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AMENDMENT REPORT:

ESIA FOR EXPLORATION AND MINING ACTIVITIES ON ML 133, ERONGO REGION, NAMIBIA

PROJECT NUMBER: ECC-84-446(c)-REP-27-C

REPORT VERSION: REV 01

DATE: 17 SEPTEMBER 2026

ECC
ENVIRONMENTAL
COMPLIANCE CONSULTANCY

TITLE AND APPROVAL PAGE

Project Name:	ESIA for Exploration and Mining Activities on ML 133, Erongo Region, Namibia
Client Company Name:	Grace Simba Investments (Pty) Ltd
Client Name:	Mr Tim Marais
Ministry Reference:	ECC-2300764
Status of Report:	Draft for Public Review
Project Number:	ECC-84-446(c)-REP-27-C
Date of issue:	17 September 2026
Review Period	17 – 24 September 2026

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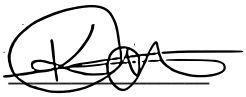

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EXECUTIVE SUMMARY

Environmental Compliance Consultancy (Pty) Ltd (ECC) was appointed by Grace Simba Investments (Pty) Ltd, a subsidiary of Andrada Mining (Pty) Ltd, to prepare an amendment to the environmental and social impact assessment (ESIA) for mining licence (ML) 133 in the Erongo Region and to update the associated environmental and social management plan (ESMP). ML 133 covers approximately 3,288 ha along the banks of the ephemeral Omaruru River, some 35 km southeast of Uis, within the Nai-Nais community in the Dâures Constituency. The licence area is accessed from Uis on the C35 and D1930 roads, lies within the Tsiseb Communal Conservancy, and has a long history of tin mining.

The Proponent holds environmental clearance certificate ECC-2300764, issued on 17 September 2023 for mining activities for base and rare metals, industrial minerals and precious metals on ML 133 and subsequently transferred to Grace Simba on the original issuance and validity dates. The purpose of this amendment is to expand the scope of the certificate to include an expanded mineral exploration programme and to assess the impacts associated with short to medium term exploration in more detail. The amendment does not remove or replace the mining activities already authorised. ML 133 is a mining licence, mining remains an authorised and intended activity within the licence area, and both the exploration and the mining phases are accordingly described and assessed in this report. The renewal application for the environmental clearance certificate is being lodged ahead of this amendment report.

The exploration programme comprises the establishment of temporary camp, office, storage and ablution facilities; the installation of power supply infrastructure comprising generator units and a solar photovoltaic system with battery energy storage; the installation of water storage tanks; drilling by rotary air blast, reverse circulation and diamond methods, together with trenching and grab and bulk sampling; waste management; environmental baseline monitoring; the construction of access roads and drill pads; and rehabilitation. Approximately 60 personnel will be employed during the exploration phase, around 85 per cent of whom will be accommodated at the on-site camp. Water is abstracted from existing groundwater boreholes under a valid abstraction licence and is treated through a temporary reverse osmosis plant to provide potable supply. The mining activities authorised under the licence, which are covered by the Proponent's routine environmental compliance monitoring and reporting, comprise open pit mining, drilling and blasting, loading and hauling of ore and waste rock, crushing, screening and processing of ore, stockpiling of ore, waste rock and residue, and the associated roads and support infrastructure. Ore extracted from ML 133 is transported to Uis for processing.

The assessment has been undertaken in terms of the Environmental Management Act, No. 7 of 2007 and its 2012 regulations. Listed activities triggered by the Project fall under energy generation, transmission and storage; waste management, treatment, handling and disposal; mining and quarrying; forestry; water resource developments; and hazardous substance treatment, handling and storage. Other instruments relevant to the Project include the

Minerals (Prospecting and Mining) Act, No. 33 of 1992, the Water Resources Management Act, No. 11 of 2013 and its 2023 regulations, the Forest Act, No. 12 of 2001, the Hazardous Substances Ordinance, 1974, and the National Heritage Act, No. 27 of 2004.

The assessment methodology follows International Finance Corporation Performance Standard 1, the Namibian draft procedures and guidance for environmental impact assessment, and ECC's accumulated ESIA experience. The study area is the licence area itself. Sensitive receptors, being the employee and contractor camps, the core shed and the occupied houses within and adjacent to the licence area, have been mapped and carried into the assessment. Public consultation for ML 133 was undertaken as part of the original application process, including a public meeting held at the Uis Community Hall on 9 August 2024. As this is a renewal and amendment process, no further public meetings or advertisements are required. The draft amendment report and draft ESMP will be issued for public and government review for a period of seven days, from 17 September 2026 to 24 September 2026.

The topics scoped into the assessment cover the biophysical environment, being soils, surface and groundwater and biodiversity, and the socioeconomic environment, being employment, skills development, tourism, air quality, traffic, occupational health and safety, heritage and archaeology, noise, and visual and sense of place.

The baseline described in Chapter 5 is of a licence area that has already been worked. ML 133 lies on the banks of the ephemeral Omaruru River, approximately 35 km southeast of Uis in the Nai-Nais community area, within the Tsiseb Conservancy and the Dâures Constituency. It carries the remains of the historical Tin Tan tin mine, has been under exploration for several years and is grazed by communal small stock. The climate is hot and semi arid, with rainfall below 150 mm a year and evaporation many times higher. There is no permanent surface water: the Omaruru River along the eastern boundary and the drainage lines that cross the licence flow only after rain, and a 100 m riparian buffer applies to all of them under the Water Resources Management Act. Water is drawn from licensed boreholes on the licence. The shallow, rocky nudilithic leptosols have little agricultural value. The habitats present are hills and ridges, gravel plains and drainage lines, with the protected trees of the Omaruru riparian zone the most sensitive feature; none of the plant or animal species recorded is exclusively associated with the licence, although endemic hornbills and Rüppell's parrot were confirmed nesting in the riparian trees and leopard was recorded. The Brandberg, some 50 km to the northwest, is outside the area of influence. The licence is sparsely populated, with a small number of dwellings of the Nai-Nais community within and immediately adjacent to it, and Uis is the nearest town. A graveyard that is still in use, a group of suspected children's graves, a precolonial stone settlement and the old Tin Tan Mine settlement lie within the licence. Baseline noise levels are low, dust fallout has remained below the residential limit since monitoring began in 2023, and access is by the D1930 from the C35 and C36, with the last section of the C35 being paved.

Impacts were identified and evaluated using ECC's methodology, which is based on International Finance Corporation Performance Standard 1 and the Namibian draft

procedures and guidance for environmental impact assessment. The significance of each impact is derived from the sensitivity and value of the receptor and the magnitude of change, having regard to the nature, reversibility, duration, extent and probability of the impact, and is rated before and after mitigation. A rapid cumulative impact assessment was undertaken using the International Finance Corporation good practice handbook, with ML 133 and its immediate surroundings, including the Uis Tin Mine and ML 134, as the spatial boundary and the duration of exploration and mining through to closure as the temporal boundary. Because ML 133 is a mining licence, both the exploration programme and the mining activities authorised on the licence were assessed for every topic.

For the exploration programme, all adverse impacts are rated low or minor after mitigation. The only impact of major significance before mitigation is the risk of injury to personnel, which reduces to minor with the safety measures in the ESMP. The socio-economic impacts of exploration are beneficial and of moderate to major significance through employment, skills development, local procurement and government revenue. For the mining phase, the impacts of open pit mining, blasting, ore haulage to the Uis processing plant, waste rock and ore stockpiles, sustained groundwater abstraction and a larger workforce are rated adverse moderate before mitigation for noise, air quality, visual, groundwater and surface water, community and land use, traffic, heritage and avifauna, and adverse major for occupational health and safety and for the potential displacement of dwellings should the mining footprint or its exclusion zones encroach on the Nai-Nais households. With the measures in the ESMP these reduce to minor, and the employment, procurement and revenue benefits of mining are rated beneficial major. The mining phase ratings are provisional: the noise, air quality and traffic specialist studies were scoped for exploration, and the ESMP commits the Proponent to completing the mining phase noise, air quality, traffic, hydrology and geochemical studies, and to updating the ESMP with their results, before large scale mining and potential onsite processing commences.

The draft ESMP (Appendix A) carries the mitigation and monitoring commitments for both phases, with roles, responsibilities and reporting requirements. Its principal commitments are to keep the pit, dumps, infrastructure and drilling out of the riparian buffer and the modelled flood extents; to protect the heritage sites with agreed buffers, to limit blast vibration at the dwellings and heritage sites and to maintain community access to the graveyard; to confirm the position of the Nai-Nais dwellings against the mine layout before mining and, where avoidance is not possible, to prepare a resettlement or livelihood restoration plan meeting IFC Performance Standard 5; to operate under a safety management system meeting the Minerals Act and Labour Act requirements; to comply with the water abstraction licence and establish a groundwater monitoring network before mining; to characterise waste rock before dumps are built and to manage stormwater, dust and waste to licensed facilities; to give preference to local employment and procurement and to maintain the grievance mechanism; to rehabilitate progressively and prepare a funded mine closure plan under the Minerals Act; and to report compliance to MEFT bi-annually.

ECC concludes that the exploration and mining activities on ML 133 can be undertaken without residual impacts of moderate or major significance, provided that the ESMP is implemented for both phases and the mining phase specialist studies are completed and the ESMP updated before mining commences. ECC therefore recommends that the Environmental Commissioner renew and amend the environmental clearance certificate for ML 133 to authorise the expanded exploration programme together with the mining activities already authorised on the licence, subject to the conditions set out in the draft ESMP.

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ABBREVIATION LIST

ABBREVIATION	DESCRIPTION
%	Percentage
~	approximately
µg	microgram
˚C	degrees celsius
AQO	air quality objectives
AQSR	Air quality sensitive receptors
BWh	represents a hot desert climate
CBNRM	Community based natural resource management
CIA	Cumulative impact assessment
COVID	Coronavirus
COVID-19	Coronavirus 2019
dBA	Decibels
DD	Diamond drilling
DEAF	Department of Environmental Affairs and Forestry
DWA	Department Water Affairs
EAP	Environmental assessment practitioner
ECC	Environmental Compliance Consultancy (Pty) Ltd
EIA	Environmental Impact Assessment
EMA	Environmental Management Act No.7 of 2007
EMP	Environmental management plan
EPLs	Exclusive prospecting licences
ERT	electrical resistivity tomography
ESIA	Environmental and social impact assessment
ESMP	Environmental and social management plan
g/t	Grams per tonne
GDP	Gross domestic product
GG	Government gazette
GN	Government notice
GPR	ground-penetrating radar
Grace Simba	Grace Simba Investments (Pty) Ltd
ha	hectare
HCV	High conservation value

ABBREVIATION	DESCRIPTION
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	Kilometres
km/h	Kilometres per hour
km^2	kilometres squared
kV	kilovolts
kW	kilowatt
LOM	life of mine
Ltd	limited
m	metre
m/s	metre per second
m^3	cubic metres
m^3/d	cubic metres per day
m^3/h	cubic metre per hour
MAFWLR	Ministry of Agriculture, Fisheries, Water and Land Reform
masl	metres above sea level
MC	Mining claim
MEFT	Ministry of Environment, Forestry and Tourism
mg/m2/day	milligrams per metres squared per day
MIME	Ministry of Industries, Mines and Energy
ML	mining licence
mm	millimetre
Mm^3	million cubic metres
Mt	million tonnes per annum
Mtpa	million tonnes per annum
MW	million watts
Na	sodium
NDP	National Development Plan
NHC	National Heritage Council
NSR	noise sensitive receptor
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter of less than 10 µm (thoracic particles)
$PM_{2.5}$	particulate matter with an aerodynamic diameter of less than 2.5 µm (respirable particles)
Pty	propriety
PV	photovoltaic system

ABBREVIATION	DESCRIPTION
RAB	Rotary Air Blast
RC	Reverse Circulation
Reg	registration
RO	Reverse Osmosis
RoD	record of decision
t	tonnes
TB	tuberculosis
ToR	terms of reference
WHO	World Health Organisation
Zn	zinc

1 INTRODUCTION

1.1 COMPANY BACKGROUND

Environmental Compliance Consultancy (Pty) Ltd (ECC) has been engaged by Grace Simba Investments (Pty) Ltd (hereafter referred to as "the Proponent" or "Grace Simba"), a subsidiary of Andrada Mining (Pty) Ltd to conduct an environmental and social impact assessment (ESIA) amendment and update the environmental and social management plan (ESMP) as part of the environmental clearance certificate renewal application for mining licence (ML) 133. The Proponent holds an environmental clearance certificate for mining activities for base and rare metals, industrial minerals and precious metals on mining licence (ML) 133 in the Erongo Region. The environmental clearance certificate was initially awarded to Uis Tin Mining Company (Pty) Ltd on 17 September 2023. The environmental clearance certificate was then transferred to Grace Simba, maintaining the original issuance and validity dates. The ESIA amendment report has been prepared to update the scope of activities for ML 133. The purpose of the amendment is to revise the Project description by including expanded mineral exploration activities, and to provide a more detailed assessment of the impacts associated with short- to medium-term exploration activities. This amendment does not remove or replace the mining activities already approved. ML 133 is a mining licence issued in terms of the Minerals (Prospecting and Mining) Act, No. 33 of 1992, and mining of the minerals to which the licence relates remains an authorised activity that the Proponent intends to undertake within the licence area. This amendment therefore addresses both the expanded exploration programme and the continued mining activities on ML 133.

Current operations within ML 133 comprise exploration of targeted areas for base and rare metals, industrial minerals and precious metals. Mining of these minerals is authorised under ML 133 and under the existing environmental clearance certificate, and is intended to be undertaken within the licence area over the remaining term of the licence. Both the exploration and the mining phases are accordingly described and assessed in this amendment report.

ML 133 covers an area of approximately 3288 hectares (ha) and is located along the banks of the ephemeral Omaruru River, approximately 35 km southeast (SE) of Uis, within the Nai-Nais community, in the Dâures Constituency, Erongo Region.

The site can be accessed using the D1930 road via C35 road from Uis as shown in Figure 1.

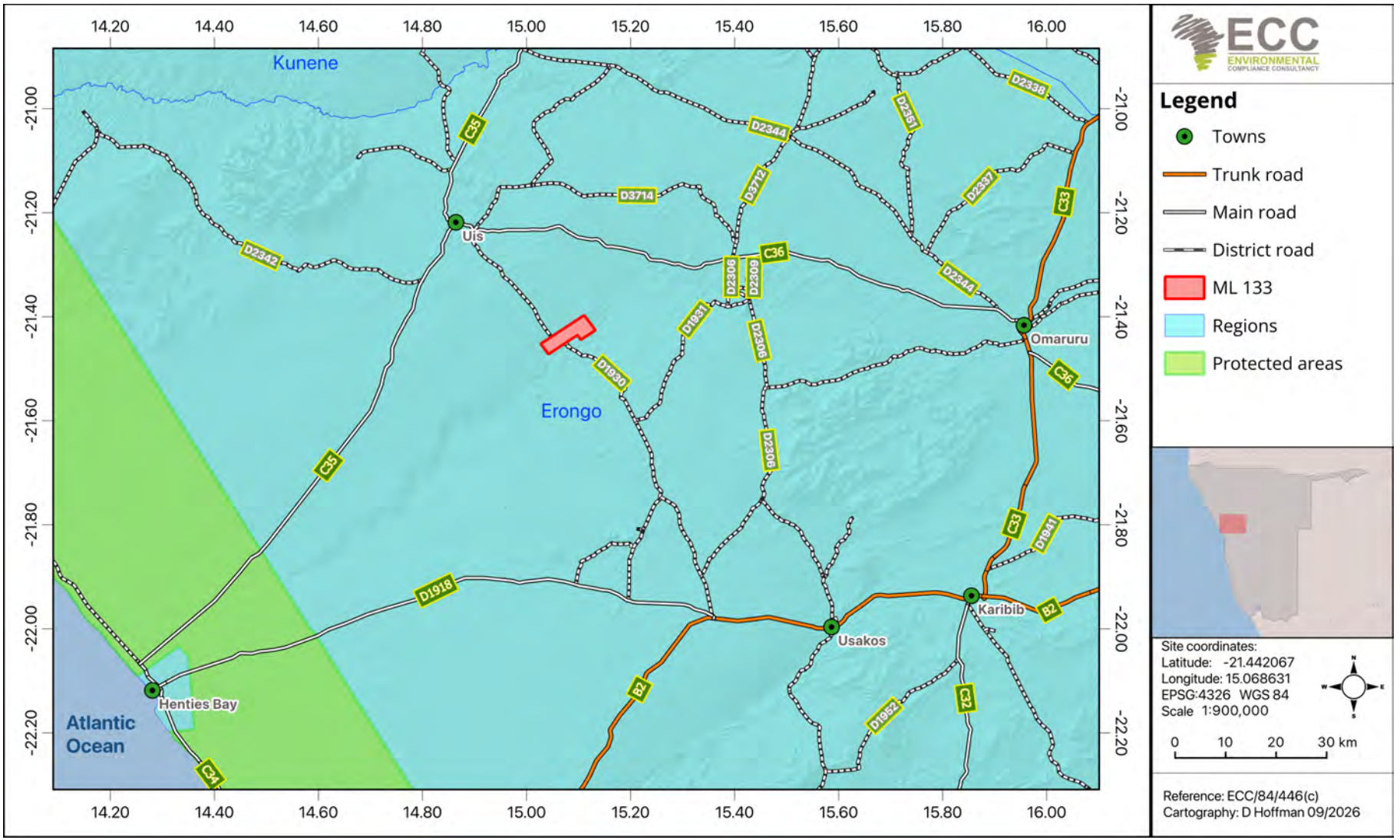


Figure 1 – Locality of the Project

1.2 PURPOSE OF THE DRAFT ESIA AMENDMENT REPORT

An ESIA amendment report has been compiled in terms of the requirements of the Environmental Management Act, No. 7 of 2007, and its associated 2012 regulations. The purpose of this draft amendment report is to expand the current authorised activities to include expanded mineral exploration activities, in addition to the already approved mining activities, to assess the potential environmental and social impacts of both the exploration and the mining phases on ML 133 and present the findings of the ESIA process.

This draft amendment report summarises the prescribed ESIA process followed; provides information on the baseline biophysical and socio-economic environments, Project description and details; outlines the methodology for the assessment phase; includes the assessment findings and presents a draft ESMP, which is provided as Appendix A.

This draft ESIA amendment report and draft ESMP will be issued for public and government review for a period of 7 days from 9 September 2026 – 16 September 2026. After the completion of the 7-day public review period of the draft ESIA amendment and draft ESMP, considering feedback from stakeholders and I&APs, the final amendment report, ESMP and supporting appendices (including a comments and responses report) will be submitted to the competent authority MIME and MEFT for a final record of decision on the Project.

This draft amendment ESIA report is further split into the following chapters:

- Chapter 1 is an introduction to the proposed Project and ESIA process;
- Chapter 2 provides details about the ESIA approach, including the roles of the public and specialists;
- Chapter 3 provides additional detail on the legal environment and requirements;
- Chapter 4 provides sufficient detail on the Project description to identify and assess potential impacts;
- Chapter 5 provides an overview of the screening and scoping results and related baseline information identifying all relevant biophysical and social aspects, taking specialist studies into consideration;
- Chapter 6 provides an overview of the methodology for identifying and evaluating impacts;
- Chapter 7 provides the findings of the environmental and social impact assessment;
- Chapter 8 covers the conclusion; and
- Chapter 9 provides the bibliography.

1.3 THE PROPONENT OF THE PROPOSED PROJECT

The Proponent details are provided in Table 1.

Table 1 - Proponent's details

Company Representative:	Contact Details:
Mr Tim Marais Head of Exploration – Andrada Mining	+27 82 487 6280 tim.marais@andradamining.com

1.4 ENVIRONMENTAL REQUIREMENTS

The Environmental Management Act, No. 7 of 2007, and its associated 2012 regulations, stipulates that an environmental clearance certificate is required before undertaking any of the listed activities that are identified in the Act and its regulations. This draft amendment report also serves to support the environmental clearance certificate renewal application for ML 133. The renewal application will be lodged ahead of this amendment report, so that the environmental clearance certificate for ML 133 remains valid while the amendment is assessed. Potential listed activities triggered by the Project are provided in Table 2.

Table 2 - Listed activities potentially triggered by the Project on ML 133

Source: Environmental Management Act, 2007, and its regulations

Listed activity	As defined by the regulations of Act	Relevance to the Project
Energy generation, transmission, and storage activities	The construction of facilities for: (1a) The generation of electricity.	– The Project will be supported by power supply infrastructure, including generator units and a solar photovoltaic (PV) system with associated battery energy storage.
Waste management, treatment, handling, and disposal activities	(2.3) The importing, processing, use and recycling, temporary storage, transit, or exporting, of waste.	– General (non-hazardous) solid waste generated by the Project and accommodation camp(s) will be collected, stored in designated containers and disposed of at an approved local municipal waste disposal facility or landfill site (i.e. local disposal site in Uis or Henties Bay waste disposal site). – Hazardous and hydrocarbon waste shall be collected by a licensed waste contractor and transported to the nearest permitted industrial hazardous waste storage and handling facility. – Temporary portable chemical toilets will be used during field exploration activities, while a French drain system serves the camp. – Shower and kitchen greywater shall be disposed according to municipal requirements and shall not be discharged near drainage lines. – Waste rock, residue and processing waste generated during the mining phase will be managed within the

Listed activity	As defined by the regulations of Act	Relevance to the Project
		approved waste rock dump, stockpile and residue storage footprints on ML 133, in accordance with the ESMP.
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. 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.	– The Project involves an expanded exploration programme including geological mapping, geophysical surveys and sampling by means of drilling, trenching, grab sampling and bulk sampling, undertaken to identify and assess mineralisation potential within the ML. – ML 133 is a mining licence and mining of base and rare metals, industrial minerals and precious metals remains an authorised activity within the licence area. The mining activities currently listed for ML 133, which are covered by the Proponent's routine environmental compliance monitoring and reporting, remain applicable and include open pit mining, drilling and blasting, loading and hauling of ore and waste rock, crushing, screening and processing of ore, stockpiling of ore, waste rock and residue, and the construction and maintenance of haul and access roads and associated support infrastructure. – The renewal of the mining licence, the environmental clearance certificate and any related authorisation required in terms of the Minerals (Prospecting and Mining) Act, No. 33 of 1992 is itself a listed activity in terms of item 3.1.
Forestry activities	4. The clearance of forest areas, deforestation, afforestation, timber harvesting, or any other related activity that requires authorisation in	– Limited vegetation clearing may be required for tracks and drilling access, and, during the mining phase, for the

Listed activity	As defined by the regulations of Act	Relevance to the Project
	terms of the Forest Act, 2001 (No. 12 of 2001) or any other law.	pit, waste rock dump, stockpile, haul road and plant footprints.
Water resource developments	8.1 The abstraction of ground or surface water for industrial or commercial purposes.	– The Proponent holds a valid water abstraction licence issued in accordance with the Water Resources Management Act, No. 11 of 2013 and 2023 Regulations by the Department of Water Affairs (DWA) within the Ministry of Agriculture, Fisheries, Water and Land Reform (MAFWLR). – Water will be abstracted from existing groundwater boreholes for the drilling operations, and, during the mining phase, for mining, mineral processing and dust suppression. – A temporary water treatment system (reverse osmosis (RO) plant) is on site to provide potable water.
Hazardous substance treatment, handling, and storage	9.1 The manufacturing, storage, handling, or processing of hazardous substance defined in the Hazardous Substances Ordinance, 1974.	– Field exploration activities will involve the storage and handling of hazardous and hydrocarbon substances such as fuel, lubricants and drilling fluids. – Refuelling of vehicles will be undertaken off-site (Uis and Usakos). – Portable sanitation facilities shall be provided on site and regularly serviced by an approved contractor. – Shower and kitchen greywater shall be disposed according to municipal requirements and shall not be discharged near drainage lines.

Listed activity	As defined by the regulations of Act	Relevance to the Project
		– Diamond drilling cuttings shall be contained within the drill pad area and if contaminated, disposed through a hazardous waste facility. – Explosives required for the mining phase will be transported, stored, handled and used by a licensed contractor in accordance with the Explosives Act, No. 26 of 1956 and its regulations.

2 APPROACH TO THE ASSESSMENT

2.1 PURPOSE AND SCOPE OF THE ASSESSMENT

The aim of this draft ESIA amendment assessment is 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 implement the identified assessment methodology (Chapter 6). The process followed through the assessment is illustrated in Figure 2 and is detailed further in Chapter 6. The assessment covers the expanded exploration programme proposed for ML 133 together with the mining activities already authorised under the licence.

2.2 THE ASSESSMENT PROCESS

The ESIA methodology applied to this draft ESIA amendment 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 ECC's combined relevant ESIA experience.

Furthermore, this draft ESIA amendment assessment was undertaken for the Proponent in accordance with Namibian legal requirements.

This draft ESIA assessment is a formal process. The potential impacts that the Project will have on the biophysical, social and economic environments are identified, assessed and reported so that the significance of potential impacts can be taken into account when considering a record of decision (RoD) 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 draft ESIA amendment assessment, is illustrated in Figure 2, and is detailed further in the following sections.

At this juncture, the draft ESIA amendment assessment presented here has been carried out in accordance with the short – medium term indicative exploration plans received from the Proponent, with the intent on expanding the existing ESMP to bring these activities in line with best practice. This short to medium term focus does not displace the longer term intent for ML 133. Mining of base and rare metals, industrial minerals and precious metals remains an authorised activity under the mining licence and under the existing environmental clearance certificate, and the approvals and management obligations attaching to those activities remain in force.

1. Project screening

Complete

The first stages in the draft ESIA amendment 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, to determine ways in which the Project might interact with the biophysical, social and economic environments.

As this is a renewal application with the inclusion of an amendment – no registration of the Project is required or distribution of a background information document. The existing application number is utilised on the MEFT DEAF portal.

2. Establishing the assessment scope

Complete

Where a draft ESIA amendment 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. The following environmental and social topics were scoped into the assessment, as there was the potential for significant impacts to occur. Impacts that are identified as potentially significant during the screening and scoping phase are taken forward for further assessment in chapter 7 of this report. These are:

BIOPHYSICAL ENVIRONMENT
- Soils
- Surface and ground water
- Biodiversity

SOCIOECONOMIC ENVIRONMENT
- Employment
- Skills development
- Tourism
- Air quality
- Traffic
- Occupational health and safety
- Heritage and archaeology
- Noise
- Visual and sense of place

3. Baseline studies

Complete

A robust baseline is required, 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 Project area has been studied extensively from 2019 – 2022 for various purposes, this literature was available and referenced. The Project site-specific area has been studied as part of the draft ESIA amendment process and the following has been conducted as part of this assessment:
- Desktop studies
- Consultation with stakeholders (where required)
- Specialist studies

The environmental and social baselines are provided in this report in chapter 5.

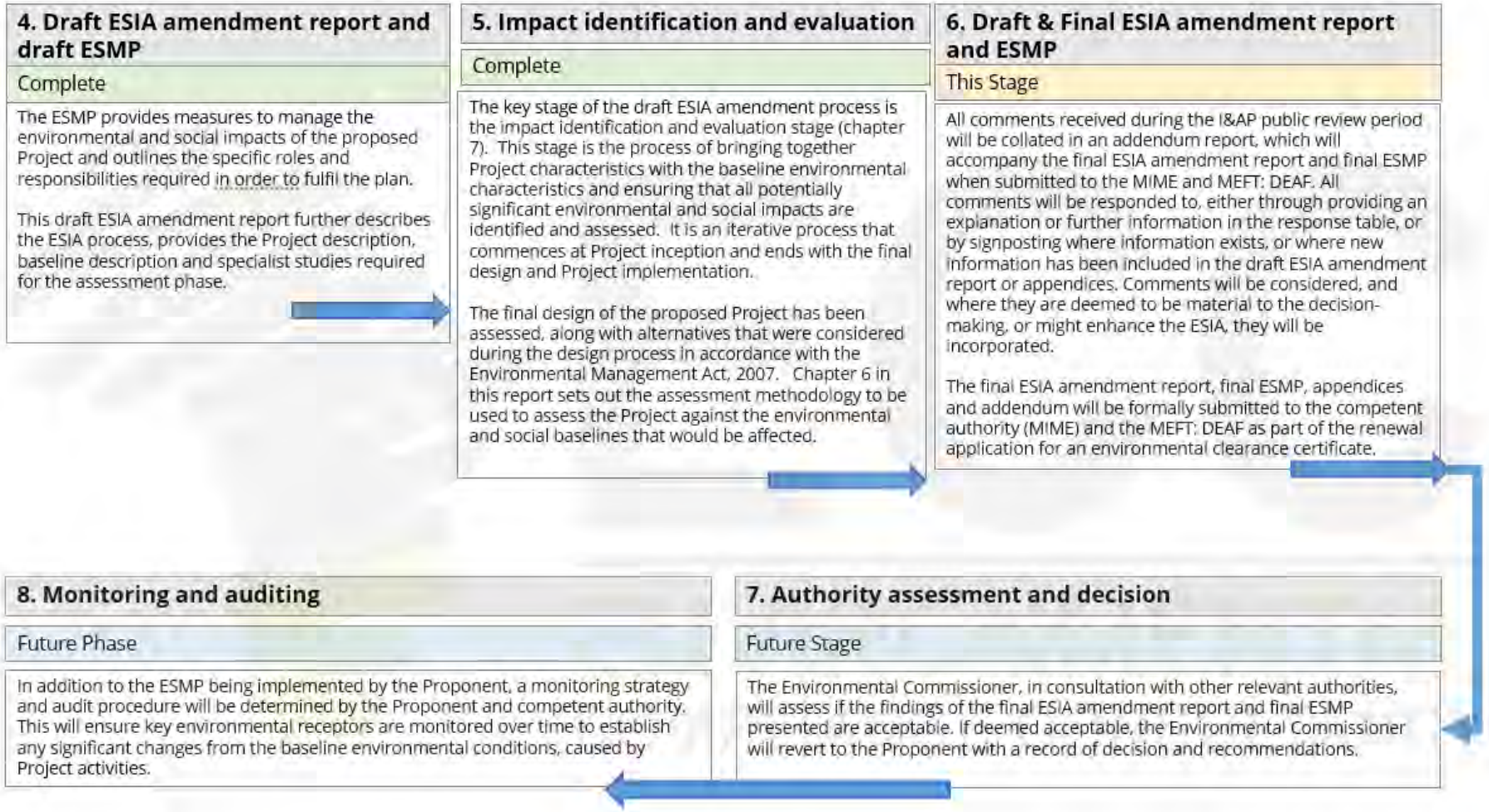


Figure 2 - ESIA process and stages complete

2.3 STUDY AREA

The ESIA study area (ML 133) for this draft amendment report and environmental clearance certificate renewal has been defined according to the geographic scope of the receiving environment and potential impacts that could arise because of the proposed Project within that area. The receiving environment is a summary term for the biophysical and socioeconomic environment that is described in the baseline chapter (Chapter 5). The study area is presented in Figure 3 below. The study area lies within the Tsiseb Communal Conservancy and has been used for mining historically. Mining remains an authorised activity within ML 133 and the study area has therefore been defined to accommodate both the expanded exploration programme and the continued mining activities. Sensitive receptors, shown on Figure 3, are the places where people live or work closely enough to Project activities to be affected by them, in this case the employee and contractor camps, the core shed and the occupied houses in and around the licence area. A total of 16 dwellings (houses) were identified.

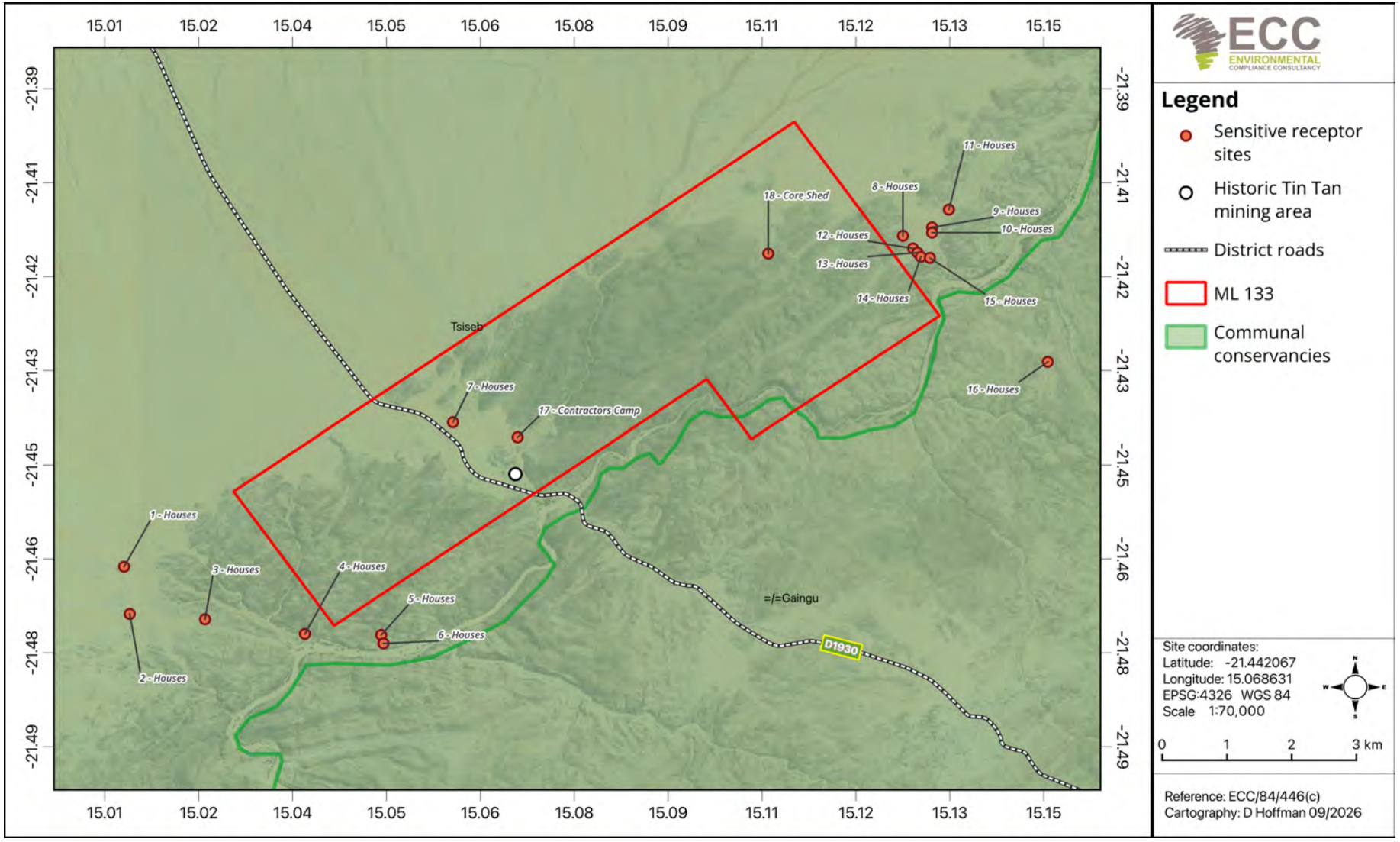


Figure 3 - Study area and sensitive receptor sites (employee camp and houses) within ML133 (Sourced: Airshed, 2026)

2.4 PUBLIC CONSULTATION

Public participation and consultation as stipulated in Section 21 of the Environmental Management Act, 2007 and its regulations was undertaken as part of the original environmental clearance certificate application process for ML 133. Consultation is a critical component of any ESIA process and is vital for achieving transparent decision-making.

Public consultation for the ML 133 Project was undertaken in accordance with the Environmental Management Act (No. 7 of 2007) and the associated Environmental Impact Assessment Regulations (2012). A public consultation meeting was held on 9 August 2024 at the Uis Community Hall (Appendix B), providing interested and affected parties (I&APs), including community members, neighbouring landowners, government representatives and other stakeholders, with an opportunity to obtain information on the proposed Project, raise questions and provide comments and concerns for consideration during the environmental and social assessment process.

In addition to the formal public consultation meeting, ongoing stakeholder engagement is maintained as the Project progresses with exploration and mining activities. Regular consultation is conducted with neighbouring landowners and other directly affected stakeholders to discuss planned activities, facilitate access where required, address concerns and provide updates on Project progress. Feedback received through these engagements is considered in Project planning and incorporated into environmental management measures where appropriate. As this is a renewal and amendment process, no public meetings or advertisements are required to the public. I&APs will be informed of this draft ESIA amendment report and draft ESMP for a review period of 7 days.

2.5 IDENTIFICATION OF KEY STAKEHOLDERS AND INTERESTED AND AFFECTED PARTIES

A stakeholder mapping exercise should be undertaken to identify individuals or groups of stakeholders and the method in which they will be engaged during the draft ESIA amendment process. Stakeholders can be approached through direct communication (letters and phone calls), in person meetings or directly by email.

A summarised list of stakeholders for this Project is provided below:

- Directly and indirectly affected landholders, community members and leaders;
- Daures Constituency;
- Dâure Daman Traditional Authority
- Tsiseb Communal Conservancy;
- Nai-Nais Community;
- The general public with an interest in the Project;
- Ministry of Environment, Forestry and Tourism (MEFT);
- Ministry of Agriculture, Fisheries, Water and Land Reform (MAFWLR);

- Ministry of Industries, Mines and Energy (MIME);
- National Heritage Council (NHC);
- Erongo Regional Council; and
- Uis Village Council.

3 REVIEW OF THE LEGAL ENVIRONMENT

3.1 RELEVANT NATIONAL LEGISLATION

This chapter outlines the regulatory framework applicable to the proposed Project. As stated in Chapter 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 the current mining activities on ML 133. This amendment does not seek to substitute or reduce the currently authorised mining activities; it seeks only to broaden the scope of the environmental clearance certificate to formally include expanded exploration activities.

The Project area is located outside of any national parks, heritage-listed areas or areas of significance. It is located in the Tsiseb communal conservancy and falls under the tourism, farming and wildlife management zone. The Revised National Policy on Prospecting and Mining identifies communal conservancies containing high-value species, important wildlife habitats and wildlife corridors as areas requiring particular protection. Although the Policy does not provide for the blanket exclusion of all communal conservancies, areas within such conservancies that have significant biodiversity conservation value may be excluded from prospecting and mining. The potential for such areas has been investigated as part of the specialist biodiversity assessment. The Project area falls within the larger Omaruru basin area, and many communal farmers and research communities depend on this catchment area. The Department of Water Affairs monitors this area closely.

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 lists specific permits and licences for the Project.

3.2 RELEVANT NATIONAL POLICIES AND PLANS

Table 3 - Details of the regulatory framework as it applied to the 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. The constitution refers that the state shall actively promote and maintain the welfare of the people by adopting policies aimed at the following: "Maintenance of ecosystems, essential ecological processes and biological diversity of Namibia, and the utilisation of living, natural resources on a sustainable basis for the benefit of all Namibians, both present, and future."	The 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. 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."	Exploration activities on ML 133 trigger listed activities under the Environmental Management Act's regulations, requiring an amended ESIA to formally incorporate them into the Project's authorisation. Current mining activities remain covered under the existing valid Environmental Clearance Certificate and licence for ML 133.

National regulatory framework	Summary	Applicability to the Project
	The Act sets out the requirements associated with licence terms and conditions, such that the holder of a mineral licence shall comply with. 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 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. The Act states that an EIA should be undertaken and submitted as part of the environmental clearance certificate application process. 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 draft ESIA amendment report documents the findings of the environmental and social assessment undertaken for the proposed exploration activities and the mining activities already authorised on ML 133. The process has been undertaken in line with the requirements under the Act and its 2012 regulations.
Water Resources Management Act, No. 11 of 2013 and the Regulations of 2023.	This Act provides for the control, conservation and use of water for domestic, agricultural, urban, and industrial	The Proponent holds a valid water abstraction licence and a drilling licence

National regulatory framework	Summary	Applicability to the Project
	purposes; and to make provision for the control of certain activities on or in water. The Department of Water Affairs, within the Ministry of Agriculture, Water and Land Reform (MAWLR), is responsible for the administration of the Act.	issued in accordance with the Water Resources Management Act, No. 11 of 2013 and 2023 Regulations by the Department of Water Affairs (DWA) within the Ministry of Agriculture, Fisheries, Water and Land Reform (MAFWLR). The Act establishes obligations to prevent water pollution. Measures to minimise the potential contamination of surface water and groundwater are incorporated into the draft ESMP (Appendix A).
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.	All planned activities will be confined to the boundaries of the ML. Measures to minimise disturbance to soils and vegetation, including the conservation of topsoil and native vegetation where possible, are incorporated into the draft ESMP to support the rehabilitation of disturbed areas following the completion of exploration activities.
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.	Project activities may require limited vegetation clearing where necessary to facilitate exploration and mining activities. The Proponent will ensure that all required

National regulatory framework	Summary	Applicability to the Project
	Section 21 states that no person shall cut, destroy, or remove vegetation that is growing within 100 metres of a river, stream, or watercourse. Section 23 requires a permit from the Director for the clearance of vegetation on more than 15ha 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.	permits and approvals are obtained prior to the commencement of any vegetation clearing.
National Heritage Act, No. 27 of 2004.	The Act provides provision for the protection and conservation of places and objects with heritage significance. Section 55 compels mining companies to report any archaeological findings to the National Heritage Council. Subsection 9 allows the NHC to issue a consent, subject to any conditions that the Council deems necessary.	An archaeological and cultural specialist study was undertaken in January 2024 to identify and assess the archaeological, historical and cultural heritage resources within the proposed Project area. The assessment identified heritage resources within the Project area and assessed their significance in accordance with the requirements of the National Heritage Act, 2004 (Act No. 27 of 2004). The findings of the specialist study informed the impact assessment.

National regulatory framework	Summary	Applicability to the Project
		The Proponent intends to apply for the necessary heritage consent permit from the National Heritage Council (NHC). In cases where new heritage sites are discovered during exploration or mining, a *Chance Find Procedure* will be followed.
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 Proponent must adhere to all labour provisions and guidelines, as stipulated in the Labour Act. The Project 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 require the transportation of personnel, equipment, materials and supplies to support the proposed exploration activities. All employees, contractors and service providers will comply with applicable national road traffic legislation and regulations when operating 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.	The Proponent must handle hazardous substances and hydrocarbons, such as potential chemicals, oils, lubricants and fuels, in a safe and responsible way,

National regulatory framework	Summary	Applicability to the Project
	This applies to the manufacture, sale, use, disposal, and dumping of hazardous substances, as well as their import and export.	thereby avoiding any pollution or harm to the environment.
Petroleum Products and Energy Amendment Act, No. 3 of 2000	Provides provision for the Minister to regulate the cleaning up of petroleum product spills, leaks and related incidents. The Proponent is required to carry all costs associated with such incidents.	The Proponent must take into consideration the requirements that are stipulated in both the Act and its Regulations. Measures in the draft ESMP (Appendix A) sets out methods to comply with the Regulations, specifically waste disposal during exploration and mining. If fuel is to be stored on site (>200 L petrol or >600 L diesel) a consumer installation certificate will be applied for from MIME.
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.	Exploration and mining activities may both generate dust. 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 draft ESMP (Appendix A).

3.3 NATIONAL POLICIES AND PLANS

Table 4 - Namibian national policies and plans applicable to the 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. 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).
Sixth National Development Plan (NDP6)	The NDP6 is the sixth plan in the series of seven (7) five-year national development plans that outline the objectives and aspirations of Namibia's long-term vision as expressed in Vision 2030. There are four (4) pillars on which NDP6 is built, these are: – Economic growth, transformation and resilience; – Human development and community resilience; – Environmental sustainability; and Effective governance and public service delivery.	The Proponent is encouraged to support Government's objectives of the NDP6 through creating opportunities for continued employment.
Namibia's Green Plan, 1992	Namibian has developed a 12-point plan for integrated sustainable environmental management to ensure a safe and healthy environment and to maintain a viable economy. Clause 2 (f) makes specific mention to guidelines related to sustainable development.	Environmental best practises shall be adhered to during the field exploration and mining programmes.

Policy or plan	Description	Relevance to the Project
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. 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 objectives of the Minerals Policy are in line with the objectives of the Fifth National Development Plan that includes the reduction of poverty, employment creation, and economic empowerment in Namibia.	The Proponent must conform to the Policy and where applicable support local spending and procurement. The Proponent is required to adhere to the Policy's general guidelines by implementing appropriate legal mechanisms to ensure effective and sustainable environmental management from the outset. The scoping and impact assessment process is one such mechanism, aimed at safeguarding environmental integrity throughout the Project's lifecycle.
Pollution Control and Waste Management Bill (draft), 1999	This draft Act aims to promote sustainable development by regulating the discharge of pollutants into the air, land and sea. Additionally, it ensures that Namibia has an integrated waste management approach and complies with international legislation.	The Proponent shall take note of the draft bill requirements and ensure conditions are adhered to with regards to containment of pollutants.
Draft National Policy on Prospecting and Mining in Protected Areas, other Areas with High Value Species and Environmentally Sensitive Areas, 2024/2025 - 2034/2035	The vision of the Policy is to develop integrated and sustainable prospecting and mining in Namibia to support economic growth, whilst maintaining the integrity of ecosystems and natural resources, and avoiding degradation of areas highly sensitive for their ecological, social and/or cultural heritage value. This is to	The Proponent shall ensure that Project activities comply with the Policy by identifying and avoiding environmentally sensitive areas and areas of high biodiversity value within the Project footprint.

Policy or plan	Description	Relevance to the Project
	be achieved through identification of key ecological and culturally sensitive areas within Namibia's protected areas and other areas with high value species and environmentally sensitive areas, development of a Decision Support Tool, and improvement in the procedures for granting different exploration and mining licenses. This Policy presents an important opportunity to strengthen inter-ministerial collaboration and coordination, which will support improved integrated and sustainable development planning that fosters economic growth whilst maintaining the integrity of ecosystems and natural resources upon which Namibia's people and its economy depend. The Policy has been developed to complement various regulations and policies relevant to prospecting and mining, in order to ensure minimal negative impacts on the environment. Where necessary, specific Memoranda of Understanding shall be developed between prospecting and mining companies, the MEFT and the MME to set out additional implementation mechanisms.	

3.4 NATIONAL CERTIFICATES, PERMITS OR LICENCES

Table 5 – National certificates, permits or licences relevant to the Project

Permit or licence	Act / Regulation	Related activities requiring permits	Relevant Authority
Environmental clearance certificate (Valid certificate– ECC2300764)	Environmental Management Act, No. 7 of 2007	Required for all listed activities shown in Table 4 of Chapter 1.	Ministry of Environment, Forestry and Tourism (MEFT)
Mining licence (No. 133)	Section 90 (application for a mining licence) of the Minerals Act, No. 33 of 1992	Mining related activities, i.e., issuance of the mining licence.	Ministry of Industries, Mines and Energy (MIME)
Water abstraction licences (No.12249)	Water Resources Management Act, 2013 (Act No. 11 of 2013) and 2023 Regulations	Required for groundwater abstraction for exploration and mining related activities.	Ministry of Agriculture, Fisheries, Water and Land Reform (MAFWLR): Department of Water Affairs (DWA)
Wastewater treatment, effluent discharge and reuse licence	Water Resources Management Act, 2013 (Act No. 11 of 2013) and 2023 Regulations	Required for domestic water advanced treatment facilities, septic/conservancy tanks, French drains/soak away systems, discharge of sewage and/or excess industrial wastewater. Will only be triggered when it becomes applicable.	Ministry of Agriculture, Fisheries, Water and Land Reform (MAFWLR): Department of Water Affairs (DWA)
Permit for the clearing of vegetation	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 Environment, Forestry and Tourism (MEFT), Omaruru Forestry office

Permit or licence	Act / Regulation	Related activities requiring permits	Relevant Authority
Notice of intention to drill and borehole registration	Water Resources Management Act, No. 11 of 2013 and 2023 Regulations	Despite any other law to the contrary, a person who proposes to drill a new borehole, or to improve any existing borehole, for the purpose of searching for or extracting minerals or other substances, or for road construction or any other purposes other than exploring for groundwater must inform the Minister of such proposal, furnish the Minister with such data and information as the Minister may require in connection with such borehole drilling or improvement and take such measures as may be required by the Minister for conserving and protecting groundwater. Any excess water collected as a result of any operation contemplated in subsection (1) must be disposed of as prescribed.	Ministry of Agriculture, Fisheries, Water and Land Reform (MAFWLR): Department of Water Affairs (DWA)
Heritage Consent Permit	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)

4 PROJECT DESCRIPTION AND PROPOSED PROJECT AMENDMENTS

4.1 PROJECT BACKGROUND

The Project is located within ML 133, which covers an area of approximately 3,288 ha and is located along the banks of the ephemeral Omaruru River, approximately 35 km southeast of the Uis town, in the Nai-Nais community, Dâures Constituency, Erongo Region. ML 133 is in close proximity to the existing operational ML 134 mining area, where should mining be approved in the future, ore could be extracted and transported to the operational processing facility on ML 134.

Operations conducted by the Proponent to date at Lithium Ridge include bulk sampling from old workings for metallurgical test work, geological field mapping, geophysical surveys, channel sampling for assaying which were conducted and concluded in February 2023, RC and DD drilling. Over 700 pegmatite samples have been collected. The assay results indicate potential of future geological modelling and field validation works. In addition, approximately 1978 tonnes of ore material was mined from the licence area and transported to Uis for processing at the Uis Tin Mine. Ore extracted from the licence is detailed in the monthly returns submitted to MIME.

4.2 PROPOSED AMENDMENT ACTIVITIES

The short-medium term exploration operations within ML 133, which form the basis for this ESIA, involve field exploration and drilling of targeted areas for base and rare metals, industrial minerals and precious metals. Operations will focus on exploration, resource definition and feasibility assessments. This amendment does not remove or replace the mining activities already approved under the existing environmental clearance certificate. ML 133 is a mining licence and the mining activities authorised under it, which are covered by the Proponent's routine environmental compliance monitoring and reporting and by the listed activities set out in Chapter 1, remain part of the Project description and are carried through to the draft ESMP. Should the Project progress into a full-scale mining phase, the ESIA and ESMP will be updated accordingly to ensure any potential associated environmental and social impacts incorporate appropriate mitigation, management and monitoring measures in line with best practice.

The exploration programme comprises the following activities and associated support infrastructure (Figure 4):

- Establishment of temporary site camp infrastructure such as site offices, accommodation (contractor and employees camp), storage and ablution facilities;
- Construction of storage areas;
- Installation of power supply infrastructure (i.e. generator units and the photovoltaic (PV) solar system and battery storage unit);

- Installation of water storage tanks for domestic use and drilling operations;
- Drilling (rotary air blast (RAB), reverse circulation (RC) and DD) and associated excavation activities;
- Surface mapping and sampling programmes (grab, soil and trench sampling);
- Geophysical surveys (e.g. ground-penetrating radar (GPR) and electrical resistivity tomography (ERT));
- Aerial surveys;
- Waste management;
- Environmental baseline monitoring (climate monitoring, dust fallout monitoring and environmental compliance audits);
- Construction of access roads and drill pads; and
- Rehabilitation.

The mining activities authorised under ML 133 and covered by the Proponent's routine environmental compliance monitoring and reporting, comprise open pit mining, drilling and blasting, loading and hauling of ore and waste rock, crushing, screening and processing of ore, stockpiling of ore, waste rock and residue, the construction and maintenance of haul and access roads, and the associated support infrastructure described above. Ore extracted from ML 133 is transported to and processed at the existing processing plant at Uis.

Figure 4 - Visual representation of the associated support infrastructure on ML 133

4.3 UTILITIES

4.3.1 POWER SUPPLY

ML 133 will be supported by power supply infrastructure, including generator units and a solar PV system with associated battery energy storage.

4.3.2 WATER SUPPLY

Water will be abstracted from existing nearby groundwater boreholes for the drilling operations, and for the authorised mining and processing activities. The Proponent holds a valid water abstraction licence issued in accordance with the Water Resources Management Act, No. 11 of 2013 and 2023 Regulations by the Department of Water Affairs (DWA) within the Ministry of Agriculture, Fisheries, Water and Land Reform (MAFWLR). Additionally, a temporary water treatment system (reverse osmosis (RO) plant) is on site to provide potable water for all exploration and mining activities.

4.3.3 WORKFORCE ACCOMMODATION

Approximately 60 personnel will be employed during exploration; however, around 85% of the workforce will be accommodated at the on-site camp, with only 15% commuting daily from Uis.

4.3.4 LIQUID AND SOLID WASTE MANAGEMENT

Ablution facilities (flush-type portable toilets) will be regularly serviced and maintained to ensure hygienic conditions. All sewage waste shall be removed off-site by a registered contractor and disposed of at a registered municipal wastewater treatment facility. Shower and kitchen greywater shall be disposed according to municipal requirements and shall not be discharged near drainage lines.

General (non-hazardous) solid waste generated by the Project and accommodation camps will be collected, stored in designated containers and disposed of at an approved municipal waste disposal facility or landfill site (i.e. local disposal site in Uis or Henties Bay waste disposal site). Hazardous and hydrocarbon solid waste shall be collected by a licensed waste contractor (e.g., Rent-A-Drum Namibia) and transported to the nearest permitted industrial hazardous waste storage and handling facility.

4.4 REHABILITATION

Once exploration and mining activities have been completed, all disturbed areas will be rehabilitated to a condition that is as close as reasonably possible to their original state and in line with the requirements of the Project draft ESMP (Appendix A). Appropriate rehabilitation measures will be identified prior to the commencement of the exploration and mining programmes and will be communicated to local landowners within or adjacent to ML 133.

Photographic records will be taken before and after rehabilitation to monitor the effectiveness of the restoration measures. These records will be included in the bi-annual reports submitted to the Ministry of Environment, Forestry and Tourism (MEFT). The Proponent is committed to rehabilitating all areas disturbed as a result of the exploration and mining activities.

5 ENVIRONMENTAL AND SOCIAL BASELINE

5.1 BASELINE DATA COLLECTION

This chapter presents the findings of both the desktop study and the specialist studies undertaken for the Project. The desktop component draws on a review of literature, spatial data and publicly available reports regarding the biophysical and socio-economic environment of the Project area, while the specialist studies provide focused, project-specific findings from site visits that have been incorporated to inform this assessment, which is discussed further in section 5.2 below.

ML 133 is a mining licence and the Project comprises both exploration and mining activities on the licence. The baseline described in this chapter therefore provides the reference condition against which the impacts of both exploration and subsequent mining on ML 133 are assessed in Chapter 7.

5.2 SPECIALIST STUDIES

The following specialist studies shown in Table 6 were commissioned and completed, to determine the current state of the baseline environments:

Table 6 - Specialist studies commissioned and completed for the ESIA amendment

Study Area	Purpose	Specialist and Report date
Terrestrial ecology/Biodiversity	– Biodiversity and habitat. – Identification of species of concern and sensitive areas. – Impacts of drilling operations on habitats and biodiversity (if any). – Comparison of dry season (November 2023) and wet season (March to April 2024) conditions.	– Dr. Peter Cunningham (Environment & Wildlife Consulting, Namibia) (Appendix C) – April 2024
Hydrology	– Baseline Assessment – sourcing of baseline climatic and hydrological data. – Storm protection. – Flood assessment. – Hydrological impact assessment undertaken using ECC's impact assessment methodology.	– Hydrologic Consulting (Appendix D) – October 2024
Air quality	– Provide emission standards and dust suppression requirements.	– Mrs Hanlie Liebenberg-Enslin (Airshed Planning Professionals) (Appendix E)

Study Area	Purpose	Specialist and Report date
	– Assess prevailing wind directions and possible effects of emissions on the process and/or personnel. – Model potential air quality impacts.	– May 2026
Noise	– To determine the significance of impacts on the acoustic environment and potential noise sensitive receptors (NSRs) given noise generated by activities proposed as part of the project.	– Ms Renee von Gruenewaldt (Airshed Planning Professionals) (Appendix F) – May 2026
Traffic	– To assess the anticipated transport impacts and road safety implications of the proposed inclusion of exploration activities within the approved mining activities on ML 133. – To determine whether the existing road network can safely accommodate exploration-related traffic in addition to the traffic generated by the approved mining activities.	– Mr Hugo Engelbrecht (Innovative Transport Solutions) (Appendix G) – July 2026
Heritage and culture	– Identify significant heritage objects, graves and paintings within ML 133.	– Dr Eliot Mowa (ESM Archaeological and Cultural Heritage Consultants) (Appendix H) – October 2024

5.3 LOCATION

The proposed Project site is located approximately 35 km southeast of the town of Uis, in the northern part of the Erongo Region, and approximately 120 km inland from the Atlantic Ocean. The site falls within the Nai-Nais community area and is not located in close proximity to any major town or city. The Omaruru River traverses the eastern border of the Mining Licence (ML) area, forming an important hydrological feature of the site. Uis is located within the Dâures Constituency which has a radius of approximately 120 km from the B2 road to the Ugab River. The B2 main road can be accessed from Uis via the D1930 gravel road, which traverses ML 133 and

extends southeast towards Usakos for approximately 132 km. The small settlement of Okombahe is located approximately 60 km southeast of Uis along this route.

5.4 LAND USE

The Project is situated in a predominantly communal subsistence agricultural region dominated by small stock farming land uses and to a lesser extent small-scale mining. The regional area is characterised by the high endemism and biodiversity associated with the desert climate and the Brandberg Mountain, which is situated approximately 50 km northwest of ML 133 (Figure 5). The Project area (ML 133) is part of the communal Okombahe Reserve and falls within the Tsiseb conservancy, part of the larger Dâures Constituency. Farming activities on the surrounding communal land are expected to continue relatively undisturbed during exploration. The effect of mining on grazing land within ML 133 is assessed in Chapter 7.

Historical tin mining took place on ML 133 at the Tin Tan Mine and the remains of the old workings and mine buildings are still present on the licence (see section 2.3). ML 133 is therefore not a greenfields site. Current land use on the licence comprises communal small stock grazing, mineral exploration by the Proponent and a small number of dwellings associated with the Nai-Nais community located within and immediately adjacent to the licence (see section 2.3).

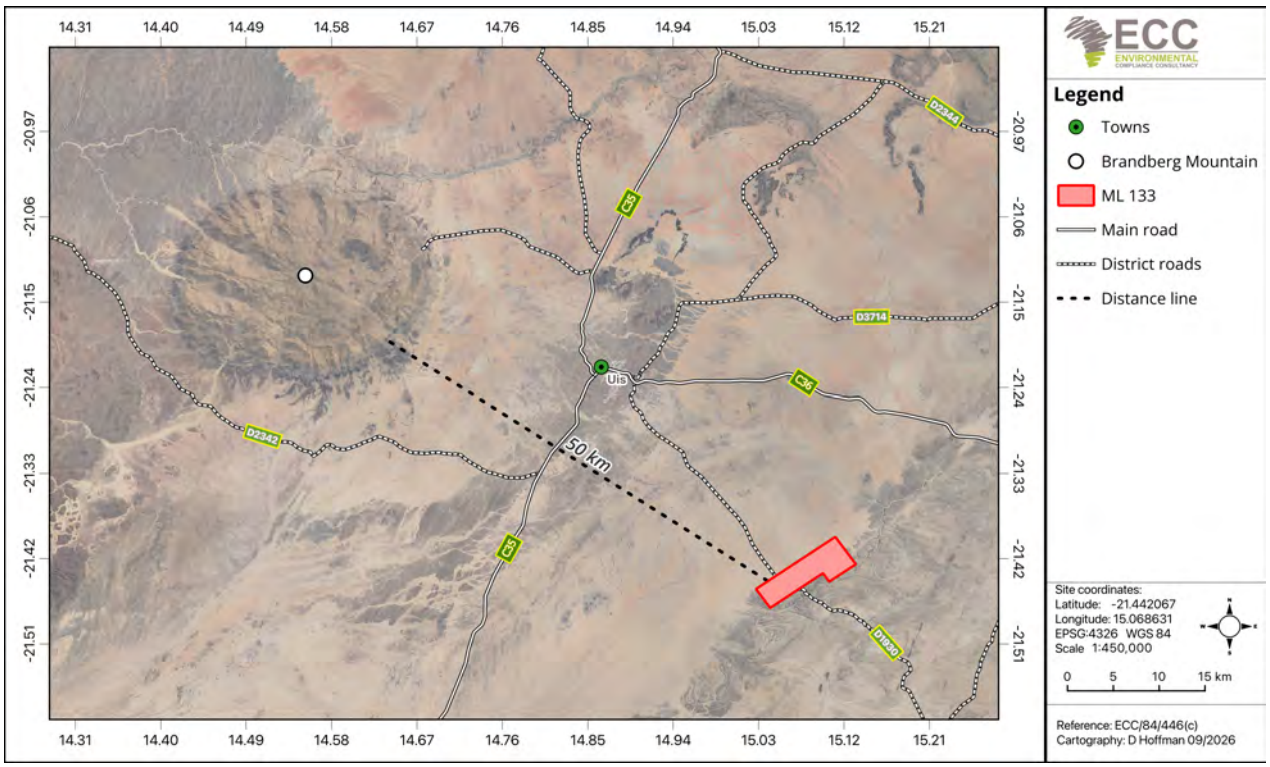


Figure 5 – Distance of the Brandberg Mountain from ML 133

5.5 GEOLOGICAL SETTING

The regional geology of the ML 133 area consists mainly of the Swakop Group, with the Kalahari and Namib Sands located to the west (Figure 6). The Swakop Group is part of the Damara Supergroup and Gariep Complex which date back to 850 million years ago (Bubenzer, 2002). Rocks of the Swakop group tend to be thicker towards the north zone. One of the main rock types are the red-granites, which are composed by a range of monzogranite to alkali-feldspar granite and characterised to be a homogenous intrusion. ML 133 comprises a swarm of LCT-type pegmatites within the NaiNais–Kohero pegmatite belt, hosting polymetallic mineralisation of lithium (dominantly as spodumene, with petalite also present), tin and tantalum. Mapping and channel sampling have identified 99 individual pegmatite bodies along a confirmed strike of ~ 9 km, with mineralisation confirmed to continue at depth through subsequent RC and diamond drilling (Andrada Mining, 2023).

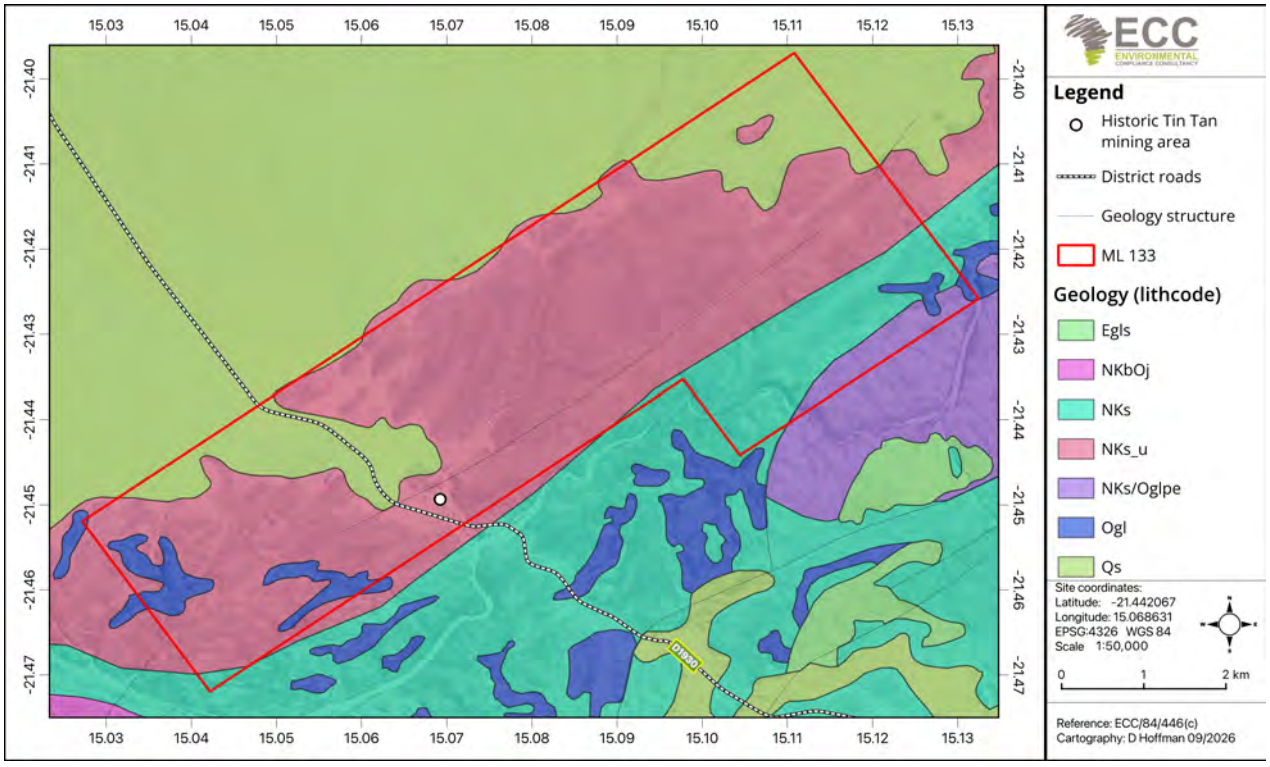


Figure 6 - Geological setting of ML 133

5.6 TOPOGRAPHY AND SOIL

The topography of the ML is relatively rocky with various uneven rock outcrops. The elevation varies due to it being on the riverbanks of the Omaruru river. Smaller rivers flow into the larger Omaruru river causing this fluctuation in elevation, it varies between 700 m to 1100 m above mean sea level (Figure 7). The fluctuating topography observed may not be attributed solely to river flow, but could also reflect underlying structural controls, including folding and faulting. Such structural

deformation can produce variations in rock competency and orientation, resulting in ridges, valleys and other topographic irregularities that mirror the underlying geological structure.

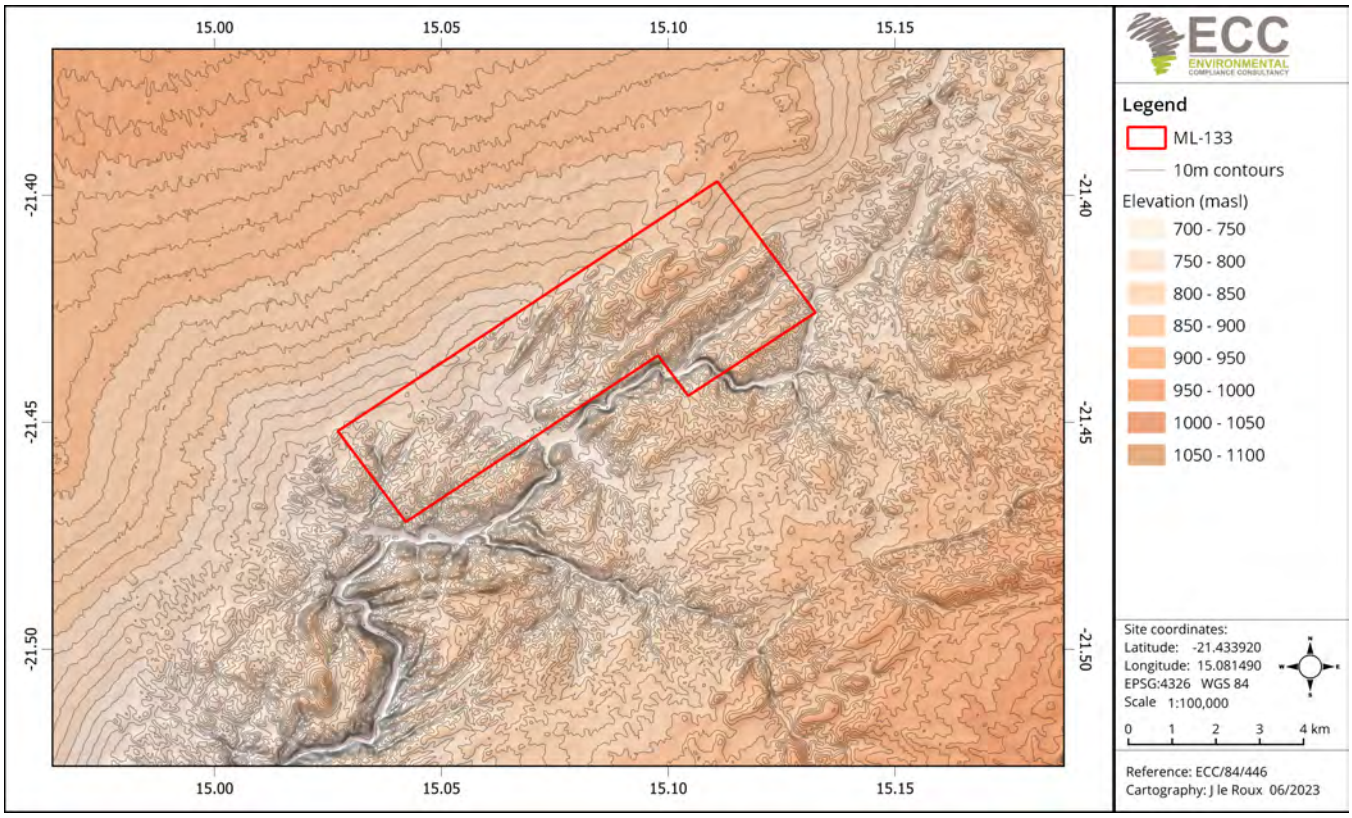


Figure 7 - Map showing the topography of ML 133

ML 133 is largely covered by rock outcrops and a small portion of the north-western side of the ML is covered by soil (Bubenzer, 2002) (Figure 8). Rocky outcrops are defined as geological features that are characterised by a vast variety of physical environments including escarpments, overhangs, cliffs and inselbergs (Fitzsimons & Michael, 2017). Namibian soils vary a great deal whereby variations occur on both a regional and local scale.

Gypsisols occur in areas where there is a source of sulphate and calcium form gypsum, which is characterised by a soft mineral composed of calcium sulphate (Mendelsohn, Jarvis, Mendelsohn & Robertson, 2022). This often appears in areas evaporation rates exceed the amount of rainfall received. The calcium sulphate is generally dissolved out of the soil, carried by percolating water beneath the surface where it exists in many forms such as powder, pebbles or gypsum crystals. If grown large enough, these crystals can be collected to as ornaments (Mendelsohn, Jarvis, Roberts, & Robertson, 2002).

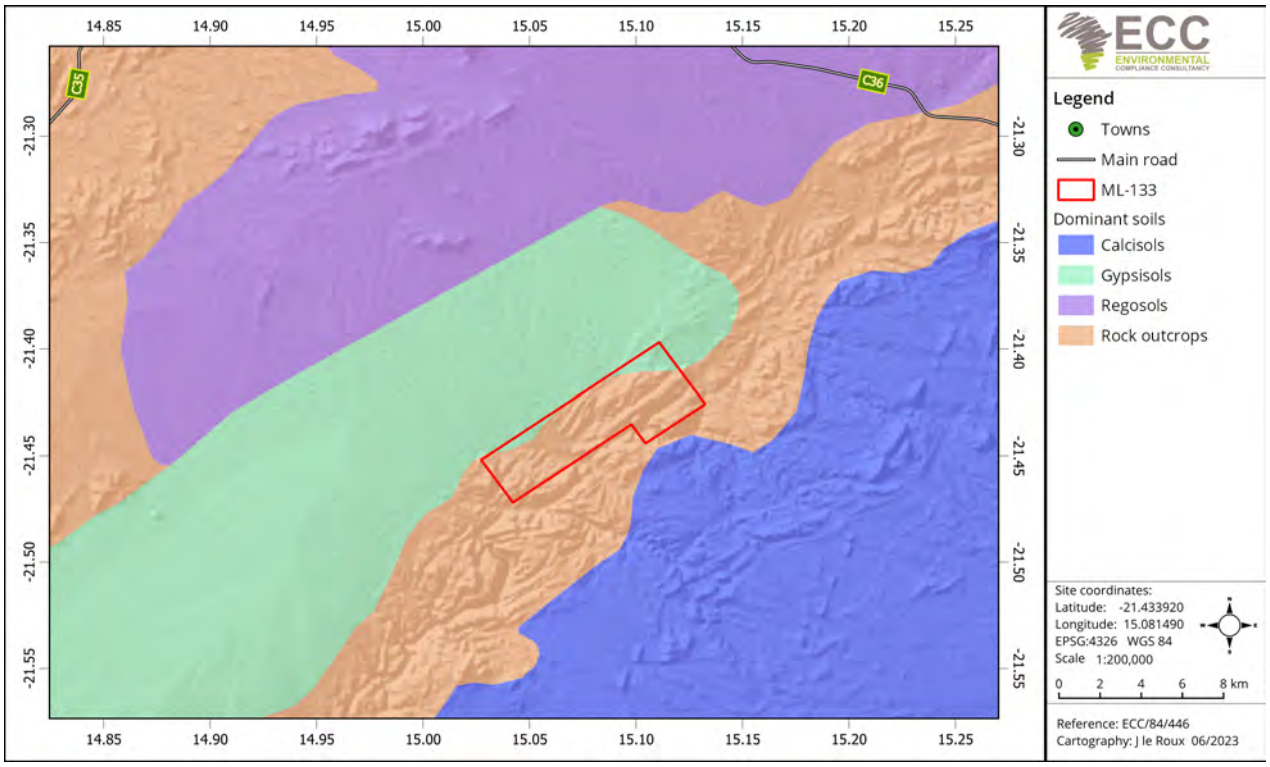


Figure 8 - Dominant soil type found on ML 133

5.7 CLIMATE

The Lithium Ridge area generally experiences a hot, dry semi-arid climate, typical of the inland areas of north-western Namibia. The climate is influenced by its inland location and distance from the moderating effects of the Atlantic Ocean. Rainfall is generally low, erratic and seasonal, with periods of prolonged dry conditions. The area is characterised by high evaporation rates, low humidity and generally clear conditions. Strong winds, particularly during the dry season, can contribute to wind erosion and dust generation.

5.8 TEMPERATURE

Mean daily maximum temperatures range from approximately 27°C in June and July to 32°C in March and April. Temperatures increase from January through March, decline steadily from April to July, and then increase again from August to October before remaining relatively stable at around 31°C towards the end of the year (Figure 9).

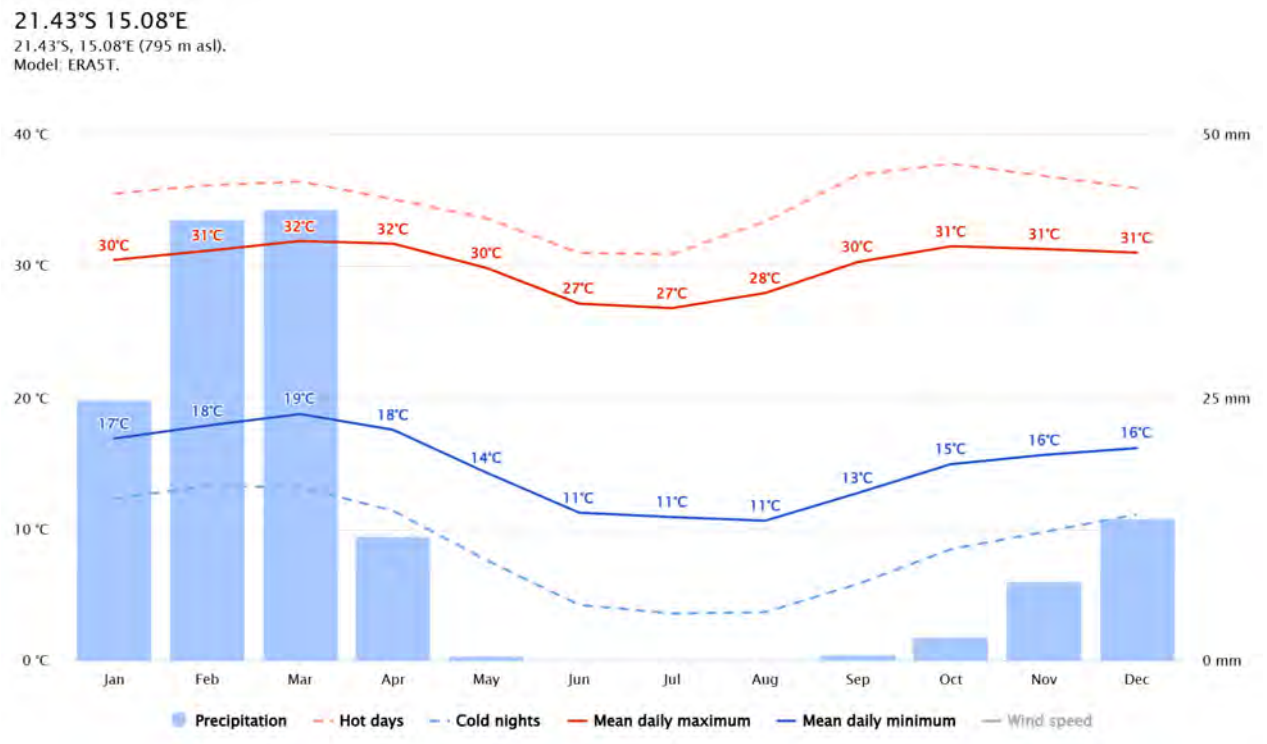


Figure 9 – Average temperature and precipitation in the ML 133 location (Source: Meteoblue, 2026)

5.9 WIND AND AIR QUALITY

The wind rose for ML 133 (modelled Meteoblue data for Uis, the nearest reference point) shows how many hours per year the wind blows from the indicated direction. In the Project area the winds of a south westerly direction are predominant with average wind speeds between 10 and 20 km/h, mainly because of its proximity to the Atlantic Ocean and Namib Desert (Figure 10). Wind can occur any time of the day and the most predominant wind directions for this area are southwest (SW), south-southwest (SSW), east-northeast (ENE) and northeast (NE). Air quality monitoring should be undertaken by observing the dust particulate matter and its possible sources during operations using the wind direction as an influencer.

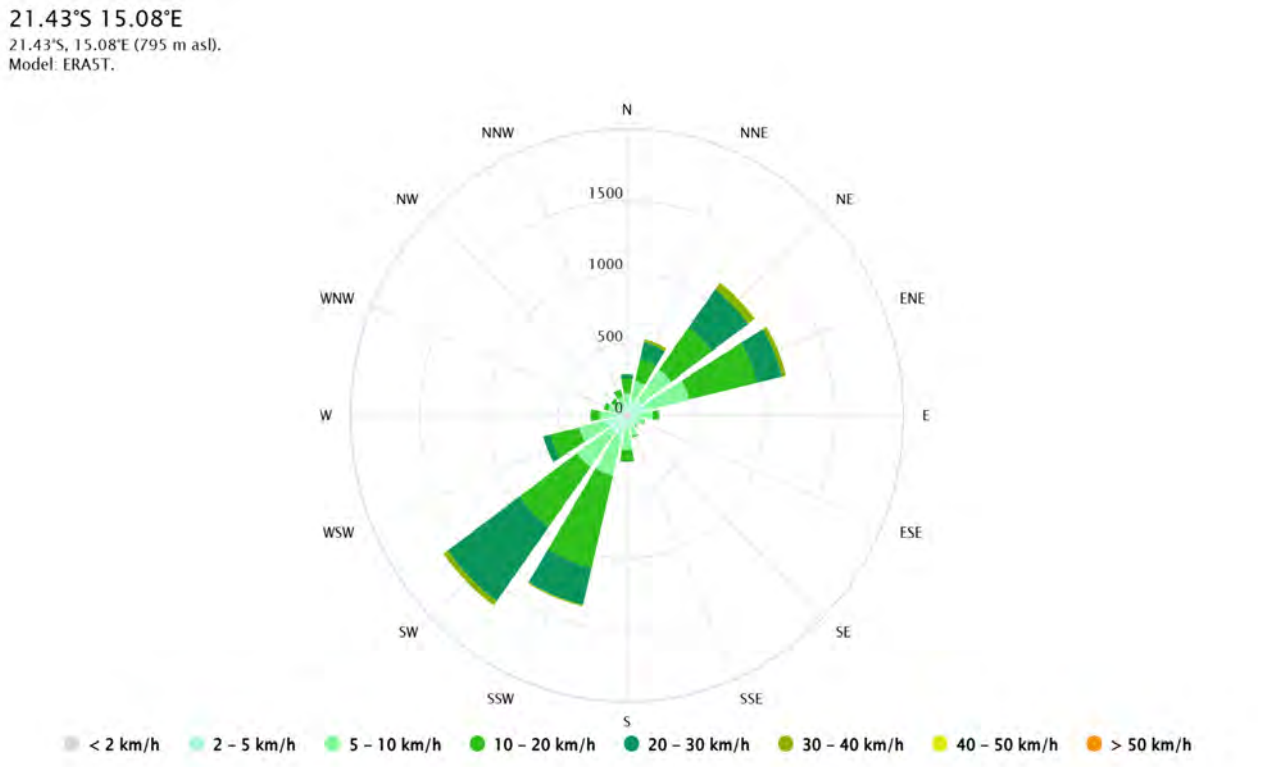


Figure 10 - Prevailing wind direction and wind speed in the ML 133 area (Source: Meteoblue, 2026)

5.10 RAINFALL AND EVAPORATION

The average annual rainfall in Namibia tends to increase towards the north-eastern direction, while lowest average rainfall is experienced along the Namibian coast. Rainfall is scarce with an average between 20 mm and 50 mm per year occurring mainly during the summer months, between December and April (Figure 11). The average annual evaporation rates are between 2 100 – 2 240 mm per year, which is much higher compared to the average rainfall received in this general area (Mendelsohn, Jarvis, Roberts & Robertson, 2002).

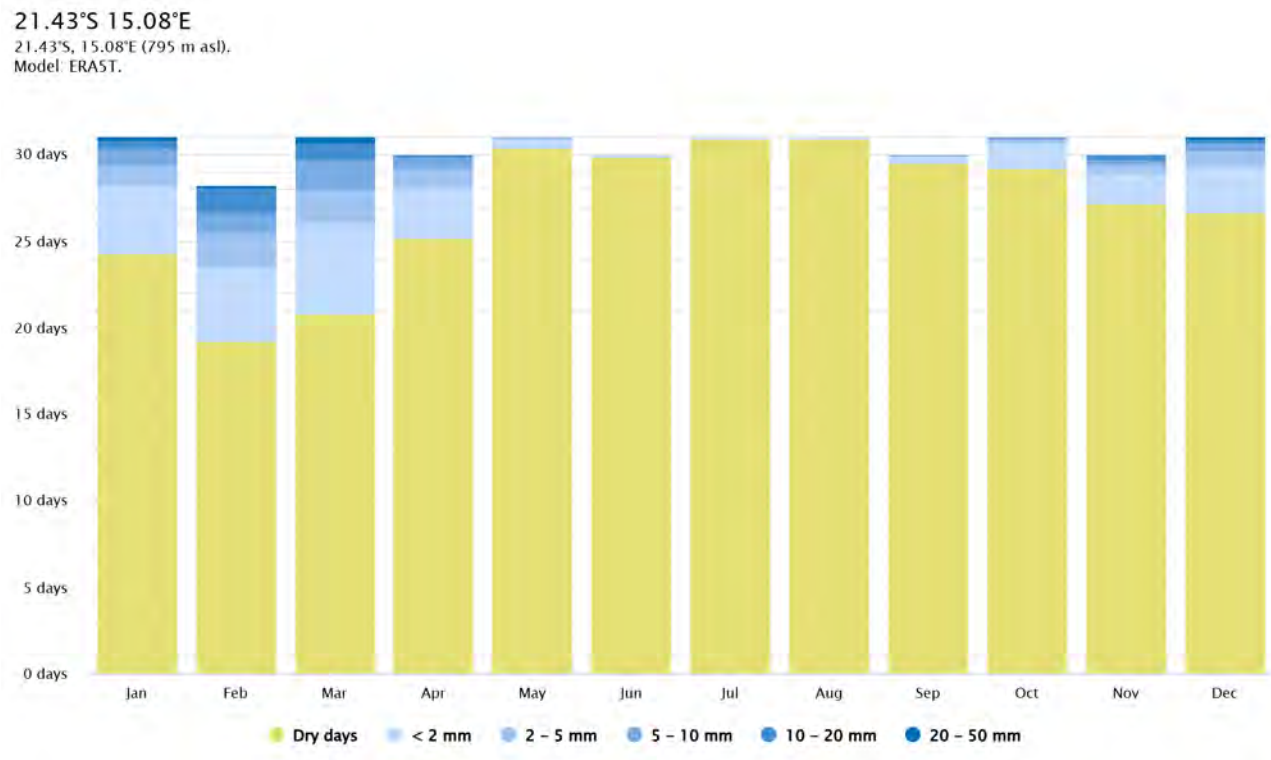


Figure 11 - Average rainfall received in the general ML 133 area (Source: Meteoblue, 2026)

5.11 GEOHYDROLOGY AND HYDROLOGY

The proposed ML 133 mining area is situated within the Omaruru Catchment in the Erongo Region and lies adjacent to the ephemeral Omaruru River (Figure 12), which forms part of the eastern boundary of the mining licence. Surface drainage across the site is characterised by numerous ephemeral drainage lines that convey runoff only after rainfall events. These drainage features form an important component of the local hydrological system and contribute to downstream flows within the Omaruru River catchment.

A hydrological study conducted by Hydrologic Consulting included a high-level flood risk assessment undertaken in 2024 (Appendix D). Prior to mining activities and the mine layout is established, an in-depth groundwater specialist study shall be conducted.

The hydrological study indicates that flooding associated with the Omaruru River is generally confined to the river channel, with the potential for inundation primarily limited to the eastern boundary of the mining licence. No permanent or perennial surface water bodies occur within ML 133. However, numerous ephemeral drainage lines traverse the site and are considered hydrologically sensitive (Hydrologic Consulting, 2024). In accordance with the Water Resources Management Act, No. 11 of 2013, a 100 m riparian buffer is applicable to all delineated watercourses. As much of the site falls within these riparian buffer areas, careful planning, stormwater management and the necessary regulatory approvals will be required where activities encroach on these zones.

Groundwater information was sourced from the test pumping report compiled by ECC in January 2026 (Appendix I). Four exploration production boreholes were drilled on ML 133 in September 2025 under Borehole Licence 11913, issued on 30 April 2025. Two of them, PNNBH_02 and PNNBH_04, produced sufficient blow yield to warrant casing and test pumping, and the remaining two are retained for monitoring (Environmental Compliance Consultancy (ECC) (Pty) Ltd, 2026).

The boreholes target a secondary fractured aquifer developed in metasediments of the Kuiseb Formation, Swakop Group, Damara Supergroup, beneath Quaternary and alluvial cover. The lithology is dominated by mica schist with minor calc silicate rock. Extensive pegmatite intrusion has probably compartmentalised groundwater in the fractured aquifer, so flow to any given borehole depends on the orientation and density of the fracture network intersected rather than on a laterally continuous water table. Only half of the boreholes drilled returned a usable yield, which is consistent with that setting.

Two hydraulically distinct settings occur within the licence area. PNNBH_02 drilled directly into the fractured aquifer beneath a thin unsaturated cover, with a rest water level of 38.80 mbgl. PNNBH_04 lies in the course of the Omaruru River and encountered saturated river alluvium at surface, with a rest water level of 1.2 mbgl. The alluvium was cased but not grouted off, leaving the fractured aquifer in direct hydraulic connection with the overlying alluvial aquifer, and the borehole acted as a leaky confined system with vertical recharge from the alluvium compensating for abstraction. A transmissivity of approximately 10 m^2/d was adopted for both boreholes. Recommended yields total 13.5 m^3/h over 20 pumping hours per day, or approximately 98 550 m^3/a, and are set out with the aquifer parameters in Table 10 of ECC (2026) (Appendix I). No storage coefficient could be determined, as no drawdown response was recorded in the surrounding boreholes during either test.

Groundwater chemistry differs between the two boreholes in line with the hydraulics. PNNBH_02 is a sodium chloride water with total dissolved solids of 2 508 mg/l, indicating a long residence time and the effects of evaporative concentration. PNNBH_04 is a calcium bicarbonate water at 705 mg/l, consistent with more frequent fresh recharge from the Omaruru alluvium. Neither borehole meets potable limits. PNNBH_02 exceeds the acceptable limit for electrical conductivity, total dissolved solids, chloride, sulphate, calcium, sodium, boron, arsenic and uranium, and PNNBH_04 for uranium alone at 0.0486 mg/l against a limit of 0.015 mg/l. Uranium in PNNBH_02 is 0.3389 mg/l and arsenic is 0.0785 mg/l against a limit of 0.05 mg/l. Full hydrochemical results are given in Table 9 of ECC (2026) (Appendix I). Water from these boreholes is intended for exploration, mining and dust suppression, and is not proposed for potable supply.

These results establish the pre-abstraction condition against which operational monitoring will be compared. The two untested boreholes, PNNBH_01 and PNNBH_03, form the initial monitoring network.

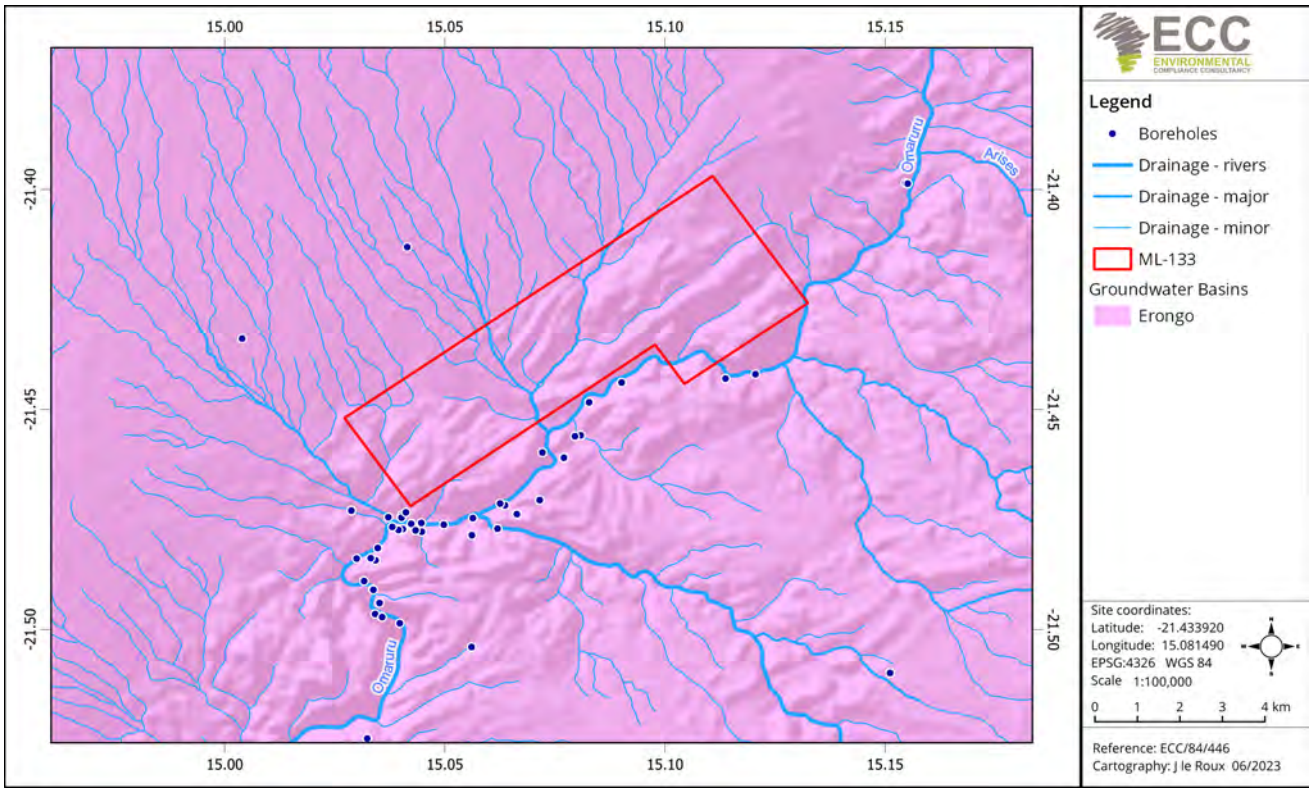


Figure 12 - Hydrological profile of ML 133

5.12 BIODIVERSITY

A biodiversity specialist study was undertaken by Dr Peter Cunningham of Environment & Wildlife Consulting, Namibia, in April 2024 to assess and compare the receiving environment under wet- and dry-season conditions (Appendix C).

Namibia's network of protected areas, communal conservancies, state forests, community forests, private game reserves and commercial farmlands provide an immense biodiversity (Alberts, 2023). The Project area is defined as a Semi-desert Savannah and Transition Zone and is located on the boundary of the Western-Central Escarpment and Inselbergs and/or Western Highlands. The general Nai-Nais area is characterised by an annual rainfall less than 150 mm, a wide variety of landscapes and a hyper-arid climate (Huntley, 2023). The study area lies within the Tsiseb Communal Conservancy (7 913 km²) although the Omaruru River forms the boundary with the #Gaingu Communal Conservancy (7 731 km²). The major wildlife species present in the two conservancies are as follows: elephant, black rhino, leopard, cheetah, mountain zebra, kudu, gemsbok, ostrich, springbok, steenbok, black-backed jackal and klipspringer (Tsiseb) and kudu, gemsbok, springbok, and leopard (#Gaingu) (Cunningham, 2024).

ML 133 lies approximately 50 km southeast of the Brandberg Mountain. The Brandberg and its immediate surrounds are biologically diverse and are recognised as a centre of endemism; however, the mountain lies well outside the Project area and the regional biodiversity values

associated with it should not be read as applying directly to ML 133. Within ML 133 the habitats present are hills and ridges, undulating gravel plains and ephemeral drainage lines, including the Omaruru River riparian zone (Cunningham, 2024). These habitats support succulent vegetation and wildlife adapted to the arid semi-desert conditions, as described in the sections below.

The impact significance is further assessed in chapter 7 and mitigation measures are described in the draft ESMP (Appendix A).

5.12.1 FLORA SPECIES

This area is characterised by little vegetation due to low rainfall, high evaporation and unfavourable soil. The plant diversity for this area is low to medium (150 to 199 species) with the Brandberg and Erongo Mountain areas representing high diversity (400 to 499 species). Plant endemism in this area is viewed as high with 16 to 25 species and the dominant vegetation structure on the Project area are western-central escarpment and inselbergs with varied and sparse shrubland and grasslands within the Namib desert biome (Figure 13). The vegetation biomass in the Project is extremely low and the biomass increases towards the northeastern direction of the country (Mendelsohn, Jarvis, Roberts, & Robertson, 2002).

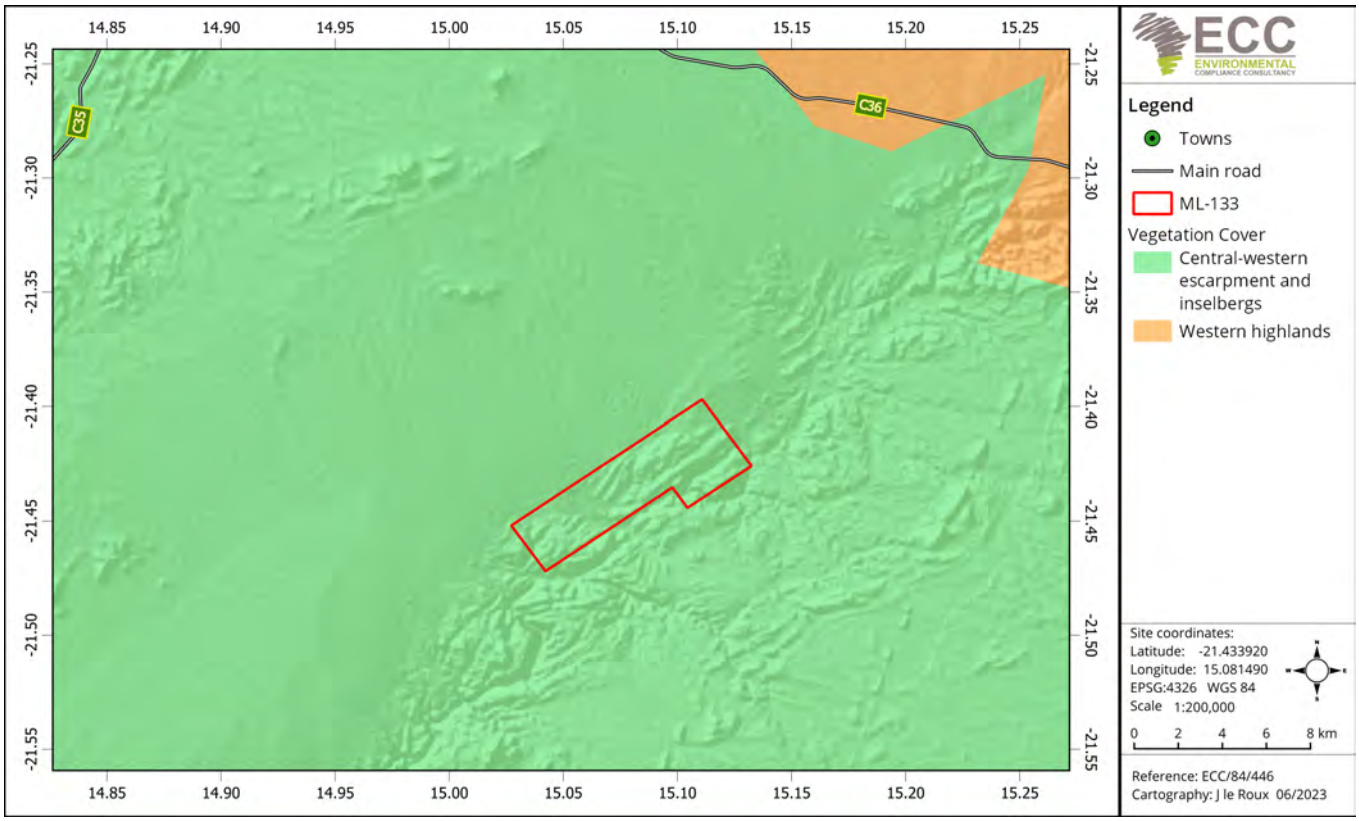


Figure 13 - Vegetation map for ML 133

According to the baseline study by Peter Cunningham (2024) there are approximately 104 species of larger trees and shrubs (>1 m in height) and 80 species of grasses estimated to occur in the

wider area surrounding ML 133. Twelve species of trees and shrubs (11.5%) expected to occur in this area are classified as endemic, 7 species as near endemic (6.7%), 25 species (24%) are protected by the Forest Act No. 12. of 2001, 4 species (3.9%) are protected under the Nature Conservation Ordinance No. 4 of 1975 while 6 species (5.8%) are classified as CITES Appendix 2 species (Cunningham, 2024).

The protected vegetation species which include dominant and endemics associated with different habitats on ML 133 during dry and wet seasons are described below.

Hills/Ridges

During the field study conducted in the dry season (November), 13 species were identified in transects covering 1000 m in various hills/ridge habitats. During the wet season (March-April) survey 8 species of larger trees and shrubs were encountered along various transects over 500 m. *Euphorbia virosa* (27%) (Figure 14), *Monechma cleomoides* (16%) and *Euphorbia damarana* (13%) were the most dominant species in this habitat during the dry season. During the wet season, *Acacia rificiens* (28%), *Petalidium variabile* (28%) and *Adenolobus pechuelii* (12%) were the most dominant species. *Euphorbia* species and *Commiphora* species account for 20% and 17.5% of the tree/shrub species composition in these habitats, respectively. Protected species – *Commiphora dinteri*, *C. saxicola*, *C. virgata*, *Maerua schinzii* (Figure 14), *Sarcocaulon* spp. and *Sterculia africana* – make up approximately 20% of the larger trees/shrubs in these habitats. Permits would be required to remove important /protected species in this habitat.

Aloe dichotoma (quiver tree) which is vulnerable and protected was also encountered during the dry season field work. Two species of grass namely *Stipagrostis uniplumis* (68.7%) and *Eragrostis nindensis* (3.3%) were most dominant along various transects totalling 159 m in this habitat.

Figure 14 - *Euphorbia virosa* and *Maerua schinzii* (protected) encountered on hills/ridge habitats

Undulating gravel plains

The tree and shrub species encountered along undulating gravel plains were *Acacia erioloba*, *Hoodia currorii* and *Euphorbia damarana*. However, this habitat was excluded from field study due to the scarce vegetation found.

Drainage lines

During the field studies, 10 and 7 species of large trees and shrubs were observed along transects totalling 1000 m and 500 m in drainage line habitats (Omaruru River). The following species were most dominant during the dry season: *Combretum imberbe* (26%) (Figure 15), *Euclea pseudebenus* (25%), *Cordia sinensis* (19%) and *Faidherbia albida* (18%). *Tamarix usneoides* (54%), *Prosopis* spp. (18%) and *Euclea pseudebenus* (14%) were the most dominant species during the wet survey. The following protected species accounted for 74% of the larger tree/shrubs during the investigation period: *Acacia erioloba,* Combretum imberbe, *Euclea pseudebenus*, *Faidherbia albida*, *Ficus sycomorus*, *Maerua schinzii* and *Tamarix usneoides*.

The grasses observed between the dry and wet season were relatively similar. Dominant grass species in these areas were *Stipagrostis damarensis* (endemic) and *S. hirtigluma*.

Figure 15 - Protected *Combretum imberbe* dominant along the Omaruru River riparian habitat

During the field study multiple invasive alien species were observed on ML 133 and are described below.

Invasive alien species

Five invasive alien species were encountered on ML 133 area - *Argemone ochroleuca* (Mexican poppy), *Datura innoxia* (thorn apple), *Prosopis* spp. (mesquite spp.), *Ricinus communis* (castor oil) and *Nicotiana glauca* (wild tobacco) (Figure 16). Most of these species were observed in the more mesic Omaruru River and other ephemeral drainage lines on ML 133, with the biggest problem being the ubiquitous *Prosopis* spp. forming dense stands along the riverbanks (Cunningham, 2024).

(a)

(b)

(c)

(d)

(e)

Figure 16 - Invasive alien species identified as *Argemone ochroleuca* (Mexican poppy) (a); *Datura innoxia* (thorn apple) (b); *Nicotiana glauca* (wild tobacco) (c); *Prosopis* spp. (mesquite spp) (d); *Ricinus communis* (castor oil) (e)

5.12.2 FAUNA SPECIES

The Brandberg Mountain, approximately 50 km northwest of ML 133, supports the greatest combination of endemic fauna than any other place in Namibia and is therefore a critical conservation area (BirdLife International, 2023). The Brandberg is a hotspot for reptile and amphibian endemism, making up 49 of the 59 near-endemic reptile species and three (3) of the six (6) endemic species in Namibia. The mammal endemism in Namibia is highly associated with the escarpment belt eastwards from the Namib Desert. There are three (3) to four (4) endemic mammals in and around the ML (BirdLife International, 2023 & Mendelsohn *et al.,* 2002).

Reptiles

The overall reptile diversity in Namibia accounts for 30% of reptiles in Africa with at least 22% being endemic. At least 57 species of reptiles are expected to occur in the wider area surrounding ML 133 with 28 species being endemic – i.e., 49.1% endemic. Majority of which are lizards and snakes. Reptile diversity tends to be highest around gravel plains, inselbergs and mountains such as the Brandberg mountain, consisting of at least 41 - 50 different reptile species. According to

the Namibian legislation, 1 species is viewed as rare - African Flat Gecko (*Afroedura africana africana*); 3 species as vulnerable - Leopard Tortoise (*Stigmochelys pardalis*), Southern African Python (*Python natalensis*), Rock or White-throated Monitor *(Varanus albigularis),* 4 species as protected game, 2 species insufficiently known and 3 species as peripheral.

Important species expected to occur in the wider area surrounding ML 133 are - tortoise *Stigmochelys pardalis*; pythons – *P. anchietae* and *P. natalensis*; Namibian wolf snake (*Lycophidion namibianum*) – monitor lizard (*Varanus albigularis*) and some of the endemic and little-known gecko species – e.g., *Pachydactylus* species.

During the study fieldwork activities, 6 species were identified during the dry season and 3 species during the wet season, including 2 skinks, 2 Old World lizard, 2 agamas and 1 gecko. Nocturnal fieldwork was not conducted due to cold ambient temperatures (<16°C most reptiles are inactive) during both seasons.

Amphibians

The amphibian populations are declining globally largely due habitat destruction as a result of increased anthropogenic activities (Cunningham, 2024). Amphibian patterns across the country are closely associated with the rainfall trends, due to their attraction to surface water. Most amphibians require water to breed and for young to grow, therefore they are associated with permanent water bodies, predominantly in northeast Namibia. There is an estimate of 5 to 8 amphibian species in the wider area surrounding ML 133, which is quite low. Of these, 4 species are endemic - Damaraland Pygmy Toad (*Poyntonophrynus damaranus*); Hoesch's Pygmy Toad (*Poyntonophrynus hoeschi*); Marbled Rubber Frog (*Phrynomantis annectens*) and Damaraland Sand Frog (*Tomopterna damarensis*). During the field study no amphibian species were encountered during both the dry and wet surveys due to the prolonged drought and no open surface water present.

Mammals

The overall diversity and abundance of large herbivorous mammals (big game) is rated as "moderate" with 3 - 4 species expected – e.g., gemsbok, mountain zebra and springbok – while overall diversity and density of large carnivorous mammals (large predators) is viewed as "moderate" with 4 species expected – e.g., leopard, cheetah, spotted and brown hyena (Cunningham, 2024). Although the mammal diversity may be moderate, large mammal abundance in the surrounding conservancy areas may be high, as the Tsiseb and #Gaingu Conservancies are known for their wildlife (Mendelsohn, Jarvis, Roberts, & Robertson, 2002). Approximately 87 species of mammal species are expected of which 10 are endemic. The IUCN (2022) classifies 4 species each as vulnerable (cheetah, leopard, Hartmann's Mountain zebra, giraffe) and near threatened (African straw-coloured fruit bat, Commerson's roundleaf bat, striped leaf-nosed bat, brown hyena). The House Mouse (*Mus musculus*) is an invasive alien species to the

area which are viewed as casual pests which are known carriers of “plague” and may add to economic stressors.

During the field investigation, 13 species were identified during the dry season, compared to 3 species during the wet season. Mammals encountered during both seasons are the following: rock hyrax, porcupine, 3 rats and mice, baboon, 3 carnivores and 3 ungulates. Additionally, during the dry season, 10 small mammal captures were made of 3 species from a total of 29 Sherman traps used: *Gerbillurus setzeri*, *Tatera leucogaster* and *Petromyscus collinus.* During the wet season, 1 small mammal was captured (*Petromyscus collinus*) from a total of 10 Sherman traps set (Figure 17).

(a) (b)

Figure 17 - Sherman collapsible small mammal traps (a), capture of the Bushveld gerbil (*Tatera leucogaster*) (b)

Avifauna

A total of 658 bird species has been recorded in Namibia, this region consists of 111 - 140 bird species, which is average compared to the central and northeast regions of Namibia. Thirteen of the 14 Namibian endemics are expected to occur in the wider area surrounding ML 133 (92.9% of all Namibian endemic species or 6.8% of all the species expected to occur in the area).

The bird species classified as protected/ important species in Namibia are as follows:

- Seven species are classified as endangered (violet wood-hoopoe, Ludwig’s bustard, white-backed vulture, tawny eagle, booted eagle, martial eagle, black);
- Two species as vulnerable (lappet-faced vulture, secretary bird); and
- Five species as near threatened (Rűppel’s parrot, kori bustard, Cape eagle owl, Verreaux’s eagle, peregrine falcon).

The most important species confirmed on ML 133 during fieldwork are the endemic Damara hornbill (*Tockus damarensis*), Monteiro’s hornbill (*Tockus monteiri*) and Rüppel’s parrot. Large trees with cavities present along the Omaruru River riparian zone such as the camelthorn tree (*Acacia erioloba*) serve as nesting sites for various bird species (Figure 18). These trees should be avoided during exploration and mining activities.

During the field study 30 species were identified during the dry season survey, compared to 11 species during the wet season survey, which is attributed to the overall and prolonged dry conditions in April 2024. It is expected that much more birds should be attracted following rainfall and potential Omaruru River flow.

Figure 18 - Damara hornbill (*Tockus damarensis*), an endemic, nesting in cavities in old growth trees

5.13 SOCIO-ECONOMIC BASELINE

The Namibian population is currently above 2.5 million, with Erongo region making up 7.1% of the total population, with over 105,400 people (Erongo Regional Council, 2015). There is no town or formal settlement within ML 133. The licence area is sparsely populated, with a small number of dwellings associated with the Nai-Nais community located within and immediately adjacent to the licence (see section 5.15). The nearest town to ML 133 is Uis. Uis is an extremely small, rural town with approximately 2,587 residents. Uis forms part of the Dâures constituency, known as the largest constituency in the Erongo region with a total surface area of 13,490 km^2. The Dâures constituency is characterised by a higher death rate than birth rate (a short life expectancy). Furthermore, youth between the ages of 15 and 34 experience an unemployment rate of 37% (Envirodu Consulting & Training Solutions, 2022).

The GDP of Namibia was recorded at 14 billion US Dollars in 2019 and is expected to continuously increase between 2023 and 2028 by almost 17%, amounting to approximately 16 billion US Dollars in 2028 (O'Neill, Namibia: Gross domestic product (GDP) in current prices from 1998 to 2028, 2023). In 2021, the service industry makes up 58% of the GDP, which included tourism-related activities, which in turn creates a positive impact on the socio-economic growth. Mining accounts for 25% of the national GDP dominated by diamond and uranium mining, however major growth is foreseen for gold mining and offshore oil production (O'Neill, Namibia: Share of economic sectors in the gross domestic product (GDP) from 2011 to 2021, 2023).

The Erongo region allows for the mining of commodities such as gold, marble, tin, salt and semi-precious stones (Erongo Regional Council, 2015). However, there is a continuous establishment of uranium mines over the past decade due to an increase in the demand of the energy source. Namibia was the world's third largest uranium producer in 2022 and production is expected to increase by 5% between 2022 and 2026 (GlobalData, 2023). Andrada's Uis Mine is considered a flagship tin mine in Namibia, the world's largest open cast hard rock tin mine, with additional tantalum and lithium potential.

The proposed site is within a communal conservancy, Tsiseb Conservancy, which 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 Tsiseb Conservancy serves as a major tourist attraction due to the Brandberg Mountain (the tallest inselberg in Namibia) and rich, endemic wildlife. Tourism within the conservancy is concentrated around the Brandberg, approximately 50 km northwest of ML 133. There are no tourism facilities or known ecotourism activities on ML 133 itself. The Brandberg Mountain has a rich archaeological and spiritual significance, displaying the "White lady" rock art at the base of the mountain. Tourism in conservancies is a growing area of the tourism sector, which benefits the local development of rural communities and makes Namibia a popular tourist destination, generating more income. Conservancies also seek to preserve and protect species and their natural environment (Jaro Consultancy, 2023).

5.14 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 125th 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 Dâures Constituency and falls within the jurisdiction of the Dâures Traditional Authority. The Erongo Region is tasked to plan and develop the region in a sustainable manner for the benefit of its inhabitants by establishing, managing and controlling of settlement areas focusing on core services. The Erongo Regional Council is responsible for approximately 140,000 inhabitants, which is around 7.7% of the total Namibian population (Erongo Regional Council, 2015).

5.15 Demographic profile

No dedicated demographic dataset exists for the Nai-Nais settlement or the immediate ML 133 Project area specifically, as this area does not constitute a distinct enumeration unit within Namibia's national census framework. Approximately 16 dwellings were identified within or immediately adjacent to ML 133 during the specialist surveys, which provides an indicative measure of local settlement presence in the Project area (see Figure 3 of chapter 2).

The Uis settlement serves as a local service and commercial centre for the surrounding rural and communal areas. The population is relatively small, with livelihoods and economic activities influenced by mining, brick manufacturing, tourism, informal trade, livestock farming, and subsistence activities (Namibia Statistic Agency, 2023).

The 2023 Population and Housing Census recorded the population characteristics of the Uis area and provides the most recent official demographic data available for Namibia (Namibia Statistic Agency, 2023). The wider area is predominantly rural, with settlements and households dispersed across the communal landscape. The population is predominantly associated with the Damara community, and Khoekhoegowab is widely spoken in the area. Uis falls within the broader traditional jurisdiction of the Dâures Traditional Authority, while the Tsiseb Conservancy is an important community-based natural resource management institution in the surrounding area.

The demographic profile is characterised by a relatively young population and a substantial proportion of economically active residents. Employment opportunities in the area are relatively limited and are largely associated with mining, government services, small businesses, tourism and informal economic activities. Consequently, employment opportunities and access to higher-order services may result in movement between Uis and larger regional centres such as Usakos, Omaruru, Swakopmund and Walvis Bay (Namibia Statistic Agency, 2023).

5.16 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. As a result of this life expectancy has increased, tuberculosis (TB) and Human Immunodeficiency

Virus/Acquired Immunodeficiency Syndrome (HIV/AIDS) mortality decreased due to high coverage of antiretroviral therapy (ART) in 2012, infant mortality reduced significantly (Chipare, Tapera, Pachawo, & January, 2020). 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, 2017).

In Namibia, HIV/AIDS prevalence dropped from 22% in 2002 to 17.2% in 2016, decreasing in young adult age groups (15 -24) and prevalence in the older age groups increased slightly. Mid-2016 young adults and children received art, representing 79% coverage of people eligible for treatment (WHO, 2017).

TB continues to be a significant concern in Namibia, recorded as one of the highest case notifications rates in the world. The main drivers in TB cases are the emergence of multidrug-resistant TB and extensively drug-resistant TB, which pushes the nation to improve the capacity for managing identified cases, infection control in health facilities and strengthen reporting (WHO, 2017). The Erongo Region has historically recorded a relatively high HIV prevalence compared with several other regions of Namibia, although prevalence has generally stabilised or declined over time due to increased access to HIV testing, antiretroviral therapy (ART) and prevention programmes (Ministry of Health and Social Services (MoHSS), 2023).

In Namibia, the malaria mortality rate dropped significantly from 96.5 per 100,000 population in 2000 to 1.5 per 100 000 population in 2012. Namibia is reported as one (1) of the four (4) southern African countries with a goal to eliminate malaria by 2020 (WHO, 2017). However, with the advent of COVID-19, there has been a steady increase in malaria cases nationally and globally. Namibia recorded more than 13 633 malaria cases and over 40 deaths nation-wide in 2020. In 2021, Namibia reported 13 740 malaria cases and 15 deaths, a reduction from deaths reported in 2020 (WHO, 2022).

According to the MoHSS, the Erongo Region has the following facilities: four (4) hospitals, two (2) health centres and 18 primary health care clinics. The major districts in which these facilities can be found is the Swakopmund district, Walvis Bay district, Omaruru district and Usakos district (MoHSS, 2022).

Namibia reported its first cases of coronavirus (COVID-19) in March 2020 which caused illness in humans at a pandemic scale and has resulted in an increasing number of deaths worldwide (WHO, 2023). The viral outbreak has adversely affected various socioeconomic activities globally, and with reports of a continually increasing number of people testing positive, it has had significant impacts on the operations of various economic sectors in Namibia as well. 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).

5.17 EMPLOYMENT

Employment is a significant socioeconomic concern in Namibia, with high levels of unemployment and a relatively large informal sector. According to the 2023 Namibia Labour Force Survey, Namibia's unemployment rate is approximately 36.9%, using the broad national unemployment measure (Namibia Statistics Agency (NSA), 2024). Unemployment is particularly pronounced among the youth, highlighting the limited availability of formal employment opportunities for new entrants to the labour market. The Namibian economy is characterised by employment concentrated in the following sectors: wholesale and retail trade, agriculture, construction, mining, manufacturing, transport and storage, accommodation and food services, and public administration. Informal employment also constitutes an important source of livelihoods, particularly among lower-income households and in rural and smaller settlements (Namibia Statistics Agency (NSA), 2024).

The Erongo Region has a comparatively diversified economy and is one of Namibia's important centres for mining, fishing, port-related activities, tourism, manufacturing, construction and services. Major employment centres include Walvis Bay, Swakopmund, Arandis, Henties Bay and Omaruru. Mining and associated industries provide an important source of formal employment, particularly around the uranium-mining areas of central Erongo. Uis has a substantially smaller and more locally focused employment base than the major urban and industrial centres of Erongo. Mining and mineral exploration are important components of the local economy, supplemented by small businesses, informal trading, tourism, government services, agriculture and livestock-related livelihoods.

The closure and subsequent redevelopment of mining activities in the Uis area have historically had a significant influence on local employment. The revival of tin and other mineral exploration and mining activities has consequently been an important source of employment and economic opportunity for the local community. However, employment opportunities remain relatively limited compared with larger centres such as Walvis Bay and Swakopmund. The 2023 Census provides useful information on the demographic and economic characteristics of Uis, but employment statistics at settlement level can be less robust than regional and national labour-force estimates (Namibia Statistic Agency, 2023). There is no dedicated employment dataset for the Nai-Nais community or the ML 133 area specifically. Employment within the licence area is currently limited to the Proponent’s exploration activities and subsistence livestock farming; the

historical Tin Tan Mine no longer provides any employment. Mining on ML 133 is expected to change this position materially, and the employment effects of both exploration and mining are assessed in Chapter 7.

5.18 CRIME

Crime remains a significant concern in Namibia. During the 2023/2024 financial year, the Namibian Police Force recorded 110,551 criminal cases nationwide. The Erongo Region recorded 8,709 cases, accounting for approximately 8% of all reported cases. The most reported offences included theft, stock theft, housebreaking, common assault, gender-based violence (GBV) and fraud (Namibia Police Force (NAMPOL), 2024).

5.19 CULTURAL HERITAGE

It has been stated that the Erongo Region is characterised by major archaeological landscapes, however a large portion of the region is archaeologically undocumented. According to the heritage and cultural impact assessment conducted by Dr Eliot Mowa on 22 October 2023 (Appendix H) the Erongo Region's archaeological value is contributed by the significant number of prehistoric human settlements dating from the Early through Middle to Late Stone Age periods. Past excavation activities that occurred in archaeological areas of interest such as the Brandberg, Erongo and Spitzkoppe Mountains indicates the human occupation dates back approximately 6,000 before the present (BP) to 50 years BP when rock art traditions were no longer common (Mowa, 2024).

The recent historical evidence of activities includes colonial battlefields, historic graves, roadworks, old salt works, historical Mines and shipwrecks. Some of these features such as graves are specific and localised and might be easily defined and demarcated, whereas others may be extensive and difficult to demarcate (Mowa, 2024).

It is assumed that the Nai-Nais settlement dates back to pre-colonial times due to the earliest dates marked on burial sites encountered in and around the settlement (Mowa, 2024). The archaeological sites assessed on ML 133 are provided in Table 7 and shown in Figure 19 and Figure 20.

The impact significance is further assessed in chapter 7 and mitigation measures are described in the draft ESMP (Appendix A).

Table 7 - Archaeological sites assessed on ML 133

Site Name	Description	Coordinates
1. Grave site	37 graves in the area, the majority of the graves are unidentified, oldest dated grave is of an individual who died in 1932. The	-21.439435, 15.05501

	cemetery is not fenced and is still being utilised with the recent burial in 2020.	
2. An old precolonial presumably Damara settlement	Precolonial settlement built with stones. Stones are put together circularly. Open space in the centre surrounded by stone hut structures.	-21.4423889, 15.0711389
3. Old Tin Tan Mine settlement	The administration and mine workers' accommodation structures lie within a riverbed, and a few buildings including the mine foreman or manager accommodation lie on a hill near an open pit trench area, which is the old mine excavation locality. Six buildings are within the area, all in ruins or falling apart and uninhabited.	-21.449225, 15.067663
4. Potential children's graves	Eight (8) to nine (9) suspected graves were identified. The graves are aligned at the foot of a rocky outcrop hill, suspected to have been buried here in recent past.	-21. 45262 15.06573

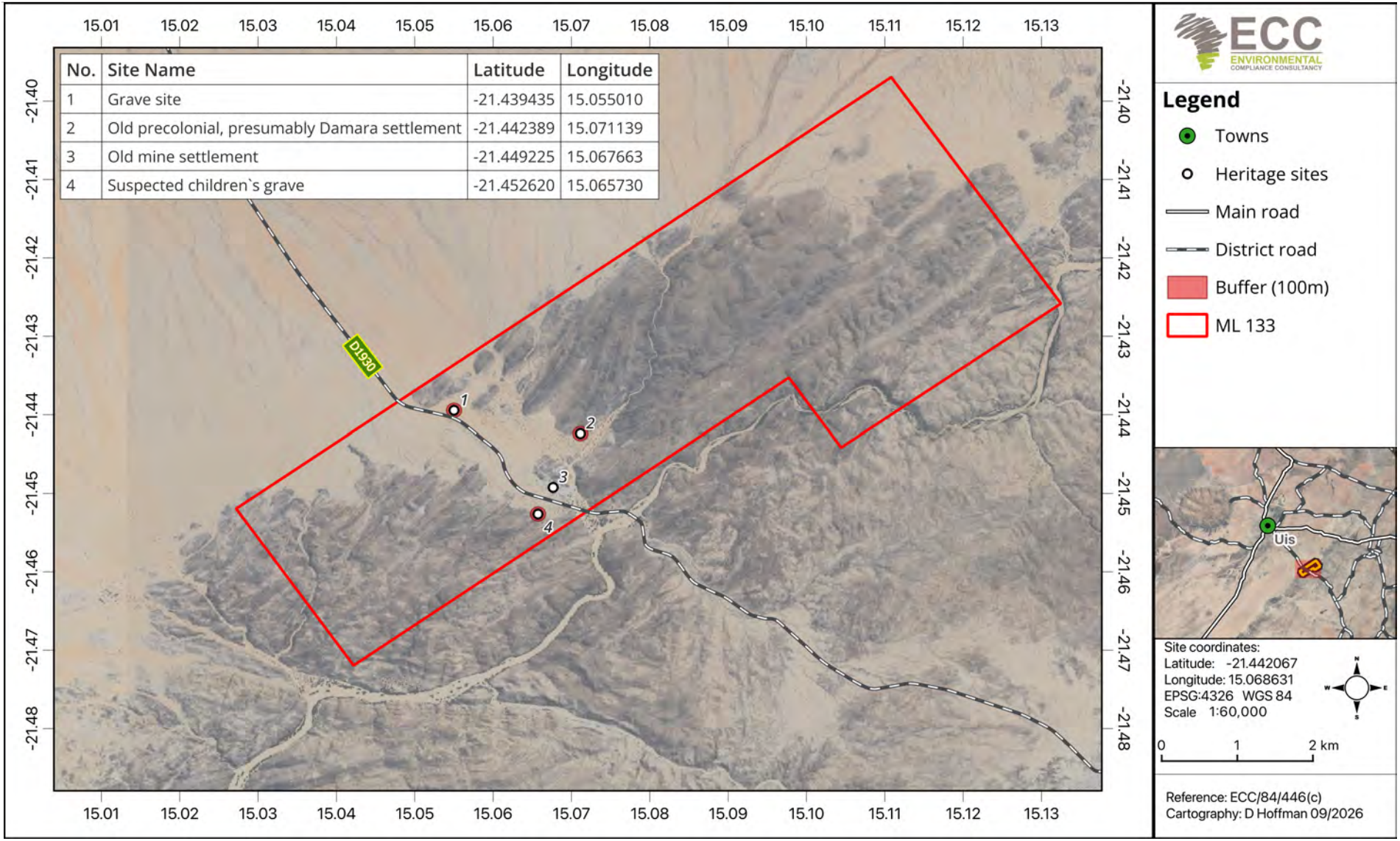


Figure 19 – Archaeological findings mapped within ML 133

(a)

(b)

(c)

(d)

Figure 20 - Burial site within Nai-Nais (a); Precolonial settlement in Nai-Nais (b); Mine worker accommodation structures in ML 133 (c); suspected children's graves (d)

5.20 NOISE

The noise impact assessment (NIA) for the Project was undertaken by Airshed Planning Professionals (Pty) Ltd in May 2026. Ambient noise within the Project area is dominated by natural sources, including wind, bird calls and insect activity. During periods of stronger winds, vegetation movement and wind interaction with the surrounding terrain contributes significantly to the ambient soundscape. Anthropogenic noise sources are limited and are generally associated with occasional vehicle movements along gravel access roads, farming activities and intermittent mining-related operations in the wider area.

The noise survey campaign was undertaken on 28 and 29 September 2023. For comparison purposes, the measured noise levels (LAeq) are presented in Figure 21 (day-time results) and Figure 22 (night-time results). The measured baseline noise levels were well below the IFC noise guidelines for residential areas at all 6 survey sites. Day-time results showed four out of the six sites (Sites 1, 3, 5, and 6) show almost identical average ambient noise levels in the narrow band of 36-37 dBA. Background noise levels across all sites remain low and contained between 22 dBA (Site 2) and 30 dBA (Sites 3 and 4). Night-time results showed background noise spans a very narrow band between 20 dBA (Site 5) and 23 dBA (Site 2), with four of the six sites sitting identically at 22 dBA.

Figure 23 shows the noise sensitive receptors in relation to the ML 133 exploration area.

Figure 24 shows the simulated day-time noise levels due to exploration activities. The NIA was scoped for the exploration phase; noise associated with the mining phase on ML 133 is addressed in Chapter 7. The impact significance is further assessed in chapter 7 and mitigation measures are described in the draft ESMP (Appendix A).

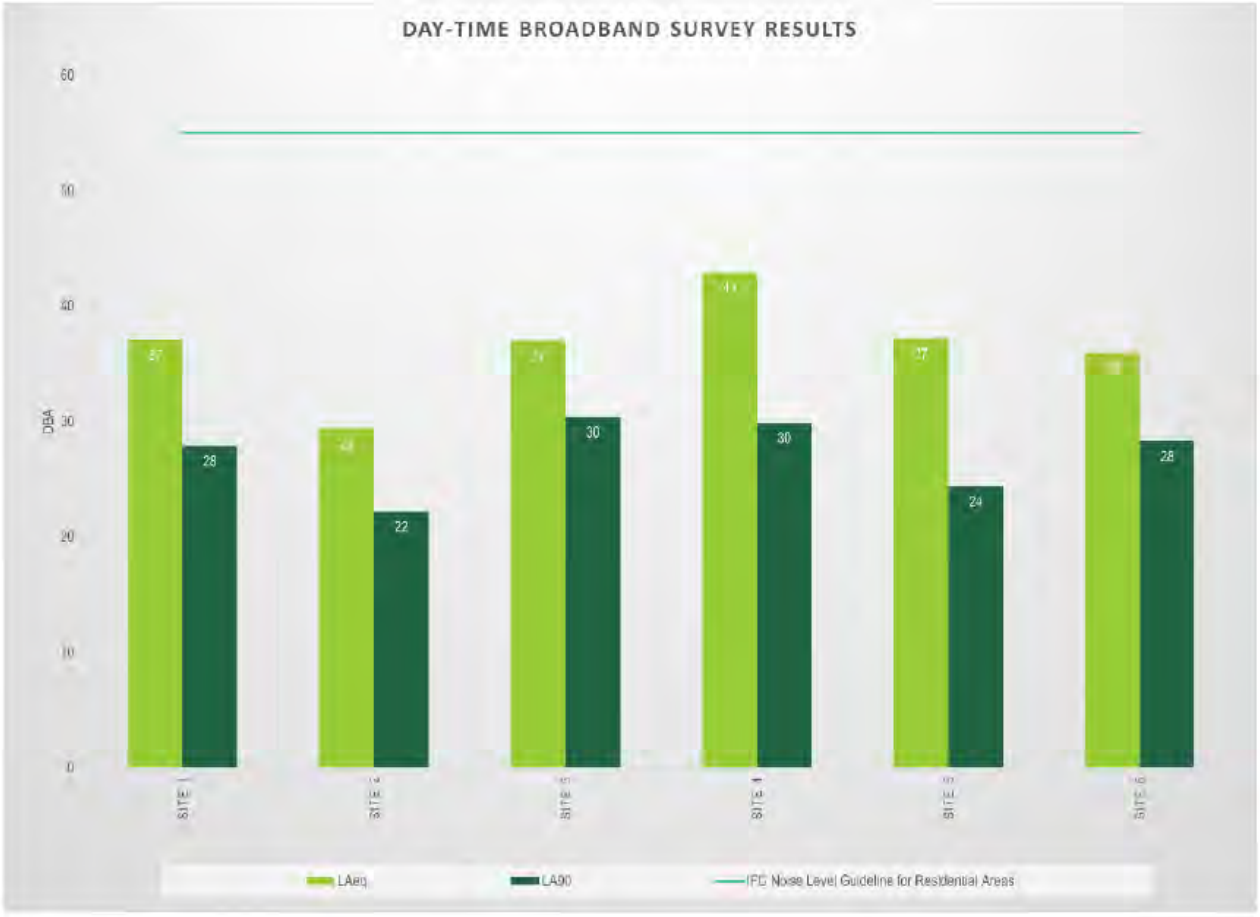


Figure 21 - Day-time broadband survey results (Source: Airshed 2026)

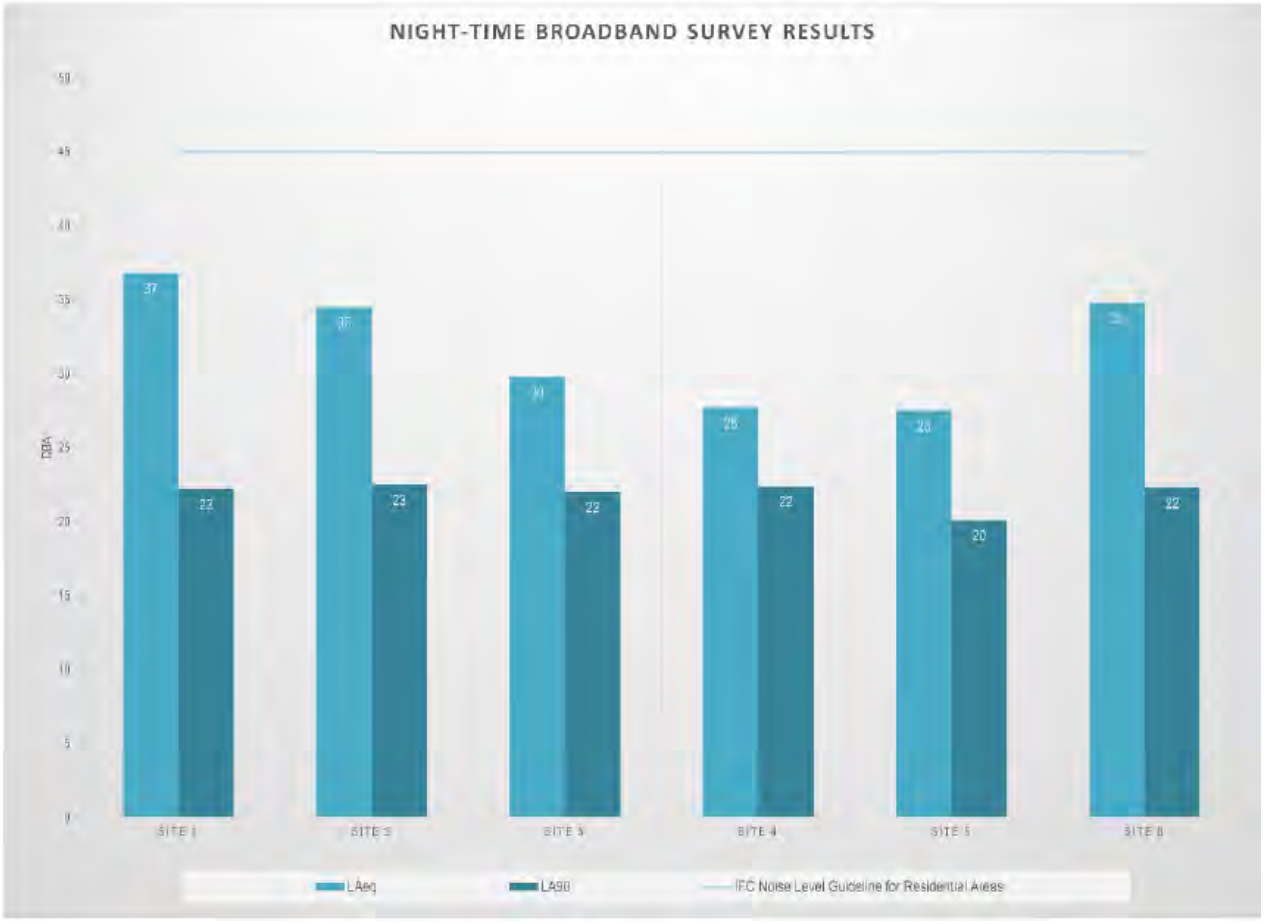


Figure 22 - Night-time broadband survey results (Source: Airshed, 2026)

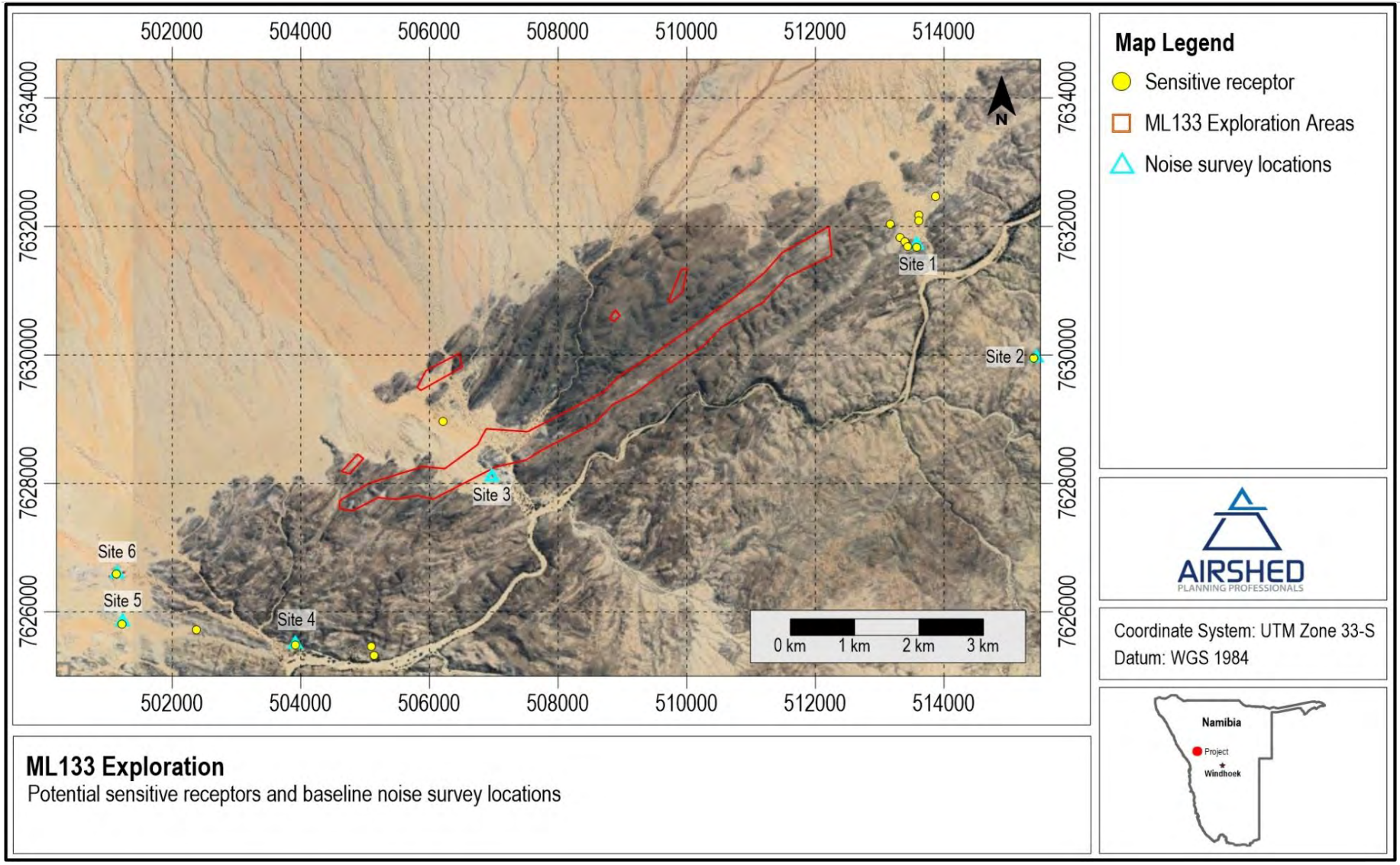


Figure 23 - Noise sensitive receptors (employee camp and residents) within the ML 133 exploration area (Source: Airshed, 2026)

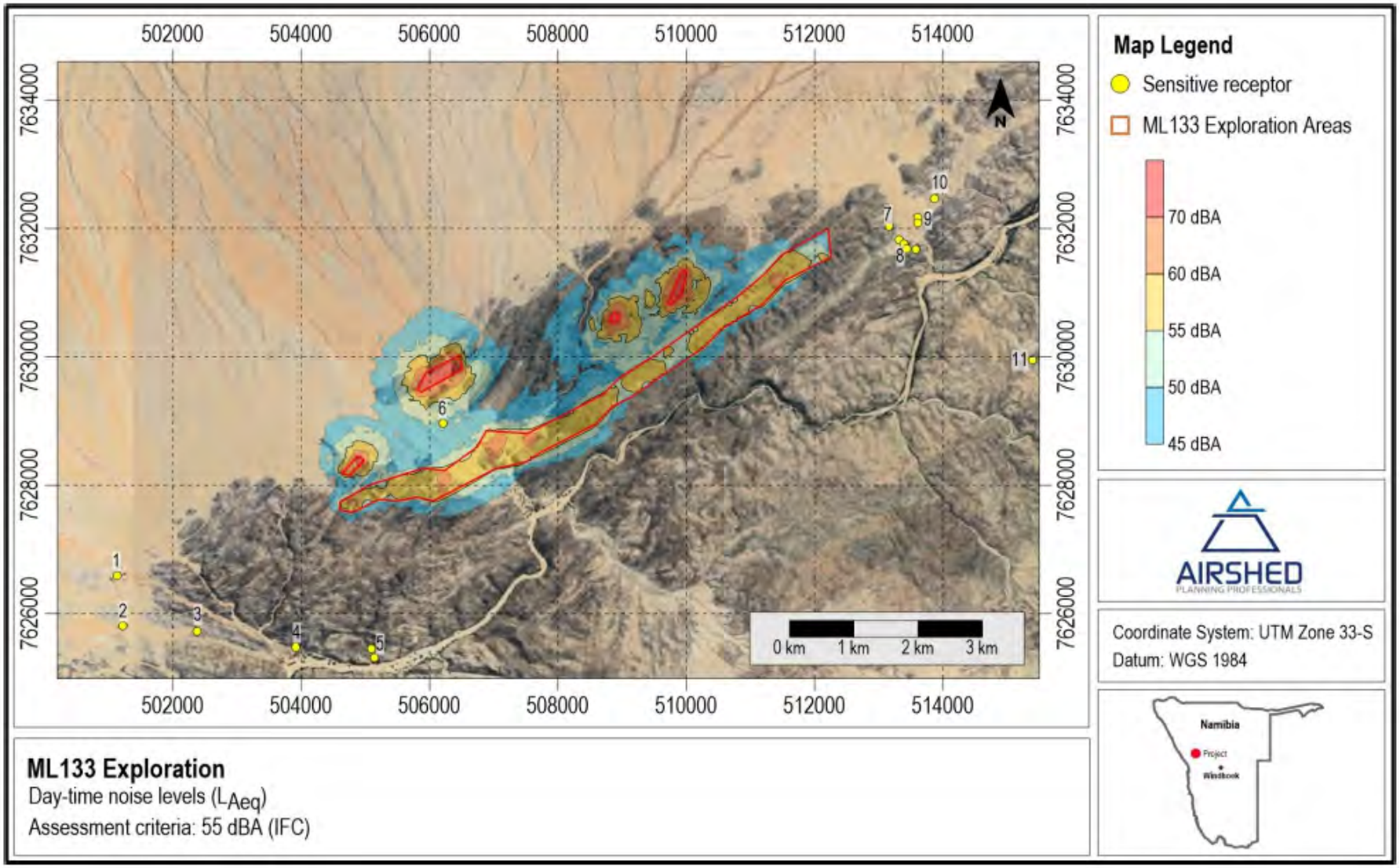


Figure 24 - Simulated day-time noise levels due to exploration activities

5.21 AIR QUALITY

An air quality impact assessment (AQIA) for the proposed Project was undertaken by Airshed Planning Professionals (Pty) Ltd in May 2026. According to the AQIA, particulate matter (PM) is the primary air pollutant of concern within the Project area. Existing emissions are mainly associated with windblown dust, vehicle movement on unpaved roads (C36 and D1930), historical mining disturbances and small-scale agricultural activities. Dust emissions may become more pronounced during dry and windy conditions, although the overall contribution of these sources to ambient air quality is considered to be relatively low. Additional regional sources include operations at the Uis Tin Mine and NamClay in Uis, together with occasional biomass burning, bush clearing activities and regional transport of mineral dust from northern Namibia.

Dust fallout monitoring has been conducted by ECC since September 2023. Designated stations marked as AQ-01 to AQ-08, serve as depositional dust stations, enabling the measurement of fallout dust over a period of 28 to 32 days. Adhering to the American methodology (ASTM D1739-98), these stations capture airborne particles as they settle into a collection bucket, thereby facilitating the acquisition of dust fallout air quality data. The threshold dust fallout follows the SANS limit for residential areas (600 mg/m^2/day). Figure 25 represents the average quarterly dust fallout results from September 2023 until March 2026. The average quarterly dust fallout levels remained well below the SANS limit for residential areas (600 mg/m^2/day).

The impact significance is further assessed in chapter 7 and mitigation measures are described in the draft ESMP (Appendix A).

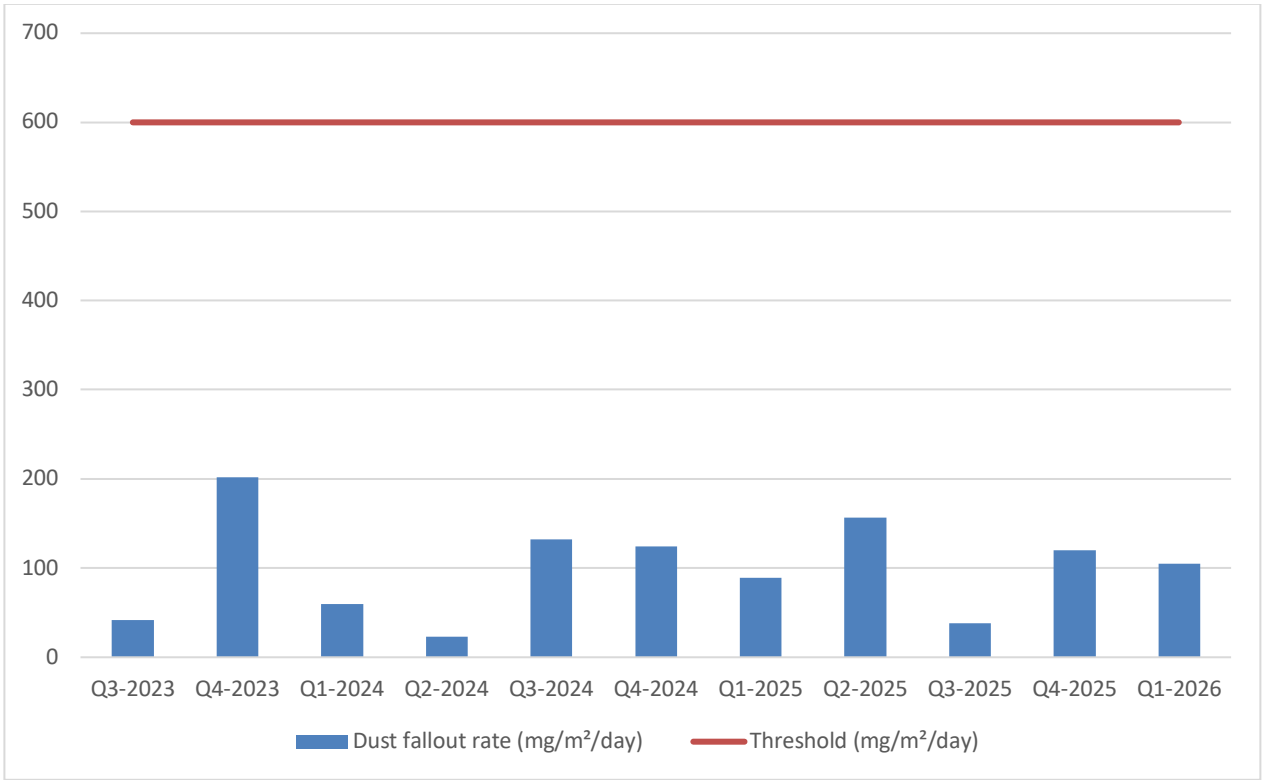


Figure 25 - The average quarterly dust fallout levels from Q3 2023 to Q1 2026

5.22 TRAFFIC

According to the transport impact statement (assessment) conducted by Innovative Transport Solutions (ITS) in July 2026 (Appendix G) for the exploration phase, the existing road network serving the Project comprises the C35, C36 and D1930 roads (Figure 26).

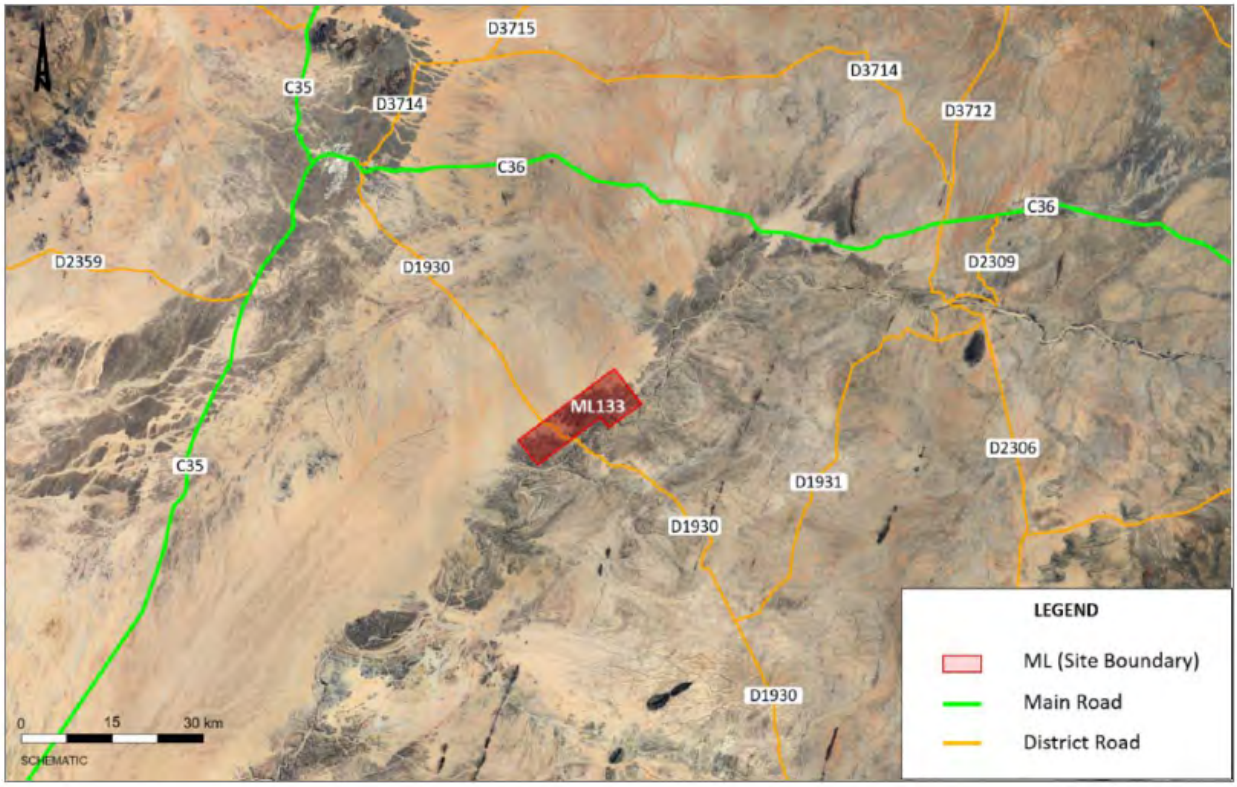


Figure 26 – Surrounding road network road hierarchy (Source: ITS, 2026)

The C35 and C36 are rural main roads that provide regional access to the area. The C36 is an unsealed gravel road with one lane in each direction and a posted speed limit of 100 km/h. The C35 consists predominantly of gravel, with a paved section extending north towards Uis. The paved section has one lane in each direction with narrow shoulders and a posted speed limit of 120 km/h, while the remaining gravel sections have a posted speed limit of 100 km/h. Roadworks to pave the remaining gravel section of the C35 are in progress, with approximately 8 km still to be paved at the time of writing. The D1930 is a rural district road comprising a single gravel carriageway with one lane in each direction and a posted speed limit of 80 km/h. This road traverses the ML 133 area and provides direct access to the Project site.

The ML covers approximately 3,288 ha and includes the historic Tin Tan Mine. Existing infrastructure is present on the site, although most of the ML area remains undeveloped. Access to the site will be via two proposed access points from the D1930 road, located approximately 30

km south of the C36/D1930 intersection and approximately 2 km apart. The Transport Impact Statement indicates that the surrounding road network has adequate capacity to accommodate the low traffic volumes anticipated during the exploration phase. Approximately 60 personnel will be employed, with around 85% accommodated on-site, thereby limiting daily commuting requirements. Traffic generated by the exploration programme is expected to comprise a small number of staff vehicles together with water delivery trucks, resulting in an estimated maximum of eight vehicle trips during both the AM and PM peak hours. According to the Committee of Transport Officials (COTO) guidelines, developments generating fewer than 50 peak-hour vehicle trips are generally considered to have a negligible impact on the surrounding road network. The transport impact statement was scoped for the exploration phase. The traffic implications of the mining phase, including the haulage of ore or concentrate from ML 133, are considered in Chapter 7.

With respect to road safety, the existing shoulder sight distance and vertical alignment at both proposed site accesses are considered acceptable. However, the Transport Impact Statement identifies that Site Access 2 intersects the D1930 at an acute angle of approximately 35°, which is below the recommended minimum intersection angle of 75°. The report therefore recommends that the access be redesigned to comply with geometric design standards and that appropriate warning signage be installed at both site access intersections to ensure safe vehicle movements during exploration activities.

The impact significance is further assessed in chapter 7 and mitigation measures are described in the draft ESMP (Appendix A).

5.23 VISUAL

The surrounding ML 133 environment is predominantly natural, with limited anthropogenic disturbance associated with existing mining activities, farm infrastructure, gravel access roads and utility services. The visual character of the area is defined by the arid landscape of the Erongo region, comprising exposed bedrock, scattered shrubs and grasses and open vistas across the surrounding plains and mountainous terrain (Mendelsohn, Jarvis, Roberts, & Robertson, 2002). Vegetation is generally sparse, allowing for relatively long viewing distances, particularly from elevated ground. However, local topography, including hills and ridges, provides natural screening in some areas, reducing the visibility of activities occurring within valleys or lower-lying terrain.

The ML 133 Project area has a relatively low population density (~16 houses), with potential visual receptors primarily comprising nearby farmsteads, workers associated with existing mining activities, users of local gravel roads, conservancy users and occasional tourists travelling through the wider area (Mendelsohn, Jarvis, Mendelsohn, & Robertson, 2022). The presence of existing mining-related infrastructure and activities within the broader landscape also contributes to the existing anthropogenic character of the area. Consequently, the visual sensitivity of the broader

area is considered relatively low, although receptors with direct and unobstructed views towards the ML 133 area may experience greater visual exposure.

The proposed exploration activities introduce temporary visual elements into this existing landscape, including exploration equipment, vehicles and two exploration campsites. The establishment and use of the camps may introduce artificial lighting associated with accommodation, security and other camp-related activities. Where activities occur during the evening or night, lighting may be visible from surrounding areas and could introduce localised artificial light into an otherwise predominantly rural environment. This could result in a temporary change to the existing night-time visual character, particularly for receptors with direct views towards the camps.

In addition, exploration-related vehicle movements on the predominantly gravel road network may generate dust, particularly during dry and windy conditions. Dust generated by light vehicles, water trucks and other exploration support vehicles may result in temporary and localised dust plumes along access routes, which could be visible to nearby receptors and temporarily affect visual clarity.

Mining on ML 133 will introduce longer term visual elements. These include open pit excavations, drilling and blasting, loading and hauling of ore and waste rock, crushing, screening and processing of ore, stockpiling of ore, waste rock and residue, the construction and maintenance of haul and access roads, and the associated support infrastructure and lighting. The visual character of the licence area will be altered for the life of mine and until rehabilitation is complete. The visual effects of both exploration and mining are assessed in Chapter 7.

The impact significance is further assessed in chapter 7 and mitigation measures are described in the draft ESMP (Appendix A).

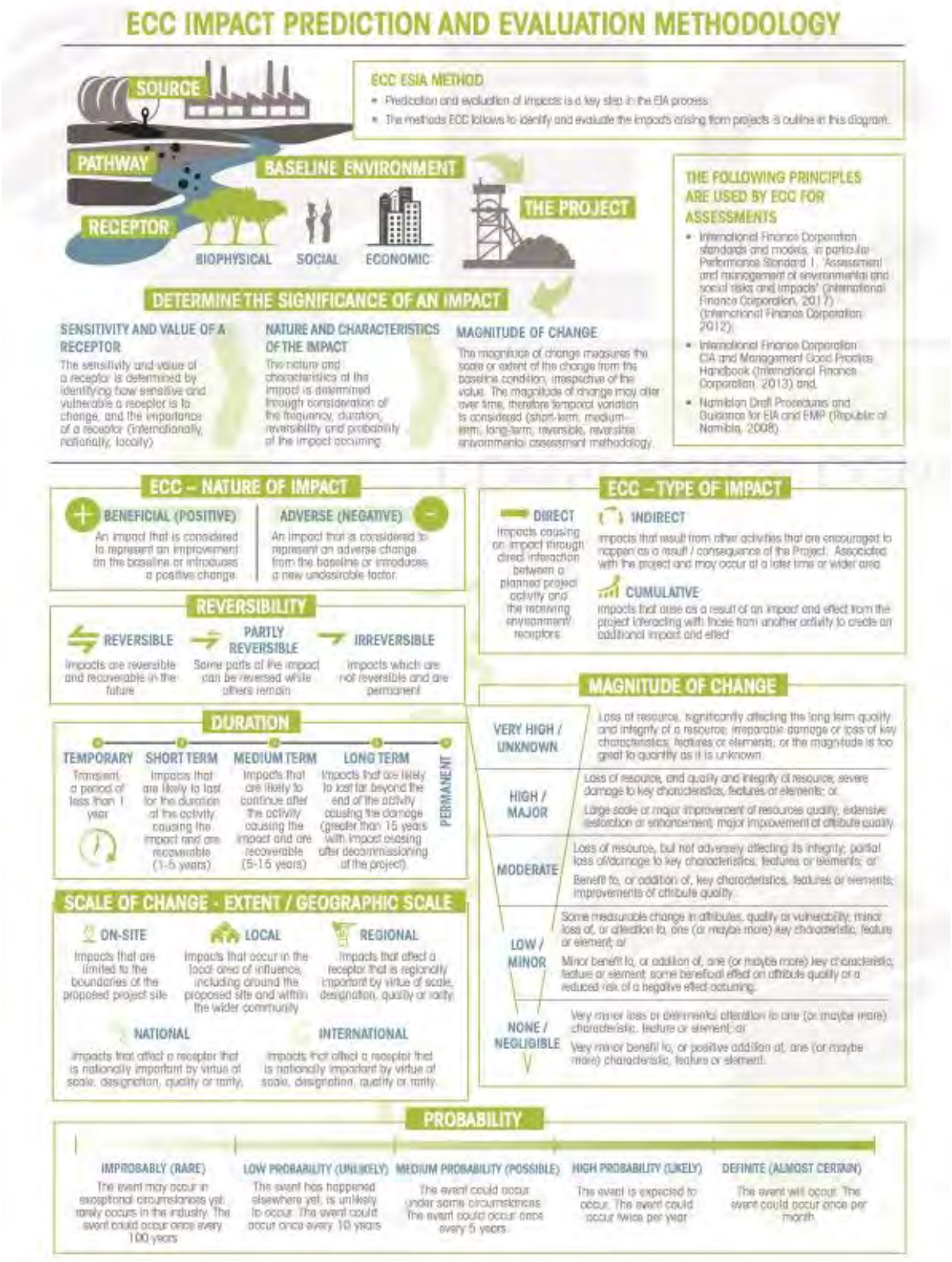
6 IMPACT IDENTIFICATION AND EVALUATION METHODOLOGY

6.1 INTRODUCTION

The impact assessment methodology described in this chapter is designed to systematically identify and evaluate potential environmental and social impacts that may arise from the proposed Project. ML 133 is a mining licence and the Project comprises both exploration and mining activities on the licence, as described in Chapter 4. The method set out in this chapter is applied to both. The method takes into consideration the baseline characteristics of the Project area and assesses the significance of impacts based on various factors, including the sensitivity and value of environmental and social receptors, the nature and characteristics of the potential impact and the magnitude of potential change.

This chapter provides a structured approach for evaluating the potential impacts of the proposed Project on the environment and social aspects. The method shown in Figure 27 provides assessment guidance that is used to evaluate impacts, and it also acknowledges any limitations, uncertainties and assumptions associated with the assessment methodology. It outlines how impacts are identified and evaluated and how the level of significance is derived. The method also addresses the application of mitigation measures in the assessment and how additional mitigations are identified.

Overall, this chapter provides a comprehensive and systematic approach for conducting impact assessments, which can help ensure that potential environmental and social impacts are thoroughly evaluated and addressed in the decision-making process for the proposed Project. However, it is important to note that the effectiveness of this method would ultimately depend on its implementation and the accuracy of the baseline data and assumptions used in the assessment, as discussed further in section 6.3.


ECC IMPACT PREDICTION AND EVALUATION METHODOLOGY
SOURCE
PATHWAY
RECEPTOR
BASELINE ENVIRONMENT
BIOPHYSICAL
SOCIAL
ECONOMIC
THE PROJECT
ECC ESIA METHOD
• Prediction and evaluation of impacts is a key step in the EIA process
• The methods ECC follows to identify and evaluate the impacts arising from projects is outline in this diagram.
THE FOLLOWING PRINCIPLES ARE USED BY ECC FOR ASSESSMENTS
• International Finance Corporation standards and models, in particular Performance Standard 1, 'Assessment and management of environmental and social risks and impacts' (International Finance Corporation, 2017) (International Finance Corporation, 2012);
• International Finance Corporation CIA and Management Good Practice Handbook (International Finance Corporation, 2013) and,
• Namibian Draft Procedures and Guidance for EIA and EMP (Republic of Namibia, 2008)
DETERMINE THE SIGNIFICANCE OF AN IMPACT
SENSITIVITY AND VALUE OF A RECEPTOR
The sensitivity and value of a receptor is determined by identifying how sensitive and vulnerable a receptor is to change, and the importance of a receptor (internationally, nationally, locally)
NATURE AND CHARACTERISTICS OF THE IMPACT
The nature and characteristics of the impact is determined through consideration of the frequency, duration, reversibility and probability of the impact occurring
MAGNITUDE OF CHANGE
The magnitude of change measures the scale or extent of the change from the baseline condition, irrespective of the value. The magnitude of change may alter over time, therefore temporal variation is considered (short-term, medium-term, long-term, reversible, reversible environmental assessment methodology
ECC – NATURE OF IMPACT
BENEFICIAL (POSITIVE)
An impact that is considered to represent an improvement on the baseline or introduces a positive change
ADVERSE (NEGATIVE)
An impact that is considered to represent an adverse change from the baseline or introduces a new undesirable factor.
ECC – TYPE OF IMPACT
DIRECT
Impacts causing an impact through direct interaction between a planned project activity and the receiving environment/ receptors
INDIRECT
Impacts that result from other activities that are encouraged to happen as a result / consequence of the Project. Associated with the project and may occur at a later time or wider area
CUMULATIVE
Impacts that arise as a result of an impact and effect from the project interacting with those from another activity to create an additional impact and effect
REVERSIBILITY
REVERSIBLE
Impacts are reversible and recoverable in the future
PARTLY REVERSIBLE
Some parts of the impact can be reversed while others remain
IRREVERSIBLE
Impacts which are not reversible and are permanent
DURATION
TEMPORARY
Transient, a period of less than 1 year
SHORT TERM
Impacts that are likely to last for the duration of the activity causing the impact and are recoverable (1-5 years)
MEDIUM TERM
Impacts that are likely to continue after the activity causing the impact and are recoverable (5-15 years)
LONG TERM
Impacts that are likely to last far beyond the end of the activity causing the damage (greater than 15 years with impact ceasing after decommissioning of the project)
PERMANENT
MAGNITUDE OF CHANGE
VERY HIGH / UNKNOWN
Loss of resource, significantly affecting the long term quality and integrity of a resource; irreparable damage or loss of key characteristics, features or elements; or the magnitude is too great to quantify as it is unknown
HIGH / MAJOR
Loss of resource, and quality and integrity of resource; severe damage to key characteristics, features or elements; or
Large scale or major improvement of resources quality; extensive restoration or enhancement; major improvement of attribute quality
MODERATE
Loss of resource, but not adversely affecting its integrity; partial loss of/damage to key characteristics, features or elements; or
Benefit to, or addition of, key characteristics, features or elements; improvements of attribute quality.
LOW / MINOR
Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (or maybe more) key characteristic, feature or element; or
Minor benefit to, or addition of, one (or maybe more) key characteristic, feature or element; some beneficial effect on attribute quality or a reduced risk of a negative effect occurring.
NONE / NEGLIGIBLE
Very minor loss or detrimental alteration to one (or maybe more) characteristic, feature or element; or
Very minor benefit to, or positive addition of, one (or maybe more) characteristic, feature or element.
SCALE OF CHANGE - EXTENT / GEOGRAPHIC SCALE
ON-SITE
Impacts that are limited to the boundaries of the proposed project site
LOCAL
Impacts that occur in the local area of influence, including around the proposed site and within the wider community
REGIONAL
Impacts that affect a receptor that is regionally important by virtue of scale, designation, quality or rarity
NATIONAL
Impacts that affect a receptor that is nationally important by virtue of scale, designation, quality or rarity.
INTERNATIONAL
Impacts that affect a receptor that is nationally important by virtue of scale, designation, quality or rarity.
PROBABILITY
IMPROBABLY (RARE)
The event may occur in exceptional circumstances yet rarely occurs in the industry. The event could occur once every 100 years
LOW PROBABILITY (UNLIKELY)
The event has happened elsewhere yet, is unlikely to occur. The event could occur once every 10 years
MEDIUM PROBABILITY (POSSIBLE)
The event could occur under some circumstances the event could occur once every 5 years
HIGH PROBABILITY (LIKELY)
The event is expected to occur. The event could occur twice per year
DEFINITE (ALMOST CERTAIN)
The event will occur. The event could occur once per month

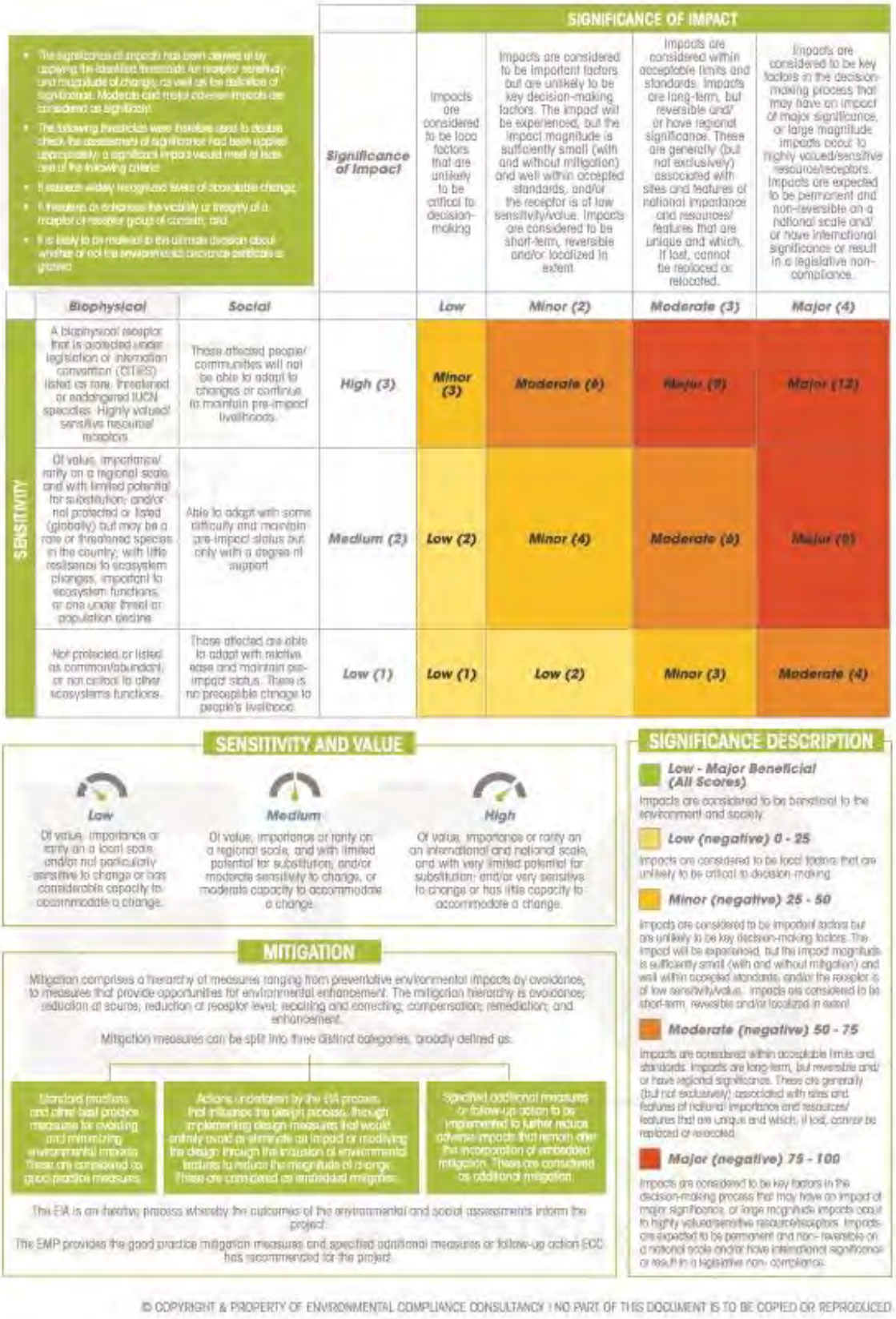


Figure 27 - ECC ESIA methodology based on IFC standards

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 limitations and uncertainties associated with the assessment methodology in Namibia were observed to include the absence of topic-specific assessment guidance, with a generic methodology being applied based on IFC guidance and professional judgement. This implies that there may be limitations in terms of tailoring the assessment to specific topics or issues relevant to Namibia, and that the methodology may not fully capture the unique characteristics and nuances of the local context.

The impact assessment process also acknowledges the presence of uncertainties and assumptions were made based on realistic worst-case scenarios to ensure that potential environmental impacts are identified and assessed comprehensively. These assumptions and uncertainties are identified and documented during the assessment process, shown in Table 8, in line with best practice.

A cautious approach is applied where uncertainties exist, allowing for the identification and assessment of potential impacts based on worst-case scenarios. The limitations and uncertainties are acknowledged and described in the baseline section of the assessment (chapter 5), indicating transparency and awareness of potential limitations in the methodology.

It is important to note that the limitations and uncertainties identified in the assessment methodology may introduce potential biases or inaccuracies in the assessment results. Therefore, it is recommended to regularly review and update the methodology to address these limitations and uncertainties, and to ensure that it remains robust and relevant for the specific context of Namibia. Additionally, incorporating stakeholder feedback and local knowledge can also contribute to improving the accuracy and comprehensiveness of the assessment process.

Table 8 - Limitation, uncertainties and assumptions

Limitation/uncertainty	Assumption
Scope of the assessment covers exploration and mining activities on ML 133	ML 133 is a mining licence and mining is intended to take place on it. This ESIA amendment therefore assesses both the exploration activities and the mining activities on ML 133 as described in Chapter 4, and the ESMP covers both. Where the detailed design of mining and processing infrastructure is not yet fixed, the assessment is based on the activities and parameters set out in Chapter 4 and on a realistic, worst case. Any material change to those activities or parameters will be addressed through an amendment to the environmental clearance certificate and ESMP, not through a separate assessment.
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.
The program of exploration works is not confirmed	It is assumed that field exploration work shall be undertaken in separate campaigns over the course of the licence period and during the validity of the environmental clearance certificate. Accordingly, this assessment considers the exploration methods listed in the listed activities table in Chapter 4 (which includes sampling in its broad sense, covering grab, trench, drill and bulk sampling) and the maximum likely impacts associated with those activities.

6.4 CUMULATIVE IMPACTS

6.4.1 CUMULATIVE IMPACT ASSESSMENT METHOD

Cumulative impacts may arise as a result of other Project activities, or due to the combination of two or more projects within the immediate surroundings of ML 133 (Figure 28). A cumulative impact assessment (CIA) will be undertaken by applying the IFC CIA Good Practice Handbook (International Finance Corporation, 2013), which recommends that a rapid CIA is undertaken.

A rapid CIA takes into consideration the challenges associated with a good CIA process, which include a lack of basic baseline data, uncertainty associated with anticipated development, limited government capacity, and the absence of strategic regional, sectoral, or integrated resource planning schemes.

The following five-step rapid CIA process will be followed:

Step 1: Scoping – Determine spatial and temporal boundaries.

Step 2: Receptor identification – identify valued environmental and social receptors and identify reasonably foreseeable developments.

Step 3: Determine the present condition of valued environmental and social receptors (the baseline).

Step 4: Evaluate the significance of the cumulative impacts.

Step 5: Identify mitigation measures to avoid or reduce cumulative impacts.

The following information will be applied to the assessment in line with the above steps and IFC guidance:

- The spatial and temporal boundaries of the CIA are the extent of the ML boundaries and the duration of exploration and mining activities on ML 133, from establishment through operation to closure and rehabilitation.
- Valued environmental and social receptors that may be affected.
- A review of existing and reasonable, anticipated and/or planned developments has been undertaken, which is based on the information presented in chapter 4.
- The predicted future conditions of sensitive and common environmental and social receptors have been taken into consideration in the assessment.
- The assessment findings will be presented in the assessment report and will have the CIA applied in combination with professional judgment and published environmental assessment reports.
- A review of mitigation and monitoring measures will be undertaken, with any additional ones identified.

6.5 MITIGATION

Mitigation comprises a hierarchy of measures ranging from preventing environmental impacts through 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 through which the ESIA process influences 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 mitigations.
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 actions to be implemented, to further reduce adverse impacts that remain after the incorporation of embedded mitigation. These are considered as additional mitigations.

The ESIA is an iterative process whereby the outcomes of the environmental assessments inform the Project.

The draft ESMP (Appendix A) provides the good practice measures and specified additional measures or follow-up actions.

Embedded mitigation and good practice mitigation were taken into account for this 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.

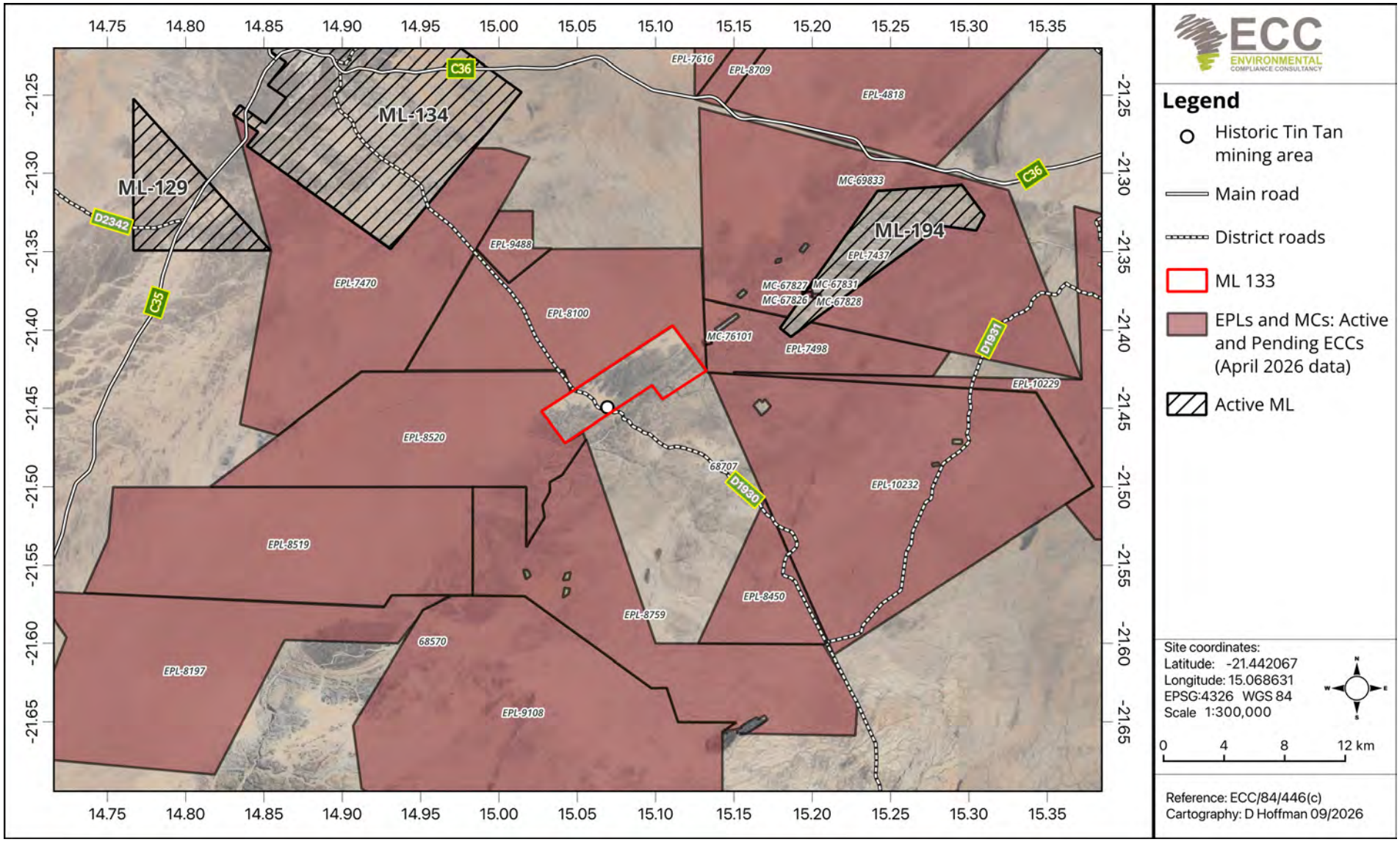


Figure 28 - Exclusive Prospecting Licences (EPLs) and Mining Claims (MC) and Mining licences (MLs) surrounding ML 133

7 IMPACT ASSESSMENT FINDINGS AND PROPOSED MITIGATION MEASURES

This chapter presents the findings of the ESIA for the proposed project as per the ESIA process, scope and methodology set out in Chapters 2 and 6. The aim of this ESIA report is to focus on the significant impacts that may arise because of the proposed Project. This chapter therefore only considers the significant impacts and or those that may have specific interest to the community and stakeholders. A summary of impacts that are not considered significant is discussed in 7.1.

The list of high level and likely impacts that are considered significant or of interest to the community and stakeholders are as follows:

- Socio-economic: employment and employee occupational health and safety
- Socio-economic: community
- Socio-economic: traffic
- Socio-economic: tourism
- Socio-economic: heritage
- Socio-economic: visual
- Socio-economic: air quality
- Socio-economic: noise
- Environment: biodiversity , soil, surface and groundwater and waste.

For each potential significant or sensitive impact, a summary is provided which includes the activity that would cause an impact; the potential impacts; embedded or best practice mitigation (stated where required / available); the sensitivity of receptor that would be impacted; the severity, duration, and probability of impacts; the significance of impacts before mitigation and after mitigation measures are applied.

7.1 IMPACTS NOT CONSIDERED SIGNIFICANT

As a result of an iterative project evolution process, mitigation has been incorporated and embedded into the Project plan, thereby designing out potential environmental and social impacts or reducing the potential impact so that it is not significant. The ESMP provides best practice measures, management and monitoring for identified impacts. Impacts that have been assessed as not being significant are summarised in Table 9 and are not discussed further, unless otherwise indicated

Table 9 - Non-significant impacts

Environmental or Social topic	Potential impact	Rational
Social environment		
Land use	Land may no longer be used for grazing where it is taken up by the open pits,	Part of the area has already been disturbed by the historic Tin-Tan workings and associated small scale mining (Figure 3 under chapter 2).

Environmental or Social topic	Potential impact	Rational
	waste rock dumps, the processing area and access roads	The mine footprint is small relative to the grazing land available in the surrounding area, so the loss of grazing is not expected to be significant. Where communal land is affected, the consent of the traditional authority and the communal land board is required under the Communal Land Reform Act 5 of 2002 whether or not the impact is significant.
Tourism, visual and sense of place	Mining operations, dust and night lighting may affect the visual quality of the area and the experience of visitors travelling to and through it	The nearest recognised tourism attraction is the Brandberg Mountain, approximately 50 km from the licence area. The screening criterion applied is a visual zone of influence of approximately 10 km for open pits, waste rock dumps and plant structures in open terrain. At 50 km the mine will not be visible from the mountain or from the routes serving it, and it will not alter the setting that visitors travel for, so the Brandberg is screened out. The historic Tin-Tan workings also mean that mining is already part of the character of the licence area itself.
Biophysical environment		
Natural disasters and natural hazards	A flood, drought, seismic event, extreme wind or lightning strike damages mine infrastructure and causes a secondary environmental incident, for example the release of sediment, hydrocarbons or process water	A natural hazard is an external event that the mine must be designed and managed for, and it belongs in the assessment only where the hazard could trigger an environmental incident. Drought, high temperatures, high winds and dust storms are ordinary operating conditions in southern Erongo rather than events, and they are addressed through water supply planning and dust control. Seismic risk in Namibia is low. Flash flooding of the ephemeral drainage lines crossing the licence

Environmental or Social topic	Potential impact	Rational
		area is the one hazard that cannot be screened out on current information, because inundation of a pit, the toe of a waste rock dump or a fuel and reagent store would cause a release (Appendix D). Provided that infrastructure is sited outside the 1:100 year flood line, and that bunding and stormwater controls are designed for the assessed design storm, the residual risk is not significant. The flood, fire and spill scenarios must still be carried in the risk assessment and in the emergency preparedness and response plan conducted by the Proponent.

7.2 SOCIOECONOMIC ENVIRONMENT: ECONOMIC

The socio-economic impact assessment concept embraces both social and economic impacts. The potential social and economic impacts associated with the proposed Project include employment creation, revenue for the government, contribution to local businesses and skills development. ML 133 is a mining licence and both the exploration programme and the mining activities authorised on the licence (Chapter 4) are assessed. Exploration phase impacts are described first, followed by the mining phase. An overview of the socio-economic impacts is shown in Figure 29, before mitigation. Each specific impact is discussed in detail in the sections below and the impact assessment ratings are summarised in Table 10.

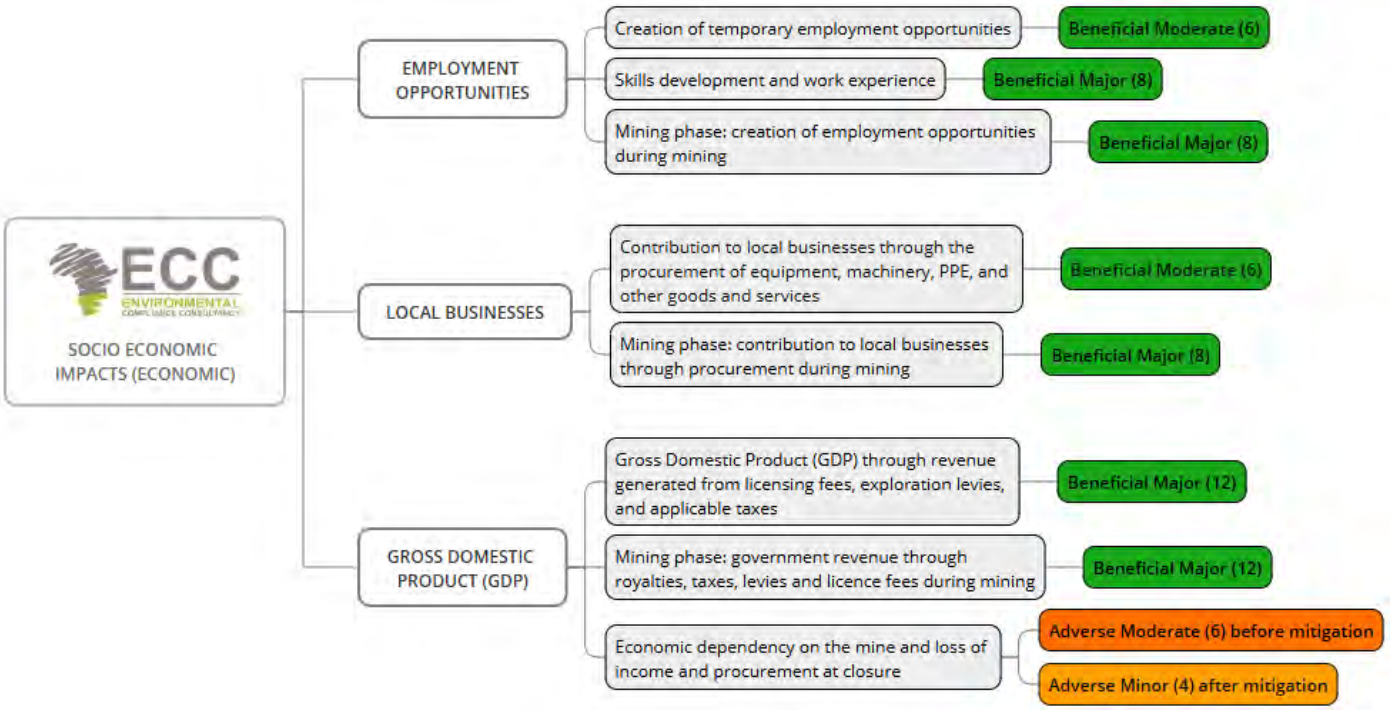


Figure 29 - Socio-economic impacts

7.2.1 EMPLOYMENT OPPORTUNITIES, LOCAL BUSINESSES AND GDP

7.2.1.1 Creation of temporary employment opportunities

The proposed ML 133 exploration programme will create temporary employment opportunities during the exploration phase. Employment is expected to be generated through activities such as drilling operations, geological investigations, environmental monitoring, site supervision, security, logistics and general support services. The impact is considered beneficial as these employment opportunities generate direct income to employees and enable them to enhance household well-being and improve overall livelihood conditions.

Employment during exploration is considered reversible, as these employment opportunities are temporary in nature and typically cease once exploration activities conclude, after which affected households or communities generally return to their pre-existing economic conditions. The impact is short-term, occurring for the duration of the exploration programme. The impact is expected to be predominantly regional, with the primary beneficiaries being workers and businesses in Uis and the surrounding Erongo Region.

As discussed in Chapter 5, the closure of mines in the Uis area has had a significant impact on local households, particularly through the loss of employment and associated economic opportunities. The renewed exploration for tin and other minerals has the potential to support local employment and contribute to broader economic opportunities within the local community. The probability of the positive impact occurring is considered definite. The exploration programme is expected to be executed by reputable drilling contractors with experienced personnel already in place. In addition, all drilling contractors must be registered with the

Department of Water Affairs, in compliance with the Water Resources Management Act, No. 11 of 2013, and the associated 2023 Regulations.

The magnitude of change is considered low as the number of jobs created is expected to be limited with a workforce of approximately 60 employees. The sensitivity of the receptor is rated medium given the regional scale of the impact, as employees may be sourced from the broader region. The overall significance of the impact is rated beneficial moderate. No mitigation measures are required for this beneficial impact.

7.2.1.2 Skills development and work experience

Exploration activities on ML 133 will provide opportunities for workers to acquire practical skills and technical experience in various field-based activities such as drilling assistance, geological sampling, core logging support, sample preparation and handling. Participation in these activities allows workers to gain exposure to industrial standard operational procedures, occupational health and safety practices and basic technical skills applicable to the mineral exploration and mining sector. Such experience can contribute to skills development and improved employability within broader mining industry.

The nature of the impact is assessed as beneficial, directly impacting employees. Once a worker has acquired technical skills, they retain the ability to apply these skills in future employment opportunities. The impact is considered irreversible and permanent as the transfer of knowledge and skills cannot be reversed. The extent of the impact is assessed as regional, as employment and skills development will primarily benefit individuals from nearby towns or settlements within the Erongo Region. The likelihood of the impact is considered definite, as the exploration team will acquire skills and work experience through the completion of various field exploration activities.

The magnitude of change is rated moderate, given that the skills acquired during the exploration phase are highly transferable to subsequent exploration or mining projects. The sensitivity of the receptor is rated medium due to the regional scale of the impact. The overall significance of the impact is rated beneficial major. No mitigation measures are required.

7.2.1.3 Contribution to local businesses through the procurement of equipment, machinery, PPE, and other goods and services

Exploration activities will create demand for goods, consumables, fuel, personal protective equipment (PPE) and the rental of drilling equipment, machinery and vehicles. Businesses and service providers within the Erongo Region are expected to benefit from supplying these goods and services, creating opportunities for increased revenue and supporting regional economic activity.

The impact is considered beneficial as it provides direct economic opportunities for local and regional businesses. It is reversible, as these benefits will cease once the exploration programme is completed. The impact is expected to be short term, with local procurement of goods, consumables, equipment, machinery and support services taking place throughout the

exploration phase (~5 years). The impact will primarily occur within the Erongo Region where suppliers and service providers are located. The impact is considered likely, as specialised equipment, machinery, spare parts, fuel and other operational requirements will need to be sourced from regional businesses for the duration of the programme.

The magnitude of change is considered minor, as the exploration phase requires relatively limited quantities of goods and services compared to later project stages. The sensitivity of the receptor is considered medium due to the regional economic benefits associated with local procurement. Overall, the impact is assessed as moderate beneficial, and no mitigation measures are considered necessary.

7.2.1.4 Gross Domestic Product (GDP) through revenue generated from licensing fees, exploration levies, and applicable taxes.

Exploration activities contribute to government revenue through licensing and permit fees, exploration levies, applicable taxes and other statutory payments required under the Minerals (Prospecting and Mining) Act No. 33 of 1992. These revenues support national and regional development by funding public services, infrastructure and socio-economic programmes, which indirectly benefit local communities and the wider economy.

The impact is considered beneficial, as the financial contributions generated through exploration activities provide government with resources to support development initiatives beyond the Project area. The impact is considered partly reversible, as the revenue generated from the exploration programme is limited to the duration of exploration (~5 years). Once exploration activities cease, these specific revenue streams will end; however, investments made using these funds may continue to provide long-term socio-economic benefits. The impact is expected to occur over the short term, corresponding with the anticipated exploration period. The impact is definite, as payment of licence fees, permit fees, levies and applicable taxes is a mandatory legal requirement for maintaining exploration rights and conducting operations.

The magnitude of change is considered high, reflecting the cumulative financial contributions associated with licence fees, permit applications, operational expenditure and applicable taxes. The sensitivity of the receptor is also considered high, as the benefits are realised at a national and regional level through government expenditure and development programmes. Overall, the impact is assessed as major beneficial and no mitigation measures are required.

7.2.1.5 Mining phase: employment, skills development, procurement and government revenue

The mining activities authorised on ML 133 comprise open pit mining, drilling and blasting, loading and hauling of ore and waste rock, crushing and screening, stockpiling and the construction and maintenance of haul and access roads, with ore transported to the existing processing plant at Uis (Chapter 4). These activities will sustain the same categories of socio-economic benefit as exploration, but over a longer period and at a larger scale.

Employment during mining will be generated through mining operations, haulage, maintenance, environmental and safety functions, security, catering and general support services. The impact is

beneficial and direct, and is reversible at closure when mining employment ceases. It is long term, lasting for the life of mine, and regional in extent, with workers expected to be drawn from the Nai-Nais community, Uis and the wider Erongo Region. The probability is definite. The magnitude of change is rated moderate, as the mining workforce will exceed the exploration workforce and the employment will be sustained rather than campaign based, and the sensitivity of the receptor is medium given the regional scale and the limited alternative employment in the Uis area described in Chapter 5. The significance of the impact is rated beneficial major. Skills development and work experience will follow the same pattern as described for exploration, but with a broader range of mining, processing and maintenance skills, and is likewise rated beneficial major.

Procurement of goods and services during mining, including fuel, explosives, spares, tyres, PPE, plant hire, haulage and catering, will create sustained demand for suppliers in Uis, the Erongo Region and nationally. The impact is beneficial, direct, reversible at closure, long term and regional, and is considered definite. The magnitude of change is rated moderate and the sensitivity of the receptor medium, giving a significance of beneficial major.
Mining will generate royalties on minerals won, income and other taxes, export levies where applicable and ongoing licence fees under the Minerals (Prospecting and Mining) Act No. 33 of 1992. The impact is beneficial, direct and partly reversible, long term and national in extent, and definite. The magnitude of change and the sensitivity of the receptor are both rated high, giving a significance of beneficial major.

The reliance of local households and businesses on mining income also carries an adverse impact at the end of the life of mine, when employment and procurement cease. This dependency impact is adverse, indirect and partly reversible, long term and regional, and is considered likely given the history of mine closure in the Uis area described in Chapter 5. The magnitude of change is rated minor, as the mining workforce is modest relative to the regional economy and the Uis processing plant is expected to continue operating, and the sensitivity of the receptor is medium. The significance is rated adverse moderate before mitigation. Mitigation, comprising local employment and procurement targets, skills transfer that is portable beyond the mine, and closure planning that addresses the social transition, is set out in the draft ESMP (Appendix A). The significance is rate adverse minor after mitigation.

Table 10 - Socio-economic impact assessment rating

Activity	Receptor	Impact	Nature of impact	Value and sensitivity	Magnitude of change	Significance of impact
Exploration activities	Employees and contractor employees	Creation of temporary employment opportunities.	Beneficial Direct Reversible Short term Regional Definite	Medium	Low	Beneficial Moderate (6)

Activity	Receptor	Impact	Nature of impact	Value and sensitivity	Magnitude of change	Significance of impact
		Skills development and work experience.	Beneficial Direct Irreversible Permanent Regional Definite	Medium	Moderate	Beneficial Major (8)
	Local and regional economy	Local businesses: contribution to local businesses and vendors for equipment, machinery, PPE and other goods and services.	Beneficial Direct Reversible Short term Regional Likely	Medium	Minor	Beneficial Moderate (6)
	National economy	Gross domestic product (GDP): revenue generated through licencing fees, exploration levies and taxes.	Beneficial Direct Partly reversible Short term National Definite	High	High	Beneficial Major (12)
Mining activities	Employees and contractor employees	Creation of employment opportunities during mining.	Beneficial Direct Reversible Long term Regional Definite	Medium	Moderate	Beneficial Major (8)
	Local and regional economy	Local businesses: contribution to local businesses and vendors for	Beneficial Direct Reversible Long term Regional Definite	Medium	Moderate	Beneficial Major (8)

Activity	Receptor	Impact	Nature of impact	Value and sensitivity	Magnitude of change	Significance of impact
		equipment, machinery, consumables, PPE and other goods and services during mining.				
	National economy	Government revenue through royalties, taxes, levies and licence fees during mining.	Beneficial Direct Partly reversible Long term National Definite	High	High	Beneficial Major (12)
	Local community and businesses	Economic dependency on the mine and loss of income and procurement at closure.	Adverse Indirect Partly reversible Long term Regional Likely	Medium	Minor	Adverse Moderate (6)

7.3 SOCIOECONOMIC ENVIRONMENT – SOCIAL

Social impacts include potential consequences to local landowners, neighbours, sensitive receptors within the Nai-Nais community and the Tsiseb conservancy, impacting their lives, work or interactions. ML 133 is a mining licence and both the exploration programme and the mining activities authorised on the licence (Chapter 4) are assessed. For each topic the exploration phase impacts are described first, followed by the mining phase. An overview of the social impacts is shown in Figure 30, before mitigation. Each specific impact is discussed in detail in the sections below and described in Table 11.

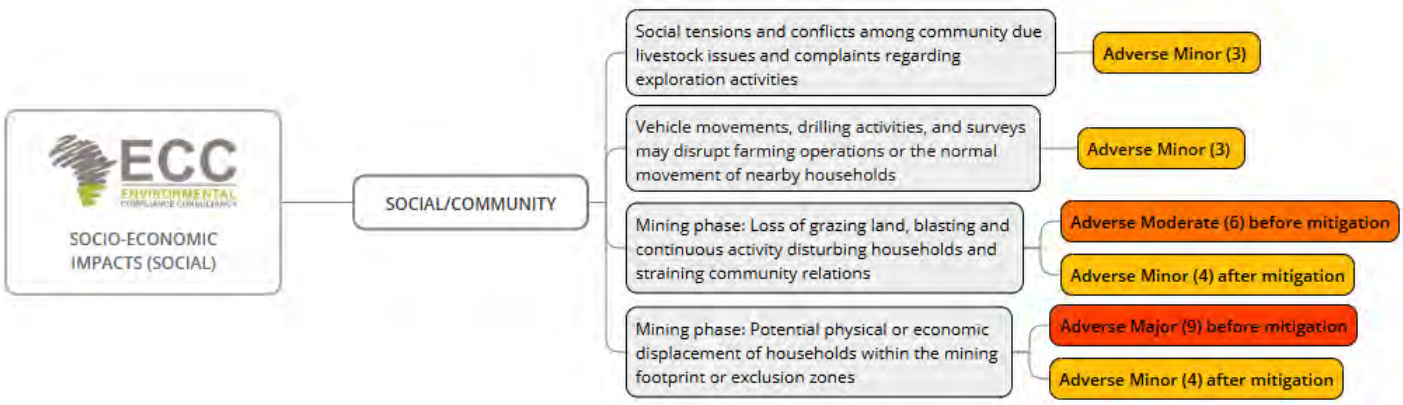


Figure 30 - An overview of social impacts

7.3.1 COMMUNITY (FARMERS, LANDOWNERS AND CONSERVANCY)

7.3.1.1 Social tensions and conflicts among community due to livestock issues and complaints regarding exploration activities (namely Nai-Nais community)

In rural areas, livestock are often a primary source of income, food security and of cultural value. Approximately 22% of rural households in Namibia rely on farming as their main source of income (Namibia Statistics Agency, 2025). If exploration activities interfere with grazing land, water points or livestock movement routes, this may lead to disputes between community members, farmers, and the project Proponent (MAWLR, 2022). Concerns such as loss of grazing access, dust, noise, increased traffic or fears of livestock injury or theft can intensify frustrations. In small communities, these tensions can be more pronounced due to strong social interdependence and limited economic alternatives. Conflict may strain community relationships and weaken trust between households, traditional authorities and conservancy management structures, disrupt collective decision-making and create divisions over perceived benefits, particularly where some individuals gain employment or compensation while others bear the impacts (NACSO (Namibian Association of CBNRM Support Organisations), 2022).

The nature of the impact is adverse and directly impacting local households, however, is deemed reversible as social tension can often be addressed through regular engagements to reach mutual beneficial arrangements. The impact is anticipated to be short term (1 – 5 years), as it is expected to occur during the exploration phase, prior to the transition to mining operations. The impact is local in extent, as it is expected to affect primarily the surrounding communities, livestock owners and land users adjacent to the exploration area. The likelihood of occurrence is considered likely, given the dependence of local communities on communal grazing land, distance from the exploration area and shared natural resources, and the potential for exploration activities to disrupt access and generate grievances.

The magnitude of change is considered minor, as activities within ML 133 have been ongoing for several years and the local communities are familiar with the exploration team, a grievance register is maintained on site and regular stakeholder engagement is undertaken with the local community as required. The impact sensitivity is deemed low due to the localised nature. Overall,

the significance of the impact is rated adverse minor (Table 11). Mitigation measures are outlined in the draft ESMP (Appendix A).

7.3.1.2 Vehicle movements, drilling activities and surveys may disrupt farming operations or the normal movement of nearby households

Rural communities in and around the Project area are often highly dependent on communal land for livestock grazing, access to water and daily movement between homesteads and shared resources. Exploration-related activities such as vehicle movement, drilling and surveys may temporarily disrupt these activities by limiting access to grazing areas, interfering with livestock routes and creating safety concerns for residents. The nature of the impact is adverse and directly impacting local households. The impact may be reversible as disruptions to the normal movement may be resolved through early and ongoing engagement with affected rural communities to identify key farming areas and livestock routes. The impact is anticipated to be short term (1 – 5 years), as it is expected to occur during the exploration phase, prior to the transition to mining operations. The impact is localised in extent, as it is anticipated to primarily affect nearby communities, livestock owners and land users in the vicinity of the exploration area. The probability is considered likely due to expected exploration activities and potential disruptions.

The magnitude of change is considered minor, as activities within ML 133 have been ongoing for several years and the local communities are familiar with the exploration team. A grievance register is maintained on site and regular stakeholder engagement is undertaken with the local community as required. The impact sensitivity is deemed low due to the localised nature. Overall, the significance of the impact is rated adverse minor (Table 11). Mitigation measures are outlined in the draft ESMP (Appendix A).

7.3.1.3 Mining phase: loss of grazing land, disturbance to households and potential displacement within ML 133

Open pit mining, waste rock and ore stockpiling, haul roads and the associated infrastructure described in Chapter 4 will remove communal grazing land from use for the life of mine and will bring blasting, heavy vehicle movement and continuous activity into the licence area. The dwellings associated with the Nai-Nais community that lie within or immediately adjacent to ML 133 (Chapter 5) may be affected by these activities, and where the mining footprint or its safety exclusion zones overlap dwellings, grazing areas or water points, physical or economic displacement may result. Mining will also raise expectations of employment and procurement and may bring workers from outside the area, both of which can create tension within a small community.

The impact on livelihoods and community relations is adverse and direct, partly reversible through rehabilitation and the restoration of grazing at closure, long term for the life of mine and local in extent, and is considered likely. The magnitude of change is rated moderate and the sensitivity of the receptor medium, given the dependence of the Nai-Nais households on communal grazing and the limited alternatives described in Chapter 5. The significance is rated adverse moderate before mitigation.

Potential physical or economic displacement of households within the mining footprint is adverse, direct, irreversible and permanent, local in extent and possible, depending on the final mine layout. The sensitivity of the receptor is high and the magnitude of change moderate, giving a significance of adverse major before mitigation. Mitigation is set out in the draft ESMP (Appendix A) and includes confirming the location of all dwellings, grazing areas and water points against the mine layout before mining commences, designing the pit, dumps and exclusion zones to avoid them wherever possible, and, where avoidance is not possible, preparing a resettlement or livelihood restoration plan in consultation with the affected households, the Dâures Traditional Authority and the Tsiseb Conservancy that meets the requirements of IFC Performance Standard 5. A community grievance mechanism, regular engagement and local employment and procurement commitments apply to both phases.

Table 11 - Local community (social) impact assessment ratings

Activity	Receptor	Impact	Nature of impact	Value & Sensitivity	Magnitude of change	Significance of impact
Exploration operations	Community (farmers, landowners and Tsiseb Conservancy)	Social tensions and conflicts among community due livestock issues and complaints regarding exploration activities.	Adverse Direct Reversible Short term Local Likely	Low	Minor	Adverse Minor (3)
		Vehicle movements, drilling activities, and surveys may disrupt farming operations or the normal movement of nearby households.	Adverse Direct Reversible Short term Local Likely	Low	Minor	Adverse Minor (3)
Mining operations	Community (farmers, landowners	Loss of grazing land, blasting and continuous	Adverse Direct Partly reversible	Medium	Moderate	Adverse Moderate (6)

Activity	Receptor	Impact	Nature of impact	Value & Sensitivity	Magnitude of change	Significance of impact
	and Tsiseb Conservancy)	activity disturbing households and straining community relations during mining.	Long term Local Likely			
	Nai-Nais households within or adjacent to ML 133	Potential physical or economic displacement of households within the mining footprint or exclusion zones.	Adverse Direct Irreversible Permanent Local Possible	High	Moderate	Adverse Major (9)

7.3.2 HERITAGE IMPACTS

Heritage and cultural impacts embrace potential disturbance to structures, features and artifacts identified within the Project area with cultural and/or heritage significance as a result of the exploration activities. The impacts are presented in Figure 31 for illustrative purposes only. The impacts are discussed in the sections below and described in Table 12.

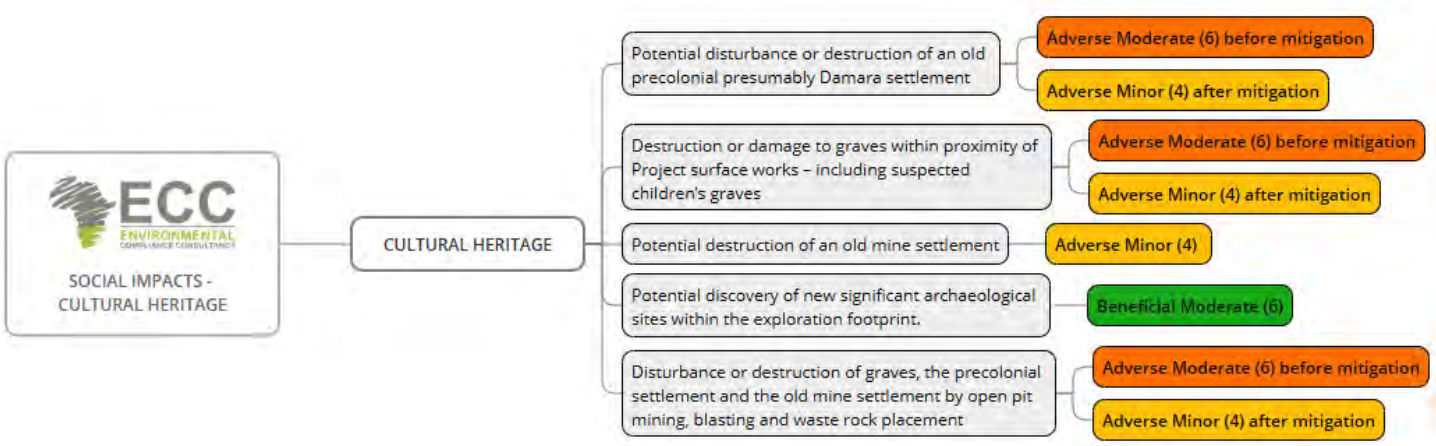


Figure 31 - Heritage and cultural impacts

The field survey undertaken by the heritage specialist on 22 October 2023 (Appendix H) uncovered various cultural and archaeological landscapes and abandoned settlements within ML 133. A

variety of graveyards, old mine accommodation and a settlement was encountered on ML 133 (Chapter 5).

The potential heritage and cultural impacts are discussed below.

7.3.2.1 Exploration activities may lead to further physical destruction of the Old precolonial presumably Damara Settlement

Exploration activities planned within ML 133 pose a potential risk of further physical destruction to the precolonial settlement identified during the field survey. This site comprises a circular arrangement of stone-built structures with an open central space surrounded by stone hut features. The nature of the impact will be adverse, direct, irreversible and permanent (Table 12). According to the specialist study, the settlement is susceptible to disturbance from nearby development activities (Mowa, 2024). Considering the findings the probability of the impact is possible.

The magnitude of change is rated major as the specialist study found that the site has high research potential. The sensitivity of the impact is expected to be medium due to the extent and potential of the impacts. Overall, the significance of impact is expected to be adverse moderate, before mitigation, as shown in Table 12. With mitigation, the impact will be reduced to adverse minor.

Mitigation measures are discussed below and included in the draft ESMP (Appendix A):

- Where feasible, the Project design and exploration layout should be adjusted to avoid or minimise disturbance to heritage remains through the establishment of exclusion or buffer zones;
- No vehicle movement, excavation, stockpiling or laydown areas should be permitted within designated heritage-sensitive areas unless authorised by the relevant authority and specialist;
- A permit for mitigation or salvage excavation, if required, should be obtained from the NHC prior to any disturbance of significant heritage resources;
- A chance finds procedure shall be included in the ESMP and implemented throughout the exploration phase. All contractors should be trained on the procedure;
- Should previously unidentified archaeological or heritage material be encountered during exploration, work in the immediate area should cease immediately, the site secured, and a qualified heritage specialist and the relevant authorities notified for assessment and guidance before activities resume;
- Exploration personnel should receive heritage awareness training to recognise potential archaeological materials and understand reporting procedures;
- Where avoidance is not possible, a programme of detailed recording, documentation, and controlled salvage excavation should be undertaken by a qualified specialist before disturbance occurs; and
- Monitoring by a heritage specialist should be undertaken during high-risk ground-disturbing activities in areas of known or potential heritage sensitivity.

7.3.2.2 Destruction or damage to graves within proximity of Project surface works – including suspected children's graves

Within the ML 133, 37 graves in the area, the majority of the graves are unidentified, oldest dated grave is of an individual who died in 1932. The cemetery is not fenced and is still being utilised with the recent burial in 2020. Additionally, eight to nine suspected graves, the graves are aligned at the foot of a rocky outcrop hill, suspected to have been buried here in the recent past. The impact is assessed as adverse, directly impacting the potential graves. The impact is irreversible as destruction or physical disturbance of a grave and associated remains cannot be fully reversed. Although the graves may be relocated or rehabilitated where legally and culturally appropriate, the original burial context and associated cultural values cannot be restored. Any physical damage or destruction to graves would result in a permanent loss of the original burial site and its associated heritage value. The impact is assessed on a regional level due to the regional importance of graves. The impact is rated possible, although according to the heritage assessment (Appendix H), disturbance to the graves is not expected during exploration.

The magnitude of change is moderate. The damage or destruction of graves represents a significant impact due to the loss of physical remains, burial context and cultural heritage values. The sensitivity of the impact is medium due to the regional scale. Overall, the significance of impact is expected to be adverse moderate, before mitigation, as shown in Table 12. With mitigation, the impact will be reduced to adverse minor. Mitigation measures are discussed under section 7.3.2.1 and included in the draft ESMP (Appendix A).

7.3.2.3 Potential destruction of an old mine settlement

The Old Mine Settlement comprises the remains of former mine administration and workers' accommodation structures located within a riverbed, with several additional structures, including the former mine foreman/manager accommodation, situated on a nearby hill overlooking an old open-pit trench area. Approximately six buildings were identified, all of which are currently uninhabited and in a state of ruin or deterioration. The settlement provides evidence of historic mining activities and may have local historical and archaeological significance.

The impact is assessed as adverse, directly impacting the settlement, irreversible and permanent. Physical damage or destruction of the remaining historic structures and associated archaeological evidence cannot be fully restored to their original condition. The impact is rated on a national scale as the settlement may contribute to the broader historical record of mining in Namibia. The impact probability is rated unlikely as the heritage assessment report (Appendix H) indicates "low or indirect threat from possible consequences of development".

The magnitude of change is rated minor due the low significance of the archaeological finding, identified as disturbed. The sensitivity of the receptor is rated medium, although the structures are in ruins and have lost their original function, they provide evidence of historic mining occupation and may contain associated archaeological or historical information. Overall, the

significance of impact, before mitigation, is rated adverse minor (Table 12). Mitigation measures are described in the draft ESMP (Appendix A).

7.3.2.4 Potential discovery of heritage sites, objects and/or artifacts

During exploration activities, previously unrecorded cultural heritage sites, objects or artefacts may be encountered within the Project footprint. In such instances, the chance find procedure, as outlined in the draft ESMP is advised. This impact is considered beneficial, as it contributes directly to Namibia's national heritage register, maintained by the National Heritage Council (NHC) in terms of the National Heritage Act, 2004 (Act No. 27 of 2004). The impact is regarded as permanent and irreversible. The probability of occurrence is considered possible, given the presence of undocumented heritage resources in remote areas. Significant discoveries could also enhance opportunities for cultural tourism. The magnitude of change is assessed as moderate, as many heritage resources hold spiritual, cultural and social value for local communities, including traditional authorities and descendant groups. Furthermore, all archaeological materials, graves and culturally significant sites are legally protected, irrespective of formal registration status. The sensitivity of the receptor (receiving environment) is rated medium due to the associated national cultural value. The significance of the impact is beneficial moderate (Table 12). The chance find procedure is outlined in the draft ESMP (Appendix A).

7.3.2.5 Mining phase: disturbance of graves, the precolonial settlement and the old mine settlement by open pit mining, blasting and waste rock placement

Mining will disturb a far larger footprint than exploration and introduces blasting. The graveyard, the suspected children's graves, the precolonial stone settlement and the old Tin Tan Mine settlement recorded in Chapter 5 all lie within ML 133, and the graveyard remains in use. Open pit excavation, waste rock and ore placement, haul roads and blast vibration and fly rock may damage or destroy these sites, or make the graveyard inaccessible to the families who use it.

The impact is adverse, direct, irreversible and permanent, regional to national in extent given the research potential of the precolonial settlement, and is considered possible depending on the final mine layout. The sensitivity of the receptor is medium and the magnitude of change major, giving a significance of adverse moderate before mitigation. The mitigation listed above applies, with the following additions for the mining phase: the mine layout must be designed around the graveyard, the suspected children's graves and the precolonial settlement with buffers agreed with the heritage specialist and the National Heritage Council; blast design must limit vibration and fly rock at these sites; continued access to the graveyard for the community must be maintained; and where a grave or site cannot be avoided, relocation may only proceed under a National Heritage Council permit and with the consent of the families and the Dâures Traditional Authority. These measures are carried into the draft ESMP (Appendix A).

Table 12 - Heritage impacts before mitigation

Activity	Receptor	Impact	Nature of impact	Value & Sensitivity	Magnitude of change	Significance of impact
Exploration phase	Cultural heritage	Potential disturbance or destruction of an old precolonial presumably Damara settlement.	Adverse Direct Irreversible Permanent National Possible	Medium	Major	Adverse Moderate (6)
		Destruction or damage to graves within proximity of Project surface works – including suspected children's graves.	Adverse Direct Irreversible Permanent Regional Possible	Medium	Moderate	Adverse Moderate (6)
		Potential destruction of an old mine settlement.	Adverse Direct Irreversible Permanent National Unlikely	Medium	Minor	Adverse Minor (4)
		Potential discovery of new significant archaeological sites within the exploration footprint.	Beneficial Direct Irreversible Permanent National Possible	Medium	Moderate	Beneficial Moderate (6)
Mining phase	Cultural heritage	Disturbance or destruction of graves, the	Adverse Direct Irreversible Permanent	Medium	Major	Adverse Moderate (6)

Activity	Receptor	Impact	Nature of impact	Value & Sensitivity	Magnitude of change	Significance of impact
		precolonial settlement and the old mine settlement by open pit mining, blasting and waste rock placement.	National Possible			

7.3.3 OCCUPATIONAL HEALTH AND SAFETY

Occupational health and safety is a critical consideration during exploration, as personnel may be exposed to a range of physical, chemical and environmental hazards in remote areas. The occupational health and safety impact is shown in Figure 32. The specific impact is discussed in detail in the section below and described in Table 13.

Figure 32 - An overview of occupational health and safety impact

7.3.3.1 Potential risk of on-site injuries leading to short-term impairment, permanent disabilities or fatalities

Exploration activities involve occupational health and safety risks that may result in temporary injuries, long-term impairments, permanent disabilities (including noise-induced hearing loss), or, in severe cases, fatalities. These risks are largely associated with the use of heavy machinery and drilling equipment and vehicle movements. Key safety concerns include physical injuries arising from routine exploration operations and site-related activities. In the absence of appropriate health and safety management systems, sufficient training and effective emergency response and preparedness measures, these hazards may present significant risks to the health, safety, and well-being of personnel on site.

The impact is considered adverse and will directly affect exploration personnel. Occupational injuries may range in severity and, in serious cases, could result in permanent disabilities or fatalities. Consequently, the impact is considered potentially irreversible and permanent. It is, however, anticipated that an experienced and suitably qualified exploration team will be deployed on site, supported by established health and safety procedures. The impact is therefore expected

on site. As such, any injuries that may occur are more likely to result from unforeseen or accidental incidents rather than inadequate competence or insufficient practical experience among personnel. The likelihood of the impact occurring is therefore assessed as possible (medium).

The magnitude of change is rated very high due to varying degrees of injuries that can occur, ranging from minor injuries to potentially life-threatening incidents. The sensitivity of the receptor is rated high as injuries could lead to permanent disabilities, which limit workers future employment opportunities and their ability to perform tasks within the industry. Overall, the significance of impact, before mitigation, is rated adverse major (Table 13). With mitigation, the significance of the impact is reduced to adverse minor.

Mitigation measures are outlined below and included in the draft ESMP (Appendix A):

- Conduct induction training for all personnel prior to commencing work, covering hazards, emergency procedures and safe work practices;
- Conduct daily toolbox talks covering health, safety and environmental risks/impacts;
- Conduct infield risk assessments with supervisor(s) before any activity may commence;
- The Proponent and contractor(s) to ensure the appointment of a dedicated health and safety person and where required, safety, health and environment (SHE) representative(s)/ (trained first-aider);
- Ensure competent supervision is in place for all exploration activities;
- Maintain a clear chain of communication and incident-reporting procedure;
- Provide workers with suitable PPE and enforce mandatory PPE use across all designated work areas;
- Regularly inspect and replace worn or damaged PPE;
- Conduct routine maintenance of all machinery to prevent mechanical failures;
- Establish exclusion zones around drilling operations and ensure the areas are clearly demarcated;
- Prepare and implement an emergency response plan (ERP) covering medical emergencies, fire, spills and accidents;
- Provide fire extinguishers at designated areas (fuel storage areas, camps and near generators) and first aid kits; and
- Conduct regular emergency drills with the exploration team covering fire, evacuation and spill response.

7.3.3.2 Mining phase: risk of injuries and fatalities from open pit mining, blasting, heavy mobile equipment and crushing

Mining introduces hazards that are not present during exploration: drilling and blasting, pit wall and dump slope instability, interaction between people and large haul trucks and loaders, crushing and screening plant, and continuous operation over a longer period. The impact is adverse, direct, potentially irreversible and permanent, confined to the site and possible. The magnitude of change is rated very high, as the consequences range from minor injury to fatality, and the sensitivity of the receptor is high. The significance is rated adverse major before mitigation and adverse minor with mitigation.

In addition to the measures listed above, the mining phase requires a documented safety management system meeting the Minerals Act and the Labour Act health and safety regulations, a blast management plan with exclusion zones and warning procedures that extend to the nearby dwellings, geotechnical design and monitoring of pit walls and dumps, traffic management for heavy mobile equipment, and an emergency response plan and medical capability sized for the mining workforce. These are carried into the draft ESMP (Appendix A).

Table 13 - Occupational health and safety impact assessment ratings

Activity	Receptor	Impact	Nature of impact	Value & Sensitivity	Magnitude of change	Significance of impact
Exploration operations	Employees	Potential risk of on-site injuries leading to short-term impairment, permanent disabilities or fatalities	Adverse Direct Irreversible Permanent On-site Possible	High	Very high/Unknown	Adverse Major (9)
Mining operations	Employees	Risk of injuries and fatalities from open pit mining, blasting, heavy mobile equipment and crushing.	Adverse Direct Irreversible Permanent On-site Possible	High	Very high/Unknown	Adverse Major (9)

7.3.4 NOISE IMPACTS

Noise generating activities are anticipated during exploration and is discussed in detail below. The simulated day-time noise levels due to exploration activities are illustrated in (Figure 34). Figure 33 shows an overview of the noise impact for illustration purposes before mitigation. The assessed impacts are further detailed in Table 14.

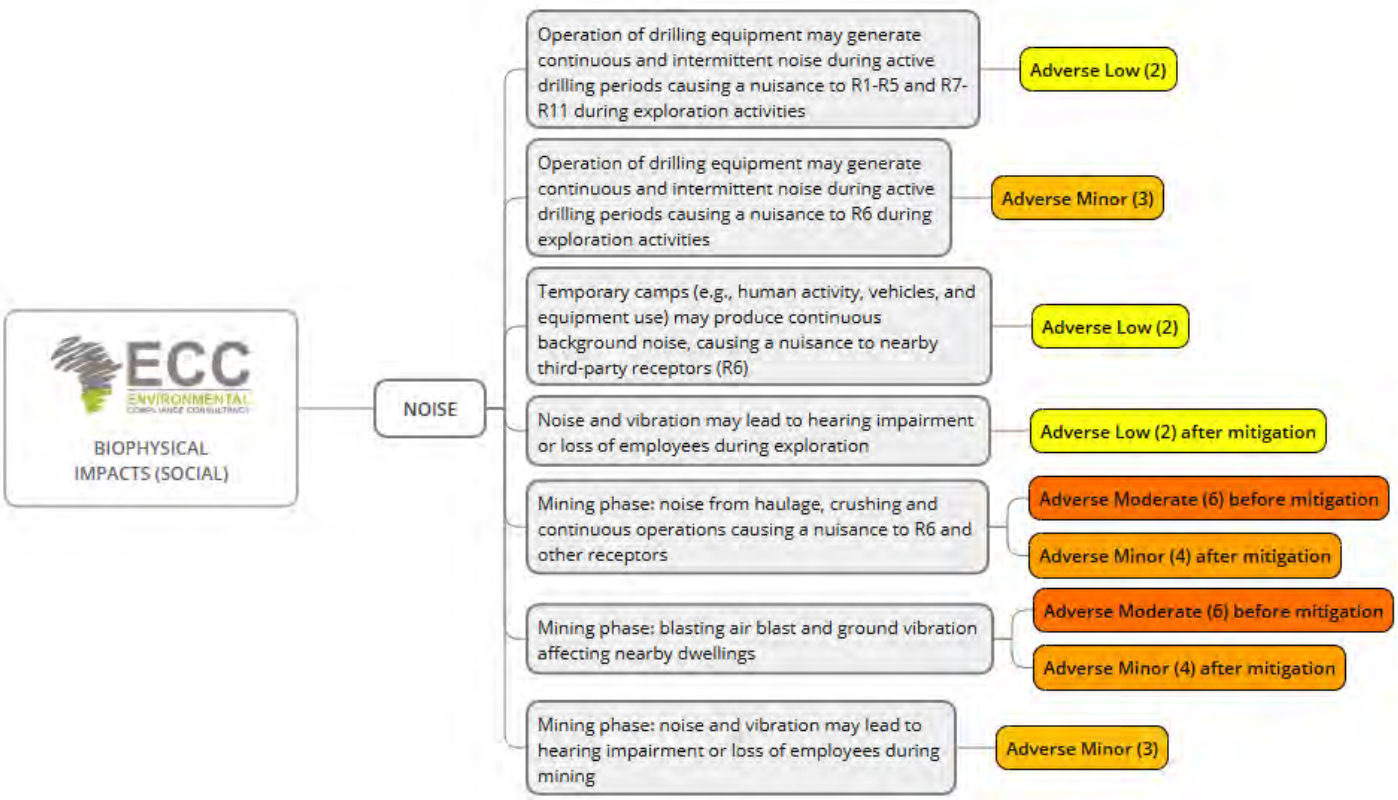


Figure 33 - Overview of noise impacts

7.3.4.1 Operation of drilling equipment may generate continuous and intermittent noise during active drilling periods causing a nuisance to Receptor (R)1-R5 and R7-R11 during exploration activities

The operation of drilling equipment during exploration activities may generate continuous and intermittent noise emissions during active drilling periods, potentially causing a nuisance to on-site personnel and nearby noise sensitive receptors (i.e. defined as NSR). Noise may originate from drilling rigs, support vehicles, generators, compressors and associated equipment operating within the Project area. The impact is considered adverse and directly impacting noise sensitive receptors. Exploration activities are expected to be reversible and undertaken continuously during active exploration periods. Certain activities may be repetitive or prolonged, including full-day operations. The impact is anticipated to be short term (1 – 5 years), as it is expected to occur during the exploration phase, prior to the transition to mining operations. Noise generated from drilling activities and on-site personnel is expected to affect surrounding local communities, potentially resulting in temporary disturbance and nuisance.

The magnitude of the change is considered negligible. Based on the noise specialist study for the Project (Airshed Planning Professionals (Airshed), 2026) (Appendix F), noise levels due to Project activities are within the IFC Noise Guideline for residential areas at off-site NSRs (residential dwellings) specifically, R1-R5 and R7-R11 which is ≤55 dBA (Figure 34). The simulated noise impacts due to Project activities are not expected to result in any perceptible change to baseline noise levels at the identified NSRs (residential dwellings) and will therefore is not expected to result in any community reactions (Airshed Planning Professionals (Airshed), 2026). Therefore, the

sensitivity of the receptor is deemed low. Overall, the significance of the impact is rated adverse low (Table 14). Mitigation measures are outlined in the draft ESMP (Appendix A).

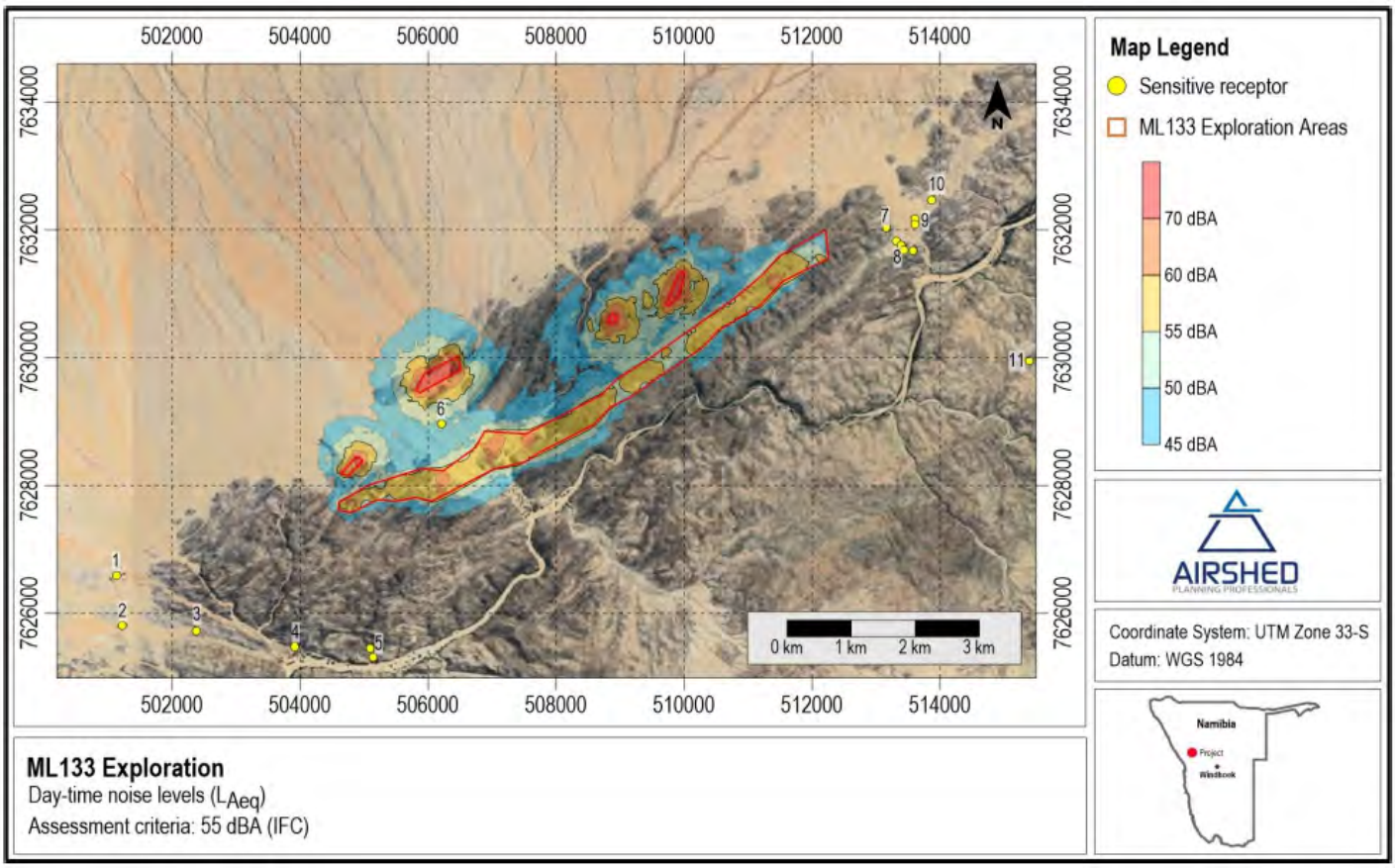


Figure 34 - Simulated day-time noise level due to exploration activities

7.3.4.2 Operation of drilling equipment may generate continuous and intermittent noise during active drilling periods causing a nuisance to R6 during exploration activities

Exploration activities involving the operation of drilling rigs, generators, compressors, support vehicles and other mechanical equipment may generate continuous and intermittent noise during active drilling periods, potentially causing a nuisance to a nearby sensitive receptor, receptor (R) 6 (Figure 34). The impact is considered adverse and directly impacting R6. Exploration activities are expected to be reversible and undertaken continuously during active exploration periods. Certain activities may be repetitive or prolonged, including full-day operations. The impact is anticipated to be short term (1 – 5 years), as it is expected to occur during the exploration phase, prior to the transition to mining operations. Noise generated from drilling activities and on-site personnel is expected to affect surrounding local communities, potentially resulting in temporary disturbance and nuisance to R6.

The magnitude of the change is considered minor as normal operations will occur during daytime. Due to R6 within the exploration area, the increase in noise levels may result in a 'medium' community reaction with potential complaints (Airshed Planning Professionals (Airshed), 2026). Therefore, the sensitivity of the receptor is deemed low due to the local extent. Overall, the

significance of the impact is rated adverse minor (Table 14). Mitigation measures are outlined in the draft ESMP (Appendix A).

7.3.4.3 Temporary camps (e.g., human activity, vehicles and equipment use) may produce continuous background noise, causing a nuisance to nearby third-party receptors (R6)

The establishment and operation of temporary camps may generate continuous background noise from human activity, vehicle movement and equipment use. These activities may result in noise disturbances that could cause a nuisance to nearby third-party receptors, specifically R6, particularly where camps are located in proximity to local communities, homesteads, or other sensitive receptors. The nature of the impact is expected to be adverse and directly impact R6. The impact is considered reversible, as noise associated with temporary camps is temporary in nature and will cease following the completion of exploration activities and camp demobilisation. The impact is anticipated to be short term (1 – 5 years), as it is expected to occur during the exploration phase. The impact is considered local, as noise disturbances will be confined to the immediate vicinity of the temporary camps and nearby receptors. The likelihood is rated as likely, as routine camp-related activities are expected to generate noise during the exploration period.

The magnitude of change is considered negligible due to the temporary and low-level nature of camp-related noise. Sensitivity is rated as low due to the localised nature of the impact. Overall, the significance of the impact is rated adverse low. Mitigation measures are outlined in the draft ESMP (Appendix A).

7.3.4.4 Noise and vibration impacts on employees while operating drilling equipment

Exploration activities may expose employees to elevated noise and vibration levels generated by drilling equipment, machinery, vehicles and associated operations. Prolonged or repeated exposure to excessive noise may increase the risk of hearing impairment or hearing loss among employees, particularly where appropriate hearing protection is not consistently used. Exposure to vibration from equipment may also contribute to discomfort or occupational health effects. The impact is expected to be limited to on-site personnel and will primarily occur during active exploration activities.

The impact is expected to be adverse and directly affecting on-site personnel. The impact is considered irreversible, as hearing impairment or hearing loss resulting from prolonged exposure to excessive noise may be permanent. The impact is anticipated to be short term, as employees may be exposed to noise and vibration throughout the duration of exploration activities. The extent of the impact is considered on-site, as it is limited to employees working within the exploration area and in proximity to drilling equipment and machinery. The impact is expected to occur as noise will be generated during exploration. The magnitude of change is considered minor, as noise from normal exploration operations may cause temporary or short-term discomfort to employees, however the appropriate PPE shall be used. The sensitivity of the receptor is low as reduced comfort for personnel exposed to elevated noise levels will be limited to active operations only. Overall, the significance of the impact is rated adverse low, after mitigation (use of appropriate PPE). Mitigation measures are outlined in the draft ESMP (Appendix A).

7.3.4.5 Mining phase: noise from blasting, haulage, crushing and continuous operations affecting R6, other receptors and employees

Mining will generate noise from drilling and blasting, haul trucks and loaders, crushing and screening plant and generators, potentially over extended hours and for the life of mine. Blasting also produces air blast and ground vibration. R6 lies within the licence area and the remaining receptors lie within a few kilometres, so a perceptible change in the ambient noise environment described in Chapter 5 is expected.

Operational noise affecting R6 and the other receptors is adverse, direct and reversible, long term and local, and likely. The sensitivity of the receptor is medium, given the presence of dwellings within and immediately adjacent to the licence, and the magnitude of change moderate, giving a significance of adverse moderate before mitigation. Blasting air blast and vibration is adverse, direct and reversible, long term, local and likely, with a medium sensitivity and moderate magnitude, and is rated adverse moderate before mitigation. Noise and vibration exposure of employees follows the exploration assessment but over a longer period and with a wider range of equipment, and is rated adverse minor before mitigation, with hearing conservation measures reducing it to adverse low.

The noise specialist study (Appendix F) modelled the exploration phase only. Noise and vibration modelling of the mining phase, including blast design limits for the nearest dwellings, will be undertaken before mining commences and the ESMP updated with the results. Mitigation for both phases is set out in the draft ESMP (Appendix A).

Table 14 - Noise impact assessment ratings

Activity	Receptor	Impact	Nature of impact	Value & sensitivity	Magnitude of change	Significance of impact
Exploration operations	Employees and third-party stakeholders	Operation of drilling equipment may generate continuous and intermittent noise during active drilling periods causing a nuisance to R1-R5 and R7-R11 during	Adverse Direct Reversible Short term Local Likely	Low	Negligible	Adverse Low (2)

Activity	Receptor	Impact	Nature of impact	Value & sensitivity	Magnitude of change	Significance of impact
		exploration activities.				
		Operation of drilling equipment may generate continuous and intermittent noise during active drilling periods causing a nuisance to R6 during exploration activities.	Adverse Direct Reversible Short term Local Likely	Low	Minor	Adverse Minor (3)
		Temporary camps (e.g., human activity, vehicles, and equipment use) may produce continuous background noise, causing a nuisance to nearby third-party receptors (R6).	Adverse Direct Reversible Short term Local Likely	Low	Negligible	Adverse Low (2)
		Noise and vibration may lead to hearing impairment	Adverse Direct Irreversible Short term On-site	Low	Minor	Adverse Low (2) *(post mitigation)*

Activity	Receptor	Impact	Nature of impact	Value & sensitivity	Magnitude of change	Significance of impact
		or loss of employees during exploration.	Likely			
Mining operations	Employees and third-party stakeholders	Noise from haulage, crushing and continuous operations causing a nuisance to R6 and other receptors during mining.	Adverse Direct Reversible Long term Local Likely	Medium	Moderate	Adverse Moderate (6)
		Blasting air blast and ground vibration affecting nearby dwellings.	Adverse Direct Reversible Long term Local Likely	Medium	Moderate	Adverse Moderate (6)
		Noise and vibration may lead to hearing impairment or loss of employees during mining.	Adverse Direct Irreversible Long term On-site Likely	Low	Minor	Adverse Minor (3)

7.3.5 VISUAL IMPACTS

During the exploration phase, several activities with the potential to create visual intrusion or alter the existing landscape are expected, and these are discussed in detail in the following section. Figure 35 shows an overview of the visual impacts, before mitigation. The assessed impacts are further described in Table 15.

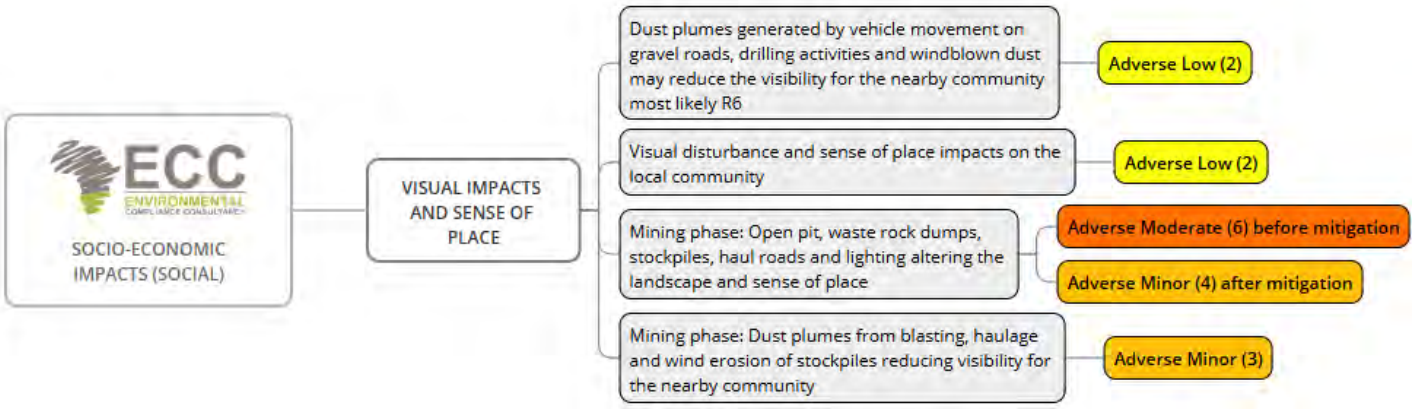


Figure 35 - Overview of visual impacts

7.3.5.1 Dust plumes generated by vehicle movement on gravel roads, drilling activities and windblown dust may reduce the visibility for the nearby community, most likely R6

Exploration activities, including vehicle movement on gravel roads, drilling operations and the generation of windblown dust, may result in the formation of visible dust plumes within and around the Project area. These dust plumes may reduce visibility and temporarily alter the visual character of the surrounding landscape, particularly for nearby receptors, such as the R6 community (International Finance Corporation (IFC), 2007). The impact is considered adverse and direct, as elevated dust levels may detract from the visual aspect and create the perception of environmental disturbance. The impact is reversible as the dust plumes are temporary and cease once the source of dust generation is controlled or exploration activities end. The impact is rated short term, for the duration of exploration activities (1 – 5 years). The probability of the impact occurring is rated as likely, as vehicle movements, drilling activities and wind action are expected to generate dust during normal exploration operations, particularly during dry and windy conditions. Predominant winds in the Project area are discussed under section 5.9.

The magnitude of change is considered minor, as significant dust plumes are not anticipated under normal operating and meteorological conditions. Consequently, dust-related nuisance effects and associated complaints are expected to be limited. The sensitivity of the receptor is assessed as low, as reduced visibility is likely to affect primarily on-site personnel and stakeholders located in close proximity to active drilling areas. The overall significance of the impact is rated adverse low, before mitigation. Mitigation measures are outlined in the draft ESMP (Appendix A).

7.3.5.2 Visual disturbance and sense of place impacts on the local community

Exploration activities may result in temporary changes to the visual character of the landscape, potentially affecting the sense of place experienced by surrounding communities and other receptors. Visual impacts may arise from the presence and operation of drilling rigs, support vehicles, machinery, exploration personnel, temporary camps, storage containers and other associated infrastructure. Increased vehicle movements and operational activity may further contribute to the perception of disturbance. These features may introduce industrial elements

into the landscape that contrast with the existing natural and rural setting, making them visible from nearby farms and access routes within the surrounding area.

The impact is considered adverse and direct, as exploration activities may temporarily alter the visual character of the landscape and affect the sense of place experienced by nearby communities and other receptors. The impact is considered reversible, as the visual disturbance will cease once exploration activities are completed and all equipment and temporary infrastructure are removed from the site. The impact is expected to be short-term, persisting only for the duration of the exploration programme (1 – 5 years). The extent of the impact is considered local, as visual changes will primarily be experienced within and immediately surrounding the Project area, including nearby farms and access routes. The probability is considered possible, as the Project is located within a landscape where mining and exploration activities are already present, reducing the degree to which the visual changes associated with the proposed exploration programme may be perceived as unusual or intrusive.

The magnitude of change is minor as the exploration activities are temporary in nature and the Project area is located within a landscape where mining and exploration activities are already established. The sensitivity of the receptor is assessed as low, due to localised nature of the Project. The overall significance of the impact is rated adverse low, before mitigation (Table 15). Mitigation measures are outlined in the draft ESMP (Appendix A).

7.3.5.3 Mining phase: open pit, waste rock dumps, drilling, stockpiles, haul roads and lighting altering the landscape and sense of place

Mining will introduce permanent and semi-permanent features into the landscape: the open pit, drilling, waste rock dumps and ore stockpiles, haul and access roads, crushing and screening plant, workshops and lighting for extended hours of operation. These features will be visible from the D1930, from the Nai-Nais dwellings and from elevated ground in the surrounding conservancy and will change the character of the licence area from a largely natural landscape with historical workings to an active mine for the life of mine and until rehabilitation is complete.

The impact is adverse and direct, partly reversible through progressive rehabilitation and final landform shaping, long term and local to regional in extent, and definite. The sensitivity of the receptor is medium, given the dwellings within and adjacent to the licence and the conservancy setting, and the magnitude of change moderate, as the existing mining character of the wider Uis landscape reduces the contrast. The significance is rated adverse moderate before mitigation. Dust plumes from blasting, haulage and wind erosion of stockpiles are adverse, direct and reversible, long term and local, and likely, and are rated adverse minor before mitigation. Mitigation, including dump placement and shaping to screen views, progressive rehabilitation, directional and shielded lighting and dust suppression, is set out in the draft ESMP (Appendix A).

Table 15 - Visual disturbance impact assessment ratings

Activity	Receptor	Impact	Nature of impact	Value & Sensitivity	Magnitude of change	Significance of impact
Exploration operations	Visual – local community	Dust plumes generated by vehicle movement on gravel roads, drilling activities and windblown dust may reduce the visibility for the nearby community most likely R6.	Adverse Direct Reversible Short term Local Possible	Low	Minor	Adverse Low (2)
		Visual disturbance and sense of place impacts on the local community.	Adverse Direct Reversible Long term Local Possible	Low	Minor	Adverse Low (2)
Mining operations	Visual – local community	Open pit, waste rock dumps, stockpiles, haul roads and lighting altering the landscape and sense of place during mining.	Adverse Direct Partly reversible Long term Regional Definite	Medium	Moderate	Adverse Moderate (6)
		Dust plumes from blasting, haulage and wind erosion of stockpiles reducing visibility for the nearby community.	Adverse Direct Reversible Long term Local Likely	Low	Minor	Adverse Minor (3)

7.3.6 AIR QUALITY

An air quality impact assessment (AQIA) for the proposed Project was undertaken by Airshed Planning Professionals (Pty) Ltd in May 2026. During exploration a range of air quality deteriorating activities are foreseen and discussed in depth below. Figure 36 shows an overview of the air quality impacts assessed, before mitigation and Table 16 details the assessed impacts.

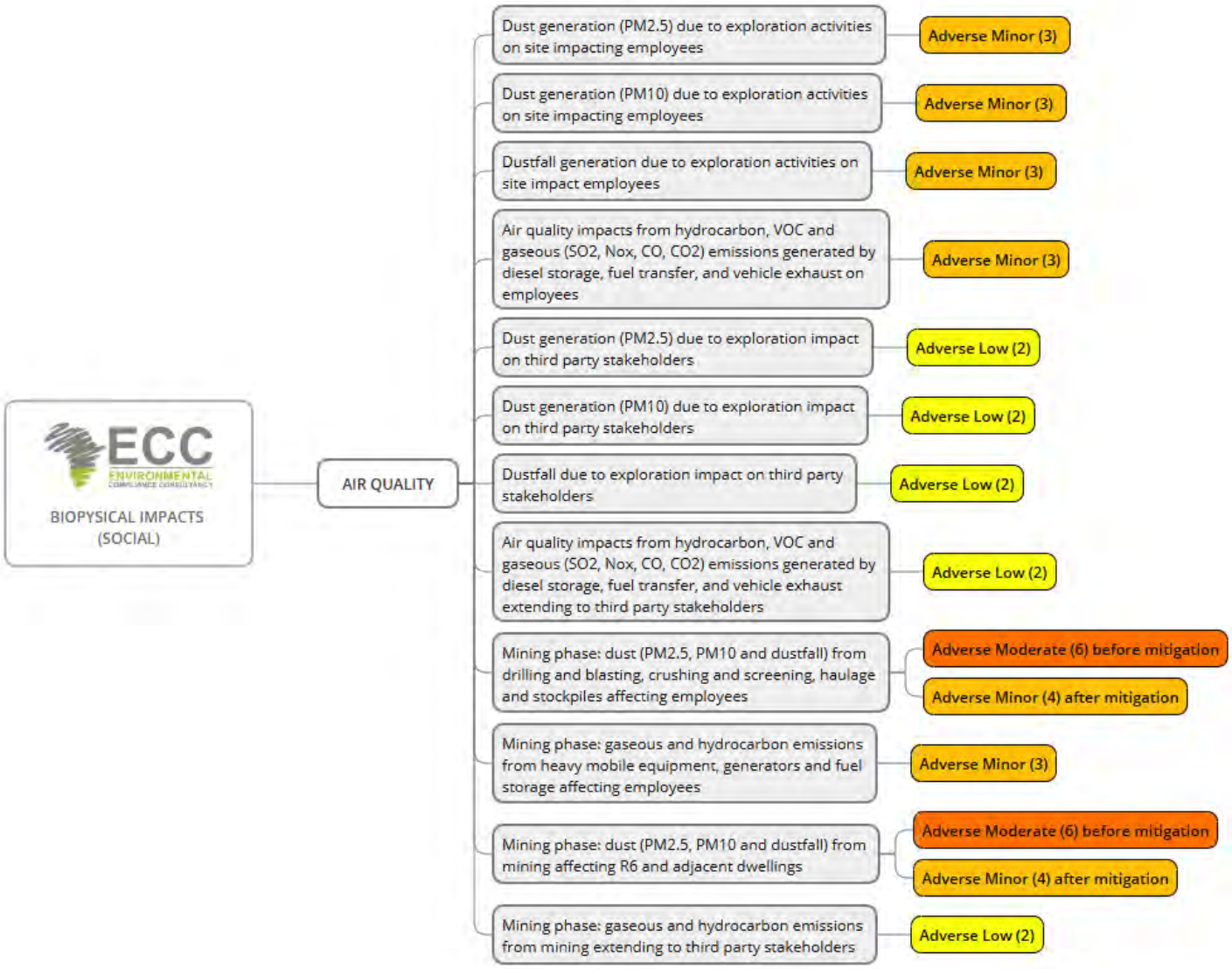


Figure 36 - An overview of air quality impacts

7.3.6.1 Dust generation ($PM_{2.5}$) due to exploration activities on site affecting employees

Dust generation (specifically, $PM_{2.5}$,) may result from exploration activities, particularly from vehicle movement on unpaved surfaces, earthworks, material handling, drilling and general camp operations. Particulate matter with an aerodynamic diameter of 2.5 micrometres or less ($PM_{2.5}$) refers to fine inhalable particles that can penetrate deep into the respiratory tract and are associated with adverse health effects (World Health Organization (WHO), 2021). Additional sources of dust emissions contributing to the overall dust emissions load can be attributed to dust generated from historically mined areas. Given these activities, it is expected that fugitive dust may be present during dry, windy conditions (Airshed Planning Professional (Airshed), 2026). This

may reduce local air quality, create nuisance conditions for nearby receptors and pose potential respiratory health risks to workers, specifically the contractor's camp if not properly managed.

The nature of the impact is adverse, directly affecting employees on site. The impact is considered partly reversible as dust emissions are generally temporary and will reduce once exploration activities cease and disturbed areas are rehabilitated. Air quality can improve relatively quickly after dust generating activities have ended. The impact is expected to be short-term, persisting only for the duration of the exploration programme (1 – 5 years). The impact is assessed on-site. Different drilling methods is expected to generate $PM_{2.5}$ and the impact is likely.

The magnitude of change is considered minor, dust generation is expected to be temporary and of relatively low intensity. $PM_{2.5}$ daily GLCs, for unmitigated activities, do not exceed the AQO (WHO IT-3) at any of the AQSRs but the footprint of exceedance extends ~200 m from the road. There are intermittent small areas of exceedances of the annual $PM_{2.5}$ AQO on the road (Figure 37). Please note that for mitigated activities, no exceedances were predicted at any of the AQSRs, therefore exceedances are not captured in Figure 37. Dust-producing activities such as vehicle movement, minor earthworks and daily camp operations are limited in scale, and the appropriate PPE shall be used. The sensitivity of the receptors is low as reduced comfort for personnel exposed to dust will be limited to active operations only. Overall, the significance of the impact is rated adverse minor before mitigation (Table 16). Mitigation measures are outlined in the draft ESMP (Appendix A).

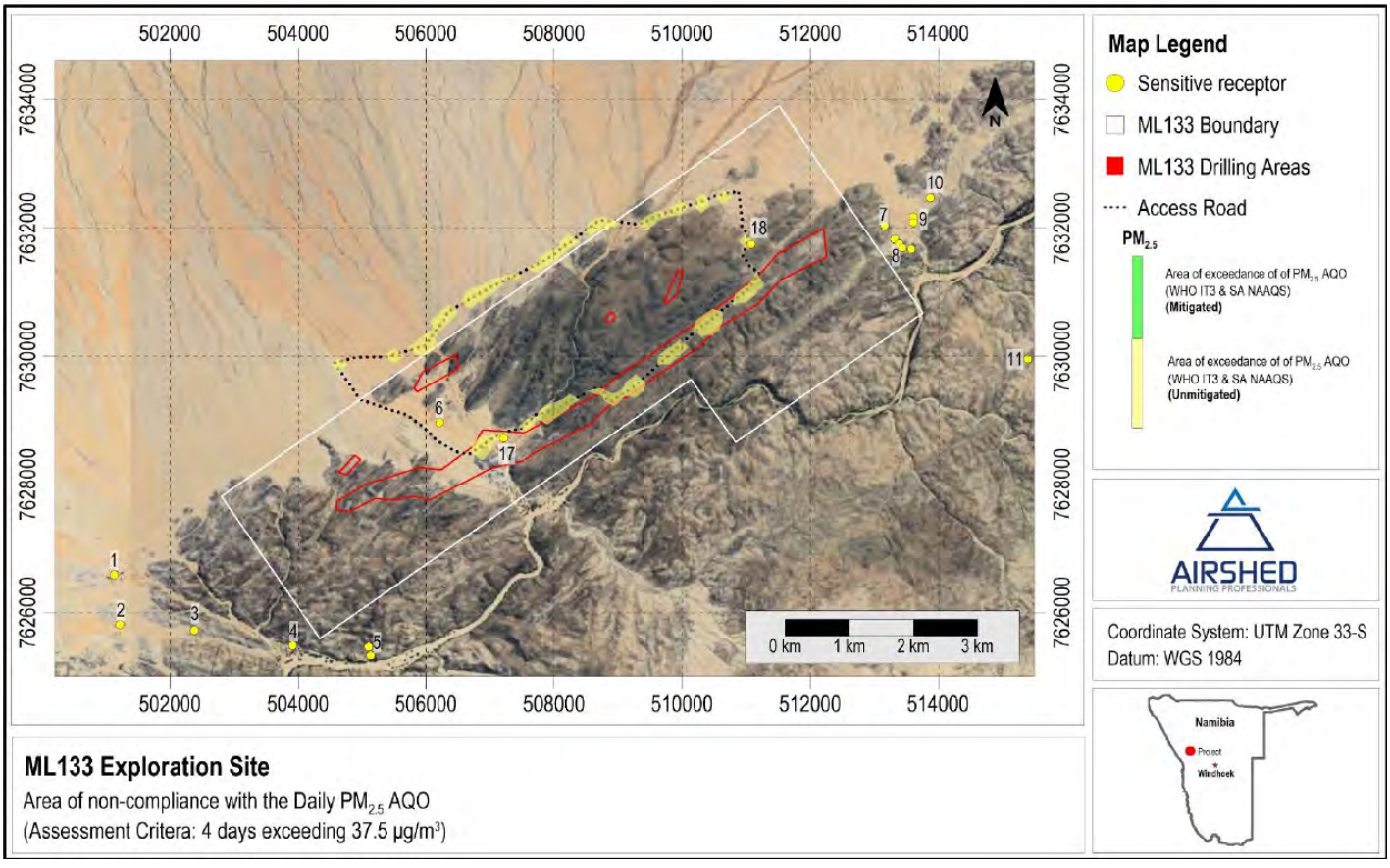


Figure 37 - Daily $PM_{2.5}$ AQO for unmitigated exploration operations (no exceedances are predicted at any receptor for mitigated operations)

7.3.6.2 Dust generation (PM_{10}) due to exploration activities on site affecting employees

Exploration activities, including drilling, vehicle movement on unpaved roads and tracks, minor ground disturbance, site preparation and material handling, have the potential to generate fugitive dust, including PM_{10}. Employees working in or near active exploration areas may be exposed to elevated dust concentrations, particularly during dry and windy conditions. The impact will adversely and directly impact employees working as part of the exploration team. The impact is considered partly reversible, as dust concentrations are expected to decrease rapidly once the source activity ceases, however there are health consequences of exposure. The impact is expected to be short-term, persisting only for the duration of the exploration programme (1 – 5 years). The impact is assessed on-site. The probability is likely, given that dust generation is an inherent aspect of exploration activities, particularly under dry conditions.

The magnitude of change is considered minor. According to the air quality study (Appendix E), PM_{10} daily ground level concentration, for unmitigated activities, results in exceedances of the 24-hour air quality objective (AQO) at a maximum distance of ~200 m from the road (Figure 38). The only AQSR that shows an exceedance is the contractors camp, which is located close to the road (Airshed Planning Professional (Airshed), 2026). Please note that for mitigated activities, no exceedances were predicted at any of the AQSRs, therefore exceedances are not captured in Figure 38. Dust-generating activities, including vehicle movement, minor earthworks and routine camp operations, are expected to be limited in scale and duration. Appropriate PPE will be provided and used to minimise employee exposure. Receptor sensitivity is considered low, as any reduction in employee comfort associated with dust exposure is expected to be limited. Overall, the significance of the impact is rated adverse minor before mitigation. Mitigation measures are outlined in the draft ESMP (Appendix A).

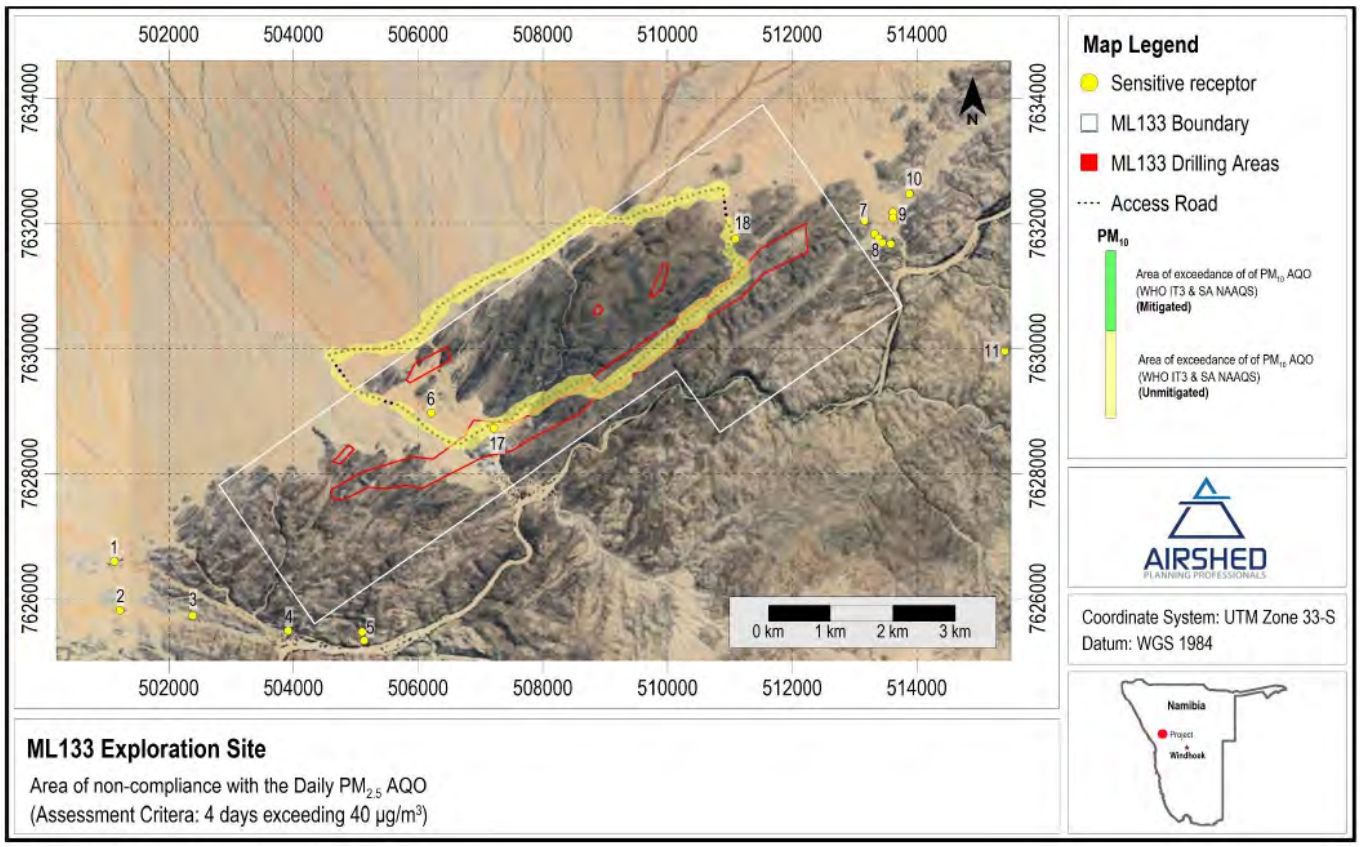


Figure 38 - Daily PM_{10} AQO for unmitigated exploration operations (no exceedances are predicted at any receptor for mitigated operations)

7.3.6.3 Dustfall due to exploration activities on site affecting employees

Exploration activities, including vehicle movement on unpaved roads and tracks, drilling, minor earthworks and routine camp activities, may generate dust that subsequently settles on surrounding surfaces. Employees working within or near active exploration areas may experience temporary nuisance effects from dustfall. The impact will adversely and directly impact employees working as part of the exploration team. The impact is considered partly reversible, as dust concentrations are expected to decrease rapidly once the source activity ceases, however there are health consequences of exposure. The impact is expected to be short-term, persisting only for the duration of the exploration programme (1 – 5 years). The impact is assessed on-site. The probability is likely, as some level of dust deposition is expected from exploration activities, particularly under dry and windy conditions.

Maximum daily dustfall rates, for unmitigated exploration activities, are within the AQO (SA NDCR residential limit of 600 mg/m²/day) at all but one of the AQSRs – the contractors camp (Figure 39). Please note that for mitigated activities, no exceedances were predicted at any of the AQSRs, therefore exceedances are not captured in Figure 39.

The magnitude of change is therefore minor. Receptor sensitivity is considered low, as employees are exposed primarily during active operations and appropriate PPE and workplace controls will further minimise exposure. Overall, the significance of the impact is rated adverse minor before mitigation (Table 16). Mitigation measures are outlined in the draft ESMP (Appendix A).

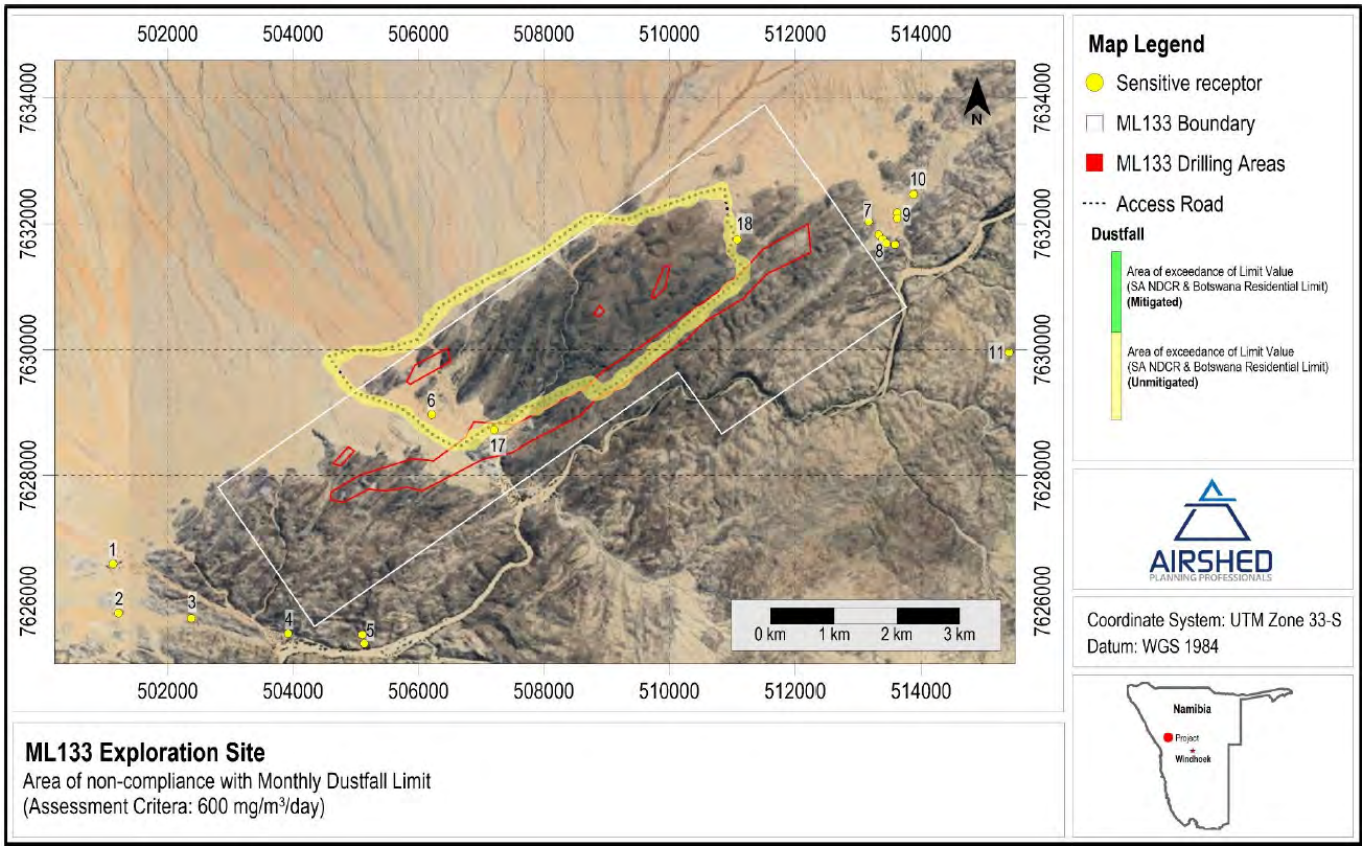


Figure 39 - Monthly dustfall limit values for unmitigated exploration operations (no exceedances are predicted at any receptor for mitigated operations)

7.3.6.4 Air quality impacts from hydrocarbon, VOC and gaseous (SO_2, NO_x, CO, CO_2) emissions generated by diesel storage, fuel transfer and vehicle exhaust on employees

Exploration activities may result in air quality impacts from hydrocarbon vapours, volatile organic compounds (VOCs) and gaseous emissions such as sulphur dioxide (SO_2), nitrogen oxides (NO_x), carbon monoxide (CO) and carbon dioxide (CO_2). These emissions may be generated from diesel storage, fuel transfer operations and vehicle exhaust emissions associated with on-site activities. The nature of the impact is adverse, directly affecting employees on site. The impact is considered partly reversible as emissions from diesel storage, fuel transfer and vehicle exhaust will cease once exploration activities are completed, allowing local air quality to recover over time. The impact is expected to be short-term, persisting only for the duration of the exploration programme. The impact is assessed on-site. The probability is considered likely because diesel storage, fuel transfer and vehicle operation are integral components of exploration activities and will occur routinely throughout the Project lifecycle. These activities generate hydrocarbon vapours, VOCs and combustion-related gaseous emissions such as SO_2, NO_x, CO, and CO_2.

The magnitude of change is considered minor as exploration activities involve relatively small volumes of fuel use, storage and a limited number of vehicles and equipment will be on-site. Additionally, VOC emissions are expected to remain localised within the immediate operational area and to disperse quickly under normal atmospheric conditions. The sensitivity of the receptors is low due to the on-site extent of the impact. Overall, the significance of the impact is rated

adverse minor, before mitigation. Mitigation measures are outlined in the draft ESMP (Appendix A).

7.3.6.5 Dust generation ($PM_{2.5}$) due to exploration impact on third party stakeholders

Exploration activities may generate $PM_{2.5}$, emissions, primarily from vehicle movement on unpaved roads, drilling operations, earthworks and material handling. These dust emissions may affect third-party stakeholders, specifically R6 as they are within the ML 133 Project boundary.

The nature of the impact is adverse, direct and reversible, as the impact will be a result of the exploration activities and will cease should operations end. The impact is expected to be short-term, persisting only for the duration of the exploration programme (Figure 37). The impact is assessed at a local level and potential to reach air quality sensitive receptors (AQSR). The impact is rated possible, although $PM_{2.5}$ ground level concentrations do not exceed the AQO at any of the AQSRs, however there are intermittent small areas of exceedances of the annual $PM_{2.5}$ AQO on the road (Airshed Planning Professional (Airshed), 2026).

The magnitude of change is minor, as exploration activities are limited in scale and $PM_{2.5}$ is expected to represent a relatively small fraction of the dust generated by most mechanical exploration activities. The sensitivity of the receptors is low due to the local extent. Overall, the significance of the impact is rated adverse low, before mitigation . Mitigation measures are outlined in the draft ESMP (Appendix A).

7.3.6.6 Dust generation (PM_{10}) due to exploration impact on third party stakeholders

Exploration activities, including drilling, vehicle movement on unpaved roads and tracks, minor earthworks and ground disturbance, have the potential to generate fugitive dust, including PM_{10}. Third-party stakeholders, such as nearby land users and especially road users in the vicinity of exploration activities, may experience temporary exposure to elevated dust concentrations, particularly during dry and windy conditions. The nature of the impact is adverse, direct and reversible, as the impact will be a result of the exploration activities and will cease should operations end. The impact is expected to be short-term, persisting only for the duration of the exploration programme. The impact is assessed at a local level and potential to reach air quality sensitive receptors (AQSR). The impact is rated possible, as the unmitigated daily ground-level PM_{10} concentrations are predicted to exceed the 24-hour AQO at distances of up to approximately 200 m from the road (Figure 38). Of the identified AQSRs, only the contractor's camp is predicted to experience an exceedance.

The magnitude of change is considered minor, as exceedances of the PM_{10} 24-hour AQO are predicted to be largely confined to the contractor's camp and the immediate vicinity of the road. The sensitivity of the receptors is low due to the local extent. Overall, the significance of the impact is rated adverse low, before mitigation. Mitigation measures are outlined in the draft ESMP (Appendix A).

7.3.6.7 Dustfall due to exploration impact on third party stakeholders

Exploration activities, including vehicle movement on unpaved roads and tracks, drilling, minor earthworks and other ground-disturbing activities, may result in dust deposition on surrounding surfaces. Third-party stakeholders, including nearby land users, road users and other persons in the vicinity of exploration areas, may experience nuisance effects associated with dustfall, particularly during dry and windy conditions. The impact is adverse, direct and reversible, as it will arise directly from exploration activities and is expected to cease once these activities are discontinued. The impact is expected to be short-term, persisting only for the duration of the exploration programme. The probability is possible, as some degree of dust deposition is expected from vehicle movement and ground disturbance, particularly under dry and windy conditions.

The magnitude of change is considered minor, as it is anticipated that dust-related impacts are unlikely to cause significant deterioration of air quality that would result in nuisances to third-party stakeholders. The sensitivity of the receptor is considered low due to the localised nature of the impact on site. The overall significance of the impact is rated adverse low, before mitigation (Table 16). Mitigation measures are outlined in the draft ESMP (Appendix A).

7.3.6.8 Air quality impacts from hydrocarbon, VOC and gaseous (SO2, Nox, CO, CO2) emissions generated by diesel storage, fuel transfer and vehicle exhaust extending to third party stakeholders

Exploration activities may result in air quality impacts to third party stakeholders from hydrocarbon vapours, volatile organic compounds (VOCs) and gaseous emissions such as sulphur dioxide (SO_2), nitrogen oxides (NO_x), carbon monoxide (CO) and carbon dioxide (CO_2), generated from diesel storage, fuel transfer operations and vehicle exhaust emissions. While these emissions are primarily associated with on-site activities, they may extend to third-party stakeholders. The nature of the impact is adverse, directly affecting third party receptors. The impact is considered reversible as it is a result of the exploration activities and will cease should operations end. The impact is expected to be short-term, persisting only for the duration of the exploration programme (1 – 5 years). The impact is assessed at a local scale. The probability is considered possible as it depends largely on points of activity within ML 133 and distance to AQSRs.

The magnitude of change is considered minor as emissions are expected to be for small-scale activities that are typically confined to the immediate operational area. The sensitivity of the receptor is deemed low due to the local extent of the impact. Overall, the significance of the impact is rated adverse low, before mitigation (Table 16). Mitigation measures are outlined in the draft ESMP (Appendix A).

7.3.6.9 Mining phase: dust (PM2.5, PM10 and dustfall) and gaseous emissions from drilling and blasting, crushing and screening, haulage and wind erosion of stockpiles affecting employees and third party receptors

Mining will generate substantially more particulate matter than exploration. Sources include drilling and blasting, loading and hauling of ore and waste rock on unpaved haul roads, crushing

and screening, wind erosion of ore and waste rock stockpiles and dumps, and exhaust emissions from heavy mobile equipment and generators. Employees will be exposed on site and third party receptors, in particular R6 within the licence and the dwellings immediately adjacent to it, may experience elevated PM10 and PM2.5 concentrations and dustfall, particularly under the prevailing south westerly winds described in Chapter 5.

The impact on employees is adverse and direct, partly reversible, long term and on site, and likely. The sensitivity of the receptor is medium, given the respirable fraction and the length of exposure, and the magnitude of change moderate, giving a significance of adverse moderate before mitigation. The impact on third party receptors is adverse, direct and reversible, long term and local, and likely, with a medium sensitivity and moderate magnitude, and is rated adverse moderate before mitigation. Gaseous emissions (SO2, NOx, CO, CO2 and VOCs) from heavy mobile equipment, generators and fuel storage remain minor in magnitude with low sensitivity and are rated adverse minor for employees and adverse low for third parties.

The air quality specialist study (Appendix E) modelled the exploration phase only. Dispersion modelling of the mining phase, including the crushing and screening plant, haul roads and stockpiles, will be undertaken before mining commences and the ESMP updated with the results and with any additional monitoring stations required near R6. Interim mitigation, comprising water or chemical dust suppression on haul roads, minimising drop heights, covering or wetting stockpiles, blast timing relative to wind direction and personal exposure monitoring for employees, is set out in the draft ESMP (Appendix A).

Table 16 - Air quality impact assessment ratings

Activity	Receptor	Impact	Nature of impact	Value & sensitivity	Magnitude of change	Significance of impact
Exploration operations	Air quality – employees	Dust generation ($PM_{2.5}$) due to exploration activities on site.	Adverse Direct Partly reversible Short term On-site Likely	Low	Minor	Adverse Minor (3)
		Dust generation (PM_{10}) due to exploration activities on site.	Adverse Direct Partly reversible Short term On-site Likely	Low	Minor	Adverse Minor (3)
		Dustfall generation due to	Adverse Direct	Low	Minor	Adverse Minor (3)

Activity	Receptor	Impact	Nature of impact	Value & sensitivity	Magnitude of change	Significance of impact
		exploration impact.	Partly reversible Short term On-site Likely			
		Air quality impacts from hydrocarbon, VOC and gaseous (SO2, Nox, CO, CO2) emissions generated by diesel storage, fuel transfer, and vehicle exhaust on employees.	Adverse Direct Partly reversible Short term On-site Likely	Low	Minor	Adverse Minor (3)
	Third party receptors	Dust generation ($PM_{2.5}$) due to exploration.	Adverse Direct Reversible Short term Local Possible	Low	Minor	Adverse Low (2)
		Dust generation (PM_{10}) due to exploration.	Adverse Direct Reversible Short term Local Possible	Low	Minor	Adverse Low (2)
		Dustfall due to exploration impact	Adverse Direct Reversible Short term Local Possible	Low	Minor	Adverse Low (2)
		Air quality impacts from hydrocarbon, VOC and	Adverse Direct Reversible Short term	Low	Minor	Adverse Low (2)

Activity	Receptor	Impact	Nature of impact	Value & sensitivity	Magnitude of change	Significance of impact
		gaseous (SO2, Nox, CO, CO2) emissions generated by diesel storage, fuel transfer, and vehicle exhaust extending to third party stakeholders.	Local Possible			
Mining operations	Air quality – employees	Dust (PM2.5, PM10 and dustfall) from drilling and blasting, crushing and screening, haulage and stockpiles during mining.	Adverse Direct Partly reversible Long term On-site Likely	Medium	Moderate	Adverse Moderate (6)
		Gaseous and hydrocarbon emissions from heavy mobile equipment, generators and fuel storage during mining.	Adverse Direct Partly reversible Long term On-site Likely	Low	Minor	Adverse Minor (3)
	Third party receptors	Dust (PM2.5, PM10 and dustfall) from mining affecting R6 and adjacent dwellings.	Adverse Direct Reversible Long term Local Likely	Medium	Moderate	Adverse Moderate (6)
		Gaseous and hydrocarbon	Adverse Direct	Low	Minor	Adverse Low (2)

Activity	Receptor	Impact	Nature of impact	Value & sensitivity	Magnitude of change	Significance of impact
		emissions from mining extending to third party stakeholders.	Reversible Long term Local Possible			

7.3.7 TRAFFIC IMPACTS

A transport impact statement (assessment) was conducted by Innovative Transport Solutions (ITS) in July 2026 (Appendix G) for the exploration phase, the existing road network serving the Project comprises the C35, C36 and D1930 roads as per Figure 26 (chapter 5). The exploration phase will primarily involve light vehicles transporting personnel and occasional heavy vehicles delivering equipment and fuel to the site (water for exploration is drawn from boreholes within the licence and moved on site roads only). Figure 40 shows an overview of the traffic impacts assessed, before mitigation and Table 17 details the assessed impacts. The transport impact statement covers the exploration phase; the mining phase, including ore haulage to the Uis processing plant, is assessed at the end of this section.

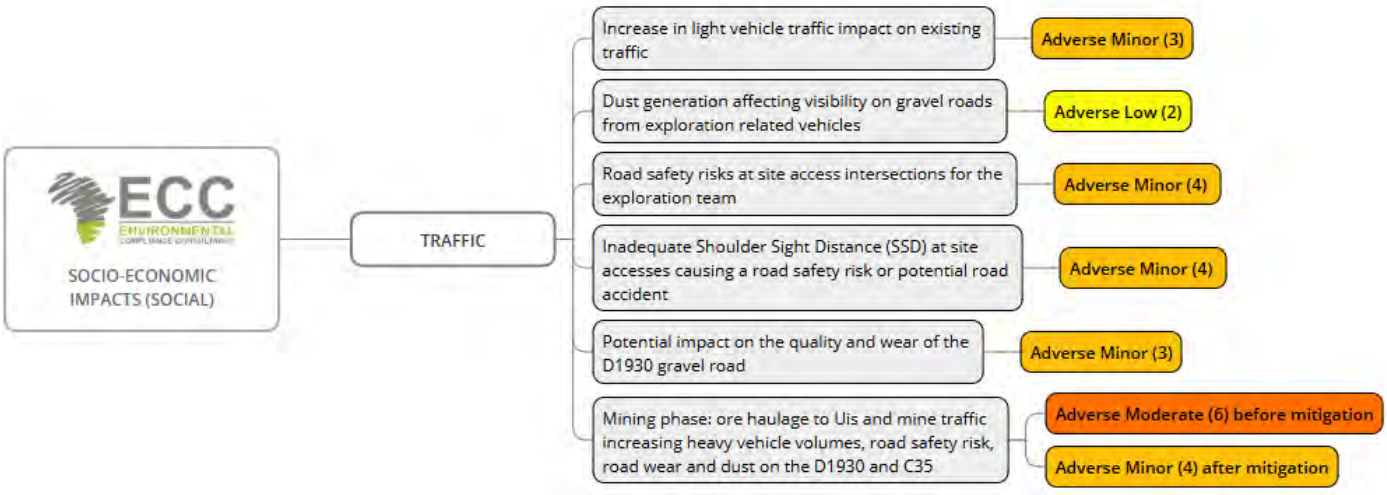


Figure 40 - An overview of traffic impacts

7.3.7.1 Increase in light vehicle traffic impact on existing traffic

During the exploration phase, the daily movement of personnel to and from the Project site will result in a slight increase in light vehicle traffic along the C35, C36 and D1930 roads. Approximately ~60 personnel will be employed during exploration; however, around 85% of the workforce will be accommodated at the on-site camp, with only 15% commuting daily from Uis. Consequently, the Project is expected to generate approximately six inbound staff vehicle trips during the morning (AM) peak hour and six outbound staff vehicle trips during the afternoon (PM) peak hour (Innovative Transport Solutions, 2026) (Appendix G). These additional vehicle movements will increase traffic volumes but are not expected to be significant due to the low number of trips and the ability of the existing rural road network to accommodate the additional traffic. The impact is

expected to be adverse, directly impacting road users and reversible once exploration cease. The impact is expected to be short-term, persisting only for the duration of the exploration programme. The additional traffic will impact local road users. The probability is considered definite since 15% of the exploration workforce live off site and commutes daily.

The magnitude of change is rated negligible, as the additional traffic represents only a marginal increase on the existing rural road network, which already accommodates mining-related traffic and has sufficient capacity to absorb the additional vehicle movements. As a result, no reduction in road capacity, traffic flow or level of service is expected. The sensitivity of the receptor is deemed low due to the local extent of the impact. Overall, the significance of the impact is rated adverse minor, before mitigation. Mitigation measures are outlined in the draft ESMP (Appendix A).

7.3.7.2 Dust generation affecting visibility on gravel roads from exploration related vehicles

The movement of light vehicles transporting personnel and occasional delivery vehicles along the existing gravel roads may generate dust, particularly during dry and windy conditions. Dust plumes created by vehicle movements can temporarily reduce visibility for motorists travelling on the C36 and D1930 roads, especially where vehicles are travelling at higher speeds or where multiple vehicles are using the same section of road. Reduced visibility may increase the likelihood of traffic conflicts between exploration vehicles and other road users, including local residents, tourists and other mining vehicles. Paving of the remaining gravel section of the C35 is in progress, with approximately 8 km still to be paved, so dust generation on the C35 will fall away once the roadworks are complete. The impact is adverse and direct, impacting other road users. Dust generation causes a temporary and reversible nuisance to nearby road users. The impact will be confined to the local gravel access roads and sections of the C36 and D1930 roads used by exploration vehicles. Dust generation is likely whenever vehicles travel on dry, unsealed roads, and the severity depends on weather conditions and traffic frequency.

Vehicle movements are limited during the exploration phase, resulting in only occasional dust generation, therefore the magnitude of change is expected to be minor. The sensitivity of the impact is considered low due to the local extent. Overall, the significance of the impact is rated adverse low, before mitigation. Mitigation measures are outlined in the draft ESMP (Appendix A).

7.3.7.3 Road safety risks at site access intersections for the exploration team

During exploration, personnel and contractors will access the Project site via two proposed access points along the D1930 road. The repeated entry and exit of light vehicles, water trucks and other exploration-related vehicles at these intersections may increase the risk of road traffic incidents involving the exploration team. These risks are primarily associated with vehicles slowing down to turn into the site, merging back onto the D1930 and sharing the road with other motorists. Road safety risks at the site access intersection are adversely and directly impacting the Project staff commuting to the Project site. The impact is considered partially reversible, as road traffic incidents could result in injuries or, in severe cases, fatalities involving Project personnel or other road users. The impact is limited to the exploration phase and will occur only during periods of active site access, a short term (1 - 5 years). The impact is confined to the two proposed access

intersections and the immediate section of the D1930 road (on-site). Exploration vehicles will regularly use the site accesses; however, traffic incidents are not expected to occur frequently, especially since the exploration staff is aware of traffic rules in and around the licence area. The probability is therefore rated as possible.

The magnitude of change is considered moderate. ITS (2026) identified that Site Access 2 currently intersects the D1930 at an acute angle of approximately 35°, which is below the recommended minimum intersection angle of 75° for safe turning movements. Although adequate shoulder sight distance is expected at both access points, the existing geometry of Site Access 2 could reduce the safety of vehicle manoeuvres if left unmodified. The sensitivity of the impact is rated medium due to due to potential injuries involving road accidents. Overall, the significance of the impact is rated adverse minor, before mitigation. Mitigation measures are outlined in the draft ESMP (Appendix A).

7.3.7.4 Inadequate Shoulder Sight Distance (SSD) at site accesses causing a road safety risk or potential road accident

Inadequate Shoulder Sight Distance (SSD) at site accesses causing a road safety risk. The Transport Impact Statement (Appendix G) assessed the available Shoulder Sight Distance (SSD) at the two proposed access points along the D1930. The D1930 has a posted speed limit of 80 km/h, for which the assessment indicates a minimum SSD of 180 m for passenger vehicles and 240 m for single-unit trucks. Based on the review of aerial imagery, Site Access 1 is located along a relatively straight section of the D1930, while Site Access 2 is located on the outside of a horizontal curve. The nature of the impact is adverse, direct and partly reversible. The risk can be reduced through maintaining clear sight lines, managing vegetation or other obstructions, and implementing appropriate access design. However, a traffic incident could result in injuries or permanent consequences. The potential impact will occur during the exploration phase while project vehicles use the accesses (1 – 5 years). The impact is restricted to the immediate vicinity of the two project access intersections along the D1930 (on-site). The assessment indicates that SSD should be acceptable at both accesses, however the impact remains possible.

The magnitude of change is minor. The assessment concluded that the available SSD at both accesses should be acceptable from a horizontal alignment perspective. The vertical alignment was also considered acceptable, with gradients of approximately 2–4% and no significant vertical crests or sags identified. The sensitivity of the impact is rated medium due to due to potential injuries involving road accidents. Overall, the significance of the impact is rated adverse minor, before mitigation. Mitigation measures are outlined in the draft ESMP (Appendix A).

7.3.7.5 Potential impact on the quality and wear of the D1930 gravel road

Repeated use of the D1930 gravel road by Project-related light vehicles, water trucks and other exploration support vehicles may contribute to minor wear and deterioration of the existing road surface. Heavy vehicle movements may accelerate the formation of corrugations, loose gravel, potholes and wheel rutting, particularly during periods of intensive vehicle use or following rainfall. Increased road wear may reduce driving comfort and, if left unmaintained, could create minor road safety hazards for both Project personnel and other road users. The impact is adverse

and cumulative as the D1930 is an existing public gravel road that is already used by local residents, conservancy users, tourists, farmers and other mining operations within the region. The impact is considered reversible as any deterioration of the gravel road surface can be restored through routine grading and maintenance once exploration activities have ceased or during the Project. The impact will occur intermittently throughout the exploration phase (~3-5 years) and will cease when exploration activities are completed, therefore short term. The impact is confined to the local roads used. Repeated vehicle movements, particularly by heavy vehicles on gravel roads, are likely to result in some degree of surface wear over time.

The magnitude of change is rated minor. ITS (2026) estimates that the exploration phase will generate only a limited number of vehicle trips and concludes that the existing road network has sufficient capacity to accommodate the anticipated traffic without operational or capacity-related upgrades (Appendix G). The sensitivity of the receptor is considered low due to the local extent. Overall, the significance of the impact is rated adverse minor, before mitigation (Table 17). Mitigation measures are outlined in the draft ESMP (Appendix A).

7.3.7.6 Mining phase: ore haulage to the Uis processing plant and mine traffic on the D1930 and C35

Ore mined on ML 133 is transported to the existing processing plant at Uis (Chapter 4). Mining will therefore introduce regular heavy vehicle movements on the D1930 and the C35 for the life of mine, together with a larger commuting workforce, fuel and explosives deliveries and service vehicles. The consequences are increased heavy vehicle traffic on rural roads shared with residents, conservancy users and tourists, road safety risk at the site accesses and along the haul route, accelerated wear of the unpaved D1930, and dust along the unpaved sections.

The impact is adverse, direct and reversible, long term and regional in extent, and definite. The sensitivity of the receptor is medium, given the road safety consequences for other road users, and the magnitude of change moderate, giving a significance of adverse moderate before mitigation. The transport impact statement (Appendix G) covers the exploration phase only; a mining phase traffic assessment, including haul route selection, the geometry of Site Access 2, road maintenance contributions to the Roads Authority and haulage scheduling, will be undertaken before mining commences and the ESMP updated. Interim mitigation is set out in the draft ESMP (Appendix A).

Table 17 - Traffic impacts

Activity	Receptor	Impact	Nature of impact	Value & Sensitivity	Magnitude of change	Significance of impact
Vehicle use during exploration	Road users	Increase in light vehicle traffic impact on existing traffic.	Adverse Direct Reversible Short term Local Definite	Low	Negligible	Adverse Minor (3)

Activity	Receptor	Impact	Nature of impact	Value & Sensitivity	Magnitude of change	Significance of impact
		Dust generation affecting visibility on gravel roads from exploration related vehicles.	Adverse Direct Reversible Temporary Local Likely	Low	Minor	Adverse Low (2)
		Road safety risks at site access intersections for the exploration team.	Adverse Direct Partly reversible Short term On-site Possible	Medium	Moderate	Adverse Minor (4)
		Inadequate Shoulder Sight Distance (SSD) at site accesses causing a road safety risk or potential road accident	Adverse Direct Partly reversible Short term On-site Possible	Medium	Minor	Adverse Minor (4)
		Potential impact on the quality and wear of the D1930 gravel road.	Adverse Cumulative Reversible Short term Local Likely	Low	Minor	Adverse Minor (3)
Vehicle use during mining	Road users	Ore haulage to Uis and mine traffic increasing heavy vehicle volumes, road safety risk, road wear and dust on the	Adverse Direct Reversible Long term Regional Definite	Medium	Moderate	Adverse Moderate (6)

Activity	Receptor	Impact	Nature of impact	Value & Sensitivity	Magnitude of change	Significance of impact
		D1930 and C35.				

7.4 BIOPHYSICAL ENVIRONMENT: SOIL

7.4.1 SOIL IMPACTS

A soil assessment was conducted by the ECC in November 2024. The objective of the assessment and subsequent report is to provide a baseline soil analysis and assessment for ML 133. The report provides a baseline description of soils that occur in the study area, including a summary of the soil composition, fertility, land use potential and erodibility (Appendix H).

The specific impacts on soil, before mitigation, are presented in Figure 41 for illustrative purposes only. Impacts are discussed in detail in the sections thereafter (Table 18). ML 133 is a mining licence and both the exploration programme and the mining activities authorised on the licence (Chapter 4) are assessed; exploration phase impacts are described first, followed by the mining phase.

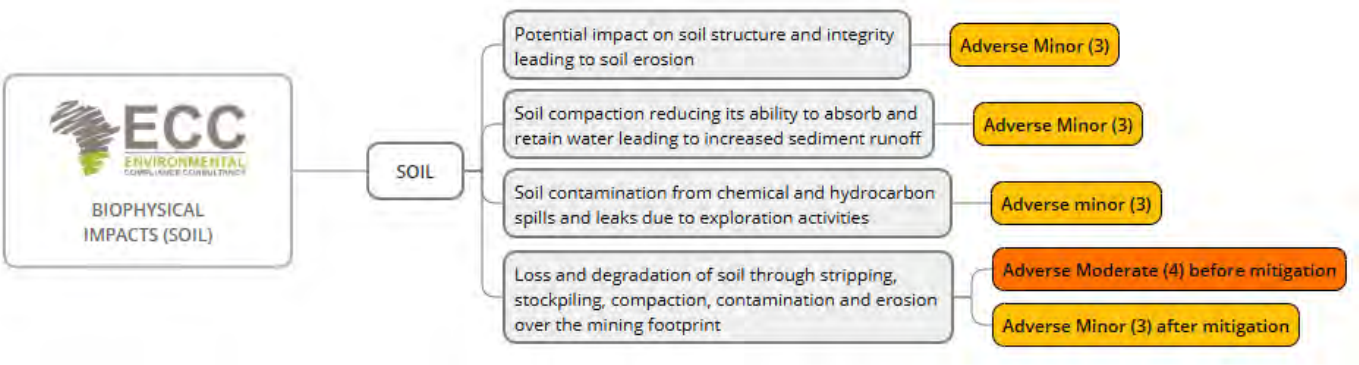


Figure 41 – An overview of soil impacts

7.4.1.1 Impact on soil structure and integrity during the exploration phase

Exploration activities may negatively affect soil structure and integrity through vegetation clearing, excavation, drilling, vehicle movement and the establishment of temporary access tracks and camps. One of the main causes of soil erosion is anthropogenic activities such as land clearing (Gantulga, Iimaa, Batmunkh, & Surenjav, 2023). These activities can lead to reduced porosity and disruption of natural soil horizons, which may impair water infiltration, root penetration and microbial activity. Disturbed soils may become more vulnerable to erosion by wind and water, particularly in exposed areas with limited vegetation cover. In addition, repeated movement of heavy machinery may destabilise surface soils, increase sediment runoff and contribute to land degradation. If not properly managed and rehabilitated, these impacts may reduce soil fertility, hinder natural vegetation recovery and alter the long-term stability and function of the affected ecosystem.

The nature of the impact is adverse, impacts the soil directly and partly reversible due to potential soil rehabilitation to be applied post exploration. The impact is expected to be short-term in duration, as it is associated with the exploration activities and the implementation of the planned exploration programme (1 – 5 years). Impacts are generally confined to exploration sites, access roads, drilling areas and temporary infrastructure footprints, although secondary effects such as erosion may extend beyond these areas. Given the nature of exploration activities involving machinery, excavation, and vehicle movement, disturbance to soil structure and integrity is a likely outcome.

ML 133 is dominated by nudilithic leptosols, which lack well-defined horizons, nutrients and characterised as a poor soil due to poor water retention and susceptibility to erosion. Therefore, the magnitude of change is minor, and the sensitivity is low due to the local scale. The significance of the impact is minor, before mitigation. The mitigation measures are outlined in the draft ESMP (Appendix A).

7.4.1.2 Soil compaction reducing its ability to absorb and retain water leading to increased sediment runoff

Exploration activities involving the movement of heavy machinery, drilling equipment and support vehicles may result in soil compaction, which reduces pore space within the soil and limits its ability to absorb, retain and infiltrate water. Compacted soils often exhibit decreased permeability and increased surface runoff during rainfall events, which can accelerate erosion and transport sediments into surrounding areas or nearby drainage lines. This increased sediment runoff may degrade adjacent habitats, alter natural drainage patterns and contribute to sedimentation of watercourses. In addition, soil compaction can restrict root penetration and reduce soil aeration, thereby lowering soil fertility and hindering vegetation re-establishment and long-term land rehabilitation.

The nature of the impact is adverse, impacts the soil directly and partly reversible due to potential soil rehabilitation to be applied post exploration. The impact is expected to be short-term in duration, as it is associated with the exploration activities and the implementation of the planned exploration programme. Impacts would likely remain confined to the immediate exploration footprint, such as drill pads, access tracks and laydown areas. Soil compaction and associated runoff are likely to occur due to regular use of heavy machinery and vehicles during exploration.

The nudilithic leptosols, which lack well-defined horizons, nutrients and characterised as a poor soil due to poor water retention and susceptibility to erosion. Additionally, the soils are already disturbed, therefore the incremental change to soil structure, infiltration capacity, and erosion risk is likely to be less severe than in undisturbed areas. The magnitude of change is minor, and the sensitivity is low due to the on-site scale. The significance of the impact is minor, before mitigation. The mitigation measures are outlined in the draft ESMP (Appendix A).

7.4.1.3 Soil contamination from chemical and hydrocarbon spills and leaks due to exploration activities

Exploration activities, particularly drilling operations, may result in soil contamination through accidental spills or leaks of hydrocarbons, fuels, lubricants, drilling fluids, grey water, domestic wastewater and other chemicals used on-site. Such substances can infiltrate the soil profile and alter its physical and chemical properties, potentially reducing soil quality, affecting microbial activity and impairing vegetation growth. Contaminated soils may lose fertility and become unsuitable for natural regeneration, while pollutants may persist in the environment if not promptly contained and remediated. In permeable or shallow soils, contaminants may also migrate beyond the immediate spill area, increasing the risk of secondary contamination to surrounding soils and, where applicable, groundwater resources. Repeated or poorly managed spills may contribute to long-term land degradation and reduce the effectiveness of future rehabilitation efforts. Majority of the spillage is likely to be classified as small leaks which may be cleaned up in situ.

The nature of the impact is adverse, impacts the soil directly and is deemed partly reversible as contaminated soil can be remediated through excavation, removal or *in situ* bioremediation; however, complete restoration of original soil quality and biological function may not always be achieved, particularly in shallow, rocky soils where contamination can be difficult to isolate. The duration depends on the scale of the spill and response time. Small spills that are immediately contained may have short-term effects, while larger or unmanaged contamination may persist for years. Impacts are typically confined to drilling areas, fuel storage points and equipment servicing locations within the Project site. While spills are not constant, the regular use of fuels, lubricants and drilling chemicals makes accidental leaks or spills likely during exploration.

ML 133 is dominated by a poor soil that would not have been suitable for any other practices, therefore the magnitude of change is minor. The sensitivity of the impact is low due to the on-site scale. The overall significance of the impact is minor, before mitigation (Table 18). The mitigation measures are detailed in the draft ESMP (Appendix A).

7.4.1.4 Mining phase: loss and degradation of soil through stripping for the open pit, waste rock and ore stockpiles, haul roads and infrastructure

Open pit mining and the placement of waste rock, ore stockpiles, haul roads and plant infrastructure will strip or bury soil over a far larger and more permanent footprint than exploration. The shallow nudilithic leptosols on ML 133 hold little topsoil, so the volume of soil that can be recovered for rehabilitation is limited and what is stripped must be stockpiled and protected from erosion. Compaction by heavy mobile equipment, hydrocarbon and chemical spills at workshops, fuel storage and the crushing plant, and erosion of exposed dumps and stockpiles are the same mechanisms described for exploration, but at a greater scale and over the life of mine.

The impact is adverse and direct, partly reversible through progressive rehabilitation and final landform shaping, long term for the life of mine, local in extent and definite. Given the poor

agricultural value of the soils, the sensitivity of the receptor is low, but the magnitude of change is moderate because of the area affected and the permanence of the pit and dumps. The significance is rated adverse moderate before mitigation. Mitigation for the mining phase, including topsoil stripping and stockpiling ahead of disturbance, dump design for stability and erosion control, bunded fuel and workshop areas and progressive rehabilitation, is set out in the draft ESMP (Appendix A). The significance is rated adverse minor after mitigation.

Table 18 - Impacts on soil

Activity	Receptor	Impact	Nature of impact	Value & sensitivity	Magnitude of change	Significance of impact
Exploration phase	Soil	Potential impact on soil structure and integrity leading to soil erosion.	Adverse Direct Partly reversible Short term Local Likely	Low	Minor	Minor (3)
		Soil compaction reducing its ability to absorb and retain water leading to increased sediment runoff.	Adverse Direct Partly reversible Short term On-site Likely	Low	Minor	Minor (3)
		Soil contamination from chemical and hydrocarbon spills and leaks due to exploration activities.	Adverse Direct Partly reversible Long term On-site Likely	Low	Minor	Minor (3)
Mining phase	Soil	Loss and degradation of soil through stripping, stockpiling, compaction,	Adverse Direct Partly reversible Long term Local	Low	Moderate	Adverse Moderate (4)

Activity	Receptor	Impact	Nature of impact	Value & sensitivity	Magnitude of change	Significance of impact
		contamination and erosion over the mining footprint.	Definite			

7.5 BIOPHYSICAL ENVIRONMENT: GROUNDWATER, SURFACE WATER AND WASTE

A preliminary hydrological assessment was carried out by Hydrologic Consulting in October 2024 (Appendix D). This report outlines the hydrological baseline with a hydrological (surface water) impact assessment subsequently presented.

ML 133 is within the greater Omaruru Catchment which drains to the Atlantic Ocean. The Omaruru Catchment's primary river is the Omaruru River, which passes immediately east to southeast of the site, intersecting a small portion of the site's eastern boundary. A containing catchment representative of a portion of the greater Omaruru Catchment was delineated to define the surface water area of influence in this study (Figure 42). The specific impacts on groundwater and surface water, before mitigation, are presented in Figure 43 for illustrative purposes only. Ground water and surface water impacts are discussed in detail in the sections thereafter (Table 19).

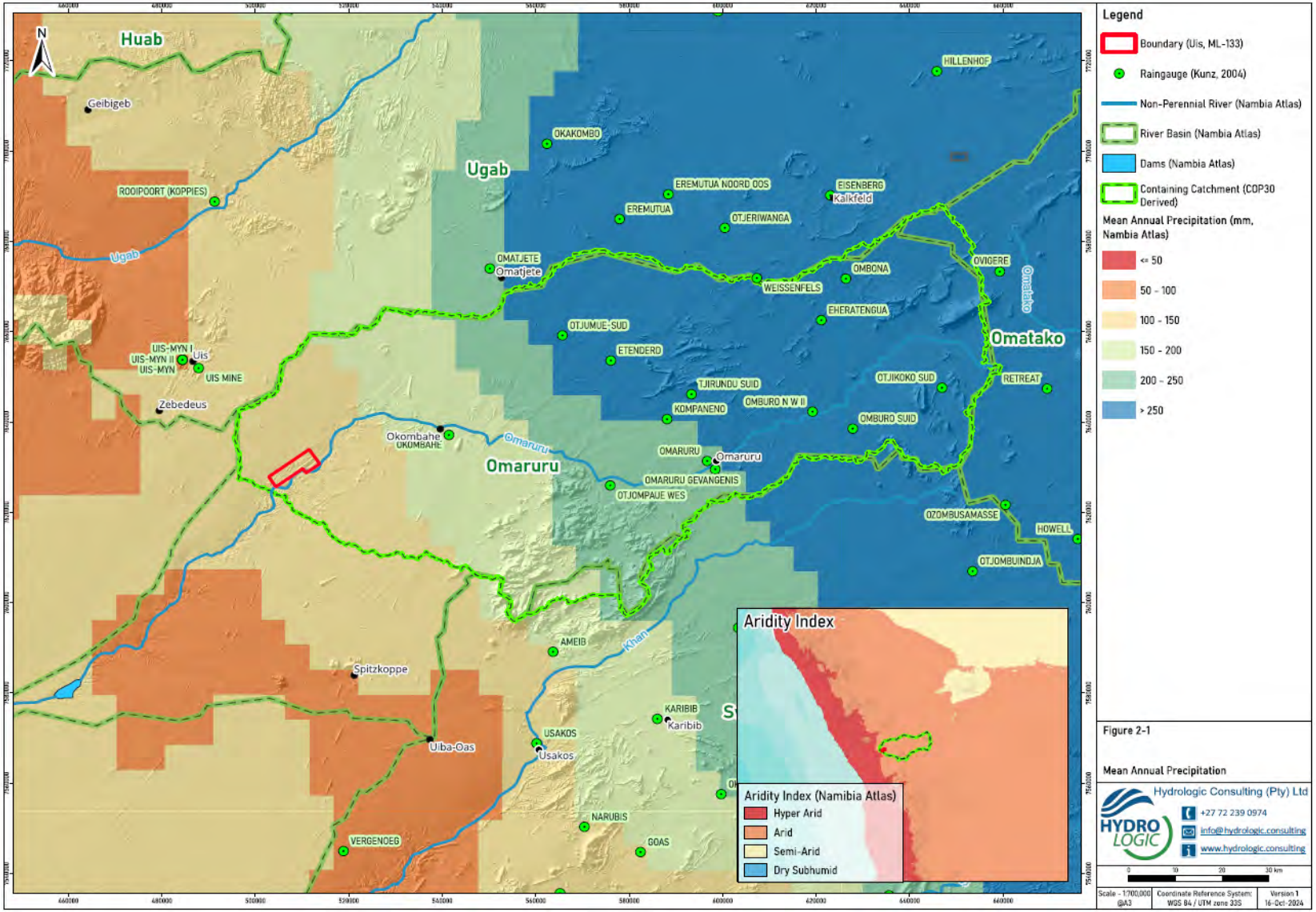


Figure 42 - Containing catchment surrounding the ML 133 general area

Figure 43 - An overview of groundwater and surface water

7.5.1 GROUNDWATER IMPACTS

7.5.1.1 Groundwater abstraction for exploration activities may potentially reduce available groundwater resources

Groundwater required for the exploration programme may be obtained from existing boreholes as authorised by DWA. The abstraction of groundwater for exploration purposes has the potential to cause temporary, localised reduction in groundwater levels within the affected aquifers. However, the anticipated water demand for exploration activities, primarily for drilling operations, dust suppression and domestic use, is relatively low (~100,000 m^3/a) when compared to the significantly larger volumes typically associated with mining, industrial, or agricultural operations. As a result, the risk of substantial depletion of groundwater resources is expected to be limited, provided abstraction rates remain within sustainable levels and are appropriately managed. Continuous monitoring of borehole yields and groundwater levels can further assist in ensuring that abstraction does not adversely affect the long-term availability of the resource or neighbouring groundwater users.

The nature of the impact is considered adverse, direct and partly reversible, as groundwater levels may temporarily decrease during abstraction and recover once water demand is reduced or discontinued. The impact is typically limited to the active exploration phase and the period during

which groundwater abstraction takes place, which is over a short term. Impacts are usually confined to the immediate area surrounding the abstraction borehole(s), therefore the impact is considered on a local scale. Groundwater level reductions may occur if abstraction exceeds natural recharge or local aquifer capacity; however, given the relatively low water demand for exploration, significant impacts are less likely and rated possible. The magnitude of change is considered minor, because water requirements for exploration are generally small and will remain within the limits stipulated in the approved water abstraction licence issued by DWA. The sensitivity of the receptor is medium as the groundwater is a critical resource that supports nearby communities. Overall, the significance of the impact is rated adverse minor, before mitigation. Mitigation measures are outlined in the draft ESMP (Appendix A).

7.5.1.2 Machinery and equipment operations may cause accidental fuel or hydraulic fluid leaks and spills, potentially contaminating groundwater resources

The operation of machinery and equipment during exploration activities presents a risk of accidental leaks and spills of hazardous and hydrocarbon substances such as diesel, lubricants, hydraulic fluids and other petroleum-based products. These substances may be released during refuelling, equipment servicing, storage, or as a result of mechanical failure. If not properly contained, contaminants can infiltrate the soil and migrate vertically through permeable or fractured geological formations, potentially reaching and contaminating groundwater resources (Younger, 2001). In arid environments such as Namibia, where groundwater often represents the primary freshwater resource and natural recharge rates are generally low, contamination events may persist for extended periods due to limited dilution and flushing capacity (Department of Water Affairs and Forestry (DWAF), 2005).

The impact is deemed adverse, directly causing groundwater contamination. If cleanup measures are implemented promptly, the impact can be mitigated and is expected to be partly reversible, preventing groundwater infiltration. The impact duration is expected to occur over a medium term, depending on the volume of the spill and the effectiveness of immediate cleanup and remediation measures (>5 years). The spatial scale of the impact is considered regional as this could impact the water quality of the regional groundwater. The likelihood of the impact is considered possible, as hazardous and hydrocarbon materials are routinely handled and used during operational and in-field maintenance activities associated with exploration, creating the potential for accidental spills, including larger-scale incidents.

The magnitude of change is considered low because spills are generally infrequent and localised during exploration and the scale of hazardous or hydrocarbon material use is relatively limited. The sensitivity of the receptor is considered medium due to the regional scale. Overall, the significance of the impact is rated adverse minor, before mitigation. Mitigation measures are outlined in the draft ESMP (Appendix A).

7.5.1.3 Untreated domestic wastewater may seep into and contaminate groundwater resources

Domestic wastewater generated from exploration camps or temporary site facilities, if not properly collected, stored and managed, may seep into the ground and contaminate underlying

groundwater resources. Wastewater may contain nutrients, pathogens, detergents and other organic pollutants that can alter groundwater quality and make it unsuitable for domestic, livestock or agricultural use. Infiltration is of particular concern in areas with shallow groundwater tables, permeable soils or fractured rock formations, where contaminants can migrate more easily into aquifers. If unmanaged, continuous seepage may lead to localised groundwater pollution, increased nutrient loading and potential health risks to surrounding users and ecosystems. Proper sanitation systems and wastewater management measures are therefore essential to minimise this impact.

The impact is deemed adverse, directly causing groundwater contamination. The impact is partly reversible, through the implementation of immediate clean up measures of wastewater containment. The impact duration is considered medium term as contaminants could persist in the environment, if remediation measures are not promptly implemented. Additionally, the impact is considered over a regional scale as the regional groundwater may be affected. The likelihood of the impact is considered possible as wastewater will be generated during the exploration program. However, contamination will most likely occur only in the event of a failure of wastewater management systems, such as septic tanks or chemical portable toilets, therefore the impact is rated as possible. The magnitude of change is assessed as minor, as any seepage of untreated wastewater is expected to be limited in scale and promptly identified and addressed to prevent significant contamination. The sensitivity of the receptor is rated medium due to the regional scale. Overall, the significance of the impact is rated adverse minor, before mitigation. Mitigation measures are included in the draft ESMP (Appendix A).

7.5.1.4 Mining phase: groundwater abstraction, pit dewatering and contamination from mining activities

Water for the mining phase (dust suppression on haul roads and at the crushing and screening plant, workshop and domestic use) will continue to be drawn from the licensed boreholes within ML 133. Ore is processed at Uis, so process water demand does not arise on the licence, but mining demand will be sustained rather than campaign based and may approach the licensed volume of 100 000 m3/a. Should the open pit extend below the water table, pit dewatering will lower groundwater levels around the pit and produce water requiring management. Contamination risks from hydrocarbons, workshop effluent and domestic wastewater are the same as described for exploration but larger in scale and duration, and seepage from waste rock and ore stockpiles adds a further pathway where the material is sulphidic or otherwise reactive.

The abstraction and dewatering impact are adverse, direct and partly reversible, long term and local to regional in extent, and likely. The sensitivity of the receptor is medium, as groundwater supports the Nai-Nais households and livestock, and the magnitude of change moderate, giving a significance of adverse moderate before mitigation. Contamination of groundwater from mining activities is adverse, direct and partly reversible, medium to long term and regional, and possible, with a medium sensitivity and moderate magnitude, and is rated adverse moderate before mitigation. Mitigation, including a groundwater monitoring network around the pit and dumps with baseline sampling before mining, compliance with the abstraction licence and reporting to

DWA, geochemical characterisation of waste rock and ore before dump construction, and bunded workshop, fuel and wastewater facilities, is set out in the draft ESMP (Appendix A).

7.5.2 SURFACE WATER IMPACTS

There are no permanent or perennial surface water bodies within ML 133. Surface water is limited to the ephemeral Omaruru River along the eastern boundary and the ephemeral drainage lines that cross the licence and flow only after rainfall (Chapter 5). The surface water impacts below relate to these features and to the 100 m riparian buffer that applies to all delineated watercourses under the Water Resources Management Act.

7.5.2.1 Machinery and equipment operations may cause accidental fuel or hydraulic fluid leaks and spills, potentially contaminating surface water resources

The operation of machinery and equipment during exploration activities may result in accidental leaks or spills of fuel, oil or hydraulic fluids. If not properly contained, these substances may be transported via surface runoff into drainage lines, ephemeral streams or stormwater channels, potentially contaminating surface water resources. The extent and severity of contamination will depend on factors such as the location of refueling and maintenance activities, the quantity of hazardous and hydrocarbon substances handled, rainfall events, and the proximity of operational areas to natural drainage systems or watercourses. Such contamination may degrade water quality, adversely affect aquatic habitats, and pose risks to downstream users.

The impact is deemed adverse, directly causing surface water contamination. With prompt and effective cleanup measures, the impact can be partially mitigated and is expected to be partly reversible. The impact duration of the impact is expected to occur over a medium term, depending on the volume of the spill and the effectiveness of immediate cleanup and remediation measures. The spatial extent of the impact is considered regional, as the nearest mainstream watercourse, which is the Omaruru River which passes immediately east to southeast of the ML. The probability of occurrence is considered possible, as hazardous and hydrocarbon materials are routinely used and handled during exploration activities, creating the potential for accidental spills, including larger-scale incidents.

The magnitude of change is considered low to moderate because spills are generally infrequent and localised during exploration, and the scale of hazardous and hydrocarbon material use is relatively limited. The sensitivity of the receptor is considered medium due to the regional scale. Overall, the significance of the impact is rated adverse minor, before mitigation. Mitigation measures are outlined in the draft ESMP (Appendix A).

7.5.2.2 Potential flooding events within ML 133

The primary Omaruru River is a major watercourse with the potential to convey substantial flood flows past the Project area. Hydraulic modelling was undertaken to simulate flooding associated with the 1:50-year recurrence interval (RI), 1:100-year RI and Regional Maximum Flood (RMF) events. However, the level of detail incorporated into the model was limited; therefore, the simulated flood extents and associated results for the Omaruru River should be regarded as high-level estimates. Figure 44 illustrates that for the 1:50 RI and 1:100 RI flood events, the flood

response is similar, with flooding for the 1:100 RI event (yellow colour) barely visible given the overlapping 1:50 RI event results (green colour). The regional maximum flood despite a substantial increase in flows is also similar in flood extent to the smaller two events. This is largely due to the well-defined Omaruru River channel which has incised itself into the terrain. The result is that flood waters are largely contained by the river channel with the primary exception being the area about Nai Nais where flood waters escape the river channel. Overall, the influence of flooding caused by the Omaruru River on the site is limited to the site's eastern boundary. Defined areas of flood should ideally be avoided (with regards to planned works) given the risk that exists due to this watercourse and its large upstream area which can generate substantial flows.

The impact is adverse, direct and potentially reversible, as flooding may directly affect Project infrastructure, access routes and personnel, while damage and disruption can generally be remedied following the event. The duration of individual flood events is expected to be short-term, although damage, operational disruption or repair requirements may persist beyond the flood event. The impact is expected to be on a regional scale. The impact is rated as unlikely due to the projections as per Figure 44 and is described as rare as per Appendix D. The magnitude of the potential impact is considered moderate, given the potentially substantial flood flows associated with the Omaruru River. Modelled peak flows exceed 6,000 m^3/s for the RMF event and are approximately 4,934 m^3/s for the 1:100-year RI event, indicating the potential for significant flooding and associated damage to infrastructure, disruption of operations and risks to personnel. The sensitivity of the receptor is considered medium due to the regional scale. Overall, the significance of the impact is rated adverse minor, before mitigation. Mitigation measures are outlined in the draft ESMP (Appendix A).

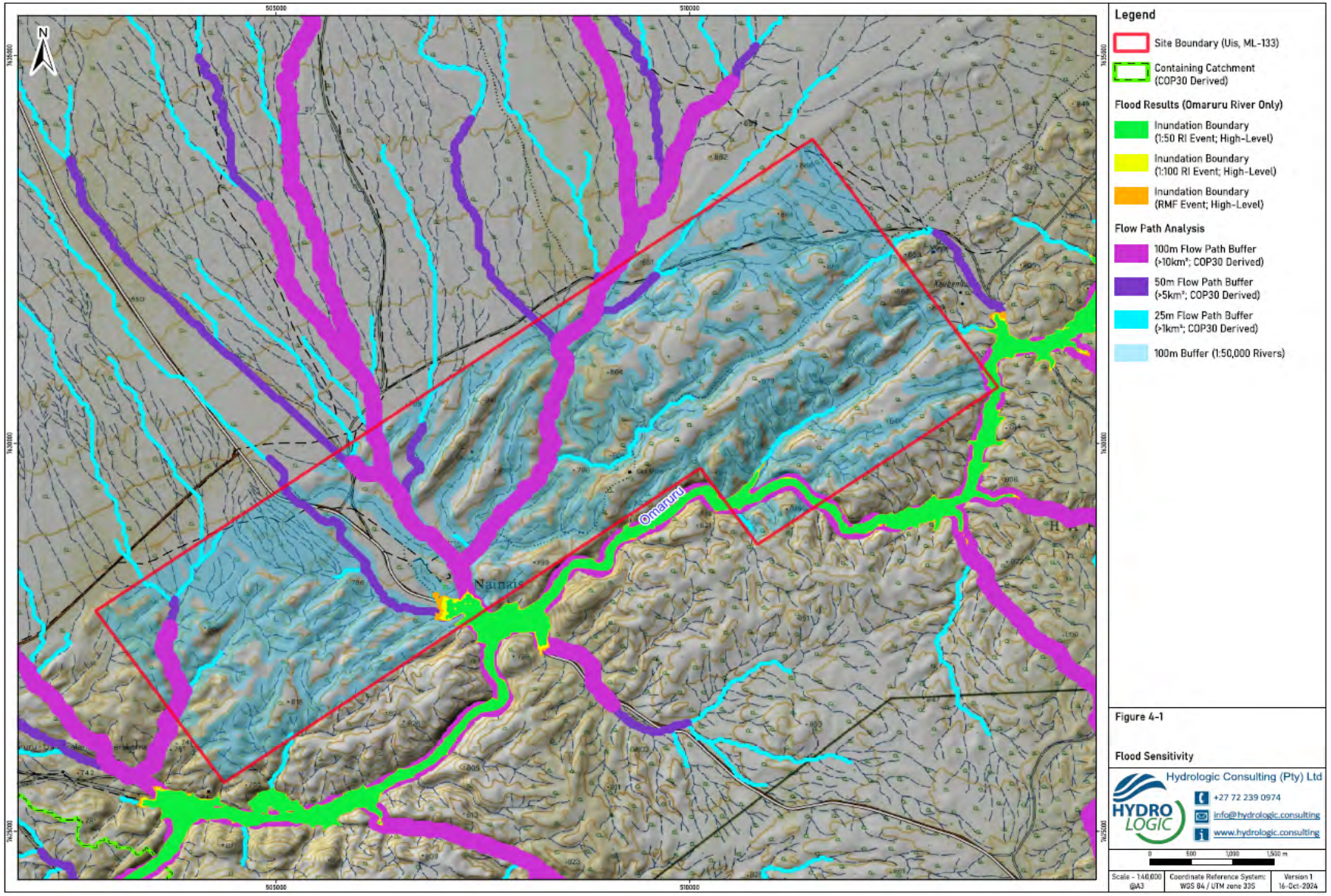


Figure 44 - Flood sensitivity of 1:50 (green) and 1:100 (yellow) recurrence intervals (RI)

7.5.2.3 Untreated domestic wastewater may seep into and contaminate surface water sources.

Untreated domestic wastewater generated during the Project may seep into the surrounding environment and contaminate nearby surface water resources, particularly where wastewater is improperly contained, managed or discharged. Potential sources include ablution facilities, accommodation and camp facilities, and other domestic activities. The impact is deemed adverse, directly causing surface water contamination such as the Omaruru River traversing ML 133. The impact is partly reversible, through the implementation of immediate clean up measures of wastewater containment. The impact duration is considered medium term as contaminants could persist in the environment, if remediation measures are not promptly implemented. Additionally, the impact is considered over a regional scale as the nearest ephemeral Omaruru River traverses the region. The likelihood of the impact is considered possible as wastewater will be generated during the exploration nearest program. However, contamination will most likely occur only in the event of a failure of wastewater management systems, such as septic tanks or chemical portable toilets, therefore the impact is rated as possible. The magnitude of change is assessed as minor, as any seepage of untreated wastewater is expected to be limited in scale and promptly identified and addressed to prevent significant contamination. The sensitivity of the receptor is rated medium due to the regional scale. Overall, the significance of the impact is rated adverse minor, before mitigation. Mitigation measures are included in the draft ESMP (Appendix A).

7.5.2.4 Mining phase: alteration of drainage lines, sediment laden runoff and flood risk to the open pit and dumps

The open pit, waste rock dumps, stockpiles and haul roads will occupy and divert ephemeral drainage lines that cross ML 133, concentrating runoff and increasing sediment loads to the Omaruru River after rainfall. Exposed dumps and stockpiles are a continuing sediment source. Where mining infrastructure encroaches on the 100 m riparian buffer or the flood extents shown in Figure 44, flood flows in the Omaruru River may enter the pit or erode dump toes, and the Nai-Nais area, where flood water escapes the channel, is particularly exposed. Hydrocarbon and wastewater contamination pathways to surface water are as described for exploration but over a longer period.

The impact is adverse and direct, partly reversible through stormwater design and rehabilitation, long term and regional in extent given the connection to the Omaruru River, and likely. The sensitivity of the receptor is medium and the magnitude of change moderate, giving a significance of adverse moderate before mitigation. Mitigation, including a stormwater management plan that separates clean and dirty water, siting the pit and dumps outside the riparian buffer and modelled flood extents or obtaining the necessary DWA authorisation where this is not possible, sediment traps below dumps, and a refined flood model for the mining layout, is set out in the draft ESMP (Appendix A).

Table 19 - Impacts on groundwater, rivers, catchments and other fresh water sources

Activity	Receptor	Impact	Nature of impact	Value and sensitivity	Magnitude of change	Significance of impact
Exploration activities	Groundwater	Groundwater abstraction for exploration activities may potentially reduce available groundwater resources.	Adverse Direct Partly reversible Short term Local Possible	Medium	Minor	Adverse Minor (4)
		Machinery and equipment operations may cause accidental fuel or hydraulic fluid leaks and spills, potentially contaminating groundwater resources.	Adverse Direct Partly reversible Medium term Regional Possible	Medium	Minor	Adverse Minor (4)
		Untreated domestic wastewater may seep into and contaminate groundwater resources.	Adverse Direct Partly reversible Medium-term Regional Possible	Medium	Minor	Adverse Minor (4)
	Surface water	Machinery and equipment operations may cause accidental fuel or hydraulic fluid leaks and spills, potentially contaminating surface water resources.	Adverse Direct Partly reversible Medium-term Regional Possible	Medium	Minor	Adverse Minor (4)

Activity	Receptor	Impact	Nature of impact	Value and sensitivity	Magnitude of change	Significance of impact
		Potential flooding events within ML 133.	Adverse Direct Partly reversible Short term Regional Unlikely	Medium	Moderate	Adverse Minor (4)
		Untreated domestic wastewater may seep into and contaminate surface water sources.	Adverse Direct Partly reversible Medium-term Local Possible	Low	Minor	Adverse Low (2)
Mining activities	Groundwater	Sustained abstraction and pit dewatering lowering groundwater levels around the pit and licensed boreholes.	Adverse Direct Partly reversible Long term Regional Likely	Medium	Moderate	Adverse Moderate (6)
		Contamination of groundwater from hydrocarbons, workshop and domestic effluent and seepage from waste rock and ore stockpiles.	Adverse Direct Partly reversible Long term Regional Possible	Medium	Moderate	Adverse Moderate (6)
	Surface water	Alteration of drainage lines, sediment laden runoff	Adverse Direct Partly reversible	Medium	Moderate	Adverse Moderate (6)

Activity	Receptor	Impact	Nature of impact	Value and sensitivity	Magnitude of change	Significance of impact
		and flood risk to the open pit and dumps.	Long term Regional Likely			

7.5.3 WASTE GENERATION

This section discusses the impacts related to solid waste generated by exploration activities during the exploration program. Figure 45 shows an overview of the potential solid waste impacts for illustrative purposes only, before mitigation. Each impact is discussed in detail in the sections below and the impact assessment ratings are summarised in Table 20.

Figure 45 - Overview of solid waste impacts

7.5.3.1 Improper handling and disposal of general (non-hazardous) waste leading to visual pollution, deterioration of the surrounding environment and attraction of scavengers

The proposed ML 133 exploration programme will generate general (non-hazardous) waste, including domestic waste, packaging materials, plastics, paper, scrap materials, PPE, grey water and food waste associated with drilling activities, camps and the presence of exploration personnel. If such waste is not appropriately stored, managed, transported and disposed of, it may result in visual pollution, degrade the aesthetic quality of the surrounding environment and attract scavengers. Windblown litter may also spread beyond the immediate work area, particularly under the windy conditions typical of the Erongo Region, increasing the area affected by waste and detracting from the natural landscape.

The impact is adverse and directly impacting the natural environment. The impact is considered reversible, as waste can be removed, and affected areas restored through regular housekeeping, use of appropriate facilities and correctly managed waste disposal practices. The impact is expected to be short-term, occurring only during the active exploration phase (1 – 5 years). The impact is anticipated to be on-site, affecting the exploration sites, temporary work areas and immediate surroundings. The impact is considered possible if waste management practices are not effectively implemented. With appropriate waste management measures in place, the likelihood of the impact occurring is low. The magnitude of change is considered minor, as the anticipated volumes of general waste are relatively small and the impact can be readily managed

through good housekeeping and routine waste collection. The sensitivity of the receiving environment is low, due to the on-site extent. Overall, the significance of the impact is rated adverse low, before mitigation (Table 20). Mitigation measures are outlined in the draft ESMP (Appendix A).

7.5.3.2 Improper management of hazardous and hydrocarbon waste may result in the contamination of soil, surface water, groundwater and surrounding ecosystems.

The proposed ML 133 exploration programme will generate limited quantities of solid hazardous and hydrocarbon waste associated with drilling activities and the maintenance of equipment and vehicles. Additionally smoking and the disposal of cigarette butts is handled as hazardous waste. This may include used oil filters, hydrocarbon-contaminated absorbent materials, oily rags, contaminated personal protective equipment (PPE), spent batteries, empty chemical and lubricant containers and other hazardous and hydrocarbon waste generated during routine exploration activities. If these wastes are not appropriately segregated, stored, transported and disposed of at a licensed hazardous waste disposal facility, they may result in the localised contamination of soil and, through prolonged exposure to rainfall, may lead to runoff into nearby drainage lines. Cigarette butts take long to degrade, are a fire risk and are also visually unsightly.

The impact is considered adverse, direct and partially reversible. Localised contamination can generally be remediated through the removal of contaminated soil, proper management of cigarette butts and the proper collection and disposal of hazardous and hydrocarbon waste. The impact is expected to be short-term, provided that hazardous waste is promptly removed, appropriately handled and disposed of at an authorised facility. The impact is expected to be site-specific, primarily affecting drill sites, temporary storage areas, camp areas and equipment servicing locations. Prior to mitigation, the impact is possible as hazardous and hydrocarbon waste will be generated during exploration, and contamination could occur if waste is improperly handled, stored or disposed.

The magnitude of change is considered moderate. While the quantities of solid hazardous and hydrocarbon waste are expected to be small, improper management could result in localised environmental contamination requiring remediation. The sensitivity of the receiving environment is low, due to the on-site extent. Overall, the significance of the impact is rated adverse low, before mitigation (Table 20). Mitigation measures are outlined in the draft ESMP (Appendix A).

7.5.3.3 Mining phase: waste rock and increased general and hazardous waste volumes

Mining will generate waste rock is stockpiled on the licence, mineral residue in volumes that dwarf exploration waste, together with larger quantities of general waste from a bigger workforce and hazardous waste from workshops, the crushing and screening plant and fuel and explosives handling. Waste rock dumps stockpiles are permanent landscape features unless backfilled, and their stability, dust generation and seepage are addressed under the soil, air quality and water impacts.

The impact of general and hazardous waste is adverse, direct and partly reversible, long term and on site to local in extent, and likely. The sensitivity of the receptor is low and the magnitude of

change moderate, giving a significance of adverse low before mitigation, provided that the waste management measures in the draft ESMP (Appendix A) are scaled to the mining workforce and include a licensed hazardous waste contractor, an explosives waste procedure and a mine waste (waste rock) management plan.

Table 20 - Solid waste impacts

Activity	Receptor	Impact	Nature of impact	Value and sensitivity	Magnitude of change	Significance of impact
Exploration activities	Solid waste	Improper handling and disposal of general (non-hazardous) waste leading to visual pollution, deterioration of the surrounding environment and attraction of scavengers.	Adverse Direct Reversible Short term On-site Possible	Low	Minor	Adverse Low (2)
		Improper management of hazardous waste may result in the contamination of soil, surface water, groundwater and surrounding ecosystems.	Adverse Direct Partly reversible Short term On-site Possible	Low	Moderate	Adverse Low (2)
Mining activities	Solid waste	Waste rock and residue stockpiles and increased general and hazardous waste volumes during mining.	Adverse Direct Partly reversible Long term Local Likely	Low	Moderate	Adverse Low (2)

7.6 BIOPHYSICAL ENVIRONMENT: BIODIVERSITY

A biodiversity specialist study was undertaken by Dr Peter Cunningham of Environment & Wildlife Consulting, Namibia, in April 2024 to assess and compare the receiving environment under wet- and dry-season conditions (Appendix C).

7.6.1 FLORA

ML 133 has been subjected to past and current mining activities, exploration activities, subsistence farming infrastructure and construction of roads, which makes this area highly disturbed. Mining activities near Uis have been occurring at interval for the last century. The proposed Project is unlikely to have major impacts on flora biodiversity. Studies have shown that many flora and fauna species have adapted to the new stresses, food sources, predators and threats associated with living in proximity to human activity or human communities (Hunter, 2007). The specific impacts to flora in the Project area before mitigation during exploration phase are presented in Figure 46 and

Table 21, for illustrative purposes only. The potential Project impacts on flora biodiversity are discussed further in the sections below.

For the purposes of this chapter, ML 133 or the licence area means the whole mining licence; the Project footprint means the areas physically disturbed by exploration or mining activities within ML 133; and the wider area surrounding ML 133 means the desktop study area used by Cunningham (2024), which extends to the Uis area. The Brandberg Mountain lies approximately 50 km northwest of ML 133 and is outside the area of influence of the Project. ML 133 is a mining licence and both the exploration programme and the mining activities authorised on the licence (Chapter 4) are assessed; exploration phase impacts are described first for each group, followed by the mining phase.

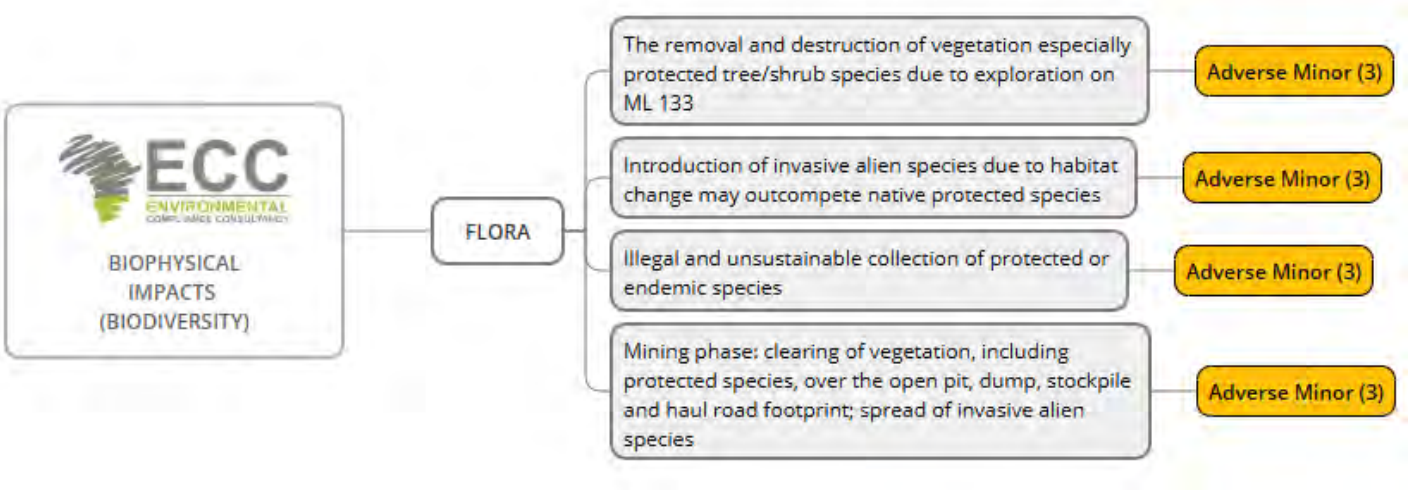


Figure 46 - Impacts on flora

7.6.1.1 The removal and destruction of vegetation especially protected tree/shrub species due to exploration on ML 133

Cunningham (2024) established that there are approximately 104 tree and shrub species, of which 12 species (11.5%) expected to occur in the wider area surrounding ML 133 are classified as endemic, 7 species as near endemic (6.7%), 25 species (24%) are protected by the Forest Act No. 12. of 2001, 4 species (3.9%) are protected under the Nature Conservation Ordinance No. 4 of 1975 while 6 species (5.8%) are classified as CITES Appendix 2 species. The removal of tree and shrub species is not likely to be destructive impacts due to the anthropogenic disturbances throughout the past decades. Additionally, none of the larger tree or shrub species are exclusively associated with ML 133 (Cunningham, 2024)

The study indicated three types of important habitats and the flora species associated with it:

1. **Omaruru River channel (riparian habitat)**

– Large trees such as *Acacia erioloba*, *Combretum imberbe*, *Euclea pseudebenus*, *Faidherbia albida*, *Ficus cordata*, *Ficus sycomorus*

2. **Ephemeral drainage lines**

– *Acacia erioloba*, Boscia albitrunca, *Combretum imberbe*, *Euclea pseudebenus*, *Faidherbia albida*, *Ficus cordata*, *Ficus sycomorus*

3. Mountainous areas/ Hills and ridges

– *Aloe dichotoma*, various *Commiphora species* (e.g., *C. dinteri*, *C. saxicola*, *C. virgata*), *Euphorbia* spp. (*Euphorbia damarana*, *E. virosa*), *Maerua schinzii*, *Moringa ovalifolia* and *Sterculia africana*.

The nature of the impact will be adverse, directly impacting trees and shrubs. The removal and destruction of vegetation, particularly protected tree and shrub species, is considered partly reversible because some ecological recovery can occur over time, however the general area has been disturbed over past decades and full restoration is unlikely. The impact will be on site, where exploration activities are carried out. The impact is expected to be short-term in duration, as it is associated with the exploration activities and the implementation of the planned exploration programme (1 - 5 years). The probability is considered likely, as clearing of vegetation and site disturbance is expected at exploration target areas.

The magnitude of change is considered minor, as vegetation within the Project area has already been subjected to anthropogenic disturbance over the past decades, reducing the overall ecological sensitivity of the site. Furthermore, the removal of tree and shrub species is not anticipated to result in significant destructive impacts, as none of the larger tree or shrub species present are exclusively confined to ML 133 and are represented elsewhere in the surrounding region. The sensitivity of the receptor is low because the anticipated loss is expected to be limited and localised. The overall significance of the impact is rated minor, before mitigation (

Table 21). Mitigation measures are described in the draft ESMP (Appendix A) based on the biodiversity specialist study (Appendix C).

7.6.1.2 Potential introduction of invasive alien species due to habitat change may outcompete native protected species

Opportunistic invasive alien species may be introduced during clearing of land. These invasive alien species spread easily and compete heavily with native protected species, reducing the range area of native important species. Five invasive alien species were encountered throughout the ML 133 area during the vertebrate fauna and flora assessment (Cunningham, 2024). The five species are as follows:

- *Argemone ochroleuca* (Mexican poppy) - pioneer species, dwell in disturbed/cleared land, toxic
- *Datura innoxia* (thorn apple) – fast dispersers, abundant along riverbanks, poisonous to humans and may be fatal
- *Prosopis* spp. (mesquite spp.) – outnumber & eliminate native species, reduce ephemeral flow in riverbeds through groundwater abstraction
- *Ricinus communis* (castor oil) – castor bean contains ricin, which is extremely toxic to humans, fast growers and widely distributed
- *Nicotiana glauca* (wild tobacco) – produce many seeds, poisonous to humans and animals, mostly found in dry rivers.

The nature of the impact will be adverse, directly impacting native vegetation. The impact is considered partly reversible, as invasive alien species can be controlled or removed through management interventions. However, once established, eradication can be difficult and time-consuming, and native species may not fully recover. The impact is considered medium term, as invasive species can persist well beyond the exploration phase and continue altering habitat conditions if not effectively managed (>5 years). The impact is expected to be localised to the Project footprint and adjacent disturbed areas. The probability is considered likely, particularly where vegetation clearing, soil disturbance and vehicle movement create pathways for the introduction and spread of invasive species.

The magnitude of change is considered minor. While habitat alteration may facilitate invasive species establishment, the existing disturbed nature of the area may reduce the relative significance of additional change. The sensitivity of the receptor is low due to the local extent of the impact. The overall significance of the impact is rated minor, before mitigation (

Table **21**). Mitigation measures are described in the draft ESMP (Appendix A) based on the biodiversity specialist study (Appendix C).

7.6.1.3 Illegal and unsustainable collection of protected species

During exploration activities, the contractors and employees may be prone to potential illegal collection/trading of endemic/protected/rare vegetation species found within ML 133. *Combretum imberbe*, classified as protected under the Forest Act, No. 12 of 2001 and Regulations (2015) are often illegally harvested for charcoal (Ministry of Agriculture, Water and Forestry and Ministry of Environment and Tourism, 2017). According to the Forest Act, the *Commiphora dinteri* and *Commiphora saxicola* has been prone to illegal harvesting for horticultural trade, *Maerua schinzii* is heavily used by humans for medicinal and ornamental purposes.

The impact is considered adverse, direct and irreversible. Once protected species are removed from the environment, particularly slow-growing, rare, or endemic species, population recovery may be difficult without intervention. The impact is assessed as long-term (>15 years), the effects may persist for many years, especially where species have low reproductive rates or limited distribution. Continued collection pressure can result in prolonged population decline. The impact is concentrated within the Project footprint and surrounding accessible areas, therefore the local area. The impact prior to mitigation measures is assessed as possible as a result of increased human presence and access to the site during Project activities, which could create opportunities for opportunistic collection of protected species. However, the occurrence is not expected to be widespread, particularly in areas where such species are not highly abundant.

The magnitude of change is moderate due to the potential loss of protected species that are significant, and the sensitivity is assessed as low due to the local extent. The overall significance of the impact is rated minor before mitigation (

Table 21). Mitigation measures are described in the draft ESMP (Appendix A) based on the biodiversity specialist study (Appendix C).

7.6.1.4 Mining phase: clearing of vegetation, including protected trees and shrubs, over the open pit, waste rock dump, stockpile and haul road footprint

Mining will clear vegetation over a much larger and longer-lived footprint than exploration, including hills and ridges that support Euphorbia, Commiphora and other protected succulents, and potentially the drainage lines and Omaruru River riparian zone where Combretum imberbe, Acacia erioloba, Faidherbia albida and other protected trees dominate. Disturbed ground dumps and haul roads also extend the area available to the invasive alien species already present on the licence, and a larger workforce increases the risk of illegal collection of protected plants.

The impact is adverse and direct, partly reversible through progressive rehabilitation, long term for the life of mine, local in extent and definite. The sensitivity of the receptor is low across most of the licence given its disturbed condition, but the riparian and drainage line habitats are of higher sensitivity. The magnitude of change is moderate. The significance is rated adverse minor before mitigation, rising to adverse moderate where the mining footprint encroaches on the riparian zone. Mitigation, including a mine layout that keeps the pit, dumps and infrastructure out of the Omaruru River riparian zone and main drainage lines, Forestry permits for the removal of protected species, search and rescue or relocation of succulents, an invasive alien species control programme scaled to the mining footprint and progressive rehabilitation, is set out in the draft ESMP (Appendix A).

Table 21 - Impacts on flora

Activity	Receptor	Impact	Nature of impact	Value & sensitivity	Magnitude of change	Significance of impact
Exploration phase	Trees and shrubs	The removal and destruction of vegetation especially protected tree/shrub species due to exploration on ML 133.	Adverse Direct Partly reversible Short term On-site Likely	Low	Minor	Minor (3)
	Vegetation	Introduction of invasive alien species due to habitat change may outcompete native protected species.	Adverse Direct Partly reversible Medium term Local Likely	Low	Minor	Minor (3)
Employment, Procurement of contractors, good and services		Illegal and unsustainable collection of protected or endemic species.	Adverse Direct Irreversible Long term Local Possible	Low	Moderate	Minor (3)
Mining phase	Trees, shrubs and succulents	Clearing of vegetation, including protected species, over the open pit, dump, stockpile and haul road footprint; spread of invasive alien species.	Adverse Direct Partly reversible Long term Local Likely	Low	Moderate	Adverse Minor (3)

7.6.2 REPTILES

There are approximately 261 species of reptiles identified in Namibia with 57 reptile species expected in the wider area surrounding ML 133. Namibia has the richest lizard fauna in Africa with 22% of the lizards occurring in Namibia being endemic. Geckos have the highest occurrence of endemics with 13 of the 17 species (71.4%) expected in the wider area. However, none of the unique species are exclusively associated with ML 133. Cunningham (2024) noted that the ML 133 area has been heavily disturbed because of current and past mining, exploration activities, various subsistence farming infrastructures, roads and tracks. The specific impacts to reptiles in the Project area before mitigation are presented in Figure 47 for illustrative purposes only and described in Table 22. The potential Project impacts on reptiles are discussed further in the sections below.

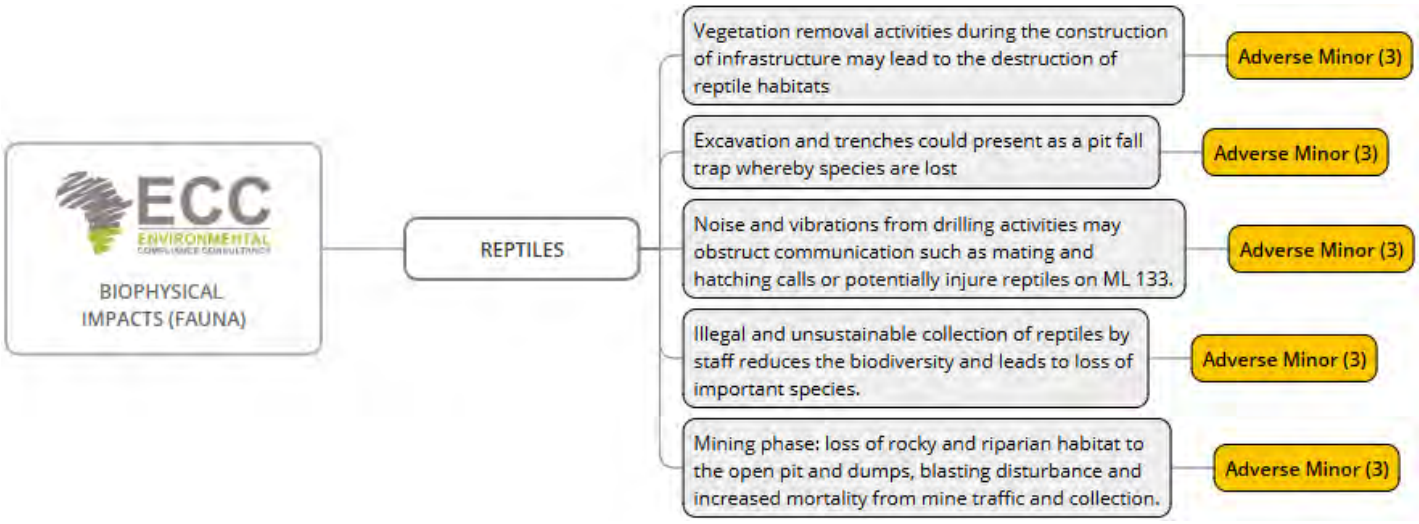


Figure 47 – An overview of impacts on reptiles

7.6.2.1 Vegetation removal activities during the construction of infrastructure may lead to the destruction of reptile habitats

During exploration, vegetation removal may result in the destruction of sensitive reptile habitats. It was observed that majority of the reptile species are associated with rocky terrain and rock crevices along the Omaruru River, gravel plains and ephemeral drainage lines. Protected species include *Stigmochelys pardalis* (Leopard tortoise), *Python anchietae* (Dwarf Python), *Python natalensis* (Southern African Python), *Varanus albigularis* (Rock or White-throated Monitor) and *Afroedura africana Africana* (African Flat Gecko). During the field study (Appendix C), six (6) species were confirmed from the ML 133 including *Pedioplanis namaquensis* (Namaqua sand lizard), *Agama planiceps* (Female Namibian rock agama) – endemic and *Rhoptropus boultoni* (Boulton's Namib day gecko).

The nature of the impact is adverse, directly impacting reptile in the area and partly reversible. Habitat can recover over time through rehabilitation and natural regeneration, but recovery may be slow in arid or sensitive ecosystems. The impact is expected to occur over the long term, as impacts may persist during exploration with habitat recovery extending beyond exploration (>15

years). The impact is generally confined to the Project footprint and immediately surrounding disturbed areas, therefore locally. Habitat disturbance is expected where vegetation clearing and ground disturbance occur, making impacts on reptiles likely.

The magnitude of change is minor due to the potential loss of important habitats for reptiles on ML 133. The sensitivity of receptor is low because the impact will only impact reptiles located on ML 133. The overall significance of the impact is rated minor, before mitigation. Mitigation measures are described in the draft ESMP (Appendix A) based on the biodiversity specialist study (Appendix C).

7.1.1.1 Excavation and trenches could present as a pit fall trap whereby species are lost

Excavations and open trenches may act as pitfall traps for reptiles and other small fauna, resulting in accidental entrapment, injury, dehydration or mortality where individuals are unable to escape. This potential impact is particularly relevant for ground-dwelling species with limited mobility or nocturnal movement patterns. If left open for extended periods, these features may contribute to localised faunal losses and disrupt normal movement and foraging behaviour.

The impact is adverse, directly impacting reptiles and partly reversible. Behavioural disturbance and temporary displacement are reversible once trenches are closed or rehabilitated, therefore the impact is assessed as partly reversible. The impact is limited to the period during which excavations remain open during the exploration period. The impact is anticipated to be short term (1 – 5 years), as it is expected to occur during the exploration phase. The impact is expected to be confined to the Project site and its immediate surrounding disturbed areas and is therefore considered on-site. The probability is considered likely where open trenches are left unattended, especially overnight and where no escape provisions or daily inspections are in place.

The magnitude of change is moderate due to the potential loss of protected or important individuals and the sensitivity of the receptor is low because the impact will occur on-site. The overall significance of the impact is minor, before mitigation (Table 22). Mitigation measures are described in the draft ESMP (Appendix A) based on the biodiversity specialist study (Appendix C).

7.6.2.2 Noise and vibration from drilling activities may obstruct communication such as mating and hatching calls or potentially injure reptiles on ML 133

Noise and vibration generated by drilling activities may disturb reptile species within ML 133 by interfering with behavioural and ecological processes. Although reptiles are generally less reliant on vocal communication than birds or amphibians, many species are sensitive to ground-borne vibrations and low-frequency noise, which they use to detect predators, prey, and environmental changes. Elevated noise and vibration levels may disrupt normal behaviours such as foraging, sheltering, mating and nesting, and may alter movement patterns or cause displacement from preferred habitats.

The impact is adverse, directly impacting reptiles and reversible as noise and vibration is temporary. The impact is anticipated to be short term (1 – 5 years), as it is expected to occur during

the exploration phase. The extent is localised, generally limited to the immediate vicinity of active drilling areas. The probability is considered likely as noise and vibration are inherent to drilling activities, although the level of disturbance will vary depending on distance from the source and drilling method.

The magnitude of change is minor due to the minor change caused to reptiles and the sensitivity will be low due to the impact occurring on-locally. The overall significance of the impact is rated minor, before mitigation (Table 22). Mitigation measures are described in the draft ESMP (Appendix A) based on the biodiversity specialist study (Appendix C).

7.6.2.3 Illegal and unsustainable collection of reptiles by staff reduces the biodiversity and leads to loss of important species

Illegal and unsustainable collection of reptiles by Project staff or contractors may result in a decline in local reptile populations, reducing biodiversity and potentially leading to the loss of species of ecological and conservation importance. According to Cunningham (2024), the important reptiles that are expected to occur in the wider area surrounding ML 133 are Python natalensis and Varanus albigularis, both of which are vulnerable and protected game. It has been reported that the endangered Python natalensis are involved in both human-wildlife conflict (HWC) and are victim of illegal trading (Dube & Kavhu, 2022). Varanus albigularis are commonly poached and sold on the black market as exotic pets worldwide, although their natural habitats are dry, savanna regions in the southern and eastern sub-Saharan Africa. Additionally, tortoises were often collected to sell them illegally into the global pet trade.

The impact is adverse, direct and irreversible. Removal of individual reptiles from the ecosystem may result in permanent loss, particularly where species are killed or removed from breeding populations. Population recovery may occur over time if collection ceases but this depends on species' reproductive rates and ecological resilience. For slow-growing, endemic or threatened species, recovery may be limited. The effects may persist well beyond the active Project phase (long term), especially where repeated collection reduces population viability or affects reproductive success. Continued collection pressure can result in prolonged population decline. The impact is generally concentrated within the Project area and immediately accessible surrounding habitats where staff operate. However, effects may extend locally where species have small ranges or where collection pressure spreads beyond the site. The probability of illegal and unsustainable collection of reptiles by staff is considered possible, as increased human activity and interaction with reptile species may create opportunities for opportunistic collection.

The magnitude is considered moderate because, while the impact often affects individual animals rather than entire populations, reptiles typically have slower reproductive rates and specific habitat requirements. The loss of protected, endemic, or ecologically important species may contribute to reduced biodiversity, altered predator-prey relationships, and weakened ecosystem stability. The sensitivity is assessed as low due to the local extent. The overall significance of the impact is rated minor, before mitigation (Table 22). Mitigation measures are described in the draft ESMP (Appendix A) based on the biodiversity specialist study (Appendix C).

7.6.2.4 Mining phase: loss of rocky and riparian reptile habitat to the open pit and dumps, blasting disturbance and increased mortality from mine traffic

Open pit mining and waste rock placement will remove rocky terrain, rock crevices and, potentially, riparian habitat that support most of the reptile species recorded on ML 133, and blasting adds ground vibration and disturbance that exploration drilling does not. Haul road traffic increases the risk of mortality of slow moving species such as tortoises, and a larger workforce increases the risk of illegal collection.

The impact is adverse and direct, partly reversible, long term, local in extent and definite. The sensitivity of the receptor is low, as none of the species are exclusively associated with ML 133, and the magnitude of change moderate, giving a significance of adverse minor before mitigation. Mitigation, including pre-clearance search and relocation of reptiles from the pit and dump footprints, retention of rocky outcrops outside the footprint, speed limits on haul roads and a prohibition on collection, is set out in the draft ESMP (Appendix A).

Table 22 - Impacts on reptiles

Activity	Receptor	Impact	Nature of impact	Value & sensitivity	Magnitude of change	Significance of impact
Exploration phase	Reptiles	Vegetation removal activities during the construction of infrastructure may lead to the destruction of reptile habitats.	Adverse Direct Partly reversible Long term Local Likely	Low	Minor	Minor (3)
		Excavation and trenches could present as a pit fall trap whereby species are lost.	Adverse Direct Partly reversible Short-term On-site Likely	Low	Moderate	Minor (3)
Drilling activities during operations		Noise and vibrations from drilling activities may obstruct communication such as mating and hatching calls or potentially	Adverse Direct Reversible Short term Local Likely	Low	Minor	Minor (3)

Activity	Receptor	Impact	Nature of impact	Value & sensitivity	Magnitude of change	Significance of impact
		injure reptiles on ML 133.				
Employment, Procurement of contractors, good and services		Illegal and unsustainable collection of reptiles by staff reduces the biodiversity and leads to loss of important species.	Adverse Direct Irreversible Long term Local Possible	Low	Moderate	Minor (3)
Mining phase	Reptiles	Loss of rocky and riparian habitat to the open pit and dumps, blasting disturbance and increased mortality from mine traffic and collection.	Adverse Direct Partly reversible Long term Local Likely	Low	Moderate	Adverse Minor (3)

7.6.3 AMPHIBIANS

Amphibians are declining worldwide because of human activities and the resulting habitat destruction. ML 133 has been heavily impacted by various anthropogenic disturbances as suggested in previous sections such as mining, infrastructure, farming and road construction. Amphibians are strongly associated with surface water accessibility and permanent water bodies for breeding purposes and for the growth of their young. The ephemeral drainage lines potentially serve as a seasonal habitat. It was expected that approximately 8 amphibian species in the wider Uis area, and no amphibians are present in the ML 133 area. However, it should be noted that due to the lack of surface water, amphibians are not viewed as important in the wider area surrounding ML 133. None of the unique amphibians expected to be exclusively associated with this area (Cunningham, 2024). The specific impacts to amphibians in the Project area before mitigation are presented in Figure 48 for illustrative purposes only and described in Table 23. The potential Project impacts on amphibians are discussed further in the sections below.

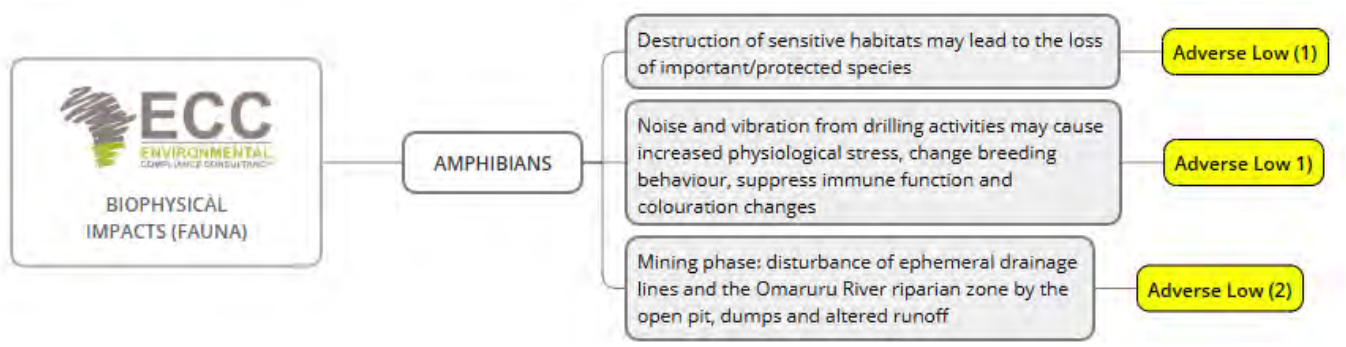


Figure 48 - Impacts on amphibians

It has been identified that the ephemeral drainage lines, Omaruru River and hill/ridges adjacent to the Omaruru River are important habitats for amphibians. The ephemeral drainage may provide a seasonal habitat due to temporary pools and Omaruru River may provide potential habitats after flooding events. These areas are well vegetated with protected tree species such as the *Acacia erioloba* that provides an important habitat for other species as well (Cunningham, 2024). The most important habitats are shown in Figure 49. The red line shows the boundaries of ML 133, the green lines in Figure 49 represents the Omaruru River, the yellow/orange line represents the main ephemeral drainage lines, and the white dotted oblongs represents hills/ridges adjacent the Omaruru River and another larger ephemeral drainage line.

Figure 49 - Important habitats on ML 133 (Source: Cunningham, 2024)

7.6.3.1 Destruction of sensitive habitats may lead to the loss of important/protected species

The destruction of sensitive habitats may result in the displacement, injury or loss of protected and ecologically important species that rely on these habitats for shelter, foraging, and reproduction. The four endemic species expected in the wider area surrounding ML 133 are as follows: *Poyntonophrynus damaranus*, *Poyntonophrynus hoeschi*, *Phrynomantis annectens* and

Tomopterna damarensis. The ephemeral drainage lines and the Omaruru River have been identified as sensitive habitats and are likely to be avoided during active exploration. During the field work, no amphibians were encountered on ML 133 (Appendix C).

The impact is adverse, direct and partly reversible. Habitat disturbance may be restored through rehabilitation, and any temporary displacement of transient individuals would likely be reversible after exploration. Impacts would persist during active disturbance (short term) by exploration personnel. The extent of the impact is on-site. In the absence of confirmed amphibian populations and where no suitable aquatic or moist habitats are present, the probability is considered unlikely.

Given the absence of recorded amphibians and the likely low habitat suitability, the magnitude of change is expected to be negligible. The sensitivity of the receptor is low due to the on-site extent of the impact. The overall significance of the impact is rated low before mitigation. Mitigation measures are described in the draft ESMP (Appendix A) based on the biodiversity specialist study (Appendix C).

7.6.3.2 Noise and vibration from drilling activities may cause increased physiological stress, change breeding behaviour, suppress immune function and colouration changes

Noise and vibration generated by exploration drilling activities may cause temporary physiological and behavioural disturbances in fauna, potentially resulting in elevated stress levels, altered movement patterns and short-term disruption of breeding or foraging behaviour. Although drilling activities generally produce lower-intensity and more continuous noise compared to blasting, sensitive species may still respond to ground vibrations and acoustic disturbance by avoiding the area, reducing activity, or altering sheltering behaviour.

The impact is considered adverse, direct and reversible. Habitat disturbance may be restored through rehabilitation and any temporary displacement of transient individuals would likely be reversible after exploration. Impacts would persist during active disturbance (short term) by drilling activities. The extent of the impact is local, generally limited to the immediate vicinity of active drilling areas and potentially beyond. In the absence of confirmed amphibian populations and where no suitable aquatic or moist habitats are present, the probability is considered unlikely.

Given the absence of recorded amphibians and the likely low habitat suitability, the magnitude of change is expected to be negligible. The sensitivity of the receptor is low due to the on-site extent of the impact. The overall significance of the impact is rated low, before mitigation (Table 23). Mitigation measures are described in the draft ESMP (Appendix A) based on the biodiversity specialist study (Appendix C).

7.6.3.3 Mining phase: disturbance of ephemeral drainage lines and the Omaruru River riparian zone by the open pit, dumps and altered runoff

The only amphibian habitat of note on ML 133 is the seasonal pools in the ephemeral drainage lines and the Omaruru River after flooding. Mining may occupy or divert drainage lines, alter runoff and sediment delivery to the river and, where the pit is dewatered, change shallow groundwater support to the riparian zone. Given the absence of recorded amphibians and the

low habitat suitability, the impact is adverse, direct and partly reversible, long term and local, and possible. The sensitivity of the receptor is low and the magnitude of change minor, giving a significance of adverse low before mitigation. Keeping the pit, dumps and infrastructure out of the main drainage lines and the riparian buffer, and the stormwater measures in the draft ESMP (Appendix A), address this impact.

Table 23 - Impacts on amphibians

Activity	Receptor	Impact	Nature of impact	Value & sensitivity	Magnitude of change	Significance of impact
Drilling activities during exploration	Amphibians	Destruction of sensitive habitats may lead to the loss of important/protected species.	Adverse Direct Partly reversible Short term On-site Unlikely	Low	Negligible	Low (1)
		Noise and vibration from drilling activities may cause increased physiological stress, change breeding behaviour, suppress immune function and colouration changes.	Adverse Direct Reversible Short term Local Unlikely	Low	Negligible	Low (1)
Mining phase	Amphibians	Disturbance of ephemeral drainage lines and the Omaruru River riparian zone by the open pit, dumps and	Adverse Direct Partly reversible Long term Local Possible	Low	Minor	Adverse Low (2)

Activity	Receptor	Impact	Nature of impact	Value & sensitivity	Magnitude of change	Significance of impact
		altered runoff.				

7.6.4 MAMMALS

Cunningham (2024) expects approximately 87 species of mammals to occur in the wider area surrounding ML 133, of which 10 are endemic. Most of the mammalian fauna are expected to be rodents (31%) and bats (27.6%) respectively. During the fieldwork conducted, 13 species of mammals were confirmed. None of the unique animals are expected to be exclusively associated with ML 133. The specific impacts on mammals, before mitigation, measures are presented in Figure 50 for illustrative purposes only and described in Table 24. Impacts are discussed in detail in the sections thereafter.

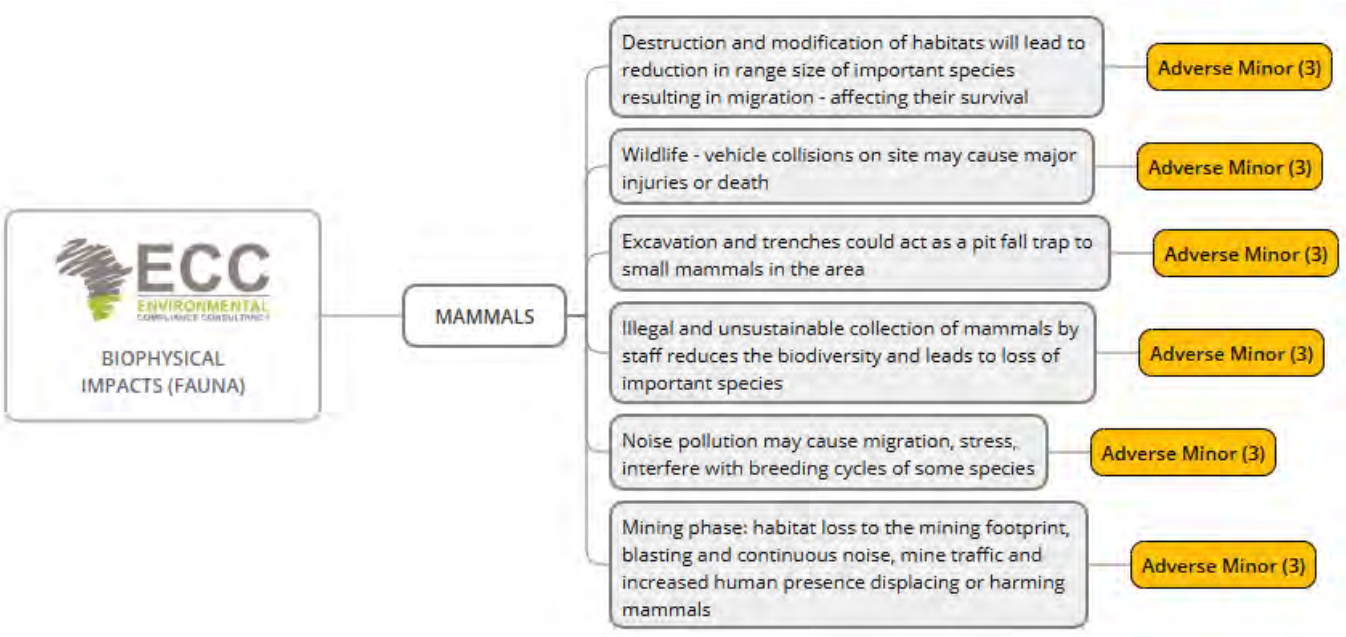


Figure 50 - Impacts on mammals

7.6.4.1 Destruction and modification of habitats will lead to reduction in range size of important species resulting in migration - affecting their survival

The destruction and/or modification of existing sensitive habitat reduces the area available for large animals to roam and inhabit, leading to the loss of habitat and increased likelihood of migration. Large mammals on ML 133 are not expected to be materially affected, given the past and ongoing human activity on the licence and the availability of similar habitat in the surrounding conservancy. Therefore, the exploration activities are not likely to be detrimental to large mammals. The large mammals confirmed during the field work (Appendix C) are as follows: Leopard (*Panthera pardus*) – vulnerable, Steenbok (*Raphicerus campestris*) and Klipspringer (*Oreotragus oreotragus*) - protected game. Three small mammals' species were successfully trapped: *Petromyscus collinus* captured at rocky terrain; *Gerbillurus setzeri* (endemic) and *Tatera*

leucogaster found in ephemeral drainage lines. Loss of small mammal habitat may impact their survival due to increased vulnerability to predators.

The removal of identified sensitive small mammal habitats should be avoided. Large trees and vegetation should not be removed as large mammals such as steenbok use these trees for shade. The nature of the impact is adverse and direct, impacting sensitive habitats and partly reversible. Habitat rehabilitation may restore some ecological function over time but original habitat complexity and species occupancy may not fully recover, especially for specialised species. Species may also choose to migrate to other areas that are quieter and less disturbed.

The impact is expected to occur over a medium term (>5 years), as range reduction and displacement effects may persist throughout the Project life and beyond. The impact is generally limited to the disturbed footprint and adjacent habitats but ecological effects may extend further where migration routes or connected habitats are affected (local). The impact is expected to be likely as habitat disturbance is expected where vegetation clearing and ground disturbance occur.

The magnitude of change is moderate due to the risk of potentially losing sensitive species populations and the sensitivity is low due to the local extent. The overall significance of the impact is rated minor, before mitigation (Table 24). Mitigation measures are described in the draft ESMP (Appendix A) based on the biodiversity specialist study (Appendix C).

7.6.4.2 Wildlife - vehicle collisions on site may cause major injuries or death

Vehicle movement on-site may result in collisions with wildlife, causing serious injury or mortality to affected fauna individuals. Increased traffic associated with Project activities may pose a direct threat to fauna, particularly slow-moving, nocturnal, or ground-dwelling species attempting to cross access roads or move between habitat patches. The impact may be heightened during low-visibility conditions or where animals are attracted to disturbed areas for food, water or shelter. Repeated collisions may contribute to localised population declines, especially for species with low reproductive rates, restricted distributions or conservation importance. The impact will be adverse, directly impacting wildlife, irreversible and permanent due to potential major injuries inflicted on wildlife or death.

The impact is generally limited to access roads and exploration areas, with potential effects on adjacent habitats, therefore the impact is assessed locally. The likelihood depends on traffic frequency, vehicle speed, species presence, and movement patterns. In areas with regular wildlife activity and active vehicle movement, collisions are a realistic risk without mitigation such as speed restrictions and driver awareness. The impact is assessed as possible. The magnitude of change is moderate due to potential loss of important large or small mammals that occur on ML 133 and the surrounding area. The sensitivity of receptor is low as the impact is directed towards species in the local area. The overall significance of the impact is rated minor, before mitigation (Table 24). Mitigation measures are described in the draft ESMP (Appendix A) based on the biodiversity specialist study (Appendix C).

7.6.4.3 Excavation and trenches could act as a pit fall trap to small mammals in the area

Excavations and trenches may act as pitfall traps for small mammals occurring in the area, resulting in accidental entrapment, injury or mortality. Small mammals moving through the site in search of food, shelter or mates may inadvertently fall into open trenches and become unable to escape due to steep sides, unstable substrates, or excessive depth. Once trapped, individuals may be exposed to dehydration, starvation, heat stress, predation or physical injury, particularly in arid environments where shelter and water are limited. In addition to direct mortality, open excavations may disrupt natural movement corridors and create temporary barriers between feeding, nesting, and refuge areas, potentially increasing energy expenditure and vulnerability to predators. Repeated trapping incidents over the course of Project activities may contribute to localised reductions in small mammal abundance, particularly for species with limited mobility or restricted habitat ranges.

The impact is adverse and direct, impacting small mammals. Movement disruption and temporary displacement are reversible once trenches are backfilled or rehabilitated, therefore the impact is rated as partly reversible. The impact remains for as long as trenches are open, with the potential to recur throughout the exploration process over a short-term (1 – 5 years). The impact will occur within the exploration site (On-site). The probability is considered likely where open trenches are left unattended, especially overnight, and where no escape provisions or daily inspections are in place.

The magnitude of change is moderate due to the potential loss of protected or important individuals, and the sensitivity of the receptor is low because the impact will occur on-site. The overall significance of the impact is rated minor, before mitigation (Table 24). Mitigation measures are described in the draft ESMP (Appendix A) based on the biodiversity specialist study (Appendix C).

7.1.1.2 Illegal and unsustainable collection of mammals by staff reduces biodiversity and leads to loss of important species

Illegal and unsustainable collection, persecution, or killing of mammals by Project staff may result in a decline in local mammal populations, reducing biodiversity and potentially leading to the loss of species of ecological and conservation importance. Mammals may be targeted for bushmeat, trade or due to perceived nuisance or danger, placing additional pressure on populations already affected by habitat disturbance. This is particularly significant for protected, endemic or slow-reproducing species, as their removal may reduce breeding populations, alter predator-prey dynamics and disrupt ecosystem functioning. Repeated or unmanaged collection may contribute to long-term population decline, localised extirpation and reduced ecological resilience.

Protected mammal species expected to be found in the ML 133 area are as follows:

- *Pipistrellus rueppellii* (Rüppell's Pipistrelle) – insufficiently known;
- *Cistugo seabrai* (Namibian Wing-gland Bat) - Endemic, rare and listed as vulnerable;
- *Galago moholi* (South African Galago) – Vulnerable, protected game;

- *Atelerix frontalis angolae* (Southern African Hedgehog) - Insufficiently known, rare, protected game;
- *Acinonyx jubatus* (Cheetah) - Vulnerable, protected game;
- *Parahyaena brunnea* (Brown Hyena) - Insufficiently known, vulnerable, peripheral;
- *Panthera pardus* (Leopard) – Vulnerable, protected game;
- *Giraffa camelopardalis* (Giraffe) – Vulnerable; and
- *Madoqua damarensis* (Damara Dik-dik) - insufficiently known, protected game.

During the actual fieldwork on ML 133, *Panthera pardus* (Leopard) were confirmed. Leopard faeces were observed beneath a larder tree in an ephemeral drainage line (Appendix C). Leopard and cheetah are targeted for their skins and bones. The nature of the impact is adverse, directly impacting mammal species and irreversible. Population recovery may be possible if collection ceases and habitats remain suitable, however, the loss of individual animals, particularly breeding adults or threatened species, may be irreversible and recovery may be slow. The effects may persist beyond the Project lifecycle, especially where repeated collection reduces population viability or affects reproductive success; therefor the impact is rated as long-term (>15 years). The impact is generally concentrated within the Project area and surrounding accessible habitats where staff are active (1 – 5 years). The probability is possible due to increased human presence and interaction with wildlife.

The magnitude of change is considered moderate, as the impact is likely to affect individual animals. The loss of protected, endemic or ecologically important species could contribute to reduced biodiversity, altered predator-prey dynamics and diminished ecosystem stability. Sensitivity of the receptor is considered low, given that the impact is expected to be limited to a local extent. The overall significance of the impact is rated minor, before mitigation (Table 24). Mitigation measures are described in the draft ESMP (Appendix A) based on the biodiversity specialist study (Appendix C).

7.6.4.4 Noise pollution may cause migration, stress, interfere with breeding cycles of some species

Large mammals are more mobile and tend to pass through ML 133 and the surrounding area. Noise pollution generated by Project activities may disturb fauna by causing physiological stress, displacement and disruption of normal behavioural patterns. Elevated noise levels may cause some species to avoid the area or migrate to less disturbed habitats, potentially reducing access to food, shelter and breeding sites. Prolonged or repeated exposure may increase stress levels, interfere with communication and mating behaviours and disrupt breeding cycles, which could reduce reproductive success. Sensitive species may also experience reduced foraging efficiency and heightened vulnerability to predation due to altered movement and vigilance patterns. The severity of the impact will depend on the intensity, frequency, and duration of the noise, as well as the sensitivity of the affected species.

The nature of the impact is adverse, direct and reversible. The impact is generally temporary, and affected species are likely to return to normal behavioural patterns once the noise source ceases or decreases. The impact persists only for the duration of the noise-generating activity over a

short-term period. Noise impacts are typically concentrated within the Project footprint and adjacent habitats, with intensity decreasing with distance from the source (local extent). The impact is expected to be likely as noise generation is inherent to drilling and vehicle activities, although the level of disturbance will vary according to activity, species and distance from the noise source.

The magnitude of change is minor due to the migration of habitat of large mammals, the sensitivity of the receptor will be low due to the local extent of the impact. The overall significance of the impact is rated minor, before mitigation (Table 24). Mitigation measures are described in the draft ESMP (Appendix A) based on the biodiversity specialist study (Appendix C).

7.6.4.5 Mining phase: habitat loss to the mining footprint, blasting and continuous noise, mine traffic and increased human presence affecting mammals

Mining will remove habitat over the pit, dump and infrastructure footprint for the life of mine, and blasting, continuous haulage and lighting will displace the larger mammals that currently move through the licence, including leopard, steenbok and klipspringer, into the surrounding conservancy. Small mammal habitat in rocky terrain and drainage lines will be lost within the footprint. Haul road traffic increases collision risk and a larger workforce increases the risk of persecution and illegal collection.

The impact is adverse and direct, partly reversible at closure, long term, local in extent and definite. The sensitivity of the receptor is low, as none of the species are exclusively associated with ML 133 and similar habitat is available in the surrounding area, and the magnitude of change moderate, giving a significance of adverse minor before mitigation. Mitigation, including retention of movement corridors along the Omaruru River, speed limits and night driving restrictions on haul roads, a prohibition on hunting, snaring and collection, and directional lighting, is set out in the draft ESMP (Appendix A).

Table 24 - Impacts on mammals

Activity	Receptor	Impact	Nature of impact	Value & sensitivity	Magnitude of change	Significance of impact
Exploration activities	Mammals	Destruction and modification of habitats will lead to reduction in range size of important species resulting in migration -	Adverse Direct Partly reversible Medium term Local Likely	Low	Moderate	Minor (3)

Activity	Receptor	Impact	Nature of impact	Value & sensitivity	Magnitude of change	Significance of impact
		affecting their survival.				
		Wildlife - vehicle collisions on site may cause major injuries or death.	Adverse Direct Irreversible Permanent Local Possible	Low	Moderate	Minor (3)
		Excavation and trenches could act as a pit fall trap to small mammals in the area.	Adverse Direct Partly reversible Short-term On- site Likely	Low	Moderate	Minor (3)
Employment, Procurement of contractors, good and services for open pit mining		Illegal and unsustainable collection of mammals by staff reduces the biodiversity and leads to loss of important species.	Adverse Direct Irreversible Long term Local Possible	Low	Moderate	Minor (3)
Drilling activities during exploration		Noise pollution may cause migration, stress, interfere with breeding cycles of some species.	Adverse Direct Reversible Short term Local Likely	Low	Minor	Minor (3)
Mining phase	Mammals	Habitat loss to the mining	Adverse Direct	Low	Moderate	Adverse Minor (3)

Activity	Receptor	Impact	Nature of impact	Value & sensitivity	Magnitude of change	Significance of impact
		footprint, blasting and continuous noise, mine traffic and increased human presence displacing or harming mammals.	Partly reversible Long term Local Likely			

7.6.5 AVIFAUNA

Bird diversity and endemism is classified as average in the wider area surrounding ML 133 with 111 - 140 species and 13 of the 14 Namibian endemics are expected to occur in the area (Cunningham, 2024). An Important Bird Area exists at the Brandberg Mountain, approximately 50 km northwest of ML 133; it lies well outside the area of influence of the Project and is noted for context only. Thirteen (13) of the 14 Namibian endemics are expected to occur in the wider area (92.9% of all Namibian endemic species or 6.8% of all the species expected to occur in the area).

The vertebrate fauna and flora report by Cunningham (2024) indicated that the following IUCN listed species are likely to occur in ML 133 or the wider area surrounding ML 133:

- Endangered: violet wood-hoopoe, Ludwig's bustard, white-backed vulture, tawny eagle, booted eagle, martial eagle, black stork;
- Vulnerable: lappet-faced vulture, secretarybird;
- Near threatened: Rűppel's parrot, kori bustard, Cape eagle owl, Verreaux's eagle, peregrine falcon; and
- Endemic species (data deficient): Damara hornbill, bare-cheeked babbler and Herero chat.

The specific impacts on avifauna, before mitigation, are presented in Figure 51 for illustrative purposes only and described in Table 25. Impacts are discussed in detail in the sections thereafter.

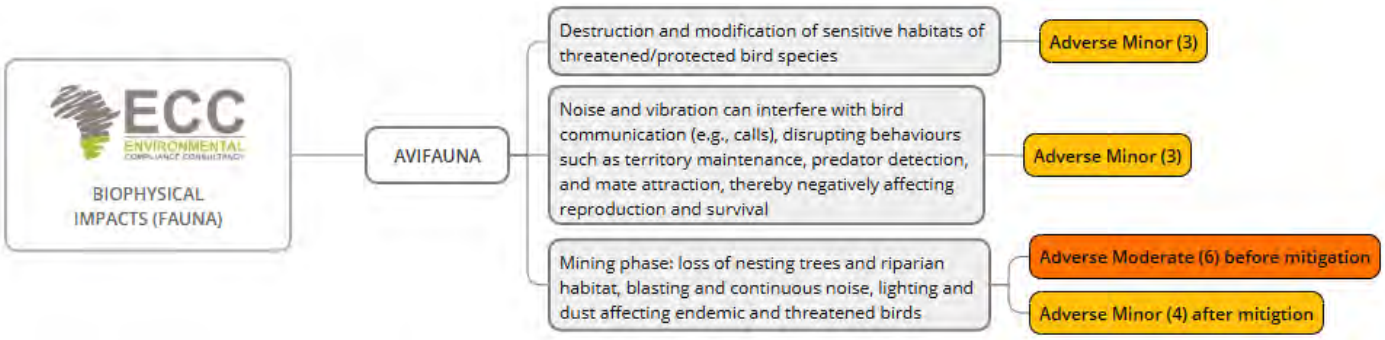


Figure 51 - Specific impacts on avian on ML 133

7.6.5.1 Destruction and modification of sensitive habitats of threatened/protected bird species

During the specialist field study (Appendix C), 29 bird species were encountered in the ML 133 general area. The important species confirmed in the area were the Damara hornbill (*Tockus damarensis*), Monteiro's hornbill (*Tockus monteiri*) and Rüppel's parrot, all of which are endemic. Large trees with cavities which are present in the Omaruru River riparian zone provides a nesting site for hornbills and parrots and such sites should be protected and avoided especially during breeding season. Exploration activities may result in the destruction, degradation or modification of sensitive habitats used by threatened and protected bird species through vegetation clearing, establishment of access tracks, drilling activities, increased human presence and vehicle movement. These disturbances may lead to habitat loss, displacement from nesting or foraging areas, reduced breeding success and increased stress levels. In cases where critical habitats are affected, localised declines in bird abundance and diversity may occur, potentially compromising the conservation status of vulnerable species and disrupting ecological functions such as pollination, seed dispersal and predator-prey interactions.

The nature of the impact is adverse, directly impacting bird habitat and partly reversible. Habitat disturbance may recover over time through natural regeneration with support of rehabilitation. The impact may persist throughout the exploration phase and continue beyond Project completion until habitat restoration occurs (long term). Impacts are generally confined to the exploration footprint (e.g., drill sites, access routes, camps) and may affect wider bird populations if critical habitat or movement corridors are disturbed, therefore the impact is considered local. Habitat disturbance is likely due to exploration activities where vegetation clearing and increased human presence occur within or near sensitive bird habitats.

The magnitude of change is moderate due the potential loss of bird nesting sites or sensitive habitats and the sensitivity of receptor is low due to the local scale of the impact. The overall significance of the impact is rated minor, before mitigation. Mitigation measures are described in the draft ESMP (Appendix A) based on the biodiversity specialist study (Appendix C).

7.1.1.3 Noise and vibration can interfere with bird communication (e.g., calls), disrupting behaviours such as territory maintenance, predator detection, and mate attraction, thereby negatively affecting reproduction and survival

Noise and vibration generated during exploration activities, including drilling, vehicle movement, and operation of heavy machinery, may interfere with bird communication by masking vocalisations used for essential ecological functions such as territory establishment and defence, predator detection and mate attraction. This disruption may alter behavioural patterns, increase stress levels, and reduce the ability of birds to successfully reproduce and maintain social structures. Sensitive, threatened or protected bird species may be particularly vulnerable to such disturbances, especially during breeding and nesting periods. Prolonged or repeated exposure to elevated noise and vibration levels may lead to displacement from preferred habitats, reduced breeding success and in some cases, lower survival rates, thereby affecting local population stability and ecosystem dynamics.

The nature of the impact is adverse, direct and reversible once noise and vibration sources cease, allowing bird communication and normal behavioural patterns to resume. The disturbance is mainly limited to the active exploration phase (short term) and occurs intermittently during drilling, vehicle movement and machinery operation. Noise and vibration impacts are usually concentrated within and immediately surrounding the exploration footprint, with intensity decreasing with distance from the source (local). Given the regular use of machinery, vehicles, and drilling equipment during exploration, noise-related disturbance to birds is likely, particularly for species sensitive to noise disruption.

The magnitude of change is considered minor as the impact does not directly destroy habitat but may temporarily disrupt critical behaviours such as communication, territory defence, predator awareness and mate attraction. The sensitivity of the receptor is low due to the local scale of the impact. The overall significance of the impact is rated minor, before mitigation (Table 25). Mitigation measures are described in the draft ESMP (Appendix A) based on the biodiversity specialist study (Appendix C).

7.1.1.4 Mining phase: loss of nesting trees and riparian habitat, blasting and continuous noise, lighting and dust affecting birds

The large cavity bearing trees along the Omaruru River riparian zone that support the endemic Damara hornbill, Monteiro's hornbill and Rüppell's parrot are the most sensitive bird habitat on ML 133, and mining is the activity most likely to affect them if the pit, dumps or haul roads encroach on the riparian zone. Blasting and continuous haulage and crushing noise, night lighting and dust from stockpiles and haul roads will disturb birds over a wider area and for longer than exploration drilling, and raptors listed as endangered or vulnerable may be displaced from the licence.

The impact is adverse and direct, partly reversible, long term, local in extent and definite. The sensitivity of the receptor is medium, given the confirmed presence of endemic and threatened species and the importance of the riparian trees, and the magnitude of change moderate, giving a significance of adverse moderate before mitigation. Mitigation, including a mine layout that avoids the riparian zone and large cavity bearing trees, pre-clearance nest surveys and seasonal timing of clearing outside the breeding season, blast timing and noise controls, and shielded lighting, is set out in the draft ESMP (Appendix A).

Table 25 - Impacts on avifauna

Activity	Receptor	Impact	Nature of impact	Value & sensitivity	Magnitude of change	Significance of impact
Exploration phase	Avian	Destruction and modification of sensitive habitats of threatened/protected bird species.	Adverse Direct Partly reversible Long term Local Likely	Low	Moderate	Minor (3)
Drilling activities during operations		Noise and vibration can interfere with bird communication (e.g., calls), disrupting behaviours such as territory maintenance, predator detection, and mate attraction, thereby negatively affecting reproduction and survival.	Adverse Direct Reversible Short term Local Likely	Low	Minor	Minor (3)
Mining phase	Avian	Loss of nesting trees and riparian habitat, blasting and continuous noise, lighting and dust affecting endemic and	Adverse Direct Partly reversible Long term Local Likely	Medium	Moderate	Adverse Moderate (6)

Activity	Receptor	Impact	Nature of impact	Value & sensitivity	Magnitude of change	Significance of impact
		threatened birds.				

7.7 CUMULATIVE IMPACTS

The EIA regulations state that cumulative impacts should be considered as part of the ESIA for a proposed project. Good practice requires that, as a minimum, cumulative impacts are assessed during the ESIA process. Cumulative impacts can arise when a single resource or receptor is affected by more than one (1) impact from the proposed Project (intraspecific). Cumulative impacts may also arise because of the combination of two (2) or more projects (interspecific).

Cumulative impacts have a wide temporal and spatial scope and are not restricted to a local area nor need to happen at the same time. It is, therefore, crucial to identify a suitable study and assessment area, as well as a timeframe to assess. Cumulative impacts can also be vast and complicated; therefore, it is important to focus on the significant impacts.

The intraspecific and interspecific cumulative impacts that may arise as a result of the Project, before mitigation, are presented in Figure 52 for illustrative purposes only and are outlined in Table 26 and Table 27, respectively. ML 133 is a mining licence and the cumulative assessment covers both the exploration programme and the mining activities authorised on the licence (Chapter 4). The spatial boundary is ML 133 and its immediate surroundings, including the Uis Tin Mine and ML 134, and the temporal boundary is the duration of exploration and mining through to closure (Chapter 6).

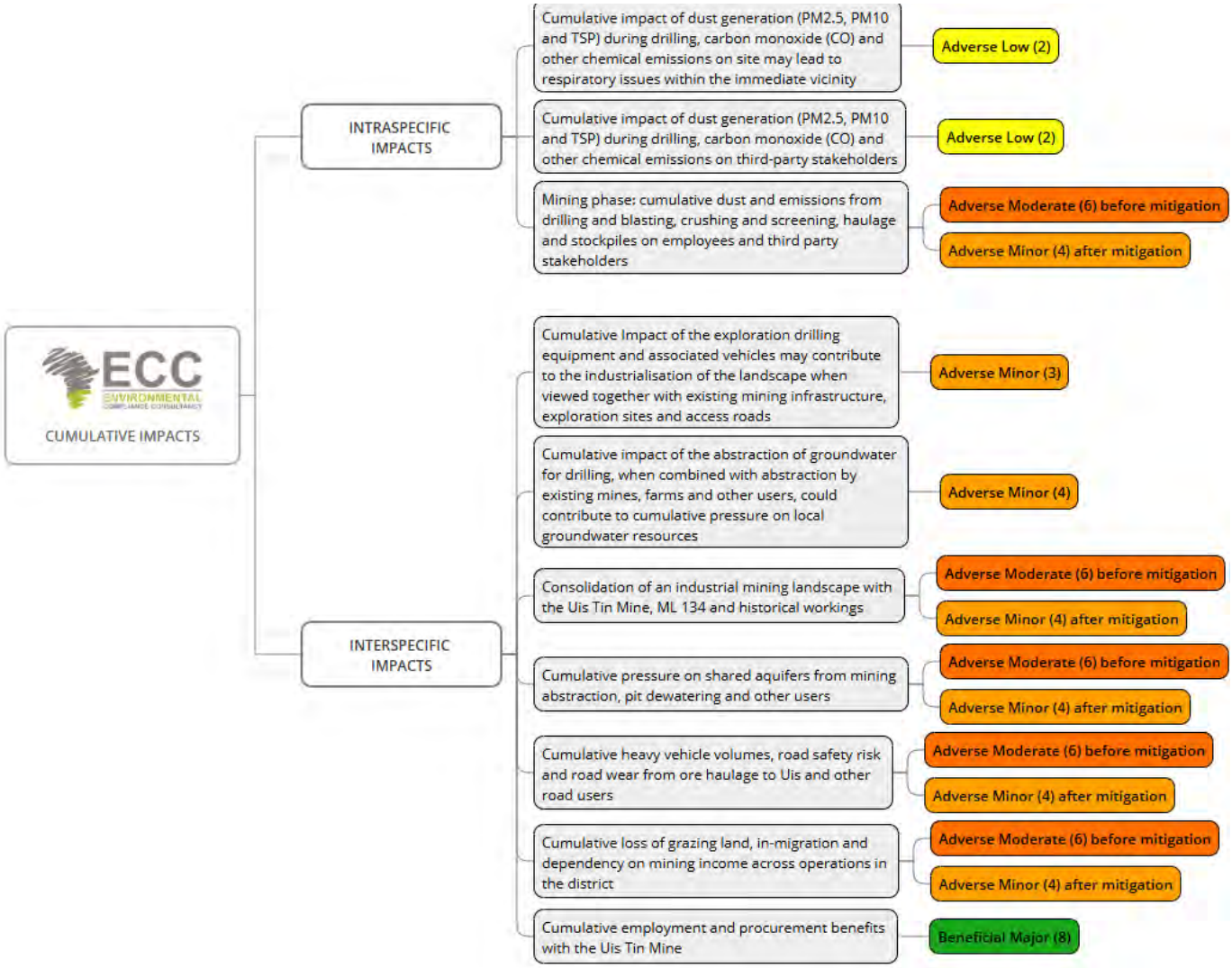


Figure 52 - Overview of the cumulative impacts

7.7.1 INTRASPECIFIC CUMULATIVE IMPACTS

7.7.1.1 Cumulative impact of dust generation (PM2.5, PM10 and TSP) during drilling, carbon monoxide (CO) and other chemical emissions on site may lead to respiratory issues within the immediate vicinity

The use of different equipment, machinery and vehicles during the exploration related activities may release fine particulate matter, TSP, CO and other chemical emissions. The impact on air quality may lead to potential respiratory issues of people in the immediate vicinity, most likely employees.

The nature of the impact is adverse and cumulative as a result of various sources contributing to air quality degradation. Particulate matter, CO as well as other fuel emissions can penetrate deep into the lungs, causing respiratory irritation and long-term health issues. The impact is partly reversible due to potential health effects posed to employees during exploration; however, health may improve after exploration activities through rest. The duration of the impact is short term, due to the potential tenure of the exploration program (~five (5) years). The scale of this impact is on-site, and the magnitude of change is minor due to the sporadic exposure during exploration.

The probability of this occurring is possible due to the nature of exploration activities. The sensitivity of the receptor is rated low, as the impact will be limited to the Project site. Overall, the significance of the impact is adversely low, before mitigation. Mitigation measures are provided in Table 26 and the draft ESMP (Appendix A).

7.7.1.2 Cumulative impact of dust generation (PM2.5, PM10 and TSP) during drilling, carbon monoxide (CO) and other chemical emissions on third-party stakeholders

Dust generation ($PM_{2.5}$, PM_{10} and TSP) from drilling activities, together with emissions of carbon monoxide (CO) and other exhaust-related pollutants from vehicles, generators and drilling equipment, may result in a decline in ambient air quality in the surrounding area. Elevated concentrations of particulate matter can be transported beyond the immediate Project footprint, particularly under windy conditions typical of the region and may affect neighbouring sensitive receptors. This may lead to nuisance impacts such as dust deposition on properties and reduced visibility. Fine particulates ($PM_{2.5}$ and PM_{10}) may also pose health risks to nearby residents and workers, including respiratory irritation and exacerbation of pre-existing conditions.

The nature of the impact is adverse and cumulative as a result of various sources contributing to air quality degradation. The impact is reversible as emissions may be a temporary nuisance or temporarily reduce visibility to third-party stakeholders. The duration of the impact is short term, due to the potential tenure of the exploration program (~five (5) years). The scale of this impact is local, and the magnitude of change is minor due to the variable exposure during exploration. The probability of this occurring is possible due to the nature of exploration activities, the distance to the neighbouring community members and windy conditions, taking predominant wind directions into account, in proximity to the third-party stakeholders. The sensitivity of the receptor is rated low, as the impact will be localised. Overall, the significance of the impact is adversely low, before mitigation. Mitigation measures are provided in Table 26 and the draft ESMP (Appendix A).

7.7.1.3 Mining phase: cumulative dust and emissions from drilling and blasting, crushing and screening, haulage and stockpiles on employees and third party stakeholders

During mining the sources of particulate matter and combustion emissions on ML 133 multiply and operate together for the life of mine: drilling and blasting, loading and hauling on unpaved haul roads, crushing and screening, wind erosion of stockpiles and dumps, and heavy mobile equipment and generator exhaust. The combined effect on employees is adverse, cumulative and partly reversible, long term, on site and likely, with a medium sensitivity and moderate magnitude, and is rated adverse moderate before mitigation. The combined effect on third party stakeholders, in particular R6 within the licence and the dwellings adjacent to it, is adverse, cumulative and reversible, long term, local and likely, with a medium sensitivity and moderate magnitude, and is rated adverse moderate before mitigation. Dispersion modelling of the combined mining sources will be undertaken before mining commences and the ESMP updated. The significance of the impact is rated minor after mitigation. Mitigations are provided in Table 26 and the draft ESMP (Appendix A).

7.7.2 INTERSPECIFIC CUMULATIVE IMPACTS

7.7.2.1 Cumulative impact of the exploration drilling equipment and associated vehicles may contribute to the industrialisation of the landscape when viewed together with existing mining infrastructure, exploration sites and access roads

The proposed exploration programme will introduce temporary visual elements, including drilling rigs, support vehicles, water bowsers, generators and small, short-term drill sites. While these features are limited in scale and duration, they have the potential to contribute cumulatively to the gradual industrialisation of the landscape when considered alongside existing mining operations, exploration activities, access roads and associated infrastructure within the Uis mining district. The nature of the impact is adverse and cumulative due to various exploration and mining activities near Uis. The impact is reversible as exploration infrastructure will be removed following completion of drilling and disturbed areas will be progressively rehabilitated to restore the natural appearance of the site. The duration of the impact is short term, due to the potential tenure of the exploration program (~five (5) years). The scale of this impact is local and the magnitude of change is minor as exploration activities will result in only temporary and localised alterations to the visual environment.

The probability of this occurring is likely as drilling equipment, vehicles and temporary work areas will be visible during active exploration. The sensitivity of the receptor is rated low. Although the Erongo landscape possesses scenic qualities, the Project area is located within an established mining region where existing mining operations, exploration activities and associated infrastructure have already modified portions of the landscape. Overall, the significance of the impact is adversely low, before mitigation. Mitigation measures are provided in Table 27 and the draft ESMP (Appendix A).

7.7.2.2 Cumulative impact of the abstraction of groundwater for drilling, when combined with abstraction by existing mines, MLs, EPLs and MCs, could contribute to cumulative pressure on local groundwater resources

The proposed exploration programme will require limited volumes of groundwater for drilling operations. While the water demand associated with individual exploration activities is relatively low, cumulative impacts may arise when groundwater abstraction is considered in combination with existing and future abstraction by operating mines, mining claims, exploration projects (EPL's), commercial farms and other authorised groundwater users within the Uis area. Continued abstraction by multiple users has the potential to place additional pressure on local aquifers, particularly during prolonged dry periods or drought conditions when natural recharge is limited.

The nature of the impact is adverse and cumulative due to combined groundwater abstraction. The impact is reversible provided groundwater abstraction remains within sustainable limits and licensed abstraction rates are adhered to. The duration of the impact is short term, being limited to the active drilling period. The scale of this impact is local, depending on the hydrogeological connectivity of the aquifer and the location of other groundwater users. The probability of this occurring is possible as groundwater abstraction by other mines, exploration projects and agricultural users is already occurring within the broader region.

The magnitude of change is minor as the proposed exploration programme requires relatively small volumes of water compared to operational mining activities. The sensitivity of the receptor is rated medium due to the arid climate of the Erongo Region, the limited natural recharge of groundwater resources and the reliance of mining operations, agriculture and surrounding communities on groundwater as a primary water source. Overall, the significance of the impact is adversely minor, before mitigation. Mitigation measures are provided in Table 27 and the draft ESMP (Appendix A).

7.7.2.3 Mining phase: cumulative visual, groundwater, traffic and social effects of mining on ML 133 together with the Uis Tin Mine, ML 134 and other activities in the Uis mining district(MLs, EPLs and MCs)

Mining on ML 133 will add a permanent open pit, waste rock dumps, stockpiles, haul roads and plant to a district that already contains the Uis Tin Mine, the operational ML 134 area and historical workings. The cumulative visual effect is the consolidation of an industrial mining landscape between Uis and the Omaruru River, which is adverse, cumulative and partly reversible, long term and regional, and definite. The sensitivity of the receptor is medium and the magnitude of change moderate, and the impact is rated adverse moderate before mitigation.

Sustained abstraction for mining, together with abstraction by the Uis Tin Mine, other exploration projects, farms and the Nai-Nais households, and any pit dewatering, places cumulative pressure on the same aquifers over the life of mine. The impact is adverse, cumulative and partly reversible, long term and local to regional, and likely, with a medium sensitivity and moderate magnitude, and is rated adverse moderate before mitigation.

Ore haulage from ML 133 to the Uis processing plant will share the D1930 and C35 with Uis Tin Mine traffic, residents, conservancy users and tourists for the life of mine. The cumulative traffic and road safety impact is adverse, cumulative and reversible, long term and regional, and definite, with a medium sensitivity and moderate magnitude, and is rated adverse moderate before mitigation. The significance is rated minor after mitigation.

Employment and procurement from mining on ML 133 add to the benefits already generated by the Uis Tin Mine and are cumulatively beneficial for the Uis area (beneficial major). At the same time, the concentration of grazing land loss, in-migration and, at closure, loss of income across several operations in the same small community is an adverse cumulative social effect, rated adverse moderate before mitigation. Mitigation is provided in Table 27 and the draft ESMP (Appendix A).

Table 26- Intraspecific cumulative impacts of the Exploration Project within ML 133

Receptor	Impacts	Significance of impact	Impact management
Air quality	**Activity:** Operation of equipment, machinery and vehicles during exploration. **Impact:** Increased dust generation, CO and other chemical emissions on employees.	Low (2)	– Dust suppression measures must be implemented; – Minimise air quality impacts during exploration by limiting the speed of vehicles (40 km/h); – Ensure that international air quality standards and best practices are adhered to; – Implement an air quality monitoring programme; – The workforce must be issued appropriate PPE; and – Vehicles and machinery are to be regularly serviced according to the manufacturers' specifications and kept in good working order to minimise exhaust emissions.
	Activity: Operation of equipment, machinery and vehicles during exploration. **Impact:** Increased dust generation, CO and other chemical emissions on third-party stakeholder.	Low (2)	– Locate drilling activities and generators as far as practicable from neighbouring receptors and sensitive areas; – Establish buffer zones between operational areas and nearby receptors; – Use appropriate drilling techniques and equipment fitted with dust suppression systems (e.g., misting systems or shrouds where feasible); – Limit simultaneous drilling activities where receptors are nearby; – Monitor weather conditions and suspend or reduce dust-generating activities during periods of high winds; and – Implement a grievance mechanism for neighbouring receptors and respond promptly to complaints.

Receptor	Impacts	Significance of impact	Impact management
Air quality (mining phase)	**Activity:** Drilling and blasting, crushing and screening, haulage and stockpiling during mining. **Impact:** Combined dust (PM2.5, PM10 and dustfall) and combustion emissions on employees and third party stakeholders, including R6.	**Moderate (6)**	– Undertake dispersion modelling of the combined mining sources before mining commences and update the ESMP; – Water or chemical dust suppression on haul roads, at the crusher and on stockpiles; – Blast timing to account for wind direction relative to R6 and adjacent dwellings; – Extend the dust fallout monitoring network to R6 and undertake personal exposure monitoring for employees; and – Maintain the grievance mechanism for neighbouring receptors.

Table 27 - Interspecific cumulative impacts of the Exploration Project

Receptor	Impacts	Significance of impact	Impact management
Visual	**Activity:** Industrialisation of the landscape when viewed together with existing mining infrastructure, exploration sites and access roads. **Impact:** Visual disturbance and sense of place.	**Minor (3)**	– Restrict disturbance to the smallest practicable footprint by utilising existing access roads, tracks and previously disturbed areas wherever feasible; – Avoid the unnecessary creation of new access tracks and rehabilitate any temporary tracks that are no longer required; – Limit the number of active drill sites operating simultaneously to reduce the cumulative visual presence of exploration equipment within the landscape; – Ensure that drilling equipment, vehicles and temporary facilities are removed immediately upon completion of activities at each drill site;

Receptor	Impacts	Significance of impact	Impact management
			– Implement progressive rehabilitation by backfilling drill collars (where applicable), removing all waste and equipment and restoring disturbed areas as soon as exploration activities are completed; – Stockpile and replace topsoil appropriately to promote natural vegetation recovery and minimise long-term visual scarring; – Minimise vegetation clearing to only that required for safe access and drilling operations, avoiding unnecessary disturbance of surrounding vegetation; – Prevent the accumulation of waste, scrap materials, fuel drums and redundant equipment at drill sites by maintaining good housekeeping practices throughout the exploration programme; – Ensure that any temporary infrastructure, including storage areas and laydown areas, is kept neat, orderly and confined to designated locations; and – Conduct regular environmental inspections to verify that rehabilitation is progressing satisfactorily and that temporary disturbances are not left unattended.
Groundwater	**Activity:** Abstraction of groundwater for drilling, when combined with abstraction by existing mines, farms and other users. **Impact:** Cumulative pressure on local groundwater resources	**Minor (4)**	– Proponent shall hold a valid water abstraction licence issued in accordance with the Water Resources Management Act, No. 11 of 2013 and 2023 Regulations by the Department of Water Affairs (DWA) within the Ministry of Agriculture, Fisheries, Water and Land Reform (MAFWLR); – Limit groundwater abstraction to the minimum volume necessary for drilling operations and implement water conservation practices where feasible;

Receptor	Impacts	Significance of impact	Impact management
			– Monitor abstraction volumes and maintain records to ensure groundwater use remains within approved limits; – Where practical, utilise recycled drilling water or water-efficient drilling techniques to reduce freshwater demand; – Regularly inspect pumps, pipelines, hoses and storage tanks for leaks, and repair any defects promptly to prevent unnecessary water losses; – Coordinate water abstraction with other authorised groundwater users, where applicable, to minimise cumulative pressure on shared aquifers; – Avoid unnecessary simultaneous abstraction from multiple boreholes within the same hydrogeological unit where this could increase local drawdown; and – Rehabilitate temporary water abstraction points and any disturbed areas upon completion of exploration activities.
Visual (mining phase)	Activity: Open pit, dumps, stockpiles, haul roads and plant on ML 133 together with the Uis Tin Mine, ML 134 and historical workings. Impact: Consolidation of an industrial mining landscape and loss of sense of place.	Moderate (6)	– Design and place waste rock dumps to screen views from the D1930 and the Nai-Nais dwellings; – Progressive rehabilitation and final landform shaping in line with the closure plan; – Shielded, directional lighting; and – Good housekeeping and removal of redundant equipment and structures.
Groundwater (mining phase)	Activity: Sustained abstraction and any pit dewatering for mining, combined with abstraction by the Uis Tin Mine, farms and households.	Moderate (6)	– Comply with the water abstraction licence and report abstraction to DWA; – Establish a groundwater monitoring network around the pit, dumps and community boreholes with baseline sampling before mining;

Receptor	Impacts	Significance of impact	Impact management
	Impact: Cumulative pressure on shared aquifers over the life of mine.		– Coordinate abstraction with other licensed users in the same aquifer; and – Water conservation and reuse of dewatering water for dust suppression.
Traffic (mining phase)	Activity: Ore haulage to Uis and mine traffic on the D1930 and C35 together with Uis Tin Mine and other road users. Impact: Cumulative heavy vehicle volumes, road safety risk and road wear.	Moderate (6)	– Mining phase transport assessment and haul route agreement with the Roads Authority before mining commences; – Redesign of Site Access 2 to meet geometric standards; – Haulage scheduling, speed limits and driver management; and – Contribution to maintenance of the D1930.
Community (mining phase)	Activity: Mining on ML 133 together with the Uis Tin Mine and other operations drawing on the same community. Impact: Cumulative loss of grazing land, in-migration and dependency on mining income; cumulative employment and procurement benefits.	Adverse Moderate (6); Beneficial Major (8)	– Local employment and procurement commitments coordinated with the Uis Tin Mine; – Grievance mechanism and regular engagement with the Nai-Nais community, the Dâures Traditional Authority and the Tsiseb Conservancy; – Livelihood restoration where grazing is lost; and – Closure and social transition planning that considers the other operations in the district.

8 CONCLUSION

A full and comprehensive ESIA has been undertaken for the amendment application for ML 133, covering both the exploration programme and the mining activities authorised on the mining licence (Chapter 4). All aspects have been considered in the impact assessment and have been investigated against the planned exploration and mining activities. All specialist input has been considered and the recommended mitigation measures have been incorporated into the draft ESMP (Appendix A).

Table 28, Table 29 and Table 30 summarises the socio-economic impacts, social environmental impacts and biophysical environment impacts, respectively, after mitigation. On a scale of 1 to 12, low to high, the beneficial (B) and negative (N) impact significance is stated. Exploration phase impacts are listed first in each table, followed by the mining phase impacts.

Table 28 – Socio-economic impacts assessed and ratings after mitigation

Socio-economic environment: economic		**Socio-economic environment: social**	
Creation of temporary employment opportunities.	B6	Social tensions and conflicts among community due to livestock issues and complaints regarding exploration activities.	N3
Skills development and work experience.	B8	Vehicle movements, drilling activities, and surveys may disrupt farming operations or the normal movement of nearby households.	N3
Contribution to local businesses through the procurement of equipment, machinery, PPE, and other goods and services.	B6		
Gross Domestic Product (GDP) through revenue generated from licensing fees, exploration levies and applicable taxes.	B12		
Mining phase: creation of employment opportunities during mining.	B8		
Mining phase: contribution to local businesses through procurement during mining.	B8		
Mining phase: government revenue through royalties, taxes, levies and licence fees.	B12		

Mining phase: economic dependency on the mine and loss of income at closure.	N4	

Table 29 - Social environment impacts assessed

Social environment: Occupational health and safety	
Potential risk of on-site injuries leading to short-term impairment, permanent disabilities or fatalities.	N4
Social environment: Air quality	
Dust generation (PM2.5, PM10 and TSP) due to exploration activities on site.	N2
Air quality impacts from hydrocarbon, VOC and gaseous (SO_2, NOx, CO, CO_2) emissions generated by diesel storage, fuel transfer and vehicle exhaust on employees.	N3
Dust generation (PM2.5, PM10 and TSP) due to exploration impact on third party stakeholders.	N2
Air quality impacts from hydrocarbon, VOC and gaseous (SO_2, NOx, CO, CO_2) emissions generated by diesel storage, fuel transfer and vehicle exhaust extending to third party stakeholders.	N2
Cumulative: dust generation (PM2.5, PM10 and TSP) during drilling, carbon monoxide (CO) and other chemical emissions on site may lead to respiratory issues within the immediate vicinity	N1
Cumulative: dust generation (PM2.5, PM10 and TSP) during drilling, carbon monoxide (CO) and other chemical emissions on third-party stakeholders	N1
Social environment: Visual	
Dust plumes generated by vehicle movement on gravel roads, drilling activities and windblown dust may reduce the visibility for the nearby community most likely R6.	N2
Visual disturbance and sense of place impacts on the local community.	N2
Cumulative: exploration drilling equipment and associated vehicles may contribute to the industrialisation of the landscape when viewed together with existing mining infrastructure, exploration sites and access roads	N2
Social environment: Noise	
Operation of drilling equipment may generate continuous and intermittent noise during active drilling periods causing a nuisance to R1-R5 and R7-R11 during exploration activities.	N2
Operation of drilling equipment may generate continuous and intermittent noise during active drilling periods causing a nuisance to R6 during exploration activities.	N3
Temporary camps (e.g., human activity, vehicles, and equipment use) may produce continuous background noise, causing a nuisance to nearby third-party receptors (R6).	N2

Noise and vibration may lead to hearing impairment or loss of employees during exploration.	N2
Social environment: Heritage	
Potential disturbance or destruction of an old precolonial presumably Damara settlement.	N4
Destruction or damage to graves within proximity of Project surface works – including suspected children's graves.	N4
Potential destruction of an old mine settlement	N2
Potential discovery of new significant archaeological sites within the exploration footprint – unrecorded heritage sites may be encountered and managed through the chance find procedure.	B6
Social environment: Traffic	
Increase in light vehicle traffic impact on existing traffic.	N2
Dust generation affecting visibility on gravel roads from exploration related vehicles.	N2
Road safety risks at site access intersections for the exploration team.	N3
Inadequate Shoulder Sight Distance (SSD) at site accesses causing a road safety risk or potential road accident	N2
Potential impact on the quality and wear of the D1930 gravel road.	N2
Mining phase: social environment	
Community: loss of grazing land, blasting and continuous activity disturbing households and straining community relations.	N4
Community: potential physical or economic displacement of households within the mining footprint or exclusion zones.	N4
Heritage: disturbance or destruction of graves, the precolonial settlement and the old mine settlement by open pit mining, blasting and waste rock placement.	N4
Occupational health and safety: risk of injuries and fatalities from open pit mining, blasting, heavy mobile equipment and crushing.	N4
Noise: noise from haulage, crushing and continuous operations causing a nuisance to R6 and other receptors.	N4
Noise: blasting air blast and ground vibration affecting nearby dwellings.	N4
Noise: hearing impairment of employees during mining.	N3
Visual: open pit, waste rock dumps, stockpiles, haul roads and lighting altering the landscape and sense of place.	N4
Visual: dust plumes from blasting, haulage and stockpiles reducing visibility for the nearby community.	N2
Air quality: dust (PM2.5, PM10 and dustfall) from mining affecting employees.	N4
Air quality: gaseous and hydrocarbon emissions from heavy mobile equipment, generators and fuel storage during mining.	N2
Air quality: dust (PM2.5, PM10 and dustfall) from mining affecting R6 and adjacent dwellings.	N4
Air quality: gaseous and hydrocarbon emissions from mining on employees and third parties.	N2

Traffic: ore haulage to Uis and mine traffic increasing heavy vehicle volumes, road safety risk, road wear and dust on the D1930 and C35.	N4

Table 30 - Biophysical environment assessed impacts

Biophysical environment: Flora	
The removal and destruction of vegetation especially protected tree/shrub species due to exploration on ML 133.	N3
Introduction of invasive alien species due to habitat change may outcompete native protected species.	N3
Illegal and unsustainable collection of protected or endemic species.	N3
Biophysical environment: Reptiles	
Vegetation removal activities during the construction of infrastructure may lead to the destruction of reptile habitats.	N4
Excavation and trenches could present as a pit fall trap whereby species are lost.	N4
Noise and vibrations from drilling activities may obstruct communication such as mating and hatching calls or potentially injure reptiles on ML 133.	N4
Illegal and unsustainable collection of reptiles by staff reduces the biodiversity and leads to loss of important species.	N2
Biophysical environment: Amphibians	
Destruction of sensitive habitats may lead to the loss of important/protected species.	N1
Noise and vibration from drilling activities may cause increased physiological stress, change breeding behaviour, suppress immune function and colouration changes.	N1
Biophysical environment: Mammals	
Destruction and modification of habitats will lead to reduction in range size of important species resulting in migration - affecting their survival.	N3
Wildlife - vehicle collisions on site may cause major injuries or death.	N3
Excavation and trenches could act as a pit fall trap to small mammals in the area.	N3
Illegal and unsustainable collection of mammals by staff reduces the biodiversity and leads to loss of important species.	N3
Noise pollution may cause migration, stress, interfere with breeding cycles of some species.	N3
Biophysical environment: Avian	
Destruction and modification of sensitive habitats of threatened/protected bird species.	N2
Noise and vibration can interfere with bird communication (e.g., calls), disrupting behaviours such as territory maintenance, predator detection, and mate attraction, thereby negatively affecting reproduction and survival.	N2
Biophysical environment: Soil	
Potential impact on soil structure and integrity leading to soil erosion.	N3

Soil compaction reducing its ability to absorb and retain water leading to increased sediment runoff.	N3
Soil contamination from chemical and hydrocarbon spills and leaks due to exploration activities.	N3
Biophysical environment: Groundwater	
Groundwater abstraction for exploration activities may potentially reduce available groundwater resources.	N4
Machinery and equipment operations may cause accidental fuel or hydraulic fluid leaks and spills, potentially contaminating groundwater resources.	N4
Untreated domestic wastewater may seep into and contaminate groundwater resources.	N4
Cumulative: abstraction of groundwater for drilling, when combined with abstraction by existing mines, MLs, EPLs and MCs, could contribute to cumulative pressure on local groundwater resources	N3
Biophysical environment: Surface water	
Machinery and equipment operations may cause accidental fuel or hydraulic fluid leaks and spills, potentially contaminating surface water resources.	N4
Untreated domestic wastewater may seep into and contaminate surface water sources.	N2
Biophysical environment: Waste	
Improper handling and disposal of general (non-hazardous) waste leading to visual pollution, deterioration of the surrounding environment and attraction of scavengers	N2
Improper management of hazardous waste may result in the contamination of soil, surface water, groundwater and surrounding ecosystems.	N2
Mining phase: biophysical environment	
Flora: clearing of vegetation, including protected species, over the pit, dump, stockpile and haul road footprint; spread of invasive alien species.	N2
Reptiles: loss of rocky and riparian habitat, blasting disturbance and mortality from mine traffic and collection.	N2
Amphibians: disturbance of ephemeral drainage lines and the Omaruru River riparian zone by the pit, dumps and altered runoff.	N1
Mammals: habitat loss to the mining footprint, blasting and continuous noise, mine traffic and increased human presence.	N2
Avian: loss of nesting trees and riparian habitat, blasting and continuous noise, lighting and dust affecting endemic and threatened birds.	N4
Soil: loss and degradation of soil through stripping, stockpiling, compaction, contamination and erosion over the mining footprint.	N3
Groundwater: sustained abstraction and pit dewatering lowering groundwater levels.	N4
Groundwater: contamination from hydrocarbons, effluent and seepage from waste rock and ore stockpiles.	N4

Surface water: alteration of drainage lines, sediment laden runoff and flood risk to the pit and dumps.	N4
Waste: waste rock and residue stockpiles and increased general and hazardous waste volumes.	N1
Cumulative: combined dust, visual, groundwater, traffic and social effects of mining on ML 133 with the Uis Tin Mine and ML 134.	N4

The draft ESIA amendment report of this Project outlines the impact assessment for the exploration and mining activities on ML 133 and lists all the expected implications. No adverse impacts remain of medium (moderate) or high (major) significance after mitigation. All impacts range from low to minor significance after mitigation, on the condition that the mitigation measures in the draft ESMP (Appendix A) are implemented for both phases and that the mining phase specialist studies identified in Chapter 7 (noise, air quality, traffic, hydrology and geochemistry) are completed and the ESMP updated before mining commences. Monitoring requirements for the duration of exploration and mining are set out in the draft ESMP (Appendix A).

All stakeholders and registered interested and affected parties (I&APs) will be given the opportunity to provide comments, if any, to ECC during the seven (7) day public review period of the draft ESIA amendment report, draft ESMP report and supporting appendices. All comments received from I&APs will be consolidated into an addendum report (i.e. comments and responses report) to the final ESIA amendment report and the final ESMP report.

The draft ESIA amendment report and draft ESMP report will be revised, finalised and submitted to the competent authority (MIME) and to MEFT for review and a record of decision (RoD) on the environmental clearance certificate renewal and amendment application for exploration and mining activities on ML 133.

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APPENDIX A – UPDATED ESMP

APPENDIX B – PUBLIC CONSULTATION

APPENDIX C – BIODIVERSITY SPECIALIST STUDY

APPENDIX D -HYDROLOGICAL SPECIALIST STUDY

APPENDIX E – AIR QUALITY SPECIALIST STUDY

APPENDIX F – NOISE SPECIALIST STUDY

APPENDIX G – TRAFFIC SPECIALIST STUDY

APPENDIX H – HERITAGE/ARCHAEOLOGICAL SPECIALIST STUDY

APPENDIX I – TEST PUMPING REPORT