

**BILL OF QUANTITIES FOR THWAKE WATER DISTRIBUTION AND LIVELIHOOD
RESTORATION PROJECT IN MUVAU /KIKUMINI WARD**

Preamble

The rates entered shall include VAT, third party fees, levies, input costs, labour and contractor's overheads and profits.

Bill 1: Preliminary & General Items

Item	Item Description	Unit	Quantity	Unit Rate	Amount
	Publicity Sign Board				
1.1	Fabricate erect and maintain public sign post 1200x1200x1.5mm metal sheet, 1500mm above ground level. It should be anchored 600mm deep motorised in mass concrete and well supported with 50x25mm RHS frame to detail as provided in the drawing and as instructed by the project manager.	No	1		
	<i>Sub Total carried from Bill 1 to Main summary</i>				

BILL 2 PIPELINE

NO	Item Description	Unit	Quantity	Unit Rate	Amount
	<u>DEMOLITION AND SITE CLEARANCE AND PIPELINE</u>				
	<p><i>The rate quoted is for site clearance and de molition along construction wayleave. Rate shall be deemed to include removal of the material, natural and artificial articles, objects and obstructions which are above the original surface and carting away to tips, identified by the contractor in liaison with the Local Authority</i></p> <p><i>The rate quoted will also include supply and transport to site storage, transport from site storage, excavate, lay and joint pipes complete with all jointing materials and but fusing.</i></p> <p><i>The rate is deemed to include excavation, bed lining, installation , backfilling of the pipe trenches and pipe pressure testing. keep trenches and ther excavations free of water.</i></p>				

	<i>BOSTER -KWAKATHOKA RAISING MAIN</i>				
2.1	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	5000		
2.2	PN16 DN63mm HDPE PE100 ISO4428	LM	3000		
2.3	PN12.5 DN63mm HDPE PE100 ISO4428	LM	2000		
2.4	Supply and install DN63 non return valve	No	2		
	<i>KWAKATHOKA -BOOSTER GRAVITY MAIN</i>				
2.5	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	3600		
2.6	PN10 DN63mm HDPE PE100 ISO4428	LM	3600		
	<i>BOOSTER-KIUNDWANI GRAVITY MAIN</i>				
2.7	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	4000		
2.8	PN10 DN63mm HDPE PE100 ISO4428	LM	2000		
2.9	PN12.5 DN63mm HDPE PE100 ISO4428	LM	2000		
	<i>ST MARK GRAVITY LINE-KWA LEMBA AND BOOSTER-KWA MAITHYA AND CONNECTION TO ATC</i>				
2.11	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	4000		
2.12	PN10 DN50mm HDPE PE100 ISO4428	LM	4000		

2.13	Supply and install standard pre-cast reinforced concrete pipeline mark posts of 750mm height along the pipeline	No.	8		
2.14	Provide sixtythousand shillings for materials and on-site geometric positioning of all pipelines and fittings by the client's representative	Is	1		
	<i>KYEMOLE PRIMARY LINE</i>				
2.15	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	50		
2.16	PN12.5 DN 3/4" HDPE PE100 ISO4428	LM	50		
	<i>KING'UTHENI PRIMARY LINE</i>				
2.17	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	50		
2.18	PN10 DN 3/4" HDPE PE100 ISO4428	LM	50		
2.2	<u>PIPEWORK - FITTINGS AND VALVES</u>				
	<u>The rate quoted is for provision , fixing at booster -kwa kathoka ,booster - Kwakathoka raising mains ,st marks and booster -kwa maithya gravity lines and kyemole gravity line</u>				
2.21	Gate/ Sluice Valves				
2.211	Supply and install DN50 pn 16 ball valves for Line Valves	No	5		
2.212	Supply and install DN90 pn 16 ball valves for Line Valves	NO	2		
	Supply and install DN63 pn 16 ball valves for Line Valves	NO	5		
2.213	Supply and install DN3/4" pn16 ballvalves for Line Valves	No	2		
2.214	Supply and install DN0.5" gate valves for Line Valves	No	4		

2.215	Supply and install DN3/4" water meter class C	No	3		
	Junctions and branches				
2.216	OD 63x50x63mm plain ended tee to be fused, with flanged branch and valves and all the necessary accessories for airvalves and washouts	No	20		
2.218	OD 50x50x50mm plain ended tee to be fused, with flanged branch and valves and all the necessary accessories for airvalves and washouts	No	4		
2.219	OD 110x50x110mm plain ended tee to be fused, with flanged branch and valves and all the necessary accessories for airvalves and washouts	No	4		
2.22	OD 90x90x90mm plain ended tee to be fused, with flanged branch and valves and all the necessary accessories for airvalves and washouts	No	2		
	Airvalves/				
2.219	Supply and install DN50mm anti-shock/ anti-surge single- orifice Air Valves as per the attached technical specifications with flanged base	No	23		
2.22	Supply and install DN50mmx25x25mm reducing tee	No	3		
2.221	Construct 600mm by 600mm masonry valve chamber. Depth not exceeding 1m, Include for provision and fixing of reinforced concrete slab Cover and a padlock to house all appliances with locking devices	No	25		
	<i>Sub Total carried from Bill 2 to Main summary</i>				
BILL	3) VALVE CHAMBER				
No.	ITEM DESCRIPTION	UNIT	QTY	RATE	AMOUNT

	Supply materials and provide personnel to construct 1M*1M a gate valve chamber (as in the attached drawing) to be installed at Kyemole line and to house gate valves of DN 900mm and all main tees				
3.1	Cut the spoil upto 300mm below g.l. over the borehole chamber area and remove all vegetable soil to temporary spoil heap.	M ³	0.5		
3.2	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	M ³	1		
3.3	Mass concrete mix 1:4:8: in 50mm concrete slab	M ³	0.5		
3.4	225mm thick dressed quarry stone walling	M ²	5		
3.5	Provide and instal a lockable reinforced concrete class 20/20 Cover c/w padlock	No.	1		
3.6	EXTERNAL PLASTER - 20mm thick 1:2 cement sand to exterior face of the valve chamber wall	M ²	4		
	Sub Total				
	Sub total carried for collection in the summary page for 9 no	No	9		
3.5	Provide and instal a lockable reinforced concrete class 20/20 Cover c/w padlock	No.	5		
	Sub Total carried from Bill 3 to Main summary				
BILL 4	10M3 PLASTIC TANK AND STEEL TOWER.				
		UNIT	QTY	RATE	AMOUNT
4.1	transport, Deliver & Install a 2no10 m ³ Double Laminated Plastic Water Tank, c/w G.I3" dia. Inlet, Outlet & Overflow and interconections and accesories, GI Pipes with threading ,welding , joining and branding .	No	2		
4.2	Supply, deliver and erect firmly on Concrete Anchors, Fabricated 5M Steel Tower, use square tubes, 4" x 4" x 4mm, to hoist 3 no 10 cubic meter tanks c/w bracings, ladder and tank shade. To be installed as directed by the supervising Engineer	No	1		

	<i>Sub Total carried from Bill 4 to Main summary</i>				
BILL 5	CHLORINE DOSING SYSTEM				
		UNIT	QTY	RATE	AMOUNT
5.1	Supply and install KLORMAN INLINE chlorinator or equivalent aproved with by-pass and 8N0 catridges	ls	1		
	<i>Sub Total carried from Bill 5 to Main summary</i>				
Bill 6: Raising of sand dam wall					
Item	Item Description	Unit	Quantity	Unit Rate	Amount
6.1	Allow for keeping all ecavations free of water by either bailing, pumping, diverting river flow or other means including during excavation and construction	Item	1.0		
6.2	Site clearance	SM	20		
6.3	<u>Provision and placing of vibrated reinforced boulder cyclopean concrete. Place boulders on top of concrete, place concrete and vibrate each layer ensuring 40% concrete class 25 (1:2:4) with additives and 20mm thick maximum aggregate sizeclass 25 (1:2:4) with additives and 20mm thick maximum aggregate size and 60% approved boulders. Use water proof cement for every bag of cement used in the construction of super structure</u>				-
6.3.1	Use properly vibrated reinforced boulder cyclopean concrete for raising the sand dam wall 0.5 m height and stepped wing walls max height 1.5m as instructed by the supervising engineer	CM	85		
	carry out different laboratory tests of construction material (cement, concrete cubes) as per supervising engineers instruction	No	12		

6.3.2	Reinforcement. Include for cutting, bending, hacking of concrete to expose steel, welding to join with existing rebars, and fixing all steel works with required binding wire				
6.3.3	Nominal diameter T 16mm @ 400 mm drilled in rock	Kgs.	1,100		
6.3.4	Ditto but nominal diameter T 10mm @ 500 mm	Kgs.	400		
6.3.5	Form Work				
6.3.6	Using marine board or other similar quality material approved by the project manager provide formwork for the works	SM	70		
	<i>Sub Total carried from Bill 6 to Main summary</i>				
BILL	7) SOLAR SYSTEM				
NO	Item Description	Unit	Quantity	Unit Rate	Amount
BILL7.1 :Non Vatable Items					
7.1.1	Supply, Deliver and Install on the steel tower, Solar Array System of total output 9375Watts, including high-efficiency tier 1 monocrystalline modules As Jinko Solar 625W monofacial panels in 1 string of 15 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	9375		

	Supply, Deliver & Install a AC/DC inverter for solar powering AC motor rated power 5.5 KW Incorporating: - Hybrid capability with the option of DC solar power, generator or mains grid power inputs with the following functions Settable minimum and maximum frequency and open circuit voltage, Display of operating parameters including frequency, voltage, amperage, input power and pump speed, Protection against over and under voltage, over current, system overload and module over temperature, Fault detection with error code display and Selectable hybrid modes that prioritise solar supply as well as maximise output through optimal blending of both power supplies . Install SV3/5.5T or equivalent as approved	NO	1		
				Subtotal 1	
BILL 7.2 :Vatable Items					
7.2.1	Refabricated the existing Steel Tower for solar Array System, minimum height 5 meters,well oriented towards north-south direction, tower inclination angle 10-15 degrees, tower painting and a solar controller box 1000mm by 500mm by 300mm well ventilated to be included. To be installed as directed by the supervising Engineer	KSH/ WAT T	9375		
7.2.2	Supply and install DC enclosure complete	NO	1		
7.2.3	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		
7.2.4	Supply and lay Armored Cable, 7.0mm2 X 4 core	M	50		

7.2.5	Allow for system earthing, lightening arrestor and balance of system installation and equipotential bonding.	Lot	1		
7.2.2	Allow for installation sundries as Hg flex conduit, cable ties, MC4 Connectors, cable lugs cable clips and all necessary assortment	Lot	1		
7.2.3	carefully remove the existing panels on site and transport to the office. To be received by the supervising engineer.	Item	1		
				Subtotal 2	
SECURITY IMPROVEMENT ON SOLAR SYSTEM AT THWAKE INTAKE AND BOOSTER STATION					
7.3	ITEM DESCRIPTION	Unit	Quantity	Unit Rate	Amount
7.31	Supply,deliver,install and test a 4k high defination solar powered CCTV camera with colour night-vision 4G sim card for remote access,2 way audio and 360 degree horizontal and 90 degree vertical r0tation 10000 mah internal battery complete with its solar pannel to be installed in exsting solar structure as approved by supervising solar engineer	no	1		
7.32	Supply,deliver,install and test a water proof450W 4G solar flood light with CCTV camera with minimum350 degrees night-vision full colour recording,motion sensor and sim card accesable remotely installed on aminimum 5Mhighx3" diameterpainted pole firmly erected with wall passes in 1mx1.5m concrete surround foundation .	no	1		
	Subtotal for 1no			Subtotal 3	
	Subtotal for 2no		2		
	<i>Sub Total carried from Bill 7 to Main summary</i>				
BILL(8	AGRICULTURE				
Item	Description	Unit	Qty	Rate (Ksh)	Amount (Kshs)

8.11	i) Supply and Deliver Large Conical bags (120 seedlings capacity) of 6 polythene layers sheets of gauge 1mm, Bottom one with 5.71M diameter and the last apex layer/sheet of 30cm, All Sheets of 20cm Width/height pinned and screwed with 2inch long screws as shall be instructed by the agriculture	No.	98		
8.12	ii).Supply, deliver and install 5 fully planted assorted vegetables conical gardens (as specified in i above) to Muvau Kikumini PWD CSA youth demo site	No.	5		
8.13	iii) Supply and deliver a 10,000 Litres plastic tank connected with a tap to the Muvau Kikumini PWD CSA youth demo site for water harvesting	No.	1		
8.14	iv) Supply and deliver hybrid seeds of spinach and kales 25gram each	No.	2		
8.14	Pasture seeds Eragrostis superba and Cenhrus Ciliaris and (half of the	Kgs	322		
Sub total					
8.3	FISHERIES HATCHERY UNIT MATC				
	DESCRIPTION	units	Qty	Rate (Ksh)	TOTAL COST
	Repair of Existing Brood stock				
8.31	4fish ponds of 8M by 6M line pond	SQM	4		
8.32					
8.33	4 Pond liner 8m by 10m of 0.5mm gauge		320		
8.34	Pond drainage with 4inch waste pipe,4inch el	pcs	10		
8.35	Tilapia technology				
8.36	stocking of brood stock fish ponds 4 ponds of each 120 fish (males 30 female 90) in a ratio of 1:3 , from KMFRI F7 >200g	pcs	480		
8.37	Hatchery PPEs				
8.38	Dust coat (blue/white)	pcs	2		
8.39	Aqua waders	pcs	2		
8.311	Gumboots (WHITE)	pcs	2		

8.312	Seine net 36plydouble knot black 2m width by 12m length		1		
8.313	Kitchen weighing scales		1		
8.314	Meshed mounted hapa net	Rolls	2		
8.315	Hatching Bays (Trough)	Litre	5		
	Feeds				
8.316	Feeds for fingerlings and brood stock 25 kg bags	Bag	12		
	Short course training for farmers				
8.317					
	Hatchery repair				
8.318	Hatching jars, Silicon Material, Anti-escape screen with centre inlet pipe		2		
8.319	Green House sides cover polythene paper 30m by 5m by 2 total 300 SQM		1		
8.321	Plumping Piping system		1		
	sub total 2				
	<i>Sub Total Carried from Bill 8to Main summary page</i>				-
BILL	DESCTRIPTION				AMOUNT
Bill 1	Preliminaries and General Items				
Bill 2	Pipeline Connection				
Bill 3	Valve chambers				
Bill 4	10M3 plastic tank and steel tower				
Bill 5	chlorine dosing system				
Bill 6	Raising of sand dam wall				
Bill 7	Solar system				
Bill 8	Agriculture and livestock				
	Sub Total				

	Allow a provisional sum of Ksh 200,000.00 for Contigencies to be expended by the project manager				
	SUB TOTAL				
	Public Procurement Capacity Building Levy order 2023 which is 0.03% of the total cost before tax (Pursuant to PPRA Circular No. 1 of 2024)				
	TOTAL TAKEN TO TENDER FORM				

