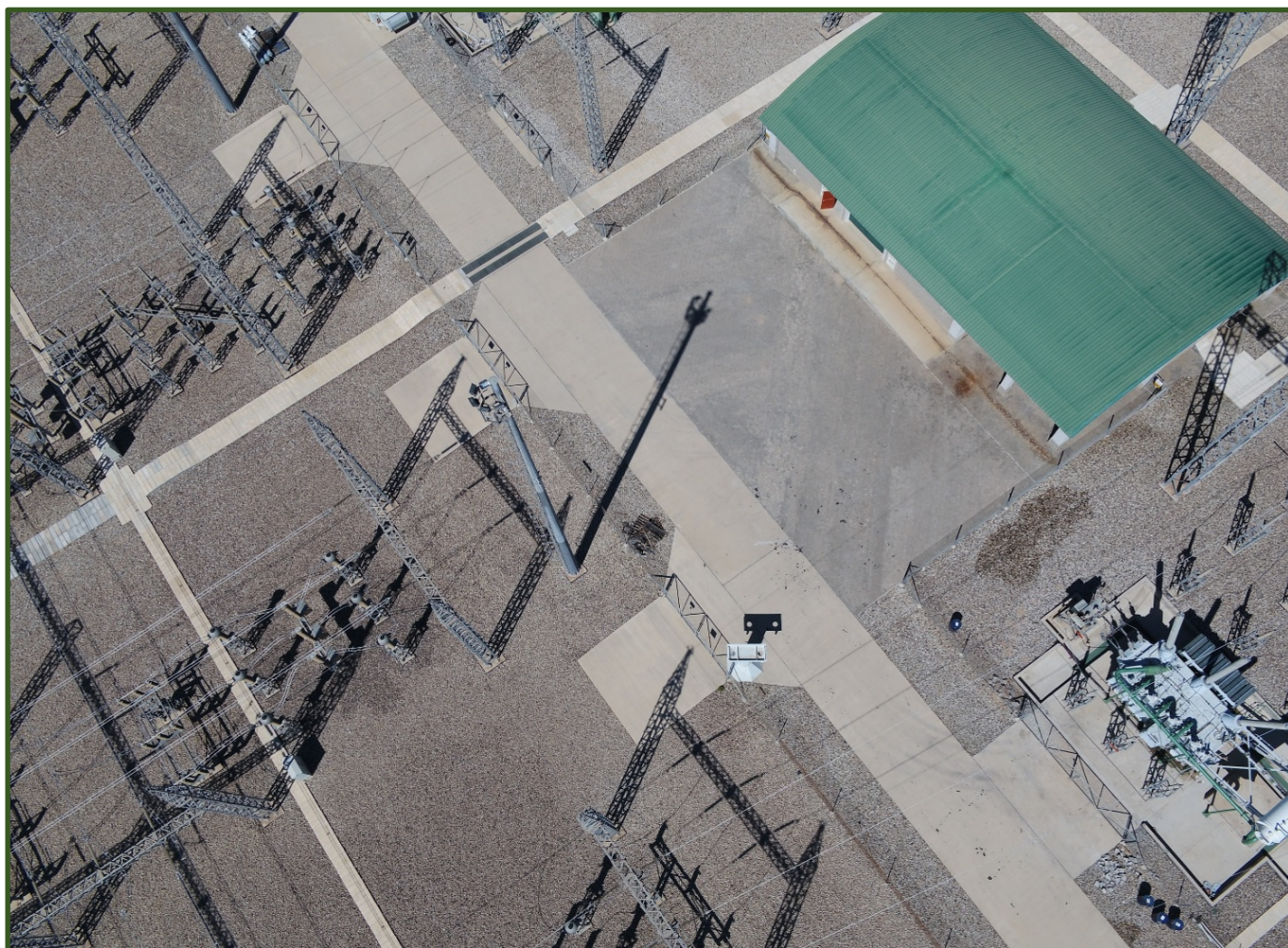




PROJECT FACT SHEET

LITHOPS BATTERY ENERGY STORAGE SYSTEM (BESS)

Introduction and Background

As the world experiences a major transition from fossil fuel-based energy sources to renewable energy, particularly from solar and wind technologies, it is confronted with significant challenges in managing the renewable energy variability, specifically ensuring energy supply and power system security. Namibia is no exception, as the revised National Integrated Resource Plan (NIRP) released in 2023, clearly shows that the base case scenario is dominated by Wind and Solar PV technologies.

By 2030 the Namibian government plans to increase the share of renewable energies (RE) in its electricity generation from around 30% to 70%. With a growing share of RE the need for measures to maintain and improve energy supply stability is also growing.

NamPower therefore conducted a feasibility study which included the techno-financial grid model analysis and its interconnections to the SAPP, existing and planned generation, as well as an Environmental and Social Impact Assessment (ESIA). The study concluded the implementation of a utility scale BESS for an estimated capacity/energy of 45 MW / 90 MWh Battery Energy Storage System (BESS) based on lithium-ion technology located at the Lithops substation in Erongo Region.

On 28 March 2024, the NamPower Board approved the Investment Decision to implement the 45 MW / 90 MWh Lithops BESS Project in line with the feasibility study. The Project now forms part of NamPower's Strategic Initiative of Energy Storage in line with the NamPower Corporate Strategy and Business Plan.

In May 2024, NamPower secured a Financing Agreement with the World Bank for the Transmission Expansion and Energy Storage (TEES) Project. The TEES Project Development Objective (PDO) is to strengthen Namibia's transmission network and enable integration of renewable energy generation. The TEES Project is structured around three components: (i) development of the second Auas-Kokerboom transmission line; (ii) development of a utility-scale BESS facility; and (iii) technical assistance.

The second component of the TEES Project financing will support the design, supply, installation, and commissioning of the 45 MW / 90 MWh Lithops BESS Project to further support the development and uptake of the renewable energy generation onto the Namibian grid.

Project Objectives and Rationale

Being the second utility-scale storage project in Namibia, the Lithops BESS will provide the following benefits:

- Perform energy arbitrage by possibly charging the BESS during off-peak hours and discharging the BESS during peak hours (avoidance of expensive peak time energy).
- Provision of emergency energy to reduce the difference between the scheduled day-ahead and the actual imports from Eskom (penalty savings on emergency energy imports).
- Improve grid resilience through ancillary services by mitigating adverse fluctuations of the power output, voltage and frequency from renewable generation sources.
- Reduce the curtailment of renewables by shifting renewable generation output from lower cost off-peak times to higher cost, peak times. The BESS could be charged at night by wind or with excess PV during the day and then discharged during the peak hours.
- Support the development and uptake of renewable energy plants in Namibia by providing ramp-rate control (if required);
- Provision of fast, accurate but short-term reactive power in case of single-phase faults (if required);
- Provide primary and secondary reserves to meet SAPP requirements.

SWOT Analysis

The Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis for the Project is summarised in Figure 1.



Figure 1: Project SWOT Analysis

Technical Description and Site Details

The selection of the Project Site was supported through a techno-economic assessment which was carried out by NamPower and Fichtner as its Technical Advisor for the feasibility study phase. The outcome of the study revealed that the BESS should be located at the Lithops substation as shown in **Figure 2** because it will be placed close to one of the major load centres.

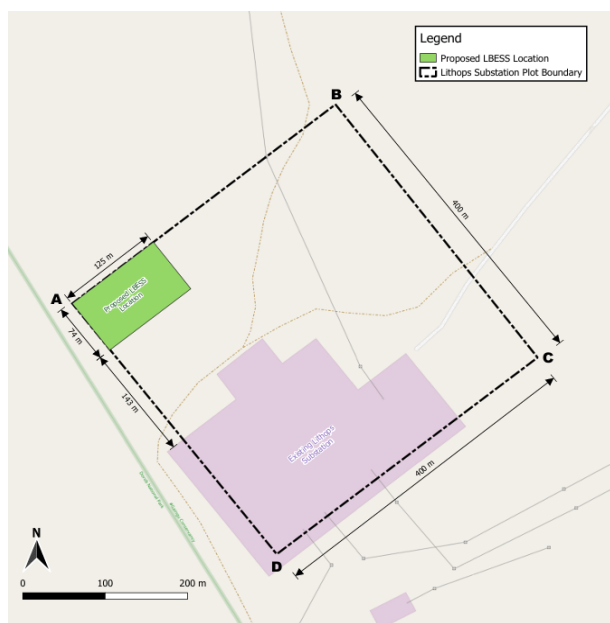


Figure 2: Lithops BESS Site Location

The technical description of the Lithops BESS and site details are listed below in Table 1.

Table 1: Location and Description

Location and Description	
Location	Lithops Substation
Coordinates	22°31'43.9"S, 14°55'26.5"
Plant Footprint	2 hectares
Plant Capacity	45 MW / 90 MWh
Planned Commissioning	November 2028
Planned Lifetime	19 years
Technology	Lithium-Ion (LFP)
Battery Cell Supplier	(TBC) Procurement in Progress

Use-Case Applications

A range of use-case applications has been identified for the Lithops BESS project. The following applications have been assigned higher priority for implementation:

- Energy arbitrage
- Provision of emergency (intraday) energy
- Reduction of renewable energy curtailment and water spilling at Ruacana hydropower.
- Reduction of additional peaking power plant capacity
- Provision of reactive power
- Power oscillation damping
- Ramp rate control
- Peak shaving
- Frequency support and Provision of Spinning Reserve

The combination of these use-case applications will be dynamically "stacked" according to their priority to ensure that the Lithops BESS operates according to the most economical dispatch strategy. The conditions within the grid are inherently dynamic (i.e. the frequency and the potential value of the use-case applications will change over time), therefore the dispatch strategy of the Lithops BESS will be optimized continually during its operation.

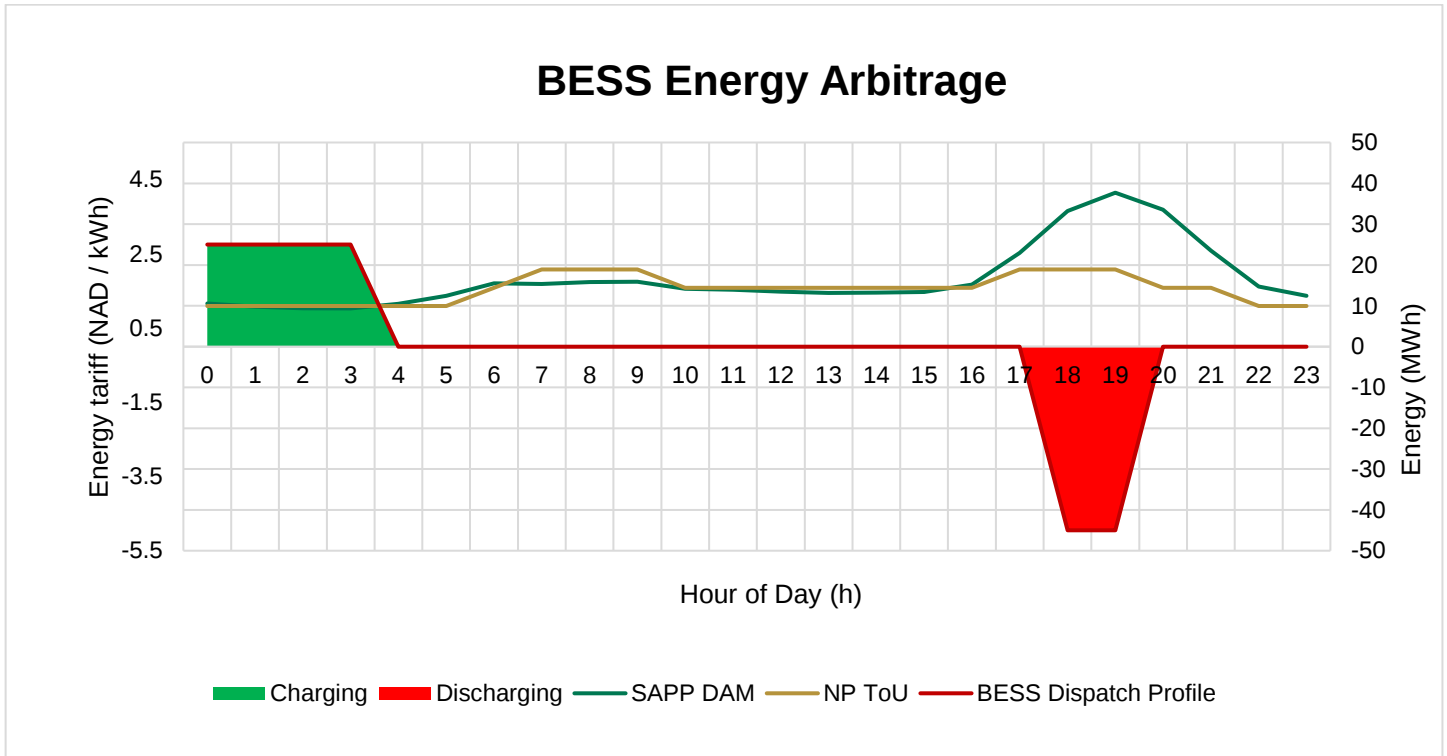


Figure 3: Average ToU tariff for SAPP and NP (Night-Time Charging Scenario)

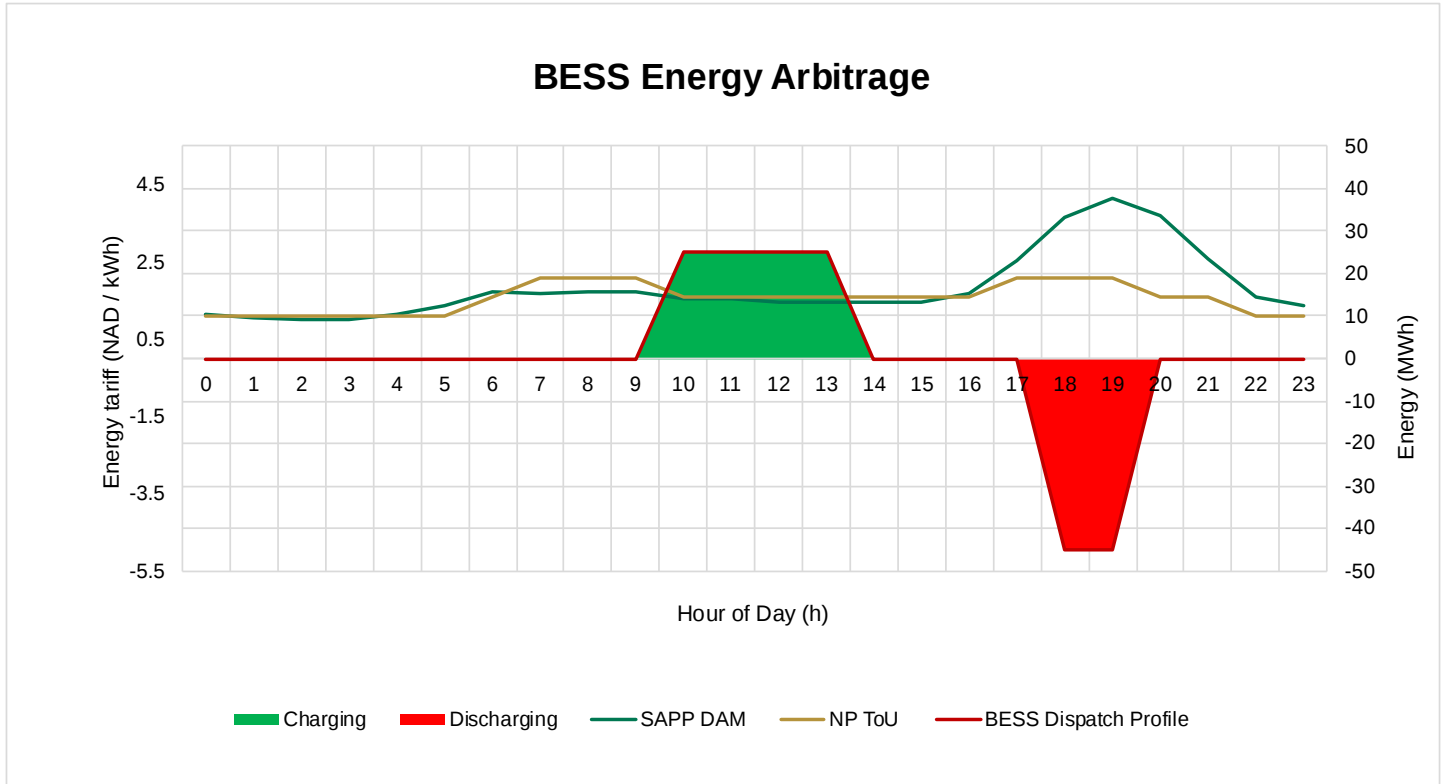


Figure 4: Average ToU tariff for SAPP and NP (Daytime Charging Scenario)

Project Structure

The Lithops BESS Project will be developed, owned, and operated by NamPower, where NamPower will appoint an EPC contractor to construct the BESS. The Project will be funded by World Bank through a USD 15 million GPG Grant and USD 20 million GCF Interest Free Loan (USD 35 million in total). Figure 4 provides the project structure which illustrates the key stakeholders and the following key agreements:

- **Financing Agreement** – NamPower signed the financial agreement with the World Bank on 25 November 2024 which became effective on 25 April 2025.
- **Generation Licence** – NamPower will apply for a generation / storage licence from Electricity Control Board (ECB).
- **Internal Operating Procedure** – NamPower Generation, NamPower Transmission, and Modified Single Buyer will enter into an internal agreement that defines the operational framework for the BESS, including roles, responsibilities, and internal transactions. The agreement will take the form of a tolling arrangement, whereby NamPower
- **Generation** will lease the BESS to NamPower MSB, which will assume responsibility for its dispatch and operational control. NamPower Generation will be responsible for the maintenance of the BESS.
- **Engineering Procurement Construction (EPC) Contract** – A reputable and experienced EPC Contractor will be appointed on the FIDIC Conditions of Contract for EPC/Turnkey Projects (2017 Silver Book). This procurement process will follow World Bank Procurement Regulations.
- **Technical Advisor / Owner's Engineer Contract** – NamPower procured GOPA Tech GmbH and Group IPS JV as a consultant to provide technical, project and contract management advisory services during the procurement of the EPC Contractor, Construction and the DNP phase of the EPC Contract. The intended project structure which is depicted in Figure 5, indicates the key stakeholders involved.

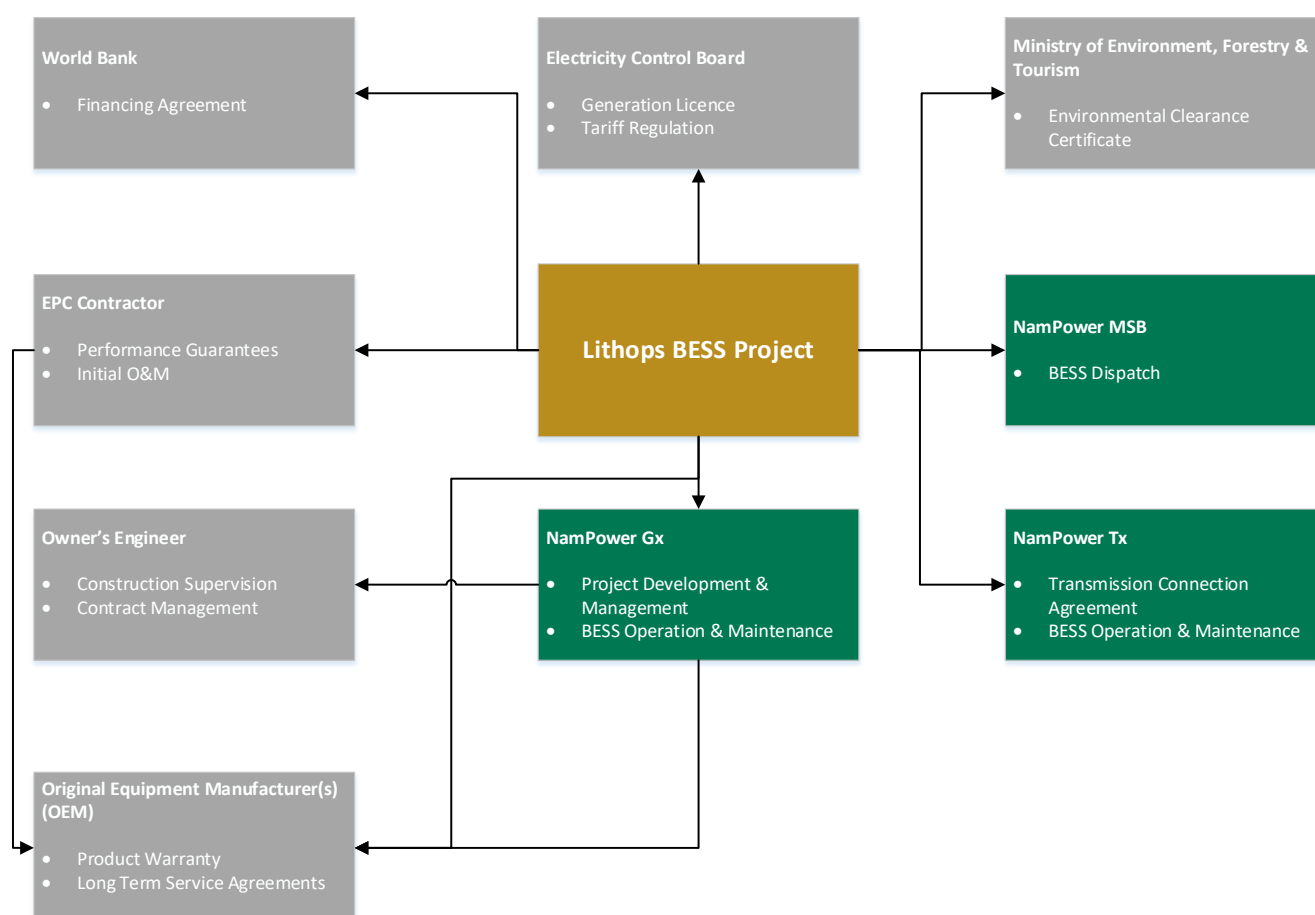


Figure 5: Lithops BESS Project Structure

Procurement Methodology

Considering World Bank financing, the Ministry of Finance has granted NamPower specific exemptions from the Public Procurement Act, 15 of 2015 to make use of the World Bank Procurement Regulations for Investment Project Financing (IPF) Borrowers for the Lithops BESS and for NamPower to administer all procurements process internally. The Lithops BESS entails the following procurement activities:

- *Procurement of a Technical Advisor/Owners Engineer*
- *Procurement of a Transformer*
- *Procurement of Substation Secondary Equipment*
- *Procurement of Substation Primary Equipment*
- *Procurement of Substation Works*
- *Procurement of the EPC Contractor for the BESS Plant*

Plant Operation and Maintenance

The EPC Contractor will be responsible for the Operation & Maintenance (O&M) services of the BESS throughout the Defects Notification Period (DNP) of 2 years, until the issuance of the Performance Certificate.

The EPC Contractor will therefore be responsible to achieve the annual performance guarantees and hence deploy the requisite supervision and support services as required to meet the annual performance guarantees under the EPC Contract. During that period, the Contractor shall be responsible for the following, but not limited to:

- for all works required to keep the BESS in a proper working condition,
- to maintain all warranties and similar conditions,
- training of NamPower 's personnel to carry out some of the specialized maintenance activities during the O&M period.

Environmental Considerations

An Environmental and Social Impact Assessment (ESIA) study was conducted by Fichtner GmbH & Co.

KG (Fichtner). This ESIA was conducted as per the Namibian Environmental Management Act, 7 of 2007, as well as the World Bank Environmental and Social Framework (ESF) which sets out 10 Environmental and Social Standards (ESS) for managing environmental and social risks, which assisted NamPower to obtain an Environmental Clearance Certificate (ECC) from the Ministry of Environment, Forestry and Tourism (MEFT) on 25 June 2025.

Capital Budget

The Project will be financed by the World Bank through a USD 15 million Global Public Goods (GPG) Grant and a USD 20 million Green Climate Fund (GCF) Interest Free Loan, bringing the total funding to USD 35 million. These funds will fully cover the Project's capital expenditure, including Development Works, EPC costs, Transmission Integration and Project Management costs.

Stakeholder Engagement

A project specific Stakeholder Engagement Plan (SEP) has been developed for this Project, including a Communication Management Plan (CMP) and Grievance Mechanism (GRM), to ensure effective internal and external engagements. The GRM is accessible via the NamPower website under the Lithops BESS project together with this Project Fact Sheet.

Risk Assessment

A risk assessment in line with NamPower's Integrated Risk Management Policy was performed to facilitate the identification, categorisation, and allocation of all project risks as well as the development of a risk register.

It should be noted that the Project Risk Register is a live document which will be updated and continuously monitored as the Project progresses through procurement into execution and operational phases.

Value Proposition

Considering the various range of ancillary services provided by the BESS, it has a relatively low fixed charge tariff component compared to the existing thermal power station options in the Namibian network that provide similar reliability services. The low-capacity payment of the Lithops BESS is mainly attributed to the fact that 43% (USD 15 million) of the CAPEX will be grant-funded by World Bank.

From 2028 onwards, the Namibian grid is expected to face challenges with oversupply from PV generation and customers' self-supply during day-time hours, whilst facing evening peak capacity shortages. This results in day-time PV curtailment costs of take-or-pay agreements and spilling of precious water at the Ruacana hydro power station.

The Lithops BESS will help address this challenge by charging gradually when the system price from a MSB perspective is low (typically during daytime oversupply) and discharging during evening peaks when the system price is highest and when peak-time generation capacity is required.

In addition to energy arbitrage, NamPower MSB will be able to utilise the BESS to provide emergency energy when needed, which is currently sourced from Eskom at an expensive tariff of about N\$ 6.00 / kWh, as compared to an estimated BESS energy tariff of about N\$ 1.47 / kWh.

Project Schedule and Progress

The Progress Measurement on the Project as of 30 September 2026 is shown in the table below:

Table 2: Project Completed Tasks

Completed Tasks	Completion Date
Techno-economic Feasibility Assessment	Dec 2023
NamPower Board Investment Decision	Mar 2024
World Approval to Finance the TEES Project	May 2024
Signature of the Financing Agreement between NamPower and World Bank	Nov 2024
Environmental Clearance Certificate from MEFT	Jun 2025
Prequalification of Applicants - Owners Engineer Procurement	Jul 2025
Invite Applications for Prequalification – EPC Contractor Procurement	Nov 2025
Appointment of the Owners Engineer	Feb 2026

Table 3: Project Next Steps

Next Steps	Completion Date
Shortlisting of Applicants – EPC Contractor Procurement	Sep 2026
Appointment of the Transformer Supplier	Oct 2026
Request Proposals from Shortlisted Applicants – EPC Contractor Procurement	Nov 2026
Apply for a Generation (Storage) License from the ECB	Nov 2026
Appointment of EPC Contractor	May 2027
Commercial Operation Date (COD)	Nov 2028

Project Key Milestones

The key milestones of the Project are summarised in Figure 6.

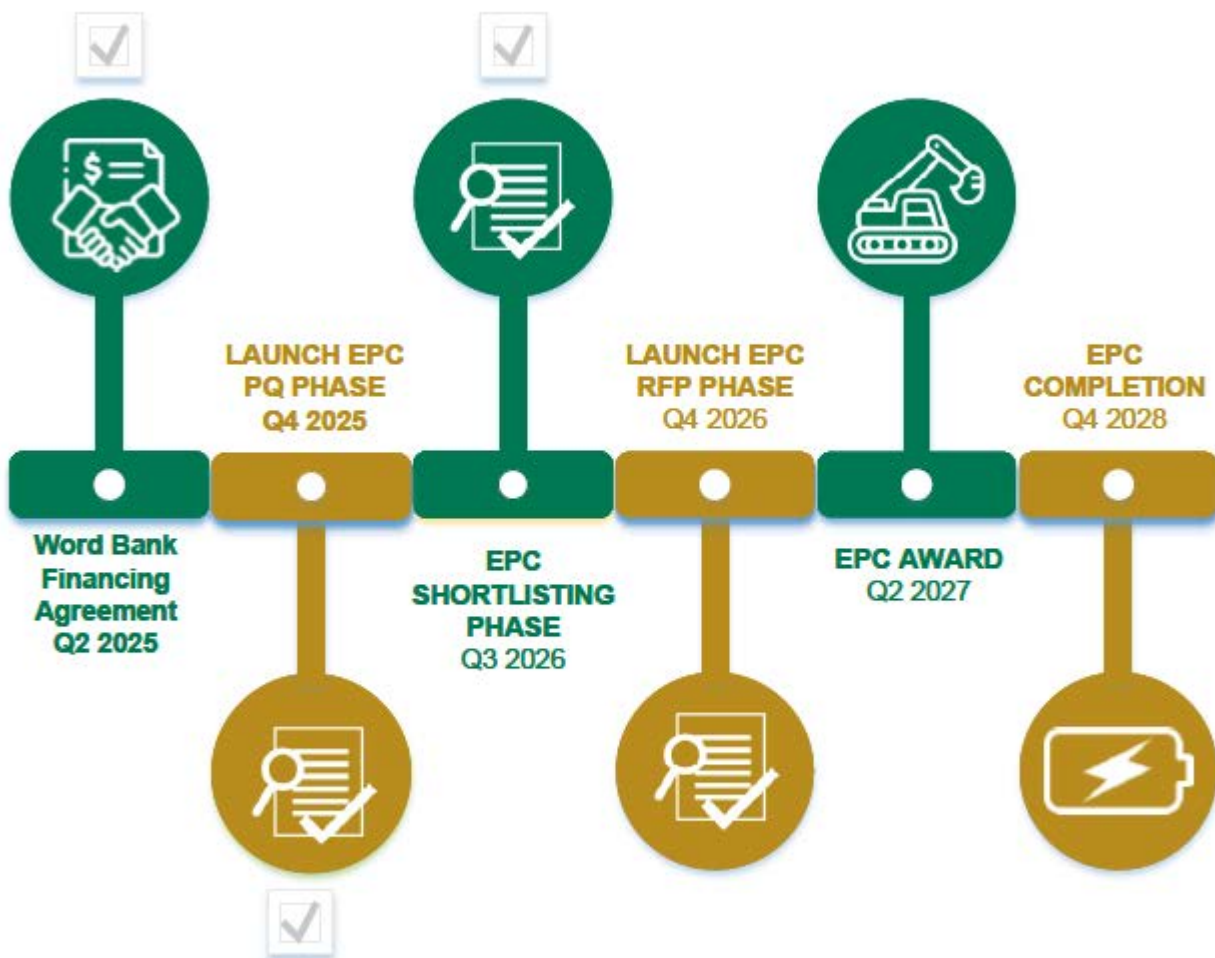


Figure 6: Project Development Timeline

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