	Mbooni ward, Mbooni Sub-County	1			
	GRAND SUMMARY OF THE BILL OF QUANTITIES				
ill No	Description		Estima	ted Amount (Ki	ES)
1.0	Preliminaries and General				
2.2	Water Treatment Works;				
2.2.1	Treatment Works - Stilling Well and Chemical Dosing Channel				
2.2.2	Treatment Works - Composite Filtration one Unit				
2.2.3	Treatment Works - Clear Water Tank				
2.2.4	Pump house and pump with all accessories				
3	Rising Main to Syiluni				
4	Provisional for Rehabilitation of Syiluni Tank				
-					
	Project Sub-total (1)				
	Add Ksh.1,500,000 for Physical Contingencies to be expended as advised by the engineer				
	and approved by the project manager				
	Sub-total (2)				
	Add 0.03% to sub-total (2) for PPRA Capacity Building Levy Add 16% to sub-total (2) for VAT				
	Grand Total C/F to Bid				
BILL 1 - P	PRELIMINARY AND GENERAL WORKS				
tem No.	•				
					an Shillings
	Description		Quantity	Curi	rency (KES)
		Unit	Quantity (a)		
	Description 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.	Unit		Curi Unit Price	rency (KES) Amount (c)
1.1	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.	Unit		Curi Unit Price	rency (KES) Amount (c)
1.1	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.	Unit		Curi Unit Price	rency (KES) Amount (c)
1.1 1.1.1	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.	LS		Curi Unit Price	rency (KES) Amount (c)
	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.		(a)	Curi Unit Price	rency (KES) Amount (c)
1.1.1	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. Contractual requirements Allow for provision of Insurance of Works, Materials, Contractor's Equipment, Workmen Injury Benefits, third party insurance, in accordance with the Conditions of Contract	LS	(a)	Curi Unit Price	rency (KES) Amount (c)
1.1.1	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. Contractual requirements Allow for provision of Insurance of Works, Materials, Contractor's Equipment, Workmen Injury Benefits, third party insurance, in accordance with the Conditions of Contract Allow for provision of project signboards as instructed by the supervising engineer Bill 1 total Carroed to summary STILLING WELL AND CHEMICAL DOSING CHANNEL	LS	(a)	Curi Unit Price	rency (KES) Amount (c)
1.1.1	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. Contractual requirements Allow for provision of Insurance of Works, Materials, Contractor's Equipment, Workmen Injury Benefits, third party insurance, in accordance with the Conditions of Contract Allow for provision of project signboards as instructed by the supervising engineer Bill 1 total Carroed to summary STILLING WELL AND CHEMICAL DOSING CHANNEL BILL No. 2.2.1	LS	(a)	Curi Unit Price	rency (KES) Amount (c) (c) = (b) x (a)
1.1.1	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. Contractual requirements Allow for provision of Insurance of Works, Materials, Contractor's Equipment, Workmen Injury Benefits, third party insurance, in accordance with the Conditions of Contract Allow for provision of project signboards as instructed by the supervising engineer Bill 1 total Carroed to summary STILLING WELL AND CHEMICAL DOSING CHANNEL	LS	(a)	Curi Unit Price (b)	rency (KES) Amount (c)
1.1.1 1.1.2 ITEM	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. Contractual requirements Allow for provision of Insurance of Works, Materials, Contractor's Equipment, Workmen Injury Benefits, third party insurance, in accordance with the Conditions of Contract Allow for provision of project signboards as instructed by the supervising engineer Bill 1 total Carroed to summary STILLING WELL AND CHEMICAL DOSING CHANNEL BILL No. 2.2.1	LS	(a)	Curi Unit Price (b)	rency (KES) Amount (c) (c) = (b) x (a)
1.1.1 1.1.2 ITEM No.	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. Contractual requirements Allow for provision of Insurance of Works, Materials, Contractor's Equipment, Workmen Injury Benefits, third party insurance, in accordance with the Conditions of Contract Allow for provision of project signboards as instructed by the supervising engineer Bill 1 total Carroed to summary STILLING WELL AND CHEMICAL DOSING CHANNEL BILL No. 2.2.1 DESCRIPTION Excavation The rates shall include for all strutting, shuttering, stabilising the excavation faces and keeping the excavation free of water by pumping, bailing or other means. Excavate for foundations and chamber, part backfill after construction and remainder,	LS	(a)	Curi Unit Price (b)	rency (KES) Amount (c) (c) = (b) x (a)
1.1.1 1.1.2 ITEM No.	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. Contractual requirements Allow for provision of Insurance of Works, Materials, Contractor's Equipment, Workmen Injury Benefits, third party insurance, in accordance with the Conditions of Contract Allow for provision of project signboards as instructed by the supervising engineer Bill 1 total Carroed to summary <u>STILLING WELL AND CHEMICAL DOSING CHANNEL</u> BILL No. 2.2.1 DESCRIPTION The rates shall include for all strutting, shuttering, stabilising the excavation faces and keeping the excavation free of water by pumping, bailing or other means.	LS	(a)	Curi Unit Price (b)	rency (KES) Amount (c) (c) = (b) x (a)

1		1	r	
	Extra Over Excavation in Any Position for:-			
110	Excavating in rock Class "A"	m ³	1	
1.1.3		m	1	
1.1.4	Excavating in rock Class "B"	m³	1	
1.1.5	Excavating in rock Class "C"	m³	1	
	Approved Selected Filling:-			
1.1.6	Fill and ram selected excavated materials around foundations	m³	8	
	Disposal of Surplus Spoil:-			
1.1.7	Cart away surplus excavated materials to an approved dumping site	m³	1	
1.2	Concrete Works			
1.2				
	Provide and place:			
	Mass Concrete Maximum Aggregate as Described in:-			
121	Class 15/20 in 75mm blinding layer under column bases and Scour Chamber base slab	2	2	
1.2.1		m²	2	
1.2.2	Class 20/20 in 400mm thick raised platform in the chemical dosing channel	m²	1	
	Guaranteed Strength Reinforced Concrete Class 35/20mm Maximum Aggregate as			
	Described in:-			
1.2.3	Column bases	m³	1	
1.2.4	Columns	m³	1	
1.2.5	200mm thick base slab	m³	2	
1.2.6	200mm thick walls	m³	5	
1.2.7	150mm thick baffle wall	m ³	1	
1.2.7		m	1	
1.2.8	100mm thick baffle walls	m³	1	
1.2.9	Scour Chambers A & B	m³	6	
1.2.10	200mm thick walkway	m ³	1	
			-	
1.3	Reinforcement Provide and fix high tensile steel reinforcement to SRN 127 including cutting, bending,			
	propping, with spacers and tying as specified			
1.3.1	Reinforcement, all diameters	kg	1715	
1.4	Formwork			
1.4	Provide and fix shuttering including propping, strutting and striking all as specified			
	(i) Formwork - Class F1 Finish			
1.4.1	Vertical sides to Column bases, width n.e 0.3m	m	4	
1.4.2	Horizontal to Soffits of Stilling Well & Chemical Dosing Channel Base Slabs	m ²	8	
	(ii) Formwork - Class F3 Finish			
1.4.3	Sides of Base Slabs and Walls of Scour Chambers	m²	26	
1.4.4	Vertical sides to Columns	m ²	5	
1.4.5	Vertical sides to Stilling Well walls	m ²	33	
1.4.5			33	
1.4.6	Vertical sides to Dosing Channel walls	m²	2	
1.4.7	Vertical sides to baffle wall in Stilling Well	m ²	4	

		-		•	
1.4.8	Horizontal to Soffit of baffle walls in stilling well, width n.e 0.15m	m	1		
1.4.0			1		
1.4.9	Vertical to sides of walkway, thickness n.e. 0.20m	m²	2		
1.4.10	Horizontal to soffit of walkway, width n.e. 0.40m	m²	2		
			_		
	Other Formwork				
1.4.11	Boxouts for Pipes in 200mm thick R.C. Walls for Stilling Well and Scour Chamber, pipe diameters n.e. 200mm and making good after pipe inserts installation	Nr	5		
1.5	Concrete Surface Finish				
1.5.1	Provide Class UF3 Finish for top of base slab of Stilling Well and Dosing Channel	m²	5		
1.6	Construction Isinta Water Day				
1.0	<u>Construction Joints - Water Bar</u> Provide and install the following waterstops in construction joints including all surface treatment, formwork, forming of rebate 20mm x 20mm and sealing of rebate with				
	polysulphide sealant all as per Drawings and Specifications.				
1.6.1	240mm wide expandite super-cast water foil PVC or similar approved waterstop in construction joints in walls.	m	15		
1.7	Metal Work				
	All steel work to be completely cleaned by acid dipping prior to galvanising. For details see drawings.				
1.7.1	Provide all materials and fix GMS access ladder to Stilling Well Channel, height of ladder n.e. 3m to details as shown.	Nr	1		
1.7.2	Provide and fix 900 mm high level balustrades of 40 mm diameter tubing Class 'B' throughout consisting of handrail and parallel middle rail 450mm below the handrail with balusters at maximum 1500 mm centres, all as detailed.	m	75		
1.8	Leak Proof Testing				
-					
1.8.1	Allow for leak proof testing of Stilling Well and Chemical Dosing Channel as specified.	Item	L.S		
1.9	Pipework Fittings & Valves				
1.9	<u>Pipework Fittings & Valves</u> Supply and tranport to site and store in a secure place all pipework and fittings including Jointing Material, Bolts, Gaskets, Paking, Jointing Glue, etc, As Applicable				
1.9	Supply and tranport to site and store in a secure place all pipework and fittings including				
1.9	Supply and tranport to site and store in a secure place all pipework and fittings including Jointing Material, Bolts, Gaskets, Paking, Jointing Glue, etc, As Applicable	Nr	1		
	Supply and tranport to site and store in a secure place all pipework and fittings including Jointing Material, Bolts, Gaskets, Paking, Jointing Glue, etc, As Applicable Raw Water Main (Inlet) Pipework - Approved Lined Ferrous Pipes to Class NP16	Nr	1		
1.9.1	Supply and tranport to site and store in a secure place all pipework and fittings including Jointing Material, Bolts, Gaskets, Paking, Jointing Glue, etc, As Applicable Raw Water Main (Inlet) Pipework - Approved Lined Ferrous Pipes to Class NP16 200mm dia. flanged spigot 90 [°] bend (Mark 1) 200mm dia. double flanged pipe, length 630mm with puddle flange at 200mm from one end (Mark 2)	Nr	1		
1.9.1	Supply and tranport to site and store in a secure place all pipework and fittings including Jointing Material, Bolts, Gaskets, Paking, Jointing Glue, etc, As Applicable Raw Water Main (Inlet) Pipework - Approved Lined Ferrous Pipes to Class NP16 200mm dia. flanged spigot 90 ⁰ bend (Mark 1) 200mm dia. double flanged pipe, length 630mm with puddle flange at 200mm from one				
1.9.1 1.9.2 1.9.3 1.9.4	Supply and tranport to site and store in a secure place all pipework and fittings including Jointing Material, Bolts, Gaskets, Paking, Jointing Glue, etc, As Applicable Raw Water Main (Inlet) Pipework - Approved Lined Ferrous Pipes to Class NP16 200mm dia. flanged spigot 90 ⁰ bend (Mark 1) 200mm dia. double flanged pipe, length 630mm with puddle flange at 200mm from one end (Mark 2) 200mm dia. double flanged 90 ⁰ bend (Mark 3) 200mm dia. flanged spigot pipe, length 2000mm (cut to suit on site) (Mark 4)	Nr Nr Nr	1 2 1		
1.9.1 1.9.2 1.9.3	Supply and tranport to site and store in a secure place all pipework and fittings including Jointing Material, Bolts, Gaskets, Paking, Jointing Glue, etc, As Applicable Raw Water Main (Inlet) Pipework - Approved Lined Ferrous Pipes to Class NP16 200mm dia. flanged spigot 90° bend (Mark 1) 200mm dia. double flanged pipe, length 630mm with puddle flange at 200mm from one end (Mark 2) 200mm dia. double flanged 90° bend (Mark 3)	Nr Nr	1		
1.9.1 1.9.2 1.9.3 1.9.4	Supply and tranport to site and store in a secure place all pipework and fittings including Jointing Material, Bolts, Gaskets, Paking, Jointing Glue, etc, As Applicable Raw Water Main (Inlet) Pipework - Approved Lined Ferrous Pipes to Class NP16 200mm dia. flanged spigot 90 ⁰ bend (Mark 1) 200mm dia. double flanged pipe, length 630mm with puddle flange at 200mm from one end (Mark 2) 200mm dia. double flanged 90 ⁰ bend (Mark 3) 200mm dia. flanged spigot pipe, length 2000mm (cut to suit on site) (Mark 4)	Nr Nr Nr	1 2 1		
1.9.1 1.9.2 1.9.3 1.9.4 1.9.5	Supply and tranport to site and store in a secure place all pipework and fittings including Jointing Material, Bolts, Gaskets, Paking, Jointing Glue, etc, As Applicable Raw Water Main (Inlet) Pipework - Approved Lined Ferrous Pipes to Class NP16 200mm dia. flanged spigot 90 [°] bend (Mark 1) 200mm dia. double flanged pipe, length 630mm with puddle flange at 200mm from one end (Mark 2) 200mm dia. double flanged 90 [°] bend (Mark 3) 200mm dia. flanged spigot pipe, length 2000mm (cut to suit on site) (Mark 4) 200mm dia. flange adaptor (Mark 5)	Nr Nr Nr Nr	1 2 1 1		
1.9.1 1.9.2 1.9.3 1.9.4 1.9.5 1.9.6	Supply and tranport to site and store in a secure place all pipework and fittings including Jointing Material, Bolts, Gaskets, Paking, Jointing Glue, etc, As Applicable Raw Water Main (Inlet) Pipework - Approved Lined Ferrous Pipes to Class NP16 200mm dia. flanged spigot 90° bend (Mark 1) 200mm dia. double flanged pipe, length 630mm with puddle flange at 200mm from one end (Mark 2) 200mm dia. double flanged 90° bend (Mark 3) 200mm dia. flanged spigot pipe, length 2000mm (cut to suit on site) (Mark 4) 200mm dia. flange adaptor (Mark 5) 200mm dia. flanged spigot pipe, length 1200mm (Mark 6)	Nr Nr Nr Nr	1 2 1 1 1		
1.9.1 1.9.2 1.9.3 1.9.4 1.9.5 1.9.6	Supply and tranport to site and store in a secure place all pipework and fittings including Jointing Material, Bolts, Gaskets, Paking, Jointing Glue, etc, As Applicable Raw Water Main (Inlet) Pipework - Approved Lined Ferrous Pipes to Class NP16 200mm dia. flanged spigot 90 ⁰ bend (Mark 1) 200mm dia. double flanged pipe, length 630mm with puddle flange at 200mm from one end (Mark 2) 200mm dia. double flanged 90 ⁰ bend (Mark 3) 200mm dia. flanged spigot pipe, length 2000mm (cut to suit on site) (Mark 4) 200mm dia. flange adaptor (Mark 5) 200mm dia. flanged spigot pipe, length 1200mm (Mark 6) 200mm dia. stepped coupling (Mark 7)	Nr Nr Nr Nr	1 2 1 1 1		
1.9.1 1.9.2 1.9.3 1.9.4 1.9.5 1.9.6 1.9.7	Supply and tranport to site and store in a secure place all pipework and fittings including Jointing Material, Bolts, Gaskets, Paking, Jointing Glue, etc, As Applicable Raw Water Main (Inlet) Pipework - Approved Lined Ferrous Pipes to Class NP16 200mm dia. flanged spigot 90° bend (Mark 1) 200mm dia. double flanged pipe, length 630mm with puddle flange at 200mm from one end (Mark 2) 200mm dia. double flanged 90° bend (Mark 3) 200mm dia. flanged spigot pipe, length 2000mm (cut to suit on site) (Mark 4) 200mm dia. flanged spigot pipe, length 1200mm (Mark 6) 200mm dia. stepped coupling (Mark 7) Scour & Overflow Pipework - Approved Lined Ferrous Pipes to Class NP16 150mm dia. plain ended pipe, length 420mm with puddle flange at 100mm from one end	Nr Nr Nr Nr Nr	1 2 1 1 1 1		
1.9.1 1.9.2 1.9.3 1.9.4 1.9.5 1.9.6 1.9.7 1.9.8	Supply and tranport to site and store in a secure place all pipework and fittings including Jointing Material, Bolts, Gaskets, Paking, Jointing Glue, etc, As Applicable Raw Water Main (Inlet) Pipework - Approved Lined Ferrous Pipes to Class NP16 200mm dia. flanged spigot 90 ⁰ bend (Mark 1) 200mm dia. double flanged pipe, length 630mm with puddle flange at 200mm from one end (Mark 2) 200mm dia. double flanged 90 ⁰ bend (Mark 3) 200mm dia. double flanged 90 ⁰ bend (Mark 3) 200mm dia. flanged spigot pipe, length 2000mm (cut to suit on site) (Mark 4) 200mm dia. flange adaptor (Mark 5) 200mm dia. flanged spigot pipe, length 1200mm (Mark 6) 200mm dia. stepped coupling (Mark 7) Scour & Overflow Pipework - Approved Lined Ferrous Pipes to Class NP16 150mm dia. plain ended pipe, length 420mm with puddle flange at 100mm from one end (cut to suit on site) (Mark a)	Nr Nr Nr Nr Nr Nr			
1.9.1 1.9.2 1.9.3 1.9.4 1.9.5 1.9.6 1.9.7 1.9.8 1.9.8 1.9.9	Supply and tranport to site and store in a secure place all pipework and fittings including Jointing Material, Bolts, Gaskets, Paking, Jointing Glue, etc, As Applicable Raw Water Main (Inlet) Pipework - Approved Lined Ferrous Pipes to Class NP16 200mm dia. flanged spigot 90° bend (Mark 1) 200mm dia. double flanged pipe, length 630mm with puddle flange at 200mm from one end (Mark 2) 200mm dia. double flanged 90° bend (Mark 3) 200mm dia. double flanged 90° bend (Mark 3) 200mm dia. flanged spigot pipe, length 2000mm (cut to suit on site) (Mark 4) 200mm dia. flange adaptor (Mark 5) 200mm dia. flange digot pipe, length 1200mm (Mark 6) 200mm dia. stepped coupling (Mark 7) Scour & Overflow Pipework - Approved Lined Ferrous Pipes to Class NP16 150mm dia. plain ended pipe, length 420mm with puddle flange at 100mm from one end (cut to suit on site) (Mark a)	Nr Nr Nr Nr Nr Nr Nr	1 2 1 1 1 1 1 2 2 4		
1.9.1 1.9.2 1.9.3 1.9.4 1.9.5 1.9.6 1.9.7 1.9.8 1.9.9 1.9.10 1.9.11	Supply and tranport to site and store in a secure place all pipework and fittings including Jointing Material, Bolts, Gaskets, Paking, Jointing Glue, etc, As Applicable Raw Water Main (Inlet) Pipework - Approved Lined Ferrous Pipes to Class NP16 200mm dia. flanged spigot 90 ⁰ bend (Mark 1) 200mm dia. double flanged pipe, length 630mm with puddle flange at 200mm from one end (Mark 2) 200mm dia. double flanged 90 ⁰ bend (Mark 3) 200mm dia. double flanged 90 ⁰ bend (Mark 3) 200mm dia. flanged spigot pipe, length 2000mm (cut to suit on site) (Mark 4) 200mm dia. flange adaptor (Mark 5) 200mm dia. flanged spigot pipe, length 1200mm (Mark 6) 200mm dia. stepped coupling (Mark 7) Scour & Overflow Pipework - Approved Lined Ferrous Pipes to Class NP16 150mm dia. plain ended pipe, length 420mm with puddle flange at 100mm from one end (cut to suit on site) (Mark a) 150mm dia. all flanged gate valve (Mark c) 150mm dia. all flanged tee (Mark d)	Nr Nr Nr Nr Nr Nr Nr Nr Nr Nr	1 2 1 1 1 1 2 2 4 2 2 1		
1.9.1 1.9.2 1.9.3 1.9.4 1.9.5 1.9.6 1.9.7 1.9.8 1.9.8 1.9.9 1.9.10	Supply and tranport to site and store in a secure place all pipework and fittings including Jointing Material, Bolts, Gaskets, Paking, Jointing Glue, etc, As Applicable Raw Water Main (Inlet) Pipework - Approved Lined Ferrous Pipes to Class NP16 200mm dia. flanged spigot 90° bend (Mark 1) 200mm dia. double flanged pipe, length 630mm with puddle flange at 200mm from one end (Mark 2) 200mm dia. double flanged 90° bend (Mark 3) 200mm dia. double flanged 90° bend (Mark 3) 200mm dia. flanged spigot pipe, length 2000mm (cut to suit on site) (Mark 4) 200mm dia. flange adaptor (Mark 5) 200mm dia. flange adaptor (Mark 5) 200mm dia. stepped coupling (Mark 7) Scour & Overflow Pipework - Approved Lined Ferrous Pipes to Class NP16 150mm dia. plain ended pipe, length 420mm with puddle flange at 100mm from one end (cut to suit on site) (Mark a) 150mm dia. all flanged gate valve (Mark c)	Nr Nr Nr Nr Nr Nr Nr Nr	1 2 1 1 1 1 1 2 2 4 4 2		

1.9.13	150mm dia. special flanged spigot 90 ⁰ bend (Mark f)	Nr	2		
1.9.14	150mm dia. double flanged 90 ⁰ bend (Mark g)	Nr	2		
1.9.15	150mm dia. plain ended pipe, length 500mm with puddle flange at 100mm from one end (cut to suit on site) (Mark h)	Nr	1		
	Dosed Water Outlet Pipework - Approved Lined Ferrous Pipes to Class NP16				
1.9.16	200mm dia. flanged spigot 45° bend (cut to suit on site) (Mark A)	Nr	1		
1.9.17	200mm dia. flanged spigot pipe, length 6100mm (cut to suit on site) (Mark B)	Nr	1		
	Transport From Site Store, Install, Test & Commission				
	Raw Water Pumping Main (Inlet) Pipework - Approved Lined Ferrous Pipes to Class NP16				
1.9.18	100mm dia. flanged spigot 90 ⁰ bend (Mark 1)	Nr	1		
1.9.19	100mm dia. double flanged pipe, length 630mm with puddle flange at 200mm from one				
1.9.19	end (Mark 2)	Nr	1		
1.9.20	100mm dia. double flanged 90 ⁰ bend (Mark 3)	Nr	2		
1.9.21	100mm dia. flanged spigot pipe, length 2000mm (cut to suit on site) (Mark 4)	Nr	1		
1.3.21		11/1	1		
1.9.22	100mm dia. flange adaptor (Mark 5)	Nr	1		
1.9.23	100mm dia. flanged spigot pipe, length 1200mm (Mark 6)	Nr	1		
1.9.24	100mm dia. stepped coupling (Mark 7)	Nr	1		
1.5.24			-		
	Scour & Overflow Pipework - Approved Lined Ferrous Pipes to Class NP16				
1.9.25	150mm dia. plain ended pipe, length 420mm with puddle flange at 100mm from one end (cut to suit on site) (Mark a)	Nr	2		
1.9.26	150mm dia. flange adaptor (Mark b)	Nr	4		
4.0.27			2		
1.9.27	150mm dia. all flanged gate valve (Mark c)	Nr	2		
1.9.28	150mm dia. all flanged tee (Mark d)	Nr	1		
1.9.29	150mm dia. flanged spigot pipe, length 650mm (cut to suit on site) (Mark e)	Nr	2		
1.9.30	150mm dia. special flanged spigot 90 ⁰ bend (Mark f)	Nr	2		
			_		
1.9.31	150mm dia. double flanged 90 ⁰ bend (Mark g)	Nr	2		
1.9.32	150mm dia. plain ended pipe, length 500mm with puddle flange at 100mm from one end				
	(cut to suit on site) (Mark h)	Nr	1		
	Dosed Water Outlet Pipework - Approved Lined Ferrous Pipes to Class NP16				
1.9.33	200mm dia. flanged spigot 45° bend (cut to suit on site) (Mark A)	Nr	1		
4.0.10					
1.9.19	200mm dia. flanged spigot pipe, length 6100mm (cut to suit on site) (Mark B)	Nr	1		
2	MISCELLANEOUS ITEMS				
	Provide and apply 3 coats of approved epoxy paint on one coat of epoxy primer to internal concrete surfaces of Stilling Well and Chemical Dosing Channel, beyond chemical	2			
2.1	dosing point ('Masterseal 180' as made by BASF or approved equivalent).	m²	24		
	Bill No 2.2.1 Page Total Carried to Grand Summary Page]
	COMPOSITE FILTRATION UNIT BILL No. 2.2.3 600m3/Day One Unit (25-30cmph unit)				
ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
No.				(Kshs)	(Kshs)
1	EXCAVATION				

4

In reace load include rol at stratile, stratiling, stratiling, the exacution and teers the exacute reference teers proceed as all into output teers are, all advected as a properties of the exacute stratile of the exacute s					
Independent set han 1 and the set of th		the excavation free from water by pumping, bailing or other means. Excavate for			
1.1Autimum depth last han Johnn"270Seemi set of the set of					
Image: star over example in rock Cass'A'Image: rock Cass'A' <thimage: cass'a'<="" rock="" th="">Image: r</thimage:>	1.1	Maximum depth less than 1.0m	m³	270	
Image: Problem in the calcular Triangle is authent below the foundation. Base is a point of the STR method is Strom der part is authent below the foundation. Base is a point of the STR method is Strom der part is authent below the foundation. Base is a point of the STR method is Strom der part is authent below the foundation. Base is a point of the STR method is Strom der part is authent below the foundation. Base is a point of the STR method is Strom der part is authent below the foundation. Base is a point of the STR method is Strom der part is authent below the foundation. Base is a point of the STR method is Strom der part is authent below the foundation. Base is a point of the STR method is Strom der part is authent below the foundation. Base is a point of the STR method is Strom der part is a point of the STR method is Strom der part is a point of the STR method is Strom der part is a point of the STR method is Strom der part is a point of the STR method is Strom der part is a point of the STR method is Strom der part is a point of the STR method is Strom der part is a point of the STR method is Strom der part is a point of the STR method is Strom der part is a point of the STR method is Strom der part is a point of the STR method is Strom der part is a point of the STR method is Strom der part is a point of the STR method is Strom der part is a point of the STR method is Strom der part is a point of the STR method is Strom der part is a s	1.2	-Ditto- but depth 1.0 to 2.0m	m³	150	
12.1000 - in rock Class 'C1000 - in rock Class 'C10	1.3	Extra over excavation in rock Class 'A'	m³	32	
m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m m	1.4	-Ditto - in rock Class 'B'	m³	48	
Design AssumptionImage: Control of the outset pipes is sunken below the foundation. Base als projection is 150m allow product pipes is sunken below the foundation. Base als projection is 150m allow product pipes is sunken below the foundation. Base als projection is 150m allow product pipes is sunken below the foundation. Base also projection is 150m allow product pipes is sunken below the foundation. Base also projection is 150m allow product pipes is sunken below the foundation. Base product pipes product	1.5	-Ditto - in rock Class 'C'	m³	32	
Only the 375mm desp section with the outlet pipes is surken below the foundation. Base Image: State Stat	2	CONCRETE WORKS			
Only the 375mm desp section with the outlet pipes is surken below the foundation. Base Image: State Stat		Design Assumption			
And sping sides.And sping sides.		Only the 375mm deep section with the outlet pipes is sunken below the foundation. Base			
spiping sides.Image of the second		Provide, mix and place concrete as directed.			
Image: concrete thickness 300mm Class 15/20 for surround to approved plastic nozzles and wash water channel.Image: concrete thickness 300mm Class 15/20 for surround to approved plastic nozzles and m ² Image: concrete thickness 300mm Class 15/20 for surround to approved plastic nozzles and m ³ Image: concrete thickness 300mm Class 15/20 for surround to approved plastic nozzles and m ³ Image: concrete thickness 300mm Class 15/20 for surround to approved plastic nozzles and m ³ Image: concrete thickness 300mm Vide sour channelImage: concrete thickness 300mm Vid	2.1		m²	8	
wash water channel.wash wash wash wash wash wash wash wash	2.2	Concrete Class 15/20 in surround to 200mm dia. pipe	m³	1	
1.1.1.1.1.1.1.1.1.1.1.1.2.5.Nikow for formation of a 100mm wide, 18.85m long channel in concrete class 15/20m221.1.1.1.2.6.Vibrated reinforced concrete Class 35/20 to base slab 250mm thickm ³ 1.1.1.1.1.1.2.6.Vibrated reinforced concrete Class 35/20 to base slab 250mm thickm ³ 1.1.1.1.1.1.2.7.Ditto - but for external CFU wall 250mm thick and 3280mm longm ³ 1.4.1.1.1.1.2.8.Ditto - but for internal filter wall 250mm thick and 3280mm longm ³ 1.0.1.1.1.1.2.9.Ditto - but for No. dividing walls, 3280mm longm ³ 1.0.1.1.1.1.1.1.3.10.Ditto - but for walkway 650mm widem ³ 2.2.1.1.1.1.1.1.1.1.3.11.STEEL REINFORCEMENTm ³ 2.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1. <t< td=""><td>2.3</td><td></td><td>m²</td><td>5</td><td></td></t<>	2.3		m²	5	
benching as requiredImage: sequiredImage: se	2.4	Concrete Class 15/20 in benching layer to 100mm wide scour channel	m³	2	
2.7-Ditto - but for external CFU wall 250mm thick and 3280mm longm³14Image: constraint of the set of	2.5	-	m	22	
2.8Ditto - but for internal filter wall 250mm thick and 3280mm longm³412.9Ditto - but for 6 No. dividing walls, 3280mm longm³10102.10-Ditto - but for walkway 650mm widem³10102.10-Ditto - but for walkway 650mm widem³2103 STEL REINFORCEMENT 1010109Provide and fix steel reinforcements including cutting, bending, propping with spacers and trying as specified.1010910101010109Provide and fix steel reinforcements including routing, bending, propping with spacers and trying as specified.10109101010101091010101010910101010109101010101091010101010910101010109101010101091010101010910101010109101010101091010101010910101010109101010109101010109101010109101010 <td< td=""><td>2.6</td><td>Vibrated reinforced concrete Class 35/20 to base slab 250mm thick</td><td>m³</td><td>11</td><td></td></td<>	2.6	Vibrated reinforced concrete Class 35/20 to base slab 250mm thick	m ³	11	
2.9Ditto - but for 6 No. dividing walls, 3280mm longm³10Interpretain2.10-Ditto - but for walkway 650mm widem³2Interpretain2.10-Ditto - but for walkway 650mm widem³2Interpretain3STEL REINFORCEMENTInterpretainInterpretainInterpretain3STEL REINFORCEMENTInterpretainInterpretainInterpretain4Frovide and fix steel reinforcements including cutting, bending, propping with spacers and tying as specified.InterpretainInterpretain3.1Steel reinforcement, all diameterskg3,520Interpretain4FORMWORKInterpretainInterpretainInterpretain4FORMWORKInterpretainInterpretainInterpretain4.1Sides of outlet pipes concrete surround, 375mm thickm42Interpretain4.2Sides of concrete surround to approved plastic nozzles and wash water channelm²2Interpretain4.4Sides of 3280mm external CFU wall (vertical)m²11Interpretain4.7Sides of 3280mm external CFU wall (vertical)m²107Interpretain4.7Sides of Sides of information walls beams (horizontai)m²107Interpretain	2.7	-Ditto - but for external CFU wall 250mm thick and 3280mm long	m ³	14	
2.10Ditto - but for walkway 650mm wideImage: Margin and Margin an	2.8	-Ditto - but for internal filter wall 250mm thick and 3280mm long	m³	4	
3 STEEL REINFORCEMENT Image: Constraint of the steel reinforcements including cutting, bending, propping with spacers and trying as specified. Image: Constraint of the steel reinforcements including cutting, bending, propping with spacers and trying as specified. Image: Constraint of the steel reinforcement, all diameters Image: Constree steel reinforcement, all	2.9	-Ditto - but for 6 No. dividing walls, 3280mm long	m³	10	
Image: constraint of the section of	2.10	-Ditto - but for walkway 650mm wide	m ³	2	
Image: constraint of the state of the sta	3	STEEL REINFORCEMENT			
Image: constraint of the section o		Provide and fix steel reinforcements including cutting, bending, propping with spacers and			
4 FORMWORK Image: Constraint of the second sec					
Image: Constraint of the second se			kg	3,520	
allowing for curvature where necessary.Image: constant of the section	4	FORMWORK			
Image: state of 250mm thick base slabImage: slabIma					
Image: Normal state in the	4.1	Sides of outlet pipes concrete surround, 375mm thick	m	42	
Image: constraint of the second se	4.2	Sides of 250mm thick base slab	m²	5	
Image: space of the systemImage: space of the system <th< td=""><td>4.3</td><td>Sides of concrete surround to approved plastic nozzles and wash water channel</td><td>m²</td><td>2</td><td></td></th<>	4.3	Sides of concrete surround to approved plastic nozzles and wash water channel	m²	2	
4.6 Sides of 3280mm internal filter wall (vertical) m ² 111 111 4.6 Sides of 3280mm internal filter wall (vertical) m ² 111 111 4.7 Sides of 6 No. dividing walls (vertical) m ² 107 107 4.8 Soffit of 150mm thick underflow walls beams (horizontal) m ² 1 1	4.4	Sides of benching to scour channel	m²	31	
4.7 Sides of 6 No. dividing walls (vertical) m ² 107 100 4.8 Soffit of 150mm thick underflow walls beams (horizontal) m ² 1 1	4.5	Sides of 3280mm external CFU wall (vertical)	m²	141	
4.8 Soffit of 150mm thick underflow walls beams (horizontal) m ² 1 1	4.6	Sides of 3280mm internal filter wall (vertical)	m²	111	
	4.7	Sides of 6 No. dividing walls (vertical)	m²	107	
A.9 Sides of 650mm wide walkway m ² 5	4.8	Soffit of 150mm thick underflow walls beams (horizontal)	m²	1	
	4.9	Sides of 650mm wide walkway	m ²	5	

5 \					
5 1	Soffit of 650mm wide walkway	m ²	1		
	, ,				
51 0	WATER BAR				
51 1			50		
	Provide and install 240mm wide bituminous expansion board in construction joint concrete base slab and walls. Include for all surface treatment, formwork, forming of	m	59		
	rebate 20mm x 20mm and sealing of rebate with polysulphide sealant all as per drawings				
	and specification				
	Epoxy Floor and Wall Paint as 'Masterseal 180' or approved equivalent Apllied strictly in				
ŝ	accordance with the Manufacturer's printed instruction:-				
5.2 F	Paint to Filtration unit	m²	52		
5.2 r		m	52	-	
5.3 F	Paint to Sedimentation unit walls, dividing walls, collection weir, etc	m²	127		
	· · · · · · · · · · · · · · · · · · ·				
6 1	PIPES AND FITTINGS - PN 10				
	Supply and install all pipework and fittings including jointing material, concrete				
9	surrounds etc. to the the CFU and filter unit as specified in the CFU drawings.				
	Inlet Pipework and Fittings (Approved Epoxy Coated Ferrous Pipes and Fittings)			-	
6.1 2	200mm dia. coupling (Mark 1)	Nr	1		
	200mm dia. single threaded (male) pipe 1645mm long with puddle flange at 8400mm	Nr	1		
f	from threaded end (Mark 2)				
<u> </u>	200mm dia famala threaded earliet (Mark 2)	Nie	1		
6.3 2	200mm dia. female threaded socket (Mark 3)	Nr	1		
6.4 2	200mm dia. single threaded (male) 90° bend (Mark 4)	Nr	1		
-					
6.5 2	200mm dia. flanged spigot pipe 800mm long with puddle flange at 75mm from the plain	Nr	1		
e	end (Mark 5)				
				-	
6.6 2	200mm dia. double flanged 90° bend (Mark 6)	Nr	2	-	
6.7 2	200mm dia. flanged spigot pipe 660mm long (Mark 7)	Nr	1		
(Outlet Pipework and Fittings (Approved HDPE Pipes and Fittings)				
6.8 2	200mm dia. equal 90° tee (Mark A)	Nr	1	-	
6.9 2	200mm dia. plain ended pipe 250mm long (cut to suit on site) (Mark B)	Nr	1	-	
0.9 2		INI	1		
6.10	200mm dia. 90° elbow (Mark C)	Nr	1		
6.11 2	200mm dia. plain ended pipe 5000mm long (cut to suit on site) (Mark D)	Nr	1		
C 12	200 mm die stuk and with enhander dieter blan en (Mark 5)	Nu			
6.12 2	200mm dia. stub end with galvanized steel flange (Mark E)	Nr	1		
	Outlet Pipework and Fittings (Approved Epoxy Coated Ferrous Pipes and Fittings)				
				1	
(
	200mm x 200mm dia. all flanged cross (Mark F)	Nr	1		
6.13 2					
6.13 2 6.14 2	200mm dia. all flanged gate valve with 1.5m long extension spindle (Mark G)	Nr	4		
6.13 2					
6.13 2 6.14 2 6.15 2	200mm dia. all flanged gate valve with 1.5m long extension spindle (Mark G) 200mm dia. flange adaptor (Mark H)	Nr Nr	4 6		
6.13 2 6.14 2 6.15 2 6.16 2	200mm dia. all flanged gate valve with 1.5m long extension spindle (Mark G)	Nr	4		
6.13 2 6.14 2 6.15 2 6.16 2	200mm dia. all flanged gate valve with 1.5m long extension spindle (Mark G) 200mm dia. flange adaptor (Mark H) 200mm dia. plain ended pipe 1.2m long with puddle flange at 400mm from one end (cut	Nr Nr	4 6		
6.13 2 6.14 2 6.15 2 6.16 2 t	200mm dia. all flanged gate valve with 1.5m long extension spindle (Mark G) 200mm dia. flange adaptor (Mark H) 200mm dia. plain ended pipe 1.2m long with puddle flange at 400mm from one end (cut	Nr Nr	4 6		
6.13 2 6.14 2 6.15 2 6.16 2 t 6.17 2	200mm dia. all flanged gate valve with 1.5m long extension spindle (Mark G) 200mm dia. flange adaptor (Mark H) 200mm dia. plain ended pipe 1.2m long with puddle flange at 400mm from one end (cut to suit on site) (Mark I) 200mm dia. coupling (Mark J)	Nr Nr Nr	4 6 3 3		
6.13 2 6.14 2 6.15 2 6.16 2 t 6.17 2	200mm dia. all flanged gate valve with 1.5m long extension spindle (Mark G) 200mm dia. flange adaptor (Mark H) 200mm dia. plain ended pipe 1.2m long with puddle flange at 400mm from one end (cut to suit on site) (Mark I)	Nr Nr Nr	4 6 3		
6.13 2 6.14 2 6.15 2 6.16 2 t 6.17 2 6.18 2	200mm dia. all flanged gate valve with 1.5m long extension spindle (Mark G) 200mm dia. flange adaptor (Mark H) 200mm dia. plain ended pipe 1.2m long with puddle flange at 400mm from one end (cut to suit on site) (Mark I) 200mm dia. coupling (Mark J) 200mm dia. plain ended pipe 3.6m long (cut to suit on site) (Mark K)	Nr Nr Nr Nr	4 6 3 3 3		
6.13 2 6.14 2 6.15 2 6.16 2 t 6.17 2 6.18 2	200mm dia. all flanged gate valve with 1.5m long extension spindle (Mark G) 200mm dia. flange adaptor (Mark H) 200mm dia. plain ended pipe 1.2m long with puddle flange at 400mm from one end (cut to suit on site) (Mark I) 200mm dia. coupling (Mark J)	Nr Nr Nr	4 6 3 3		
6.13 2 6.14 2 6.15 2 6.16 2 t 6.17 2 6.17 2 6.18 2 6.19 2	200mm dia. all flanged gate valve with 1.5m long extension spindle (Mark G) 200mm dia. flange adaptor (Mark H) 200mm dia. plain ended pipe 1.2m long with puddle flange at 400mm from one end (cut to suit on site) (Mark I) 200mm dia. coupling (Mark J) 200mm dia. plain ended pipe 3.6m long (cut to suit on site) (Mark K) 200mm dia. Butterfly valve	Nr Nr Nr Nr	4 6 3 3 3		
6.13 2 6.14 2 6.15 2 6.16 2 6.16 2 t 6.17 2 6.18 2 6.18 2	200mm dia. all flanged gate valve with 1.5m long extension spindle (Mark G) 200mm dia. flange adaptor (Mark H) 200mm dia. plain ended pipe 1.2m long with puddle flange at 400mm from one end (cut to suit on site) (Mark I) 200mm dia. coupling (Mark J) 200mm dia. plain ended pipe 3.6m long (cut to suit on site) (Mark K)	Nr Nr Nr Nr	4 6 3 3 3		
6.13 2 6.14 2 6.15 2 6.16 2 t 6.17 2 6.18 2 6.19 2	200mm dia. all flanged gate valve with 1.5m long extension spindle (Mark G) 200mm dia. flange adaptor (Mark H) 200mm dia. plain ended pipe 1.2m long with puddle flange at 400mm from one end (cut to suit on site) (Mark I) 200mm dia. coupling (Mark J) 200mm dia. plain ended pipe 3.6m long (cut to suit on site) (Mark K) 200mm dia. Butterfly valve	Nr Nr Nr Nr	4 6 3 3 3		
6.13 2 6.14 2 6.15 2 6.16 2 6.16 2 6.17 2 6.18 2 6.19 2 6.19 2 6.19 2 6.20 0	200mm dia. all flanged gate valve with 1.5m long extension spindle (Mark G) 200mm dia. flange adaptor (Mark H) 200mm dia. plain ended pipe 1.2m long with puddle flange at 400mm from one end (cut to suit on site) (Mark I) 200mm dia. coupling (Mark J) 200mm dia. plain ended pipe 3.6m long (cut to suit on site) (Mark K) 200mm dia. Butterfly valve Washwater Outlet Pipework and Fittings (Approved HDPE Pipes and Fittings)	Nr Nr Nr Nr Nr	4 6 3 3 3 1		
6.13 2 6.14 2 6.15 2 6.15 2 6.16 2 t 6.17 2 6.18 2 6.19 2 6.19 2 6.19 2 6.20 0 6.21 2	200mm dia. all flanged gate valve with 1.5m long extension spindle (Mark G) 200mm dia. flange adaptor (Mark H) 200mm dia. flange adaptor (Mark H) 200mm dia. plain ended pipe 1.2m long with puddle flange at 400mm from one end (cut to suit on site) (Mark I) 200mm dia. coupling (Mark J) 200mm dia. plain ended pipe 3.6m long (cut to suit on site) (Mark K) 200mm dia. Butterfly valve 200mm dia. Butterfly valve Washwater Outlet Pipework and Fittings (Approved HDPE Pipes and Fittings) Concentric wash water collector, 420mm x200mm and 375mm long (Mark i) 200mm dia. socket (Mark ii)	Nr Nr Nr Nr Nr Nr Nr	4 6 3 3 3 1 1 1 1		
6.13 2 6.14 2 6.15 2 6.15 2 6.16 2 t 6.17 2 6.18 2 6.19 2 6.19 2 6.19 2 6.20 0 6.21 2	200mm dia. all flanged gate valve with 1.5m long extension spindle (Mark G) 200mm dia. flange adaptor (Mark H) 200mm dia. flange adaptor (Mark H) 200mm dia. plain ended pipe 1.2m long with puddle flange at 400mm from one end (cut to suit on site) (Mark I) 200mm dia. coupling (Mark J) 200mm dia. plain ended pipe 3.6m long (cut to suit on site) (Mark K) 200mm dia. Butterfly valve 200mm dia. Butterfly valve	Nr Nr Nr Nr Nr Nr	4 6 3 3 3 1 1		

			-		
6.24	200mm dia. stub ended pipe with galvanized steel flange 5950mm long (Mark v)	Nr	1		
	Washwater Outlet Pipework and Fittings (Approved Epoxy Coated Ferrous Pipes and				
	Fittings)				
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		
	Scour Pipework and Fittings (Approved Epoxy Coated Pipes and Fittings)				
	Scoul ripework and ritings (Approved Epoxy Coated ripes and ritings)				
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		
0.25					
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		
	Overflow Pipework and Fittings (Approved Epoxy Coated Pipes and Fittings)				
	<u></u>				
6.32	150mm dia. flanged spigot pipe 600mm long with puddle flange 100mm from one end	Nr	1		
	(Mark e)				
6.33	150mm dia. double flanged 90° bend (Mark f)	Nr	1		
0.33		11/1			
6.34	150mm dia. flanged spigot pipe 3.0m long cut to suit on site (Mark g)	Nr	1		
	Other Pipework and Fittings (Approved HDPE Pipes and Fittings) and Metalwork as				
	Detailed on Drawings				
6.35	Supply and install 75 dia. flap valve as specified	Nr	4		
	when the second s				
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	Nr	2		
0.57	shown		2		
6.38	Supply and install 50mm dia. HDPE pipe, 1300mm long with 7Nr. 19mm dia. holes as	Nr	2		
	shown				
6.39	Supply and install 50mm dia. HDPE pipe, 1700mm long with 9Nr. 19mm dia. holes as	Nr	2		
0.00	shown		-		
6.40	Supply and install 50mm dia. HDPE pipe, 2100mm long with 11Nr. 19mm dia. holes as	Nr	2		
	shown				
6.41	Supply and install 50mm dia. HDPE pipe, 2500mm long with 13Nr. 19mm dia. holes as	Nr	4		
0.41	shown		7		
6.42	Supply and install approved plastic nozzles in underdrain pipes	Nr	120		
7	FILTER MEDIA				
,	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	m³	3		
		~			ļ]
7.2	Supply and lay coarse sand of size 1mm in one layer 75mm thick	m³	1		
7.3	Supply and lay graded sand of size 0.5mm - 1.0mm in two layers as shown	³	6		
1.5	אראיז איז איז איז איז איז איז איז איז איז	m³	0		
7.4	Allow for connection of the composite filtration unit to the inflow 150mm dia. GMS pipe	Nr	1		
	and outflow as directed.				
8	MISCELLANEOUS WORKS				
8.1	Provide and fix GMS sheet 6mm thick settled water collection weir length 3000mm as	Nr	1		
0.1	detailed on Drawings.		l Î		
	-				
8.2	Provide all materials and fix an external access ladder to Composite Filtration Unit as per	Item	LS		
	details on Drawings.				
			I	L	I

8.3	Provide all materials and fix 1200mm wide Chequered Plate Walking Platform over the Composite Filtration Unit complete with handrails as per details on Drawing No.	Item	LS		
8.4	Test and commission the composite filtration unit including disinfection of media for 24 hours.	Nr	1		
9					
9	PRECAST CONCRETE				
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 reinforcemet, all as directed.	Nr	60		
10	CHAMBERS				
10.1	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.				
10.1.1	Maximum depth less than 1.0m	m³	55		
10.1.2	-Ditto- but depth 1.0 to 2.0m	m³	25		
					1
10.1.3	Extra over excavation in rock Class 'A'	m³	6		
10.1.4	-Ditto - in rock Class 'B'	m³	13		
10.1.5	-Ditto - in rock Class 'C'	m³	13		
10.2	CONCRETE WORKS				
	Provide, mix and place concrete as directed.				
10.2.1	Concrete Class 15/20 in 50mm blinding layer under base slab.	m²	33		
10.2.6	Vibrated reinforced concrete Class 25/20 to base slab 200mm thick	m³	6		
10.2.7	-Ditto - but for chamber walls 200mm thick and 2000mm long	m³	17		
10.3	STEEL REINFORCEMENT				
	Provide and fix steel reinforcements including cutting, bending, propping with spacers and tying as specified.				
10.3.1					
	Steel reinforcement	kg	400		
10.4	Steel reinforcement FORMWORK	kg	400		
10.4		kg	400		
10.4 10.4.1	<u>FORMWORK</u>	kg 	400		
10.4.1	FORMWORK Provide and fix shuttering including propping, strutting and striking all as specified. Sides of 200mm thick base slab	m²	10		
	FORMWORK Provide and fix shuttering including propping, strutting and striking all as specified. Sides of 200mm thick base slab				
10.4.1 10.4.2	FORMWORK Provide and fix shuttering including propping, strutting and striking all as specified. Sides of 200mm thick base slab Sides of 2000mm chamber walls (vertical) 2.3 Total Carried to Grand Summary Page	m²	10		
10.4.1 10.4.2	FORMWORK Provide and fix shuttering including propping, strutting and striking all as specified. Sides of 200mm thick base slab Sides of 2000mm chamber walls (vertical) 2.3 Total Carried to Grand Summary Page CLEAR WATER TANK; one unit of four 100m ³ tanks	m²	10		
10.4.1	FORMWORK Provide and fix shuttering including propping, strutting and striking all as specified. Sides of 200mm thick base slab Sides of 2000mm chamber walls (vertical) 2.3 Total Carried to Grand Summary Page	m²	10	RATE	AMOUNT
10.4.1 10.4.2 Bill No. 2	FORMWORK Provide and fix shuttering including propping, strutting and striking all as specified. Sides of 200mm thick base slab Sides of 2000mm chamber walls (vertical) 2.3 Total Carried to Grand Summary Page CLEAR WATER TANK; one unit of four 100m ³ tanks BILL No.2.2.4	m ²	10 74	RATE Kshs	AMOUNT Kshs
10.4.1 10.4.2 Bill No. 2.	EORMWORK Provide and fix shuttering including propping, strutting and striking all as specified. Sides of 200mm thick base slab Sides of 2000mm chamber walls (vertical) 2.3 Total Carried to Grand Summary Page CLEAR WATER TANK; one unit of four 100m ³ tanks BILL No.2.2.4 DESCRIPTION EARTHWORKS	m ²	10 74		
10.4.1 10.4.2 Bill No. 2. ITEM No.	EORMWORK Provide and fix shuttering including propping, strutting and striking all as specified. Sides of 200mm thick base slab Sides of 2000mm chamber walls (vertical) 2.3 Total Carried to Grand Summary Page CLEAR WATER TANK; one unit of four 100m ³ tanks BILL No.2.2.4 DESCRIPTION	m ²	10 74		
10.4.1 10.4.2 Bill No. 2. ITEM No.	EORMWORK Provide and fix shuttering including propping, strutting and striking all as specified. Sides of 200mm thick base slab Sides of 2000mm chamber walls (vertical) 2.3 Total Carried to Grand Summary Page CLEAR WATER TANK; one unit of four 100m ³ tanks BILL No.2.2.4 DESCRIPTION EARTHWORKS	m ²	10 74		
10.4.1 10.4.2 Bill No. 2. ITEM No.	FORMWORK Provide and fix shuttering including propping, strutting and striking all as specified. Sides of 200mm thick base slab Sides of 2000mm chamber walls (vertical) Last Carried to Grand Summary Page CLEAR WATER TANK; one unit of four 100m ³ tanks BILL No.2.2.4 DESCRIPTION EARTHWORKS Excavation Excavations shall include for strutting, shuttering, stabilizing excavated surfaces and	m ²	10 74		

1.3	Ditto but depth range between 1m - 2m	m³	36	
1.4	Ditto but depth range between 2m - 3m	m ³	36	
1.4			50	
1.5	Ditto but depth range between 3m - 4m	m³	22	
1.6	Extra over for rock - Class 'A' blasting not permitted	3	11	
1.0		m ³	11	
1.7	ditto - but Class B	m³	16	
		2		
1.8	ditto - but Class C	m ³	27	
	Filling			
	Filling to completed structures including compaction as specified			
1.9	Selected excavated material other than topsoil, approved and use as fill and compact in 200mm layers as specified on site as and when directed by the Engineer. Compaction tests to be done and rates to include for this	m³	89	
1.10	Filling hardcore of 300mm hand parked rubble along tank perimeter compacted in layers of 150mm	m³	28	
	Disposal of excavated Material			
1.1.1		3	-	
1.11	Disposal of excavated material other than topsoil, rock or artificial hard material	m ³	5	
1.12	Disposal of excavated material-rock	m³	54	
2	IN SITU CONCRETE Provision of concrete			
	Design Mix			
	<u>Grade: C15/20</u>			
2.1	Provide all materials, mix and place 50mm thick concrete blinding mix (Class 15/20) to base slab, allow for sloping sides	m²	73	
2.2	100mm Thick Pipe Surround	m ³	1	
	Reinforced Concrete; Class 35/30 Provide all materials, mix and place reinforced concrete for;			
2.3	250mm concrete in tank base slab and sump base and walls	m³	17	
2.4	250mm thick Tank walls	m ³	18	
2.4			10	
2.5	Columns base and columns	m³	1	
2.6	Roof Beams	m ³	2	
2.0		m	2	
2.7	200mm thick Roof Slab	m³	14	
		2		
2.8	150mm thick baffle walls	m³	6	
	Reinforced Concrete; Class 25/20			
	Provide all materials, mix and place reinforced concrete for;			
2.8	Scour chamber walls and base slab	m³	2	
	CLASS G: CONCRETE ANCILLARIES Dimensions as per details on Specific Structural Drawings			
	Formwork: Rough Finish; Plane Vertical			
2.10	Provide and fix strip shuttering including propping, strutting and striking to the edge of	m²	8	
2.10		m²	8	
2.10	Provide and fix strip shuttering including propping, strutting and striking to the edge of	m² m²	8	
	Provide and fix strip shuttering including propping, strutting and striking to the edge of tank base slab - 250mm wide Provide and fix wrought shuttering including propping, strutting and striking to sump			

		-			
2.13	Provide and fix wrought shuttering including propping, strutting and striking to scour chamber base walls, n.e. 1.5m height	m²	19		
2.14	Provide and fix strip shuttering including propping, strutting and striking to the Tank wall - height 2300mm	m²	138		
2.15	Provide and fix wrought shuttering including propping, strutting and striking to sides of columns, n.e. 300mm wide	m²	6		
2.16	Provide and fix wrought shuttering including propping, strutting and striking to sides of column bases, n.e. 100mm wide	m²	1		
2.17	Provide and fix wrought strip shuttering including propping, strutting and striking to the vertical edge of roof slab - 200mm wide	m²	61		
2.18	-Ditto- to sides of beams - 300mm wide	m²	20		
2.19	-Ditto- to soffit of beams - 300mm wide	m²	7		
2.20	-Ditto- to soffit of projection of roof slab - 300mm wide	m²	4		
2.21	Provide and fix wrought shuttering including propping, strutting and striking to the soffit of roof slab	m²	61		
	Finishing on Surfaces				
2.22	1:3 cement sand screed with steel trowel finish laid to fall tank floors at 1:120, and	m²	3		
2.22	minimum depth 15mm		5		
2.23	1:3 cement sand screed with steel trowel finish laid to roof slab at 1:120, and minimum depth 15mm	m²	3		
3	REINFORCEMENT				
3.1	Provide, cut, bend and fix mild steel reinforcement bars as per details on structural drawings.	kg	5633		
	JOINTS AND WATER STOPS				
	JOINTS AND WATER STOPS (Rates to include for all rebates, shuttering, PVC waterstop, resin bonded cork joint sealers and bituminous painting)				
3.2	(Rates to include for all rebates, shuttering, PVC waterstop, resin bonded cork joint	m	62		
	(Rates to include for all rebates, shuttering, PVC waterstop, resin bonded cork joint sealers and bituminous painting) Provide and install 240mm wide, 20mm thick bituminous expansion board in construction joint at 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	62		
4	(Rates to include for all rebates, shuttering, PVC waterstop, resin bonded cork joint sealers and bituminous painting) Provide and install 240mm wide, 20mm thick bituminous expansion board in construction joint at 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 <u>MISCELLANEOUS ITEMS</u>				
4.1	(Rates to include for all rebates, shuttering, PVC waterstop, resin bonded cork joint sealers and bituminous painting) Provide and install 240mm wide, 20mm thick bituminous expansion board in construction joint at 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 MISCELLANEOUS ITEMS Provide all materials and construct vents as per details on Drawing	Nr	4		
4	(Rates to include for all rebates, shuttering, PVC waterstop, resin bonded cork joint sealers and bituminous painting) Provide and install 240mm wide, 20mm thick bituminous expansion board in construction joint at 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 <u>MISCELLANEOUS ITEMS</u>				
4.1	(Rates to include for all rebates, shuttering, PVC waterstop, resin bonded cork joint sealers and bituminous painting) Provide and install 240mm wide, 20mm thick bituminous expansion board in construction joint at 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 MISCELLANEOUS ITEMS Provide all materials and construct vents as per details on Drawing Allow for construction of 600mm x 600mm access manhole with cast iron frame and	Nr	4		
4 4.1 4.2	(Rates to include for all rebates, shuttering, PVC waterstop, resin bonded cork joint sealers and bituminous painting) Provide and install 240mm wide, 20mm thick bituminous expansion board in construction joint at 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 <u>MISCELLANEOUS ITEMS</u> Provide all materials and construct vents as per details on Drawing Allow for construction of 600mm x 600mm access manhole with cast iron frame and cover	Nr	4		
4 4.1 4.2 4.3	(Rates to include for all rebates, shuttering, PVC waterstop, resin bonded cork joint sealers and bituminous painting) Provide and install 240mm wide, 20mm thick bituminous expansion board in construction joint at 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 MISCELLANEOUS ITEMS Provide all materials and construct vents as per details on Drawing Allow for construction of 600mm x 600mm access manhole with cast iron frame and cover Provide all materials and fix galvanized wrought iron cat ladder to outside of reservoir. (Stringers - 50mm x 10mm rings - 20mm diameter at 300mm centres) Length n.e. 2.5m Provide all materials and fix galvanized wrought iron cat ladder to inside of reservoir.	Nr Nr	4		
4 4.1 4.2 4.3 4.4	(Rates to include for all rebates, shuttering, PVC waterstop, resin bonded cork joint sealers and bituminous painting) Provide and install 240mm wide, 20mm thick bituminous expansion board in construction joint at 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 MISCELLANEOUS ITEMS Provide all materials and construct vents as per details on Drawing Allow for construction of 600mm x 600mm access manhole with cast iron frame and cover Provide all materials and fix galvanized wrought iron cat ladder to outside of reservoir. (Stringers - 50mm x 10mm rings - 20mm diameter at 300mm centres) Length n.e. 2.5m Provide all materials and fix galvanized wrought iron cat ladder to inside of reservoir. (Stringers - 50mm x 10mm rings - 20mm diameter at 300mm centres) Length n.e. 2.4m Allow for boxing out holes in reinforced concrete floors, walls, etc diameter n.e. 200mm including concrete reinstatement after pipe installation. The exact dimension to suit the	Nr Nr Nr Nr	4		
4.1 4.2 4.3 4.4 4.5	(Rates to include for all rebates, shuttering, PVC waterstop, resin bonded cork joint sealers and bituminous painting) Provide and install 240mm wide, 20mm thick bituminous expansion board in construction joint at 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 MISCELLANEOUS ITEMS Provide all materials and construct vents as per details on Drawing Allow for construction of 600mm x 600mm access manhole with cast iron frame and cover Provide all materials and fix galvanized wrought iron cat ladder to outside of reservoir. (Stringers - 50mm x 10mm rings - 20mm diameter at 300mm centres) Length n.e. 2.5m Provide all materials and fix galvanized wrought iron cat ladder to inside of reservoir. (Stringers - 50mm x 10mm rings - 20mm diameter at 300mm centres) Length n.e. 2.4m Allow for boxing out holes in reinforced concrete floors, walls, etc diameter n.e. 200mm including concrete reinstatement after pipe installation. The exact dimension to suit the pipe. Allow for construction of 25mm x 25mm drip all round the roof edge as detailed	Nr Nr Nr Nr	4 2 1 1 4		
4.1 4.2 4.3 4.4 4.5 4.5	(Rates to include for all rebates, shuttering, PVC waterstop, resin bonded cork joint sealers and bituminous painting) Provide and install 240mm wide, 20mm thick bituminous expansion board in construction joint at 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 MISCELLANEOUS ITEMS Provide all materials and construct vents as per details on Drawing Allow for construction of 600mm x 600mm access manhole with cast iron frame and cover Provide all materials and fix galvanized wrought iron cat ladder to outside of reservoir. (Stringers - 50mm x 10mm rings - 20mm diameter at 300mm centres) Length n.e. 2.5m Provide all materials and fix galvanized wrought iron cat ladder to inside of reservoir. (Stringers - 50mm x 10mm rings - 20mm diameter at 300mm centres) Length n.e. 2.4m Allow for boxing out holes in reinforced concrete floors, walls, etc diameter n.e. 200mm including concrete reinstatement after pipe installation. The exact dimension to suit the pipe. Allow for construction of 25mm x 25mm drip all round the roof edge as detailed PIPES, FITTINGS AND VALVES	Nr Nr Nr Nr	4 2 1 1 4		
4.1 4.2 4.3 4.4 4.5 4.5	(Rates to include for all rebates, shuttering, PVC waterstop, resin bonded cork joint sealers and bituminous painting) Provide and install 240mm wide, 20mm thick bituminous expansion board in construction joint at 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 MISCELLANEOUS ITEMS Provide all materials and construct vents as per details on Drawing Allow for construction of 600mm x 600mm access manhole with cast iron frame and cover Provide all materials and fix galvanized wrought iron cat ladder to outside of reservoir. (Stringers - 50mm x 10mm rings - 20mm diameter at 300mm centres) Length n.e. 2.5m Provide all materials and fix galvanized wrought iron cat ladder to inside of reservoir. (Stringers - 50mm x 10mm rings - 20mm diameter at 300mm centres) Length n.e. 2.4m Allow for boxing out holes in reinforced concrete floors, walls, etc diameter n.e. 200mm including concrete reinstatement after pipe installation. The exact dimension to suit the pipe. Allow for construction of 25mm x 25mm drip all round the roof edge as detailed	Nr Nr Nr Nr	4 2 1 1 4		

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5.3 200mm Dia 1200mm long flanged spigot pipe (Mark 3) Nr 1	
5.4 1Nos. 200 mm dia Coupling (Mark 4) Nr 1	
OUTLET/SUCTION PIPEWORK	
5.5 Suction Pipework accounted for in Treated Water Pump House BOQ	
OVERFLOW & WASHOUT PIPEWORK	
5.6 150mm dia.flanged spigot pipe 600mm long with puddle flange at 150mm from spigot end Nr 1	
5.6 150mm dia.flanged spigot pipe 600mm long with puddle flange at 150mm from spigot end Nr 1 (Mark a)	
5.7 150mm dia. double flanged 90° short radius bend (Mark b) Nr 1	
5.8 150mm dia. double flanged pipe 1050mm long (cut to suite on site) (Mark c) Nr 1	
5.9 150mm dia. flange adaptor (Mark d) Nr 1	
5.10 150mm dia. all flanged 60° bend (Mark e) Nr 1	
5.11 150mm dia. flanged spigot pipe 1250mm long with spigot end bevelled. (cut to suite on Nr 1	
site) (Mark f)	
5.12 150mm dia. All flanged gate valve (EURO 20 SERIES TYPE 23 SAINT GOBAIN PAM or Nr 1	
approved equivalent) (Mark g)	
5.13 150mm dia. 90º flanged spigot bend (cut to suite on site) (Mark h) Nr 1	
5.14 150mm dia. 90° flanged spigot bend (cut to suite on site) (Mark i) Nr 1	
6 CONSTRUCTIONAL WORK	
6 CONSTRUCTIONAL WORK 6.1 Provide and fix step irons to chambers Nr 6	
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				1	7
	Extra Over Excavation in Any Position for:-				
1.3	Executing in rock Cloce "A"	3	1		
1.3	Excavating in rock Class "A"	m ³	1		-
1.4	Excavating in rock Class "B"	m³	4		
1.5	Excavating in rock Class "C"	m³	2		
1.6	Approved Selected Filling as Described:- Provide and deposit approved selected fill in maximum 150mm thick layers in making up	m³	5		
110	levels including achieving satisfactory compaction. Rate to include performing necessary compaction tests.		5		
1.7	Provide, lay and level out fine crushed stone, sand or gravel blinding 50mm thick to surface of filling, including watering and rolling to achieve satisfactory compaction.	m²	4		
1.8	Fill with approved hardcore in a 300mm thick layer including achieving satisfactory	m ²	11		
	compaction.				
	Disposal of Surplus Spoil:-				
1.9	Cart away surplus excavated materials to an approved dumping site	3	5		
1.9	Cart away surplus excavated materials to an approved dumping site	m ³	5		
	Anti-Termite Treatment				
1.10	Chemical anti-termite treatment to surface of filling with an approved insecticide.	m²	33		
	Damp-Proof Membrane				
1.11	500 Gauge polythene sheeting, laid over hardcore in two layers	m²	33		
	CONCRETE WORK				
	Mass Concrete Class 15/20mm Maximum Aggregate as Described in:-				
1.12	75mm Thick blinding under the walls strip footings, column bases and over hardcore	m²	5		
	SUPER-STRUCTURE				
	Guaranteed Strength Reinforced Concrete Class 25/20mm Maximum Aggregate as Described in:-				
1.13	200mm Thick Base Slab	m³	7		
1.15			,		
1.14	150mm Thick Base Slab topping	m³	5		
1.15	300mm Thick Column Bases and Wall Strip Footings	m³	2		
1.16	Control Panel 300mm upstand beams	3	1		
1.10		m ³	1		
1.17	Pump Plinth size 1100mm long x 800mm wide x 300mm deep	Nr	2		
1.18	Pump Plinth size 700mm long x 700mm wide x 300mm deep	Nr	1		
	Builders Work				
1.19	Provide all materials and construct; Drainage sump internal size 400mm long x 400mm wide x 150mm deep in concrete floor	Nr	1		
1.19	slab including forming rebate 100mm wide x 50mm deep to top inner edges of sump wall to receive metal grating cover (m.s.) and including all necessary excavation, disposal and formwork.	INF	I		
1.20	Form cable duct internal size 200mm wide x 150mm deep in concrete floor slab including forming rebate 100mm wide x 50mm deep to top inner edges of channel wall to receive chequer plate cover (m.s.)	m	4		
1.21	Form drainage channel internal size 200mm wide and depth varying from 100mm to 150mm deep in concrete floor slab including forming rebate 100mm wide x 50mm deep to top inner edges of channel wall to receive mild steel grating cover (m.s.)	m	4		
1.22	Provide all materials and install a 200mm Dia. Upvc drainage pipe from cable ducts cast into floor slab as shown on Drg. No. 5188481-ATK-WTP-PH-DR-W-017	m	2		

1.23	Form pocket internal size 1100mm long x 800mm wide x 50mm deep in base slab to receive treated water pump plinth (R.C.) including all the necessary formwork	Nr	2		
1.24	Form pocket internal size 700mm long x 700mm wide x 50mm deep in concrete topping to receive backwash pump plinth (R.C.) including all the necessary formwork	Nr	1		
	Provide and Fix High Tensile Steel Reinforcement to SRN 127 including Cutting, Bending, Propping With Spacers and Tying as Specified :-				
1.25	Reinforcement, all diameters as specified in the drawings	Kg	2000		
	FORMWORK				
	Provide and Fix Shuttering Including Propping, Strutting and Striking, all as Specified				
	Sawn Formwork - Class F1 Finish:-				
1.26	Sides of 200mm thick pump house base slab	m ²	10		
1.27	Sides of column bases and columns in the foundations	m²	13		
1.28	Sides of 200mm Walls Strip footings - Pump house walls	m²	50		
	Wrot Formwork - Class F3 Finish:-				
1.29	Edges of Treated Water Pump Plinth size 1100mm long x 800mm wide x 300mm deep not exceeding 300mm wide	m	4		
1.30	Edges of Backwash Water Pump Plinth size 700mm long x 700mm wide x 300mm deep not exceeding 300mm wide	m	3		
1.31	Edges of Control Panel Upstand Beams 1600mm long x 200mm wide x 300mm deep	m	5		
	RENDERING				
	15mm Cement and sand (1:4) render to plinths, finished with a wood float				
1.32	Pump Plinth size 1100mm long x 800mm wide x 350mm deep including pocket in base slab	m²	5		
1.33	Pump Plinth size 700mm long x 700mm wide x 350mm deep including pocket in base slab	m²	7		
	Bonded Cement and Sand (1:4) Screed Bed in One Coat with Approved Hardener incorporated in the Mix, Well Bonded to Concrete Base as Described:-				
1.34	40mm Thick paving with wood float finish on pump house slab	m²	32		
	Damp-proof course:				
	Bituminous Felt Damp-Proof Course as Described:-				
1 25			40		
1.35	200mm Wide under walls	m	13		
1.36	Joint Filler 20mm Thick resin bonded cork filler between 1100 x 800 x 350mm pump plinth and 200mm thick floor slab sealed with 25mm deep bitumen	m²	5		
1.37	-Ditto for 700 x 700 x 350mm pump plinth	m²	5		
	Walling				
	Natural Stone Block Walling, Medium Chisel Dressed, Reinforced with 20 swg Hoop Iron at every third course, and Bedded, Jointed and Pointed in Cement Mortar (1:4):-				
1.38	200 mm Walling	m²	45		
	CONCRETE WORKS				
	Guaranteed Strength Reinforced Concrete Class 25/20mm as Described in:				
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130 Uptand learns for the control planel n ⁿ 2 (1) 140 Columns n ⁿ 4 (1) 141 Beams n ⁿ 4 (1) 142 Selas class 50x 500 x 500 m Thick liel on and including 50m thick bed of sand and n ⁿ 12 12 143 Selas class 50x 500 x 500 m Thick liel on and including 50m thick bed of sand and n ⁿ 12 12 144 Selas class 50x 500 x 500 m Thick liel on and including 50m thick bed of sand and n ⁿ 12 12 145 Reinforcement, and selas in the source strength selas for selas for selas for selas field in the source strength selas for selas field in the source strength selas for selas field in the source strength selas field in the source stre strength selas field in the source stren					
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Provide and Fix High Tensile Steel Reinforcement to SRN 127 Including Cutting, Bending, Propiping with. Spaces and Tying as Specified . Including Cutting, Bending, Reinforcement, all diameters Including, Reinforcement, all diameters <thincluding, Reinforcement, all diameters Including</thincluding, 		jointing and pointing in cement mortar			
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Rates to include for Provision of all Material, Fabrication and Fixing Image: Constraint of the second	1.50	12.5mm thick cement and sand rendering externally on concrete surfaces	m²	25	
Rates to include for Provision of all Material, Fabrication and Fixing Image: Constraint of the second					
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Image: Section of the section of th	1.51	round m.s transverse bars welded at 20mm spacing to 16mm round m.s longitudinal bars	m²	3	
1.53 Provide and fix Gantry girder made out of 203 x 133 x 30 kg/m UB. Include for 500kg capacity chain block mounted on roller bracket on the gantry, fixing of gantry to concrete beams of pump house with 16mm bolts, etc., all as detailed. Nr 1 4 4 4 4	1.52	Mild steel chequer plate cover for cable duct internal size 200mm wide x 150mm deep	m²	3	
1.53 Provide and fix Gantry girder made out of 203 x 133 x 30 kg/m UB. Include for 500kg capacity chain block mounted on roller bracket on the gantry, fixing of gantry to concrete beams of pump house with 16mm bolts, etc., all as detailed. Nr 1 1 0 0 0 0					<u> </u>
capacity chain block mounted on roller bracket on the gantry, fixing of gantry to concrete beams of pump house with 16mm bolts, etc., all as detailed.		UB Gantry			
capacity chain block mounted on roller bracket on the gantry, fixing of gantry to concrete beams of pump house with 16mm bolts, etc., all as detailed.	1 52	Provide and fix Gantry girder made out of 203 y 133 y 30 kg/m LIB Include for 500kg	Nr	1	
Steel Doors Image: Constraint of the second secon	1.35	capacity chain block mounted on roller bracket on the gantry, fixing of gantry to concrete	INI	-	
		Steel Deere			
		31661 20013			
Pressed Metal Louvre Doors		Pressed Metal Louvre Doors			

	Supply and Fix the Following Pressed Metal Louvre Doors with 100 x 50mm Stiles and Top Rails, 150 x 50mm Middle and Bottom Rails With Pressed Metal Infill Louvres and 100 x 50mm Pressed Metal Frames, Including Hinges, Pad Bolts and Tower Bolts, All To Manufacturer's Details, With Three Coats Gloss Paint Complete With Opening Accessories Including Bedding and Pointing Around Frames in Cement Mortar:-			
1.54	Double door size 1800 x 2400 mm high in two equal panels	Nr	1	
1.54			1	
	Steel Casement Windows			
	Supply and Fix the following Standard Section Steel Casement Windows, including 4mm Thick Clear Sheet Glass glazed to Steel Casements with putty, complete with the following, all finished with three coats oil paint:-			
	 Opening accessories, including building in lugs to jambs and head and water-proofing and filling around opening with approved compound 			
	 Burglar-Proofing Fabricated from 12 x 12mm Mild Steel Square Bars at 150mm Centres Vertically and 150mm Horizontally and Fixed Internally to Surrounding Wall with 12mm Mild Steel Fish-Tailed Lugs at Maximum 600mm Centres; 			
1.55	Window size 1797 x 1197mm high in 3 equal panels with upper part having 2 No. fixed and 1 No. top hung ventilator,and lower half having 2 No. side-hung panels opening outward and 1 No. fixed panel	Nr	5	
	PVC Gauze Screen set on and including a Timber Framing all Round and Fixing to Wall :-			
1.56	Gauze size 1800 x 1200mm high	Nr	1	<u> </u>
1.50			-	
	Precast Concrete Louvre Block Walling :-			
1.57	200mm Thick louvre block walling with twin section with plastic coated coffee tray wire sandwiched between sections	m²	8	
	PAINTING AND DECORATING			
	Prepare and Apply Three Coats Exterior Quality Plastic Emulsion Paint:-			
	Externally on:-			
1.58	Fair-faced concrete surfaces	m²	25	
	Prepare and Apply Three Coats Interior Quality Plastic Emulsion Paint:-			
1.59	Internally on:- Plastered blockwork and concrete surfaces	2	95	
1.55		m²	35	
	Prepare and Apply Three Coats Washable Distemper as Described to:-			
1.60	Horizontal soffites of suspended chipboard or plasterboard ceilings	m²	54	
	ROOF COVERINGS			
	Gauge 28 galvanised corrugated coloured IT5 Sheets including ridge capping including all	m²	42	
	necessary underlay and jointing material			
	CARPENTRY AND JOINERY			
	Carpentry			
	Roof Trusses			
	Single Pitch Roof Truss With 600mm eaves projection, in 150 x 50mm Rafters, Ceiling Joists, Struts and Ties in Sawn Cypress Grade II Seasoned and Pressure Impregnated with			
	Wood Preservative and timber joints with bolted and nailed connections to the Engineer's approval :-			
1.61	Equal truss 4400mm clear span and 900mm high	Nr	5	
	Other Roof Members			
	Sawn Cypress Grade II Maximum Moisture Content 12% Seasoned and Pressure Impregnated with Wood Preservative and Timber Joints With Bolted and Nailed Connections to the Engineer's Approval:-			
1.62	150 x 50mm Purlins	m	42	

				1	
1.63	200 x 50mm Ridge board	m	7		
1.05			/		
1.64	100 x 50mm Wall plate tied to wall with 20 s.w.g. hoop iron at 900mm centres and	m	42		
	bedded in cement mortar (1:3) on top of wall				
	Joinery				
	General Timbers				
	Wrot Prime Grade Cypress, Including Finishing With Three Coats First Quality Gloss Paint :-				
1.65	250 x 40mm Fascia board	m	26		
2	CEILING				
	12mm Thick Approved Chipboard to BS 2604, Part 2, density 480-640kgs, per Square				
	Electro-magnetic meter in Sheets Size 2400 x 1200mm Fixed to and Including 50 x 50mm				
	Sawn Cypress Grade 2 Battens at 600mm Centres in Both Directions Complete with Gauge Jointing Material				
2.1	Horizontal ceiling fixed to underside of trusses	m²	30		
2.2	12mm Carries FOrem high alugand		15		
2.2	12mm Cornice 50mm high, plugged	m	15		
2.3	Extra over ceiling lining for forming removable access trap door size 600 x 600mm with	Nr	1		
	100 x 38 mm sawn treated cypress trimming joists between tie beams,120 x 20mm (finished) wrot cypress frame all round and 20mm blockboard removable panel set loose				
	on top of framing.				
	Builders Work in Connection with Electrical Installations				
2.4	Allow for cutting and leaving all necessary holes, notches, mortices, sinkings and chases	Item	L.S		
	both in the structure and its finishes and for all making good in connection with concealed				
	conduits or cables PIPEWORK AND FITTINGS				
	Supply, Transport to Site and Store in Secure Place, Including Jointing Material, Bolts, Gaskets, Packing, Jointing Glues, etc. as Applicable				
	Treated And Backwash Water Pumps - Suction Main (Approved Lined Ferrous Pipe				
	Fittings to Class NP 16)				
2.5	150mm dia. flanged strainer (Mark 1)	Nr	1		
2.6	150mm dia. double flanged pipe, 1100mm long with puddle flange at 500mm from one	Nr	1		
2.0	end (Mark 2)		-		
2.7	450 mm dia dankia (kurani 200 kand (Mark 2)	NI-	1		
2.7	150mm dia. double flanged 30 ^o bend (Mark 3)	Nr	1		
2.8	150mm dia. double flanged pipe, 1900mm long (Mark 4)	Nr	1		
2.9	150mm dia. flanged adaptor (Mark 5)	Nr	3		
2.5			,		
2.10	150mm dia. double flanged pipe, 1700mm long with puddle flange at 500mm from one	Nr	1		
	end (Mark 6)				
2.11	150mm x 150mm x 150mm dia. all flanged radial tee (Mark 7)	Nr	2		
2.12	150mm dia. double flanged pipe, 250mm long (Mark 8)	Nr	2		
2.12			2		
2.13	150mm dia. double flanged gate valve to BS 5163 (short face to face) (Mark 9)	Nr	2		
2.14	150mm x 65mm dia. double flanged eccentric taper (Mark 10)	Nr	2		
2.15	150mm dia. double flanged pipe, 900mm long (Mark 11)	Nr	1		<u> </u>
2.16	150mm x 50mm dia. double flanged concentric taper (Mark 12)	Nr	1		
2 17	E0mm dia dauble flanged pine 700mm lang (Mark 13)	Niz	1		
2.17	50mm dia. double flanged pipe, 700mm long (Mark 13)	Nr	1		
2.18	50mm x 50mm x 50mm dia. all flanged tee (Mark 14)	Nr	1		
2 19	50mm dia. flanged adaptor (Mark 15)	Nr	4		<u> </u>
2.15			T		<u> </u>
2.18	50mm dia. flanged adaptor (Mark 15)	Nr	4		
2.20	50mm dia. double flanged gate valve to BS 5163 (short face to face) (Mark 16)	Nr	2		

2.21	50mm dia. single flanged 90º bend (Mark 17)	Nr	1	
2.21	John ula. Single hanged 30° bend (wark 17)	INI	1	
	Backwash Pumps - Delivery Main (Approved Lined Ferrous Pipe Fittings to Class NP 16)			
2.22	50mm dia. double flanged gate valve to BS 5163 (short face to face) (Mark A)	Nr	2	
2.23	50mm dia. double flanged free acting check valve (Non return valve) (Mark B)	Nr	2	
2.24	50mm dia. double flanged 90° bend (Mark C)	Nr	3	
			5	
2.25	50mm x 50mm x 50mm dia. all flanged tee (Mark D)	Nr	1	
2.26	50mm x 80mm dia. double flanged concentric taper (Mark E)	Nr	1	
2.27	80mm x 80mm x 50mm dia. all flanged tee (Mark F)	Nr	1	
2.28	50mm dia. single orifice air valve with built in isolating valve (Mark G)	Nr	1	
2.29	80mm dia. double flanged pipe, 700mm long (Mark H)	Nr	1	
2.30	80mm dia. double flanged water Electro-magnetic meter (Mark I)	Nr	1	
2.31	80mm dia. flanged adaptor (Mark J)	Nr	2	
2.32	80mm dia. double flanged pipe, 500mm long with puddle flange at 200mm from one end (Mark K)	Nr	1	
2.33	80mm dia. double flanged 45º bend (Mark L)	Nr	2	
2.34	80mm dia. flanged spigot pipe, 800mm long (cut to suit on site) (Mark M)	Nr	2	
2.35	80mm dia. stepped coupling (Mark N)	Nr	1	
	Treated Water Pumps - Delivery Main (Approved Lined Ferrous Pipe Fittings to Class NP			
	16			
2.36	100mm x 65mm double flanged concentric taper with 25mm dia. male threaded tapping	Nr	2	
2.30	for pressure gauge (Mark a)		2	
2.37	25mm dia. pressure gauge (pressure class up to 30 bars) - Hunter or approved equivalent	Nr	2	
	(Mark b)			
2.38	100mm dia. double flanged gate valve to BS 5163 (short face to face) (Mark c)	Nr	2	
2.39	100mm dia. double flanged free acting check valve (Non return valve) (Mark d)	Nr	2	
2.39		Nr	Ζ	
2.4	100mm dia. double flanged 90° bend (Mark e)	Nr	1	
2.41	100mm dia. double flanged pipe, 910mm long (Mark f)	Nr	1	
2.42	100mm x 100mm x 100mm dia. all flanged radial tee (Mark g)	Nr	1	
2.43	100mm x 100mm x 50mm dia. all flanged tee (Mark h)	Nr	1	<u> </u>
2.44	50mm dia. single orifice air valve with built in isolating valve (Mark i)	Nr	1	
2.45	100mm dia. double flanged pipe, 900mm long with puddle flange at 200mm from one end (Mark j)	Nr	1	
2.46	100mm dia. double flanged 45° bend (Mark k)	Nr	2	
		INI		
2.47	100mm dia. double flanged pipe, length 1200mm (cut to suit on site) (Mark I)	Nr	2	
2.48	100mm dia. flanged adaptor (Mark m)	Nr	2	
2.49	100mm dia. double flanged water Electro-magnetic meter (Mark n)	Nr	1	
2.50	100mm dia. flanged spigot pipe, length 1500mm (cut to suit on site) (Mark o)	Nr	1	
2.51	100mm dia. stepped coupling (Mark p)	Nr	1	
	Supply, Transport From Site Store, Install, Test and Commission			
	Backwash Pumps - Suction Main (Approved Lined Ferrous Pipe Fittings to Class NP 16)			

2.52	150mm dia. flanged strainer (Mark 1)	Nr	1		
2.53	150mm dia. double flanged pipe, 1100mm long with puddle flange at 500mm from one	Nr	1		
	end (Mark 2)				
2.54	150mm dia. double flanged 30º bend (Mark 3)	Nr	1		
2.55	150mm dia. double flanged pipe, 1900mm long (Mark 4)	Nr	1		
2.56	150mm dia. flanged adaptor (Mark 5)	Nr	3		
2.57	150mm dia. double flanged pipe, 1700mm long with puddle flange at 500mm from one end (Mark 6)	Nr	1		
2.58	150mm x 150mm x 150mm dia. all flanged radial tee (Mark 7)	Nr	2		
2.59	150mm dia. double flanged pipe, 250mm long (Mark 8)	Nr	2		
2.60	150mm dia. double flanged gate valve to BS 5163 (short face to face) (Mark 9)	Nr	2		
2.61	150mm x 65mm dia. double flanged eccentric taper (Mark 10)	Nr	2		
2.62	150mm dia. double flanged pipe, 900mm long (Mark 11)	Nr	1		
2.63	150mm x 50mm dia. double flanged concentric taper (Mark 12)	Nr	1		
2.64	50mm dia. double flanged pipe, 700mm long (Mark 13)	Nr	1		
2.65	50mm x 50mm x 50mm dia. all flanged tee (Mark 14)	Nr	1		
2.00	FOrmer die flangend adapter (Mark 1F)	Ne	4		
2.66	50mm dia. flanged adaptor (Mark 15)	Nr	4		
2.67	50mm dia. double flanged gate valve to BS 5163 (short face to face) (Mark 16)	Nr	2		
2.68	50mm dia. single flanged 90° bend (Mark 17)	Nr	1		
	Backwash Pumps - Delivery Main (Approved Lined Ferrous Pipe Fittings to Class NP 16)				
2.69	50mm dia. double flanged gate valve to BS 5163 (short face to face) (Mark A)	Nr	2		
2.70	50mm dia. double flanged free acting check valve (Non return valve) (Mark B)	Nr	2		
2.71	50mm dia. double flanged 90° bend (Mark C)	Nr	3		
2.72	50mm x 50mm x 50mm dia. all flanged tee (Mark D)	Nr	1		
2.73	50mm x 80mm dia. double flanged concentric taper (Mark E)	Nr	1		
2.74	80mm x 80mm x 50mm dia. all flanged tee (Mark F)	Nr	1		
2.75	50mm dia. single orifice air valve with built in isolating valve (Mark G)	Nr	1		
2.76	80mm dia. double flanged pipe, 700mm long (Mark H)	Nr	1		
2.77	80mm dia. double flanged water Electro-magnetic meter (Mark I)	Nr	1		
2.78	80mm dia. flanged adaptor (Mark J)	Nr	2		
2.79	80mm dia. double flanged pipe, 500mm long with puddle flange at 200mm from one end (Mark Κ)	Nr	1		
2.80	80mm dia. double flanged 45º bend (Mark L)	Nr	2		
2.81	80mm dia. flanged spigot pipe, 800mm long (cut to suit on site) (Mark M)	Nr	2		
2.82	80mm dia. stepped coupling (Mark N)	Nr	1		
2.83	100mm x 65mm double flanged concentric taper with 25mm dia. male threaded tapping for pressure gauge (Mark a)	Nr	2		
2.84	25mm dia. pressure gauge (pressure class up to 30 bars) - Hunter or approved equivalent (Mark b)	Nr	2		
2.85	100mm dia. double flanged gate valve to BS 5163 (short face to face) (Mark c)	Nr	2		
2.86	100mm dia. double flanged free acting check valve (Non return valve) (Mark d)	Nr	2		

				T	
2.87	100mm dia. double flanged 90° bend (Mark e)	Nr	1		
2.88	100mm dia. double flanged pipe, 910mm long (Mark f)	Nr	1		
2.00		111	-		
2.89	100mm x 100mm x 100mm dia. all flanged radial tee (Mark g)	Nr	1		
2.90	100mm x 100mm x 50mm dia. all flanged tee (Mark h)	Nr	1		
2.91	50mm dia. single orifice air valve with built in isolating valve (Mark i)	Nr	1		
2.92	100mm dia. double flanged pipe, 900mm long with puddle flange at 200mm from one end	Nr	1		
2.92	(Mark j)	INI	1		
2.93	100mm dia. double flanged 45° bend (Mark k)	Nr	2		
2.94	100mm dia. double flanged pipe, length 1200mm (cut to suit on site) (Mark I)	Nr	2		
2.95	100mm dia. flanged adaptor (Mark m)	Nr	2		
2.95		INI	2		
2.96	100mm dia. double flanged water Electro-magnetic meter (Mark n)	Nr	1		
2.97	100mm dia. flanged spigot pipe, length 1500mm (cut to suit on site) (Mark o)	Nr	1		
					
2.98	100mm dia. stepped coupling (Mark p)	Nr	1		
2	DUMADC				
3	PUMPS Provide all materials, install, test and commission;				<u> </u>
1	וויטיומב מו הומנכוומוג, וווגנמון, נכזג מונו נטווווווזאוטוו,				
	Treated Water Transmission Pumps				
3.1	1 No. Treated water pumps (Duty) as GRUNDFOS vertical, multistage centrifugal pumps, (Item	1nr		
	with a capacity of 25m3/h at 265m static head) fixed speed control booster set for cold				
	water complete with:				
	•Base frame with anti-vibration mountings				
	•				
	• Pressure switch (double pole) arrangement including flow switch and necessary valve and				
	 Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings 				
	 Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, 				
	 Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings 				
	 Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch 				
	 Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control 				
	 Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control All other necessary items for booster set to specification Power (P2) main pump 15kW Mains frequency: 50Hz 				
	 Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control All other necessary items for booster set to specification Power (P2) main pump 15kW 				
	 Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control All other necessary items for booster set to specification Power (P2) main pump 15kW Mains frequency: 50Hz 				
	 Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control All other necessary items for booster set to specification Power (P2) main pump 15kW Mains frequency: 50Hz 				
	 Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control All other necessary items for booster set to specification Power (P2) main pump 15kW Mains frequency: 50Hz 				
	 Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control All other necessary items for booster set to specification Power (P2) main pump 15kW Mains frequency: 50Hz Rated voltage: 3 x 380-415D/660-690Y V 				
3.3	 Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control All other necessary items for booster set to specification Power (P2) main pump 15kW Mains frequency: 50Hz Rated voltage: 3 x 380-415D/660-690Y V 	Item	LS		
3.3	Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control All other necessary items for booster set to specification Power (P2) main pump 15kW Mains frequency: 50Hz Rated voltage: 3 x 380-415D/660-690Y V Backwash Pumps I No. Backwash pumps (Duty and standby) as GRUNDFOS vertical, multistage centrifugal pumps, (each with a capacity of 17m3/h at 16.5m head) fixed speed control booster set		LS		
3.3	Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control All other necessary items for booster set to specification Power (P2) main pump 15kW Mains frequency: 50Hz Rated voltage: 3 x 380-415D/660-690Y V Backwash Pumps 1 No. Backwash pumps (Duty and standby) as GRUNDFOS vertical, multistage centrifugal pumps, (each with a capacity of 17m3/h at 16.5m head) fixed speed control booster set for cold water complete with:		LS		
3.3	Peressure switch (double pole) arrangement including flow switch and necessary valve and fittings Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control All other necessary items for booster set to specification Power (P2) main pump 15kW Mains frequency: 50Hz Rated voltage: 3 x 380-415D/660-690Y V Backwash Pumps 1 No. Backwash pumps (Duty and standby) as GRUNDFOS vertical, multistage centrifugal pumps, (each with a capacity of 17m3/h at 16.5m head) fixed speed control booster set for cold water complete with: Base frame with anti-vibration mountings		LS		
3.3	Peressure switch (double pole) arrangement including flow switch and necessary valve and fittings Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control All other necessary items for booster set to specification Power (P2) main pump 15kW Mains frequency: 50Hz Rated voltage: 3 x 380-415D/660-690Y V Backwash Pumps No. Backwash pumps (Duty and standby) as GRUNDFOS vertical, multistage centrifugal pumps, (each with a capacity of 17m3/h at 16.5m head) fixed speed control booster set for cold water complete with: Base frame with anti-vibration mountings Pressure switch (double pole) arrangement including flow switch and necessary valve and		LS		
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3.3	Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control All other necessary items for booster set to specification Power (P2) main pump 15kW Mains frequency: 50Hz Rated voltage: 3 x 380-415D/660-690Y V Backwash Pumps Solution I No. Backwash pumps (Duty and standby) as GRUNDFOS vertical, multistage centrifugal pumps, (each with a capacity of 17m3/h at 16.5m head) fixed speed control booster set for cold water complete with: Base frame with anti-vibration mountings Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings ·Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch		LS		
3.3	Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings •Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control •All other necessary items for booster set to specification Power (P2) main pump 15kW Mains frequency: 50Hz Rated voltage: 3 x 380-415D/660-690Y V Backwash Pumps 1 No. Backwash pumps (Duty and standby) as GRUNDFOS vertical, multistage centrifugal pumps, (each with a capacity of 17m3/h at 16.5m head) fixed speed control booster set for cold water complete with: •Baresure switch (double pole) arrangement including flow switch and necessary valve and fittings •Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control		LS		
3.3	Peressure switch (double pole) arrangement including flow switch and necessary valve and fittings Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control All other necessary items for booster set to specification Power (P2) main pump 15kW Mains frequency: 50Hz Rated voltage: 3 x 380-415D/660-690Y V Backwash Pumps 1 No. Backwash pumps (Duty and standby) as GRUNDFOS vertical, multistage centrifugal pumps, (each with a capacity of 17m3/h at 16.5m head) fixed speed control booster set for cold water complete with: Base frame with anti-vibration mountings Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control All other necessary items for booster set to specification Power (P2) main pump 2.2kW Mains frequency: 50Hz		LS		
3.3	Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control All other necessary items for booster set to specification Power (P2) main pump 15kW Mains frequency: 50Hz Rated voltage: 3 x 380-415D/660-690Y V Backwash Pumps I No. Backwash pumps (Duty and standby) as GRUNDFOS vertical, multistage centrifugal pumps, (each with a capacity of 17m3/h at 16.5m head) fixed speed control booster set for cold water complete with: Base frame with anti-vibration mountings Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control All other necessary items for booster set to specification Power (P2) main pump 12.2kW		LS		
	 Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control All other necessary items for booster set to specification Power (P2) main pump 15kW Mains frequency: 50Hz Rated voltage: 3 x 380-415D/660-690Y V Backwash Pumps I No. Backwash pumps (Duty and standby) as GRUNDFOS vertical, multistage centrifugal pumps, (each with a capacity of 17m3/h at 16.5m head) fixed speed control booster set for cold water complete with: Base frame with anti-vibration mountings Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control Automatic Control Panel for booster set to specification Power (P2) main pump 2.2kW Mains frequency: 50Hz Rated voltage: 3 x 380-500 V		LS		
3.3	Peressure switch (double pole) arrangement including flow switch and necessary valve and fittings Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control All other necessary items for booster set to specification Power (P2) main pump 15kW Mains frequency: 50Hz Rated voltage: 3 x 380-415D/660-690Y V Backwash Pumps 1 No. Backwash pumps (Duty and standby) as GRUNDFOS vertical, multistage centrifugal pumps, (each with a capacity of 17m3/h at 16.5m head) fixed speed control booster set for cold water complete with: Base frame with anti-vibration mountings Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control All other necessary items for booster set to specification Power (P2) main pump 2.2kW Mains frequency: 50Hz		LS		
	 Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control All other necessary items for booster set to specification Power (P2) main pump 15kW Mains frequency: 50Hz Rated voltage: 3 x 380-415D/660-690Y V 		LS		
	 Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control All other necessary items for booster set to specification Power (P2) main pump 15kW Mains frequency: 50Hz Rated voltage: 3 x 380-415D/660-690Y V Backwash Pumps I No. Backwash pumps (Duty and standby) as GRUNDFOS vertical, multistage centrifugal pumps, (each with a capacity of 17m3/h at 16.5m head) fixed speed control booster set for cold water complete with: Base frame with anti-vibration mountings Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control Automatic Control Panel for booster set to specification Power (P2) main pump 2.2kW Mains frequency: 50Hz Rated voltage: 3 x 380-500 V		LS		
	 Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control All other necessary items for booster set to specification Power (P2) main pump 15kW Mains frequency: 50Hz Rated voltage: 3 x 380-415D/660-690Y V 		LS		
4	Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings *Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control *All other necessary items for booster set to specification Power (P2) main pump 15kW Mains frequency: 50Hz Rated voltage: 3 x 380-415D/660-690Y V Backwash Pumps I No. Backwash pumps (Duty and standby) as GRUNDFOS vertical, multistage centrifugal pumps, (each with a capacity of 17m3/h at 16.5m head) fixed speed control booster set for cold water complete with: Base frame with anti-vibration mountings Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings *Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control *All other necessary items for booster set to specification Power (P2) main pump 2.2kW Mains frequency: 50Hz Rated voltage: 3 x 380-500 V	Item			
4	 Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings *Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control *All other necessary items for booster set to specification Power (P2) main pump 15kW Mains frequency: 50Hz Rated voltage: 3 x 380-415D/660-690Y V Backwash Pumps No. Backwash pumps (Duty and standby) as GRUNDFOS vertical, multistage centrifugal pumps, (each with a capacity of 17m3/h at 16.5m head) fixed speed control booster set for cold water complete with: Base frame with anti-vibration mountings Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings *Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control *All other necessary items for booster set to specification Power (P2) main pump 2.2kW Mains frequency: 50Hz Rated voltage: 3 x 380-500 V MISCELLANEOUS Provide, excavate for, lay and joint 200mm dia uPVC Class 'B' drainage pipe (or HDPE PN10) as shown on Drg. No. 5188481-ATK-WTP-PH-DR-W-016 . 	Item			
4	Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control All other necessary items for booster set to specification Power (P2) main pump 15kW Mains frequency: 50Hz Rated voltage: 3 x 380-415D/660-690Y V Backwash Pumps 1 No. Backwash pumps (Duty and standby) as GRUNDFOS vertical, multistage centrifugal pumps, (each with a capacity of 17m3/h at 16.5m head) fixed speed control booster set for cold water complete with: Base frame with anti-vibration mountings Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control All other necessary items for booster set to specification Power (P2) main pump 2.2kW Mains frequency: 50Hz Rated voltage: 3 x 380-500 V Provide, excavate for, lay and joint 200mm dia uPVC Class 'B' drainage pipe (or HDPE	Item			
4	Peressure switch (double pole) arrangement including flow switch and necessary valve and fittings *Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control *All other necessary items for booster set to specification Power (P2) main pump 15kW Mains frequency: 50Hz Rated voltage: 3 x 380-415D/660-690Y V Backwash Pumps 1 No. Backwash pumps (Duty and standby) as GRUNDFOS vertical, multistage centrifugal pumps, (each with a capacity of 17m3/h at 16.5m head) fixed speed control booster set for cold water complete with: Base frame with anti-vibration mountings #Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings *Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control *All other necessary items for booster set to specification Power (P2) main pump 2.2kW Mains frequency: 50Hz Rated voltage: 3 x 380-500 V MISCELLANEOUS Provide, excavate for, lay and joint 200mm dia uPVC Class 'B' drainage pipe (or HDPE PN10) as shown on Drg. No. 5188481-ATK-WTP-PH-DR-W-016 . Water Sampling Point	Item			
4	Peressure switch (double pole) arrangement including flow switch and necessary valve and fittings Paressure switch (double pole) arrangement including flow switch and necessary valve and fittings Paressure switch of Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control Paressure switch (double pole) arrangement including flow switch and necessary valve and fittings Packwash Pumps No. Backwash pumps (Duty and standby) as GRUNDFOS vertical, multistage centrifugal pumps, (each with a capacity of 17m3/h at 16.5m head) fixed speed control booster set for cold water complete with: Base frame with anti-vibration mountings Peressure switch (double pole) arrangement including flow switch and necessary valve and fittings Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control All other necessary items for booster set to specification Power (P2) main pump 2.2kW Mains frequency: 50Hz Rated voltage: 3 x 380-500 V MISCELLANEOUS MISCELLANEOUS Provide, excavate for, lay and joint 200mm dia uPVC Class 'B' drainage pipe (or HDPE PN10) as shown on Drg. No. 5188481-ATK-WTP-PH-DR-W-016. Water Sampling Point Provide suitable water sampling points whose position will be determined by the	Item			
4	Peressure switch (double pole) arrangement including flow switch and necessary valve and fittings *Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control *All other necessary items for booster set to specification Power (P2) main pump 15kW Mains frequency: 50Hz Rated voltage: 3 x 380-415D/660-690Y V Backwash Pumps 1 No. Backwash pumps (Duty and standby) as GRUNDFOS vertical, multistage centrifugal pumps, (each with a capacity of 17m3/h at 16.5m head) fixed speed control booster set for cold water complete with: Base frame with anti-vibration mountings #Pressure switch (double pole) arrangement including flow switch and necessary valve and fittings *Automatic Control Panel for automatic pump operation with 'run' & 'trip' indicator, overload protections and automatic changeover in case of duty pump failure, time switch for control *All other necessary items for booster set to specification Power (P2) main pump 2.2kW Mains frequency: 50Hz Rated voltage: 3 x 380-500 V MISCELLANEOUS Provide, excavate for, lay and joint 200mm dia uPVC Class 'B' drainage pipe (or HDPE PN10) as shown on Drg. No. 5188481-ATK-WTP-PH-DR-W-016 . Water Sampling Point	Item			

4.2	150 x 25mm dia steel saddle clamp	Nr	1		
4.3	25mm dia. G.I. 1000mm long pipe with male threaded ends (Mark 2)	Nr	1		
4.4	25mm dia. G.I. elbow (female threaded) (Mark 3)	Nr	1		
4.5	25mm dia. G.I. 250mm long pipe (male threaded) (Mark 4)	Nr	1		
	25 mm die C.L. unien (female dans de d.) (Mark 5)	N	1		
4.6	25mm dia. G.I. union (female threaded) (Mark 5)	Nr	1		
4.7	25mm dia. Brass Tap (Mark 6)	Nr	1		
	Water Electro-magnetic meter Chamber				
4.3	Excavate for, provide all materials, special shuttering etc. and construct 600mm x 450mm internal dimensions in-situ concrete inspection chambers on sewers diaElectro-magnetic meter less than 160mm. All as per standard drawings. Include for building in pipes, forming benching to falls, Grade 'B' Medium Duty cast iron covers, etc. Depth to invert n.e. 1.0m	ltem	1		
Bill No 2.	2.5 Total Carried to Grand Summary Page				
	Bill No 3: Rising Main to Syiluni Tank HDPE DN 225 PN25 and DN 200 (PN20 & PN16)				
	uni no 5. minig main to synum rank i nore div 225 riv25 and div 200 (Piv20 & PN16)			Kenv	an Shillings
Item No.	Description	Unit	Quantity		ency (KES)
nem NO.	Description	Jint		Unit Price	Amount (c)
A	CLASS A:GENERAL ITEMS		(a)	(b)	(c) = (b) x (a)
	Provision for General obligations, site services and facilities, Temporary Works, testing of materials and work, Provisional Sums and Prime Cost Items Items to cover elements of the cost of the work which are not to be considered as proportional to the quantities of the Permanent Work				
	Not applicable				
В	Not applicable				
C					
D	DEMOLITION & SITE CLEARANCE provision for Demolition and removal of natural and artificial articles, objects and				
	obstructions which are above the Original Surface				
	GENERAL CLEARANCE (mostly for pipe trasportation and placing of pipes along the				
D1	pipeline route)				
	METHOD OF MEASUREMENT				
	(items on site clearance shall be deemed to include disposal pf material arising locally				
D2	REMOVAL OF TREES (Provisional)				
D1	Trees of girth: 500 mm - 1 m.,	nr	50		
	locally disposed. REMOVAL OF STUMPS(Provisional)				
D3 D31	Stumps of diameter: less than 1m.,	nr	10		
D31	Stumps of diameter: less than 1m.,	nr	10		
	locally disposed.				
D6	CLEARANCE OF PIPELINE (Provisional)				
	WAYLEAVES, DISPOSAL LOCAL,				
D6	Nominal bore: not exceeding 100-300mm; For Washout pipeline				
	Pipeline only at KM 0+060 and KM1+080	m	100		
E	Not applicable				
F G	Not applicable Not applicable				
H	Not applicable				
1	PIPEWORK: PIPES				
	Provision for supply, laying and joining of pipes through butt fusion METHOD OF MEASUREMENT				
	(Backfilling of trenches shall not be measued ,lengths of pipes shall be measured along their center lines				
1	High-density -Polyethylene				
┝───	Normal bore:not exceeding 200-300mm HDPE DN225 of PN 25, DN200 of PN25 and&8 as per Technical Specifications Clauses 3,				
	702, 760, 801, 805, 808, 809 and 1008				
	in treaches , depth not exceeding 1.5-2.0 for main pipeline				
L					

		1		r	
	DN225 PN 25 between chainage 0+000 to 0+280 as per Drawings Depth not exceeding				
1422	1.5m	m	300		
1423	DN200 PN20 between chainage 0+280 to 0+420 as per Drawings Depth not exceeding	m	200		
	1.5m				
1424	DN200 PN 16 between chainage 0+420 to 1+495 as per Drawings Depth not exceeding		1 200		
1424	1.5m	m	1,200		
J	PIPEWORK-FITTINGS AND VALVES				
	provision for placing Fittings and valves for pipework				
	Normal bore:not exceeding300-600mm				
	Pipe and fittings install as per the drawings and list of equipments				
	METHOD OF MEASUREMENT				
	(items for fittings and valves does not include the supply of material by sub contrator				
	or unless otherwise stated .				
J1	Install Pipe and fittings Bends (Holizontal Bend)			-	
71	11.25°, 45°, 90° Long radius bends				
	Nb: not exceeding 200-300mm.	nr	7		
J2	HDPE Coupler Weldeding sections on bend s	nr	14		
JΖ	Nb: not exceeding 200-300mm.		14		
	···· U ····				
J3	COVER 712mm			-	
	Fibre glass reinforced cover with locking mechanism Wo chamaber	nr	4		
	Air valve Chamber	nr	2		
J4	Long spigot (HDPE)				
	Nb: not exceeding 200-300mm.				
	OD200				
		nr	4		
J5	Flange pipe				
12					
	Nb: not exceeding 200-300mm.				
	OD200				
		nr	4	-	
J6	Double flanged pipe				
	Nb: not exceeding 200-300mm.				
	OD200	nr	16		
			10		1
J7	FLAP VALVE				
	Nb: not exceeding 200mm -300mm. OD200				
		nr	1		
			-		
J8	GATE VALVE				
	Nb: not exceeding 300mm-200mm. OD200				
		nr	2		
J9	Normal TEE				
	Nb: not exceeding 200-300mm. OD200				
		nr	2	+	
J10	DISMANTLING JOINT			I	l

	Nb: not exceeding 200-300mm.				
	OD200				
		nr	2		
J12	Invert TEE				
	Nb: not exceeding 200-300mm.				
	OD200				
		nr	2		
J13	NON -RETURN GATE				
	Nb: not exceeding 200-300mm.				
	OD200				
		nr	2		
			-		
J14	ISOLATION VALVE/BUTTERFLY VALVE				
714	Nb: not exceeding 200-300mm.				
	OD200				
		nr	1		
			-		
			1		
J15	AIR VALVE MOD.LYNX 3F		1		
113	Nb: not exceeding 200mm.		1		
	OD200	<u> </u>			
		nr	1		
		nr	1	1	
	+				
	+				
147	Constitution size				
J17	GS ventilation pipe		C		
	with mosquito mesh wire cover	nr	6		
J18	LONG STUB				
	Nb: not exceeding 200mm.				
	OD200	nr	4		
К	PIPEWORK				
	MANHOLE & PIPEWORK ANCILLARIES				
	Provision for excavation of chambers, crossings and reinstatement, other ancillaries as				
	listed, including for supply of all necessary materials and construction of insitu chambers				
K1	MANHOLES AND OTHER CHAMBERS EXCAVATIONS				
	CHAMBERS IN ACCORDANCE WITH DRAWINGS				
	METHOD OF MEASUREMENT				
	(the depths of chambers shall be measured from the tops of covers)				
K11	In -situ concrete outfall structure (washout and Syiluni tank inlet)				
	depth ne. 1.5 m.	nr	3		
K12	Insitu Concrete air valve chamber	L			
	depth not exceeding 1.5 -2.0m.	nr	2		
K13	Insitu cast Concrete washouts chamber				
	depth not exceeding 1.5 -2.0m.	nr	2		
K6	CROSSINGS				
	METHOD OF MEASUREMENT				
	(any crossing shall be measured by widths measued along the pipe centerline)				
K6.3	Existing unsurfaced road crossing				
К6.3	Existing unsurfaced road crossing (this includes open cutting , placing of pipe as sleeves as per drawings)				
K6.3					
K6.3	(this includes open cutting , placing of pipe as sleeves as per drawings)				
K6.3	(this includes open cutting , placing of pipe as sleeves as per drawings)				
K6.3	(this includes open cutting , placing of pipe as sleeves as per drawings)				
K6.3	(this includes open cutting , placing of pipe as sleeves as per drawings)	nr	1		
K6.3	(this includes open cutting , placing of pipe as sleeves as per drawings) at	nr	1		
K6.3	(this includes open cutting , placing of pipe as sleeves as per drawings) at	nr	1		

K7					
	REINSTATEMENT				
	METHOD OF MEASUREMENT				
	(reinstatements shall be measured by widths measued along the pipe centerline)				
K7.1	Breaking up, temporary and permanent reinstatement of unsurfaced roads, pipe norm.	~	20		
K7.1	bore 200 - 300mm	m	20		
	Breaking up, temporary and permanent reinstatement of footpaths, pipe norm. bore 200 -				
K7.2	300mm	m	5		
K7.3	Breaking up, temporary and permanent reinstatement of	m	5		
107.5	grassland & lawns pipe nom. Bore not exceeding 200-300 mm.				
	0				
10					
K8	OTHER PIPEWORK ANCILLARIES METHOD OF MEASUREMENT				
	(marker posts shall be measured for pipes ducts , chambers and road crossing)				
K8.1	Marker Posts shall be measured for pipes ducts , chambers and road crossing /				
K82	Marker Posts for Air valve	nr	4		
	in accordance with standard drawings.				
K83	Marker Posts for Washouts	nr	2		
	in accordance with standard drawings.				
				<u> </u>	
K84	Marker Posts for treated main	nr	8		
	at 200m spacing and change of direction as per specifications.				
L	PIPEWORK:SUPPORTS AND RPOTECTION , ANCILARIES TO LAYING AND EXCAVATION				
	Provision for Extras to excavation and backfilling of trenches for pipework Pipe laying in headings and by thrust boring and pipe jacking Provision of supports and protection to pipework, ducts and culvert				
L1	EXCAVATION and BACKFILLING				
	METHOD OF MEASUREMENT				
	The volume of extras to excavation and backfilling in pipetrenches shall be calculated by multiplying together the average depth and length of the material removed or backfilled and the nominal trench width. Trenches to be 0.9m deep, and 0.6m wide)				
	Pipe in trenches				
	class I rock				
	class II Laterite gravel				
	class III soft soil				
L11	class III soft soil In pipe trenches excavation & backfilling		10		
L11	class III soft soil	m	10		
L11 L1.2	class III soft soil In pipe trenches excavation & backfilling	m	10		
	class III soft soil In pipe trenches excavation & backfilling of class I material (Provisional).	m	10		
	class III soft soil In pipe trenches excavation & backfilling of class I material (Provisional). In pipe trenches excavation & backfilling				
L1.2	class III soft soil In pipe trenches excavation & backfilling of class I material (Provisional). In pipe trenches excavation & backfilling of class II material (Provisional).				
	class III soft soil In pipe trenches excavation & backfilling of class I material (Provisional). In pipe trenches excavation & backfilling of class II material (Provisional). In pipe trenches excavation & backfilling	m	200		
L1.2	class III soft soil In pipe trenches excavation & backfilling of class I material (Provisional). In pipe trenches excavation & backfilling of class II material (Provisional).				
L1.2	class III soft soil In pipe trenches excavation & backfilling of class I material (Provisional). In pipe trenches excavation & backfilling of class II material (Provisional). In pipe trenches excavation & backfilling	m	200		
L1.2	class III soft soil In pipe trenches excavation & backfilling of class I material (Provisional). In pipe trenches excavation & backfilling of class II material (Provisional). In pipe trenches excavation & backfilling	m	200		
L1.2 L1.3	class III soft soil In pipe trenches excavation & backfilling of class I material (Provisional). In pipe trenches excavation & backfilling of class II material In pipe trenches excavation & backfilling of class III material	m	200		
L1.2	class III soft soil In pipe trenches excavation & backfilling of class I material (Provisional). In pipe trenches excavation & backfilling of class II material In pipe trenches excavation & backfilling of class III material SURROUNDS	m	200		
L1.2 L1.3	class III soft soil In pipe trenches excavation & backfilling of class I material (Provisional). In pipe trenches excavation & backfilling of class II material In pipe trenches excavation & backfilling of class III material	m	200		
L1.2 L1.3	class III soft soil In pipe trenches excavation & backfilling of class I material (Provisional). In pipe trenches excavation & backfilling of class II material In pipe trenches excavation & backfilling of class III material SURROUNDS	m	200		
L1.2 L1.3	class II soft soil In pipe trenches excavation & backfilling of class I material (Provisional). In pipe trenches excavation & backfilling of class II material (Provisional). In pipe trenches excavation & backfilling of class II material Surrounds Supply of class 15/20 mass concrete for 150mm pipe surround at road crossing	m	200		
L1.2 L1.3	class II soft soil In pipe trenches excavation & backfilling of class I material (Provisional). In pipe trenches excavation & backfilling of class II material (Provisional). In pipe trenches excavation & backfilling of class II material (Provisional). In pipe trenches excavation & backfilling of class II material Supply of class 15/20 mass concrete for 150mm pipe surround at road crossing CONCRETE STOOLS AND THRUST BLOCKS CONCRETE CLASS 20	m	200		
L1.2 L1.3	class II soft soil In pipe trenches excavation & backfilling of class I material (Provisional). In pipe trenches excavation & backfilling of class II material (Provisional). In pipe trenches excavation & backfilling of class II material In pipe trenches excavation & backfilling of class III material SURROUNDS Supply of class 15/20 mass concrete for 150mm pipe surround at road crossing CONCRETE STOOLS AND THRUST	m	200		
L1.2 L1.3 L5.0	class III soft soil In pipe trenches excavation & backfilling of class I material (Provisional). In pipe trenches excavation & backfilling of class II material (Provisional). In pipe trenches excavation & backfilling of class III material SURROUNDS Supply of class 15/20 mass concrete for 150mm pipe surround at road crossing CONCRETE STOOLS AND THRUST BLOCKS CONCRETE CLASS 20 To horizontal bends	m	200		
L1.2 L1.3	class III soft soil In pipe trenches excavation & backfilling of class I material (Provisional). In pipe trenches excavation & backfilling of class II material (Provisional). In pipe trenches excavation & backfilling of class III material SURROUNDS Supply of class 15/20 mass concrete for 150mm pipe surround at road crossing CONCRETE STOOLS AND THRUST BLOCKS CONCRETE CLASS 20 To horizontal bends Volume: 0.8-1 m ³ , nom.		200		
L1.2 L1.3 L5.0	class III soft soil In pipe trenches excavation & backfilling of class I material (Provisional). In pipe trenches excavation & backfilling of class II material (Provisional). In pipe trenches excavation & backfilling of class III material SURROUNDS Supply of class 15/20 mass concrete for 150mm pipe surround at road crossing CONCRETE STOOLS AND THRUST BLOCKS CONCRETE CLASS 20 To horizontal bends	m	200		
L1.2 L1.3 L5.0	class III soft soil In pipe trenches excavation & backfilling of class I material (Provisional). In pipe trenches excavation & backfilling of class II material (Provisional). In pipe trenches excavation & backfilling of class III material SURROUNDS Supply of class 15/20 mass concrete for 150mm pipe surround at road crossing CONCRETE STOOLS AND THRUST BLOCKS CONCRETE CLASS 20 To horizontal bends Volume: 0.8-1 m ³ , nom.		200		
L1.2 L1.3 L5.0	class III soft soil In pipe trenches excavation & backfilling of class I material (Provisional). In pipe trenches excavation & backfilling of class II material (Provisional). In pipe trenches excavation & backfilling of class III material SURROUNDS Supply of class 15/20 mass concrete for 150mm pipe surround at road crossing CONCRETE STOOLS AND THRUST BLOCKS CONCRETE CLASS 20 To horizontal bends Volume: 0.8-1 m ³ , nom.		200		
L1.2 L1.3 L5.0 L7	class III soft soil In pipe trenches excavation & backfilling of class I material (Provisional). In pipe trenches excavation & backfilling of class II material (Provisional). In pipe trenches excavation & backfilling of class III material SURROUNDS Supply of class 15/20 mass concrete for 150mm pipe surround at road crossing CONCRETE STOOLS AND THRUST BLOCKS CONCRETE CLASS 20 To horizontal bends Volume: 0.8-1 m ³ , nom. bore: 200 - 300 mm.		200		

	bore: 200 - 300 mm.				
	Mass concrete grade C20				
	20 mm aggregates:				
	Isolation Valve stools				
L7.4	Volume 0.5-1m³,	nr	4		
	bore: 200 - 300 mm.				
	Bill 3 Total Carried to Summary				
	Bill No. 4: Provisional for Rehabilitation of Syiluni Tank				
Item No.					an Shillings
	Description				ency (KES)
			Quantity	Unit Price	Amount (c)
		Unit	(a)	(b)	(c) = (b) x (a)
	Rehabilitation works (Provisional)				
4.1	PLASTERING				
		2			
	12.5mm thick 1:3 cement:sand waterproofed plaster internally on blockwork surfaces;	m ²	70		
	cost inclusive of surface hacking				
4.2	RENDERING				
		2	70		
	12.5mm thick 1:3 cement and sand rendering externally on concrete surfaces; cost	m²	70		
	inclusive of surface hacking				
	Bill 4 Total Carried To Summary				
	THE END.				