# BILL OF QUANTITIES FOR CHARIRIK WATER PAN

BILL NO.	DESCRIPTION	AMOUNT (KSHS)
	Destination of a second second second second	
Bill No. 1	Preliminaries & general requirements	
Bill No. 2	Earth works and offtake	
011110.2		
Bill No. 3	Auxiliary structures	
Bill No. 4	Construction water trough	
Bill No. 5	Construction of yard tap	
Bill No. 6	Fencing	
Diii 140. 0		
Bill No. 7	Pipelines	
Bill No. 8	10m <sup>3</sup> Masonry Sump	
Bill No. 9	100m <sup>3</sup> Masonry Tank	
	· · ·	
Bill No. 10	Control Room	
Bill No. 11	Electro-Mechanical Works	
Bill No. 12	Green House (40m x 8m):	
Bill No. 13	Pit Latrines/ Bathrooms	
	Sub-Total- (A)	
	Contingencies	
	Provide 2.5% of Sub-Total (A) for Contingencies	
	N/B: Rates include all taxes unless otherwise stated	
	GRAND TOTAL CARRIED TO FORM OF TENDER	
	GRAND TOTAL CARRIED TO FORM OF TEINDER	
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## **GRAND SUMMARY**

	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
N0.				(KSHS)	(KSHS)
	BILL NO.1 - PRELIMINARIES AND GENERAL REQUIREMENTS				
1.1	Mobilization, Demobilization & Storage of Equipment and materials				
1.1.1	The contractor may allow for provision of Mobilization, Demobilization (after use) and storage facilities for all Equipment, Materials required on site. The client shall not accept any claim arising out of contractor's omission on this item.	Ls	1		
1.1.2	Provide for technical services of setting out of Pan, Survey and Supervision of Pan construction by a qualified Engineer/Surveyor approved by the Employer	Ls	1	150,000	150,000.00
1.1.4	Prepare Health and Safety Plan and any costs associated with the implementation of the pan	Ls	1	100,000	100,000.00
1.1.5	Prepare and implement Environmental and Social Management Plan (ESMP)	Ls	1	200,000	200,000.00
1.1.6	Provide for community Policing (4 guards for maximum 60 days)	Man/ Days	240	500	120,000.00
1.2	Project Sign board				
1.2.1	Provide, fix and maintain project sign board per drawing (including any payments to local authorities) through to end of defects liability period of contract)	No.	2		
	BILL NO. 1 TOTAL CARRIED OVER TO GRAND SUMMARY				

	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
N0.				(KSHS)	(KSHS)
	BILL NO.2 - EARTH WORKS				
2.1	Reservoir excavation				
	Clear site of all trees, tree stumps, shrubs and grass commencing from ground level n.e 300mm deep and dispose off the construction site as directed.	m <sup>3</sup>	300		
2.1.2	Commence reservoir excavation from the stripped level to achieve a volume of 20,000m <sup>3</sup> , cart away to form the embankment or dispose as may be directed by the water Engineer	m³	20,000		
	Excavate for draw off/scour pipe trench not exceeding 1.0m from the stripped level and cart away as directed by the Project Engineer.	m <sup>3</sup>	135		
2.1.4	Construct Embankment using selected excavated materials other than Top soil and rocks as per designed drawing plans and sections with side slopes of 2:1 upstream and 2:1 downstream with suitable selected materials. The material should be hauled through the buffer zone that is specified in the design drawings as may be directed by the Supervising Engineer. Embarkment filling shall be compacted in layers of 150mm thick to achieve 95% Maximum Dry Density.	m <sup>3</sup>	10,000		
2.1.5	Provide for the hauling of excess material to spoil and dispose it to an identified site as may be directed by the Supervising Engineer	m <sup>3</sup>	2,000		
2.1.6	Excavate for silt trap measuring 6 by 10m with side slope 2:1 to a depth of 1.5m from ground surface and dispose / reuse excavated materials as directed by the Engineer	m <sup>3</sup>	90		
				1	
	TOTAL BILL NO. 2 TOTAL CARRIED OVER TO GRAND SUM	MARY			

### BILL OF QUANTITIES FOR CONSTRUCTION OF CHARIRIK WATER PAN TO 20,000 $\mbox{M}^3$

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE (KSHS)	AMOUNT (KSHS)
	BILL NO. 3- WATER PAN ANCILLARIES				
2.1	Cottlesses all C. Dissesses				
3.1	Spillway sill & Ripraps				
3.1.1	Allow for excavation and construction of spillway concrete sill 6.0m x 0.6m x 0.3m across the whole span of spillway mouth comprising of Reinforced concrete class 20/20 and including 10mm Re-Bars as per detailed drawing Nr And its associated formwork.	m <sup>3</sup>	2		
3.1.2	Supply 150mm average size hard boulders, Prepare surface, compaction, build, and joining with mortar 1;3 a 150mm Thick spillway riprap to the satisfaction of the Engineer.	m <sup>2</sup>	60		
3.1.3	Allow for placing, compaction and joining with mortar a 150mm riprap on the inlet channel as directed by the engineer and to the design standard.	m²	200		
3.1.4	Allow for placing, compaction of 150mm riprap on the silt trap wall, base and inlet to the pan buttress wall to the design specification and under supervision of the Engineer.	m²	60		
3.2	Draw-off system				
3.2.1	Excavate using strictly an excavator a 60m trench from the inside edge of the water pan and to the design levels about 3.5m deep and backfill required by the Engineer so as to allow least dead storage	m <sup>3</sup>	210		
3.2.2	Provide for a standard intake tower using perforated OD 150 mm GI pipes with wire mesh screens 3m high using concrete mix of ration 1:2:4 (cement. Sand and Ballast). Provide a dead storage of 0.5m on the pipe.as described in the working drawings	Ls	1		
3.2.3	Provide, lay and connect to intake tower OD 150mm GI pipes including fittings for draw off system under the entire embankment	m	78		
3.2.4	Provide, lay and connect to cattle trough OD 50mm GI pipes including fittings from draw off system	m	30		
3.2.5	Provide and fix the following:				
3.2.6	Sluice valve of OD 150mm	No.	1		
3.2.7	150 mm dia flanged x 50 mm dia Steel Cross	No.	1		
3.2.8	Steel Socket, 150 mm Dia	No.	1		
3.2.9	End Plug, 150mm Dia	No.	1		
3 2 10	Steel Bend, 50mm Dia	No.	1		
	Equal Steel Tee, 50mm Dia	No.	1		
3.2.12	Gate Valves (Pegler), 25 mm Dia	No.	2		
3.2.13	Allow for excavate, provide for materials and construct lockable masonry chambers with internal dimensions 1000mm x1000mm x1000 mm as indicated in the drawings and as directed by the Engineer. Rates to include formwork.	No.	1		
3.2.14	Supply and Installation of ring culverts of OD 900mm with concrete surround concrete (class 20/20)	m	24		
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	TOTAL BILL NO.3 TOTAL CARRIED OVER TO GRAND SUMMARY				

N0.       (KSH         BILL NO.4: CONSTRUCTION OF 10M LONG CATTLE       (KSH         TROUCH       (CSH         4.1       Earthworks       (CSH         4.1.1       Prepare site by stripping top 150 mm of soil to remove all debris including sand (if any) from site and carting away spoil $m^2$ 52.00         4.1.2       Excavate for foundation strip commencing at stripped levels depth not exceeding 1.50m deep $m^3$ 25.00         4.1.3       Remove surplus excavated material from site $m^3$ 15.00       (CSH         4.1.4       Backfill around foundation $m^3$ 10.00       (CSH         4.1.4       Backfill around foundation $m^3$ 8.00       (CSH         4.2.1       200 mm thick approved hardcore filling spread, well rammed and compacted in 150mm layers to receive concrete surface bed $m^3$ 8.00         4.3.1       Concrete work       (CSH)       (CSH)       (CSH)       (CSH)         4.3.1       Somm bilnding layer on hardcore surfaces $m^2$ 38.00       (CSH)         4.3.2       Strip foundation $m^3$ 1.50       (CSH)       (CSH)         4.3.3       Tommelide nough (Optional) $m^3$ 2.00       (CSH)       (CSH)       (CSH) <tr< th=""><th></th><th>DESCRIPTION</th><th>UNIT</th><th>QUANTITY</th><th>RATE</th><th>AMOUNT</th></tr<>		DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
TROUGHImage: constraint of the second s	N0.				(KSHS)	(KSHS)
4.1.1Prepare site by stripping top 150 mm of soil to remove all debris including sand (if any) from site and carting away spoil $m^2$ 52.004.1.2Excavate for foundation strip commencing at stripped levels depth not exceeding 1.50m deep $m^3$ 25.004.1.3Remove surplus excavated material from site $m^3$ 15.004.1.4Backfill around foundation $m^3$ 10.004.2Filling $m^3$ 8.004.2.1200 mm thick approved hardcore filling spread, well rammed and compacted in 150mm layers to receive concrete surface bed $m^3$ 8.004.3Concrete work $m^2$ 38.00 $m^2$ 4.3.1Somm blinding layer on hardcore surfaces $m^2$ 38.004.3.2Strip foundation $m^3$ 1.504.3.3Trim thick concrete class 15 (1:3:6) with 20mm thick maximum aggregate size in $m^2$ 38.004.3.3Strip foundation $m^3$ 1.504.3.4100 mm thick floor slab $m^3$ 2.004.3.4100 mm thick floor slab $m^3$ 2.004.3.4100 mm thick floor slab $m^2$ 20.004.3.4100 mm thick floor slab $m^2$ 20.004.3.512 mm Thick paving to floor with water proof cement (Optional) $m^2$ 4.5.112 mm Thick paving to floor with water proof cement (Optional) $m^2$						
4.1.1including sand (if any) from site and carting away spoil $m^2$ $22.00$ 4.1.2Excavate for foundation strip commencing at stripped levels depth not exceeding 1.50m deep $m^3$ $25.00$ 4.1.3Remove surplus excavated material from site $m^3$ $15.00$ 4.1.4Backfill around foundation $m^3$ $10.00$ 4.2Filling $m^3$ $10.00$ 4.2.1200 mm thick approved hardcore filling spread, well rammed and compacted in 150mm layers to receive concrete surface bed $m^3$ $8.00$ 4.3.2Concrete work $m^2$ $38.00$ $m^3$ $8.00$ 4.3.3Somm blinding layer on hardcore surfaces $m^2$ $38.00$ $m^2$ 4.3.4Somm blinding layer on hardcore surfaces $m^2$ $27.00$ $m^3$ 4.3.3Transmum aggregate as described in: rowelled rough (Optional) $m^3$ $2.00$ $m^2$ 4.3.4100 mm thick floor slab $m^3$ $2.00$ $m^2$ $20.00$ 4.4.4Mesh fabric reinforcement ref. No. A142 laid in floor slab with minimum 150 mm side allowance $m^2$ $20.00$ $m^2$ 4.5.112 mm Thick paving to floor with water proof cement (Optional) $m^2$ $10.00$ $m^2$ 4.5.215 mm thick plaster to internal side of wall with water proof $m^2$ $14.00$	4.1	Earthworks				
4.1.2depth not exceeding 1.50m deepm25.004.1.3Remove surplus excavated material from sitem³15.004.1.4Backfill around foundationm³10.004.2Fillingm³10.004.2.1Some thick approved hardcore filling spread, well rammed and compacted in 150mm layers to receive concrete surface bedm³8.004.3Concrete workm³8.00m³8.004.3Concrete class 15 (1:3:6) with 20mm thick maximum aggregate size inm²38.004.3.1Somm blinding layer on hardcore surfacesm²38.004.3.2Strip foundationm²38.004.3.3Somm blinding layer on hardcore surfacesm²27.004.3.4Nibrited reinforced concrete class 25 (1:1.5:3) with 20mm maximum aggregate as described in:m²27.004.3.3Torm thick concrete benching laid to falls and with surface steelm²20.004.3.4Nesh fabric reinforcement ref. No. A142 laid in floor slab with minimum 150 mm side allowancem²20.004.5.112 mm Thick paving to floor with water proof cement (Optional)m²10.004.5.215 mm thick plaster to internal side of wall with water proofm²10.00	4.1.1		m <sup>2</sup>	52.00		
4.1.4       Backfill around foundation $m^3$ 10.00         4.2       Filling       10.00         4.2.1       200 mm thick approved hardcore filling spread, well rammed and compacted in 150mm layers to receive concrete surface bed $m^3$ 8.00         4.3       Concrete work       10.00       10.00         4.3       Concrete class 15 (1:3:6) with 20mm thick maximum aggregate size in       10.00         4.3.1       50mm blinding layer on hardcore surfaces $m^2$ 38.00         Vibrated reinforced concrete class 25 (1:1.5:3) with 20mm maximum aggregate as described in:       10.00       10.00         4.3.2       Strip foundation $m^3$ 1.50         4.3.3       75mm thick concrete benching laid to falls and with surface steel rowelled rough (Optional) $m^2$ 27.00         4.3.4       100 mm thick floor slab $m^3$ 2.00       10.00         4.4.1       Mesh fabric reinforcement ref. No. A142 laid in floor slab with minimum 150 mm side allowance $m^2$ 20.00         4.5       Finishes       10.00       10.00       10.00         4.5.1       12 mm Thick paving to floor with water proof cement (Optional) $m^2$ 10.00	4.1.2		m <sup>3</sup>	25.00		
4.2FillingImage: second	4.1.3	Remove surplus excavated material from site	m <sup>3</sup>	15.00		
4.2.1200 mm thick approved hardcore filling spread, well rammed and compacted in 150mm layers to receive concrete surface bed $m^3$ 8.004.3Concrete workImage: spread	4.1.4	Backfill around foundation	m <sup>3</sup>	10.00		
4.2.1       and compacted in 150mm layers to receive concrete surface bed       m <sup>-1</sup> 8.00         4.3       Concrete work       1       1         Mass Concrete class 15 (1:3:6) with 20mm thick maximum aggregate size in       1       1         4.3.1       50mm blinding layer on hardcore surfaces       m <sup>2</sup> 38.00         Vibrated reinforced concrete class 25 (1:1.5:3) with 20mm maximum aggregate as described in:       1       1         4.3.2       Strip foundation       m <sup>3</sup> 1.50         4.3.3       75mm thick concrete benching laid to falls and with surface steel trowelled rough (Optional)       m <sup>3</sup> 2.00         4.3.4       Nesh fabric reinforcement ref. No. A142 laid in floor slab with minimum 150 mm side allowance       m <sup>2</sup> 20.00         4.4.1       Mesh fabric reinforcement ref. No. A142 laid in floor slab with minimum 150 mm side allowance       1       1         4.4.1       Immut side allowance       1       1       1         4.5.1       12 mm Thick paving to floor with water proof cement (Optional)       m <sup>2</sup> 10.00         4.5.2       15mm thick plaster to internal side of wall with water proof       m <sup>2</sup> 14.00	4.2	Filling				
Mass Concrete class 15 (1:3:6) with 20mm thick maximum aggregate size inImage: concrete class 15 (1:3:6) with 20mm thick maximum aggregate size inImage: concrete class 25 (1:1.5:3) with 20mm maximum aggregate as described in:Image: concrete class 25 (1:1.5:3) with 20mm maximum aggregate as described in:4.3.150mm blinding layer on hardcore surfacesm²38.00Vibrated reinforced concrete class 25 (1:1.5:3) with 20mm maximum aggregate as described in:m²38.004.3.2Strip foundationm³1.504.3.375mm thick concrete benching laid to falls and with surface steel trowelled rough (Optional)m²27.004.3.4100 mm thick floor slabm³2.004.3.4100 mm thick floor slabm³2.004.3.4Reinforcementm²20.004.4.1Mesh fabric reinforcement ref. No. A142 laid in floor slab with minimum 150 mm side allowancem²20.004.5.1I2 mm Thick paving to floor with water proof cement (Optional)m²10.004.5.215mm thick plaster to internal side of wall with water proof to m²m²14.00	4.2.1		m <sup>3</sup>	8.00		
aggregate size inImage: constraint of the second seco	4.3	Concrete work				
Vibrated reinforced concrete class 25 (1:1.5:3) with 20mm maximum aggregate as described in:Image: Concrete class 25 (1:1.5:3) with 20mm maximum aggregate as described in:4.3.2Strip foundationm³1.504.3.3Trom thick concrete benching laid to falls and with surface steel trowelled rough (Optional)m²27.004.3.4100 mm thick floor slabm³2.004.3.4Nesh fabric reinforcement ref. No. A142 laid in floor slab with minimum 150 mm side allowancem²20.004.4.1Mesh fabric reinforcement ref. No. A142 laid in floor slab with minimum 150 mm side allowancem²20.004.5.5FinishesImage: Concrete field						
maximum aggregate as described in:Image: maximum aggregate as described in:Image: maximum aggregate as described in:4.3.2Strip foundation $m^3$ 1.504.3.375mm thick concrete benching laid to falls and with surface steel trowelled rough (Optional) $m^2$ 27.004.3.4100 mm thick floor slab $m^3$ 2.004.3.4100 mm thick floor slab $m^3$ 2.004.4.4ReinforcementImage: maximum aggregate as described in floor slab with minimum 150 mm side allowance $m^2$ 20.004.5.5FinishesImage: maximum aggregate as described in floor slab with minimum 150 mm side allowanceImage: maximum aggregate aggrega	4.3.1	50mm blinding layer on hardcore surfaces	m <sup>2</sup>	38.00		
4.3.375mm thick concrete benching laid to falls and with surface steel trowelled rough (Optional) $m^2$ 27.004.3.4100 mm thick floor slab $m^3$ 2.004.3.4100 mm thick floor slab $m^3$ 2.004.4Reinforcement $m^2$ 20.004.4.1Mesh fabric reinforcement ref. No. A142 laid in floor slab with minimum 150 mm side allowance $m^2$ 20.004.5Finishes $m^2$ 20.004.5.1I2 mm Thick paving to floor with water proof cement (Optional) $m^2$ 10.004.5.215mm thick plaster to internal side of wall with water proof $m^2$ 14.00						
4.3.3trowelled rough (Optional) $m^2$ $27.00$ 4.3.4100 mm thick floor slab $m^3$ $2.00$ 4.3.4100 mm thick floor slab $m^3$ $2.00$ 4.4Reinforcement $m^3$ $2.00$ 4.4Reinforcement $m^2$ $20.00$ 4.4.1Mesh fabric reinforcement ref. No. A142 laid in floor slab with minimum 150 mm side allowance $m^2$ $20.00$ 4.5Finishes $m^2$ $20.00$ 4.5Finishes $m^2$ $10.00$ 4.5.112 mm Thick paving to floor with water proof cement (Optional) $m^2$ $10.00$ 4.5.215mm thick plaster to internal side of wall with water proof $m^2$ $14.00$	4.3.2	Strip foundation	m <sup>3</sup>	1.50		
4.4ReinforcementImage: constraint of the second sec			m <sup>2</sup>	27.00		
4.4.1Mesh fabric reinforcement ref. No. A142 laid in floor slab with minimum 150 mm side allowance $m^2$ 20.004.5Finishes $m^2$ 20.004.5Finishes $m^2$ 20.004.5.1I2 mm Thick paving to floor with water proof cement (Optional) $m^2$ 10.004.5.2I5mm thick plaster to internal side of wall with water proof $m^2$ 14.00	4.3.4	100 mm thick floor slab	m <sup>3</sup>	2.00		
4.4.1minimum 150 mm side allowance $m^2$ 20.004.5FinishesII4.5FinishesIICement and sand mortar (1:3) in:II4.5.112 mm Thick paving to floor with water proof cement (Optional) $m^2$ 10.004.5.215mm thick plaster to internal side of wall with water proof $m^2$ 14.00	4.4	Reinforcement				
4.5.1       12 mm Thick paving to floor with water proof cement (Optional)       m <sup>2</sup> 10.00         4.5.2       15mm thick plaster to internal side of wall with water proof       m <sup>2</sup> 14.00	4.4.1		m <sup>2</sup>	20.00		
4.5.1       12 mm Thick paving to floor with water proof cement (Optional)       m <sup>2</sup> 10.00         4.5.2       15mm thick plaster to internal side of wall with water proof       m <sup>2</sup> 14.00	4.5	Finishes				
4.5.2 <sup>15mm</sup> thick plaster to internal side of wall with water proof m <sup>2</sup> 14.00		Cement and sand mortar (1:3) in:				
4.5.2 m <sup>-</sup> 14.00	4.5.1	12 mm Thick paving to floor with water proof cement (Optional)	m <sup>2</sup>	10.00		
	4.5.2		m <sup>2</sup>	14.00		
4.5.3     12mm thick plaster to external side of wall     m <sup>2</sup> 6.00	4.5.3	12mm thick plaster to external side of wall	m <sup>2</sup>	6.00		
Sub-Total Carried Over to the Next Page						

	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
N0.		<b></b>		(KSHS)	(KSHS)
	Sub-Total Brought Overfrom the previous Page				
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4.6	Blockwork and Masonry				
	To include supply and lay dressed building stones for masonry				
	walls				ļ
4.6.1	225mm thick ashlar masonry, vertical straight walls; thickness 150-	2	21.00		
4.6.1	250	m <sup>2</sup>	21.00		
4.7	Galvanized mild steel pipes class "B" medium thickness with and including jointing fittings and fixed as described				
	25mm diameter inlet pipe chased through masonry wall 300 mm				<u> </u>
4.7.1	long with and including stop cork (Float Valve)	No	1.00		
4.7.2	25mm diameter inlet pipe	m	30.00		
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	BILL NO. 4 TOTAL CARRIED OVER TO GRAND SUMMARY				

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
N0.				(KSHS)	(KSHS)
	BILL NO. 5: CONSTRUCTION OF 5 NO. YARD TAPS				
5.1	SITE CLEARANCE AND SETTING OUT				
5.1					
5.1.1	Clear site of all bushes, shrubs, etc and dispose as directed by the Engineer	m <sup>2</sup>	2		
5.2	EXCAVATION AND BACKFILLING				
	Top soil				
5.2.1	Rates to include removal of top vegetable soil average 250mm deep and dispose as directed by the Engineer.	m <sup>2</sup>	2		
5.3	HARDCORE				
5.3.1	Well-watered hard core packing in layers 150mm thick to make up levels average 300mm deep.	m <sup>3</sup>	0.75		
5.3.2	50mm blinding to hardcore bed surfaces in quarry dust/murram or equal and approved.	m <sup>2</sup>	2.5		
5.5	CONCRETE WORKS IN SUBSTRUCTURE				
	Rates to include providing and placing the following concrete mixes including all form-work.				
	Concrete Mix 1:2:4				
5.5.1	Ditto in 300mm concrete base	m <sup>3</sup>	0.6		
5.6	Masonry Walling				
5.6.1	(1000 x 225 x 800)mm natural stone to walls to superstructures walling in 1:3 sand/cement mortar finished with steel finished on one side. Rate to included mild all reinforcement at every course	m²	1		
5.7	FINISHES				
5.7.1	25mm thick sand cement lime plaster to external surfaces.	m <sup>2</sup>	2		
5.7.2	25mm thick sand cement lime plaster to floor surface	m <sup>2</sup>	2		
	Sub-Total Carried Over to the Next Page	+			
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ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
N0.				(KSHS)	(KSHS)
	Sub-Total Brought Overfrom the previous Page				
	sub rotal product overnow the previous ruge				
5.80	PIPE WORK AND FITTINGS				
	Rates include supplying of pipe fittings including all jointing 'accessories,' handling, fixing, jointing and testing to the fetching bay. Rates also to include cutting and joining pipes.				
5.8.1	25mm dia. GI pipe class B to be connected to the distribution main	m	30		
	GI Pipe Fittings (Rates to include all connections)				
500			1		
5.8.2	25mm diameter Gate valve	No.	1		
5.8.3	20mm diameter Heavy duty water taps (Pegler)	No.	4		
5.8.4	25mm diameter Union	No.	4		
5.8.5	25mm diameter long nipples	No.	4		
5.8.6	25mm dia.1m long stand pipe	No.	3		
5.8.7	25mm dia, 90° bend/elbow	No.	1		
5.8.8	25mm x 20mm dia, Reducing Sockets	No.	4		
5.8.9	25mm dia, Equal steel Tee	No.	3		
	SUB-TOTAL FOR 1 NO. YARD TAP (A)				
	TOTAL FOR 5 NO. YARD TAPS= 5 x (A) Above	No.	5		
	BILL NO. 5 TOTAL CARRIED OVER TO GRAND SUMMARY				

	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
N0.				(KSH)	(KSH)
	BILL NO. 6- FENCING	m	550		
6.1	Fence				
•					
6.1.1	Provide and install 100mm by 125mm by 2.70m long Concrete posts so as to rise 2.1m above the grounds spaced at 3m centre to centre	No	200		
6.1.2	Excavation of holes to anchor posts concrete posts	No	200		
6.1.3	Concrete class 1:3:6 for anchoring the posts	m³	16		
6.1.4	Provide and install 100mm by 125mm by 2.0m long strainer Concrete posts (double struts) spaced at 30m and at all corners and gate	No	10		
6.1.5	Excavation of holes to anchor strainer concrete posts	No	10		
6.1.6	Concrete class 1:3:6 for anchoring the strainer posts	m <sup>3</sup>	2		
6.1.7	Supply and fix 6 strands of Barbed wire (barbed wire 16G x 25kg)	m	550		
6.1.8	Supply and fix 16-gauge Chain link (8ft height, Mesh sizes are 50mm×50mm) and provide for anchoring to the ground as shall be directed by supervising Engineer.	m²	1,375		
6.2	Gate				
6.2.1	Supply and install 4000x2000mm double leave steel grill gate to 300x300mm concrete columns complete with iron mongery (use 50mmx25mmx6mm SHS with 38mmx25mmx6mm vertical members). Provide for epoxy primer paint with 2 coats of final gloss paint	Nr	1		
6.2.2	Provide, cut and place 10mm square twisted steel rebars in gate columns and 600mmx600mm footing	Kg	20		
6.2.3	Ditto 8mm twisted steel rebars as stirrups in column @150mm	Kg	14		
6.3	Mass concrete class C20/25 in:				
6.3.1	Concrete to poles	m <sup>3</sup>	4		
6.3.2	300mmx300mm Gate columns	m³	0.5		
			0.0		
6.4	Formwork to;				
6.4.1	Column edges over 150mm but not exceeding 300 mm girth	m <sup>2</sup>	7		
6.5	Finishes				
6.5.1	25mm thick cement: sand (1:4) screed to surfaces with 12mm thick lime steel trowelled smooth finish on columns	m <sup>2</sup>	7		
6.5.2	Gloss painting to columns- code provided by Engineer	m <sup>2</sup>	6		
	BILL NO. 6 TOTAL CARRIED OVER TO GRAND SUMMARY				

#### ITEM DESCRIPTION UNIT QUANTITY RATE AMOUNT No. Kshs Kshs **BILL NO.7- PIPELINES** 7.1 CLASS D: DEMOLITION AND SITE CLEARANCE 7.1.1 500 General site clearance along the pipeline alignment. m<sup>2</sup> Tree Cutting (Provisional) Cut down trees, grub up roots and cart away to tips CLASS E: EARTHWORKS 7.2 Note:- Trench width and minimum cover to pipes is as per the Specification. The cost shall include for strutting, shuttering, stabilizing the earth faces of trenches and keeping the trenches free of water from whatever source by pumping or other means and cost of use of selected soil from the excavated material for compaction in bed and surround to backfilling of trenches, etc., all as specified. Excavation and backfilling in normal material for HDPE pipes OD m<sup>3</sup> 7.2.1 341 90 mm for depth n.e 1.5 m 7.2.2 Ditto but for OD 63 mm 409 m<sup>3</sup> Ditto but for OD 50 mm 1,747 7.2.3 m³ m<sup>3</sup> 125 7.2.4 E.O for excavation in rock (Provisional) 7.3 CLASS I: PIPE WORK - PIPES SUPPLY AND PIPE LAYING HDPE PIPES Supply, Transport to site and store in secure place High Density Polyethylene pipes (HDPE) Pipes PE 100 with Butt Fusion Jointing and or Coupling connectors. Include supply of jointing materials. 7.3.1 OD 90 mm- PN 10 in Trenches 650 m 7.3.2 OD 90 mm- PN 6 in Trenches 100 m 900 7.3.3 OD 63 mm- PN 6 in Trenches m 7.3.4 OD 50 mm- PN 6 in Trenches 3,850 m Sub-Total Carried Over to the Next Page

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
No.				Kshs	Kshs
	Sub-Total Brought Overfrom the previous Page				
7.4	CLASS J: PIPE WORK - FITTINGS AND VALVES				
	Supply, Transport to site and store in secure place. Include supply of jointing materials, bolts, nuts, gaskets etc. as applicable as required by specifications and details on drawings. Transport from Site Store, Install, Test and Commission Ferrous pipe Fittings - Epoxy coated externally and cement mortar lined internally or Approved equivalent				
7.4.1	Bends, OD 63 mm-PN 16				
7.4.1.1	90 <sup>0</sup> bend	Nr	1		
7.4.1.2	45 <sup>0</sup> bend	Nr	1		
7.4.2	PE BUTT FUSION FITTINGS				
	Bends to HDPE PE 100 PN16, OD 50 mm				
7401		Nhi	2		
7.4.2.1	90 <sup>0</sup> bend (Provisional)	Nr	2		
7.4.2.2	45 <sup>0</sup> bend	Nr	2		
7.5	CLASS K: PIPE WORK - CHAMBERS AND PIPE WORK ANCILLARIES				
	Note:- Items for work in this class shall include:- - Excavation, preparation of surfaces, disposal of excavated material, shoring sides of excavation, backfilling and removal of redundant services. - Concrete, reinforcement, formwork, joints and finishes. - Tips for disposal of excavated material or debris to be identified by the Contractor in liaison with the Local Authority.				
7.5.1	WASHOUTS				
7.5.1.1	Excavate for, provide all materials and construct complete Lockable inspection valve chambers of internal dimensions 750 x 750 x 1000 mm. Rates to including thrust blocks, step irons, pipe supports and covers as shown in the drawings.	Nr	1		
	Provide, handle, install and test the following steel and HDPE pipes and fittings, valves and specials. Special rates shall include for completing all pipe joints as specified in the drawings				
	Sub-Total Carried Over to the Next Page				

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
No.				Kshs	Kshs
	Sub-Total Brought Overfrom the previous Page				
	For 2 No. W/O Chambers				
7.5.1.2	63 mm dia, Flang Joint with metal Flange	Nr	2		
	63 mm dia x 63 mm dia Level Invert Flanged GI Tee	Nr	1		
	63 mm dia, 2 m long with flap valve	Nr	1		
7.5.1.5	63 mm dia, Flanged Sluice Valve	Nr	1		
	BILL NO. 7 TOTAL CARRIED OVER TO GRAND SUMMAR'	,			
	BILLING: 7 TOTAL CARRIED OVER TO GRAND JOMMAR	•			

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUN
NO.				(Kshs)	(Kshs)
	BILL 8: 10m <sup>3</sup> SUMP				
8.1	CLASS D: DEMOLITION AND SITE CLEARANCE				
	All materials arising from Demolition and site clearance unless				
	otherwise stated shall remain the property of the employer and re-				
	usable items to be stored at the employer's depot. Rates to include				
	disposal to tip as directed				
8.1.1	General clearance; removal of all bushes, grass and shrubs etc. haul	m <sup>2</sup>	16.0		
0.1.1	distance n.e. 1km	m	10.0		
8.2	CLASS E: EARTHWORKS				
	Excavation shall include for strutting, shuttering, stabilising				
	excavated surfaces and keeping excavations free of water by				
	bailing out, pumping or other means and preparation of the excavated surfaces Excavation for foundations				
8.2.1	Topsoil; maximum depth n.e. 0.3m	m <sup>3</sup>	5		
8.2.2	Materials other than topsoil, rock or artificial hard material	m <sup>3</sup>	10		
	maximum depth 0.3m - 1m				
8.2.3	Materials other than topsoil, rock or artificial hard material	m <sup>3</sup>	15		
0.2.5	maximum depth 1m - 2.5m		15		
8.2.4	Rock material, maximum depth 2-2.5m (Provisional)	m <sup>3</sup>	10		
	Excavation ancillaries Preparation of excavated surfaces				
8.2.5	Materials other than topsoil or rock surface				
		2			
8.2.6	Rock surface	m <sup>2</sup>	16		
	Disposal of excavated material				
	Approved material shall be retained for backfilling and unsuitable				
8.2.7	material shall be disposed to tip as directed by the Engineer Topsoil	m <sup>2</sup>	20		
	distance of haul n.e. 1km				
8.2.8	Material other than topsoil or rock distance of haul n.e 1km	m <sup>3</sup>	4		
5.2.0			Т		
	Sub-Total Carried Over to the Next Page				

#### ITEM DESCRIPTION UNIT QUANTITY RATE AMOUNT NO. (Kshs) (Kshs) Sub-Total Brought Overfrom the previous Page 8.3 CLASS F: IN SITU CONCRETE Provision of concrete: Provide materials and mix concrete to the specified class, place, vibrate and cure; cement to BS 12 or BS 146 8.3.1 Design mix; Grade C15; 20mm aggregate m<sup>2</sup> 8 8.3.2 Design mix; Grade C25; 20mm aggregate m³ 6 8.4 **CLASS G: CONCRETE ANCILLARIES** Dimensions as per details on Drawings of specific structural Formwork: Rough finish; Plane vertical 8.4.1 External sides of ground slab width > 0.4 < 1.22m<sup>2</sup> 10 8.4.2 External sides of roof slab width > 0.2 < 0.4m $m^2$ 4 Formwork: Rough finish; Plane horizontal 8.4.3 Soffit of suspended slab; width exceeding 1.22m m<sup>2</sup> 12 Reinforcement; plain round steel bars to BS4449 Rate to include for cutting, bending, supporting, tying and securing reinforcement 8.4.4 Nominal size 6 mm Kgs. 110 8.4.5 200 Nominal size 8 mm Kgs. Reinforcement; High yield steel bars to BS 4449 Rate to include for cutting, bending, supporting tying and securing reinforcement 8.4.6 Nominal size 10 mm 200 Kgs. Miscellaneous work (including provision and laying) 1:3 cement sand mortar screed placed on reservoir walls and floor 8.4.6 as shown on drawings to facilitate reservoir drainage 8.4.7 1:3 cement sand mortar screed placed on reservoir floor and walls m<sup>3</sup> 1 Sub-Total Carried Over to the Next Page

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
NO.				(Kshs)	(Kshs)
	Sub-Total Brought Overfrom the previous Page				
8.5	CLASS J: PIPEWORK - FITTINGS AND VALVES				
	STEEL PIPEWORK Supply, lay and joint pipe fittings & valves. Include for excavation				
	& backfilling of pipe trenches				
	INLET PIPE WORK BENDS				
8.5.1	100 mm dia GI 90° elbow	No.	1		
0.5.1		110.	•		
	OUTLET PIPE WORK				
	BENDS				
8.5.2	80 mm dia .90 <sup>0</sup> elbow	No.	2		
0.9.2		110.	2		
	MISCELLANEOUS				
8.5.3	Strainer, 100mm dia.	No.	1		
	SCOUR & OVERFLOW PIPEWORK				
	BENDS				
8.5.4	90 <sup>°</sup> Elbow, 100mm dia.	No.	2		
0.5.4		110.	2		
	TEES				
8.5.5	100 x 100 mm tee	No.	1		
	CLASS N: MISCELLANEOUS METAL WORK				
	Rate to include supply and fixing and inclusive of foundations				
	where applicable				
	Lockable mild steel sheet metal covers for access; $1100 \times 1100 \times 20$				
8.5.6	mm	No.	1		
0 5 7	50 11 11 11 11				
8.5.7	50mm dia. elbows as Ventilators,	No.	4		
8.6	CLASS U: BLOCKWORK AND MASONRY				
	To include supply and lay dressed building stones for masonry				
	walls				
0 ( 1	225mm thick ashlar masonry, vertical straight walls; thickness 150 -	2	25		
8.6.1	250	m²	25		
	BILL NO. 8 TOTAL CARRIED OVER TO GRAND SUMMARY				

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
No.				(KSh)	(KSh)
	BILL NO. 9- 100 m <sup>3</sup> MASONRY STORAGE TANK				
9.1	CLASS D: DEMOLITION AND SITE CLEARANCE				
	All materials arising from Demolition and site clearance unless otherwise stated shall remain the property of the employer and re-usable items to be stored at the employer's depot. Rates to include disposal to tip as directed				
9.1.1	General clearance; removal of all bushes, grass and shrubs etc. haul distance n.e. 1km	m²	25.0		
9.2	CLASS E: EARTHWORKS				
	Excavation shall include for strutting, shutterimg, stabilising excavated surfaces and keeping excavations free of water by bailing out, pumping or other means and preparation of the excavated surfaces (Excluding disposal of excavated material)				
9.2.1	Topsoil; maximum depth n.e 0.25 m	m <sup>3</sup>	14		
9.2.2	Topsoil; maximum depth n.e 0.25 m - 0.5 m	m <sup>3</sup>	14		
9.2.3	Materials other than topsoil, rock or artificial hard material maximum depth 0.5 - 1 m	m³	29		
9.2.4	Materials other than topsoil, rock or artificial hard material maximum depth 1 - 1.5 m	m <sup>3</sup>	29		
9.3	EXCAVATION ANCILLIARIES				
	<i>Filling</i> Filling to completed structures including compaction as specified				
9.3.1	Selected excavated material other than topsoil, rock, or artificial hard material	m <sup>3</sup>	12		
9.3.2	Rock material ( Hard Core) distance of haul n.e. 1 km	m <sup>3</sup>	12		
9.4	CLASS F: IN SITU CONCRETE				
	Provide materials and mix concrete to the specified class; cement to BS 12 and place as directed by the Supervising Engineer				
	Blinding Concrete				
9.4.1	Blinding Concrete, 75 mm thick Class 15/40 to base of the Tank	m <sup>2</sup>	44		
9.4.2	Ditton for base of Valve Chambers	m <sup>2</sup>	4		
9.4.3	Reinforced Conrete Class 25/20 to the Base Slab	m <sup>3</sup>	13		
9.4.4	Ditto for Roof Slab	m³	12		
9.4.5	Ditto for Base of Chambers (2 No. 1000 x 1000 x 1200 mm Chambers for Offtake and Washouts )	m <sup>3</sup>	7		
	Sub-Total Carried Over to the Next Page				

ITEM No.	DESCRIPTION	UNIT	QUANTITY	RATE (KSh)	AMOUNT (KSh)
	Sub-Total Brought Overfrom the previous Page				(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
9.5	CLASS G: CONCRETE ANCILLARIES				
	Dimensions as per details on Drawings of specific structural				
	Formwork : Rough finish; Plane vertical				
9.5.1	External sides of foundation slab width > 0.4 < 1.22	m <sup>2</sup>	10		
9.5.2	External side of roof slab internal sides of parapet walls width $> 0.2 < 0.4$ m	m <sup>2</sup>	5		
9.5.3	Sides of columns; width > 0.4 < 1.22 mm	m <sup>2</sup>	15		
9.5.4	Internal sites of the roof slab	m <sup>2</sup>	40		
	Reinforcement; plain round steel bars to BS4449 Rate to include for cutting, bending, supporting, tying and securing reinforcement				
9.5.5	Nominal size 6 mm	Kgs.	19		
9.5.6	Nominal size 8 mm	Kgs.	392		
	Reinforcement; deformed high yield steel bars to BS 4449				
	Rate to include for cutting, bending, supporting tying and securing reinforcement				
9.5.7	Nominal size 10 mm	Kgs.	1,776		
9.5.8	Nominal size 16 mm	Kgs.	705		
9.5.9	Nominal size 20 mm	Kgs.	0		
	MISCELLANEOUS WORKS				
	(Rates to include for provision and laying)				
9.5.10	1:3 cement sand mortar screed placed on reservoir floor and walls as shown on drawings to facilitate reservoir drainage	m²	185		
9.5.11	Supply and place water proof cement	Kgs.	36		
9.5.12	Supply and place lime in plaster	Kgs.	35		
9.5.13	Supply and place bondex joint as specified in the drawing	Kgs.	15		
9.6	CLASS H: PRECAST CONCRETE				
9.6.1	Plain covering slabs 600 x 600 x 100mm	No.	2		
	Sub-Total Carried Over to the Next Page				

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
No.				(KSh)	(KSh)
	Sub-Total Brought Overfrom the previous Page				
9.7	CLASS J: PIPEWORK - FITTINGS AND VALVES				
	Supply, lay and joint pipe fittings & valves. Include for excavation & backfilling of pipe trenches. Steel Pipe Fittings to NP 10				
	INLET PIPE WORK AND BENDS				
	BENDS				
9.7.1	90 <sup>0</sup> , 80 mm dia threaded Long Radius Bend in trenches depth n.e. 2500 mm	No.	2		
9.7.2	80 mm dia, 90º GI Elbow	No.	1		
	STRAIGHT SPECIALS AND VALVES				
9.7.3	80 mm dia Threaded GI pipe ( Class B - Riser for inlet pipe )	No.	1		
9.7.4	80 mm dia, 0.5 m Long, Threaded GI Spigot ( for inlet pipe )	No.	1		
	OUTLET PIPE WORK ( DRAW OFF )				
	BELLMOUTHS				
9.7.5	Flanged Bell mouth 100 mm dia	No.	1		
	BENDS				
9.7.6	100 mm dia , 0.5 m long threaded GI spigot	No.	1		
9.7.7	100 mm dia, 90 degrees , GI Long Radius Bend	No.	1		
	STRAIGHT SPECIALS				
9.7.8	100 mm dia threaded GI Pipe ( Rates to include for provision of Sockets)	m	6		
9.7.9	100 mm dia, 0.5m long single flanged GI pipe	No.	2		
	VALVES , NIPPLES AND UNIONS				
9.7.10	100 mm dia Gate Valve To B\$5163, hand operated with hand wheel	No.	1		
9.7.11	100 mm dia GI Nipple	No.	3		
	80 mm dia GI Union	No.	1		
5.7.12		110.	•		
	Sub-Total Carried Over to the Next Page				

DESCRIPTION	UNIT	QUANTITY	RATE (KSh)	AMOUNT (KSh)
Sub-Total Brought Overfrom the previous Page				(
SCOUR				
BENDS				
80 mm dia GI Flanged as shown in drawings	No.	1		
80 mm dia, 90 <sup>0</sup> Double flanged long radius bend	No.	1		
STRAIGHT SPECIALS				
80 mm dia threaded GI Pipe ( Rates to include for provision of Sockets)	m	12		
80 mm dia, 0.5 m Long threaded GI Pipe	No.	12		
VALVE				
80 mm dia Gate Valve To B\$5163, hand operated with hand wheel	No.	1		
80mm dia, Flanged adaptor	No.	1		
OVER FLOW				
TAPER				
Flanged bell mouth 80 mm dia.	No.	1		
STRAIGHT SPECIALS				
80mm dia, 0.5m Long GI Spigot Single flanged GI Pipe	No.	1		
Flanged spigot 2500mm length with puddle flange 400mm from flanged end, 80mm dia.	No.	1		
DRAINAGE PIPEWORK				
BENDS				
90 <sup>0</sup> Double socket short radius bend, 80mm dia	No.	2		
STRAIGHT SPECIALS				
Plain ended spigot, 500mm length, 80mm dia.	No.	2		
Plain ended spigot, 2000mm length, 80mm dia	No.	1		
CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES				
Excavate for, provide all materials and construct complete Lockable inspection valve chambers of internal dimensions 750 x 750 x 1000 mm. Rates to including thrust blocks, step irons, pipe supports and covers as shown in the drawings.	Nr	1		
	Sub-Total Brought Overfrom the previous Page         SCOUR & OVERFLOW PIPEWORK         SCOUR         BENDS         80 mm dia GI Flanged as shown in drawings         80 mm dia, 90° Double flanged long radius bend         STRAIGHT SPECIALS         80 mm dia threaded GI Pipe ( Rates to include for provision of Sockets)         80 mm dia, 0.5 m Long threaded GI Pipe         VALVE         80 mm dia Gate Valve To B\$5163, hand operated with hand wheel         80 mm dia, Flanged adaptor         OVER FLOW         TAPER         Flanged bell mouth 80 mm dia.         STRAIGHT SPECIALS         80mm dia, 0.5m Long GI Spigot Single flanged GI Pipe         Flanged spigot 2500mm length with puddle flange 400mm from flanged end, 80mm dia.         DRAINAGE PIPEWORK         BENDS         90° Double socket short radius bend, 80mm dia         STRAIGHT SPECIALS         Plain ended spigot, 2000mm length, 80mm dia.         Plain ended spigot, 2000mm length, 80mm dia         CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES         Excavate for, provide all materials and construct complete Lockable inspection valve chambers of internal dimensions 750 x 750 x 1000 mm. Rates to including thrust blocks, step irons, pipe	Sub-Total Brought Overfrom the previous Page	Sub-Total Brought Overfrom the previous Page	Sub-Total Brought Overfrom the previous Page     (KSh)       SCOUR & OVERFLOW PIPEWORK     Image: Constraint of the previous Page     Image: Constraint of the previous Page       SCOUR     Image: Constraint of the previous Page     Image: Constraint of the previous Page       SCOUR     Image: Constraint of the previous Page     Image: Constraint of the previous Page       SCOUR     Image: Constraint of the previous Page     Image: Constraint of the previous Page       SO mm dia GI Flanged as shown in drawings     No.     1       80 mm dia GI Flanged as shown in drawings     No.     1       STRAICHT SPECIALS     Image: Constraint of the previous Page     Image: Constraint of the previous Page       80 mm dia threaded GI Pipe (Rates to include for provision of Sockets)     m     12       80 mm dia, 0.5 m Long threaded GI Pipe     No.     1     Image: Constraint of the previous Page       80 mm dia, Gate Valve To B\$S163, hand operated with hand wheel     No.     1     Image: Constraint of the previous Page       80 mm dia, Flanged adaptor     No.     1     Image: Constraint of the previous Page     Image: Constraint of the previous Page       70VER FLOW     Image: Constraint of the previous Page: Con

ITEM No.	DESCRIPTION	UNIT	QUANTITY	RATE (KSh)	AMOUNT (KSh)
	Sub-Total Brought Overfrom the previous Page				
9.9	CLASS N: MISCELLANEOUS METAL WORK				
9.9.1	Rectangular section ditches; line; cross-sec area not exceeding 0.25m <sup>2</sup> to take Washout Drainage pipe	m	5		
	Rate to include supply and fixing and inclusive of foundations where applicable				
9.9.2	Galvanised mild steel ladders. The ladders should be of rounded steel bars of 25mm dia.	No.	2		
9.9.3	Locakable mild steel sheet metal covers for access; 1100 x 1100 x 20 mm	No.	2		
9.9.4	Ventilators, 80mm dia. To include for Elbows and GI Straigths	No.	4		
9.10	CLASS U: BLOCKWORK AND MASONRY				
	Masonry Block Work for Walls as shown in drawings				
	Rates for Masonry blocks to include for Supply, Dressing, and Curing				
9.10.1	300 mm thick	m <sup>2</sup>	40		
9.10.2	225 mm thick	m <sup>2</sup>	67		
9.10.3	Ditto for 2 No. ( 100 x 100 x 1200 mm ) Inspection Valve Chambers	m <sup>2</sup>	6		
9.11	CLASS V: PAINTING AND BRANDING				
9.11.1	Provide for painting and branding of the Tank as directed	m <sup>2</sup>	50		
	BILL NO. 9 TOTAL CARRIED OVER TO GRAND SUMMARY	1	1	1	
	BILL NO. 9 TOTAL CARRIED OVER TO GRAIND SUMMARY				

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE (KSHS)	AMOUNT (KSHS)
	BILL No. 9 - Control Room (2M X 2M)				
A	Excavate to firm ground on soft material as directed by the engineer	m <sup>3</sup>	6		
В	Provide and place hardcore material to a depth of 300mm	m <sup>3</sup>	2		
С	Mass concrete class 15/20(1:3:6) 150mm thick as strip footing	m <sup>3</sup>	2		
D	Vibrated reinforced concrete class 25/20 to 150mm thick slab	m <sup>3</sup>	2		
E	10mm Diameter square twisted reinforcement bars for strip footing	Kg	74		
F	150mm thick fired clay brick walling bedded and jointed with 1:3 cement/sand		24		
G	mortar 32mm thick cement sand screed to receive finishes	m <sup>2</sup> m <sup>2</sup>	4		
Н	15mm thick cement/sand plaster to brick wall surfaces	m <sup>2</sup>	24		
l	12 mm reinforcement to beam	Kg	48		
J	8 mm reinforcement to beam	Kg	22		
К	Provide and fix 28 gauge pre-painted sheets	m <sup>2</sup>	5		
L	Provide and fix sawn timber 75*50 mm as purlins	m	13		
М	Provide and fix sawn timber 100*50mm as roof tie beams	m <sup>2</sup>	15		
Ν	Provisional sum for drainage works	PC	1		
0	Provisional sum for electrical works as directed	PC	1		
	BILL NO. 10 TOTAL CARRIED OVER TO GRAND SUMMARY				

	BILL No. 11 - ELECTRO - MECHANICAL WORKS				
11.1	Requirement				
	Nequitement				
11.1.1					
	Solar Pumping System to power a 11Kw (15HP) Submersible Pump.				
11.2	Site Conditions:				
11.2.1	Desired Yield- 30-35m <sup>3</sup> /Hr				
11 2 2	Distance to Pumphouse- 10m				
11.2.2					
11.2.3	Total Dynamic Head- 75m				
11.3	Equipment Required:				
11.3.1	Pump				
	Premium quality GRUNDFOS SP30-13 or DAYLIFF DS30-13 or				
	PEDROLLO 6SR27/10 pumps being constructed of stainless steel and				
	fitted with 11Kw 3Ph motor.				
11.3.2	Control Unit				
	The controller Sunverters for controlling of the pump system,				
	monitoring of the operating states and incorporates the following				
	alarm functions: over current, under voltage, over speed, over				
	temperature, reverse polarity, low water. It should have an				
	integrated MPPT (Maximum Power Point Tracking) which maximizes				
	power use from PV modules.				
11.3.3	Solar Panels				
	51 No. 330W, 24V, crystalline PV solar modules to provide a				
	maximum of 16,830W output and a reserve capacity over the rated				
	power requirement of the pump. The array will consist of 3 parallel				
	strings of 17pieces in series each will be wired to provide the voltage				
	requirement of the pump.				
11.3.4	Accessories				
	These will include underground cables and inter-panel wiring among				
	others.				
11 2 7					
11.3.5	Ground Mount Solar Support Structure for the Solar Panels				
	3.5m high galvanized steel support structure for mounting the solar				
	panels.				
11.3.6					
11.5.0	Installation_				
	To include:				
	i.Transport of equipment to the site,				
	ii.Electrical connections between pump and controller,				
	iii.Cable Connections between pump, controller and the solar				
	modules,				
	iv.Commissioning and testing with water delivered to the surface.				
		I	I	I	I

	BILL No. 11 - ELECTRO - MECHANICAL WORKS				
		115.117		DATE	
NO.	ITEM DESCRIPTION		QUANTITY	RATE (KSHS)	AMOUNT (KSHS)
11.4	Cost				
11.4.1	SUBMERSIBLE 11KW PUMP END	No.	1		
11.4.2	11kW 3PH SUB-MOTOR	No.	1		
11.4.3	11KW 3PH SUNVERTER	No.	1		
11.4.4	DC PV DISCONNECT SWITCH 1000VDC/40A	No.	1		
11.4.5	330W 24VDC CRYSTALLINE SOLAR MODULE	No.	51		
11.4.6	4mm <sup>2</sup> x 4 PVC FLAT SUBMERSIBLE DROP CABLE	m	20		
11.4.7	4mm x 4 CORE U/G CABLE	m	20		
11.4.8	SENSUS WATER METER	No.	1		
11.4.9	LIGHTNING ARRESTOR SYSTEM	Ls	1		
11.4.10	GALVANISED STEEL GROUND MOUNT 3M STRUCTURE	No.	16830		
11.4.11	TWIN FLAT 6mm CABLE WITH EARTH	No.	25		
11.4.12	2NO EARTHROD C/W CLAMP & 10M COPPER EARTH WIRE	Ls	1		
11.4.13	PV SURGE PROTECT	No.	1		
11.4.14	INSTALLATION SUNDRIES & FITTINGS	Ls	1		
11.4.15	INSTALLATION LABOUR AND TRANSPORT	Ls	1		
	TOTAL BILL 11 CARRIED OVER TO GRAND SUMMARY	-+		· · · · · · · · · · · · · · · · · · ·	

ITEM	ITEM DESCRIPTION	UNIT	QUANTITY	AMOUNT
NO.				(KSHS)
	BILL No. 12 - GREEN HOUSE (8m x 40m)			
	Green House (40m x 8m):			
	Greenhouse gutter heigth- 2.1m - 3.0m			
12.1				
	width- 8m			
	Length- 30m			
	Detected in detection in telletten and training of a susan of			
	Rate should include Supply, installation and training of personnel.			
		Ls	1	
	Prefabricated Galvanised metallic greenhouse tunnel type structure			
	UV stabilized Green house polythene, thickness of between 200-220 microns, 1000			
12.1.1	gauge, the colour yello or milky, bilted, W-wire, and profile. • 0.005mm vent and screen net/shade net 50% to 70%			
	Crop Support			
	<ul> <li>It should come with a kit comprising of seedling trays, PPEs, 20L knapsack Sprayer, etc.</li> </ul>			
12.1.2	Complete drip irrigation system with 1,000L Plastic tank, and metallic stand	Ls	1	
12.1.3	Training	Ls	1	
10.1.4	Numerous and for any second	1.		
12.1.4	Nursery pack for one season	Ls	1	
12.1.5	Soil sampling and Full Analysis	Ls	1	
	TOTAL BILL 12 CARRIED OVER TO GRAND SUMMARY			
-	I OTAL DILL IZ CARRIED OVER TO GRAIND SUMIMARY			

ltem	Description	Unit	Qty	Rate Kshs	Amount Kshs
	BILL NO.13: PROPOSED PIT LATRINE/BATHROOM				
	<u>BILL NO.13.1</u>				
	SUBSTRUCTURE WORKS ALL PROVISIONAL				
A	Clear site of bushes,shrubs and the like, grup up there root and burn the arisings	SM	30		
В	Excavate vegetable top soil average 150mm deep set aside in spoil heaps and later spread around the site as directed.	SM	30		
с	Excavate oversite commencing from stripped level average depth 300mm but not exceeding 1.5m deep	SM	25		
D	Excavate foundation trench not exceeding 1.50m deep commencing from stripped level and backfill av depth 600mm.	СМ	20		
F	Allow for plunking and strutting sides of excavation trenches	ITEM	1		
	<u>Disposal</u>				
G	Load, wheel and cart away surplus soil.	СМ	20		
	Hardcore filling				
Н	Imported hardcore ; water and well compacted in thickness of 150mm but maximum depth of 300mm to sides of the excavated pit.	SM	16		
J	50mm thick murram blinding to surfaces of hardcore surfaces.	SM	16		
	<u>PIT EXCAVATION (4X1.5M)</u>				
К	Excavate for pit commencing from stripped level but not exceeding 1.5m deep	СМ	12		
L	Ditto but over 1.5m n.e 3.0m deep.	СМ	12		
М	Ditto but over 3.0m n.e 4.5m deep.	СМ	12		
Ν	Ditto but over 4.5m deep but not exceeding 9.0m deep.	СМ	34		
М	Extra over excavation in soft rocks	СМ	35		
	Carried to collection				

ltem	Description	Unit	Qty	Rate Kshs	Amount Kshs
	Mesh fabric reinforcement to B.S 4483 and setting in concrete with 300mm side and end laps (measured nett-allow for laps)				
		614	25		
A	Fabric mesh ref:A142weighing 2.22kg per square metre in floor bed DAMP PROOF MEMBRANE	SM	25		
В	500 gauge polythene damp proof memmbrane laid under surface bed with 300mm side and end laps (measured net -allow for laps)	SM	25		
с	<u>CONCRETE</u> 50mm thick concrete (1:4:8 mix ) blinding under footings	SM	9		
	Insitu concrete class 20/20, vibrated and reinforced as described, in:-				
D	strip footing and groundbeam	СМ	4		
Е	150mm thick surface bed	SM	25		
	<u>Reinforcement works all in accordance with the Engineer's details and approval including all cutting, bending, laying and binding wire to:</u>				
F	strip footing and ground Beam	Kg	200		
	SAWN FORMWORK TO;				
G	Vertical sides of strip footing size175-225mm high.	LM	55		
н	Edges of ground floor slab over 75mm but not exceeding 150mm high	LM	18		
J	200mm thick natural stone foundation walling to a stable base of the pit bedded and jointed in c.s morta 1;4	SM	10		
	<b>DPC</b> Three -ply bituminous felt damp proof course bedded in cement and sand morta(1;3)				
к	200mm Wide horizontal layer	LM	15		
	<u>PLINTH FINISH</u>				
L	<u>Cement and Sand 1:4 render</u> 12 mm thick render wood float <u>Prepare and apply two coats bituminous paint to:</u>	SM	7		
м	Render surfaces externally	SM	7		
	Constanting on the state				
	Carried to collection				

ltem	Description	Unit	Qty	Rate Kshs	Amount Kshs
	COLLECTION				
1	Total Brought Forward From Page No.1				
2	Total Brought Forward From Page No. 2				
	TOTAL CARRIED TO SUMMARY				

ltem	Description	Unit	Qty	Rate Kshs	Amount Kshs
	REINFORCED CONCRETE WORKS SUPERSTRUCTURE				
	<u>BILL NO. 13.2</u>				
	Vibrated reinforced concrete (1;2;4) class 20 in;				
А	Ring Beams and lintols	СМ	2		
	REINFORCEMENT Reinforcement in different sizes in structural concrete work all in accordance with the Engineer's details and approval including all cutting,bending,laying and binding wire to;				
В	Ring Beams and lintols	kg	120		
	SAWN FORMWORK TO;				
С	Sides and soffits of ring beams average heights 125-175mm.	LM	58		
	Carried to summary				

ltem	Description	Unit	Qty	Rate Kshs	Amount Kshs
	BILL NO.13.3				
	LOAD BEARING WALLINGS				
	EXTERNAL WALLING				
	Load bearing chisel cut natural stone walling, jointed in cement and sand(1;3)morter and including hoop iron reinforcement at alternate courses including all necessary working around all door and windows openings formed accurately as per Architects schedule				
A	150mm thick walling	SM	46		
В	Ditto but to dwarf wall at the entrance and cable wall	SM	13		
	<b>INTERNAL WALLING</b> Load bearing chisel cut natural stone walling, jointed in cement and sand(1;3) mortar and including hoop-iron reinforcement at alternate courses, including allnecessary working around all door and window openings formed accurately				
С	150mm thick	SM	17		
	Carried to summay				

BILLING.13.4         ROOF CONSTRUCTION AND COVERING         MAIN ROOF -TIMBER TRUSSES         Structural timber trusses in pressure impregnated treated sawn cypress including subtraction.jointing with necessary timber plates.bolts and connecting plates.boltsing and fixing in position all in accordance with Engineers calculate and drawings         100x50mm wall plate secured with and including 12mm diameter mild teel "Post         100x50mm thick at 1500mm centres cast in concrete ring beam principle rafters.         100x50mm principle members       LM         24       Prepare and apply Three cost gloss print to >-         Receive from horizontal including all necessary timber batters and fixtures and fixtures soft timber 100 to 200mm girth externally       LM         Perpare and apply Three cost gloss plaint to >-       LM       24         Prepare and apply Three cost gloss plaint to Semeral surfaces of timb	ltem	Description	Unit	Qty	Rate Kshs	Amount Kshs
MAIN ROOF -TIMBER TRUSSES       Structural timber trusse in pressure impregnated treated sawn cypress including fabrication_jointing with necessary timber plates Johts and connecting plates, Johts and drawings       Johtson with a structural timber trusses in pressure impregnated treated sawn cypress with Engineers details and drawings       Jum 300         A       IO0x50mm wall plate secured with and including I2mm diameter mild see I7b0t       Jum 300         B       IO0x50mm thick at I500mm centres cast in concrete ring beam principle rarties.       LM       80         B       IO0x50mm principle members       LM       80         B       IO0x50mm purifies       LM       60         C       75x50mm purifies       LM       60         B       IO0x50mm purifies       LM       60         C       75x50mm purifies       LM       60         B       IO0x50mm purifies       LM       60         C       75x50mm purifies       LM       60         B       Vort timber selected and kept dean       LM       24         Z       Papera and apply three coats of sols plant to :-       Mot splate apply three coats of splas plant to :-       Mot splate apply three coats of splas plant to :-         F       Not timber 100 to 200mm gitth externally       LM       24		BILL NO.13.4				
Structural timber trusses in pressure impregnated treated sawn cypress including fabrication, Jointing with necessary timber plates, boits and connecting plates, hoits and drawings       IdoxS0mm will plate secured with and including 12mm diameter mild steel 'Jobt'         A       100xS0mm will plate secured with and including 12mm diameter mild steel 'Jobt'       ILM       30         B       100xS0mm plates, boits and kingpost       LM       80         B       100xS0mm plate secured with and including 12mm diameter mild steel 'Jobt'       S0         C       75x50mm purinciple members       LM       80         B       100xS0mm thick at 1500mm centres, struts and ties and kingpost       LM       60         C       75x50mm purins       LM       60         B       100x50mm but common rafters, struts and ties and kingpost       LM       60         C       75x50mm purins       LM       60         B       Supply and fix 30 gauge prepainted box profile Roof covering at 15.0 degrees from horizontal including all necessary timber battens and fixtures in the strut show and apply three coats of gloss oil paints to General LM       LM       24         F       Prepare and apply Three coats gloss paint to :-       LM       24       24         F       Prepare and stop and apply three coats of gloss oil paints to General surfaces of timber 100 to 200mm girth externally       LM       24		ROOF CONSTRUCTION AND COVERING				
including fabrication.jointing with necessary timber plates, botts and connecting plates, hotts and fawings     IOOXSOmm will plate secured with and including 12mm diameter milld steel 'Jobit'       A     100xSOmm will plate secured with and including 12mm diameter milld steel 'Jobit'     IVM     30       B     100xSOmm thick at 1500mm centres cast in concrete ring beam principle rafters.     LM     80       B     100xSOmm principle members     LM     80       B     100xSOmm principle members     LM     50       C     75xSomm purlins     LM     60       ROOF FINISHES AND COVERING     LM     60       B     Supply and fix 30 gauge prepainted box profile Roof covering at 15.0 degrees from horizontal including all necessary timber battens and fistures ryf.     SM     31       C     Frepare and apply Three coats gloss paint to :-     F     Knot prime and stop and apply three coats of gloss oil paints to General surfaces of timber 100 to 200mm girth externally     LM     24		MAIN ROOF -TIMBER TRUSSES				
steel 7bolt       Image: Steel 7bolt integration integrated integrated integrated integration integrated integration integ		including fabrication,jointing with necessary timber plates ,bolts and connecting plates,hoisting and fixing in position all in accordance with				
A       rafters.       LM       30         B       100x50mm principle members       LM       80         C       75x50mm purlins       LM       60         ROOF FINISHES AND COVERING       LM       60         D       degrees from horizontal including all necessary timber battens and fixtures from horizontal including all necessary timber battens and fixtures from horizontal including all necessary timber battens and fixtures from horizontal including all necessary timber battens and fixtures from horizontal including all necessary timber battens and fixtures from horizontal including all necessary timber battens and fixtures from horizontal including all necessary timber battens and fixtures from horizontal including all necessary timber battens and fixtures from horizontal including all necessary timber battens and fixtures from horizontal including all necessary timber battens and fixtures from horizontal including all necessary timber battens and fixtures from horizontal including all necessary timber battens and fixtures from horizontal including all necessary timber battens and fixtures from horizontal including all necessary timber battens and fixtures from horizontal including all necessary timber battens and fixtures from horizontal including all necessary timber battens and fixtures from horizontal including all necessary timber battens and fixtures from horizontal including all necessary timber battens and fixtures from horizontal including all necessary timber battens and fixtures from horizontal including all necessary timber battens and fixtures from horizontal and apply three coats of gloss oil paints to General super first and fixtures of timber 100 to 200mm girth externally       LM       24         F <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td></td<>						
B       100x50mm but common rafters, struts and ties and kingpost       LM       50         C       75x50mm purlins       LM       60         RCOF FINISHES AND COVERING       5M       31         D       Supply and fix 30 gauge prepainted box profile Roof covering at 15.0 degrees from horizontal including all necessary timber battens and fixtures m/s.       SM       31         E       225x25mm Fascia or barge board       LM       24         F       knot prime and stop and apply three coats of gloss oil paints to General surfaces of timber 100 to 200mm girth externally       LM       24	A		LM	30		
C       75x50mm purlins       LM       60         ROOF FINISHES AND COVERING	В	100x50mm principle members	LM	80		
ROOF FINISHES AND COVERING.       SM       31         b       Supply and fix 30 gauge prepainted box profile Roof covering at 15.0 degrees from horizontal including all necessary timber battens and fixtures of timber selected and kept clean       SM       31         E       Wrot timber selected and kept clean       LM       24         F       Prepare and apply Three coats gloss paint to :- function of timber 100 to 200mm girth externally       LM       24         F       Image: solution of timber 100 to 200mm girth externally       LM       24	В	100x50mm but common rafters, struts and ties and kingpost	LM	50		
D       Supply and fix 30 gauge prepainted box profile Roof covering at 15.0 degrees from horizontal including all necessary timber battens and fixtures nys.       SM       31         E       Wrot timber selected and kept clean 225x25mm Fascia or barge board       LM       24         F       Prepare and apply Three coats gloss paint to :- root syntax strates of timber 100 to 200mm girth externally       LM       24         F       knot prime and stop and apply three coats of gloss oil paints to General surfaces of timber 100 to 200mm girth externally       LM       24	С	75x50mm purlins	LM	60		
D       degrees from horizontal including all necessary timber battens and fixtures m/s.       SM       31         E       Wrot timber selected and kept clean 225x25mm Fascia or barge board       LM       24         F       Prepare and apply Three coats gloss paint to :- knot prime and stop and apply three coats of gloss oil paints to General surfaces of timber 100 to 200mm girth externally       LM       24		ROOF FINISHES AND COVERING				
E       225x25mm Fascia or barge board       LM       24         Prepare and apply Three coats gloss paint to :- knot prime and stop and apply three coats of gloss oil paints to General surfaces of timber 100 to 200mm girth externally       LM       24         F       kmot prime and stop and apply three coats of gloss oil paints to General surfaces of timber 100 to 200mm girth externally       LM       24	D	degrees from horizontal including all necessary timber battens and fixtures	SM	31		
F       knot prime and stop and apply three coats of gloss oil paints to General surfaces of timber 100 to 200mm girth externally       LM       24         Image: Comparison of timber 100 to 200mm girth externally       LM       24	E		LM	24		
Carried to collection	F	knot prime and stop and apply three coats of gloss oil paints to General	LM	24		
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		Carried to collection				

ltem	Description	Unit	Qty	Rate Kshs	Amount Kshs
	RAIN WATER DISPOSAL				
A	100mm diameter UPVC gutters fixed to fascia with including appropriate brackets hangers bends, and gutter spout or out lets for connection to down pipes by outs all in accordance with architect drawings.	LM	11		
В	Down Pipes with solvent welded joints, fixed to walls with holderbolts size 100 x 100 mm or any other approved	LM	4		
С	Extraover for swan kneck in pipe , size' - 100 x 100 mm	No.	1		
D	Extraover for shoe in pipe , size' - 100 x 100 mm	No.	1		
	Carried to collection				
	COLLECTION		Page		
1	Total Brought Forward From above		No		
2	Total Brought Forward From Page No.				
	Carried Forward to summary of Section				

ltem	Description	Unit	Qty	Rate Kshs	Amount Kshs
	BILL NO.13.5 WINDOWS AND DOORS				
	Supply and fix Steel casement windowssecti including mullions,4mm thick glass clear glass to schedule and approval Steel casement windowssecti including mullions,5mm window stays,fasteners all to architect's schedule and approvalthick obscured glass				
А	window size 800x600mm high	NO	4		
В	louvered window with clay bricks jointed with c/s morta 1;3 to approval size 1000x600mm	NO	0		
с	<u>window cill</u> 75mm cast in situ concrete cill in class 20 concrete	LM	4		
D	PAINTING AND DECORATION Prepare and apply three coats of gloss oil paints to metal surface of window externally	SM	3		
E	ditto internally	SM	3		
	DOORS & IRON MONGERY-( Supply and fix items)				
	Timber doors				
	45 mm Semi-Solid core flush doors faced both sides with 6 mm_plywood_ zen veneered for polishing , moulded and lipped all round, size ;				
F	900x2100mm	No.	4		
	Doors, frames and finishings in wrought hardwood				
G	100 x 50 mm thick door frame with 3 labours	LM	28		
н	<b>Ironmongery</b> 100 mm steel butt hinges	Pairs	6		
J	Two lever mortice lock complete with fittings as per Union cataloque 2237	NO	4		
	Carried Forward to summary of Section				

ltem	Description	Unit	Qty	Rate Kshs	Amount Kshs
	BILL NO.7 FINISHES				
	EXTERNAL WALL FINISHES				
A	Horizontal key pointing and verticle flash joint to external surface of walls.	SM	59		
В	Ditto but to verticle sides of ringbeams externaly and internaly.	SM	9		
	Prepare and apply one undercoat and two finishing coats acrylic paint or other approved by the architect				
С	Rendered walls	SM	9		
	INTERNAL WALL FINISHES				
	16mm thick (minimum) cement sand (1:3) screed to receive ceramic tiles and 2 coats of paint m/s to approval.				
D	Steel trowelled smooth plasters to surfaces of wall to receive paint (m/s)	SM	93		
	PAINTING AND DECORATING				
	Prepare and apply three coats silk vinyl emulsion paint or other approved by Architect				
F	To plastered surfaces of walls	SM	93		
	INTERNAL FLOOR FINISHES				
	cement and sand (1:3) backing				
Н	32mm thick cement and sand screed steel float finish/ smooth finish to floor with redoxide paints.	SM	25		
	Total carried to collection				

ltem	Description	Unit	Qty	Rate Kshs	Amount Kshs
	SECTION SUMMARY				
1	Substructures works				
2	Reinforced concrete works				
3	External and internal walling				
4	Roof construction and covering				
5	Windows, Doors and iron mongery				
6	External, internal wall finishes				
	TOTAL BILL 13 CARRIED OVER TO GRAND SUMMARY				