ENVIRONMENTAL SCOPING STUDY EPL 9892 – Haakiesdoorn Copper Project, //Karas Region, Namibia

Prepared for: Profile Energy (Pty) Ltd

Project Name	Scoping report plus impact assessment for exploration activities on EPL 9892, Karas Region, Namibia
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Disclaimer (Environmental Scoping Study)

This Environmental Scoping Study (ESR) and the associated supporting annexures have been prepared by Dr Ismael Kangueehi of Augite Environmental Consultants cc on behalf of the project proponent for the purpose of supporting an application for an Environmental Clearance Certificate (ECC) in terms of Namibia's Environmental Management Act, 2007 (Act No. 7 of 2007) and the Environmental Impact Assessment Regulations (GN 30 of 2012), as amended. The report has been compiled using a combination of desk-top information sources, publicly available baseline datasets, project information supplied by the proponent (including the project description and proposed exploration activity envelope), and professional judgement based on relevant experience in environmental assessment and the Namibian regulatory context.

While reasonable care has been taken to ensure the accuracy and completeness of information presented, the assessment is based on the information available at the time of writing and on the assumptions described in the report. Environmental conditions may vary spatially and temporally, and additional information may become available during stakeholder engagement, field verification, or subsequent phases of project planning. The findings, conclusions and recommendations presented are therefore provided on the understanding that they may require refinement should the project scope change materially or if new evidence indicates different sensitivities, risks, or regulatory triggers.

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Author Qualifications and Experience (Dr Ismael Kangueehi)

Dr Ismael Kangueehi (PhD) is an environmental geochemist, exploration geologist and environmental assessment practitioner with extensive experience in Namibia's mining, energy and infrastructure sectors. He holds a Doctorate in Earth Sciences (Environmental Geochemistry) from Stellenbosch University, supported by Honours and Master's degrees in the same discipline, and a BSc in Geology and Environmental Biology from the University of Namibia. His academic and applied work is grounded in environmental geochemistry, biogeochemistry, environmental baselines, risk screening, and the interpretation of geological and hydrogeological systems relevant to impact assessment and environmental management planning.

Dr Kangueehi is the founder of Augite Environmental Consultants cc and has delivered professional environmental assessment outputs including Environmental Scoping Reports (ESRs), Environmental Impact Assessments (EIAs), Environmental Management Plans (EMPs), stakeholder engagement documentation, and legal compliance frameworks aligned to Namibia's Environmental Management Act and associated EIA Regulations, as well as international good practice where required (including IFC-aligned approaches when relevant). He also works as a Senior Researcher and Exploration Geologist (industry-facing), which strengthens his practical understanding of exploration methods, field logistics, and the realistic impact pathways associated with mineral exploration and early-stage project development. His experience spans baseline description and interpretation (geology, soils, vegetation, hydrogeology, hydrology and socio-economic context), impact screening and significance evaluation, mitigation design, and compliance-ready EMP structuring suitable for regulatory submission and on-ground implementation.

Executive Summary

This Environmental Scoping Study has been prepared to support an Environmental Clearance Certificate (ECC) application for exploration activities on EPL 9892, located in southern Namibia in the vicinity of Noordoewer close to the Namibia–South Africa border. The study provides an ECC-aligned scoping assessment of a reasonable exploration activity envelope, the desk-top description of the receiving environment, identification and screening of key issues and potential impacts, an outline and expanded exploration Environmental Management Plan (EMP) framework, and the basis for any further targeted specialist inputs should higher-intensity activities (e.g., trenching or drilling) be triggered. The scoping approach has been designed to meet Namibia's ECC submission expectations by ensuring transparent issue identification, traceable impact screening (pre- and post-mitigation), and practical, enforceable management commitments.

The proponent intends to undertake phased exploration that typically includes reconnaissance mapping and ground truthing, geochemical sampling (rock chips, soil/lag sampling and related media), and geophysical surveys (e.g., ground magnetics/gravity; potential IP/EM lines). Where warranted by results and subject to appropriate permissions and compliance, exploration may escalate to limited trenching/pitting and exploration drilling (RC and/or diamond) at selected targets. Activities such as mining, bulk sampling at mining scale, permanent infrastructure, ore processing plants, and permanent waste facilities are not included in the assessed scope unless separately proposed and authorised. The assessment is structured across project phases (planning/mobilisation, operations and progressive rehabilitation/decommissioning) to ensure that impacts are considered for the full lifecycle of exploration disturbances.

The receiving environment is characteristic of an arid to semi-arid southern Namibia setting, where climatic drivers strongly influence impact pathways. The Noordoewer area experiences very low rainfall and extended dry periods, with moderate winds that contribute to a baseline propensity for dust generation and visibility hazards on unpaved roads. These conditions elevate the importance of traffic management, dust suppression (where feasible), and wind-responsive operational controls. Topographically, the EPL occupies a plateau-like interior with increased dissection and a higher density of ephemeral drainage lines along the margins, particularly in the southern and eastern portions of the licence. The mapped drainage network is composed of multiple small streams that are typically dry for long periods but can convey short-lived, high-energy runoff following intense rainfall events; this increases the sensitivity of valley floors, tributary confluences and stream crossings to erosion and sediment mobilisation if disturbed.

Hydrogeological mapping indicates that the licence area is dominated by fractured basement aquifers associated with granite, gneiss and older volcanic rocks and is broadly classified as having very low groundwater potential. In practical terms, groundwater occurrence is expected to be localised and structurally controlled (fractures/lineaments), and reliable water supply from new abstraction points cannot be assumed. This scarcity context has two key implications: (i) exploration planning should prioritise lawful water sourcing (e.g., carting or existing authorised sources) rather than creating new abstraction demands, and (ii) groundwater protection measures must be stringent, because any contamination introduced into fracture networks may be persistent and difficult to remediate. Geological mapping indicates a multi-unit setting dominated by the Tsams Formation and intrusive suites (including the Goodhouse Subsuite and Ramansdrif Subsuite) with additional discrete occurrences of pegmatite and surficial sediment patches. The presence of multiple lithological domains and contacts supports systematic exploration targeting but also implies variable regolith and access conditions that must be managed through careful route selection and footprint discipline.

Key issues identified during scoping reflect typical exploration impact pathways in arid environments and the specific sensitivities indicated by the maps. The priority environmental risks include: (i) uncontrolled access and proliferation of informal tracks, leading to habitat fragmentation and cumulative footprint expansion; (ii) soil disturbance, compaction and erosion initiation, with sediment transport into the ephemeral stream network during storm events; (iii) dust generation and road safety risks from vehicle movements on gravel roads under dry, windy conditions; (iv) water resource risks, particularly pollution risks from fuel handling, sanitation and—if drilling occurs—drilling fluids/cuttings management, with heightened consequence given limited groundwater resilience; (v) waste management and housekeeping, including wildlife attraction and persistent litter; and (vi) heritage, archaeology and palaeontology risks from ground disturbance, including the potential to disturb graves or cultural resources. The principal socio-economic issues are linked to land access and permissions, grazing/livestock disturbance, waterpoint protection, traffic safety, and expectation management around local employment and procurement opportunities.

An expanded exploration EMP has been developed to provide enforceable mitigation and monitoring measures aligned to ECC conditions. Core commitments include strict use of existing roads and tracks and prohibition of off-road driving; demarcation of approved routes and no-go areas; avoidance buffers around drainages, waterpoints and sensitive microhabitats; erosion and stormwater controls and post-rainfall inspections; bunded fuel storage, controlled refuelling and spill response readiness; disciplined waste and sanitation management with zero uncontrolled discharge; progressive rehabilitation of all disturbances (re-contouring, ripping/scarifying, stabilisation and closure of redundant tracks); dust controls including speed limits, targeted suppression at high-use points where feasible, and stop/scale-back rules during high winds; and mandatory heritage chance-find and stop-work procedures. Monitoring is structured around auditable registers (disturbance and route logs, spill/incident logs, waste tracking, dust/noise complaints and grievance registers, and rehabilitation close-out evidence), supported by ECO/site supervisor inspections during active phases.

Overall, the scoping study concludes that exploration activities on EPL 9892 are environmentally acceptable and socially manageable at scoping level, provided that the exploration remains within the defined activity envelope and the EMP controls are implemented, verified and enforced. Most impacts are expected to be localised, short-term and reversible if footprint discipline, drainage avoidance, pollution prevention, and progressive rehabilitation are applied. Higher-consequence risks—particularly groundwater contamination pathways and heritage disturbance—can be managed to acceptable residual risk through strict operational controls, targeted screening where warranted before intrusive works, and robust incident response and stakeholder engagement mechanisms. The study therefore recommends proceeding with ECC submission for the proposed exploration envelope, maintaining active stakeholder engagement and access agreements, and implementing an auditable monitoring and reporting programme to demonstrate ongoing compliance throughout the exploration lifecycle.

1. Introduction and Purpose of the Study

This Environmental Scoping Study (ESS) has been prepared for proposed mineral exploration activities within Exclusive Prospecting Licence (EPL) 9892 located in the //Karas Region of southern Namibia. The ESS provides a structured identification of the environmental and social baseline conditions, identifies potential risks and impacts associated with exploration activities, and defines preliminary mitigation and management measures consistent with Namibian regulatory expectations and international good practice, specifically the International Finance Corporation (IFC) Performance Standards (PS). The scoping stage is intended to define the key issues ("material risks") that could influence project feasibility, permitting, and future investment decisions, and to shape the scope of any subsequent Environmental Impact Assessment (EIA) should the programme progress to more intrusive phases such as trenching and drilling.

The ESS is designed to support robust decision-making at early project stage by (i) characterising the receiving environment and sensitive receptors, (ii) describing the activity types and plausible impact pathways, (iii) screening and prioritising impacts based on likelihood and consequence, (iv) outlining mitigation consistent with the mitigation hierarchy (avoid–minimise–restore–offset), and (v) establishing the outline of an Environmental and Social Management Framework (ESMF) and/or Environmental and Social Management System (ESMS) to be implemented by the proponent and all contractors. This scoping approach ensures that environmental and social considerations are integrated early into exploration planning, thereby reducing risk, controlling costs, and strengthening lender and investor confidence.

2. Project Description

EPL 9892 is an exploration licence targeting copper mineralisation within a structurally favourable basement terrane of southern Namibia. The licence area includes known copper mineralisation (Haakiesdoorn Copper Prospect) and is located within a broader copper-fertile metallogenic corridor approximately 17 km southeast of the Haib porphyry copper deposit. The exploration programme is phased and adaptive, with activities intensifying only if results justify progression.

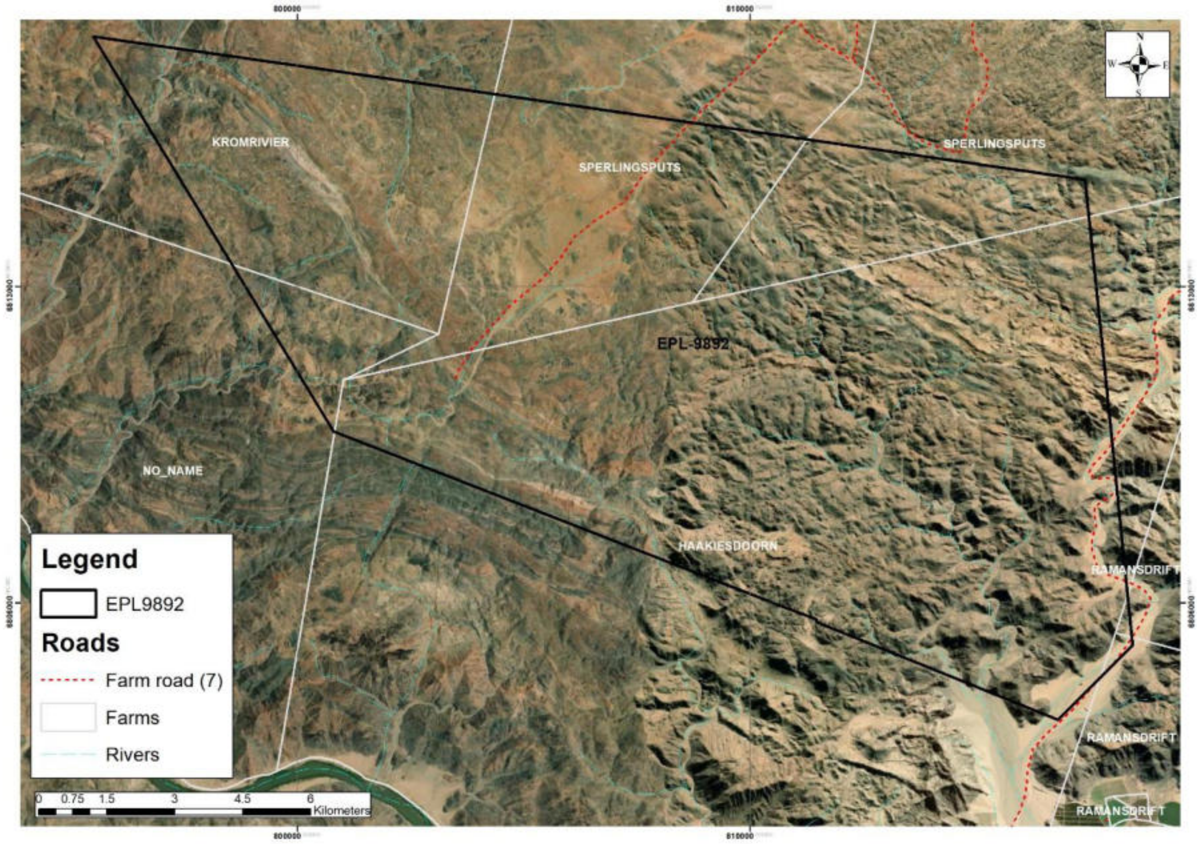

Figure 1. Location map for EPL9892 in the Karas Region, Namibia.

2.1 Exploration Activities Considered Under This Scoping Study

Non-intrusive / low-impact activities include desktop studies, GIS compilation, satellite interpretation, and reconnaissance field visits. Field-based prospecting activities include geological mapping, structural mapping, rock-chip sampling, and soil geochemical sampling using hand tools. Geophysical surveys may include ground magnetics, electromagnetic (EM) traverses, resistivity/IP profiling, and/or radiometric surveys using portable or vehicle-mounted instrumentation. Limited site access works may include improving existing tracks or establishing short temporary spur tracks to reach sampling sites, with strict control on disturbance footprint.

Intrusive exploration may involve shallow pits and trenches (where justified), and potentially a later phase of scout drilling (reverse circulation, and possibly limited diamond drilling). Drilling activities would require a temporary drill pad, sumps (if applicable), water supply arrangements (typically from existing farm boreholes by agreement), temporary fuel storage, and strict waste/spill controls. No ore processing, heap leaching, blasting, or bulk mining is proposed under the scoping stage.

2.2 Project Footprint and Duration

The exploration footprint is expected to be dispersed and small in areal extent relative to the licence area, with disturbance concentrated at access routes, sampling points, trenches, and drill pads. Disturbance is inherently temporary and reversible if managed correctly and followed by progressive rehabilitation. Exploration is typically planned in seasonal campaigns, avoiding sensitive periods where possible (e.g., post-rainfall high erosion risk, key livestock movements, or bird breeding peaks where relevant).

2.3 Workforce, Camps, and Logistics

Exploration teams will include geologists, technicians, field assistants, drivers, and contractors. Depending on remoteness and travel time, temporary field camps may be established or staff may be accommodated in nearby towns. Camps (if used) would require potable water supply, sanitation, solid waste management, and strict controls to prevent litter, wildlife attraction, and uncontrolled vehicle movement. Contractor management is critical under IFC PS1 and PS2; all contractors must comply with project E&S requirements, HSSE procedures, and behavioural standards.

3. Project Justification and Strategic Context

EPL 9892 is positioned within a proven regional copper system. Copper is a critical mineral supporting global electrification, renewable energy infrastructure, and grid expansion. The project's strategic context includes Namibia's mineral sector development priorities and the opportunity to contribute to local employment, procurement, and skills development if exploration results progress to advanced stages. At scoping stage, the key justification is the presence of copper mineralisation within the licence and the strong regional geological setting, balanced with the ability to manage environmental and social risks given the low-intensity nature of early exploration and the availability of standard mitigation measures.

4. Policy, Legal, and Institutional Framework

4.1 Namibian Legal Context

The project must comply with the Environmental Management Act (No. 7 of 2007) and the EIA Regulations (2012), as well as relevant sector laws and permitting requirements. Depending on activities, additional permits/authorisations may be required for water abstraction (if applicable), waste management, transport of hazardous substances (fuel/lubricants), access approvals, and heritage chance-find management.

4.2 IFC Performance Standards Alignment

This ESS is aligned with IFC PS1–PS8. PS1 governs risk assessment and ESMS; PS2 addresses labour and working conditions; PS3 focuses on pollution prevention and resource efficiency; PS4 addresses community health and safety; PS5 applies if land acquisition or economic displacement occurs (not anticipated for exploration but must be screened); PS6 addresses biodiversity; PS7 applies if Indigenous Peoples as defined by IFC are present (screening required); and PS8 addresses cultural heritage. Where Namibia’s legal framework and IFC requirements differ, the more stringent requirement is adopted as good practice.

4.3 Applicable International Good Practice (GIIP)

The project will apply Good International Industry Practice including exploration-specific controls (spill prevention, drill sump management, rehabilitation), OHS frameworks (hazard identification and risk assessment, PPE, training), and stakeholder engagement best practice (disclosure, consultation, grievance mechanism, record-keeping).

5. Scoping Methodology and Study Boundaries

The scoping methodology includes a desktop review of environmental and social baseline conditions, interpretation of the licence boundary, evaluation of plausible exploration methods, and impact pathway analysis. The study area is defined as (i) the EPL boundary for direct impacts, and (ii) an area of influence (AoI) surrounding the licence for indirect impacts such as traffic, supply chains, noise, dust, and social interactions with neighbouring farms and settlements.

Potential impacts are screened using a significance approach considering magnitude, duration, reversibility, likelihood, sensitivity of receptors, and the effectiveness of mitigation. Impacts are classified as negligible, low, medium, or high at scoping level. A key output is the identification of priority issues that require specialist baseline surveys (e.g., biodiversity, heritage) before intrusive exploration.

6. Description of the Receiving Environment

6.1 Climate and Meteorology

Southern Namibia is characterised by arid to semi-arid conditions with high inter-annual rainfall variability and high evaporation rates. Rainfall typically occurs as short-duration storm events capable of generating intense runoff in ephemeral channels. Temperature extremes can be significant, with very hot daytime temperatures in summer and cold nights in winter. Wind regimes can generate dust movement, particularly on dry, bare surfaces and unsealed roads. These climatic factors influence erosion risk, dust generation, water availability, and occupational health risks (heat stress, dehydration). Exploration planning must consider seasonal accessibility, stormwater control for disturbed areas, and worker welfare.

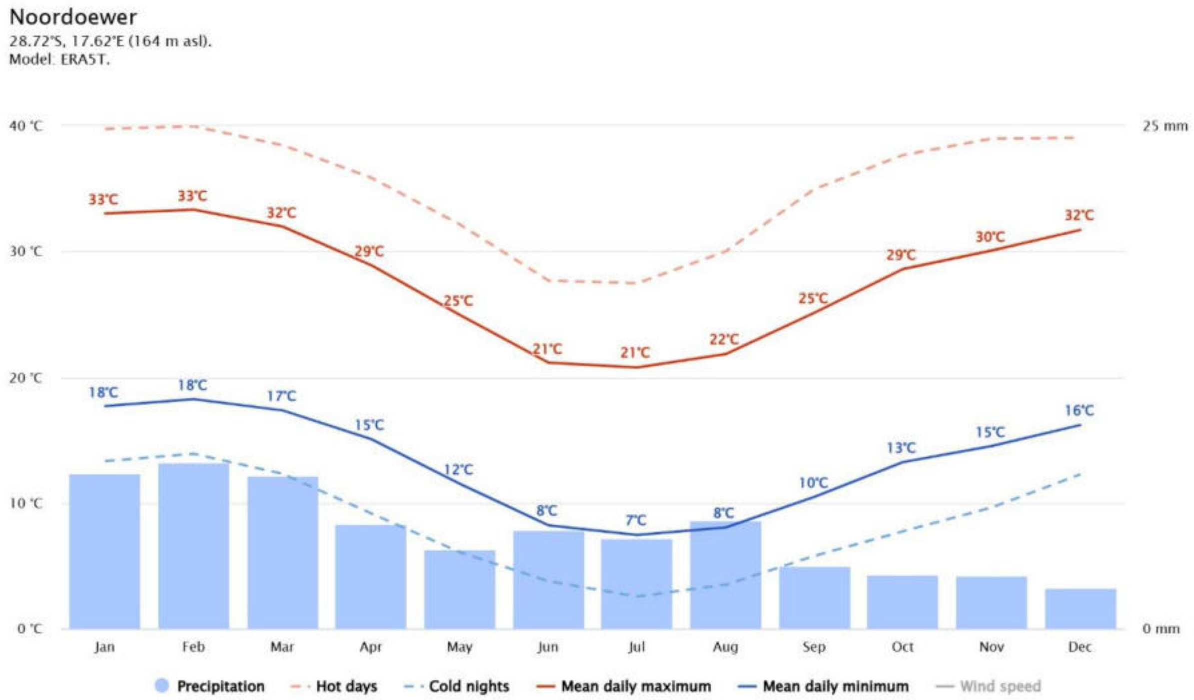

Figure 2. The climate and meteorological graph for the Noordoewer area.

6.2 Topography, Landforms, and Soils (Detailed)

The topography of EPL 9892 is characterised by a broad elevated plateau surface across the central and northern parts of the licence, grading into a more dissected, rugged terrain along the margins—most notably toward the southern and south-eastern portions of the polygon. The elevation tinting indicates that the EPL largely occupies mid-to-higher ground (generally in the ~850–1,050 m amsl bands across the interior), while the lowest elevations occur along incised valleys and outside/near the southern boundary where the colour ramp shifts into the ~250–550 m amsl ranges. This pattern suggests a landscape where resistant bedrock forms broad interfluves (plateau-like surfaces) and where drainage has cut down to form narrow valleys and steepened side-slopes at the edges—terrain that is typically more erosion-prone and operationally constrained once disturbed.

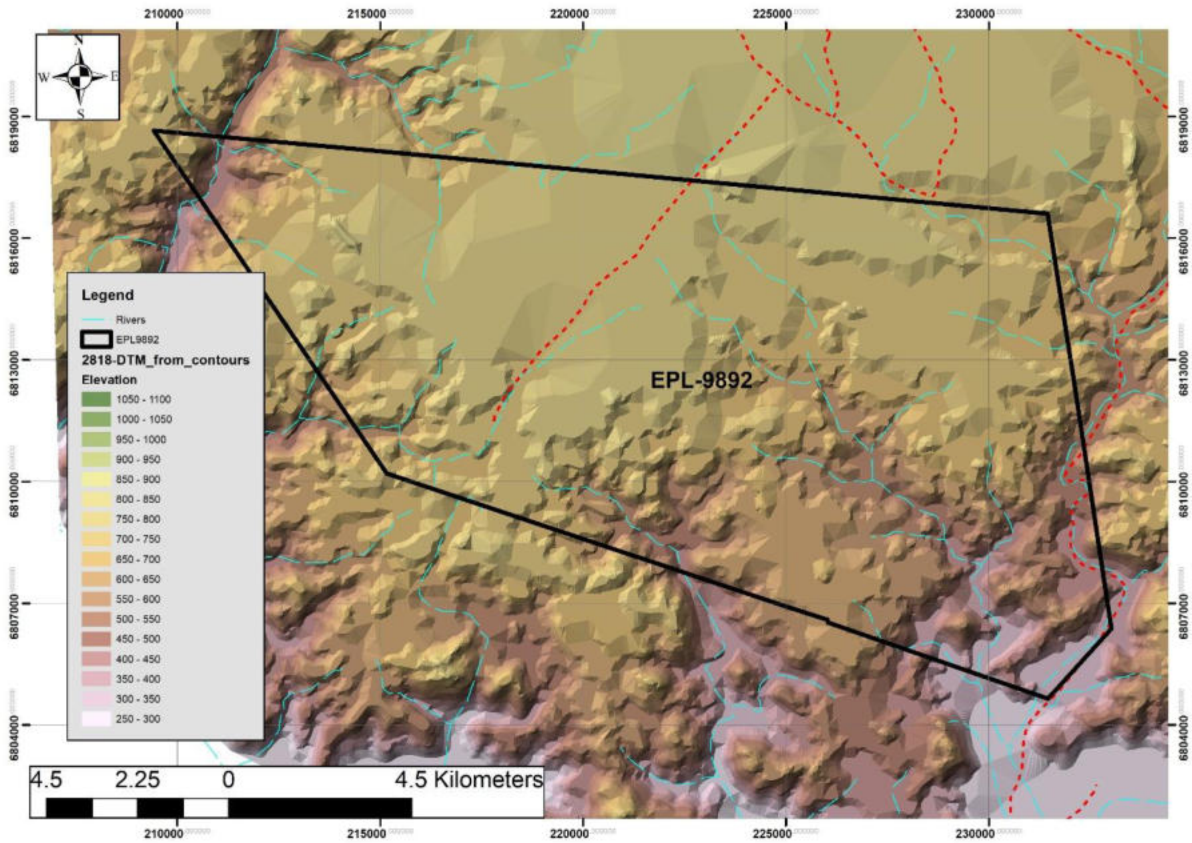

Figure 3. The topographical map for EPL9892.

The mapped streams (blue drainage lines) form a dendritic network of mostly small, ephemeral channels rather than a single dominant river. Within the EPL boundary the drainage density is noticeably higher in the southern half and along the eastern margin, where multiple short tributaries converge into more defined valley corridors; by contrast, the central/northern plateau shows fewer incised channels and more widely spaced headwater lines, implying better-drained, gently sloping interfluves with runoff concentrating only after storms. The drainage pattern is consistent with semi-arid southern Namibia conditions: most channels will be dry for long periods, but during intense rainfall events they can convey short-lived, high-energy flows that rapidly mobilise sediment from disturbed surfaces. The presence of numerous small tributaries is particularly important for exploration planning because it increases the number of potential crossings and the likelihood that "minor" drainage depressions become significant flow paths during storms.

Figure 4. The topographical terrain of the southern Namibia.

For scoping and the exploration EMP, the practical implications are clear: (i) the southern and eastern dissected zones should be treated as higher sensitivity for erosion and sediment delivery, and drill pads, trenches, camps, fuel storage and laydown areas should be preferentially sited on the gentler interfluves away from valley floors and tributary confluences; (ii) all drainage lines—especially the more continuous channels—should have no-disturbance buffers and be avoided for vehicle routing, with any unavoidable crossings restricted to existing crossing points and stabilised to prevent rutting and bank erosion; (iii) linear disturbances (tracks, cleared lines) must be designed to avoid capturing and concentrating runoff (e.g., use natural contours, install simple diversion structures/water bars where needed), because on this terrain concentrated runoff is the principal trigger for rill and gully formation; and (iv) access scheduling must be weather-aware, as travelling on wet valley bottoms and clayey low areas can create deep ruts that later become permanent erosion channels feeding the stream network. Overall, the map indicates that EPL 9892 is not "flat desert" terrain—rather it is a plateau system with edge dissection, where drainage controls will materially influence both impact significance (erosion/sedimentation) and the feasibility of low-impact exploration if route discipline and micro-siting are not enforced.

6.3 Surface Water and Hydrology

The geological map for EPL 9892 shows a licence area that straddles several contrasting lithological domains, with a clear "belt-like" distribution of units that suggests a strong regional structural grain and multiple lithostratigraphic contacts within the EPL footprint. The dominant bedrock across much of the central and eastern licence is mapped as the Tsams Formation (MTa) (brown–khaki tone), forming a broad corridor that occupies the interior of the EPL and locally extends toward the eastern boundary; in practical field terms, this unit is likely to express as variably resistant bedrock with shallow, stony regolith and intermittent outcrop, providing the main host package that will control terrain, soil development, and exposure conditions for mapping and sampling. Surrounding and locally interfingering with the Tsams Formation is the Goodhouse Subsuite (MgVG) (lavender), which occurs extensively along the western side of the EPL and again as a large tract along the southern and southeastern margins; its areal extent implies that a significant proportion of exploration traverses will cross contacts between MgVG and MTa, which are important from an exploration perspective because lithological contacts commonly focus deformation, fluid flow, and alteration, and therefore represent priority targets for structural mapping and geochemical profiling. On the eastern side of the licence, the map highlights an elongate wedge of the Ramansdrif Subsuite (MgVR) (darker purple) extending into the EPL from the east; this creates a second major contact zone (MgVR–MTa and MgVR–MgVG) within a relatively short distance, strengthening the interpretation that the EPL is positioned across a multi-unit contact network rather than a single homogeneous lithology.

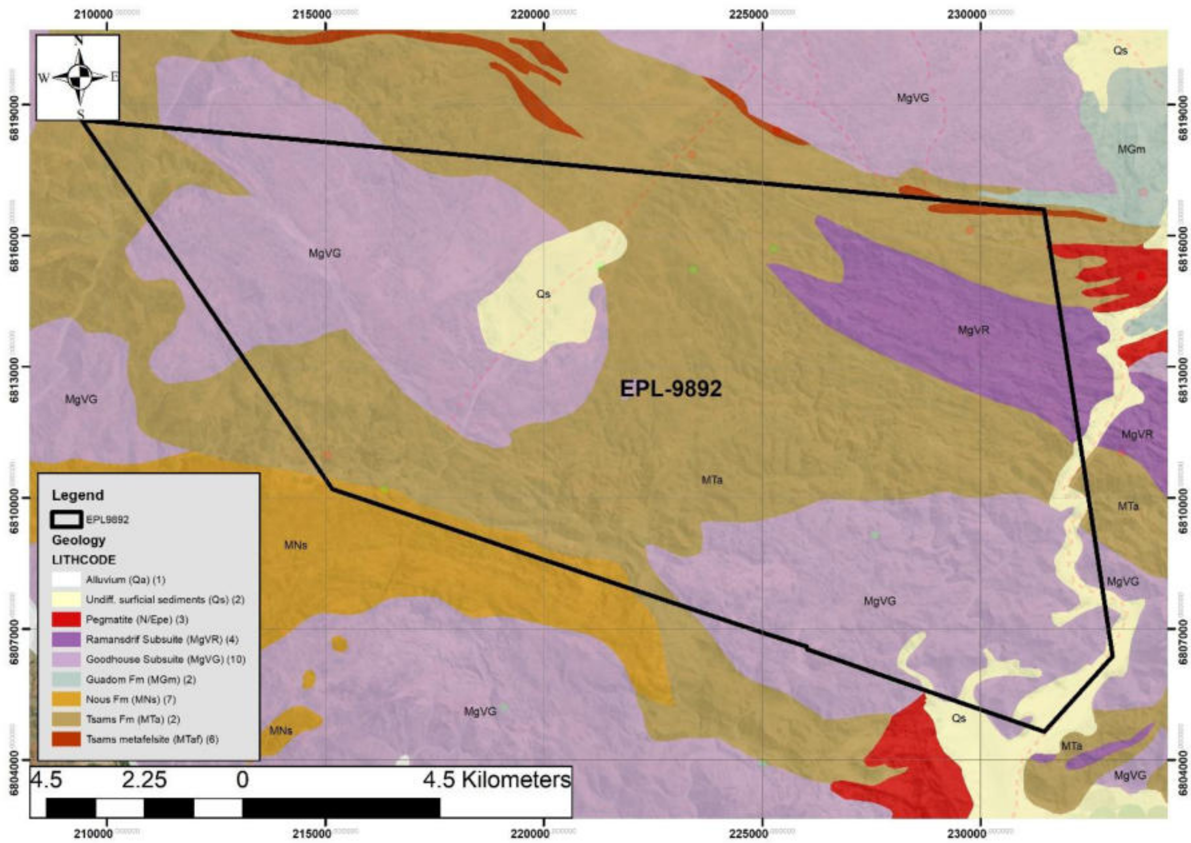

Figure 5. the geological map for EPL9892 in the Karas region.

Superimposed on these broader bedrock domains are smaller but exploration-significant units. Linear to lensoid bodies of Tsams metafelsite (MTaf) (orange-brown) occur near the northern margin of the map and appear aligned with the regional fabric; such metavolcanic/metafelsic units can be structurally competent and may host different geochemical signatures compared to the surrounding formations, making them useful marker horizons during mapping and potentially prospective depending on the commodity model being tested. The map also indicates multiple occurrences of pegmatite (N/Epe) (red), notably clustered near the eastern edge and again in the south-southeastern portion of the map (with a large red body just south of the EPL boundary and smaller red occurrences near/inside the eastern boundary). Even where pegmatites are not the primary target, their presence is important because they may indicate late-stage intrusive activity and can be associated with element enrichment, alteration halos, and brittle structures that can also influence base-metal and precious-metal targeting. In addition, patches of undifferentiated surficial sediments (Qs) (pale yellow) occur within the EPL (including a distinct "island" of Qs in the north-central part of the licence and additional Qs along the southeastern margin), and minor alluvium (Qa) is listed in the legend—these superficial units imply localised cover that may obscure bedrock geochemical responses and reduce outcrop availability, but they also provide appropriate media for soil/lag sampling and may mark palaeo-drainage or low-lying depositional settings that should be treated carefully in terms of access and erosion control. A small occurrence of the Guadam Formation (MGm) (blue-green) is mapped toward the far north-eastern side of the map (largely outside the EPL boundary), indicating additional lithological diversity in the broader area even if it is not a major component of the licence itself.

Overall, the map suggests that EPL 9892 is geologically favourable for systematic exploration because it contains (i) extensive, mappable bedrock domains (MTa and MgVG), (ii) multiple major contacts (MTa–MgVG, MTa–MgVR, MgVG–MgVR) that should be treated as first-order structural and geochemical target corridors, (iii) discrete bodies of pegmatite and metafelsite that provide additional prospectivity vectors and mapping control, and (iv) limited but meaningful surficial cover (Qs/Qa) that will influence the selection of sampling media and the interpretation of anomalies. For field execution, this geometry supports an exploration strategy that prioritises contact-focused traverses, structural measurements along lithological boundaries, and geochemical sampling grids oriented to cut across the dominant lithological trends, while explicitly accounting for surficial sediment "masking" in Qs/Qa areas and ensuring that any intrusive works (trenches/drill pads) are micro-sited to avoid disturbing sensitive depositional zones and drainage-linked sediments.

6.4 Groundwater and Hydrogeology

The hydrogeological map for EPL 9892 indicates a groundwater setting that is dominated by crystalline basement aquifers with overall very low groundwater potential across almost the entire licence footprint. The EPL polygon (red outline) sits overwhelmingly on the unit mapped as granite, gneiss and older volcanic rocks (the "+" symbol), and the map's potential class for this domain is explicitly labelled "very low potential"—which is consistent with basement terrains where groundwater occurrence and yield are controlled almost entirely by secondary permeability (weathered regolith zones, joints, fractures and fault damage zones) rather than primary pore space. In practical terms, this means borehole success and yield are expected to be highly variable and site-specific: most locations away from major structures will likely yield low, intermittent supplies (or dry holes), whereas the best prospects for groundwater supply occur where drilling intersects persistent lineaments, faults and/or thrust-related structures that enhance fracture density and connectivity.

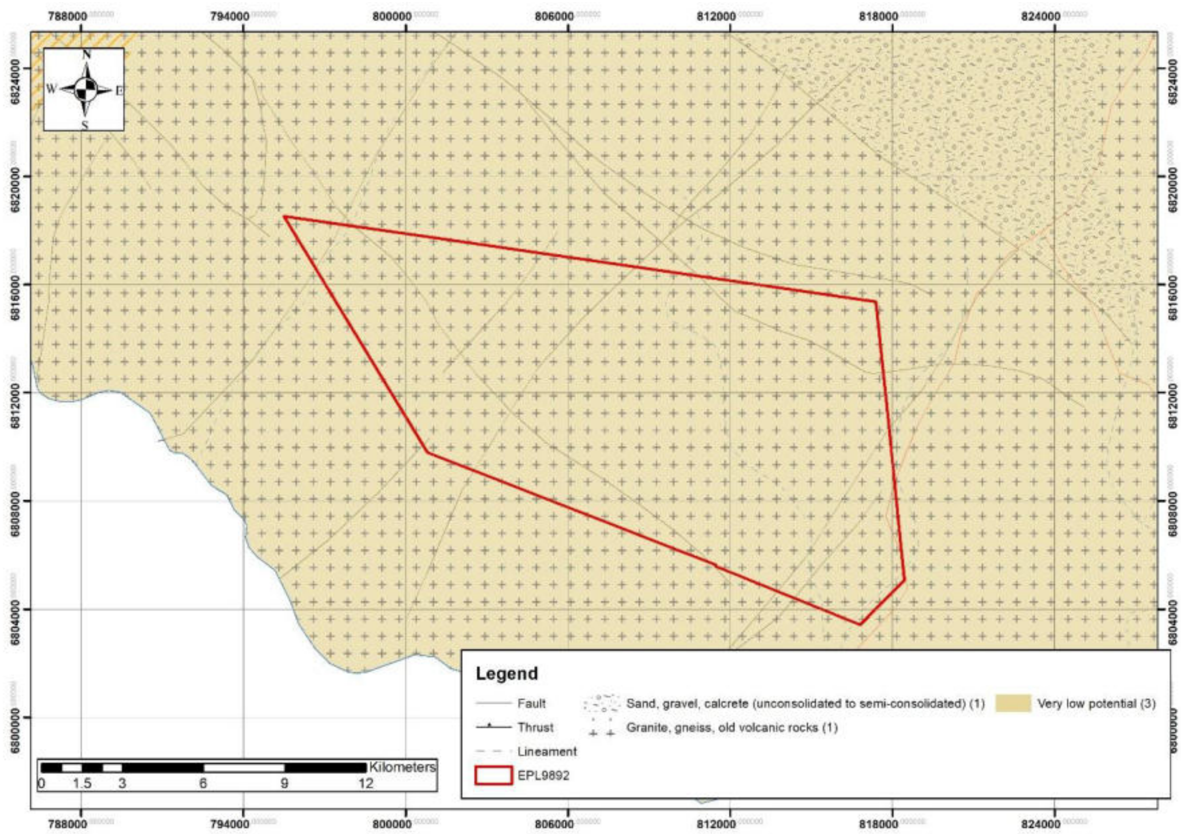

Figure 6. The hydrogeological map of EPL9892 in the Karas region.

This is supported by the map itself, which shows multiple lineaments crossing the licence area and at least one prominent structural corridor; these features should be treated as the primary hydrogeological targets if any water supply boreholes are ever required, and they are also the most relevant pathways for potential contaminant migration if poor practices occur. A small area of sand, gravel and calcrete (unconsolidated to semi-consolidated) is mapped to the north-eastern side of the map (largely outside the EPL boundary), suggesting that localised shallow, more porous materials may occur in the broader area; however, the EPL itself remains overwhelmingly basement-dominated, so such deposits—if present near the boundary—would more likely provide limited, local perched storage rather than a reliable regional aquifer. From a scoping/EMP standpoint, the key implication is that exploration operations should assume water scarcity (i.e., reliance on water carting or existing licensed sources rather than developing new abstraction points), and should apply strict groundwater protection controls (bunded fuel storage, controlled refuelling, spill readiness, disciplined sanitation, and—if drilling occurs—contained management of cuttings/fluids), because even though yields are low, contamination introduced into fractured zones can be persistent and difficult to remediate.

Air Quality and Dust

Baseline

The receiving environment for EPL 9892 in the vicinity of Noordoewer is expected to have generally good ambient air quality due to the rural setting and the absence of major industrial point sources; however, the area is inherently dust-prone because of its arid climate, sparse vegetation cover, and frequent winds. Climate normals for Noordoewer indicate very low rainfall throughout the year (typically only a few millimetres per month) and persistent moderate winds (monthly averages broadly in the mid-teens to ~20 km/h), with windier conditions commonly occurring in spring to early summer (around Oct–Nov), which increases the likelihood of episodic windblown dust and road dust. These baseline conditions mean that unpaved roads, exposed soils, and disturbed exploration surfaces can readily generate fugitive dust during dry periods, and that dust events can occur suddenly when wind speeds increase.

Receptors

Key receptors for dust and air-quality effects at exploration stage are primarily localised and near-ground, and typically include: (i) farmsteads, workers' housing and any sensitive individuals (e.g., asthma sufferers) within the wider area of influence; (ii) livestock (especially at waterpoints, kraals, and along herding routes) where dust may cause nuisance, irritation or reduced forage palatability near high-traffic routes; (iii) road users on gravel and secondary roads where dust can reduce visibility and increase collision risk; and (iv) vegetation immediately adjacent to high-use tracks, where dust deposition can affect leaf surfaces (usually minor and reversible at exploration scale). The most sensitive "receptor situations" are therefore near residences, near waterpoints, and along shared public access routes where traffic volumes and speeds are highest.

Impact pathways

Dust and air-quality impacts during exploration are expected to be dominated by fugitive particulate matter (PM10/coarse dust and, to a lesser extent, PM2.5) generated through a limited number of pathways:

1. Vehicle movement on unpaved roads and tracks (primary pathway): tyre–surface interaction on dry gravel and sand generates dust plumes that can travel downwind, reduce visibility, and cause nuisance.

2. Access preparation and site disturbance (secondary pathway): minor scraping, clearing, drilling pad preparation, trenching (if undertaken), and stockpiling of fines can expose erodible material, which becomes a dust source under wind or traffic disturbance.
3. Windblown dust from disturbed surfaces (secondary pathway): once surfaces are loosened or topsoil is disturbed, even low-to-moderate winds can entrain fine particles, especially in open, sparsely vegetated areas.
4. Drilling operations (if triggered): localised dust from drill cuttings handling and traffic at drill sites; typically manageable with housekeeping and (where feasible) targeted suppression.

Because the baseline environment is already predisposed to dust events in dry windy periods, the project's key risk is incremental localised dust increases near receptors and along access routes, rather than regional air-quality degradation.

Mitigation and monitoring

Dust management should be embedded as a core exploration EMP control with clear, enforceable operational rules:

- Traffic controls (primary mitigation): enforce strict speed limits on all unpaved roads/tracks, implement route discipline (no off-road driving), avoid unnecessary trips, and schedule movements to reduce peak traffic.
- Suppression at high-risk points: apply targeted wet suppression (water cart/bowser or hand-watering) only at high-use, high-nuisance points (e.g., near residences, waterpoints, camp areas, drill pads) where sustainable and permitted; avoid creating runoff/erosion.
- Surface stabilisation and housekeeping: keep disturbed footprints small; stabilise/cover fine material stockpiles; keep drill cuttings contained; rehabilitate unused tracks and pads progressively to reduce exposed fines.
- Wind-responsive operations: apply stop-work or scale-back rules during high winds to prevent uncontrolled dust generation and road safety risks.
- Stakeholder responsiveness: maintain a complaints register and close-out actions, with rapid response to verified nuisance.

Dust & Air Quality Monitoring Plan (Exploration Phase)

Objectives

- Demonstrate that dust is being effectively controlled and that impacts on receptors remain localised and reversible.
- Provide evidence-based triggers for corrective action.
- Create an auditable record for ECC compliance and stakeholder assurance.

Monitoring components and methods

1) Complaints register (community nuisance monitoring)

- Tool: Dust/air-quality complaints log maintained by the ECO / site supervisor.
- Minimum fields: date/time; complainant (name/contact if provided); location; nature of complaint (dust, visibility, health symptoms, livestock); weather conditions (wind/direction if known); activity occurring (traffic/drilling/clearing); immediate response; corrective action; close-out date; feedback to complainant.
- Frequency: continuous; reviewed weekly during active fieldwork.
- Trigger: *Any* dust complaint triggers investigation within 24–48 hours (or next working day in remote context).

2) Visual dust inspections (field-based trigger monitoring)

- Method: ECO/site supervisor performs visual checks during operations and records observations in a daily/weekly log, focusing on:
    - dust plumes from vehicles and drill sites,
    - dust deposition near receptors,
    - visibility along access roads,
    - windy conditions and exposed/disturbed surfaces.
- Frequency: daily during active work; minimum weekly during low-activity periods.
- Visual trigger levels (practical, defensible):
    - Level 1 (Low): brief dust plume that disperses quickly; no offsite drift toward receptors → *continue with routine controls*.

- Level 2 (Moderate): visible dust plume persists and drifts downwind toward a receptor or public road; light dust deposition observed on nearby vegetation/structures → *implement corrective action immediately (reduce speed, increase spacing, targeted suppression)*.
- Level 3 (High): dust causes reduced visibility on roads, reaches residences/waterpoints, or repeated Level 2 events occur despite controls → *stop/scale back dust-generating activities until conditions improve and controls are strengthened*.

3) Speed compliance checks (primary control verification)

- Standard: site speed limits defined in the EMP (e.g., 40 km/h on main gravel, 20–30 km/h on tracks—final values set to match road condition and safety).
- Method options (choose what is feasible):
  - GPS tracking reports from vehicles (preferred if available), or
  - random spot checks by ECO using vehicle speedometer confirmation and time–distance checks, plus signage at camp and key junctions.
- Frequency: spot checks daily during high traffic; minimum 2× per week otherwise.
- Trigger: repeated speeding events → corrective action (driver re-induction, written warning, restriction from driving duties for repeated non-compliance).

4) High-wind stop-work / scale-back rules (wind-driven dust control)

- Method: use a handheld anemometer at camp/drill site *or* a verified weather app reading for the immediate vicinity (documented).
- Action thresholds (to be embedded in EMP):
  - ≥ 30 km/h sustained wind (or frequent gusts above this): *scale back* dust-generating activities (reduce traffic, increase spacing, avoid new clearing, apply suppression only where safe).
  - ≥ 40 km/h sustained wind (or dust visibly blowing off disturbed surfaces with offsite drift): *stop-work* for dust-intensive activities (grading/clearing, high-frequency traffic, unconstrained cuttings handling) until wind drops and visibility is safe.

- Safety override: if visibility on roads becomes unsafe at any time, suspend movements until safe.

5) Optional quantitative monitoring (only if triggered by sensitivity/complaints) At scoping level, continuous particulate monitoring is usually not required for remote exploration unless there are sensitive receptors very close to high-use routes or repeated complaints. If triggered, deploy a portable PM monitor (PM10/PM2.5) at the most relevant receptor location for short campaigns (e.g., 1–2 weeks) to confirm effectiveness of controls and provide objective evidence.

Reporting and records (ECC-aligned)

- Daily/weekly dust log (visual inspections + weather notes + actions).
- Complaints register with documented close-out.
- Speed compliance records (spot checks or GPS summaries).
- Stop-work events recorded (date/time, trigger, activities stopped, restart conditions).
- Monthly summary (during active exploration): number of complaints, exceedance events (visual Level 2/3), corrective actions implemented, and any EMP adjustments.

6.5 Air Quality and Dust (Detailed)

The receiving environment around EPL 9892 in the vicinity of Noordoewer is expected to experience intermittent elevated dust levels typical of Namibia's arid southern interior, driven primarily by low rainfall, high insolation, sparse vegetation cover, and regular moderate-to-strong winds that readily entrain fine surface material. Climate normals for the Noordoewer area indicate very low mean monthly rainfall (generally single-digit mm/month) and a long dry-season condition in which exposed soils and unpaved surfaces remain dry and erodible for extended periods. Wind climatology for the same locality indicates average monthly wind speeds mostly in the ~14–20 km/h range, with the windiest conditions typically occurring in spring to early summer (around Oct–Nov)—a seasonal window that often corresponds to elevated dust nuisance and reduced visibility risk on gravel roads.

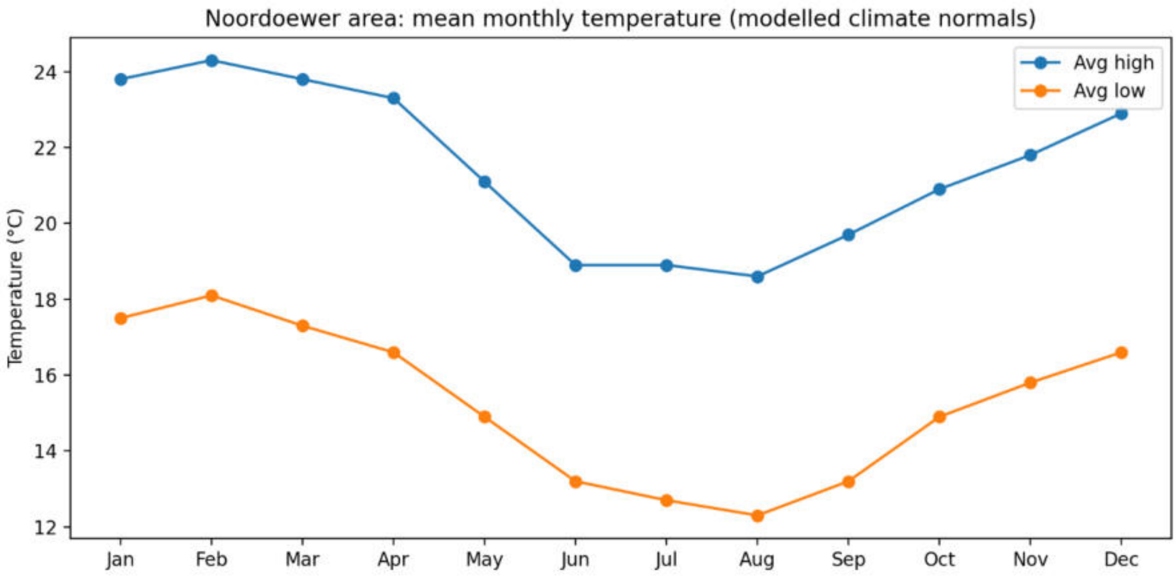

Figure 7. The monthly mean temperature.

For an exploration project, the dominant *project-attributable* air-quality risk is therefore fugitive dust (PM10 and coarse particulates) generated by vehicle movement on gravel tracks, creation/maintenance of access routes, limited scraping/clearing at work sites, and—if later triggered—trenching or drilling pad preparation. Even where regional background dust is naturally occurring, exploration can cause localised short-term increases at receptors such as farmsteads, livestock handling areas, waterpoints, and at/near roadside sections where vehicles pass frequently. In addition to nuisance impacts (soiling, reduced comfort), dust is a road safety hazard during dry windy conditions, especially where visibility is reduced and where heavy vehicles share narrow gravel routes.

In terms of "ambient air quality" (background), publicly available model-based AQI products for Noordoewer commonly identify PM2.5 as the dominant pollutant and show daily AQI values in the Good to Fair range (example: AQI ~36–43), noting the use of Copernicus Atmosphere Monitoring Service (CAMS) inputs (i.e., these are modelled estimates, not necessarily local regulatory monitoring). For national context, the World Health Organization health-and-environment scorecard for Namibia flags that national PM2.5 exposure remains material relative to WHO guideline levels, supporting the framing that particulate pollution is a relevant health determinant even in low-industrial settings.

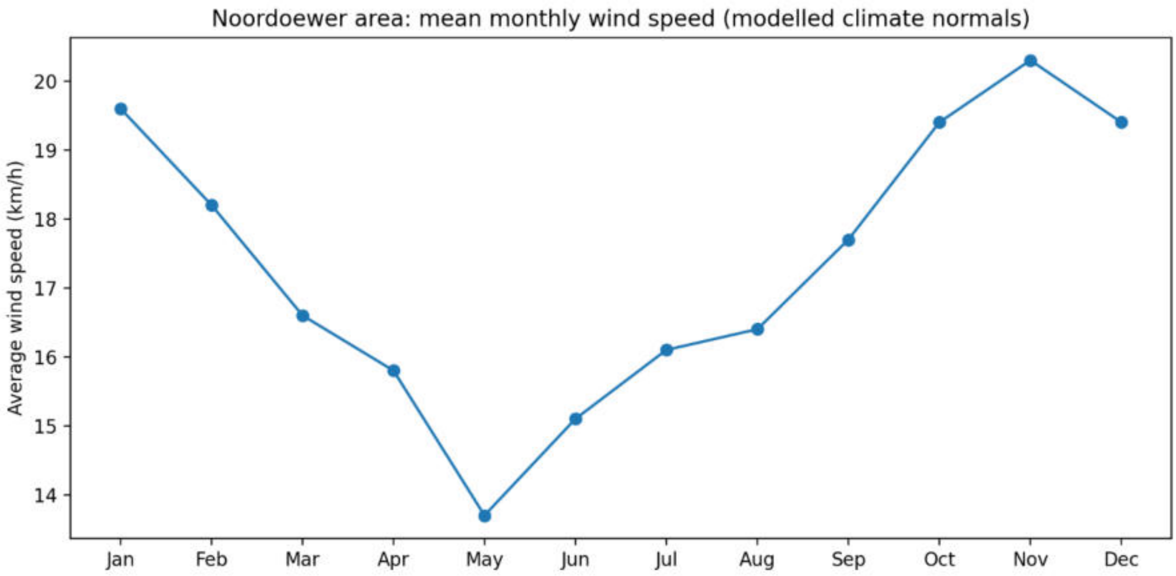

Figure 8. The average monthly wind speed around Noordoewer.

Scoping implication: air impacts are typically low to moderate (localised, reversible) provided dust controls are enforced; however, they can become moderate at sensitive receptors or along frequently used access corridors if route discipline and speed limits are not controlled. The EMP should therefore commit to: speed limits, avoidance of unnecessary off-road driving, wet suppression where feasible at high-use points, progressive rehabilitation, and complaints tracking (dust nuisance log + corrective actions).

6.6 Noise and Vibration (Detailed)

Baseline setting

The receiving environment for EPL 9892 is predominantly rural and sparsely populated, with the acoustic environment typically characterised by low background noise levels and intermittent, low-frequency anthropogenic noise associated mainly with vehicle movements on gravel roads, occasional farm activities, and wind-driven natural sounds. In such settings, the perceived change from project-related noise can be more noticeable than in urban areas because baseline ambient noise is low and receptors (farmsteads, homesteads, waterpoints, and roadside users) may be dispersed but sensitive to short-duration peaks. Wind is an important contextual factor: under moderate-to-strong wind conditions, ambient noise can increase due to vegetation and surface effects, and dust-management measures may constrain certain operations, indirectly influencing the timing of noise-generating activities.

Sources of noise and vibration (exploration phase)

Noise and vibration impacts during exploration are generally short-term, localised and reversible, but can be significant if unmanaged near receptors. The principal sources include:

1. Vehicle movements and access activities
    - Light vehicles (bakkies) and occasional heavy vehicles (equipment mobilisation, water carting).
    - Noise from engines, braking, corrugations, and loading/unloading.
    - Vibration may occur on badly corrugated tracks, particularly from heavy vehicles.
2. Geophysical surveys (where undertaken)
    - Ground magnetics/gravity are typically low-noise.
    - IP/EM surveys may involve generators or small equipment, producing intermittent noise.
3. Camp and support logistics (if a temporary camp is used)
    - Generators, water pumps, lighting plants.
    - Human activity noise (voices, radios, maintenance activities).
4. Trenching/pitting (if required)
    - Noise from excavators/backhoes and support vehicles.
    - Short-duration vibration can occur from heavy equipment operation.
5. Exploration drilling (if warranted)
    - Highest noise and vibration risk at exploration stage.
    - Noise from drill rigs, compressors, boosters, generators, mud pumps (diamond drilling), and rod handling.
    - Vibration is usually low at distance but can be perceptible close to the rig and along hard ground/bedrock.
6. Blasting

- Not typical for exploration and should be treated as excluded unless separately authorised. If contemplated, it would require additional assessment and strict regulatory control.

Sensitive receptors

Noise sensitivity is driven by proximity, duration, and timing. Likely receptors include:

- Farmsteads / homesteads and worker housing (sleep disturbance and nuisance).
- Livestock near kraals, waterpoints, or herding routes (startle response, avoidance).
- Wildlife (behavioural disturbance, temporary displacement from waterpoints).
- Road users (startle and safety in areas with heavy-vehicle movements).

Where receptor locations are not precisely known at scoping stage, the EMP should require confirmation of nearby receptors during access permissions and pre-mobilisation planning.

Impact pathways and typical effects

- Nuisance and disturbance: short-term annoyance, disruption of routine activities, and in the case of drilling, sustained noise for several days to weeks at a site.
- Sleep disturbance: particularly if generators or drilling occur at night.
- Livestock/wildlife disturbance: avoidance of waterpoints or flight response near noisy operations.
- Vibration effects: typically limited to immediate vicinity; can cause nuisance but unlikely to cause structural damage at exploration scale unless within very close range to buildings and operating heavy equipment on hard ground.

Scoping-level significance (typical)

- Vehicles & light fieldwork: Low significance (local, short duration) with controls.
- Camps/generators: Low–Moderate significance if close to receptors or operated at night.
- Trenching: Moderate significance for short periods if close to receptors.
- Drilling: Moderate–High pre-mitigation due to duration and continuous noise; typically reduced to Low–Moderate post-mitigation if properly sited and managed.

Mitigation measures (EMP commitments)

A. Planning and siting controls (primary mitigation)

- Micro-site drilling and camps away from receptors: avoid siting rigs, generators, and camps near homesteads, kraals, and waterpoints; use landowner input to confirm sensitive areas.
- Use existing access routes to minimise new disturbances and avoid routing close to residences.
- Set working-hour restrictions: default to daylight operations for high-noise activities unless justified and agreed with land users.

B. Equipment and operational controls

- Ensure all engines, compressors and generators have effective mufflers/silencers and are maintained.
- Use acoustic shielding where feasible (e.g., locating generators behind vehicles/terrain, temporary barriers at camp).
- No idling policy for vehicles and equipment when not in use.
- For drilling: maintain a tidy pad layout to reduce unnecessary handling noise; ensure rod racks and metal-on-metal contact are managed.

C. Traffic and logistics

- Speed control reduces both dust and noise on gravel/corrugated tracks.
- Schedule heavy vehicle movements during daytime and avoid early morning/late evening where possible.

D. Communication and grievance management

- Notify landowners/occupiers in advance of drilling, trenching, or heavy mobilisation.
- Maintain a noise/dust complaints register (shared mechanism is acceptable) and respond with corrective actions.

Noise and vibration monitoring plan (exploration-appropriate)

At exploration stage, monitoring should be risk-based, focusing on proximity to receptors and duration of activity.

1) Routine monitoring (all phases)

- ECO/site supervisor conducts weekly noise checks (qualitative) during active operations:
    - identify prominent sources,
    - confirm working hours compliance,
    - confirm equipment maintenance status,
    - record any complaints.
- Keep a noise log: date, location, activity, receptors within ~1–2 km (if any), and actions taken.

2) Trigger-based quantitative monitoring (if needed)

Deploy a handheld sound level meter and take spot readings if:

- a receptor is within practical proximity (e.g., a homestead/farmstead within a few km of drilling),
- repeated complaints occur,
- drilling is planned to run continuously for extended periods. Spot readings should be taken:
- at the site boundary (or agreed proxy location),
- at the nearest receptor location (with permission),
- during representative operations (peak drilling/compressor load).

3) Performance indicators

- Zero unresolved noise complaints.
- Compliance with agreed working hours.
- No night-time generator/drilling near receptors unless explicitly agreed and justified.
- Evidence of maintained silencers/mufflers and documented equipment inspections.

4) Stop/adjust rules

- If noise complaints are verified and sustained: implement corrective actions immediately (re-site generator, add shielding, reduce hours, suspend night work).
- If livestock disturbance is reported near waterpoints: increase buffer distance and avoid operations near sensitive livestock areas.

Residual impact statement

With the above controls, noise and vibration impacts are expected to remain localised, short-term, and largely reversible, with the main residual risk associated with drilling campaigns if rigs are located too close to receptors or operated continuously without appropriate siting, shielding, and stakeholder coordination. Effective micro-siting, equipment maintenance, daylight scheduling, and complaint response mechanisms are therefore the key determinants of acceptable residual noise performance during exploration.

6.7 Biodiversity and Ecosystems

Baseline setting and ecological context

The EPL 9892 receiving environment near Noordoewer is situated within an arid southern Namibia landscape where biodiversity patterns are primarily controlled by water availability, topographic relief, substrate/geology and drainage connectivity. Although regional vegetation is generally sparse and drought-adapted, ecological value is often concentrated in localised "resource patches" that function as refugia and movement corridors, including ephemeral drainage lines, riparian/fringe zones where moisture persists after rainfall, rocky ridges and outcrops that provide shade and microhabitats, and calcrete/sandy depositional areas that support distinct plant assemblages. The topography and stream network mapped for EPL 9892 indicates a plateau-like interior with increased dissection and higher drainage density along the margins—particularly the southern and eastern parts of the licence—meaning ecological sensitivity is likely to be uneven: lower on stable interfluves and higher along drainage corridors and rugged/ridge areas where vegetation recovery is slower and habitat structure is more complex. In arid ecosystems, recovery from disturbance is typically slow because soil development is limited, seed banks can be patchy, and episodic rainfall drives irregular recruitment; consequently, even small footprints can have long-lasting effects if not rehabilitated properly.

Key biodiversity receptors

At scoping level, the principal receptors likely to be relevant include:

- Natural vegetation and habitat integrity (including microhabitats on rocky slopes and drainage margins).
- Protected or priority species (if present), including large mammals, reptiles, raptors and drought-adapted flora—often associated with drainage lines, rocky refugia and waterpoints.
- Ecological processes, particularly surface runoff concentration, sediment transport, and episodic productivity pulses following rainfall.
- Invasive alien species risk, which increases where vehicles, camps and disturbed soils introduce propagules into otherwise intact arid habitats.
- Wildlife movement and behaviour, especially where exploration traffic intersects with animal movement paths to water.

Activity–impact pathways (exploration phase)

Biodiversity impacts from exploration are generally driven by a limited set of pathways:

1. Vegetation clearance and habitat loss
   New access spurs, track widening, line clearing for geophysics, drill pad preparation, and trenching/pitting (if undertaken) can remove vegetation cover, disturb root systems and reduce habitat complexity. In arid settings, this can persist for long periods if disturbance is not rehabilitated and access is not controlled.

2. Habitat fragmentation and proliferation of informal tracks
   Repeated vehicle use and off-road driving can create a network of parallel tracks, fragmenting habitat, increasing edge effects, and expanding the footprint beyond what is necessary for exploration. This is one of the most common cumulative impacts of exploration.

3. Soil disturbance → erosion → secondary ecological impacts
   Compaction and surface sealing reduce infiltration, increase runoff and initiate rilling/gullying, especially on slopes and in dissected terrain. Sediment can smother vegetation along drainage lines and alter microhabitats that support higher biodiversity values.

4. Wildlife disturbance, displacement and collision risk
   Noise, light (if night work occurs), increased traffic and human presence can cause temporary displacement from preferred habitats and waterpoints. Vehicle–wildlife collisions are a realistic risk on gravel roads, particularly at dawn/dusk and where visibility is reduced by dust.

5. Pollution and waste-related impacts
   Poor housekeeping can attract wildlife (e.g., scavengers), increase disease risk, and create persistent litter. Hydrocarbon spills (even small) can damage soil biota and vegetation and can be transported along drainage lines during storm events.

6. Invasive species introduction and spread
   Vehicles and disturbed soils can introduce invasive plants. In arid ecosystems, invasives can establish along disturbed linear corridors and around camps/water sources, degrading habitat quality.

Scoping-level significance (typical)

- Vegetation/habitat disturbance: Moderate pre-mitigation (localised but potentially long-lasting in arid systems); Low–Moderate post-mitigation with strong footprint control and rehabilitation.
- Fauna disturbance and collisions: Low–Moderate pre-mitigation; Low post-mitigation with speed controls and operational discipline.
- Invasives: Moderate pre-mitigation (if unmanaged); Low post-mitigation with prevention and inspections.
- Cumulative track proliferation: Moderate–High pre-mitigation; Moderate–Low post-mitigation if strict route approval and closure rehabilitation are enforced.

Mitigation measures (EMP commitments)

A. Avoidance and footprint discipline (primary control)

- Use existing roads/tracks wherever possible; prohibit off-road driving except where specifically authorised for safety/technical necessity.
- Minimise clearing widths for any new access or geophysical lines; preferentially use existing paths and natural openings.

- No-go buffers around drainage lines and sensitive microhabitats (riparian fringes, rocky refugia, wet patches after rains); avoid siting drill pads, camps, fuel storage, sumps and laydown areas in these zones.
- Micro-site pads and trenches on stable, gently sloping interfluves rather than valley floors or steep slopes.

B. Fauna protection and traffic management

- Enforce speed limits and driver induction (wildlife/livestock awareness).
- Avoid night driving where practicable; minimise night-time operations and lighting spill.
- Keep waste secured to avoid attracting wildlife; no feeding of animals.

C. Pollution prevention and housekeeping

- Bunded fuel storage and controlled refuelling; spill kits and training; no refuelling near drainage lines.
- Waste segregation, secure storage, and removal to licensed facilities; zero-litter policy.

D. Rehabilitation and closure of disturbances

- Progressive rehabilitation of pads, trenches and redundant tracks: re-contour, rip/scarify compacted surfaces, and stabilise with brush packing/stone lines where needed.
- Close and camouflage redundant access (berms/brush lines) to prevent re-use and track multiplication.
- Maintain a disturbance register with GPS tracks of all routes/pads and closure status.

E. Invasive alien species prevention

- Vehicle hygiene where feasible (especially for contractors); avoid importing gravel/soil from unknown sources.
- Regular inspections of camps, pads, and track edges; remove invasive plants early before seeding.

Biodiversity monitoring plan (exploration-appropriate)

Monitoring should be practical, auditable, and focused on preventing cumulative footprint expansion.

1) Pre-disturbance checks (before new ground disturbance)

- ECO/site supervisor verifies that proposed pads/trenches/lines are outside drainage buffers and sensitive microhabitats.
- Confirm landowner inputs on local sensitive areas (waterpoints, key grazing/wildlife zones).

2) Routine field monitoring (during operations)

- Weekly ECO inspections (or more frequent during intensive work) to check:
    - adherence to approved routes,
    - evidence of off-road driving or parallel tracks,
    - vegetation clearing width compliance,
    - waste housekeeping and spill readiness,
    - wildlife incidents (sightings, collisions).
- Maintain a Biodiversity & Disturbance Register (date, location, activity, footprint, issues, corrective actions).

3) Rehabilitation verification (progressive and post-activity)

- After completion of pads/trenches: verify ripping/scarifying, re-contouring, and stabilisation.
- Post-rainfall inspections: check for rilling/gullying and implement corrective stabilisation.

4) Trigger-based actions

- Evidence of track proliferation/off-road driving → immediate corrective action: close/rehabilitate tracks, re-induct drivers, disciplinary measures.
- Wildlife collision incident → review speed limits/routes/timing; implement additional controls; record in incident register.
- Invasive plant detection → remove before seed set and document treatment.

Specialist input (Plan of Study relevance)

At scoping level, the baseline is desk-top and map-based. A targeted ecological walkover is recommended if the final programme includes extensive new access, multiple drill sites, trenching in areas of higher drainage density, or if stakeholder feedback indicates sensitive biodiversity features. The walkover should focus on identifying sensitive microhabitats, confirming buffer needs, and refining micro-siting constraints for intrusive works.

Residual impact statement

With strict footprint discipline, avoidance of drainage-linked habitats, robust housekeeping, and progressive rehabilitation, biodiversity impacts from exploration on EPL 9892 are expected to remain localised and reversible, with the key residual risk being cumulative habitat fragmentation via informal track proliferation. Accordingly, the effectiveness of route approval, driver discipline, and closure rehabilitation will determine whether residual biodiversity impacts remain low and acceptable under ECC conditions.

6.8 Land Use, Socio-Economic Environment, and Livelihoods

Baseline setting (regional and local context)

EPL 9892 lies in southern Namibia within the broader socio-economic catchment of Noordoewer and surrounding rural settlements and farm areas. The wider region is part of the ǁKaras Region, which recorded a total population of 109,893 in the 2023 census preliminary results (with broadly balanced male/female composition). Land use in this part of Namibia is typically characterised by a mosaic of commercial livestock farming, extensive rangelands, and—where perennial water is available—irrigated agriculture along the Orange River corridor. Noordoewer is a strategic border settlement on the Orange River opposite Vioolsdrif and functions as a key cross-border entry/exit point on the national trunk route B1 road (Namibia), linking the border to central and northern Namibia. In the broader socio-economic hinterland, irrigated table-grape production in the Orange River valley (notably around Aussenkehr) is a major seasonal employer and economic driver, with reports indicating large workforce numbers across grape-producing companies in the valley. The border economy (transport, logistics, services), commercial farming, and irrigated agriculture therefore form the main livelihood pillars likely to influence stakeholder priorities and impact sensitivity for exploration.

Receptors and stakeholders (who can be affected)

The principal socio-economic receptors relevant at scoping level include:

- Land users and rights-holders: commercial farm owners/occupiers and workers; communal users where applicable; any leaseholders or lawful users of tracks/waterpoints within or near the EPL.
- Households and vulnerable groups: dispersed rural households and seasonal/temporary workers in the broader area (especially in irrigated agricultural zones), who may be sensitive to changes in access, safety, and employment practices.
- Service centres and local businesses: accommodation providers, fuel suppliers, workshops, shops and transport operators who may benefit from project procurement and short-term demand.

- Road users and road authorities: users of public gravel roads and trunk-route linkages connecting to the B1 corridor, with safety risks influenced by increased project traffic and dust.
- Cross-border systems: border management and corridor logistics are relevant context because Noordoewer is a recognised point of entry/exit and therefore already experiences transport flows and associated safety concerns.

Impact pathways (how exploration may affect land use and livelihoods)

At exploration scale, socio-economic impacts are typically driven by a limited set of pathways:

1. Land access and land-use compatibility (social licence risk) Exploration requires physical access to rangelands and specific target areas. Without clear access agreements and on-ground protocols (gates/fences, permitted routes, restricted zones), exploration can lead to access conflicts, perceptions of trespass, disruption to farm operations, and reputational risk. These issues can become significant even when the physical footprint is small, because they directly affect daily land management and trust.
2. Livestock and grazing interference Vehicle movements, low-level noise, and presence of crews can disturb livestock, particularly near waterpoints, kraals and herding routes. Disturbance is usually short-lived but can create recurrent nuisance if activities are concentrated near sensitive farm infrastructure or if vehicles move off approved tracks.
3. Traffic safety, dust nuisance, and road integrity Additional vehicles on gravel roads and tracks can increase the likelihood of collisions (including livestock/wildlife), reduce visibility during dust conditions, and accelerate corrugation/potholing. Given the strategic corridor context of Noordoewer and its linkage to the B1 route, traffic and safety issues are typically prominent stakeholder concerns.
4. Employment and local procurement (positive pathway, but expectation risk) Exploration can generate short-term jobs (field assistants, drivers, general hands, security) and local procurement (fuel, accommodation, minor services). However, in areas where employment pressure is high or where seasonal labour markets exist (e.g.,

the Orange River agricultural economy), benefits can be outweighed by dissatisfaction if recruitment is perceived as non-transparent or if expectations are not managed.

5. Water scarcity and competition perceptions
   Even where the project carts water or uses existing lawful sources, communities and land users may perceive exploration as a potential competitor for scarce water. This becomes more sensitive in arid southern Namibia settings and should be managed proactively through disclosure and proof of lawful water sourcing.

6. Cumulative impacts over multiple campaigns
   The main cumulative socio-economic risk is the incremental proliferation of tracks/pads and repeated traffic, which can compound dust/safety concerns and create a perception of progressive land degradation unless rehabilitation and route discipline are enforced and demonstrated.

Mitigation and monitoring (EMP-aligned socio-economic management)

Socio-economic performance at exploration stage is driven less by "engineering" and more by disciplined controls, communication, and auditable commitments. The following measures should be treated as core EMP requirements:

A. Access, permissions, and land-use protocols

- Conclude written access agreements prior to mobilisation (routes, gates, speed limits, no-go areas, waterpoints, livestock protocols, timing restrictions).
- Implement a Gate & Fence Procedure (leave gates as found; no cutting fences; immediate repair if accidental damage occurs; log incidents and close-out).
- Maintain a Route Approval System (mapped approved routes; prohibition of off-road driving; GPS/track logs where feasible).

B. Livelihood protection (grazing and livestock)

- Establish buffers around waterpoints/kraals and avoid parking/refuelling in these areas.
- Provide driver induction on livestock awareness and movement protocols; avoid herding times where possible.
- Apply a no harassment/no feeding rule for wildlife and livestock.

C. Traffic safety and dust integration

- Enforce speed limits with spot checks or GPS verification, and record compliance.
- Restrict night driving where practicable; implement convoy communications for heavy vehicles.
- Integrate the dust controls already adopted for air quality (route discipline, speed control, suppression only where feasible and lawful).

D. Local benefits and expectation management

- Adopt a transparent Local Employment & Procurement Procedure: advertise opportunities locally where possible; keep records of recruitment decisions; prioritise local suppliers where they meet cost/quality/safety requirements.
- Provide clear messaging that exploration jobs are short-term and variable, and document commitments realistically.

E. Grievance mechanism and stakeholder communications

- Maintain an accessible Grievance Register (date, complainant, issue, location, response, corrective action, close-out) with defined response timeframes.
- Provide routine notifications to land users before high-activity periods (mobilisation, trenching, drilling).

F. Monitoring and reporting (what to track for ECC compliance) Minimum monitoring records recommended for EPL 9892 include:

- Access agreements and route maps (approved routes + no-go areas).
- Gate/fence incident log and corrective actions.
- Speed compliance records (spot checks/GPS summaries).
- Stakeholder engagement log (meetings, notifications, issues raised, responses).
- Local employment/procurement register (roles, duration, local spend categories).
- Grievance register with verified close-out evidence.

Residual impact statement

If access is formalised, route discipline is enforced, traffic and dust controls are applied, and grievances are managed transparently, the socio-economic impacts of exploration on EPL 9892 are expected to be localised, short-term, and largely reversible, with modest positive benefits through temporary employment and procurement. The principal residual risks are social licence risks—access conflicts, livestock disturbance, and traffic/dust nuisance—driven by operational behaviour rather than footprint size; these are manageable through strict protocols, proactive communication, and auditable monitoring consistent with Namibia's ECC expectations.

8. Impact Identification and Detailed Scoping Assessment

8.1 Soils, Land Disturbance, and Erosion

Exploration activities can break desert pavement and calcrete crusts, create ruts, compact soils, and trigger erosion along tracks and trench edges. Erosion risk is elevated after rainfall events when disturbed surfaces are vulnerable. The significance is generally low to medium depending on the intensity and controls. Mitigation includes strict footprint management, use of existing tracks, contour-aligned trenching practices, stormwater diversion around disturbed areas, stockpiling topsoil separately, and rehabilitation (recontouring, ripping compacted areas, replacing topsoil, and stabilising surfaces).

8.2 Biodiversity Impacts

Habitat disturbance is typically localised but can be important in sensitive microhabitats. Fauna may be disturbed by noise and traffic, and roadkill can occur. Mitigation includes seasonal sensitivity screening, avoidance of drainage lines and rocky refugia, speed limits, prohibition of hunting/collection, waste control to avoid wildlife attraction, and restoration of disturbed habitats. Under PS6, if any critical habitat triggers are found, additional requirements apply including no net loss/ net gain depending on habitat category and stronger mitigation and monitoring.

8.3 Water Resources

Risks include contamination and sedimentation of ephemeral channels, and groundwater contamination from fuel spills or poor drill-site management. Mitigation includes bunded fuel storage, spill kits and training, refuelling procedures, setbacks from drainage lines, proper sump management and closure, and water abstraction agreements with monitoring of volumes.

8.4 Air, Dust and Emissions

Dust can be a nuisance and health risk. Mitigation includes road speed control, avoiding unnecessary track creation, water spraying where justified, and PPE. Emissions are mainly vehicle-related and can be reduced through efficient logistics planning and maintenance.

8.5 Noise

Noise impacts are typically temporary but can affect livestock and residents. Mitigation includes scheduling, equipment maintenance, and siting noisy activities away from receptors.

8.6 Traffic and Road Safety

In remote farming areas, increased traffic can increase collision risks with livestock and hazards on gravel roads. Mitigation includes journey management plans, speed limits, driver training, and coordination with landowners.

8.7 Waste and Hazardous Materials

Exploration generates general waste, scrap, oily rags, filters, and potentially drill cuttings. Improper disposal is a high reputational risk. Mitigation includes waste segregation, removal to licensed facilities, no burning/burying, and strict hazardous waste handling protocols.

8.8 Social Impacts and Livelihood Interactions

Short-term impacts include disturbance to grazing and routine farm operations. Benefits include employment and procurement. Mitigation includes access agreements, compensation protocols for verified damage, and continued engagement.

8.9 Cultural Heritage

Chance finds risk is low but must be managed with a formal procedure and training.

9. Cumulative Impacts (Detailed)

Cumulative impacts may arise from multiple exploration or farming activities within the wider area, particularly related to track proliferation, groundwater abstraction stress, and incremental habitat fragmentation. While the project alone may have low impacts, cumulative effects can become material if multiple licences operate simultaneously. The project should monitor other activities and incorporate cumulative considerations into annual work planning.

10. Environmental and Social Management Framework (IFC PS1)

The project should establish an ESMS proportional to the risk level, including: an E&S Policy; legal compliance register; risk and impact register; mitigation implementation plans; contractor management; training; incident management; emergency preparedness; stakeholder engagement plan; grievance mechanism; monitoring and reporting; and management review. This framework ensures systematic control of E&S risks and supports future lender due diligence.

1) Soils, Land Disturbance and Erosion

Possible impacts. Exploration vehicle movements and establishment of temporary spur tracks can break desert pavement and calcrete crusts, compact soils, and create ruts that concentrate runoff, increasing erosion risk during storm events. Mechanical trenching and drill pad construction can expose loose soils and stockpiles that are highly susceptible to wind and water erosion. If rehabilitation is delayed, disturbed surfaces may remain visible for extended periods due to slow ecological recovery in arid environments.

Mitigation. Prioritise use of existing farm roads and tracks and prohibit off-track driving except where formally approved and demarcated. Route selection should avoid slopes, drainage lines, and sensitive soil surfaces. Limit the width and length of new access routes, implement speed limits, and conduct post-rainfall inspections to identify and repair rilling. For trenching and drilling, strip and stockpile topsoil separately (where present), keep stockpiles low and stable, and recontour disturbed surfaces immediately after completion. Rip compacted surfaces, return topsoil, and stabilise surfaces using local rock/brush packing where appropriate to reduce erosion and promote recovery.

2) Surface Water and Drainage Lines

Possible impacts. Although surface water is ephemeral, drainage lines are ecologically and operationally important and can be affected by poorly placed crossings, sedimentation from disturbed ground, or accidental hydrocarbon spills. Trenching or track development near channels can alter flow paths, causing localised scouring or deposition. Uncontrolled runoff from pads and stockpiles can introduce sediment into channels after rainfall.

Mitigation. Apply a precautionary approach by avoiding drainage lines wherever practicable and enforcing buffer/setback distances for fuel storage and refuelling. Minimise crossings; where unavoidable, use simple, reversible crossing solutions and restore channel banks after use. Implement basic stormwater controls around disturbed areas (e.g., diversion berms, runoff spreaders, temporary silt barriers where needed) and require immediate rehabilitation of disturbed surfaces at the end of each work segment. Maintain spill kits on all vehicles and at work sites and train crews in spill response.

3) Groundwater Resources and Boreholes

Possible impacts. Groundwater is the primary water source for farms in the area and is sensitive to contamination and overuse. Drilling can introduce contamination risks through fuel handling, drilling additives, improper management of cuttings/sumps, or poor housekeeping. Water abstraction for drilling, if unmanaged, may temporarily affect farm water availability or borehole yields.

Mitigation. Formalise water use agreements with landowners, including abstraction limits and access protocols. Use low-toxicity drilling additives and maintain strict controls on chemical handling. Store fuels and lubricants in bunded areas, use drip trays, and refuel only in designated zones away from drainage lines and boreholes. Manage drill cuttings and fluids in lined sumps where necessary and ensure proper sump closure, backfilling, and rehabilitation. Record daily abstraction volumes and respond immediately to any landowner concerns regarding water supply.

4) Biodiversity, Vegetation and Habitat Disturbance (IFC PS6)

Possible impacts. Exploration may cause localised vegetation clearing and habitat disturbance, particularly along new tracks, pads, and trenches. Disturbance can affect slow-growing arid-adapted plant communities, and vehicle traffic can cause direct mortality to small fauna (e.g., reptiles) or disturb ground-nesting birds. Disturbance also increases the potential for alien/invasive species introduction along travel routes and in disturbed soils.

Mitigation. Apply the mitigation hierarchy: avoid sensitive habitats first (drainage lines, rocky refugia, calcrete pans), minimise disturbance footprint, and rehabilitate progressively. Conduct a pre-disturbance walkover to identify any protected plants, nesting sites, or sensitive microhabitats and adjust routes accordingly. Enforce speed limits and restrict night driving to reduce fauna collisions. Implement a strict no-hunting/no-collection policy and waste controls to prevent wildlife attraction. Clean down vehicles and equipment before entering the site and monitor disturbed areas for invasive plants, removing them early.

5) Air Quality and Dust

Possible impacts. Dust generation from vehicles on unsealed roads, trenching, and drilling may cause short-term nuisance to landowners and farm workers and may reduce local vegetation forage quality through dust deposition. Dust also presents a worker health risk during dry and windy conditions.

Mitigation. Implement speed limits, limit new track creation, and apply water suppression only where justified and feasible. Plan work to reduce unnecessary traffic and avoid high-wind periods for activities with high dust potential where possible. Provide appropriate PPE (dust masks/respirators) and enforce their use in dusty tasks. Record and respond to dust complaints through the grievance mechanism.

6) Noise and Vibration

Possible impacts. Noise from vehicles, generators, trenching equipment, and drilling rigs may disturb nearby farmsteads, workers, livestock and wildlife. If drilling is continuous, the disturbance potential increases, especially at night.

Mitigation. Restrict noisy activities to daylight hours where feasible, maintain equipment to prevent excessive noise, and site drill pads away from homesteads and livestock camps. Inform landowners in advance of drilling schedules and expected duration. Use mufflers and acoustic controls for generators where practical.

7) Traffic, Road Safety and Community Health and Safety (IFC PS4)

Possible impacts. Increased traffic on farm tracks and gravel roads can raise the risk of vehicle accidents and collisions with livestock. Exploration equipment and open excavations can pose hazards to farm workers or visitors if not controlled. Remote work also elevates emergency response risk due to long distances and limited medical services.

Mitigation. Implement a Journey Management Plan covering driver training, fatigue controls, speed limits, communication protocols, and emergency response arrangements. Coordinate vehicle movements with landowners, maintain access control, and place clear signage at active work areas. Barricade trenches and open pits and restrict access to authorised personnel only. Maintain first aid capacity on-site and define evacuation routes and response roles.

8) Waste Management and Pollution Prevention (IFC PS3)

Possible impacts. Exploration generates general waste (packaging, domestic refuse), hazardous waste (oily rags, filters), and potentially drilling wastes (cuttings, greywater). Poor waste handling can result in soil contamination, wildlife attraction, visual pollution, and reputational risk.

Mitigation. Implement a waste management procedure based on segregation, secure storage, and removal to licensed disposal facilities. Prohibit burning and burying of waste. Maintain waste manifests and disposal records. Ensure hazardous waste is stored in labelled containers and transported by appropriately authorised service providers. Maintain strict housekeeping standards at all work sites and camps.

9) Land Access, Land Use and Livelihoods (IFC PS5 – Screening)

Possible impacts. Exploration activities may temporarily restrict access to grazing camps, disturb livestock movement patterns, or cause damage to fences, tracks, or water infrastructure. While exploration does not typically cause displacement, even short-term disruption can be significant to farm operations if not managed.

Mitigation. Secure written access agreements with landowners covering routes, work schedules, sensitive areas, and restoration responsibilities. Communicate schedules ahead of time and adjust work to avoid critical farming periods where possible. Implement a compensation protocol for verified damages and restore any disturbed infrastructure immediately. Operate a grievance mechanism and ensure timely resolution.

10) Labour and Working Conditions (IFC PS2)

Possible impacts. Worker injury risks include heat stress, vehicle incidents, slips/trips, equipment hazards during trenching and drilling, and fatigue during remote operations. Contractor-heavy workforces can create risks of inconsistent labour standards, poor accommodation, or weak grievance channels.

Mitigation. Implement an occupational health and safety system with task risk assessments, PPE requirements, toolbox talks, and incident reporting. Apply heat stress management (hydration, shaded rest, schedule heavy work outside peak heat). Ensure contractors are prequalified, inducted, and audited for compliance with labour standards and safety requirements. Provide workers with a functioning grievance mechanism and ensure fair contracts and non-discrimination.

11) Cultural Heritage (IFC PS8)

Possible impacts. Trenching, road works, and drilling may encounter unrecorded archaeological artefacts or heritage features. Unmanaged disturbance can cause irreversible loss and trigger regulatory non-compliance.

Mitigation. Implement a Chance Finds Procedure with stop-work rules, site securing, and notification protocols. Train all crews to recognise potential heritage materials. Engage a qualified heritage specialist if a find occurs and obtain required permissions before resuming work.

12) Cumulative Impacts

Possible impacts. The incremental expansion of tracks, repeated disturbance across multiple targets, and combined pressure on groundwater and grazing systems can create cumulative impacts over time, even if each activity is individually small.

Mitigation. Maintain a cumulative disturbance footprint register and adopt annual planning that prioritises re-use of tracks and pads. Set internal limits for annual disturbance, apply progressive rehabilitation, and periodically review cumulative impacts with landowners and relevant authorities.

Impact Significance Scoring Method

EPL 9892 – Haakiesdoorn Copper Project

This scoring method has been applied to all impacts listed in the EPL 9892 Impact Register.

Impact significance is determined through a structured evaluation of:

- Magnitude of change
- Sensitivity of the receptor
- Geographic extent
- Duration
- Reversibility
- Likelihood of occurrence

The assessment is performed for:

- Pre-mitigation (inherent risk), and
- Post-mitigation (residual risk)

in line with IFC PS1 requirements.

1. Impact Magnitude Criteria

Score	Magnitude Description
1 – Very Low	Very small change to baseline conditions; barely distinguishable from natural variability
2 – Low	Minor change to baseline conditions; noticeable but limited and easily managed
3 – Medium	Clear and measurable change to baseline conditions; may require active management
4 – High	Substantial alteration of baseline conditions; potential regulatory concern
5 – Very High	Severe alteration of baseline conditions; potential long-term or irreversible damage

2. Receptor Sensitivity / Value Criteria

Score	Sensitivity Description
1 – Very Low	Degraded or highly modified environment; no special protection or dependence
2 – Low	Common and widespread receptors; low ecological or social vulnerability
3 – Medium	Moderately sensitive receptors (e.g. productive grazing land, ephemeral drainage lines, groundwater users)
4 – High	Highly sensitive receptors (e.g. key water supply boreholes, sensitive habitats, vulnerable communities)
5 – Very High	Critical or protected receptors (e.g. legally protected habitats, critical habitat under IFC PS6, protected heritage sites)

3. Geographic Extent Criteria

Score	Extent
1 – Site specific	Limited to a small work area (single pad, trench or track section)
2 – Local	Affecting a portion of the EPL
3 – Widespread (EPL scale)	Affecting several areas across the licence
4 – Regional	Extending beyond the EPL boundary
5 – National / transboundary	Affecting large areas beyond the project region

4. Duration Criteria

Score	Duration
1 – Very short	Days to weeks
2 – Short	Weeks to months
3 – Medium	Months to several years
4 – Long	Life-of-project

Score	Duration
5 – Permanent	Continues after closure

5. Reversibility Criteria

Score	Reversibility
1 – Fully reversible	Natural recovery or rapid rehabilitation
2 – Mostly reversible	Recovery with limited intervention
3 – Partly reversible	Active rehabilitation required
4 – Difficult to reverse	Long recovery period
5 – Irreversible	Permanent loss or damage

6. Likelihood (Probability) Criteria

Score	Likelihood
1 – Rare	Highly unlikely to occur
2 – Unlikely	Could occur under abnormal conditions
3 – Possible	May occur during normal operations
4 – Likely	Expected to occur repeatedly
5 – Almost certain	Will occur in most circumstances

7. Significance Calculation Method

For each impact:

Impact Severity Score (ISS) is calculated as:

$$\text{ISS} = \frac{(Magnitude + Sensitivity + Extent + Duration + Reversibility)}{5}$$

The ISS is then combined with Likelihood to determine overall risk.

8. Risk Score Calculation

$$\text{Risk Score} = \text{ISS} \times \text{Likelihood}$$

9. Significance Rating Thresholds

Risk Score	Significance Category	Reporting Term Used in Register
≤ 4	Negligible	N
> 4 – 8	Low	L
> 8 – 12	Medium	M
> 12	High	H

These thresholds were applied consistently for both pre-mitigation and residual impact ratings in the Impact Register.

10. Risk Heat-Map (Matrix)

The heat-map below shows how overall significance is derived from Impact Severity Score (ISS) and Likelihood.

Likelihood vs Impact Severity

Likelihood ↓ / Severity →	Very Low (≤1.5)	Low (1.6–2.5)	Medium (2.6–3.5)	High (3.6–4.5)	Very High (>4.5)
5 – Almost certain	M	M	H	H	H
4 – Likely	L	M	M	H	H
3 – Possible	L	L	M	M	H
2 – Unlikely	N	L	L	M	M
1 – Rare	N	N	L	L	M

Colour logic for presentation in your report

- N – green
- L – yellow
- M – orange
- H – red

11. Application of the Method to EPL 9892

For EPL 9892:

- The majority of exploration-related impacts (soils, dust, noise, vegetation disturbance, access disruption, waste, and traffic) score:
  - Medium severity (ISS ≈ 2.6–3.5) and
  - Possible to Likely probability (3–4)
    giving Medium pre-mitigation significance.
- After applying the mitigation measures defined in the ESMP:
  - severity is reduced (mainly through reduced extent, duration and reversibility scores), and
  - likelihood is reduced (through procedural and engineering controls),

resulting in Low or Negligible residual risk.

Formal Impact Register for EPL 9892 – Haakiesdoorn Copper Exploration Project, derived directly from the impacts and mitigation measures previously described and structured to meet IFC-aligned scoping and lender due-diligence expectations.

The register explicitly presents:

- impact description,
- affected receptors,
- project phase and activity,
- significance before mitigation,
- key mitigation measures, and
- residual (post-mitigation) significance.

The register is suitable for direct insertion into your ESS.

Impact Register

EPL 9892 – Haakiesdoorn Copper Exploration Project (IFC-aligned)

Significance Rating Key

- Negligible (N)
- Low (L)
- Medium (M)
- High (H)

Ref	Activity / Phase	Impact Description	Affected Receptors	Impact Nature	IFC PS	Significance (Pre-Mitigation)	Key Mitigation Measures	Residual Significance
IR-01	Vehicle access and temporary track creation (prospecting and geophysics)	Compaction of soils, disturbance of calcrete and desert pavement, and initiation of erosion	Soils, landforms, vegetation	Direct, local, short– to medium-term	PS1, PS3, PS6	Medium	Use existing tracks; demarcate approved routes; avoid slopes and drainage lines; speed limits; progressive rehabilitation (ripping, re-contouring)	Low
IR-02	Trenching and drill pad preparation	Localised erosion, visual scarring and unstable excavations	Soils, land stability, landscape character	Direct, local, short-term	PS1, PS3	Medium	Limit trench and pad size; contour-aligned trenching; stabilise stockpiles; barricade excavations; immediate backfilling and rehabilitation	Low
IR-03	Track creation, trenching and drilling near drainage lines	Sedimentation and alteration of ephemeral flow paths	Surface water, drainage line habitats	Direct, local, episodic	PS3, PS6	Medium	Avoid drainage lines; minimise crossings; rehabilitate disturbed banks; stormwater diversion and erosion controls	Low
IR-04	Fuel handling and equipment maintenance	Soil and potential groundwater	Soils, groundwater, livestock	Direct, local, potentially long-term	PS3, PS1	Medium	Bunded storage; designated refuelling areas; spill kits and training; no refuelling	Low

Ref	Activity / Phase	Impact Description	Affected Receptors	Impact Nature	IFC PS	Significance (Pre-Mitigation)	Key Mitigation Measures	Residual Significance
		contamination from hydrocarbon spills					near drainage lines or boreholes	
IR-05	Drilling operations and sump management	Contamination of shallow groundwater and soils from drilling fluids and cuttings	Groundwater, soils	Direct, local, medium-term	PS3, PS1	Medium	Low-toxicity drilling additives; lined or managed sumps; controlled discharge; proper closure and rehabilitation	Low
IR-06	Water abstraction for drilling	Temporary reduction in water availability for farm operations	Landowners, livestock, groundwater users	Indirect, local, short-term	PS3, PS4	Medium	Abstraction agreements; volume limits; daily water use recording; alternative supply arrangements	Low
IR-07	Clearing for tracks, pads and trenches	Loss of vegetation and disturbance of habitats	Vegetation, fauna, habitats	Direct, local, short-term	PS6	Medium	Pre-disturbance walkover; avoid sensitive micro-habitats; minimise footprint; progressive rehabilitation	Low
IR-08	Vehicle movement and site activity	Disturbance to fauna and potential small-animal mortality	Fauna (reptiles, birds, small mammals)	Direct, local, short-term	PS6, PS4	Low	Speed limits; restrict night driving; awareness training; no hunting policy	Negligible

Ref	Activity / Phase	Impact Description	Affected Receptors	Impact Nature	IFC PS	Significance (Pre-Mitigation)	Key Mitigation Measures	Residual Significance
IR-09	Vehicle movement on unsealed roads	Dust nuisance affecting farm workers, livestock and vegetation	Air quality, human receptors, vegetation	Direct, local, short-term	PS3, PS4	Medium	Speed limits; water spraying where required; PPE for workers; minimise unnecessary travel	Low
IR-10	Drilling and mechanical activities	Noise disturbance to farmsteads and livestock	Landowners, livestock, wildlife	Direct, local, short-term	PS4, PS6	Medium	Daytime operations where feasible; equipment maintenance; locate rigs away from homesteads; advance notification	Low
IR-11	Increased exploration traffic	Road safety risks and livestock collisions	Farm workers, road users, livestock	Direct, local, short-term	PS4	Medium	Journey management plan; driver training; speed limits; communication with landowners	Low
IR-12	Waste generation and storage	Pollution, wildlife attraction and visual degradation	Soils, fauna, landscape	Direct, local, medium-term	PS3, PS1	Medium	Waste segregation; secure storage; removal to licensed facilities; waste tracking	Low
IR-13	Trenching and ground disturbance	Disturbance or destruction of	Cultural heritage resources	Direct, irreversible if unmanaged	PS8	Medium	Chance Finds Procedure; stop-work protocol; specialist involvement	Low

Ref	Activity / Phase	Impact Description	Affected Receptors	Impact Nature	IFC PS	Significance (Pre-Mitigation)	Key Mitigation Measures	Residual Significance
		unknown heritage material						
IR-14	Occupation of grazing areas and access restrictions	Temporary disruption to farm operations and grazing patterns	Landowners, farm workers, livestock	Indirect, local, short-term	PS1, PS5 (screening)	Low	Access agreements; work scheduling; restoration of infrastructure; compensation for verified damage	Negligible
IR-15	Presence of exploration teams	Community health and safety risks (site access, equipment hazards)	Farm workers, visitors	Direct, local, short-term	PS4	Low	Site access control; signage; inductions; emergency response procedures	Negligible
IR-16	Field and drilling activities	Occupational health and safety risks (heat stress, vehicle incidents, machinery)	Workers and contractors	Direct, short- to medium-term	PS2	Medium	H&S management system; PPE; fatigue and heat-stress protocols; toolbox talks	Low
IR-17	Contractor employment and camp arrangements	Poor labour conditions or worker grievances	Workers	Direct, medium-term	PS2	Low	Contractor pre-qualification; audits; worker grievance mechanism	Negligible

Ref	Activity / Phase	Impact Description	Affected Receptors	Impact Nature	IFC PS	Significance (Pre-Mitigation)	Key Mitigation Measures	Residual Significance
IR-18	Disturbance of soils and vehicle movements	Introduction and spread of invasive plant species	Natural vegetation	Indirect, local, long-term	PS6	Low	Vehicle and equipment clean-down; monitoring and early removal; rehabilitation	Negligible
IR-19	Temporary infrastructure and excavation scars	Visual intrusion in natural landscape	Landscape character, landowners	Direct, local, short-term	PS1	Low	Progressive rehabilitation; removal of all temporary infrastructure	Negligible
IR-20	Multiple exploration sites over time	Cumulative habitat loss and land disturbance	Soils, habitats, land use	Indirect, local to regional, medium-term	PS1, PS6	Medium	Cumulative footprint register; annual planning to reuse tracks and pads; internal footprint limits	Low

EPL9892 Exploration Project.

It is structured to meet lender due-diligence expectations under the International Finance Corporation (IFC) Performance Standards (PS1–PS8) and is fully consistent with the exploration-phase activities you described (mapping, sampling, geophysics, trenching and possible scout drilling).

IFC-Aligned Impact Assessment Matrix – EPL 9892

Legend

- Phase: P = Prospecting & reconnaissance; T = Trenching / pitting; D = Drilling (if approved later)
- Significance (pre-mitigation): Negligible (N), Low (L), Medium (M), High (H)
- Residual significance (post-mitigation): N / L / M
- IFC PS: Relevant Performance Standard(s)

Phase	Activity / Aspect	Receptor	Potential Impact	Key Impact Pathway	IFC PS	Significance (Pre-mitigation)	Key Mitigation / Management Measures	Residual Significance
P	Vehicle access on farm tracks and temporary spur tracks	Soils, landforms, vegetation	Soil compaction, disturbance of desert pavement and calcrete crusts, initiation of erosion	Repeated vehicle traffic and track creation	PS1, PS3, PS6	M	Use existing tracks only where practicable; prohibit off-track driving except where approved; demarcate routes; avoid slopes and drainage lines; progressive rehabilitation	L

Phase	Activity / Aspect	Receptor	Potential Impact	Key Impact Pathway	IFC PS	Significance (Pre-mitigation)	Key Mitigation / Management Measures	Residual Significance
							(ripping, re-contouring); post-rainfall inspections	
P	Geological mapping and rock-chip sampling	Vegetation, micro-habitats	Localised vegetation removal and habitat disturbance	Hand tools and foot access to outcrops	PS6	L	Limit sampling footprint; avoid sensitive micro-habitats (drainage lines, rocky refugia); no removal of protected plants; awareness training	N
P	Soil geochemical sampling	Soils and vegetation	Small-scale surface disturbance and loss of ground cover	Shallow hand-auger or shovel sampling	PS1, PS6	L	Minimise hole size; backfill and compact; reinstate surface crust where possible	N
P	Ground geophysical surveys	Livestock, wildlife, landowners	Temporary disturbance and nuisance	Foot and vehicle movement, small crews	PS4, PS6	L	Notify landowners in advance; restrict movements to agreed routes; avoid livestock handling areas	N
P	Presence of exploration teams and contractors	Local communities, farm workers	Health and safety risks, disease transmission, nuisance	Interaction with farm operations and residents	PS4, PS2	L	Site induction; code of conduct; access control; community H&S awareness; grievance mechanism	N
P	Temporary storage of fuel and lubricants	Soils and groundwater	Hydrocarbon contamination	Spills during refuelling or storage	PS3, PS1	M	Bunded storage; drip trays; designated refuelling areas; spill kits and training; no storage near drainage lines	L

Phase	Activity / Aspect	Receptor	Potential Impact	Key Impact Pathway	IFC PS	Significance (Pre-mitigation)	Key Mitigation / Management Measures	Residual Significance
P	Traffic on public and farm roads	Farm workers, livestock, road users	Road accidents and livestock collisions	Increased vehicle movements	PS4	M	Journey management plan; speed limits; driver training; communication with landowners; signage where required	L
P	Waste generation (general and hazardous)	Soils, fauna, visual environment	Pollution, wildlife attraction, visual impact	Improper waste handling	PS3, PS1	M	Waste segregation; no burning or burying; removal to licensed facilities; secure storage	L
T	Mechanical trenching and pitting	Soils, land stability	Localised erosion, unstable faces, visual scarring	Excavation and stockpiling	PS1, PS3	M	Engineering controls; trench alignment along contour where feasible; stockpile management; fencing/barricading; backfilling and rehabilitation	L
T	Trenching across shallow soils	Vegetation, habitats	Loss of vegetation and micro-habitats	Clearing and excavation	PS6	M	Pre-clearance walk-over by ecologist; avoidance of sensitive habitats; limit trench length; rehabilitation	L
T	Trenching and pitting	Cultural heritage	Disturbance to unknown archaeological material	Ground disturbance	PS8	M	Chance-finds procedure; stop-work protocol; training of crews; notify authorities and specialists	L

Phase	Activity / Aspect	Receptor	Potential Impact	Key Impact Pathway	IFC PS	Significance (Pre-mitigation)	Key Mitigation / Management Measures	Residual Significance
D	Drill pad establishment and access	Soils, landforms, vegetation	Localised but more intensive land disturbance	Pad construction, track improvement	PS1, PS6	M	Minimise pad size; avoid drainage lines; strip and store topsoil separately; progressive rehabilitation	L
D	Drilling operations	Groundwater	Risk of contamination and aquifer damage	Drilling fluids, cuttings, sumps	PS3, PS1	M	Low-toxicity drilling additives; lined sumps where required; proper closure and rehabilitation; borehole protection; no uncontrolled discharge	L
D	Water abstraction for drilling	Farm water supply, aquifer	Temporary reduction in water availability	Abstraction from existing boreholes	PS3, PS4	M	Formal agreements with landowners; abstraction limits; monitoring of volumes; alternative supply if needed	L
D	Drilling noise and lighting	Farm residents, livestock, fauna	Disturbance and nuisance	Continuous drilling and generators	PS4, PS6	M	Daylight drilling where possible; equipment maintenance; location of rigs away from homesteads and livestock camps; notify landowners	L
D	Drill cuttings and greywater	Soils, surface water	Localised contamination and sedimentation	Poor cuttings management	PS3	M	Designated disposal areas; no discharge into drainage lines; rehabilitation of sumps	L

Phase	Activity / Aspect	Receptor	Potential Impact	Key Impact Pathway	IFC PS	Significance (Pre-mitigation)	Key Mitigation / Management Measures	Residual Significance
All	Interaction with landowners and farm operations	Livelihoods, land access	Temporary disruption to grazing and farm routines	Restricted access to camps and tracks	PS5*, PS1	L	Access agreements; work scheduling; compensation for verified damage; grievance mechanism	N
All	Employment of exploration staff and contractors	Workers	Occupational injuries, heat stress, fatigue	Fieldwork and remote conditions	PS2	M	H&S management system; PPE; heat-stress protocols; medical response plan; toolbox talks	L
All	Introduction of invasive species	Natural vegetation	Spread of alien plants along disturbed routes	Vehicles and disturbed soils	PS6	L	Clean-down of vehicles; rehabilitation; monitoring of disturbed areas	N
All	Visual disturbance	Landscape character, landowners	Temporary reduction in visual quality	Pads, trenches, tracks	PS1	L	Progressive rehabilitation; remove waste and equipment after use	N
All	Cumulative disturbance from multiple exploration sites	Soils, habitats, land use	Incremental habitat loss and fragmentation	Multiple small footprints over time	PS1, PS6	M	Annual footprint planning; cumulative footprint tracking; prioritise reuse of existing tracks and pads	L

Environmental & Social Management Plan (ESMP)

Mitigation and Monitoring Matrix – EPL 9892

Abbreviations

- E&S Manager – Environmental & Social Manager / Site Environmental Officer
- PM – Project Manager / Exploration Manager
- H&S Officer – Health and Safety Officer
- Contractor – Drilling / geophysical / earthworks contractor
- Landowner Rep. – Landowner or designated farm representative

Impact / Risk	IFC PS	Mitigation / Management Actions	Responsibility	Monitoring Indicators	Monitoring Method	Reporting Frequency
Soil compaction, track proliferation and erosion	PS1, PS3, PS6	Use existing tracks wherever practicable; prohibit off-track driving; approve and demarcate temporary spur tracks; avoid slopes and drainage lines; rip and re-contour disturbed areas after use; progressive rehabilitation	PM; E&S Manager; Contractors	Number of new tracks created; total disturbed footprint; visible erosion features	Site inspections; GPS footprint mapping; photo records	Weekly during fieldwork; monthly summary
Disturbance of vegetation and sensitive micro-habitats	PS6	Conduct pre-activity walkover to identify sensitive habitats; avoid drainage lines, rocky refugia and calcrete pans; restrict vegetation clearing to minimum footprint; no collection of flora or fauna	E&S Manager; Field Supervisors	Number of sensitive sites avoided; incidents of unauthorised clearing	Field checklists; inspection reports	Weekly during activities

Impact / Risk	IFC PS	Mitigation / Management Actions	Responsibility	Monitoring Indicators	Monitoring Method	Reporting Frequency
Habitat disturbance and fauna mortality (traffic)	PS6, PS4	Enforce speed limits; restrict night driving where possible; driver awareness training; prohibit hunting and harassment of wildlife	PM; H&S Officer	Vehicle speeds; wildlife incidents reported	Vehicle logs; incident reports	Monthly
Soil disturbance from sampling and geophysics	PS1, PS6	Minimise sampling hole size; backfill and compact holes; restore surface crust where possible	Field Supervisors	Percentage of holes reinstated	Visual inspection	Weekly
Hydrocarbon spills and soil contamination	PS3, PS1	Bunded fuel storage; drip trays; designated refuelling areas; spill kits available; spill response training; no refuelling within 50 m of drainage lines	H&S Officer; E&S Manager; Contractors	Presence of bunding and spill kits; number of spills; response time	Inspection checklists; incident register	Weekly; immediate reporting for spills
Groundwater contamination from drilling	PS3, PS1	Use low-toxicity drilling additives; line sumps where required; contain and properly close drill sumps; prevent uncontrolled discharge; implement borehole protection measures	Drilling Contractor; E&S Manager	Drilling fluid type; sump condition; closure status	Drill site inspections; closure reports	Per drill site; monthly summary
Over-abstraction of groundwater for drilling	PS3, PS4	Formal abstraction agreements with landowners; set abstraction limits; record volumes used; alternative supply arrangements where required	PM; Landowner Rep.; E&S Manager	Daily water volumes; borehole performance complaints	Water logs; landowner feedback	Weekly during drilling

Impact / Risk	IFC PS	Mitigation / Management Actions	Responsibility	Monitoring Indicators	Monitoring Method	Reporting Frequency
Sedimentation and disturbance of drainage lines	PS3, PS6	Avoid trenching and access routes in drainage lines; install temporary crossings where unavoidable; rehabilitate immediately after use	PM; E&S Manager; Contractors	Number of crossings; condition of drainage lines	Site inspections; photos	Weekly
Dust generation and air quality nuisance	PS3, PS4	Enforce speed limits; water spraying on high-use tracks if required; avoid unnecessary track creation; provide PPE for dusty activities	H&S Officer; Field Supervisors	Dust complaints; PPE compliance	Site inspections; grievance log	Monthly
Noise disturbance to landowners and livestock	PS4	Restrict noisy activities to daylight hours where possible; maintain equipment; locate drill rigs away from homesteads and livestock camps; notify landowners of schedules	PM; E&S Manager	Number of complaints; equipment maintenance records	Complaints register; inspections	Monthly
Traffic accidents and livestock collisions	PS4	Journey management plan; driver training; speed restrictions; communication with landowners on movements	PM; H&S Officer	Traffic incidents; near-miss reports	Incident register; trip logs	Monthly
Improper waste handling and pollution	PS3, PS1	Waste segregation; no burning or burying; secure storage; regular removal to licensed facilities; waste tracking records	E&S Manager; Contractors	Waste volumes removed; waste manifests	Waste register; inspection reports	Monthly
Trenching instability and open excavations	PS4, PS1	Barricade trenches; slope or bench excavations where required; signage; restrict access; backfill after use	PM; Contractors; H&S Officer	Open trench duration; barricades in place	Site inspections	Weekly

Impact / Risk	IFC PS	Mitigation / Management Actions	Responsibility	Monitoring Indicators	Monitoring Method	Reporting Frequency
Disturbance to archaeological or heritage material	PS8	Implement Chance Finds Procedure; train crews; stop work and secure site if artefacts found; notify authorities and specialists	E&S Manager; Field Supervisors	Number of chance-find incidents; training records	Incident reports; training logs	Immediate notification; quarterly summary
Disruption to grazing and farm operations	PS1, PS5 (screening)	Formal land access agreements; schedule works with landowners; compensate verified damage; restore fences and tracks	PM; Landowner Rep.; E&S Manager	Complaints received; compensation cases	Stakeholder log; grievance register	Monthly
Community health and safety risks	PS4	Site access control; signage; induction of all workers; emergency response and first-aid capability; disease prevention measures	H&S Officer; PM	Induction coverage; incident frequency rate	Training records; incident reports	Monthly
Occupational health and safety risks to workers	PS2	H&S management system; task-specific risk assessments; PPE; heat-stress protocols; fatigue management; toolbox talks	H&S Officer; Contractors	LTIFR; toolbox attendance; PPE compliance	H&S reports; inspections	Weekly toolbox; monthly report
Poor labour and contractor practices	PS2	Contractor pre-qualification; labour compliance audits; worker grievance mechanism; clear contracts	PM; HR / Admin; E&S Manager	Audit results; grievances lodged and closed	Audit reports; grievance log	Quarterly
Introduction of invasive species	PS6	Clean-down of vehicles and equipment; monitor disturbed areas; rehabilitate promptly	E&S Manager; Contractors	Presence of invasive plants	Site inspections	Quarterly

Impact / Risk	IFC PS	Mitigation / Management Actions	Responsibility	Monitoring Indicators	Monitoring Method	Reporting Frequency
Visual scarring and landscape degradation	PS1	Progressive rehabilitation; remove all temporary infrastructure and waste after activities	PM; E&S Manager	Area rehabilitated vs disturbed	Inspection and closure reports	Monthly
Cumulative disturbance across EPL	PS1, PS6	Maintain cumulative footprint register; annual planning to reuse tracks and pads; internal review of total disturbance	PM; E&S Manager	Total disturbed area per year	GIS tracking; management review	Quarterly
Inadequate stakeholder engagement and unresolved grievances	PS1	Implement Stakeholder Engagement Plan; maintain grievance mechanism; disclose exploration plans and schedules	E&S Manager; PM	Number of engagements; grievances resolved within timeframe	Engagement records; grievance log	Quarterly

Haakiesdoorn Copper Exploration Project, cross-referenced to the International Finance Corporation (IFC) Performance Standards (PS1–PS8).

This register is scoped specifically for early-stage mineral exploration (mapping, sampling, geophysics, trenching and possible scout drilling).

Applicable Law / Regulation (Namibia)	Key Compliance Obligation for EPL 9892	Project Relevance (Exploration Phase)	Competent Authority	Corresponding IFC PS
Environmental Management Act, 2007 (Act No. 7 of 2007)	Environmental clearance required for listed activities; duty of care; implementation of mitigation measures; public consultation	Environmental scoping and environmental clearance for prospecting, trenching and drilling; implementation of ESMP	Ministry of Environment, Forestry and Tourism (Environmental Commissioner)	PS1, PS3, PS4, PS6, PS8
Environmental Impact Assessment Regulations, 2012 (GN 30 of 2012)	Scoping/EIA process; public participation; registration of I&APs; submission of reports	Preparation of ESS, stakeholder engagement, disclosure and submission of application	Environmental Commissioner	PS1
Minerals (Prospecting and Mining) Act, 1992 (Act No. 33 of 1992)	Lawful conduct of prospecting; access arrangements; rehabilitation of disturbed land; protection of landowner rights	All exploration activities, land access, rehabilitation of sampling, trenches and drill sites	Ministry of Mines and Energy	PS1, PS5 (screening), PS6
Water Resources Management Act, 2013 (Act No. 11 of 2013)	Licensing/authorisation for abstraction; protection of groundwater and surface water; prevention of pollution	Use of borehole water for drilling; protection of aquifers; spill prevention	Department of Water Affairs	PS3, PS4
Labour Act, 2007 (Act No. 11 of 2007)	Fair employment conditions; worker rights; prohibition of child and forced labour; grievance mechanisms	Employment of exploration staff and contractors	Ministry of Labour, Industrial Relations and Employment Creation	PS2

Applicable Law / Regulation (Namibia)	Key Compliance Obligation for EPL 9892	Project Relevance (Exploration Phase)	Competent Authority	Corresponding IFC PS
National Heritage Act, 2004 (Act No. 27 of 2004)	Protection of archaeological, palaeontological and heritage sites; chance-find reporting obligations	Trenching, access tracks and drilling may expose heritage material	National Heritage Council of Namibia	PS8
Nature Conservation Ordinance, 1975 (Ordinance No. 4 of 1975), as amended	Protection of listed and specially protected species; restrictions on disturbance	Vegetation clearing, fauna disturbance, incidental encounters	Ministry of Environment, Forestry and Tourism	PS6
Road Traffic and Transport Act, 1999 (Act No. 22 of 1999)	Vehicle safety, licensing, road use and transport of goods and fuel	Exploration traffic, transport of fuel and equipment	Roads Authority / Traffic Authorities	PS4
Public and Environmental Health Act, 2015 (Act No. 1 of 2015)	Public health protection; sanitation; waste handling	Camps, sanitation, waste management during exploration	Ministry of Health and Social Services / Local Authorities	PS3, PS4
Atmospheric Pollution Prevention Ordinance, 1976 (Ordinance No. 11 of 1976) *(legacy but still applicable)*	Control of emissions and dust nuisance	Dust and generator emissions during exploration	Ministry of Environment / Local Authorities	PS3
Common law duty of care (Namibia)	Duty to prevent environmental harm and nuisance to neighbours	Landowner relations, dust, noise, damage to property	Courts / Common law	PS1, PS4
Access agreements with landowners (contractual obligation)	Lawful access, compensation for damage, restoration of land	All field activities inside EPL 9892	Landowners / Proponent	PS1, PS5 (screening)

Overall conclusion

Based on the defined exploration activity envelope for EPL 9892 in the vicinity of Noordoewer and the desk-top baseline compiled from the geological, hydrogeological and topographical mapping provided, the project is considered environmentally and socially feasible at scoping level, provided exploration is implemented as a low-footprint, strictly controlled programme aligned to Namibia's ECC conditions and the commitments in the exploration EMP. The receiving environment is an arid to semi-arid southern Namibia setting where dust-prone climatic conditions, limited and structurally controlled groundwater occurrence, and a well-developed network of ephemeral drainage lines create sensitivities that can amplify the consequences of poor operational control. Hydrogeological mapping indicates that groundwater potential across most of the licence is very low, primarily associated with fractured basement lithologies, meaning that reliable water supply is likely to be constrained and highly localised; this increases the importance of lawful water sourcing and robust pollution-prevention controls because any contamination in fracture networks may be persistent and difficult to remediate. The geological setting shows multiple lithological domains and contact zones (including broad host units and intrusive bodies such as pegmatites), which is favourable for systematic exploration targeting; however, it also implies variable terrain and regolith conditions that must be accounted for in access planning and disturbance management. The topographical map indicates a plateau-like interior with greater dissection and higher drainage density along the margins, particularly in the southern and eastern portions of the EPL, which elevates the erosion and sediment-mobilisation risk during episodic storm events if tracks, pads or trenches are poorly sited.

At scoping level, the most material risks are therefore not associated with large-scale transformation, but with the incremental and cumulative effects typical of exploration: uncontrolled access and track proliferation, soil disturbance and erosion initiation (with sediment delivery to ephemeral channels), dust and road-safety impacts from traffic on unpaved roads, hydrocarbon/spill and waste-related contamination risks (especially if drilling and camps are undertaken), and heritage/archaeology/palaeontology risks where intrusive works encounter sensitive resources such as graves, artefacts or fossil material. With strict footprint discipline (use existing routes, prohibit off-road driving), avoidance buffers around drainages and sensitive microhabitats, bunded fuel storage and spill readiness, disciplined sanitation and waste management, and progressive rehabilitation of all disturbed areas, the majority of impacts are expected to reduce to low residual significance, while high-consequence issues (groundwater contamination and heritage disturbance) can be managed to acceptable residual risk through enforceable controls and stop-work protocols.

Overall recommendations (ECC-aligned)

It is recommended that the proponent proceed with the ECC submission and implement exploration on EPL 9892 subject to the following key conditions and commitments, which should be explicitly reflected in the ESR/EMP and contractor method statements:

1. Adopt a clear exploration envelope and change-control: implement exploration only within the assessed envelope (mapping, sampling, geophysics; limited trenching/drilling if triggered). Any expansion of

footprint, prolonged camps, or higher-intensity earthworks must trigger review and, where necessary, additional assessment/authorisation.

2. Strict access and footprint control: prioritise existing roads and tracks, prohibit off-road driving, implement route approval maps, demarcate no-go areas, and maintain a GPS-based disturbance register for all new/temporary tracks and pads.

3. Drainage network protection: apply no-disturbance buffers to mapped streams/tributaries; avoid siting pads, camps, fuel storage, sumps and laydown areas in valley floors or near confluences; restrict crossings to existing points and stabilise approaches to prevent rutting and bank erosion.

4. Erosion prevention and progressive rehabilitation: micro-site on stable interfluves, minimise clearing widths, inspect after storm events, and rehabilitate progressively (re-contour, rip/scarify compacted ground, stabilise with brush packing/stone lines where needed, and close redundant routes to prevent re-use).

5. Water scarcity planning and groundwater protection: assume limited local groundwater availability; prioritise water carting or lawful existing sources; implement bunded fuel storage (≥110%), controlled refuelling, spill kits and training, contained management of drill cuttings/fluids where applicable, and managed sanitation with zero discharge to land or drainage.

6. Dust and air-quality controls: enforce speed limits, reduce unnecessary traffic, apply targeted suppression only at high-use points where feasible and lawful, and implement "stop/scale-back in high winds" rules supported by a complaints register and corrective-action tracking.

7. Noise and activity timing: schedule high-noise activities (drilling, trenching, heavy mobilisation) during daylight where practicable; maintain silencers/mufflers; communicate planned high-activity periods to land users in advance.

8. Heritage and chance-find compliance: implement a mandatory chance-find and stop-work procedure; undertake targeted heritage screening prior to trenching/drilling or formation of new access where sensitivity is suspected.

9. Land use and livelihoods safeguards: secure written access permissions; implement gate/fence protocols; protect waterpoints; manage livestock disturbance; maintain a grievance mechanism with documented close-out; apply transparent local recruitment and procurement practices to manage expectations.

10. Monitoring, auditing and reporting: appoint an ECO (at least during active phases) to conduct inspections and maintain auditable registers (routes/disturbance, spills/incidents, waste, complaints, rehabilitation close-out), and report against ECC conditions.

Recommendation statement: Subject to the above conditions and the full implementation of the EMP, exploration activities on EPL 9892 are recommended to proceed, as impacts are expected to be localised, manageable and largely reversible at exploration scale. The ECC decision should emphasise enforceable controls for drainage/erosion, groundwater and spill prevention, access discipline, and stakeholder engagement, as these are the principal determinants of acceptable residual environmental and social risk for this arid southern Namibia setting.

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