

Drawing Number:- ForAfrika/South Sudan/WARP/2026/

Project Title :- Drilling of 1 Solar Powered borehole with Installation 6m height x 5cu.m solar water scheme, Twic and Gogrial West county

Specification:- Drilling 1 borehole to Solar Powered with Installation 6m height x 5cu.m solar water scheme, with 5,000 liters Storage Tank Supplying 5 Tap Heads to Serve 5000 People and School Gardens.

Date
Location
State

Aweil East
NBeG

S/N	DESCRIPTION OF ITEM	UNIT	QTY	RATE	AMOUNT (USD)
1	PRELIMINARIES AND DRILLING				
1.1	Mobilization and demobilization of equipment and personnel to site	Ls	1		
1.2	Conduct geophysical survey (field work, interpretation and report) for the location of borehole at a suitable site use geo-electrical sounding (VES, vertical electrical sounding), profiling (CST, constant separation traversing) are the standard (*), and electrical resistivity tomography (ERT)	Ls	1		
Sub Total 1					
2	BORE HOLE DRILLING WORKS				
2.1	Drilling of borehole				
2.2	Conduct confirmatory geophysical survey (field work, interpretation and report) for the location of borehole at a suitable site use geoelectrical sounding (VES, vertical electrical sounding), profiling (CST, constant separation traversing) are the standard (*), and electrical resistivity tomography (ERT) - at least 4 points	Points	5		
2.3	Drilling of 6.3 inches (160.02 mm) dia open hole through basement / Sedimentary formation, to accommodate 5 inches (127 mm) dia permanent casing, including all drilling fluids and lubricants, disposal of excavated material, taking any remedial measures to overcome caving in or over drilling to accommodate sloughed materials and keeping drilling record as specified between ground level and 30m below ground level.	m	100		
2.4	Allow for taking sample of drill cuttings at two (2m) intervals through out the drilling	m	100		
	Bore Hole installation				
2.5	Supply and install 5" 16bar MUTUNCHI PVC threaded Joint uPVC slotted screen casing 5" in diameter (internal diameter) with minimum thickness of 3mm and 3m length.	m	30		
2.6	Supply and install 5" 16bar PVC threaded Joint uPVC solid plain casing 5" in diameter (internal diameter) with minimum thickness of 3mm	m	70		
2.7	Supply and installation of filter gravel pack. (average dept 140m and standard thickness 50mm). Filter gravel siliceous, rounded with diameter of 2.0 - 4.0 mm depending on screen slot size.	m	25		
2.8	Backfilling wall, annulus and casings, back filling and, sealing abortive borehole if applicable	Ls	1		
	Borehole development				
2.9	Flushing and development of borehole by airlifting, jetting, and pumping to attain optimum yield and clean water for minimum of 8 hours including measurements, records and proper disposal of water and in the presence of ForAfrika Engineer	Ls	1		
2.1	Supply and place cement grout in borehole annulus around the casing and construction of concrete slab around the well cap (minimum of 10m depth required)	m	10		
	Construct well head casing as specified	Ls	1		
	Pumping Tests and Water Quality Analysis				
2.11	Execution of Step Drawdown Test to determine the hydraulic performance of the well (Min 8 hrs) with 4 steps (2hr each) of increasing yields and ending with 8 - 10 cu.m/h followed by a Constant Rate Test (min. 12 hours) and full recovery measured, to determine the long term sustainability yield of the borehole including measurement of GW level and yield, recording of EC, pH and temperature of the groundwater every hour during pumping. A pump with minimum capacity of 2.5 cu.m/h and hydraulic head of 65m must be available with all equipments (generators, cables, discharge hose of 100m to ensure safe disposal of water from borehole and other ancillary materials).	Hours	12		
2.12	Recovery Test (min. 6 hours), including measurement and records of water level, submission of data in digital form and printouts (data sheet and graphs)	hours	12		
2.13	A minimum of 2 litres each for chemical and bacteriological analysis shall be collected by the contractor in the presence of the Engineer or his representative. (3) Water samples should be collected in clean, sterilized properly sealed and protected plastic containers from the borehole for reference to a Water Testing Authority recognized and authorized by MWR&I for laboratory analysis, after completion of test pumping. One sample will be used for each of these tests: physical, chemical and bacteriological analyses. The samples so collected should reach the authorized Water Testing Laboratories (Ministry of Water Resources and Irrigation), within 6 hours from the time of collection from the borehole unless otherwise. Specific parameters to be measured shall include. • Physical Parameters – Colour, Odour, Taste, Turbidity, pH Value, Electrical Conductivity, Temperature	Ls	1		
2.14	Carry out disinfection of well with chlorine solution. Add 10L of 1% chlorine solution per m3 of well water. Leave for atleast 12hr	Ls	1		
2.15	Construct and install tight fitted steel well cover with suitable fittings	No	1		
Borehole drilling works carried to summary					

3	OVERHEAD TANK				
3.1	Supply and install water storage tank of 5m ³ (5000 uPVC tank liters each) capacity including accessories and connection fittings, including washing and disinfection (Item 2.8) of tanks and plumbing fittings and fixtures	No	1		
	Sub Total 3				
4	TOWER				
4.1	Casting of 500mm x 500mm x 1000mm RC plinth using RC (Mix 1:2:4) including reinforcements threaded with nuts and washers to take bolts.	No	4		
4.2	Casting of 300mm x 300mm x 1400mm RC Beam using RC (Mix 1:2:4) including reinforcements and shuttering	No	4		
4.3	Supply and installation of 6" x 3" x 6m High H-beam (vertical column) 12mm thickness mild steel welded to 40cm x 40cm x 20mm base plate with hole to collect bolts.	length	4		
4.4	Supply and installation 6" x 3" x 2.8m high H-beam (Primary beam), mild steel	length	2		
4.5	Supply and installation of 4" x 3" x 2.8m H beam (Secondary Beams), mild steel	length	6		
4.6	Supply and installation of 4" x 2" x 5.8m U-channel (horizontal support), mild steel	length	10		
4.7	Supply and installation of 3" x 3" angle X 5mm thick Iron for Cross internal support to vertical beams with hole to collect bolts.	length	14		
4.8	Supply and installation of 5mm thick plate thick grating sheets (with opening to drain any waste water) (2.8m x 2.8m) cover to catwalk area welded to top rafter to receive overhead tank.	No	1		
4.9	Supply and installation of 5mm thick 2" angle iron Handrail to catwalk area.	length	10		
4.1	Supply and installation of 6 meters ladder 5mm thick 2" angle iron with thread at 600mm intervals covered with circular steel back rest protection	Sum	1		
4.11	Supply and application Anti rust red oxide coating to completed water tower.	Coat	1		
4.12	Supply and application of Oil paint coating to completed water tower.	Coat	1		
	Sub Total 4				
5	PUMP INSTALLATIONS				
5.1	Supply and installation of Grundfos SOFlex pump specifications is to be agreed with SCI Engineer based on pumping test data (2.5-5hp).	No	1		
5.2	Supply and installation of Grundfos CU 200 control box complete including cables, connections and accessories to pump and to float switch. (Converting DC to AC)	No	1		
5.3	Supply and installation of automatic Water level switch to water tank with cables and connections	No	1		
5.4	Supply and Installation 1x1/4" HDPE riser mains from the pump to the well head (HDPE full length 100m)	length	1		
5.5	Construction of 5" flange to well head reduced to take 2" UPVC pipe connection to the Supply Mains including fittings and accessories for connection.	No	1		
5.6	Construction of manhole to wellhead complete with RC slab cover to protect the well head including rendering and finishing.	No	1		
	Sub Total 5				
6	SOLAR POWER				
6.1	Supply and installation of sunshine solar panels watts to be determined by pump rating including connections and cables to control unit (To be determined with SCI Engineer Approx 320watts 1000V each Including a thunder arrestor over the solar installations	Panels	6		
6.2	Supply and installation of Metal frame to hold solar panels above or below that water tanks.	No	1		
	Sub Total 6				
7	PIPE CONNECTIONS AND RETICULATIONS				
7.1	Supply and Installation of 1x1/2" UPVC mains (Full length) from well head flange to Overhead tank including non-return Valve and other accessories	length	10		
7.2	Supply and Installation of 2" UPVC mains from Overhead tank to distribution pipes including non-return Valve and other accessories	length	10		
7.3	Supply and installation of 1" UPVC mains for distribution taps (HDPE Pipes 100m)	length	3		
7.3	Supply and installation of 2" UPVC mains for distribution taps (HDPE Pipes 100m)	length	3		
7.4	Construct a 5mx5mx1m tap stand and install 5 heavy duty pressure release 3/4" taps on concrete platform in a space provided in the community including soak pit; location	No	4		
7.5	Supply and Install high pressure water spray nozzle of minimum 1" diameter for irrigation farming	No	1		
	Report				
7.6	Prepare and Submit all reports duly signed by the Geologist and company seal and signatures, Report format should have: • Full name of and address of the Provider company • Description of the project and location (Village, LGA, State, GPS Coordinates) • Site Access sketch map • Pumping test report with pictures • Pump installation report with pictures • Bacteriological and chemical analyses test Pictures of pumping test and construction stages etc. must be attached	No	1		
	Sub Total 7				

8	FENCING AND VISIBILITY				
8.1	Allow for provision of branding and visibility of the water facility, including preparing surface with 2 coats of paints, engraving of words and logos as shown on the branding template (1 mounted on ground, 4 mounted on the handrail at the four sides)	No	2		
8.2	Procure and Install BRC mesh wire coated fence with gate which is 6x6m perimeter on 3" galvanized steel post silver color painted, using two course 6" block and buried 150mm depth to hold the concrete. Including pedestrian gate (1m wide) around the tower stand the area to be cover with concrete including drainage and razor spiral wire installed at the top. GI pipes will carry two sides welded 2" angle iron to allow fitting of mesh - refer the attached design	Ls	1		
Bill No 8 Carried to Summary					
SUMMARY LIST					
Item No.	Description	Amount (NGN)			
Bill 1.	Preliminaries				
Bill 2.	CONSTRUCTION AND MATERIALS				
Bill 3	OVERHEAD TANK				
Bill 4.	TOWER				
Bill 5	PUMP INSTALLATIONS				
Bill 6.	SOLAR POWER				
Bill 7	PIPE CONNECTIONS AND RETICULATIONS				
Bill 8	FENCING AND VISIBILITY				
TOTAL for 1 Borehole Upgrade					
Cost for 5 Boreholes upgrade		Boreholes	5		
GRAND TOTAL					