

BILL OF QUANTITIES FOR MULILUNI – KIAMBANI WATER AND LIVELIHOOD ENHANCEMENT PROJECT IN MASONGALENI WARD

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

Item	Item Description	Unit	Qty	Rate	Amount
2.11	Reverse osmosis water purification system for TDS5000 raw water, feeding 8m ³ /hr and permeating 4m ³ /hr DAYLIFF RO 4M ³ /HR STDRO8/4 or equivalent approved c/w UV sterilization and recovery of at least 50%. The system shall have Pre-chlorination & PH adjustment, Glass media filtration, Activated Carbon filtration, Antiscalant dosage and Reverse Osmosis components. Provide brochures to the supervising engineer for approval before supply. Cost includes interconnecting with PVC tanks. Include of training operator and operating, servicing and replacing consumables within defects liability period.	Unit	1		
	1No. pre-filtration pump complete with pressure vessel, to deliver water through the pre-treatment filter.				
	2No. Chemical dosing pumps complete with chemical tanks for chlorine and antiscalant dosage.				
	1No. deep bed glass and Activated Carbon filter, comprising of multimedia filter complete with A/C media.				
	1No. SS housing; or equivalent approved with washable Ultrafiltration cartridges				
	1No. High lift pump to purified water tank				
	Reverse osmosis (RO) integrated unit complete with special RO high pressure membranes for brackish water desalination, in special pressure vessels.				
	All the necessary plumbings (including 2No. 10m ³ PVC tanks), fittings and electrical accessories including				
	Provision for disposal of backwash and waste water				

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Item	Item Description	Unit	Qty	Rate	Amount
Bill 1:	Preliminary & General Items				
1.1	Publicity Sign Board				
1.11	Supply and erect publicity sign board on 1.5m x 1.2m metal sheet approximately secured on a 40 mm x 3mm thick steel frame at least 2m above the ground level and leveled as shall be directed	No	1		-
1.2	Mobilization and Demobilization				
1.21	Mobilize to site and demobilize. Provide equipment including but fusion, personal protective equipment, materials and personnel necessary for the due and satisfactory completion of the works, provision of security and shall remove same on completion	Item	1		-
1.3	Setting Out				
1.31	Allow a provisional sum of Kshs. 40,000.00 for setting out in presence of project supervisor	l/s	1	40,000.00	40,000.00
1.5	Attendance of items 1.31 above	%	15		-
<i>Total carried from Bill 1 to Main summary</i>					
BILL 2	WATER TREATMENT - REVERSE OSMOSIS				
2.1	RO Equipment				
	Supply, install and test the following:-				

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Item	Item Description	Unit	Qty	Rate	Amount
2.2	Solar power for the RO Equipment				
	<i>Supply, install, test and operate within defects liability period the following solar power system components</i>				
2.21	Supply and install lithium-ion batteries 5kw 48V high efficiency with a comprehensive manufacturer warranty	Nr	3		-
2.22	Hybrid inverter 3 phase complete with charge controller Anti-islanding Protection, PV String Input Reverse Polarity Protection, Insulation Resistor Detection, Residual Current Monitoring Unit, Output Over Current Protection, Output Shorted Protection, Surge Protection, Arc Fault Circuit Interruption (AFCI optional) as deye or approved equivalent, total wattage 12kW.	Item	1		
2.23	Solar panels, high-efficiency half-cell monocrystalline tier 1 modules, MC4 terminations	w	13,200		
2.24	5m high solar mounting structure, 75X75X3mm collumns as shall be directed	Nr	1		-
2.25	Data logger setup compatible with provided inverter model	Nr	1		
2.26	Surge protector	Nr	1		
2.27	Fuse box enclosure	Nr	1		
2.28	50mm ² flex battery cable and equal termination lugs	Nr	12		-
2.29	Fuced Pv Disconnect Switch 1000 VDC, approved	Nr	3		
2.3	6mm PV Cable Single Core 1000VDC Tinnd Copper ; Insulation: XLPO ; Insulation Color: Red and black	m	200		-

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Item	Item Description	Unit	Qty	Rate	Amount
2.31	Output AC cable 25mm from the inverter to the combiner board 4 core (stranded copper, armored terminated with cable lugs on both sides and safely coated with heat shrink tubing and managed in cable tray	m	20		-
2.32	Allow for 600mm by 400mm distribution board with fully shrouded copper busbar provisions, IP43 protection, IK 08 mechanical impact strength, complete with I. 2 No mcb 100A II. 3 NO mcb 63A III. To house the electrical component	Nr	1		-
2.4	Allow for solar system earthing including earth pit treatment, 4ft earth rod, 10mm sq earthing cable + lightening arrester	Nr	1		-
	<i>Total carried from Bill 2 to Main summary</i>				-
BILL 3	PIPELINE O DEMO FARM				
	CLASS D: DEMOLITION AND SITE CLEARANCE				
	<i>The rate quoted is for site clearance and demolition 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>				
	<i>General clearance</i>				

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Item	Item Description	Unit	Qty	Rate	Amount
3.01	Bush 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	m	200		-
<u>CLASS I: PIPEWORK - PIPES</u>					
<i>The rate quoted is for supply and transport to site storage, transport from site storage, excavate, lay and joint pipes complete with all jointing materials and but fusing. The rate is deemed to include excavation, bed lining, installation and backfilling of the pipe trenches. keep trenches and ther excavations free of water.</i>					
3.02	PN10 DN40mm HDPE PE100 ISO4427	m	200.00		
3.03	Class B GI pipes DN 32mm	m	12.00		
3.04	Allow for couplers and connector pipes and fittings	item			10,000.00
<u>CLASS J: PIPEWORK - FITTINGS AND VALVES</u>					
<i>The rate quoted is for provision and fixing</i>					
Bends					
3.05	OD 40mm 90 ^o	nr	2.00		
All Flanged Sluice Valves					
3.08	Supply and install DN32 PN16 gate valves Pegler or equivalent approved for line valves	nr	2.00		

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Item	Item Description	Unit	Qty	Rate	Amount
	CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES				
	<i>The rate quoted is for chambers, culverts, crossings and reinstatements and other ancillaries as specified.</i>				
	Air Valve/Washout/Sluice Valve Chambers				
3.09	Construct 600mm by 600mm masonry valve chamber. Depth not exceeding 700mm, all in accordance with details shown on drawings. Include for provision and fixing of cast iron step irons and heavy duty rectangular mild steel frame as per details on drawing	nr	2.00		
	Marker Posts				
	<i>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</i>				
3.1	Pipeline marker post inscribed WL	nr	3.00		
3.4	Sluice Valve marker post inscribed SV	nr	2.00		
	Amount for Bill 3 carried to Summary				
Bill 4	5MX3M TREATMENT HOUSE				
4.1	EARTHWORKS				
	Excavation and Earthworks				
4.11	Excavate average 150mm deep to remove vegetable soil and cart away	m ²	25		
	Excavate Starting From Stripped Level to Receive :-				

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Item	Item Description	Unit	Qty	Rate	Amount
4.12	Foundations and bases of isolated piers 0.0 - 1.0 metres deep	m ³	12		-
4.13	-Ditto - but 1.0 - 2.0 metres deep	m ³	1		-
	Extra Over Excavation in Any Position for:-				
4.14	Excavating in rock Class "A"	m ³	1		-
4.15	Excavating in rock Class "B"	m ³	1		-
4.16	Excavating in rock Class "C"	m ³	1		-
	Approved Filling as Described				
4.17	Provide and deposit approved compacted fill material in layers 200mm thick in making up levels under floor slab including achieving satisfactory compaction. Compaction tests to be done and rates to include for this.	m ³	5.5		-
4.18	Provide, lay and level out the 300mm compacted hardcore top surface blinded with crushed stone, sand or gravel 50mm thick to surface of filling, including watering and rolling to achieve satisfactory compaction.	m ²	18		-
	Approved Selected Filling				
4.19	Fill and ram selected excavated materials around foundations and buildings	m ³	16		-
	Disposal of Surplus Spoil:-				
4.10	Cart away surplus excavated materials to an approved dumping site	m ³	10		-

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Item	Item Description	Unit	Qty	Rate	Amount
	<u>Anti-Termite Treatment</u>				
4.11	Chemical anti-termite treatment to surface of filling with an approved insecticide	m ²	20		
	<u>Damp-Proof Membrane</u>				
4.12	500 Gauge polythene sheeting, laid over hardcore in two layers	m ²	20		
4.2	<u>CONCRETE WORKS:</u>				
	<u>Mass Concrete Class 15/20mm Maximum Aggregate as Described in:-</u>				
4.21	75mm Thick blinding under foundation concrete, column bases or over hardcore	m ²	5		
	<u>Guaranteed Strength Reinforced Concrete Class 25/20mm Maximum Aggregate as Described in:-</u>				
4.22	Foundation trenches, Footing and column bases	m ³	2.5		
4.23	Base Slabs	m ³	3		
4.24	Roof slab, Suspended slabs, columns and beams	m ³	12		
4.3	<u>Reinforcement</u>				
	<u>Fabric Reinforcement No. A142 Mesh Size 150 x 150mm Weighing 2.22 kgs Per m², Including Bends, Tying Wire and Distance Blocks:-</u>				

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Item	Item Description	Unit	Qty	Rate	Amount
4.31	Fabric reinforcement with minimum 150mm wide side and end laps, laid in floor slab	m ²	18		-
	<u>Provide and Fix High Tensile Steel Reinforcement to SRN 127 Including Cutting, Bending, Propping With Spacers and Tying as Specified :-</u>				
	Reinforcement, diameters				
4.32	Y8	Kg	115		-
4.33	Y10	Kg	110		-
4.34	Y12	Kg	185		-
4.4	<u>Formwork</u>				
	<u>Provide and Fix Shuttering Including Propping, Strutting and Striking, all as Specified</u>				
	<u>Sawn Formwork - Class F1 Finish:-</u>				
4.41	Vertical sides of column bases and columns	m ²	15		-
4.42	Horizontal soffits of suspended floor	m ²	6		-
4.43	Sloping soffits of staircases and ramps not exceeding 30 degrees from horizontal	m ²	2		-
4.44	Edges of slabs, ramps and risers of steps not exceeding 300mm wide	m	20		-
	<u>Wrot Formwork - Class F3 Finish:-</u>				
4.45	Horizontal soffits of roof slab	m ²	17		-
4.46	Vertical sides of columns	m ²	3		-
4.47	Sides and soffits of beams	m ²	16		-

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Item	Item Description	Unit	Qty	Rate	Amount
4.5	WALLING				
	<u>Natural Stone Block Walling, Medium Chisel Dressed, Reinforced with 20 swg Hoop Iron at Every Alternate Course, and Bedded, Jointed and Pointed in Cement Mortar (1:3):-</u>				
4.51	200 mm Walling	m ²	40		
	Labours				
4.52	Extra over walling for ruled horizontal and flush vertical joints	m ²	15		
	<u>Precast Concrete Louvre Block Walling :-</u>				
4.53	200mm Thick louvre block walling	m ²	2		
	Damp-Proof Course:				
	<u>Bituminous Felt Damp-Proof Course as Described:-</u>				
4.54	200mm Wide under walls	m	17		
	Plinths.				
4.55	15mm Cement and sand (1:4) render to plinth walls, finished with a wood float	m ²	2		
4.56	Prepare and apply two coats of bituminous paint on rendered plinth walls	m ²	3		

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Item	Item Description	Unit	Qty	Rate	Amount
	<u>Precast Reinforced Concrete (1:2:4) Lintel 200mm Deep Reinforced with 4 No. 10mm Diameter Mild Steel Bars and 6mm Diameter Mild Steel Links at 200mm Centres, Finished Smooth on all Exposed Surfaces, Including all Moulds and Formwork, Hoisting, Bedding and Flush Pointing in Cement and Sand Mortar (1:4) :-</u>				
5.57	Lintel 200mm wide x 1400mm long	Nr	1		
4.6	METALWORK				
	<u>Steel Doors</u>				
	<u>Pressed Metal Louvre Doors</u>				
	<u>Supply and Fix the following Pressed Metal Louvre Doors with 100 x 50mm Stiles and Top Rails, 150 x 50mm Middle and Bottom Rails With Pressed Metal Infill Louvres and 100 x 50mm Pressed Metal Frames, Including Hinges, Pad Bolts and Tower Bolts, All To Manufacturer's Details, With Three Coats Gloss Paint Complete With Opening Accessories Including Bedding and Pointing Around Frames in Cement Mortar:-</u>				
4.61	Door size 1000 x 2000 mm high in panels	Nr	1		
	WINDOWS				
	<u>uPVC Casement Windows</u>				

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Item	Item Description	Unit	Qty	Rate	Amount
	<u>Supply and Fix the Following Standard Section uPVC Casement Windows, Including 4mm Thick Clear Sheet Glass Glazed to Steel Casements with Putty, Complete with Opening Accessories, Including Building in Lugs to Jambs and Head and Water-Proofing and Filling Around Opening with Approved Compound;</u>				
4.62	Window size to fit 1200 x 1000mm high opening with two equal panels 1 No. fixed and 1. No. opening outwards, with the upper part having 1No. fixed panel and 1 No. opening outwards	Nr	2		
4.7	RENDERING				
	<u>12.5mm Thick Cement and Sand Render as Described Externally on :-</u>				
4.71	Blockwork and concrete surfaces	m ²	38		
	PLASTERING				
	<u>12.5mm Thick 'Gauged' Cement Plaster as described internally on :-</u>				
4.72	Blockwork and concrete surfaces	m ²	40		
4.8	FLOORS AND FINISHES				
	Floor Tiling				
	<u>Acid-Proof Granito Floor Tiles Laid With Straight Joints Both Ways:-</u>				

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Item	Item Description	Unit	Qty	Rate	Amount
4.81	Floor tiles laid to floors, treads, risers or as skirting on screed or backing	m ²	15.4		
	<u>Epoxy Floor and Wall Paint as 'Masterseal 180' or approved equivalent Applied Strictly in Accordance With the Manufacturer's Printed Instruction :-</u>				
4.82	Paint to floors	m ²	15.4		
4.83	Paint to skirting	m ²	5		
	<u>Precast Concrete Paving Slabs</u>				
4.84	Slabs size 600 x 600 x 50mm Thick laid on and including 50mm thick bed of sand and jointing and pointing in cement mortar	m ²	12		
4.9	<u>PAINTING AND DECORATING</u>				
	<u>Prepare and Apply Three Coats Exterior Quality Plastic Emulsion Paint:-</u>				
	<u>Externally on:-</u>				
4.91	Fair-faced concrete surfaces	m ²	38		
	<u>Prepare and Apply Three Coats Interior Quality Plastic Emulsion Paint:-</u>				
	<u>Internally on:-</u>				
4.92	Plastered blockwork and concrete surfaces	m ²	38		

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Item	Item Description	Unit	Qty	Rate	Amount
	<u>Amount Carried to Collection</u>				-
BILL 5	ESTABLISHMENT OF DEMMO FARM				
	<i>Supply and deliver the following</i>				
5.01	Vertical bags- Large Kitchen Garden Sacks	No.	50.00		
5.02	Conical garden dam-liner polythene sheet	No.	50.00		
5.03	Purchase and supply of Kales seeds (Hybrid)	grams	50.00		
5.04	Purchase and supply spinach seeds (Local)	grams	50.00		
5.05	Purchase and supply amarathas (Managu) seeds (Local)	grams	50.00		
5.06	Purchase and supply black night shade (Mchicha) (Local)	grams	25		
5.07	Purchase and supply Coriander (Daniah) seeds (Local)	grams	50		
5.08	Excavation of Cut off drains for Soil and Water Conservation	CM	250		
5.09	Terraces as shall be instructed	CM	150		
5.10	Complete Drip Kit as shall be instructed	acrea	0.25		
5.11	Improved Deep Super Langstroth Beehive- Brood box(9 7/8 inches (50.5 cm) in length, 16 inches in width, and 9 5/8 inches (24.4 cm) in depth). Super Box - 8.5 inches in height and 19 inches. Painted yellow with Makueni County Name/ FLLoCA , Plastic queen excluder included. Made of pine wood with hive adjustable locks to bind the Superbox and brood box	No.	50		
5.12	Apiary Stand	No.	50		
5.13	Installation of Apiary Stand	No.	50		
5.14	Purchase and supply of Full Protective Gears Bee Suit, Bee Gloves	No.	6		

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Item	Item Description	Unit	Qty	Rate	Amount
5.15	Purchase and supply of Full Protective Gears Bee Suit, Bee Gloves	No.	4		
5.16	3-Frame Centrifuge Honey Extractor	No.	1		
5.17	Purchase and supply of pasture seeds, Cencrus ciriaris, Eragrostis superba (Ndata Kivumbu and Mbeetwa) as shall be instructed	Kgs	300		
5.18	Supply and install 5,000 litres double layer PVC water tank on a high masonry platfoarm, and plumbing works as shall be instructed	No.	1		
TOTAL FOR DEMMO FARM ESTABLISHMENT					

GRAND SUMMARY PAGE

BILL	BILL DESCRIPTION	AMOUNT
BILL 1	PRELIMINARIES AND GENERAL ITEMS	-
BILL 2	SOLAR POWERED WATER TREATMENT - REVERSE OSMOSIS	-
BILL 3	PIPEWORK TO DEMMO FARM	-
BILL 4	TREATMENT HOUSE	-
BILL 5	DEMMO FARM	-

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Item	Item Description	Unit	Qty	Rate	Amount
Name:					
Designation					
Signature					
Date:					

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