

**ADDENDUM 2****BILL OF QUANTITIES FOR KIWAYUU VILLAGE WATER SUPPLY CONSTRUCTION.**

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT KSHS
<b>A.</b>	<b><u>CONSTRUCTION OF 8.984KM PIPELINE</u></b>				
	<b><u>Clearing of pipeline route</u></b>				
1.0	Clear pipeline route of bushes, undergrowth, trees, debris and rubbish and dispose. Width of clearance to be 2.0m to accommodate for access road and trench and excavation of materials.	M <sup>2</sup>	3,488		
	<b><u>Excavation</u></b>				
1.1	Excavate for pipe trench to a depth not exceeding 1000mm for 50mm diameter Pvc pipes class D, prepare bed on completion of excavation.	M	1,744		
1.2	Excavate for pipe trench to a depth not exceeding 1000mm for 25mm diameter Pvc pipes class D, prepare bed on completion of excavation.	M	1,850		
1.3	Excavate for pipe trench to a depth not exceeding 1000mm for 20mm diameter Pvc pipes class D, prepare bed on completion of excavation.	M	3,950		
1.4	Excavate for pipe trench to a depth not exceeding 1000mm for 20mm diameter PPR pipes class D, prepare bed on completion of excavation	M	1,440		
	<b><i>SUB-TOTAL</i></b>				

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT KSHS
	<b><i>Balance Brought Forward</i></b>				
	<b><u>Laying and jointing of pvc pipes.</u></b>				
1.5	Distribute, lay and joint 50mm diameter Pvc pipes class D in trench including making provisions for appurtenances and pipe fittings as per specifications.	M	1,744		
1.6	Distribute, lay and joint 25mm diameter Pvc pipes class D in trench including making provisions for appurtenances and pipe fittings as per specifications.	M	1,850		
1.7	Distribute, lay and joint 20mm diameter Pvc pipes class D in trench including making provisions for appurtenances and pipe fittings as per specifications.	M	3,950		
1.8	Distribute, lay and joint 20mm diameter PPR pipes for meter installation.	M	1,440		
1.9	<b><u>Backfilling</u></b> Backfill trench using well selected excavated material after laying and jointing the 50mm, 25mm and 20mm PVC and PPR pipes.	M	8,984		
	<b><i>SUB-TOTAL</i></b>				

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT KSHS
	<i>Balance Brought Forward</i>				
2.0	<b><u>Installation of 240 Consumer Water Meters</u></b> Distribute and install No.240 of 15mm Kent Water Meters as directed by the Engineer.	No.	240		
2.1	<b><u>Road crossing</u></b> Allow for provision of road crossing; culvert construction and casing for PVC pipes.	Lump sum	1		
2.2	<b><u>Construction of valve chambers</u></b> Construct standard reinforced concrete valve chambers. Include for hardcore fill, boxing out for manhole and fixing of 1No. MS manhole cover and frame light duty 600x 450mm for water master meters, air valves and washout.	No.	6		
1.5	<b><u>Pressure Testing &amp; Disinfection.</u></b> Allow for carrying out pressure testing on pipeline.	M	1,744		
1.6	<b><u>Installation of Air Valves, Wash out and Water Master Meters.</u></b> Install rising air valves wash out and water master meters and connect to pipeline as instructed on site.	No.	6		
	<b><i>SUB-TOTAL</i></b>				

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT KSHS
	<i>Balance Brought Forward</i>				
2.3	<b><u>Installation of air valves, wash out and water meters</u></b> Provide and install 2" water meters at				

	inter connection of the 50mm diameter PVC Pipeline.	No.	2		
	<b><u>Construction of interconnection chambers.</u></b>				
2.4	Supply all materials, construct chambers for interconnection of the gravity main of 80mm diameter and the extension distribution mains of 50mm	No.	2		
2.5	Install and connect to pipeline sluice valve and all other fittings.	No.	3		
	<b><u>Miscellaneous</u></b>				
2.6	Provide concrete class 15 include for the required formwork and additional excavation for anchor blocks and surrounding of pipeline as directed by the Engineer (Provisional).	No.	10		
	<b><u>Mark post</u></b>				
2.7	Provide, lay and fix in place and paint pre-cast reinforced concrete marker posts along the pipeline at 200m interval, the posts to be with letter 100mm, 80mm and 50mm posts be painted blue. The size to be 75mm x100mm x 150mm long.	No.	18		
	<b><i>PIPELINE TOTAL</i></b>				

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT KSHS
	<i>Balance Brought Forward</i>				
<b><u>B.</u></b>	<b><u>MATERIALS FOR PIPELINE.</u></b>				
1.	PVC 50mm Diameter pipes class D	No.	295		

2.	PVC 25mm Diameter pipes class D	No.	315		
3.	PVC 20mm Diameter pipes class D	No.	665		
4.	PPR 20mm Diameter pipes class D	No.	240		
5.	2" PVC Tee	No.	15		
6.	1" PVC Tee	No.	40		
7.	3/4" PVC Tee	No.	180		
8.	2" x 1" PVC Reducing socket	No.	15		
9.	1" x 3/4" PVC Reducing socket	No.	15		
10.	2" Gate valve	No.	7		
11.	1" Gate valve	No.	10		
12.	3/4" Gate valve	No.	600		
13.	3/4" G.I Elbow	No.	720		
14.	3/4" G.I Bend	No.	480		
15.	3/4" x 1/2" G.I Reducing Bush	No.	720		
16.	1/2" Tap (Pegler)	No.	240		
<b><i>SUB-TOTAL</i></b>					

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT KSHS
	<b><i>Balance Brought Forward</i></b>				
17.	1/2" Water Meter (Kent)	No.	240		
18.	2" PVC Cap	No.	4		

19.	2" PVC Adaptor	No.	20		
20.	1" PVC Adaptor	No.	80		
21.	3/4" PVC Adaptor	No.	480		
22.	Solfix cement	LTR.	60		
23.	Thread Seal/Tape	No.	2,000		
<b><i>SUB-TOTAL</i></b>					

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT KSHS
	<b><i>Balance Brought Forward</i></b>				
	<b><u>Materials for valve chambers.</u></b>				
1.	Water meter 2" (Kent) Flanged	No.	1		

2.	Wash out valve 2" Flanged	No.	1		
3.	Air valve 2" Female screwed	No.	3		
4.	Gate valve 2" U.K	No.	4		
5.	G.I Nipple 2"	No.	10		
6.	G.I Plain socket 2"	No.	10		
7.	G.I Tee 2"	No.	4		
8.	2" PVC Adaptor	No.	20		
9.	G.I Flange 2"	No.	50		
10.	PVC Reducing Socket 2" x 1"	No.	4		
11.	Bolts, Nuts and Washers of 16mm Diameter of 2" length	No.	28		
12.	Gaskets 6mm thickness	Kg	6		
<b><i>SUB-TOTAL</i></b>					

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT KSHS
	<b><i>Balance Brought Forward</i></b>				
13.	Cast iron lockable manhole cover	No.	3		
14.	Solfix cement	LTR.	15		

15.	Coral Blocks 9" x 9" x 16"	No.	1,000		
16.	Portland Cement	Bag.	24		
17.	Building Sand	M <sup>3</sup>	7		
18.	Ballast	No.	10		
<b><i>SUB-TOTAL</i></b>					

<b>ITEM NO.</b>	<b>DESCRIPTION</b>	<b>UNIT</b>	<b>QUANTITY</b>	<b>RATE</b>	<b>AMOUNT KSHS</b>
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<b>C.</b>	<b><u>CONSTRUCTION OF CHLORINATION TOWER</u></b>				
1.0	Clear tower site of all bushes, scrubs, undergrowth and trees and remove all stumps and roots and dispose.	Lump Sum	1		
1.1	Excavate tower site commencing from 200mm below ground level but not exceeding 1.5m deep.	M <sup>3</sup>	3		
1.2	Provide, place and compact 300mm thick hardcore as shown on the drawings.	M <sup>2</sup>	2		
1.3	Provide, place 50mm thick blinding 1:3:6 concrete mix on top of hardcore and compact.	M <sup>2</sup>	2		
1.4	Provide, mix and place 200mm thick vibrated reinforced concrete 1:2:4 mix to base slab. Allow for curing.	M <sup>3</sup>	0.4		
1.5	Provide, mix and place 1:3 cement sand screed 20mm thick on top of tower roof slab. Allow for curing.	M <sup>2</sup>	3.5		
1.6	<b><u>Reinforcement</u></b> Provide and fix Y10 reinforcement bars in concrete foundation of tower bottom as shown on drawings directed by engineer.	M	22		
1.7	Provide and fix Y10 reinforcement bars in concrete roof slab of the tower as shown on the drawing.	M	36		
1.8	Provide, mix and place reinforced concrete 1:2:4 to column as shown on the drawings. Allow for plastering. The column size to be 250 x 250mm.	No.	4		
	<b><i>SUB-TOTAL</i></b>				

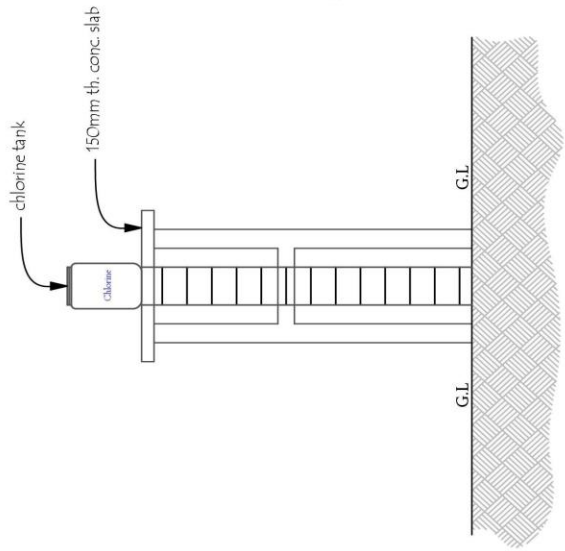
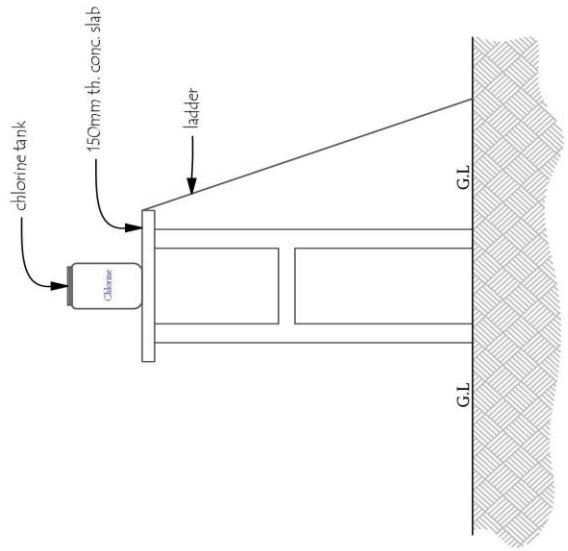
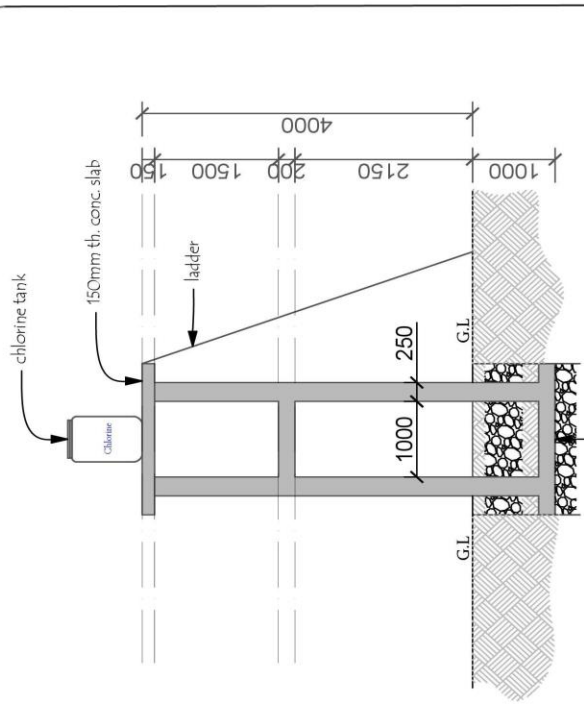
ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
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NO.					KSHS
	<i>Balance Brought Forward</i>				
1.9	Provide and fix Y12 reinforcement bars in concrete columns of tower as shown on drawings directed by engineer.	M	82		
2.0	Provide and fix Y10 reinforcement bars in concrete beams of the tower as shown on the drawing.	M	20		
2.1	Provide and fix Y8 reinforcement bars for links in concrete columns and beams of the tower as shown on the drawing.	M	156		
2.2	Allow for construction of tank shade	Lump sum	1		
	<i>TOTAL</i>				

**SUMMARY OF BILL OF QUANTITIES FOR KIWAYUU PROJECT.**

<b>BOQ ITEM.</b>	<b>DESCRIPTION</b>	<b>AMOUNT (Kshs)</b>
<b>A</b>	Construction of 8.984Km Pipeline	
<b>B</b>	Materials for 8.984Km Pipeline	
<b>C</b>	Construction of Chlorination tower	
	<b><i>SUB-TOTAL</i></b>	
	Contingencies (5%)	
	Project Management Fee	
	Branding & Commissioning	
	<b>GRAND TOTAL</b>	

# CHLORINATION TOWER DRAWING FOR KIWAYUU WATER PROJECT



<b>NOTES</b>	
1. All measurements in (MM) unless otherwise stated.	
2. Dimensions are to be read from this drawing in preference to scaled ones.	
3. No dimensions shall be made from any part of the drawing without client prior consent.	
4. Contractor shall read and verify all dimensions on site.	
5. This drawing shall be used in conjunction with the contract specification with amended drawing.	
6. Foundation depth to be determined on site.	
7. All drainage/flushing works to refer to MCH standards and specifications.	
8. All materials to be provided under all structural work.	
9. Any discrepancy to be notified to the engineer immediately.	
10. All drawings to be checked before printing.	
<b>CLIENT:</b> LAVI WATER & SEWERAGE CO. LTD.	<b>PROJECT:</b> PROPOSED KIWAYUU CHLORINATION TOWER
<b>DESIGNER:</b> Mr. Jacob N. Chiripita	<b>CHECKER:</b> Mr. Paul A. Mwanza
<b>SCALE:</b> As Shown	<b>TITLE:</b> Working Drawing
DATE: AUGUST 2018 DRG. No. SCALE: AS SHOWN REVISION REF: M/18/02/28/03/18	

