

DRILLING OF SOLAR-POWERED BOREHOLE, PROVISION AND INSTALLATION OF SOLAR PUMP AND SIX SOLAR PANELS IN KAILAHUN

BILL OF QUANTITIES

Item No	Description	Unit	Estimated Quantity	Unit Rate (Le)	Amount (Le)
1.0	PRELIMINARIES				
1.01	Mobilization including Transportation and set up at the Borehole site of all equipment and maintain drill rigs for the complete construction of the borehole with all accessories, associated arrangement, and all personnel to site, including office and store accommodation, workshop, ancillary works and services for the drilling, testing and completing of the drilled well and installation of the submersible pump and the solar system	Lump Sum	1		
1.02	Site Preparation of the drill site and clearing of all vegetation, levelling of the ground or any other obstruction in the execution of the works Client	Lump Sum	1		
1.03	Site photograph. Provide site photo in every stage of activity executed like site preparation, drilling works etc	Lump Sum	1		
1.04	Sign Board with UNDP Logo with inscription: "Constructed with Support from UNDP Sierra Leone in collaboration with the Sierra Leone Correctional centre" Note this inscription should be done on a steel plate and fix on the Perimeter Security Fence Wall by the entrance gate	Lump Sum	1		
1.05	Demobilization at the completion of the contract, removal of all equipment, personnel and temporary works from the site. Clear and clean the site for handing over.		1		
	PRELIMINARIES carried to summary				

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Item No	Activity Description	Unit	Estimated Quantity	Unit Rate (Le)	Amount (Le)
2.0	BOREHOLE SITING AND DRILLING WORKS				
2.01	Carry out geophysical survey/sitting of drilling sites to locate borehole using vertical electrical sounding (VES) method or otherwise. The survey should provide information to assess the amount of water present, soil porosity	Lum Sump	1		
2.02	Drilling through overburden, unconsolidated and consolidated formation to a minimum depth of 60m, for installation of 150mm diameter casing and screen taking soil samples and logging the borehole	m	20		
2.03	Supply install and withdraw temporary casing 154mm	Lump Sum	1		
2.04	Drilling borehole of 200 mm nominal diameter in hard formation/basement rock as per drilling methods specified in the technical specification	m	80		
2.05	Sampling and Borehole logging at 2m interval as per the specification provided	Lump Sum	1		
2.06	Supply and install 150 mm nominal diameter and 10 Bar Nominal Pressure UPVC blind Casings: The casing should have a minimal wall thickness ranging from 6 - 10mm as stated in the specifications	m	80		
2.07	Supply and install 150 mm Nominal diameter and 10 Bar nominal pressure UPVC screen=n (Slotted) casing,Slot size 0.5mm : Supply and install of slotted PVC screens of at least 115mm nominal diameter of 10 Bar rating with wall thickness 6-10mm slot with 0.5/1mm as stated in the technical specifications	m	40		
2.08	Supply and install a 150mm nominal diameter PVC sump pipe: Wall thickness ranging from 6 -10 mm with as per technical specification	Pcs	1		
2.09	Gravel pack and Well Grouting: Supply and place filter gravel gravel pack around screen, standard thickness of gravel 50mm	Lump Sum	1		
	BOREHOLE & DRILLING WORKS B/D				

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Item No	Activity Description	Unit	Estimated Quantity	Unit Rate (Le)	Amount (Le)
	BOREHOLE SITING& DRILLING WORKS B/F				
2.10	Provide and Place Cement Grout as specified, grouted with cement slurry of 1.67 - 2.08 Kg cement/liter (24-30 liters of water per 50 Kg bag of cement	m	5		
2.11	Well Development and capping: Develop the drilled well air-lift method until clear water is observed, including measurements, records and disposal of water minimum 3 hours	hour	3		
2.12	Supply and install seal for the top of the borehole to protect it from contamination. The sea should be concrete cover	item	1		
2.13	Water Quality Tests including the hydraulic performance of the well: Qater Quality analysis of major ions and cations. Physical Parameters, trace elements and Bacteriological: Bacteriological and physio-chemical samples analysis , reporting and borehole disinfection	item	1		
2.14	Completion Reports: Submit both hard and electronic copies of drilled well log and pumping and recovery test results	copies	2		
	BOREHOLE SITING AND BOREHOLE WORKS Carried to Summary				
	SUMMARY				
	Preliminaries				
	Borehole Siting and Borehole Works				
	TOTAL PRELIMINARIES.] BOREHOLE SITTING AND BOREHOLE WORKS				
	Contegency 10%				
	GRAND TOTAL FOR BOREHOLE DRILLING				

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Item No	Activity Description	Unit	Estimated Quantity	Unit Rate (Le)	Amount (Le)
3.00	SUPPLY AND INSTALLATION OF SOLAR PUMP AND SOLAR PANELS AND ASSESSORIES				
3.01	Supply and instal Solar Submersible pump GRUNDFOS- AQF 2.0 - 2.5 including CU- control, Apron and runway construction. The Submersible must be powered by solar energy with a 2.5 to 3.5 HP output that should be fitted with an automatic relay that switch on and off when the water goes down and /or full. The cost include all accessories including cables wiring and installation	Item	1		
3.02	Supply and install pipe fittings(nipples, Adaptors) required to connect PE riser pipes to the submersible solar pump	Lump Sum	1		
3.03	Supply and install PE riser pipes PN 10 bars to the submersible pump and overhead storage tanks	m	120		
3.04	Supply and install six (6) Solar panels of Polycrystalline OSDA 250-275 Watt Solar module	No	6		
3.05	Supply and instal fully configured solar INVERTER with maximum current output that should have provision for A.C input and output and D.C input The inverter shall give adequate power with an inrush current and should be designed to run the solar pump	No	1		
3.06	Supply and install solar batteries 12V-200 Amps capable to run dual power source	No	6		
3.07	Supply and install control Panel (48 volts) for the inverter, solar batteries and pump	NO	1		
3.08	Supply and install Floater switch	item	1		
3.09	Metallic support structure: Supply, fabricate and install the prefabricated steel structure on the finished reinforced concrete columns and beams to support racks and solar panels above the reinforced concrete tower	Lump Sum	1		
COST OF SUPPLY AND INSTALLATION AND SOLAR PUMP AND PANNELS					

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Item No	Activity Description	Unit	Estimated Quantity	Unit Rate (Le)	Amount (Le)
	COST OF SUPPLY AND INSTALLATION OF SOLAR PUMP AND SOLAR PANNEL				
	Contingency 5%				
	TOTAL COST SUPPLY AND INSTALLATION BOF SOLAR PUMP AND SOLAR PANELS				
	SUMMARY				
	GRAND TOTAL FOR BOREHOLE DRILLING				
	GRAND COST SUPPLY AND INSTALLATION OF SOLAR PUMP AND SOLAR PANELS				
	GRAND TOTAL COST :BOREHOLE DRILLING , SOLAR PUMP AND PANELS				