Environmental Impact Assessment Report

For the proposed 300 MW Photovoltaic Solar Facility

Liselo Area

Location: Liselo, Zambezi Region

ROJECT DETAILS

Project Title:	Draft Scoping Report for the Proposed Photovoltaic Solar Facility, Liselo Area
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Project Location:	Liselo Area, Zambezi Region Namibia
Report Status:	Final Environmental Impact Assessment Report
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DEFINITION OF TERMS

EAP	An Environmental Assessment Practitioner (EAP) is a qualified professional responsible for conducting environmental assessments and managing environmental compliance for development projects.
EIA	Environmental Impact Assessment
Environment	the natural and man-made resources, both biotic and abiotic, occurring in the lithosphere and atmosphere, water, soil, minerals and living organisms, whether indigenous or exotic, and the interaction between them.
MW	A megawatt (MW) is a unit of power equal to 1 million watts. 1 MW = 1,000,000 watts.It measures the rate at which energy is produced or consumed.
Manage	Means to manage with a view to securing its protection,

	conservation, regulations, rehabilitation, and sustainable use.
Mitigate	Activities designed to compensate for unavoidable environmental damage
Monitor	means to assess continuously the state and trends of developments on any part of the environment as well as the actual or potential impact of any activity on the environment and human health
Natural Resource	The air, soils, minerals and waters of Namibia, mammals, birds, fish, trees, grasses, springs, vleis, sponges, marshes, swamps and public streams.
Deforestation	Total removal of trees or any other vegetation from land.
Pollution	any direct or indirect alteration of the physical, thermal, chemical, biological properties of the environment caused by discharge, emission, or deposit of a substance into the environment
Project	means any activity which has or is likely to have an impact on the environment
Solar Facility	A solar facility is a large scale electrical generating system comprised of photovoltaic (PV) modules and associated electrical infrastructure.
Sustainable utilization	means the use or exploitation of the environment which guards against extinction, depletion or degradation of any natural resource and permits the replenishment of natural resources by natural means or otherwise.
Waste	Includes domestic, commercial or industrial material, whether in liquid, gaseous or solid form, which is discharged, emitted or deposited into the environment in such volume, composition or manner as to cause pollution.

ABBRIVIATIONS

EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMF	Electromagnetic Field
EMP	Environmental Management Plan
E&S	Environmental and Social Standards
ESKOM	South African National Electricity Utility
ESMP	Environmental and Social Management Plan
EHS	Environmental, Health, and Safety
EHSGs	Environmental, Health, and Safety Guidelines
FPIC	Free, Prior, and Informed Consent
IFC	International Finance Corporation
I&APs	Interested and Affected Parties
KAZA TFCA	Kavango-Zambezi Transfrontier Conservation Area
MEFT	Ministry of Environment, Forestry and Tourism (Namibia)
MME	Ministry of Mines and Energy (Namibia)
NamPower	Namibia Power Utility Company
NGO	Non-Governmental Organization
NIRP	National Integrated Resource Plan
OGEMP	Off-Grid Electrification Master Plan
PV	Photovoltaic
SAPP	Southern African Power Pool
TOR	Terms of Reference
WPSN	Water and Power Supply Namibia (Pty) Ltd

EXECUTIVE SUMMARY

Overview

Water and Power Supply Namibia (WPSN) proposes a 300 MW (AC) Photovoltaic (PV) Solar Facility with an integrated Battery Energy Storage System (BESS) near Katima Mulilo to support Namibia's growing demand for sustainable, cost-effective electricity. The project aligns with national energy objectives, including Vision 2030, the National Energy Policy (2017), and the Renewable Energy Policy, by enhancing energy security, reducing reliance on imports, and promoting environmentally responsible power generation. As a listed activity under the Environmental Management Act (2007) and EIA Regulations (2012), the project requires an Environmental Clearance Certificate (ECC), triggering this Scoping Report and the subsequent Environmental Impact Assessment (EIA). Michmat Investments has been appointed as the Environmental Assessment Practitioner (EAP) to oversee the EIA, engage stakeholders, identify key environmental and social issues, and ensure legal compliance.

The Scoping Report identifies potential impacts on biodiversity, land use, visual character, noise, soil, cultural heritage, and local communities, and considers alternatives including site layout, technology options, and a "no-go" scenario. The project is deemed environmentally and socially feasible, provided impacts are properly assessed and mitigated. Planned measures include sensitive site design, vegetation rehabilitation, biodiversity protection, erosion and water management, dust and noise control, visual impact reduction, waste management, and community engagement through employment and skills development. Findings support progressing to the full EIA phase, which will include specialist studies, detailed assessments, and a comprehensive Environmental Management Plan (EMP) to ensure sustainable outcomes.

1. INTRODUCTION

1.1. Purpose of the EIA report.

The purpose of this Environmental Impact Assessment (EIA) Report is to comply with the requirements of the Environmental Management Act, 2007 (Act No. 7 of 2007) and the Environmental Impact Assessment Regulations, 2012 of Namibia, and to support informed decision-making by the Environmental Commissioner regarding the proposed activity. The EIA Report identifies, evaluates, and communicates the potential environmental, social, and economic impacts associated with the proposed project across all phases of development. It assesses the significance of these impacts and examines reasonable alternatives, including the no-go option, to ensure that the preferred option represents the least environmentally damaging feasible alternative.

The report further proposes mitigation and management measures, which inform the Environmental Management Plan (EMP), to avoid, minimise, or remedy adverse impacts and enhance positive outcomes. It also documents the public participation process, ensuring transparency and incorporation of stakeholder concerns. Overall, the EIA Report aims to promote sustainable development, ensure legal compliance, and provide a sound basis for the consideration and issuance of an Environmental Clearance Certificate.

1.2. Background of the project and proponent.

Water and Power Supply Namibia (WPSN) is the project proponent and a Namibian-registered company operating within the national utilities and renewable energy sector. The company is committed to expanding sustainable energy generation solutions that support Namibia's growing demand for reliable, affordable, and environmentally responsible electricity supply. In alignment with national development priorities such as Namibia's Vision 2030, the National Energy Policy (2017), and the Renewable Energy Policy WPSN seeks to diversify the country's energy mix through the development of grid-connected renewable energy projects, including photovoltaic (PV) solar power facilities.

To fulfil the legal requirements of the Environmental Management Act (EMA), 2007 (Act No. 7 of 2007) and the Environmental Impact Assessment (EIA) Regulations of 2012, WPSN has appointed Michmat Investments as the Environmental Assessment Practitioner (EAP). Michmat Investments is a Namibian environmental consultancy with experience in conducting Environmental Impact Assessments, Environmental Management Plans, public participation processes, and related specialist studies across various sectors, including renewable energy developments.

Michmat Investments is responsible for conducting the EIA process for the proposed Photovoltaic Solar Facility, including the compilation of the Scoping Report, facilitation of public consultation, identification of key environmental issues, and preparation of the Terms of Reference for the full Environmental Impact Assessment study. The EAP will ensure that the project complies with the principles of environmental management outlined in Section 3 of the EMA and that decisions are informed by a transparent, participatory, and scientifically based assessment process.

1.3. Details of the EAP

Michmat Investment has been appointed by Water and Power Supply Namibia (Pty) Ltd to undertake the Environmental Impact Assessment (EIA) for the proposed 300 MW photovoltaic solar facility. Michmat Investment is an experienced environmental consultancy specialising in the planning, management, and execution of EIAs for small to large-scale renewable energy and infrastructure projects, tourism establishments,mining, road infrastructure and water infrastructure, and petroleum infrastructure in Namibia. The company ensures compliance with the Environmental Management Act, 2007 (Act No. 7 of 2007) and the Environmental Impact Assessment Regulations, 2012, providing technical and regulatory guidance throughout the project lifecycle.

Environmental Assessment Practitioner (EAP)

The Environmental Assessment Practitioner for this project is Mr. Michael Matengu, who oversees the entire EIA process for the proposed 300 MW solar facility. His responsibilities include leading the Scoping Phase, conducting the Environmental Impact Assessment Phase, managing public consultation with Interested and Affected Parties (I&APs), and preparing and submitting the draft and final EIA Reports, including the Environmental Management Plan (EMP), to the Ministry of Environment,

Forestry and Tourism (MEFT)** for review and approval.

Qualifications:

- Diploma in Environmental Science
- Bachelor of Arts in Tourism, specialising in Geography and Environmental Studies and Management
- BSc Honours in Environmental Management (Cand)
- Master of Business Administration (MBA Cand))

Mr. Matengu has extensive experience in environmental assessments for, renewable energy projects, mining and sustainable resource management, ensuring the EIA is thorough, scientifically robust, and fully compliant with Namibian environmental legislation.

1.4. Type

The proposed development is a utility-scale photovoltaic (PV) solar energy facility. The project will consist of ground-mounted photovoltaic solar panels that convert solar radiation directly into electrical energy through the photovoltaic effect. The PV modules will be installed on fixed-tilt or single-axis tracking support structures, depending on final engineering and design considerations, to optimise electricity generation.

Electricity generated by the solar panels will be produced as direct current (DC) and converted to alternating current (AC) by on-site inverter units. The generated power will be collected and stepped up in voltage at an on-site collector substation before being transmitted to the national electricity grid via associated grid connection infrastructure. Supporting infrastructure will include internal access roads, perimeter fencing, a control building, and temporary construction and laydown areas.

1.5. Capacity

The proposed photovoltaic solar facility will have a maximum installed generation capacity of approximately 300 megawatts (MW) and will be developed within a project area of approximately 1 000 hectares. The larger land area provides flexibility in the final layout design, allowing for appropriate spacing between panel arrays, environmental buffers, drainage management, and avoidance of sensitive environmental features identified during the EIA process.

The operational lifespan of the facility is expected to be 25 to 30 years. During this period, the project will contribute to increased renewable energy generation capacity, reduction of greenhouse gas emissions, and enhancement of national energy security. Upon decommissioning, all infrastructure will be removed and the site rehabilitated in accordance with the approved Environmental Management Plan

1.6. Power Sector in Namibia

Namibia records exceptionally high annual sunshine hours and ranks among the countries with the highest solar energy potential globally. Coal is used only for electricity generation at the country's sole coal-fired facility, the Van Eck Power Station. All coal consumed in Namibia is imported, primarily from South Africa. At present, Namibia imports a large share of its electricity from South Africa and other neighbouring countries. A special agreement between NamPower and Eskom, South Africa's national power utility, allows Namibia to purchase surplus electricity from South Africa at relatively affordable prices. According to the World Bank's development indicators, access to electricity in Namibia stood at 55.2% of the population in 2019. Namibia also operates the Ruacana Hydropower Station, which consists of 80 MW generating units powered by water from a surge head bay. Electricity is generated at 11,000 volts, stepped up to 330,000 volts, and transmitted through vertical tunnels to surface switchgear before being distributed to central regions of the country.

The Ministry of Mines and Energy (MME) serves as the sole administrator of the Solar Revolving Fund (SRF), a credit facility established to encourage the adoption of renewable energy technologies. The SRF primarily targets rural and off-grid communities, while also being accessible to urban users. It forms part of the Off-Grid Energization Master Plan for Namibia (OGEMP), which aims to expand

access to suitable energy technologies in rural areas. Namibia's installed electricity generation capacity is currently 498 MW, which falls short of national demand. The Namibian Integrated Resource Plan projects electricity consumption growth of approximately 4.25% per year between 2011 and 2031, further increasing reliance on electricity imports. To address this challenge, the government intends to expand domestic generation capacity and reduce dependence on imports.

The Ruacana Hydropower Plant, located on the Kunene River, remains Namibia's primary source of electricity. However, its dependence on consistent water flow poses challenges during periods of drought. Long-term solutions have been proposed, including large-scale initiatives such as the Kudu Gas Project, although its implementation has faced prolonged delays.These constraints present significant opportunities for renewable energy development, particularly in solar power. Namibia's abundant solar resources offer substantial potential for large-scale photovoltaic (PV) projects and increased investment in renewable energy.

1.7. Current Renewable Initiatives

Namibia is actively expanding its renewable energy sector to reduce dependence on imported electricity and strengthen energy security. The country plans to commission about 93 MW of new renewable capacity in the 2025/26 financial year, significantly boosting local generation from solar and wind sources.

Key projects and policies include:

- Large-scale solar development: Namibia officially broke ground in June 2025 for its largest solar photovoltaic power plant, the 100-MW Sores Gaib Power Station, marking a major step toward enhancing the country's renewable energy capacity. NamPower has partnered with Chinese firms to build a 100 MW solar plant, expected online by mid-2026, and launched a 120 MW solar tender to bring six grid-connected PV plants online under an Independent Power Producer (IPP) framework.
- Renewables target and regulatory reform: Renewables' share of Namibia's energy mix has grown to around 21 %, with a national goal to reach 70 % by 2030. Regulatory reforms like the Modified Single Buyer model aim to attract investment and allow direct power purchase agreements with IPPs.
- Battery storage and grid upgrades: A 51 MW/51 MWh Omburu Battery Energy Storage System is

under construction to improve grid stability and better integrate intermittent solar and wind power.

- Biomass and other renewables: Construction has begun on a 40 MW biomass power plant in Tsumeb to diversify renewable sources.
- Green hydrogen and industrial renewables: Namibia is investing in green hydrogen initiatives, including commissioning Africa's first green-hydrogen-powered iron production facility and planning larger hydrogen projects, although some (like the Hyphen green ammonia project) have faced setbacks and investor pullbacks.
- International support: A World Bank-backed project is financing transmission expansion and utility-scale energy storage to enhance renewable integration and strengthen the national grid.

Together, these initiatives reflect a strong national push toward renewable energy growth, infrastructure modernization, and long-term energy independence.

1.8. Project rationale and objectives.

1.8.1. Project Rationale

Namibia continues to face significant energy security challenges, primarily due to its high dependence on imported electricity. The country imports approximately 60% of its electricity from neighbouring countries within the Southern African Power Pool (SAPP), particularly South Africa and Zambia. This dependence exposes Namibia to regional supply constraints, fluctuating electricity prices, and power shortages caused by ageing infrastructure and increasing demand across Southern Africa.

SADC countries, including South Africa, Botswana, Zambia, and Zimbabwe, are experiencing rising electricity demand driven by population growth, industrialisation, and economic development. Several countries within the region have struggled to consistently meet their domestic energy needs, resulting in load shedding, supply deficits, and reduced export capacity. These regional pressures increase the urgency for Namibia to strengthen its own generation capabilities.

The proposed Photovoltaic Solar Facility is therefore justified as a strategic response to these national and regional energy challenges. Solar energy represents one of Namibia's most abundant natural resources, with some of the highest solar irradiation levels globally. Harnessing this resource supports

national goals of reducing import dependency, enhancing energy self-sufficiency, and transitioning toward a low-carbon and climate-resilient energy sector. Additionally, the project aligns with Namibia's commitments under regional and international frameworks, including SADC energy cooperation efforts, the Southern African Power Pool (SAPP), and global climate change mitigation goals.

The project also supports socio-economic development by creating employment opportunities, promoting infrastructure development, and stimulating economic activity in the project area. By increasing the share of renewable energy in the national mix, the project contributes to long-term sustainability, energy affordability, and reduced exposure to volatile regional electricity markets.

1.8.2. Project Objectives

The key objectives of the proposed PV solar project are:

- To increase Namibia's domestic electricity generation capacity
  Reduce the current ~60% dependency on imported power by contributing reliable, clean, and sustainable energy to the national grid.
- To enhance national energy security
  Strengthen Namibia's resilience to regional power shortages and supply fluctuations within the SAPP and SADC region.
- To support regional energy stability
  Contribute to SADC's collective efforts to improve power generation capacity, reduce load shedding, and promote cross-border energy cooperation.
- To promote renewable energy development in line with national policies
  Align with Namibia's Vision 2030, the National Energy Policy (2017), and the Renewable Energy Policy by expanding the renewable energy sector and reducing reliance on fossil-fuel-based imports.
- To utilise Namibia's high solar resource potential
  Leverage the country's exceptional solar irradiation to generate cost-effective and environmentally sustainable power.
- To reduce greenhouse gas emissions
  Support Namibia's climate commitments by increasing clean energy supply and reducing the carbon intensity of the national energy mix.
- To stimulate socio-economic development

Create employment opportunities during construction and operations, support local procurement, and promote skills development.

- To diversify the national energy mix
  Increase the proportion of renewable energy sources to improve system flexibility, reduce long-term energy costs, and support grid stability.
- To contribute to long-term sustainable development

1.9. EIA Process Overview

The Environmental Impact Assessment (EIA) process in Namibia is governed by the Environmental Management Act, 2007 (Act No. 7 of 2007) and the Environmental Impact Assessment Regulations, 2012. The process applies to activities listed in the Regulations and is administered by the Environmental Commissioner within the Ministry responsible for environmental affairs.

The EIA process commences with screening to determine whether the proposed activity is a listed activity requiring an Environmental Clearance Certificate (ECC). If required, the proponent submits an application for environmental clearance and appoints a qualified Environmental Assessment Practitioner (EAP). Following acceptance of the application, a scoping and public participation process is undertaken to identify key environmental issues and concerns. Interested and Affected Parties (I&APs) are informed and provided with an opportunity to comment on the proposed activity.

Based on the nature and scale of the project, the environmental assessment is conducted either as a Basic Assessment or a full Environmental Impact Assessment, which may include specialist studies. The assessment identifies and evaluates potential environmental, social, and economic impacts, considers reasonable alternatives (including the no-go option), and proposes mitigation measures. An Environmental Management Plan (EMP) is prepared to outline mitigation, monitoring, and compliance requirements throughout the project lifecycle. The EIA Report and EMP are submitted to the Environmental Commissioner for review and decision-making.

The Environmental Commissioner may grant environmental clearance (with or without conditions) or refuse the application. If approved, an Environmental Clearance Certificate is issued, authorising the activity subject to compliance with the approved EMP and conditions. Following approval, the proponent is responsible for implementing the EMP and ensuring ongoing compliance. Environmental

monitoring, reporting, and audits may be required. Provision is made for amendment, renewal, or appeal of the ECC in accordance with the Act and Regulations.

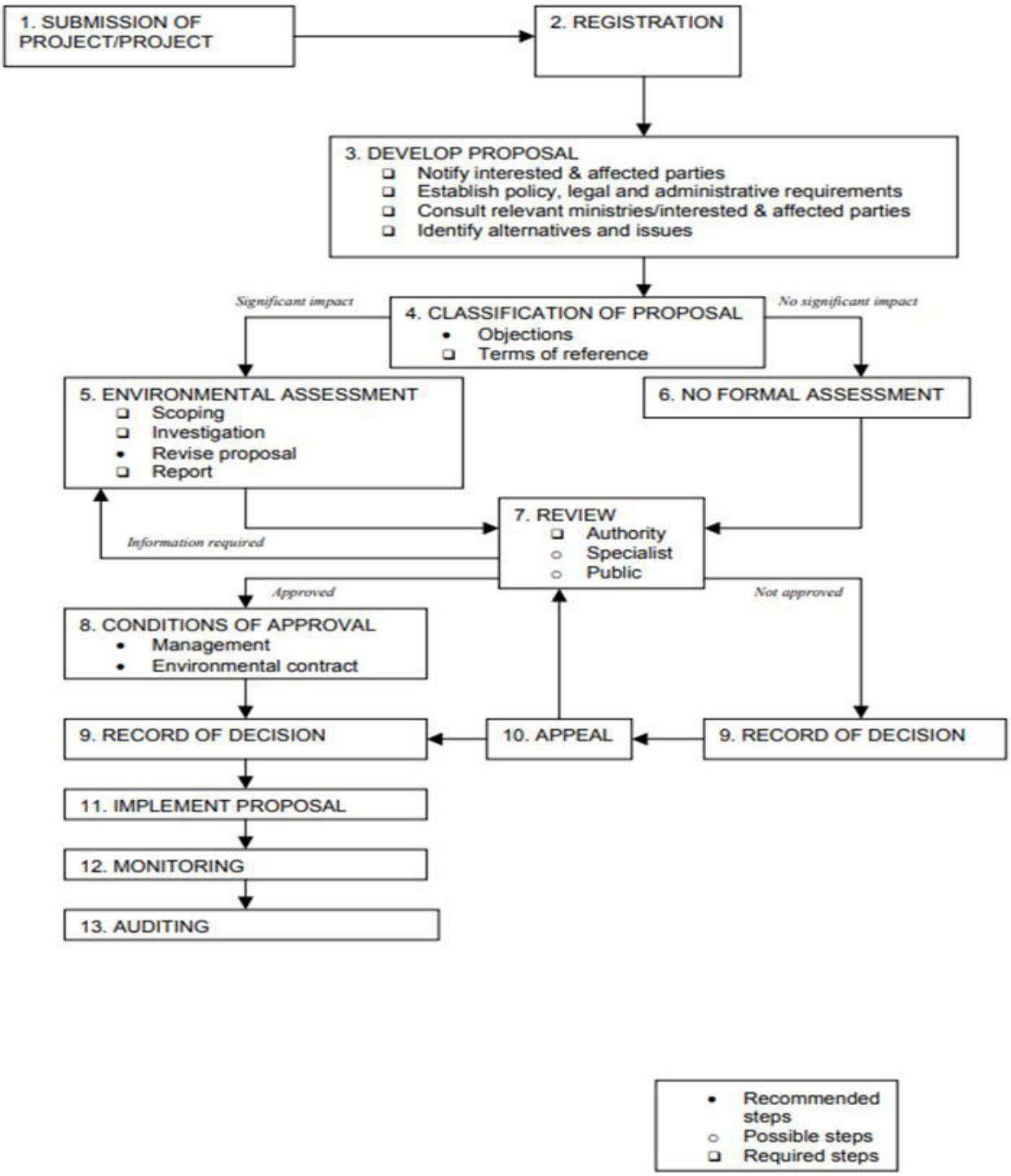


Figure1. EIA Process

1.9.1. The Scoping Phase

The Scoping Phase is the initial stage of the EIA process and aims to identify key environmental, social, and economic issues related to the proposed activity. During this phase, the project scope is defined, potential impacts are identified, and reasonable alternatives, including the no-go option, are considered. A public participation process is conducted to ensure that Interested and Affected Parties (I&APs) can raise concerns. The outcome of this phase is a Scoping Report, which outlines identified issues, required specialist studies, and the Terms of Reference for the detailed EIA.

1.9.2. The EIA Phase

The EIA Phase is the detailed assessment stage. It involves a comprehensive evaluation of potential impacts on the physical, biological, socio-economic, and cultural environment. Where necessary, specialist studies are conducted to provide in-depth analysis. The significance of impacts is assessed, and practical mitigation measures are proposed. An Environmental Management Plan (EMP) is prepared to guide implementation, monitoring, and compliance. Draft reports are made available for public and authority review before submission of the final EIA Report to the Environmental Commissioner for decision-making.

Together, these phases ensure that environmental issues are identified and addressed early, public participation is integrated, and decision-making is informed, transparent, and aligned with sustainable development principles in Namibia.

2. PROJECT DESCRIPTION

2.1. Project Description and location.

Project title: Proposed 300 MW Liselo Solar and Storage Facility

Site location: Liselo, Zambezi Region,

17˚30’31.65’’S. 24˚09’08.47’’E

Description: The proposed development involves the establishment of a 300 MW (AC) solar photovoltaic (PV) power generation facility with an integrated Battery Energy Storage System (BESS) and associated supporting infrastructure. The facility will be developed on a designated site to harness solar energy for conversion into electricity, which will be supplied to the national grid.

The proposed project will consist of ground-mounted PV module arrays, inverters, transformer stations, and a 132 kV on-site substation. The BESS will be housed in purpose-built enclosures to store surplus electricity for dispatch during peak demand periods, enhancing grid stability and energy reliability. Ancillary infrastructure will include internal access roads, security fencing, operations and maintenance buildings, cabling (both overhead and underground), drainage and stormwater controls, and connection infrastructure to the nearest grid point.

The purpose of the project is to generate renewable electricity to contribute to the national energy mix, reduce dependence on fossil fuels, and support national decarbonization and energy security goals. Environmental sensitivities, such as biodiversity, soil, water, and heritage resources, will be carefully considered during the assessment and design phases to minimize impacts.

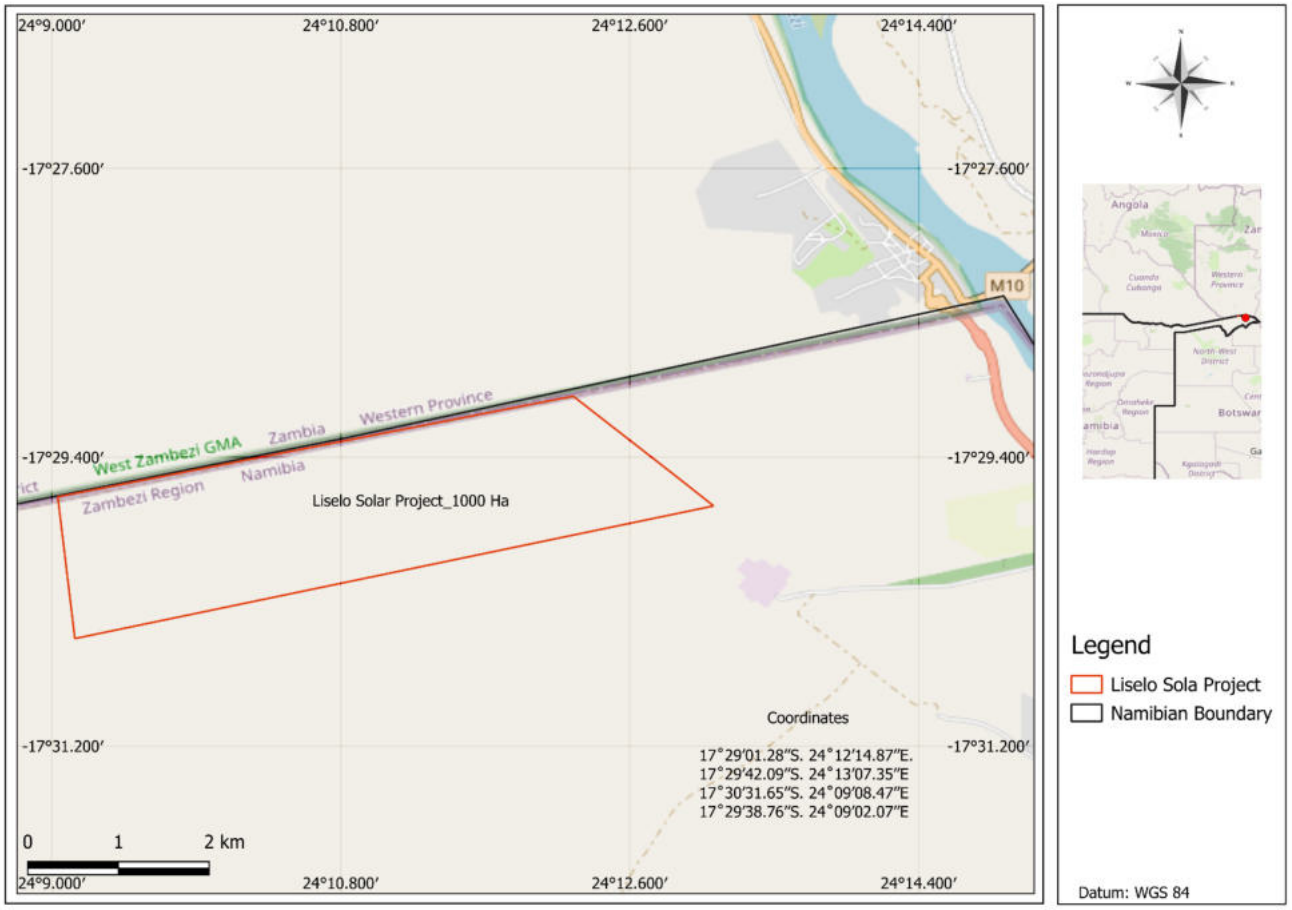


Figure 2. Locality Map

2.2. Project Components, Phases, and Activities

Table 1. Project Phases and Activities

Phase	Objectives	Key Activities
1. Pre-Construction	Prepare the site for safe and efficient construction while minimizing environmental and social impacts	a) Site Clearing and Debushing (Four Tiers) - Tier 1 – Perimeter Clearing: Remove invasive species, shrubs, and vegetation along site boundary for access and demarcation - Tier 2 – Access Roads/Internal Tracks: Clear corridors for vehicles, equipment, and materials - Tier 3 – Panel Arrays/Substation Footprint: Targeted clearing within panel and substation areas - Tier 4 – Ancillary Facilities: Clear storage yards, worker camps, water and waste facilities b) Perimeter Fencing - Erect fencing with controlled access gates - Include wildlife passages and safety signage
2. Construction	Build the solar plant infrastructure in a structured and safe manner	**Phase 1** – Civil Works: Grading, leveling, access roads, drainage, foundations, erosion control **Phase 2** – Mechanical & Structural Installation: Install mounting structures, place panels, alignment checks, transformers/inverters/cabling **Phase 3** – Electrical Works & Grid Connection: Substation completion, grid

		interconnection, testing, commissioning
3. Operations & Maintenance (O&M)	Ensure efficient energy generation, safety, and long-term reliability	- Routine inspections of panels, inverters, transformers - Regular panel cleaning (manual or automated) - Vegetation management to prevent shading/fire risk - Continuous monitoring via SCADA systems - Repairs and component replacements
4. Decommissioning	Safely dismantle the solar facility and rehabilitate the site	- Dismantle panels, mounting structures, inverters, transformers, and cabling - Transport materials for recycling or licensed disposal - Refill, regrade, and replant native vegetation - Remove temporary facilities, access roads, and fencing if not needed - Conduct environmental monitoring post-decommissioning

2.3. Materials, technologies, and inputs required.

The development of a photovoltaic (PV) solar project in the Liselo area of the Zambezi Region will require a range of materials, technologies, and operational inputs consistent with industry best practice and local environmental conditions.

2.3.1. Materials

Table 2. Materials

Category	Material/Description
Photovoltaic (PV) Modules	High-efficiency silicon-based solar panels (monocrystalline or equivalent), suitable for high-temperature and high-irradiation environments
Mounting Structures	Galvanized steel or aluminium support structures; fixed-tilt or single-axis tracking systems; designed for local wind loads and seasonal weather
Foundations	Concrete or driven pile foundations for panel structures, inverter stations, and substations
Electrical Cabling	DC and AC cables, earthing conductors, cable trays; compliant with international and Namibian electrical standards
Inverters and Transformers	Central or string inverters; step-up transformers for voltage conversion and grid connection
Substation Components	Switchgear, protection systems, meters, and control equipment
Perimeter Fencing and Security	Fencing materials, gates, CCTV systems, and lighting for site security
Access Infrastructure	Gravel or paved access roads and internal tracks
Water Storage and Supply Materials	Tanks, pipes, and fittings for panel cleaning and construction use
Battery Energy Storage System	A Battery Energy Storage System (BESS) enhances the performance and reliability of the proposed 300 MW solar PV facility by storing excess electricity generated during peak sunlight and supplying it when generation is low or demand is high.
Operation and Maintenance Building (O&M	Site Offices, Security Offices, Warehouse, Workshops
Temporal Laydown Areas	For materials
133kv circuit Overhead Powerlines	For distribution of the generated power which will be connected to the existing Zambezi Transmission (350 kV) Substation

2.3.2. Technologies

Table 3: Technologies

Category	Technology / Description
PV Generation Technology	Utility-scale photovoltaic systems optimized for high solar irradiation conditions
Inverter Technology	Grid-compliant inverters with anti-islanding protection and remote monitoring capability
Monitoring & Control Systems	SCADA systems for real-time performance monitoring, fault detection, and reporting
Energy Management & Protection Systems	Relays, breakers, and surge protection devices for safe operation
Cleaning Systems	Manual or semi-automated panel cleaning technologies adapted to dusty conditions
Grid Interconnection Technology	Transmission lines, substations, and communication systems for integration into the national grid

2.3.3. Inputs

Table 4. Inputs

Category	Inputs / Description
Land	Suitable land with secure tenure and appropriate zoning
Water	Limited quantities for construction activities and periodic panel cleaning
Labor	Skilled and semi-skilled workforce; opportunities for local employment
Fuel & Electricity	Diesel or other fuels for construction machinery and temporary power supply
Construction Equipment	Earth-moving machinery, cranes, pile drivers, trucks, lifting equipment
Permits & Approvals	Environmental clearance, generation licenses, grid connection approvals, land-use permits
Logistics & Transport	Transportation of equipment and materials to the site, including

	cross-border imports if needed

These materials, technologies, and inputs are typical of utility-scale photovoltaic projects in Namibia and the Southern African region and will be selected to ensure technical reliability, environmental compatibility, and compliance with national regulations and international best practice.

2.3.4. Solar Irradiation

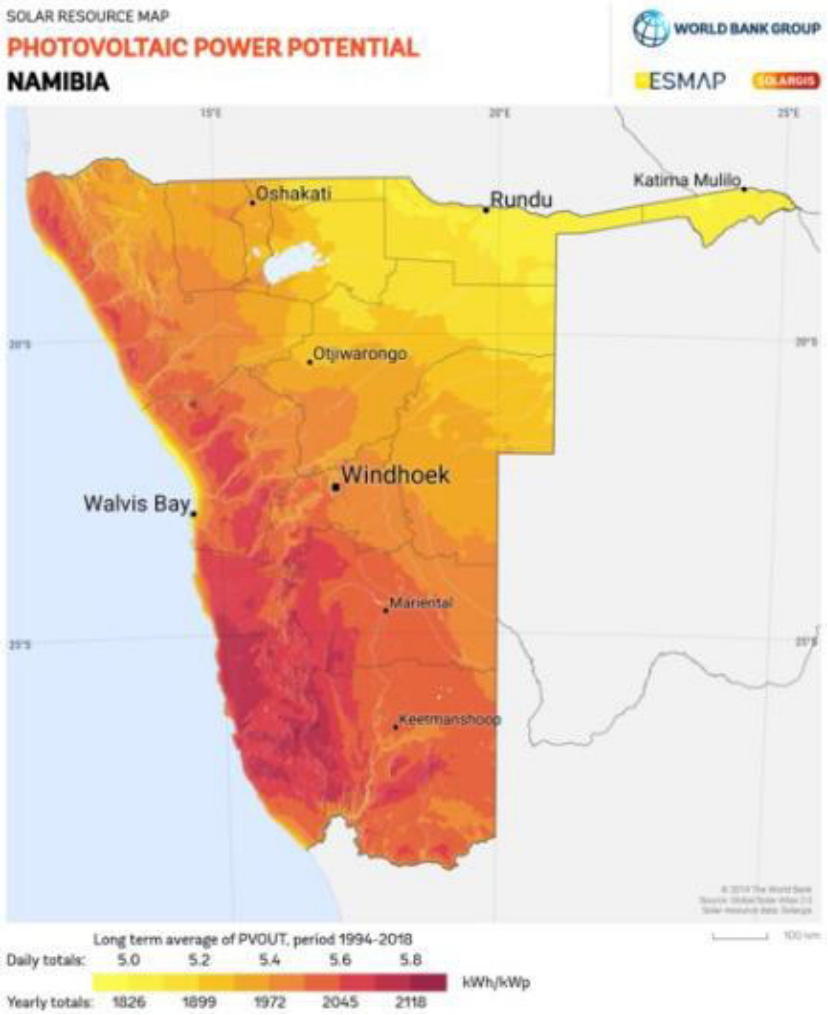


Figure 3. Namibia Photovoltaic Power Potential

2.4. Project outputs, products, or services.

The Liselo Solar Project is expected to deliver the following key outputs, products, and services over its lifecycle:

2.4.1. Electricity generation (primary output)

Clean, renewable electricity generated from photovoltaic solar technology. Power supplied to the national grid and/or local distribution network, contributing to energy security in the Zambezi Region and Namibia as a whole.

2.4.2. Renewable energy capacity addition

Installation of new utility-scale solar generation capacity, increasing Namibia's domestic electricity production. Contribution toward national renewable energy and climate change mitigation targets.

2.4.3. Reduction in greenhouse gas emissions

Displacement of fossil fuel–based electricity and imported power, resulting in reduced carbon dioxide and other greenhouse gas emissions.

2.4.4. Grid support and energy reliability

Improved stability and reliability of electricity supply in the Zambezi Region. Potential support for peak demand periods, depending on system configuration.

2.4.5. Local economic and social benefits

Temporary and permanent employment opportunities during construction, operation, and maintenance. Skills development and knowledge transfer to local workers and contractors.

2.4.6. Energy services for development

Enhanced availability of electricity to support local economic activities, public services, and infrastructure development. Potential to support rural electrification and improved quality of life in surrounding communities.

2.4.7. Technology and infrastructure development

Deployment of modern solar PV technology, grid infrastructure, and monitoring systems. Strengthening of regional energy infrastructure and technical capacity.

2.4.8. Long-term sustainable energy service

Provision of a reliable, low-impact energy service over the project's operational lifespan (typically 25-30 years). Overall, the Liselo Solar Project will provide clean electricity as its core product, while also delivering broader environmental, economic, and social services that support sustainable development in the Zambezi Region and Namibia.

2.5. Project Alternatives

2.5.1. Location

The current location proposed for the Liselo Solar Project is considered the most suitable and preferred option when assessed against technical, environmental, and socio-economic criteria.

The project site is strategically located near the existing power station in the Zambezi Region, which presents a major advantage for the development of a solar power facility. The proximity to existing electrical infrastructure significantly reduces the need for extensive new transmission lines, thereby lowering construction costs, minimizing land disturbance, and reducing potential environmental and social impacts associated with long-distance power transfer. The close location also facilitates efficient connection, transfer, and distribution of electricity into the regional grid, improving overall system reliability.

In terms of accessibility, existing road infrastructure is already available in the project area. While some sections may require upgrading to accommodate construction vehicles and equipment, the presence of roads eliminates the need for constructing entirely new access routes. This reduces land clearing, soil disturbance, and associated environmental impacts, while also improving logistical efficiency during both the construction and operational phases.

The site is also located close to the Zambezi River, which provides a potential water source should limited quantities of water be required during construction (e.g., for dust suppression).

2.5.2. No-go Areas

A comprehensive review of environmental, cultural, and land-use constraints was undertaken to determine whether any no-go areas exist within or adjacent to the proposed Liselo Solar Project site. No-go areas are typically defined as locations where development is legally restricted or environmentally unacceptable due to the presence of sensitive ecological features, cultural heritage resources, or protected land designations.

Cultural and Heritage Resources

Desktop studies, consultation with available heritage registers, and preliminary site assessments indicate that no known cultural, archaeological, or historical heritage sites have been identified within the proposed project footprint or its immediate surroundings. The area does not fall within any zone designated under the National Heritage Act, 2004, and no declared monuments, graves, sacred sites, or historical structures are recorded in the vicinity. As such, the project does not conflict with nationally protected heritage resources, and the likelihood of impacting cultural heritage is considered low.

Protected and Conservation Areas

The proposed Liselo Solar Project site is not located within or adjacent to any proclaimed protected areas, such as national parks, conservancies, forest reserves, or community conservation areas. There are also no internationally recognised conservation areas (including Ramsar wetlands, Important Bird Areas, or biodiversity hotspots) overlapping the site. This significantly reduces the risk of adverse impacts on sensitive ecosystems or conservation-priority species.

Ecological Sensitivity

The project area is situated on previously undeveloped land with low ecological sensitivity, characterised by common vegetation types typical of the Zambezi Region. No rare, endemic, or threatened plant or animal species have been identified as being dependent on the site. The absence of wetlands, riparian buffers, or critical wildlife corridors within the project footprint further supports the conclusion that the area does not qualify as a no-go zone from an ecological perspective.

Land Use and Community Constraints

The site is not currently used for agriculture, settlement, or grazing, and no competing land uses of social or economic significance have been identified. The land is free of active livelihoods or community infrastructure, thereby minimising the risk of displacement, land-use conflict, or loss of community resources. Additionally, the area does not overlap with communal land allocations or traditional land claims that would restrict development.

Regulatory Compliance

Based on current information, the site complies with national environmental and land-use legislation, and no statutory exclusions apply that would prohibit the development of a solar energy facility. Consequently, there are no legal or regulatory no-go constraints associated with the selected location

3. REGULATORY, LEGAL AND INSTITUTIONAL FRAMEWORK.

3.1.Legal Framework

Table 5. Regulatory, legal and institutional framework.

Framework	Regulation	Description
The Constitution	Constitution	Provides a legal and policy foundation supporting renewable energy development through principles on natural resource management, environmental protection, economic development, and social welfare
	Article 95	Commits the State to promote sustainable development, responsible use of natural resources, and economic growth for current and future generations. Solar projects align with this by using sunlight and enhancing energy security and economic resilience.
	Article 91c	Mandates the Ombudsman to investigate overuse and degradation of natural resources, reinforcing environmental protection. Encourages adoption of clean energy technologies like solar power with minimal environmental impact.
Environmental Regulatory Framework	Environmental Management Act, 2007 (Act No. 7 of 2007)	-Legal basis for environmental protection in Namibia. -Requires EIAs and Environmental Clearance Certificates (ECC) for listed activities. -Emphasizes sustainability, stakeholder participation, impact mitigation, and polluter-pays/precautionary principles.
	EIA Regulations, 2012 (GN No. 30 of 2012)	Defines EIA procedures under EMA. Listed projects must submit a Scoping Report, complete a full EIA, and obtain an ECC before proceeding.
	Environmental Management Plan (EMP)	Guides mitigation, monitoring, and management of environmental and social impacts during the project lifecycle.

	Soil Conservation Act (Act 76 of 1969)	Provides for the prevention of soil erosion and promotes the protection and maintenance of soil structure, vegetation, and natural soil resources in Namibia.
	Water Act	Requires certification under Sections 21(1) and 21(2) for the disposal of industrial or domestic wastewater and effluent. Prohibits pollution of surface and underground water bodies (Section 23(1)) and holds project proponents accountable for environmental remediation costs upon project abandonment (Section 23(2)).
	National Climate Change Strategy and Action Plan (2013–2020)	Identifies climate change as a critical threat to sustainable development and promotes a holistic approach to mitigation and adaptation measures.
	Pollution and Waste Management Bill (Draft)	Defines various types of pollution and outlines government measures to control pollution and ensure a clean and safe environment. Mandates compliance with waste management requirements, with non-compliance constituting a punishable offense.
	Waste Management Regulations: Local Authorities Act (1992)	Provides guidelines for waste management and requires property occupiers to provide secure, hygienic, adequate, and accessible waste storage facilities on their premises.
Energy Regulatory Framework	Electricity Act, 2007 (Act No. 4 of 2007)	Regulates the electricity supply industry, including licensing of generation and distribution and consumer protection. Solar power facilities require a generation licence from the Electricity Control Board (ECB) and compliance with national technical and safety standards.

	Renewable Energy Policy of Namibia (2017)	Promotes investment in renewable energy, encourages private-sector participation, and supports the reduction of electricity import dependence. The proposed photovoltaic facility aligns with this policy.
	National Integrated Resource Plan (NIRP)	Provides long-term electricity generation planning and prioritises the expansion of renewable energy, including utility-scale solar PV, to meet national electricity demand.
Land use Framework and other related regulation	Communal Land Reform Act, 2002	Where a project is located on communal land, land rights must be approved by the relevant Traditional Authority and the Communal Land Board.
	National Land Policy, 1998	Provides a framework for land administration and equitable land use based on constitutional principles. Emphasises environmentally sustainable land and natural resource use, equality before the law (Article 10), and redress of historical social and economic injustices in line with Article 95(l) of the Constitution.
	Road Ordinance, 1972 (Ordinance 19 of 1972)	Regulates proclaimed road widths and road reserve boundaries, controls infringements and obstructions, prescribes distances for fences from roads, and governs traffic control during construction on trunk and main roads.
	Public Health and Environmental Act, 2015	Prohibits the creation or existence of nuisances or conditions that may be injurious or dangerous to human health, as provided under Section 119.
	Township and Regional Planning Ordinance and Amendments	Requires planning and zoning approvals from relevant local or regional authorities for projects located within designated planning schemes or regions.
	Forestry Act,	Requires permits for the removal of protected tree

	2001	species and for clearing large areas of vegetation where applicable.
	Heritage Act, 2004	Requires consultation with the National Heritage Council where heritage resources may be affected, and the issuance of permits where necessary.
	Labour Act, 2007	Regulates occupational health and safety and fair labour practices during construction and operation, ensuring employee welfare and protection against unfair labour practices.
Institutional Context	Institution	Role
	Ministry of Environment, Forestry and Tourism (MEFT)	Lead authority for the EIA process. The Environmental Commissioner reviews the Scoping Report, EIA Report, and EMP, and issues the Environmental Clearance Certificate (ECC).
	Electricity Control Board (ECB)	Issues electricity generation licences, oversees compliance with the Electricity Act, and regulates electricity tariffs where applicable.
	NamPower	National electricity utility involved in grid connection, power purchase agreements, and transmission infrastructure, depending on project requirements.
	Regional and Local Authorities	Responsible for land-use planning, development approvals, and provision of municipal services where applicable.
	Traditional Authorities / Communal Land Boards	Grant land permissions and provide project endorsement for developments located on communal land.
	Ministry of Mines and Energy (MME)	Oversees the energy sector and implements national energy policies.
SADC Guidelines	SADC Protocol	Promotes regional energy integration, development of

	on Energy	renewable energy, and harmonisation of energy policies and regulatory frameworks among SADC member states.
	Southern African Power Pool (SAPP) Guidelines	Apply where grid connection and power trading require compliance with regional power system operation, reliability, and stability requirements.
International Standard/Guidelines	**IFC Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts**	Core standard guiding the EIA process. Requires environmental and social assessment, an ESMS, identification and mitigation of key risks, stakeholder engagement, a grievance mechanism, and implementation of an ESMP.
	IFC Performance Standard 2: Labour and Working Conditions	Applies to construction and operational workforce. Requires safe working conditions, fair employment terms, prohibition of child and forced labour, worker grievance mechanisms, and protection from occupational hazards.
	IFC Performance Standard 3: Resource Efficiency and Pollution Prevention	Requires efficient use of water and energy, prevention of pollution, control of soil erosion and dust, proper management of hazardous materials, and responsible disposal of e-waste and PV modules.
	IFC	Addresses risks to local communities from traffic,

	Performance Standard 4: Community Health, Safety, and Security	construction activities, electrical infrastructure, and security arrangements. Requires emergency preparedness and a Community Health and Safety Plan.
	IFC Performance Standard 5: Land Acquisition and Involuntary Resettlement	Applies where land acquisition or economic displacement may occur. Requires avoidance or minimisation of displacement, fair compensation, livelihood restoration, and documented agreements with land authorities.
	IFC Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	Requires biodiversity baseline studies, protection of sensitive habitats and species, mitigation of avifauna risks, and application of the mitigation hierarchy to achieve no net loss where applicable.
	IFC Performance Standard 7: Indigenous Peoples	Applies if Indigenous Peoples are present or affected. Requires culturally appropriate engagement, FPIC for significant impacts, protection of traditional practices, and safeguarding land and resource access.
	IFC Performance Standard 8:	Requires heritage screening, specialist studies if needed, implementation of chance-find procedures, consultation with heritage authorities, and protection of cultural and

	Cultural Heritage	spiritual sites.
	World Bank Group EHS General Guidelines (2007)	Applicable to all infrastructure projects. Provide requirements for environmental management, occupational and community health and safety, pollution control, waste management, and construction/decommissioning practices.
	EHS Guidelines for Renewable Energy – Solar Power Projects (2015)	Specific to utility-scale solar PV. Covers array design, glare, land clearing, drainage, fire risks, PV module handling and disposal, battery storage risks, and biodiversity protection.
	EHS Guidelines for Electric Power Transmission and Distribution (2007)	Applicable if transmission lines or substations are included. Addresses EMFs, avifauna protection, electrical safety, and right-of-way management.

4. LAND OWNERSHIP AND PROJECT TENURESHIP

The project site is owned by the Mafwe Traditional Authority and will remain under its ownership throughout the project lifecycle. The land will be leased to Water and Power Supply Namibia (Pty) Ltd for the purpose of developing and operating the solar project. The lease agreement between Mafwe Traditional Authority and Water and Power Supply Namibia (Pty) Ltd will be for a period of 25 years, corresponding with the anticipated operational lifespan of the project. Upon expiry of the lease, land use and tenure arrangements will be subject to the terms and conditions agreed upon between the Mafwe Traditional Authority and Water and Power Supply Namibia (Pty) Ltd.

5. NEED AND DESIRABILITY

5.1. Strengthening National Energy Security and Reducing Import Dependence

Namibia remains highly dependent on imported electricity, with imports historically covering roughly 60% of consumption, primarily from South Africa's Eskom and other Southern African Power Pool (SAPP) partners. This makes the country vulnerable to external supply shocks, contractual uncertainties, price volatility, and regional power shortages.

- Imports are costly and expose Namibia's economy to high electricity tariffs.
- Major power purchase agreements (such as with Eskom) are subject to renegotiation and expiration, creating future supply risks.
- A local solar facility would generate clean electricity domestically, reducing reliance on imports, stabilizing supply, and supporting long-term energy independence.

5.2. Mitigating Vulnerability to Regional Power Crises

South Africa's power sector has experienced periodic generation challenges, financial constraints, and reliability issues, which affect the stability of imports. Although recent agreements have mproved supply security, the situation remains sensitive to maintenance issues, load shedding, and fluctuating generation capacity.

By diversifying the supply mix with solar generation in the Zambezi Region, Namibia can buffer itself against external disruptions and foster resilience in national electricity delivery.

5.3. Utilizing Abundant Solar Resources

Namibia has world-class solar irradiation potential, making utility-scale PV projects highly efficient and cost-effective. Solar power can generate clean, sustainable energy with minimal operational fuel costs, unlike imported coal-based electricity or expensive long-distance grid supply. This advantage is particularly suitable for the Zambezi Region, which receives high solar insolation and can host large PV installations.

5.4. Supporting Regional Economic and Social Development

- A solar plant in the Liselo area offers tangible local development benefits, such as:
- Job creation during construction and operations.
- Skills transfer and local capacity building.
- Improved electricity access for communities in a region that traditionally has limited local generation capacity.
- ESME and local developmental support

These economic gains improve livelihoods and help drive broader regional development.

5.5. Strategic Border Location Benefits

The Zambezi Region's location near international borders positions it strategically for cross-border energy opportunities:

- It can serve as a solar energy hub that supports regional grid stability and potential future export of renewable energy.
- It aligns with broader SAPP integration goals that encourage renewable generation and power trading across Southern Africa.

Proximity to neighbouring markets could facilitate economies of scale and shared infrastructure development, strengthening regional energy cooperation.

5.6. Aligning with National Renewable Energy Goals

Namibia's energy policy aims to increase renewable generation capacity, reduce import dependency, and support sustainable development. Planned solar IPP projects including those in regions such as Zambezi form part of this strategy, demonstrating government commitment to renewables.

A solar facility in the Liselo area supports national objectives to:

- Expand solar generation capacity.
- Lower electricity costs over time by reducing reliance on imported power.
- Align with climate commitments and carbon reduction pathways

6. BASELINE ENVIRONMENTAL AND SOCIAL CONTEXT

6.1. Physical environment

6.1.1. Climate

The Liselo area, located within Namibia's Zambezi Region, experiences a tropical savanna climate characterized by distinct wet and dry seasons. The wet season runs from November to March/April, during which most of the region's rainfall occurs, influenced by the Intertropical Convergence Zone and convective storms typical of the sub-tropics. Annual rainfall in the region generally ranges between 600 mm and 1,000 mm, making it the wettest part of Namibia compared to the national average of less than 250 mm.

Temperatures are consistently warm to hot year-round. Daytime highs frequently exceed 30-35 °C, especially in the late dry season (October-December), while cooler months (May-August) see temperatures around 20-28 °C during the day. Nighttime temperatures in the dry season can drop to around 10 °C or lower. Humidity is relatively high, particularly during the rainy months, but declines in the dry season.

6.1.2. Rainfall and Hydrology

Rainfall in the Liselo area is highly seasonal and variable in intensity, with the heaviest rainfall occurring between December and March. This rainfall contributes to flooding of adjacent floodplains and wetlands, fed by the broader Zambezi Basin's hydrology. Major rivers in the region the Zambezi, Kwando, Linyanti, and Chobe-create a network of perennial and seasonal watercourses that recharge floodplains and support rich surface water dynamics.

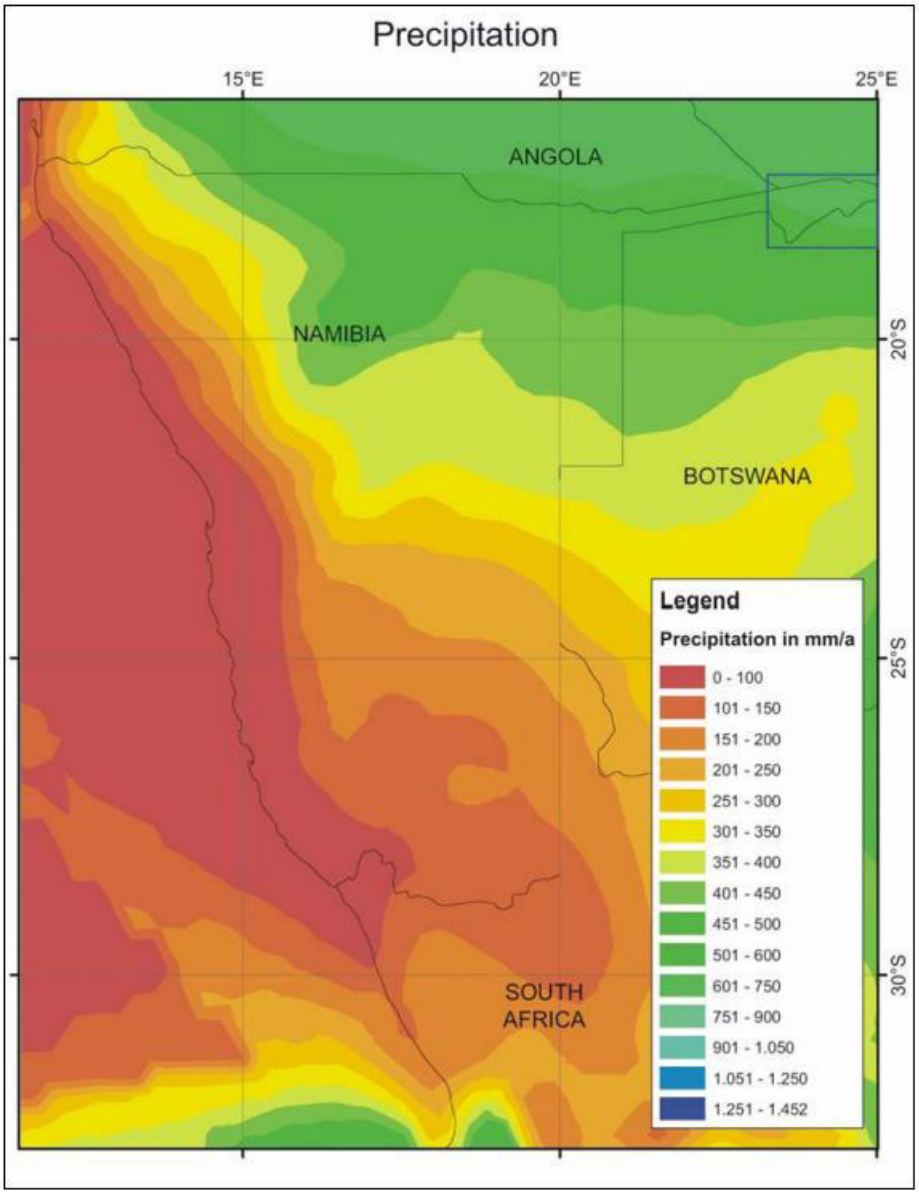


Figure 4. Spatial Rainfall Distribution in Namibia.

6.1.3. Flooding

The Atlas of Namibia (compiled by John Mendelsohn, Alice Jarvis, Carole Roberts & Tony Robertson), which includes broad hydrological and environmental maps for the Caprivi/Zambezi Region, shows that the Zambezi River's floodplain including towns and rural settlements near Katima Mulilo and Liselo lies within a flood-prone landscape. Although the Atlas is a broad-scale source, it is based on extensive, systematic environmental data and longstanding field knowledge of the region's

hydrology and ecology. The specific area where the project is intended seems to be in a low flood risk area.

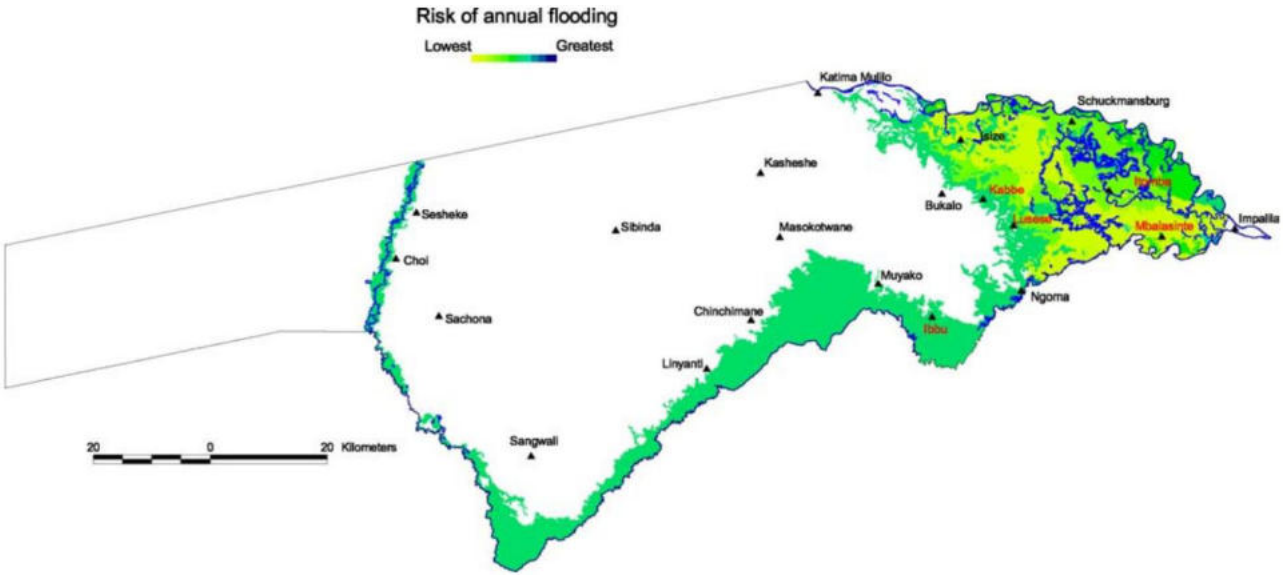


Figure 5. Annual Flood Risk Map

6.1.4. Topography

From a topographical and geological point of view, Caprivi/Zambezi region lies almost at the bottom of a vast sand pit, more formally known as the Kalahari Basin. The landscape of Liselo and the broader Zambezi Region is predominantly flat to gently undulating, reflecting its position within the Zambezi River floodplain system. Elevations typically range from about 930 m to 1,100 m above sea level, with the terrain sloping gently from west to east. Extensive floodplains, wetlands, and marshy lowlands dominate the geography, interspersed with woodland savanna and grassland. Seasonal flooding during the wet season affects broad areas, creating saturated soils and surface water bodies.

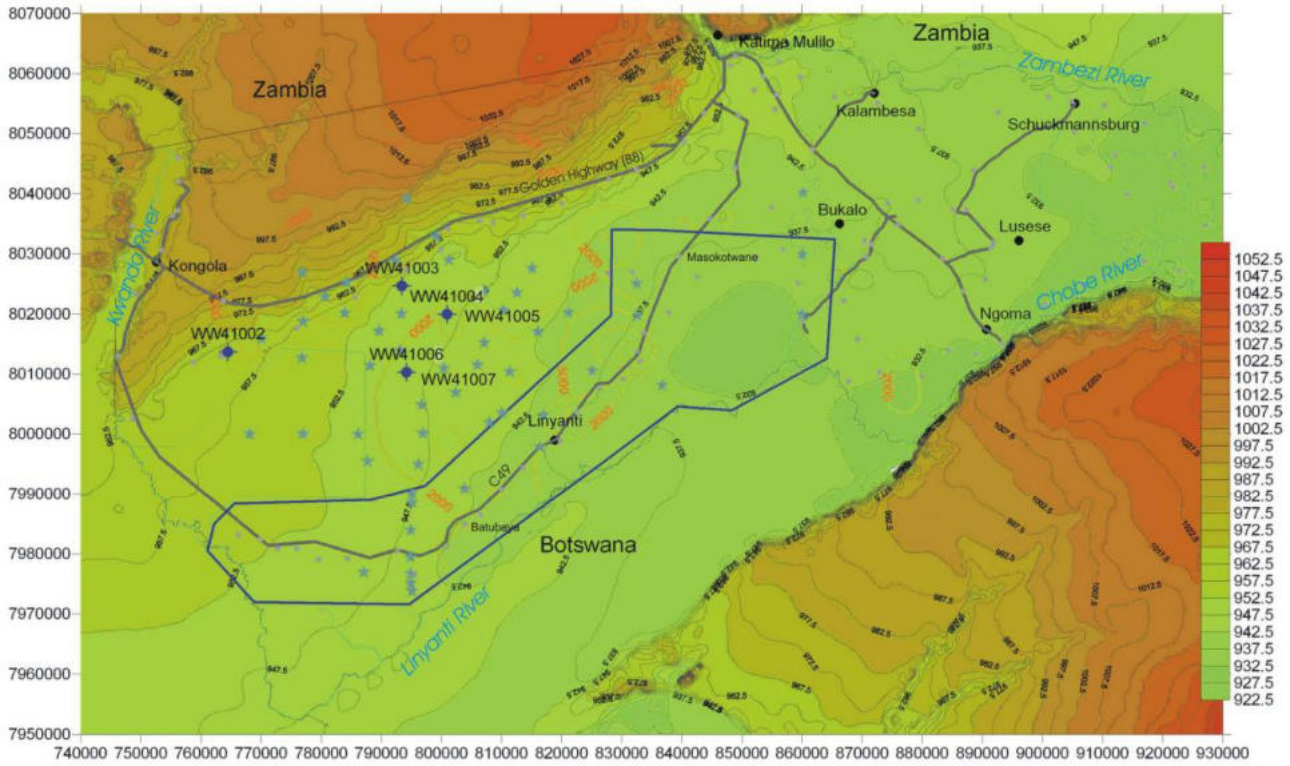


Figure 6. General Topography.

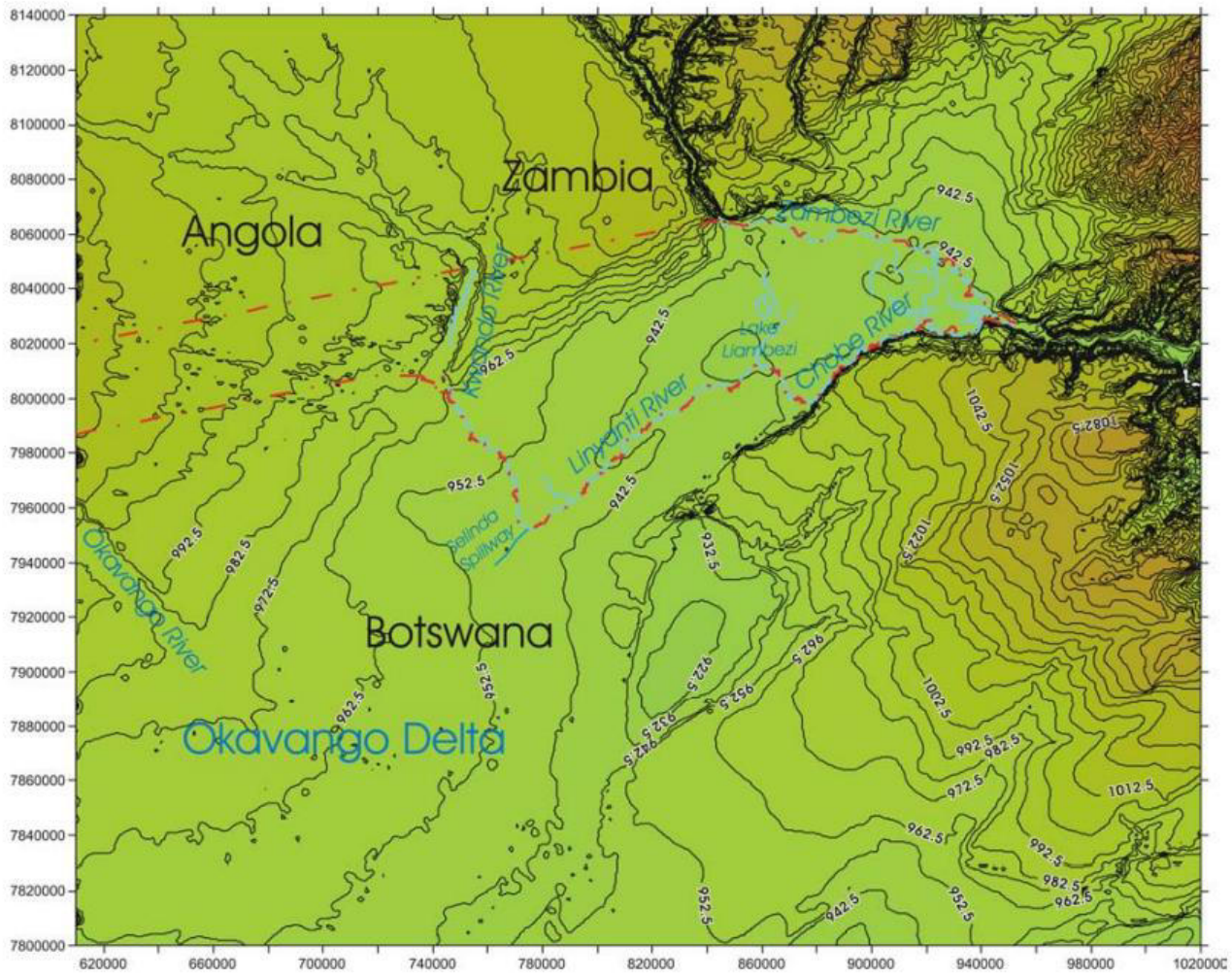


Figure 7. Topographical Gradient

6.1.5. Soils

Soil conditions in the Liselo area are influenced by the region's hydrological and climatic regime.

According to the Atlas of Namibia (MENDELSOHN et al., 2002), arenosols are dominating in the western part of the Eastern Caprivi Region whereas fluvisols predominantly occur in its eastern part (Figure 7). Soil texture is clayey in the lowlying areas and sand content generally increases with elevation .

In much of the central part of the Eastern Caprivi the soils consists of clayey loam. Therefore possibilities for infiltration are low. Since at the same time evaporation mostly exceeds rainfall, it is very likely that groundwater recharge over much of the Eastern Caprivi is negligible.

Kalahari sands: Widespread across much of the region, these sandy soils have low water retention and are typically nutrient-poor, common to much of northeastern Namibia.

Hydromorphic and alluvial soils: Along river corridors and floodplains, soils tend to be fertile clay loams and fluvisols, enriched by periodic alluvial deposition. These soils support richer vegetation growth and floodplain agriculture.

The combination of sandy and clay-rich soils affects water infiltration, groundwater recharge, and suitability for agriculture and infrastructure.

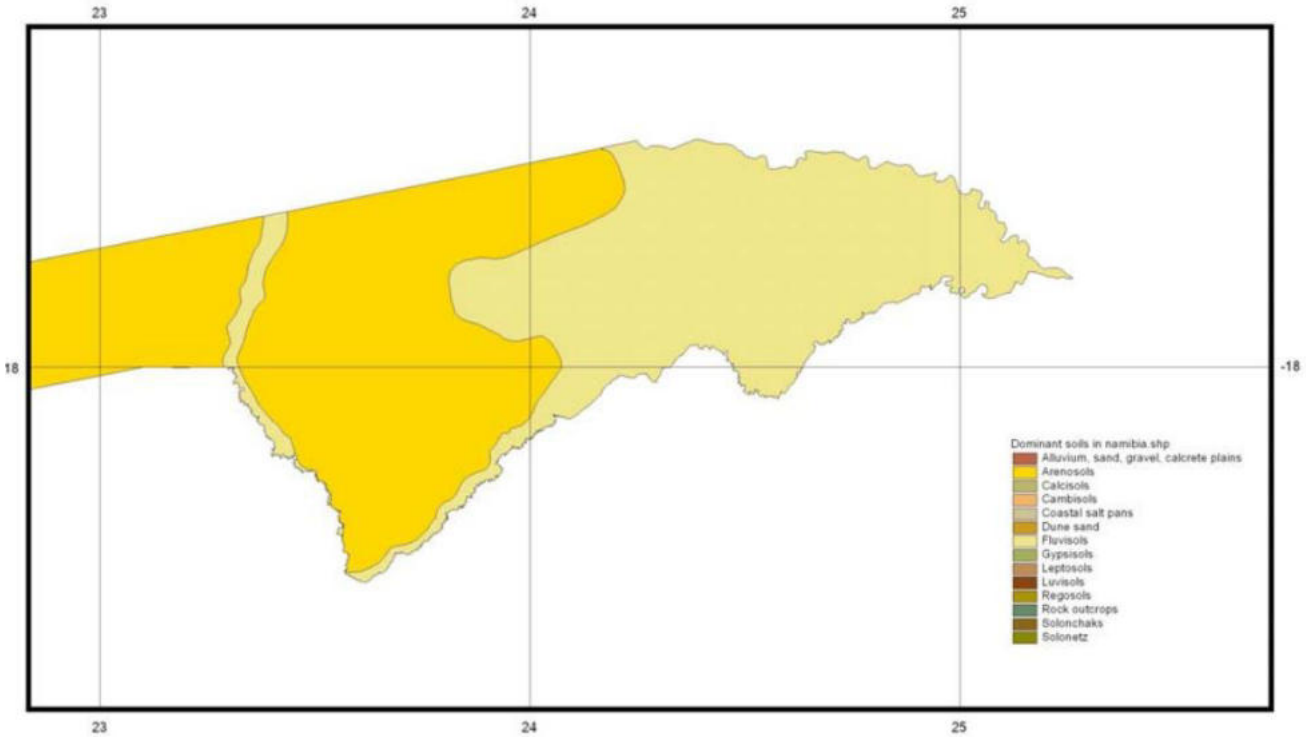


Figure 8. Dominant Soil Types.

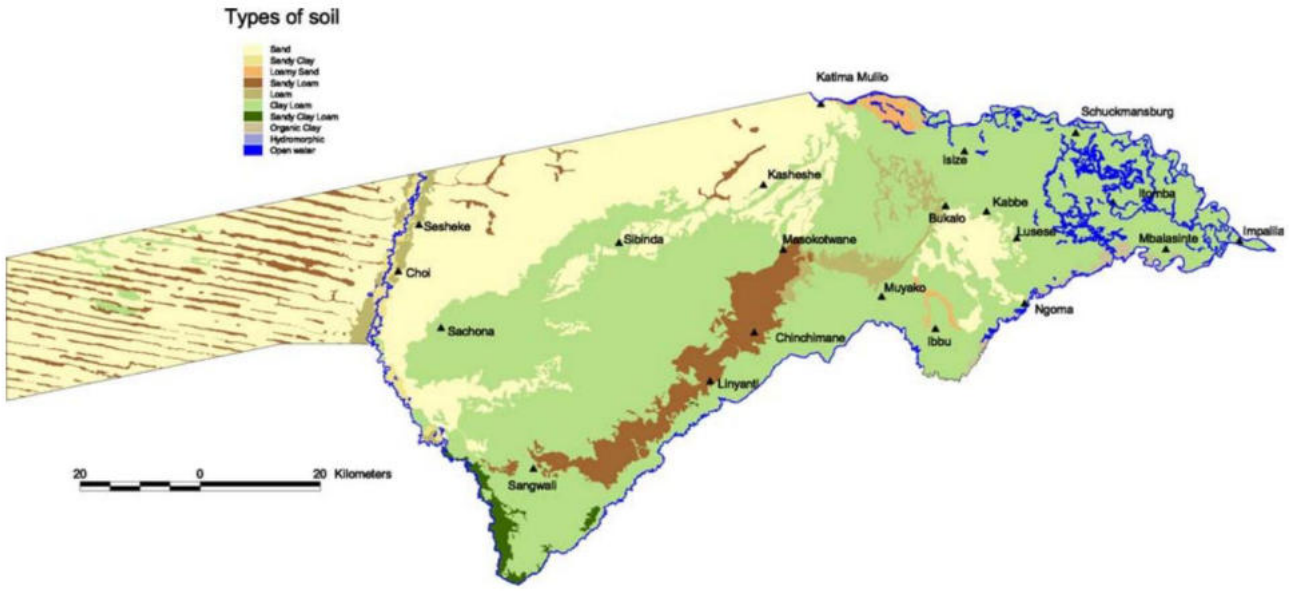


Figure 9. Types of Soils

6.1.6. Surface and Groundwater (Hydrogeology)

Surface water is abundant relative to other Namibian regions due to perennial rivers and seasonal floodwaters. The Zambezi Basin's river systems contribute to extensive wetlands and floodplain inundation, which provides important ecological services and temporary surface water storage. Flood peaks typically occur shortly after the peak rainy season and may inundate wide areas.

Groundwater conditions in the broader region are complex. The superficial aquifers are generally associated with Kalahari sand deposits, which may have low infiltration potential due to clayey layers, limiting groundwater recharge in places. Groundwater may be available from deeper alluvial deposits near rivers, but detailed hydrogeological data for the Liselo area specifically are limited.

6.1.7. Geology

The geology of the Liselo area near Katima Mulilo in the Zambezi Region (formerly Caprivi Strip) is strongly influenced by superficial sedimentary deposits and regional sedimentary cover, rather than by exposed ancient bedrock. Although detailed bespoke geological maps from the Geological Survey of Namibia (GSN) for Liselo are limited, multiple environmental and geological baseline reports provide a clear understanding of the underlying geology typical for this part of northeastern Namibia.

Geology and Sedimentary Cover

Dominance of Kalahari Sequence Deposits

The Liselo area lies within the Kalahari Basin, and the geology is principally comprised of unconsolidated Kalahari Sequence sediments that overlie older rock units. These sediments form a thick blanket of sands, gravels, and minor clay horizons that cover most of the landscape, extending across the floodplains and upland terraces.

Kalahari sands: Fine- to coarse-grained, sub-angular quartz-rich sands dominate the near surface, often up to 30 m or more in thickness. These aeolian sands are generally off-white to reddish where iron staining occurs but are clay-poor in the uppermost horizons.

Duricrusts and calcretes: Hardpan or calcrete layers may occur locally within the sequence, indicative of past arid conditions that cemented sediments near the surface.

Alluvium and lacustrine deposits: In proximity to the Zambezi River and smaller tributaries, recent alluvial sediments, including fine sands, silts, and clays, are present in floodplain settings. These result from episodic river flooding and sediment deposition over the Quaternary period.

Pleistocene Fluvial Gravels

Localized coarse pebbly gravels in the upper sedimentary layers are linked to ancient river channels, likely related to paleo-Zambezi fluvial systems active during the Pleistocene. These gravels are typically less than 0.5 m thick and represent reworked, older alluvial deposits.

Underlying Older Sedimentary Units (Karoo Sequence)

While not widely exposed at the surface, the Karoo Sequence including units such as the Kalkrand Formation is thought to underlie the thick Kalahari cover at depth. These older sediments are more consolidated and may influence deeper groundwater flow and aquifer properties.

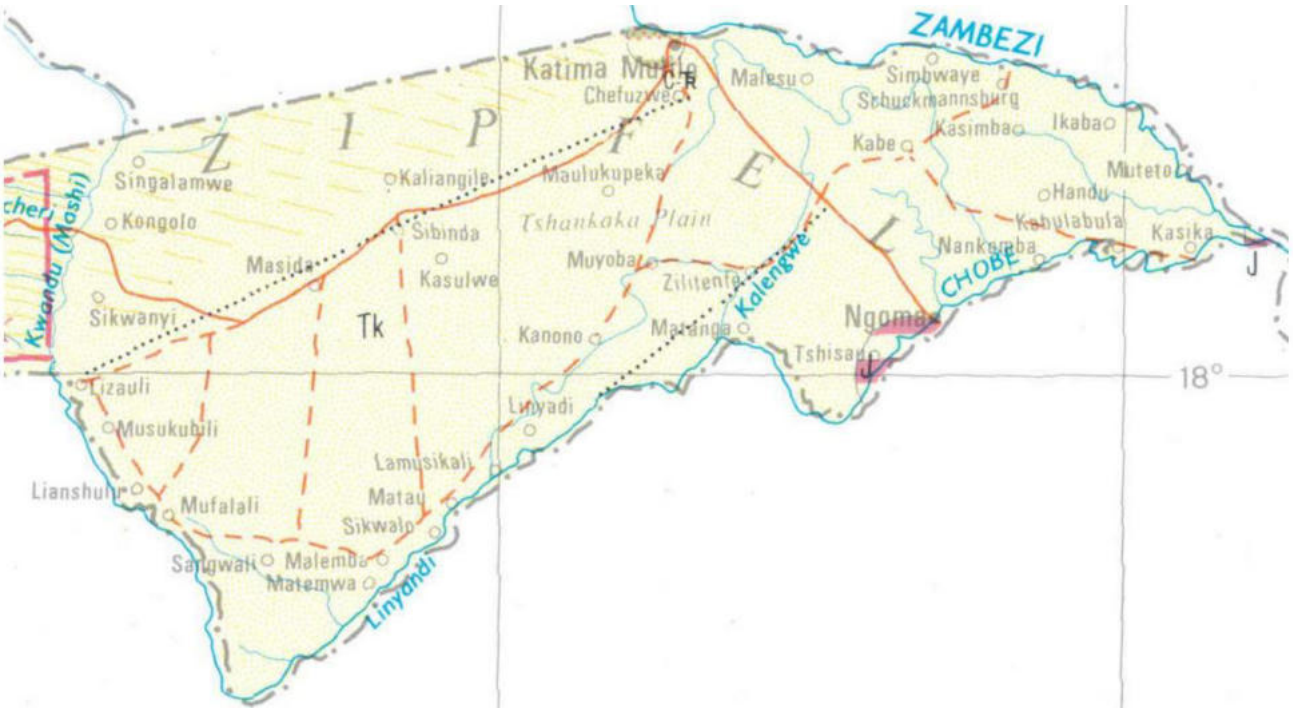


Figure 10. Geological set up based on (1:1000,000 Geological Map of Namibia 1980).

6.1.8. Air Quality

Liselo area, is predominantly rural with minimal heavy industry. As a result, background ambient air quality is generally good, with few persistent sources of industrial air pollutants. Occasional local emissions may arise from dust during dry, windy conditions, agricultural burning, and biomass cooking or heating in villages. These are typically intermittent and localized rather than chronic or severe. No major urban air quality monitoring stations exist in the immediate Liselo area, but rural conditions generally result in low baseline pollutant concentrations.

6.2. Biological environment.

6.2.1. Flora (Vegetation)

The Zambezi Region, including Liselo area, is one of Namibia's most biologically diverse areas due to its tropical savanna climate, high rainfall, and riverine systems. The area supports a mix of vegetation types including riverine forests, woodlands, floodplain grasses, and savanna.

Common vegetation communities and species include:

Riverine and riparian forests around Liselo area and surrounding project site is dominated by large hardwood trees. Woodland and savanna species such as African teak (Pterocarpus angolensis), Burkea (Burkea africana), camel-thorn (Acacia erioloba), and silver cluster-leaf (Terminalia sericea). Other indigenous trees such as False Mopane (Guiboutia coleosperma),Acacia Erioloba,Treminaria sericea,Ximenia caffraa var cafra,Acacia hebeclada,Acacia ataxacantha,,Acacia Fleckii,Acacia Hebeclada,Acacia mellifera,Acacia nigrescens,Dichrostachys cenerea,Erythrophleum africanum,Baikiaea plurijuga,Bauhinia urbaniana,Zyzophus mucronate,Grawia flavescens,Grawia retineruis,Camiphora anglonsis,Comretumcollinum,Combretum hereroense,Combretum imbermbe,Combretum psidioides,Combretum zyheri.

Grasses and floodplain vegetation flourish in seasonally inundated areas, especially near river channels, wetlands, and floodplain soils, providing high productivity during the wet season. This diverse vegetation structure provides habitat and resources for a wide range of animal species and contributes to the ecological complexity of the region.Grass species identified and know to the surrounding Liselo area includes Bottle brush grass(Perotis patens),Andropogon gayanus var polyclaudus,Chloris virgata,Cynodon dactylon,Dactyloctenium giganteum,Aristida stripitala graciliflora.

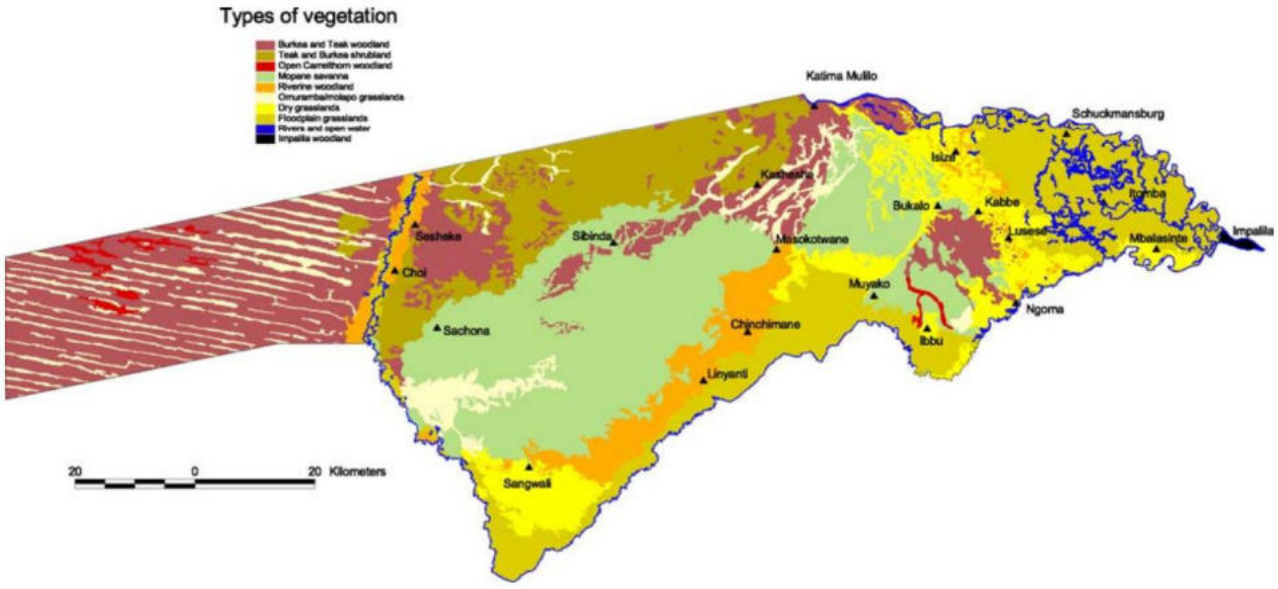


Figure 11. Types of vegetation

6.2.2. Fauna (Mammals and Other Wildlife)

Liselo Area and specifically the identified solar facility site is situated at the geographic heart of the KAZA TFCA landscape in the northeast of Namibia, making it and its surrounding lands part of the broader Transfrontier area. While the facility area itself is not inside a core protected area, it lies within the KAZA conservation landscape and serves as a strategic hub for tourism, wildlife corridors, and conservation cooperation.

Notable fauna includes:
Large mammals: African elephant, lion. Ungulates and other herbivores: Common impala, common duiker, and , warthog. Small mammals and other species: porcupines, spotted hyena, scrub hare, wathog, common duiker, wild dogs, Jackals, Stripped pole cat, and Aardvark and various smaller nocturnal mammals inhabit riverbanks, woodlands, and grasslands.

Protected areas near Liselo and Katima Mulilo, such as Nkasa Rupara (formerly Mamili) and Mudumu National Parks, support many of these species and act as core wildlife corridors between neighbouring Botswana, Zambia, and Angola.

6.2.3. Avifauna (Birds)

The Zambezi Region is considered Namibia's premier birding area, with exceptionally high species richness due to varied habitats including riverine forest, floodplains, woodlands, and wetlands.

Bird diversity and highlights:
Over 400-430 bird species have been recorded within the region's protected areas and floodplain habitats. Wetland and waterbird species include African skimmers, African fish eagles, African finfoots, pygmy geese, jacanas, herons, and waders. Migratory species such as carmine bee-eaters gather seasonally along the Zambezi River sandbanks between September and November. Woodland and savanna birds include Schalow's turaco, trumpeter hornbill, coppery sunbird, eastern bearded robin, western-banded snake eagle, and various raptors and hornbills. The region's bird communities are both resident and migratory, making it a critical avifaunal hotspot within Namibia.

Notable avifauna within and around the project site includes Black collard barbet, red billed hornbill, Common scimitar bill, Lilac breasted roller, African cuckoo, Common swift (Apus apus), Grey go-away bird,Loughing dove,Cape turtle dove, Double banned sandygroose, Brown crowned Tchangra,Dark caped bulbul,,long billed crombec,Willow wabler,Ratling cisticola, Neddicky cisticola,Black chested prinia,Tawny flanked prinia, and Marico Flycatcher.

6.2.4. Reptiles

The eastern Zambezi Region supports a rich reptile fauna that reflects both the wetland and savanna environments. Reptile diversity includes:
An estimated 70-80 reptile species in the general Katima Mulilo area, including snakes, lizards, geckos, terrapins, and crocodiles. Crocodile species: Crocodylus niloticus (Nile crocodile) is common along rivers and large waterways, an iconic wetland reptile. Other notable reptiles: Nile monitor (Varanus niloticus), various snake species, skinks, geckos, and terrapins.

6.3. Socio-Economic Environment

6.3.1. Demography

The Zambezi Region has experienced steady population growth. The 2023 Census estimates the regional population at approximately 142,373 people, with a population density around 9.7 persons/km², higher than the national average, reflecting relative settlement pressure in this part of Namibia. Katima Mulilo, the regional capital, had an estimated 46,401 residents in 2023, with density in the urban constituencies above 1,000 persons/km² due to concentrated settlement and services.

Historically, the region's population skewed slightly younger, with many residents in the economically active age group (15–59 years), and urban areas like Katima Mulilo attracting youth from rural surroundings. Liselo itself functions as a peri-urban/rural settlement area relying on proximity to Katima Mulilo for access to services; it does not have large independent population data but reflects broader regional rural demographics.

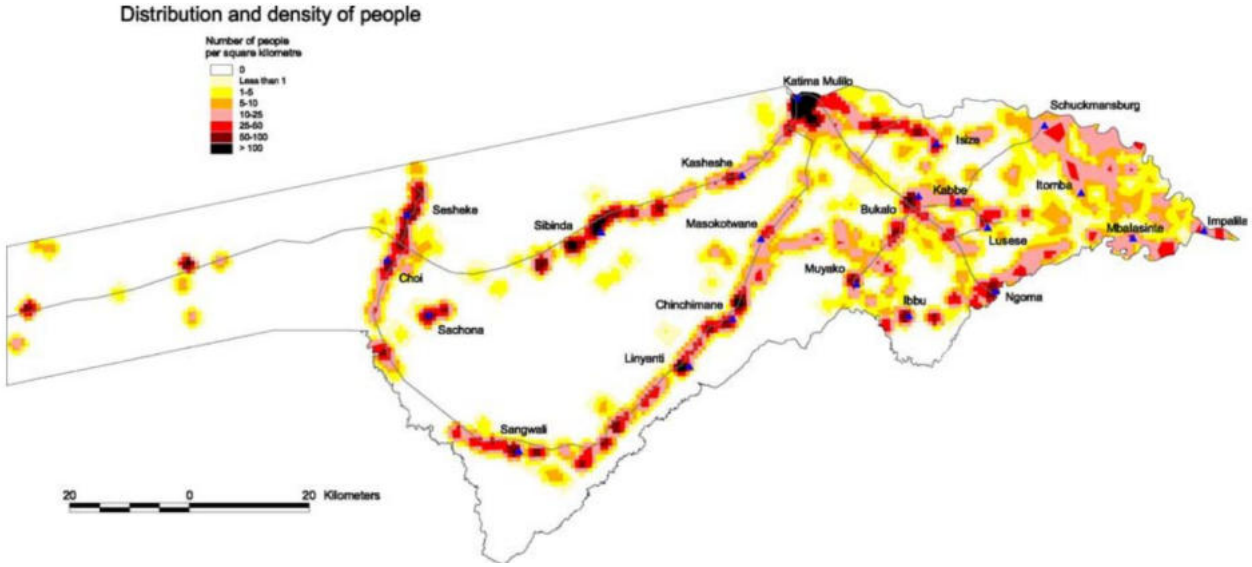


Figure12. Distribution and Density of People.

6.3.2. Livelihoods and Economic Activities

The main economic activities in the Zambezi Region are subsistence agriculture, fishing, and small-scale commerce, often integrated with seasonal natural resource harvesting (e.g., reeds, fish, bush products). Many households cultivate maize, sorghum, millet, beans, groundnuts and vegetables, especially through mixed farming systems.

Agriculture is a major employment sector, employing over 42% of the region's workforce in agriculture, forestry, and fishing, indicating heavy reliance on natural resource–based livelihoods.

In Katima Mulilo, wage employment and formal sector jobs are also important, with many people working in education, administrative services, wholesale/retail trade, tourism-related activities, and cross-border commerce due to the town's strategic location.

Although economic diversification exists, unemployment remains significant in the region, with many economically active persons under- or unemployed, highlighting the need for new employment opportunities and economic stimulation.

6.3.3. Land Use and Land Use Practices

Land use in the Zambezi Region is characterised by subsistence farming and livestock keeping, with villages and rural settlements occupying communal lands along roads and near water sources. Many villagers practice dry land and riverine cropping, reflecting reliance on seasonal rainfall and floodplain moisture.

Agriculture and grazing activities are central to livelihoods, although large areas of fertile land remain under-utilised, according to regional political leaders calling for enhanced agricultural investment due to the region's productive soils.

Urban and peri-urban land use around Katima Mulilo includes residential plots, informal settlements, commercial zones, open markets, institutional land (schools, clinics), and transport corridors, with growth driven by border trade and migration.

6.3.4. Cultural Heritage and Social Dynamics

The Zambezi Region is culturally diverse, inhabited by ethnic groups such as the Mafwe, Subia, Lozi, Mayeyi, and Mbukushu, each with distinct languages, customs, music, dance, and artisanal craft traditions. Katima Mulilo's culture blends traditional practices with modern influences, celebrated through festivals such as the Zambezi Bream Festival, showcasing fishing heritage, cultural displays, music, and community activities.

Local markets, craft centres, and cultural villages promote traditional arts and crafts, providing both economic opportunities and cultural preservation platforms. Despite cultural richness, infrastructure and service challenges such as informal settlements and uneven access to utilities reflect ongoing social development needs.

6.3.5. Health, Education and Social Services

The Zambezi Region's health infrastructure is limited relative to population needs, with one main hospital and several health centres and clinics serving wide rural areas. This infrastructure supports Katima Mulilo and surrounding communities but often struggles with demand. Liselo relies on health and education services in Katima Mulilo, as local facilities (e.g., a primary school) are limited and clinics or higher-level services are accessed in town.

Education levels in Katima Mulilo and the region show a relatively high literacy rate in urban areas, with many residents able to read/write and access schools, while rural education access remains a priority for improvement. Health challenges include constraints in service access, high disease burdens, and issues related to sanitation, with the town historically reporting periodic outbreaks of diarrhoeal diseases linked to inadequate infrastructure.

7. TECHNICAL AND INFRASTRUCTURE ASPECTS

7.1. Project design

Located 2 km Northwest of Katima Mulilo town, the proposed facility within an area of 1,000 hectares, can easily accommodate the energy potential of approximately 680,000,000 kWh of electricity per year for Phase 1, 150MWp, (340,000,000 kWh). Water and Power Supply Namibia Pty Ltd, plans to secure the solar farm project and will have exclusive rights to explore, develop and utilize the solar energy resources. Details of the facility will be made available before the pre-construction phase of the project, once the turnkey EPC contract has been awarded.

System Design Designing the site layout for a 150MW solar farm involves careful consideration of various factors such as topography, solar irradiance, environmental impact, accessibility, and future expansion possibilities.

7.1.1. Site Selection

- A location with high solar irradiance and minimal shading. Use solar resource maps and on-site measurements to assess solar potential.

- Consideration of the topography of the site, aiming for a relatively flat terrain to minimize construction costs and maximize solar exposure.

7.1.2. Array Orientation and Tilt

- Optimize the orientation and tilt of solar panels for maximum energy production. In most cases, panels face south in the northern hemisphere and north in the southern
- hemisphere.
  The tilt angle should be adjusted based on the latitude of the site.

7.1.3. Spacing and Density

- Determine the spacing between rows and the distance between individual solar panels. This is crucial to avoid shading and ensure efficient land use.
- Consider the type of solar technology (fixed-tilt, single-axis tracking, or dual-axis tracking) to determine the optimal density.

7.1.4. Access Roads and Infrastructure

- Plan access roads for construction, maintenance and emergency vehicles. Ensure they can handle heavy equipment during construction.
- Install necessary infrastructure for power collection, inverters and substations.

7.1.5. Security and Fencing

- Implement security measures, including perimeter fencing and surveillance systems to protect the solar farm from unauthorized access and potential theft.

7.1.6. Environmental Considerations

- Assess the impact on local flora and fauna. Design the layout to minimize disruption to the natural habitat and comply with environmental regulations.

- Consider erosion control measures, especially during the construction phase.

7.1.7. Interconnection and Substation

- Plan the layout of the electrical infrastructure, including inverters, transformers, and the substation.
- Ensure proper spacing and access for maintenance.

7.1.8. Storm-water Management

- Implement storm-water management measures to prevent soil erosion and water runoff. This is especially important during construction.

7.1.9. Future Expansion

- Allow for potential future expansion by designing the layout with scalability in mind. Leave space for additional solar arrays and infrastructure.

7.1.10. Community and Stakeholder Engagement:

- Engage with the local community and stakeholders to address concerns and ensure a positive relationship. This can include visual screening, noise reduction measures and other considerations.

7.1.11. Regulatory Compliance

- Ensure compliance with local zoning regulations, environmental laws and other relevant permits. Work closely with local authorities throughout the planning and construction phases.

It's crucial to work with a team of experts, including engineers, environmental consultants and project managers to create a site layout that maximizes efficiency, minimizes environmental impact and complies with all regulations.

7.2. Technology Selection

Namibia offers some of the most favourable solar conditions in the world for power generation. The country receives an average direct solar irradiation of approximately 2,200 kWh/m² per year, coupled with minimal cloud cover. In southern Namibia, solar resources are even stronger, with an average of about 11 sunshine hours per day and direct solar radiation reaching roughly 3,000 kWh/m² per year. The most widespread application of photovoltaic (PV) technology in Namibia is solar-powered water pumping, particularly for cattle farming. Other common uses include rural electrification, such as providing power for lighting, radios, televisions, and fans.

The proponent intends to deploy innovative single-cell design solar panels that deliver significantly higher energy output and cost savings compared to conventional front-contact panels. These panels have been installed in more than 60 countries and are currently regarded as the leading single-cell PV technology on the global market, making them well suited for large-scale solar power plants. The technology provider has designed, developed, constructed, operated, and supplied over 5 GW of this advanced solar technology worldwide. Compared to conventional panels, these solar modules generate up to 75% more energy over a 25-year lifespan and hold the world record for the highest-efficiency silicon solar panel. The technology is engineered to start generating earlier in the day, operate more effectively, and continue producing power later into the evening. Due to their superior efficiency and performance at high temperatures, the panels convert more sunlight into electricity while operating at lower temperatures, resulting in higher real-world energy yields even under extreme climatic conditions.

7.3. Grid Connection

Solar grid connection cost depends on the size of the solar plant project and to whom the project is selling the power (off taker). The project needs to acquire a Generation License and Transmission License from the Electricity Control Board (ECB).

The company also needs to fill in an Application for Grid Connection and pay a Transmission application fee which will be based on the study which will then determine the numbers of transformers needed. The number of transformers required for the operation it depends on the location, size and distance from the suppliers to the consumers. The transmission fees can only be discussed after the

study and all technical information's about the project are provided. The Application for a Solar Grid connection depends on the size of the solar plant project/how much energy the project is capable of generating.

7.4. Access Roads

7.4.1. Existing Access Infrastructure

The proposed Liselo Solar Project is advantageously located within proximity to Katima Mulilo and the main regional power substation, providing good access to existing transport and electricity infrastructure. The project site can be accessed via:

Primary access roads: The regional and trunk road network linking Katima Mulilo to surrounding settlements and border posts (including the Trans-Caprivi Corridor) provides reliable access for heavy vehicles transporting construction materials, solar panels, transformers, and other equipment.
Secondary and local roads: Gravel and earth roads maintained by the regional and local authorities provide direct access to the Liselo area. These roads are commonly used by local communities for daily transport and agricultural activities.

7.4.2. Project-Related Road Development

Use of existing roads: The project will primarily utilize existing public and farm access roads to minimize new land disturbance and avoid unnecessary vegetation clearance.

Upgrading and maintenance: Temporary upgrading may be required during construction, including grading, compaction, and dust suppression to allow safe passage of heavy construction vehicles.

Internal access roads: Within the project footprint, internal gravel access tracks will be developed to connect panel arrays, inverter stations, substations, and maintenance areas. These will be designed to:

- Follow natural contours where possible
- Avoid low-lying or flood-prone areas
- Minimize soil erosion and vegetation removal

7.4.3. Traffic and Safety Considerations

Construction traffic will increase temporarily during the construction phase. Traffic management measures will include:

- Speed restrictions
- Warning signage
- Controlled access points

Community access will be maintained where existing roads are shared with local residents. Overall, the site's proximity to the main substation significantly reduces the need for long new access routes and transmission corridors, thereby lowering environmental and social impacts.

7.5. Water use

Water Requirement

Water use for the Liselo Solar Project will be moderate and non-consumptive, mainly associated with construction and operational activities. No water-intensive industrial processes are involved.

7.5.1. Construction Phase Water Use

During construction, water will be required for:

- Dust suppression on access roads and cleared areas
- Concrete works, including foundations for mounting structures and substation infrastructure
- General construction activities, such as equipment cleaning and limited domestic use by workers

7.5.2. Operational Phase Water Use

During operations, water demand will be significantly lower and mainly used for:

- Periodic cleaning of solar panels to maintain efficiency, especially during dry and dusty periods
- Routine maintenance activities
- Limited domestic use by on-site operational staff

7.5.3. Water Sources

Potential water sources include:

- Municipal water supply from Katima Mulilo, subject to availability and approval by the relevant local authority
- Licensed boreholes, permitted and drilled, in accordance with the Namibian Water Resources Management Act
- Water delivery by tanker, particularly during peak construction periods

No abstraction from rivers, groundwater is anticipated without formal authorization.

7.5.4. Water Management and Conservation

- Water use will follow a water-efficient management approach, prioritizing minimal consumption.
- Dry or semi-dry panel cleaning methods will be considered where feasible.
- Water storage tanks will be used to regulate supply and avoid over-extraction.
- Spill prevention and control measures will be implemented to protect soil and groundwater quality.

7.6. Construction Methods

Possible Construction Methods: Liselo Solar Project (Construction Phase)

The construction of the Liselo Solar Project will follow **standard, proven photovoltaic (PV) construction methods** that are widely applied in Namibia and Southern Africa. These methods are designed to ensure efficiency, safety, and minimal environmental disturbance.

7.6.1. Site Preparation and Earthworks

- **Selective clearing and debushing** will be undertaken only within approved construction footprints (panel arrays, access roads, inverter pads, substation areas).
- Heavy machinery such as **bulldozers, graders, and excavators** will be used to:
    - Clear vegetation
    - Level and compact surfaces

- Prepare access routes and equipment pads

- Topsoil will be **stripped, stockpiled, and reused** during rehabilitation to maintain soil fertility.
- **Cut-and-fill techniques** will be minimized to reduce erosion and maintain natural drainage patterns.

7.6.2. Foundation Installation Methods

The mounting structures for solar panels will be installed using one or a combination of the following methods, depending on soil conditions at Liselo:

a) Driven Pile Foundations

- Steel piles are driven into the ground using **hydraulic or pneumatic pile drivers**.
- This method:
  - Requires minimal excavation
  - Produces little construction waste
  - Is fast and cost-effective
- Commonly used in Namibian solar projects where soils allow pile penetration.

b) Augered or Concrete Foundations

- Holes are drilled using **augers or drilling rigs**.
- Concrete is poured to secure mounting posts.
- Used where soils are loose, sandy, or where pile driving is unsuitable.

7.6.3. Access Road and Internal Track Construction

- Existing roads will be upgraded using **grading and compaction techniques**.
- Internal roads will be constructed using:
  - Gravel surfacing
  - Compacted natural soils
- Drainage culverts and berms will be installed where necessary to manage stormwater and prevent erosion.

7.6.4. Mechanical Installation of Solar Arrays

- Pre-fabricated **steel or aluminium mounting structures** will be assembled on-site.
- Structures will be aligned and oriented to maximize solar exposure.
- **Solar PV modules** will be installed manually or with mechanical lifting aids and secured to the mounting structures using standardized fastening systems.

7.6.5. Electrical Installation Methods

- **DC cabling** will be laid in underground trenches or secured above ground on cable trays.
- **Inverters and transformers** will be mounted on concrete plinths or pre-cast foundations.
- **AC cabling** will connect inverter stations to the on-site substation.
- Trenching will be backfilled and compacted once cabling is installed.

Substation and Grid Connection Works

- Construction of the on-site substation will involve:
    - Foundation construction
    - Installation of transformers, switchgear, and protection systems
- The short transmission line or cable linking the plant to the nearby main substation will be installed using **overhead line erection or underground cabling methods**, depending on design and approvals.

7.6.6. Panel Cleaning and Commissioning

- Panels will be cleaned using **water-efficient methods** before commissioning.
- Testing and commissioning will involve:
    - Electrical testing
    - Performance verification
    - Safety inspections
- The plant will be synchronized with the grid following approval by NamPower and the relevant authorities.

7.6.7. Workforce and Construction Camp Methods

- Temporary construction camps will be established using **modular units**.
- Waste management systems (solid and liquid) will be installed.
- Occupational health and safety procedures will be strictly applied.

7.6.8. Environmental Control Measures During Construction

- **Dust suppression** using water sprays.
- **Erosion control** using berms, silt fences, and revegetation.
- **Noise control** through restricted working hours and equipment maintenance.
- Controlled storage and handling of fuels and chemicals.

8. STAKEHOLDER ENGAGEMENT

8.1. Identification of key stakeholders

Table 6. Key Stakeholders

Category	Stakeholder	Role or Interest
Regulatory	-Mafwe Traditional Authority -Zambezi Regional Council -Katima Mulilo Town Council -MEFT	Environmental, health, safety, compliance and land use
Emergency Services	Rundu Fire Brigade, Police	Emergency response coordination
Community	Nearby residents and industrial neighbours	Employment Opportunities, Developmental
NGOs / Public	Local environment and civic groups	Transparency, sustainability, Environmental Protection

8.2. Registered Interested and Affected Parties

Table 7.Registered I&APs

Registered Interested and Affected Parties			
Full Name	**Proxy/Organisation**	**Contact**	**Email**
Imataa Mamili	Mamili Engineering	0813231002	dmamili@yahoo.com
Geoge Kamwi	KMTC	0813187580	georgekamwi@gmail.com
Sereth Neil	Exponant	0816745778	garethmunyail@gmail.com
Monica Nd	CIC Indo	0813810947	monica_nd@yahoo.com

8.3. Stakeholder engagement during scoping phase.

- Newspaper Notification (3 newspapers) (The Republican, The Sun and Allgemeine Zeitung Newspaper)
    - 1st Advert- 24 November 2025
    - 2nd Advert- 01 December 2025
- Basic Information Document
    - Issued on the 24th of November for public review
    - Public Participation open 24 Nov 2025 to 28 Dec 2025(35 Days)
- Draft Scoping Report
    - Available for review from the 02 Dec 2025 to the 28th of Dec 2025
- Notification letters sent to relevant authorities via email
    - Zambezi Regional Council-The Governor and Representatives
    - Katima Mulilo Town Council
    - Mafwe Traditional Authority-Traditional Representatives
- Site notices posted around town/public areas from the 02 of December 2025-The Public
- Public Participation Meeting 18 th of December 2025(14Hr00 to 16Hr00)
- ECC Application Submission to Ministry of Environment Forestry and Tourim-06 Jan 2026

8.4. Summary of early consultations, concerns, and expectations.

8.4.1. Early Consultations

- Engagements with local community leaders, traditional authorities, and regional government officials to introduce the project and gather initial feedback.
- Discussions with relevant regulatory bodies, including environmental and energy authorities, to clarify permitting requirements.
- Engagements with potentially affected landowners and community members to explain project scope and benefits.

8.4.2. Potential Concerns Raised

- Environmental impacts: Possible effects on local flora and fauna, water resources, and land use.
- Social impacts: Potential changes to local livelihoods, community dynamics

- Infrastructure and services: Concerns about increased traffic, pressure on local roads, and provision of electricity or other utilities.
- Health and safety: Worries about dust, noise, or other construction-related disturbances.

8.4.3. Expectations from the Project:

- Employment opportunities: Preference for local hiring during pre-construction, construction and operation phases.
- Community development: Requests for support for schools, healthcare facilities, water supply, cultural events and other community infrastructure.
- Environmental stewardship: Implementation of mitigation measures to minimize ecological disruption.
- Transparency and communication: Regular updates on project progress and decision-making processes.
- Long-term benefits: Assurance that the solar facility contributes to sustainable energy access and regional development.

9. SCOPING AND EIA METHODOLOGY

9.1. Approach to Impact Assessment

In terms of the Environmental Management Act, 2007 (Act No. 7 of 2007) and the Environmental Impact Assessment Regulations, 2012 (Government Notice No. 30 of 2012), the construction and operation of the proposed project constitute a listed activity. As such, the project is required to obtain an Environmental Clearance Certificate (ECC) from the Environmental Commissioner prior to implementation. The application for an ECC must be supported by an Environmental Impact Assessment (EIA) process, undertaken in accordance with the requirements of the EIA Regulations. The EIA process involves the systematic identification, assessment, and evaluation of potential direct, indirect, and cumulative environmental and social impacts associated with the proposed project.

The EIA process comprises two main phases, namely the Scoping Phase and the Assessment Phase, culminating in the submission of an EIA Report and an Environmental Management Plan (EMP) for consideration by the Environmental Commissioner.

Figure 13. Phases of the Environmental Impact Assessment (EIA) Process.

9.2. Overview of the Scoping and EIA Phase

The Environmental Impact Assessment (EIA) process in Namibia is governed by the Environmental Management Act, 2007 (Act No. 7 of 2007) and the Environmental Impact Assessment Regulations, 2012. The process applies to activities listed in the Regulations and is administered by the Environmental Commissioner within the Ministry responsible for environmental affairs.

The EIA process commences with screening to determine whether the proposed activity is a listed activity requiring an Environmental Clearance Certificate (ECC). If required, the proponent submits an application for environmental clearance and appoints a qualified Environmental Assessment Practitioner (EAP). Following acceptance of the application, a scoping and public participation process is undertaken to identify key environmental issues and concerns. Interested and Affected Parties (I&APs) are informed and provided with an opportunity to comment on the proposed activity.

Based on the nature and scale of the project, the environmental assessment is conducted either as a Basic Assessment or a full Environmental Impact Assessment, which may include specialist studies. The assessment identifies and evaluates potential environmental, social, and economic impacts,

considers reasonable alternatives (including the no-go option), and proposes mitigation measures. An Environmental Management Plan (EMP) is prepared to outline mitigation, monitoring, and compliance requirements throughout the project lifecycle. The EIA Report and EMP are submitted to the Environmental Commissioner for review and decision-making.

The Environmental Commissioner may grant environmental clearance (with or without conditions) or refuse the application. If approved, an Environmental Clearance Certificate is issued, authorising the activity subject to compliance with the approved EMP and conditions. Following approval, the proponent is responsible for implementing the EMP and ensuring ongoing compliance. Environmental monitoring, reporting, and audits may be required. Provision is made for amendment, renewal, or appeal of the ECC in accordance with the Act and Regulations.

9.2.1. The Scoping Phase

The Scoping Phase is the initial stage of the EIA process and aims to identify key environmental, social, and economic issues related to the proposed activity. During this phase, the project scope is defined, potential impacts are identified, and reasonable alternatives, including the no-go option, are considered. A public participation process is conducted to ensure that Interested and Affected Parties (I&APs) can raise concerns. The outcome of this phase is a Scoping Report, which outlines identified issues, required specialist studies, and the Terms of Reference for the detailed EIA.

9.2.2. The EIA Phase

The EIA Phase is the detailed assessment stage. It involves a comprehensive evaluation of potential impacts on the physical, biological, socio-economic, and cultural environment. Where necessary, specialist studies are conducted to provide in-depth analysis. The significance of impacts is assessed, and practical mitigation measures are proposed. An Environmental Management Plan (EMP) is prepared to guide implementation, monitoring, and compliance. Draft reports are made available for public and authority review before submission of the final EIA Report to the Environmental Commissioner for decision-making.

9.3. Methods for data collection

- Site visit
- Desktop Study

- Field surveys
- Literature review
- Stakeholder engagement

9.4. Criteria for impact significance evaluation.

Table 8. Criteria for Evaluation

Criteria	Description / Assessment	Category Options (Tick or Specify)
Extent *(The physical and spatial scale of the impact)*	Describe the area affected (e.g., limited to site, surrounding community, or broader region).	**Local** - Confined to the immediate area **Site** -Limited to the development footprint **Regional** - Extends beyond local boundaries
Duration	Define how long the impact is expected to last.	**Short Term** - 0 to 5 years **Medium Term** -5 to 15 years **Long Term** - 15 to 30 years **Permanent** - Beyond project life / irreversible
Intensity	Describe the magnitude or degree of change caused by the impact.	**Low** - Minor change, easily reversible **Medium** - Noticeable change, manageable with mitigation **High** - Major change, possibly irreversible
Probability	Indicate the likelihood of the impact occurring.	**Improbable** - Unlikely under normal conditions **Possible** - Could occur occasionally **Likely** - Expected to occur regularly **Highly Likely** - Occurs frequently **Definite** - Will occur regardless of controls
Determination of Significance – Without Mitigation	Rate the overall significance before implementing mitigation measures.	**No Significance** **Low** **Medium** **High**
Determination of Significance – With Mitigation	Rate the significance after mitigation is applied.	**No Significance** **Low** **Medium** **High**

9.5. Integration with IFC Performance Standards

Table 9. IFC Performance Standards

IFC Performance Standard	Relevant to Liselo Solar Facility	Proposed Action/Mitigation Measures
PS1: Assessment and Management of Environmental and Social Risks and Impacts	Ensures systematic identification and management of E&S risks across the project lifecycle	Conduct ESIA, implement Environmental & Social Management System (ESMS), monitor compliance
PS2: Labor and Working Conditions	Protects workers' health, safety, and rights during construction and operation	Safe working conditions, non-discrimination, training programs, grievance mechanisms
PS3: Resource Efficiency and Pollution Prevention	Promotes sustainable use of water, energy, and materials, and prevents pollution	Optimize resource use, implement waste management, control dust, minimize emissions
PS4: Community Health, Safety, and Security	Protects nearby communities from project-related risks	Traffic and safety management, emergency response plans, responsible security measures
PS5: Land Acquisition and Involuntary Resettlement	Ensures fair treatment of affected persons if land is acquired	Engage landowners early, provide fair compensation, maintain transparent communication
PS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	Minimizes impact on local ecosystems and species	Conduct biodiversity assessments, avoid sensitive areas, implement habitat restoration if needed
PS7: Indigenous Peoples	Protects rights of indigenous or marginalized groups in the project area	Conduct meaningful consultations, respect cultural and social rights, incorporate community input

PS8: Cultural Heritage	Protects tangible and intangible cultural heritage sites	Identify heritage resources, avoid or mitigate impacts, develop management plans with local input

10.SCOPE OF ASSESSMENT

The scope of assessment for the EIA report defines the environmental and social aspects to be evaluated for the proposed solar energy project in Zamezi Region, Liselo Area. The scoping phase aims to identify potential impacts, including cumulative effects, determine key issues for further study, and guide the level of detail required for the full Environmental Impact Assessment (EIA).

10.1. Identification of environmental and social receptors

The assessment will identify environmental and social receptors that may be affected by the project. These include terrestrial flora and fauna, avifauna, soil, surface and groundwater resources, ambient air quality, noise-sensitive receptors, landscape and visual characteristics, existing land uses, nearby settlements, community services, and the socio-economic conditions of surrounding communities.

10.2. Key issues assessed during the full EIA

Key issues requiring detailed assessment include land clearance and habitat loss, impacts on biodiversity and avifauna, dust and noise generation during construction, water abstraction and potential impacts on geohydrology, waste generation and management, visual impacts, occupational and community health and safety, and socio-economic effects such as employment creation and land access. Potential cumulative impacts, particularly in combination with existing and planned developments in the Zambezi Region, Liselo area (such as other energy, infrastructure, or agricultural projects), will also be identified and assessed.

Table 10. Impact Assessment Criteria

Criteria	Description / Assessment	Category Options (Tick or Specify)
Extent *(The physical and spatial scale of the impact)*	Describe the area affected (e.g., limited to site, surrounding community, or broader region).	**Local** - Confined to the immediate area **Site** -Limited to the development footprint **Regional** - Extends beyond local boundaries
Duration	Define how long the impact is expected to last.	**Short Term** - 0 to 5 years **Medium Term** -5 to 15 years **Long Term** - 15 to 30 years **Permanent** - Beyond project life / irreversible
Intensity	Describe the magnitude or degree of change caused by the impact.	**Low** - Minor change, easily reversible **Medium** - Noticeable change, manageable with mitigation **High** - Major change, possibly irreversible
Probability	Indicate the likelihood of the impact occurring.	**Improbable** - Unlikely under normal conditions **Possible** - Could occur occasionally **Likely** - Expected to occur regularly **Highly Likely** - Occurs frequently **Definite** - Will occur regardless of controls
Determination of Significance – Without Mitigation	Rate the overall significance before implementing mitigation measures.	**No Significance** **Low** **Medium** **High**
Determination of Significance – With Mitigation	Rate the significance after mitigation is applied.	**No Significance** **Low** **Medium** **High**

Table 11. Impact Assessment Matrix

Aspect	Potential Impacts		Potential Impact Criteria				Mitigation of potential Impacts		
	Receptor	**Impact Description**	**Extent**	**Duration**	**Intensity**	**Probability**	**Determination of Significance (Without Mitigation)**	**Mitigation**	**Determination of Significance (With Mitigation)**
Pre-Construction Phase									
Physical Environment	Soil	•Disturbance and exposure of topsoil during vegetation clearing, increasing susceptibility to erosion. •Soil compaction from the movement of machinery and vehicles. •Loss of soil fertility due to removal of organic matter and vegetation cover. •Risk of localized soil contamination from accidental fuel or oil spills.	S	St	M	L	H	•Restrict debushing to the approved project footprint only. Strip and stockpile topsoil separately for later rehabilitation. •Avoid unnecessary vehicle movement and designate specific access routes. Conduct debushing preferably during the dry season. Implement erosion control measures such as contour bunds and temporary drainage channels. Store fuels and lubricants in bunded areas and maintain spill response kits on site. •Rehabilitate disturbed areas progressively where possible.	L
	Surface Water	•Increased surface runoff and sedimentation in nearby seasonal streams or drainage lines.	S	Mt	M	P	H	•Establish buffer zones around rivers, streams, wetlands, and drainage lines. •Install silt fences, sediment traps, and diversion channels prior to debushing.	L

		•Risk of siltation of surface water bodies during rainfall events following vegetation removal. •Potential contamination from oil or fuel spills entering surface water systems.						•Avoid clearing vegetation within flood-prone or wetland areas. •Prohibit refuelling and maintenance of machinery near surface water bodies. •Monitor runoff paths after rainfall and repair erosion features promptly.	
	Ground Water	Low risk of groundwater contamination from fuel or oil spills infiltrating exposed soils. •Minor changes in infiltration patterns due to soil compaction.	S	Mt	M	P	M	•Ensure all hazardous substances are stored in lined and bunded areas. •Regularly inspect machinery for leaks. •Implement emergency spill procedures to prevent infiltration. •Limit soil compaction to reduce changes in natural infiltration rates.	L
	Air Quality	•Increased dust generation from clearing activities and vehicle movement. •Temporary deterioration of air quality in the immediate vicinity. •Minor exhaust emissions from construction equipment.	L	Mt	L	P	M	•Apply water spraying on cleared areas and access roads to suppress dust. •Limit vehicle speeds within the site. •Avoid de-bushing during high wind conditions. •Maintain machinery to minimize exhaust emissions. •Suspend activities if dust levels become excessive.	L
	Noise	•Temporary increase in noise levels from chainsaws, bulldozers, and other clearing equipment.	L	St	L	P	M	Restrict debushing activities to daylight hours only. •Use ell-maintained, low-noise equipment where possible. Inform nearby communities in advance of de-bushing activities.	L

		•Possible disturbance to nearby communities and wildlife.						•Avoid unnecessary idling of machinery.	
	Visual Landscape	•Temporary visual scarring due to removal of natural vegetation. •Reduced aesthetic value of the landscape during the clearing phase. •Increased visibility of disturbed areas from nearby roads or settlements.	S	Lt	M	L	H	Minimize vegetation clearing and retain natural screening where possible. •Clearly demarcate areas to be cleared before debushing begins. •Stack cleared vegetation neatly or remove it in accordance with approved waste management practices. •Rehabilitate cleared areas promptly and progressively. •Use indigenous vegetation for rehabilitation to restore the natural landscape character.	L
Biological Environment	Flora	•Disturbance or removal of natural vegetation during site demarcation and access route establishment. •Loss of indigenous plant species, including mature trees. •Increased risk of invasive alien plant species introduction through vehicles and equipment.	S	St	M	L	M	•Conduct a botanical walk-through survey prior to vegetation clearance. •Avoid areas with dense, sensitive, or protected vegetation where feasible. •Minimise vegetation clearance to footprints strictly required for the project. •Clearly mark no-go areas, •Prohibit unnecessary tree cutting; where unavoidable, obtain permits if required. •Clean vehicles and machinery before site entry to prevent alien species spread.	L

								•Implement a vegetation management and rehabilitation plan.	
	Fauna	•Temporary displacement of fauna from preferred habitats. •Disturbance to burrows, nests, and movement corridors. •Increased risk of injury or mortality from vehicles. •Human-wildlife interactions, particularly in wildlife-rich areas.	S	St	L	L	M	•Carry out a faunal sensitivity assessment before site clearing. •Restrict vehicle movement to designated access routes. •Enforce low speed limits on site. •Schedule vegetation clearance outside breeding seasons where possible. •Allow fauna to move away naturally before clearing; no trapping or harm. •Provide environmental awareness training for workers. •Prohibit hunting, poaching, or harassment of wildlife.	L
	Avifauna	•Disturbance to nesting, roosting, and foraging birds. •Temporary displacement due to human activity and noise. •Potential disturbance to ground-nesting species during site pegging and access preparation.	S	St	L	P	M	•Conduct an avifaunal screening survey, especially near wetlands. •Avoid pre-construction activities during peak breeding seasons where feasible. •Establish buffer zones around known nesting or roosting areas. •Limit unnecessary noise and human activity outside demarcated work areas. •Clearly mark sensitive bird habitats as no-go areas. •Ensure personnel are trained to identify and report bird nests.	L

Socio-Economic Environment	Livelihood	•Temporary loss of access to grazing and resource collection areas •Short-term disturbance to subsistence livelihood activities •Minor positive impact through limited short-term employment	L	St	L	P	M	•Engage local communities and traditional authorities prior to debushing activities •Restrict clearing to approved and demarcated areas only •Maintain alternative access routes for livestock where feasible •Prioritise local labour for pre-construction activities •Communicate clearing schedules in advance to affected community members	L
	Land use	Temporary disturbance and reduced usability of communal land •Early alteration of land-use patterns within the project footprint •Potential community concern regarding future land access	S	St	L	P	L	•Minimise the pre-construction footprint as much as possible •Clearly demarcate project boundaries and no-go areas •Avoid unnecessary clearing outside the approved site layout •Ensure compliance with land tenure approvals and agreements	L
	Health and Education	•Temporary dust-related nuisance •Minor noise disturbance	L	St	L	P	L	Implement dust suppression measures where necessary •Restrict clearing and machinery operation to daytime hours •Enforce speed limits on all site access roads •Inform local schools and community leaders of clearing schedules	L

	Traffic	•Increased risk of minor traffic incidents •Temporary disturbance to local road users and livestock movement •Minor deterioration of access roads	L	St	M	L	M	•Use existing access roads where possible •Enforce low speed limits on site and access roads •Install temporary warning signage where required •Schedule vehicle movements to avoid peak community activity times	L
	Cultural Heritage	•Potential disturbance or damage to unrecorded cultural heritage sites •Risk of cultural conflict if sites are disturbed	L	St	L	Im	L	•Conduct a pre-clearing heritage walk-through survey •Clearly mark and avoid any identified heritage features •Implement a Chance Find Procedure •Train clearing teams to recognise and report heritage materials •Immediately stop work and notify relevant authorities if a find occurs	L
Construction Phase									
Physical Environment	Soil	•Soil erosion from land clearing, excavation, and grading, especially during the rainy season. •Loss of topsoil which reduces fertility and may hinder post-construction vegetation growth.	S	St	M	L	M	•Implement phased site clearing and limit machinery to designated tracks. •Install silt fences, sediment traps, and temporary berms on slopes. •Stockpile topsoil for site restoration and revegetation after construction. •Ensure proper fuel storage with bunds and spill kits; train workers on handling chemicals.	L

		•Soil compaction due to heavy machinery, reducing infiltration and soil health. •Contamination from accidental spills of fuel, lubricants, or concrete.						•Avoid working on saturated soils during heavy rainfall.	
	Surface Water	•Contamination from oils, fuels, concrete, or other construction materials. •Altered drainage patterns leading to flooding or erosion downstream	S	St	M	P	M	•Divert runoff using temporary drains or swales to sedimentation ponds. •Limit storage of chemicals near water bodies; use spill containment systems. •Restore natural drainage channels post-construction. •Schedule earthworks during dry seasons where possible.	L
	Ground Water	•Pollution from accidental spills (fuel, oil, concrete slurry) infiltrating shallow groundwater. •Altered recharge patterns due to compacted soils reducing infiltration.	L	St	M	P	M	•Store chemicals in lined bunded areas, away from recharge zones. •Implement spill response procedures and emergency containment. •Use controlled washing areas for machinery to prevent contamination.	L

								•Avoid excavations or stockpiling materials directly above shallow groundwater points.	
	Air Quality	• Dust generation from land clearing, grading, and vehicle movement. • Exhaust emissions from construction machinery and vehicles. • Nuisance to nearby communities from particulate matter and odors.	L	St	M	P	M	•Spray water on unpaved roads and exposed soils to suppress dust. •Limit vehicle speed and use covered trucks for material transport. •Maintain equipment in good condition to reduce exhaust emissions. •Schedule activities to minimize peak dust exposure near sensitive receptors (homes or schools).	L
	Noise	•Disturbance to communities and wildlife from machinery, trucks, and generators. •Potential health impacts (stress, sleep disturbance) for nearby residents.	L	St	M	L	M	•Restrict construction to daylight hours where possible. •Use low-noise equipment and mufflers on generators and vehicles. •Maintain buffer zones of vegetation to dampen noise. •Notify local communities of high-noise activities in advance.	L

	Visual Landscape	•Temporary alteration of scenic views due to cleared land, machinery, and stockpiles. •Visual intrusion from construction camps and equipment storage.	L	Lt	M	L	M	•Limit clearing to areas essential for construction; preserve vegetation around site boundaries. •Screen storage areas and camps using natural vegetation or temporary barriers. •Rehabilitate disturbed areas promptly after construction with planting to restore visual aesthetics. •Coordinate site layout to minimize impact on key viewpoints.	L

Biological Environment	Flora	•Loss of vegetation cover: Clearing land for panels, access roads, and infrastructure may remove grasses, shrubs, and isolated trees. •Soil degradation and erosion: Disturbing vegetation exposes soil to erosion, reducing the ability for natural regeneration. •Introduction of invasive species: Construction equipment and materials may bring non-native plants that compete with local species. •Damage to sensitive species: Rare or medicinal plants may be accidentally removed or damaged.	S	St	M	L	M	•Conduct a pre-construction vegetation survey to identify sensitive or protected species. •Limit clearing to the minimum area required for construction. •Establish no-go zones around rare plants, wetlands, and riparian areas. •Implement a rehabilitation plan using native species after construction. •Clean machinery before entering the site to reduce the spread of invasive plant seeds.	L
	Fauna	•Habitat disturbance or loss: Clearing and earthworks may displace small mammals, reptiles, amphibians, and insects. •Injury or mortality: Construction vehicles, trenches, and equipment pose direct risks.	S	St	L	M	M	•Conduct a baseline fauna survey before construction to identify sensitive species. •Use wildlife corridors or maintain patches of natural vegetation where feasible. •Schedule construction to avoid sensitive breeding or nesting seasons.	L

		•Behavioral disruption: Noise, vibration, and human activity can force animals to abandon their habitats.						•Cover open trenches at the end of each day and provide escape ramps for trapped animals. •Train workers to avoid harming wildlife and report sightings of vulnerable species.	
	Avifauna	•Disturbance to nesting and roosting birds from noise, clearing, and movement of machinery. •Collision risks with construction equipment, temporary structures, and vehicles. •Habitat loss for species that rely on trees, shrubs, or wetlands for feeding or nesting.	S	St	L	P	M	•Conduct a bird survey to identify breeding and migratory species. •Avoid clearing during peak breeding and migration seasons. •Maintain trees and shrubs wherever possible to provide nesting sites. •Use visual markers on vehicles and structures to reduce collision risks. •Implement education for workers on the importance of protecting birds and reporting any incidents.	L
Socio-Economic Environment	Livelihood	•Disruption of agricultural activities: Construction may block access to grazing areas. •Temporary loss of income: Local laborers and small vendors may be affected if access to certain areas is restricted.	L	St	L	P	L	•Engage with local communities to map grazing lands and agricultural plots to avoid disruption. •Schedule construction to minimize interference with planting and harvesting periods. •Prioritize local employment and procurement to support livelihoods.	Ns

		•Competition for resources: Influx of construction workers may increase demand for water, firewood, and food.						•Ensure fair compensation if access restrictions affect farming or grazing. •Provide clean water and sanitary facilities for workers to reduce pressure on local resources.	
	Land use	•Temporary land occupation: Construction sites, storage yards, and access roads may temporarily alter land use patterns. •Soil compaction and degradation: Heavy machinery can reduce land fertility for post-construction use. •Conflicts with existing land use: Pastoral or subsistence farming areas may overlap with construction zones.	S	Mt	M	L	M	•Limit land clearing to the minimum necessary footprint. •Rehabilitate disturbed areas post-construction to restore soil structure and vegetation. •Engage in land-use planning consultations with local authorities and communities.	L
	Health and Education	•Increased health risks: Dust, noise, and sanitation challenges can affect local communities. •Spread of communicable diseases: Temporary workers may introduce illnesses. •Disruption of Noise, dust, or traffic can affect community	S	St	M	L	M	•Implement dust suppression (watering roads) and noise control measures. •Provide adequate sanitation and safe drinking water for workers. •Conduct health awareness campaigns for workers and local communities. •Schedule construction activities to avoid night hours where possible. •Coordinate with local health facilities for emergency preparedness.	L

	Traffic	•Increased vehicle movement: Construction trucks may congest local roads. •Road damage: Heavy vehicles may degrade local roads. •Safety risks: Risk of accidents for pedestrians and livestock.	L	St	M	L	M	•Develop a Traffic Management Plan (TMP) including routes, speed limits, and signage. •Schedule deliveries to avoid peak local traffic times. •Use temporary road reinforcements to reduce damage from heavy machinery. •Educate workers and the community on traffic safety. •Provide pedestrian crossings or temporary pathways for local communities.	L
	Cultural Heritage	•Disturbance of archaeological or heritage sites: Excavation may uncover graves, traditional sites, or artifacts. •Loss of cultural landscapes: Clearing land may affect sites of spiritual or historical importance. •Conflict with local traditions: Construction activities may overlap with culturally significant areas or practices.	S	St	L	Im	L	•Conduct a Cultural Heritage Assessment before construction. •Establish buffer zones around known sites and mark them clearly. •Develop a chance-find procedure: if artifacts or human remains are found, stop work and notify authorities. •Engage local leaders and communities in heritage protection planning. •Educate workers on respect for local cultural sites.	L

Operation & Maintenance Phase									
Physical Environment	Soil	•Minor soil compaction from maintenance vehicles traveling across access roads and around panels. •Localized erosion if drainage is inadequate or vegetation is removed around service areas. •Potential contamination from accidental spills of oils, lubricants, or cleaning chemicals.	S	Lt	M	L	H	•Limit vehicle movement to designated access tracks to reduce compaction. •Maintain vegetation cover around the facility to stabilize soil. •Implement spill response procedures and store oils/chemicals in bunded areas. •Monitor areas prone to erosion and repair any erosion rills or gullies promptly.	L
	Surface Water	•Sedimentation or pollution from minor spills or wash water during panel cleaning. •Altered runoff patterns due to compacted areas or impervious surfaces.	S	Lt	M	L	M	•Use controlled water drainage systems to channel runoff safely. •Clean panels using environmentally safe detergents in designated areas. •Maintain vegetated buffer strips near any watercourses to filter runoff. •Conduct regular inspections of drainage infrastructure and repair blockages immediately.	L
	Ground Water	•Low risk of contamination from chemicals or fuel leaks if improperly stored. •Minimal alteration of recharge due to impervious surfaces in O&M areas.	S	Lt	M	L	H	•Store all fuels, oils, and chemicals in lined and bunded storage areas. •Train staff in spill prevention and response procedures. •Avoid washing or chemical disposal in areas where water infiltrates directly to shallow groundwater.	L

								•Monitor groundwater quality periodically near storage areas.	
	Air Quality	•Dust emissions from occasional maintenance vehicles on unpaved roads. •Minor exhaust emissions from O&M vehicles and generators if used.	L	Lt	M	L	M	•Limit vehicle movement to designated tracks and apply water to access roads during dry conditions. •Use well-maintained vehicles and generators to reduce emissions. •Encourage electric or low-emission vehicles for maintenance if feasible.	L
	Noise	•Low-level noise from maintenance equipment, vehicles, and occasional generators. •Disturbance to nearby communities or wildlife if maintenance occurs early morning or late evening.	L	Lt	L	P	M	•Schedule maintenance during daylight hours. •Use low-noise equipment and ensure generators are properly muffled. •Maintain a buffer zone of vegetation around the site to reduce noise propagation.	L
	Visual Landscape	•Permanent presence of solar panels may slightly alter the visual landscape. •Temporary visual clutter from maintenance vehicles, storage of equipment, or debris.	S	Lt	L	P	M	•Maintain tidy O&M areas and remove unnecessary debris immediately. •Preserve vegetation buffers around the facility to blend the panels with the surrounding landscape. •Plan panel layout and maintenance areas to minimize visibility from key viewpoints. •Rehabilitate any disturbed areas after O&M activities (e.g., grading, vegetation replacement)	L

Biological Environment									
	Flora	Periodic maintenance activities, vegetation control beneath panels, and vehicle movement may: •Cause localized removal or suppression of vegetation, particularly grasses and low shrubs. •Lead to soil exposure and reduced natural regeneration if vegetation is repeatedly cleared. •Increase the risk of invasive plant species colonizing disturbed or shaded areas. •Reduce availability of plant resources traditionally used by local communities (e.g., grazing or medicinal plants).	S	Lt	M	L	M	•Maintain controlled vegetation management, favoring grass cutting rather than complete clearing. •Use manual or mechanical methods instead of herbicides where possible. •Rehabilitate disturbed areas with indigenous plant species adapted to local conditions. •Monitor and remove invasive species regularly. •Restrict maintenance vehicles to existing access routes to protect surrounding vegetation.	L
	Fauna	The operational solar facility introduces permanent infrastructure and routine human presence, which may: •Cause habitat modification or fragmentation, especially for	S	Lt	M	L	M	•Maintain wildlife movement corridors where feasible, especially along site boundaries. •Use wildlife-friendly fencing (e.g., raised bottom sections where appropriate).	L

		small mammals, reptiles, and amphibians. •Result in disturbance from vehicles and maintenance activities, leading to avoidance behaviour. •Pose collision or trapping risks for small animals near fences, trenches, or equipment. •Reduce grazing or movement areas for wildlife in and around the site.						•Enforce low vehicle speed limits within the facility. •Conduct routine inspections to rescue animals trapped within infrastructure. •Train O&M staff in wildlife awareness and reporting procedures.	
	Avifauna	Solar facilities may affect bird species through: •Disturbance from routine maintenance activities near feeding or resting areas. •Collision risks with panel structures, perimeter fencing, and overhead lines. •Habitat alteration, particularly where trees or shrubs were removed during construction. •Potential avoidance of the site by sensitive or migratory species common in the Zambezi Region.	S	Lt	L	L	M	•Maintain vegetated buffer zones and natural habitats around the site to support bird activity. •Mark fences and any overhead lines with bird-visible markers to reduce collision risk. •Avoid unnecessary night lighting; use downward-facing, low-intensity lights if required. •Schedule maintenance activities to avoid peak bird breeding or migration periods, where feasible. •Implement avian monitoring programs to detect and respond to any unexpected impacts.	L

Socio-Economic Environment	Livelihood	The development and operation of the solar facility may influence local livelihoods by: •Restricting access to communal land previously used for grazing, or collection of natural resources. •Causing loss of income opportunities for households that depended on the project site. •Creating temporary and permanent employment opportunities, which may benefit some community members. •Increasing local economic activity through demand for goods and services.	L	Lt	M	P	L	•Engage with local communities and traditional authorities to identify livelihood activities affected by the project. •Ensure fair compensation or livelihood restoration measures where access to land or resources is lost. •Prioritize local employment and procurement during construction and operation. •Support community development initiatives where feasible (e.g., skills training). • Maintain controlled access to surrounding communal land to minimize disruption.	L
	Land use	The solar facility will result in: •Permanent change in land use from communal or agricultural land to energy infrastructure.	L	Lt	M	P	M	•Select sites that avoid high-value agricultural land or sensitive areas. •Minimize the project footprint through efficient layout and design.	L

		•Potential conflict with existing land uses, such as grazing or seasonal farming. •Reduced land availability for future alternative uses within the project footprint.						•Allow compatible land uses such as controlled grazing where safe and feasible. •Rehabilitate unused areas and maintain vegetation cover. •Secure all necessary land use approvals and maintain ongoing engagement with landowners and authorities.	
	Health and Education	The project may affect health and education through: •Improved access to electricity, indirectly benefiting health facilities, schools, and households. •Minor health risks from dust, noise, or traffic during construction and maintenance. •Improved local capacity through employment and skills transfer.	S	Lt	M	L	H	•Implement dust, noise, and traffic control measures. •Ensure workers follow health and safety standards, including sanitation and hygiene practices. •Support local clinics and schools through electrification or social investment, where feasible. •Conduct health awareness programs for workers and communities.	L
	Traffic	Traffic impacts may include: •Increased vehicle movement during construction and maintenance. •Higher risk of accidents involving pedestrians, livestock, and cyclists. •Wear and tear on local roads due to heavy vehicles.	L	Lt	M	L	M	•Develop and implement a Traffic Management Plan (TMP). •Use designated transport routes and restrict vehicle speeds. •Install warning signage near settlements, and crossing points. •Schedule transport activities outside peak community movement times.	L

								•Repair any damage to local roads caused by project activities.	
	Cultural Heritage	The proposed project may: •Disturb archaeological sites, graves, or sacred areas during site development. •Affect cultural landscapes important to local communities. •Create social conflict if cultural values are not respected.	S	Lt	L	L	Im	•Conduct a Cultural Heritage Impact Assessment prior to construction. Establish buffer zones around identified heritage sites. •Implement a chance-find procedure to address unexpected discoveries. •Engage traditional leaders and communities in decision-making. •Train workers on cultural sensitivity and site protection.	Ns

Decommission Phase									
Physical Environment	Soil	Decommissioning activities such as dismantling structures, excavation of foundations, and vehicle movement may: •Cause soil disturbance and erosion, particularly where foundations and underground cables are removed. •Lead to loss or mixing of topsoil, affecting soil fertility. •Result in soil compaction from heavy machinery. •Cause soil contamination from accidental fuel, oil, or hydraulic fluid spills. •Leave behind uneven surfaces, increasing long-term erosion risk if rehabilitation is inadequate.	L	St	H	Hl	H	•Strip, store, and reuse topsoil for site rehabilitation. Implement erosion control measures such as silt fences and contouring. •Restrict machinery to designated access routes. •Refuel vehicles in bunded areas only and keep spill kits on site. •Backfill and compact excavated areas appropriately. •Rehabilitate all disturbed areas using indigenous vegetation.	L
	Surface Water	Decommissioning may: •Increase sediment runoff into surface water bodies. •Cause pollution from fuel spills, concrete residues, or waste materials. •Temporarily alter natural drainage patterns during earthworks.	S	St	M	L	M	•Maintain buffer zones around all watercourses. •Install temporary sediment control structures during earthworks. •Prohibit washing of machinery near water bodies. •Remove all waste materials promptly. •Restore natural drainage channels and contours post-decommissioning.	L

		•Increase flood risk if rehabilitation is delayed.						•Schedule major earthworks during the dry season where feasible.	
	Ground Water	Groundwater may be affected through: •Contamination from spills of fuels, oils, or lubricants. •Leaching from improperly managed waste or sanitation facilities. •Temporary disruption of groundwater recharge patterns due to soil disturbance.	S	St	M	L	M	•Store hazardous substances in lined and bunded areas. •Implement a spill prevention and emergency response plan. •Use sealed sanitation systems and remove them after decommissioning. •Dispose of hazardous waste at licensed facilities. •Monitor groundwater quality if contamination is suspected.	L
	Air Quality	Decommissioning activities may generate: •Dust emissions from excavation, vehicle movement, and removal of infrastructure. •Exhaust emissions from machinery and transport vehicles. •Short-term nuisance impacts to nearby communities and vegetation.	S	St	L	P	L	•Water exposed surfaces and access roads regularly. •Cover trucks transporting soil or debris. •Limit vehicle speeds within the site. •Maintain machinery to reduce exhaust emissions.	L
	Noise	Noise will be generated by dismantling activities, machinery, and transport vehicles, potentially:	L	St	M	L	H	•Restrict noisy activities to daytime hours. •Use well-maintained, low-noise equipment.	L

		•Disturbing nearby communities and livestock. •Affecting wildlife in surrounding habitats. •Causing short-term discomfort for workers.						•Install temporary noise barriers where required. •Inform local communities in advance of noisy operations. •Ensure workers use appropriate hearing protection.	
	Visual Landscape	During decommissioning: •The site may appear visually disturbed due to exposed soil, machinery, and dismantled infrastructure. •Temporary visual intrusion may affect the rural character of the area. •Inadequate rehabilitation could leave long-term visual scars.	S	St	M	L	M	•Remove all solar infrastructure, fencing, foundations, and waste materials. •Recontour land to match natural topography. •Reapply topsoil and revegetate using native plant species. •Remove temporary access roads unless needed by the community. •Monitor vegetation recovery and replant where necessary.	L
Biological Environment	Flora	During decommissioning, activities such as removal of solar panels, foundations, cabling, access roads, and fencing will disturb previously rehabilitated or naturally regenerated vegetation. Potential impacts include: •Damage or removal of vegetation cover, particularly grasses and shrubs that have	S	St	M	L	L	•Conduct a pre-decommissioning vegetation survey to identify sensitive or protected plant species. •Limit vegetation clearance strictly to areas required for infrastructure removal. •Strip, store, and re-apply topsoil to support regrowth. •Rehabilitate disturbed areas immediately after decommissioning using indigenous plant species sourced locally.	L

		recolonised the site during operation. •Soil exposure, leading to increased erosion risk and reduced plant regeneration. •Loss of indigenous plant species, including those of traditional or medicinal value. •Introduction or spread of invasive plant species due to soil disturbance and machinery movement. •Temporary reduction in habitat quality until rehabilitation is complete.						•Monitor and remove invasive plant species during and after rehabilitation. •Restrict vehicle movement to existing tracks to avoid unnecessary vegetation damage.	
	Fauna	Decommissioning will involve increased human activity and heavy machinery, which may: •Cause temporary disturbance and displacement of small mammals, reptiles, amphibians, and invertebrates. •Increase risk of injury or mortality from vehicle movements, open trenches, or dismantling activities.	S	St	L	P	L	•Conduct a pre-decommissioning fauna walk-through survey. •Schedule decommissioning activities to avoid peak breeding or migration periods, where feasible. •Maintain low vehicle speed limits on site. •Cover open trenches or provide escape ramps for animals. •Remove fencing as early as safely possible to restore wildlife movement corridors. •Train workers on wildlife awareness and reporting procedures.	L

		•Disrupt wildlife movement patterns due to temporary barriers or noise. •Reduce availability of shelter and foraging areas until vegetation recovers. Impacts are generally short-term and reversible, with long-term conditions improving once infrastructure is removed.							
	Avifauna	The Zambezi Region supports high bird diversity, including wetland-dependent and migratory species. During decommissioning: •Noise and human activity may disturb nesting, feeding, or roosting birds. •Removal of structures may temporarily displace birds that have adapted to the operational facility. •Increased vehicle activity may increase collision risks. •Short-term loss of perching or shelter sites may occur.	L	St	L	P	L	•Conduct a pre-decommissioning avifauna assessment, especially for nesting activity. •Avoid decommissioning during peak breeding and migration seasons. •Restrict noisy activities to daylight hours. •Maintain vegetation buffers near wetlands and drainage lines. •Educate workers on bird protection and prohibit harm or disturbance. •Monitor bird activity during decommissioning and adjust operations if necessary.	L

Socio-Economic Environment	Livelihood	Decommissioning may affect local livelihoods in several ways: •Temporary employment opportunities will decline as construction and operational jobs end. •Local businesses and service providers that supported the facility may experience reduced income. •Short-term disruption to grazing, farming, or resource access may occur due to vehicle movement and rehabilitation activities. •In the long term, land may be returned to communal use, potentially restoring traditional livelihood activities.	L	St	M	L	M	•Inform communities well in advance about decommissioning timelines. •Prioritize local labor for decommissioning and rehabilitation works. •Support skills transfer that may help workers find alternative employment. •Restore land promptly to allow resumption of grazing or farming. •Engage local leaders to plan post-decommission land use.	L
	Land use	During decommissioning: •Land will temporarily be used for equipment dismantling, storage, and vehicle access. •Soil disturbance may limit immediate use of land for agriculture or grazing.	S	St	M	L	M	•Limit disturbance to the smallest possible footprint. •Remove all foundations, cabling, fencing, and access roads unless requested by the community. •Recontour land to natural topography and restore drainage patterns.	L

		•Once infrastructure is removed and rehabilitation is complete, land use can revert to pre-project conditions.						•Rehabilitate land using indigenous vegetation suitable for grazing. •Obtain community and authority agreement on final land condition.	
	Health and Education	Decommissioning activities may: •Increase dust, noise, and traffic, temporarily affecting nearby households, clinics, and schools. •Pose safety risks to communities due to heavy vehicle movement. •Reduce indirect benefits previously provided by the project (e.g., electrification support).	S	St	M	L	M	•Implement dust and noise control measures, especially near schools and clinics. •Restrict high-impact activities to daytime hours. •Provide clear signage and community notices about hazardous activities. •Ensure workers follow strict health and safety procedures.	L
	Traffic	Traffic impacts during decommissioning include: •Increased movement of heavy trucks transporting panels, steel structures, and waste. •Road safety risks for pedestrians, cyclists, livestock, and school children. •Potential damage to local access roads.	L	St	M	L	M	•Implement a Traffic Management Plan (TMP) specific to decommissioning. •Use designated haul routes approved by local authorities. •Enforce speed limits and driver safety training. •Install warning signs near settlements and schools. •Repair any road damage caused by decommissioning activities.	L

	Cultural Heritage	Ground disturbance during decommissioning may: •Expose or damage archaeological artefacts, graves, or sacred sites. •Disturb culturally important landscapes or sites identified by local communities. •Cause social conflict if heritage resources are not respected.	S	St	M	Im	L	•Conduct a pre-decommissioning cultural heritage survey. •Maintain buffer zones around known heritage sites. •Implement and enforce a Chance Finds Procedure. •Involve traditional authorities and elders in decision-making. •Train workers on cultural sensitivity and legal obligations.	Ns

Key:

Nature of the impact:	(N/A) No impact	(+) Positive Impact (-)	Negative Impact		
Geographical extent:	(S) Site;	(Lc) Local/District;	(P) Regional;		
Intensity / Magnitude:	(L) Low;	(M) Medium;	(H) High;		
Duration:	(St) Short Term;	(Mt) Medium Term;	(Lt) Long Term;	(P) Permanent	
Probability:	(Im) Improbable	(Po) Possible;	(Li) Likely;	(Hl)Highly Likely	(D)Definite
Without Mitigation	Ns (No Significance)	(L) Low;	(M) Medium;	(H) High;	
With Mitigation	Ns (No Significance)	(L) Low;	(M) Medium;	(H) High;	

11.CUMULATIVE IMPACTS

Below is a set of cumulative impacts considered in an Environmental Impact Assessment (EIA) for a 300 MW solar facility covering 1,000 ha in the Zambezi Region (Liselo). These cumulative impacts include the project's direct impacts added to other existing/planned activities in the area, and extend across environmental, social, economic, cultural, and health domains.

Table 12 . Cumulative Impacts

Impact Category	Cumulative Impact	Project Phase	Mitigation Measures
Land Use	Progressive loss of communal and natural land contributing to cumulative land transformation in the region.	Pre-construction	• Optimize site layout to minimise land take • Avoid high-value grazing and sensitive areas • Engage land users and traditional authorities early
	Permanent conversion of ±1,000 ha adds to regional cumulative land use change.	Construction	• Limit footprint to approved area • Clearly demarcate no-go areas • Progressive rehabilitation of disturbed areas
	Long-term restriction of land access contributes to cumulative land use alteration.	Operation & Maintenance	• Maintain buffer zones where feasible • Allow controlled grazing where compatible
	Residual land degradation following closure contributes to cumulative impacts.	Decommissioning	• Implement site rehabilitation plan • Restore land to agreed post-use condition

12.ASSAMPTIONS AND LIMITATIONS

12.1. Possible Assumptions

- Solar resource availability
  It is assumed that the Liselo area receives adequate and consistent solar irradiation throughout the year to support the technical and economic viability of the proposed solar project.
- Land availability and suitability
  The project assumes that sufficient land is available, free of major physical constraints, and that land tenure and access issues can be resolved without significant conflict.
- Grid access and capacity
  It is assumed that the existing electricity grid infrastructure in the Zambezi Region has sufficient capacity, or can be upgraded, to accommodate the proposed solar plant and enable reliable power evacuation.
- Regulatory approvals
  The project assumes that all required environmental authorizations, permits, and licenses will be obtained within reasonable timeframes in accordance with Namibian legislation.
- Stakeholder acceptance
  It is assumed that local communities and stakeholders will generally support the project following effective consultation and engagement.
- Theft
  The development of the solar facility, fencing combined with modern security measures such as drone monitoring and security guard patrols, will reduce the risk of stock and property theft on-site. And in the region.

12.2. Possible Limitations

- Environmental data constraints
  Baseline environmental data for the Liselo area may be limited due to seasonal variation and time the assessment was conducted, particularly for biodiversity and avifauna, which could restrict the accuracy of impact predictions.
- Seasonal and climatic variability
  Variations in weather patterns, flooding, or extreme climatic events common in the Zambezi Region

may affect construction activities and long-term operational performance.

- Sensitive environmental features

  The presence of sensitive habitats, possible wildlife movement corridors, could limit site layout options therefore requiring additional mitigation measures.

- Infrastructure constraints

  Limited road access, distance to substations, or insufficient grid capacity may increase project costs or delay implementation.

- Cumulative impacts from other developments

  Existing or planned developments in the Liselo area may contribute to cumulative environmental and social impacts, potentially constraining project design or scale.

- Socio-economic considerations

  Competing land uses, traditional land rights, or community expectations regarding employment and benefits may pose challenges if not carefully managed.

- Political interference

  Regional and national political interference can impact the planning, approval, and implementation of the solar facility, potentially causing delays, increased costs, or changes to project scope

These assumptions and limitations highlight key uncertainties and constraints that will need to be addressed and refined through detailed studies and stakeholder engagement during the Environmental Impact Assessment process.

13.PRELIMINARY MITIGATION MEASURES

13.1. Consideration of mitigation hierarchy consistent with IFC PS approach.

The following preliminary mitigation measures for the Liselo solar project are structured according to the mitigation hierarchy consistent with the IFC Performance Standards (PS) approach: Avoid → Minimize → Restore → Offset. These measures will be refined during the full Environmental Impact Assessment (EIA) and incorporated into an Environmental and Social Management Plan (ESMP).

Table 13. IFC Performance Standards (PS): Mitigation Hierarchy

Mitigation Hierarchy	**Key Measures**	**Examples / Application for Liselo Solar Project**
Avoid	Prevent potential impacts before they occur	- Select project site away from ecologically sensitive areas and critical wildlife habitats - Avoid culturally or socially sensitive sites, including communal lands and settlements - Design layout to minimize land clearing and preserve natural corridors
Minimize	Reduce the intensity, duration, and extent of impacts	- Limit vegetation clearance to essential areas only - Control dust and noise during construction (water spraying, speed limits, timing of works) - Implement buffer zones around sensitive species and habitats - Apply erosion control and proper stormwater management - Use low-profile, non-reflective panels to reduce visual impact
Restore / Rehabilitate	Re-establish conditions to as close to baseline as possible	- Re-vegetate cleared or disturbed areas using native plant species - Remove temporary construction facilities and restore land to pre-project condition - Repair access roads or disturbed terrain post-construction
Offset / Compensate	Address residual impacts that cannot be fully mitigated	- Implement biodiversity offsets for unavoidable habitat or species impacts in consultation with authorities - Support community programs to compensate for residual land use restrictions or disruption of livelihoods

Additional Measures	Cross-cutting actions to support all stages	- Continuous environmental and social monitoring (biodiversity, air, noise, water, soil) - Stakeholder engagement and communication with local communities and authorities - Occupational and community health and safety protocols throughout construction and operation

These mitigation hierarchy ensures that the project first seeks to avoid impacts, then minimizes unavoidable effects, restores affected areas, and finally offsets residual impacts, in line with IFC Performance Standards and international best practice.

14.REFERENCES

Alexander, G. & Marais, J. (2007) A Guide to the Reptiles of Southern Africa. Cape Town: Struik Publishers.

Apps, P. (2012) Smithers' Mammals of Southern Africa: A Field Guide. Cape Town: Struik Nature.

Braam van Wyk, & van Wyk, P. (1997) Field Guide to Trees in Southern Africa. Cape Town: Struik Publishers.

Chittenden, H., Davies, G. & Weiersbye, I. (2016) Roberts Bird Guide. 2nd edn. Cape Town: John Voelcker Bird Book Fund.

Communal Land Reform Act 5 of 2002 (Namibia) (2002) Communal Land Reform Act. Windhoek: Government of the Republic of Namibia.

Electricity Act 4 of 2007 (Namibia) (2007) Electricity Act. Windhoek: Government of the Republic of Namibia.

Environmental Management Act 7 of 2007 (Namibia) (2007) Environmental Management Act. Windhoek: Government of the Republic of Namibia.

Environmental Regulations (Namibia) (2012) Environmental Impact Assessment Regulations. Windhoek: Ministry of Environment, Forestry and Tourism.

Forestry Act 12 of 2001 (Namibia) (2001) Forestry Act. Windhoek: Government of the Republic of Namibia.

International Finance Corporation (IFC) (2012a) IFC Performance Standards on Environmental and Social Sustainability. Washington, DC: International Finance Corporation.

International Finance Corporation (IFC) (2012b) IFC Performance Standards on Environmental and Social Sustainability. Washington, DC: International Finance Corporation.

Labour Act 11 of 2007 (Namibia) (2007) Labour Act. Windhoek: Government of the Republic of Namibia.

Mannheimer, C.A. & Curtis, B.A. (eds.) (2009) Le Roux and Miller's Field Guide to the Trees and Shrubs of Namibia. Windhoek: Macmillan Education Namibia.

Margane, A., Baeumle, R., Schildknecht, F. & Wierenga, A. (2005) Technical Cooperation Project: Investigation of Groundwater Resources and Airborne-Geophysical Investigation of Selected Mineral

Targets in Namibia – Groundwater Investigations in the Eastern Caprivi Region: Main Hydrogeological Report. Windhoek: Federal Institute for Geosciences and Natural Resources (BGR) and Department of Water Affairs (DWA).

Mendelsohn, J. (2007) A digest of information on key aspects of Caprivi's geography. Windhoek, 4 September.

MEFT (Ministry of Environment, Forestry and Tourism) (2018) Best Practice Guide: Scoping and Terms of Reference. Windhoek: MEFT.

Ministry of Lands, Resettlement and Rehabilitation (1998) Namibia's National Land Policy. Windhoek: Government of the Republic of Namibia.

Ministry of Mines and Energy (2016) National Integrated Resource Plan (NIRP). Windhoek: Government of the Republic of Namibia.

Ministry of Mines and Energy (2017) Renewable Energy Policy of Namibia. Windhoek: Government of the Republic of Namibia.

Namibian Environmental Assessment Policy (1995) Namibian Environmental Assessment Policy. Windhoek: Ministry of Environment, Forestry and Tourism.

National Heritage Act 27 of 2004 (Namibia) (2004) National Heritage Act. Windhoek: Government of the Republic of Namibia.

Pollution and Waste Management Bill (Draft) (Namibia) (2019) Pollution and Waste Management Bill (Draft). Windhoek: Government of the Republic of Namibia.

Pollution Control and Waste Management Ordinance 11 of 1975 (1975) Pollution Control and Waste Management Ordinance. Windhoek: Government of the Republic of Namibia.

Public and Environmental Health Act 1 of 2015 (Namibia) (2015) Public and Environmental Health Act. Windhoek: Government of the Republic of Namibia.

Republic of Namibia (1990) The Constitution of the Republic of Namibia. Windhoek: Government of the Republic of Namibia.

Roads Ordinance 19 of 1972 (1972) Roads Ordinance. Windhoek: Government of the Republic of Namibia.

Soil Conservation Act 76 of 1969 (Namibia) (1969) Soil Conservation Act. Windhoek: Government of the Republic of Namibia.

Southern African Development Community (SADC) (1996) SADC Protocol on Energy. Gaborone: SADC Secretariat.

Southern African Power Pool (SAPP) (2009) Southern African Power Pool Guidelines. Harare: SAPP Coordination Centre.

Waste Management Act (Namibia) (2018) Waste Management and Pollution Control Act. Windhoek: Government of the Republic of Namibia.

Waste Management Regulations: Local Authorities Act 23 of 1992 (1992) Local Authorities Act. Windhoek: Government of the Republic of Namibia.

Water Act 54 of 1956 (Namibia) (1956) Water Act. Windhoek: Government of the Republic of Namibia.

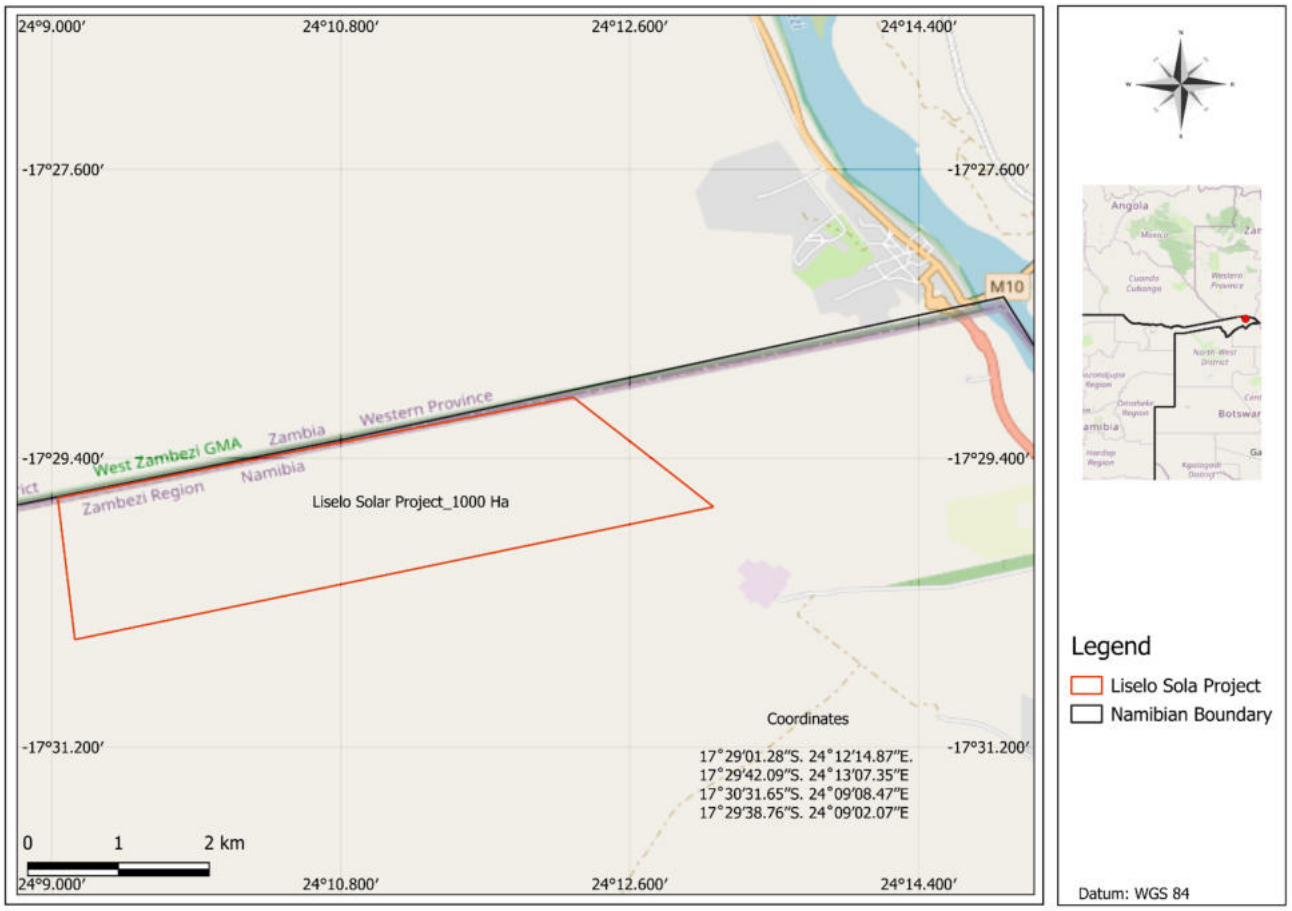
World Bank Group (2007a) Environmental, Health and Safety (EHS) General Guidelines. Washington, DC: World Bank Group.

World Bank Group (2007b) EHS Guidelines for Electric Power Transmission and Distribution. Washington, DC: World Bank Group.

World Bank Group (2015) EHS Guidelines for Renewable Energy – Solar Power Projects. Washington, DC: World Bank Group.

15.APPENDICES

APPENDIX A. SITE MAP



APPENDIX B. ATTEDANCE REGISTER

MICHMAT INVESTMENT CC

Discipline-Excellence-Quality

PUBLIC PARTICIPATION ATTENDANCE REGISTER

(Photovoltaic Solar Facility)

Proponent: Water and Power Supply Namibia (Pty) Ltd **Date:** 18 Dec 2025

Consultant: Michmat Investments cc **Venue:** Katima Mulilo Community Hall

No.	Full Name	Organisation	Contact No.	Email	Signature
1.	Michael Matapy	Michmat	0813137[illegible]	matapyimyc[illegible]	
2	Imataa Mamili	MAMILI ENGINEERING	0813231002	dmamili@yahoo.com	
3	George Kamwi	K.M.TC	0813187580	georgekam[illegible]@gmail.com	
4	GARETH NEIL	EXPONANT	0816745[illegible]	garethmunya[illegible]@gmail	
5	Munda Albert	KIM.TC	08187[illegible]		
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APPENDIX C. PUBLIC NOTICE

PUBLIC NOTICE

CALL FOR PUBLIC PARTICIPATION PROCESS FOR THE PROPOSED PHOTOVOLTAIC SOLAR FACILITY-LA

The Public is hereby invited to attend a Public Participation Meeting for the proposed Liselo Solar Project, undertaken in terms of the Environmental Management Act, 2007 (Act No. 7 of 2007) and the Environmental Impact Assessment Regulations of Namibia. The Public Participation Process ensures that all Interested and Affected Parties (IAPs) are informed of the proposed activity and are given a fair opportunity to comment, raise concerns, or provide local knowledge that may assist in the environmental assessment.

Your participation is essential to ensure that environmental, social, and community considerations are adequately addressed before any decisions are made regarding the proposed development.

Fig 1. Liselo Sola Facility Site Location

A **Public Meeting** details are as follows:

- **Venue:** Katima Mulilo Community Hall
- **Date:** 18 December 2025
- **Time:** 14:00 – 16:00
- **Proponent:** Water and Power Supply Namibia (Pty) Ltd

Interested and Affected Parties (IAPs), are invited to attend the meeting.

Consultant Contact Details:

Michmat Investments cc
Environmental Assessment Practitioner (EAP)
Phone: +264 812131704
Email: michmainvest@outlook.com/matengu.myck@yahoo.com

Comments, enquiries, or requests for digital copies of the Basic Information Document may be directed to the above contact emails.

Open Market

Waiting Area

Kamunu

Police Station

APPENDIX D. MEETING AGENDA

MICHMAT INVESTMENT CC

Proposed Photovoltaic Solar Facility Meeting Agenda

Company Name:	Michmat Investments cc
Proponent:	Water and Power Supply Namibia (Pty) Ltd
Date:	Thursday 18 December 2025
Time:	14:00 -16:00
Location:	Katima Mulilo Community Hall
Chair:	Mr. Michael Matengu

Attendees & Roles

- Michael Matengu – MD (Chair)

Agender Items

Time	Agender Item	Lead	Support Documents
13:30	Arrival and Registrations	Meeting Chair	Basic Information Document
14:00	Opening Remarks	Meeting Chair	Basic Information Document
14:15	Project Background and Overview	Mr Michael M	Basic Information Document
14:30	EIA Process and Legal Requirements	Mr Michael M	Basic Information Document
14:40	Anticipated Project Impacts	Mr Michael M	Basic Information Document
14:50	Assessment Methodology	Mr Michael M	Basic Information Document
15:00	Public Discussions and Comments Session	Mr Michael M	Basic Information Document
15:45	Next Step and way forward	Mr Michael M	Basic Information Document

APPENDIX E. NEWSPAPER ADVERTS

24 November 2025 (The Republikein,The Sun,Allgemeine Zeitung Newspapers)

6 Market Watch MONDAY 24 NOVEMBER 2025

Market Watch Kleinadvertensies • Classifieds

SPERTYE: 13:00 TWEE WERKSDAE VOOR PLASING
DEADLINES: 13:00 TWO WORKING DAYS PRIOR TO PLACEMENT

TEL: 061*297 2175 **FAX:** 061*239 638
EMAIL: classified2@synergi.com.na

Geen advertensies sal telefonies aanvaar word nie.
No advertisements will be accepted telephonically.

INHOUDSOPGAWE / CONTENTS

RATES & DEADLINES

To avoid disappointment of an advertisement not appearing on the date you wish, please book timeously. Classified emails, notices

CONDITIONS OF ACCEPTANCE:
Republikein reserves the right to withhold or cancel any advertisement order that has been

009 Vakatures / Vacancies

Job Advertisement: Project Manager - Tungaashike Construction CC
Position: Project Manager
Company: Tungaashike Construction CC
Location: Oshakati, Namibia
Employment Type: Full-Time
About the Role Tungaashike Construction CC is seeking a highly skilled and experienced Project
Manager to oversee and manage construction projects from initiation to completion.
The ideal candidate must be able to work effectively in a multicultural environment and coordinate with Chinese-speaking partners, suppliers, and clients.
Key Requirements
Minimum 5 years proven experience in project management within the construction industry.
Fluency in Chinese (Mandarin) speaking and writing is mandatory for communication with Chinese partners and project stakeholders.
Strong leadership and organisational skills.
Ability to manage project budgets, timelines, and teams.
Excellent communication and reporting abilities. Knowledge of Namibian construction standards and regulations will be an added advantage.
Responsibilities
Lead, coordinate, and supervise construction project activities.
Communicate effectively with Chinese-speaking clients, engineers, and suppliers.
Prepare project reports, plans, and documentation.
Monitor project progress and ensure compliance with quality and safety standards.
Manage project teams and subcontractors.

009 Vakatures / Vacancies

with at least 2 years off-road/4x4 experience
Experience with VHF/GPS tracking, camera trapping, or ecological monitoring
Strong data collection and reporting skills
Commitment to ethical, community-led conservation
Rewild Project Officer: to support rescue, rehabilitation, post-release monitoring and ecological research, starting immediately.
Requirements:
MSc in zoology, ecology, wildlife conservation, or related field (or equivalent experience)
Minimum 4 years field experience, preferably with mammal telemetry or rewilding work
Experience with pangolin rehabilitation, VHF/GPS tracking, and behavioural monitoring is required
Camp Manager: for our remote field base supporting pangolin conservation programmes, starting early January.Requirements:
BSc in conservation or related field preferred; relevant experience accepted in place of degree
Minimum 2 years management experience
CBNRM experience required
Strong organisational, logistical, and communication skills
Ability to manage remote camp operations, supplies, safety and team coordination
All of these positions require: university degrees and working experience with training certificates (NATH, FGASA, Wildlife Campus, etc) a valid manual driving license and 4 x 4 experience, computer literacy, fluency in English, strong communication skills,

028 Huise te koop / Residential Prop. for Sale

Swakopmund-Mondesa house for sale Ext 4 Erf 2298 size 298 Selling price N$1 270 000
Contact HELENA
0818434306 / 0812935923
DM02025004423792

035 Regskennisgewings / Legal Notices

PUBLIC PARTICIPATION NOTICE ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR THE PROPOSED 300 MW PHOTOVOLTAIC (SOLAR) POWER PROJECT IN THE LISELO AREA, KATIMA MULILO, ZAMBEZI REGION
Notice is hereby given in terms of the Environmental Management Act, 2007 (Act No. 7 of 2007) and the Environmental Impact Assessment Regulations (GN No. 30 of 2012) that an application for an Environmental Clearance Certificate will be submitted to the Ministry of Environment, Forestry and Tourism (MEFT): Department of Environmental Affairs (DEA) for the following proposed activity:
Project: Development of a 300 MW Photovoltaic (Solar) Power Plant and associated infrastructure in the Liselo Area, near Katima Mulilo, Zambezi Region.
Proponent: Water and Power Supply Namibia (Pty) Ltd
Environmental Assessment Practitioner (EAP): Michmat Investments cc
The proposed development includes solar PV arrays, inverters, transformers, a substation, internal access roads, Battery Storage and a transmission connection point.
Public Participation:Interested and Affected Parties (I&APs) are invited to register and submit comments, queries, or concerns regarding the proposed project. A public meeting will be held to present project details and gather feedback. Background Information Document (BID) and Draft Scoping Report (DSR) will be made available upon

035 Regskennisgewings / Legal Notices

TERMS: "VOETSTOOTS" AND CASH TO THE HIGHEST BIDDER
DATED AT WINDHOEK ON THIS DAY OF NOVEMBER 2025
ENGLING, STRITTER AND PARTNERS
Legal Practitioners for Execution Creditor
No 12 Love Street
Windhoek
Ref: ZM/sd 538384
DM02025004423788

IN THE HIGH COURT OF NAMIBIA
Main Division Windhoek
Case Number: HC-MD-CIV-ACT-CON-2025/03025
In the matter between
FIRST NATIONAL BANK OF NAMIBIA LTD Execution Creditor/Plaintiff
and CHANTELL FIONA KNOWLES (BORN SWARTZ)Execution Debtor/Defendant
NOTICE OF SALE IN EXECUTION
In Execution of a judgment granted against the above named Execution Debtor/Defendant by the above Honourable Court in the above mentioned suit, the under mentioned goods will be sold by Public Auction by the Deputy-Sheriff for the district of WALVIS BAY, UNIT 11 FACTORY PARK, C/O 10TH STREET EAST & GRAND AVENUE, OLD INDUSTRIAL AREA, on FRIDAY, the 5TH of DECEMBER 2025 at 10:00 or so soon thereafter as may be:
1x Hisense Flatscreen television
1x Brown television stand
1x Brown Mat
1x L-Shape black lounge suite
1x Grey Samsung Fridge
1x Mirror
1x Mat dark Brown /light brown
1x Dressing table
1x Bedside table (black)
2Tix Black Mat
1x Brown chest of drawers
1x White samsung Toploader washing machine

035 Regskennisgewings / Legal Notices

NOTICE OF APPLICATION TO A COMMITTEE IN TERMS OF THE LIQUOR ACT, 1998 (Regulations 14, 26 & 33)
Notice is given that an application in terms of the Liquor Act, 1998, particulars of which appear below, will be made to the Regional Liquor Licensing Committee, Region: KHOMAS
1. Name and postal address of applicant: PENOMUNTU INVESTMENTS CC, P.O BOX 4239, WINDHOEK, NAMIBIA
2. Name of business or proposed business to which application relates: DEL POSTO LOUNGE
3. Address/location of premises to which application relates: ERF 1484 ROCKY CREST, UNIT 4, ROAD 15 AND
ROAD 7, WINDHOEK, NAMIBIA
4. Nature and details of application: APPLICATION FOR A SPECIAL LIQUOR LICENCE.
5. Clerk of the court with whom application will be lodged: CLERK OF THE MAGISTRATE'S COURT, DISTRICT
WINDHOEK
6. Date on which application will be lodged: 03 DECEMBER 2025
7. Date of meeting of Committee at which application will be heard: 14 JANUARY 2026
Any objection or written submission in terms of section 28 of the Act in relation to the application must be sent or delivered to the Secretary of the Committee to reach the Secretary not less than 21 days before the date of the
meeting of the Committee at which the application will be heard.
DM02025004423798

01 December 2025(The Republikein,The Sun,Allgemeine Zeitung Newspapers)

6

AZ Market Watch

MONDAY 1 DECEMBER 2025

Market Watch Kleinadvertensies • Classifieds

SPERTYE: 13:00 TWEE WERKSDAE VOOR PLASING
DEADLINES: 13:00 TWO WORKING DAYS PRIOR TO PLACEMENT

Geen advertensies sal telefonies aanvaar word nie.

TEL: 061*297 2175 **FAX:** 061*239 638
EMAIL: classified2@synergi.com.na

No advertisements will be accepted telephonically.

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001	Sterfgevalle	001	Death Notices
002	In Memoriam	002	In Memoriam
003	Dankbetuigings	003	With Gratitude
004	Verlore	004	Lost
005	Kennisgewings	005	Notices
006	Persoonlik	006	Personal
007	Opleiding	007	Training
008	Betrekkings gevra	008	Employment Wanted
009	Vakatures	009	Vacancies
010	Spesiale dienste	010	Services
011	Gelukwensings	011	Congratulations
012	Eiendomme	012	Properties
013	Bou en verf	013	Construction
014	Akkommodasie	014	Accommodation
015	Te huur gevra	015	Wanted to Let
016	Te huur	016	To Let
017	Kommersieel te huur gevra	017	Commercial Wanted to Let
018	Kommersieel te huur	018	Commercial to Let
019	Kommersieel te koop gevra	019	Commercial Property to Buy
020	Kommersieel te koop	020	Comm. Property for Sale
021	Allerlei te koop gevra	021	Goods Wanted to buy
022	Allerlei te koop	022	Goods for Sale
023	Diere	023	Animals
024	Motorfietse en fietse	024	Bicycles and Motorcycles
025	Motors	025	Vehicles
026	Vragmotors en sleepwaens	026	Trucks and Trailers
027	Huise te koop gevra	027	Residential Prop. to Buy
028	Huise te koop	028	Residential Prop. for Sale
029	Besighede	029	Businesses
030	Plase te koop gevra	030	Farms Wanted to Buy
031	Plase te koop	031	Farms for Sale
032	Veilings	032	Auctions
033	Erwe te koop gevra	033	Erven Wanted to Buy
034	Erwe te koop	034	Erven for Sale
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RATES & DEADLINES

To avoid disappointment of an advertisement not appearing on the date you wish, please book timeously. Classified smalls, notices and display smalls: 13:00, two working days prior to placing. A handling fee of 15% is payable on cancellations received in writing by 13:00 two days before scheduled publication. No cancellation will be accepted if received after this deadline.

RATES:

CONDITIONS OF ACCEPTANCE: Republikein reserves the right to withhold or cancel any advertisement order that has been accepted. Republikein accepts no liability for failure to publish an advertisement received by telephone.

ERRORS: Please report errors immediately. Republikein accepts no responsibility for more than one incorrect insertion of any

028 Huise te koop Residential Prop. for Sale

Swakopmund-Mondesa house for sale Ext 4 Erf 2298 size 298 Selling price N$1 270 000 Contact HELENA 0818434306 / 0812935923
DM0202500423792

3 bedroom, 2 bathrooms house, open plan living area. One bedroom flat with large kitchen, electric fence, alarm, parking for 4 cars. N$11 000. Deposit N$6 000. Contact 0812722244.
DM0202500423863

029 Besighede Businesses

CHINESE HEALTH CLINIC (Acupuncture) moved to Werner list str No3. Windhoek center, behind Old Mutual.Call 0813591886
DM0202500423532

027 Huise te koop gevra Residential Prop. to Buy

CASH BUYER IS URGENTLY LOOKING FOR A HOUSE/TOWNHOUSE TO BUY IN WINDHOEK. IF SELLING OR KNOWING SOMEONE SELLING, KINDLY CALL Hillary 0813500256
DM0202500423865

035 Regskennisgewings Legal Notices

PUBLIC PARTICIPATION NOTICE ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR THE PROPOSED 300 MW PHOTOVOLTAIC (SOLAR) POWER PROJECT IN THE LISELO AREA, KATIMA MULILO, ZAMBEZI REGION

Notice is hereby given in terms of the Environmental Management Act, 2007 (Act No. 7 of 2007) and the Environmental Impact Assessment Regulations (GN No. 30 of 2012) that an application for an Environmental Clearance Certificate will be submitted to the Ministry of Environment, Forestry and Tourism (MEFT): Department of Environmental Af-

035 Regskennisgewings Legal Notices

IN THE Magistrate's Court for the District of Grootfontein Held at Grootfontein.
Case No. 35/2024
In the matter between:
FETZELHOVEN IRRIGATION CC - Execution Creditor/Plaintiff
andCHIMEZIE FARMING ENTERPRISES PTY LTD - 1st Execution Debtor/Defendant
HENDRIK GROBELAAR 2nd Executor Debtor /Defendant
In execution of a Judgment against the above mentioned Execution Debtor / Defendant by the above Honourable Court on 11 November 2024, in the above mentioned suit, the under mentioned goods will be sold by Public Auction by the Messenger of Court for the district of Grootfontein at the premises at, in front of Grootfontein Magistrate Court on 12 December 2025 at 13H00.
1x Land Rover Defender (Reg No: CY 270-165)
1x Tractor Trailer
1x Case Jx75T Tractor (Red)
1x Trailer White (T1320kg)(530kg)
1x Compressor
3x Water Tanks (White)
1x Gas Bottle 48kg
1x White Gas Deep Freezer
1x Table with 8 Chairs
1x Mega Master Cooker (Red)
8x Wooden Chairs
1x Meat Cutting Machine (Blue)
5x Glass Cutting Machines
1x Small Generator
5x Solar Connectors (Five standalone solar power units, portable solar systems designed for independent electricity generation)
20x Solar Panels
Amount of Scrap
Voetstoots cash to the highest bidder.
Dated at Grootfontein 27 November 2025
WKH INC
Legal Practitioners for Plaintiff
23 B Hidipo Hamutenya Street.
REF NO. DEB1658(WV)
DM0202500423867

IN THE Magistrate's Court for the District of Grootfontein
Held at Grootfontein.
Case No. 29/2025
In the matter between:
GROOTFONTEIN TRACTORS

Daphne Lilly Howard

4 December 1930 - 13 November 2025

The family of Daphne Lilly Howard sadly announce her passing. Daphne leaves behind her children Sharon, Cheryl and Gareth, 6 grandchildren, and 10 great-grandchildren.

Please join us in a Celebration of Her Life.
3.30pm, Thursday, 4 December 2025
Eros Manor Retirement Village

Market Watch Kleinadvertensies • Classifieds

SPERTYE: 13:00 TWEE WERKSDAE VOOR PLASING
DEADLINES: 13:00 TWO WORKING DAYS PRIOR TO PLACEMENT

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RATES:
(Monday - Friday)
- Classifieds Smalls: N$135.36 for the first 20 words and N$2.15 (15% Vat included) for every word thereafter
- Display Smalls: N$153.07 per col/cm (15% Vat included)
- School notices: N$115.05 (15% Vat included) per col/cm
- Churches: N$115.05

CONDITIONS OF ACCEPTANCE:
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ERRORS:
Please report errors immediately. Republikein accepts no responsibility for more than one incorrect insertion of any advertisement of any cost beyond the cost of the space occupied by the faulty advertisement. No re-publication will be given due to small typographical errors which do not lessen the effectiveness of the advertisement. Republikein does not accept responsibility

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Proponent: Water and Power

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and
CHIMEZIE FARMING ENTERPRISES PTY LTD - 1ST Execution Debtor/Defendant
HENDRIK GROBELAAR - 2ND Execution Debtor/Defendant
In execution of a Judgment

Daphne Lilly Howard

4 December 1930 - 13 November 2025

The family of Daphne Lilly Howard sadly announce her passing. Daphne leaves behind her children Sharon, Cheryl and Gareth, 6 grandchildren, and 10 great-grandchildren.

Please join us in a Celebration of Her Life.
3.30pm, Thursday, 4 December 2025
Eros Manor Retirement Village

APPENDIX F. DECLARATION

Declaration of authorship

APPLICATION NUMBER: 251213006795

Project Title:

Photovoltaic Solar Facility Development, Liselo Area

I Michael Matengu (full name of Environmental Assessment Practitioner - EAP) understand and agree that the information I have furnished in this submission will be reviewed by the Office of the Environmental Commissioner (OEC). I accept that the Environmental Commissioner, will hold me accountable in terms of Section 43(1)(b) of the Environmental Management Act, Act No. 7 of 2007 for any inaccurate or misleading information knowingly provided in the following documentation.

Tick the box (es) applicable to your submission:

- ☐ Pro Forma Environmental Contract for Mining Claim(s)
- ☐ Environmental Questionnaire For Mining
- ☒ Scoping report
- ☒ Environmental Impact Assessment (EIA)
- ☒ Environmental Management Plan (EMP),
- ☒ Consent from Relevant Authority

I certify, and, acknowledge that the provision of such information will impede the lawful carrying out of the duties, responsibilities and functions of the Environmental Commissioner. I declare that the information submitted is my own work. All direct or indirect sources used are acknowledged as references.

Consultancy Name: Michmat Investments cc

EAP Signature:

Date: 07 December 2026

APPENDIX G.EAP CV

CURRICULUM VITAE (CV) FOR CONSULTANT

Name of Consultant: Michael Matengu
Profession: Independent Environmental Assessment Practitioner/Environmental Specialist
Date of Birth: 19 February 1985
Nationality: Namibian
Membership in Professional Bodies: Environmental Assessment Practitioners of Namibia (EAPAN).

Key Qualification:

Name of Task/ Assignment:	Environmental Clearance Certificate Renewal
Year:	Sep 2023- Nov 2023
Location:	Rundu
Client:	Kaisosi River Lodge
Main Project Feature:	Environmental Management Plan
Position Held:	Independent Environmental Impact Assessment Practitioner
Degree of Responsibility:	Baseline Assessment, EMP and Submission

Name of Task/ Assignment:	Environmental Impact Assessment and Review
Year:	Jan 2023- May 2023
Location:	Mushangara, Divundu and Ncgangcana, Rundu
Client:	Water and Power Supply Namibia (Pty) Ltd

Main Project Feature:	Environmental Impact Assessment and Environmental Management Plan Document Review
Position Held:	Independent Environmental Impact Assessment Practitioner
Degree of Responsibility:	Assessment, Review and Submission

Name of Task/ Assignment:	Solar Feasibility Study
Year:	May 2022- Nov 2022
Location:	Mushangara, Divundu and Ncgangcana, Rundu
Client:	Water and Power Supply Namibia (Pty) Ltd
Main Project Feature:	Feasibility Study Assessment Report
Position Held:	Independent Environmental Assessment Practitioner
Degree of Responsibility:	Assessment, EIA, EMP Review, Feasibility Assessment Report

Name of Task/ Assignment:	Construction of main mine features by China State Construction and Engineering Corporation for Husab Swakop Uranium Mine
Year:	May 2014- Jan 2017
Location:	Husab Swakop Uranium Mine
Client:	Husab Swakop Uranium Mine
Main Project Feature:	Construction, Environmental Management Plan, Compliance Monitoring

Position Held:	Environmental Compliance Officer
Degree of Responsibility:	EMP Development, Compliance Monitoring, Documentation and writing of report

Name of Task/ Assignment:	Environmental Impact Assessment and EMP Development by Gobabeb Research and Training Centre for Husab Swakop Uranium Mine
Year:	2009- 2010
Location:	Husab Swakop Uranium Mine
Client:	Husab Swakop Uranium Mine
Main Project Feature:	Environmental Impact Assessment, Monitoring and Reporting
Position Held:	Research Technician
Degree of Responsibility:	Biodiversity Monitoring, Data collection and Analysis, Reporting

Name of Task/ Assignment:	Baseline Environmental Assessment by Gobabeb Research and Training Centre for Langer Heinrich Uranium Mine
Year:	2008
Location:	Langer Heinrich Uranium Mine

Client:	Langer Heinrich Uranium Mine Pty (Ltd)
Main Project Feature:	Baseline Environmental Assessment and Monitoring
Position Held:	Research Technician
Degree of Responsibility:	Biodiversity Monitoring, Analysis and Reporting

Name of Task/ Assignment:	Environmental Impact Assessment by Gobabeb Research and Training Centre for Valencia Uranium Mine Pty (Ltd)
Year:	2007- 2008
Location:	Valencia Uranium Mine
Client:	Valencia Uranium Mine
Main Project Feature:	Environmental Impact Assessment and EMP
Position Held:	Research Intern
Degree of Responsibility:	Biodiversity Monitoring, Analysis and Reporting

Education:

Name of Institution	**Qualification Name**	**Qualification**	**Year**
University of South Africa	BSc Hon	Environmental Management	2025
Steinbeis University	MBA	Business Administration	2025
Institute of Business Management of Southern Africa	Certificate	Health, Safety and Security Administration	2016-2017
Advance Learning Interactive System	Diploma	Environmental Science	2012-2013

Online			
University of Namibia	B.A. Degree	Tourism (Geography and Environmental Studies Major)	2003-2007

Employment Record:

Year	Company	Responsibility	References
2024-Current	Sinomine Tsumeb Smelter	**Environment Officer: Air Quality** • compliance with legal, regulatory and environmental requirements • Ensure compliance to international standards set by our Smelter • Ambient Ensure air quality baseline assessments • Ambient air quality equipment failure planning • Ambient air quality regulatory requirement update • Continuous and real-time air quality monitoring and management • Ambient air quality station instrument installation, maintenance and calibrations • Fallout dust monitoring and boundary monitoring • Develop and implement air quality continuous monitoring program	**Mr. Inekela Iiyambo** Contact: 0814663771

Year	Company	Responsibility	References
		• Evaluation, selection and request for proposal and quotation • Procurement of ambient air quality instruments • Meteorological stations management and Monitoring • Development of ambient air quality SOPs • Management reporting • Ambient air quality data analysis and interpretation • Regular ambient air quality data review • Ambient air quality management budgeting	
2021-2024	Dundee Precious Metals Tsumeb (Copper Smelter)	**Environment Officer: Air Quality** • compliance with legal, regulatory and environmental requirements • Ensure compliance to international standards set by our Smelter • Ambient Ensure air quality baseline assessments • Ambient air quality equipment failure planning • Ambient air quality regulatory requirement update • Continuous and real-time air quality monitoring and management • Ambient air quality station instrument installation, maintenance and calibrations • Fallout dust monitoring and boundary monitoring	**Mr. Inekela Iiyambo** Contact: 0814663771

Year	Company	Responsibility	References
		• Develop and implement air quality continuous monitoring program • Evaluation, selection and request for proposal and quotation • Procurement of ambient air quality instruments • Meteorological stations management and Monitoring • Development of ambient air quality SOPs • Management reporting • Ambient air quality data analysis and interpretation • Regular ambient air quality data review • Ambient air quality management budgeting	
2019-2021	Dundee Precious Metals Tsumeb (Copper Smelter)	Environmental Assistant: • Air Quality Monitoring, Calibrations and Management, • Management and maintenance of fallout dust buckets and sites • Dust buckets preparation and installation, Basic Laboratory work • Preparation of sampling equipment's • Ground water monitoring, sampling and management, Manage and ambient air quality monitoring stations, • Calibration of air quality monitoring stations, Installation	**Ms. Ndeshi Simon** Contact: 0812749270

Year	Company	Responsibility	References
		of basic equipment in ambient air quality monitoring station • Maintenance of air quality instruments (PM2.5, PM10, SO2 Analyser, TEOM Monitor, Partisol Sequential Monitor) • Maintain and download weather data) • Cleaning air quality stations and sampling ports • Basic maintenance of sampling equipment's and tools , HSE inspections	
2018-2019	Environmental Compliance Consultancy	**Environmental Control Officer** • Undertaking of Environmental Impact Assessments (EIA) • Collect environmental and rangeland information and conduct data entry into the management system • Responsible for Geographic Information System and database management • Conduct inspections on all Jumbo FSC Group Scheme farms and assess compliance to Namibian legal requirements and FSC International Standards, • Keep record of all non-compliances observed on farms visited, Mitigate negative environmental effects through regulations and policy enforcement	**Mrs. Charne Eimann** Phone: 0812103970

Year	Company	Responsibility	References
		• Develop and update inspection checklist, Site visits and assessments	
2014-2017	China State Construction and Engineering Corporation	**Environmental Compliance Officer:** • Develop and manage Mini Environmental Management Plan • Implement the conditions of the Construction Environmental Management Plan (CEMP) and Mini Environmental Management Plan (Mini-EMP) • Conduct environmental inspections mine to assess compliance to the set policies, procedures, standards • construction environmental management plan and the national legislations • Maintain detailed records of inspections, audits reports and register, training records, MSDS, waste management • Implementation of corrective and preventative measures • Mitigation of negative environmental impacts through enforcement of policies, regulations, and national legislations • Waste management on all China State sites on the mine • Site wide chemical management and inspections • conduct training	**Mr. Timothy Thikundeko** Phone: 0813149598

Year	Company	Responsibility	References
		• Implement environmental management system according to ISO 14001 standards • Responsible for occupational health and hygiene of all employees on all sites, Site wide environmental rehabilitation	
2012-2013	Namibia Statistic Agency	**Regional GIS Analyst:** • Provide service to customers via telephone and email • Compile data belonging to core function of the Regional Council and NSA • Data dissemination, including web-based GIS, With RC and other stakeholder • Produce atlases, posters of interest to the general public • Perform spatial analysis to combined statistical and geographical data based on user demand perform spatial analysis to combined statistical and geographical data based on user demand • provide support in the use of geographical data to internal as well as external users, technical assistance on GIS and related land use planning activities • Management of Regional GIS Database • Production of required thematic maps and mapping activities for	**Mr. Essen Mowa** Email: Phone: 061 431 3200

Year	Company	Responsibility	References
		Oshikoto Regional Council and other regional stakeholders	
2010-2011	National Planning Commission	**Regional Supervisor:** • Logistics, Publicity, supervising field-based teams and updating Enumeration Area (EA) maps • Capturing physical locations building structures and other non-spatial attributes to create a dwelling unit frame, • Capturing data Using Personal Digital Assistant (PDA) with integrated GPS • Checking quality of data collected by field teams using G-Survey application and Uploading and Downloading data from the PDA to the laptop and vice versa, Supervision of field Staff	**Mr. Michael Lukubwe** Contact: 0813070084
2008-2010	Gobabeb Research and Training Centre	**Research Technician:** • Data collection and analysis of Biota- Africa Project • Environmental Impact Assessment (Valencia, Langer Heinrich, Swakop Uranium) • Monitoring (ground water, air quality, vegetation, weather and biodiversity) • Support and assist visiting scientist with field activities and data collection • Research equipment management and maintenance, Responsible for NOAA sampling,	**Mr. Hiskia Mbura** Phone:0812931568

Year	Company	Responsibility	References
		collection, shipping and updating database once results have been received • Basic laboratory work (sampling, filtration, identification, sorting)	

Languages:

Language	Speaking	Reading	Writing
English	Excellent	Excellent	Excellent
Afrikaans	Fair	Excellent	Good
Silozi	Excellent	Excellent	Excellent
Oshiwambo	Poor	Good	Good

Certification:

I, the undersigned, certify that to the best of my knowledge and belief that, these data correctly describe me, my qualification, and experience.

Date: 07 Jan 2026

Full name of Consultant:

Michael Matengu
Email: matengu.myck@yahoo.com

Cell: +264 812131704

APPENDIX H. CONCERNT OF LEASHOLD

MAFWE ROYAL ESTABLISHMENT

Office of the Litunga (Chief) Linyanti Khuta
P O Box 7004 – Katima Mulilo – Republic of Namibia

October 20, 2025

The Chairperson
Zambezi Communal Land Board
Katima Mulilo
Zambezi Region

Dear Sir

SUBJECT: CONSENT TO RIGHT OF LEASEHOLD

Mafwe Traditional Authority hereby certify that Water and Power Supply Namibia (PTY) LTD Registration Number: 20211144 has been allocated land in Liselo communal area measuring approximately 1000ha for Liselo Solar Project purposes.

We hereby recommend that the land Board / Minister of Lands proceed with processing the application for a leasehold in accordance with relevant laws and regulations.

Yours Sincerely,

Mucheka
Miriam Mucheka
Secretary

P.M Kawana
Hon. Natamoyo

HIS ROYAL HIGHNESS CHIEF I LITUNGA G S MAMILI VII

G.S. Mamili VII
His Royal Highness Litunga

MAFWE ROYAL ESTABLISHMENT
Office of the Chief (Litunga)
Linyanti khuta
20 OCT 2025
P.O BOX 7004, Ngnchimane
Republic of Namibia

APPENDIX I. PUBLIC PARTICIPATION MEETING

Environmental Management Plan

For the proposed 300 MW Photovoltaic Solar Facility

Liselo Area

Location: Liselo, Zambezi Region

PROJECT DETAILS

Project Title:	Draft Scoping Report for the Proposed Photovoltaic Solar Facility, Liselo Area
Proponent Address:	Water and Power Supply Namibia Pty Ltd, P.O. Box 908, Tsumeb, Namibia
Contact:	+264 852131704
	Water and Power Supply Namibia (Pty) Ltd
Contact Person:	Mr. Simon Hewitt
Email:	simonh@wapsafrica.com
Project Location:	Liselo Area, Zambezi Region Namibia
Report Status:	Environmental Management Plan
Authors:	Michael Matengu EAP
Consultant :	Michmat Investments cc

Table of Contents

List of Abbreviations

AIDS Acquired Immune Deficiency Syndrome
CAP Corrective Action Plan
CLO Community Liaison Officer
CSR Corporate Social Responsibility
ECC Environmental Clearance Certificate
EHS Environment, Health and Safety
EIA Environmental Impact Assessment
EMA Environmental Management Act, 2007 (Namibia)
EMP Environmental Management Plan
EPC Engineering, Procurement and Construction Contractor
ERIMP Emergency Response and Incident Management Plan
ESIA Environmental and Social Impact Assessment
GRM Grievance Redress Mechanism
HIV Human Immunodeficiency Virus
H&S Health and Safety
IFC International Finance Corporation
ISO International Organization for Standardization
MAWLR Ministry of Agriculture, Water and Land Reform
MEFT Ministry of Environment, Forestry and Tourism
NGO Non-Governmental Organization
O&M Operation and Maintenance
OHS Occupational Health and Safety
PPE Personal Protective Equipment
PM Particulate Matter
SOP Standard Operating Procedure
TMP Traffic Management Plan
TOR Terms of Reference
WMP Waste Management Plan

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List of Figures

1. Introduction

This Environmental Management Plan (EMP) provides mitigation, monitoring, and management measures to avoid, minimize, or manage adverse environmental and social impacts associated with the construction, operation, and decommissioning of a 300 MW solar photovoltaic power facility at Liselo in the Zambezi Region.

2. Objectives of the EMP

- To identify potential environmental and social impacts during the operational and decommissioning phases.
- To prescribe mitigation and monitoring measures to prevent or minimize adverse impacts.
- To assign clear roles and responsibilities for environmental management.
- To ensure compliance with environmental laws, regulations, and license conditions.
- To enhance environmental awareness and accountability among employees and contractors.

3. Project Description

3.1. Project Overview

Project title: Proposed 300 MW Liselo Solar and Storage Facility

Site location: Liselo, Zambezi Region,

17˚30’31.65’’S. 24˚09’08.47’’E

Description: The proposed development involves the establishment of a 300 MW (AC) solar photovoltaic (PV) power generation facility with an integrated Battery Energy Storage System (BESS) and associated supporting infrastructure. The facility will be developed on a designated site to harness solar energy for conversion into electricity, which will be supplied to the national grid.

The proposed project will consist of ground-mounted PV module arrays, inverters, transformer stations, and a 132 kV on-site substation. The BESS will be housed in purpose-built enclosures to store surplus electricity for dispatch during peak demand periods,

enhancing grid stability and energy reliability. Ancillary infrastructure will include internal access roads, security fencing, operations and maintenance buildings, cabling (both overhead and underground), drainage and stormwater controls, and connection infrastructure to the nearest grid point.

The purpose of the project is to generate renewable electricity to contribute to the national energy mix, reduce dependence on fossil fuels, and support national decarbonization and energy security goals. Environmental sensitivities, such as biodiversity, soil, water, and heritage resources, will be carefully considered during the assessment and design phases to minimize impacts.

3.2. Location

The facility is located Zambezi Region Site location: Liselo, Zambezi Region,

Coordinates:17˚30’31.65’’S. 24˚09’08.47’’E

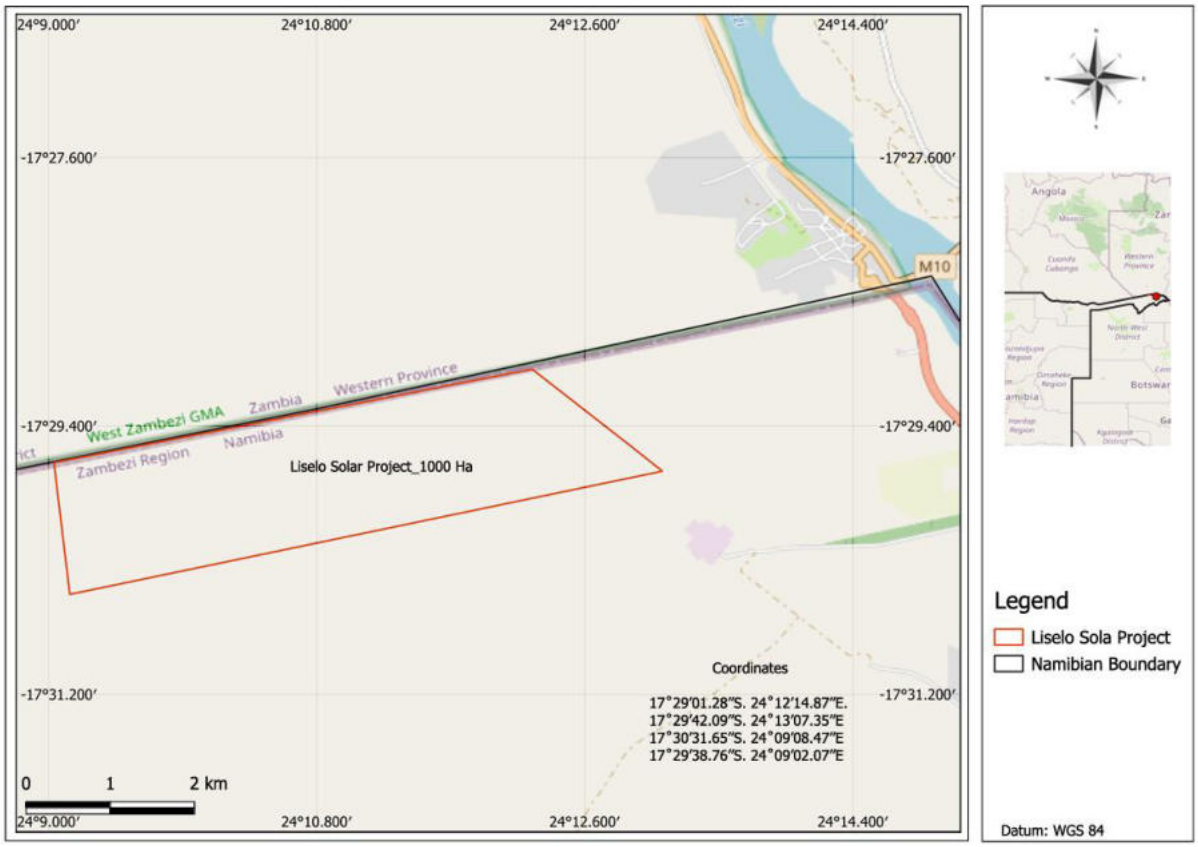

Figure 1. Site Location

4. Regulatory, Legal and Institutional Framework

Key legislation applicable to this EMP includes:

Table 1. Regulatory Framework

Framework	Regulation	Description
The Constitution	Constitution	Provides a legal and policy foundation supporting renewable energy development through principles on natural resource management, environmental protection, economic development, and social welfare
	Article 95	Commits the State to promote sustainable development, responsible use of natural resources, and economic growth for current and future generations. Solar projects align with this by using sunlight and enhancing energy security and economic resilience.
	Article 91c	Mandates the Ombudsman to investigate overuse and degradation of natural resources, reinforcing environmental protection. Encourages adoption of clean energy technologies like solar power with minimal environmental impact.
Environmental Regulatory Framework	Environmental Management Act, 2007 (Act No. 7 of 2007)	-Legal basis for environmental protection in Namibia. -Requires EIAs and Environmental Clearance Certificates (ECC) for listed activities. -Emphasizes sustainability, stakeholder participation, impact mitigation, and polluter-pays/precautionary principles.
	EIA Regulations, 2012 (GN No. 30 of 2012)	Defines EIA procedures under EMA. Listed projects must submit a Scoping Report, complete a full EIA, and obtain an ECC before proceeding.
	Environmental Management Plan (EMP)	Guides mitigation, monitoring, and management of environmental and social impacts during the project lifecycle.
	Soil Conservation Act (Act 76 of 1969)	Provides for the prevention of soil erosion and promotes the protection and maintenance of soil structure, vegetation, and natural soil resources in Namibia.
	Water Act	Requires certification under Sections 21(1) and 21(2) for the disposal of industrial or domestic wastewater and effluent. Prohibits pollution of surface and underground water bodies (Section 23(1)) and holds project proponents accountable for environmental remediation costs upon project abandonment (Section 23(2)).
	National Climate Change	Identifies climate change as a critical threat to sustainable

	Strategy and Action Plan (2013–2020)	development and promotes a holistic approach to mitigation and adaptation measures.
	Pollution and Waste Management Bill (Draft)	Defines various types of pollution and outlines government measures to control pollution and ensure a clean and safe environment. Mandates compliance with waste management requirements, with non-compliance constituting a punishable offense.
	Waste Management Regulations: Local Authorities Act (1992)	Provides guidelines for waste management and requires property occupiers to provide secure, hygienic, adequate, and accessible waste storage facilities on their premises.
Energy Regulatory Framework	Electricity Act, 2007 (Act No. 4 of 2007)	Regulates the electricity supply industry, including licensing of generation and distribution and consumer protection. Solar power facilities require a generation licence from the Electricity Control Board (ECB) and compliance with national technical and safety standards.
	Renewable Energy Policy of Namibia (2017)	Promotes investment in renewable energy, encourages private-sector participation, and supports the reduction of electricity import dependence. The proposed photovoltaic facility aligns with this policy.
	National Integrated Resource Plan (NIRP)	Provides long-term electricity generation planning and prioritises the expansion of renewable energy, including utility-scale solar PV, to meet national electricity demand.
Land use Framework and other related regulation	Communal Land Reform Act, 2002	Where a project is located on communal land, land rights must be approved by the relevant Traditional Authority and the Communal Land Board.
	National Land Policy, 1998	Provides a framework for land administration and equitable land use based on constitutional principles. Emphasises environmentally sustainable land and natural resource use, equality before the law (Article 10), and redress of historical social and economic injustices in line with Article 95(l) of the Constitution.
	Road Ordinance, 1972 (Ordinance 19 of 1972)	Regulates proclaimed road widths and road reserve boundaries, controls infringements and obstructions, prescribes distances for fences from roads, and governs traffic control during construction on trunk and main roads.
	Public Health and Environmental Act, 2015	Prohibits the creation or existence of nuisances or conditions that may be injurious or dangerous to human health, as provided under Section 119.
	Township and Regional Planning Ordinance and Amendments	Requires planning and zoning approvals from relevant local or regional authorities for projects located within designated planning schemes or regions.

	Forestry Act, 2001	Requires permits for the removal of protected tree species and for clearing large areas of vegetation where applicable.
	Heritage Act, 2004	Requires consultation with the National Heritage Council where heritage resources may be affected, and the issuance of permits where necessary.
	Labour Act, 2007	Regulates occupational health and safety and fair labour practices during construction and operation, ensuring employee welfare and protection against unfair labour practices.
Institutional Context	Institution	Role
	Ministry of Environment, Forestry and Tourism (MEFT)	Lead authority for the EIA process. The Environmental Commissioner reviews the Scoping Report, EIA Report, and EMP, and issues the Environmental Clearance Certificate (ECC).
	Electricity Control Board (ECB)	Issues electricity generation licences, oversees compliance with the Electricity Act, and regulates electricity tariffs where applicable.
	NamPower	National electricity utility involved in grid connection, power purchase agreements, and transmission infrastructure, depending on project requirements.
	Regional and Local Authorities	Responsible for land-use planning, development approvals, and provision of municipal services where applicable.
	Traditional Authorities / Communal Land Boards	Grant land permissions and provide project endorsement for developments located on communal land.
	Ministry of Mines and Energy (MME)	Oversees the energy sector and implements national energy policies.
SADC Guidelines	SADC Protocol on Energy	Promotes regional energy integration, development of renewable energy, and harmonisation of energy policies and regulatory frameworks among SADC member states.
	Southern African Power Pool (SAPP) Guidelines	Apply where grid connection and power trading require compliance with regional power system operation, reliability, and stability requirements.
International Standard/Guidelines	**IFC Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts**	Core standard guiding the EIA process. Requires environmental and social assessment, an ESMS, identification and mitigation of key risks, stakeholder engagement, a grievance mechanism, and implementation of an ESMP.
	IFC Performance Standard 2: Labour and Working Conditions	Applies to construction and operational workforce. Requires safe working conditions, fair employment terms, prohibition of child and forced labour, worker grievance mechanisms, and protection from occupational hazards.

	IFC Performance Standard 3: Resource Efficiency and Pollution Prevention	Requires efficient use of water and energy, prevention of pollution, control of soil erosion and dust, proper management of hazardous materials, and responsible disposal of e-waste and PV modules.
	IFC Performance Standard 4: Community Health, Safety, and Security	Addresses risks to local communities from traffic, construction activities, electrical infrastructure, and security arrangements. Requires emergency preparedness and a Community Health and Safety Plan.
	IFC Performance Standard 5: Land Acquisition and Involuntary Resettlement	Applies where land acquisition or economic displacement may occur. Requires avoidance or minimisation of displacement, fair compensation, livelihood restoration, and documented agreements with land authorities.
	IFC Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	Requires biodiversity baseline studies, protection of sensitive habitats and species, mitigation of avifauna risks, and application of the mitigation hierarchy to achieve no net loss where applicable.
	IFC Performance Standard 7: Indigenous Peoples	Applies if Indigenous Peoples are present or affected. Requires culturally appropriate engagement, FPIC for significant impacts, protection of traditional practices, and safeguarding land and resource access.
	IFC Performance Standard 8: Cultural Heritage	Requires heritage screening, specialist studies if needed, implementation of chance-find procedures, consultation with heritage authorities, and protection of cultural and spiritual sites.
	World Bank Group EHS General Guidelines (2007)	Applicable to all infrastructure projects. Provide requirements for environmental management, occupational and community health and safety, pollution control, waste management, and construction/decommissioning practices.
	EHS Guidelines for Renewable Energy – Solar Power Projects (2015)	Specific to utility-scale solar PV. Covers array design, glare, land clearing, drainage, fire risks, PV module handling and disposal, battery storage risks, and biodiversity protection.
	EHS Guidelines for Electric Power Transmission and Distribution (2007)	Applicable if transmission lines or substations are included. Addresses EMFs, avifauna protection, electrical safety, and right-of-way management.

5. Environmental Management Roles and Responsibilities

Table 1. Roles and responsibilities

Role	Responsibility
Proponent / Facility Manager	Overall EMP Implementation
Environmental Control Officer (ECO)	Monitor compliance; conduct inspections; maintain records; prepare reports.
Safety, Health, Environment and Quality (SHEQ) Officer	Over see occupational health, fire, and safety programs.
Contractors / Workers	Onsite Compliance: Adhere to EMP measures and report incidents immediately.
Local Authorities / MEFT	Regulatory Oversight: Conduct external audits and compliance verification.

6. Environmental Management Plan

Pre Construction Phase -EMP

Receptor	Aspect	Impact Description	Mitigation / Management Measures (Liselo Context)	Responsible Party	Monitoring Indicators
Soil	Site selection	Soil erosion due to sandy/alluvial soils	Avoid flood-prone and low-lying areas; conduct soil suitability assessment	Proponent / Environmental Consultant	Approved soil report
Surface Water	Floodplain proximity	Increased flood risk and sedimentation	Site outside active floodplain; maintain buffer to streams and wetlands	Environmental Consultant	Flood risk assessment
Ground Water	Borehole siting	Aquifer contamination	Proper borehole design; permits from MAWLR	EPC	Borehole permits
Air Quality	Baseline conditions	Dust from survey vehicles	Limit vehicle movement; use existing tracks	EPC	Dust complaints
Noise	Surveys	Disturbance to communities	Restrict activities to daytime	EPC	Community feedback
Visual Landscape	Layout planning	Visual intrusion in	Low-profile design;	EPC	Approved layout

		rural landscape	perimeter vegetation		
Flora	Vegetation clearance	Loss of riparian and woodland species	Avoid riparian vegetation; flora survey	Environmental Consultant	Flora clearance permit
Fauna	Habitat fragmentation	Disturbance to mammals	Wildlife movement assessment; buffer zones	Environmental Consultant	Fauna report
Avifauna	Migratory routes	Collision risk	Avifauna study (wetlands & migratory birds)	Specialist	Avifauna study approval
Livelihood	Land access	Loss of grazing and farming land	Community consultations; compensation	Proponent	Signed agreements
Land Use	Communal land	Land-use conflicts	Consent from Traditional Authority	Proponent	Land allocation letter
Health & Education	Workforce influx	Pressure on clinics/schools	Local recruitment strategy	Proponent	Employment records
Traffic	Access roads	Road safety risks	Traffic and access plan	EPC	TMP approval
Cultural Heritage	Sacred sites	Damage to cultural sites	Consultation with Traditional Authority	Heritage Specialist	Clearance certificate

Construction Phase-EMP

Receptor	Aspect	Impact Description	Mitigation / Management Measures	Responsible Party	Monitoring Indicators
Soil	Earthworks	Erosion during rainy season	Schedule works in dry season; erosion controls	EPC	Erosion incidents
Soil	Earthworks	Erosion during rainy season	Schedule works in dry season; erosion controls	EPC	Erosion incidents
Surface Water	Runoff	Sedimentation of streams	Silt traps; diversion channels	EPC	Water turbidity
Ground Water	Fuel handling	Contamination risk	Bunded fuel storage; spill response plan	EPC	Spill register
Air Quality	Construction dust	Dust affecting nearby villages	Water spraying; speed limits	EPC	Dust levels
Noise	Equipment	Noise nuisance	Maintain equipment; PPE	EPC	Noise readings
Visual Landscape	Infrastructure	Temporary visual disturbance	Orderly site management	EPC	Site inspections
Flora	Clearing	Loss of woodland vegetation	Limit clearing; protect large trees	EPC	Area cleared
Fauna	Machinery movement	Wildlife injuries	Speed limits; awareness training	EPC	Incident reports
Avifauna	Construction	Disturbance to	Avoid peak breeding	EPC	Nest monitoring

		nesting birds	season		
Livelihood	Employment	Temporary disruption	Employ local labor	EPC	Local employment %
Land Use	Access restriction	Reduced grazing access	Maintain corridors	EPC	Complaints log
Health & Education	Worker health	Disease and accidents	OHS plan; HIV/AIDS awareness	EPC	Accident records
Traffic	Transport	Increased accidents	Signage; controlled access	EPC	Traffic incidents
Cultural Heritage	Excavation	Chance finds	Implement chance find procedure	EPC	Incident reports

Operation and Maintenance Phase – Environmental Management Plan (EMP)

Receptor	Aspect	Impact Description	Mitigation / Management Measures	Responsible Party	Monitoring Indicators
Soil	Maintenance traffic	Soil compaction	Designated access routes	O&M Contractor	Soil condition
Surface Water	Panel cleaning	Contaminated runoff	Use minimal water; no chemicals	Operator	Water quality
Ground Water	Water abstraction	Overuse	Monitor abstraction volumes	Operator	Water use records
Air Quality	Operations	Negligible impact	No mitigation required	Operator	N/A
Noise	Inverters	Low-level noise	Routine maintenance	Operator	Noise monitoring
Visual Landscape	Long-term presence	Visual impact	Vegetative screening	Operator	Landscape condition
Flora	Vegetation control	Habitat alteration	Manual clearing or grazing	Operator	Vegetation cover
Fauna	Site fencing	Wildlife movement restriction	Wildlife-friendly fencing	Operator	Fauna sightings
Avifauna	Panel glare	Bird collisions	Anti-reflective panels	Operator	Bird mortality
Livelihood	Jobs	Sustainable employment	Local O&M employment	Operator	Employment data
Land Use	Restricted access	Reduced communal use	Controlled shared access	Operator	Compliance audits
Health & Education	Community benefit	Improved services	CSR programs	Operator	CSR reports
Traffic	Maintenance	Minor disturbance	Scheduled visits	Operator	Incident logs

	vehicles				
Cultural Heritage	Stability	No disturbance	Routine monitoring	Operator	Inspection reports

Decommission Phase – Environmental Management Plan (EMP)

Receptor	Aspect	Impact Description	Mitigation / Management Measures	Responsible Party	Monitoring Indicators
Soil	Dismantling	Soil disturbance	Progressive rehabilitation	Operator	Soil restoration
Surface Water	Runoff	Sedimentation	Temporary drainage controls	Operator	Water quality
Ground Water	Waste disposal	Pollution risk	Licensed waste handlers	Operator	Disposal records
Air Quality	Dust	Dust emissions	Water spraying	Operator	Dust levels
Noise	Machinery	Temporary noise	Daytime operations	Operator	Noise levels
Visual Landscape	Site clearance	Landscape scarring	Restore to original condition	Operator	Rehabilitation success
Flora	Rehabilitation	Vegetation loss	Indigenous re-vegetation	Operator	Vegetation cover
Fauna	Habitat disturbance	Temporary displacement	Phased decommissioning	Operator	Wildlife return
Avifauna	Structure removal	Disturbance	Avoid nesting season	Operator	Monitoring reports
Livelihood	Job losses	Economic impact	Skills transfer support	Operator	Transition plans
Land Use	Land return	Change in use	Handover to community	Operator	Land handover certificate
Health & Education	Safety	Accident risks	OHS procedures	Operator	Safety audits

Traffic	Equipment transport	Road damage	Road restoration	Operator	Road condition
Cultural Heritage	Excavation	Heritage damage	Chance-find procedure	Operator	Incident reports

7. Training and Awareness

7.1. Objective

The objective of the training and awareness programme is to ensure that all project personnel are fully aware of the environmental, social, health, and safety obligations associated with the proposed solar power facility, and that activities are conducted in compliance with the Environmental Management Act (2007) and approved EMP.

7.2. Environmental Induction

All employees, contractors, and subcontractors shall undergo a **mandatory Environmental, Health and Safety (EHS) induction** prior to commencement of work on site.

The induction programme shall include, but not be limited to:

- Overview of the proposed project and EMP requirements
- Applicable Namibian environmental legislation and permit conditions
- Identification of sensitive environmental features such as floodplains, wetlands, flora, fauna, and avifauna
- Waste management and pollution prevention procedures
- Occupational health and safety requirements
- Emergency response procedures
- Community relations and code of conduct

Attendance registers shall be maintained and refresher inductions conducted where necessary.

Environmental induction Management Table

Aspect	Description	Responsibility	Timing	Monitoring
Environmental Induction	Mandatory EHS induction for all workers	EPC Contractor / Operator	Prior to site access	Attendance registers

7.3. Toolbox Talks

Toolbox talks shall be conducted on a **regular basis (at least weekly during construction)** to reinforce environmental and safety awareness and address activity specific risks.

Topics shall include:

- Dust, noise, and erosion control
- Spill prevention and response
- Waste segregation and housekeeping
- Working during rainy season conditions
- Wildlife encounters and reporting

Records of toolbox talks shall be kept on site.

Toolbox Talk Management Table

Aspect	Description	Responsibility	Frequency	Monitoring
Toolbox Talks	Short environmental and safety briefings	Site Supervisor	Weekly / As required	Toolbox talk records

7.4. Wildlife and Cultural Heritage Awareness

Given the ecological sensitivity and cultural significance of the Zambezi Region, all personnel shall receive training on wildlife protection and cultural heritage preservation. Workers shall be informed of:

- Prohibition of hunting, trapping, or harming wildlife
- Safe conduct in the presence of wild animals
- Speed limits to prevent wildlife collisions
- Respect for sacred sites, graves, and cultural features
- Implementation of the Chance Find Procedure

8. Emergence Response and Incident Management

8.1. Objective

To ensure effective preparedness and response to environmental and safety emergencies in order to minimize harm to people, property, and the environment.

8.2. Spill Prevention and Response

Fuel, oil, and hazardous materials shall be stored and handled in accordance with best practice to prevent contamination of soil and water resources.
Measures include:

- Bunded storage facilities
- Spill kits at high-risk locations
- Routine inspection and maintenance of machinery
- Training of personnel in spill response
- All spills shall be reported, recorded, and remediated promptly.

Spill Management Table

Risk	Mitigation Measures	Responsibility	Monitoring
Fuel and oil spills	Bunding, spill kits, training	EPC / Operator	Spill register

8.3. Fire Management Plan

A Fire Management Plan shall be implemented to prevent and respond to fire incidents. Measures include:

- Fire extinguishers at strategic locations
- Hot-work permit system
- Firebreak maintenance
- Prohibition of open fires
- Fire drills shall be conducted periodically and coordination maintained with local emergency services.

Fire Management Table

Fire Risk	Prevention Measures	Responsibility	Monitoring
Construction & operational fires	Fire extinguishers, firebreaks	EPC / Operator	Inspection records

8.4. Incident Reporting Procedures

All environmental, health, safety, and social incidents shall be reported and investigated in accordance with the approved procedures. The incident management process includes:

- Immediate reporting to Site Supervisor
- Securing the affected area
- Completion of incident report within 24 hours
- Investigation and corrective actions
- Reporting to MEFT where required

9. Grievance Redness Mechanism

9.1. Objective

To provide an accessible, transparent, and culturally appropriate mechanism for affected communities to raise concerns related to the project.

9.2. Grievance Management Process

A formal grievance redress mechanism shall be implemented throughout all project phases. The process includes:

- Establishment of a community grievance register
- Appointment of a Community Liaison Officer (CLO)
- Timely investigation and resolution of grievances
- Feedback to complainants

Grievance Management Table

Aspect	Description	Responsibility	Timeframe
Grievance Register	Recording community complaints	CLO	Ongoing
Resolution	Investigation and feedback	CLO / Proponent	14–30 days

10. Reporting Review and Auditing

10.1. Environmental Reporting

Environmental performance shall be monitored and reported throughout the project lifecycle.

Reporting Requirements Table

Report Type	Phase	Responsibility	Frequency
Environmental Monitoring Report	Construction	EPC Contractor	Monthly
Environmental Performance Report	Operation	Operator	Annually

10.2. Environmental Auditing

Independent environmental audits shall be conducted to assess compliance with:

- EMP requirements
- Environmental Clearance Certificate conditions
- Applicable Namibian legislation
- Audit findings shall be documented and corrective actions implemented.

10.3. EMP Review

The EMP shall be reviewed and updated when:

- Project activities change
- Significant incidents occur
- Audit findings require corrective action
- Regulatory requirements change