pilot plant;
- An upgrade of the existing settling and evaporation ponds; and
- A need for an increased supply of water (water demand of 150 000 cubic meters per year).

These upgrades equate to a life of operations of 20 years and will transform the pilot plant into an ore processing plant with a targeted tin recovery of 64% during operations.

## 2.4 Why is the Project Needed

Namibia is rich in natural resources and the minerals sector is a key contributor to the nations Gross Domestic Product in Namibia. The proposed expansion will create additional job opportunities and economic benefits. There are various important uses for tin, some of which include various uses within the food packaging, automotive, medical, electronics, and textiles industries.

## 2.5 Operation Phase

The proponent will have a water demand of 150 cubic litres per year for the proposed expansion and production rate increase on ML 134. This is required to operate stage 2 and covers a production output of 120 Tons Per Hour (TPH), which is predicted to be achieved through this stage. Water will be obtained from underground sources and an existing surface water body that was artificially created from historical mining. This water body is called the northern pit.

A rudimentary (Clarus Fusion Waste Water Treatment Plant (WWTP)) sewerage effluent water collection and treatment system exists on-site and there is the need to upgrade this system to operate comfortably with an enlarged capacity of personnel on-site. The system is maintained by an external service provider and must be upgraded as part of the expansion scope to accommodate additional volumes. Sewage waste is collected monthly by a local contractor and disposed of at the local sewage plant.

The expansion will also entail the installation of a new CWC stormwater channel and berm around the pilot plant as well as an upgrade of the existing settling and evaporation ponds.

Ore (cassiterite) will continue to be extracted from the open pit areas, which will supply the proposed stage 2 expansion within the ML 134 area with adequate volumes of ore. Open-pit 1 will continue to be mined and opened in a southerly direction and will eventually flow into pit 2.

All plant discard streams are dewatered before disposal, maximising water conservation and negating the need for tailings storage facilities. Coarse and fine tailings are dewatered on vibrating screens, while slimes are dewatered through thickener and filter press combination. The recovered water is ponded and reused in the process. Dewatered tailings are co-disposed with mining waste rock.

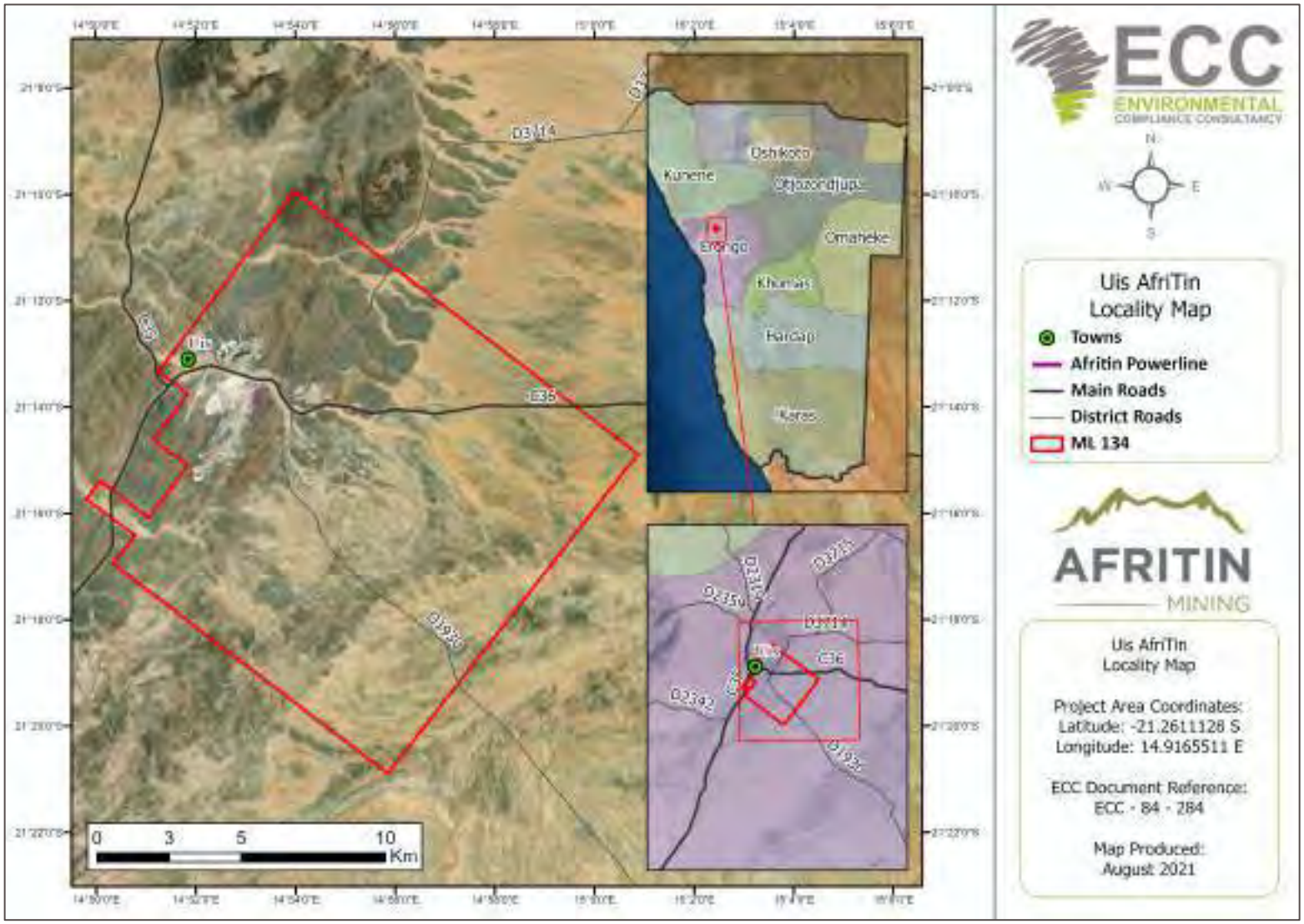



**FIGURE 1 – LOCALITY MAP OF THE PROPOSED PROJECT**

## 2.6 Potential Impacts of the Project

### 2.6.1 Socio-economic

The potential social impacts are anticipated to be of minor significance, these potential impacts may include the following:

- Potential to unearth, damage or destroy undiscovered heritage remains;
- Some jobs will be created as a result of the expansion project;
- Potential traffic issues during the construction and operational phases;
- There will be economic benefits due to increased investment and investor confidence in the Namibian minerals sector;
- Minor disruption to the neighbouring residents and sensitive receptors, including some potential increase in noise and dust levels especially during the construction, blasting and decommissioning phases of the project; and
- Potential poaching/ livestock theft impacts due to the increased movement of people in the area.

### 2.6.2 Environmental

Some of the potential environmental impacts are anticipated to be of minor significance, and those that may occur shall be contained within the ML site, these potential impacts may include the following:

- Clearing of vegetation during the expansion of the pilot plant;
- Potential Impacts on biodiversity and migratory patterns of fauna;
- Use of resources, including groundwater;
- Potential ground and surface water pollution; and
- Risk of spillage of hydrocarbons, chemicals or other dangerous goods/materials.

There may also be impacts of a more significant nature that will require further investigation during the ESIA process. The impacts proposed at this stage include, but are not limited to:

- Potential mine drainage and contaminant leaching: Potential changes to groundwater and surface water quality as a result of mine drainage, chemical spillages and contamination;
- Potential groundwater drawdown both locally and over a wider area due to pit dewatering, and groundwater abstraction for water supply;
- Erosion of soils and mine wastes into surface water streams or sediment-laden surface run-off that collects in natural channels;
- Potential impacts on air quality, key indicator sources include mobile, stationary and fugitive sources within mine and processing operations;
- Noise and vibration impacts; and
- Project potential impact towards climate change due to the contribution of carbon emissions.

# 3 CONSIDERATION OF ALTERNATIVES

Best practice environmental assessment methodology calls for consideration and assessment of alternatives to a proposed project.

No alternative site has been considered due to this being an existing mine: however, by using process innovation and available new technologies, the proponent aims to turn a mine that was once deemed non-feasible into a feasible state with a larger production output. Mechanical and processing upgrades to existing infrastructure shall form the core of the expansion process.

# 4 THE ENVIRONMENTAL ASSESSMENT PROCESS

This ESIA, conducted by ECC, is undertaken in terms of the Environmental Management Act, 2007 and its regulations. The process followed in this ESIA is set out in the flowchart in Figure 2.

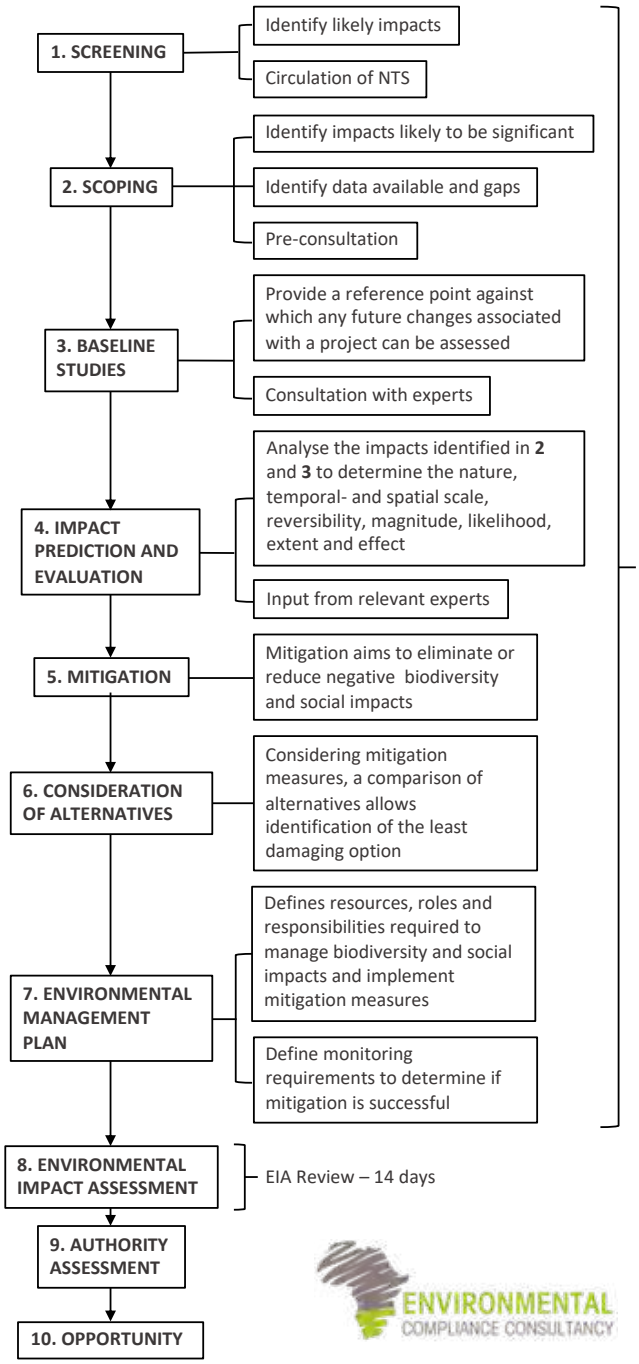



**FIGURE 2 - FLOWCHART OF THE ENVIRONMENTAL ASSESSMENT PROCESS**

## 4.1 SCREENING

A review of the proposed project screening findings against the listed activities was conducted; the findings of which are summarised below.

The potential environmental and social effects are anticipated to be of minor to medium significance (with mitigation), and those that may occur shall be contained within the ML 134 site and the town of Uis.

**ENERGY GENERATION, TRANSMISSION AND STORAGE ACTIVITIES**

(1.a) The construction of facilities for the generation of electricity;

- External diesel generators are in use on-site as an emergency backup power supply source to skeleton operations only in the event of a power failure.

(1.b) The construction of facilities for the transmission and supply of electricity;

- An existing 66-kilovolt powerline and associated infrastructure located within the Accessory Work Permit area of the ML will continue to be used. No upgrades are needed for the time being.

**WASTE MANAGEMENT, TREATMENT, HANDLING AND DISPOSAL ACTIVITIES**

(2.2) Any activity entailing a scheduled process referred to in the Atmospheric Pollution Prevention ordinance, 1976.

- Mining activities generate dust fallout which is being monitored on a monthly basis.
- Potential for noxious gas generation and emission.

(2.3) The import, processing, use and recycling, temporary storage, transit or export of waste.

- A rudimentary (Clarus Fusion WWTP) sewerage effluent water collection and treatment system exists on-site and is maintained by an external service provider and must be upgraded as part of the expansion scope to accommodate additional volumes. Sewage waste is collected on a monthly basis by a local contractor and disposed of at the local sewage plant.
- An industrial waste collection facility is in use within the processing plant physical boundaries.
- Overburden and plant discard material (>6mm) are transported and disposed of on the WRD site located within the mining licence footprint.
- Solid and Hazardous waste collection points are in use on the site.

**MINING AND QUARRYING ACTIVITIES**

(3.1) The construction of facilities for any process or activities which requires a licence, right or other form of authorisation, and the renewal of a licence, right or other form of authorisation, in terms of the Minerals (Prospecting and Mining Act), 1992.

- The current operations are permitted under an approved mining licence (ML 134).
- The resource in this case Tin is extracted, then manipulated within the processing plant and refined to tin metal sheets.

(3.2) Other forms of mining or extraction of any natural resources whether regulated by law or not.

(3.3) Resource extraction, manipulation, conservation and related activities.

**FORESTRY ACTIVITIES**

(4) The clearance of forest areas, deforestation, afforestation, timber harvesting or any other related activity that requires authorisation in terms of the Forest Act, 2001 (Act No. 12 of 2001) or any other law.

- There is the possibility of vegetation that may be cleared for the possible creation of new roads or new laydown areas.

**WATER RESOURCE DEVELOPMENT**

(8.1) The abstraction of ground or surface water for industrial or commercial purposes.

- Mining operations will continue to utilize groundwater and surface water sources for their processing requirements, dust suppression and human consumption.

(8.2) The abstraction of groundwater at a volume exceeding the threshold authorised in terms of a law relating to water resources.

- Currently, there is an abstraction permit that allows for a 75 000 cubic meters abstraction threshold per year valid for two years. An amendment application will be submitted to increase abstraction to 150 000 cubic meters per year to supply production needs.

(8.5) Construction of dams, reservoirs, levees and weirs.

- The expansion of the pilot plant project will entail the installation of a new CWC stormwater channel and berm around the pilot plant as well as an upgrade of the existing settling and evaporation ponds.

(8.6) Construction of industrial and domestic wastewater treatment plants and related pipeline systems.

- The pilot plant has an operational sewage effluent collection, treatment and disposal system in place. However, the need to upgrade this system exists to operate comfortably at an enlarged capacity of personnel on-site.

(8.8) Construction and other activities in watercourses within flood lines.

(8.9) Construction and other activities within a catchment area.

- The project falls within the Ugab catchment area.

**HAZARDOUS SUBSTANCE TREATMENT, HANDLING AND STORAGE**

9.1 The manufacturing, storage, handling or processing of a hazardous substance defined in the Hazardous Substances Ordinance, 1974.

- Petrol, diesel, liquid petroleum gas or paraffin will be stored for the vehicles and plants to function
- A diesel storage tank is installed on-site.
- Explosives are used for blasting purposes and may be stored on-site.

9.2 Any process or activity which requires a permit, licence or another form of authorisation, or the modification of or changes to existing facilities for any process or activity which requires an amendment of an existing permit, licence or authorisation or which requires a new permit, licence or authorisation in terms of a law governing the generation or release of emissions, pollution, effluent or waste.

- Licences will be obtained for all hazardous substances that will need to be stored on the site and will be used in the mining process. Licences will need to be obtained for facilities that will be storing these substances.

(9.4) The storage and handling of dangerous goods, including petrol, diesel, liquid petroleum gas or paraffin, in containers with a combined capacity of more than 30 cubic meters at any one location.

## 4.2 SCOPING

Due to the nature of the proposed project, and the implementation of industry best practice mitigation measures during the expansion of phase 2 of the project, the effects on the environment and society are expected to be minimal and localised, with mitigation. The main concerns are the impacts associated with ground and surface water pollution and air quality.

## 4.3 BASELINE STUDIES

For the proposed project, baseline information was obtained through a desk-based study, Specialists studies and site verification processes through focusing on the environmental receptors that could be affected by the proposed project. ECC will also engage with stakeholders, I&APs and the

proponents to seek input into the assessment.

## 4.4 Impact Assessment

Impacts will be assessed using the ECC ESIA methodology. The ESIA will be conducted in terms of the Environmental Management Act, 2007 and its regulations. ECC's methodology for impact assessments was developed using IFC standards in particular Performance Standard 1 'Assessment and management of environmental and social risks and impacts' (IFC 2012, 2017) and Namibian Draft Procedures and Guidance for ESIA and EMP (GRN, 2008) including international and national best practice with over 25 years of combined ESIA experience.

## 4.5 Environmental Management Plan

An EMP shall be developed for the proposed project setting out auditable management actions for Afritin Mining to ensure careful and sustainable management measures are implemented for their activities in respect of the surrounding environment and community.

## 4.6 Public Participation and Advertising

Public participation is an important part of the ESIA process; it allows the public and other stakeholders to raise concerns or provide valuable local environmental knowledge that can benefit the assessment, in addition, it can aid the design process. This project is currently at the scoping phase and public participation phase.

At this phase ECC will perform the following:

- Identify key stakeholders, authorities, municipalities, environmental groups and interested or affected members of the public, hereafter referred to as I&APs;
- Distribute the BID for the proposed project (this document);
- Advertise the environmental application in two national newspapers;
- Place notices on-site at or near the boundary;
- If required host a public meeting to encourage stakeholder participation and engagement, and provide details of issues identified by the environmental practitioner, stakeholders and I&APs;
- Record all comments of I&APs and present such comments, as well as responses provided by ECC, in the comments and responses report, which will be included in the scoping report that shall be submitted with the application, and
- Circulate I&AP comments to the project team for consideration of project design.

Comments must be submitted in writing and can be emailed using the details in the contact us section below.

**CONTACT US**

We welcome any enquiries regarding this document and its content. Please contact:

**Environmental Compliance Consultancy (ECC)**

info@eccenvironmental.com

Tel: +264 81 669 7608

www.eccenvironmental.com

At ECC we make sure all information is easily accessible to the public.

Follow us online to be kept up to date:

+264 81 669 7608

info@eccenvironmental.com

www.eccenvironmental.com

**RECEIVED BY OFFICIAL STAMP**
Received by Name:

Date:

Signature:

REFERENCE: ECC-84-284-LET-08-A
8th September 2021

Dear Identified Stakeholder and or Potentially Interested Party:

**RE: INVITATION TO A FOCUS GROUP MEETING FOR THE UIS TIN MINE EXPANSION STAGE II MINE PROJECT, UIS DISTRICT IN THE ERONGO REGION.**

Environmental Compliance Consultancy (ECC) on behalf of our client Uis Tin Mining Company (Pty) Ltd would like to inform you of our intended, and upcoming, focus group meeting for the Uis Tin Mine Environmental and Social Impact Assessment. ECC is conducting the assessment in accordance with the Environmental Management Act, No. 7 of 2007, for which an application for an environmental clearance certificate will be submitted for the proposed expansion of mining and processing activities on ML 134 in the Erongo Region.

Uis Tin Mining Company (Pty) Ltd proposes several mechanical and process flow upgrades to components of the current pilot plant's processing and supporting infrastructure (i.e., upgrades to the Dense Medium Separation (DMS) 1 cyclone feed, inlet pressure system rates and constant moisture control within feed material, etc.) and therefore, an expected increase in the production rate from the current 80 Tons Per Hour (TPH) in stage 1 to 120 TPH in stage 2. To implement the proposed upgrades, various other supporting infrastructure on-site require an upgrade to be able to sustain and support the planned expansion project. The planned expansion will ensure a life of operations of 20 years.

This letter is to extend an invitation to you as an identified stakeholder and potentially Interested and Affected Party (I&AP) of the project and provide a communication channel with ECC. ECC wishes to invite you to attend the focus group meeting and

provide input to the environmental and social impact assessment (ESIA) as per the details below:

**Focus Group Meeting:**
**Uis Settlement**, Tuesday, **16th September 2021**
Meeting Address: Uis Settlement Office, opposite the NamClay factory entrance
Time: **10:00 AM.**

**We kindly request that you RSVP by email to info@eccenvironmental.com or phone on 081 669 7608 and confirm your attendance for the focus group meeting.**

In addition to the above meeting, Uis Tin Mining Company (Pty) Ltd is committed to engaging all affected stakeholders through planned, ongoing public participation in as required.

ECC values community input and participation in our projects and we look forward to working with you as the project develops. Should you require further information, please do not hesitate to contact us.

Yours sincerely,

Stephan Bezuidenhout
**Environmental Compliance Consultancy**
Contact: 081 669 7608
Email: stephan@eccenvironmental.com

Jessica Bezuidenhout Mooney
**Environmental Compliance Consultancy**
Contact: 081 669 7608
Email: jessica@eccenvironmental.com

# PUBLIC NOTICE

## LODGING OF ANNUAL RETURNS AND PAYMENT OF ANNUAL DUTIES

The Business and Intellectual Property Authority (BIPA) hereby wish to bring to the attention of business owners of Close Corporations, Companies with share capital (PTY) and Companies incorporated under Section 21, that BIPA is commencing with a public awareness campaign on the submission of annual returns and payment of annual duties for the period 2012-2021. Kindly note the following information.

In terms of Section 181 of the Companies Act, 2004 (Act No. 28 of 2004) the lodging of annual returns is compulsory for all **Companies with a share capital**, and a lodging fee of N$160.00 must accompany the annual return (CM23). The calculation of Annual duties is prescribed in Regulation 40 of the Regulations made under the Companies Act, 2004 (Act 28 of 2004).

Failure to lodge annual returns and the non-payment of annual duties as prescribed by the Companies Act, renders businesses non-compliant with the relevant legislative requirements and may result in entities incurring penalties and/or being subject to deregistration.

Take note that **Section 21 Companies** are obliged to lodge their annual returns, but are not required to pay an annual duty. **Close Corporation (CC)** shall not later than one month after the financial year, pay the prescribed annual duty in terms of Section 13 (2) of the Close Corporations Act, 1988 (Act No. 26 of 1988) as amended, read together with Regulation 11(1) of the Regulations made thereunder. The Corporation must, on the prescribed form (i.e. form CC7) lodge proof of such payment to the Registrar not later than forty-two days after the end of every financial year. Failure to pay annual duties as prescribed by the Close Corporations Act renders businesses non-compliant with the following legislative requirements.

1. The annual duty payable by Close Corporations is fixed at N$ 120.00 as prescribed in terms of Regulation 5 to the Regulations (see Schedule 1 thereto) made under the Close Corporations Act, 1988; and
2. Pay such annual duty subject to the payment of additional fees according to the scales prescribed under Regulation 11(3) of the Regulations made under the Close Corporations Act.

The period for which BIPA is requesting the lodging of annual returns and the payment of annual duties are 2012 – 2021. In order to remain compliant with the relevant legislation and avoid punitive measures, business owners are encouraged to visit the BIPA offices and enquire about outstanding returns and fees.

Businesses that have already paid their annual duties for the period 2012-2021 are requested to assist BIPA in updating its records by submitting proof of payment for the respective years. Any entity with outstanding annual duties WILL NOT be allowed to make any amendments to their entity or be allowed to receive a good standing certificate from BIPA. For more information, kindly contact +264 61 299 4484/64/21 or send an email to debtors@bipa.na.

***VIVIENNE KATJIUONGUA***
***REGISTRAR OF BUSINESS REGISTRATION AND INTELLECTUAL PROPERTY***

*Good Standing makes for Good Business –*
*Submit your annual returns TODAY!*

bipa | BUSINESS AND INTELLECTUAL PROPERTY AUTHORITY
*Protecting Entrepreneurship and Innovation*

adforce

RE-ADVERTISEMENT

# TENDER

MTC hereby invites appropriately qualified companies to apply for the following tender:

- MTC48-21-0:

**REQUESTING PROPOSALS FOR SUPPLY, DELIVERY, INSTALLATION, COMMISSIONING AND MAINTENANCE OF SPECIALISED AIR CONDITIONING SYSTEMS AT THE MTC HEAD OFFICE IN OLYMPIA, WINDHOEK AND MTC OSHAKATI**

**BRIEFING MEETING:**
24th September 2021
@ 10H00

**BRIEFING MEETING VENUE:**
Microsoft Teams, the link will be on MTC's website

CLOSING DATE:
Friday, 01st October, 2021 by 14H30

The Terms of Reference documents are available at: **www.mtc.com.na**

mtc.com.na

make the connection mtc

NILALEG

The Ministry of Environment, Forestry and Tourism (MEFT), in partnership with the United Nations Development Programme (UNDP) and Environmental Investment Fund of Namibia (EIF), wishes to invite proposals through the Namibia Integrated Landscape Approach for Enhancing Livelihoods and Environmental Governance to Eradicate Poverty (NILALEG) Project Small Grants Facility.

Registered communal conservancies, gazetted community forests, community groups, farmer's associations, women's groups, youth groups and informal community groups (subject certain conditions) are all eligible to apply for a grant under this facility. The grant facility remains limited to the pre-determined landscapes of Omaoipanga (Kunene Region), Ruacana (Omusati Region), Okongo (Ohangwena Region), Nkulivere (Kavango West Region) and Zambezi (Zambezi Region) while the anticipated proposals remain limited to the investment themes of agroforestry, sustainable rangeland/crop management and nature-based enterprises.

Grant proposals should be submitted on the EIF prescribed templates available at the EIF website, www.eif.org.na, or at EIF offices including grant application guidelines, the maps of the focal landscapes and other related forms.

**Grant proposals should be addressed to:**
Environmental Investment Fund of Namibia
NILALEG Project Grant Facility
Heinitzburg Heights
c/o Heinitzburg and Dr. Theo-Ben Gurirab Streets
Klein Windhoek, Windhoek

Proposals should be submitted to the EIF not later than 12 November 2021 at 17h00.
Both hardcopies and emails will be accepted.
For further **queries, kindly contact:**

**Ms. Philadelphia Buys**
EIF: NILALEG Project Coordinator
PBuys@EIF.ORG.NA or
Tel: 061 – 4317705

**Ms. Kredula Shimwandi**
EIF: Gender Intern KShimwandi@EIF.ORG.NA or
Tel: 061 – 4317736

gef | Environmental Investment Fund of Namibia | ensuring sustainability | UNDP

UIS TIN MINING COMPANY

**NOTICE OF AN ENVIRONMENTAL ASSESSMENT & PUBLIC PARTICIPATION PROCESS FOR THE PROPOSED STAGE 2 EXPANSION OF THE PILOT TIN PROCESSING PLANT ON ML 134, ERONGO REGION, NAMIBIA.**

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

**Applicant:** Uis Tin Mining Company (Pty) Ltd
**Environmental Assessment Practitioner (EAP):** Environmental Compliance Consultancy
**Location:** Uis, Erongo Region, Namibia

**Project:** The proposed project involves the stage 2 expansion of the pilot tin processing plant and upgrades to the stormwater and effluent collection and treatment infrastructure around the pilot plant.

**Location:** All activities will take place on Mining Licence (ML) 134, held by Afritin Mining Namibia (Pty) Ltd, Erongo Region.

**Proposed Activities:** Uis Tin Mining Company (Pty) Ltd proposes several mechanical and process flow upgrades to components of the current pilot plant's processing and supporting infrastructure and therefore an expected increase in the production rate from the current 80 Tons Per Hour (TPH) in stage 1 to 120 TPH in stage 2. This equates to a life of Operations of 20 years.

**Purpose of the review and registration period:** The purpose of the review and registration period is to introduce the proposed project and to afford registered Interested and Affected Parties (I&APS) an opportunity to comment on the Background Information Document (BID) to ensure that all issues, and concerns are brought forward, captured and considered further in the assessment.

The registration period is effective from the **8th of September 2021 to 22nd of September 2021**. I&APs and stakeholders are required to register for the project at: www.eccenvironmental.com/projects/ or email ECC to register.

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

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

**website: http://www.eccenvironmental.com**
**Project ID: ECC-128-355-ADT-05-D**

ECC

AL-ANON
Help for relatives of Alcoholics

AL-ANON Family groups offer help for friends and relatives of alcoholics.

They provide assistance for people who live with alcoholics.

Dawnnam@gmail.com

VENUE: cnr Lüderitz and Kasino Street
DATE AND TIME: Thursdays at 19H00

mtc@ec.[illegible]
www.ecenv.[illegible]
+264812[illegible]
+264816[illegible]

ENVIRONMENTAL
COMPLIANCE CONSULTANCY

Meeting Attendance Register

Date: _____

Meeting Subject: - Focus Meeting For the Afritin UTM ESIA

Venue: Uis Settlement Office Boardroom

| | NAME | ORGANIZATION | EMAIL ADDRESS | CONTACT NUMBER | SIGNATURE |
|---|---|---|---|---|---|
| 1 | Jason Amukwa | ERC-Uis | jamukwa@erc.gov.na | 0813735391 | [signature] |
| 2 | Efraim Touroß | UTMC | efraimtouroß@afritinmining.com | 0818077822 | [signature] |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | | | | | |

ENVIRONMENTAL
COMPLIANCE CONSULTANCY

Meeting Attendance Register

Date: 19/10/2021

Meeting Subject: - Public Meeting for the Afritin UTM ESIA

Venue: Uis Settlement Office Boardroom

| | NAME | ORGANIZATION | EMAIL ADDRESS | CONTACT NUMBER | SIGNATURE |
|---|---|---|---|---|---|
| 1 | MR. I Kamend | FARMERS Elders | — | 0817327146 | [signature] |
| 2 | Ranga Tsibeb | E/REO | rtsibeb@2gmail.com | 0812293976 | [signature] |
| 3 | Julia Garises | Disaster Manage group Tatamuts/Uis | | 0812464417 | [signature] |
| 4 | RALF SCHOMMARZ | UIS TIN MINE | ralf.schommarz@afritinmining | 081 1247395 | [signature] |
| 5 | Amingo Honnes | UIS-ERC | amingohonnes@ymail.com | 0812545970 | [signature] |
| 6 | JOHANNES GARISES | Brandberg small miner | johannesgarises@gmail.com | 0813092097 | [signature] |
| 7 | Helen Geingos | Brandberg P.S. | ott.dgtdaisy@gmail.com | 0812577133 | [signature] |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | | | | | |

ECC
UIS TIN MINE
PHASE 1 STAGE 2
EXPANSION
PROJECT
ESIA PROCESS
SCOPING PHASE

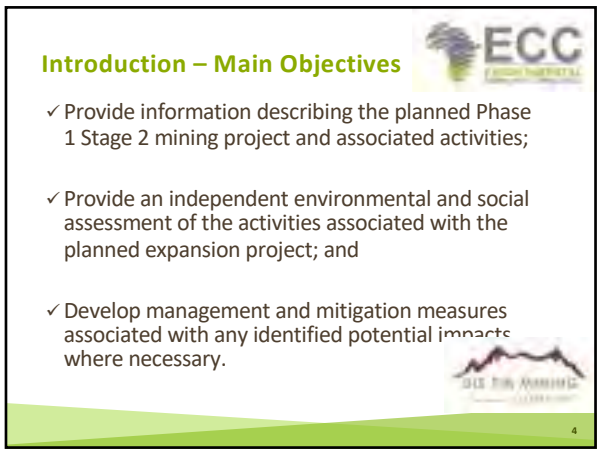
1

Welcome
• House Rules
• Introductions
ECC

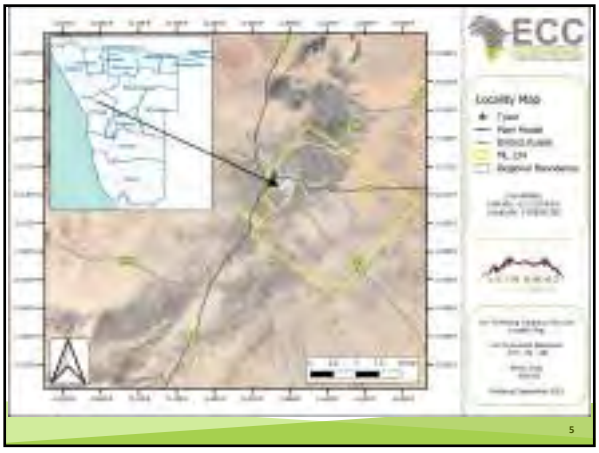
2

AGENDA
ECC
• Main Objectives
• Background Information
• Environmental & Social Impact Assessment (ESIA) Process
• Uis Tin Mine Overview
• Potential Biophysical & Socio-economic Impacts
• Baseline Studies
• Public Participation
3

3


Introduction – Main Objectives
ECC
✓ Provide information describing the planned Phase 1 Stage 2 mining project and associated activities;
✓ Provide an independent environmental and social assessment of the activities associated with the planned expansion project; and
✓ Develop management and mitigation measures associated with any identified potential impacts where necessary.
4

4


ECC
Locality Map
5

5

6

7

8

9

## About Uis Tin Mining Company (Pty)Ltd…

- Namibian registered subsidiary of Afritin Mining.
- Commenced infrastructure development in 2018 on the historical Uis Tine Mine footprint.
- The project is operating in two phases; phase 1 the current pilot plant that employs approximately 90 - 150 personnel, and phase 2 (future development) will be full scale mining which will employ 450 - 550 personnel.
- Uis Tin Mining Company (Pty) Ltd proposes several mechanical and process flow upgrades to components of the current pilot MHCP plant's processing and supporting infrastructure .
- Dewatering of the grits tailings (less than 630 microns),
- Dewatering of the slimes tailings (less than 45 microns) and
- Expanding the feed capacity to the spiral plant.
- The modifications are expected to more than double the throughput capacity of these circuits and therefore an expected increase in the production rate from the current 80 Tons Per Hour (TPH) in stage 1 to 120 TPH in stage 2. This equates to a life of Operations of 20 years.

10

## ESIA Process

- Screening – Register the ESIA on the DEA Portal
- Scoping – Current Phase
  - Baseline Studies
  - Public Participation
  - Terms of Reference
- Assessment Phase

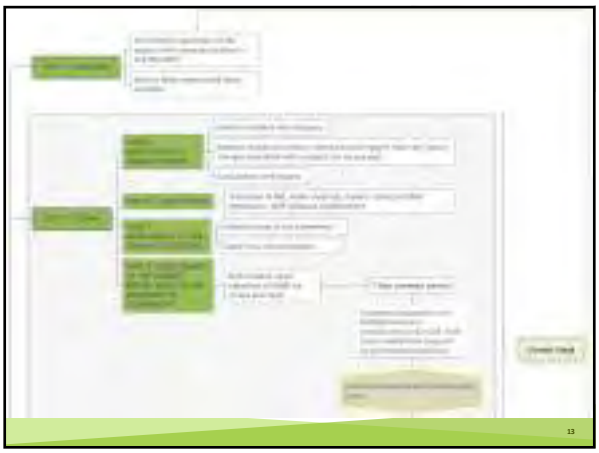
11

## ESIA Process

- Screening – DEA PORTAL

| ACTIVITIES THAT TRIGGERED A CLEARANCE CERTIFICATE APPLICATION |
|---|
| ENERGY GENERATION, TRANSMISSION AND STORAGE ACTIVITIES |
| WASTE MANAGEMENT, TREATMENT, HANDLING AND DISPOSAL ACTIVITIES |
| MINING AND QUARRYING ACTIVITIES |
| WATER RESOURCE DEVELOPMENT |
| HAZARDOUS SUBSTANCE TREATMENT, HANDLING AND STORAGE |

12



13

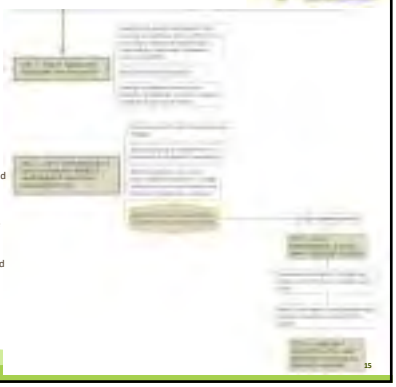
## Public Participation

- Notification of the project – newspapers & site notice boards
  - 8/09/2021 and 15/09/2021
- The Background Information Document (BID) provided I&APs with the opportunity to take part in the public participation process.
- This presentation extracts information from the BID to describe the project to those attending the meeting.

14

## Process

- Screening - (DEA PORTAL)
- Scoping – Current Phase
- **Assessment Phase**
  - Impact prediction and evaluation of alternatives,
  - Assigning mitigation measures
  - Incorporating monitoring and conceptual rehabilitation plans.
  - This phase culminates in the drafting of the ESIA report and draft Environmental Management Plan (EMP) and
  - Submission to the appropriate competent authorities.



15

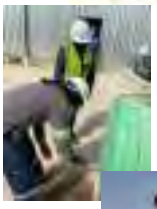
## Baseline Studies Commissioned to date

| BASELINE STUDIES | SPECIALIST |
|---|---|
| A baseline **fauna and flora** study is underway | Peter Cunningham |
| A **noise** baseline study was completed and results are being modelled | AirShed |
| An **air quality** baseline study is underway | AirShed |
| A **heritage** baseline study is underway | John Kinahan |
| **TO BE COMPLETED** | |
| Traffic surveys and report is outstanding. | |
| Vibration assessment | |
| Aquifer source sustainability assessment will be completed | |
| **ACTIVE MONITORING** | |
| Groundwater quality monitoring | |
| Depositional dust monitoring | |

16

## Potential Impacts to be assessed

- Potential impacts that can arise from the proposed project include but are not limited to:
  - Dust Pollution
  - Noise impacts
  - Visual impacts
  - Water resource impacts
  - Impact on archaeological and cultural features
  - Biodiversity impacts
  - Increased traffic volumes on public roads
  - Employment opportunities (permanent / temporary)
  - Growth of both local and regional economy
  - Others….



17

## What you can do!

- Provide in writing, any issues and suggestions regarding the proposed development. This correspondence must include:
  1. Name & Surname;
  2. Organization represented;
  3. Position in the organization;
  4. Contact details and;
  5. Any direct business, financial, personal or other interest which you may have in the approval or refusal of the application.
- Send written submissions to info@eccenvironmental.com
- Or uploaded onto the ECC website

18

## Questions / Discussion ?

19

www.eccenvironmental.com

19

## Questions / Comments / Concerns

| Name / Organisation | Comment / Concern |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

www.eccenvironmental.com 20

20

# NOTICE OF AN ENVIRONMENTAL ASSESSMENT & PUBLIC PARTICIPATION PROCESS FOR THE PROPOSED STAGE 2 EXPANSION OF THE PILOT TIN PROCESSING PLANT ON ML 134, ERONGO REGION, NAMIBIA.

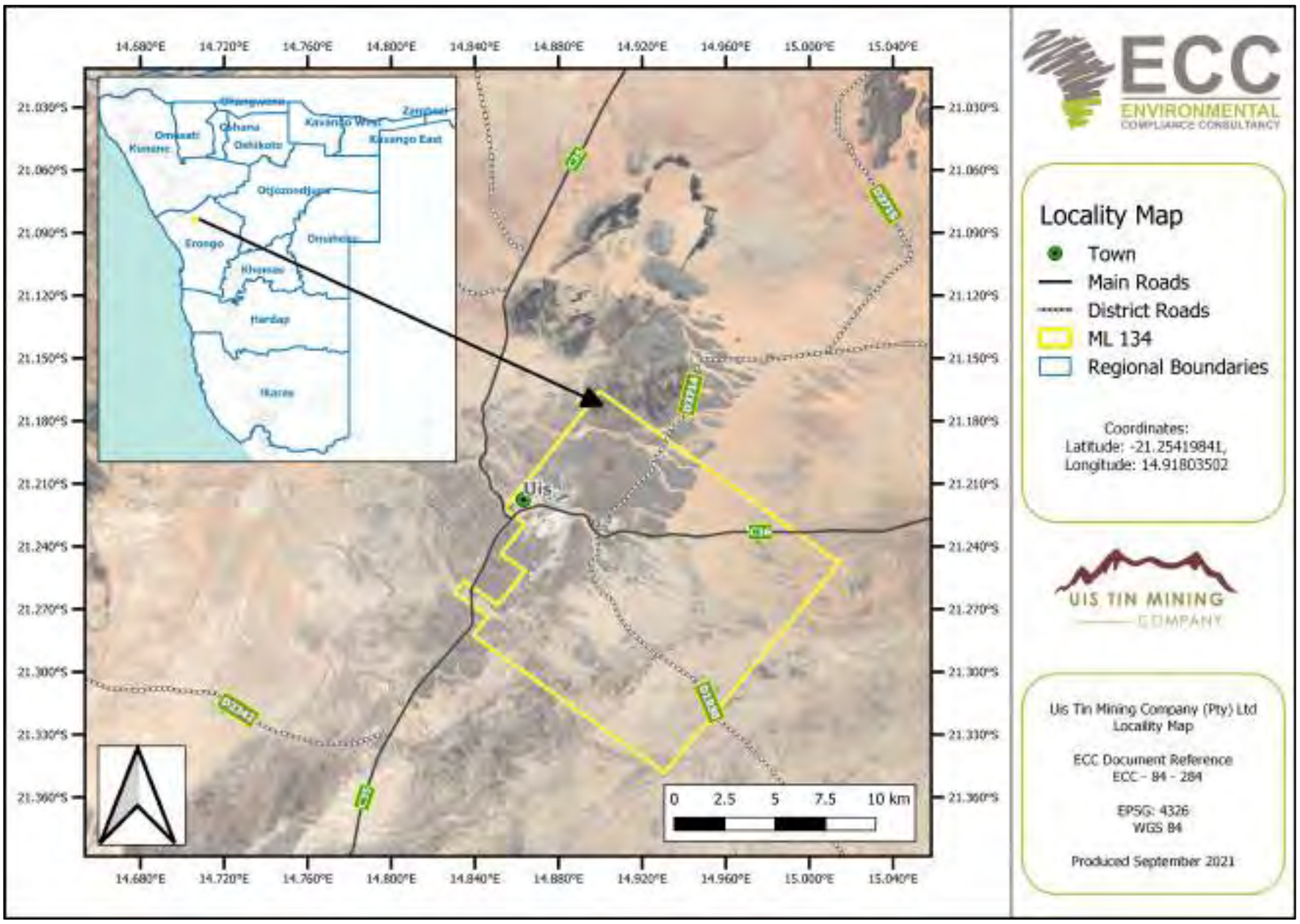
**Environmental Compliance Consultancy cc (ECC) hereby gives notice to the public that an application for an environmental clearance certificate in accordance with the Environmental Management Act, No. 7 of 2007 will be made as per the following:**

| | |
|---|---|
| **Applicant:** | **Uis Tin Mining Company (Pty) Ltd** |
| **Environmental Assessment Practitioner (EAP):** | **Environmental Compliance Consultancy** |
| **Location:** | **Uis, Erongo Region, Namibia** |
| **Project ID:** | **ECC-84-284** |

**Proposed Project Activity:** The proposed project involves the stage 2 expansion of the pilot tin processing plant on Mining Licence (ML) 134, held by Uis Tin Mining Company (Pty) Ltd.

Uis Tin Mining Company (Pty) Ltd proposes several mechanical and process flow upgrades to components of the current pilot plant's processing and supporting infrastructure and therefore an expected increase in the production rate from the current 80 Tons Per Hour (TPH) in stage 1 to 120 TPH in stage 2. This equates to a life of Operations of 20 years.

**Proposed Project Area**: Erongo Region, Namibia




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

I&APs and stakeholders are required to register for the project at: www.eccenvironmental.com/projects

The team at ECC will then maintain contact with all registered I&APs to engage and to keep them informed as the ESIA process develops. ECC will also provide registered I&APs input opportunities and review periods throughout the assessment process.

ECC
ENVIRONMENTAL
COMPLIANCE CONSULTANCY

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

## LIST OF SDC MEMBERS FOR UIS SETTLEMENT

| | NAME | INSTITUTION | PORTFOLIO | TEL | EMAIL |
|---|---|---|---|---|---|
| **1.** | Mr G.A. /Honneb | Uis Settlement **(Chairperson)** | CAO | 0812545970 | |
| **2.** | Mr J. S. Amukwa | Uis Settlement **(Secretary)** | SAO | 0813735391 | jsamukwa@gmail.com |
| **3.** | Ms Rejoice Thourus | Daures Youth Forum | Daures Youth Representative | 0818710585 | dankierotaun@gmail.com |
| **4.** | Snr. Cllr E. Gowaseb | Daures Traditional Authority | Senior Councilor | 0812774628 | |
| **5.** | Mr. Barend Gurirab | Uis Aquaculture Eco-Tourism Enterprise | PRO/Administrator | 0812972217 | |
| **6.** | Mr. Sebulon Ganinab | Agriculture (MAWF) | Senior Agriculture Technician (S.A.T) | 0812350432 | uisadc@gmail.com |
| **7.** | Mrs. Elder Gretschen Tauros | Churches Representative | Church Elder | | |
| **8.** | Mr. Andrew Noabeb | MoHSS (Uis Clinic) | Registered Nurse/RN | 064 504 011 | andrewjosenoabeb@gmail.com |
| **9.** | Mr. Boois SR | Petrus Ganeb Sec. School | Head of Department | 0812131196 | |
| **10.** | Mr Johannes. M. Gariseb | Stone Sellers Rep | Small Scale Miner | 0813092097 | johannesgariseb@gmail.com |
| **11.** | Mr Eric Xaweb | Tsiseb Conservancy | Manager | 0813479255 | tsisebconservancy@gmail.com |
| **12.** | Mrs. Helena Geingos | Brandberg Primary School | Principal | 0812577133 | primaryschoolbrandberg@gmail.com |
| **13.** | Mr Isaskar Kamendu | Pensioners & Daureb Farmers Association | Pensioner and Farmer | 0817327146 | |
| **14.** | Mr. C. Basil | UPOA-Chairperson | Businessman | 064504038 | brandberg@africaonline@gmail.com.na |
| **15.** | Sgt Johanna Mandjoro | Nampol | Station Commander | 0813241880 | Petrinamuvangam@gmail.com |
| **16.** | Mr. Conradt Brandt | Rural Water Supply | Senior Extension Officer | 0813542625 | |
| **17.** | Mr. R. Tsiseb | Erongo Red | Electrician | 0812293976 | rtsiseb2@gmail.com |
| **18.** | Mrs Julia Gariases | Tatamutsi Dev. Committee-Chairlady | Businesswoman | 0812464417 | garisesjulia20@gmail.com |
| **19.** | Ms Pauleen Shekutana | Namwater | Acting Area Manager | 0811241928 | |
| **20.** | Mr. M. Tjeuva | Ministry of Environment and Tourism | Ranger | 0817746455 | |

## LIST OF SDC MEMBERS FOR UIS SETTLEMENT

| | NAME | INSTITUTION | PORTFOLIO | TEL | ATTENDANCE |
|---|---|---|---|---|---|
| 1. | Mr G.A. /Honneb | Uis Settlement **(Chairperson)** | CAO | 0812545970 | |
| 2. | Mr J. S. Amukwa | Uis Settlement **(Secretary)** | SAO | 0813735391 | Yes jsamukwa@gmail.com |
| 3. | Ms Rejoice | Daures Youth Forum | Daures Youth Representative | 0818710585 | Yes dankierotaun@gmail.com |
| 4. | Snr. Cllr E. Gowaseb | Daures Traditional Authority | Senior Councilor | 0812774628 | No |
| 5. | Mr. Barend Gurirab | Uis Aquaculture Eco-Tourism Enterprise | PRO/Administrator | 0812972217 | |
| 6. | Mr. Sebulon Ganinab | Agriculture (MAWF) | Senior Agriculture Technician (S.A.T) | 0812350432 | No uisadc@gmail.com |
| 7. | Mrs Elder Gretschen Tauros | Churches Representative | Church Elder | | No |
| 8. | Mr. Andrew Noabeb | MoHSS (Uis Clinic) | Registered Nurse/RN | 064 504 011 | Yes andrewjosenoabeb@gmail.com |
| 9. | Mr. Boois SR | Petrus Ganeb Sec. School | Head of Department | 0812131196 | No |
| 10. | Mr Johannes. M. Gariseb | Stone Sellers Rep | Small Scale Miner | 0813092097 | Yes johannesgariseb@gmail.com |
| 11. | Mr Eric Xaweb | Tsiseb Conservancy | Manager | 0813479255 | tsisebconservancy@gmail.com |
| 12. | Mrs. Helena Geingos | Brandberg Primary School | Principal | 0812577133 | Yes primaryschoolbrandberg@gmail.com |
| 13. | Mr Isaskar Kamendu | Pensioners & Daureb Farmers Association | Pensioner and Farmer | 0817327146 | |
| 14. | Mr. C. Basil | UPOA-Chairperson | Businessman | 064504038 | brandberg@africaonline@gmail.com.na |
| 15. | Sgt Johanna Mandjoro | Nampol | Station Commander | 0813241880 | Petrinamuvangam@gmail.com |
| 16. | Mr. Conradt Brandt | Rural Water Supply | Senior Extension Officer | 0813542625 | |
| 17. | Mr. R. Tsiseb | Erongo Red | Electrician | 0812293976 | Yes rtsiseb2@gmail.com |
| 18. | Mrs Julia Garises | Tatamutsi Dev. Committee-Chairlady | Businesswoman | 0812464417 | Yes garisesjulia20@gmail.com |
| 19. | Ms Pauleen Shekutana | Namwater | Acting Area Manager | 0811241928 | |
| 20. | Mr. M. Tjeuva | Ministry of Environment and Tourism | Ranger | 0817746455 | |

| Text messages sent | Email request sent | Undecided |
|---|---|---|
| | | |

+264 81 669 7608

info@eccenvironmental.com

www.eccenvironmental.com

**PROJECT:** Proposed Phase 1, Stage 2 expansion of the Pilot Tin Processing Plant Project in Uis, Erongo Region, Namibia

**JOB NO:**

**CONVERSATION WITH:** I&APs

**PERSONAL INTERVIEW:** ☒

**COMPANY:** AfriTin Mining

**PHONE CONVERSATION:** ☐

**ECC REP:** Lester Harker and Matthew Bliss

**TELEPHONE NUMBER:**

**PERSONS PRESENT:** Matthew Bliss and Lester Harker
I&APs

**DATE:** 19/10/2021 **TIME:** 16h00

**SUBJECT:** Public consultation for the mine expansion process for the project

**Details of interview/conversation/meeting**

1. Public Participation Meeting with I&APs and Uis Community.
2. 16:00PM-17:30PM, Tuesday the 19th of October 2021, at Uis Settlement Office, Board room.
3. **Present for ECC**: Matthew Bliss (MB) and Lester Harker (LH)
4. **Present for AfriTin Mining: Mr. Ralf Schommarz (Mine manager at the time.**
5. MB: Welcoming remarks, introduced the team and outlined the need for the public meeting for the proposed project.
6. MB: Commencement of presentation. Introduction of the meeting for the proposed project, details of ECCs involvement, briefly explained the importance of the public's participation for the Phase 1, stage 2 mine expansion and activities associated with that. Pinpointed the Environmental Social Impact Assessment (ESIA) process and the use of performance standard 1 of the IFC guidelines, Namibian legislation and best practice guidelines. An explanation of the scoping report procedure environmental clearance application procedure was given as well as the identification of triggered listed activities to inform the assessment scope. The potential impacts will also be set with community input and Discussed the importance of the public's opinion and its value to calculate long-term environmental and social impacts.
7. Mr Amingo – Control Administrative Officer of Uis town Club: 1. Assets of the previous mines were bought by Mr/Honneb, currently the regional council runs the town on which there are certain areas of land and waste caused by the previous mine which is in the vicinity of the town center. He asked who these belong to specifically the white sand and who to contact should the government want to make use of the sand. 2. Asked who the two ponds found close to their office and another one close to the mine belong to currently since they still have economic value.
8. MB: We do not know unfortunately, but that would be a very important piece of information that could be included in the report so that, with all the baseline data you end up having an ownership map or strata of ownership.
9. Mr Amingo – Control Administrative Officer of Uis town Club: 3. With the re-opening of the mine, as a resident there are high hopes of employment creation and social upliftment of the town thus,

pleads that core focus during employment should be on the local residents of Uis so as to create a sense of belongingness and take pride in the mine re-opening.

10. MB: The main message of our social sections would be about local and that would be a recommendation to you as a town, the company and the government to join forces and make that happen. The project expansion is early in the company's process that; they are using it to see how well it works before proceeding to the next step but we could liaise with the company on that to see what is required.
11. Mr R. Tsibeb – Erongo Red: Asked with regards to the baseline assessment of rehabilitation, what is the plan in place to rehabilitate the area.
12. MB: Unprocessed rocks that come out of a mine are usually stacked together with the fines that come out of processing which have little to no financial value. Currently, they are being disposed of by use of trucks and there is a top elevation that it will go to and in the end the area will be easier to grow any trees, grass or bushes. Also, we will recommend to the company that activities of that nature be included during mining operations to test out the feasibility of the rehabilitation initiative and it will be included in the report as well.
13. Mrs Julia Garises – Tatamutsi Dev. Committee- Chairlady: During the end of mining activities, the lives of the town residents take a different turn whereby jobs are lost and even the town service providers increase their trading prices (such as the municipality bills). Can this be taken in to consideration.
14. MB: It is difficult because the town was doing well until the regional/town council decide that bills will be increase given the low number of people remaining in the town. So, jobs, training and capacity building are significant for residents to sustain themselves one way or another. This will also be included in the report and since the project is still in its early stages, plans can be made taking the above-mentioned into account as was well communicated.
15. I&AP: Asked why development projects do not employ a few people from the town of project origin and train them physically to do the work.
16. MB: It is not always easy to do but given that this is a small project; it makes total sense.
17. I&AP: Emphasized the dust issue stating that the mine authority and proponent need to come together and discuss this as fugitive dust is a serious cause for concern for Uis inhabitants and those in nearby areas.
18. MB: Acknowledged the suggestion and takes note of the I&APs concerns.
19. Helena Geingos – Brandberg Primary School Principal: Asked if there are motivational programmes in place to introduce mining to the school going learners at the 2 local schools that might trigger their interest and may want to take up geology and mining related courses in future and then come back to work in their home town.
20. MB: It would be great to introduce such programmes and this can be done on a few occasions for instance during career day at the schools. Suggestion acknowledged and notes take on that.
21. Helena Geingos – Brandberg Primary School Principal: Further asked if in future schools will be permitted to plan day trips and bring learners to see the mine.
22. MB: It is not easy to do a mine tour unless it is fully shut down. Mine activities are mainly underground and the main priority with such operations is safety of personnel.
23. Mrs Julia Garises – Tatamutsi Dev. Committee- Chairlady: Asked if there will be any sponsorship

opportunities from the mine introduced destined for top performing learners to further their studies.

24. MB: Acknowledged the suggestion and takes note of the I&APs concerns.
25. I&AP: Asked if there are any measures in place to control the dust pollution and noise impacts as advancements in technology develop.
26. MB: From traffic, there is use of water trucks to control dust on site. There's also different kinds of salts and several others that can help pack the dust down, using water sprays at dusty points in the facility may work really well too. Recommending chemicals that may be seen as hazardous and toxic is not ideal in this regard, but there are several things that can be done to control that although it is quite hard since there is dust everywhere.
27. I&AP: 1. Asked why there are no more traffic cones used on the road leading to the site as a way of restricting vehicles from heading in that direction like they were used during the blasting stage. 2. Asked why there is no public communication for residents to take caution on the day of blasting and to keep their animals indoors too.
28. MB: This will be discussed with the proponent to pool together ideas on what they plan to do regarding the above-mentioned.
29. I&AP: Commended that, at the moment the road is not closed because there are no blasting activities taking place, the blasting site is also located far away from road and it is always kept locked for safety reasons.
30. I&AP: Asked how far the project expansion site is from the current area.
31. MB: The main part of the expansion and the mining place is going to be where it has been in the past, the mining operations are relatively small thus, there is no need for frequent blasting to feed the plant so the footprint is going to be equivalent to the previous one.
32. I&AP: Asked if it true that; there is a settlement farm 40 km outside Uis on the Henties Bay road and that area is proposed as a mine area where-by people are being forced to move
33. LH: If I may summarise, do you mean can the traditional authority not be used as an entity there to inform the people, specifically the Daures Traditional Authority.
34. I&AP: Agreed to what was summarised.
35. MB: Acknowledged the question and takes note of the I&APs concerns to probe further.
36. LH: Asked further what parties/entities/organisations were in agreement with the removal of the said farm inhabitants on the proposed mine area.
37. I&AP: Responded that when the meeting was held, the mine authority was present.
38. LH: Asked if that was that was in reference to the previous mine.
39. I&AP: Indicated that it was mentioned during the meeting that was done during the mine study meaning, it was not an agreement done but rather part of the presentation.
40. MB: Acknowledged the response and takes note of the I&APs concerns.
41. MB: Asked whether there were any further suggestions or comments.
42. Majority of the I&APs: Indicated that they had no further questions or comments.
43. MB: Thanked them for their time and acknowledged that the I&APs suggestions, concerns and questions were taken note of.

Commotion ensued and people started walking out.

LH: Reminded the I&APs, that they could forward their comments registry form to us via email and fill in their names and contact details on the meeting's register.

Meeting ended at 17:30PM

REPUBLIC OF NAMIBIA

# MINISTRY OF AGRICULTURE, WATER AND LAND REFORM

**Telephone:** **(061) 2087229**
**Fax:** **(061) 2087697**
**Enquiries:** **M Nickel**
**Reference:** **PC General**

**Department of Water Affairs**
**Private Bag 13193**
**Windhoek**
**9000**

The Director
Afritin Namibia (Pty) Ltd
P. O. Box 90757
**Windhoek**
Namibia

**RE: APPLICATION FOR THE LEGALIZATION OF ONE (1) EXISTING BOREHOLE WITH REGARDS TO THE AMENDMENT OF THE WATER ABSTRACTION PERMIT NO.11 429, AT UIS SETTLEMENT, OMARURU DISTRICT**

1. Your application dated 04 August 2021 requesting amendment to your current abstraction permit, No. 11 429, bears reference.
2. The above request is hereby approved by this Ministry for the legalization of borehole number 6 (WW 206113): to be included in permit No. 11 429.
3. Kindly note that all permit conditions as stipulated in abstraction Permit No.11 429 are applicable.
4. You are kindly requested to send page 1 of the permit back to this Ministry for cancellation and to be replaced with the attached page of the permit concerned.
5. This letter now forms part of the permit and must be filed therewith
6. Your co-operation is appreciated.

EXECUTIVE DIRECTOR
2021 -09- 30
Republic of Namibia
Ministry of Agriculture, Water and Land Reform

**PERCY W. MISIKA**
**EXECUTIVE DIRECTOR**

REPUBLIC OF NAMIBIA

# MINISTRY OF AGRICULTURE, WATER AND LAND REFORM

**Telephone: (061) 2087111**
**Fax: (061) 2087697**
**Enquiries: M Nickel**
**Reference: PC General**

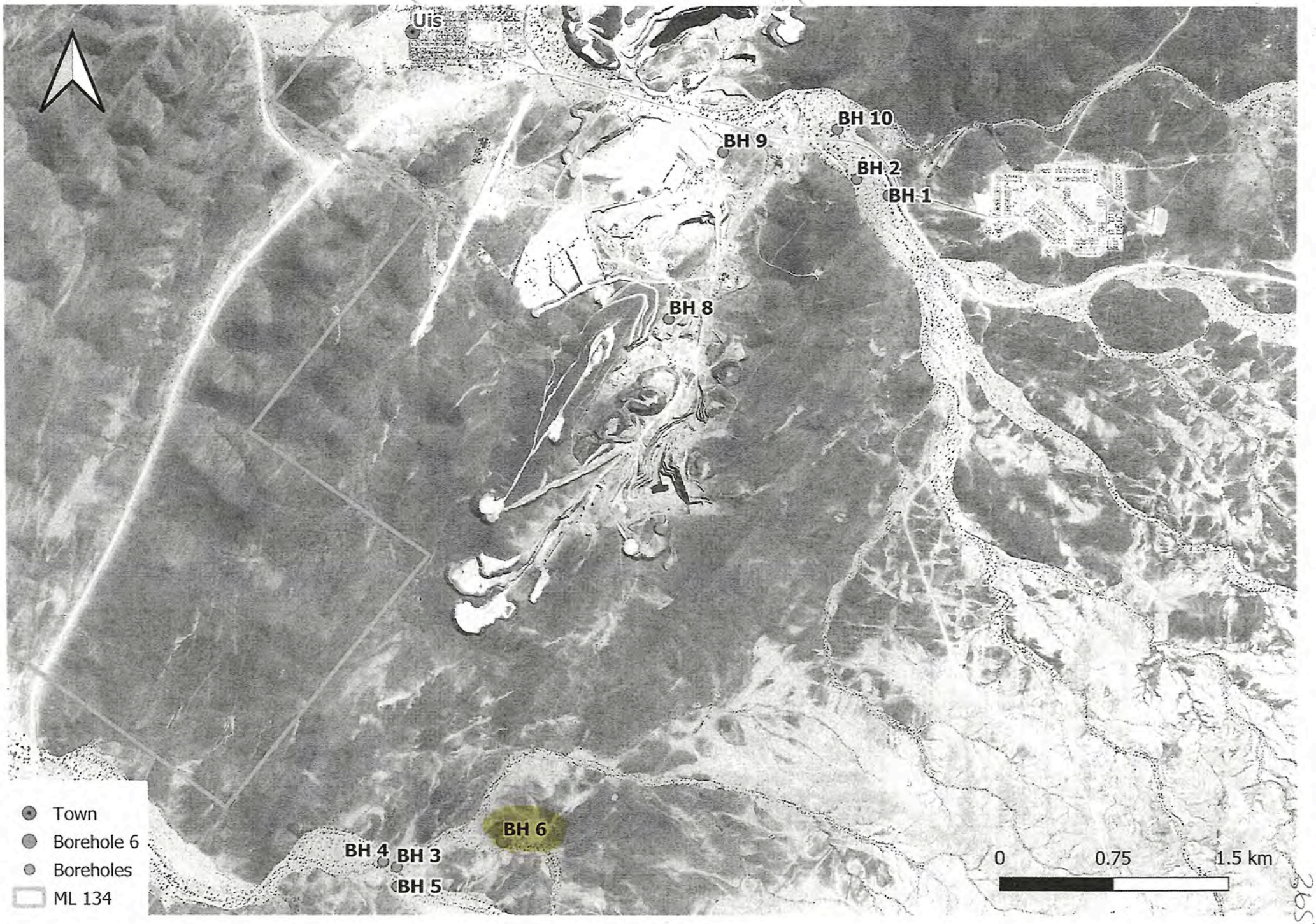
**Department of Water Affairs**
**Private Bag 13193**
**Windhoek**
**9000**

**PERMIT NUMBER: 11 429** **DATE: 15 September 2021**

**PERMIT ISSUED IN TERMS OF REGULATIONS 5 AND 9 OF GOVERNMENT NOTICE R1278 OF 23 JULY 1971 AS PROMULGATED UNDER SECTION 30(2) OF THE WATER ACT, 1956 (ACT 54 OF 1956), AS AMENDED**

| | | |
|---|---|---|
| NAME OF PERMIT HOLDER | : | Afritin Namibia (Pty) Ltd |
| ADDRESS | : | P O Box 90757, Windhoek |
| REGISTERED PROPERTIES | : | Uis Settlement |
| DISTRICT | : | Omaruru |
| CONTROL AREA | : | Omaruru Subterranean Water Control Area |
| VALIDITY PERIOD | : | Two (2) years |
| BOREHOLES TO BE USED | : | Serial numbers WW 205110, WW 205111, WW 205112, WW 205113, WW 205114, WW 205115, WW 205116, WW 205117 and WW 206113 |
| PURPOSE FOR WHICH WATER MAY BE USED | : | Industrial purposes |
| ABSTRACTION PER YEAR | : | 75 000m³ maximum |

This permit authorizes the holder (or his successors in title) to further abstract and use water for the purpose as stated above, from the existing boreholes identified as WW 205110, WW 205111, WW 205112, WW 205113, WW 205114, WW 205115, WW 205116, WW 205117 and WW 206113, as identified on the mine planning map, attached as Annexure A, subject to the following conditions:


Uis
BH 10
BH 9
BH 2
BH 1
BH 8
BH 6
BH 4
BH 3
BH 5
Town
Borehole 6
Boreholes
ML 134
0
0.75
1.5 km

365

| SPECIES | ENDEMISM | PROTECTED | IUCN1 | IUCN2 |
|---|---|---|---|---|
| Lophiocarpus dinteri Engl. | | | | |
| Maerua juncea Pax subsp. juncea | | | | |
| Maerua parvifolia Pax | | | | |
| Maerua schinzii Pax | | Forestry Protected | | |
| Merremia bipinnatipartita (Engl.) Hallier f. | Endemic | | | |
| Merremia guerichii A.Meeuse | Endemic | | | |
| Microcharis disjuncta (J.B.Gillett) Schrire var. disjuncta | | | | |
| Monechma cleomoides (S.Moore) C.B.Clarke | | | | |
| Monechma desertorum (Engl.) C.B.Clarke | Endemic | | | |
| Monechma genistifolium (Engl.) C.B.Clarke subsp. genistifolium | Endemic | | | |
| Monsonia senegalensis Guill. & Perr. | | | | |
| Monsonia umbellata Harv. | Near Endemic | | | |
| Moringa ovalifolia Dinter & A.Berger | Near Endemic | Protected | | |
| Orthanthera albida Schinz | | | | |
| Petalidium coccineum S.Moore | | | | |
| Petalidium englerianum (Schinz) C.B.Clarke | | | | |
| Petalidium luteo-album A.Meeuse | Endemic | | | |
| Petalidium variabile (Engl.) C.B.Clarke var. spectabile Mildbr. | Endemic | | | |
| Phaeoptilum spinosum Radlk. | | | | |
| Phyllanthus maderaspatensis L. | | | | |
| Polygala guerichiana Engl. | | | | |
| Ptycholobium biflorum (E.Mey.) Brummitt subsp. angolensis (Baker) Brummitt | | | | |
| Salvadora persica L. var. persica | | | | |
| Sesamum capense Burm.f. | | | | |
| Sesamum marlothii Engl. | Endemic | | | |
| Sesbania pachycarpa DC. subsp. dinterana J.B.Gillett | Near Endemic | | | |
| Sesbania sphaerosperma Welw. | | | | |
| Sesuvium sesuvioides (Fenzl) Verdc. var. angustifolium (Schinz) Gonç. | | | | |
| Setaria appendiculata (Hack.) Stapf | | | | |
| Solanum capense L. | | | | |
| Solanum dinteri Bitter | Endemic | | | |
| Sporobolus nebulosus Hack. | Near Endemic | | | |
| Stipagrostis damarensis (Mez) De Winter | Near Endemic | | | |
| Stipagrostis giessii Kers | | | | |
| Stipagrostis hirtigluma (Steud. ex Trin. & Rupr.) De Winter subsp. pearsonii (Henrard) De Winter | | | | |
| Stipagrostis hochstetteriana (Beck ex Hack.) De Winter var. hochstetteriana | | | | |
| Stipagrostis subacaulis (Nees) De Winter | | | | |
| Tapinanthus guerichii (Engl.) Danser | | | | |
| Terminalia prunioides M.A.Lawson | | | | |
| Tribulus zeyheri Sond. subsp. zeyheri | | | | |
| Trichoneura eleusinoides (Rendle) Ekman | | | | |
| Triraphis purpurea Hack. | | | | |
| Vangueria infausta Burch. subsp. infausta | | | | |
| Viscum verrucosum Harv. | | | | |
| Zygophyllum cylindrifolium Schinz | Near Endemic | | | |

| SPECIES | ENDEMISM | PROTECTED | IUCN1 | IUCN2 |
|---|---|---|---|---|
| Abutilon pycnodon Hochr. | | | | |
| Acacia erubescens Welw. ex Oliv. | | | | |
| Acacia mellifera (Vahl) Benth. subsp. detinens (Burch.) Brenan | | | | |
| Acacia montis-usti Merxm. & A.Schreib. | Endemic | Forestry Protected | Near Threatened | |
| Acacia reficiens Wawra subsp. reficiens | | | | |
| Adenolobus garipensis (E.Mey.) Torre & Hillc. | | | | |
| Aizoanthemum dinteri (Schinz) Friedrich | Endemic | | | |
| Amaranthus praetermissus Brenan | | | | |
| Amphiasma merenskyanum Bremek. | Near Endemic | | | |
| Anticharis imbricata Schinz | Endemic | | | |
| Anticharis kaokoensis B.Nord. | Endemic | | | |
| Aponogeton desertorum Zeyh. ex A.Spreng. | | | | |
| Aptosimum arenarium Engl. | Endemic | | | |
| Aptosimum glandulosum F.E.Weber & Schinz | | | | |
| Aptosimum lineare Marloth & Engl. var. lineare | | | | |
| Aristida parvula (Nees) De Winter | | | | |
| Barleria lancifolia T.Anderson subsp. lancifolia | | | | |
| Blepharis gigantea Oberm. | Endemic | | | |
| Blepharis grossa (Nees) T.Anderson | Near Endemic | | | |
| Blepharis pruinosa Engl. | Endemic | | | |
| Boscia albitrunca (Burch.) Gilg & Gilg-Ben. | | Forestry Protected | | |
| Boscia foetida Schinz subsp. foetida | | | | |
| Brachiaria glomerata (Hack.) A.Camus | | | | |
| Caesalpinia rubra (Engl.) Brenan | | | | |
| Calicorema capitata (Moq.) Hook.f. | | | | |
| Centropodia mossamedensis (Rendle) Cope | | | | |
| Chascanum garipense E.Mey. | | | | |
| Chascanum pinnatifidum (L.f.) E.Mey. var. pinnatifidum | | | | |
| Citrullus ecirrhosus Cogn. | Near Endemic | | | |
| Cleome elegantissima Briq. | | | | |
| Cleome foliosa Hook.f. var. foliosa | | | | |
| Codon schenckii Schinz | | | | |
| Commiphora namaensis Schinz | Near Endemic | | | |
| Commiphora pyracanthoides Engl. | | | | |
| Commiphora saxicola Engl. | Endemic | | | |
| Commiphora tenuipetiolata Engl. | | | | |
| Commiphora virgata Engl. | | | | |
| Commiphora wildii Merxm. | | | | |
| Corchorus merxmuelleri Wild | Endemic | | | |
| Cordia monoica Roxb. | | | | |
| Cordia sinensis Lam. | | | | |
| Cucumis sagittatus Peyr. | | | | |
| Cuscuta hyalina Roth | | | | |
| Cyamopsis senegalensis Guill. & Perr. | | | | |
| Cyperus fulgens C.B.Clarke var. fulgens | | | | |
| Cyperus marginatus Thunb. | | | | |
| Cyphostemma omburense (Gilg & M.Brandt) Desc. | | | | |
| Dactyliandra welwitschii Hook.f. | | | | |
| Danthoniopsis ramosa (Stapf) Clayton | | | | |
| Dicoma capensis Less. | | | | |
| Elephantorrhiza elephantina (Burch.) Skeels | | | | |
| Elephantorrhiza suffruticosa Schinz | | | | |
| Eragrostis annulata Rendle ex Scott-Elliot | | | | |
| Eragrostis bicolor Nees | | | | |
| Euclea pseudebenus E.Mey. ex A.DC. | | | | |
| Euphorbia damarana L.C.Leach | Near Endemic | | | |
| Euphorbia phylloclada Boiss. | | | | |
| Fagonia minutistipula Engl. | | | | |
| Felicia smaragdina (S.Moore) Merxm. | Endemic | | | |
| Geigeria alata (Hochst. & Steud.) Benth & Hook.f. ex Oliv. & Hiern | | | | |
| Geigeria rigida O.Hoffm. | Endemic | | | |
| Gisekia africana (Lour.) Kuntze var. africana | | | | |
| Gossypium anomalum Wawra ex Wawra & Peyr. subsp. anomalum | | | | |
| Grielum sinuatum Licht. ex Burch. | | | | |
| Heliotropium tubulosum E.Mey. ex DC. | | | | |
| Hermannia helianthemum K.Schum. | | | | |
| Hermannia modesta (Ehrenb.) Mast. | | | | |
| Hermannia rautanenii Schinz ex K.Schum. | | | | |
| Hermbstaedtia spathulifolia (Engl.) Baker | Endemic | | | |
| Hibiscus elliottiae Harv. | | | | |
| Hoodia currorii (Hook.) Decne. subsp. currorii | | Protected | | |
| Indigofera auricoma E.Mey. | | | | |
| Indigofera heterotricha DC. subsp. heterotricha | | | | |
| Indigofera heterotricha DC. subsp. pechuelii (Kuntze) Schrire | | | | |
| Juncus rigidus Desf. | | | | |
| Kissenia capensis Endl. | | | | |
| Lantana dinteri Moldenke | | | | |
| Leucosphaera bainesii (Hook.f.) Gilg | | | | |
| Limeum myosotis H.Walter var. confusum Friedrich | | | | |