

# **Rotary Club of Kitengela (RCK)**

## **TENDER DOCUMENT**

**Grant Title: Drinking Water and Improvement of Sanitation at  
Kyatune Special School in Mutomo.**

**Grant Number: GG2123813**

**For**

**Borehole Design & Build.**

**Kyatune Adjudication Section, Plot No. 977, Kyatune Location,  
Mutomo District.**

## Introduction

Rotary Club of Kitengela is a not-for-profit organization registered under Rotary International. It has 7 areas of focus as below.

- Peace and Conflict Prevention / Resolution
- Disease Prevention and Treatment
- Water and Sanitation
- Maternal and Child Health
- Basic Education and Literacy
- Economic and Community Development
- Environment

In collaboration with the Rotary Club Kitengela, Rotary Club of Upsalla Linne, Kyatune Special School and Sweden Mutomo International and the Kyatune Community in Mutomo; they would like to undertake a project in Economic & Community Development and Water & Sanitation in the Kyatune area. This will involve drilling of a borehole, water distribution (reticulation) and building of 2 water kiosks for vending water to the neighboring community.

The Kyatune community & Rotary Club of Kitengela has drilled a borehole at Kyatune Special School. Rotary Club of Kitengela would like to enlist the services of a competent Electro-Mechanical Contractor who is duly registered with the relevant authorities to provide borehole equipping works and run water distribution /reticulation in the Kyatune area.

Overall works include:

1. Design a water pumping solution
2. Equipping of the borehole with a hybrid pump system (mains & solar powered)
3. Installation of the Solar System for the pump above

This tender is in 2 parts:

- ✓ Part 1: Technical Bid
- ✓ Part 2: Financial Bid.

Technical tender constitutes 70% while financial tender 30%.

Documents shall be mailed to [rckitengelabids@gmail.com](mailto:rckitengelabids@gmail.com) marked **Proposed Borehole Design & Build for Kyatune Special School at Kyatune Adjudication Section, Plot No. 977, Kyatune Location, Mutomo District**. Submissions are expected to reach on or before close of business on **March 14<sup>th</sup>, 2022** addressed to the RC Kitengela Tender Committee

## Part 1 – Technical & Bidding Requirements

## SECTION : SCOPE OF WORKS

### 1. MATERIALS AND EQUIPMENT

All materials, equipment, etc. to be used in the execution of the work by the Contractor in this contract shall conform to the requirements of the latest Kenya Bureau of Standards (KEBS), International Electrotechnical Committee (IEC), International Standard Organization (ISO) or other approved applicable standards in Kenya unless otherwise specifically stated.

### 2. QUALITY OF MATERIAL AND WORKMANSHIP

The materials and workmanship shall be of the best of their respective kinds and shall be to the approval of the Project Lead. Should any material/equipment which are in the judgement of the project manager unsound, or of inferior quality or in any way unsuited for the work in which it is proposed for use, such materials/equipment shall not be used upon the works and shall forthwith be removed from the site and replaced with the proper quality items to the approval of the Project Lead, all at the expense of the contractor.

The Contractor shall remove and reconstruct at his own expense any portion of the works which gives evidence of any defects or injury which may affect the strength or durability of the work or the performance of the system.

### 3. CONTRACTOR'S LIABILITY

The Contractor shall indemnify the Employer against any claims made in respect of loss of life, injury or damage to persons, animals, goods, or property.

### 4. SPECIFIC TASKS/ ACTIVITIES

The main activities to be carried out are as follows:

- Design, supply, deliver to site, Install, test and commission. The solar system shall be adequately designed to produce sufficient solar-generated power for a pump capable of discharging 70% of the tested borehole yield (refer to test pumping report). The system shall be inclusive of all the required protection such as earthing, protection against lightening etc.
- Earthworks- Shall include but not limited to excavation for solar support structure for the required structural stability of it. Trench works and backfilling accordingly.
- Supply & delivery of all materials for the solar works, Solar Structure and Pumping Units Accessories to be approved by Project Lead and or other appointed authority.
- Masonry work- Carry out construction works for foundation as required by the standards of the civil and structural engineering on the concrete mixing ratios for the solar support and other related scope.
- Design, Fabricate and assemble a Solar PV Array Support structure of **6M height above** ground and firm provision for security of the solar panels against theft The solar support structure should be made of Steel or other suitable construction material.
- Provide finishes to the completion of the masonry work on the structure stability and Installation of electrical connections between the pump and controller.
- Balance of System: Proper power controls, grounding hardware, lightening protection, security of all electrical cabling-should not be exposed.

- Mechanical and Electrical works including but not limited to electrical terminations, mountings, interconnections, fastenings, joinery works, plumbing connections .
- Installation of 2" 3m Draw pipes – Heavy duty construction offering reduced friction for increased operating efficiency, corrosion resistance, light weight and durability.
- End user and Project Stakeholder training on pump and solar system operation and maintenance post installation period. Training will be both theoretical and practical hand son at site for minimum 2 days and Certificates issued to trainees.
- Documentation: To include System manuals, Operation & Maintenance Manuals, As built drawing for the solar support structure, Training manual, HSE report, photos, Product Warranty, Workmanship warranty, etc

## PROPOSAL DOCUMENT

Please include in your response a written submission including:

### 1.1 Statutory / Preliminary Requirements (Mandatory)

- a) Copy of certificate of incorporation/registration.
- b) A copy of a current and valid tax compliance certificate
- c) PIN Certificate.
- d) A certified true copy of CR12 not later than 6months
- e) Copy of certificate of registration with National Construction Authority i.e. must be NCA 7 or above in the category of Electro-mechanical works.
- f) Copy of certificate of registration as a solar photovoltaic contractor with the Energy and Petroleum Regulatory Authority (EPRA).
- g) Copy of Technician Certificate of registration as a solar photovoltaic technician by EPRA-Class T3
- h) Company profile detailing Company physical location, Contact details authorized personnel
- i) Evidence of adequate insurance risk covers and policies

### 1.2 Technical Requirement

- a. Project Method Statement comprising the following - Methodology to carry out the various components for the works (summarized SOW), Site management org chart, Health & Safety Management, Environmental Management, Quality Management, Logical and detailed work plan with a maximum period of performance of 4 weeks.
- b. Detailed technical specifications of the system proposed to be supplied and installed should meet minimum set requirements- provide support documents.
- c. **Key Personnel: Provide Current CV and Copies of Certificates for atleast the following**
  - Project Manager –Min HND in Mechanical, Electrical Engineering and Minimum 5 years of post-qualification experience and minimum 3 years' experience in similar assignments (water & solar infrastructure works).
  - Electrician/Technician – EPRA & NCA Accredited class T3. Minimum 3 years of relevant experience (water & solar infrastructure works).
- d. Organization Experience
  - Atleast three corporate reference letters from your past and current clients in the last 2yrs -
  - Copies of LPO and or Award letters for atleast 3 works of similar nature, each valued in the sum of KShs **2 Million** done within the last three years.
  - Duly signed certificates of completion for the 3 listed completed projects in the last 3 years.

- e. Schedule of relevant ongoing jobs /projects
- f. Occupational Health and Safety plan
- g. Letters of Agency, Representation, Distributorship etc. for equipment manufacturers etc.
- h. **Design:** The Contractor shall provide all design calculations for the output of the proposed installation including solar support structure design and the following details
  - The output of each module and the total number of modules required
  - Module type, performance specifications, and warranties
  - Mounting arrangements, inclination, and orientation of modules
  - Area required for the system installation
  - All applicable PV & Electrical system losses
  - Total Energy Produced and Water pumped per day
  - Performance Ratio
  - Total Energy output in kWh
  - Economic / Financial Modelling of monthly power bill savings by using Solar

Project Name	Project Client name and Contacts	Project commencement date	Projected end date	Project amount in KES (at least KSh 2 Million)	Attachment

### 1.3 Equipment / Machinery

The bidder must demonstrate that he the key equipment listed hereafter. Provide Lease or ownership documentation as evidence

		Specifications	Owned / Leased
	Heavy Duty Truck with Hydraulic Hoisting Mechanism	Land Cruiser, Heavy Duty models (3-5T)	
	Concrete Mixer	0.5m <sup>3</sup>	
	Poker Vibrator – 40mm	40mm	
	Welding Equipment	Capable of 10mm welding rods	
	Electrical Commissioning Kit	UT-529C , Fluke etc	

#### **1.4 Financial Capacity**

Provide the following as evidence of financial position/capacity to undertake this project. Attach the required documents

- a) A current bank statement covering the immediate past six months. The bank statement should be in the bidder's name and stamped/certified by the bank
- b) Attach evidence of availability of funds/ working capital of at least **KES 1 Million** in form of a bank deposit as illustrated in the bank current certified bank statement or Attach Letter of credit/finance/ bank overdraft from a reputable bank of at least **KES 3 Million**
- c) Duly signed audited financial statement for the past three years.

#### **1.5 Qualitative Requirements**

- a. Evidence of an unblemished record (Ethical conduct and integrity ) and related declarations
- b. Quality management policy , approach and or methodology
- c. Any other capacity / quality the firm may wish to make known
- d. Company Code of Ethics and or Other Internal Governance Policy
- e. Duly updated company profiles and website links
- f. Sanity in presentation of proposal including but not limited to serialization and initializing all pages in the proposal submitted.

#### **1.6 Commitment / Undertaking to provide the following upon request**

The anticipated requirements before notice to proceed / site hand over include the following 10% Performance Bond issued by reputable Bank regulated by CBK

Contractors all Risks (CAR) Insurance covering – Subcontractors equipment valued atleast KShs 1,000,000/= Third Party equipment and persons valued atleast KShs 1,000,000 for one incident, with unlimited number of incidences, Contract Works Including permanent , temporary & materials)., Workers Compensation Insurance against personnel injury or death (WIBA) i.e of subcontractors employees: KShs 500,000 for each incident, number of incidences unlimited.

## Part 2 – Financial Bid

## Instructions to Tenderers

1. This is Firm Unit Fixed Price contract for the provision of specific services, goods, works or deliverables and is not adjusted if the actual costs are higher than the fixed price amount. Offerors are expected to include all costs, direct and indirect, into their total proposed price.
2. Tenders shall be submitted on the form of tender attached hereto and all blanks in this form and in the schedules attached to the specification shall be completed.
3. No alteration shall be made on the form of tender or in the specification and schedules.
4. The tenderer (whether his tender is accepted or not) and all other recipients of the specification and documents shall treat the details of specification and the documents attached thereto as private and confidential.
5. The employer does not bind himself to accept the lowest or any tender and will not be responsible for or pay for expenses or losses which may be incurred by any tenderer in the preparation of his tender.
6. All tenderers shall return tender and all accompanying documents duly completed – email to [rckitengelabids@gmail.com](mailto:rckitengelabids@gmail.com).
7. The tender must be received not later than the time, date. Tenders received later than the date specified above shall not be considered.
8. All items of additional information, issued to tenderers prior to the time for closing the bids, shall become a part of the Contract Documents and shall be included in the proposals.
9. The tenderer shall, where applicable, provide leaflets and catalogues giving technical and physical details of the fittings being offered by him as an integral part of his bid.
10. Cost/Price proposals – A well elaborate itemized bill of quantities should be provided by respective bidders showing the item description, qty, unit of measure, unit price or rate where applicable, total amount by line item, sub-total without vat and Grand total including VAT with highlights of VAT applicable items / materials and non-vattable items.
11. The Contractor is responsible for all applicable taxes and fees, as prescribed under the applicable laws for income, compensation, permits, licenses, and other taxes and fees due as required. Refer to Finance Act for more details on the same.
- 12. The Payment schedules**
  - a) 25% advance payment upon signing of the contract and mobilization to the site and confirmation by the Project Committee Lead.
  - b) 65% upon completion of the works, training and hand over signed off by Project Lead.
  - c) 10% after a 3-months retention period (90-days defects liability period).

**Your quotation should be valid for 60 days**

**FORM OF TENDER**

Dear Sir/Madam

**RE: PROPOSED BOREHOLE DESIGN & BUILD FOR KYATUNE SPECIAL SCHOOL.**

Having examined and understood all the specifications, conditions of contract, Bill of Quantities and all other relevant documents for the above works and having obtained all the necessary information affecting this tender, we the undersigned hereby offer to execute and complete to the satisfaction of the Services Engineer the whole **Borehole equipping works** herein stated for the sum of Kenya Shillings: -

.....

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(KSHS: - .....)

We undertake, if this tender is accepted to execute a formal Contract Agreement with the Client in the terms shown in tender documents and to submit the name of an approved surety who will be willing to be bound to the client for the said works in an amount equal to 10% of the Contract amount.

We understand and agree that the employer is not bound to accept the lowest or any tender. Our offer is valid for acceptance within ninety (90) days from the date of this tender.

Signed: ..... Date: .....

Completion Period: .....

Name and Address with Official Stamp: .....

Witness: .....

Signed: .....

Address: .....

Date: .....

## **Appendix to the Schedule of conditions of Main contract**

The appendix to the Conditions of Main Contract has been completed as Follows:

1. Defects liability period – 90 Days from certified Practical completion of works.
2. Date of possession - In accordance with the Program of works.
3. Date of practical Completion - In accordance with the Pump Installation Program

### **4. Taxes and Duties**

The tender shall be inclusive of all taxes including import duty, VAT and Withholding taxes.

### **5. Time for Completion**

There is need to complete the works in the time stated in the main contracts' document. The Contractor shall make all due preparation safeguard against factors such as labour, shifts fluctuation, weather patterns etc. that might slow his progress and no claims for extras will be considered on account of his failure to do so.

### **6. Warranty**

The Contractor must furnish the Project Lead with general written warranty covering quality of workmanship, materials, and equipment and be compelled and held liable thereby for a five year period after practical completion of the contract, except for latent defects, which shall be warranted for ten years.

The Contractor must make good at his own expense, such repairs and replacements as may be required as a consequence of negligent workmanship or defective material. The Electro-Mecahnical Contractor must also produce such warrants and guarantees as described aforesaid from all manufacturers and/or suppliers of materials or equipment incorporated in the project under this contract.

### **7. Equipment Performance / Witness Tests**

The Contractor conduct workshop / factory witness Test where the project committee will be represented by the Project Lead for his approval prior to site mobilization.

### **8. Protection**

The Solar support frameworks and all solar panels once mounted must be adequately protected against hence firmly fastened and secured accordingly. The solar support must be out of harm for any children and infrastructure users.

### **9. Handing over**

The Contractor's work shall be considered complete, and the defects liability period shall commence only when the contract works and supporting services have been tested, commissioned and operated to the satisfaction of the Project Lead.

### **10. Defects After Completion**

Defects Liability Period will be 90 days from the date of completion of the contract as certified by the Project Lead.

## PARTICULAR SPECIFICATIONS FOR BOREHOLE EQUIPPING

### 1. Purpose

The borehole equipped with a submersible pump & solar panels under this contract will be to provide water intended for community use. The maximum ground water abstraction permitted from the borehole shall be  $10\text{m}^3$  /day with the maximum abstraction period not exceeding 8 hours per day.

The execution of the works shall be in full compliance with relevant provisions of the Water Act. The proposed drilling site will be **on Kyatune Adjudication Section, Plot No. 977, Kyatune Location, Mutomo District.**

### 2. Scope of the Work

The works included in the contract are:

- (a) The supply and **installation** of 1No. Submersible borehole pump, complete with the necessary controls. Connection of the water from the borehole to the water storage tanks.
- (b) Supply and installation of monitoring tune and master meter for monitoring water level and consumption respectively.

### 3. Borehole Data

- (a) Total depth – 105 Meters
- (b) Minimum Borehole diameter – 152mm
- (c) Static Water Level – 56.62 Meters
- (d) Pumping Water Level – 90 Meters
- (e) Borehole Tested Yield,  $Q_t$  –  $8\text{M}^3/\text{Hr}$

### 4. Supply and Installation of Pump

The Electro-Mechanical Contractor shall supply and install:-

- 4.1. One electric submersible hybrid pump which will conform to the specification stated, for operation on 240Volt, three -phase / Solar Powered.
- 4.2. All necessary electrical equipment for the pump such as control panel with starter, ammeter, single phasing cut-out, low voltage cut-out and all necessary cables for connection.
- 4.3. Suitable diameter uPVC pipe class 'C' to carry water to the surface/ to water storage tanks
- 4.4. Low level cut-out switch
- 4.5. Airline 20mm uPVC pipe for water level measurements
- 4.6. Pressure gauge
- 4.7. The gate valves, non-return valves before the master meter
- 4.8. Master meter for measuring the water from the borehole.

### Note on Pump Installation

The Electro- Mechanical Contractor shall install the borehole pump complete with all necessary accessories.

The Electro- Mechanical Contractor shall make the necessary electrical connections and include in his prices all cable, starter-panel, switches etc. required to put the pump in operation while tendering for this part.

The installation of the submersible pump into the borehole shall be done immediately the borehole drilling is completed, test pumped and water analysed for suitability for human consumption.

## **5. Solar and Electrical works**

It shall be the responsibility of the Electro-Mechanical Contractor to provide a solar system of adequate capacity to run the pump as specified and carry out all electrical wiring between all items of his Contract to ensure the correct function of his equipment.

### **5.1. Solar Photovoltaic Module:**

- Mono or Poly Crystalline Silicon Solar cells should be used in the solar modules that are used for the Solar Water Pumping application.
- Modules supplied with the Solar Water Pumping systems shall have certificate as per IEC 61215-1-1:2016 – (Special requirements for testing of crystalline silicon photovoltaic (PV) modules) specifications.
- Modules must qualify to IEC 61730 Part I and II for safety qualification testing.
- The efficiency of the PV modules should be minimum 16%.
- The terminal box on the module should have a provision for "Opening" for replacing the cable, if required.
- Module Junction should have protection class of IP65, module connector MC4 with 4 mm<sup>2</sup> cable with a length of 70% of module length.
- Power temperature coefficient of PV modules shall be at most: -0.043%/oK
- Peak Power of individual module for the solar water pumps at STC must at least be 250 Wp or more. Use of PV module with higher power output is preferred. Module IV characteristics at STC, its temperature coefficient shall be provided for the module.
- Each module must be labelled indicating at a minimum: Manufacturer, Model Number, Serial Number, Maximum Power Point Watt Rating (Wp tolerance), Maximum Power Point Current, Maximum Power Point Voltage, Open Circuit Voltage and Short Circuit Current.
- The module framing should be such that it permits secure connection to the mounting structure, prevents edge damage and has the longevity to withstand environmental factors for the duration of the module warranty period. Modules frame minimum dimensions (35 x 35 mm and 1.7 mm)
- All PV modules used in the array must be of same type, same model, same power rating and same manufacturer
- The PV modules must be warranted to retain at least 90 % of its rated wattage measured at STC for 10 years and 80% of the rated wattage at 20 years.

### **5.2. Solar Pump Controller/Inverter:**

- Maximum Power Point Tracker (MPPT) embedded solar controller should be used to optimally utilize the power from Solar PV array and maximize the discharge.
- Solar controller shall have IP 65 protection.
- Protection system with sensors should be incorporated in the controller to protect the solar water pump set against dry running, open circuit, accidental output short circuit, under voltage, reverse polarity, lightning arrestor.
- Reliable DC circuit breaker suitable for switching DC power ON or OFF shall be provided in the solar pump controller.

- Suitable size of UV cable shall be used in enough length for interconnection between solar PV array to the controller and the controller to the solar water pump set.
- Controller shall be provided its specification with maximum input voltage, maximum current, and its maximum efficiency which should not be less than 95%.

### **5.3. Array Mounting Structure**

- The Solar PV modules should be ground mounted on metallic structures of adequate strength and design that can withstand weight of the modules and high wind velocities up to 150 km/hr.
- The modules should be ground-mounted with corrosion resistant painting.
- The array mounting structure will hold the photovoltaic modules. The modules must be mounted on a support structure made of corrosion resistant material that assures stable and secure attachment.
- The structure must be mounted such that the modules are at a tilt angle of 20 degrees to the horizontal facing the equator.
- There should be no shading from nearby trees or buildings in the solar module.
- All nuts and bolts should be made of very good quality and should be corrosion resistant.
- The structure should be designed to allow easy replacement of any module.
- The array structure shall be so designed that it will occupy minimum space without sacrificing the output from the SPV panels.
- Schematic design of the array mounting structure should be provided for the pumping application.
- In order to minimize theft risk, Modules fixation on the support structure has to be of anti-theft type.

### **5.4. Balance of Systems**

- The supplier should list all required equipment and accessories like plumbing materials, valves, connectors for water pipeline, PV and pump installation materials, cables, connectors required for specified solar water pumps.
- Separate list of equipment for earthing and lightning arrestor should be provided.

## **BILLS OF QUANTITIES**

**Itemized Bill of Quantities to be provided by the Contractor supported by proof of System Design**

## Notes of Quantities

1. The prices quoted shall be deemed to include for all obligations under the contract including but not limited to supply of materials, labour, delivery to site, and storage on site, installation, testing, commissioning and all taxes (including **16% VAT**).
2. All prices omitted from any item, section or part of the Bills of Quantities shall be deemed to have been included to another item, section or part.
3. The brief description of the items given in the Bills of Quantities are for the purpose of establishing a standard to which the Electro-Mechanical Contractor shall adhere to. Otherwise alternative brands of equal and approved quality will be accepted.
4. Should the Electro-Mechanical Contractor install any material not specified here-in before receiving approval from the Project Lead, the Electro-Mechanical Contractor shall remove the material in question and, at his own cost, install the proper material.
5. The grand total of prices in the price summary page must be carried forward to the Form of Tender.

**Summary Page**

Item no	Description	Amount (KShs)
	Total brought forward from	
	Sub-Total	
	Add 5% contingency sum (Supervision fees etc)	
	<b>Total carried to form tender</b>	

Total cost in words (Kenya Shillings)

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Name of Tenderer \_\_\_\_\_

Address \_\_\_\_\_

Terms of payment \_\_\_\_\_

Delivery Period \_\_\_\_\_