



PROJECT FACT SHEET

OMBURU BATTERY ENERGY STORAGE SYSTEM (BESS) PROJECT

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Introduction and Background

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. A battery storage system such as the KfW funded 54MW / 54 MWh Omburu BESS Project can fulfil a multitude of tasks related to the challenges of the integration of RE and is ideally suited to support the sustainable development of the Namibian electricity sector.

As the project is the first of its kind in Namibia, it fulfils a pioneering function - it is expected that subsequent projects in the same field will benefit substantially from the experience gained from within this project.

Currently Namibia imports up to 70% of its electricity from neighbouring countries. This electricity is predominately generated with coal. In order to increase Namibia's share of RE, reduce its dependency from electricity imports and minimize negative environmental impacts from fossil fuel-based electricity supply, the Namibian Government initiated several steps to address these issues.

NamPower plans to extend its own RE generation by approximately 100 MW by 2025. In addition, the initial liberalization of the Namibian electricity market is already attracting private sector investments in solar and wind power plants making use of Namibia's extraordinarily good solar and wind resources. It is anticipated that the liberalization of the market could add an additional 300 MW PV and 200 MW wind plants to the Namibian grid. These factors all contribute to a climate-friendly development of the Namibian economy and makes Namibia less vulnerable from future constraints of the main electricity suppliers within the South African Power Pool (SAPP).

The rapid expansion of RE is to be welcomed, but it also challenges the Namibian electricity sector with new problems. The fluctuating generation from RE sources and is a permanent challenge for grid stability and security of supply.

Project Objectives and Rationale

As the first utility-scale storage projects in Namibia, the Omburu BESS will provide the following benefits:

- Surplus electricity from RE generation as well as cheaper electricity imports from the Southern African Power Pool (SAPP) can be stored in the BESS. The stored energy could supply customers during peak times and would offset fossil energy from the aging local Van Eck coal power plant.
- Provide grid stability services to the electricity grid as short- and medium-term power fluctuations from RE generation can be absorbed by the BESS. Given the planned growth of RE, this will ensure the stable security of supply for future growth and economic development in Namibia.
- The BESS would enable Namibia to expand its participation in electricity trade within the 12 member states of the SAPP in a more balanced way. If surplus generation from RE can be traded in the SAPP, a contribution can be made to regional climate protection.
- Provide some of the emergency energy that is currently being supplied by Eskom / SAPP. The avoided emergency energy from Eskom will greatly reduce NamPower cost of electricity.

SWOT Analysis

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

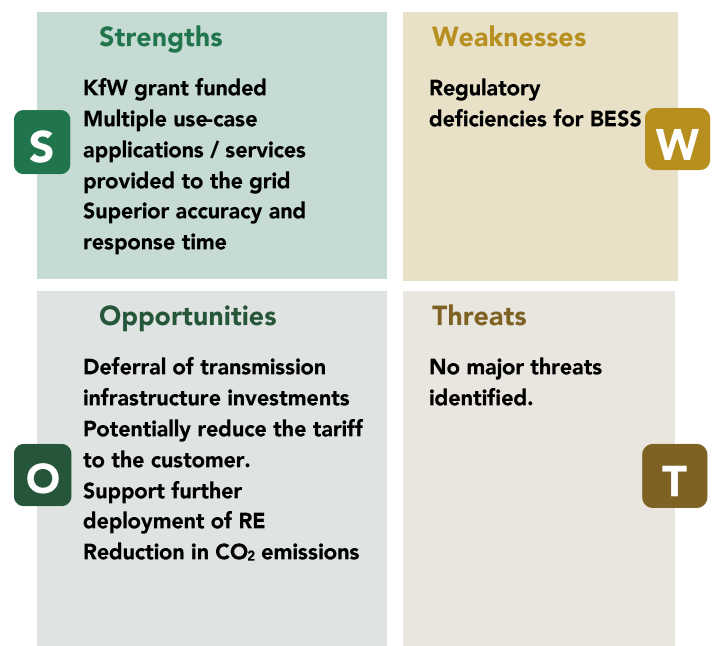


Figure 1: Project SWOT Analysis

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. The outcome of the study revealed that the BESS should be located at the Omburu substation as shown in Figure 2 for the reasons that it will be placed close to one of the major load centres, while also replacing the aging SVC equipment at the substation.

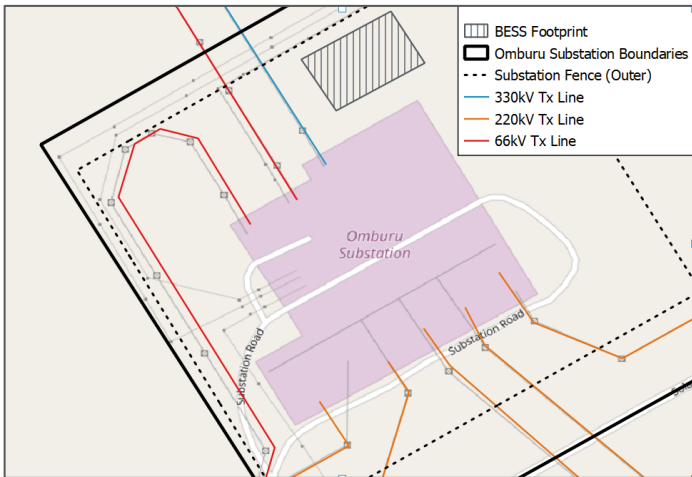


Figure 2: Omburu BESS Site Location

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

Table 1: Location and Description

Location and Description	
Location	Omburu Substation
Coordinates	21°29'40.71"S; 16° 1'40.48"E
Plant Footprint	~0.82 hectares
Plant Capacity	54 MW / 54 MWh
Planned Commissioning	Q3 of 2025
Planned Lifetime	19 years
Technology	Lithium-Ion (LFP)
Battery Cell Supplier	NARADA Power Source

Use-Case Applications

A combination of various use-case applications were identified for the Omburu BESS, namely peak shifting, arbitrage, provision of emergency energy, ramp-rate control and reactive power control. These use-case applications will be dynamically “stacked” according to their priority to ensure that the BESS operates according to the most economical dispatch strategy. Figure 3 below illustrates peak-shifting use-case application which will be the main use-case

application. 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 BESS will be optimized continually during its operation.

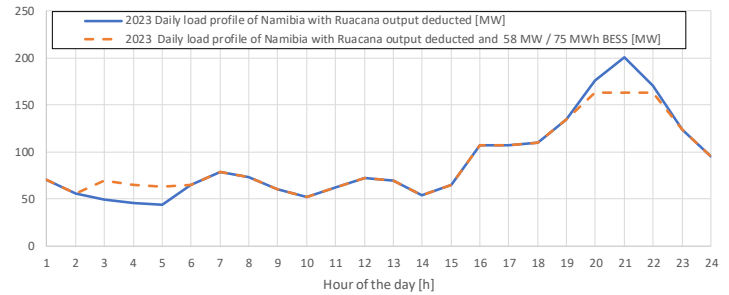


Figure 3: Peak-shifting use-case application

Project Structure

The intended project structure which is depicted in Figure 4, indicates the key stakeholders involved.

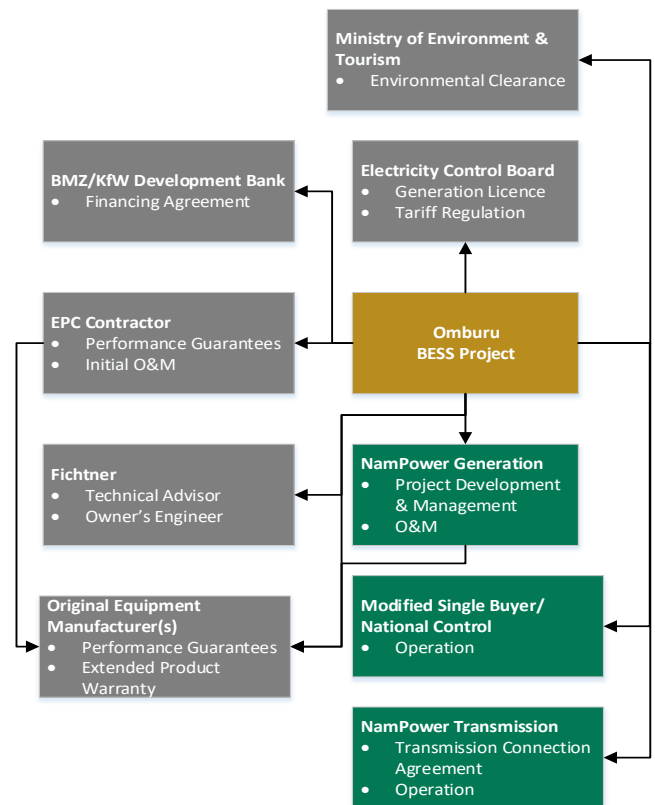


Figure 4: Project Structure

The Omburu BESS Project will be developed, owned, and operated by NamPower, where NamPower will appoint an EPC contractor to construct the BESS. The KfW Development Bank will provide EUR 20 million in grant funding to implement the Project. Figure 4 provides the project structure which illustrates the key stakeholders and the following key agreements:

- Financing Agreement – NamPower and KfW will enter into a Financing Agreement where KfW will provide EUR 20 million in grant funding through the GET FIT programme to support the implementation of the Project.
- Generation Licence – NamPower applied for a generation licence from the Electricity Control Board in March 2021 to operate the BESS.
- Transmission Connection Agreement – NamPower Generation will enter into a Transmission Connection Agreement (TCA) with NamPower's Transmission Business Unit for the connection of the BESS to the Namibian grid.
- Technical Advisory Services – Fichtner was appointed as NamPower's technical advisor to lead the techno-economic feasibility studies for the BESS and will act as NamPower's Employer's Representative during the procurement and implementation phases of the Project.
- EPC Contract – NamPower will appoint an EPC Contractor to engineer, procure and construct the BESS on a turnkey basis and to supervise the operation and maintenance activities during a two-year defect notification period. This contract will be based on the 2017 FIDIC Conditions of Contract for EPC/Turnkey Projects (Silver Book).
- Considering the newly gazetted market rules of the Modified Single Buyer (MSB) Model, a Power Purchase Agreement (PPA) will be signed between NamPower Generation and NamPower's MSB Business Unit.

Procurement Methodology

Although the procurement of the EPC Contractor will be performed in line with the Namibian Public Procurement Act; the Ministry of Finance has granted NamPower specific exemptions from the Act to make provision for KfW's mandatory procurement guidelines as part of this procurement activity and to allow NamPower to administer the procurement process internally.

The open international bidding process was selected for this procurement activity and will be carried out in two stages, namely a prequalification stage and a bidding stage.

Plant Operation and Maintenance

The Contractor will be responsible for the Operation & Maintenance (O&M) of the BESS throughout the Defect Notification Period. The tentative duration of that O&M period is 2 years after Date of Completion. Considering the novelty of the technology, NamPower will have an option to sign an O&M Contract with the EPC Contractor. 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

A scoping study was completed in September 2020 as part of the feasibility study, which assisted NamPower to obtain an Environmental Clearance Certificate (ECC) from the Ministry of Environment, Forestry and Tourism (MEFT) in March 2021. Since the BESS Project is classified as a brownfield development, a detailed Environmental Impact Assessment (EIA) was not required.

Capital Budget

The KfW Development Bank will provide EUR 20 million in grant funding via the Get-Fit programme to support the implementation of the Omburu BESS Project. While the grant funding will cover the direct EPC costs, NamPower will cover the costs related to the local taxes and duties of the EPC contract, the project development costs and the transmission connection and integration costs. NamPower's contribution to the Project is expected to be approximately NAD 100 mil. NamPower's Financial Statements are reported in NamPower's Annual Report, (Investor Relations section of the NamPower website, www.nampower.com.na).

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 BESS project together with the Project Fact Sheet.

Value Proposition

Although the Project will be largely grant funded, an economic assessment was still carried out to determine the Project's potential impact to the customer. Due to the nature of the services that will be provided by the BESS, the proposed tariff will be split into a fixed capacity tariff (NAD/kVA/month) and an energy tariff (NAD/kWh).

It is expected that the BESS would provide ancillary services at a significantly lower cost when compared to that of Van Eck, Anixas and Eskom whose costs are detailed in the ECB's [Detailed Market Design Report](#).

The energy tariff of the BESS is expected to be lower than the peak NamPower tariff (shown in Figure 5 below) as well as the average peak tariff on the SAPP Day-Ahead-Market.

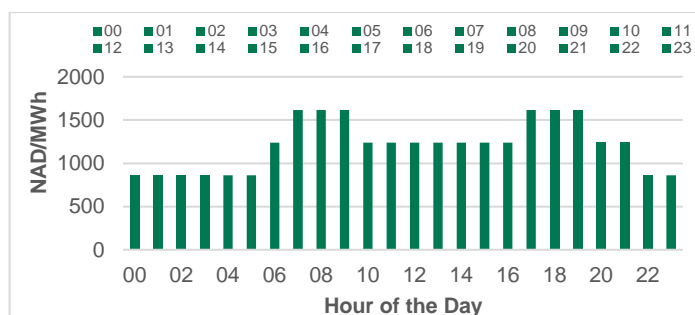


Figure 5: BESS Energy Tariff (Year 1 estimate)

The value proposition of the Omburu BESS Project stretches far beyond the direct benefits as described above. The implementation of the Omburu BESS will reduce the critical loading on the backbone of the grid which in turn will increase the security of supply to the customer without the immediate need of substantial investments to upgrade transmission lines. The Omburu BESS is also expected to significantly reduce the operation of Van Eck during times of Eskom load shedding and would thereby indirectly reduce costs to the customer. Furthermore, the Omburu BESS will enable more room for the uptake of local RE generation which in turn would further Namibia's commitment to achieving its goal of 70% RE generation by 2030.

Risk Assessment

A risk assessment in line with NamPower's Integrated Risk Management Policy was performed during the techno-economic feasibility study. However, due to the substantial grant funding availed by KfW, no class-I risks have been identified to date.

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

Project Schedule and Progress

The following key next steps are required to bring the project to its completion:

Table 2: Key Next Steps for the Project

Key Next Steps
Construction of the Omburu BESS
Construction Completion and Taking Over
Defect Notification Period

The completed tasks of the Project are summarised in Table 3.

Table 3: Project Completed Tasks

Completed Tasks	Completion Date
NamPower Board approval of Project Business Case	Sep 2019
Techno-economic Feasibility Assessment	Aug 2020
MoF Exemption from certain provisions of the Public Procurement Act	Nov 2020
BMZ Approval to Finance the Project	Feb 2021
Environmental Clearance from MEFT	Mar 2021
Signature of the Financing Agreement between NamPower and KfW	Dec 2021
Prequalification of applicants for Bidding stage	Jan 2022
Invite prequalified applicants for First Stage Bidding	Sep 2022
Obtain a Generation Licence from the ECB	Mar 2023
Evaluation of First Stage Bids	Apr 2023
Invitation of responsive Bidders to Second Stage Bidding	May 2023
Evaluation of Second Stage Bids	Sep 2023
EPC Contract Award	Sep 2023
Contract Signature	Dec 2023

Project Key Milestones

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

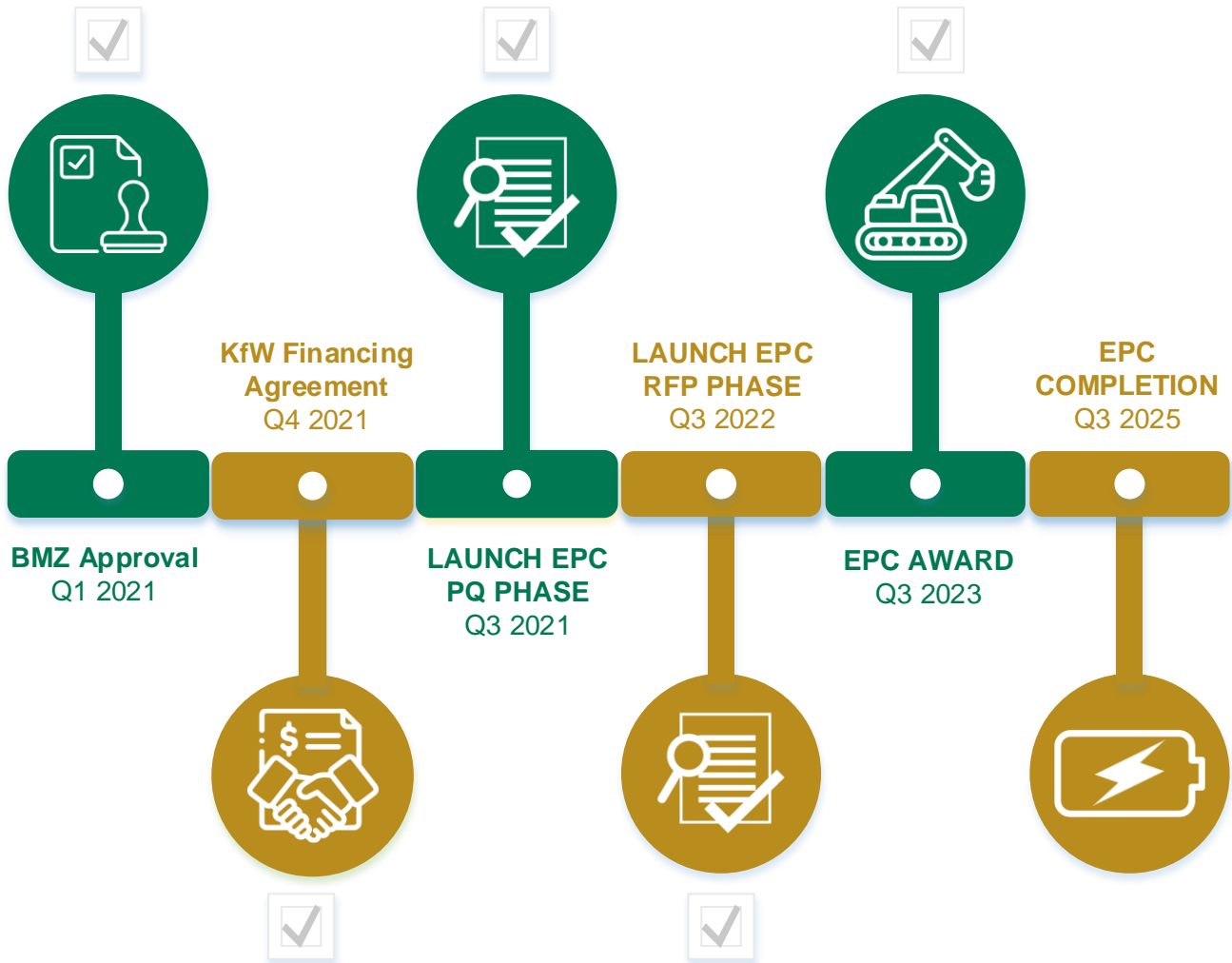


Figure 6: Project Development Timeline

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