

PHASE II : ATHI TUNGUNI BOQ

WATER BOQ

**GRAND SUMMARY**

Bill	Description	Bill amount (KShs.)
1	<b>PRELIMINARIES AND GENERAL</b>	
	Contractual requirements, Specified requirements, Method-Related Charges, Provisional Sums	
2	<b>EXISTING INTAKE IMPROVEMENTS AND REHABILITATION</b>	
	Expansion Galleries Pipe	
3	<b>EXISTING TREATMENT PLANT IMPROVEMENTS AND REHABILITATION</b>	
	Composite filtration units	
	Electomechanicals for treatment plant	
4	<b>Rising main to Mukononi tanks OD 110</b>	
	Pipeline km7+277	
5	<b>250m3 Mukononi tanks</b>	
	Mukononi hill tank	
6	<b>Distribution network for Makindu, Kikumbulyu North and Nguumo.</b>	
	<b>Makindu</b>	
	Mukononi Musingini Kamboo line 11.8km OD90	
	<b>Kikumbuluyi North</b>	
	Mukononi Kathyaka Nyayo shopping center 10.9km OD90	
	<b>Nguumo</b>	
	Mukononi Symule 4.30km OD90	
7	<b>Water points</b>	
	8no .Water kiosks	
i	Sub - Total 1 (ITEMS 1 , 2,3, 4, 5&7 )	
ii	Add 16% of Sub-Total 1 for Value Added Tax	
<b>GRAND TOTAL(i +ii)</b>		

**BILL 1 - PRELIMINARY AND GENERAL WORKS**

Item No.	Description	Unit	Quantity	Kenyan Shillings	
				Currency (KES)	
				Unit Price	Amount ( c )
			(a)	(b)	(c) = (b) x (a)
	<b><u>THE WHOLE OF THIS BILL IS PROVISIONAL AND CAN BE DELETED AS DIRECTED BY THE ENGINEER.</u></b>				
	The rates quoted by the Contractor shall be deemed to include provision by the Contractor to provide temporary vehicular access to all construction sites including negotiating with private land owners and paying the necessary charges as required. Any additional working area shall be provided by the Contractor at his own cost.				
<b>1.1</b>	<b>Contractual requirements</b>				
1.1.1	Allow for provision of Performance Security in accordance with the Conditions of Contract	LS	1		
1.1.2	Allow for provision of Insurance of Works, Materials and Contractor's Equipment in accordance with the Conditions of Contract	LS	1		
1.1.3	Allow for provision of insurance for Workmen Injury Benefits	LS	1		
1.1.4	Allow for provision of Third Party Insurance (including Employer's Property) all in accordance with the Conditions of Contract	LS	1		
<b>1.5</b>	<b>Removal and alteration of existing services</b>				
1.5.1	Allow a provisional sum of Ksh100,000 for removal and alteration of existing services as directed and cost approved by the Engineer	Prov. Sum	1	100,000.00	
1.7.2	Include .....10..... percentage of item 1.7.1 for contractor's overheads and profits	Prov. Sum	%	10%	
<b>1.9.0</b>	<b>Engineer's Setting out for Works</b>				
1.9.1	Allow a provisional sum of Kshs. 150,000 for setting out of works, preparation of bar bending schedules, pipework schedules and material order sheets	Prov. Sum	1	150,000.00	
1.9.2	Include .....10..... percentage of item 1.9.1 for contractor's overheads and profits	Prov. Sum	%	10%	

<b>1.12.0</b>	<b>Test Running of the Works:</b>				
1.12.1	Production of performance data (Water quality etc.). Test Running to be carried out in close liaison with the Makueni county department of water and KIMWASCO Services Provider's Staff. The Contractor to allow for 'on job' training of Operation and Maintenance Staff, Tools, etc., and ensure that the operations are carried out full time on a 24 hour basis for 45 days by the water services provider, all in accordance with the Specifications.	L.S	1	150,000	
1.14.7	Allow for provision of As-Built Drawings in accordance with the Specifications. The drawings to be in A1 and in PDF and editable softcopy to be handed over to the client on inspection and verification that all works are included.	No	50		
1.14.8	Allow for provision of Operation and Maintenance (O&M) Manuals in accordance with the Specifications. To include all designs and manufacturer manuals, details inspected and approved by the Engineer for handover to the client.	L.S	1	50,000	
<b>1.16.0</b>	<b>Temporary Works</b>				
1.16.1	Provide and establish project publicity sign boards (location as directed on site)	LS	1		
<b>1.19.0</b>	<b>wayleaves connection and approval</b>				
1.19.1	allow for KERRA corridor approval crossing approvals	L.S	1	200,000.00	
	<b>Grand Total</b>				

BILL NO. 2: EXISTING INTAKE IMPROVEMENTS					
INTAKE Sump and Galleries Structures					
Item No.	Description	Unit	Quantity	Kenyan Shillings	
				Currency (KES)	
				Unit Price	Amount ( c )
			(a)	(b)	(c) = (b) x (a)
A	Expansion of Intake Galleries pipe OD63 Perforated infiltration pipe				
<b>CLASS I: PIPEWORK - PIPES</b>					
<b>HIGH DENSITY POLYETHYLENE _Hydrocarbon polymer</b>					
Provision, laying and jointing of pipes Excavating and backfilling pipe trenches					
Lengths of pipes shall be measured along their centre lines.					
<b>HDPE PIPE</b>					
A1	HDPE PIPE Dia 300mm	m	81		
<b>CLASS L: SUPPORTS AND PROTECTION</b>					
<b>ANCILLARIES TO LAYING AND EXCAVATION</b>					
<b>Extras to Excavation and Backfilling</b>					
( Note: Blasting not allowed for any rock excavation)					
Extras to excavation and backfilling of trenches for pipework, ducts and metal culverts, manholes and other chambers, headings, thrust boring and pipe jacking Pipe laying in headings and by thrust boring and pipe jacking Provision of supports and protection to pipework.					
<b>L1</b>	<b>In Pipe Trenches</b>				
L1.2	Allow for excavation of soft material below final surface of pipe trench and backfill with approved Gravel , well compacted in layers of 500mm thickness, depth not exceeding 1.0m (Provisional)	m <sup>3</sup>	162.00		
L2.2	backfilling with 500mm Normal river bed sand	m <sup>3</sup>	162.00		
L2.3	Allow for Gabions rehaillitations and improvements	m <sup>2</sup>	72.00		
L2.4	Diversion of river and dewatering of bed to allow for excavation.	ls	1.00		
L2.5	Fencing of the intake	ls	1.00		
<b>INTAKE Sump and Galleries Structures to summary</b>					

<b>BILL NO. 3: EXISTING TREATMENT PLANT REHABILITATION AND IMPROVEMENTS</b>					
<b>C</b>	<b>Composite filtration units</b>				
Item No.	Description	Unit	Quantity (a)	Kenyan Shillings Currency (KES)	
				Unit Price (b)	Amount ( c ) (c) = (b) x (a)
<b>C</b>	<b>COMPOSITE FILTRATION UNITS</b>				
<b>C1</b>	Commissioning of treatment plant	ls	1		
<b>C2</b>	Introduce airblowers	ls	1		
<b>C3</b>	Expand wash water collector	ls	1		
<b>C4</b>	Scour water to soak any pit	ls	1		
<b>C5</b>	Filter sand washing	ls	1		
<b>C6</b>	Solar streetlighting	ls	1		
<b>C8</b>	Injector pump with accessories before flocculation channel and at contact tank	ls	2		
<b>C9</b>	<b>New Flocculation basin</b>				
<b>C9.1</b>	<b>IN SITU CONCRETE</b>				
	provision for placing of concrete				
<b>C9.2</b>	<b>New Flocculation channel structure</b>				
	class of concrete is as per BS 8500 and BS EN 206-1				
	<i>METHOD OF MEASUREMENT</i>				
	<i>(thickness used for blinding shall be the minimum thickness)</i>				
<b>C9.3</b>	Blinding (class15/20) (Provisional)				
	Thick.not .exceeding 150mm	m <sup>3</sup>	5		
<b>C9.4</b>	Base (class25/20) (Provisional)				
	Thick.not .exceeding 150-300mm	m <sup>3</sup>	4		
<b>C9.5</b>	Column (class 25/20) (Provisional)				
	Thick.not .exceeding 150-300mm	m <sup>3</sup>	7		
<b>C9.6</b>	Pier cap (class 25/20) (Provisional)				
	Thick.not .exceeding 150-300mm	m <sup>3</sup>	7		
<b>C9.7</b>	Deck (class 25/20) (Provisional)				
	Thick.not .exceeding 150-300mm	m <sup>3</sup>	14		
<b>C9.8</b>	walls (class 25/20) (Provisional)				
	Thick.not .exceeding 150-300mm	m <sup>3</sup>	6		
<b>C9.9</b>	Baffer wals (class 25/20) (Provisional)				
	Thick.not .exceeding 150-300mm	m <sup>3</sup>	2		
<b>C9.10.1</b>	<b>CONCRETE ANCILLARIES</b>				
	provision for formwork in situ concrete				
	<i>METHOD OF MEASUREMENT</i>				
	<i>(formwork shall be measuredfor surface of in situ concrete which requires temporary support during casting excepts otherwise stated)</i>				
<b>C9.10.2</b>	Formwork :fair finish (Provisional)				
	plane vertical width not exceeding 0.2-0.4m	m <sup>2</sup>	42		
<b>C9.10.3</b>	Formwork :fair finish (Provisional)				

	plane Horizontal width not exceeding 0.2-0.4m	m <sup>2</sup>	42		
<b>C9.10.4</b>	<b>Reinforcement (Provisional)</b>				
	Deformed high yeild steel bars				
	norminal size 8mm	t	1		
	norminal size 10mm	t	1		
	norminal size 12mm	t	1		
	<b>MISCELLANEOUS</b>				
<b>C10</b>	Clear water tap with pipe accessories	ls	1		
<b>C11</b>	Painting to elevated tank, access ladders	ls	1		
<b>C12</b>	Gauge repair for the contact tank	ls	1		
	<b>Composite filtration units to summary</b>			<b>TOTAL</b>	-
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Kenyan Shillings</b>	
				<b>Currency (KES)</b>	
				<b>Unit Price</b>	<b>Amount ( c )</b>
			<b>(a)</b>	<b>(b)</b>	<b>(c) = (b) x (a)</b>
<b>B</b>	<b>ELECTROMECHANICAL FOR TREATMENT PLANT</b>				
<b>B1</b>	Provide ,install comission a second submersible Pump at the contact tank with the same specifacations , with all accessories for rising main to Mukononi	ls	1		
	<b>Treatment plant Electromechanicals to summary</b>				

Item No.	Description	Unit	Quantity (a)	Kenyan Shillings	
				Currency (KES)	
				Unit Price (b)	Amount ( c ) (c) = (b) x (a)
	<b>CLASS A: GENERAL ITEMS.</b>				
	<i>Includes: General obligations, Site services and facilities, Temporary Works, Testing of materials and work, Provisional Sums and Prime Cost Items.</i>				
	Items to cover elements of the cost of work which are to be considered as proportional to the quantities of the permanent works				
	<b>A2: Specified Requirements</b>				
A260	Testing of HDPE pipes nominal bore 110mm, test as per Technical Specifications Clause 812.	M	7,277		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE.</b>				
	<i>Includes: Demolition and removal of natural and artificial articles, objects and obstructions which are above the original surface</i>				
	<i>Excludes: Removal of articles, objects, obstructions and materials (other than tree roots) at or below the original surface</i>				
	<b>D1: Site Clearance</b>				
D11	General Site clearance 5m width; as per Technical Specifications Clause 201, 204 & 814.	ha	1.46		
	<b>D3: Trees</b>				
D21	Trees Girth: 0.5m to 2.0m; holes backfilled with excavated materials, Technical Specifications Clause 205.	nr	20		
D21	Trees Girth: exceeding 2m; holes backfilled with excavated materials, Technical Specification Clause 205.	nr	15		
	<b>D3: Stumps</b>				
D31	Removal of stumps present (with a diameter less than 1m) as per Clause 206 of the Technical Specifications.	nr	15		
	<b>CLASS I: PIPEWORKS - PIPES.</b>				
	<i>Includes: Provision, Laying and Jointing of pipes. Excludes: Work included in classes J, K, L, Y and Pipe Building Services (Included in Z).</i>				
	HDPE OD 110mm of PN 16 as per Technical Specifications Clauses 3, 702, 760, 801, 805, 808, 809 and 1008				
I422	Between Chainages 0+000 - 7+277 as per Drawings Depth not exceeding 1.5m	m	7,277		
	<b>CLASS J: PIPEWORK - FITTINGS &amp; VALVES.</b>				
	<i>Includes: Fittings and Valves for Pipework. Excludes: Work included in classes I, K, L, Y and Pipe Building Services (Included in Z)</i>				
	HDPE Pipe Bends as per Technical Specifications Clause 702.1				
	<b>Horizontal and vertical Bends</b>				
J612.14	Bends Butt fused; nominal bore OD 110 mm PN16 45° effective length 220mm in trench	nr	6		
	Valves and Penstocks (Drawings J008/RWM/CP-001 to 004)				
	<b>Epoxy coated Steel fittings to Double Air Valves (DAV)</b>				
J322	DN 110 x DN 100 all flanged ferrous tee as per Technical Specifications clause 760	nr	8		
J331.1	DN 100 x DN 50 all flanged concentric taper as per Technical Specifications clause 728	nr	8		
J342.2	D110 HDPE Ranger Coupling as per Technical Specification clause 702. 1.6	nr	8		
J382.1	DN 110 flanged spigot steel pipe 1.2m long as per Technical Specifications Clause 728	nr	16		
J811	DN 50 double flange gate valve as per Technical Specifications clause 760	nr	8		
J861.5	DN 50mm Double Orifice Air Valves (DAV) as per Technical Specifications clause 703	nr	8		
	<b>Epoxy coated Steel fittings to Single Air Valves (SAV)</b>				
J322.1	DN 110 x DN 100 all flanged reducing tee as per Technical Specifications clause 760	nr	8		
J331.2	DN 110 x DN 80 all flanged concentric taper as per Technical Specifications clause 728	nr	8		
J342.2	DN110 HDPE Ranger Coupling as per Technical Specification clause 702. 1.6	nr	8		
J382.1	DN110 flanged spigot steel pipe 1.2m long as per Technical Specifications Clause 728	nr	16		
J861.2	DN 80mm Flanged Single Orifice Air Valves (SAV) with built in isolating valve as per Technical Specifications clause 703	nr	8		
	<b>Epoxy coated Steel fittings to Washouts (WO)</b>				
J322.2	DN 200 x DN 150 all flanged level invert scour tee as per Technical Specifications clause 760	nr	8		
J342.2	DN 110 HDPE Ranger Coupling as per Technical Specification clause 702. 1.6	nr	16		
J351.3	DN 110 flanged adaptor - self-restraining dismantling joint	nr	16		
J381.3	DN 110 flanged spigot steel pipe 1.2m long as per Technical Specifications Clause 728	nr	16		
J382.2	DN 100 flanged spigot steel pipe 1.2m long as per Technical Specifications Clause 728	nr	16		
J391.3	OD 110 UPVC/ DN 150 G.S. Ranger Coupling Adaptor	nr	8		
J481.2	OD 110 6m long UPVC pipe cut to suit on site	nr	8		
J811.3	DN100 double flanged sluice gate valve as per Technical Specifications clause 760	nr	8		

J891.2	DN100 GI flap valve as per Technical Specification clause 762	nr	8		
	<b>Epoxy coated Steel fittings to Sectional Valves (SV)</b>				
J342.2	DN 100 HDPE Ranger Coupling as per Technical Specification clause 702. 1.6	nr	2		
J352.2	DN 100 flanged adaptor - self-restraining dismantling joint	nr	1		
J382.1	DN 100 flanged spigot steel pipe 1.2m long as per Technical Specifications Clause 728	nr	1		
J382.1	DN 100 all spigot steel pipe 1.2m long as per Technical Specifications Clause 728	nr	1		
J812.2	DN 100 all flanged sluice valve as per Technical Specifications clause 760	nr	1		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLIARIES.</b>				
	<i>Includes: Manholes and other chambers, ducts, culverts, crossings and reinstatement, other ancillaries as listed. Excludes: Work included in I, J, L, Y and Z</i>				
	<b>K2: Chambers</b>				
K211	Block depth 0 - 1.5m excavated by hand with medium duty cast iron cover	nr	2		
K212	Block depth 1.5 - 2.0 m excavated by hand; with medium duty cast iron cover	nr	4		
K213	Block depth 2 - 2.5 m excavated by hand; with medium duty cast iron cover	nr	2		
	<b>K6: Crossings</b>				
K621	Valley crossings width 3 to 10m pipe bore 100mm	nr	2		
	<b>K6: Reinstatement (Technical Specifications Clauses 113 and 815)</b>				
K752	Pipebore; not exceeding 100mm	m	7,277		
	<b>K8: Other pipework Ancillaries.</b>				
	<i>Supply all material, cast and fixed reinforced Concrete Marker Posts complete. All in accordance with drawings and specification clause 746</i>				
K820.1	Double Air Valves marker post inscribe DAV	nr	3		
K820.2	Single Air Valves marker post inscribe SAV	nr	3		
K820.3	Wash out marker post inscribe WO	nr	3		
K820.4	Sectional Valves marker post inscribe SV	nr	1		
K820.5	Pipeline inscribe marker post DN 100HDPE PIPE	nr	19		
	<b>CLASS L: PIPEWORK - SUPPORT AND PROTECTION, ANCILLIARIES TO LAYING AND EXCAVATION.</b>				
	<i>Includes: Extras to excavation and backfilling of trenches for pipework, ducts and metal culverts, manholes and other chambers, headings, thrust boring and pipe jacking. Excludes: Work included in classes I, J, K, Y and Z</i>				
	<b>L1: Extras to Excavation and Backfilling</b>				
L111	Excavation in trench for rock class "A" Blasting is not permitted	m <sup>3</sup>	50		
L121	Excavation for chambers for rock class "A"	m <sup>3</sup>	40		
	<b>L3: Beds depth 150mm (Technical Specifications Clause 809)</b>				
L333	Imported granular material type B pipe nominal bore not exceeding 100mm	m	1,746		
	<b>L5: Surrounds (Technical Specifications Clause 809)</b>				
L533	Imported granular material type B pipe nominal bore not exceeding 100mm	m	1,746		
	<b>L7: Concrete Support, Thrust Blocks and Anchor Blocks (Clause 810)</b>				
L742.1	Thrust blocks for bends	nr	2		
L742.2	Ditto for Tees	nr	4		
L742.3	Pipe Slip Anchors DN100	nr	4		
	<b>TOTAL CARRIED TO GRAND SUMMARY</b>				



Item No.	Description	Unit	Quantity (a)	Kenyan Shillings	
				Currency (KES)	
				Unit Price (b)	Amount ( c ) (c) = (b) x (a)
	<b>CLASS A: GENERAL ITEMS.</b>				
	<b>A3: Method-Related Charges</b>				
	<i>Includes:General obligations,site services and facilities,Temporary Works,testing of materials and work, Provisional Sums and Prime Cost Items</i>				
	Items to cover elements of the cost of work which are to be considered as proportional to the quantities of the permanent works				
	Testing of the works				
	Testing and sterilization test as Specification clauses 812 and 816				
A260	Test reservoir and all pipeworks	Item	1.0		
	<b>CLASS E: EARTHWORKS</b>				
	<i>Includes:Excavation,dredging,filling,compaction,disposal and landscaping</i>				
	<i>Excludes:Excavation for: ground investigation ( included in class B ) diaphragm walls and ground anchorages ( included in class C ) , pipes and sewers,manholes, trenches and ditches, pipes headings, thrust boring and pipe jacking and pipe , jointing ( included in classes I,J,K,L and Y ), piles ( included in classes P and Q ), foundations for traffic signs ( included in class R ), tunnels,shafts,headings and other subterranean cavities, ( included in class T ), foundations for fences and gates ( included in class X ), Reinstatement following pipe laying ( included in class K )</i>				
	General excavation(Technical Specification clause 301 - 304 and 814 ( Drg No.J008/ST/TMK/LP/LPH-001)				
E412	Top soil maximum depth 0.25- 0.5	m <sup>3</sup>	75.0		
	Excavate in material other than topsoil, rock or artificial hard material				
E323	Maximum depth 0.5- 1m	m <sup>3</sup>	75.0		
E324	Depth: 1.0 - 2.0m	m <sup>3</sup>	150.0		
E325	Depth: 2.0 - 5.0m	m <sup>3</sup>	60.0		
	Filling as per Technical specification clauses 304 and 1009				
E614	Filling to structures	m <sup>3</sup>	61.0		
E645.1	300mm approved hard-core fill	m <sup>3</sup>	45.0		
E645.2	Quarry dust 50mm thick on hardcore	m <sup>3</sup>	8.0		
	<b>CLASS F: IN SITU CONCRETE</b>				
	<i>Excludes:Insitu concrete for: capping of boreholes ( included in class E ), diaphragm walls ( included in class C ), excavation ancillaries ( included in class E ), granolithic and other applied finishes ( included in class G ), drainage and pipework ( included in classes K and L ),piles ( included in classes P and Q ),roads,pavings and kerbs ( included in class R ), tunnels and shafts and linings ( included in class T ), foundations for fences and gates ( included in class X )</i>				
	<b>Provision and placing of concrete</b>				
F132	Provide and mix materials needed for designed concrete Class 15/20 for 50mm thick blinding layer as per Clause 747 of the Technical specifications	m <sup>3</sup>	8.0		
F152	Provide and mix materials needed for designed concrete Class 30/25 for Base slab, Columns, Walls and Roof slab as per Clause 747 of the Technical specifications	m <sup>3</sup>	55.0		
	<b>CLASS G: CONCRETE ANCILLARIES</b>				
	<i>Includes:Formwork for in situ concrete, Reinforcement for in situ concrete, Joints in in situ concrete, Post-tensioned prestressing, Accessories for in situ concrete</i>				
	Formwork as per Technical Specification clause 5				
	<b>Formwork fair finish</b>				
	Plane vertical to:				
G243.1	External surface to wall footing	m <sup>2</sup>	29.0		
G243.2	External surface to ring beam	m <sup>2</sup>	10.0		
G243.3	External wall face upto 150mm below parapet wall	m <sup>2</sup>	16.0		
G243.4	External face to base slab	m <sup>2</sup>	10.0		
	<b>Formwork rough finish</b>				
	Plane vertical to:				
G143.1	External wall face down to 150mm below surface of roof parapet wall	m <sup>2</sup>	142.0		
G143.2	Internal surface of wall footing	m <sup>2</sup>	29.0		
G143.3	Column bases	m <sup>2</sup>	4.0		
G143.4	Columns (300mm wide)	m <sup>2</sup>	6.0		
G143.7	Internal faces of walls	m <sup>2</sup>	142.0		
G143.8	External and Internal edges of up stand to roof parapet, including boxing out for roof drain pipes	m <sup>2</sup>	19.0		
	Plane horizontal to:				
G113	Soffit of roof slab	m <sup>2</sup>	11.0		
	<b>Formwork fair finish</b>				
G172.1	Form opening 600 X 600mm opening for roof access	m <sup>2</sup>	1.0		
G172.2	Form 900 X 900 X 750mm deep sump for washout in the floor slab	m <sup>2</sup>	1.0		
G174	Form opening 1000 X 1000mm opening for inlet pipe access	m <sup>2</sup>	1.0		

	<b>Reinforcement</b>				
G526	Nominal diameter 20mm	kg	105.0		
G525	Ditto but nominal diameter 16mm	kg	435.0		
G524	Nominal diameter 12mm	kg	900.0		
G523	Ditto but nominal diameter 10mm	kg	576.0		
G522	Ditto but nominal diameter 8mm	kg	490.0		
G521	Ditto but nominal diameter 6mm	kg	20.0		
	<b>JOINTS AND WATER STOPS</b>				
	<i>(Rates to include for all rebates, shuttering, PVC waterstop, resin bonded cork joint sealers and bituminous painting)</i>				
G653.1	PVC waterstop; average width 300-300m	m	32.0		
G653.2	Ditto between column bases and floor slab	m	28.0		
G653.3	Ditto between wall and wall base and excluding PVC water stops	m	32.0		
G652.1	Construction joint between wall and wall base together with 150mm wide eyeleted water stop with central bulb	m	34.0		
G642.1	Construction joint between wall panels. Include for 240mm wide plain rearguard water stops	m	16.0		
G642.2	Ditto between adjacent bays of floor slabs	m	16.0		
G642.3	Ditto between bases	m	14.0		
G621.1	6mm thick joint filler on top of walls	m	14.0		
G621.2	30mm wide by 30mm deep trapezoidal false joints with sealer on roof slab	m	12.0		
G642.4	Partial construction joint in roof slab. Include for 140mm wide plain PVC water stops priming of surface and 50mm wide adhesive tape	m	8.0		
	<b>CLASS I: PIPE WORK - PIPES</b>				
	Includes:Provision,laying and jointing of pipes, Excavating and backfilling pipe trenches, Excludes: Work included in classes J,K,L and Y, Piped building services ( included in classes Z )				
	<b>Drainage</b>				
I512	110 DN PVC drain spigot pipe piece 2000mm long with flap valve	nr	1.0		
	<b>CLASS J: PIPE WORK - FITTINGS AND VALVES</b>				
	<i>Includes:Fittings and valves for pipework, Excludes: Work included in classes I,K,L and Y, Piped building services ( included in classes Z )</i>				
	<b>Inlet pipe</b>				
J351.3	DN250 Flange adaptor	nr	1.0		
J311.1	DN 250 all flanged 90° bend long radius	nr	3.0		
J381.2	250 all flanged pipe 2600mm long	nr	1.0		
J381.3	250 All flanged pipe 1000mm long with central puddle flange	nr	1.0		
J871	250 Ball and float Valve	nr	1.0		
J381	250/280mm dia flexible ranger coupling	nr	1.0		
J381.4	250mm all spigot 1000mm pipe piece	nr	1.0		
J881.1	All flange 250mm sluice valve	nr	1.0		
J381.5	250mm all flanged 500mm pipe piece	nr	1.0		
	<b>Outlet pipe</b>				
J381.6	150mm all flanged 1000mm pipe piece	nr	1.0		
J321	150mm x 80mm all flanged reducing tee	nr	1.0		
J881.2	All flanged 150mm sluice valve	nr	1.0		
J381.7	150 All flanged pipe piece 1500mm long with puddle flange 200mm from one end	nr	1.0		
J311.2	150mm All flanged 90° bend (long radius)	nr	1.0		
J371	150 Dia. flanged bell mouth	nr	1.0		
J381	150/160mm dia flexible ranger coupling	nr	1.0		
J331	100mm x 150mm all flanged reducing taper	nr	2.0		
J381.8	100mm all flanged strainer	nr	1.0		
J382.9	100mm flanged 1500mm pipe piece	nr	1.0		
J871	100mm All flanged Master Meter	nr	1.0		
J381.10	100mm flanged 500mm pipe piece	nr	1.0		
J381.11	150mm all spigot 750mm pipe piece	nr	1.0		
J351	DN100 Flange adaptor	nr	3.0		
J382.9	150mm flanged 2000mm pipe piece	nr	1.0		
J881.1	All flange 100mm sluice valve	nr	1.0		
J381.12	160mm all spigot HDPE 3000mm pipe piece	nr	1.0		
J381.12	160mm spigot HDPE 9000mm pipe piece	nr	1.0		
J381.13	160mm spigot HDPE12000mm pipe piece	nr	3.0		
	<b>Scour and Overflow pipe</b>				
J371	100 Dia. flanged bell mouth	nr	2.0		
J311	100 All flanged 90° bend (short radius)	nr	2.0		
J382.12	100mm all flanged 2000mm pipe piece epoxy coated	nr	1.0		
J351	DN100 Flange adaptor epoxy coated	nr	1.0		
J872	All flanged 100mm sluice valve	nr	1.0		
J382.14	100mm flanged spigot 500mm pipe piece epoxy coated	nr	2.0		

J381	Flexible ranger coupling DN 110/DN 100 epoxy coated	nr	2.0		
J321	DN 100 All flanged equal tee epoxy coated	nr	1.0		
J311	100 All flanged 90° bend (long radius) epoxy coated	nr	1.0		
J382.15	100 All flanged pipe 2800mm long with puddle flange 550mm from one end epoxy coated	nr	1.0		
J382.16	100mm all flanged 1600mm pipe piece	nr	1.0		
	<b>Vent pipe</b>				
J382.18	80mm all flanged 500mm pipe piece epoxy coated	nr	1.0		
J311	80 All flanged 90° bend (long radius) epoxy coated	nr	4.0		
J382.19	80mm all flanged 3000mm pipe piece epoxy coated	nr	1.0		
J382.20	80mm all flanged 1000mm pipe piece epoxy coated	nr	1.0		
	<b>Distribution Outlet Details</b>				
	<b>Offtake</b>				
J372	50 Dia. flanged bell mouth epoxy coated	nr	1.0		
J382.2	50 All flanged pipe 250mm long with puddle flange 50mm from one end epoxy coated	nr	1.0		
J332	50mm x 25mm all flanged reducing taper epoxy coated	nr	2.0		
J382.3	25mm all flanged strainer	nr	1.0		
J352	DN25 Flange adaptor epoxy coated	nr	3.0		
J382.6	25mm flanged 250mm pipe piece epoxy coated	nr	1.0		
J872	25mm All flanged Master Meter	nr	1.0		
J382.5	25mm all spigot 125mm pipe piece epoxy coated	nr	1.0		
J872	All flanged 25mm sluice valve	nr	1.0		
J382.6	50mm flanged 125mm pipe piece epoxy coated	nr	1.0		
J381	Flexible ranger coupling DN 63/DN 50 epoxy coated	nr	1.0		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b>				
	<i>Includes: Manholes and other chambers, ducts, culverts, crossings and reinstatement, other ancillaries as listed</i>				
	<i>Excludes: Work included in classes I, J, L and Y, Ducted building services ( included in classes Z )</i>				
	<b>Chambers as per Technical Specification clause 811</b>				
K231	Provide materials and construct in situ concrete valve chambers, depth not exceeding 1.5m	nr	2.0		
K232	Ditto but depth 1.5-2m	nr	2.0		
	<b>CLASS N: MISCELLANEOUS METALWORKS</b>				
	<i>Excludes: Metal reinforcement for concrete (included in classes C, G, H and R), Metal insert in concrete (included in classes C and G), Pipework (included in classes I, J, K and L), Structural metalwork (included in class M), Fittings and fastenings to timber (included in class O), Piles (included in classes P and Q), Traffic signs (included in class R), Rail track and accessories (included in class S), Fences (included in class X)</i>				
N130	GMS ladder 400mm wide with stringers and rungs fabricated from 40mm and 30mm Dia. M.S tubes respectively (in and out)	nr	1.0		
N230.1	1400 square GMS grill over overflow pipe	nr	1.0		
N230.3	Install all accessories for depth measuring staff gauge. Rate to include for all fittings	nr	1.0		
	<b>CLASS L: PIPEWORK- SUPPORT AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	<i>Includes: Extras to excavation and backfilling of trenches for pipework, ducts and metal culverts, manholes and other chambers, headings, thrust boring and pipe jacking, Excludes: Work included in classes I, J, K and Y, insulation to building services ( included in class Z )</i>				
L541	Class 20 mass concrete in pipe surrounds under reservoir	m <sup>3</sup>	8.0		
	<b>TOTAL CARRIED To Tanks Summary</b>				

Item No.	Description	Unit	Quantity (a)	Kenyan Shillings Currency (KES)	
				Unit Price (b)	Amount ( c ) (c) = (b) x (a)
	<b>CLASS A: GENERAL ITEMS.</b>				
	<i>Includes: General obligations, Site services and facilities, Temporary Works, Testing of materials and work, Provisional Sums and Prime Cost Items.</i>				
	Items to cover elements of the cost of work which are to be considered as proportional to the quantities of the permanent works				
	<u>A2: Specified Requirements</u>				
A260	Testing of HDPE pipes nominal bore 90mm, test as per Technical Specifications Clause 812.	M	27,000		
	<b>CLASS D: DEMOLITION AND SITE CLEARANCE.</b>				
	<i>Includes: Demolition and removal of natural and artificial articles, objects and obstructions which are above the original surface</i>				
	<i>Excludes: Removal of articles, objects, obstructions and materials (other than tree roots) at or below the original surface</i>				
	<b>D1: Site Clearance</b>				
D11	General Site clearance 5m width; as per Technical Specifications Clause 201, 204 & 814.	ha	13.50		
	<b>D3: Trees</b>				
D21	Trees Girth: 0.5m to 2.0m; holes backfilled with excavated materials, Technical Specifications Clause 205.	nr	20		
D21	Trees Girth: exceeding 2m; holes backfilled with excavated materials, Technical Specification Clause 205.	nr	15		
	<b>D3: Stumps</b>				
D31	Removal of stumps present (with a diameter less than 1m) as per Clause 206 of the Technical Specifications.	nr	15		
	<b>CLASS I: PIPEWORKS - PIPES.</b>				
	<i>Includes: Provision, Laying and Jointing of pipes. Excludes: Work included in classes J, K, L, Y and Pipe Building Services (Included in Z).</i>				
	HDPE OD 90mm of PN 16 as per Technical Specifications Clauses 3, 702, 760, 801, 805, 808, 809 and 1008				
I422	Between Chainages 0+000 to 41+310 as per Drawings Depth not exceeding 1.5m	m	27,000		
	<b>CLASS J: PIPEWORK - FITTINGS &amp; VALVES.</b>				
	<i>Includes: Fittings and Valves for Pipework. Excludes: Work included in classes I, K, L, Y and Pipe Building Services (Included in Z)</i>				
	<i>HDPE Pipe Bends as per Technical Specifications Clause 702.1</i>				
	<b>Horizontal and vertical Bends</b>				
J612.14	Bends Butt fused; nominal bore OD 90 mm PN16 45° effective length 220mm in trench	nr	5		
	Valves and Penstocks (Drawings J008/RWM/CP-001 to 004)				
	<b>Epoxy coated Steel fittings to Double Air Valves (DAV)</b>				
J322	DN 100 x DN 90 all flanged ferrous tee as per Technical Specifications clause 760	nr	4		
J331.1	DN 100 x DN 50 all flanged concentric taper as per Technical Specifications clause 728	nr	4		
J342.2	D100 HDPE Ranger Coupling as per Technical Specification clause 702. 1.6	nr	4		
J382.1	DN 100 flanged spigot steel pipe 1.2m long as per Technical Specifications Clause 728	nr	8		
J811	DN 50 double flange gate valve as per Technical Specifications clause 760	nr	4		
J861.5	DN 50mm Double Orifice Air Valves (DAV) as per Technical Specifications clause 703	nr	4		
	<b>Epoxy coated Steel fittings to Single Air Valves (SAV)</b>				
J322.1	DN 100 x DN 100 all Equal tee as per Technical Specifications clause 760	nr	4		
J331.2	DN 100 x DN 80 all flanged concentric taper as per Technical Specifications clause 728	nr	4		
J342.2	DN100 HDPE Ranger Coupling as per Technical Specification clause 702. 1.6	nr	4		
J382.1	DN100 flanged spigot steel pipe 1.2m long as per Technical Specifications Clause 728	nr	8		
J861.2	DN 80mm Flanged Single Orifice Air Valves (SAV) with built in isolating valve as per Technical Specifications clause 703	nr	4		
	<b>Epoxy coated Steel fittings to Washouts (WO)</b>				
J322.2	DN 100 x DN 80 all flanged level invert scour tee as per Technical Specifications clause 760	nr	4		
J342.2	DN 100 HDPE Ranger Coupling as per Technical Specification clause 702. 1.6	nr	8		
J351.3	DN 100 flanged adaptor - self-restraining dismantling joint	nr	8		
J381.3	DN 100 flanged spigot steel pipe 1.2m long as per Technical Specifications Clause 728	nr	8		
J382.2	DN 100 flanged spigot steel pipe 1.2m long as per Technical Specifications Clause 728	nr	8		
J391.3	OD 90 UPVC/ DN 90 G.S. Ranger Coupling Adaptor	nr	4		
J481.2	OD 906m long UPVC pipe cut to suit on site	nr	4		
J811.3	DN 90 double flanged sluice gate valve as per Technical Specifications clause 760	nr	4		

J891.2	DN 90 GI flap valve as per Technical Specification clause 762	nr	4		
	<b>Epoxy coated Steel fittings to Sectional Valves (SV)</b>				
J342.2	DN 90 HDPE Ranger Coupling as per Technical Specification clause 702. 1.6	nr	2		
J352.2	DN 100 flanged adaptor - self-restraining dismantling joint	nr	1		
J382.1	DN 100 flanged spigot steel pipe 1.2m long as per Technical Specifications Clause 728	nr	1		
J382.1	DN 100 all spigot steel pipe 1.2m long as per Technical Specifications Clause 728	nr	1		
J812.2	DN 100 all flanged sluice valve as per Technical Specifications clause 760	nr	1		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLIARIES.</b>				
	<i>Includes: Manholes and other chambers, ducts, culverts, crossings and reinstatement, other ancillaries as listed. Excludes: Work included in I, J, L, Y and Z</i>				
	<b>K2: Chambers</b>				
K211	Block depth 0 - 1.5m excavated by hand with medium duty cast iron cover	nr	2		
K212	Block depth 1.5 - 2.0 m excavated by hand; with medium duty cast iron cover	nr	4		
K213	Block depth 2 - 2.5 m excavated by hand; with medium duty cast iron cover	nr	2		
	<b>K6: Crossings</b>				
K621	Valley crossings width 3 to 10m pipe bore 100 mm	nr	2		
	<b>K6: Reinstatement (Technical Specifications Clauses 113 and 815)</b>				
K752	Pipebore; not exceeding 100 mm	m	54		
	<b>K8: Other pipework Ancillaries.</b>				
	<i>Supply all material, cast and fixed reinforced Concrete Marker Posts complete. All in accordance with drawings and specification clause 746</i>				
K820.1	Double Air Valves marker post inscribe DAV	nr	4		
K820.2	Single Air Valves marker post inscribe SAV	nr	4		
K820.3	Wash out marker post inscribe WO	nr	4		
K820.4	Sectional Valves marker post inscribe SV	nr	1		
K820.5	Pipeline inscribe marker post DN 200 HDPE PIPE	nr	135		
	<b>CLASS L: PIPEWORK - SUPPORT AND PROTECTION, ANCILLIARIES TO LAYING AND EXCAVATION.</b>				
	<i>Includes: Extras to excavation and backfilling of trenches for pipework, ducts and metal culverts, manholes and other chambers, headings, thrust boring and pipe jacking. Excludes: Work included in classes I, J, K, Y and Z</i>				
	<b>L1: Extras to Excavation and Backfilling</b>				
L111	Excavation in trench for rock class "A" Blasting is not permitted	m <sup>3</sup>	40		
L121	Excavation for chambers for rock class "A"	m <sup>3</sup>	40		
	<b>L3: Beds depth 150mm (Technical Specifications Clause 809)</b>				
L333	Imported granular material type B pipe nominal bore not exceeding 100mm	m	6,480		
	<b>L5: Surrounds (Technical Specifications Clause 809)</b>				
L533	Imported granular material type B pipe nominal bore not exceeding 100mm	m	6,480		
	<b>L7: Concrete Support, Thrust Blocks and Anchor Blocks (Clause 810)</b>				
L742.1	Thrust blocks for bends	nr	2		
L742.2	Ditto for Tees	nr	4		
L742.3	Pipe Slip Anchors DN100	nr	4		
	<b>TOTAL CARRIED TO GRAND SUMMARY</b>				

**BILL No. 7- WATER KIOSKS**

Item No.	Description	Unit	Quantity (a)	Kenyan Shillings	
				Currency (KES)	
				Unit Price (b)	Amount ( c ) (c) = (b) x (a)
<b>CLASS E: EARTHWORKS</b>					
<i>Includes:Excavation,dredging,filling,compaction,disposal and landscaping</i>					
<i>Excludes:Excavation for: ground investigation ( included in class B ), diaphragm walls and ground anchorages ( included in class C ), pipes and sewers,manholes, trenches and ditches, pipes headings, thrust boring and pipe jacking and pipe , jointing ( included in classes I,J,K,L and Y ), piles ( included in classes P and Q ), foundations for traffic signs ( included in class R ), tunnels,shafts,headings and other subterranean cavities, ( included in class T ), foundations for fences and gates ( included in class X ), Reinstatement following pipe laying ( included in class K )</i>					
E412	Top soil maximum depth 0-0.25m	m <sup>3</sup>	4.0		
	Excavate in material other than topsoil, rock or artificial hard material				
E323	Depth 0.25-0.5 in floor area	m <sup>3</sup>	4.0		
E324	Depth: 0.5-1.0m for 1600mmx1600mm soak pit and 400mmx400mm catch pit and strip footing	m <sup>3</sup>	14.5		
E325.1	Depth: 1.0-1.8m for 1600mmx1600mm soak pit	m <sup>3</sup>	2.0		
<b>Filling as per Technical specification clauses 304 and 1009</b>					
E645	300mm approved hard-core fill compacted in 150mm layers to floor slab and front area	m <sup>3</sup>	4.0		
E617	Graded approved free draining hard-core/rubble stone filling the soak pit	m <sup>3</sup>	0.8		
<b>CLASS F: IN SITU CONCRETE</b>					
<i>Excludes:Insitu concrete for:capping of boreholes ( included in class E ), diaphragm walls ( included in class C ), excavation ancillaries ( included in class E ), granolithic and other applied finishes ( included in class G ), drainage and pipework ( included in classes K and L ), piles ( included in classes P and Q ), roads,pavings and kerbs ( included in class R ), tunnels and shafts and linings ( included in class T ), foundations for fences and gates ( included in class X )</i>					
<b>Provision and Placing of concrete</b>					
F132	Provide and mix materials needed for designed concrete Class 15/20 for 50mm thick blinding layer as per Clause 747 of the Technical specifications	m <sup>3</sup>	1.0		
F152	Provide and mix materials needed for designed mass concrete Class 25/20 for Base slab, front area, soak pit cover and wall footing as per Clause 747 of the Technical specifications	m <sup>3</sup>	5.0		
F642	Trowel finished plaster to the internal wall surfaces	m <sup>2</sup>	20.0		
<b>CLASS G: CONCRETE ANCILLARIES</b>					
<i>Includes:Formwork for in situ concrete, Reinforcement for in situ concrete, Joints in in situ concrete, Post-tensioned prestressing, Accessories for in situ concrete</i>					
<b>Formwork as per Technical Specification clause 5</b>					
Formwork rough finish					
Plane vertical to:					
G143.1	External face of strip footing, floor slab and soak pit cover	m <sup>2</sup>	6.0		
<b>Reinforcement</b>					
G523	Nominal diameter 10mm to ring beam	kg	24.0		
G522	Ditto but nominal diameter 8mm to ring beam	kg	20.5		
G561	BS 142 weld mesh reinforcement to floor Slab	m <sup>2</sup>	15.0		
<b>CLASS J: PIPE WORK - FITTINGS AND VALVES</b>					
<i>Includes:Fittings and valves for pipework</i>					
<i>Excludes: Work included in classes I,K,L and Y, Piped building services ( included in class Z )</i>					
J311.1	15mm dia heavy duty GMS pipe 500mm long	m	4.0		
J311.2	20mm dia GMS pipe 5000mm	nr	1.0		
J81.1	15mm dia. Glove Valve as Peglar	nr	4.0		
J81.1	20mm dia. Glove Valve as Peglar	nr	1.0		
J81.2	50mm X 20mm Reducing socket	nr	1.0		
J321.1	50 X 50 mm Equal Tee	nr	2.0		
J321.2	20 x15 mm Reducing Tee	nr	4.0		
J361.1	50mm end plug	nr	1.0		
J361.2	20mm union	nr	4.0		
J381.2	20mm short/Barrel nipple	nr	4.0		
J311.1	20mm bend	nr	5.0		
J311.2	15mm bend	nr	4.0		
J880	20mm Peglar or approved Water Meter	nr	1.0		
J33.8	150mm Dia. Precast Concrete drainage pipes	m	1.0		
<b>CLASS N: MISCELLANEOUS METALWORKS</b>					

	<i>Excludes: Metal reinforcement for concrete (included in classes C,G,H and R , Metal insert in concrete (included in classes C and G ), Pipework (included in classes I,J,K and L), Structural metalwork (included in class M), Fittings, and fastenings to timber (included in class O), Piles (included in classes P and Q ), Traffic signs (included in class R ), Rail track and accessories (included in class S ), Fences (included in class X )</i>				
N810	2300 X 850 steel door including locks and hinges to details	nr	1.0		
N820	1000 X 950 steel swing window including locks and hinges to details	nr	1.0		
N840	Meter Box 220 X 220 X 300 lockable	nr	1.0		
N850	Catch pit grating made from welded to form 25mm square mesh on 50mm steel frame	nr	1.0		
	<b>CLASS O: TIMBER</b>				
	<i>Includes:Timber components and fittings, Timber Timber supports in tunnels ( included in class T )decking, Fittings and fastenings to timber components and decking, Excludes: Formwork to concrete ( included in class G), Timber sleepers ( included in class S ), Timber piles ( included in class P ),Timber fencing ( included in class X ), Carpentry and joineryin simple building works incidental to civil engineering works ( included in class Z)</i>				
	Softwood components				
	Provide and fix the following approved items of sawn cypress grade II, pressure impregnated to Shelf				
O413.1	75mmx50mm tie beam	m	8.0		
O413.1	50 x 50mm purlins	m	15.0		
O413.2	100 x 50mm rafters	m	10.0		
O472	15x250mm fascia board	m	20.0		
O800	Assorted Nails	kg	10.0		
	<b>CLASS U: BRICKWORK,BLOCKWORK AND MASONRY</b>				
	<i>Excludes:Brickwork in manholes and other brickwork incidental to pipework ( included in class K ),Brickwork in sewer renovation (included in class Y ).</i>				
U911	150 x225X 450mm natural stone to walls to superstructures walling in 1:3 sand/cement mortar finished with steel finished d on one side.	m	100.0		
U921	225 x225 X 450 natural stone to walls to Substructures walling in 1:3 sand/cement mortar.	m	30.0		
	Walling Ancillaries				
U981	Joint reinforcement equivalent to the wall thickness less 10 mm	m	40.0		
U982	Provide and place approved damp proof course	m	10.0		
U985	6" x 12" X 12" Concrete ventilation blocks	nr	8.0		
U986	4" X 8 X 18" lining block to the site of the catch pit	m	10.0		
	<b>CLASS V: PAINTING</b>				
	<i>Includes:In situ painting</i>				
	<i>Excludes: Painting carried out prior to delivery of components to the site</i>				
V234	1 coats of approved undercoat to concrete surface	m <sup>2</sup>	20.0		
V321	3 coats of approved gloss paint to timber surfaces	m <sup>2</sup>	5.0		
V533	3 coats of approved emulsion gloss paint to plastered surface	m <sup>2</sup>	20.0		
V643	1 coats of masonry paint to plastered surface for branding as specified in clause 1032 of the technical specifications.	m <sup>2</sup>	10.0		
V833	2 coats of bituminous paint to plinths and Horizontal Keys and floor	m <sup>2</sup>	10.0		
	<b>CLASS W: WATERPROOFING</b>				
	<u>Roofing</u>				
W372	Inter-locking concrete roofing tiles laid on 40mm x 40mm timber battens	m <sup>2</sup>	10.0		
	TOTAL				
	<b>TOTAL FOR 4 No. CONSUMER WATER KIOSKS CARRIED TO GRAND SUMMARY</b>		<b>8.0</b>		