

TO ALL INTERESTED BIDDERS

EXPRESSION OF INTEREST FOR THE UPGRADING OF THE FIRE PROTECTION SYSTEM AT KARIBA NORTH BANK POWER STATION AND KARIBA NORTH BANK EXTENSION POWER STATION - KNBEPC/PROC/022/2021

1.0 INTRODUCTION

Kariba North Bank Extension Power Corporation (KNBEPC) Limited seeks to upgrade the Fire Protection system at the Power Station to the best of current trends in order to safeguard the Corporation's Power generating infrastructure.

KNBEPC Limited now invites eligible and reputable Consulting Firms to express interest in the Implementation of an Upgraded Fire Protection system at the power station. The foreign consultants who participate shall partner with local consultants.

2.0 BACKGROUND

Kariba North Bank Extension Power Corporation (KNBEPC) Limited was incorporated by ZESCO Limited in 2007 as a Special Purpose Vehicle (SPV) which was tasked with the development of Kariba North Bank Extension (KNBE) project. The construction commenced in 2008 and the plant was commissioned in 2014. The purpose of establishing the SPV was purely to oversee the project implementation and commissioning of the power station. Following the successful completion of the project, KNBEPC Ltd is expected to exist as a legal entity.

Basically, the sought services must cover the old Generating Station referred to as Kariba North Bank Power Station (KNBPS) and the extension Power Station referred to as Kariba North Bank Extension (KNBE).

The current fire detection and suppression system installed on the old Generating Station has become obsolete and problematic and the Manufacturer no longer support the product from 2015. Similarly, the installed system on the new plant has become problematic as well. Further, this project aims to upgrade the fire protection system for both Generating plants, which has proven to be very ineffective coupled with the lack of spares and technical documentation (drawings and manuals).

The system on KNBPS side was installed during the Power Rehabilitation Project in 2004 and covers the Power House, Transformer Compound, Administration Building, Intakes, Switchyard and Auto workshop. In each of the operational areas stated above, detectors (smoke, heat and ionisation detectors) are installed in zones per room/space and wired to a Local Fire Detection Panel and/or CO₂ Discharge Panel, for rooms where CO₂ fire suppression is installed.

The Main Fire Detection and Alarm Panel is located in the Control Room and is connected via RS485 cable to the Fire Protection Computer. All alarms from each of the Local Detection Panels are relayed to this panel and the Fire Protection Computer for Operator intervention. The rest of the other panels are connected to each other and

the Main Fire Detection and Alarm Panel on a fibre cable network on an RS485 protocol. Manual call points (break glass) alarms are installed at various strategic positions in the fire protected areas and can be used to manually initiate fire alarms in the respective operational areas.

Each fire protected area is also equipped with audible sounders and/or strobes for audio and visual indication purposes. The sounders are operated from the Local Fire Detection Panels. The Local Fire Detection Panels also continuously monitor the loops and electronics equipment in the system and are able to issue fault alarms for equipment identified to be faulty. Similarly, the Fire protection scheme on KNBPS as highlighted above is identical in terms of areas of coverage with respect to the KNBE station.

Given the above situation, Expressions of Interest (EOI) proposals are being sought from prospective Consulting Firms for the implementation but not limited to Inspection and Designing of an upgraded Fire protection system for the Power Station.

3.0 OBJECTIVE

The objective of the assignment is to design and upgrade the Fire Protection System at KNBPS and KNBEPS in order to safeguard the Corporation's Power generating infrastructure and maintain it to the best of current trends.

4.0 SCOPE

KNBEPC wishes to engage a qualified consultant to Inspect, Design and prepare a BOQ for upgrading of the Fire protection system with a view to integrating it into the existing facility both for KNBPS and KNBE Power Station. Under this EOI, the consultant shall be responsible for the design of all interfaces and interconnections between the Heating Ventilation and Air Conditioning (HVAC) systems, DCS and the fire detection and suppression system to enable the transmission/receipt of signals for activation/initiation of start/stop and close interlocks of these systems and their associated sub-systems.

All designs shall be Quality Functional Deployable and shall be fully compliant with all relevant standards. For, suppression systems, the consultant shall be required in the design to incorporate and reuse the existing Carbon Dioxide cylinders, pipe work, nozzles, valves where possible. The system shall comply but, is not limited to the items listed below.

4.1 Review, Design and Develop Specifications

Under this EOI, a complete fully addressable fire detection, alarming and suppression system shall be provided which shall display all fire, fault and operational alarms initiated by the fire detection systems installed within the power station area. The System design to be supplied under this proposal shall be of modular design of components for ease of maintenance and repair. The main components shall include the Redundant Power Supply Unit complete with standby batteries and charging unit, Central Data Processing Unit (CPU), I/O interface cards, Communication module, in-

built mono colour display unit (64 character capacity), housing and colour graphic display & touchscreen Human Machine Interface (HMI) or equivalent etc.

The design shall consist of the Master Fire Detection and Alarm Panel to be located in the Control Room in the Power House and Local Fire Detection and Alarm Panels in the following operational areas: Power house, Transformer Compound and Intakes.

The design system in the various operational areas shall operate autonomously and separate of each other except for the information that shall be shared between the panels as well as the Master Fire Detection Panel as determined by the Client. The designed Master Fire Detection and Alarm Panel in the control room should communicate with all the other panels and the operator should have the control to enable/ disable/ acknowledge/ reset alarms in those areas controlled by the other panels. Further the operator shall have capability to enable/ disable detectors in the zones all operation areas. Furthermore, KNBEPC shall furnish the supplier with the following documentation and/or information:

- Original Equipment Manufacturer (OEM) drawings of existing facility and commissioning reports relevant for the execution of this project; and
- Any relevant data required for the execution of this project where such data is available. In the unlikely event that such data is not available, the Supplier shall agree with KNBEPC on the assumptions that can be made to enable the satisfactory execution of this project.

4.2 Preparation of the Bill of Quantities (BOQ).

4.3 Participate in the procurement process including pre-bid meeting and responding to queries during the floatation period of the tender.

4.4 Assist with the analysis and evaluation of tenders, prepare an evaluation report and make recommendations to the General Manager, KNBEPC Limited for acceptance of the best evaluated bidder.

4.5 Propose any other items that may be deemed essential to the operations of the Fire Protection System.

4.6 Supervise the implementation of the project.

5.0 Coverage of the Fire Protection System

Both Power stations including all associated auxiliary equipment and areas.

6.0 Reference Standards and Documentation

The design shall comply but not limited to the codes and standards below:

- a) NFPA 72
- b) NFPA 2001/12

- c) EN 50081-2, EMC (Emission)
- d) EN 50082-2, EMC (Immunity)
- e) EN 60950, Electrical safety
- f) IEC 60255-4, 2kV, 50Hz 1min, Insulation
- g) IEC 60870-2-1 cl. C,
 - Surrounding Temperature 0 - 55°C
 - Humidity@ < 85% RH at 25°C

7.0 EXPERIENCE AND EXPERTISE OF THE CONSULTING FIRM

The Consulting firm shall comply but not limited to the criteria set below:

- a) A proven track record of having successfully Implemented at least three (03) Complex Fire Protection Systems with references and contact persons provided of similar magnitude.
- b) The Consulting firm should also provide curriculum vitae for at least 5 key personnel with relevant experience to oversee the implementation of the system;
- c) The Consulting Firm should ensure availability of local support for continued technical support and maintenance of the solution to be provided; and
- d) The Consulting Firm should be able to provide Fire Protection System training to System Administrators and end users respectively at a designated authorized training Institution.

8.0 General Information

a) Geographic Site Location

Kariba North Bank Power Station is located on the Kariba Gorge section on common boundary of Zambia and Zimbabwe on the northern bank of Kariba Dam. The site is located lies at approximately 16.5° south of the equator and at an altitude of approximately 460 masl. It is 192km from Lusaka (capital city of Zambia) and is accessible by bituminous standard road. The main access by air is through Kenneth Kaunda Internal Airport which is located in Lusaka.

b) Outdoor Meteorological Parameters

There is no meteorological station at the Kariba North Bank Power Station. Notwithstanding, the available data from Kariba Airport meteorological station located in Zimbabwe but close to the Station is sufficient for determining outdoor meteorological parameters. According to the statistics information from the Kariba Airport meteorological station, the:

- i) Average daily minimum temperature is 12°C
- ii) Average daily maximum temperature is 43°C
- iii) Average monthly minimum temperature is 7.3°C
- iv) Average monthly maximum temperature is 39.7°C
- v) Extreme minimum temperature is 2.7°C

vi) Extreme maximum temperature is 45°C.

The equipment supplied under this contract shall be capable, as a minimum, of operating under the above stated meteorological conditions.

The Expression of Interest should be in one (1) original, two (2) copies and one soft copy and must be deposited in the tender box situated at the Reception, KNBEPCC Offices in Woodlands in Lusaka clearly marked "**EXPRESSION OF INTEREST FOR THE UPGRADING OF THE FIRE PROTECTION SYSTEM AT KARIBA NORTH BANK POWER STATION AND KARIBA NORTH BANK POWER EXTENSION POWER STATION – KNBEPCC/PROC/022/2021**" and addressed to the General Manager Kariba North Bank Extension Power Corporation Limited, Plot Number 10819, Mwinilunga Crescent, Off Lake Road, Woodlands, Lusaka, Zambia, Telephone Number: +260-211,362654/59/61/62/64/66 or Mobile No. +260-967-904405/0950-299151. The email address is knbe@zesco.co.zm.

LATE EXPRESSIONS OF INTEREST SHALL NOT BE ACCEPTED. The closing date for receipt of Expressions of Interest shall be **Friday 14 January 2022 at 10:30 hours local time.**

**ALEX CHILEKA
GENERAL MANAGER**