County Government of Kwale

Bills of Quantities for Umoja dam Phase II: Construction of Treatment facility & Distribu

Bill 1: Preliminaries

Item	Description	Unit	Quantity	Rate (Kes)
1.11	Provide all materials and fabricate, erect and maintain a fibre publicity sign post as shall be directed by the Project manager	No	2	
1.12	Allow for Mobilization and Demobilization of materials, equipments, tools and personnel to and from the site	item	1	
1.13	Allow for Kenya Shillings One Hundred Thousands for project team attendance expenses.	ls	1	
1.14	Allow a percentage for contractors overheads and profits on item 1.13	%	20	
1.15	Carry out ESIA for the project and submit SPR Report for adoption as recommended by the NEMA	item	1	
1.16	Allow for ESMP implementation as Recommended by the ESIA	item	1	
1.17	Allow for insurance of personel, machinery and works during the project period	item	1	
1.18	Allow for registration of works/site by National Construction Auntority - NCA.	item	1	
1.20	**Capacity Building & Operation Support**			
1.21	Allow for Kshs. 300,000 for capacity building of Water committee and training of 2No. selected community members later to be absorbed by the Water Committee as scheme operators	item	1	
1.22	Allow for Kenya Shillings Two Hundred thousand for purchase, registration and delivery a motor bike of the following specifications: Engine; 4 stroke,Natural Air Cooled, engine displacement 124.53cc, maximum power 8.09kW at 8000rpm, length 2000mm, width 745mm, front suspension telescopic oil damped, rear suspension hydraulic shock absorber, front and rear drum 130mm, fuel tank capacity 12lit, reserve capacity 2lit.	No.	1	
1.23				
1.24				
1.25	Supply and deliver Plastic 1/2" Water Meters as shall be directed by the Engineer	No.	50	
1.26				

	Total carried to Main summary			

Bill 3: Dam - WTP site (Gravity Line)

Item	Description	Unit	Quantity	Rate (Kes)
	EARTHWORKS			
3.11	Clear pipeline route 1m wide and grab roots, ready for excavation	sm	700	
3.12	Excavation in soft for trench 1000mm deep and 800mm wide including bedding of not less than 100mm thick of selected excavated material	cm	560	
	PIPE WORKS			
3.13	supply all materials for off take connection from the 10" HDPE raw water pipe at the dam draw off	item	1	
	Supply, lay, test and backfill accordingly;			
3.14	DN 225mm (8") HDPE PN 10 pipes	lm	700	
	Valves & fittings			
	Supply, fix and test;			
3.15	Single orifice 1" air valve to include 225mm clump, 2 No. 1 " GI nipples and 1 " gate valve	No	1	
3.16	3" wash out to include 8" x 3" T junction, 2 No. 2 " nipple, and 1 gate valve	No	1	
3.17	8" Sluice valves	No	2	
3.18	Supply, install and fix - including strainers - 8" Water meter as shall be directed by the Engineer	No	1	
	Valve Chambers			
3.20	Provide all materials and construct 1200x1200mm valve chambers	No	3	
	Marker Posts			
3.21	Provide all materials, fabricate, cast and install marker posts along the pipeline route and on other valve chambers, W.O, A.V etc	No	7	
	Total carried to Main summary			

Bill 4: Water Treatment Plant and Associated Infrastructure

Item	Description	Unit	Quantity	Rate (Kes)
4.1	**Composite Filtration Unit (CFU)**			
4.11	Provide all materials and construct a 20m3/hr CFU as per detailed BoQ and Drawing	item	1	

4.12	Allow for pipe connections from the 8" HDPE pipe to the Mixing chamber	item	1	
4.2	**Clear Water Tank/ Sump Tank**			
4.21	Provide all materials and construct a 225m3 masonry tank (detailed BoQ annexed) as shall be directed by the Engineer	item	1	
4.22	Allow for pipe connections from the CFU to the clear water tank	item	1	
4.4	**Solar Pumping Facilities**			
4.41	**Low Lift Pump**			
4.411	Supply, install, test and commission centrifugal (vertical or horizontal) multistage pump capable of delivering 36m3/hr against a head of 90m (CR 45-4 or European Approved Equivalent*)	set	1	
4.412	Supply, install, test and commision SV3/15T sunverter or Approved equivalent	item	1	
4.413	Supply, install, test and commission monocrystalline solar modules/ panels - TR350M (4 strings of 17panels each or Approved Equivalent*)	wat	23,800	
4.414	Supply, fabricate and install aluminium solar structure to carry the designed panels above	item	1	
4.415	Allow for necessary cabling, sundries, PV disconnect, change over switches etc necessary for the electrical works	item	1	
4.5	**Fencing**			
	Earthworks			
4.51	Clear sight of shrubs, small trees, 1m wide girth not exceeding 600mm and grub roots and remove from site as directed by the Project Manager	SM	600	
4.51	Excavate for pits not exceeding 600mm depth and 300mm diameter	No.	201	
	Concrete works			
4.53	Provide and pour insitu mass concrete class 20/20 agg(1:2:4) into excavated pits for backfilling	CM	10.85	

4.54	Supply all material & Cast insitu 2.5m high (٦ shaped) concrete fencing posts at 3m cetre to centre with holes to allow fixing of 2.1m high chain link. The posts shall be of 100 x100 mm grade 20 reinforced concrete with D8 reinforcement bars as shall be directed by the	No.	201	
4.55	Supply all material & Cast insitu 2.1m high concrete fencing posts as support for anchoring fence at change of direction The posts shall be of 100 x100 mm grade 20 reinforced concrete with D8 reinforcement bars as shall be directed by the Project Manager	No.	101	
	Chain Link and Barber Wire			
4.56	Galvanizing wire 3 lines	LM	1800	
4.57	Barbed wire 3 lines on the cranked position	LM	1800	
4.58	PVC Coated Chain link 2.1 metre high gauge12	LM	600	
4.60	**Gate**			
	Gate civil works			
4.61	Excavate 500x500x600mm for foundation of the gate pillars	cm	1	
4.62	50mm thick blinding using concrete 15/20	sm	0.3	
	Reinforcements			
	Supply,cut, bend and fix high yield deformed steel bars:			
4.63	D12	Kg	90	
4.64	D8	Kg	31	
4.65	Sawn form work or Equivalent	sm	25	
4.66	Cast concrete into the columns concrete class 20/20	cm	6	
4.67	Using mortar 1:3, plaster the columns as directed on site	sm	25	
4.68	Fabricate and mount onto the concrete columns 2.5m wide and 2.1m high double opening steel gate (as per drawing)	item	1	
4.70	**Painting**			
4.71	Prepare and apply two white emulsion paint coats onto the columns	sm	25	

4.72	Prepare and apply two bermuda blue paint coats onto the double steel gate on both sides	sm	45	
4.80	**Branding of gate**			
	Employ a skilled artist to carry out branding for:			
4.81	i. Kwale County & Natioanal Government logo which should be approximately 450x450mm square	Ls	1	
	ii. The script as detailed wording below			
	ii. (a). Letters/Font to be 300mm height			
	ii. (b). Font Thickness to be 50mm			
	ii. © . The font colour to be black			
	The script to be in 2 lines:			
	line 1: PROPOSED CONSTRUCTION OF UMOJA DAM PHASE II: CONSTRUCTION OF TREATMENT FACILITY AND DISTRISTRIBUTION NETWORK			
	line 2: FINANCED BY COUNTY GOVERNMENT OF KWALE FY 2025/2026			
4.82	cost for script writing	Ls	1	
4.9	**Street Lights**			
	Supply, install and test 100W street lamps complete with their lithium batteries and solar panels (intergrated type), mounted on 2.5" street light poles 6m high	No.	4	
	Total carried to Main summary			

Approved Equivalent: This means the component should be able to perfom same as the describe
superior in terms of the output requirements

Bill 7: Rising Main : Pipeline to Godo				
Item	**Description**	**Unit**	**Quantity**	**Rate (Kes)**
	EARTHWORKS			
7.11	Clear pipeline route 1m wide and grab roots, ready for excavation	sm	1850	
7.12	Excavation in soft for trench 1000mm deep and 800mm wide including bedding of not less than 100mm thick of selected excavated material	cm	1480	

7.13	Excavation in hard formation for trench 1000mm deep and 800mm wide including bedding of not less than 100mm thick of selected excavated material	cm	518	
	PIPE WORKS			
7.14	supply all materials for off take connection from the low lift pumps outlet pipe	item	1	
	Supply, lay, test and backfill accordingly;			
7.15	DN 160mm (6") HDPE PE100 PN 12.5 pipes	lm	1,850	
	Valves & fittings			
	Supply, fix and test;			
7.16	Single orifice 1" air valve to include 6" clump, 2 No. 1 " GI nipples and 1 " gate valve	No	1	
7.17	2" wash out to include 6 x 2 T junction, 2 No. 2 " nipple, and 1 gate valve	No	1	
7.18	6" Non-Return valve	No	2	
7.19	6" Sluice valves	No	1	
7.20	6" Water Meter	No	1	
	Valve Chambers			
7.21	Provide all materials and construct 1200x1200mm valve chambers	No	6	
	Marker Posts			
7.22	Provide all materials, fabricate, cast and install marker posts along the pipeline route and on other valve chambers, W.O, A.V etc	No	12	
	CWPs			
7.23	Supply all materials and construct a community water points as per attached drawing/detailed BoQ	No	3	
	Total carried to Main summary			

Bill 19: Test Run

Item	Description	Unit	Quantity	Rate (Kes)
19.1	**Water Quality**			
19.11	Carry out water quality (both raw and treated) from a KENAS Recognized laboratory as shall be directed by the Engineer	samples	3	
19.2	**Test Run**			

19.21	Test Run the whole Project by employing the selected and trained local (facilitating them) as well as providing practical technical support of the operations team, necessary supplies and maintanance required	days	14	
19.3	**Water Treatment Chemicals**			
	Supply and deliver granullar approved WT Chemicals:			
19.31	Alum	Kgs	3000	
19.32	Chlorine	Kgs	180	
19.33	Soda Ash	Kgs	200	
	Total carried to Main summary			

MAIN SUMMARY

Item	**Description**			
	Bill 1: Preliminaries			
	Bill 3: Dam - WTP site (Gravity Line)			
	Bill 4: Water Treatment Plant and Associated Infrastructure			
	Bill 7: Rising Main - To Godo Trading Center			
	Bill 19: Test Run			
	Total 1			
	Add 5% Contigency			
	Add 0.03% PPRA Capacity Levy			
	Total 2			
	Add 16% VAT			
	Total 2: Carried to Form of Tender			

Annexes

Annex 1: Composite Filitration Unit - C.F.U - $20m^3/hr$

Item	Description	Unit	Quantity	Rate (Kes)
A1	**General Site Clearance**			
A1.11	Clear all vegetation, grab stamps and roots for the proposed site	sm	98.00	
A2	**Earthworks**			
A2.11	Top soil stripping for depth not exceeding 300mm and safe disposal as shall be directed by the Engineer	cm	27.00	
A2.12	Excavation in Normal soil formation for depth not exceeding 1000mm	cm	90.00	
A2.13	Ditto but for rock formation (provision quantity)	cm	45.00	
A2.14	Back fill selected excavated material in 200mm thick layers, water and ram it after foundation construction as directed by the Engineer	cm	46.00	
A3	**Concrete Works - Blinding**			
A3.11	On to the excavated area, cast 50mm thick concrete class 20/20 as concrete blinding	sm	4.50	
A4	**Hardcore**			
A4.11	Hand pack 300mm thick of approved hard core as directed by the Engineer	cm	31.05	
A4.12	Supply, spread, water and compact quarry dust onto the hard core	sm	90.00	
A4.2	**Concrete slab**			
A4.21	Cast 300mm thick concrete class 25/20 slab	cm	31.05	
A4.3	**Reiforcement Bars**			
A4.31	Supply, bed and fix (rates including binding wire); 8mm dia. High tensile	Kg	645.38	
A4.32	10mm dia. High tensile steel	Kg	896.00	
A4.33	12mm dia. High tensile steel	Kg	1,514.00	
	PAGE 1 TOTAL CARRIED TO COLLECTION SHEET			
A4.4	**Formwork** Provide and fix shuttering including all propping, strutting striking all as necessary as specified for curvature where required.			
A4.41	Props	m^2	6.00	
A4.42	6x1 timber	m^2	5.00	
A4.43	4x2 timber	m^2	9.00	

A5	**Walling**			
A5.11	Provide and lay plastic joint in 25mm sealer or approved equivalent between the base and the walls of CFU (water bar) as directed by the Engineer	m^2	35.00	
	Construct stone masonry wall in cement sand ration 1:2 mixed with water proof additive			
A5.12	Thickness 225mm	m^2	57.00	
A5.13	Ditto 150mm	m^2	120.00	
A6	**Reinforcement bars**			
	Supply, bed and fix (rates including binding wire);			
A5.11	8mm dia. High tensile	Kg	86.70	
A6.12	12mm dia. High tensile	Kg	1,035.68	
A6.13	14mm dia. High tensile steel	Kg	1,457.90	
A6	**Finishes**			
	Provide, handle and apply the following materials as described			
A6.11	2 Layers of 10mm thick plaster water proof plaster using 1.2 cement sand ratio to inside walls	sm	113.00	
A6.12	Supply and apply water proof emulsion (sika)	sm	113.00	
A6.13	15mm rendering to outside wall using 1:3 cement sand raio	sm	142.25	
A6.14	2 Coats of crown emulsion paint to external wall above finished ground level.	sm	100.00	
A6.15	3 Coats of crown gloss paint to external wall above skirting as directed on site	sm	22.62	
A6.16	50mm thick floor screed to sedimentation chambers	m^2	60.00	
A6.17	Ditto to 50mm to filtration unit	m^2	15.00	
A6.18	Ditto to slopping concrete floor	m^2	60.00	
	PAGE 2 TOTAL CARRIED TO COLLECTION SHEET			
A7	**Pipes and Fittings**			
	Provide and Install the following pipes complete with fittings as shown on the drawings. Rate to include making good			
A7.11	150mm GI Pipe clear water outlet/backwash pipe	lm	24.00	
A7.12	150mm GI Pipe washout/wastewater outlet pipe	lm	24.00	
A7.13	150mm GI Pipe raw water inlet pipe	lm	30.00	
A7.14	150mm GI overflow pipe	lm	24.00	
A7.15	150 x 200 stainless steel collection weir	lm	36.00	
A7.16	150mm (6") Sluice valves	No	6.00	

A8	**Underdrain system** Supply, fabricate and fit under drain as shown in the drawings			
A8.11	1.7m long x 150mm x 200mm channel, made up of 3mm thick plate	No	2.00	
A8.12	1.7m long, 3mm thick steel plate with slots on top of the 150mm x 200mm channel	No	2.00	
A8.13	50mm dia GI with 5 nozzles 0.5m long	No	4.00	
A8.14	50mm dia GI with 7 nozzles 1.3m long	No	2.00	
A8.15	50mm dia GI with 9 nozzles 1.7m long	No	2.00	
A8.16	50mm dia GI with 11 nozzles 2.1m long	No	4.00	
A9	**Filter Media** Supply, handle and place filter media as shown on the drawings			
A9.11	Filter and effective size 0.5mm and uniformity coeffi	cm	12.00	
A9.12	Course sand effective size 1.0mm	cm	3.50	
A9.13	Gravel effective size 2 - 5 mm	cm	1.00	
A9.14	Ditto 5 - 12mm	cm	1.00	
A9.15	Ditto 12 - 20mm	cm	1.00	
A9.16	Ditto 20 - 38mm	cm	1.00	
	PAGE 3 TOTAL CARRIED TO COLLECTION SHEET			
A10	**Handrails & Walkway**			
A10.11	Install handrails and walkways around the perimeter of the filter unit and from the ladder to the filter unit access ladder constructed using 25mm GI pipes	m	150.00	
	Chemical Mixing			
A10.12	Allow for mixing chamber and construction of the baffle walls to the new Composite Filtration Unit as directed by the Engineer	Item	1.00	
A11	**Chemical dozer**			
A11.11	Supply and install FRO Chemical dozers for chemicals (Alum & Chlorine) complete with fibre glass mixing tanks	nr	2.00	
A12	**Valve Chambers -1200x1200mm**			
A12.11	Excavate for provide all materials and construct valve chambers as per details on drawings.	nr	5.00	
	PAGE 4 TOTAL CARRIED TO COLLECTION SHEET			

	COLLECTION SHEET			
	PAGE **1 Carried to Summary from Pg 1** **2 Carrid to Summary from Pg 2** **3 Carried to Summary from Pg. 3** **4 Carried to Summary from Pg. 4**			
	TOTAL (1No. CFU)			

Annex 2: 225m^3 Masonry Tank				
Item	**Description**	**Unit**	**Quantity**	**Rate (Kes)**
	General Site Clearance			
4.01	Allow for general Clearance of the Site	item	1	
	Excavation			
4.02	Excavate to formation level, use material as fill where required and cart away surplus to tips 0.5 M	cm	150	
4.03	Extra over item 4.02 for excavation in rock (provisic	cm	5	
	Shuttering			
4.04	Provide and fix strip shuttering including ,propping, strutting and striking to the edge of base slab 250mm wide and all – deemed to be included item.	m	120	
4.05	Provide and fix wrought shuttering including propping, strutting and striking to the edge of roof slab, sides of beams, soffit of roof slab 150mmwide and all –deemed – to be included items.	sm	150	
4.06	Provide Hardcore 250mm & thick	cm	25	
	Concrete & screed: provide all materials ,mix and place concrete and screed as specified:			
4.07	Concrete blinding class 15, 50mm thick to base slab, allow for slopping of sides.	cm	8	
4.08	Vibrated reinforced concrete: concrete class 25/20, 200mm thick to floor slab	cm	30	

4.08	Vibrated reinforced concrete: concrete class 25/20, 150mm thick to roof slab.	cm	25	
4.08	Vibrated reinforced concrete: concrete class 25/20, to beams	cm	10	
4.08	Vibrated reinforced concrete: concrete class 25/20, to column	cm	5	
4.09	Cement screed, 1:2 cement sand ratio, include water proof cement at a rate of 1kg water proof cement to 50 kg building cement to fall on base slab.	sm	300	
	Provide all materials and construct masonry walls as specified			
4.10	350x225mm thick dressed quarry stones	sm	36	
4.11	300 x 225 mm thick dressed quarry stones	sm	40	
4.12	225 x 225mm thick dressed quarry stones	sm	49	
4.13	Provide all materials and construct mortar joints 1:3 cement sand ratio including water proof cement to 50 kg building cement.	cm	13	
4.14	Provide all materials and render the inside of the reservoir wall with 20 mm thick cement rendering of 1.2 cement sand ratio with water proof additive at the rate of 1 kg water proof cement to 50 kg ordinary building cement.	sm	135	
4.15	Provide all materials and plaster the outside of the reservoir wall with 20 mm thick cement plaster of 1.2 cement sand ratio .	sm	130	
	Total for Page 1			
	Provide ,cut bend and fix mild steel reinforcement bars as specified .spacers and binding wire are deemed to be included.			
4.16	8mm dia high yield	kg	550	
4.17	10mm dia high yield	kg	500	
4.18	12mm dia high yield	kg	400	
4.19	16 mm dia high yield	kg	230	
	Bondex and Lime			
4.20	Provide and lay one layer of lime 300mm wide by 6mm thick.	Kg	30	
4.21	Chisel wall/floor joint to form a 50mm x 25mm groove and then Provide and lay Bondex 50mm wide by 25 mm thick on inside next to wall.	Kg	50	
4.22	Provide and smooth trowel the top of wall and paint with 3 coats of Bituminous paint.	Litre	10	

	Manhole and ladder : rate to include for application of 3 coats of paint.			
4.23	Allow for construction of 600 x 600 mm access manhole ,include for supply and fixing of lockable mild steel cover and frame	No.	1	
4.24	Provide all materials and fix galvanized cat ladder to outside of reservoir (stringers – 50mm x10mm,rungs 20mmdia at 300 centres 5.5m.	No.	1	
4.25	Provide all materials and fix wrought cat ladder to inside of reservoir (stingers -50mmx 10mm-rungs-20mmdia at 300 centers)length 4.5 m.	No.	1	
4.26	Allow for construction of 25mm x 25mm drip all around the roof edge.	No	1	
	Testing and sterilization			
4.27	Allow for water tightness test as specified and directe	Item	1	
4.28	Allow for sterilization of the tank as directed.	Item	1	
	Pipe work and fittings supply ,lay and fit all pipes and fittings including jointing materials ,(bolts ,nuts washers, gasket, packings) cutting and threading as specified :			
	Scour pipe			
4.29	150 x 100 mm dia flanged bell mouth	No.	1	
4.30	100mm dia 90^{o} flanged GI bend	No.	1	
4.31	100 mm G1 pipe piece flanged 4 m long	No .	1	
4.32	100mm dia sluice valve complete with related fittings	No.	1	
4.33	Standard Valve chamber	No.	1	
	Total for Page 2			
	Over flow			
4.34	100mm dia 90^{o} GI Bend	No.	2	
4.35	100mm dia GI socket	No.	2	
4.36	100mm GI threaded pipe 4 m long	No.	1	
4.37	100mm dia GI puddle flange 500mm long	No.	1	
	Air vent 4 No. per tank			
4.38	100mm dia. GI pipe piece 350 mm long	No.	4	
4.39	100mm dia .Elbow with mosquito gauze	No.	8	
4.40	100mm dia. Nipple	No.	8	
4.41	100mm dia. Equal Tee	No.	4	
	Inlet pipe			

4.42	100m dia .GI pipe with puddle flange 500mm long	No.	1	
4.43	100 mm dia GI flanged pipe piece 4 m long		1	
4.44	100mm dia 90^{o} GI Bend	No.	2	
4.45	100mm dia sluice valve complete with associated fittings	No.	1	
4.46	Standard valve chamber	No.	1	
	Outlet			
4.47	150 x 100 mm bell mouth with puddle flange	No.	1	
4.48	100mm GI bend with puddle flange	No.	1	
4.49	100mm G.I pipe piece 3 m long flanged	No.	1	
4.50	100mm dia flanged sluice valve	No.	1	
4.51	100mmx75mm reducer	No	2	
4.52	Standard Valve chamber	No.	2	
	Total for Page 3			
	Sub Total page 1			
	Sub Total page 2			
	Sub Total page 3			
Total for 225m3 Masonry Tank Carried forward to Summary				

Annex 3: Communal Watering Point

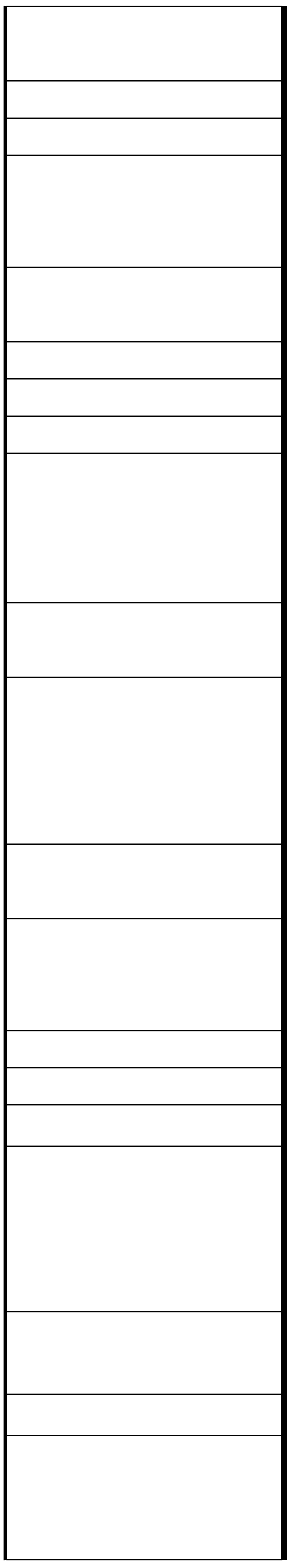
Item	Description	Unit	Quantity	Rate (Kes)
	EXCAVATION WORK & CONSTRUCTION WORK.			
a	**Site Clearance and excavation work**			
	Excavate oversite average 150mm deep, wheel and deposit on site as directed.	SM	1.2	
	Excavate for foundation trench not exceeding 1.5m from the ground	CM	6	
	Ditto for rock formation	CM	1	
	Return fill and ram well selected excavated materials	CM	6	
	Load and cart away surplus excavated materials	CM	5	
	300mm thick hardcore layer compacted in 3 layers and blinded with murram	CM	5	
	50mm thick murram blinding	CM	0.3	
	50mm thick weak concrete blinding under strip foundations	CM	0.3	
b	**Vibrated reinforced concrete grade 20/20 (1:2:4) - 20mm aggregate**			
i	200mm thick foundation concrete	CM	1	
ii	150mm thick floor surface bed	SM	1	

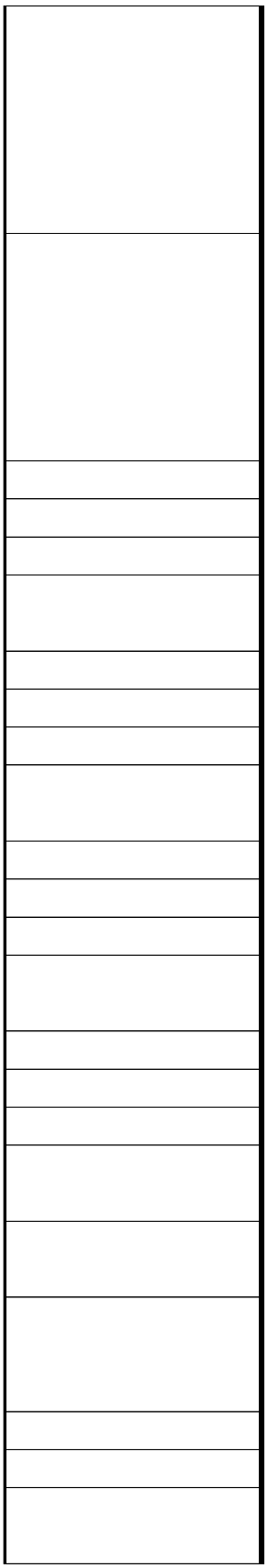
c	**Steel Reinforcement**			
	Steel bars cut and bent as required including short joining lengths, binding wire and spacer blocks			
i	Y8 longitudinal bars in strip footing	kg	21.5	
ii	Y10 cross(main) bar in strip foundation footing	kg	30.5	
d	**Sawn softwood formwork to;-**			
i	Slides of floor bed 150 to 225mm	LM	18	
ii	Solid coral block walling in cement sand mortar (1:4) 200mm thick walling	SM	9	
iii	12mm cement sand (1:4) render trowelled smooth platform finishes	SM	9	
iv	25mm thick cement sand plaster to sides and top platform	SM	18	
e	**Plumbing Works**			
i	Provide 2" PPR pipes for connection from the 2" main line to the tank and provide taps for the fetching bay.	item	1	
ii	Supply, fix and test 3/4" PVC water meter	No	1	
f	**Storage PVC Tanks**			
	Supply, fix on top of the slab and test 10,000l PVC KENTANK or Equivalent and approved quality	No	1	
	Total for 1No. platform			

ıtion lines
Amount (Kes)

Amount (Kes)

Amount (Kes)





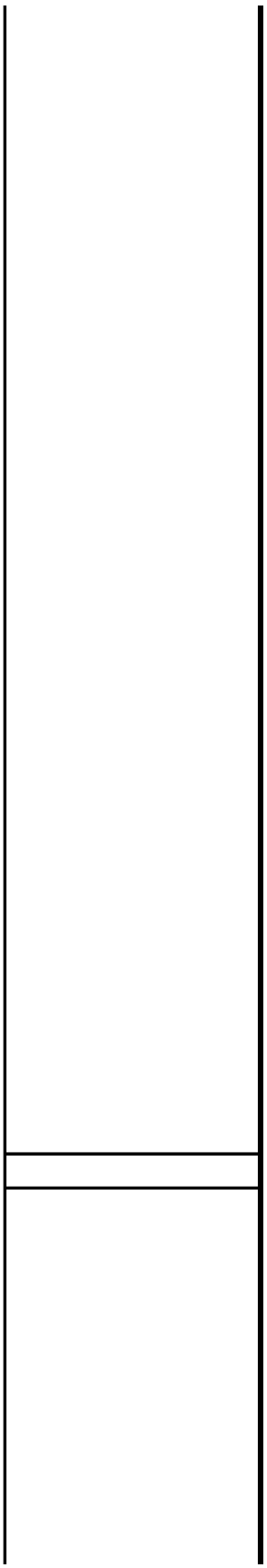
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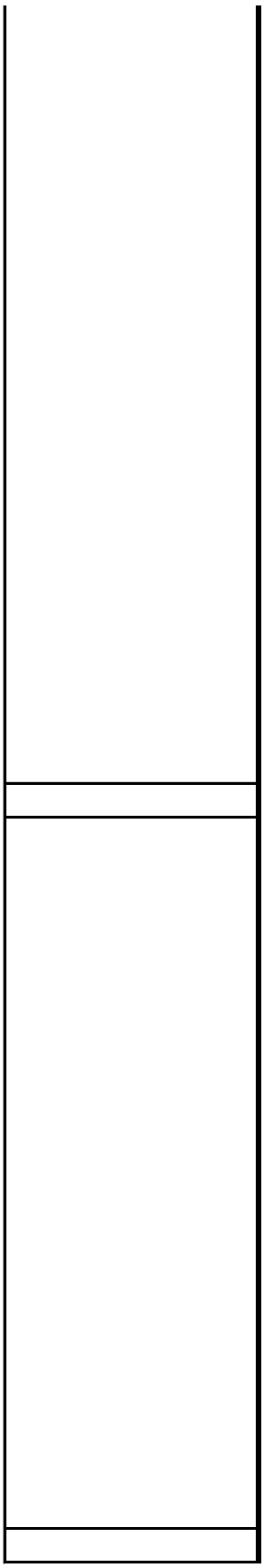
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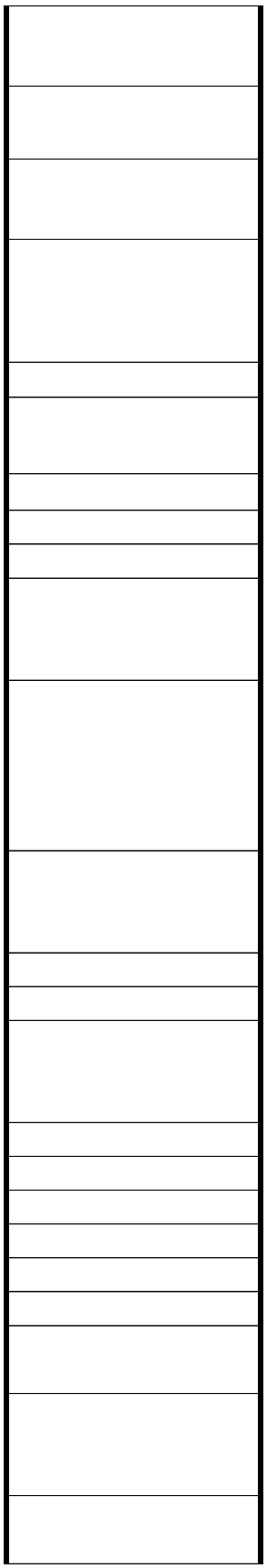
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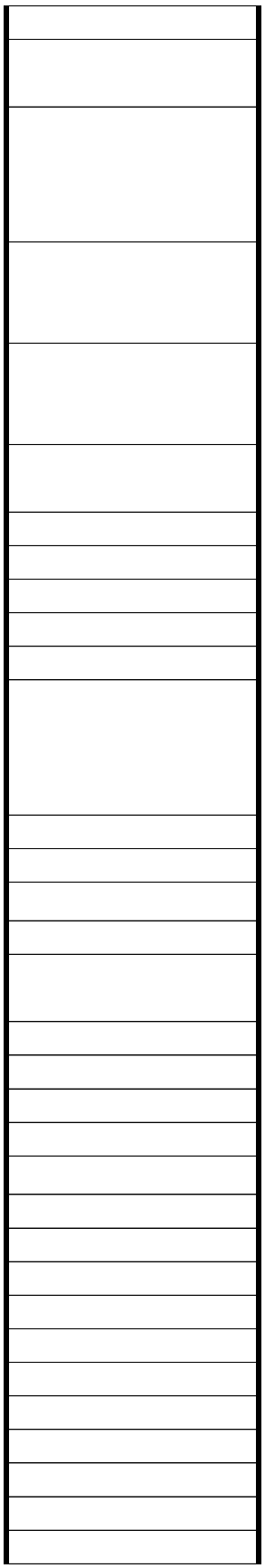
Amount (Kes)





Amount (Kes)





Amount (Kes)

