## ATHI MAVINDINI WATER PROJECT ENHANCEMENT - MAVINDINI WARD BoQ ALL PRICES ARE INCLUSIVE OF TRANSPORT, LABOUR COSTS, PROFITS, OVERHEADS & 16% VAT **BILL OF QUANTITIES** Amount (Kshs) Rate (Ksh) Qty Unit Description Item General Items/ Preliminaries Bill 1 Allow for mobilization of machinery, equipment and personel for due satisfactory implementation of the works and demobilization from site after 1 Item 1.1 completion, provision of security, personal protective equipments and insurance of works Supply and erect publicity sign board on 1.5m x 1.2m metal sheet approximately secured on a 40 mm No 1 x 3mm thick steel frame at least 2m above the 1.2 ground level and leveled as directed Testing 1.3 Allow for concrete strength test by approved government facility to the satisfaction of the project 1 No 1.4 manager. Submit report Allow for a provisional sum of Kes 50,000.00 for 50,000.00 50,000.00 L/sum Item setting out by the client's representative 1.5 Allow for contractor's attendance for VAT and profit % % 1.6 for item 1.5 above Sub total carried for collection in the summary page Bill 2 100 CUBIC METER RC SUMP

Item Description

Item

2.1

Earth works

Unit

Qty

GOVERNMENT OF MAKUENI COUNTY 2 1 AUG 2024 Chief officer:

Amount

Rate

2.12	Allow for probing for water sump in the presence of supervising engineer	Item	1		
2.13	Excavate wet sand and soil to reduce levels to create adequate working area	СМ	250		
2.14	Ditto e.o excavations in hard rock including making good	СМ	5		
2.15	Keep all ecavations free of water by either bailing, pumping, diverting river flow or other means including during excavation and construction	Item	1		
2.16	Allow for planking and strutting	SM	96		
2.17	Backfill and ram as directed externall sides of wall	СМ	150		
2.18	Spread/ load and cart away surplus excavated materials from site as directed	СМ	100		
2.2	Reinforcement bars (rate to include binding wires)				
	Provided handle, cut, bend and fix the following reinforcement bars as stated in the bending schedule or as directed by the Engineer (rate to include binding wires and drilling in rock)				
2.21	16mm diameter bars in beams and column	Kgs	860		
2.22	12 mm diameter for slabs (top and bottom mesh both ways for floor and bottom bars for top slab) and walling	Kgs	1600		
2.23	10mm diameter bars as stir ups, walling and top bar for top slab	Kgs	1399	97423	



2.3	Concrete work: Use rapid hardening cement				
2.31	Construct rectangular, vibrated concrete class 25 ring beam and cross beams as footing as per the provided drawing	СМ	4		
2.32	Pack 250-300mm approved hardcore to make up levels	SM	50		
2.33	Construct reinforced concrete column (pillar) 450x450mm with 8 No D16 rebars at the centre of the sump floor as per the provided drawing	СМ	1		
2.34	Reinforced concrete Class 20 mix 1:2:4 for tank 200 mm floor and top slab, 200 mm walling, 8 No 200 x 200 mm columns and beams with provisions for water seepage/penetration on walls as directed	СМ	34		
2.4	Formwork	SM	112		
2.41	Sawn timber formwork for rc walling	SM	52		1
2.42	Allow for cost of formwork for roof slab	SIVI	32		-
2.43	Extra over ditto for manhole size 600 x 600mm in roof slab	No.	2		
2.44	Formwork for columns and beams	SM	12		
2.5	Miscellaneous works	100		C 2000	-
2.51	Construct and install reinforced concrete manhole cover 600mm x 600 mm of the roof slab reinforced concrete class 25 as directed. Use D10mm c/c 150mm for main both main and distribution bars as directed	No.	2		

GOVERNMENT LA MAKUENI COUNTY

2 1 AUG 2024

Chief officer:

2.52	1500mm x 300mm internal stainless steel ladder anchored in wall or as shall be directed	No.	1		
2.53	Supply, deliver, install and test O/D 110 mm (4") G.I pipes class B 6 M Lengths. Rate to include welding, cutting, threading and joining as directed	No.	2		
2.6	Infiltration gallaries				
2.61	Excavation/Backfilling				
2.62	Excavation in wet sand n.e 4m, keeping excavation free from general waters. Return fill material and spread surplus as shall be directed	cm	48		
2.63	Using perforated fused UPVC pipe and fittings 200mm diameter PN10 allow for installation of infiltration gallery including end caps, geotextile cloth wrapping 2 rouds graded gravel packing and anchorage as per the drawings provided and as instructed by the project engineer	m	24		
	Sub Total carried for collection in the summary page				22807
Bl	ILL C) SOLAR POWER AND ACCESSORIES		<b>.</b>		
S	ITEM DESCRIPTION	UNIT	QTY	RATE	AMOUNT
NO.	The state of the s	J.,	~	MIL	KSHS.



3.1	Supply, Deliver & Install a AC/DC inverter for solar powering AC motor 13 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 SV3/15T or equivalent as approved by supervising engineer	No.	1	
3.2	Circuit Disconnect Switch, 63Amps	No.	1	4.,
3.3	Three phase 6 mm <sup>2</sup> X 4 core submersible Cable housed in upvc pipes or armoured cable 6 mm <sup>2</sup> X 4 core	LM	140	
3.4	Sensor Cable, Twin, Double Insulated, 0.75mm <sup>2</sup>	LM	150	



3.5	Supply, deliver and install on the steel tower, solar array system of total output 22500 watts including high efficiency mono crystalline tier 1 modules such as Jinko or approved equivalent string using 6 mm sq DC cable and MC4 terminated on both sides to be properly mounted on the structure in item 3.8 as directed by the supervising engineer	Watts	22500		
2.6	Change over switch	No.	1		
3.6	Adaptor Set, 1.25"Ø	Set	1		
3.7	Supply and instal on firm reinforced concrete class 20 1:2:4 ratio foundation 2000 X 600 mm holes, use concrete poles minimum 10 m pole length 190 mm top diameter clamping length 1.6 m, use 8 No. 100 x 100 x 3 mm SHS with the solar panels (as in the drawing)	Item	1		
		No.	4		
3.9	Cable Glands, 25mmL	No.	2		-
3.1	Cable Glands, 20mmL	No.	1		
3.11	Splicing Kit, Medium Packet	No.	2	28.5	
3.12	Cable Ties, Large Packet, Manila	No.	20		
3.13	Insulating Tapes, Large  Copper Earth Rod, 5ft c/w Clamp	No.	1		
3.14	Copper Earth Rou, Sit Cy w Chary	M	15		
3.15	Earth Lead Cable, 6mm <sup>2</sup> , single	No.	1		
3.16	lightning arrestor  Supply, deliver, install and test O/D 110 mm (4")  HDPE pipes PN16 as per KS ISO 4427:2007. To be laid in a trench and anchored using 1 m x 1m x 1 m RC blocks every 30 m not less than 2 m deep	LM	150		



3.18	Butt fusion for item 3.17 above	N	2 1		
3.19	Non return valve 4" metallic only	No.	3	190	Karaman a
3.2	Carefully moving and installing existing pump	No.	1		
3.21	Dry cell battery 12 v 100 AH capacity or equivalent as approved by supervising Engineer	No	1		
	Sub Total Carried for collection in summary page				
BILL	D) PIPELINES AND WATER CONNECTION				
S	ITEM DESCRIPTION				AMOUNT
NO.		UNIT	QTY	RATE	KSHS.
4.1	Bush clearing and excavation to pipe invert level as per engineer's specifications (trench minimum depth 600 mm), lay, test pipeline and backfill to ground level for item below	LM	550		NOTIO.
4.2	Supply, deliver, install and test O/D 110 mm (4") HDPE pipes PN16 as per KS ISO 4427:2007. To be laid in the same trench as item 4.1 above	LM	550		
4.3	Butt fusion for item 4.2 above	No	11	Marine Committee	
4.4	Supply and install 1" tees along the 4" pipeline to intall air valve along the existing pipeline (not clamp)	No	4		
4.5	Supply and install fabricated 200 ltrs tanks with tap made from non corroding material with an inspection/filling cover	No	2		and the same
4.6	Use stainless steel SHS to secure the tanks c/w locking devices	Item	1		



4.7	Sodium Hypochlorite (NaCIO) or Liquid Chlorine or Chlorine 90	Kgs	300	
4.8	Hydrated Aluminium Sulfate (AL2(SO <sub>4</sub> ) <sub>3</sub> - Alum) as a flocculant	Kgs	300	
4.9	Distribution Pipeline			
4.1	Bush clearing and excavation to pipe invert level as per engineer's specifications (trench minimum depth 600 mm), lay, test pipeline and backfill to ground level for item below	LM	3000	
4.11	Supply, deliver, install and test O/D 63 mm (2") HDPE pipes PN12.5 in 100 m rolls as per KS ISO 4427:2007. To be laid in the same trench as item above from Ilumani to Kwa Nthokoi	LM	1500	
4.12	Supply, deliver, install and test O/D 50 mm (1.5") HDPE pipes PN12.5 in 100 m rolls as per KS ISO 4427:2007. To be laid in the same trench as item above from Ilumani to Kwa Nthokoi	LM	1500	
4.13	Provision of tee at Ilumani distribution tank	Unit	1	
4.14	Butt fusion for item 4.11 and 4.12 above	No	30	
4.15	Supply and install 63mm (2") Gate valves (Pegler PN 16 or equivalent as approved by supervising engineer) c/w fittings	No	2	
4.16	Supply, deliver, install and test O/D 63 mm (2") air valves fitted with necessary fittings	No	3	
4.17	Construction of a 3 m * 3 m internal masonry wall security guard room with steel door and steel window, roofed with corrugated iron sheets and installed with lighting and sockets and required wiring	No.	1	



1.18	Supply, erect and test an all in one solar street light mounted on the solar concrete poles; LED lamp power 60 w battery 60 AH, PV Model 90 W Controller 10 A. Provide bronchure of light characteristic	No.	2	
4.19	Supply, Deliver & Install a 10 m³ Double Laminated Plastic Water Tank, c/w G.I 1.5" dia. Inlet, Outlet & Overflow Pipes. To be mounted on 1.5 m high masonry tank platform at Kwa Nthokoi	No.	1	
4.2	Irrigation pipeline			
4.21	Supply, install and test DN 100 (4") PN16 flanged metallic sluice valve fitted with necessary fittings	No	1	
4.22	4" x 2.5" tee	No	1	
4.23	Bush clearing and excavation to pipe invert level as per engineer's specifications (trench minimum depth 600 mm), lay, test pipeline and backfill to ground level from Muangeni treatment for item 4.24 and 4.25 below	LM	4000	
4.24	Supply, deliver, install and test O/D 75 mm (2.5") HDPE pipes PN12.5 in 100 m rolls as per KS ISO 4427:2007. To be laid in the same trench as item 4.23 above	LM	1400	
4.25	Supply, deliver, install and test O/D 63 mm (2") HDPE pipes PN12.5 in 100 m rolls as per KS ISO 4427:2007. To be laid in the same trench as item 4.23 above	LM	2600	
4.26	Butt fusion for item 4.24 and 4.25 above	No	40	



1.27	75 mm x 63 mm HDPE reducer	No	1	
4.28	Supply, deliver, install and test O/D 63 mm (2") double orifice air valves fitted with necessary fittings	No	3	
4.29	Supply and installation of 3/4 tees along the return pipe as directed	No	40	
4.3	Supply and installation of 3/4 gate valves	No	40	
4.31	Supply and install 63mm (2") Gate valves (Pegler PN 16 or equivalent as approved by supervising engineer) c/w fittings	No	1	
4.32	Supply, joint and test 63 mm (2") end cap	No.	3	
	Sub Total Carried for collection in summary page			

	BILL E) FENCING			RATE	AMOUNT
S	ITEM DESCRIPTION	UNIT	QTY	KSHS.	KSHS.
NO.	Supply materials and provide personnel to construct a firm fence 40 M X 30 M perimeter borehole area				
5.1	Bushclear the fence perimeter, excavate 400 mm diameter x 600 mm depth holes and firmly erect the concrete posts 2ft below ground	No	52		
5.2	Supply reinforced concrete posts 125 x 125 mm x 2.4 m (8 ft) height erected at spacing of 3.5 m, c/w with straining posts at corners or every 30 meters	No.	52		



5.3	Supply and fix 6 strands of super high tensile twisted barbed wire 480 mtrs rolls 16G x 20kg, 4" barb spacing according to KEBS SM#1329	Rolls	. 2	
5.4	Supply and fix hot-dip galvanized 80 X 80 mm Chain link Type A diameter 14 gauge 2 mm diam., 5 ft wide x 18 m length rolls to accordance KEBS standard KS EAS 135:1999. Anchor the chainlink around the perimeter with concrete	Rolls	8 .	
5.5	Construct 4m wide 2.25 m height double leaf opening steel gates clad in high grade mesh wire, anchored on reinforced concrete columns using 4 No. Y10 Rebars each column. Include a small entry door 900 mm width c/w padlocks	No.	1	
5.6	Concrete foundation class 20 ratio 1:2:4 to anchor the concrete posts	СМ	4	
5.7	Achor chainlink 150 mm depth and 100 mm width using concrete class 15 ratio 1:3:6.	СМ	2.5	
	Sub Total carried for collection in the summary page			

BILL	F) STANDARD WATER KIOSK				· · · · · · · · · · · · · · · · · · ·
NO	ITEM DESCRIPTION	UNIT	QTY	RATE	AMOUNT KSHS.
	Supply, deliver all necessary materials as below and construct A 2M×2.5M kiosks at Kwa Nthokoi as directed				
6.1	FOUNDATION				



	Cut to spoil top soil n.e. 150mm below g.l. over				
	Kiosks and fetching bay areas into a permanent heap	m <sup>2</sup>	7		
6.1.2	Cut to spoil a strip foundation trench n.e. 600mm below g.l.	СМ	1.2		
6.1.3	300mm thick hardcore filling well watered and compacted in layers of 150mm maximum thickness to make up levels	СМ	2.1		
6.1.4	50mm thick quarry dust/Murram blinding to surfaces of hardcore	SM	7		
6.1.5	Chemical anti-termite treatment (as gladiator or equally approved) executed complete by an approved specialist under ten (10) year guarantee to surfaces of blinded hardcore	SM	7		
6.1.6	1000 gauge polythene or any other equally approved Damp proof membrane laid under surface bed with 300mm side and end laps( measured nett - allow for laps)	SM	9		
6.1.7	Natural stone walling, roughly chisel dressed on both sides and jointed in cement and sand (1:3) mortar 200mm foundation walling	LM	9		
6.1.8	Mass concrete class 15 (1:4:8) in 50mm thick surface blinding under strip footings	CM	0.35		
6.1.9	Mesh fabric reinforcement A98 to B.S 4483 ( measured nett-allow for laps)	m <sup>2</sup>	7		
6.1.10	100mm thick 1:2:4 (C20/20) vibrated RC floor slab over Kiosks and fetching bay areas	m <sup>2</sup>	7		
6.1.11	25mm thick Cement sand screed (1:3) finished with steel float.	LM	5		
	Item total			Language For	action of the second



6.2	WALLING			
6.2.1	Hessian based bituminous felt DPC 225mm wide horizontally placed below masonry walling	LM	10	
6.2.2	Dressed Natural stone / Block walling: 200mm thick, bedded and jointed with cement and sand mortar (1:3), reinforced with 20SWG hoop iron in alternate courses to external wall including gable ends	m²	30	
6.2.3	Vibrated reinforced concrete 1:2:4 (class 20 (20/20mm) in Ringbeams	СМ	0.4	
6.2.4	High yield square twisted steel reinforcement bars to BS 4461 including for cutting, bending to shape, tying, hooking and spacer blocks as described in:			
6.2.5	8mm diameter ditto	KG	10	
6.2.6	12mm diameter ditto	KG	50	 
6.2.7	Sawn formwork to Sides of ringbeam	m <sup>2</sup>	2.7	
6.2.8	Horizontal key pointing in masonry joints in external wall surfaces	m²	27	
6.2.9	15mm thick Cement sand plaster to walls surfaces (1:3) finished to walls to receive paint internally	m²	30	
	Item total			
ITEM 6.3	ROOFING:			
6.3.1	Wrought Cypress Timber 4x2	LM	17	



5.3.2	Wrought Cypress Timber 3" x 2"	LM	20		
	Wrought Cypress Timber 2" x 2"	LM	20		
	G30 2m Corrugated Iron Sheets.	SM	10		
	Roofing Nails	Kg	2		
	Assorted Ordinary Wire Nails	Kg	2		
	2.1M x 1M Standard steel door complete with frame, hinges latch bolts and padlock.	SM	1		
6.3.8	1M X 1M Standard steel window complete with frame hinges and latch bolts.	m <sup>2</sup>	1		
	Item Total				
ITEM 6.4	FINISHES:		36		
6.4.1	ROOF: 8" x 1" planed timber fascia board	LM	36		
6.4.2	METAL SURFACES: Prepare and apply three coats plastic enamel paint to General metal surfaces (both sides) (Red oxide primer glossy)	SM	4		
6.4.3	INTERNAL PLASTERED WALLS: Prepare and apply three coats plastic silk emulsion paint to Plastered wall surfaces internally	SM	30		
6.4.4	EXTERNAL WALLS: Prepare and apply three coats permaplast external wall paint to Rendered sides of beam and walls externally	SM	7		
6.4.5	Branding complete with logos and an engraved aluminium metallic plaque as directed	Item	1		
	Item total				
	PLUMBING:			1	



6.5.1	Supply, Deliver, joint and test 1.5 "dia. G.I. Pipes, Class 'B', 6m Long, for outlet of tanks	No.	3		
6.5.2	1.5" diameter GI elbow	No	4		
6.5.3	1.5" diameter GI union sockets	No.	4	-	
6.5.4	1.5" by 3/4" reducing socket G.I	No.	1		
6.5.5	Water meter 1" dia. Kent	No.	1		
6.5.6	3/4" diameter assorted length G.I nipples	No	5		
6.5.7	3/4" diameter GI Pipe class B	No.	1		
6.5.8	3/4" diameter Gate valve-peglar type	No.	3		
6.5.9	3/4" diameter valve sockets	No	2		
6.5.10	3/4" diameter GI union.	No.	4		
6.5.11	3/4" diameter GI Elbow	No	4		
6.6	Pipe joining material:				
6.6.1	Boss white for G.I Pipes	Kg	0.5		
6.6.2	Solvent Cement	Kg	0.5		
6.6.3	Coolant	Lts	1		
6.6.4	Sealing thread	Pcs	2		-
	Item total	1000			
	Sub Total Carried for collection in the Summary page				

	G) VALVE CHAMBER ITEM DESCRIPTION	UNIT	QTY	RATE	AMOUNT
No.	TIEM DESCRIPTION			KShs.	KShs.
	Supply materials and provide personnel to construct a 1 m x 1m valve chamber (as in the attached drawing)			Cathaga II a g	



7.1	Cut the spoil upto 300mm below g.l. over the borehole chamber area and remove all vegetable soil to temporary spoil heap.	$M^3$	0.3	
7.2	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	
7.3	Mass concrete mix 1:4:8: in 50mm concrete slab	$M^3$	0.1	-
7.4	225mm thick dressed quarry stone walling	M <sup>2</sup>	5	-
7.5	Provide and instal a lockable double steel Cover c/w padlock or a reinforced concrete cover as instructed	No.	1	
7.6	EXTERNAL PLASTER - 20mm thick 1:2 cement sand to exterior face of the valve chamber wall	M²	4	
	Total for 1 No valve chamber			 
	Sub total carried for collection in the summary page (for 14 No)	No.	14	 

BILL	H) 10CM TANK PLATFORM		n T		
No.	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
				KShs.	KShs.
	Supply materials and provide personnel to construct a tank base platform 1 m high to hold a 10 m <sup>3</sup> plastic water tank (as in the attached drawing)				2 400



8.1	Cut the spoil upto 200mm below G.L over tank base and remove all vegetable soil to temporary spoil heap.	СМ	1.5	
8.2	Excavate foundation from stripped level over the tank site to depth n.e. 0.6m deep 300 mm wide and dispose soil as directed	SM	10	
8.3	Mass concrete mix 1:4:8: in 50mm thick blinding to hardcore	СМ	0.4	
8.4	225mm thick dressed quarry stone walling	SM	26	
8.5	Provided handle, cut, bend and fix 8 mm deformed steel bars on all alternate course of the wall	Kgs	28	
8.6	Damp proof course	LM	9.5	
8.7	Provide, pack and compact hardcore in 300 mm layers to fill the tank platform	СМ	9	
8.8	Provided handle, cut, bend and fix 8 mm deformed steel bars on top slab	Kgs	16	
8.9	Vibrated reinforced concrete mix 1:2:4 in 100 mm thick for slab	CM	1	
8.1	EXTERNAL PLASTER - 20mm thick 1:2 cement sand to exterior face of tank wall	SM	10	
	Sub total carried for collection in the summary page			

BILL	I) BEE KEEPING			(A)	
No.	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
140.	DESCRIT 1161.			KShs.	KShs.
	Supply of Bee hives				



9.1	Purchase and supply of Langstroth bee hives for Katumbua County Forest as directed by the technical supervisor	20	
	Sub total carried for collection in the summary page		

BILL	PROVISIONAL SUMS	UNIT	OTY	RATE	AMOUNT
J					KSHS.
10.1	Allow a Provisional sum of Kshs 470,000 for Contingencies to be expended by project manager				470,000.00
	Sub Total carried for collection in the summary page				

ENERAL ITEMS/PRELIMINARIES  O CUBIC METER RC SUMP				KSHS
O CUBIC METER RC SUMP				
DREHOLE PUMP AND ACCESSORIES				
PELINES AND WATER CONNECTION				
NCING				
ANDARD WATER KIOSK				
LVE CHAMBER				
P A	ELINES AND WATER CONNECTION NCING ANDARD WATER KIOSK	ELINES AND WATER CONNECTION  NCING  ANDARD WATER KIOSK	ELINES AND WATER CONNECTION  NCING  ANDARD WATER KIOSK	ELINES AND WATER CONNECTION  NCING  ANDARD WATER KIOSK



Н	TANK PLATFORM	
I	BEE KEEPING	
J	PROVISIONAL SUMS	
_	TOTAL TAKEN TO TENDER FORM	

Chief officer: