

**BILL 11000: RELOCATION OF WATER PIPELINE**

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ITEM	DESCRIPTION	UNIT	QUANTITY	RATE (TSHS)	AMOUNT (TSHS)
	<b>BILL 11000: WATER RELOCATION</b>				
	<b><u>PART 1: PRELIMINARIES AND GENERAL ITEMS</u></b>				
<b>1.1</b>	<b>Contractual Requirements</b>				
1.1.4	Record and as built drawings	Sum	1		
1.1.6	Handling, transportation and storage of pipes and fittings as per specifications	Sum	1		
<b>1.2</b>	<b>Investigations and Testing of the Works</b>				
1.2.1	Testing of materials; concrete test cubes; samples and methods of testing as per Specifications	Sum	1		
1.2.2	Handling, transportation and storage of pipes and fittings as per specifications	Sum	1		
1.2.3	Tests on lining and coating materials for ferrous pipes as per specifications	Sum	1		
1.2.4	Investigate and inspect new pipeline route, alignment and establish right of way	Sum	1		
1.2.7	Investigate and inspect and report on condition of existing pipes and preparation of construction and shop drawings	Sum	1		
	<b>Ground Investigation</b>				
<b>1.2.8</b>	<b>Trial Pits and Trenches</b>				
1.2.8.1	At 500m spacing along the new pipeline route In material other than rock maximum depth 2-3m; minimum plan area at the bottom of the excavation 2m <sup>2</sup> and backfill after sampling (Provisional)	Nr	150		
1.2.8.2	Pumping at a minimum extraction rate of 10,000 liters per hour (Provisional)	Hr	24		
1.2.8.3	Disturbed samples of soft material from the surface or from trial pits and trenches minimum 5 kg (Provisional)	Nr	300		
	<u>Site Tests and Observations (Provisional As instructed by Engineer)</u>				
1.2.9	Soil tests for Bedding - classifications (moisture and Atterberg), grading, shear strength, compaction, elastic modulus etc for native soil materials	Nr	30		
	<b>Sub-Total Carried Forward</b>				

		<b>Brought Forward</b>			
		<b><u>Laboratory Tests As instructed by Engineer(Chemical content / Provisional)</u></b>			
1.2.10	Sulphate	Nr	30		
1.2.11	pH value	Nr	30		
1.2.12	Other Tests not listed above from 1.3.9 to 1.3.10	Sum	1		
1.3	<b>Method-Related Charges</b>				
	The Contractor may insert method related charges to cover his intended method of executing the Works, the costs of which are not proportional to the quantities and for which he has not allowed elsewhere.				
1.3.1	Mobilisation/demobilisation	Sum	1		
1.6	<b>Other Provisional Sums</b>				
	For works not covered in the bills - Provisional Sums				
1.6.1	Temporary and Permanent diversion of existing services	PS			100,000,000
1.6.2	Landscaping	PS			50,000,000
1.6.4	Compensation to landowners	PS			200,000,000
1.6.6	Special Tests ordered by Engineers not covered elsewhere in the bills	PS			10,000,000
1.7	Contractor's Percentage of Provisional Items to 1.6	%			
<b>PART 1: PRELIMINARIES CARRIED TO SUMMARY</b>					

**PART 2: DN 250 (10") Maktaba Street - Morogoro Road**

All pipework and appertunances to include supply of pipes, fittings and chambers, excavation, bedding, install, backfilling, testing and commissioning

2.1 DN 250 Operating Pressure at 10 bars

**PIPE MATERIAL**

Pipe material : Select **Ferrous Materials**

Pipe Thickness .....

Diameter : OD ..... Internal .....

Yield Strength .....

Grade if Steel .....

0.2% Proof Stress if D.I.

Elastic Modulus: Short Term .....

Long Term .....

**LINING**

Material .....

Brand Name if Epoxy .....

Thickness .....

**COATING**

**PIPE MATERIAL**

2.1.1 DN 250 pipeline Class S3 bedding, cover not exceeding 1.5 m m 950

2.1.2 EO item 2.1 for concrete bed and surround m 100

2.1.3 EO item 2.1 for pipes with cover exceeding 1.5 m not exceeding 2.5 m m 100

2.1.4 EO item 2.1 for pipes with cover exceeding 2.5 m not exceeding 3.5 m m 100

2.1.5 EO item 2.1 for excavation in coral m<sup>3</sup> 100

2.1.6 EO item 2.1 for reinstatement of bitumen surfaced roads m 100

2.1.7 EO item 2.1 for reinstatement of murrum surfaced roads m 100

2.1.8 EO item 2.1 for reinstatement of paths and driveways m 100

2.1.9 EO item 2.1 for external protection with tape wrapping m 100

**BENDS**

**FITTINGS MATERIAL**

2.1.10 DN 250 11 1/40 Nr 10

2.1.11 DN 250 22 1/20 Nr 8

2.1.12 DN 250 45 0 Nr 8

2.1.13 DN 250 90 0 Nr 5

**Sub-Total Carried Forward**

	<b>Brought Forward</b>			
	<b>APPURTENANCES</b>			
	For Appurtenances : Air Valves, Washouts, and Fire Hydrants, specify pipe and fittings materials			
	<u>FITTINGS MATERIAL</u>			
	Material : Select <b>Ferrous Materials</b>			
	<u>AIR VALVES</u> on road			
2.1.14	Single air valve complete with pipework, fittings and chamber	Nr	2	
2.1.15	Double air valve complete with pipework, fittings and chamber	Nr	3	
	<b>WASHOUTS</b>			
2.1.16	Washout Type 1 complete with up to 20 m of pipework, fittings and chamber	Nr	2	
2.1.17	Washout TYPE 2 complete with up to 20 m of pipework, fittings and chamber	Nr	1	
	<b>FIRE HYDRANTS</b>			
2.1.18	Fire Hydrants complete with pipework, fittings and chamber	Nr	1	
	<b>THRUST BLOCKS</b>			
2.1.19	Reinforced concrete	m <sup>3</sup>	1	
2.1.20	Unreinforced concrete	m <sup>3</sup>	10	
	<b>CROSSINGS</b>			
2.1.21	Culvert overcrossing complete	Nr	1	
2.1.22	Culvert undercrossing complete	Nr	1	
2.1.23	Sewer, ditch or drain undercrossing complete	Nr	1	
2.1.24	Stream undercrossing complete	Nr	1	
2.1.25	Telephone cable undercrossing complete	Nr	1	
2.1.26	Electrical Armoured cable undercrossing complete	Nr	1	
	<b>Sub-Total Carried Forward</b>			

**Brought Forward**

**CONNECTIONS**

Complete with all pipework, fittings, thrust blocks, valves, chambers and marker posts  
Pipe Materials and Fittings shall be those selected above for the respective sizes

2.1.27	Sum for connection into existing pipelines	PS		50,000,000
2.1.27.1	Contractor's Percentage of Provisional Items to 2.1.27	%		

**PART 2: MAKTABA-MOROGORO ROAD CARRIED TO SUMMARY**

**PART 3: DN 200 (8") Maktaba Street - Bibi Titi Mohamed (In Both Sides)**

All pipework and appertunances to include supply of pipes, fittings and chambers, excavation, bedding, install, backfilling, testing and commissioning

3.1 DN 200 Operating Pressure at 10 bars

**PIPE MATERIAL**

Pipe material : Select **Ferrous Materials**

Pipe Thickness .....

Diameter : OD ..... Internal .....

Yield Strength .....

Grade if Steel .....

0.2% Proof Stress if D.I. ....

Elastic Modulus: Short Term ...Long Term ...

**LINING**

Material .....

Brand Name if Epoxy .....

Thickness .....

**COATING**

**PIPE MATERIAL**

3.1.1	DN 200 pipeline Class S3 bedding, cover not exceeding 1.5m	m	2,000		
3.1.2	EO item 3.1 for Class 3 bedding	m	100		
3.1.3	EO item 3.1 for concrete bed and surround	m	100		
3.1.4	EO item 3.1 for pipes with cover exceeding 1.5 m not exceeding 2.5 m	m	100		
3.1.5	EO item 3.1 for pipes with cover exceeding 2.5 m not exceeding 3.5 m	m	100		
3.1.6	EO item 3.1 for excavation in coral	m <sup>3</sup>	100		
3.1.7	EO item 3.1 for reinstatement of bitumen surfaced roads	m	100		
3.1.8	EO item 3.1 for reinstatement of murrum surfaced roads	m	100		
3.1.9	EO item 3.1 for reinstatement of paths and driveways	m	150		
3.1.10	EO item 3.1 for external protection with tape wrapping	m	100		

**Sub-Total Carried Forward**

		<b>Brought Forward</b>			
	<b><u>BENDS</u></b>				
	<b><u>FITTINGS MATERIAL</u></b>				
	Material : Select <b>Ferrous Materials</b>				
3.1.11	DN 200 11 1/4 <sup>0</sup>	Nr	10		
3.1.12	DN 200 22 1/2 <sup>0</sup>	Nr	8		
3.1.13	DN 200 45 <sup>0</sup>	Nr	8		
3.1.15	DN 200 90 <sup>0</sup>	Nr	5		
	<b><u>APPURTENANCES</u></b>				
	For Appurtenances: AirValves, Washouts, and Fire Hydrants, specify pipe and fittings materials				
	<b><u>FITTING MATERIALS</u></b>				
	Material : Select <b>Ferrous Materials</b>				
	<b><u>AIR VALVES</u></b> on road				
3.1.16	Single air valve complete with pipework, fittings and chamber	Nr	2		
3.1.17	Double air valve complete with pipework, fittings and chamber	Nr	3		
	<b><u>WASHOUTS</u></b>				
3.1.18	Washout TYPE 1 complete with up to 20 m of pipework, fittings and chamber	Nr	2		
3.1.19	Washout TYPE 2 complete with up to 20 m of pipework, fittings and chamber	Nr	1		
	<b><u>FIRE HYDRANTS</u></b>				
3.1.20	Fire Hydrants complete with pipework, fittings and chamber	Nr	1		
	<b><u>THRUST BLOCKS</u></b>				
3.1.21	Reinforced concrete	m <sup>3</sup>	1		
3.1.22	Unreinforced concrete	m <sup>3</sup>	10		
	<b><u>CROSSINGS</u></b>				
3.1.23	Culvert overcrossing complete	Nr	1		
3.1.24	Culvert undercrossing complete	Nr	2		
<b>Sub-Total Carried Forward</b>					

	<b>Brought Forward</b>				
3.1.25	Sewer, ditch or drain undercrossing complete	Nr	1		
3.1.26	Water pipe DN 300 mm undercrossing complete	Nr	1		
3.1.27	Stream undercrossing complete	Nr	1		
3.1.28	Telephone cable 150 mm-300mm undercrossing complete	Nr	1		
3.1.29	Electrical Amoured cable undercrossing complete	Nr	1		
	<b><u>CONNECTIONS</u></b>				
	Complete with all pipework, fittings, thrust blocks, valves, chambers and marker posts Pipe Materials and Fititngs shall be those selected above for the respective sizes				
3.1.30	Provisional Sum for connection into existing pipelines	PS			50,000,000
3.1.30.1	Contractor's Percentage of Provisional Items to 3.1.30	%			
<b>PART 3: MAKTABA - BIBI TITI CARRIED TO SUMMARY</b>					

**PART 4: DN 300mm Maktaba Street - Kamata (in both sides) via Bibi Titi Mohamed**

All pipework and appertunances to include supply of pipes, fittings and chambers, excavation, bedding, install, backfilling, testing and commissioning

4.1	DN 300 Operating Pressure at 10 bars			
4.1.1	DN 300 pipeline Class S4 bedding, cover not exceeding 1.5	m	4,000	
4.1.2	EO for DN 300 pipe at HDD crossing	m	30	
4.1.3	EO item 4.1 for Class S4 bedding	m	500	
4.1.4	EO item 4.1 for concrete bed and surround	m	100	
4.1.5	EO item 4.1.1 for pipes with cover exceeding 1.5 m but not exceeding 2.5 m	m	400	
4.1.6	EO item 4.1.1 for pipes with cover exceeding 2.5 m not exceeding 3.5m	m	100	
4.1.7	EO item 4.1 for excavation in rock	m <sup>3</sup>	100	
4.1.8	EO item 4.1 for excavation in coral	m <sup>3</sup>	100	
4.1.9	EO item 4.1 for reinstatement of bitumen surfaced roads	m	500	
4.1.10	EO item 4.1 for reinstatement of murram surfaced roads	m	100	
4.1.11	EO item 4.1 for reinstatement of road shoulder	m	1,000	
4.1.12	EO item 4.1 for reinstatement of paths and driveways	m	200	
4.1.13	EO item 4.1 for external protection with tape wrapping	m	950	

**BENDS**

**FITTINGS MATERIAL**

Material : Select **Ferrous Materials**

4.1.14	DN 300 11 1/4 <sup>0</sup>	Nr	10	
4.1.15	DN 300 22 1/2 <sup>0</sup>	Nr	15	
4.1.16	DN 300 45 <sup>0</sup>	Nr	12	
4.1.17	DN 300 90 <sup>0</sup>	Nr	10	

**Sub-Total Carried Forward**

<b>Brought Forward</b>					
<b>APPURTENANCES</b>					
For Appurtenances: Air Valves, Washouts, and Fire Hydrants, specify pipe and fittings materials					
<b><u>FITTINGS MATERIAL</u></b>					
Material: Select <b>Ferrous Materials</b>					
<u>AIR VALVES</u> on road					
4.1.18	Single air valve complete with pipework, fittings and chamber	Nr	8		
4.1.19	Double air valve complete with pipework, fittings and chamber	Nr	6		
<b><u>WASHOUTS</u></b>					
4.1.20	Washout TYPE 1 complete with up to 20 m of pipework, fittings and chamber	Nr	8		
4.1.21	Washout TYPE 2 complete with up to 20 m of pipework, fittings and chamber	Nr	1		
<b><u>FIRE HYDRANTS</u></b>					
4.1.22	Fire Hydrants complete with pipework, fittings and chamber	Nr	2		
<b><u>THRUST BLOCKS</u></b>					
4.1.23	Reinforced concrete	m <sup>3</sup>	2		
4.1.24	Unreinforced concrete	m <sup>3</sup>	30		
<b><u>CROSSINGS</u></b>					
4.1.25	Culvert overcrossing complete	Nr	2		
4.1.26	Culvert undercrossing complete	Nr	4		
4.1.27	Sewer, ditch or drain undercrossing complete	Nr	2		
4.1.28	Stream undercrossing complete	Nr	2		
4.1.29	Telephone cable undercrossing complete	Nr	2		
4.1.30	Electrical Armoured cable undercrossing complete	Nr	2		
<b>Sub-Total Carried Forward</b>					

Brought Forward

**CONNECTIONS**

Complete with all pipework, fittings, thrust blocks, valves, chambers and marker posts  
Pipe Materials and Fittings shall be those selected above for the respective sizes

4.1.31	Sum for connection into existing pipelines	PS		100,000,000
4.1.31.1	Contractor's Percentage of Provisional Items to 4.1.31	%		

**PART 4: MAKTABA - KAMATA CARRIED TO SUMMARY**

**PART 5: DN 300mm Kamata - Mandela Road (in both sides)**

All pipework and appertunances to include supply of pipes, fittings and chambers, excavation, bedding, install, backfilling, testing and commissioning

<b>5.1</b>	DN 300 Operating Pressure at 10 bars			
5.1.1	DN 300 pipeline Class S4 bedding, cover not exceeding 1.5	m	10,000	
<b>5.1.2</b>	EO for DN 300 pipe at HDD crossing	m	30	
5.1.3	EO item 5.1 for Class S4 bedding	m	500	
5.1.4	EO item 5.1 for concrete bed and surround	m	100	
5.1.5	EO item 5.1.1 for pipes with cover exceeding 1.5 m but not exceeding 2.5 m	m	700	
5.1.6	EO item 5.1.1 for pipes with cover exceeding 2.5 m not exceeding 3.5 m	m	100	
5.1.7	EO item 5.1 for excavation in rock	m <sup>3</sup>	140	
5.1.8	EO item 5.1 for excavation in coral	m <sup>3</sup>	140	
5.1.9	EO item 5.1 for reinstatement of bitumen surfaced roads	m	1000	
5.1.10	EO item 5.1 for reinstatement of murram surfaced roads	m	100	
5.1.11	EO item 5.1 for reinstatement of road shoulder	m	1,500	
5.1.12	EO item 5.1 for reinstatement of paths and driveways	m	200	
5.1.13	EO item 5.1 for external protection with tape wrapping	m	950	

**BENDS**

**FITTINGS MATERIAL**

Material : Select **Ferrous Materials**

5.1.14	DN 300 11 1/4 <sup>0</sup>	Nr	15	
5.1.15	DN 300 22 1/2 <sup>0</sup>	Nr	10	
5.1.16	DN 300 45 <sup>0</sup>	Nr	8	
5.1.17	DN 300 90 <sup>0</sup>	Nr	10	

**Sub-Total Carried Forward**

<b>Brought Forward</b>					
<b>APPURTENANCES</b>					
For Appurtenances: Air Valves, Washouts, and Fire Hydrants, specify pipe and fittings materials					
<u>FITTING MATERIALS</u>					
Material : Select <b>Ferrous Materials</b>					
<u>AIR VALVES</u> on road					
5.1.18	Single air valve complete with pipework, fittings and chamber	Nr	8		
5.1.19	Double air valve complete with pipework, fittings and chamber	Nr	4		
<b><u>WASHOUTS</u></b>					
5.1.20	Washout TYPE 1 complete with up to 20 m of pipework, fittings and chamber	Nr	7		
5.1.21	Washout TYPE 2 complete with up to 20 m of pipework, fittings and chamber	Nr	1		
<b><u>FIRE HYDRANTS</u></b>					
5.1.22	Fire Hydrants complete with pipework, fittings and chamber	Nr	2		
<b><u>THRUST BLOCKS</u></b>					
5.1.23	Reinforced concrete	m <sup>3</sup>	2		
5.1.24	Unreinforced concrete	m <sup>3</sup>	30		
<b><u>CROSSINGS</u></b>					
5.1.25	Culvert overcrossing complete	Nr	1		
5.1.26	Culvert undercrossing complete	Nr	3		
5.1.27	Sewer, ditch or drain undercrossing complete	Nr	2		
5.1.28	Stream undercrossing complete	Nr	2		
5.1.29	Telephone cable undercrossing complete	Nr	2		
5.1.30	Electrical Amoured cable undercrossing complete	Nr	2		
<b>Sub-Total Carried Forward</b>					

Brought Forward

**CONNECTIONS**

Complete with all pipework, fittings, thrust blocks, valves, chambers and marker posts  
Pipe Materials and Fittings shall be those selected above for the respective sizes

5.1.31	Sum for connection into existing pipelines	PS		100,000,000
5.1.31.1	Contractor's Percentage of Provisional Items to 5.1.31	%		

**PART 5: KAMATA - MANDELA RD CARRIED TO SUMMARY**

<b><u>PART 6: DN 250mm (10") Kamata - Mandela Road</u></b> <b><u>(in both sides)</u></b>				
All pipework and appertunances to include supply of pipes, fittings and chambers, excavation, bedding, install, backfilling, testing and commissioning				
<b>6.1</b>	DN 250 Operating Pressure at 10 bars			
6.1.1	DN 250 pipeline Class S3 bedding, cover not exceeding 1.5 m	m	10,000	
6.1.2	EO item 6.1 for concrete bed and surround	m	100	
6.1.3	EO item 6.1.1 for pipes with cover exceeding 1.5 m not exceeding 2.5 m	m	130	
6.1.4	EO item 6.1.1 for pipes with cover exceeding 2.5 m not exceeding 3.5 m	m	100	
6.1.5	EO item 6.1 for excavation in coral	m <sup>3</sup>	100	
6.1.6	EO item 6.1 for reinstatement of bitumen surfaced roads	m	100	
6.1.7	EO item 6.1 for reinstatement of murram surfaced roads	m	100	
6.1.8	EO item 6.1 for reinstatement of paths and driveways	m	120	
6.1.9	EO item 6.1 for external protection with tape wrapping	m	110	
<b><u>BENDS</u></b>				
<b><u>FITTINGS MATERIAL</u></b>				
Material : Select <b>Ferrous Materials</b>				
6.1.10	DN 250 11 1/4 <sup>0</sup>	Nr	15	
6.1.11	DN 250 22 1/2 <sup>0</sup>	Nr	16	
6.1.12	DN 250 45 <sup>0</sup>	Nr	16	
6.1.13	DN 250 90 <sup>0</sup>	Nr	10	
<b><u>APPURTENANCES</u></b>				
For Appurtenances: Air Valves, Washouts, and Fire Hydrants, specify pipe and fititngs materials				
<b><u>FITTING MATERIALS</u></b>				
Material: Select <b>Ferrous Materials</b>				
<b><u>AIR VALVES</u></b> on road				
6.1.14	Single air valve complete with pipework, fittings and chamber	Nr	4	
<b>Sub-Total Carried Forward</b>				

		<b>Brought Forward</b>			
6.1.15	Double air valve complete with pipework, fittings and chamber	Nr	6		
<b><u>WASHOUTS</u></b>					
6.1.16	Washout TYPE 1 complete with up to 20 m of pipework, fittings and chamber	Nr	4		
6.1.17	Washout TYPE 2 complete with up to 20 m of pipework, fittings and chamber	Nr	1		
<b><u>FIRE HYDRANTS</u></b>					
6.1.18	Fire Hydrants complete with pipework, fittings and chamber	Nr	2		
<b><u>THRUST BLOCKS</u></b>					
6.1.19	Reinforced concrete	m <sup>3</sup>	2		
6.1.20	Unreinforced concrete	m <sup>3</sup>	20		
<b><u>CROSSINGS</u></b>					
6.1.21	Culvert overcrossing complete	Nr	2		
6.1.22	Culvert undercrossing complete	Nr	4		
6.1.23	Sewer, ditch or drain undercrossing complete	Nr	2		
6.1.24	Stream undercrossing complete	Nr	2		
6.1.25	Telephone cable undercrossing complete	Nr	2		
6.1.26	Electrical Amoured cable undercrossing complete	Nr	2		
<b><u>CONNECTIONS</u></b>					
Complete with all pipework, fittings, thrust blocks, valves, chambers and marker posts Pipe Materials and Fititngs shall be those selected above for the respective sizes					
6.1.27	Sum for connection into existing pipelines	PS			100,000,000
6.1.27.1	Contractor's Percentage of Provisional Items to 6.1.27	%			
<b>PART 6: KAMATA - MANDELA RD CARRIED TO SUMMARY</b>					

**PART 7: DN 400mm Kamata - Mandela Road**

All pipework and appertunances to include supply of pipes, fittings and chambers, excavation, bedding, install, backfilling, testing and commissioning

7.1	DN 400 Operating Pressure at 10 bars		
7.1.1	DN 400 pipeline Class S4 bedding, cover not exceeding 1.5m	m	5,500
7.1.2	EO for DN 450 PE pipe at HDD crossing	m	30
7.1.3	EO item 7.1 for Class S4 bedding	m	500
7.1.4	EO item 7.1 for concrete bed and surround	m	100
7.1.5	EO item 7.1 for pipes with cover exceeding 1.5 m not exceeding 2.5 m	m	700
7.1.6	EO item7.1 for pipes with cover exceeding 2.5 m not exceeding 3.5 m	m	100
7.1.7	EO item 7.1 for excavation in rock	m3	140
7.1.8	EO item 7.1 for excavation in coral	m3	140
7.1.9	EO item 7.1 for reinstatement of bitumen surfaced roads	m	1,500
7.1.10	EO item 7.1 for reinstatement of murram surfaced roads	m	100
7.1.11	EO item 7.1 for reinstatement of road shoulder	m	1,500
7.1.12	EO item 7.1 for reinstatement of paths and driveways	m	200
7.1.13	EO item 7.1 for external protection with tape wrapping	m	950

**BENDS**

**FITTING MATERIALS**

Material: Select **Ferrous Materials**

7.1.14	DN 400 11 1/ 0	Nr	10
7.1.15	DN 400 22 1/ 0	Nr	10
7.1.16	DN 400 45 0	Nr	8
7.1.17	DN 400 90 0	Nr	8

**Sub-Total Carried Forward**

	<b>Brought Forward</b>				
	<b>APPURTENANCES</b>				
	For Appurtenances : Air Valves, Washouts, and Fire Hydrants, specify pipe and fittings materials				
	<b><u>FITTING MATERIALS</u></b>				
	Material: Select <b>Ferrous Materials</b> <u>AIR VALVES</u> on road				
7.1.18	Single air valve complete with pipework, fittings and chamber	Nr		10	
7.1.19	Double air valve complete with pipework, fittings and chamber	Nr		5	
	<b><u>WASHOUTS</u></b>				
7.1.20	Washout TYPE 1 complete with up to 20 m of pipework, fittings and chamber	Nr		5	
7.1.21	Washout TYPE 2 complete with up to 20 m of pipework, fittings and chamber	Nr		2	
	<b><u>FIRE HYDRANTS</u></b>				
7.1.22	Fire Hydrants complete with pipework, fittings and chamber	Nr		2	
	<b><u>THRUST BLOCKS</u></b>				
7.1.23	Reinforced concrete	m <sup>3</sup>		2	
7.1.24	Unreinforced concrete	m <sup>3</sup>		10	
	<b><u>CROSSINGS</u></b>				
7.1.25	Culvert overcrossing complete	nr		2	
7.1.26	Culvert undercrossing complete	nr		3	
7.1.27	Sewer, ditch or drain undercrossing complete	nr		2	
7.1.28	Stream undercrossing complete	nr		2	
7.1.29	Telephone cable undercrossing complete	nr		2	
7.1.30	Electrical Amoured cable undercrossing complete	nr		2	
	<b>Sub-Total Carried Forward</b>				

Brought Forward

**CONNECTIONS**

Complete with all pipework, fittings, thrust blocks, valves, chambers and marker posts  
Pipe Materials and Fittings shall be those selected above for the respective sizes

7.1.31	Sum for connection into existing pipelines	PS			100,000,000
7.1.31.1	Contractor's Percentage of Provisional Items to 7.1.31	%			

**PART 7: KAMATA - MANDELA ROAD CARRIED TO SUMMARY**

**PART 8: DN 525 mm Nkurumah/Lumumba to Tazara  
& Mandela Section**

All pipework and appertunances to include supply of pipes, fittings and chambers, excavation, bedding, install, backfilling, testing and commissioning

**8.1** DN 525 Operating Pressure at 10 bars

8.1.1	DN 525 pipeline Class S3 bedding, cover not exceeding 1.5 m	m	8,000
8.1.2	EO item 8.1 for Class 3 bedding	m	150
8.1.3	EO item 8.1 for concrete bed and surround	m	100
8.1.4	EO item 8.1.1 for pipes with cover exceeding 1.5 m not exceeding 2.5 m	m	200
8.1.5	EO item 8.1.1 for pipes with cover exceeding 2.5 m not exceeding 3.5 m	m	100
8.1.6	EO item 8.1 for excavation in rock	m <sup>3</sup>	120
8.1.7	EO item 8.1 for excavation in coral	m <sup>3</sup>	120
8.1.8	EO item 8.1 for reinstatement of bitumen surfaced roads	m	100
8.1.9	EO item 8.1 for reinstatement of murram surfaced road	m	100
8.1.10	EO item 8.1 for reinstatement of road shoulder	m	1,500
8.1.11	EO item 8.1 for reinstatement of paths and driveways	m	100
8.1.12	EO item 8.1 for external protection with tape wrapping	m	150

**BENDS**

**FITTINGS MATERIAL**

Material : Select **Ferrous Materials**

8.1.13	DN 525 11 1/4 <sup>0</sup>	Nr	14
8.1.14	DN 525 22 1/2 <sup>0</sup>	Nr	8
8.1.15	DN525 45 <sup>0</sup>	Nr	8
8.1.16	DN 525 90 <sup>0</sup>	Nr	5

**Sub-Total Carried Forward**

	<b>Brought Forward</b>			
	<b>APPURTENANCES</b>			
	For Appurtenances: Air Valves, Washouts, and Fire Hydrants, specify pipe and fittings materials			
	<b><u>FITTING MATERIALS</u></b>			
	Material: Select <b>Ferrous Materials</b> <u>AIR VALVES</u> on road			
8.1.17	Single air valve complete with pipework, fittings and chamber	Nr	3	
8.1.18	Double air valve complete with pipework, fittings and chamber	Nr	5	
	<b><u>WASHOUTS</u></b>			
8.1.19	Washout TYPE 1 complete with up to 20 m of pipework, fittings and chamber	Nr	5	
8.1.20	Washout TYPE 2 complete with up to 20 m of pipework, fittings and chamber	Nr	1	
	<b><u>FIRE HYDRANTS</u></b>			
8.1.21	Fire Hydrants complete with pipework, fittings and chamber	Nr	1	
	<b><u>THRUST BLOCKS</u></b>			
8.1.22	Reinforced concrete	m <sup>3</sup>	1	
8.1.23	Unreinforced concrete	m <sup>3</sup>	30	
	<b><u>CROSSINGS</u></b>			
8.1.24	Culvert overcrossing complete	Nr	1	
8.1.25	Culvert undercrossing complete	Nr	2	
8.1.26	Tazara Railway undercrossing	Nr	1	
8.1.27	Water pipe DN 300 mm undercrossing complete	Nr	1	
8.1.28	Stream undercrossing complete	Nr	1	
	<b>Sub-Total Carried Forward</b>			

	<b>Brought Forward</b>				
8.1.29	Telephone cable 150 mm-300mm undercrossing complete	Nr	1		
8.1.30	Electrical Amoured cable undercrossing complete	Nr	1		
	<b><u>CONNECTIONS</u></b>				
	Complete with all pipework, fittings, thrust blocks, valves, chambers and marker posts Pipe Materials and Fittings shall be those selected above for the respective sizes				
8.1.31	Provisional Sum for connection into existing pipelines	PS			50,000,000
8.1.31.1	Contractor's Percentage of Provisional Items to 8.1.31	%			
<b>PART 8: NKURUMAH/LUMUMBA - TAZARA &amp; MANDELA SECTION CARRIED TO SUMMARY</b>					

**PART 9: Mandela to Tazara Workshop (Mchicha)**

All pipework and appertunances to include supply of pipes, fittings and chambers, excavation, bedding, install, backfilling, testing and commissioning

9.1 DN 600 Operating Pressure at 10 bars

**PIPE MATERIAL**

9.1.1	DN 600 pipeline Class S3 bedding, cover not exceeding 1.5 m	m	500		
9.1.2	EO item 9.1 for Class 3 bedding	m	100		
9.1.3	EO item 9.1 for concrete bed and surround	m	100		
9.1.4	EO item 9.1.1 for pipes with cover exceeding 1.5 m not exceeding 2.5 m	m	100		
9.1.5	EO item 9.1.1 for pipes with cover exceeding 2.5 m not exceeding 3.5 m	m	100		
9.1.6	EO item 9.1 for excavation in rock	m <sup>3</sup>	100		
9.1.7	EO item 9.1 for excavation in coral	m <sup>3</sup>	100		
9.1.8	EO item 9.1 for reinstatement of bitumen surfaced roads	m	100		
9.1.9	EO item 9.1 for reinstatement of murram surfaced roads	m	100		
9.1.10	EO item 9.1 for reinstatement of road shoulder	m	100		
9.1.11	EO item 9.1 for reinstatement of paths and driveways	m	100		
9.1.12	EO item 9.1 for external protection with tape wrapping	m	80		

**BENDS**

**FITTINGS MATERIAL**

Material: Select **Ferrous Materials**

9.1.13	DN 600 11 1/4 <sup>0</sup>	Nr	5		
9.1.14	DN 600 22 1/2 <sup>0</sup>	Nr	4		
9.1.15	DN 600 45 <sup>0</sup>	Nr	4		
9.1.16	DN 600 90 <sup>0</sup>	Nr	2		

**Sub-Total Carried Forward**

		<b>Brought Forward</b>		
<b>APPURTENANCES</b>				
For Appurtenances: Air Valves, Washouts, and Fire Hydrants, specify pipe and fittings materials				
<b><u>FITTINGS MATERIAL</u></b>				
Material : Select <b>Ferrous Materials</b>				
<u>AIR VALVES</u> on road				
9.1.17	Single air valve complete with pipework, fittings and chamber	Nr	2	
9.1.18	Double air valve complete with pipework, fittings and chamber	Nr	2	
<b><u>WASHOUTS</u></b>				
9.1.19	Washout TYPE 1 complete with up to 20 m of pipework, fittings and chamber	Nr	2	
9.1.20	Washout TYPE 2 complete with up to 20 m of pipework, fittings and chamber	Nr	1	
<b><u>FIRE HYDRANTS</u></b>				
9.1.21	Fire Hydrants complete with pipework, fittings and chamber	Nr	1	
<b><u>THRUST BLOCKS</u></b>				
9.1.22	Reinforced concrete	m <sup>3</sup>	1	
9.1.23	Unreinforced concrete	m <sup>3</sup>	30	
<b><u>CROSSINGS</u></b>				
9.1.24	Culvert overcrossing complete	Nr	1	
9.1.25	Culvert undercrossing complete	Nr	2	
9.1.26	Tazara Railway undercrossing	Nr		
9.1.27	Water pipe DN 300 mm undercrossing complete	Nr	1	
9.1.28	Stream undercrossing complete	Nr	1	
9.1.29	Telephone cable 150 mm-300mm undercrossing complete	Nr	1	
9.1.30	Electrical Armoured cable undercrossing complete	Nr	1	
<b>Sub-Total Carried Forward</b>				

**Brought Forward**

**CONNECTIONS**

Complete with all pipework, fittings, thrust blocks, valves, chambers and marker posts  
Pipe Materials and Fittings shall be those selected above for the respective sizes

9.1.31	Provisional Sum for connection into existing pipelines	PS		50,000,000
9.1.31.1	Contractor's Percentage of Provisional Items to 9.1.31	%		

**PART 9: MANDELA TO TAZARA CARRIED TO SUMMARY**

**PART 10: DN 300mm Mandela Road to Kipawa**

All pipework and appertunances to include supply of pipes, fittings and chambers, excavation, bedding, install, backfilling, testing and commissioning

**10.1** DN 300 Operating Pressure at 10 bars

10.1.1	DN 300 pipeline Class S4 bedding, cover not exceeding 1.5	m	3,000
10.1.2	EO for DN 300 pipe at HDD crossing	m	30
10.1.3	EO item 10.1 for Class S4 bedding	m	100
10.1.4	EO item 10.1 for concrete bed and surround	m	100
10.1.5	EO item 10.1.1 for pipes with cover exceeding 1.5 m not exceeding 2.5 m	m	100
10.1.6	EO item 10.1.1 for pipes with cover exceeding 2.5 m not exceeding 3.5 m	m	100
10.1.7	EO item 10.1 for excavation in rock	m <sup>3</sup>	100
10.1.8	EO item 10.1 for excavation in coral	m <sup>3</sup>	100
10.1.9	EO item 10.1 for reinstatement of bitumen surfaced roads	m	300
10.1.10	EO item 10.1 for reinstatement of murrum surfaced roads	m	100
10.1.11	EO item 10.1 for reinstatement of road shoulder	m	100
10.1.12	EO item 10.1 for reinstatement of paths and driveways	m	100
10.1.13	EO item 10.1 for external protection with tape wrapping	m	1,000

**BENDS**

**FITTINGS MATERIAL**

Material : Select **Ferrous Materials**

10.1.14	DN 300 11 1/40	Nr	12
10.1.15	DN 300 22 1/20	Nr	10
10.1.16	DN 300 45 0	Nr	10
10.1.17	DN 300 90 0	Nr	10

**Sub-Total Carried Forward**

		<b>Brought Forward</b>		
<b>APPURTENANCES</b>				
For Appurtenances : Air Valves, Washouts, and Fire Hydrants, specify pipe and fittings materials				
<b><u>FITTINGS MATERIAL</u></b>				
Material: Select <b>Ferrous Materials</b>				
<u>AIR VALVES</u> on road				
10.1.18	Single air valve complete with pipework, fittings and chamber	Nr	2	
10.1.19	Double air valve complete with pipework, fittings and chamber	Nr	4	
<b><u>WASHOUTS</u></b>				
10.1.20	Washout TYPE 1 complete with up to 20 m of pipework, fittings and chamber	Nr	6	
10.1.21	Washout TYPE 2 complete with up to 20 m of pipework, fittings and chamber	Nr	4	
<b><u>FIRE HYDRANTS</u></b>				
10.1.22	Fire Hydrants complete with pipework, fittings and chamber	Nr	4	
<b><u>THRUST BLOCKS</u></b>				
10.1.23	Reinforced concrete	m <sup>3</sup>	10	
10.1.24	Unreinforced concrete	m <sup>3</sup>	30	
<b><u>CROSSINGS</u></b>				
10.1.25	Culvert overcrossing complete	Nr	2	
10.1.26	Culvert undercrossing complete	Nr	4	
10.1.27	Sewer, ditch or drain undercrossing complete	Nr	2	
10.1.28	Gas pipe undercrossing complete	Nr	2	
10.1.29	Stream undercrossing complete	Nr	2	
10.1.30	Telephone cable undercrossing complete	Nr	2	
10.1.31	Electrical Armoured cable undercrossing complete	Nr	2	
<b>Sub-Total Carried Forward</b>				

Brought Forward

**CONNECTIONS**

Complete with all pipework, fittings, thrust blocks, valves, chambers and marker posts  
Pipe Materials and Fittings shall be those selected above for the respective sizes

10.1.32	Sum for connection into existing pipelines	PS		100,000,000
10.1.32.1	Contractor's Percentage of Provisional Items to 10.1.32	%		

**PART 10: MANDELA ROAD - KIPAWA CARRIED TO SUMMARY**

**PART 11: DN 200mm Mandela (Mchicha) to Kipawa**

All pipework and appertunances to include supply of pipes, fittings and chambers, excavation, bedding, install, backfilling, testing and commissioning

11.1	DN 200 Operating Pressure at 10 bars				
11.1.1	DN 200 pipeline Class S3 bedding, cover not exceeding 1.5 m	m	2,000		
11.1.2	EO item 11.1 for Class 3 bedding	m	150		
11.1.3	EO item 11.1 for concrete bed and surround	m	100		
11.1.4	EO item 11.1.1 for pipes with cover exceeding 1.5 m not exceeding 2.5 m	m	100		
11.1.5	EO item 11.1.1 for pipes with cover exceeding 2.5 m not exceeding 3.5 m	m	100		
11.1.6	EO item 11.1 for excavation in coral	m <sup>3</sup>	100		
11.1.7	EO item 11 for reinstatement of bitumen surfaced roads	m	100		
11.1.8	EO item 11.1 for reinstatement of murrum surfaced roads	m	100		
11.1.9	EO item 11.1 for reinstatement of paths and driveways	m	100		
11.1.10	EO item 11.1 for external protection with tape wrapping	m	100		
	<b><u>BENDS</u></b>				
	<b><u>FITTINGS MATERIAL</u></b>				
	Material: Select <b>Ferrous Materials</b>				
11.1.11	DN 200 11 1/4 <sup>0</sup>	Nr	10		
11.1.12	DN 200 22 1/2 <sup>0</sup>	Nr	8		
11.1.13	DN 200 45 <sup>0</sup>	Nr	8		
11.1.14	DN 200 90 <sup>0</sup>	Nr	5		
	<b>Sub-Total Carried Forward</b>				

	<b>Brought Forward</b>			
	<b>APPURTENANCES</b>			
	For Appurtenances : Air Valves, Washouts, and Fire Hydrants, specify pipe and fittings materials			
	<b><u>FITTINGS MATERIAL</u></b>			
	Material : Select <b>Ferrous Materials</b>			
	<u>AIR VALVES</u> on road			
11.1.15	Single air valve complete with pipework, fittings and chamber	Nr	2	
11.1.16	Double air valve complete with pipework, fittings and chamber	Nr	3	
	<b><u>WASHOUTS</u></b>			
11.1.17	Washout TYPE 1 complete with up to 20 m of pipework, fittings and chamber	Nr	2	
11.1.18	Washout TYPE 2 complete with up to 20 m of pipework, fittings and chamber	Nr	1	
	<b><u>FIRE HYDRANTS</u></b>			
11.1.19	Fire Hydrants complete with pipework, fittings and chamber	Nr	1	
	<b><u>THRUST BLOCKS</u></b>			
11.1.20	Reinforced concrete	m <sup>3</sup>	1	
11.1.21	Unreinforced concrete	m <sup>3</sup>	10	
	<b><u>CROSSINGS</u></b>			
11.1.22	Culvert overcrossing complete	Nr	1	
11.1.23	Culvert undercrossing complete	Nr	2	
11.1.24	Sewer, ditch or drain undercrossing complete	Nr	1	
11.1.25	Water pipe DN 300 mm undercrossing complete	Nr	1	
11.1.26	Stream undercrossing complete	Nr	1	
11.1.27	Telephone cable 150 mm-300mm undercrossing	Nr	1	
11.1.28	Electrical Amoured cable	Nr	1	
	<b>Sub-Total Carried Forward</b>			

**Brought Forward**

**CONNECTIONS**

Complete with all pipework, fittings, thrust blocks, valves, chambers and marker posts  
Pipe Materials and Fittings shall be those selected above for the respective sizes

11.1.29	Provisional Sum for connection into existing pipelines	PS		50,000,000
11.1.29.1	Contractor's Percentage of Provisional Items to 11.1.29	%		

**PART 11: MANDELA (MCHICHA) TO KIPAWA  
CARRIED TO SUMMARY**

**PART 12: DN 400mm KIPAWA TO  
GONGOLAMBOTO (Mzambarau)**

All pipework and appertunances to include supply of pipes, fittings and chambers, excavation, bedding, install, backfilling, testing and commissioning

<b>12.1</b>	DN 400 Operating Pressure at 10 bars				
12.1.1	DN 400 pipeline Class S4 bedding, cover not exceeding 1.5	m	6,000		
12.1.2	EO forDN 450 PE pipe at HDD crossing	m	30		
12.1.3	EO item 12.1 for Class S4 bedding	m	500		
12.1.4	EO item 12.1 for concrete bed and surround	m	100		
12.1.5	EO item 12.1.1 for pipes with cover exceeding 1.5 m not exceeding 2.5 m	m	500		
12.1.6	EO item 12.1.1 for pipes with cover exceeding 2.5 m not exceeding 3.5 m	m	100		
12.1.7	EO item12.1 for excavation in rock	m <sup>3</sup>	100		
12.1.8	EO item 12.1 for excavation in coral	m <sup>3</sup>	100		
12.1.9	EO item 12.1 for reinstatement of bitumen surfaced roads	m	1,000		
12.1.10	EO item 12.1 for reinstatement of murram surfaced roads	m	100		
12.1.11	EO item 12.1 for reinstatement of road shoulder	m	400		
12.1.12	EO item 12.1 for reinstatement of paths and driveways	m	100		
12.1.13	EO item 12.1 for external protection with tape wrapping	m	500		
	<b><u>BENDS</u></b>				
	<b><u>FITTINGS MATERIAL</u></b>				
	Material: Select <b>Ferrous Materials</b>				
12.1.14	DN 400 11 1/4 0	Nr	10		
12.1.15	DN 400 22 1/2 0	Nr	10		
12.1.16	DN 400 45 0	Nr	8		
12.1.17	DN 400 90 0	Nr	8		
	<b>Sub-Total Carried Forward</b>				

		<b>Brought Forward</b>		
<b>APPURTENANCES</b>				
For Appurtenances: Air Valves, Washouts, and Fire Hydrants, specify pipe and fittings materials				
<u>FITTINGS MATERIAL</u>				
Material : Select <b>Ferrous Materials</b>				
<u>AIR VALVES</u> on road				
12.1.18	Single air valve complete with pipework, fittings and chamber	Nr	8	
12.1.19	Double air valve complete with pipework, fittings and chamber	Nr	4	
<b><u>WASHOUTS</u></b>				
12.1.20	Washout TYPE 1 complete with up to 20 m of pipework, fittings and chamber	Nr	5	
12.1.21	Washout TYPE 2 complete with up to 20 m of pipework, fittings and chamber	Nr	2	
<b><u>FIRE HYDRANTS</u></b>				
12.1.22	Fire Hydrants complete with pipework, fittings and chamber	Nr	2	
<b><u>THRUST BLOCKS</u></b>				
12.1.23	Reinforced concrete	m <sup>3</sup>	2	
12.1.24	Unreinforced concrete	m <sup>3</sup>	10	
<b><u>CROSSINGS</u></b>				
12.1.25	Culvert overcrossing	Nr	2	
12.1.26	Culvert undercrossing	Nr	4	
12.1.27	Sewer, ditch or drain undercrossing	Nr	2	
12.1.28	Tazama and Gas pipeline undercrossing	Nr	2	
12.1.29	Stream undercrossing complete	Nr	1	
12.1.30	Telephone cable undercrossing	Nr	1	
12.1.31	Electrical Amoured cable undercrossing	Nr	1	
<b>Sub-Total Carried Forward</b>				

Brought Forward

**CONNECTIONS**

Complete with all pipework, fittings, thrust blocks, valves, chambers and marker posts  
Pipe Materials and Fittings shall be those selected above for the respective sizes

12.1.32	Sum for connection into existing pipelines	PS		100,000,000
12.1.32.1	Contractor's Percentage of Provisional Items to 12.1.32	%		

**PART 12: KIPAWA TO GONGO LA MBOTO  
(Mzambarauni) CARRIED TO SUMMARY**

**PART 13: DN 300mm ROZANA TO MSIMBAZI STREET**

All pipework and appertunances to include supply of pipes, fittings and chambers, excavation, bedding, install, backfilling, testing and commissioning

**13.1** DN 300 Operating Pressure at 10 bars

13.1.1	DN 300 pipeline Class S4 bedding, cover not exceeding 1.5	m	3,000		
13.1.2	EO for DN 300 pipe at HDD crossing	m	30		
13.1.3	EO item 13.1 for Class S4 bedding	m	100		
13.1.4	EO item 13.1 for concrete bed and surround	m	100		
13.1.5	EO item 13.1.1 for pipes with cover exceeding 1.5 m not exceeding 2.5 m	m	100		
13.1.6	EO item 13.1.1 for pipes with cover exceeding 2.5 m not exceeding 3.5 m	m	100		
13.1.7	EO item 13.1.1 for excavation in rock	m <sup>3</sup>	100		
13.1.8	EO item 13.1.1 for excavation in coral	m <sup>3</sup>	100		
13.1.9	EO item 13.1 for reinstatement of bitumen surfaced roads	m	300		
13.1.10	EO item 13.1 for reinstatement of murram surfaced roads	m	100		
13.1.11	EO item 13.1 for reinstatement of road shoulder	m	100		
13.1.12	EO item 13.1 for reinstatement of paths and driveways	m	100		
13.1.13	EO item 13.1 for external protection with tape wrapping	m	2,000		

**BENDS**

**FITTINGS MATERIAL**

Material : Select **Ferrous Materials**

13.1.14	DN 300 11 1/4 <sup>0</sup>	Nr	12		
13.1.15	DN 300 22 1/2 <sup>0</sup>	Nr	10		
13.1.16	DN 300 45 <sup>0</sup>	Nr	10		
13.1.17	DN 300 90 <sup>0</sup>	Nr	10		

**Sub-Total Carried Forward**

		<b>Brought Forward</b>		
<b>APPURTENANCES</b>				
For Appurtenances: Air Valves, Washouts, and Fire Hydrants, specify pipe and fittings materials				
<b><u>FITTINGS MATERIAL</u></b>				
Material: Select <b>Ferrous Materials</b>				
<u>AIR VALVES</u> on road				
13.1.18	Single air valve complete with pipework, fittings and chamber	Nr	2	
13.1.19	Double air valve complete with pipework, fittings and chamber	Nr	4	
<b><u>WASHOUTS</u></b>				
13.1.20	Washout TYPE 1 complete with up to 20 m of pipework, fittings and chamber	Nr	6	
13.1.21	Washout TYPE 2 complete with up to 20 m of pipework, fittings and chamber	Nr	4	
<b><u>FIRE HYDRANTS</u></b>				
13.1.22	Fire Hydrants complete with pipework, fittings and chamber	Nr	4	
<b><u>THRUST BLOCKS</u></b>				
13.1.23	Reinforced concrete	m <sup>3</sup>	10	
13.1.24	Unreinforced concrete	m <sup>3</sup>	30	
<b><u>CROSSINGS</u></b>				
13.1.25	Culvert overcrossing complete	Nr	2	
13.1.26	Culvert undercrossing complete	Nr	4	
13.1.27	Sewer, ditch or drain undercrossing complete	Nr	2	
13.1.28	Gas pipe undercrossing	Nr	2	
13.1.29	Stream undercrossing complete	Nr	2	
13.1.30	Telephone cable undercrossing complete	Nr	2	
13.1.31	Electrical Amoured cable undercrossing complete	Nr	2	
<b>Sub-Total Carried Forward</b>				

Brought Forward

**CONNECTIONS**

Complete with all pipework, fittings, thrust blocks, valves, chambers and marker posts  
Pipe Materials and Fittings shall be those selected above for the respective sizes

13.1.32	Sum for connection into existing pipelines	PS		100,000,000
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13.1.32.1	Contractor's Percentage of Provisional Items to 13.1.32	%		
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<b>PART 13: ROZANA TO MSIMBAZI STREET CARRIED TO SUMMARY</b>				
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**PART 14: DN 150mm (6") MANDELA ROAD TO MSIMBAZI STREET**

All pipework and appertunances to include supply of pipes, fittings and chambers, excavation, bedding, install, backfilling, testing and commissioning

14.1	DN 150 Operating Pressure at 10 bars				
14.1.1	DN 150 pipeline Class S3 bedding, cover not exceeding 1.5 mcover not exceeding 1.5 m	m	4,000		
14.1.2	EO item 14.1 for Class 3 bedding	m	100		
14.1.3	EO item 14.1 for concrete bed and surround	m	100		
14.1.4	EO item 14.1.1 for pipes with cover exceeding 1.5 m not exceeding 2.5 m	m	100		
14.1.5	EO item 14.1.1 for pipes with cover exceeding 2.5 m not exceeding 3.5 m	m	100		
14.1.6	EO item 14.1 for excavation in rock	m <sup>3</sup>	70		
14.1.7	EO item 14.1 for excavation in coral	m <sup>3</sup>	70		
14.1.8	EO item 14.1 for reinstatement of bitumen surfaced roads	m	100		
14.1.9	EO item 14.1 for reinstatement of murrum surfaced roads	m	100		
14.1.10	EO item 14.1 for reinstatement of road shoulder	m	100		
14.1.11	EO item 14.1 for reinstatement of paths and driveways	m	100		
14.1.12	EO item 14.1 for external protection with tape wrapping	m	100		
	<b><u>BENDS</u></b>				
	<b><u>FITTINGS MATERIAL</u></b>				
	Material : Select <b>Ferrous Materials</b>				
14.1.13	DN 150 11 1/4 <sup>0</sup>	Nr	10		
14.1.14	DN 150 22 1/2 <sup>0</sup>	Nr	8		
14.1.15	DN 150 45 <sup>0</sup>	Nr	8		
14.1.16	DN 150 90 <sup>0</sup>	Nr	5		
	<b>Sub-Total Carried Forward</b>				

<b>Brought Forward</b>					
<b>APPURTENANCES</b>					
For Appurtenances: Air Valves, Washouts, and Fire Hydrants, specify pipe and fittings materials					
<b><u>FITTINGS MATERIAL</u></b>					
Material : Select <b>Ferrous Materials</b>					
<u>AIR VALVES</u> on road					
14.1.17	Single air valve complete with pipework, fittings and chamber	Nr		1	
14.1.18	Double air valve complete with pipework, fittings and chamber	Nr		2	
<b><u>WASHOUTS</u></b>					
14.1.19	Washout TYPE 1 complete with up to 20 m of pipework, fittings and chamber	Nr		1	
14.1.20	Washout TYPE 2 complete with up to 20 m of pipework, fittings and chamber	Nr		1	
<b><u>FIRE HYDRANTS</u></b>					
14.1.21	Fire Hydrants complete with pipework, fittings and chamber	Nr		1	
<b><u>THRUST BLOCKS</u></b>					
14.1.22	Reinforced concrete	m <sup>3</sup>		1	
14.1.23	Unreinforced concrete	m <sup>3</sup>		10	
<b><u>CROSSINGS</u></b>					
14.1.24	Culvert overcrossing	Nr		1	
14.1.25	Culvert undercrossing complete	Nr		2	
14.1.26	Sewer, ditch or drain undercrossing	Nr		1	
14.1.27	Water pipe DN 300 mm undercrossing	Nr		1	
14.1.28	Stream undercrossing	Nr		1	
14.1.29	Telephone cable 150 mm-300mm undercrossing	Nr		1	
14.1.30	Electrical Amoured cable undercrossing	Nr		1	
<b>Sub-Total Carried Forward</b>					

Brought Forward

**CONNECTIONS**

Complete with all pipework, fittings, thrust blocks, valves, chambers and marker posts  
Pipe Materials and Fittings shall be those selected above for the respective sizes

14.1.31	Provisional Sum for connection into existing pipelines	PS		50,000,000
14.1.31.1	Contractor's Percentage of Provisional Items to 14.1.32	%		

**PART 14: MANDELA ROAD TO MSIMBAZI CARRIED TO SUMMARY**

**PART 15: DN 600mm TAZARA JUNCTION TO UHURU ROAD**

All pipework and appertunances to include supply of pipes, fittings and chambers, excavation, bedding, install, backfilling, testing and commissioning

**15.1** DN 600 Operating Pressure at 10 bars

**PIPE MATERIAL**

15.1.1	DN 600 pipeline Class S3 bedding, cover not exceeding	m	620
15.1.2	EO item 15.1 for Class 3 bedding	m	100
15.1.3	EO item 15.1 for concrete bed and surround	m	100
15.1.4	EO item 15.1.1 for pipes with cover exceeding 1.5 m not exceeding 2.5 m	m	100
15.1.5	EO item 15.1.1 for pipes with cover exceeding 2.5 m not exceeding 3.5 m	m	60
15.1.6	EO item 15.1 for excavation in rock	m <sup>3</sup>	50
15.1.7	EO item15.1 for excavation in coral	m <sup>3</sup>	50
15.1.8	EO item15.1 for reinstatement of bitumen surfaced roads	m	100
15.1.9	EO item 15.1 for reinstatement of murrum surfaced roads	m	100
15.1.10	EO item 15.1 for reinstatement of road shoulder	m	100
15.1.11	EO item 15.1 for reinstatement of paths and driveways	m	100
15.1.12	EO item 15.1 for external protection with tape wrapping	m	80

**BENDS**

**FITTINGS MATERIAL**

Material : Select **Ferrous Materials**

15.1.13	DN 600 11 1/4 0	Nr	3
15.1.14	DN 600 22 1/2 0	Nr	4
15.1.15	DN 600 45 0	Nr	4
15.1.16	DN 600 90 0	Nr	2

**Sub-Total Carried Forward**

		<b>Brought Forward</b>		
<b>APPURTENANCES</b>				
For Appurtenances : Air Valves, Washouts, and Fire Hydrants, specify pipe and fittings materials				
<b><u>FITTINGS MATERIAL</u></b>				
Material : Select <b>Ferrous Materials</b>				
<b><u>AIR VALVES</u></b> on road				
15.1.17	Single air valve complete with pipework, fittings and chamber	Nr	1	
15.1.18	Double air valve complete with pipework, fittings and chamber	Nr	1	
<b><u>WASHOUTS</u></b>				
15.1.19	Washout TYPE 1 complete with up to 20 m of pipework, fittings and chamber	Nr	1	
15.1.20	Washout TYPE 2 complete with up to 20 m of pipework, fittings and chamber	Nr	1	
<b><u>FIRE HYDRANTS</u></b>				
15.1.21	Fire Hydrants complete with pipework, fittings and chamber	Nr	1	
<b><u>THRUST BLOCKS</u></b>				
15.1.22	Reinforced concrete	m <sup>3</sup>	1	
15.1.23	Unreinforced concrete	m <sup>3</sup>	10	
<b><u>CROSSINGS</u></b>				
15.1.24	Culvert overcrossing complete	Nr	1	
15.1.25	Culvert undercrossing complete	Nr	1	
15.1.26	Railway undercrossing	Nr	1	
15.1.27	Water pipe DN 300 mm undercrossing complete	Nr	1	
15.1.28	Stream undercrossing complete	Nr	1	
15.1.29	Telephone cable 150 mm-300mm undercrossing	Nr	1	
15.1.30	Electrical Amoured cable undercrossing	Nr	1	
<b>Sub-Total Carried Forward</b>				

**Brought Forward**

**CONNECTIONS**

Complete with all pipework, fittings, thrust blocks, valves, chambers and marker posts  
Pipe Materials and Fittings shall be those selected above for the respective sizes

15.1.31	Provisional Sum for connection into existing pipelines	PS		50,000,000
15.1.31.1	Contractor's Percentage of Provisional Items to 15.1.32	%		

**PART 15: TAZARA JUNCTION TO UHURU ROAD  
CARRIED TO SUMMARY**

	<b><u>PART 16: GRAVITY SEWER</u></b>				
16.1	Insert uPVC pipe up to DN 250 mm in concrete structures	Nr	50		
	<b><u>PIPE WORKS</u></b>				
	uPVC pipe with push-fit joints in accordance with specifications				
16.1.1	DN 250 mm depth exceeding 3m	m	1,100		
	<b><u>PIPEWORK MANHOLE AND PIPEWORK ANCILLARIES</u></b>				
16.1.2	New manhole Type 1 for up to DN 300 mm depth to 3.5m	Nr	50		
	<b><u>CROSSINGS</u></b>				
16.1.3	Ditch crossings all sizes	Nr	15		
16.1.4	Undercrossing service /telephone/electric, 150- 900 mm	Nr	15		
	<b><u>REINSTATEMENT</u></b>				
16.1.5	Reinstatement of bitumen surfaced road	m	150		
16.1.6	Pipe work diameter 150-300 mm	m	100		
	<b><u>PIPE WORK SUPPORT AND PROTECTION</u></b>				
16.1.7	EO for excavation in rock	m <sup>3</sup>	50		
16.1.8	EO for excavation of mass concrete	m <sup>3</sup>	80		
16.1.9	EO for excavation of reinforced concrete	m	100		
	<b><u>BEDDING WITH SANDS</u></b>				
16.1.10	Nominal bore 150 mm - 300mm	m	1,100		
	<b><u>CONCRETE STOOL AND THRUST BLOCKS</u></b>				
16.1.11	CP 15 grade	m <sup>2</sup>	25		
16.1.12	CP 20 grade reinforced	m <sup>2</sup>	25		
	<b><u>HATCH BOXES</u></b>				
16.1.13	Diameter 250mm	Nr	5		
	<b>PART 16: GRAVITY SEWER CARRIED TO SUMMARY</b>				

**SUMMARY FOR BILL 10000: RELOCATION OF WATER PIPELINES**

Part 1	PRELIMINARIES AND GENERAL ITEMS				
Part 2	PIPEWORK: DN 250 mm Maktaba street to Morogoro Road				
Part 3	PIPEWORK: DN 200 mm Maktaba to Bibi Titi Mohamed (Both sides)				
Part 4	PIPEWORK: DN 300 mm, Maktaba Street to Kamata (Both sides)				
Part 5	PIPEWORK: DN 300 mm, Kamata to Mandela Road (Both sides)				
Part 6	PIPEWORK: DN 250 mm Kamata to Mandela Road				
Part 7	PIPEWORK: DN 400 mm, Kamata to Mandela				
Part 8	PIPEWORK: DN 525mm Nkrumah to Tazara				
Part 9	PIPEWORK: DN 600 mm Mandela to Tazara Workshop (Both sides)				
Part 10	PIPEWORK: DN 300 mm, Mandela Road to Kipawa (Both sides)				
Part 11	PIPEWORK: DN 200 mm Mandela to Kipawa				
Part 12	PIPEWORK: DN 400 mm, Kipawa to G/Mboto (Mzambarauni)				
Part 13	PIPEWORK: DN 300 mm, Rozana to Msimbazi Street				
Part 14	PIPEWORK: DN 150 mm Mandela Road to Msimbazi Street				
Part 15	PIPEWORK: DN 600 mm Tazara Junction to Uhuru Road				
Part 16	PIPEWORK: DN250 mm Gravity Sewer ( Ilala Boma-Msimbazi)				
<b>Bill 11000: Relocation of Water Pipelines Carried to General Summary</b>					