



## **PROCUREMENT DOCUMENTS**

**Volume II :**

**BILLS OF QUANTITIES**

**Procurement of**

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**Eastern Nairobi Water &  
Sewerage Network  
Intensification Project**

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**ICB No: AWWDA.....**

**Athi Water Works Development Agency**

**KENYA**

BILL NO. 2.1 - KARIOBANGI NORTH SEWERS					
Item No	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	<b>CLASS A - GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A260.1	Carrying out test on DN300mm pipeline as specified or directed by the Engineer. Include provision of all equipment and materials	m	380		
A260.2	Carrying out test on DN 500mm pipeline as specified or directed by the Engineer. Include provision of all equipment and materials	m	995		
	<b>CLASS B - SITE INVESTIGATION</b>				
B111	Trial holes where ordered to prove location existing underground structures	nr	35		
	<b>CLASS D - DEMOLITION AND SITE CLEARANCE</b>				
D561	Other structures of indeterminate construction Volume not exceeding 50m <sup>3</sup>	nr	14		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>DOUBLE WALLED CORRUGATED PIPES (DWC) in accordance to Technical Specifications</b>				
I100.1	Supply DN 300mm DWC SN 8 Pipes	m	380		
I100.2	Supply DN 500mm DWC SN 8 Pipes	m	995		
	<b>Laying of Pipes</b>				
	The rates entered against the items in this section shall include for general site clearance, removal trees, stripping of top soil, subsequently replacing over refilled trench, excavation laying aside and in trench in material other than rock, shuttering where necessary, refilling and compacting, spreading surplus soil evenly over and alongside pipe trench compacting, lay and joint pipes including jointing materials to correct line and level. Depths are stated from ground level to invert level.				
	Nominal bore 300mm in trenches				
I 232	Depth: n.e. 1.5 m	m	56		
I 233	1.5 - 2.0 m	m	93		
I 234	2.0 - 2.5 m	m	102		
I 235	2.5 - 3.0 m	m	47		
I 236	3.0 - 3.5 m	m	38		
I 237	3.5 - 4.0 m	m	10		
I 238	Exceeding 4.0m	m	38		
Total C/F to Next Page					

BILL NO. 2.1 - KARIOBANGI NORTH SEWERS					
Item No	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	<b>Total B/F From Previous Page</b>				
	Nominal bore 500mm in trenches				
I 232.1	Depth: n.e. 1.5 m	m	146		
I 233.2	1.5 - 2.0 m	m	243		
I 234.3	2.0 - 2.5 m	m	267		
I 235.4	2.5 - 3.0 m	m	122		
I 236.5	3.0 - 3.5 m	m	98		
I 237.6	3.5 - 4.0 m	m	25		
I 238.7	Exceeding 4.0m	m	98		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b>				
	The rates entered shall include excavation in material other than rock, construction of the manhole, reinforced concrete cover slab, and MH covers and frames, step irons, backdrop and fittings where necessary, excavation for working, trimming the base of the excavation, shuttering where necessary, backfilling and compaction around the finished manhole and disposing of surplus soil , spreading and making good.				
	<b>Manholes</b>				
	Reinforced Manhole size 1050mm, including reinforced concrete cover slab and 40 ton load bearing capacity GRP/Composite MH frame and cover with clear opening 600mm x 600mm. Provide backdrop and fittings where necessary.				
K 151	Depth n.e 1.5m	nr	11		
K 152	Depth 1.5 - 2.0 m	nr	17		
K 153	Depth 2.0 - 2.5 m	nr	19		
K 155	Depth 2.5 - 3.0 m	nr	9		
K156	Depth 3.0 - 4.0 m	nr	9		
K157	Depth exceeding 4.0 m	nr	7		
	<b>Crossings, Tunnelling and Reinstatements</b>				
	<u>Pipeline nominal bore DN 300mm and 500mm</u>				
	<u>Include for all work associated with the crossings</u>				
K 662	Fence/Hedge/Wall crossing and reinstatement; Pipe nominal bore 300 - 600mm	nr	5		
K 662.1	Underground services (waterlines, sewerlines, drains, telephone, electric cables etc.), including reinstatement to original state and liaison with the relevant body for the inspection/approval during execution of the works. Pipe nominal bore 250-900mm (Provisional)	nr	50		
K 662.2	River/stream crossing including temporary diversion of river /stream and reinstate these after construction of the sewer has been completed. This rate to include concrete surround of pipe along the crossing; Pipe nominal bore 250-900mm	nr	50		
K 732.1	Breaking up, temporary and permanent reinstatement of Murram roads	m	83		
	<b>Total C/F to Next Page</b>				

BILL NO. 2.1 - KARIOBANGI NORTH SEWERS					
Item No	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	<b>Total B/F From Previous Page</b>				
K 732.2	Breaking up, temporary and permanent reinstatement of minor tarmac roads	m	60		
K 732.3	Breaking up, temporary and permanent reinstatement of walkways ( tarmac, cabros)	m	1375		
	<b>CLASS L: SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	<b>Extras to Excavation and Backfilling</b> ( Note: Blasting not allowed for any rock excavation)				
	<i>In Pipe Trenches</i>				
L111.1	Excavation of soft rock (Provisional)	m <sup>3</sup>	521		
L111.2	Excavation of hard rock (Provisional)	m <sup>3</sup>	1214		
L118	Allow for excavation of soft material below final surface of pipe trench and backfill with approved hardcore, well compacted in layers of 200mm thickness, depth not exceeding 1.0m (Provisional)	m <sup>3</sup>	438		
	<i>In manholes and Other Chambers</i> ( Note: Blasting not allowed for any rock excavation)				
L121	Excavation of soft rock (Provisional)	m <sup>3</sup>	40		
	Excavation of hard rock (Provisional)	m <sup>3</sup>	92		
	<b>Bed, Haunches and Surrounds</b>				
	<i>Granular Material</i>				
	<u>Pipeline nominal bore 300mm and 500mm</u>				
L33	Imported granular material as per specifications for sidefill and Beds 150 mm thick. Also this shall include 200mm compacted fill from the crown of the pipeline	m	1375		
L34	<i>Mass Concrete Grade 15/20 in 150mm Thick Beds, Haunches and Surrounds as per the drawings</i>				
L341	DN 300 nominal bore pipeline. Bed, haunch and surroud type A	m	40		
L342	DN 300 nominal bore pipeline. Bed, haunch and surroud type B	m			
L343	DN 300 nominal bore pipeline. Bed, haunch and surroud type C	m			
L344	DN 300 nominal bore pipeline. Bed, haunch and surroud type D	m	50		
L345	DN 500 nominal bore pipeline. Bed, haunch and surroud type A	m	50		
L346	DN 500 nominal bore pipeline. Bed, haunch and surroud type B	m			
L347	DN 500 nominal bore pipeline. Bed, haunch and surroud type C	m			
L348	DN 500 nominal bore pipeline. Bed, haunch and surroud type D	m	50		
<b>Total C/F to Summary Page</b>					

**BILL NO. 2.2 - KARIOBANGI SOUTH SEWERS**

Item No	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	<b>CLASS A - GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A260.1	Carrying out test on DN300mm pipeline as specified or directed by the Engineer. Include provision of all equipment and materials	m	4192		
A260.2	Carrying out test on DN 500mm pipeline as specified or directed by the Engineer. Include provision of all equipment and materials	m	1835		
	<b>CLASS B - SITE INVESTIGATION</b>				
B111	Trial holes where ordered to prove location existing underground structures	nr	61		
	<b>CLASS D - DEMOLITION AND SITE CLEARANCE</b>				
D561	Other structures of indeterminate construction Volume not exceeding 50m <sup>3</sup>	nr	10		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>DOUBLE WALLED CORRUGATED PIPES (DWC) in accordance to Technical Specifications</b>				
I100.1	Supply DN 300mm DWC SN 8 Pipes	m	4192		
I100.2	Supply DN 500mm DWC SN 8 Pipes	m	1835		
	<b>Laying of Pipes</b>				
	The rates entered against the items in this section shall include for general site clearance, removal trees, stripping of top soil, subsequently replacing over refilled trench, excavation laying aside and in trench in material other than rock, shuttering where necessary, refilling and compacting, spreading surplus soil evenly over and alongside pipe trench compacting, lay and joint pipes including jointing materials to correct line and level. Depths are stated from ground level to invert level.				
	Nominal bore 300mm in trenches				
I 232	Depth: n.e. 1.5 m	m	645		
I 233	1.5 - 2.0 m	m	1328		
I 234	2.0 - 2.5 m	m	721		
I 235	2.5 - 3.0 m	m	494		
I 236	3.0 - 3.5 m	m	209		
I 237	3.5 - 4.0 m	m	380		
I 238	Exceeding 4.0m	m	418		
	Nominal bore 500mm in trenches				
I 232.1	Depth: n.e. 1.5 m	m	283		
I 233.2	1.5 - 2.0 m	m	582		
I 234.3	2.0 - 2.5 m	m	316		
I 235.4	2.5 - 3.0 m	m	216		
I 236.5	3.0 - 3.5 m	m	92		
I 237.6	3.5 - 4.0 m	m	167		
I 238.7	Exceeding 4.0m	m	183		
<b>Total C/F to Next Page</b>					

**BILL NO. 2.2 - KARIOBANGI SOUTH SEWERS**

Item No	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	<b>Total B/F From Previous Page</b>				
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b>				
	The rates entered shall include excavation in material other than rock, construction of the manhole, reinforced concrete cover slab, and MH covers and frames, step irons, backdrop and fittings where necessary, excavation for working, trimming the base of the excavation, shuttering where necessary, backfilling and compaction around the finished manhole and disposing of surplus soil , spreading and making good.				
	<b>Manholes</b>				
	Reinforced Manhole size 1050mm, including reinforced concrete cover slab and 40 ton load bearing capacity GRP/Composite MH frame and cover with clear opening 600mm x 600mm. Provide backdrop and fittings where necessary.				
K 151	Depth n.e 1.5m	nr	31		
K 152	Depth 1.5 - 2.0 m	nr	64		
K 153	Depth 2.0 - 2.5 m	nr	35		
K 155	Depth 2.5 - 3.0 m	nr	24		
K156	Depth 3.0 - 4.0 m	nr	29		
K157	Depth exceeding 4.0 m	nr	20		
	<b>Crossings, Tunnelling and Reinstatements</b>				
	<u>Pipeline nominal bore DN 300mm and 500mm</u>				
	<u>Include for all work associated with the crossings</u>				
K 662	Fence/Hedge/Wall crossing and reinstatement; Pipe nominal bore 300 - 600mm	nr	21		
K 662.1	Underground services (waterlines, sewerlines, drains, telephone, electric cables etc.), including reinstatement to original state and liaison with the relevant body for the inspection/approval during execution of the works. Pipe nominal bore 250-900mm (Provisional)	nr	31		
K 662.2	River/stream crossing including temporary diversion of river /stream and reinstate these after construction of the sewer has been completed. This rate to include concrete surround of pipe along the crossing; Pipe nominal bore 250-900mm	nr	10		
K 732.1	Breaking up, temporary and permanent reinstatement of Murram roads	m	121		
K 732.2	Breaking up, temporary and permanent reinstatement of minor tarmac roads	m	76		
K 732.3	Crossing under roads and Railways by micro tunnelling as indicated on the standard drawings	m	0		
K 732.4	River Crossing as indicated on the standard drawings	m	40		
K 732.5	Breaking up, temporary and permanent reinstatement of walkways to original state ( tarmac, cabros)	m	6027		
	<b>Total C/F to Next Page</b>				

**BILL NO. 2.2 - KARIOBANGI SOUTH SEWERS**

Item No	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	<b>Total B/F From Previous Page</b>				
	<b>CLASS L: SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	<b>Extras to Excavation and Backfilling</b> ( Note: Blasting not allowed for any rock excavation) <i>In Pipe Trenches</i>				
L111.1	Excavation of soft rock (Provisional)	m <sup>3</sup>	2277		
L111.2	Excavation of hard rock (Provisional)	m <sup>3</sup>	5312		
L118	Allow for excavation of soft material below final surface of pipe trench and backfill with approved hardcore, well compacted in layers of 200mm thickness, depth not exceeding 1.0m (Provisional)	m <sup>3</sup>	754		
	<i>In manholes and Other Chambers</i> ( Note: Blasting not allowed for any rock excavation)				
L121	Excavation of soft rock (Provisional)	m <sup>3</sup>	124		
	Excavation of hard rock (Provisional)	m <sup>3</sup>	288		
	<b>Bed, Haunches and Surrounds</b>				
	<i>Granular Material</i>				
	<u>Pipeline nominal bore 300mm and 500mm</u>				
L33	Imported granular material as per specifications for sidefill and Beds 150 mm thick. Also this shall include 200mm compacted fill from the crown of the pipeline	m	6027		
L34	<i>Mass Concrete Grade 15/20 in 150mm Thick Beds, Haunches and Surrounds as per the drawings</i>				
L341	DN 300 nominal bore pipeline. Bed, haunch and surround type A	m	50		
L342	DN 300 nominal bore pipeline. Bed, haunch and surround type B	m	0		
L343	DN 300 nominal bore pipeline. Bed, haunch and surround type C	m	0		
L344	DN 300 nominal bore pipeline. Bed, haunch and surround type D	m	100		
L345	DN 500 nominal bore pipeline. Bed, haunch and surround type A	m	50		
L346	DN 500 nominal bore pipeline. Bed, haunch and surround type B	m	0		
L347	DN 500 nominal bore pipeline. Bed, haunch and surround type C	m	0		
L348	DN 500 nominal bore pipeline. Bed, haunch and surround type D	m	100		
<b>Total C/F to Summary Page</b>					

**BILL NO. 2.3 - MAILI SABA SEWERS**

Item No	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	<b>CLASS A - GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A260.1	Carrying out test on DN300mm pipeline as specified or directed by the Engineer. Include provision of all equipment and materials	m	5110		
A260.2	Carrying out test on DN 500mm pipeline as specified or directed by the Engineer. Include provision of all equipment and materials	m	2130		
	<b>CLASS B - SITE INVESTIGATION</b>				
B111	Trial holes where ordered to prove location existing underground structures	nr	72		
	<b>CLASS D - DEMOLITION AND SITE CLEARANCE</b>				
D561	Other structures of indeterminate construction Volume not exceeding 50m <sup>3</sup>	nr	72		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>DOUBLE WALLED CORRUGATED PIPES (DWC) in accordance to Technical Specifications</b>				
I100.1	Supply DN 300mm DWC SN 8 Pipes	m	5110		
I100.2	Supply DN 500mm DWC SN 8 Pipes	m	2130		
	<b>Laying of Pipes</b>				
	The rates entered against the items in this section shall include for general site clearance, removal trees, stripping of top soil, subsequently replacing over refilled trench, excavation laying aside and in trench in material other than rock, shuttering where necessary, refilling and compacting, spreading surplus soil evenly over and alongside pipe trench compacting, lay and joint pipes including jointing materials to correct line and level. Depths are stated from ground level to invert level.				
I 232	Nominal bore 300mm in trenches Depth: n.e. 1.5 m	m	65		
I 233	1.5 - 2.0 m	m	1180		
I 234	2.0 - 2.5 m	m	1520		
I 235	2.5 - 3.0 m	m	1632		
I 236	3.0 - 3.5 m	m	457		
I 237	3.5 - 4.0 m	m	130		
I 238	Exceeding 4.0m	m	127		
<b>Total C/F to Next Page</b>					



**BILL NO. 2.3 - MAILI SABA SEWERS**

Item No	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	<b>Total B/F From Previous Page</b>				
	Nominal bore 500mm in trenches				
I 232.1	Depth: n.e. 1.5 m	m	426		
I 233.2	1.5 - 2.0 m	m	533		
I 234.3	2.0 - 2.5 m	m	320		
I 235.4	2.5 - 3.0 m	m	213		
I 236.5	3.0 - 3.5 m	m	107		
I 237.6	3.5 - 4.0 m	m	213		
I 238.7	Exceeding 4.0m	m	320		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b>				
	The rates entered shall include excavation in material other than rock, construction of the manhole, reinforced concrete cover slab, and MH covers and frames, step irons, backdrop and fittings where necessary, excavation for working, trimming the base of the excavation, shuttering where necessary, backfilling and compaction around the finished manhole and disposing of surplus soil , spreading and making good.				
	<b>Manholes</b>				
	Reinforced Manhole size 1050mm, including reinforced concrete cover slab and 40 ton load bearing capacity GRP/Composite MH frame and cover with clear opening 600mm x 600mm. Provide backdrop and fittings where necessary.				
K 151	Depth n.e 1.5m	nr	2		
K 152	Depth 1.5 - 2.0 m	nr	100		
K 153	Depth 2.0 - 2.5 m	nr	114		
K 155	Depth 2.5 - 3.0 m	nr	100		
K156	Depth 3.0 - 4.0 m	nr	38		
K157	Depth exceeding 4.0 m	nr	11		
	<b>Tunnelling and Reinstatements</b>				
	<u>Pipeline nominal bore DN 300mm and 500mm</u>				
K 732.1	Breaking up, temporary and permanent reinstatement of Murram roads	m	434		
K 662.1	Underground services (waterlines, sewerlines, drains, telephone, electric cables etc.), including reinstatement to original state and liaison with the relevant body for the inspection/approval during execution of the works. Pipe nominal bore 250-900mm (Provisional)	nr	37		
K 662.2	River/stream crossing including temporary diversion of river /stream and reinstate these after construction of the sewer has been completed. This rate to include concrete surround of pipe along the crossing; Pipe nominal bore 250-900mm	nr	10		
<b>Total C/F to Next Page</b>					

**BILL NO. 2.3 - MAILI SABA SEWERS**

Item No	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	<b>Total B/F From Previous Page</b>				
K 732.2	Breaking up, temporary and permanent reinstatement of minor tarmac roads	m	20		
K 732.3	Crossing under roads and Railways by micro tunnelling as indicated on the standard drawings	m	20		
K 732.5	Breaking up, temporary and permanent reinstatement of walkways to original state (tarmac, cabros)	m	3620		
	<b>CLASS L: SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	<b>Extras to Excavation and Backfilling</b> ( Note: Blasting not allowed for any rock excavation)				
	<i>In Pipe Trenches</i>				
L111.1	Excavation of soft rock (Provisional)	m <sup>3</sup>	2812		
L111.2	Excavation of hard rock (Provisional)	m <sup>3</sup>	6560		
L118	Allow for excavation of soft material below final surface of pipe trench and backfill with approved hardcore, well compacted in layers of 200mm thickness, depth not exceeding 1.0m (Provisional)	m <sup>3</sup>	905		
	<i>In manholes and Other Chambers</i> ( Note: Blasting not allowed for any rock excavation)				
L121	Excavation of soft rock (Provisional)	m <sup>3</sup>	226		
	Excavation of hard rock (Provisional)	m <sup>3</sup>	527		
	<b>Bed, Haunches and Surrounds</b>				
	<i>Granular Material</i>				
	<u>Pipeline nominal bore 300mm and 500mm</u>				
L33	Imported granular material as per specifications for sidefill and Beds 150 mm thick. Also this shall include 200mm compacted fill from the crown of the pipeline	m	7240		
L34	<i>Mass Concrete Grade 15/20 in 150mm Thick Beds, Haunches and Surrounds as per the drawings</i>				
L341	DN 300 nominal bore pipeline. Bed, haunch and surroud type A	m	50		
L342	DN 300 nominal bore pipeline. Bed, haunch and surroud type B	m	0		
L343	DN 300 nominal bore pipeline. Bed, haunch and surroud type C	m	0		
L344	DN 300 nominal bore pipeline. Bed, haunch and surroud type D	m	100		
L345	DN 500 nominal bore pipeline. Bed, haunch and surroud type A	m	50		
L346	DN 500 nominal bore pipeline. Bed, haunch and surroud type B	m	0		
L347	DN 500 nominal bore pipeline. Bed, haunch and surroud type C	m	0		
L348	DN 500 nominal bore pipeline. Bed, haunch and surroud type D	m	100		
<b>Total C/F to Summary Page</b>					

**BILL NO. 2.4 - UMOJA INNERCORE SEWERS**

Item No	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	<b>CLASS A - GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A260.1	Carrying out test on DN300mm pipeline as specified or directed by the Engineer. Include provision of all equipment and materials	m	1811		
A260.2	Carrying out test on DN 500mm pipeline as specified or directed by the Engineer. Include provision of all equipment and materials	m	3338		
	<b>CLASS B - SITE INVESTIGATION</b>				
B111	Trial holes where ordered to prove location existing underground structures	nr	52		
	<b>CLASS D - DEMOLITION AND SITE CLEARANCE</b>				
D561	Other structures of indeterminate construction Volume not exceeding 50m <sup>3</sup>	nr	52		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>DOUBLE WALLED CORRUGATED PIPES (DWC) in accordance to Technical Specifications</b>				
I100.1	Supply DN 300mm DWC SN 8 Pipes	m	1811		
I100.2	Supply DN 500mm DWC SN 8 Pipes	m	3338		
	<b>Laying of Pipes</b>				
	The rates entered against the items in this section shall include for general site clearance, removal trees, stripping of top soil, subsequently replacing over refilled trench, excavation laying aside and in trench in material other than rock, shuttering where necessary, refilling and compacting, spreading surplus soil evenly over and alongside pipe trench compacting, lay and joint pipes including jointing materials to correct line and level. Depths are stated from ground level to invert level.				
	Nominal bore 300mm in trenches				
I 232	Depth: n.e. 1.5 m	m	296		
I 233	1.5 - 2.0 m	m	430		
I 234	2.0 - 2.5 m	m	515		
I 235	2.5 - 3.0 m	m	333		
I 236	3.0 - 3.5 m	m	100		
I 237	3.5 - 4.0 m	m	107		
I 238	Exceeding 4.0m	m	30		
	Nominal bore 500mm in trenches				
I 232.1	Depth: n.e. 1.5 m	m	224		
I 233.2	1.5 - 2.0 m	m	545		
I 234.3	2.0 - 2.5 m	m	615		
I 235.4	2.5 - 3.0 m	m	859		
I 236.5	3.0 - 3.5 m	m	405		
I 237.6	3.5 - 4.0 m	m	210		
I 238.7	Exceeding 4.0m	m	480		
<b>Total C/F to Next Page</b>					

**BILL NO. 2.4 - UMOJA INNERCORE SEWERS**

Item No	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	<b>Total B/F From Previous Page</b>				
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b>				
	The rates entered shall include excavation in material other than rock, construction of the manhole, reinforced concrete cover slab, and MH covers and frames, step irons, backdrop and fittings where necessary, excavation for working, trimming the base of the excavation, shuttering where necessary, backfilling and compaction around the finished manhole and disposing of surplus soil , spreading and making good.				
	<b>Manholes</b>				
	Reinforced Manhole size 1050mm, including reinforced concrete cover slab and 40 ton load bearing capacity GRP/Composite MH frame and cover with clear opening 600mm x 600mm. Provide backdrop and fittings where necessary.				
K 151	Depth n.e 1.5m	nr	0		
K 152	Depth 1.5 - 2.0 m	nr	0		
K 153	Depth 2.0 - 2.5 m	nr	25		
K 155	Depth 2.5 - 3.0 m	nr	17		
K156	Depth 3.0 - 4.0 m	nr	50		
K157	Depth exceeding 4.0 m	nr	26		
	<b>Crossings, Tunnelling and Reinstatements</b>				
	<u>Pipeline nominal bore DN 300mm and 500mm</u>				
	<u>Include for all work associated with the crossings</u>				
K 662	Fence/Hedge/Wall crossing and reinstatement; Pipe nominal bore 300 - 600mm	nr	18		
K 662.1	Underground services (waterlines, sewerlines, drains, telephone, electric cables etc.), including reinstatement to original state and liaison with the relevant body for the inspection/approval during execution of the works. Pipe nominal bore 250-900mm (Provisional)	nr	26		
K 662.2	River/stream crossing including temporary diversion of river /stream and reinstate these after construction of the sewer has been completed. This rate to include concrete surround of pipe along the crossing; Pipe nominal bore 250-900mm	nr	20		
K 732.1	Breaking up, temporary and permanent reinstatement of Murram roads	m	103		
K 732.2	Breaking up, temporary and permanent reinstatement of minor tarmac roads	m	65		
K 732.5	Breaking up, temporary and permanent reinstatement of walkways to original state (tarmac, cabros)	m	1716		
<b>Total C/F to Next Page</b>					

**BILL NO. 2.4 - UMOJA INNERCORE SEWERS**

Item No	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	<b>Total B/F From Previous Page</b>				
K 732.6	Microtunnelling on tarmac road either boring or precast segment tunnels methods (nominal bore 400-900mm). To include for all associated works and safety measures	m	30		
	<b>CLASS L: SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	<b>Extras to Excavation and Backfilling</b> ( Note: Blasting not allowed for any rock excavation)				
	<i>In Pipe Trenches</i>				
L111.1	Excavation of soft rock (Provisional)	m <sup>3</sup>	2076		
L111.2	Excavation of hard rock (Provisional)	m <sup>3</sup>	4843		
L118	Allow for excavation of soft material below final surface of pipe trench and backfill with approved hardcore, well compacted in layers of 200mm thickness, depth not exceeding 1.0m (Provisional)	m <sup>3</sup>	644		
	<i>In manholes and Other Chambers</i> ( Note: Blasting not allowed for any rock excavation)				
L121	Excavation of soft rock (Provisional)	m <sup>3</sup>	98		
	Excavation of hard rock (Provisional)	m <sup>3</sup>	227		
	<b>Bed, Haunches and Surrounds</b>				
	<i>Granular Material</i>				
	<u>Pipeline nominal bore 300mm and 500mm</u>				
L33	Imported granular material as per specifications for sidefill and Beds 150 mm thick. Also this shall include 200mm compacted fill from the crown of the pipeline	m	5149		
L34	<i>Mass Concrete Grade 15/20 in 150mm Thick Beds, Haunches and Surrounds as per the drawings</i>				
L341	DN 300 nominal bore pipeline. Bed, haunch and surroud type A	m	50		
L342	DN 300 nominal bore pipeline. Bed, haunch and surroud type B	m			
L343	DN 300 nominal bore pipeline. Bed, haunch and surroud type C	m			
L344	DN 300 nominal bore pipeline. Bed, haunch and surroud type D	m	100		
L345	DN 500 nominal bore pipeline. Bed, haunch and surroud type A	m	50		
L346	DN 500 nominal bore pipeline. Bed, haunch and surroud type B	m			
L347	DN 500 nominal bore pipeline. Bed, haunch and surroud type C	m			
L348	DN 500 nominal bore pipeline. Bed, haunch and surroud type D	m	100		
<b>Total C/F to Summary Page</b>					

**BILL NO. 2.5 - EMBAKASI TASSIA SEWERS**

Item No	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	<b>CLASS A - GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A260.1	Carrying out test on DN300mm pipeline as specified or directed by the Engineer. Include provision of all equipment and materials	m	3760		
	<b>CLASS B - SITE INVESTIGATION</b>				
B111	Trial holes where ordered to prove location existing underground structures	nr	38		
	<b>CLASS D - DEMOLITION AND SITE CLEARANCE</b>				
D561	Other structures of indeterminate construction Volume not exceeding 50m <sup>3</sup>	nr	10		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>DOUBLE WALLED CORRUGATED PIPES (DWC) in accordance to Technical Specifications</b>				
I100.1	Supply DN 300mm DWC SN 8 Pipes	m	3760		
	<b>Laying of Pipes</b>				
	The rates entered against the items in this section shall include for general site clearance, removal trees, stripping of top soil, subsequently replacing over refilled trench, excavation laying aside and in trench in material other than rock, shuttering where necessary, refilling and compacting, spreading surplus soil evenly over and alongside pipe trench compacting, lay and joint pipes including jointing materials to correct line and level. Depths are stated from ground level to invert level.				
I 232	Nominal bore 300mm in trenches Depth: n.e. 1.5 m	m	701		
I 233	1.5 - 2.0 m	m	496		
I 234	2.0 - 2.5 m	m	440		
I 235	2.5 - 3.0 m	m	724		
I 236	3.0 - 3.5 m	m	738		
I 237	3.5 - 4.0 m	m	409		
I 238	Exceeding 4.0m	m	252		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b>				
	The rates entered shall include excavation in material other than rock, construction of the manhole, reinforced concrete cover slab, and MH covers and frames, step irons, backdrop and fittings where necessary, excavation for working, trimming the base of the excavation, shuttering where necessary, backfilling and compaction around the finished manhole and disposing of surplus soil , spreading and making good.				
<b>Total C/F to Next Page</b>					

**BILL NO. 2.5 - EMBAKASI TASSIA SEWERS**

Item No	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
<b>Total B/F From Previous Page</b>					
<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b>					
The rates entered shall include excavation in material other than rock, construction of the manhole, reinforced concrete cover slab, and MH covers and frames, step irons, backdrop and fittings where necessary, excavation for working, trimming the base of the excavation, shuttering where necessary, backfilling and compaction around the finished manhole and disposing of surplus soil, spreading and making good.					
<b>Manholes</b>					
Reinforced Manhole size 1050mm, including reinforced concrete cover slab and 40 ton load bearing capacity GRP/Composite MH frame and cover with clear opening 600mm x 600mm. Provide backdrop and fittings where necessary.					
K 151	Depth n.e 1.5m	nr	0		
K 152	Depth 1.5 - 2.0 m	nr	0		
K 153	Depth 2.0 - 2.5 m	nr	9		
K 155	Depth 2.5 - 3.0 m	nr	18		
K156	Depth 3.0 - 4.0 m	nr	34		
K157	Depth exceeding 4.0 m	nr	37		
<b>Tunnelling and Reinstatements</b>					
<u>Pipeline nominal bore DN 300mm</u>					
K 732.1	Breaking up, temporary and permanent reinstatement of Murram roads	m	76		
K 732.2	Breaking up, temporary and permanent reinstatement of minor tarmac roads	m	113		
K 732.5	Breaking up, temporary and permanent reinstatement of walkways to original state (tarmac, cabros)	m	1880		
<b>CLASS L: SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>					
<b>Extras to Excavation and Backfilling</b> ( Note: Blasting not allowed for any rock excavation)					
<i>In Pipe Trenches</i>					
L111.1	Excavation of soft rock (Provisional)	m <sup>3</sup>	1550		
L111.2	Excavation of hard rock (Provisional)	m <sup>3</sup>	3617		
L118	Allow for excavation of soft material below final surface of pipe trench and backfill with approved hardcore, well compacted in layers of 200mm thickness, depth not exceeding 1.0m (Provisional)	m <sup>3</sup>	470		
<b>Total C/F to Next Page</b>					

**BILL NO. 2.5 - EMBAKASI TASSIA SEWERS**

Item No	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	<b>Total B/F From Previous Page</b>				
	<i>In manholes and Other Chambers</i> ( Note: Blasting not allowed for any rock excavation)				
L121	Excavation of soft rock (Provisional)	m <sup>3</sup>	86		
	Excavation of hard rock (Provisional)	m <sup>3</sup>	200		
	<b>Bed, Haunches and Surrounds</b>				
	<i>Granular Material</i>				
	<u>Pipeline nominal bore 300mm</u>				
L33	Imported granular material as per specifications for sidefill and Beds 150 mm thick. Also this shall include 200mm compacted fill from the crown of the pipeline	m	3760		
L34	<i>Mass Concrete Grade 15/20 in 150mm Thick Beds, Haunches and Surrounds as per the drawings</i>				
L341	DN 300 nominal bore pipeline. Bed, haunch and surroud type A	m	50		
L342	DN 300 nominal bore pipeline. Bed, haunch and surroud type B	m			
L343	DN 300 nominal bore pipeline. Bed, haunch and surroud type C	m			
L344	DN 300 nominal bore pipeline. Bed, haunch and surroud type D	m	100		
<b>Total C/F to Summary Page</b>					



**BILL NO. 2.6 - PLOT 10**

Item No	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	<b>CLASS A - GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A260.1	Carrying out test on DN300mm pipeline as specified or directed by the Engineer. Include provision of all equipment and materials	m	5,000		
A260.2	Carrying out test on DN 500mm pipeline as specified or directed by the Engineer. Include provision of all equipment and materials	m	3,120		
	<b>CLASS B - SITE INVESTIGATION</b>				
B111	Trial holes where ordered to prove location existing underground structures	nr	82		
	<b>CLASS D - DEMOLITION AND SITE CLEARANCE</b>				
D561	Other structures of indeterminate construction Volume not exceeding 50m <sup>3</sup>	nr	82		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>DOUBLE WALLED CORRUGATED PIPES (DWC) in accordance to Technical Specifications</b>				
I100.1	Supply DN 300mm DWC SN 8 Pipes	m	5,000		
I100.2	Supply DN 500mm DWC SN 8 Pipes	m	3,120		
	<b>Laying of Pipes</b>				
	The rates entered against the items in this section shall include for general site clearance, removal trees, stripping of top soil, subsequently replacing over refilled trench, excavation laying aside and in trench in material other than rock, shuttering where necessary, refilling and compacting, spreading surplus soil evenly over and alongside pipe trench compacting, lay and joint pipes including jointing materials to correct line and level. Depths are stated from ground level to invert level.				
I 232	Nominal bore 300mm in trenches Depth: n.e. 1.5 m	m	550		
I 233	1.5 - 2.0 m	m	950		
I 234	2.0 - 2.5 m	m	1,200		
I 235	2.5 - 3.0 m	m	1,100		
I 236	3.0 - 3.5 m	m	700		
I 237	3.5 - 4.0 m	m	350		
I 238	Exceeding 4.0m	m	100		
	Nominal bore 500mm in trenches				
I 232.1	Depth: n.e. 1.5 m	m	343		
I 233.2	1.5 - 2.0 m	m	593		
I 234.3	2.0 - 2.5 m	m	749		
I 235.4	2.5 - 3.0 m	m	686		
I 236.5	3.0 - 3.5 m	m	437		
I 237.6	3.5 - 4.0 m	m	218		
I 238.7	Exceeding 4.0m	m	62		
<b>Total C/F to Next Page</b>					-

Item No	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	<b>Total B/F From Previous Page</b>				-
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b>				
	The rates entered shall include excavation in material other than rock, construction of the manhole, reinforced concrete cover slab, and MH covers and frames, step irons, backdrop and fittings where necessary, excavation for working, trimming the base of the excavation, shuttering where necessary, backfilling and compaction around the finished manhole and disposing of surplus soil, spreading and making good.				
	<b>Manholes</b>				
	Reinforced Manhole size 1050mm, including reinforced concrete cover slab and 40 ton load bearing capacity GRP/Composite MH frame and cover with clear opening 600mm x 600mm. Provide backdrop and fittings where necessary.				
K 151	Depth n.e 1.5m	nr	36		
K 152	Depth 1.5 - 2.0 m	nr	62		
K 153	Depth 2.0 - 2.5 m	nr	78		
K 155	Depth 2.5 - 3.0 m	nr	72		
K156	Depth 3.0 - 4.0 m	nr	69		
K157	Depth exceeding 4.0 m	nr	7		
	<b>Tunnelling and Reinstatements</b>				
	<u>Pipeline nominal bore DN 300mm and 500mm</u>				
K 732.1	Breaking up, temporary and permanent reinstatement of Murram roads	m	163		
K 732.2	Breaking up, temporary and permanent reinstatement of minor tarmac roads	m	102		
K 732.5	Breaking up, temporary and permanent reinstatement of walkways to original state (tarmac, cabros)	m	4,060		
K 732.6	Microtunnelling on tarmac road either boring or precast segment tunnels methods (nominal bore 400-900mm). To include for all associated works and safety measures	m	100		
	<b>CLASS L: SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	<b>Extras to Excavation and Backfilling</b> ( Note: Blasting not allowed for any rock excavation)				
	<i>In Pipe Trenches</i>				
L111.1	Excavation of soft rock (Provisional)	m <sup>3</sup>	3,121		
L111.2	Excavation of hard rock (Provisional)	m <sup>3</sup>	7,282		
<b>Total C/F to Next Page</b>					

**BILL NO. 2.6 - PLOT 10**

Item No	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	<b>Total B/F From Previous Page</b>				
L118	Allow for excavation of soft material below final surface of pipe trench and backfill with approved hardcore, well compacted in layers of 200mm thickness, depth not exceeding 1.0m (Provisional)  <i>In manholes and Other Chambers</i> ( Note: Blasting not allowed for any rock excavation)	m <sup>3</sup>	1,015		
L121	Excavation of soft rock (Provisional) Excavation of hard rock (Provisional)	m <sup>3</sup> m <sup>3</sup>	205 479		
	<b>Bed, Haunches and Surrounds</b>				
	<i>Granular Material</i>				
	<u>Pipeline nominal bore 300mm and 500mm</u>				
L33	Imported granular material as per specifications for sidefill and Beds 150 mm thick. Also this shall include 200mm compacted fill from the crown of the pipeline	m	8,120		
L34	<i>Mass Concrete Grade 15/20 in 150mm Thick Beds, Haunches and Surrounds as per the drawings</i>				
L341	DN 300 nominal bore pipeline. Bed, haunch and surroud type A	m	50		
L342	DN 300 nominal bore pipeline. Bed, haunch and surroud type B	m			
L343	DN 300 nominal bore pipeline. Bed, haunch and surroud type C	m			
L344	DN 300 nominal bore pipeline. Bed, haunch and surroud type D	m	100		
L345	DN 500 nominal bore pipeline. Bed, haunch and surroud type A	m	50		
L346	DN 500 nominal bore pipeline. Bed, haunch and surroud type B	m			
L347	DN 500 nominal bore pipeline. Bed, haunch and surroud type C	m			
L348	DN 500 nominal bore pipeline. Bed, haunch and surroud type D	m	50		
<b>Total C/F to Summary Page</b>					

**BILL NO. 2.7 - UMOJA III SEWERS**

Item No	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	<b>CLASS A - GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A260.1	Carrying out test on DN300mm pipeline as specified or directed by the Engineer. Include provision of all equipment and materials	m	5200		
A260.2	Carrying out test on DN 500mm pipeline as specified or directed by the Engineer. Include provision of all equipment and materials	m	1300		
A260.3	Carrying out test on DN 600mm pipeline as specified or directed by the Engineer. Include provision of all equipment and materials	m	3700		
	<b>CLASS B - SITE INVESTIGATION</b>				
B111	Trial holes where ordered to prove location existing underground structures	nr	102		
	<b>CLASS D - DEMOLITION AND SITE CLEARANCE</b>				
D561	Other structures of indeterminate construction Volume not exceeding 50m <sup>3</sup>	nr	102		
	<b>CLASS I: PIPEWORK - PIPES</b> <b>DOUBLE WALLED CORRUGATED PIPES (DWC) in accordance to Technical Specifications</b>				
I100.1	Supply DN 300mm DWC SN 8 Pipes	m	5200		
I100.2	Supply DN 500mm DWC SN 8 Pipes	m	1300		
I100.2	Supply DN 600mm DWC SN 8 Pipes	m	3700		
	<b>Laying of Pipes</b>				
	The rates entered against the items in this section shall include for general site clearance, removal trees, stripping of top soil, subsequently replacing over refilled trench, excavation laying aside and in trench in material other than rock, shuttering where necessary, refilling and compacting, spreading surplus soil evenly over and alongside pipe trench compacting, lay and joint pipes including jointing materials to correct line and level. Depths are stated from ground level to invert level.				
<b>Total C/F to Next Page</b>					-

**BILL NO. 2.7 - UMOJA III SEWERS**

Item No	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	<b>Total B/F From Previous Page</b>				-
	Nominal bore 300mm in trenches				
I 232	Depth: n.e. 1.5 m	m	1040		
I 233	1.5 - 2.0 m	m	1300		
I 234	2.0 - 2.5 m	m	780		
I 235	2.5 - 3.0 m	m	520		
I 236	3.0 - 3.5 m	m	260		
I 237	3.5 - 4.0 m	m	520		
I 238	Exceeding 4.0m	m	780		
	Nominal bore 500mm in trenches				
I 232.1	Depth: n.e. 1.5 m	m	260		
I 233.2	1.5 - 2.0 m	m	325		
I 234.3	2.0 - 2.5 m	m	195		
I 235.4	2.5 - 3.0 m	m	130		
I 236.5	3.0 - 3.5 m	m	65		
I 237.6	3.5 - 4.0 m	m	130		
I 238.7	Exceeding 4.0m	m	195		
	Nominal bore 600mm in trenches				
I 232.8	Depth: n.e. 1.5 m	m	740		
I 233.9	1.5 - 2.0 m	m	925		
I 234.10	2.0 - 2.5 m	m	555		
I 235.11	2.5 - 3.0 m	m	370		
I 236.12	3.0 - 3.5 m	m	185		
I 237.13	3.5 - 4.0 m	m	370		
I 238.14	Exceeding 4.0m	m	555		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b>				-
	The rates entered shall include excavation in material other than rock, construction of the manhole, reinforced concrete cover slab, and MH covers and frames, step irons, backdrop and fittings where necessary, excavation for working, trimming the base of the excavation, shuttering where necessary, backfilling and compaction around the finished manhole and disposing of surplus soil , spreading and making good.				-
	<b>Manholes</b>				-
	Reinforced Manhole size 1050mm, including reinforced concrete cover slab and 40 ton load bearing capacity GRP/Composite MH frame and cover with clear opening 600mm x 600mm. Provide backdrop and fittings where necessary.				-
K 151	Depth n.e 1.5m	nr	82		
K 152	Depth 1.5 - 2.0 m	nr	123		
K 153	Depth 2.0 - 2.5 m	nr	62		
K 155	Depth 2.5 - 3.0 m	nr	62		
K156	Depth 3.0 - 4.0 m	nr	41		
K157	Depth exceeding 4.0 m	nr	41		
	<b>Total C/F to Next Page</b>				-

**BILL NO. 2.7 - UMOJA III SEWERS**

Item No	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	<b>Total B/F From Previous Page</b>				-
	<b>Manholes</b>				-
	Reinforced Manhole size 1200mm, including reinforced concrete cover slab and 40 ton load bearing capacity GRP/Composite MH frame and cover with clear opening 600mm x 600mm. Provide backdrop and fittings where necessary.				-
K 151	Depth n.e 1.5m	nr	1		
K 152	Depth 1.5 - 2.0 m	nr	0		
K 153	Depth 2.0 - 2.5 m	nr	0		
K 155	Depth 2.5 - 3.0 m	nr	0		
K156	Depth 3.0 - 4.0 m	nr	39		
K157	Depth exceeding 4.0 m	nr	63		
	<b>Tunnelling and Reinstatements</b>				
	<u>Pipeline nominal bore DN 300mm, 450mm and 600mm</u>				
K 732.1	Breaking up, temporary and permanent reinstatement of Murram roads	m	204		
K 732.2	Breaking up, temporary and permanent reinstatement of minor tarmac roads	m	128		
K 732.3	Crossing under roads and Railways by micro tunnelling as indicated on the standard drawings	m	100		
K 732.5	Breaking up, temporary and permanent reinstatement of walkways to original state (tarmac, cabros)	m	3400		
	<b>CLASS L: SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>				
	<b>Extras to Excavation and Backfilling</b> ( Note: Blasting not allowed for any rock excavation)				
	<i>In Pipe Trenches</i>				
L111.1	Excavation of soft rock (Provisional)	m <sup>3</sup>	3997		
L111.2	Excavation of hard rock (Provisional)	m <sup>3</sup>	9325		
L118	Allow for excavation of soft material below final surface of pipe trench and backfill with approved hardcore, well compacted in layers of 200mm thickness, depth not exceeding 1.0m (Provisional)	m <sup>3</sup>	1275		
	<i>In manholes and Other Chambers</i> ( Note: Blasting not allowed for any rock excavation)				
L121	Excavation of soft rock (Provisional)	m <sup>3</sup>	100		
	Excavation of hard rock (Provisional)	m <sup>3</sup>	232		
	<b>Bed, Haunches and Surrounds</b>				
	<i>Granular Material</i>				
	<u>Pipeline nominal bore 300mm, 500mm and 600mm</u>				
L33	Imported granular material as per specifications for sidefill and Beds 150 mm thick. Also this shall include 200mm compacted fill from the crown of the pipeline	m	10200		
<b>Total C/F to Next Page</b>					

**BILL NO. 2.7 - UMOJA III SEWERS**

Item No	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	<b>Total B/F From Previous Page</b>				
L34	<i>Mass Concrete Grade 15/20 in 150mm Thick Beds, Haunches and Surrounds as per the drawings</i>				
L341	DN 300 nominal bore pipeline. Bed, haunch and surround type A	m	50		
L342	DN 300 nominal bore pipeline. Bed, haunch and surround type B	m			
L343	DN 300 nominal bore pipeline. Bed, haunch and surround type C	m			
L344	DN 300 nominal bore pipeline. Bed, haunch and surround type D	m	100		
L345	DN 500 nominal bore pipeline. Bed, haunch and surround type A	m	50		
L346	DN 500 nominal bore pipeline. Bed, haunch and surround type B	m			
L347	DN 500 nominal bore pipeline. Bed, haunch and surround type C	m			
L348	DN 500 nominal bore pipeline. Bed, haunch and surround type D	m	100		
L345	DN 600 nominal bore pipeline. Bed, haunch and surround type A	m	50		
L346	DN 600 nominal bore pipeline. Bed, haunch and surround type B	m			
L347	DN 600 nominal bore pipeline. Bed, haunch and surround type C	m			
L348	DN 600 nominal bore pipeline. Bed, haunch and surround type D	m	100		
<b>Total C/F to Summary Page</b>					-

**BILL NO. 2.8 - MARURA SEWERS**

Item No	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	<b>CLASS A - GENERAL ITEMS</b>				
	<b>Testing of the Works</b>				
A260.1	Carrying out test on DN300mm pipeline as specified or directed by the Engineer. Include provision of all equipment and materials	m	3700		
	<b>CLASS B - SITE INVESTIGATION</b>				
B111	Trial holes where ordered to prove location existing underground structures	nr	35		
	<b>CLASS D - DEMOLITION AND SITE CLEARANCE</b>				
D561	Other structures of indeterminate construction Volume not exceeding 50m <sup>3</sup>	nr	12		
	<b>CLASS I: PIPEWORK - PIPES</b>				
	<b>DOUBLE WALLED CORRUGATED PIPES (DWC) in accordance to Technical Specifications</b>				
I100.1	Supply DN 300mm DWC SN 8 Pipes	m	3700		
	<b>Laying of Pipes</b>				
	The rates entered against the items in this section shall include for general site clearance, removal trees, stripping of top soil, subsequently replacing over refilled trench, excavation laying aside and in trench in material other than rock, shuttering where necessary, refilling and compacting, spreading surplus soil evenly over and alongside pipe trench compacting, lay and joint pipes including jointing materials to correct line and level. Depths are stated from ground level to invert level.				
I 232	Nominal bore 300mm in trenches Depth: n.e. 1.5 m	m	192		
I 233	1.5 - 2.0 m	m	455		
I 234	2.0 - 2.5 m	m	1050		
I 235	2.5 - 3.0 m	m	723		
I 236	3.0 - 3.5 m	m	360		
I 237	3.5 - 4.0 m	m	360		
I 238	Exceeding 4.0m	m	560		
	<b>CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b>				
	The rates entered shall include excavation in material other than rock, construction of the manhole, reinforced concrete cover slab, and MH covers and frames, step irons, backdrop and fittings where necessary, excavation for working, trimming the base of the excavation, shuttering where necessary, backfilling and compaction around the finished manhole and disposing of surplus soil, spreading and making good.				
<b>Total C/F to Next Page</b>					



**BILL NO. 2.8 - MARURA SEWERS**

Item No	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
<b>Total B/F From Previous Page</b>					
<b>Manholes</b>					
Reinforced Manhole size 1050mm, including reinforced concrete cover slab and 40 ton load bearing capacity GRP/Composite MH frame and cover with clear opening 600mm x 600mm. Provide backdrop and fittings where necessary.					
K 151	Depth n.e 1.5m	nr	1		
K 152	Depth 1.5 - 2.0 m	nr	6		
K 153	Depth 2.0 - 2.5 m	nr	43		
K 155	Depth 2.5 - 3.0 m	nr	69		
K156	Depth 3.0 - 4.0 m	nr	31		
K157	Depth exceeding 4.0 m	nr	10		
<b>Tunnelling and Reinstatements</b>					
<u>Pipeline nominal bore DN 300mm</u>					
K 732.1	Breaking up, temporary and permanent reinstatement of Murram roads	m	222		
K 732.2	Breaking up, temporary and permanent reinstatement of minor tarmac roads	m	60		
K 732.5	Breaking up, temporary and permanent reinstatement of walkways to original state (tarmac, cabros)	m	1850		
<b>CLASS L: SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION</b>					
<b>Extras to Excavation and Backfilling</b> ( Note: Blasting not allowed for any rock excavation)					
<i>In Pipe Trenches</i>					
L111.1	Excavation of soft rock (Provisional)	m <sup>3</sup>	1606		
L111.2	Excavation of hard rock (Provisional)	m <sup>3</sup>	3747		
L118	Allow for excavation of soft material below final surface of pipe trench and backfill with approved hardcore, well compacted in layers of 200mm thickness, depth not exceeding 1.0m (Provisional)	m <sup>3</sup>	438		
<i>In manholes and Other Chambers</i> ( Note: Blasting not allowed for any rock excavation)					
L121	Excavation of soft rock (Provisional)	m <sup>3</sup>	40		
	Excavation of hard rock (Provisional)	m <sup>3</sup>	92		
<b>Total C/F to Next Page</b>					

**BILL NO. 2.8 - MARURA SEWERS**

Item No	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	<b>Total B/F From Previous Page</b>				
	<b>Bed, Haunches and Surrounds</b>				
	<i>Granular Material</i>				
	<u>Pipeline nominal bore 300mm</u>				
L33	Imported granular material as per specifications for sidefill and Beds 150 mm thick. Also this shall include 200mm compacted fill from the crown of the pipeline	m	35		
L34	<i>Mass Concrete Grade 15/20 in 150mm Thick Beds, Haunches and Surrounds as per the drawings</i>				
L341	DN 300 nominal bore pipeline. Bed, haunch and surroud type A	m	50		
L342	DN 300 nominal bore pipeline. Bed, haunch and surroud type B	m			
L343	DN 300 nominal bore pipeline. Bed, haunch and surroud type C	m			
L344	DN 300 nominal bore pipeline. Bed, haunch and surroud type D	m	100		
<b>Total C/F to Summary Page</b>					

Bill No. 2.9 - HOUSEHOLD CONNECTIONS

ITEM No.	DESCRIPTION	Unit	Qty	Rate	Amount (Kshs.)
	<p><b>Typical Arrangement for a Consumer Sewer Connection is shown in the Standard Drawings.</b></p> <p>It is estimated that the approximate number of consumer sewer connections to be carried out in the Project Area is 1405. The connection works are to be carried out in liaison with the respective Water Service Provider, who will receive, process and approve the applications for connections as per technical specification.</p> <p>The Contractor to obtain from Water Service Provider the exact number of connections and their locations before ordering materials and carrying out any works under this Bill.</p> <p>Consumer Connection Works will commence during the Construction Period and minimal works can extend to the Defects Liability Period (DLP). The connections will be carried out as soon as the sewers are commissioned. Taking Over will be on completion of the Connections. The Contractor should allow for this in their rates. There will be no extra cost of carrying out the Connection Works during DLP.</p> <p><b>CLASS I : PIPEWORK - PIPES</b></p> <p><b>Supply of Pipes</b> Excavation, laying and jointing is included in 'B' - Pipe Laying Supply, Transport to Site and Store. The rate to include jointing materials, bolts, gaskets, rubber rings, etc.</p>				
I511	<p>160mm outside diameter uPVC sewer pipe Class 41</p> <p><b>Pipe Laying</b> The rate quoted shall be deemed to include excavation and backfilling with selected excavated material, of pipe trenches. The rates shall also include disposal of surplus material to tips identified by the Contractor in liaison with the Local Authority, transport of material from site store to working areas, laying and jointing of pipes and fittings.</p>	m	28,100		
I512	<p>160mm outside diameter uPVC sewer pipe Class 41 Depth not exceeding 2.5m</p>	m	28,100		
	<p><b>CLASS J: FITTINGS AND VALVES</b></p> <p><b>Supply, transport to site, transport from site store lay, joint and test, 45 degrees Concrete socketed Y Junctions. The rate to include lean concrete plug and surround, jointing material, rubber rings etc. The rate should also include mass concrete which will be required for reduction of the Y Junction to the respective service lines.</b></p>				
J221	<p>160mm off 300</p>	Nr	450		
Total C/F to Next Page					

Bill No. 13 - HOUSEHOLD CONNECTIONS (Cont'd)

Item	Description	Unit	Quantity	Rate (KSh.)	Amount (KShs)
	<b>Total B/F From Previous Page</b>				
	<b>Supply, transport to site, transport from site store lay, joint and test, 45 degress uPVC socketed Y Junctions. The rate to include lean concrete plug and sorround, jointing</b>				
J521	160mm off 160	Nr	1405		
	<b>CLASS K - PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES</b>				
	<b>Masonry Inspection Chambers</b>				
K211	Provide all materials, construct and test sewer inspection chambers of depth not exceeding 1.0m, internal dimensions 450mm x 600mm constructed with 150mm thick masonry walls reinforced with hoop irons at every alternate course as shown on Drawing. Include for provision and fixing of light duty rectangular mild steel frame and cover. The cover to be concrete filled as detailed. The rate should be inclusive of two flexible joints adjacent to the Inspection Chamber as detailed.	Nr	1,405		
	<b>Crossings</b>				
K651	Allow for crossing existing boundary walls, including reinstatement to original state. Nominal bore not exceeding 200mm	Nr	1		
K661	Allow for crossing existing fences (chain link, barbed wire etc.), including reinstatement to original state. Nominal bore n.e 200mm	Nr	1		
K671	Allow for crossing existing drains and sewers, and reinstate these after construction of sewer has been completed. Pipe inside diameter n.e. 200mm.	Nr	1		
	<b>CLASS L: PIPEWORK - ANCILLARIES TO LAYING AND EXCAVATION</b>				
	<b>Extras to excavation and backfilling in pipe trenches</b>				
L111.1	Excavation of soft rock (Provisional)	m <sup>3</sup>	750		
L111.2	Excavation of hard rock (Provisional)	m <sup>3</sup>	1,750		
	<b>CLASS X: MISCELLANOUS WORKS</b>				
	<b>Testing of the works</b>				
X901	Allow for water testing of the sewer conection including sewer pipes and inspection chambers as specified including all requisite Materials, Personnel, Testing Equipment etc. Include provision of all equipment and materials	m	28,100		
<b>Total C/F to Grand Collection Page</b>					