

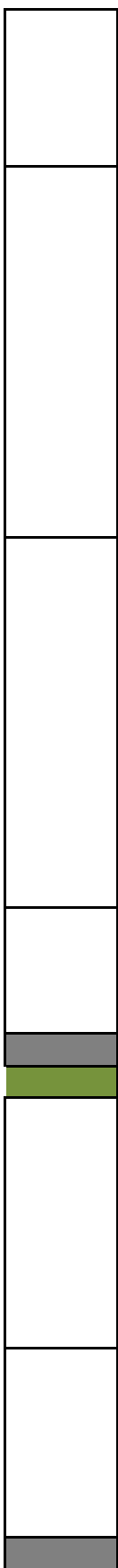
Item #	DESCRIPTION	UNIT	QUANTITIES	UNIT RATE USD
1	General works - Channel Dimensions: W=0.9 m ; H=0.75 m			
1.1	Mobilization , demobilization and safety. The rate shall include the full mobilization/demobilization of all resources and equipment necessary for the execution and completion of work. Safety signs shall be installed where necessary.	L.S.	1	
1.2	Topographical survey , Leveling, Channel Design, Shop drawings and as built drawings - Channel Length is 385 m.	L.S.	1	
1.3	Project Visibility - installation of visibility sign 0.8*1.2 m (height = 1.5 m) in a location specified by the municipality/NLWE. Footing of steel pipes should be reinforced concrete with section 0.3*0.3*0.3 m and a mesh of steel bars 12 mm (spacing 10 cm)	L.S.	1	
Sub Total (1)				
2	Excavations and Earth Works (Contractor is responsible for any damages occurs during execution)			
2.1	Excavations in any type of soil or rock for the existing channel including carting away of all debris and excavated materials and cleaning the site of the work from all encountered trees, plantations, debris during the cutting, and structures of any kind to transfer into a location out of the site (as directed by the Municipality/NLWE). The cost includes grading, earth leveling and cutting the entire surface through the whole length of the proposed Canal. Width of the excavation should be between 70 & 100 cm based on site conditions and Total Depth should not be less than 70 cm	Lm	385	
2.2	Replacing the existing soil materials under the channel by backfills using a granular compacted gravel base course/Defino with thickness not less than 20 cm. The single layer of compacted soil should not exceed 20 cm. the used materials shall be free of all roots, brush, objectionable organic matter, and rocks larger than 2 cm in diameter. Compaction should be more than 95%.	m3	70	
Sub Total (2)				
3	Concrete Works - Reinforced Concrete for Channels (Concrete Mix Designs are needed)			

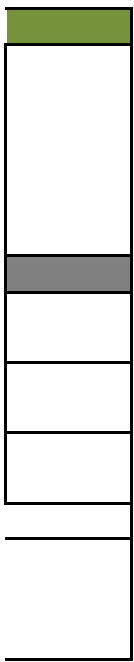
3.1	Cast in place of blinding Concrete (min =15 cm thick and 90 cm width) with strength of 10 Mpa. Polyethylene sheet (300 Micron) should be installed on the compacted materials before concreting.	m3	35	
3.2	Cast in place of footing (28 Mpa - 300 Kg/m3) for the Channel with thickness of 15 cm and two steel layers 12 mm (15 cm spacing in both directions). Construction joints are needed for connection between the existing concrete channel and the new one plus Epoxy application. Vibration for concrete are needed during the construction. in case of land different levels, the clear opening of the channel at the lowest level should be 0.8 m to carry out the water flow	m3	52	
3.3	Cast in place of Rectangular walls (28 Mpa - 300 Kg/m3) for the channel with thickness of 15 cm and one steel layer 14 mm. Construction joints are needed for connection between the existing concrete channel and the new one plus Epoxy application. Vibration for concrete are needed during the construction. in case of land different levels, the height of the channel walls at the lowest level should be 0.8 m instead of 0.6 m to avoid water flood	m3	70	
3.4	Installation of concrete top cover (30 Mpa - 350 Kg/m3) for the channel with thickness of 15 cm and two steel layers 12 mm. channel width = 0.90 m	Lm	15	
Sub Total (3)				
4	Steel works			
4.1	Steel gates for channels (ensure proper closing and opening from the main channel to the branch channels). The gates shall compose of steel plate of thickness 4 mm placed on 4 steel angle bars (4x4) with thickness 4 mm which shall be fixed on the channel edges. Steel elements should be protected by Epoxy painting.	Pcs	12	
4.2	Roots Barriers - Galvanized steel plates to be installed where trees are near to the channel to avoid future damages - plates should be 40 cm in depth (20 cm embedded in soil and 20 cm to cover the channel footing) - thickness around 0.6 mm	m2	40	
Sub Total (4)				

5	Isolation works			
5.1	Apply two layers of bitumen to the concrete surface of channel edges for protection. The surface should be clean prior painting. Drying time for layer should not be more than 60 min and the application of the second layer should be after 24 h.	m2	470	
Sub Total (5)				
Total exclusive of VAT				
VAT 11%				
Total inclusive of VAT				
COMMENTS				

Total
Amount
USD







#	Location of the channel	(width-m)	(Height-m)	Length (m)
1	Borj El Aarab - el Aakel to mehbajj coffee	0.9	0.85	385
2	Borj el Aarab - Zakaria Family to water pond	0.9	0.85	440
Total Length				825

Gravel needed (m3)	Blinding concrete volume	Footing concrete volume	Walls concrete volume	Bitumen
69.3	34.65	51.975	80.85	654.5
79.2	39.6	59.4	92.4	748
148.5	74.25	111.375	173.25	1402.5