

Master Plan Study

WORKS and SUPPLIES Bill of Quantities and Engineer Estimate

		Supplies and Works	Unit	Quantity	Unit Cost (\$)	Subtotal (\$)
Item 1 - Implementation of two exploratory/productive boreholes in urban area (ex Lot 1)						
1	1	Site installations				
	a	Mobilisation and Demobilisation of all vehicles, rigs and equipment to and from Project Area + Site Preparation, Dismantling and Restoration	lsp	1+1	5.300,00	5.300,00
	2	Drilling				
	a	- Site 1	lsp	1,0	28.800,00	28.800,00
	b	- Site 2	lsp	1,0	28.800,00	28.800,00
	3	Lining and completion				
	a	- Site 1	lsp	1,0	17.057,20	17.057,20
	b	- Site 2	lsp	1,0	17.057,20	17.057,20
	4	Development to productive and testing				
	a	- Site 1	lsp	1,0	11.440,00	11.440,00
	b	- Site 2	lsp	1,0	11.440,00	11.440,00

Sub Total Item 1 - Drilling and completion to productive of two boreholes (US\$) 119.894,40

NOTE = for more details on costs see Lot 1

Item 2 - Construction of a 1.000 cum Ground Reservoir (ex Lot 2)

2	1	Civil Works				
	a	Access works, foundation excavation and soil preparation	lsp	1,0	4.452,00	4.452,00
	b	Reinforced concrete works, base slab + lateral walls + top slab + internal sets + waterproofing	lsp	1,0	443.332,20	443.332,20
	c	Ancillaries (man holes + access ladder + aeration)	lsp	1,0	994,40	994,40
	2	Hydraulic works				
	a	Inlet and outlet control systems + washout	lsp	1,0	53.512,32	53.512,32

Sub Total Item 2 - 1.000 cum Ground Reservoir (US\$) 502.290,92

NOTE = for more details on costs see Lot 2

<i>Supplies and Works</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Cost (\$)</i>	<i>Subtotal (\$)</i>
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Item 3 - Construction of a 500 cum Ground Reservoir (ex Lot 3)

2	1	Civil Works				
	a	Access works, foundation excavation and soil preparation	lsp	1,0	6.194,70	6.194,70
	b	Reinforced concrete works, base + lateral walls + top slab + internal sets + waterproofing	lsp	1,0	247.488,30	247.488,30
	c	Ancillaries (man holes + access ladder + aeration)	lsp	1,0	994,40	994,40
	2	Hydraulic works				
	a	Inlet and outlet control systems + washout	lsp	1,0	68.954,98	68.954,98

Sub Total Item 3 - 500 cum Ground Reservoir (US\$) **323.632,38**

NOTE = for more details on costs see Lot 3

Item 4 - Construction of pipeline connecting 1.000 to 500 cum Reservoirs (ex Lot 4)

4	1	Pipe laying				
	a	Earth works (excavation + bedding and fixing the pipe + refill the trench, etc.)	lsp	1,0	203.647,90	203.647,90
	b	Pipe laying (transport on site + pipe installation)	lsp	1,0	12.601,35	12.601,35
	c	Ancillary works	lsp	1,0	1.807,00	1.807,00
	2	Foreign supplies (delivered in site)				
	a	U-PVC pipes + fittings	lsp	1,0	126.530,07	126.530,07
	b	Spare parts	lsp	1,0	5.782,32	5.782,32

Sub Total Item 4 - Construction of pipeline connecting 1.000 to 500 cum Reservoirs (US\$) **350.368,64**

NOTE = for more details on costs see Lot 4

Item 5 - Construction of pipelines connecting 1.000 and 500 cum Reservoirs to the Distribution systems (ex Lot 5)

5	1	Pipeline from 1000 cum Reservoir to the Town network				
	a	Earth works (excavation + bedding and fixing the pipe + refill the trench, etc.)	lsp	1,0	466.684,01	466.684,01
	b	Pipe laying (transport on site + pipe installation)	lsp	1,0	28.490,17	28.490,17
	c	Ancillary works	lsp	1,0	4.427,62	4.427,62
	d	Pipes stabilization (anchor blocks)	lsp	1,0	3.731,00	3.731,00
	e	Foreign supplies of U-PVC pipes + fittings	lsp	1,0	273.351,39	273.351,39
	f	Spare parts	lsp	1,0	11.121,02	11.121,02

Sub Total Item 5 - Pipelines connecting 1.000 and 500 cum Res.s to the Distrib. system (US\$) **787.805,21**

NOTE = for more details on costs see Lot 5

	Supplies and Works	Unit	Quantity	Unit Cost (\$)	Subtotal (\$)
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Item 6 - Construction of pipelines connecting the old boreholes to the 1.000 cum Reservoir (ex Lot 6)

6	1	Pipelines from old boreholes to the 1000 cum Reservoir				
	a	Earth works (<i>excavation + bedding and fixing the pipe + refill the trench, etc.</i>)	lsp	1,0	204.682,56	204.682,56
	b	Pipe laying (<i>transport on site + pipe installation</i>)	lsp	1,0	12.847,06	12.847,06
	c	Ancillary works	lsp	1,0	2.094,44	2.094,44
	d	Pipes stabilization (<i>anchor blocks</i>)	lsp	1,0	2.366,00	2.366,00
	e	Foreign supplies of U-PVC pipes + fittings	lsp	1,0	112.498,64	112.498,64
	f	Spare parts	lsp	1,0	3.277,36	3.277,36

Sub Total Item 6 - Pipelines connecting the old boreholes to the 1.000 cum Reservoir (US\$) **337.766,06**

NOTE = for more details on costs see Lot 6

Item 7 - Construction of pipelines connecting the new boreholes to the 1.000 cum Reservoir (ex Lot 7)

7	1	Pipeline from new boreholes to the 1000 cum Reservoir				
	a	Earth works (<i>excavation + bedding and fixing the pipe + refill the trench, etc.</i>)	lsp	1,0	284.752,06	284.752,06
	b	Pipe laying (<i>transport on site + pipe installation</i>)	lsp	1,0	16.815,00	16.815,00
	c	Ancillary works	lsp	1,0	1.758,66	1.758,66
	d	Pipes stabilization (<i>anchor blocks +erosion protections</i>)	lsp	1,0	14.113,00	14.113,00
	e	Foreign supplies of U-PVC pipes + fittings	lsp	1,0	81.398,39	81.398,39
	f	Spare parts	lsp	1,0	447,63	447,63

Sub Total Item 6 - Pipelines connecting the new boreholes to the 1.000 cum Reservoir (US\$) **399.284,74**

NOTE = for more details on costs see Lot 7

Item 8 - Construction of pump stations on new boreholes

8	1	Civil works				
	a	Construction of n° 3 pump stations and equipment	each	3,0	11.926,55	35.779,65
	b	Construction of n° 3 couples of manholes, civil works	each	3,0	587,00	1.762,50
	2	Hydraulic works				
	a	Installation of piping systems in n° 3 pump stations	lsp	1,0	10.373,00	10.373,00
	b	Installation of electric systems in n° 3 pump stations	lsp	1,0	11.060,00	11.060,00
	3	Foreign supplies				
	a	Foreign supplies: diesel generators + control panels x n° 3 pumps	lsp	1,0	30.396,80	30.396,80
	b	Foreign supplies: n° 3 pumps + piping ancillaries	lsp	1,0	39.357,73	39.357,73
	c	Foreign supplies: spare parts	lsp	1,0	668,61	668,61

Sub Total Item 8 - Pump stations on new boreholes (US\$) **129.398,29**

NOTE = for more details on costs see Lot 8

<i>Supplies and Works</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Cost (\$)</i>	<i>Subtotal (\$)</i>
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Item 9 - Construction the desalinization plant

9	1	Civil works				
	a	Building for housing the plant, 6,0 x 6,0 x H= 3,2 m	lsp	1,0	16.000,00	16.000,00
	b	Elevated reservoir: 80 cum x 15,0 m high, reinforced concrete made	lsp	1,0	144.000,00	144.000,00
	2	Desalinization plant for 2,8 lit/sec (10 cum/h) <i>(installed in site and start tap inclusive)</i>				
	a	Ultrafiltration plant, <i>operating with the pump of the borehole</i>	lsp	1,0	37.000,00	37.000,00
	b	Nano-filtration plant including the booster pumps	lsp	1,0	110.000,00	110.000,00
	c	Piping, fully made with stainless steel	lsp	1,0	33.000,00	33.000,00
	b	Spare parts for one year operation	lsp	1,0	25.000,00	25.000,00

Sub Total Item 9 - Construction the desalinization plant (US\$) 365.000,00

NOTE = *for more details see DWG 6*

Item 10 - Construction the distribution system of drinkable water

10	1	Piping				
	a	Earth works <i>(excavation + bedding and fixing the pipe + refill the trench, etc.)</i>	lsp	1,0	31.512,60	31.512,60
	b	Pipe laying, pipeline fully made with high density polyethylene (HDPE) PE 100 NP 10 pipes in rolls connected with compression joints <i>(transport on site + pipe installation inclusive)</i> , the quantities are: OD 50 x 1080 m, OD 63 x 7.470 m, OD 75 x 835 m, OD 90 x 985 m and OD 110 x 2.135 m	lsp	1,0	45.018,00	45.018,00
	c	Ancillary works	lsp	1,0	12.000,00	12.000,00
	d	Pipes stabilization <i>(anchor blocks + erosion protections at the river crossing)</i>	lsp	1,0	7.500,00	7.500,00
	e	Foreign supplies of made with high density polyethylene (HDPE) PE 100 NP 12,5 pipes in rolls, the quantities are: OD 50 x 1200 m, OD 63 x 7.600 m, OD 75 x 900 m, OD 90 x 1.000 m and OD 110 x 2.200 m, plus necessary fittings and valves.	lsp	1,0	104.057,24	104.057,24
	f	Spare parts	lsp	1,0	10.000,00	10.000,00
	2	Public fountains <i>(kiosks)</i>				
	a	Civil works, foundation of kiosks + manholes	lsp	14,0	65,00	910,00
	b	Piping, fully made with stainless steel	lsp	14,0	330,00	4.620,00
	c	Foreign supplies: stainless steel pipes, valves, manhole covers, consommables	lsp	14,0	1.430,00	20.020,00
	d	Spare parts	lsp	1,0	4.200,00	4.200,00

Sub Total Item 10 - Construction the distribution system of drinkable water (US\$) 239.837,84

NOTE = *for more details see DWG 5 and DWG 7.*

		Supplies and Works	Unit	Quantity	Unit Cost (\$)	Subtotal (\$)
Item 11 - Drilling and completion to productive of n° 3 boreholes in Salaxley Village Area						
11	1	Site installations				
	a	Mobilisation and Demobilisation of all vehicles, rigs and equipment to and from Project Area + Site Preparation, Dismantling and Restoration	lsp	1+1+1	8.300,00	8.300,00
	2	Drilling				
	a	- n° 3 sites	lsp	1+1+1	98.400,00	98.400,00
	3	Lining and completion				
	a	- n° 3 sites	lsp	1+1+1	55.000,00	55.000,00
	4	Development to productive and testing				
	a	- n° 3 sites	lsp	1+1+1	36.000,00	36.000,00

Sub Total Item 1 - Drilling and completion to productive of two boreholes (US\$) 197.700,00

NOTE = for more details on costs see DWG 2

Item 12 - Drilling and completion to productive of n° 4 boreholes in Jabagale Area

12	1	Site installations				
	a	Mobilisation and Demobilisation of all vehicles, rigs and equipment to and from Project Area + Site Preparation, Dismantling and Restoration	lsp	1+1+1+1	12.500,00	12.500,00
	2	Drilling				
	a	- n° 4 sites	lsp	1+1+1+1	143.200,00	143.200,00
	3	Lining and completion				
	a	- n° 4 sites	lsp	1+1+1+1	80.000,00	80.000,00
	4	Development to productive and testing				
	a	- n° 4 sites	lsp	1+1+1+1	48.000,00	48.000,00

Sub Total Item 11 - Drilling and completion to productive n°4 boreholes in Jabagale Area (US\$) 283.700,00

NOTE = for more details on costs see DWG 2

<i>Supplies and Works</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Cost (\$)</i>	<i>Subtotal (\$)</i>
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Item 13 - Construction and equipment of n°3 pump stations in Salaxley Village Well Field

13	1	Civil works				
	a	Construction of n° 3 pump stations and equipment	each	3,0	14.000,00	42.000,00
	b	Construction of n° 3 couples of manholes, civil works	each	3,0	350,00	1.050,00
	2	Hydraulic works				
	a	Installation of piping systems in n° 3 pump stations	lsp	3,0	4.200,00	12.600,00
	b	Installation of electric systems in n° 3 pump stations	lsp	3,0	2.800,00	8.400,00
	3	Foreign supplies				
	a	Foreign supplies: diesel generators + control panels x n° 3 pumps	lsp	3,0	11.000,00	33.000,00
	b	Foreign supplies: n° 3 pumps + piping ancillaries	lsp	3,0	43.000,00	43.000,00
	c	Foreign supplies: spare parts	lsp	1,0	850,00	850,00

Sub Total Item 13 - Construction and equipment of pump stations in Salaxley Well Field (US\$) **140.900,00**

NOTE = for more details on costs see DWG 2

Item 14 - Construction and equipment of n°4 pump stations in Jabagale Area Well Field

14	1	Civil works				
	a	Construction of n° 4 pump stations and equipment	each	4,0	14.000,00	56.000,00
	b	Construction of n° 3 couples of manholes, civil works	each	4,0	350,00	1.400,00
	2	Hydraulic works				
	a	Installation of piping systems in n° 3 pump stations	lsp	4,0	4.200,00	16.800,00
	b	Installation of electric systems in n° 3 pump stations	lsp	4,0	2.800,00	11.200,00
	3	Foreign supplies				
	a	Foreign supplies: diesel generators + control panels x n° 3 pumps	lsp	4,0	11.000,00	44.000,00
	b	Foreign supplies: n° 3 pumps + piping ancillaries	lsp	4,0	43.000,00	43.000,00
	c	Foreign supplies: spare parts	lsp	1,0	1.500,00	1.500,00

Sub Total Item 14 - Construction and equipment of pump stations in Jabagale Area Well Field (US\$) **173.900,00**

NOTE = for more details on costs see DWG 2

Supplies and Works	Unit	Quantity	Unit Cost (\$)	Subtotal (\$)
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Item 15 - Trunkline connecting Salaxley Village Well Field to 1.000 cum Reservoir

15	1	Pipeline from Salaxley Village Well Field to the 1000 cum Reservoir (<i>designed to convey 40 lit/sec = 108 cum/hour</i>)				
	a	Earth works (<i>excavation + bedding and fixing the pipe + refill the trench, etc.</i>)	lsp	1,0	185.805,75	185.805,75
	b	Pipe laying, pipe OD 250 U-PVC NP 16 x 16.815,0 m (<i>transport on site + pipe installation</i>)	lsp	1,0	52.126,50	52.126,50
	c	Ancillary works	lsp	1,0	18.758,00	18.758,00
	d	Pipes stabilization (<i>anchor blocks + erosion protections</i>)	lsp	1,0	15.000,00	15.000,00
	e	Foreign supplies of U-PVC pipes + fittings	lsp	1,0	982.112,74	982.112,74
	f	Spare parts	lsp	1,0	5.000,00	5.000,00

Sub Total Item 15 - Pipelines connecting Salaxley Well Field to the 1.000 cum Reservoir (US\$) **1.258.802,99**

NOTE = *for more details on costs see DWG 2*

Item 16 - Trunkline connecting Jabagale Well Field to 1.000 cum Reservoir

16	1	Pipeline from Jabagale Well Field to the 1000 cum Reservoir (<i>designed to convey 50 lit/sec = 108 cum/hour</i>)				
	a	Earth works (<i>excavation + bedding and fixing the pipe + refill the trench, etc.</i>)	lsp	1,0	288.723,75	288.723,75
	b	Pipe laying, pipe OD 315 U-PVC NP 16 x 22.645,0 m (<i>transport on site + pipe installation</i>)	lsp	1,0	226.454,20	226.454,20
	c	Ancillary works	lsp	1,0	32.000,00	32.000,00
	d	Pipes stabilization (<i>anchor blocks + erosion protections</i>)	lsp	1,0	20.000,00	20.000,00
	e	Foreign supplies of U-PVC pipes + fittings	lsp	1,0	2.117.306,95	2.117.306,95
	f	Spare parts	lsp	1,0	8.000,00	8.000,00

Sub Total Item 16 - Pipelines connecting Jabagale Well Field to the 1.000 cum Reservoir (US\$) **2.692.484,90**

NOTE = *for more details on costs see DWG 2*

Supplies and Works			Unit	Quantity	Unit Cost (\$)	Subtotal (\$)
Item 17 - Primary and Secondary Distribution Network, <i>extention to secure the service</i>						
17	1	Installation of new pipes in Town Area.				
	a	Earth works (<i>excavation + bedding and fixing the pipe + refill the trench, etc.</i>)				
		i - for OD 355 mm pipes (<i>60 m x 2,4 cum/m = 144 cum</i>)	cum	144,0	7,40	1.065,60
		ii - for OD 250 mm pipes (<i>3.295 m x 1,8 cum/m = 5.931,0 cum</i>)	cum	5.931,0	7,40	43.889,40
		iii - for OD 200 mm pipes (<i>6.500 m x 1,4 cum/m = 9.100,0 cum</i>)	cum	9.100,0	7,40	67.340,00
		iv - for OD 160 mm pipes (<i>376 m x 1,2 cum/m = 451,2 cum</i>)	cum	452,0	7,40	3.344,80
		v - for OD 110 mm pipes (<i>1021 m x 1,0 cum/m = 1.021,0 cum</i>)	cum	1.021,0	7,40	7.555,40
		vi - for OD 90 mm pipes (<i>1.310,0 m x 1,0 cum/m = 1.310,0 cum</i>)	cum	1.310,0	7,40	9.694,00
	b	Pipe laying (<i>transport on site + pipe installation</i>)				
		i - OD 355 mm pipes (<i>60 m</i>)	m	60,0	3,20	192,00
		ii - OD 250 mm pipes (<i>3.295 m</i>)	m	3.295,0	3,20	10.544,00
		iii - OD 200 mm pipes (<i>6.500 m</i>)	m	6.500,0	2,20	14.300,00
		iv - OD 160 mm pipes (<i>376,0 m</i>)	m	376,0	2,20	827,20
		v - OD 110 mm pipes (<i>1.021,0 m</i>)	m	1.021,0	2,20	2.246,20
		vi - OD 90 mm pipes (<i>1.310 m</i>)	m	1.310,0	1,60	2.096,00
	c	Ancillary works (<i>protections + manholes + etc.</i>)	lsp	1,0	38.500,00	38.500,00
2	Foreign supplies (<i>delivered in site</i>)					
	a	U-PVC pipes + fittings				
		i - OD 355 mm pipes (<i>60 m</i>)	m	70,0	113,11	7.917,98
		ii - OD 250 mm pipes (<i>3.295 m</i>)	m	3.350,0	53,81	180.258,48
		iii - OD 200 mm pipes (<i>6.500 m</i>)	m	6.700,0	34,55	231.458,20
		iv - OD 160 mm pipes (<i>376,0 m</i>)	m	400,0	22,10	8.841,20
		v - OD 110 mm pipes (<i>1.021,0 m</i>)	m	1.100,0	10,58	11.638,00
		vi - OD 90 mm pipes (<i>1.310 m</i>)	m	1.420,0	8,63	12.247,50

Sub Total Item 17 - Primary and Secondary Distribution Network, extension (US\$) 609.000,96

NOTE = for more details see DWG.s 3 and 4.

<i>Supplies and Works</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Cost (\$)</i>	<i>Subtotal (\$)</i>
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Item 18 - Hydrogeological and geophysical studies with boring tests in Nugal valley

18	1	Site installations				
	a	Mobilisation and Demobilisation of all vehicles, rigs and equipment to and from Project Area + Site Preparation, Dismantling and Restoration	lsp	n° 4	12.500,00	12.500,00
	2	Drilling				
	a	- n° 4 sites	lsp	n° 4	104.000,00	104.000,00
	3	Lining and completion				
	a	- n° 4 sites	lsp	n° 4	17.600,00	17.600,00
	4	Development to productive and testing				
	a	- n° 4 sites	lsp	n° 4	48.000,00	48.000,00

Sub Total Item 17 - Primary and Secondary Distribution Network, extension (US\$) 182.100,00

NOTE = for more details see DWG 1.