

MATHIRA WATER & SANITATION COMPANY LTD

IMPROVEMENT OF WATER SUPPLY TO KIRIMUKUYU WARD MATHIRA WEST SUB-COUNTY PROJECT

PHASE : 1

BILL No. 1 : PRELIMINARIES AND GENERAL

ITEM No.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				Kshs	Kshs
1	<u>Special Requirements</u>				
1.1	Test Running of the Scheme: Allow a provision of Kshs 220,000 for Test Running of the Scheme for a period of 4 weeks upon completion, including supply of water treatment chemicals, water quality testing and pressure testing.	Item	L.S	220,000.00	220,000.00
2	<u>Specified Requirements</u>				
2.1	Provide and erect Sign Boards at the Tank as per DRG No. MAWASCO/SP/01 and directed by the Employer	Nr	2		
2.2	Make provision for procurement of a butt fusion hydraulic machine (semi automatic) diameter OD90 to OD315 inclusive of set of reducers OD90 to OD315 and generator	month	1		
2.3	Allow a provision sum of Kshs 150,000 for survey, detailed design and profile including As-built drawings as directed by the Engineer	Item	L.S	150,000.00	150,000.00
2.4	Allow Ksh. 100,000 for branding of works as per the Engineers instruction and with MAWASCO & County Government logo and colours or as directed by the Employer	Item	L.S	100,000.00	100,000.00
2.5	Allow a P.C. Sum of KShs. 100,000 for Payments demanded by the Authorities for relocation of existing services (water pipelines, power cable), Road crossings, etc., including any statutory levies to relevant Authorities. Liaison with the relevant Authorities shall be the responsibility of the Contractor for the timely execution of the Works.	Item	P.C	100,000.00	100,000.00
BILL 1 TOTAL CARRIED TO GRAND SUMMARY PAGE					

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BILL No. 2: INTAKE WORKS: CONSTRUCTION OF SCREEN CHAMBERS

ITEM No.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				Kshs	Kshs
1	<u>GENERAL ITEMS</u>				
1.1	Clear area within Intake Site of all grass, bushes, shrubs etc. and cart away to tips	m ²	10.00		
1.2	Allow for all materials, equipment etc. for construction of screen chambers as detailed in the drawings and in consultation with the Engineer	Item	L.S		
i)	Dewatering equipment	Item	L.S		
2	<u>EARTH WORKS</u>				
2.1	Excavate for reinforced concrete screen chamber as detailed in the drawing MAWASCO/INK/01. Depth n.e. 2.5m	m ³	10		
2.2	Extra Over item 2.1 for excavation in rock class 'C' (Provisional)	m ³	3		
2.3	Excavate trench for 315mm diameter ferrous raw water pipe, backfill after laying of pipes and remainder cart away to approved tips. Depth n.e. 2.5 m.	m	30		
2.4	-Ditto- but for 315mm dia. ferrous scour pipe, depth n.e. 2.5m	m	25		
2.5	-Ditto- but for 200mm dia. ferrous scour pipe, depth n.e. 2.5m	m	25		
2.6	-Ditto- but for 200mm dia. ferrous scour pipe, depth n.e. 2.5m	m	50		
2.7	-Ditto- but for 160mm dia. ferrous scour pipe, depth n.e. 2.5m	m	60		
3	<u>CONCRETE AND STRUCTURAL WORKS</u>				
	Provide, mix and place:				
3.1	Plain Concrete Class 15/20 in 75 mm thick blinding layer under Aprons, Intake Chamber as detailed in the drawings	m ²	3		
3.2	Vibrated Reinforced Concrete Class 25/20 in	m ³	3		
3.3	Vibrated Reinforced Concrete Class 25/20 in retaining walls and weir separating wall, 300mm thick	m ³	5		
3.4	Vibrated Reinforced Concrete Class 25/20 in fine screen support columns	m ³	3.0		

	Provide and fix high tensile reinforcement to SRN 127 including cutting, bending, propping				
3.5	12mm and under	kg	1,300		
3.6	16mm and over	kg	1,000		
3.7	Vertical Formwork for concrete works (Class F1)	m ²	100		
3.8	Vertical Formwork for concrete works (Class F3)	m ²	200		
3.9	Horizontal Formwork in soffit of roof slab of Intake Chamber (Class F1)	m ²	16		
3.10	Sloping Formwork - sloping weir face (Class F3)	m ²	55		
3.11	900mm x 900mm Boxout in 315mm thick wall of Intake Chamber for 315mm dia raw water pipe	Nr	1		
3.12	500mm x 500mm Boxout in 200mm thick wall of Intake Chamber for 200mm dia water pipe and scour pipe	Nr	2		
3.13	500mm x 500mm Boxout in 160mm thick wall of Intake Chamber for 160mm dia scour pipe	Nr	2		
4	<u>PIPEWORK, FITTINGS AND VALVES</u>				
	<u>Approved Lined Ferrous Pipes</u>				
	<u>Raw Water Main</u>				
4.1	315mm diameter plain ended pipe, length 1700mm, with puddle flange at 425mm from one end	Nr	1		
4.2	315mm dia couplings	Nr	2		
4.3	315mm dia Flanged x 350mm inlet Bell mouth with 90° bend for out let pipe	Nr	1		
4.4	315mm diameter plain ended pipes with couplings	Nr	1		
4.5	315mm dia circular bore penstock valve, non-rising stem type, with extended spindle, length 1.8m, & headstock for operation (Ham Baker or approved equivalent)	Nr	1		
4.6	200mm diameter plain ended pipe, length 1700mm, with puddle flange at 425mm from one end	Nr	1		
4.7	200mm dia couplings	Nr	4		
4.8	200mm dia Flanged x 250mm inlet Bell mouth with 90° bend for out let pipe	Nr	1		
4.9	200mm diameter plain ended pipes with couplings	m	10		

4.10	200mm dia circular bore penstock valve non-rising stem type, with extended spindle, length 1.8m, & headstock for operation (Ham Baker or approved equivalent)	Nr	1		
4.11	150mm diameter plain ended pipe, length 1700mm, with puddle flange at 425mm from one end	Nr	1		
4.12	150mm dia couplings	Nr	4		
4.13	160mm dia Flanged x 200mm inlet Bell mouth with 90° bend for out let pipe	Nr	1		
4.14	150mm diameter plain ended pipes with couplings	m	10		
4.15	150mm dia. circular bore penstock valve non-rising stem type with extended spindle length 3.5m and removable T-Key for operation (Note: 1 Nr to be supplied and installed in the Intake Chamber. 3 Nr to be supplied and handed over to Employer's to be used as for maintenance along the pipeline)	Nr	4		
<u>Scour Pipeline & Penstocks</u>					
4.16	200mm diameter plain ended pipe, length 1700mm, with puddle flange at 425mm from one end	Nr	1		
4.17	200mm dia couplings	Nr	1		
4.18	200mm diameter plain ended pipes with couplings	m	10		
4.19	200mm dia circular bore penstock valve non-rising stem type, with extended spindle, length 1.8m, & headstock for operation (Ham Baker or approved equivalent)	Nr	1		
4.20	150mm dia. circular bore penstock valve non-rising stem type with extended spindle length 3.5m and removable T-Key for operation	Nr	4		
<u>5 METAL WORK</u>					
5.1	Supply and install lockable galvanized mild steel sheet metal cover, over access manholes to Intake Chamber, size 600mm x 600mm as detailed in DRG No. MAWASCO/INK/02	Nr	2		
5.2	Supply and fix galvanized mild steel coarse screen, size 1600x1300mm, fabricated using GMS bars, dia 20 mm at spacing 40 mm. Include for provision and fixing of frame with fish tailed lugs into concrete walls as detailed in DRG No. MAWASCO/INK/02	Nr	1		

5.3	Supply and fix galvanized mild steel fine screen, size 2475mm x 560mm, fabricated using M.S. bars, dia 12mm at spacing 10mm, with GMS frame and lifting handles as detailed in DRG No. MAWASCO/INK/03. (Note: 2 Nr fine screens to be supplied and installed in the Intake Chamber. 1 Nr fine screen to be supplied and handed over to Employer's Store to be used as standby screen during cleaning / maintenance of the duty screens)	Nr	3		
5.4	Supply and fix fine screen guides in grooves in fine screen support columns. Fine screen guides to be made of 60mm x 50mm x 5mm galvanised mild steel channels, length 2475mm, fixed to concrete columns with fishtail lugs as detailed in DRG No. MAWASCO/INK/03	Nr	10		
5.5	Supply and fix galvanized mild steel open grating cover over access opening in Intake Chamber roof for fine screens, length 900mm x width 690mm as detailed in DRG No. MAWASCO/INK/03	Nr	3		
BILL 2 TOTAL CARRIED TO GRAND SUMMARY PAGE					

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BILL NO. 3: KIHURI - ITIATI GAIKUYU TO MUBERETHI KIAWARIGI JUNCTION RAW WATER GRAVITY MAIN

ITEM No.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				Kshs	Kshs
	<u>CLASS A: GENERAL ITEM</u>				
1	Testing of works				
1.1	Pipeline testing and commissioning for the whole work on this line, including all necessary equipment, materials and works necessary for testing, such as pressure gauges, thrust and anchor blocks, transportation and use of water, pipe fittings, disposal of used water as directed by the Engineer.	M	5,100		
1.2	Disinfection of Pipe lines: flushing with clear water, filling with water containing 0.05 g/l calcium hypochlorite, left for 24 hours. This includes supply of all necessary equipment, materials, chemicals and water, measurement of residual chlorine, all as specified.	M	5,100		
2	<u>CLASS D: DEMOLITION AND SITE CLEARANCE</u>				
	Tree Cutting (Provisional)				
	Cut down trees, grub up roots and cart away to				
2.1	Girth: 0.5 m - 1.0 m	Nr	50		
2.2	Girth: 1.0 m - 2 m	Nr	60		
	<u>Note</u> :- Girth shall be measured 1.0 m above the ground level				
3	<u>CLASS I: PIPE WORK - PIPES</u>				
	<u>SUPPLY AND PIPE LAYING</u>				
	Supply and transport, lay and joint pipes in trench, include for excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation and backfilling as detailed in DRG No. MAWASCO/KM/01 and & Layout No. 1 - 10.				
3.1	ISO 44427 HDPE PE 100 110MM PN16				
3.11	ND 160 in trench, depth not exceeding 1.0 m	M	4,700		
3.12	ND 160 in trench, depth not exceeding 1.5 m	M	350		
3.13	ND 110 in trench, depth not exceeding 1.5 m	M	50		

3.2	<u>CLASS J: PIPE WORK - FITTINGS AND VALVES</u>				
	<u>SUPPLY, LAYING AND JOINTING</u>				
	Supply all jointing materials including all necessary accessories, transport to site, lay and joint.				
3.21	HDPE Fittings as per EN 12201 - 2 Standard				
	Junctions and Branches				
3.21	Inverted Tee (ND150 - ND 100)				
3.211	90°	Nr	2		
3.3	Couplings				
3.31	Stepped Coupling				
3.311	ND 160	Nr	4		
3.4	Flanged Adaptor				
3.41	ND 150	Nr	6		
3.42	ND 100	Nr	6		
	Stub Flange				
3.43	ND 100	Nr	10		
3.44	ND 160	Nr	10		
3.5	Valves				
3.51	Flanged Gate Valve to BS 5163				
3.511	ND 150	Nr	2		
3.512	ND 100	Nr	2		
3.6	Air Valve				
3.61	All air valves have to be equipped with built-in isolating gate valve				
3.61	Double Large Orifice Air Valve				
	ND 80	Nr	3		
3.7	Flanged Strainer				
3.71	ND150	Nr	2		

4	ANCILLIARY WORKS				
	Provide all materials, repair and roof Muberethi circular masonry tank internal diameter 4.5 meter as directed by the Engineer (Complete the attached schedule of materials & works)	Item	L.S		
4.1	IN SITU CHAMBERS				
4.11	Depth: 1.5 - 2.0 m				
	Provide all materials and construct valve chambers internal dimensions 1400mm x 1200mm. Include for supply and fixing of precast concrete cover and step irons as detailed in DRG No. MAWASCO/KM/02 as directed by the Engineer	Nr	4		
4.12	Ditto- but internal dimensions 1800 x 1400 mm.	Nr	4		
4.13	Ditto- but internal dimensions 1500 x 1500 mm.	Nr	2		
4.2	Swan Form work - Class F2 Finish				
4.21	Vertical Sides of Concrete in foundation	M ²	400		
4.3	Other Pipework Ancillaries				
4.31	Supply and fix marker posts for water main route, road crossings, change of direction, air valves, washouts, fire hydrants and valve chambers. All in accordance with DRG No. MAWASCO/KM/03 and specifications	Nr	57		
BILL 3 TOTAL CARRIED TO GRAND SUMMARY PAGE					

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PHASE : 1

GRAND SUMMARY

BILL NO.	ITEM DESCRIPTION	AMOUNT KShs.
1	BILL No. 1 PRELIMINARIES AND GENERAL	
2	BILL No. 2: INTAKE WORKS: CONSTRUCTION OF SCREEN CHAMBERS	
3	BILL NO. 3: KIHURI - ITIATI GAIKUYU JUNCTION TO MUBERETHI KIAWARIGI JUNCTION RAW WATER GRAVITY MAIN	
	SUB TOTAL 1	
	ADD 7.5% OF SUB TOTAL 1 FOR CONTINGENCIES	
	GRAND TOTAL	