



To all Bidders

01

Ref: ET-MOWE-408397-CW-RFB/Construction of Aleb RPS

Subject: Amendment No. 3 to RFBs

Subject to the request for clarification submitted by some bidders, we have issued amendment 3 to the RFBs as attached here with this letter on the specification of Reverse Osmosis Treatment Plant described under Serial No. 12 in Volume II of the RFB

Therefore, the Ministry of Water and Energy would like to inform all bidders to use the attached specification of reverse Osmosis Treatment Plant for the preparation of responsive bid instead of the previous one included in volume II of RFB under serial number 12. Please be informed that all other information in original RFBs except this amendment no 3 and previously issued amendments is remained the same.

C.C

- Water and Supply and Sanitation Sector, State Minister
 - Procurement Executive
 - HOA, GW4RP PMCU Coordinator
 - WS-PIT Coordinator
- MoWE, Addis Ababa**



With Regards

Ambassador Asfaw Dingamo
State Minister

Clarification No.1

1. Haduba RPS (ET-MOWE-366018-CW-RFB)

- 1.1 As you know the bid document of Haduba were attached on MOWE official website. However, the site has no drilled well for Haduba this means no need of pump, panels and others. As per its proposal the pipe lines proposed to take from Cheru Harut Reservoir. Do you have detail information? How did you propose all un necessary structures?

Response: The Technical Specification, BOQ and drawings prescribed in Volume II of the Bidding documents best describes the scope of work and the requirement as drown from engineering design reports.

Amendment No.2

1.Aleb RPS(ET-MOWE-408397-CW-RFB)

- 1.2 Bill 4: In the first row, we noticed that column 2 is labeled as "Cost Item," while column 3 is labeled as "Description." It is unclear why these two columns are separated since both of them appear to describe the same item. Could you please provide clarification on the purpose of this separation?

Response: The Column 2 we described as cost item is meant to be description of items, column 3 we described as description is meant to be the capacity of an item. Please refer the attached revised Bill no.4 of the BOQ as annex 1

- 1.3 Bill 4, Item No. 1: The description for the solar module states "300." However, it is unclear what the measuring unit for this value is. Could you please confirm if it is in Watts's peak (Wp)?

Response: yes, it is meant to say Watts's peak (WP)

- 1.4 Bill 4, Item No. 4: In the row following the water pipes, it states "suction/riser pipe type and size galvanized steel 1200m. We would appreciate clarification on the meaning of this context, as it is unclear.

Response: Corrected. Please refer the attached revised Bill no.4 of the BOQ as annex 1

- 1.5 Bill 4, Item No. 7: We would like to know the measuring unit and quantity of the Array Support Structure mentioned in this item, as this information is currently missing.

Response: Corrected. Please refer the attached revised Bill no.4 of the BOQ as annex 1

- 1.6 Bill 4, Item No. 8: Could you please specify the measuring unit and quantity for the material (RC concrete) and provide the capacity measuring unit of the water storage tank?

Response: Corrected. Please refer the attached revised Bill no.4 of the BOQ as annex 1

- 1.7 Bill 4, Item No. 9: We would like to know the measuring unit for the masonry of the water tank support structure mentioned in this item, as it is not specified.

Response: Corrected. Please refer the attached revised Bill no.4 of the BOQ as annex 1

- 1.8 Bill 4, Second Table: In the Solar System section for the RO treatment plant, the first item, "solar panel, does not mention the capacity (in watts) of the solar panel. Could you please provide this information? Additionally, we noticed that there is no mention of an array support structure for the solar panels in the same table. Could you confirm if this omission is intentional?

Response: Corrected. Please refer the attached revised Bill no.4 of the BOQ

- 1.9 Request to clarify the Water Quality Report



Response: Please find the annexed water quality report for your consideration as annex 2

2. Construction of Frest Teffo site RPS/ET MWOE 398358

2.1 Clarify the missed bills on BOQ which are Bill no 2,3,6,7,9,10 and summary of BOQ.

Response: The bill no 2,3,6,7,9,10 is missed from the uploaded documents. Please find the annexed Bill no 2,3,6,7,9,10 as annex 3 for your consideration



Annex 1: Corrected Bill No 4; of Aleb RPS

Bill 4: Supply and Installation of Main solar pumping components at the BH site (Design H = 161 m and Q = 10.42Lit/sec, Water temperature = 400C.). Besides, a separate solar system for the treatment plant

For the Supply and Installation of Solar water supply system at the BH site for Pumping water

Nr	Cost Item	Unit	Quantity	Unit Price (ETB)	Total Price (ETB)
1	Solar Module,300 WP	Number	153		
2	Inverter/Controller/Switch, 55kw controller	Number	1		
	Min. operating voltage (V) ,250				
	Maximum input voltage (V) ,600				
	Maximum input current (I) , 20 A				
3	Pump (solar pump) , 30 KW	Number	1		
	Pump (solar pump), Which can work in the temperature of above 40degree centigrade, with Head=161 m and design discharge=10.41l/s, casing diameter is 8", therefore the pump diameter should be less than or equals to 7inch, with the appropriate cable size, dry iron protection electrodes(2*1.5mm2 control cable) and should be supply and installed.				
4	Water pipes				
	Suction/riser pipe type and size , Galvanized Steel, size 3 inch	meter	110		



Nr	Cost Item	Unit	Quantity	Unit Price (ETB)	Total Price (ETB)
5	Pipe fittings (inches)				
	Gate Valves	Number	1		
	90 Degree Elbows, 4 inch	Number	5		
	Check valve, 4 inches	Number	1		
	Diffusers/Expansion, 4 inch	Number	1		
6	Conductors and accessories	meter	165		
	Conductor material, copper				
	Wire diameter @ < 10% loss (mm ²), size 8.37m ²	Ls			
7	Array support structure, metal	LS			
8	Water storage tank, Material, RC Concrete Capacity, 300	Number	1		
9	Water tank support structure, Masonry	Ls	5		
	Subtotal				



Annex2: Water Quality Test result of Aleb RPS

Annex 2.1 Details of the Water Source and Environmental Factors

Zone	Three
Woreda	Bidu
Site	Aleb
Latitude (N)	780904.5
Longitude (E)	1433724.6
Elevation asl (m)	19.663
Reservoir elevation asl (m)	32.929
Source Type	Deep well
Well depth (m)	150
Casing Diameter (inch)	8'' Steel
Reservoir height from ground (m)	4
Pressure (main) line diameter (inch)	4'' (OD110mm HDPE)
Well yield (l/sec)	13
SWL (m)	92.5
DWL (m)	93.2
Pump position (m)	102
PV array distance from Source (m)	25
reservoir distance from source (m)	1578
Projected No. of benef.	4451
Vol. of water require/day (m3)	253.9
Ambient temperature	40
water temperature(°C)	40
minimum irradiation (kwh/m2/day)	5.05

Annex 2.2: Well Completion Report and Laboratory Water Quality Result



Table 7: Tabulated laboratory test result of the two samples of BPW-1 with relative WHO MCL

Source of Sample	Borehole	Borehole	WHO Maximum Allowable Concentration (mg/l)
Well ID	BPW-1	BPW-1	
Sample ID	Sampled at mid of constant test	Sampled at end of constant test	
Date of Collection	20/10/2022	21/10/2022	
Date of lab submission	28/10/2022	28/10/2022	6.5-8.5
Date Analysed	10/11/2022	10/11/2022	
LAB. ID. NO.	447/2015	446/2015	
pH	6.99	7.03	
Electrical Conductivity $\mu\text{S}/\text{cm}$ (EC)	3630	3540	-
Total Solids 105 ⁰ C (mg/l)	2326	2288	-
T.Dissolved Solid(mg/L)	2324	2286	1000
Turbidity (NTU)	0.51	0.4	5
Sodium (mg/l Na)	550	545.1	200
Potassium (mg/l K)	43.5	37	-
Total Iron (mg/l Fe)	ND	ND	0.3
Manganese (mg/l Mn)	0.02	0.01	0.1
Total Hardness (mg/l CaCO ₃)	359.56	365.62	500
Calcium (mg/lCa ²⁺)	117.16	113.12	200
Magnesium (mg/l Mg ²⁺)	16	19.88	150
Alkalinity (mg/lCaCO ₃)	97.4	101.5	-
Carbonate (mg/l CO ₃ ²⁻)	Nil	Nil	-
Bicarbonate (mg/l HCO ₃)	118.88	123.83	-
Chloride (mg/l Cl ⁻)	941.3	991	250
Sulphate (mg/l SO ₄ ²⁻)	71.79	96.1	400
Nitrate (mg/l NO ₃ -N)	2.64	1.49	10
Nitrite (mg/l NO ₂ -N)	0.09	0.06	0.2
Fluoride (mg/l F ⁻)	1.8	1.8	1.5
Phosphate (mg/l PO ₄ ³⁻)	<0.1	ND	-
Aluminum (mg/l Al)	ND	ND	0.2
Barium (mg/l Ba)	ND	ND	0.7
Copper (mg/l Cu)	ND	ND	2
Chromium(mg/l Cr ⁺⁶)	ND	ND	0.05
Boron(mg/L B)	0.75	0.7	0.5
Zinc(mg/L Zn)	ND	0.5	15
Molybedum(mg/L Mo)	ND	ND	0.07
Nickel (mg/L Ni)	ND	ND	0.07
Lead (mg/L Pb)	ND	ND	0.01
Cobalt (mg/L Co)	ND	ND	-
Cadmium (mg/L Cd)	ND	ND	0.003



Table 8: Laboratory test result analysis: Summary Report of Water Sampled @mid of constant Test- BPW-1



Sample Summary Report				
Sample ID	Water sampled @mid of constant test			
Sample Date	10/20/2022			
Station	Aleb Well-BPW-1			
Location	Zone 2, Babuwanada			
Geology				
Watertype	Na-Cl			
Temperature (°C)	41.00			
pH	8.99			
Conductivity	3630.00 uS/cm			
Sum of Anions	30.40 meq/L			
Sum of Cations	32.20 meq/L			
Balance	2.87 %			
Total dissolved solids	1873.84 mg/L			
Total hardness	358.48 mg/L CaCO ₃			
Alkalinity	97.60 mg/L CaCO ₃			
Major ion composition	mg/l	mmol/l	meq/l	
Na	550.00	23.92	23.92	
K	43.60	1.113	1.113	
Ca	117.16	2.92	5.85	
Mg	16.00	0.66	1.32	
Cl	941.30	26.55	26.55	
SO ₄	81.79	0.85	1.70	
NO ₃	2.64	0.03	0.03	
HCO ₃	118.88	1.95	1.95	
Ratios	mg/l	mmol/l	Comparison to Seawater	
			mg/l	mmol/l
Ca/Mg	7.32	4.44	0.319	0.194
Ca/SO ₄	1.43	3.43	0.152	0.364
Na/Cl	0.58	0.90	0.556	0.858
Cl/Br			287	648
DESCRIPTION				
 Company Logo	PROJECT		PROJECT NO	
	CLIENT		DATE	



Table 9: Laboratory test result analysis Summary Report of Water Sampled @end of constant Test BPW-1

Sample Summary Report				
Sample ID	Water sampled @end of constant test			
Sample Date	10/21/2022			
Station	Aleb Well-BPW-1			
Location	Zone 2, Rikhsa area			
Geology				
Watertype	Na-Cl			
Temperature (°C)	40.00			
pH	7.03			
Conductivity	3540.00 uS/cm			
Sum of Anions	32.16 meq/L			
Sum of Cations	31.94 meq/L			
Balance	-0.35 %			
Total dissolved solids	1930.03 mg/L			
Total hardness	394.57 mg/L CaCO ₃			
Alkalinity	101.56 mg/L CaCO ₃			
Major ion composition	mg/l	mmol/l	mg/l	mmol/l
Na	545.10	23.71	23.71	
K	37.00	0.946	0.946	
Ca	113.12	2.82	5.64	
Mg	19.88	0.82	1.64	
Cl	991.00	27.95	27.95	
SO ₄	98.10	1.00	2.00	
NO ₃	1.49	0.02	0.02	
HCO ₃	129.83	2.03	2.03	
Ratios	mg/l	mmol/l	mg/l	mmol/l
Ca/Mg	5.69	3.45	0.319	0.194
Ca/SO ₄	1.18	2.82	0.152	0.364
Na/Cl	0.55	0.85	0.556	0.858
Cl/Br			287	548
DESCRIPTION				
	PROJECT		PROJECT NO	
	CLIENT		DATE	



Annex 3: Corrected Bill No: Bill no 2,3,6,7,9,10 of Frestafo RPS

Bill No-2: Supply and Installation of Pipes and fittings (Rising main & Distribution)

No.	Description	Unit	Qty	Unit price (Birr)	Total price (Birr)
1	EARTH WORK				
1.1	Trench excavation for pipe 0.60m * 1m	M ³	5440		
1.2	Back filling of trench excavated	M ³	5440		
2	PIPES AND FITTINGS				
2.1	PIPES (GI) Class B type				
	GI Ø 2 1/2" for rising main	M	6		
	GI Ø 3 1/2" at distribution main , road and gully crossing	M	24		
	GI Ø 3" for pressure main	M	1885		
	FITTINGS (GI)				
2.2	Union		9		
	GI Ø 3"	Pcs	8		
2.3	Nipples				
	GI Ø 3"	Pcs	8		
	GI Ø 2 1/2"	Pcs	2		
2.4	Tee				
	GI Ø 2 1/2"	Pcs	1		
2.5	Reducer				
	GI Ø 3"-2 1/2"	Pcs	2		
2.6	Coupling				
	GI Ø 3"	Pcs	323		
	GI Ø 2 1/2"	Pcs	2		
2.7	Gate valve flanged				
	GI Ø 3"	Pcs	3		
2.8	Elbow 90"				
	GI Ø 2 1/2"	Pcs	4		
2.9	Check valve				
	GI Ø 3"	Pcs	2		



No.	Description	Unit	Qty	Unit price (Birr)	Total price (Birr)
2.10.	Reducer straight HDPE 75mm*63mm	Pcs	2		
2.11	Reducer straight HDPE 63mm*50mm	Pcs	1		
	Supply and Installation of HDPE Pipes of PE-100 series				
	HDPE with ID=110mm,PN 16, Nominal wall thickness 6.2mm	m	3070		
	HDPE with ID=90mm,PN 16, Nominal wall thickness 5.8mm	m	1195		
	HDPE with ID=82mm,PN 10, Nominal wall thickness 5.6mm	m	1898		
	HDPE with ID=50mm,PN 10, Nominal wall thickness 5.6mm	m	620		
2.12	Supply and Installation of HDPE Fittings				
	Female Adaptor of size 110mm*7 1/2"	pcs	36		
	Female Adaptor of size 90mm*6 1/2"	pcs	22		
	Female Adaptor of size 82mm*5 1/2"	pcs	14		
	Female Adaptor of size 50mm*2 1/2"	pcs	14		
	Straight coupling 110mm*7 1/2"	Pcs	36		
	Straight coupling 90mm*6 1/2"	Pcs	22		
	Straight coupling 82mm*5 1/2"	Pcs	14		
	Straight coupling 50mm*2 1/2"	Pcs	14		
	Total				

Bill No-3 : Construction of 100M3 Service Reservoir (RCC)



SN	Description	Unit	Qty	Unit Price (ETB)	Total Price (ETB)
1	Earth work and excavation				
1.1	Clearing of site to remove top rock to an average depth of 20cm and dia. = 8.7m	m2	59.45		
1.2	Bulk excavation in rock to a depth of 0.5m measured from reduce level, dia. =8.7m	m3	29.725		
1.3	Extra over items 0.5m for excavation in medium formation	m3	29.725		
1.4	Cart away and deposit excavated surplus material to a distance not more than 500 m from site as directed by the engineer	m3	59.45		
1.5	Supply and compact approved selected material to depth of 1m under floor slab	m3	29.725		
1.6	Hard core filling of 40cm thick and well dressed	m2	46.57		
2	Concrete works, including form work and support				
2.1	Concrete class C-15 (1:3:6 mix) in 10cm lean concrete blinding layer	m3	4.66		
2.2	Concrete class C-30 (1:11/2:3 mix) in floor slab	m3	13.97		
2.3	Concrete class c-30 in circular wall	m3	13.89		
2.4	Ditto in roof slab	m3	7.05		
3	Reinforcement				
3.1	Provide, cut ,bend and fix in position reinforcement steel bars all according to structural drawings				
3.1.1	Deformed bar diameter 8mm	kg	14.47		
3.1.2	Ditto dia. 10mm	kg	2306.84		
3.1.3	Ditto dia 12mm	kg	151.01		
4	Plastering work				
4.1	Three coats of plastering for internal wall 2.5cm. Thick (1:3, 2:2, 1:1) mix ratio	m2	65.35		
4.2	Two coats of plastering for external wall 2.5cm thick (1:3) mix ratio	m2	73.7		
4.3	Rendering of external wall (1:3) mix ratio	m2	69.37		



SN	Description	Unit	Qty	Unit Price (ETB)	Total Price (ETB)
4.4	Cement screeding for floor slab internal walls & roof slab	m2	140.07		
5	Accessories and Finishing				
5.1	60X60 cm manhole with 4 mm thick mild steel seat frame and lockable cover on its own internal frame	Ls	1		
5.2	Supply and fix dia. 1" dia GS pipe external ladder as shown in the drawing and directed by the engineer	Ls	1		
5.3	Supply and fix dia. 1" dia GS pipe internal ladder as shown in the drawing and directed by the engineer	Ls	1		
5.4	Construct manholes with 4mm thick mild steel frame and lockable cover for inlet, outlet and over flow pipes as shown on the drawing and as instructed by the engineer (price includes all necessary costs)	Ls	2		
5.5	Supply and fix GSG 28,250mm wide water stop as shown on the drawing and instructed by the engineer	m	44		
5.6	Provide and construct angle iron post fence (2.5m net height, 0.5m embedment in concrete & c/c 2m, angle iron of 60x60x4mm) with barbed wire mesh (2.5mm thickness, 5pcs horizontal & 4pcs diagonal) and anchored with C-20 concrete at the bottom. Concrete dimension is 500x200x200mm, for BH and Generator house see at the drawings (15m*20m).	LS	1		
6	Installation and fixing of pipes, valves and fittings according to the drawing and as instructed by the engineer. Prices shall include all the necessary assistance civil work				
6.1	For inlet pipe assembly	Ls	1		
6.2	For outlet pipe assembly	Ls	1		
6.3	For overflow pipe assembly	Ls	1		
6.4	For drain pipe assembly	Ls	1		



SN	Description	Unit	Qty	Unit Price (ETB)	Total Price (ETB)
6.5	Ventilation pipes (3")	Ls	2		
6.6	Float valve	Pcs	3		
	Total Sum for one Reservoir				

