

Annexure-I

Name of work : Implementation of SCADA for Water Supply network in CoPA.

Item No.	Description of Item	Unit	Rate
1	Dismatling of old unserviceable sluice valve of size 100 mm dia with nut bolt and washer and taken as credit complete all as specified and as directed.	Each	
2	Dismatling of old unserviceable sluice valve of size 150 mm dia with nut bolt and washer and taken as credit complete all as specified and as directed.	Each	
3	Dismatling of old unserviceable sluice valve of size 200 mm dia with nut bolt and washer and taken as credit complete all as specified and as directed.	Each	
4	Supply Installation Testing Commissioning of MS Fittings including Tool pieces , Flanges , Reducer , Mechanicle Adeptor , Universal Joint Pipe etc	Per KG	
5	Material and labour for Making Priming arrangements to the pump including necessary cutting and inserting the existing pipe line for upto 25 mm dia.	Each	
6	Provision of new Rotational moulded polyethylene water storage tanks ,Double layered (cylindrical vertical with closed top) hoisted and fixed in position. 1000 Litre capacity for priming purpose complete all as specified and as directed. Make of Water Tank :Sintex / Polycon / Infra (ISI MARKED)	Each	
7	Supply and fix CPVC valve of 25 mm dia Make :(ISI MARKED)	EACH	
8	Supply and fix Non Return Valve of 25 mm dia screwed both ends for iron pipe and fixed complete all as specified and as directed. Make :(ISI MARKED)	EACH	
9	Material and labour for CPVC pipe 25 mm dia, Make : (ISI MARKED)	RM	
10	Material and labour for addition/alteration works with water inlet/outlet line of pump set of any capacity by cutting the existing GI pipe of any dia including necessary welding works to accommodate new lines/equipment of the system complete all as specified and as directed.	EACH	
11	Supply and lay Double wall corrugated high density polymer (SDR 17) pipe of ISI marked 63 mm outer dia and 50mm inner dia as in cable protection fixed to poles with necessary suitable MS clamps, bolts, nuts, washers, couplers,bends,end caps etc laid in trenches/ roads crossings etc complete all as specified and as directed. Make: KELTRON/REX/DURALINE	RM	

12	Excavation in trenches not exceeding 1.5 m wide and not exceeding 1.5 m deep for foundation, laying pipe etc.. and getting out in hard/dense soil complete all as specified and as directed.	CUM	
13	Returning filling in soft/loose soil including spreading levelling watering and well ramming in layers n.exc 25 cm thick complete all as specified and as directed.	CUM	
14	Removing excavated soil to a distance not exceeding 50 m and depositing where directed at a level n.exc. 1.5 m above the starting point complete all as specified and as directed.	CUM	
15	Supply, Installation, Testing and Commissioning of rust proof maintenance free magnetic sensors. Make: Rkom/Mahalaxmi/Techtrol	Each	
16	Supply, Installation, Testing and Commissioning of Motor Actuated Butterfly valve with the following specifications including all accessories as required a) Operating Voltage : 24 V DC / 220 V AC / 110 V AC b) Designed line pressure: 10 kg/sq cm. c) Operating Angle: 90 degrees d) Disc Material: C.I. with nylon coating e) Limit switches: 02 nos. for open and close f) Type: Direct mounting / Indirect Mounting Actuator Make : Rkom/ICS/Realtork/Flowtork/Emtork Butterfly Valve Make : L&T/Normex/Leader/Zoloto		
A	Valve size: 100 mm dia.	Each	
B	Valve size: 150 mm dia.	Each	
C	Valve size: 200 mm dia.	Each	
D	Valve size: 350 mm dia.	Each	
17	Supply, Installation Testing & Commissioning of pressure transmitter with following specification: Power supply: 10-36 V DC Process connection: G ½ " Enclosure: whether proof IP 65 Process temperature: -30 to 120 celcius Accuracy:1 % Make: DANFOSS/INDFOSS/Siemens	Each	
18	Supply, Installation Testing & Commissioning of motorized valve suitable for 25mm GI pipe for priming of pump including suitable bypass with necessary GI fittings with following specifications: Size: 25 mm Material : SS/ Forged Brass/ Cast Bronze Pressure rating: 6 kg / sq. cm. Make: Avcon/Rotox/JOHNSON CONTROL	Each	

19	Supply, Installation Testing & Commissioning of solenoid valve suitable for 10mm GI pipe for priming of pump including bypass arrangement using 10 mm. gate / ball valve with necessary GI fittings with following specifications: Size: 10 mm Material : SS/ Forged Brass/ Cast Bronze Type: Pilot operated, diaphragm type / direct acting type. Pressure rating: 6 kg / sq. cm. Normally closed Make: Avcon/ Rotox/ JOHNSON CONTROL	Each	
20	Supply, Installing, Testing and Commissioning of Ultrasonic Level Transmitter Range : 0-5 metres Accuracy : 0.5 % minimum Supply Voltage : 24V dc Output : 4-20 mA Make: NIVELCO/ E+H/ SIEMENS / BANNER / KROHNE MARSHAL	Each	
21	Supply Installation Testing Commissioning of Full Bore Electro magnetic Flow Meter with 4-20 mA output on modbus, convertor and digital display along with Flow totalizer. Quoted rate shall included test pits for identifying flow meter locations and proper excavations ,all installation accessories and consumable, including dewatering pumps etc. Make : Krohne Marshall / Siemens / Adept Fluidyne / DMS		
A	Size 200 mm	Each	
B	Size 350 mm	Each	
22	Supplying and fixing 2 x 1.5 sq. mm. PVC insulated and PVC sheathed amoured copper cable etc as reqd. Make: POLYCAB / PLAZA / RR	RM	
23	Supplying and fixing 4 x 1.5 sq. mm. PVC insulated and PVC sheathed amoured copper cable etc as reqd. Make: POLYCAB / PLAZA / RR	RM	
24	Supplying and fixing 6 x 1.5 sq. mm. PVC insulated and PVC sheathed amoured copper cable etc as reqd. Make: POLYCAB / PLAZA / RR	RM	
25	Supply and fix Brass gland of 16 mm size complete all as specified and as directed. (ISI MARKED)	EACH	
26	Supply, installation, testing and commissioning of PC based centralized Supervisory Control And Data Acquisition system (SCADA) with the following hardware & software for process control, visualization and data acquisition as per specifications and as directed by the Engineer-in-charge. (a) Minimum No of process tags- 1000 (b) Minimum graphic screens- 25 (c) No of variables per screen - 25 (d) Store text - 15000 (e) Recipes- 500 (f) Max visual basic scripts- 50 (g) Communication with controller- Ethernet (h) Max No of archives - 50 (j) Achievable data - Process data	Each	

27	<p>(j) Max No of entries per archiving - CSV, RDB (k) Password protection - Possible. (l) Alarm & Trend View - Alarm view in the form of trends (process analyst). (m) Statistical process control - SPC module for Cp and Ck charts to be embedded. (n) Clustering - The package should support clustering architectures which can a global client concept for the services. (o) Requirement:Processor :- INTEL i7 processor RAM , 8 GB RAM , Hard Disk :- 1 TB storage capacity Keyboard , Mouse and LAN port , Inbuilt software Windows 10 pro or above version along with 42" LCD / LED. (p) Static IP : Provision of wired broad band with static IP in the name of Port. (q) A4, All in One Printer, Perfect for Business Print, copy, scan Print speed up to 18 ppm (black) and 16 ppm (color) USB. Make - Delta / Dynatek Instruments Pvt Ltd / Wonderware / GE FANUC Location : SCADA Room</p>	Each	
28	<p>Supply, Installation, Testing and Commissioning of Indoor type PLC (Programmable Logic Controller) based Slave Monitoring / Annunciating Control Panel made out of 1.6 mm thick CRCA sheet for control and monitoring of 03 Nos centrifugal pumps , 06 Nos Motorized butterfly valves + 04 Nos Extra , 02 nos magnetic level sensors for priming tank , 03 Nos Ultra Sonic Level Sensor, 04 Nos motorised valves for priming , 03 Nos Pressure transmitters , 03 Nos air release valves , 3 Nos Flow Meter. The panel shall consist of the following equipments; Water Level Sensing & Display. Pump On/Off. Auto priming. Operation of Motor Actuated Butterfly Valves. Automatic Toggling of Pumps. Auto Change Over In Case of Pump Failure. Single Phasing Prevention Make: Minilec (VSPD2) or similar model in Schneider / Select / L&T. Manual Mode Operation. The PLC based Panel shall consist of the follwing sub systems. 01 no PLC with follwing specifications : Make: Delta/Siemens/ABB</p>	Each	

29	<p>CPU and Digital inputs, outputs and analog inputs and outputs as per system requirement.01 no HMI 7" (min) Graphical Touch screen multicolour having following minimum features Make: Renu/ Mitsubishi/Siemens/Delta01 Nos Ethernet Port , 01 nos serial ports and 01 nos USB port01 no SMPS of 5 A rating Make: NHP/Schneider/Telemecaniquee.Suitable no. of interposing relays24V D.C./ 240 V AC coil rating.Make: OMRON/SALZER/SCHNEIDER/IDEC/LEONEMCB of suitable rating Make: Havells/Schneider/L&T Illuminated Push Buttons, Push Buttons and Indicator Lamps as per requirement Make: SCHNEIDER/ESBEE/TELEMECHANIC /L&T Industrial Cellular GPRS Modem NT-RTU-2023 with dual ethernet ports, 4g enabled dual SIM single standby for continuous cellular connection Provision of OFC communication.Supply Voltage: 9-36 VDC, Protocols: Modbus RTU/TCP, TCP Client/Server, UDP Selector Switches as per requirement.Location : Mattancherry Halt Pump House.Make of Control Panel : Rkom Solutions / Integrated Control Systems / Dynatek India Pvt Ltd</p>	Each	
30	<p>Supply, Installation, Testing and Commissioning of Outdoor type PLC (Programmable Logic Controller) based Slave Monitoring / Annunciating Control Panel made out of 1.6mm thick CRCA sheet for control and monitoring of 06 Nos Motorized butterfly valves , 01 Nos Ultra Sonic Level Sensor The panel shall consist of the following equipments; 01 no PLC with suitable Digital and analog Inputs / outputs, expansion modules, RTC etc. Make: Delta/Siemens/ABB HMI 4" , SMPS of 5 A rating , Set of Control Relays , MCB , Audio visual generator etc , Suitable No. of LED Indicators for easy visualisation , Selector Swtiches , Push Buttons / Illuminated Push Buttons . 0.5 sqmmm multistarnded internal wiring with ferruling and suitable lugs , between Industrial Cellular GPRS Modem NT-RTU-2023 with dual ethernet ports, 4g enabled dual SIM single standby for continuous cellular connection, Provision of OFC communication. Supply Voltage: 9-36 VDC, Protocols: Modbus RTU/TCP, TCP Client/Server, UDP Location : OHT Make of Control Panel : Rkom Solutions / Integrated Control Systems / Dynatek India Pvt Ltd</p>	Each	
31	<p>Supply, Installation, Testing and Commissioning of 2 KVA UPS with backup time of 6 Hours incase of power outage. Quoted rate shall deemed to included necessary maintenance free batterires installed in powder coated MS stand with proper ventilations</p>	Each	
32	<p>Supply installation testing commissioning of AC/ DC UPS for 04 hours power back up to the PLC incase of power outage.</p>	Each	
33	<p>Supply and fixing testing commitining of Horizontal End sution type pump model DB 80/20 xe , with CI Body ,CI impeller, CS Shaft , Gland packed coupled to Kirloskar make 37 KW/ 50 HP, 2950 RPM TEFC S.q Cage induction motor on a common base frame with coupling and coupling guard</p>	Each	

	suitable for 35 LPS @ 60 mtr head. The Max Head get in the 50 Hp is 65 mtrs. make : kirloskar or equilent		
34	supply and fixing Non Return Valve size : 150mm dia horizontal type testing and committing make: kirloskar / any isi mark	Each	
35	supply and fixing testing committing sluiz valve 150mm dia , make: kirloskar / any isi mark	Each	
36	supply and fixing testing committing of foot valve 100 mm dia , make : kirloskar / normax / any isi mark	Each	
37	supply and fixing GI bolt nut with washer any size	kg	
38	additional altretion existing foundation suitable for new 50 HP centrifugal pump As per OEM direction	Each	
39	Maintenance and operation of supervisory control and data acquisition (SCADA) based water supply pumping and distribution system, including servicing of all the programmable logic control based control panels,checking the circuits, changing the time of cumps/ valves from the control panels/SCADA system and manual/Remote operations from the control panel/SCADAS system if in case of water deficiency by employing 01 Nos Technician/ shift,who should be trained person for 02 shift per day including sunday and holiday complete all as specified and direted. NOTES:-(a) The Quoted rate shall be deemed to include the cost of repair work/ defect rectification of control panel SCADA system KOCHIN PORT. (b)Display board panel (mimic panel) must function 24 hours to known the status of all pump houses installed in various location port trust area complete all as specified and directed (1) first year	Per month	
40	Do but Second year	per month	
41	Do but Third year	per month	
42	Do but Forth year	per month	
43	Do but Fifth year	per month	
44	Supply and fix in repair/replacement of electric motor suitable for actuator for 100mm dia butterfly valve complete all as specified and directed	Each	
45	Supply and fix in repair/replacement of electric motor suitable for actuator for 150mm dia butterfly valve complete all as specified and directed	Each	
46	Supply and fix in repair/replacement of electric motor suitable for actuator for 200mm dia butterfly valve complete all as specified and directed	Each	
47	Supply and fix in repair/replacement of electric motor suitable for actuator for 350mm dia butterfly valve complete all as specified and directed	Each	

48	Supply and fix in repair/replacement of relay with base 24V DC complete all as specified and directed	Each	
49	Supply and fix in repair/replacement of relay with base 220V AC complete all as specified and directed	Each	
50	Supply and fix in repair/replacement of single phase preventer model :VSP D2 complete all as specified and directed	Each	
51	Supply and fix in repair/replacement of Ultrasonic level sensor complete all as specified and directed	Each	
52	Supply and fix in repair/replacement of GPRS modem complete all as specified and directed	Each	
53	Supply and fix in repair/replacement of limit switch for complete all as specified and directed	Each	
54	Supply and fix in repair/replacement of butterfly valve complete all as specified and directed		
A	Valve size: 100 mm dia.	Each	
B	Valve size: 150 mm dia.	Each	
C	Valve size: 200 mm dia.	Each	
D	Valve size: 350 mm dia.	Each	
55	Materials and labour for earthing complete with galvanised iron earth plate electrode 600mm x 600mm x 6mm thick, burried directly and preferably vertically in ground, earth pit not less than 2.25 metre deep below ground level with top edge of the plate not less than 1.5m below ground level connected with galvanised strip of size 32 x 6mm by means of nuts, bolts, cheack nuts and washers maid of galvanised iron or steel earthing lead to be protected by galvanised iron pipe 40 mm bore(medium grade) and other end connected to earthing test point or lightening arrestor or main controlling switch as directed including providing funnel with 20mm bore	Each	
56	Supply and fix in repair/replacement of 42 inch display complete all as specified and directed	Each	

Signature of Bidder