

# **PROJECT FACT SHEET**

# **LÜDERITZ WIND POWER PLANT**

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## Introduction and Background

In 2018, Namibia Power Corporation (NamPower) crafted its new [Corporate and Strategic Business Plan](#) for the period 2019-2023. In line with the new corporate strategy and business plan, the NamPower Board of Directors approved the implementation of new generation projects in June 2018 under the “Strategic Pillar, Ensuring Security of Supply”.

These projects were later considered by the Minister of Mines and Energy and a determination was made in October 2018 by the Minister that 220MW of Power Generation should be developed where:

- 150MW would be allocated to NamPower;
- 70MW would be allocated on a competitive procurement basis as per current government procurement laws to IPPs for implementation.

At a Board Meeting on 8 November 2018, the NamPower Board ratified the implementation of the following projects as part of NamPower’s 150MW allocation.

- 20MW PV Power Project;
- 40MW Wind Power Project;
- 40MW Biomass Power Project; and
- 50MW Firm Power Project.

NamPower is thus advancing the development of its proposed 40 MWe Lüderitz Wind Power Plant. The proposed Power Plant will be developed as an Engineering Procurement and Construction project and will be owned and operated by NamPower where the majority of the costs for the project will be funded from NamPower’s balance sheet.

NamPower is committed to supporting and achieving the government objectives as set-out in the national planning policies, and in particular the Harambee Prosperity Plan II (Pillar 4, Goal 1, Activity 1), [National Integrated Resource Plan \(NIRP\)](#) and the [5th National Development Plan \(NDP5\)](#).

Considering Namibia’s ideal conditions for wind power plants at certain coastal areas, coupled with the objectives set out in NIRP and NamPower’s strategic roadmap to expand the

## Project Objectives and Rationale

The objectives of the Lüderitz Wind Power Plant, herein after referred to as the “Project” are to:

- Reduce the overall NamPower tariff to the customer by introducing the most affordable “new-build” renewable energy to the Namibian grid;
- Supporting renewable commitments prescribed in the Renewable Energy Policy and National Energy Policy; and
- Providing renewable energy outside of the typical solar PV dispatch profile.

## SWOT Analysis

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

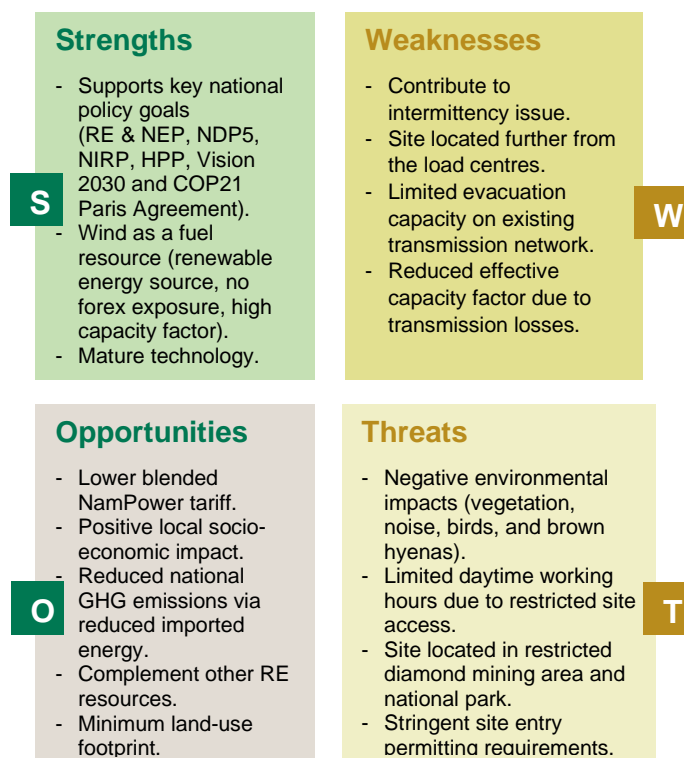


Figure 1: Project SWOT Analysis



## Technical Description and Site Details

Following a thorough site selection, with stringent site evaluation criteria, the area between Elizabeth Bay and Lüderitz Town was identified as the most preferred site and was thus recommended for the new 40 MW Wind project development. The execution period of the project from contract award to completion date is expected to be approximately sixteen (16) months, assuming that there will be adequate favourable weather conditions (wind still days).

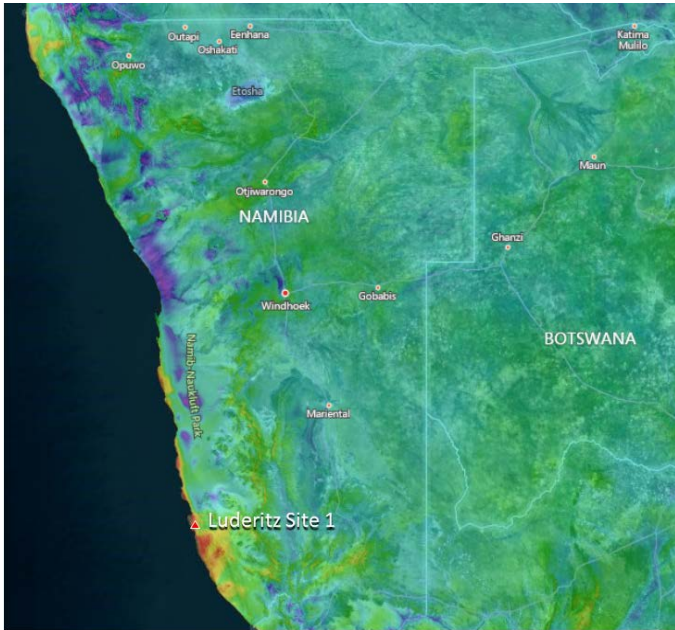


Figure 2: Wind Resource Map of Namibia

Certain constraints do exist within the identified area in “Site 1” (see Figure 3), due to other developments, environmental considerations as well the site’s proximity to the Lüderitz airport. A micro-siting study conducted in 2020 evaluated the terrain, land optimisation, turbine placement, accessibility and transmission line routing.

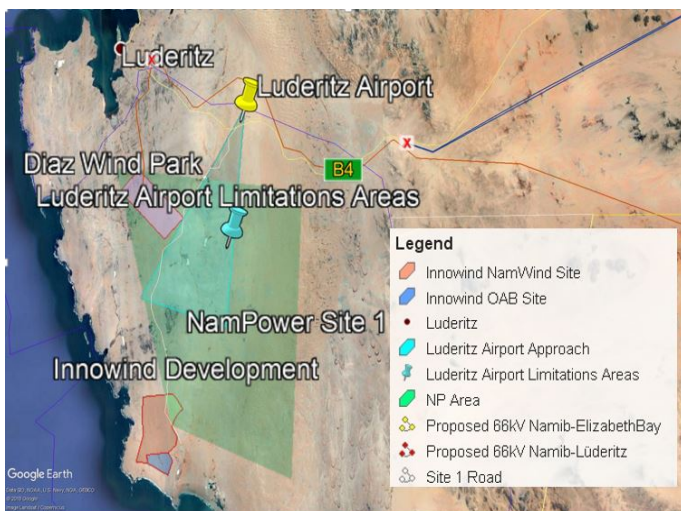


Figure 3: Preferred site location

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

Table 1: Location and Description

Location and Description	
<b>Plant Capacity:</b>	40 MW Maximum export capacity (MEC)
<b>Location:</b>	Located approximately 9 km from the seashore, 20 km south of Lüderitz.
<b>Coordinates:</b>	26°48'7.23" S; 15°10'12.99"E
<b>Wind Turbine generator Type:</b>	Horizontal-axis wind turbine (HAWT) generator, up-wind turbines
<b>Power control:</b>	Pitch & torque regulation, with variable speed;
<b>Distance from nearest main road:</b>	14 km

## Wind Resource

Based on satellite data, the Elizabeth Bay site was found to be one of the best wind resources in Namibia, with a mean wind speed of 9.21 m/s at 100 m above ground level and estimated capacity factors (P50) of approximately 50%. The wind resource and site parameters of the preferred site are indicated in Figure 4 below.

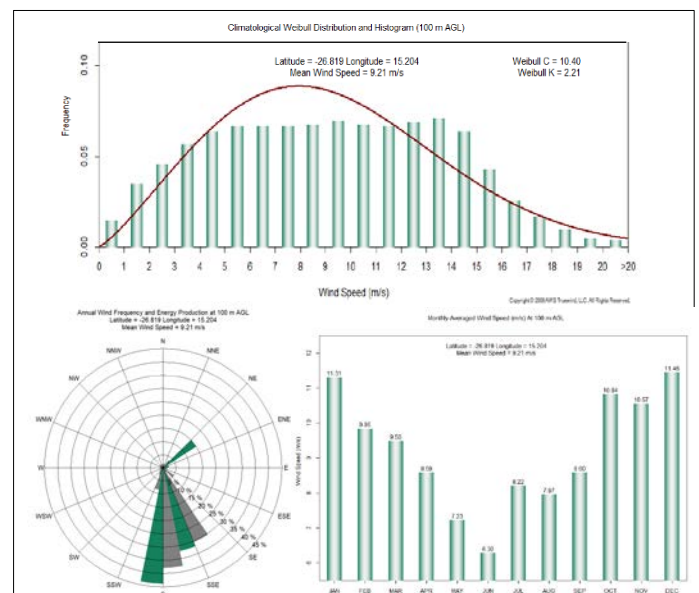


Figure 4: Site 1 Wind Data and Site Parameters

## Project Structure

The intended project structure is depicted in Figure 5, indicating the key stakeholders involved.

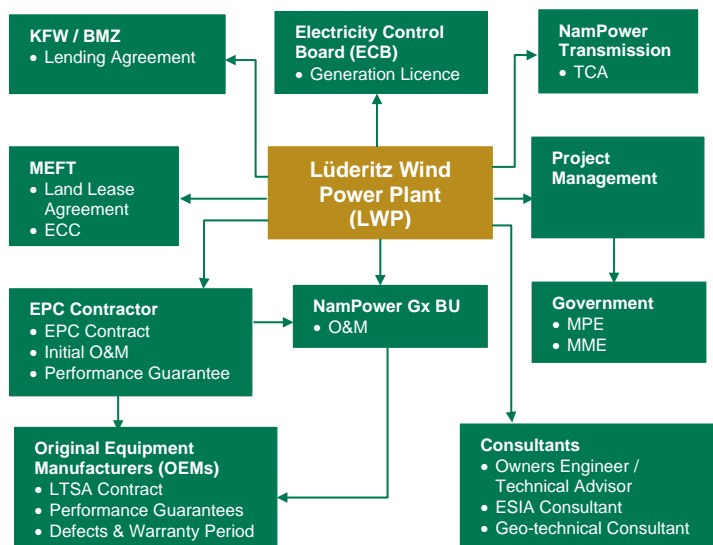


Figure 5: Project Structure

The Wind Power Plant will be developed, owned and operated by NamPower, where NamPower will perform the Project Management and appoint an EPC contractor to construct the power plant. Figure 5 provides the project structure which illustrates the key stakeholders and the following key agreements:

- Lending Agreement – It is envisaged that the Project will be implemented by NamPower and will be financed partially through a corporate loan and own funds. NamPower has engaged KfW / BMZ, as the Preferred Lender, to finance ca. ±80% of the project cost through debt against its balance sheet to leverage its financial resources. A Lending Agreement will be entered into with the respective Funding Institution;
- Generation Licence – NamPower will apply for a generation licence from ECB to operate;
- Transmission Connection Offer– NamPower Generation Capital Projects (GxCP) secured and accepted a Transmission Connection Offer from NamPower’s Transmission Business Unit for connection of the Power Plant to the Namibian grid;
- Consultants – NamPower has procured consultants to assist in providing the following specialised knowledge and expertise on the development and execution of the Wind Power Project:
  - Technical Advisor and Owner’s Engineer (TA / OE) to provide technical support and assistance in compiling the Employer’s

Requirements and managing the EPC contract with NamPower. The TA / OE to also act as a focal point for KfW feasibility study and appraisal report;

- Environment Practitioner to compile the ESIA Report and ESMP, and obtain the Environmental Clearance Certificate (ECC) from MEFT;
- Geotechnical Consultant to assess the geotechnical, hydrogeological and topographical conditions for the site in order to mitigate possible subsoil risk.
- EPC Contract – NamPower will procure an EPC Contractor to engineer, procure and construct the power plant through a transparent and open international competitive bidding process. The procurement of the EPC Contractor will follow the Public Procurement Act;
- LTSA – NamPower will enter into a Long-term Service Agreement (LTSA) with the Original Equipment Manufacturer (OEM) to conduct major maintenance and overhaul activities on main equipment.

Although the envisaged project structure for the Project relies on the Project being procured on NamPower’s balance sheet, a Power Purchase Agreement (PPA) is foreseen to be required in line with the newly anticipated Modified Single Buyer (MSB) market rules.

## Procurement Methodology

The procurement of an Engineering, Procurement and Construction (EPC) Contractor for the Project will be completed within the provisions of the Namibian Public Procurement Act, No.15 of 2015 (the Act). NamPower is fully exempted from Section 8 of the Act to procure above its threshold for the period of 2 (two) years, effective from 01 May 2021. Hence, the EPC procurement process will be administered by NamPower in-house in accordance with the Act.

The contract between NamPower and the successful bidder (EPC Contractor) will be based on the FIDIC Conditions of Contract for EPC/Turnkey Projects (Silver Book), 2017 edition.

The EPC procurement process is expected to be an open advertised bidding process through a two stage with a pre-qualification process. The scope of the EPC Contractor will include the following:

- Design, manufacture, erection, test and commissioning of a 40MW Wind Power Plant;

- Provide full turnkey-wrap scope of services, including transportation, insurance, customs and duties and a 2-year Defects Notification Period;
- Subcontract all possible local works/services to Namibian companies in order to achieve a minimum local content spend of 10% of the total EPC contract value;
- Ensure that all unskilled and semi-skilled labour which are employed are Namibian citizens; and
- Supervise (as required) the maintenance of the Plant during the first two years of operation, as well as include expected OEM LTSA requirements in the EPC contract specification.

## Plant Operation and Maintenance

The key parameters for the Project are provided in Table 2 below. The wind turbine generators will be horizontal axis wind turbines (HAWTs) with the appropriate class for the wind conditions on site.

Table 2: Key parameters

Description	Value	Unit
Installed Capacity	40	MW
Capacity Factor (P50)	± 50	%
Annual Energy Production	175.2	GWh
Wind data hub height	100	m

NamPower will operate and perform the first-line maintenance on the Lüderitz Wind Power Plant. The OEM will be responsible for major maintenance on the plant for the duration of the LTSA.

The EPC Contractor will be responsible to achieve the annual performance guarantees and hence deploy requisite supervision and support services as required in order to meet the annual performance guarantees under the EPC Contract.

NamPower staff will be trained by EPC Contractor personnel to ensure that the necessary knowledge has been transferred in order for NamPower to operate and maintain the plant.

## Environmental Considerations

The preservation of the biodiversity in the Project area and the protection of sensitive fauna (bird life and brown hyenas) and flora are key considerations in addressing the environmental impacts of the project. Through consultations with key stakeholders, specific

Project guidelines have been proposed to minimise the environmental impact of the Project.

## Capital Budget

The Project will be corporate financed through NamPower's balance sheet. NamPower's Financial Statements are reported in NamPower's Annual Report, (Investor Relations section of the NamPower website, [www.nampower.com.na](http://www.nampower.com.na)).

The total cost of the Project is estimated at N\$ 1,070,000,000 (ca. USD 70 million) at an assumed exchange rate of NAD/USD 15.3.

## Value Proposition

The value proposition of the Project is demonstrated in the cost difference between the energy generated by the Project and the corresponding energy imported from Eskom (Figure 6). The NPV avoided cost of the Project at various discount rates (on USD exchange rate of 15.3 NAD) is summarised in Table 3 below.

Table 3: Project Value Proposition

Discount Rate	NPV Avoided Cost (mil NAD)
10%	NAD 2074 million
13%*	NAD 1445 million
16%	NAD 1070 million

\* The maximum nominal return on asset as allowed by the ECB

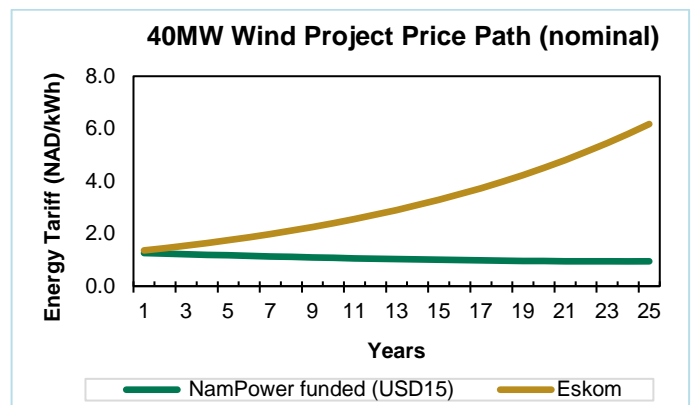


Figure 6: Expected avoided tariff

## Risk Assessment

In 2018, NamPower conducted a risk assessment workshop with internal stakeholders to identify all the anticipated Project risks in terms of the risk category



(i.e. environmental, commercial, legal and technical) and in terms of the project phase (i.e. procurement, construction and operation). The risk register is updated on a quarterly basis. Severity of these risk categories is updated quarterly. Currently, the key risks identified during the developmental phase of the Project are mainly technical and commercial, and are listed as follows:

- Erosion and/or corrosion of wind turbine and plant components during plant operation;
- Unsafe construction site due to windy conditions;
- Land procurement delays in an event that land cannot be procured at the preferred location where the resource or Transmission evacuation capacity is optimal;
- Procurement delays due to COVID-19 global pandemic;
- Adverse exchange rate fluctuations; and
- Potential procurement delays by Development Finance Institutions due to differing procurement requirements and approval process.

A risk assessment workshop will be held with the successful EPC Contractor to update the risk register for the construction and operation phases of the Project.

Commencement of wind resource measurement	01-Feb-21
Pre-Construction BM Final Report approval	08-Feb-21
Final ESIA submission to MME / MEFT for ECC applications	31-Mar-21

The following next steps are required to bring the project to its execution phase.

Table 5: Key Next Steps for the Project

Key Next Steps
Secure the lease agreement for the Project site (in progress) and rezone (if necessary) the site via the Ministry of Land Reform
Measure the wind resource for bankable data acquisition (in progress)
Procure the services of a geotechnical and hydrological consultant to perform the required survey and studies on site
Obtain the ECC from MEFT, and any other relevant permits and authorisations as required
Develop the standard bidding document and technical specification in order to procure the services of the EPC Contractor
Secure the Lending Agreement with the Preferred Lender (KFW / BMZ) for the project funding

## Project Schedule and Progress

The key milestones of the Project are summarised in Table 4 below.

Table 4: Project Completed Tasks

Completed Tasks	Completion Date
Procurement of Bird Monitoring (BM) Consultant	21-Jan-19
Procurement of ESIA Consultant	01-Mar-19
Procurement of Technical Advisor / Owner's Engineer (TA / OE)	01-Nov-19
Complete micro-siting study	22-Nov-19
ESIA Screening Report approval	30-Jan-20
Avifaunal (BM) Scoping Report approval	04-Feb-20
All approvals obtained for Wind Mast construction in restricted area	17-Feb-20
Public Participation Meetings	27-Feb-20
Final ESIA Scoping Report submission to the Competent Authority (MME)	29-Sep-20

## Project Key Milestones

The key milestones of the Project are summarised in Figure 8.

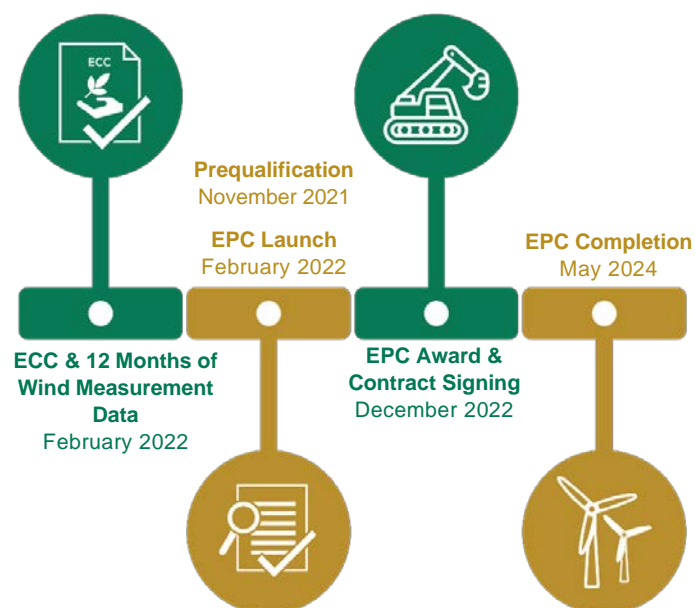


Figure 8: Project Development Timeline

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