BILL OF QUANTITIES FOR WATER TREATMENT AND DISTRIBUTION OF KATILINI EARTH DAM WATER PROJECT WARD BUDGET					
Preamble: The rates entered shall include, third party fees, levies, input costs, labour and contractor's overheads and profits.					
Item	**Item Description**	**Unit**	**Quantity**	**Unit Rate**	**Amount**
BILL 1:	**PRELIMINARY & GENERAL ITEMS**				
1.1	**Publicity Sign Board**				
1.1	Fabricate erect and maintain a public sign post, well supported to detail as provided in the drawing and as instructed by the project manager.	No	1		
1.2	Allow for mobilization and demobilization of plant equipment and staff to site	Item	1		
1.3	Allow a sum of KShs. 180,000.00 for client's technical supervision	Item	1	180,000.00	180,000.00
	Total carried from Bill 1 to Main summary page				
BILL 2	**PUMPING SYSTEM**				
2.1	**Item Description**	**Unit**	**Quantity**	**Unit Rate**	**Amount**
Non Vatable					
A	Supply, Deliver and Install on the steel tower, Solar Array System of total output 8800 Watts, including high-efficiency tier 1 monocrystalline modules As JA Solar 555W panels in 1 string of 16 panels with maximum string voltage VOC ≤850 VDC as approved using 6 mm sq dc cable and MC4 terminated on both sides to be mounted on the structure	W	8880		
Vatable					
B	Supply and install DC enclosure complete with inline 1100VDC fused isolator	NO	1		
C	Supply install, test and commission 6mm PV Cable Single Core1000VDC Tinnd Copper ; Insulation: XLPO ; Insulation Color: Red and black in a 25mm HG PVC conduit	M	60		
D	Supply and lay Armored Cable, 4 mm^2 X 4 core copper cable in a 25mm HG PVC Conduit	M	30		
E	Allow for system earthing, lightening arrestor and balance of system installation and equipotential bonding.	Lot	1		
F	Allow for installation sundries as Hg flex conduit, cable ties, MC4 Connectors, cable lugs cable clips and all necessary assortment	Lot	1		
2.2	**High Lift Pumping System**				
2.201	Fabricate a firm rust-free steel stand 300 mm height to hold pump and motor inside the tank	No	1		
2.202	Supply, Deliver and Install a Solar Submersible Multistage Centrifugal Pump of Duty Point: - 12 m^3/hr at a Total Head of 100 meters. The pump efficiency at duty point should not be less than 65%. The pump Impellers should be of Stainless Steel. Provide Copies of Pump Characteristic /Performance Curves (Brochures). Consider DS 17/10, 6SR12/11 or similar as approved by client's technical representative.	Set	1		
2.203	Supply, Deliver and Install submersible motor (5.5kW) compatible with pump described in item 2.2 above	Item	1		
2.204	Supply, Deliver & Install a AC solar pump controller for a motor rated power 7.5 KW incorporating: - Settable Min/Max Frequency & open Circuit Voltage, Display of operating Parameters, including frequency, voltage, amperage, input power & pump speed; Display of Historical Data, including Energy generation, maximum power & operating times; Protection against over/under voltage, over current, system overload and module over temperature; Fault detection with error code display; selectable hybrid modes that prioritise solar supply as well as maximise output through optimal blending of both power supplies; Display of dry run sensors and automatic controls. c/w 4mm2 earthing. Install a sunverter SV3/7.5T or equivalent as approved by supervising engineer	No	1		
2.205	Allow for refabrication of existing solar tower to accommodate new solar array. Item to include decommisioning of existing array together with pump and transportation to government offices.	Lot	1		

2.206	Supply install and test 6 mm sq PV Cable Single Core1000VDC Tinnd Copper ; Insulation: XLPO ; Insulation Color: Red and black to string solar panels as directed by supervising engineer	M	30		
2.207	Allow for armoured and submersible AC cable 4mm sq 4 core of assorted lengths as shall be instructed	M	30		
2.208	Allow for installation sundries, Insulating Tapes pvc conduit	L/ Sum	1		
2.209	Allow for DC combiner box and PV 1000VDC fuced disconnect with enclosure	No.	2		
2.21	Installation sundries	L/ Sum	1		
2.211	Splicing Kit as shall be instructed	No.	2		
2.212	Supply, joint and install 2.5" dia. GI pipe lengths 6 m inclusive of cutting, threading and joining fittings	LM	12		
2.213	Supply and install DN90 PN16 flanged Sluice valves for intake and Y-Tee	No	1		
2.214	Supply and install resilient seated 80 mm non return valve flanged type min 25bar	No	2		
2.215	Install a online chlorinator capable of dozing a flow rate of 12m³/hr complete with consumables for testing period	Item	1		
2.216	Supply and fix a wooden panel board for fixing the electrical installations	No	1		
2.217	Supply, joint and install 2.5" dia. GI pipe lengths 6 m inclusive of cutting, threading and joining fittings	LM	12		
	Sub Total Carried from Bill 2 to Main summary page				
BILL 3	**PIPELINE**				
	Site clear and excavate to pipe invert level 600 mm n.e 1m below existing ground level and backfill/ reinstate to original ground level after testing pipeline, all to the approval of the engineer	LM	4,200		
3.1	***New Rising Main to Kathungu***				
3.11	PN16 DN63mm HDPE PE100 ISO4427	LM	400		
3.11	PN12.5 DN63mm HDPE PE100 ISO4427	LM	600		
	New Line to Mwanyani Market				
	PN16 DN63mm HDPE PE100 ISO4427	LM	1,000		
	PN12.5 DN63mm HDPE PE100 ISO4427	LM	2,200		
3.7	Allow for electrofusion/ buttfusion of the pipes and fittings. Connectors and adaptors NOT PERMITTED in the rising main pipelines	Joints	44		
	Gate/ Sluice Valves				
3.72	Supply and install DN63 gate valves for Line Valves	No	13		
3.72	DN80 mm flanged bulk water master meter wesan or equivalent approved	No	1		
	Junctions and branches				
3.73	OD 63x50mm plain ended tee to be fused, with flanged branch and valves and all the necessary accessories for airvalves and washouts	No	11		
	Airvalves				
3.74	Supply and install DN50mm anti-shock/ anti-surge double- orifice Air Valves as per the attached technical specifications with flanged base	No	3		
	Marker Posts				
	Construct concrete marker posts and install along the water supply pipeline, all in accordance with details shown on drawings. (Reinforced concrete 1:2:4(class 20/20, bars D12), as per details on drawing				
3.75	Pipeline marker post inscribed WL	No	20		
3.75	Air valve marker post Inscribed AV	No	3		
3.75	Sluice Valve marker post inscribed SV	No	10		
3.8	Valve Chambers				

	Supply materials and provide personnel to construct Air Valve/ Washout/ Sluice Valve Chambers (as in the attached drawing)				
3.81	Cut the spoil upto 300mm below g.l. over the borehole chamber area and remove all vegetable soil to temporary spoil heap.	M3	1		
3.82	Excavate foundation from stripped level over the borehole chamber site to depth n.e. 0.6m deep 300 mm wide and dispose soil as directed	M3	1		
3.83	Mass concrete mix 1:4:8: in 50mm concrete slab	M3	1		
3.84	225mm thick dressed quarry stone walling	M²	5		
3.85	Provide and instal a lockable double steel Cover c/w padlock or a reinforced concrete cover as instructed	No.	1		
3.86	EXTERNAL PLASTER - 20mm thick 1:2 cement sand to exterior face of the valve chamber wall	M²	4		
	Sub Total for 1 No valve chamber				
		No.	9		
	Sub Total Carried from Bill 3 to Main summary page				
BILL 4	**REHABILITATION WORKS**				
4.1	Cut the embankment by 1.5 m depth, for a distance of 100m as directed by the supervising engineer	M3	600		
4.2	Place marram in the cut area, and compact in layers not exceeding 300 mm thick, watered and compacted to achieve a minimum of 95% Maximum Dry Density (MDD) to fill as directed.	M3	750		
4.3	Allow for rehabilitation of existing cattle trough near the road. Item to include the removal and replacement of internal plaster to stop leakage, and the installation of a float-operated ball valve assembly for automatic inflow regulation to the cattle trough, complete with plastic float ball and fittings.	Item	1		
4.4	Allow for rehabilitation of water point at source. Item to include the rehabilitation of existing rising main to Kathungu to serve as return line, Connection of tank at source to this line, rehabilitation of tank and pipe stand at source with replacement of 2 No. lockable manhole covers(600mm*800m), painting and branding of tank and connection of cattle trough to this tank.	Item	1		

SUMMARY

BILL	BILL DESCRIPTION	AMOUNT
BILL 1	PRELIMINARIES AND GENERAL ITEMS	
BILL 2	PUMPING SYSTEM	
BILL 3	PIPELINE	
BILL 4	REHABILITATION WORKS	
	SUB TOTAL	
	CONTIGENCIES	
	ADD KSHS 30,000 FOR CONTIGENCIES TO BE EXPENDED BY PROJECT MA	30,000.00
	TOTAL	
	ADD 0.03% PPRA LEVY BEFORE TAX	
	ADD VAT (16%)	
	TOTAL TAKEN TO FORM OF TENDER	