

SCOPE OF WORK (SOW)

Under the guidance of UNKEA Team in Kuajok and Juba, the selected contractor must perform in a satisfactory manner, the drilling of four (4) boreholes to be installed with hand pumps at 4 school locations determined in Yooyoo, Panthoi, Keem and Adutbul Primary Schools

Technical specification

All construction materials shall be provided by the contractor to carry out these construction activities. The contractor is expected to handle supplied materials with care to avoid loss of material on site and to carry out the works professionally without any material wastage.

1.1. Mobilization

The contractor shall make his/her own arrangements for food, accommodation and storage facilities on ground. Further he/ she shall provide all plant and equipment and share a list of his/ her equipment including drilling plant and tools as part of the tender document. The Contractor shall nominate one key person who shall be responsible for the assignment on behalf of the Contractor and shall be the Contractor's site representative. This person is indicated on the list of personnel which is part of the tender document.

The Contractor shall arrange for transportation and security of all equipment and staff. He/ she shall take all necessary precautions to ensure the security and safety of works, materials, equipment and people associated with the works. UNKEA shall liaise with the local authorities to ensure that the roads/sites are accessible by the Contractor in order for him/her to execute the works in record time.

1.2. Siting of boreholes

The contractor shall be responsible to carry out geophysical surveys using VES (Vertical Electrical Depth Sounding) on the sites located for drilling. He/ she shall thus have competent staff, equipment and software for carrying out the surveys and interpreting the data. The rough location of the boreholes has been assessed by UNKEA staff and community representatives. The contractor will be required to locate at least three probable sites for each borehole and number them in order of priority. The final site selection is made in coordination between contractor's staff, UNKEA staff and the community. **A hydrogeological report will be submitted to UNKEA.**

1.3. Drilling

The contractor shall be responsible to select the appropriate drilling procedure for the geology of each drilling site. The diameter must be adequate to accommodate the final borehole casing diameter plus a minimum annular space of 50 mm. The contractor may choose to either drill a hole of adequate diameter on the first pass or to drill a small diameter test hole, then ream to the desired size. Regardless of the procedure, payment shall only be for the drilled hole at the appropriate size.

The drilling method, drilling plant, drilling fluid and fluid additives are subject to approval and should be mentioned in the tender document. The drilling fluid and additives must be non-toxic and biodegradable. Its supply is a responsibility of the contractor.

Drill cuttings shall be placed in containers provided by the contractor. At each drill site, the contractor shall have sufficient sample container to accommodate all of the samples collected. The samples shall be kept available for inspection until the supervisor gives permission to dispose them.

During the drilling, completion and development of each borehole, the contractor shall maintain a detailed driller's report. The report shall give a complete description of all formations encountered, number of meters drilled, number of hours spent drilling, shutdown due to breakdown, length and type of casing and screen set, and other pertinent data as requested by the UNKEA supervisor. The format of the report shall be approved by the supervisor previously and shall be signed by both the driller and the supervisor on a daily basis. In addition, the contractor shall measure and monitor the depth of the borehole in progress, the static water/mud level in the borehole, the different depths of water strikes and aquifers and the penetration rates at various strata or change of tools.

The contractor shall be paid unit prices per meter in accordance with the depth drilled. The depth given in the Bill of Quantity are indicatives only and the unit prices per meter shall include all costs associated with the drilling e.g., drilling additives, preparation of daily drilling reports.

1.4. Borehole construction

The final depth of the borehole and the other relevant depths involved in the design of the borehole shall be determined from measurements made by the contractor and the supervisor. The design of the borehole (intervals to be cased and screened, screen slot opening, etc.) are to be approved by the supervisor.

The gravel pack should consist of well graded river gravel. Under no condition should rock chippings be used. The material should be free of shale, mica, clay, dirt or organic impurities of any kind. The material should be carefully introduced into the hole to avoid bridging. The last 6 meters of annular space shall be filled with cement grout to provide a sanitary seal after the development of the borehole.

1.5. Borehole development

The contractor shall develop the borehole by a combination of jetting with water and surging with air. The borehole shall be developed with great care to avoid any damage to the casings and screens. The development shall continue until the borehole is judged to be free of sand by the supervisor.

1.6. Pump testing

The contractor shall conduct a pumping test on every successful borehole. The pump testing shall be at a constant yield and continuous pumping of 1m³/h for a period of 6 hours. Immediately after the pumping, the contractor shall measure the water-level recovery in the borehole over a minimum period of 1 hour, unless the water level has recovered to the original level before.

During both the pumping and the recovery periods, the contractor shall measure the water level in the borehole using a calibrated electronic sensing device. The water level measurements are to be taken in accordance to the schedule indicated by the supervisor. The contractor shall analyze the results of the pumping test and report the results on forms provided by the supervisor before further installations.

1.7. Water quality analysis

During the pumping test, the contractor shall collect water samples from the borehole for water quality analysis. The samples shall be collected from the pump flow direct into the container. The containers shall be labelled with the borehole number, date and time of sampling.

The contractor shall have tests carried out in a laboratory that approved to determine the following parameters: colour, odour, taste, electrical conductivity, pH, turbidity, temperature, manganese, total hardness, Iron, chloride, fluoride, arsenic, nitrate and sulphate. Microbial parameters shall comprise faecal coliform counts in conjunction with the line ministry.

1.8. Borehole disinfection

After completion of the pumping tests the contractor shall undertake final disinfection of the borehole with a hypochlorite calcium solution with a concentration of 50mg/L of free chlorine. The chlorine shall be applied uniformly throughout the entire depth of the water in the borehole. All accessible portions of the borehole above the water shall also be wetted with a chlorine solution.

1.9. Construction of concrete pad and animal Trough

The Contractor shall construct a concrete pad around the borehole casing sticking above the ground (around 30cm) and continuous with the underlying 6 m cement grout in the sanitary seal. The pad shall be 2m in diameter. The concrete shall be cast over a layer of compacted hard core with a minimum thickness 200 mm above the ground and continuous with the underlying cement grout. The drainage channel shall be at least 6 m long, sloping away from the pad. The animal trough should be 1.8m². The Contractor shall ensure that the sides of the pad are straight by properly anchoring the forms. The top of the pad shall be troweled to a smooth surface. The contractor shall keep the surface of the concrete pad moist for a period of 72 hours after the concrete has been placed.

1.10. Installation of Indian Mark II hand pump

Prior to leaving a borehole unattended at any time, the contractor shall place a temporary cap on the borehole casing. An Indian Mark II hand pump with all its accessories shall be installed at each borehole, however for lifting water beyond 80m Indian Mark II extra deep shall be installed. All necessary parts and tools for the installation are provided by the contractor.

ROLE OF THE CONTRACTOR

1. The contractor will have to provide for the construction and completion in every detail of the work described in the contract and contractual documents such as ToRs and annexes. All labors, materials, tools, equipment, transportation, food and supplies required to complete the work in accordance with the specifications and terms of the contract should have to be well furnished. The contractor cannot deviate from the construction designs or specifications without seeking for permission and approval from UNKEA.
2. If the contractor is not able to finish the drilling or has to abandon the borehole due to loss of tools, accidents or any unforeseeable circumstances, the contractor should remove the casings or drive pipes already in the hole and refill it with clay or concrete. All materials extracted from the hole, after refilling it will be the property of the contractor. UNKEA will not pay for any of the work carried out, and will authorize in advance the drilling of a new hole, at a site near the abandoned one if need be, at the contractor's expenses.

HEALTH & SAFETY

The contractor's team leader shall take all reasonable precautions to prevent any death or injury to persons during said undertaken activities. These precautions shall include but not be limited to providing his crew with safety helmets, hard-toed boots (safety boots) or gumboots, heavy duty gloves, protective glasses and ensuring that all tools and equipment are in a safe condition and ensuring that his employees adopt safe working methods. The drilling crew will wear a uniform provided by the contractor at the site. No military-looking clothing will be accepted at any time.

Under this contract, the contractor's team leader has the obligation and responsibility to safeguard the safety and security of its Personnel, the drilling crew's equipment and other property, and Personnel's personal effects and other property. The contractor's team leader shall develop a security plan in consultation with UNKEA, including detailed procedures to cover evacuation, personnel, equipment, unlawful interference and prevention of sabotage.

REQUIREMENTS OF THE CONTRACTOR FOR THE TENDER

1. **EXPERIENCE:** For a contractor to be accepted to participate in the tender process, he/she must provide evidence (satisfactory contract completion certificates) of boreholes drilled in South Sudan with other NGOs or government

2. **EQUIPMENT AND WORKFORCE:** The contractor should present a list of the drilling equipment that is going to execute for the contract, specifying the following: Name; Model; Quantity; Year of manufacturing. All equipment listed should be in perfect operational conditions and if changes are required during the execution of the contract, an equipment of similar characteristics needs to be put in place and UNKEA has to be informed in written. The contractor must provide a list of the workforce that it intends to use for execution of the project, detailing percentage of females and males.
3. **TIME FOR COMPLETION:** The contractor should perform the activity in a maximum period of 2 months after the signature of the contract. For the tender process, the contractor should submit a work schedule aligning activities to match the completion period. Any bid whose schedule goes beyond the project estimated completion period of 1 month will not be accepted in the tender process. In the case of delays in the implementation process of the project, penalties will follow with immediate effect and the penalty criteria will be stipulated on the contract document.
4. **LEGAL DOCUMENTS FROM THE GOVERNMENT OF SOUTH SUDAN:** The contractor must present the below list of legal documents.

Certificate of Incorporation*
VAT Certificate *
Articles of Association*
Tax clearance*
Bank Statement*
Operation license*
Recommendations*
Company Profile*
Drilling License*

5. **BIDDING AMOUNT:** The companies participating in this tender should present the BOQ fully completed with the unit prices for each activity. The full amount quoted should cover all expenses for the completion of the activities under the contract, as well any indirect cost and/or administrative costs that the contractor must incur.

DEFECT LIABILITY PERIOD

The borehole will be guaranteed for a period of 6 months after completion. In an event that there are defects found on the borehole within the 6 months' period, the contractor will be notified and authorized to correct all the said defects before the contractor is paid the retention amount.

APPLICATION:

Interested COMPANIES who meet the conditions specified herein are invited to submit their tender documents including legal documents through the address provided.