

When replying please quote: AWWDA/GOK/B/KWS/W-11/2024/VOL.I (8) PE-jms

2nd February, 2024

To All Bidders;

**PROCUREMENT OF WORKS FOR THE CONSTRUCTION OF KIAMBAA WATER SUPPLY PROJECT:
IFB NO. AWWDA/GOK/B/KWS/W-11/2024**

**CLARIFICATIONS TO ISSUED BIDDING DOCUMENT AND BID SUBMISSION FOR PROCUREMENT
FOR WORKS**

Reference is made to the ongoing procurement of Works for the Construction of Kiambaa Water Supply Project, IFB No. AWWDA/GOK/B/KWS/W-11/2024.

Pursuant to clauses ITT 7.1 of the Tender Data Sheet (TDS), please find attached responses to clarifications as received by 30th January 2024.

Please note that the bid submission date remains 8th February, 2024 at 12:00 p.m. East Africa Time



ENG. KIPRONO D. ROP
FOR: CHIEF EXECUTIVE OFFICER

Encl.



CONSTRUCTION OF KIAMBAA WATER SUPPLY PROJECT:

TENDER NO.: AWWDA/GOK/B/KWS/W-11/2024



RESPONSE TO CLARIFICATIONS SOUGHT BY BIDDERS

S/No.	Request for Clarification / Query	Response
1.	BILL NO.2 -X338-THERE IS NO LENGTH FOR THE ACCESS ROAD.	The access road to the intake and CFU site is 500m. Refer also to section 6 Roads and Surfacing of the technical specifications and ensure your rate reflects accordingly. See attached revised BoQ
2.	BILL NO.3 - THERE IS NO J31*.1	Provide rates for the bill items provided. See attached revised BoQ
3.	BILL NO 5 – Item 5.1 Clarify on the Quantity	The quantity has been specified as 85metres. See attached revised BoQ.
4.	BILL NO 5 – Items 6.13 and 6.14 clarify on quantity	The quantities are indicated as 1nr and 4nr for Bill Item 6.13 and 6.14 respectively. See attached revised BoQ.
5.	BILL NO 6 - Class I- Pipework- pipes and Class J pipework- fittings and valves - is there a repetition on page 103 and 104?	Yes, this is inadvertently repeated. Please fill in page for page 103 only. See attached revised BoQ.
6.	BILL NO 6 – Items K820.3, L323, L523, L723- clarify on Quantities	The quantities are 3nr., 3500m, 4600m and 10nr for Bill item no. K820.3, L323, L523 and L723 respectively. See attached revised BoQ.

ATHI WATER WORKS DEVELOPMENT AGENCY

KIAMBAA WATER SUPPLY		
SUMMARY PAGE		
BILL	DESCRIPTION	COST (KES)
	DAY WORKS	
1	PRELIMINARY AND GENERAL ITEMS	
2	INTAKE WEIR	
3	RAW WATER PIPELINE	
4	STILLING WELL AND DOSING CHAMBER	
5	COMPOSITE FILTRATION UNIT	
6	COMPOSITE FILTRATION UNIT	
7	SUB - TOTAL No. 1	
8	ADD 10% CONTIGENCIES	
9	SUB - TOTAL No. 2	
10	ADD 16% VAT	
11	GRAND TOTAL	

BILL NO. 1 - PRELIMINARIES AND GENERAL ITEMS

Item No	Description	Unit	QTY	Rate (KSh.)	Amount (KSh.)
	CLASS A - GENERAL ITEMS				
	Contractual Requirements				
A110	Performance Security	Sum			
A120.1	Insurance for Works	Sum			
A120.2	Insurance against workers Injury (WIBA)	Sum			
A120.3	Insurance against Injury to Third Party Persons and damage to third party properties	Sum			
	Testing of Materials and Works				
A250.1	Provisional sum for testing of materials as specified or directed by the Engineer	sum			
A250.2	% Adjustment to the provisional sum for Item A250.1	%			
	Project Signboards and Plaque				
A279.1	Provision, fixing, maintaining and removal of site signboards	nr	3		
	Other Provisional sums				
A430	Preparation, printing and submission of As-Built Drawings and O&M Manuals	Sum			
A431	Allow Provisional Sum of Kshs 500,000.00 for maintaining, fuelling, lubricating and servicing of the transport vehicles assigned to the project for supervision of the works to be expended as directed by the Project Manager.	PC	1	500,000.00	500,000.00
A432	Allow Provisional Sum of Kshs 500,000.00 to cover supervision costs of Engineers assigned on the project from the Employer's head office to cover expenses for communication, transport, allowances etc, to be expended as directed by the Project Manager.	PC	1	500,000.00	500,000.00

A433	<p>Add a percentage of items 104 and 105 for contractor's overhead profit.</p> <p>Method Related Charges</p> <p>In addition to the items listed hereunder, a tenderer is to insert such items as he may decide to cover, items of work relating to his intended method of executing the works, costs of which are not to be considered as proportional to the quantities of the other items and for which he has not allowed in the rates and prices for the other items.</p> <p><i>Accommodation, Buildings and Services</i></p>	%			
A310	<p>Establish, maintain and remove Contractor's camp including offices, stores, laboratories, cabins, canteens etc and services including electricity, water, security, transport, staff welfare etc</p>	sum			
A353	<p>Establishment, operation and maintenance, and removal of de-watering plant/exhauster where necessary and approved by engineer</p>	sum			
Total C/F to Grand Summary Sheet					

KIAMBAA WATER SUPPLY

BILL No.2 : 2M HIGH INTAKE WEIR

ITEM	DESCRIPTION	UNIT	QTY	UNIT RATE (KES.)	TOTAL COST (KES.)
	CLASS B: GROUND INVESTIGATIONS				
	Trial Pit (1.0m x 1.0m) along the centerline of intake weir				
B111	Depth n.e 1.0m	nr	1		
B112	Depth 1 - 2m	nr	2		
B113	Depth 2 - 3m	nr	1		
	CLASS D: DEMOLITION AND SITE CLEARANCE				
	Site clearance of entire area of the intake works site that will be fenced; trees to be cleared to be identified by the Engineer: Rate to include for carting away and disposing cleared material.				
D100	General clearance	ha	0.10		
D210	Trees of girth 500mm to 1m	nr	20		
	CLASS E: EARTHWORKS				
	Excavations shall include for strutting, Shuttering, stabilizing excavated surfaces and keeping excavations free of water by bailing out, pumping or other means				
	Excavation for foundations				
	Intake chamber surface area of approx 3.0m wide x 10m long.				
E311	Topsoil depth n.e 0.25m	m ³	8		
E323	Material other than topsoil or rock depth 0.25 - 1.0m	m ³	23		
E334	Rock depth 1.0 - 2.0m	m ³	30		
	Weir Abutment walls, 2nr(LHS & RHS), approx surface area 1.3wide x 15.0m long				
E311	Topsoil depth n.e 0.25m	m ³	10		
E323	Material other than topsoil or rock depth 0.25 - 1.0m	m ³	29		
E324	Ditto but depth 1-2m	m ³	39		
E334	Rock, depth 1-2m	m ³	20		
	Improvement of Riverbank; Approx 30m long x 3m wide				
E421	Topsoil depth n.e 0.25m	m ³	23		
E422	Material other than topsoil or rock depth 0.25 - 1.0m	m ³	68		
E434	Rock, depth n.e 1-2m	m ³	14		
	Trimming of excavated surfaces				
E512	Material other than topsoil or rock	m ²	34		
E513	Trimming rock surfaces	m ²	50		
	Disposal of excavated material				
E532	Material other than top soil or rock	m ³	89		
E533	Rock	m ³	38		
Total for This Page					

KIAMBAA WATER SUPPLY

BILL No.2 : 2M HIGH INTAKE WEIR

ITEM	DESCRIPTION	UNIT	QTY	UNIT RATE (KES.)	TOTAL COST (KES.)
	Filling with imported natural material in layers not exceeding 200mm thick compacted as specified or to the Enginner's satisfaction				
E614	Selected Excavated material other than topsoil or rock to intake structures	m ³	20		
E616	Excavated rock to intake chamber	m ³	3		
	CLASS F: IN SITU CONCRETE				
F172.1	Provide and place class 15/20 concrete blinding	m ³	7		
F172.2	Provide and place concrete class 35/20 to weir structure	m ³	62		
F172.3	Ditto but to intake chambers base slabs	m ³	4		
F172.4	Ditto but to intake chamber - valve chamber extension base	m ³	1		
F172.5	Ditto but to foot bridge supporting column bases	m ³	4		
F172.6	Ditto but to 200mm walkway and chamber cover slabs	m ³	3		
F172.7	Ditto but to 300mm thick footbridge walkway slab	m ³	9		
F172.8	Ditto but chamber walls, 300 - 350mm thick	m ³	5		
F172.9	Ditto but wing walls, 300mm thick	m ³	90		
F172.10	Ditto to Crossing footbridge support columns	m ³	3		
	CLASS G: CONCRETE ANCILLARIES				
	Formwork				
G2**	All formwork fair finish	m ²	591		
	Reinforcement steel				
G522	All mild steel reinforcement deformed high yield bars	kg	14404		
	Dowels				
G681	R 25 - Plain drilled 1.0m into rock	nr	112		
	Formed surface with filler				
G643	To Weir structure	m ²	30		
	Joints				
G653	Plastic water stops: Expansion Joint Sealing - Include for all Labour, materials (including 240 mm wide PVC waterstop and resin bonded cork joint filler - Width 250mm)	m	30		
Total for This Page					

KIAMBAA WATER SUPPLY

BILL No.2 : 2M HIGH INTAKE WEIR

ITEM	DESCRIPTION	UNIT	QTY	UNIT RATE (KES.)	TOTAL COST (KES.)
	CLASS I: PIPEWORK - PIPES				
	Unless otherwise stated the rate quoted is for provision and fixing of epoxy coated FBE steel pipes in trenches .				
I415	DN 110, depth 2.5-3m	m	10		
I437	DN 200, depth 3.5-4m	m	4		
I437	DN 250, depth 3.5-4m	m	4		
	CLASS I: PIPEWORK - FITTINGS AND VALVES				
	Unless otherwise stated the rate quoted is for provision and fixing of epoxy coated FBE steel fittings to the pipe network.				
J3**.1	DN 200 steel single intake valve chamber scour pipe piece, length n.e 9.0m, with the side inside intake valve chamber fixed with wire mesh flashing with chamber wall	nr	1		
J3**.2	OD 150 Steel pipe piece for compensation flow, length n.e 3.0m, wholly embedded in concrete.	nr	1		
J3**.4	DN 150 steel single flanged outlet pipe piece, length n.e 3m, with flanged side protruding inside the intake valve chamber	nr	1		
J3**.5	DN 150 steel single flanged interconnecting pipe piece, length n.e 500mm, with flanged side protruding inside the intake valve chamber	nr	1		
	Bends				
J3**.6	DN 110, 45° double socket	nr	1		
J3**.7	DN 150, 45° double socket	nr	1		
J3**.8	DN 200, 45° double socket	nr	1		
	Straight Specials				
J3**.9	DN 110, plain ended pipe piece with puddle flange, length n.e 0.5m	nr	1		
J3**.11	DN 200, plain ended pipe piece, length n.e 0.5m	nr	1		
J3**.12	DN 200, single flanged pipe piece with puddle flange, length n.e 0.5m	nr	1		
Total for This Page					

KIAMBAA WATER SUPPLY

BILL No.2 : 2M HIGH INTAKE WEIR

ITEM	DESCRIPTION	UNIT	QTY	UNIT RATE (KES.)	TOTAL COST (KES.)
	Couplings				
J3**.5	DN110mm	nr	2		
J3**.5	DN150mm	nr	2		
J3**.5	DN300mm	nr	2		
J3**.5	DN250mm	nr	2		
	Unless otherwise stated the rate quoted is for provision and fixing of HDPE PN10 pipe fittings				
	Bends				
J6**.1	OD 250 PN 10, 90° Bend	nr	1		
	Straight Specials				
J6**.2	OD 250 PN 10 Plain ended pipe piece, length n.e 1.0m	nr	1		
	Valves and Penstocks - PN 10				
J812	DN 250 Sluice valve with extension spindle, guide brackets, headstock and hand wheel.	nr	1		
J813	Ditto but DN 200	nr	1		
	CLASS N: MISCELLANEOUS METALWORK				
	Cost to include for supply, erection and commissioning				
N12*	Fabricate and install galvanised mild steel tubular balustrades all framed and welded together. 900 mm high level balustrades of 40 mm diameter tubing Class B throughout, consisting of handrail and parallel middle rail 450 mm below the hand rail with balusters at maximum 1500 mm centres, including all necessary labours and fittings on tubings on stilling well, dosing channel, flocculation, sedimentation and filtration units as directed by the Engineer. All assembled and painted to allow for manned inspection and maintenance of the treatment plant	m	60		
N13*	Fabricate and install ladders: 1No. 2m long on stilling well and 2No 2.5m long on filters	m	6		
N181	GRP access covers size 600×600mm	nr	3		
N169.1	Coarse screen made of DN 25 GMS bar @ 75mm c/c on a 100 X 100mm thick GMS plate frame bolted with DN 20mm bolts 100mm long @ 250mm c/c as per detail on Drawing No. 5160825-KRSP-20-C-426	m ²	5		
N169.2	Fine screen made of DN6 mm GMS bars @ 20mm c/c tack welded on 50 X 50 X 10mm thick angle frame with DN 12mm GS lifting handle as per detail on Drawing No. 5160825-KRSP-20-C-426	m ²	5		
	0.8*8m long 4.5mm thick chequer plate walkway (railing catered for in N12* above)	m ²	8		
	CLASS U: Brickwork, blockwork and masonry				
U121	Provide all materials and construct 225 mm thick masonry headwall of 3m long including concrete Class 15/20 blinding, all in accordance with drawing no. 5160825-KRSP-20-C-423	m ²	8		
Total for This Page					

KIAMBAA WATER SUPPLY

BILL No.2 : 2M HIGH INTAKE WEIR

ITEM	DESCRIPTION	UNIT	QTY	UNIT RATE (KES.)	TOTAL COST (KES.)
	<u>CLASS X: MISCELLANEOUS WORK</u>				
	<u>Rock Filled Gabions</u>				
X420	Provide and install Gabion Mattresses: Thickness - 1m	nr	98		
	<u>Fencing and Gate</u>				
X136	Fence made of 12No. horizontal strands of barbed wire complete with concrete posts	m	150		
X237	5m wide gate with a 1m wide pedestrian access as per details on Drawing No. 5160825-KRSP-20-C-490	nr	1		
	<u>Access Roads and Diversion Works</u>				
X338	Provide 6m wide murrum access road to the intake works as per the technical specifications and up to the Engineers Approval	m	500		
X339	River diversion works in accordance with Engineers Drawings and in accordance with Technical Specifications	LS	1		
Total for This Page					
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KIAMBAA WATER SUPPLY

BILL No.2 : RAW WATER PIPELINE

ITEM	DESCRIPTION	UNIT	QTY	UNIT RATE (KES)	COST (KES)
	CLASS A - TESTING AND SETTING OUT OF WORKS				
	Testing Pipelines complete including flushing and sterilising in accordance with the Specification Clause 440 & 441				
A260	DN160	m	450		
	CLASS D - DEMOLITION AND SITE CLEARANCE				
D100	General clearance for pipeline for full width of easement including grubbing out all shrubs etc and removal of all trees of girth n.e 2m	ha	1		
D210	Tree girth 0.5 - 1.0m	nr	20		
	CLASS F - IN SITU CONCRETE				
	Provision of concrete: Provide materials and mix concrete to the specified class;				
	Valve chambers and headwalls for washouts				
F234	Blinding concrete class 15/20	m ³	2		
F253	Concrete grade 30/20	m ³	39		
	CLASS G: CONCRETE ANCILLARIES				
	Formwork				
G113	All formwork rough finish: ground slab, Inner face of headwall	m ²	60		
G213	All formwork fair finish: Top of wingwall, Outer faces of air valve chambers including washout headwalls and wingwalls,	m ²	144		
	Reinforcement				
	Rate to include for cutting, bending, supporting, tying and securing reinforcement				
G529	Assorted Sizes; deformed high yield steel bars to BS4449	kg	2553.46		
	CLASS I - PIPEWORK - PIPES				
	HDPE pipes as specified: Supply, excavate trench, lay pipes, backfill with selected material from the trench excavations and compact, all as specified				
I532	Nominal bore 160mm PN10 in trenches, depth not exceeding 1.5m	m	120		
I533	Ditto- but depth 1.5m - 2.0m	m	250		
I534	Ditto- but depth exceeding 2.0m	m	80		
			450		
Total for This Page					

KIAMBAA WATER SUPPLY					
BILL No.2 : RAW WATER PIPELINE					
ITEM	DESCRIPTION	UNIT	QTY	UNIT RATE (KES)	COST (KES)
	<u>CLASS J - PIPEWORK - FITTINGS AND VALVES</u>				
	<u>Bends to as specified</u>				
J311	Nominal bore 80mm, single flanged 90° bend (for washouts)	nr	2		
J313.1	Nominal bore 160mm 90° bend	nr	3		
J313.2	Ditto- but 45° bend	nr	2		
J313.3	Ditto- but 22½° bend	nr	2		
J313.4	Ditto- but 11¼° bend	nr	2		
	<u>Junctions and Branches to PN10 Pressure as specified</u>				
J323.1	Nominal bore 160mm x 80mm socketed tee with flanged branch (for Air Valves)	nr	2		
J323.2	Nominal bore 160mm x 80mm socketed tee with flanged branch (for Washouts)	nr	2		
	<u>Double Collars</u>				
J341	Nominal bore 80mm flexible coupling	nr	2		
	<u>Adaptors</u>				
J351	Nominal bore 80mm flange adaptor	nr	2		
J353	Nominal bore 160mm flange adaptor	nr	2		
	<u>Straight Specials as specified</u>				
J381.1	80mm diameter plain ended steel, 2000mm long (For Washout)	nr	2		
J381.2	80mm diameter flanged spigot pipe with thrust flange	nr	3		
J381.3	160mm diameter double flanged riser pipe, 200mm long	nr	3		
	<u>Gate Valves as specified</u>				
J811.1	Nominal bore 80mm flanged sluice valve for Washout	nr	2		
	Nominal bore 160mm flanged sluice valve	nr	2		
	<u>Air Valves as specified</u>				
J861	80mm reinforced polyamide combination Airvalve	nr	3		
	<u>CLASS K - PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</u>				
	<u>Chambers</u>				
K232.1	400x400 surface box	nr	5		
K232.2	In situ concrete chamber, internal size 1200mm x 1200mm, depth not exceeding 2.0m for Air valve	nr	3		
K232.3	Pre-cast concrete sluice valve chamber for Washouts	nr	2		
	<u>Marker Posts</u>				
K820.1	Marker post for Air Valve inscribed 'AV'	nr	3		
K820.2	-Ditto- but Water Main inscribed 'WM'	nr	10		

KIAMBAA WATER SUPPLY					
BILL No.2 : RAW WATER PIPELINE					
ITEM	DESCRIPTION	UNIT	QTY	UNIT RATE (KES)	COST (KES)
Total for This Page					

KIAMBAA WATER SUPPLY					
BILL No.2 : RAW WATER PIPELINE					
ITEM	DESCRIPTION	UNIT	QTY	UNIT RATE (KES)	COST (KES)
K820.3	-Ditto- but Washout inscribed 'WO'	nr	2		
	<u>CLASS L - PIPEWORK SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</u>				
	<i>Excavation of rock as defined in Specifications</i>				
L111	Extras to excavation and backfilling of pipe trenches for rock excavation	m ³	180		
	<i>Bedding to pipes</i>				
L323	Selected excavated granular material 150mm thick to pipe nominal bore 400mm	m	300		
	<i>Surrounds</i>				
L523	Surrounds with excavated selected granular material, pipe bore 250mm	m	300		
	Thrust blocks for bends, tees, blank ends and anchor blocks for tapers, gate valves and vertical bends.				
L723	Concrete thrust and anchor blocks, volume 0.1 - 0.2m ³ , pipe nominal bore 250mm	nr	10		
Total for This Page					
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BILL No. 4.2 : WATER TREATMENT WORKS - STILLING WELL AND DOSING CHANNEL

ITEM	DESCRIPTION	UNIT	QTY	UNIT COST (KES.)	TOTAL COST (KES.)
	CLASS D: DEMOLITION AND SITE CLEARANCE				
	General clearance				
D1**	General clearance	m ²	64		
	CLASS E: EARTHWORKS				
	Excavation				
E21*	Topsoil n.e 0.1m	m ³	7		
E22*	Material other than topsoil, rock or artificial hard material n.e 0.3m	m ³	21		
E53*	Disposal of excavated material. Rate includes topsoil, material other than top soil, rock or artificial hard material, rock and stated artificial hard material	m ³	28		
	Filling				
E615	Provide and fill 600mm thick layer of imported gravel in 300mm layers and ram around foundation to 95% MDD	m ³	32		
E617	Provide and fill 500mm hardcore layer under slabs and ram around foundation	m ³	32		
	Excavation ancilleries				
E71*	Trimming of excavated surfaces. Rate includes topsoil, material other than top soil, rock or artificial hard material, rock and stated artificial hard material	m ²	64		
E72*	Preparation of excavated surfaces. Rate includes topsoil, material other than top soil, rock or artificial hard material, rock and stated artificial hard material	m ²	64		
	CLASS F: IN-SITU CONCRETE				
F132	Provide and fill 75mm thick blinding concrete class 15/20	m ³	1.6		
F172.1	300mm thick reinforced concrete floor slab class 30/20	m ³	4.9		
F172.2	Ditto but 300mm thick walls	m ³	8.9		
	CLASS G: CONCRETE ANCILLARIES				
G2**	All formwork fair finish	m ²	65		
	Reinforcement steel				
G522	Fixing all mild steel reinforcement deformed high yield bars including binding wire	kg	1104		
	Joints				
G65*	Plastic or rubber water stop average width n.e 150mm	m	40		
G823	Finishing formed surfaces i.e steel troweling or other after striking out formwork.	m ²	65		



ATHI WATER WORKS DEVELOPMENT AGENCY

KIAMBAA WATER SUPPLY

BILL No. 4.2 : WATER TREATMENT WORKS - STILLING WELL AND DOSING CHANNEL

ITEM	DESCRIPTION	UNIT	QTY	UNIT COST (KES.)	TOTAL COST (KES.)
	CLASS J: PIPEWORK - FITTINGS AND VALVES				
	Unless otherwise stated the rate quoted is for provision and jointing of epoxy coated FBE steel fittings to the pipe network.				
	Raw Water Inlet Pipework				
J3**.1	Mark 1: DN160mm Single flanged 90° short radius bend	nr	1		
J3**.2	Mark 2: D160mm 550mm long double flanged pipe piece with paddle flange in the middle	nr	1		
Page Total Carried Forward to Next Page					

BILL No. 4.2 : WATER TREATMENT WORKS - STILLING WELL AND DOSING CHANNEL

ITEM	DESCRIPTION	UNIT	QTY	UNIT COST (KES.)	TOTAL COST (KES.)
Sum carried forward from previous page					
J3**.3	Mark 3: Ø160mm all flanged 90° bend	nr	2		
J3**.4	Mark 4: Ø160mm 2200mm long double flanged spigot pipe	nr	1		
J3**.5	Mark 5: Ø160mm flange adaptor	nr	3		
J3**.6	Mark 6: Ø160mm 1200mm long single flanged spigot pipe	nr	1		
J3**.7	Mark 7: Ø160mm 990mm long single flanged spigot pipe	nr	2		
J3**.8	Mark 8: Ø160mm sluice valve PN10	nr	1		
J3**.9	Mark 9: Ø250 Ranger Coupling	nr	1		
Stilling Well Scour Pipework					
J3**.10	Mark A: Ø100mm 700mm long flanged pipe piece with paddle flange 100mm from sigot end	nr	1		
J3**.11	Mark B: Ø100mm Straight Coupling	nr	1		
J3**.12	Mark C: Ø100mm 1200mm long single flanged spigot pipe	nr	1		
J3**.13	Mark D: Ø100mm sluice valve PN10 with extended spindle	nr	1		
J3**.14	Mark E: Ø100mm single flanged 90° bend	nr	1		
Recirculation Pipework					
J3**.15	Mark a: Ø100mm single flanged 90° bend	nr	1		
J3**.16	Mark b: Ø100mm 540mm long double flanged pipe piece with paddle flange in the middle	nr	1		
J3**.17	Mark c: Ø100mm all flanged 90° bend	nr	3		
J3**.18	Mark d: Ø100mm 2200mm long single flanged spigot pipe	nr	1		
J3**.19	Mark e: Ø100mm flange adaptor	nr	1		
J3**.20	Mark f: Ø100mm 1200mm long single flanged spigot pipe	nr	1		
J3**.21	Mark g: Ø110/Ø100mm Stepped/ Ranger Coupling	nr	1		
Weir					
J88*	Thin plate rectangular weir grouted into dosing channel. Exposed wetted surface 0.5m x 0.25m	nr	1		
CLASS K: PIPEWORK—MANHOLES AND PIPEWORK ANCILLARIES					
K122	1200mm x 1200mm cast concrete scour valve chamber. Include for provision and fixing of cast iron step irons and heavy duty rectangular mild steel frame, concrete filled cover as detailed in drawings	nr	1		



ATHI WATER WORKS DEVELOPMENT AGENCY

KIAMBAA WATER SUPPLY

BILL No. 4.2 : WATER TREATMENT WORKS - STILLING WELL AND DOSING CHANNEL

ITEM	DESCRIPTION	UNIT	QTY	UNIT COST (KES.)	TOTAL COST (KES.)
Page Total Carried Forward to Next Page					

BILL No. 4.2 : WATER TREATMENT WORKS - STILLING WELL AND DOSING CHANNEL

ITEM	DESCRIPTION	UNIT	QTY	UNIT COST (KES.)	TOTAL COST (KES.)
Sum carried forward from previous page					
	CLASS R: PAVINGS				
R75*	75mm thick cover slabs size 650mm long x 338mm wide including 2 Nr. mild steel key holes cast with slab constructed as per details on drawings.	m ²	7		
	CLASS Z: EQUIPMENT AND FITTINGS				
Z781.1	Supply, install and commission ultrasonic flow meter to measure and record flow in dosing channel. The instrument should be complete with measurement of instantaneous flow and totalised flow. The cost should include for fixing brackets, battery backup, sensors / integrator, cables, flow connector and calibration	nr	1		
Z781.2	Provide and install remote indicator located in the Administration Building of instantaneous flow and total flows from the treated water flow meter. Include for control cables, ducting, trenching for installation of remote indicators. Maximum length 45m from meter to remote location of indicator.	nr	1		
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KIAMBAA WATER SUPPLY

Bill No. 4.3 - 400m3 Composite Filtration Unit (1no. Unit)

	DESCRIPTION	UNIT	QTY	RATE (KES)	COST (KES)
1	EXCAVATION				
	The rates should include for all strutting, shuttering, stabilising the excavation and keeping the excavation free from water by pumping, bailing or other means. Excavate for foundation part backfill after construction and remainder cart away to tips or use as fill on site, all as directed.				
1.1	Maximum depth less than 1.0m	m ³	370		
1.2	-Ditto- but depth 1.0 to 2.0m	m ³	280		
1.3	Extra over excavation in rock Class 'A'	m ³	92		
1.4	-Ditto - in rock Class 'B'	m ³	150		
1.5	-Ditto - in rock Class 'C'	m ³	185		
2	CONCRETE WORKS				
	Design Assumption				
	Only the 375mm deep section with the outlet pipes is sunken below the foundation. Base slab projection is 150mm all round.				
	Provide, mix and place concrete as directed.				
2.1	Concrete Class 15/20 in 75mm blinding layer under base slab and footings allowing for sloping sides.	m ²	78		
2.2	Concrete Class 15/20 in surround to 200mm dia. pipe	m ³	1		
2.3	Mass concrete thickness 300mm Class 15/20 for surround to approved plastic nozzles and wash water channel.	m ²	5		
2.4	Concrete Class 15/20 in benching layer to 100mm wide scour channel	m ³	2		
2.5	Allow for formation of a 100mm wide, 18.85m long channel in concrete class 15/20 benching as required	m	22		
2.6	Vibrated reinforced concrete Class 35/20 to base slab 250mm thick	m ³	25		
2.7	-Ditto - but for external CFU wall 250mm thick and 3280mm long	m ³	24		
2.8	-Ditto - but for internal filter wall 250mm thick and 3280mm long	m ³	8		
2.9	-Ditto - but for 6 No. dividing walls, 3280mm long	m ³	10		
2.10	-Ditto - but for walkway 650mm wide	m ³	2		
3	STEEL REINFORCEMENT				
	Provide and fix steel reinforcements including cutting, bending, propping with spacers and tying as specified.				
3.1	Steel reinforcement, all diameters	kg	5,500		
4	FORMWORK				
	Provide and fix shuttering including propping, strutting and striking all as specified, allowing for curvature where necessary.				
4.1	Sides of outlet pipes concrete surround, 375mm thick	m	42		
4.2	Sides of 250mm thick base slab	m ²	8		
4.3	Sides of concrete surround to approved plastic nozzles and wash water channel	m ²	2		
4.4	Sides of benching to scour channel	m ²	31		
4.5	Sides of 3280mm external CFU wall (vertical)	m ²	185		
4.6	Sides of 3280mm internal filter wall (vertical)	m ²	65		
4.7	Sides of 6 No. dividing walls (vertical)	m ²	107		
4.8	Soffit of 150mm thick underflow walls beams (horizontal)	m ²	1		
Page 1 Total Carried to Bill No. 3.3 Section Collection Page					

KIAMBAA WATER SUPPLY

Bill No. 4.3 - 400m3 Composite Filtration Unit (1no. Unit)

	DESCRIPTION	UNIT	QTY	RATE (KES)	COST (KES)
4.9	Sides of 650mm wide walkway	m ²	5		
4.10	Soffit of 650mm wide walkway	m ²	15		
5	<u>WATER BAR</u>				
5.1	Provide and install 240mm wide bituminous expansion board in construction joint concrete base slab and walls. Include for all surface treatment, formwork, forming of rebate 20mm x 20mm and sealing of rebate with polysulphide sealant all as per drawings and specification	m	85		
6	<u>PIPES AND FITTINGS - PN 10</u>				
	Supply and install all pipework and fittings including jointing material, concrete surrounds etc. to the the CFU and filter unit as specified in the CFU drawings.				
	<u>Inlet Pipework and Fittings (Approved Epoxy Coated Ferrous Pipes and Fittings)</u>				
6.1	160mm dia. coupling (Mark 1)	Nr	1		
6.2	160mm dia. single threaded (male) pipe 1645mm long with puddle flange at 8400mm from threaded end (Mark 2)	Nr	1		
6.3	160mm dia. female threaded socket (Mark 3)	Nr	1		
6.4	160mm dia. single threaded (male) 90° bend (Mark 4)	Nr	1		
6.5	160mm dia. flanged spigot pipe 800mm long with puddle flange at 75mm from the plain end (Mark 5)	Nr	1		
6.6	160mm dia. double flanged 90° bend (Mark 6)	Nr	2		
6.7	160mm dia. flanged spigot pipe 660mm long (Mark 7)	Nr	1		
	<u>Outlet Pipework and Fittings (Approved HDPE Pipes and Fittings)</u>				
6.8	160mm dia. equal 90° tee (Mark A)	Nr	1		
6.9	160mm dia. plain ended pipe 250mm long (cut to suit on site) (Mark B)	Nr	1		
6.10	160mm dia. 90° elbow (Mark C)	Nr	1		
6.11	160mm dia. plain ended pipe 5000mm long (cut to suit on site) (Mark D)	Nr	1		
6.12	160mm dia. stub end with galvanized steel flange (Mark E)	Nr	1		
	<u>Outlet Pipework and Fittings (Approved Epoxy Coated Ferrous Pipes and Fittings)</u>				
6.13	200mm x 200mm dia. all flanged cross (Mark F)	Nr	1		
6.14	200mm dia. all flanged gate valve with 1.5m long extension spindle (Mark G)	Nr	4		
6.15	200mm dia. flange adaptor (Mark H)	Nr	6		
6.16	200mm dia. plain ended pipe 1.2m long with puddle flange at 400mm from one end (cut to suit on site) (Mark I)	Nr	3		
6.17	200mm dia. coupling (Mark J)	Nr	3		
6.18	200mm dia. plain ended pipe 3.6m long (cut to suit on site) (Mark K)	Nr	3		
6.19	200mm dia. Butterfly valve	Nr	1		

Page 2 Total Carried to Bill No. 3.3 Section Collection Page

KIAMBAA WATER SUPPLY

Bill No. 4.3 - 400m3 Composite Filtration Unit (Ino. Unit)

	DESCRIPTION	UNIT	QTY	RATE (KES)	COST (KES)
	<u>Washwater Outlet Pipework and Fittings (Approved HDPE Pipes and Fittings)</u>				
6.20	Concentric wash water collector, 420mm x200mm and 375mm long (Mark i)	Nr	1		
6.21	200mm dia. socket (Mark ii)	Nr	1		
6.22	200mm dia. plain ended pipe 1500mm long (cut to suit on site) (Mark iii)	Nr	1		
6.23	200mm dia. 90° elbow (Mark iv)	Nr	1		
6.24	200mm dia. stub ended pipe with galvanized steel flange 5950mm long (Mark v)	Nr	1		
	<u>Washwater Outlet Pipework and Fittings (Approved Epoxy Coated Ferrous Pipes and Fittings)</u>				
6.25	200mm dia. all flanged gate valve with 1.7m long extension spindle (Mark vi)	Nr	1		
6.26	200mm dia. single flanged 90° bend (Mark vii)	Nr	1		
	<u>Scour Pipework and Fittings (Approved Epoxy Coated Pipes and Fittings)</u>				
6.27	100mm dia plain ended pipe 2685mm long (Mark a)	Nr	2		
6.28	100mm dia plain ended pipe 4455mm long (Mark a1)	Nr	1		
6.29	100mm dia flange adaptor (Mark b)	Nr	3		
6.30	100mm dia all flanged gate valve with 1.5m long extension spindle (Mark c)	Nr	3		
6.31	100mm dia single flanged 90° bend (Mark d)	Nr	3		
	<u>Overflow Pipework and Fittings (Approved Epoxy Coated Pipes and Fittings)</u>				
6.32	150mm dia. flanged spigot pipe 600mm long with puddle flange 100mm from one end (Mark e)	Nr	1		
6.33	150mm dia. double flanged 90° bend (Mark f)	Nr	1		
6.34	150mm dia. flanged spigot pipe 3.0m long cut to suit on site (Mark g)	Nr	1		
	<u>Other Pipework and Fittings (Approved HDPE Pipes and Fittings) and Metalwork as Detailed on Drawings</u>				
6.35	Supply and install 75 dia. flap valve as specified	Nr	6		
6.36	Supply and install 50mm dia. HDPE pipe, 900mm long with 5Nr. 19mm dia. holes as shown	Nr	2		
6.37	Supply and install 50mm dia. HDPE pipe, 1100mm long with 6Nr. 19mm dia. holes as shown	Nr	2		
6.38	Supply and install 50mm dia. HDPE pipe, 1300mm long with 7Nr. 19mm dia. holes as shown	Nr	2		
6.39	Supply and install 50mm dia. HDPE pipe, 1700mm long with 9Nr. 19mm dia. holes as shown	Nr	2		
6.40	Supply and install 50mm dia. HDPE pipe, 2100mm long with 11Nr. 19mm dia. holes as shown	Nr	2		
6.41	Supply and install 50mm dia. HDPE pipe, 2500mm long with 13Nr. 19mm dia. holes as shown	Nr	4		
6.42	Supply and install approved plastic nozzles in underdrain pipes	Nr	140		

Page 3 Total Carried to Bill No. 3.3 Section Collection Page

KIAMBAA WATER SUPPLY

Bill No. 4.3 - 400m3 Composite Filtration Unit (1no. Unit)

	DESCRIPTION	UNIT	QTY	RATE (KES)	COST (KES)
7	<u>FILTER MEDIA</u>				
	Filter Media details are shown on Drawing No. 5188481-ATK-WTP-CF-DR-W-010				
7.1	Supply and lay graded gravel of size 2mm to 38mm in 4 layers 75mm thick	m ³	3		
7.2	Supply and lay coarse sand of size 1mm in one layer 75mm thick	m ³	1		
7.3	Supply and lay graded sand of size 0.5mm - 1.0mm in two layers as shown	m ³	6		
7.4	Allow for connection of the composite filtration unit to the inflow 150mm dia. GMS pipe and outflow as directed.	Nr	1		
8	<u>MISCELLANEOUS WORKS</u>				
8.1	Provide and fix GMS sheet 6mm thick settled water collection weir length 3000mm as detailed on Drawings.	Nr	1		
8.2	Provide all materials and fix an external access ladder to Composite Filtration Unit as per details on Drawings.	Item	LS		
8.3	Provide all materials and fix 1200mm wide Chequered Plate Walking Platform over the Composite Filtration Unit complete with handrails	Item	LS		
8.4	Test and commission the composite filtration unit including disinfection of media for 24 hours.	Nr	1		
9	<u>PRECAST CONCRETE</u>				
9.1	Precast concrete blocks class 20/20 finished fair on wash water channels 240mm x 100mm x 50mm thick. The rate should include formwork and reinforcement, all as directed.	Nr	60		
10	<u>CHAMBERS</u>				
10.1	<u>EXCAVATION</u>				
	The rates should include for all strutting, shuttering, stabilising the excavation and keeping the excavation free from water by pumping, bailing or other means. Excavate for foundation part backfill after construction and remainder cart away to tips or use as fill on site, all as directed.				
10.1.1	Maximum depth less than 1.0m	m ³	55		
10.1.2	-Ditto- but depth 1.0 to 2.0m	m ³	25		
10.1.3	Extra over excavation in rock Class 'A'	m ³	13		
10.1.4	-Ditto- in rock Class 'B'	m ³	27		
10.1.5	-Ditto- in rock Class 'C'	m ³	27		
10.2	<u>CONCRETE WORKS</u>				
	Provide, mix and place concrete as directed.				
10.2.1	Concrete Class 15/20 in 50mm blinding layer under base slab.	m ²	33		
10.2.6	Vibrated reinforced concrete Class 25/20 to base slab 200mm thick	m ³	6		
10.2.7	-Ditto- but for chamber walls 200mm thick and 2000mm long	m ³	17		
10.3	<u>STEEL REINFORCEMENT</u>				
	Provide and fix steel reinforcements including cutting, bending, propping with spacers and tying as specified.				
10.3.1	Steel reinforcement	kg	2,795		
10.4	<u>FORMWORK</u>				
	Provide and fix shuttering including propping, strutting and striking all as specified.				
10.4.1	Sides of 200mm thick base slab	m ²	10		
10.4.2	Sides of 2000mm chamber walls (vertical)	m ²	74		
Page 4 Total Carried to Bill No. 3.3 Section Collection Page					

KIAMBAA WATER SUPPLY

Bill No. 4.3 - 400m3 Composite Filtration Unit (1no. Unit)					
	DESCRIPTION	UNIT	QTY	RATE (KES)	COST (KES)

Bill No 3.3 - SECTION COLLECTION PAGE				
Page 1 Total				
Page 2 Total				
Page 3 Total				
Page 4 Total				
Total Cost for 1no. 400m3 CFU unit				
Bill No. 3.3 - Total Carried to Grand Summary Page				

KIAMBAA WATER SUPPLY					
BILL No.6: TREATED WATER PIPELINE					
ITEM	DESCRIPTION	UNIT	QTY	UNIT RATE (KES)	COST (KES)
	<u>CLASS A - TESTING AND SETTING OUT OF WORKS</u>				
	Testing Pipelines complete including flushing and sterlising in accordance with the Specification Clause 440 & 441				
A260	DN160	m	3,500		
	<u>CLASS D - DEMOLITION AND SITE CLEARANCE</u>				
D100	General clearance for pipeline for full width of easement including grubbing out all shrubs etc and removal of all trees of girth n.e 2m	ha	2		
D210	Tree girth 0.5 - 1.0m	nr	60		
	<u>CLASS F - IN SITU CONCRETE</u>				
	Provision of concrete: Provide materials and mix concrete to the specified class;				
	Valve chambers and headwalls for washouts				
F234	Blinding concrete class 15/20	m ³	7		
F253	Concrete grade 30/20	m ³	25		
	<u>CLASS G: CONCRETE ANCILLARIES</u>				
	Formwork				
G113	All formwork rough finish: ground slab, Inner face of headwall	m ²	40		
G213	All formwork fair finish: Top of wingwall, Outer faces of air valve chambers including washout headwalls and wingwalls,	m ²	100		
	<u>Reinforcement</u>				
	<u>Rate to include for cutting, bending, supporting, tying and securing reinforcement</u>				
G529	Assorted Sizes; deformed high yield steel bars to BS4449	kg	2567		
	<u>CLASS I - PIPEWORK - PIPES</u>				
	HDPE pipes as specified: Supply, excavate trench, lay pipes, backfill with selected material from the trench excavations and compact, all as specified				
I532	Nominal bore 160mm PN10 in trenches, depth not exceeding 1.5m	m	1,300.00		
I533	Ditto- but depth 1.5m - 2.0m	m	1,700.00		
I534	Ditto- but depth exceeding 2.0m	m	500.00		

	<u>CLASS J - PIPEWORK - FITTINGS AND VALVES</u>				
	<u>Bends to as specified</u>				
J311	Nominal bore 80mm, single flanged 90° bend (for washouts)	nr	2		
J313.1	Nominal bore 160mm 90° bend	nr	3		
J313.2	Ditto- but 45° bend	nr	2		
J313.3	Ditto- but 22½° bend	nr	2		
J313.4	Ditto- but 11¼° bend	nr	2		
Total for This Page					
	<u>Junctions and Branches to PN10 Pressure as specified</u>				
J323.1	Nominal bore 160mm x 80mm socketed tee with flanged branch (for Air Valves)	nr	2		
J323.2	Nominal bore 160mm x 80mm socketed tee with flanged branch (for Washouts)	nr	2		
	<u>Double Collars</u>				
J341	Nominal bore 80mm flexible coupling	nr	2		
	<u>Adaptors</u>				
J351	Nominal bore 80mm flange adaptor	nr	2		
J353	Nominal bore 160mm flange adaptor	nr	2		
	<u>Straight Specials as specified</u>				
J381.1	80mm diameter plain ended steel, 2000mm long (For Washout)	nr	2		
J381.2	80mm diameter flanged spigot pipe with thrust flange	nr	3		
J381.3	160mm diameter double flanged riser pipe, 200mm long	nr	3		
	<u>Gate Valves as specified</u>				
J811.1	Nominal bore 80mm flanged sluice valve for Washout	nr	2		

	Nominal bore 160mm flanged sluice valve	nr	2		
	<i>Air Valves as specified</i>				
J861	80mm reinforced polyamide combination Airvalve	nr	3		
	<u>CLASS K - PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</u>				
	<i>Chambers</i>				
K232.1	400x400 surface box	nr	6		
K232.2	In situ concrete chamber, internal size 1200mm x 1200mm, depth not exceeding 2.0m for Air valve	nr	3		
K232.3	Pre-cast concrete sluice valve chamber for Washouts	nr	3		
	<i>Marker Posts</i>				
K820.1	Marker post for Air Valve inscribed 'AV'	nr	3		
K820.2	-Ditto- but Water Main inscribed 'WM'	nr	10		
Total for This Page					
K820.3	-Ditto- but Washout inscribed 'WO'	nr	3		
	<u>CLASS L - PIPEWORK SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</u>				
	<i>Excavation of rock as defined in Specifications</i>				
L111	Extras to excavation and backfilling of pipe trenches for rock excavation	m ³	300		
	<i>Bedding to pipes</i>				
L323	Selected excavated granular material 150mm thick to pipe nominal bore 400mm	m	3500		
	<i>Surrounds</i>				
L523	Surrounds with excavated selected granular material, pipe bore 250mm	m	4600		
	Thrust blocks for bends, tees, blank ends and anchor blocks for tapers, gate valves and vertical bends.				
L723	Concrete thrust and anchor blocks, volume 0.1 - 0.2m ³ , pipe nominal bore 250mm	nr	10		
Total for This Page					
PAGE TOTAL CARRIED TO SUMMARY PAGE					