8 Environmental Management Plan (EMP) Overview

8.1 Introduction to the EMP

The Environmental Management Plan (EMP) for the proposed exploration activities under Exclusive Prospecting Licence (EPL) 10173 in the Opuwo Magisterial District, Kunene Region, Republic of Namibia, is a comprehensive framework designed to manage and mitigate the environmental and social impacts identified. An EMP, as defined by the International Finance Corporation (IFC), is "a document that outlines the mitigation, monitoring, and institutional measures to be taken during project implementation and operation to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels" (IFC, 2012). In the context of EPL 10173, the EMP ensures that the exploration activities - comprising geological mapping, geophysical surveys, drilling (50–100 boreholes), trenching (1 - 2m deep), and associated infrastructure (e.g., access tracks, field camps) - are conducted in a manner that minimizes harm to the environment, respects the cultural and socio-economic context of the Himba community, and complies with Namibian legislation and international best practices.

The EMP is a legal requirement under Section 8 of the Namibian Environmental Management Act (EMA) of 2007, which mandates that projects with potential environmental impacts must develop an EMP to manage and monitor their effects (Government of Namibia, 2007). The Environmental Impact Assessment Regulations (2012) further stipulate that the EMP must include mitigation measures, monitoring protocols, and reporting mechanisms to ensure compliance with environmental standards (Government of Namibia, 2012). Internationally, the EMP aligns with the IFC Performance Standard 1 on Environmental and Social Management Systems, which emphasizes the need for a structured approach to managing environmental and social risks, particularly in projects affecting indigenous communities like the Himba (IFC, 2012). The EMP also reflects the principles of sustainable development outlined in the Rio Declaration (1992) and the United Nations Sustainable Development Goals (SDGs), particularly SDG 15 (Life on Land) and SDG 6 (Clean Water and Sanitation) (United Nations, 1992; United Nations, 2015).

The EPL 10173 project involves exploration for base and rare metals, precious metals, and industrial minerals over a 3–5 year period, with activities concentrated in a 5-hectare area within the 20,000-hectare licence. The project area is ecologically sensitive, part of the Kaokoveld Desert ecoregion, with protected species (*Commiphora wildii*, *Welwitschia mirabilis*) and vulnerable fauna (e.g., Hartmann's mountain zebra; WWF, 2025). It is also culturally significant, as the Himba community relies on the area for seasonal grazing and resin harvesting, with a low literacy rate (40%) and limited infrastructure (70% without electricity, 60% with poor mobile coverage; Namibia Statistics Agency, 2025). The EMP addresses these challenges by integrating mitigation measures, concerns (e.g., grazing disruptions, water use, cultural heritage), and the project's legal obligations under the Minerals (Prospecting and Mining) Act of 1992, which requires environmental protection during prospecting activities (Government of Namibia, 1992).

This chapter outlines the EMP's objectives and key management actions, providing a high-level framework that will be expanded into a standalone EMP document following the scoping phase. The EMP ensures that all tenets of EPL 10173 - environmental protection, social responsibility, cultural preservation, and regulatory compliance - are addressed, with a focus on sustainable development in the Kunene Region.

8.2 Objectives of the EMP

The objectives of the EMP for EPL 10173 are designed to ensure that the exploration activities are conducted responsibly, minimizing environmental and social impacts while maximizing benefits for the local community and adhering to legal and international standards. These objectives are informed by the baseline conditions, stakeholder concerns, potential impacts, and mitigation measures, and they align with the principles of environmental justice, which emphasize fair treatment and meaningful involvement of all people, particularly marginalized groups like the Himba (United Nations, 1992).

Table 40: Objectives of the Environmental Management Plan for EPL 10173 Exploration Activities

Objective	Description	Rationale	EPL Tenet Addressed	Reference
Minimize Environmental Impacts	▪ Implement mitigation measures to reduce impacts on land (e.g., erosion), water (e.g., contamination), biodiversity (e.g., vegetation loss), air quality (e.g., dust), and noise (e.g., fauna disturbance).	▪ Protect the Kaokoveld ecoregion's fragile environment, including protected species and water resources critical for the Himba.	Environmental protection	IFC, 2012
Ensure Regulatory Compliance	▪ Comply with Namibian legislation (e.g., EMA 2007, Minerals Act 1992, Water Resources Management Act 2013) and international standards (e.g., IFC Performance Standards).	▪ Avoid legal penalties, ensure project approval by MEFT, and meet international best practices for indigenous engagement	Legal compliance	Government of Namibia, 2007; IFC, 2012
Protect Cultural Heritage and Social Values	▪ Safeguard Himba cultural heritage (e.g., ancestral sites, resin harvesting) and minimize disruptions to grazing routes, ensuring social acceptability.	▪ Respect the Himba's traditional livelihood and cultural practices, addressing their concerns (e.g., grazing disruptions).	Cultural preservation and social responsibility	Government of Namibia, 2004
Promote Sustainable Resource Use	▪ Use resources efficiently (e.g., water recycling, minimal vegetation clearing) and rehabilitate disturbed areas (e.g.,	▪ Support long-term environmental sustainability in a semi-arid region with scarce resources (e.g.,	Sustainable development	United Nations, 2015

	revegetation with native species).	40% lack safe water).		
Enhance Socio-Economic Benefits	▪ Maximize local employment (50–70% of 10–20 jobs), procurement and CSR initiatives (e.g., borehole maintenance) to benefit the Kunene Region.	▪ Address poverty (45%) and unemployment (35%) in the region, meeting stakeholder expectations for economic benefits.	Socio-economic development	Namibia Statistics Agency, 2025
Monitor and Report Performance	▪ Establish monitoring programs (e.g., water quality, noise levels) and report annually to MEFT and stakeholders, ensuring transparency and accountability.	▪ Enable adaptive management, ensure compliance, and maintain community trust through regular updates.	Monitoring and transparency	Government of Namibia, 2012; Glasson et al., 2013
Build Local Capacity	▪ Provide training for local workers (e.g., environmental management, cultural sensitivity) and collaborate with MEFT to enhance regional monitoring capacity.	▪ Enhance skills in a region with low literacy (40%) and improve regulatory oversight for future projects).	Capacity building	United Nations, 2015

8.2.1 Integrated Environmental and Social Management Framework for EPL 10173:

The objectives cover all key tenets of EPL 10173, ensuring a holistic approach to environmental and social management. Minimizing environmental impacts addresses the ecological sensitivity of the Kaokoveld ecoregion, protecting species like *Commiphora wildii* and water resources critical for the Himba (WWF, 2025). Regulatory compliance ensures adherence to the EMA (2007) and Minerals Act (1992), which require environmental protection during prospecting (Government of Namibia, 1992). Protecting cultural heritage responds to the Himba's concerns about ancestral sites and grazing routes, aligning with the National Heritage Act (2004) (Government of Namibia, 2004). Sustainable resource use supports SDG 6 and SDG 15 by promoting efficient water use and biodiversity conservation (United Nations, 2015). Socio-economic benefits address the region's economic challenges, while monitoring and capacity building ensure transparency and long-term development, aligning with principles of environmental justice and sustainable development (O'Faircheallaigh, 2010; United Nations, 1992).

8.3 Key Management Actions

The key management actions operationalize the EMP objectives, providing a detailed framework for implementing the mitigation measures. These actions address all impact areas identified in

Chapter 8 (land disturbance, water resources, biodiversity, air quality, noise pollution, socio-economic impacts) and incorporate stakeholder concerns (e.g., grazing disruptions, water use, cultural heritage). Each action includes specific measures, responsible parties, timelines, monitoring protocols, and performance indicators, ensuring that all EPL tenets are addressed. The actions are designed to be practical, measurable, and aligned with Namibian legislation and international standards, with provisions for emergency response, training, and stakeholder engagement.

Table 41:: Key Management Actions for the Environmental Management Plan of EPL 10173 Exploration Activities

Impact Area	Management Action	Responsible Party	Timeline	Monitoring Protocol	Performance Indicator	EPL Tenet Addressed	Reference
Land Disturbance	▪ Install silt fences and contouring around disturbed areas (5 ha) to prevent erosion. ▪ Schedule activities in the dry season (May–October) to avoid rainfall (300–400 mm annually). ▪ Implement 500m buffer zones around Himba grazing routes.	Project Manager	Pre-exploration (Q2 2025). Ongoing during exploration.	▪ Weekly inspections during rainy season. ▪ Measure sediment loads in runoff.	▪ Silt fences installed at all sites. ▪ Sediment loads <50 mg/L. ▪ No complaints about grazing disruptions.	Environmental protection, social responsibility	IFC, 2012
Water Resources	▪ Obtain water abstraction permits per the Water Resources Management Act (2013). ▪ Use biodegradable drilling fluids and store fuel (500L diesel) in bunded areas (110% capacity). ▪ Construct sediment traps near drill sites to capture runoff. ▪ Recycle water in a closed-loop system during drilling.	Environmental Officer	Pre-exploration (Q2 2025). Ongoing during drilling.	▪ Monthly water usage logs. ▪ Bi-weekly water quality tests (sediment, pH, salinity). ▪ Weekly inspections of storage areas.	▪ Permits obtained. ▪ Water usage <360,000 L total. ▪ Sediment loads <50 mg/L. ▪ No spills reported.	Environmental protection, sustainable development	Government of Namibia, 2013; IFC, 2012
Biodiversity	▪ Conduct pre-clearance surveys to identify protected species (e.g., *Commiphora wildii*, *Welwitschia mirabilis*). ▪ Avoid drilling during fauna breeding season (December–February). ▪ Revegetate disturbed areas with native species (e.g., *Eragrostis* grasses) post-exploration. ▪ Maintain 1 km buffer from Kunene River riparian zones.	Ecologist	Pre-exploration (Q2 2025). Seasonal scheduling. Post-exploration (2028–2030).	▪ Pre-clearance survey report. ▪ Monthly noise monitoring. ▪ Annual revegetation success rate.	▪ Survey completed before clearing. ▪ Noise <85 dB(A) at 100m. ▪ Revegetation success >80%. ▪ No activities within 1 km of Kunene River.	Environmental protection	Government of Namibia, 1975; WWF, 2025
Air Quality	▪ Apply water spraying on access tracks and drill sites (2–3 times daily in dry season). ▪ Limit vehicle speeds to 30 km/h on unpaved tracks. ▪ Provide dust masks to workers and nearby Himba herders.	Site Supervisor	Ongoing during dry season. Throughout project duration.	▪ Daily dust suppression logs. ▪ Monthly PM10 monitoring. ▪ Weekly health checks for workers.	▪ Water spraying conducted 2–3 times daily. ▪ PM10 <50 µg/m³. ▪ No respiratory complaints from	Environmental protection, social responsibility	WHO, 2005

	▪ Schedule high-dust activities (e.g., trenching) outside peak wind periods (morning/evening).				workers or community.		
Noise Pollution	▪ Use noise mufflers on equipment to limit levels to <85 dB(A) at 100m. ▪ Limit drilling to daytime hours (07:00–18:00). ▪ Notify Himba herders of drilling schedules via the community liaison officer. ▪ Coordinate dust and noise activities to minimize cumulative effects.	Site Supervisor	Throughout project duration. Ongoing during drilling.	▪ Monthly noise monitoring. ▪ Bi-weekly community feedback. ▪ Weekly activity logs.	▪ Noise <85 dB(A) at 100m. ▪ No nighttime drilling. ▪ No community complaints about noise.	Environmental protection, social responsibility	WHO, 1999
Socio-Economic Impacts	▪ Reserve 50–70% of 10–20 jobs for locals, prioritizing Himba youth. ▪ Provide on-the-job training (e.g., 2-day induction) to address low literacy (40%;). ▪ Source 70% of supplies from Opuwo businesses. ▪ Conduct a heritage assessment to identify ancestral sites. ▪ Implement a chance-find procedure for archaeological discoveries. ▪ Develop CSR initiatives (e.g., borehole maintenance, solar lighting).	Human Resources Officer; Archaeologist; Community Liaison Officer	Pre-exploration (Q2 2025). Throughout project duration.	▪ Monthly employment records. ▪ Monthly procurement logs. ▪ Pre-exploration heritage report. ▪ Quarterly CSR progress reports.	▪ 50–70% local hires achieved. ▪ 70% local procurement achieved. ▪ Heritage assessment completed. ▪ CSR initiatives implemented (e.g., 1 borehole maintained).	Socio-economic development, cultural preservation	Government of Namibia, 2004; Namibia Statistics Agency, 2025
Waste Management	▪ Segregate and store waste (e.g., drilling fluids, domestic waste) in designated areas. ▪ Dispose of hazardous waste (e.g., used oils) at licensed facilities in Opuwo. ▪ Recycle non-hazardous waste (e.g., plastics) where possible. ▪ Train workers on proper waste handling.	Environmental Officer	Throughout project duration.	▪ Weekly waste management inspections. ▪ Monthly waste disposal records.	▪ No waste left on-site. ▪ 00% hazardous waste disposed at licensed facilities. ▪ 50% non-hazardous waste recycled.	Environmental protection	Government of Namibia, 2007; IFC, 2012

Emergency Response	▪ Develop a spill response plan for fuel and chemical spills. ▪ Establish a fire management plan for field camps. ▪ Train workers on emergency procedures (e.g., spill containment, fire evacuation). ▪ Equip field camps with spill kits and fire extinguishers.	Health and Safety Officer	Pre-exploration (Q2 2025). Ongoing training.	▪ Monthly emergency drills. ▪ Immediate spill reporting (within 24 hours).	▪ Spill response plan in place. ▪ All workers trained. ▪ No unreported spills or fires.	Environmental protection, social responsibility	IFC, 2012; SME, 2014
Stakeholder Engagement	▪ - Appoint a community liaison officer to engage with the Himba community. ▪ Hold quarterly meetings with stakeholders (e.g., Vita Royal House, NNF) to update on progress. ▪ Establish a grievance mechanism to address complaints within 7 days. ▪ Use OtjiHimba translators and visual aids for communication.	Community Liaison Officer	▪ Throughout project duration.	▪ Bi-weekly meetings with Himba community. ▪ Quarterly stakeholder meeting minutes. ▪ Grievance log.	▪ Liaison officer appointed. ▪ 100% complaints resolved within 7 days. ▪ Quarterly meetings held.	Social responsibility, cultural preservation	O'Faircheallaigh, 2010; IFC, 2012
Training and Capacity Building	▪ Provide training for workers on environmental management (e.g., spill response, waste handling), cultural sensitivity, and safety. ▪ Collaborate with MEFT to train local officials on monitoring techniques. ▪ Document Himba traditional knowledge (e.g., grazing patterns) for future use.	Human Resources Officer; Environmental Officer	Pre-exploration (Q2 2025). ▪ Ongoing training.	▪ Training completion certificates. ▪ MEFT training session records. ▪ Traditional knowledge report.	▪ 100% workers trained. ▪ MEFT officials trained annually. ▪ Traditional knowledge documented.	Capacity building	United Nations, 2015

8.3.1 Comprehensive Environmental & Social Management Plan for EPL 10173: Integrating Regulatory Compliance with Sustainable Development

The key management actions address all EPL tenets comprehensively:

- **Environmental Protection:** Actions like silt fences, biodegradable fluids, pre-clearance surveys, water spraying, noise mufflers, and waste management protect the environment, ensuring compliance with the EMA (2007) and Nature Conservation Ordinance (1975) (Government of Namibia, 2007). Performance indicators (e.g., sediment loads <50 mg/L, PM10 <50 µg/m³) align with IFC standards (IFC, 2012).
- **Social Responsibility:** Buffer zones, community notifications, dust masks, and a grievance mechanism address the Himba's concerns (e.g., grazing disruptions, health impacts; Chapter 7.3), ensuring social acceptability (O'Faircheallaigh, 2010).
- **Cultural Preservation:** Heritage assessments and chance-find procedures protect Himba ancestral sites, complying with the National Heritage Act (2004) (Government of Namibia, 2004).
- **Sustainable Development:** Water recycling, revegetation, and CSR initiatives (e.g., borehole maintenance) promote resource efficiency and long-term benefits, supporting SDG 6 and SDG 15 (United Nations, 2015).
- **Socio-Economic Development:** Local hiring, procurement, and training address poverty and unemployment, aligning with SDG 8 (United Nations, 2015; Namibia Statistics Agency, 2025).
- **Monitoring and Transparency:** Regular monitoring (e.g., water quality, noise levels) and annual reporting to MEFT ensure accountability, as required by the EIA Regulations (2012) (Government of Namibia, 2012).
- **Capacity Building:** Training and collaboration with MEFT enhance local skills and regulatory oversight, supporting SDG 4 (United Nations, 2015).

The EMP includes provisions for waste management, emergency response, stakeholder engagement, and training, ensuring a holistic approach. The full EMP will expand on these actions, including detailed procedures, budgets, and audit schedules, to be submitted to MEFT for approval.

9 Conclusion and Recommendations

This chapter concludes the Environmental Impact Assessment (EIA) Scoping Report for the proposed exploration activities under Exclusive Prospecting Licence (EPL) 10173 in the Opuwo Magisterial District, Kunene Region, Republic of Namibia. It synthesizes the key findings from the scoping process, including the baseline environmental and social conditions, stakeholder engagement outcomes, potential impacts, proposed mitigation measures, and the Environmental Management Plan (EMP) overview. The conclusion evaluates the project's alignment with sustainable development goals in the context of Namibia's Vision 2030, which emphasizes economic growth, social equity, and environmental protection (Government of Namibia, 2004b). Recommendations are provided to guide the next steps in the EIA process, ensuring that the project addresses the unique challenges of the Kunene Region, meets the needs of the Himba community, and complies with the Namibian Environmental Management Act (EMA) of 2007, the Environmental Impact Assessment Regulations (2012), and international best practices such as the International Finance Corporation (IFC) Performance Standards and the United Nations Sustainable Development Goals (SDGs) (Government of Namibia, 2007; Government of Namibia, 2012; IFC, 2012; United Nations, 2015).

9.1 Summary of Findings

The scoping process has provided a detailed understanding of the environmental, social, and economic context of the EPL 10173 project area, the potential impacts of the proposed exploration activities, and the measures required to mitigate these impacts. The findings highlight the project's potential to contribute to economic development in the Kunene Region while identifying manageable environmental and social risks that must be addressed to ensure sustainability and social acceptability.

9.1.1 Baseline Environment and Project Context

The EPL 10173 area is located in a semi-arid environment with a mean annual rainfall of 300–400 mm, predominantly during the rainy season (November–April), and high evaporation rates (2,600–2,800 mm annually), exacerbating water scarcity; Namibia Meteorological Service, 2025). The terrain is flat to gently undulating (1,100–1,300 m elevation), with erosion-prone soils (lithosols and arenosols, <1% organic content) and limited surface water, except for ephemeral streams feeding into the Kunene River 10 km north (Mendelsohn et al., 2016). Groundwater is brackish (1,000–3,000 mg/L salinity) and occurs at depths of 50–100 m, making it a critical resource in a region where 40% of rural households lack access to safe drinking water (UNICEF, 2025).

Biologically, the area falls within the Kaokoveld Desert ecoregion, a biodiversity hotspot with sparse savanna vegetation (*Acacia* spp., *Commiphora wildii*), protected species (*Welwitschia mirabilis*), and arid-adapted fauna, including the vulnerable Hartmann's Mountain zebra (*Equus zebra hartmannae*) and the near-threatened Rüppell's korhaan (*Eupodotis rueppelii*) (WWF, 2025; IUCN, 2025). The region's ecological sensitivity necessitates careful management to avoid long-term impacts on biodiversity, particularly given the cultural significance of species like *Commiphora wildii*, which the Himba harvest for resin.

Socio-economically, the Kunene Region is sparsely populated (<1 person/km² in the EPL area), with the Himba community practicing semi-nomadic pastoralism as their primary livelihood (60% of households rely on livestock. The region faces significant challenges, including a 45% poverty rate, 35% unemployment, a 40% literacy rate (30% among women), and limited infrastructure (70% without electricity, 60% with poor mobile coverage; Chapter 6.3; Namibia Statistics Agency, 2025). These conditions highlight the need for the project to deliver tangible economic benefits while minimizing disruptions to the Himba's traditional way of life, which is deeply tied to the land and its resources (Jacobsen et al., 2012).

9.1.2 Public Participation Outcomes

The public participation process, conducted from 28 February to 14 March 2025, engaged a wide range of stakeholders, including the Himba community, Opuwo residents, traditional authorities (Vita Royal House), government bodies (e.g., Ministry of Environment, Forestry and Tourism (MEFT), Ministry of Mines and Energy (MME)), and NGOs (e.g., Namibia Nature Foundation (NNF), Legal Assistance Centre (LAC)). The process was designed to be inclusive, using OtjiHimba translators and visual aids to accommodate the Himba's low literacy rate (40%) and limited telecommunications access. Key concerns included:

- **Grazing Disruptions:** The Himba highlighted the risk of access tracks and drill sites blocking seasonal grazing routes, critical during the rainy season (November–April) when 90% of rainfall occurs.
- **Water Use and Contamination:** Stakeholders expressed concerns about the project's water demand (180,000–360,000 L) in a water-scarce region and the potential for groundwater contamination from drilling fluids.
- **Cultural Heritage:** The Himba and Vita Royal House emphasized the need to protect ancestral sites (e.g., graves) and cultural practices (e.g., resin harvesting from *Commiphora wildii*).
- **Economic Benefits and Infrastructure:** Opuwo residents and the Kunene Regional Council requested local employment (10–20 jobs), procurement opportunities, and infrastructure improvements (e.g., water access, electricity).

The process exceeded the minimum 7-day consultation period required by the EIA Regulations (2012) and adhered to international best practices, such as the IFC Performance Standard 7 on Indigenous Peoples, which emphasizes free, prior, and informed consent (FPIC) for indigenous groups like the Himba (Government of Namibia, 2012; IFC, 2012). The outcomes have informed the impact assessment and mitigation measures, ensuring that stakeholder concerns are integrated into the project's planning (O'Faircheallaigh, 2010).

9.1.3 Potential Impacts and Mitigation Measures

The exploration activities, involving 10–15 km of access tracks (3–5m wide), 50–100 drill pads (10m x 10m), and trenching (1–2m deep) across 5 hectares, will result in several environmental and social impacts. These impacts were assessed for their nature, extent, duration, and significance, and mitigation measures were proposed to reduce their severity. A summary of the key impacts, mitigation measures, and residual significance is provided below.

Table 42: Comprehensive Summary of Key Impacts, Mitigation Measures, and Residual Significance for EPL 10173 Exploration Activities

Impact Area	Key Impact (Pre-Mitigation Significance)	Mitigation Measure	Residual Significance (Post-Mitigation)	Development Relevance	Reference
Land Disturbance	Soil erosion, compaction, land use conflict (Moderate)	Silt fences, contouring, dry season scheduling (May–October), 500m buffer zones around grazing routes	Low	Minimizes disruption to Himba grazing routes, supporting food security (30% food insecurity rate;	IFC, 2012
Water Resources	Groundwater contamination (High), water consumption (Moderate)	Biodegradable drilling fluids, bunded storage, water abstraction permits, sediment traps, water recycling	Low	Protects scarce water resources, critical for Himba livestock and domestic use in a region with 15% diarrhea incidence	Government of Namibia, 2013
Biodiversity	Vegetation loss, fauna displacement, ecosystem disruption (Moderate)	Pre-clearance surveys, seasonal scheduling (avoid December–February breeding season), revegetation with native species, 1 km buffer from Kunene River	Low	Preserves Kaokoveld biodiversity hotspot, supporting ecotourism potential and Himba cultural practices (e.g., resin harvesting).	WWF, 2025
Air Quality	Dust generation affecting health and fauna (Moderate)	Water spraying (2–3 times daily in dry season), speed limits (30 km/h), dust masks for workers and Himba herders	Low	Reduces health risks in a region with limited healthcare access (60% live >10 km from a facility).	WHO, 2005
Noise Pollution	Fauna and human disturbance (Moderate)	Noise mufflers (<85 dB(A) at 100m), daytime drilling (07:00–18:00), community notifications via liaison officer	Low	Minimizes stress on Himba herders and fauna, supporting coexistence with exploration activities.	WHO, 1999
Socio-Economic Impacts	Cultural heritage risks, grazing disruption (Moderate); Positive job creation (10–20 jobs), procurement	Heritage assessment, chance-find procedure, 500m buffer zones, 50–70% local hiring, on-the-job training, CSR initiatives (e.g., borehole maintenance, solar lighting)	Low (with enhanced positive benefits)	Balances economic benefits (jobs, procurement) with cultural preservation, addressing poverty (45%) and infrastructure deficits (70% without electricity.	Namibia Statistics Agency, 2025

9.1.4 Environmental Management Plan (EMP) Framework

The EMP overview provides a framework for implementing the mitigation measures, with objectives to minimize impacts, ensure legal compliance, address stakeholder concerns, promote sustainable practices, and monitor performance. Key management actions include monitoring sediment loads (<50 mg/L), PM10 levels (<50 µg/m³), noise (<85 dB(A)), and employment targets (50–70% local hires), with responsibilities assigned to project staff (e.g., Environmental Officer, Community Liaison Officer). The EMP aligns with the EIA Regulations (2012), which require annual environmental performance reports to MEFT, and incorporates international standards, such as IFC Performance Standard 1 on Environmental and Social Management Systems (Government of Namibia, 2012; IFC, 2012).

9.1.5 Alignment with Sustainable Development

The EPL 10173 project has the potential to contribute to sustainable development in the Kunene Region, aligning with Namibia's Vision 2030 and the United Nations Sustainable Development Goals (SDGs), particularly SDG 1 (No Poverty), SDG 6 (Clean Water and Sanitation), SDG 8 (Decent Work and Economic Growth), and SDG 15 (Life on Land) (Government of Namibia, 2004b; United Nations, 2015). The project's economic benefits, including 10–20 temporary jobs and in local procurement, address the region's high poverty (45%) and unemployment (35%) rates, supporting SDG 1 and SDG 8 (Namibia Statistics Agency, 2025). Mitigation measures, such as water recycling and sediment traps, protect scarce water resources, contributing to SDG 6. Biodiversity conservation measures, including pre-clearance surveys and revegetation, support SDG 15 by preserving the Kaokoveld ecoregion, which has ecotourism potential (WWF, 2025). However, the project must carefully manage social risks, such as cultural heritage impacts and grazing disruptions, to ensure social equity and maintain the Himba's traditional livelihood, a key aspect of sustainable development (Jacobsen et al., 2012; United Nations, 1992).

Table 43: Alignment of EPL 10173 Exploration Project with Sustainable Development Goals

SDG	Project Contribution	Challenges	Mitigation Strategy	Reference
SDG 1: No Poverty	10–20 jobs (50–70% local hires) and in procurement	Temporary nature of jobs (3–5 years) may limit long-term benefits	On-the-job training, prioritize Himba youth (40% under 15;)	United Nations, 2015
SDG 6: Clean Water	Water recycling, biodegradable fluids to protect groundwater	High water demand (180,000–360,000 L) in a scarce region	Obtain permits, monitor usage (<360,000 L total)	United Nations, 2015
SDG 8: Decent Work	Local hiring and procurement stimulate economic activity	Low literacy (40%) may limit job access for Himba	Provide 2-day induction training, hire 50–70% locals	United Nations, 2015
SDG 15: Life on Land	Pre-clearance surveys, revegetation to protect biodiversity	Risk of vegetation loss (5 ha) and fauna displacement	Avoid breeding season, revegetate with native species	United Nations, 2015

9.1.6 Balanced Impact Strategy for EPL 10173: Mitigating Risks While Delivering Sustainable Value:

The scoping process has identified that the EPL 10173 exploration activities pose manageable environmental and social risks, with pre-mitigation impacts (e.g., high significance for groundwater contamination, moderate for biodiversity loss) reduced to low significance through targeted mitigation measures (e.g., biodegradable fluids, pre-clearance surveys). The project's alignment with sustainable development goals demonstrates its potential to contribute to economic growth and poverty reduction in the Kunene Region, while mitigation measures ensure environmental protection and social equity (United Nations, 2015). However, the temporary nature of economic benefits (3–5 years) and the region's infrastructure deficits (e.g., 70% without electricity) highlight the need for long-term development strategies, such as CSR initiatives, to maximize the project's impact (UNICEF, 2025). The EMP framework ensures that mitigation measures are implemented effectively, with monitoring and reporting mechanisms to maintain accountability (Glasson et al., 2013).

9.2 Recommendations for Further Assessment

The scoping process has laid a strong foundation for the EIA, but further assessment is required to address data gaps, refine mitigation measures, and ensure the project's long-term sustainability in the Kunene Region. The following recommendations are tailored to the exploration activities, stakeholder needs, and the region's development priorities, ensuring compliance with the EIA Regulations (2012) and alignment with international best practices (Government of Namibia, 2012; IFC, 2012).

Table 44: Detailed Recommendations for Further Assessment in the EPL 10173 EIA Process

Recommendation	Description	Rationale	Development Relevance	Reference
Detailed Impact Assessment	Conduct a detailed EIA focusing on high-significance impacts (e.g., groundwater contamination, cultural heritage risks) and cumulative effects (e.g., combined dust and noise impacts).	Quantify impacts (e.g., aquifer drawdown, number of affected heritage sites) to refine mitigation measures and ensure no long-term harm.	Ensures sustainable resource use and cultural preservation, critical for Himba livelihood and regional stability.	Government of Namibia, 2012; Glasson et al., 2013
Specialist Studies	▪ **Hydrological Study:** Assess borehole capacity, aquifer recharge rates, and long-term sustainability of water abstraction (180,000–360,000 L). ▪ **Archaeological Survey:** Map ancestral sites and sacred areas within EPL 10173. ▪ **Biodiversity Survey:** Confirm presence and population of protected species (e.g., *Welwitschia mirabilis*, Hartmann's mountain zebra). ▪ **Socio-Economic Study:** Evaluate long-term economic impacts and infrastructure needs (e.g., electricity, water access).	Fill data gaps to enhance mitigation effectiveness (e.g., exact locations of heritage sites, aquifer sustainability, species distribution).	Supports water security (SDG 6), cultural preservation, biodiversity conservation (SDG 15), and economic planning (SDG 8).	IUCN, 2025; Government of Namibia, 2004
Ongoing Stakeholder Engagement	▪ Continue engagement with the Himba community through a dedicated community liaison officer, using OtjiHimba translators and visual aids. ▪ Hold quarterly meetings with stakeholders (e.g., Vita Royal House, NNF, Kunene Regional Council) to update on project progress and address concerns.	Maintain trust, ensure FPIC, and address evolving concerns (e.g., infrastructure expectations, cultural impacts; Chapter 7.3).	Enhances social acceptability, supports social equity (SDG 10), and ensures Himba inclusion in decision-making.	O'Faircheallaigh, 2010; IFC, 2012

	▪ Establish a grievance mechanism to handle complaints within 7 days.			
Comprehensive EMP Development	▪ Develop a detailed EMP with specific procedures (e.g., spill response plan, waste management, worker training on cultural sensitivity). ▪ Include emergency protocols for spills, fires, and heritage finds. ▪ Require annual environmental performance reports to MEFT and stakeholders.	Ensure effective implementation of mitigation measures, regulatory compliance, and preparedness for unforeseen events.	Promotes environmental management (SDG 15) and accountability, ensuring long-term sustainability of exploration activities.	Government of Namibia, 2012
Monitoring and Auditing	▪ Establish a monitoring program with quarterly environmental audits (e.g., water quality, noise levels, revegetation success). ▪ Conduct annual third-party audits to verify compliance with EMP and legal requirements. ▪ Share monitoring results with stakeholders via annual reports and community meetings.	Ensure accountability, track performance, and enable adaptive management to address any unforeseen impacts.	Supports transparency, builds community trust, and ensures compliance with environmental standards (e.g., IFC, 2012).	Government of Namibia, 2012; Glasson et al., 2013
CSR and Long-Term Development	▪ Implement CSR initiatives, such as borehole maintenance, solar lighting for community use, and skills training programs for Himba youth. ▪ Partner with local NGOs (e.g., NNF, LAC) to support conservation and development projects (e.g., ecotourism, water infrastructure). ▪ Develop a post-exploration rehabilitation plan to restore grazing	Address infrastructure deficits (e.g., 70% without electricity; Chapter 6.3.6) and provide lasting benefits beyond the project's 3–5 year duration.	Contributes to SDG 1 (No Poverty), SDG 6 (Clean Water), and SDG 8 (Decent Work), enhancing regional development and community resilience.	UNICEF, 2025; United Nations, 2015

	areas and support long-term community resilience.			
Capacity Building and Knowledge Transfer	▪ Provide training for local workers on environmental management (e.g., spill response, waste handling) and cultural sensitivity. ▪ Collaborate with MEFT and MME to build capacity for monitoring and enforcement in the Kunene Region. ▪ Document traditional Himba knowledge (e.g., grazing patterns, cultural sites) to inform future projects.	Enhance local skills, improve regulatory oversight, and preserve indigenous knowledge for sustainable development.	Supports SDG 4 (Quality Education) and SDG 16 (Peace, Justice, and Strong Institutions), fostering long-term capacity in the region.	United Nations, 2015

Analysis:

The recommendations are designed to address the specific challenges of the EPL 10173 project and the Kunene Region's development needs. A detailed impact assessment and specialist studies will provide the data needed to refine mitigation measures, such as determining sustainable water abstraction rates to prevent aquifer depletion, a critical concern given the region's water scarcity (Government of Namibia, 2013). The archaeological survey ensures compliance with the National Heritage Act (2004) and protects Himba cultural heritage, while biodiversity surveys confirm the presence of protected species, aligning with the Nature Conservation Ordinance (1975) (Government of Namibia, 2004; Government of Namibia, 1975). Ongoing stakeholder engagement, including a grievance mechanism, ensures that the Himba's concerns (e.g., grazing disruptions, cultural impacts) are addressed throughout the project, supporting FPIC and social equity (IFC, 2012; O'Faircheallaigh, 2010).

The comprehensive EMP, with emergency protocols and annual reporting, ensures that mitigation measures are implemented effectively, as required by the EIA Regulations (2012) (Government of Namibia, 2012). Monitoring and auditing provide transparency and enable adaptive management, addressing any unforeseen impacts (Glasson et al., 2013). CSR initiatives, such as borehole maintenance and skills training, address the region's infrastructure deficits and provide lasting benefits, aligning with Namibia's Vision 2030 and SDGs (Government of Namibia, 2004b; United Nations, 2015). Capacity building and knowledge transfer enhance local skills and regulatory oversight, ensuring that the project contributes to long-term development in the Kunene Region (UNICEF, 2025).

The EPL 10173 exploration project has the potential to deliver economic benefits while managing environmental and social risks, provided that the recommended assessments and measures are implemented. The scoping process has identified key issues, engaged stakeholders, and proposed actionable mitigation measures, setting the stage for a sustainable and socially responsible project that supports the development aspirations of the Kunene Region and Namibia as a whole.