HESSEQUA MUNICIPALITY

HES-TECH 11/2223

ALBERTINIA WASTE WATER TREATMENT WORKS : REFURBISHMENT : MECHANICAL AND ELECTRICAL WORKS

C2.2 : BILL OF QUANTITIES

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Item	Description	Unit	Quantity	Rate	Amount
	BILL M1 **GENERAL REQUIREMENTS AND CONDITIONS**				
	Allow for all costs and expenses in connection with the following items:				
1	Providing Performance Security	Sum	-		
2	Providing Insurances	Sum	-		
3	Detailed design of the Works and Submission of Contractor's Documents (in accordance with general conditions of contract and specifications)	Sum	-		
	Contractors Establishment on Site and Destablishment from site				
4	Establishment of Contractor's camp, including security and ablution facilities	Sum	-		
5	Destablishment of Contractor's camp, including security and ablution facilities	Sum	-		
6	Provision of water, electricity and other services	Sum	-		
7	General expenses incurred in complying with the requirements of T1.2 Tender Data, not included above	Sum	-		
8	General expenses incurred in complying with the requirements of C1.2 Contract Data, not included above	Sum	-		
	Health and Safety				
9	Compliance with the requirements of the Occupational Health and Safety Act 1993 and Construction Regulations 2014, including appointment of Construction Supervisor and Competent Person (in terms of Part C3.6, Occupational Health and Safety Specification)	Sum	-		
10	Provision of and adherence to a Health and Safety Plan (in terms of Part C3.6, Occupational Health and Safety Specification)	Sum	-		
11	Compliance with the Health and Safety Specification in the Scope of Work	Sum	-		
12	Liaison, co-ordination and chairing of meetings in respect of Health and Safety requirements.	Sum	-		
	Environmental Management				
13	Compliance with the Environmental Management Specification	Sum	-		
Carried forward / ...					

Item	Description	Unit	Quantity	Rate	Amount
Brought forward / ..					
	Quality Management				
14	Quality management plan and quality assurance system	Sum	-		
	Other:-				
15	Other general expenses incurred in complying with the requirements of the Scope of Work not included above (*Specify*):	Item			
TOTAL AMOUNT OF BILL M1 CARRIED TO SUMMARY OF MECHANICAL WORK					

Item	Description	Unit	Quantity	Rate	Amount
	BILL M2 **INLET WORKS: SCREENS**				
	Allow for all the costs and expenses in connection with the design, manufacture, painting, testing, supplying, delivery, offloading and storage of the following materials and equipment:				
1	Mechanical Front Rake screen complete with launder feed chute and closure plates (10 mm bar spacing)	No	1		
2	Hand Rake screen complete (15 mm bar spacing) including hand rake	No	1		
	Allow for all costs and expenses in connection with the installation, testing and commissioning of the following:				
3	Mechanical Front Rake screen complete with launder feed chute and closure plates (10mm bar spacing)	No	1		
4	Hand Rake screen complete (15mm bar spacing)		1		
	Allow for all costs and expenses in connection with the following spares:				
5	Rake per screen supplied including chain attachments and fasteners	No	1		
6	Set of bottom bearings and stub shafts / return mechanism	No	1		
7	Complete geared motor for rake drive, including torque trip switch.	No	1		
8	Set of chains (2 per screen)	No	1		
9	Chain link sets complete with pins, rollers, inner and outer plates	No	8		
10	Replaceable wiper blade	No	1		
11	Any other spare to complete critical spares list	Sum	1		
	Other:				
12	Removal and disposal of equipment as directed by the Engineer	Sum	1		
13	Other general expenses incurred in complying with the requirements of the Scope of Work not included above (*Specify*):	-			
TOTAL AMOUNT OF BILL M2 (REFER TO PSM2) CARRIED TO SUMMARY OF MECHANICAL WORK					

Item	Description	Unit	Quantity	Rate	Amount
	BILL M3 **INLET WORKS: SCREENING WASH PRESS**				
	Allow for all the costs and expenses in connection with the design, manufacture, painting, testing, supplying, delivery, offloading and storage of the following materials and equipment:				
1	Screenings Washing Press complete with motors, gearbox, discharge chute, supports and htaches as specified	No	1		
2	All pipework, valves, actuated valves and supports for each wash press as specified including connection to water supply point	No	1		
3	Heavy duty wheelbarrow	No	2		
	Allow for all costs and expenses in connection with the installation, testing and commissioning of the following:				
4	Screengings Washing Press complete with motors, gearbox, discharge chute, supports and hatches as specified	No	1		
5	All pipework, valves, actuated valves and supports for each wash press as specified including connection to water supply point	No	1		
	Allow for all costs and expenses in connection with the following spares:				
6	Set of brushes for screw	No	1		
7	Trough Liner / Wear Liners	No	1		
8	Agitator Impeller	No	1		
9	Agitator Mechanical Seal	No	1		
	Other:				
10	Other general expenses incurred in complying with the requirements of the Scope of Work not included above (*Specify*):	-			
TOTAL AMOUNT OF BILL M3 (REFER TO PSM4) CARRIED TO SUMMARY OF MECHANICAL WORK					

Item	Description	Unit	Quantity	Rate	Amount
	BILL M4 **SCREENED RAW WASTE WATER PUMPS**				
	Supply Equipment complete including cabling switchgear, etc.				
1	Self-priming centrifugal pumpset, complete with baseplate, etc	No	2		
2	Mixers complete with rails, hoisting equipment, mountings, etc.	No	2		
3	Delivery piping complete connection to delivery piping (See Drg. 1001178 CC 0006)	Sum			
4	Anchors, brackets raw bolts, etc. to complete installation	Sum			
	Interim storage including insurances etc of:				
5	All equipment	3 month	-		
	Delivery of equipment to site				
6	Delivery of all equipment to site	Sum	-		
	Installation of equipment				
7	All equipment summarised in Bill M4 Complete	Sum	-		
	Testing				
8	Testing of all equipment	Sum	-		
	Commissioning				
9	Commission all equipment	Sum	-		
10	**Other:** **All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify)**				
TOTAL AMOUNT OF BILL M4 CARRIED TO SUMMARY OF MECHANICAL WORK					

Item	Description	Unit	Quantity	Rate	Amount
	BILL M5 **IRRIGATION PUMPS**				
	Supply Equipment complete including cabling switchgear, etc.				
1	Centrifugal borehole pumps	No	2		
2	Piping complete including connection to delivery excluding pumps (See Drg 1001178 CC 0007)	No			
3	Gantry, crawl hoist complete	Sum			
	Interim storage including insurances etc of:	No	1		
4	All equipment	3 month	2		
	Delivery of equipment to site				
5	Delivery of all equipment to site	Sum	-		
	Installation of equipment				
6	All equipment summarised in Bill M5 complete	Sum	-		
	Testing				
7	Testing of all equipment	Sum	-		
	Commissioning				
8	Commission all equipment	Sum	-		
9	**Other:** **All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify)**				
TOTAL AMOUNT OF BILL M5 CARRIED TO SUMMARY OF MECHANICAL WORK					

Item	Description	Unit	Quantity	Rate	Amount
	BILL M6 MISCELLANEOUS				
1	Servicing and Maintenance Servicing and maintenance of all mechanical and electrical equipment from date of Taking Over Certificate at 2 monthly intervals including written reports. Rate to remain fixed till end of the (three) 3 year period		18		
2	Provision and construction of rectagrid and steel frame cover on pump sump complete as indicated on Drg No1001178 DRG 0006	Sum	-		
TOTAL AMOUNT OF BILL M6 CARRIED TO SUMMARY OF MECHANICAL WORKS					

Item	Description	Unit	Quantity	Rate	Amount
	BILL M7 **SUNDRIES** **Allow for all costs and expenses in connection with the following items:**				
1	Hazop Study and appointment of independent Consultant	Sum	-		
2	Functional Design Specification prepared by the contractor	Sum	-		
3	Providing 2 draft copies of the Installation, Operation and Maintenance Manual prior to commissioning of the Works	Sum	-		
4	Providing final copies of the Installation, Operation and Maintenance Manual prior to the Issue of the Taking-Over Certificate	No	4		
5	Providing "as built" drawings	Sum	-		
6	Operating instructions and signage	Sum	-		
7	Signage as specified (Refer Aur 0001)	Sum	-		
8	Provision for dewatering of structures during installation of equipment	Sum	-		
9	Performance Acceptance Testing	Sum	-		
10	Checking, starting up, testing and commissioning of the Works	Sum	-		
11	Providing a commissioning test report	Sum	-		
12	Trial Operation Period (excl. pre-commission testing)	Sum	-		
13	Performing the specified duties during the Defects Notification Period	Sum	-		
14	Site Inspection report 3 months after successful completion of the Trial Operations Period. This report shall include the following as a minimum: a) Condition of all equipment b) Defects noted c) Performance of equipment (including head, flow, absorbed power, etc.) d) Control system check e) Fail safe check (including trips, e-stops, etc.) The report shall be supported by photographs, printouts from the SCADA and readings from plant.	Sum	-		
Carried forward / ..					

Item	Description	Unit	Quantity	Rate	Amount
Brought forward / ...					R -
	Storage of equipment where storage space is provided by:				
15	a. The Contractor	m³-month	50		
16	b. The Council	m³-month	50		
17	All costs associated with delays gaining access to site	Month	6		
18	Quality control inspections	Sum	-		
19	Allowance for inspections by Engineer or other sub-consultant	PC Sum	1		
20	Charge required by Contractor on above item 19	%	0		
21	Provisional allowance for any additional work as directed by the Engineer	Prov	1		
22	Charge required by Contractor on above item 21 (this shall include all costs such as "General Requirements and Conditions", "Contractor's overhead charges", profit, etc.)	%	0		
	Other:-				
23	Other general expenses incurred in complying with the requirements of the Scope of Work not included above (*Specify*):	-			
TOTAL AMOUNT OF BILL M7 CARRIED TO SUMMARY OF MECHANICAL WORKS					-

Item No	Description	Unit	Quantity	Material Rate	Labour Rate	Amount
	BILL E1 **ELECTRICAL INSTALLATION**					
NB	***The Bills of Quantities shall not be used for ordering purposes. The Contractor shall check and measure the lengths of all cables, conductors, material, etc on site before ordering any of these materials.***					
1.0	**Decommissioning and Demolition Works**					
1.1	Arrange power shut-down with Municipality. Item to include Attendance Fee to be paid to Municipality.	Sum	1			
1.2	Trace / disconnect / re-route existing supplies / feeder cables to equipment, etc. as required during the upgrading / extension of the works.	Sum	1			
1.3	Isolate, disconnect, make safe and remove existing redundant items of plant equipment to be decommissioned and return same to municipal stores.	Sum	1			
2.0	**Electrical Installation**					
2.1	Trenching by hand in parallel with and crossing existing services for new cables / sleeves, including backfilling and compaction, but excluding imported soft sand bedding:					
2.1.1	Earth - 400mm wide x 700mm deep	m	25			
	Earth - 600mm wide x 700mm deep	m	50			
	Earth - 800mm wide x 700mm deep	m	150			
	Earth - 1 000mm wide x 700mm deep	m	100			
2.1.2	Soft Rock - 400mm wide x 700mm deep	m	5			
	Soft Rock - 600mm wide x 700mm deep	m	5			
	Soft Rock - 800mm wide x 700mm deep	m	5			
	Soft Rock - 1 000mm wide x 700mm deep	m	5			
2.1.3	Hard Rock - 400mm wide x 700mm deep	m	5			
	Hard Rock - 600mm wide x 700mm deep	m	5			
	Hard Rock - 800mm wide x 700mm deep	m	5			
	Hard Rock - 1 000mm wide x 700mm deep	m	5			
2.2	450mm Deep imported bedding / cover material in trench measured elsewhere. Backfill material to be recovered from trenches:					
2.2.1	400mm Wide trench	m	25			
2.2.2	600mm Wide trench	m	50			
2.2.3	800mm Wide trench	m	150			
2.2.4	1 000mm Wide trench	m	100			
2.3	Extra over cost for backfilling of trenches:					
2.3.1	Imported backfill material from off-site source.	m^3	25			
2.3.2	Disposal of surplus or unsuitable material including haulage up to 10 km from site.	m^3	25			
	Carried forward / ...					

Item No	Description	Unit	Quantity	Material Rate	Labour Rate	Amount
	Brought forward / ...					
2.4	400 mm wide x 100 micron PVC Marker tape installed over cable in trench measured elsewhere.	m	975			
2.5	Concrete cable markers indicating cable direction, size etc.	No.	5			
2.6	Break open and re-instate paving along cable route.	m^2	5			
2.7	Break open existing concrete floor / surface (± 400 mm wide x 300 mm deep) for installation of cables, sleeves, conduits, etc. Item to include for making good of all concrete surfaces afterwards.	m^2	5			
2.7	uPVC sleeve installed in floor slab / trench measured elsewhere:					
2.7.1	160mm Ø sleeve.	m	5			
2.7.2	110mm Ø sleeve.	m	5			
2.7.3	75mm Ø sleeve.	m	5			
2.8	Seal sleeve ends after installation of cable using Sista foam.					
2.8.1	160mm Ø sleeve.	No.	2			
2.8.2	110mm Ø sleeve.	No.	2			
2.8.3	75mm Ø sleeve.	No.	2			
2.9	Supply and install LV, PVCAS cable in trench / sleeve / cable tray measured elsewhere:					
2.9.1	95 mm^2 Cu x 4 Core	m	5			
2.9.2	70 mm^2 Cu x 4 Core	m	5			
2.9.3	50 mm^2 Cu x 4 Core	m	50			
2.9.4	25 mm^2 Cu x 4 Core	m	370			
2.9.5	16 mm^2 Cu x 4 Core	m	5			
2.9.6	10 mm^2 Cu x 4 Core	m	100			
2.9.7	6 mm^2 Cu x 4 Core	m	325			
2.9.8	4 mm^2 Cu x 4 Core	m	150			
2.9.9	2,5 mm^2 Cu x 4 Core	m	5			
2.9.10	1,5 mm^2 Cu x 4 Core	m	5			
2.10	Supply and install **multicore** LV, PVCAS cable in trench / sleeve / cable tray measured					
2.10.1	4 mm^2 Cu x 8 Core	m	5			
2.10.2	4 mm^2 Cu x 19 Core	m	5			
2.10	Supply and install individually and overall screened, steel wire armoured, twisted pair type instrumentation cables in sleeve / conduit / cable tray measured elsewhere.					
2.11.1	1,5 mm^2 x 18 Pair	m	425			
2.11.2	1,5 mm^2 x 8 Pair	m	525			
2.11.3	1,5 mm^2 x 4 Pair	m	5			
	Carried forward / ...					

Item No	Description	Unit	Quantity	Material Rate	Labour Rate	Amount
	Brought forward / ...					
2.12	Duracast resin through joint in LV, PVCAS cable measured elsewhere:					
2.12.1	95 mm^2 Cu x 4 Core	No.	1			
2.12.2	70 mm^2 Cu x 4 Core	No.	1			
2.12.3	50 mm^2 Cu x 4 Core	No.	1			
2.12.4	25 mm^2 Cu x 4 Core	No.	1			
2.12.5	16 mm^2 Cu x 4 Core	No.	1			
2.12.6	10 mm^2 Cu x 4 Core	No.	1			
2.12.7	6 mm^2 Cu x 4 Core	No.	1			
2.12.8	4 mm^2 Cu x 4 Core	No.	1			
2.12.9	2,5 mm^2 Cu x 4 Core	No.	1			
2.12.10	1,5 mm^2 Cu x 4 Core	No.	1			
2.13	Terminate and connect LV, PVCAS cables at MCC panel / motors / equipment using brass cable gland, brass locknut, neoprene rubber shroud and crimp lugs:					
2.13.1	95 mm^2 Cu x 4 Core	No.	2			
2.13.2	70 mm^2 Cu x 4 Core	No.	2			
2.13.3	50 mm^2 Cu x 4 Core	No.	4			
2.13.4	25 mm^2 Cu x 4 Core	No.	4			
2.13.5	16 mm^2 Cu x 4 Core	No.	2			
2.13.6	10 mm^2 Cu x 4 Core	No.	4			
2.13.7	6 mm^2 Cu x 4 Core	No.	10			
2.13.8	4 mm^2 Cu x 4 Core	No.	2			
2.13.9	2,5 mm^2 Cu x 4 Core	No.	2			
2.13.10	1,5 mm^2 Cu x 4 Core	No.	2			
2.14	Terminate and connect **multicore** LV, PVCAS cables at MCC panel / junction box / equipment using brass cable gland, brass locknut, neoprene rubber shroud and crimp lugs:					
2.14.1	4 mm^2 Cu x 8 Core	No.	2			
2.14.2	4 mm^2 Cu x 19 Core	No.	2			
2.15	Terminate and connect individually and overall screened, steel wire armoured, twisted pair type instrumentation cables at MCC panel / equipment / remote E-stop stations / pratley or termination box using brass cable gland, brass locknut, neoprene rubber shroud and crimp lugs:					
2.15.1	1,5 mm^2 x 18 Pair	No.	10			
2.15.2	1,5 mm^2 x 8 Pair	No.	10			
2.15.3	1,5 mm^2 x 4 Pair	No.	2			
2.16	Terminate and connect instrumentation cables supplied with ultasonic transducers, flow / feedback micro switches, float switch, temperature sensors, etc at MCC panel / junction box using compression type glands and crimp lugs:	Sum	1			
	Carried forward / ...					

Item No	Description	Unit	Quantity	Material Rate	Labour Rate	Amount
	Brought forward / ...					
2.17	HD bare copper earth wire laid in trench / sleeve / cable tray:					
2.17.1	70mm^2	m	50			
2.17.2	16mm^2	m	5			
2.17.3	10mm^2	m	945			
2.17.4	6mm^2	m	5			
2.17.5	4mm^2	m	5			
2.18	Hard drawn bare copper earth wire terminated at MCC panel / pump motor / pratley or terminination box:					
2.18.1	70mm^2	No.	2			
2.18.2	16mm^2	No.	2			
2.18.3	10mm^2	No.	20			
2.18.4	6mm^2	No.	2			
2.18.5	4mm^2	No.	2			
2.19	Electro tin plated, high tensile brass line taps of size indicated:					
2.19.1	70mm^2	No.	1			
2.19.2	16mm^2	No.	1			
2.19.3	10mm^2	No.	20			
2.2	Galvanised steel conduit saddled to ceiling / wall / roof purlins, etc. Item to include for all saddles, adapters etc required.					
2.20.1	40 mm Diam	m	25			
2.20.2	25 mm Diam	m	50			
2.20.3	20 mm Diam	m	25			
2.21	PVC conduit saddled to ceiling / wall / roof purlins, etc. Item to include for all saddles, adapters etc required.					
2.21.1	40 mm Diam	m	25			
2.21.2	25 mm Diam	m	25			
2.21.3	20 mm Diam	m	25			
2.22	PVC conduit chased into concrete. Item to include for all adapters, etc. required and for making good of plaster work following installation of conduit.					
2.22.1	25 mm Diam	m	5			
2.22.2	20 mm Diam	m	5			
2.23	Surface mounted conduit boxes complete with covers and including fixing screws, etc:					
2.23.1	100 x 50 mm PVC boxes	No.	1			
2.23.2	100 x 100 mm PVC boxes	No.	1			
2.23.3	65mm Diameter PVC round box	No.	1			
2.23.4	100 x 50 mm galvanized steel boxes	No.	1			
2.23.5	100 x 100 mm galvanized steel boxes	No.	1			
2.23.6	65mm Diameter galvanized steel round box	No.	1			
	Carried forward / ...					

Item No	Description	Unit	Quantity	Material Rate	Labour Rate	Amount
	Brought forward / ...					
2.20	Conduit boxes complete with covers built / chased into brickwork including making good of brick / plaster finish afterwards:					
2.24.1	100 x 50 mm PVC boxes	No.	1			
2.24.2	100 x 100 mm PVC boxes	No.	1			
2.24.3	65mm Diameter PVC round box	No.	1			
2.24.4	100 x 50 mm galvanized steel boxes	No.	1			
2.24.5	100 x 100 mm galvanized steel boxes	No.	1			
2.24.6	65mm Diameter galvanized steel round box	No.	1			
2.25	Padlockable, surface mounted, stainless steel, weather and vandalproof junction / marshalling boxes rated IP 65 minimum complete with all terminal connectors / strips, equipment, etc and equipped for all cable / conduit terminations as specified and indicated on the drawings, installed at:					
2.25.1	Inlet Works - Signal Junction Box	No.	1			
2.25.2	Inlet Works - Instrumentation Junction Box	No.	1			
2.25.3	Raw Sewage - Signal Junction Box	No.	1			
2.25.4	Raw Sewage - Instrumentation Junction Box	No.	1			
2.25.5	Irrigation - Signal Junction Box	No.	1			
2.25.6	Irrigation - Instrumentation Junction Box	No.	1			
2.26	Double door polyethylene LV distribution kiosk with stainless steel gland plate complete as specified, excluding MCBs measured elsewhere similar or equal to Golnix type.					
2.26.1	9 Way	No.	1			
2.26.2	6 Way	No.	1			
2.26.3	4 Way	No.	1			
2.27	Polyethylene pole mounted enclosure of approximate dimensions indicated complete as specifed, with wooden backplate, etc similar or equal to Golnix AP type.					
2.27.1	920mm long x 520mm wide x 275mm deep	No.	1			
2.27.2	605mm long x 450mm wide x 175mm deep	No.	1			
2.27.2	450mm long x 400 mm wide x 190mm deep	No.	1			
2.28	Four way, IP 68 Pratley EZEE-FIT type junction box, complete with Kwikblok mountings, Kwikblocks, etc.					
2.28.1	No.0	No.	1			
2.28.2	No. 1	No.	2			
2.28.3	No. 2	No.	1			
2.29	600 / 1000 V PVC insulated copper conductors wiring drawn into conduit / cable tray, including terminations, etc. (Conduit / cable tray measured elsewhere):					
2.29.1	6 mm^2	m	15			
2.29.2	4 mm^2	m	15			
2.29.3	2,5 mm^2	m	15			
	Carried forward / ...					

Item No	Description	Unit	Quantity	Material Rate	Labour Rate	Amount
	Brought forward / ...					
2.30	Supply and install Matelec type rotatable weatherproof switches in flush mounted boxes:					
2.30.1	One way	No.	1			
2.30.2	Two way	No.	1			
2.31	Surface mounted 16 Amp 3-pin weatherproof double switch socket outlet.	No.	1			
2.32	Three phase, 3P + N + E surface mounted, industrial type welding socket outlet with switch interlock.	No.	1			
2.33	30A Triple pole, weatherproof lockable isolator.	No.	1			
2.34	Start / stop / emergency stop push button station, including terminal box, hot dipped galvanized 1 200mm x 100mm x 50mm channel iron and baseplate support assembly, etc.	Item	10			
2.35	Heavy duty **stainless steel cable tray** installed against wall / floor. Item to include all brackets, stainless steel mounting screws / bolts required:					
2.35.1	600mm wide	m	5			
2.35.2	400mm wide	m	5			
2.35.3	200mm wide	m	5			
2.35.4	50mm wide	m	5			
2.36	**Stainless steel mesh** cable tray installed against wall / floor. Item to include all brackets, stainless steel mounting screws / bolts required:					
2.36.1	600mm wide	m	25			
2.36.2	400mm wide	m	50			
2.36.3	200mm wide	m	50			
2.36.4	50mm wide	m	50			
2.37	Heavy duty, UV stable, **GRP cable tray** similar or equal to Fibretek type installed against wall / floor. Item to include all GRP brackets, stainless steel mounting screws / bolts required:					
2.37.1	400mm wide	m	5			
2.37.2	200mm wide	m	5			
2.37.3	50mm wide	m	5			
	Carried forward / ...					

Item No	Description	Unit	Quantity	Material Rate	Labour Rate	Amount
	Brought forward / ...					
2.38	Supply, install and connect Endress & Hauser type , 0 to 5 m ultrasonic level monitoring transducer / controller complete with 15 m of instrumentation cable, including stainless steel mounting bracket assemblies and sensor head at / inside:					
2.38.1	Inlet Works (dual transmitter)	Item	1			
2.38.2	Parshall Flume	Item	1			
2.38.3	Raw Sewage Sump	Item	1			
2.38.4	Irrigation Sump	Item	1			
2.39	Supply, install and connect Wica type, 0 to 15 bar, pressure transmitter complete with 15 m of instrumentation cable, including isolating ball valve, etc on pipeline inside pumpstation.	Sum	1			
2.40	Supply, install and connect high / low level float switches, similar or equal to Flygt type inside sump.	Item	4			
2.41	Stainless steel chain installed inside sump for mounting and stabilisation of float switches.	m	15			
2.42	Labelling of all cables.	Sum	1			
3.0	**Lighting Installation (Provisional)**					
3.1	Excavation, backfilling and compaction of 2000 mm deep hole for glass fibre pole streetlight incl. one (1) bag of cement to compact ground.	No.	1			
3.2	14m long Glassfibre pole (12m mounting height) complete with three way bracket for mounting 3 x area floodlights measured elsewhere, including MCB's, baseplate and electrical wiring inside pole.	No.	1			
3.3	Area floodlight, similar or equal to 216W Beka Omnistar type mounted on floodlight pole measured elsewhere.	No.	3			
3.4	Light fittings mounted against brickwork, concrete ceiling, etc including all galvanised steel screws, grommets, lamps, tubes, etc.					
3.4.1	IP 65, corrosion and vapour proof enclosed type LED luminaire similar or approved equal to the Nordland JBF-LT type with 2 x 24W lamps.	No.	1			
4.0	**MCC Installation**					
4.1	New Motor Control Panel complete as specified including dual purpose PLC / telemetry equipment, but excluding variable speed drives measured elsewhere.	Item	1			
	Carried forward / ...					

Item No	Description	Unit	Quantity	Material Rate	Labour Rate	Amount
	Brought forward / ...					
4.2	Weg type VSD's for motors complete as specified, installed inside new Motor Control Panel for:					
4.2.1	± 30 kW Motor	Item	2			
4.2.2	± 15 kW Motor	Item	2			
4.2.3	± 5 kW Motor	Item	4			
4.2.4	± 1,5 kW Motor	Item	1			
4.2.5	± 0,75 kW Motor	Item	1			
4.3	Weg type soft starter equipment for motors complete as specified, installed inside new Motor Control Panel for:					
4.3.1	± 30 kW Motor	Item	R / O			Rate Only
4.3.2	± 15 kW Motor	Item	R / O			Rate Only
4.3.3	± 5 kW Motor	Item	R / O			Rate Only
4.3.4	± 1,5 kW Motor	Item	R / O			Rate Only
4.3.5	± 0,75 kW Motor	Item	R / O			Rate Only
4.4	150VA Isolation transformer installed inside soft starter cubicle for electrical isolation of control voltage circuit to soft sarter control unit:	Item	R / O			Rate Only
4.5	Spare set of three ultra-rapid fuses for VSD / Soft Starter equipment installed in MCC panel measured elsewhere.					
4.5.1	± 30 kW Motor (set of three)	Item	2			
4.5.2	± 15 kW Motor (set of three)	Item	2			
4.5.3	± 5 kW Motor (set of three)	Item	4			
4.5.4	± 1,5 kW Motor (set of three)	Item	1			
4.5.5	± 0,75 kW Motor (set of three)	Item	1			
4.6	Allow for testing and commissioning of complete MCC panel including inter alia determination of optimum soft starter / VSD control settings, HMI / PLC software programming, determining / implementation of Client / Engineer specific requirements regarding HMI security and control setup, as well as checking and verifying all other control functions.	Sum	1			
4.7	Allow for one full working day for training of Employer's staff in operation and maintenance of MCC panel and HMI installation.	Sum	1			
4.8	Additional PLC / HMI programming and integration of equipment onto new / existing PLC, or HMI equipment, including on site testing and commisioning. Item measured on a time cost basis and limited to a time period agreed to by both parties.	Hour	8			
	Carried forward / ...					

Item No	Description	Unit	Quantity	Material Rate	Labour Rate	Amount
	Brought forward / ...					
5.0	**Miscellaneous**					
5.1	Inverter midwall split type airconditioning unit with wall mounted controller installed at Control Room Building ***complete with bluechem coastal corrosion treatment***, stainless steel wall mounting brackets, refrigerant / condensate piping of cooling capacity:					
5.1.1	6,0 kW (18 000 BTU)	Item	R / O			
5.1.2	3,5 kW (12 000 BTU)	Item	R / O			
5.2	Lump sum allowance for any items not included in this schedule necessary to complete the installation in accordance with the specification and drawing. Brief description of such items to be entered hereunder.	Sum	1			
	TOTAL AMOUNT OF BILL E1 CARRIED TO SUMMARY OF ELECTRICAL WORKS					

Item No	Description	Unit	Quantity	Material Rate	Labour Rate	Amount
	BILL E2 **GENERATOR INSTALLATION**					
NB	***The Bills of Quantities shall not be used for ordering purposes. The Contractor shall check and measure the lengths of all cables, conductors, material, etc on site before ordering any of these materials.***					
1.0	**Generator Equipment**					
1.1	200 kVA generator engine / alternator set with residential type exhaust silencing system complete as specified.	Sum	1			
1.2	Generator control / change-over panel complete as specified.	Item	1			
1.3	3CR12 canopy type outdoor generator enclosure for genset equipment measured elsewhere.	Item	1			
1.4	Self priming electrically operated pump for automatically filling of generator fuel tank.	Sum	1			
1.5	Allowance to completly fill (i.e. 100 % full) 12 hour day fuel tank with diesel on hand-over for testing / commissioning purposes.	Sum	1			
1.6	Supply, install and connect Wica diesel type, 0 to 1m, pressure transmitter complete for monitoring of generator fuel level. Item to include for all programming required to enable low fuel alarm on genset controller and telemetry / SCADA.	Sum	1			
1.7	Earthing of new generator equipment, including ± 15 metres of 25 mm^2 Cu bare conductor, lugs, etc.	Sum	1			
1.8	Allow for one full working day for training of Employer's staff in operation and maintenance of new generator equipment.	Sum	1			
2.0	**Miscellaneous**					
2.1	Precast concrete plinth with bund wall area and underflow arrangement for new generator equipment measured elsewhere, similar or equal to type manufactured by Messrs MDL Engineering (044 - 874 1136).	Item	1			
6.3	Lump sum allowance for any items not included in this schedule necessary to complete the installation in accordance with the specification and drawing. Brief description of such items to be entered hereunder.	Sum	1			
	TOTAL AMOUNT OF BILL E2 CARRIED TO SUMMARY OF ELECTRICAL WORKS					

Item No	Description	Unit	Quantity	Material Rate	Labour Rate	Amount
	BILL E3 **TELEMETRY INSTALLATION**					
NB	***The Bills of Quantities shall not be used for ordering purposes. The Contractor shall check and measure the lengths of all cables, conductors, material, etc on site before ordering any of these materials.***					
1.0	**Telemetry Installation** *(**Dual purpose telemetry / PLC equipment** complete as specified with sufficient status / analog / comms modules necessary to cater for the I / O specified **measured under new pumpstation control panel elsewhere.**)*					
1.1	GSM / GPRS communication equipment, including setting up and initiating same on existing Spectrum APN network and 24 month x 10 Gb / month data contract.	Sum	1			
1.2	Laminated legend card detailing I / O, pin numbers, and wire colours.	Sum	1			
2.0	**Central Station**					
2.1	Latest version of Adroit SCADA software package installed on existing telemetry computer at Albertina Water Treatment Works with:					
2.1.1	150 Scanpoints	Sum	1			
2.1.2	300 Scanpoints	Sum	R / O			Rate Only
2.2	SCADA programming and integration of new WWTW outstation onto SCADA software, including on site testing and commisioning.	Sum	1			
3.0	**Miscellaneous**					
3.1	Lump sum allowance for any items not included in this schedule necessary to complete the installation in accordance with the specification and drawing. Brief description of such items to be entered hereunder.	Sum	1			
	TOTAL AMOUNT OF BILL E3 CARRIED TO SUMMARY OF ELECTRICAL WORKS					

SUMMARY OF MECHANICAL WORKS		
BILL	**DESCRIPTION**	**AMOUNT**
M1	GENERAL REQUIREMENTS AND CONDITIONS	
M2	INLET WORKS: SCREENS	
M3	INLET WORKS : SCREENINGS WASH PRESS	
M4	SCREENED RAW WASTE WATER PUMPS	
M5	IRRIGATION PUMPS	
M6	MISCELLANEOUS	
M7	SUNDRIES	
SUB-TOTAL CARRIED FORWARD TO SUMMARY OF BILLS		-

SUMMARY OF ELECTRICAL WORKS		
BILL	**DESCRIPTION**	**AMOUNT**
E1	ELECTRICAL INSTALLATION	
E2	GENERATOR INSTALLATION	
E3	TELEMETRY INSTALLATION	
SUB-TOTAL CARRIED FORWARD TO SUMMARY OF BILLS		

SUMMARY OF BILLS		
BILL NO	**DESCRIPTION**	**AMOUNT**
	SUMMARY OF MECHANICAL BILL OF QUANTITIES	
	SUMMARY OF ELECTRICAL BILL OF QUANTITIES	
TOTAL OF PRICED ITEMS		
ADD CONTINGENCIES: The tenderer shall add 10% of the total of Schedule of Quantities for Contingencies. The sum provided here for contingencies is under the sole control of the Engineer and may be deducted in whole or in part if not required		
SUB-TOTOAL		
PLUS ALLOWANCE FOR FOREIGN EXCHANGE ADJUSTMENT (5%)		
NET TOTAL OF TENDER		
ADD 15% VALUE ADDED TAX		
GROSS TOTAL OF TENDER		