

CONTRACT: ORTDM SCMU 43-24/25-ADDENDUM#1 BILL OF QUANTITIES
 CONTRACT TITLE: 50ML/D Highbury Water Treatment Works and Raw & Clear Water Pumpstations:
 MECHANICAL & ELECTRICAL
 SECTION: 2 PROVISIONAL & PRIME COST ITEMS & DAYWORKS

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
2.2.6		Overheads, Charges and Profit on item 2.2.5 above	%	150 000.00		
		<u>HIRED VEHICLE</u>				
2.2.7		Hire of one vehicle for the Engineer as directed (incl fully-comprehensive insurance & fuel costs)	PC Sum	1	600 000.00	600 000.00
2.2.8		Overheads, Charges and Profit on item 2.2.7 above	%	600 000.00		
2.3	PSA 8.7	DAYWORKS				
	8.7	<u>LABOUR</u>				
2.3.1		a) Team leader / charge hand	hr	40		
2.3.2		b) Artisan - Mechanical	hr	40		
2.3.3		c) Specialist Electrical for MV Testing & Commissioning	hr	40		
2.3.4		d) PLC Programmer	hr	80		
2.3.5		e) Artisan - Installation Electrician	hr	80		
2.3.6		f) Skilled	hr	80		
2.3.7		g Semi-skilled	hr	250		
2.3.8		h) Unskilled	hr	500		
	8.7	<u>PLANT</u>				
2.3.9		For plant used in execution of Dayworks at rate agreed with Engineer	PC Sum	1	150 000.00	150 000.00
	8.7	<u>MATERIALS</u>				
2.3.10		For materials used in execution of Dayworks as agreed with the Engineer	PC Sum	1	250 000.00	250 000.00
2.3.11		Overheads, Charges and Profit on item 2.3.10 above	%	250 000.00		
2.4	PSA 8.6	EMPLOYER'S AGENT INSPECTIONS				
2.4.1		Book and pay for flights and accommodation for Employer's Agent where instructed	PC Sum	1	300 000.00	300 000.00
2.4.2		Overheads, Charges and Profit on item 2.4.1 above	%	300 000.00		
TOTAL FOR SECTION 2 CARRIED FORWARD TO SUMMARY						

CONTRACT: ORTDM SCMU 43-24/25-ADDENDUM#1

BILL OF QUANTITIES

CONTRACT TITLE: 50ML/D Highbury Water Treatment Works and Raw & Clear Water Pumpstations:
MECHANICAL & ELECTRICAL

SECTION: 13 CLEAR WATER PUMPSTATION

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
13.2.2.8		100mm dial size 60kPa glycerine-filled pressure gauge c/w stop-cock	No	3		
13.2.3		<u>PUMPSETS</u>				
13.2.3.1		Pumpsets as per project specification, complete with base plate, anchor bolts, couplings etc.	No	3		
13.2.4		<u>DELIVERY MANIFOLD FABRICATED STEELWORK</u>				
13.2.4.1		Complete mild steel epoxy lined and coated manifold from DN400 pump outlets to DN800 delivery manifold inside pumpstation to DN900 site-weld connection at Isolating Valve Chamber (including the blanked off future flanged delivery branches, DN800 'S' bend outside pumpstation and DN800 to DN900 reducer) as shown in drawings. (flanges to SANS 1123:1600).	Sum	1		
13.2.5		<u>PN25 FITTINGS FOR DELIVERY MANIFOLD</u>				
		Valves				
13.2.5.1		DN400 Flanged Butterfly Valve; complete with gearbox and handwheel	No.	3		
13.2.5.2		DN80 Flanged Double-Acting Air Valve with "Anti-shock" function; "Variant" 80LX or similar approved	No.	1		
13.2.5.3		DN80 Flanged Resilient Seal Gate Valve with handwheel	No.	1		
13.2.5.4		DN400 Flanged Nozzle Check Valve; F/F Dimensions To EN 558/ISO 5752 Series 14	No.	3		
		Valves for instrumentation				
13.2.5.5		13mm NB flanged Ball Valve (CI Body, S/S Ball, Reinforced teflon seat) SABS Approved	No	4		
		Couplings:				
13.2.5.6		DN400 Dismantling Joint	No	3		
13.2.5.7		DN800 Dismantling joint	No	2		
13.2.5.8		DN800 Flanged Electromagnetic Flow Meter (see under Elec Section)				
13.2.5.9		DN300 Wafer Constant Flow Control Valve "MARIC" ; Gun Metal; High Precision High Pressure (15Bar); 8854 l/min [Order Code: 300WGN6 8854]	No	1		
13.3	PI 6	INSTALL & COMMISSION				
CARRIED FORWARD						

CONTRACT: ORTDM SCMU 43-24/25-ADDENDUM#1

BILL OF QUANTITIES

CONTRACT TITLE: 50ML/D Highbury Water Treatment Works and Raw & Clear Water Pumpstations:
MECHANICAL & ELECTRICAL

SECTION: 13 CLEAR WATER PUMPSTATION

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
13.6.1	PI 6	BROUGHT FORWARD DN100 Wafer Type Constant Flow Control Valve "MARIC" ; Gun Metal; High Precision High Pressure; 1279 l/min [Order Code: 100 WG N7 1279]	No	1		
13.7		INSTALL & COMMISSION				
13.7.1		Install, test and commission pumpsets, all pipework and fittings complete (including casting -in of pipes through walls and connecting to existing suction pipeline and rising main) and Denso tape wrap all buried sections of suction and delivery pipes	Sum	1		
13.7.2		Extra-over pipework and fittings for supply of insulating flange kit where required including: insulating gaskets, sleeves, washers, explosion proof spark gaps, tape wrapping, bolts etc				
13.7.3		DN250 Flanged connections PN10 (at each suction branch)	No.	2		
13.8	PI 3	DN200 Flanged connections PN40 (each side of flowmeter)	No.	2		
13.8.1		CRANE, HOISTS, & WINCHES DESIGN NOTE: Design assumes compound girders for crane consisting of 254 x 146 x 31mm I-section and PC200 x 75mm channel with 50 x 50mm crane rail. NOTE: 150 x 150 x 12mm base plate with 4No.M20 grade 8.8 U-bolts [80mm c/c along axis of crane span, 70mm c/c along axis of crane rail] already supplied & installed by Civil Contractor & verified to BS466 Appendix F by independent Surveyor	Sum	1		
13.9	PI 4	SUPPLY & DELIVER				
CARRIED FORWARD						

CONTRACT: ORTDM SCMU 43-24/25-ADDENDUM#1

BILL OF QUANTITIES

CONTRACT TITLE: 50ML/D HIGHBURY WATER TREATMENT WORKS AND RAW & CLEAR WATER PUMPSTATIONS:
MECHANICAL & ELECTRICAL

SECTION: 17 TRANSFORMER AND GENERATOR

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
17.1		TRANSFORMER Supply, delivery, installation and commissioning of a 2500 kVA, 11 kV / 420 / 240 V, Dyn 11, Dry Type transformer as specified in PSE 5				
17.1.1		Supply	No	2		
17.1.2		Install	No	2		
17.2		EARTHING OF TRANSFORMER Earthing of the Transformer to earth grid as specified in PSE 3				
17.2.1		Supply	No	2		
17.2.2		Install	No	2		
17.3		EARTH GRID Supply, delivery and installation of earth grid 7m x 14m with cross conductors every 500mm and Cadweld at joints approximately 300m conductor 10mm dia. round copper, 1m below final level-including excavations				
17.3.1		Supply	No	1		
17.3.2		Install	No	1		
		Earth readings after earthing installation				
17.3.3		Supply	No	1		
17.3.4		Install	No	1		
17.4		MINISUB Supply, delivery, installation and commissioning of a 315kVA, 11 kV / 420 / 240 V minisub as specified PSE 7				
17.4.1		Supply	No	1		
17.4.2		Install	No	1		
		Supply, delivery, installation and commissioning of a 800kVA, 11 kV / 420 / 240 V minisub as specified PSE 7				
17.4.3		Supply	No	1		
17.4.4		Install	No	1		
		Supply and install concrete plinth for the minisubs as specified PSE 7				
17.4.5		Supply	No	2		
CARRIED FORWARD						

CONTRACT:ORTDM SCMU 43-24/25-ADDENDUM#1

CONTRACT TITLE:50ML/D Highbury Water Treatment Works and Raw & Clear Water Pumpstations:
Mechanical & Electrical

SECTION:17 Transformer and Generator

BILL OF QUANTITIES

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
17.4.6		BROUGHT FORWARD Install	No	2		
17.5		EARTHING OF MINISUB Earthing of the minisubs as specified PSE 7				
CARRIED FORWARD						

CONTRACT: ORTDM SCMU 43-24/25-ADDENDUM#1

BILL OF QUANTITIES

CONTRACT TITLE: 50ML/D HIGHBURY WATER TREATMENT WORKS AND RAW & CLEAR WATER PUMPSTATIONS:
MECHANICAL & ELECTRICAL

SECTION: 17 TRANSFORMER AND GENERATOR

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
17.5.2		Install	No	2		
		Earth readings after earthing installation				
17.5.3		Supply	No	2		
17.5.4		Install	No	2		
17.6		2500 kVA EMERGENCY GENERATOR				
		Supply deliver, installation and commissioning of a generator set as specified complete with instrumentation, fuel tank, change over control panel etc.				
		2500 kVA 11kVA Genset (inclusive of 400V or 600V/11kV step-up transformer) as per PSE 11				
17.6.1		Supply	No	1		
17.6.2		Install	No	1		
		Generator Synchronizing panel to synchronize with grid as detailed in PSE 11				
17.6.3		Supply	No	1		
17.6.4		Install	No	1		
		NER with automated neutral contactor as detailed in				
17.6.5		Supply	No	1		
17.6.6		Install	No	1		
		14,000 litre diesel tank with pumps and pipework for genset in 1 above, including automatic circulating and filling of Day Tank below.				
17.6.7		Supply	No	1		
17.6.8		Install	No	1		
		1,000 litre diesel day tank with pump and pipework for genset above				
17.6.9		Supply	No	1		
17.6.10		Install	No	1		
		Supply Diesel				
17.6.11	PI 10	Supply and fill 14,000 lt diesel tank for commissioning purposes.	PC Sum	1	350 000.00	350 000.00
17.6.12		Charges on profit on item 17.6.11 above	%	350 000.00		
CARRIED FORWARD						

CONTRACT: ORTDM SCMU 43-24/25-ADDENDUM#1

BILL OF QUANTITIES

CONTRACT TITLE: 50ML/D Highbury Water Treatment Works and Raw & Clear Water Pumpstations:
MECHANICAL & ELECTRICAL

SECTION: 20 MV SWITCHGEAR

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
20.1		HIGHBURY SWITCHGEAR (11 kV)				
		INCOMER PANELS				
		Supply, installation and commissioning of 800 A, metal clad switchgear as specified in PSE 3				
20.1.1		Supply	No	2		
20.1.2		Install	No	2		
		TRANSFORMER FEEDER PANELS				
		Supply, installation and commissioning of 800 A, metal clad switchgear with transformer differential protection as specified in PSE 3				
20.1.3		Supply	No	3		
20.1.4		Install	No	3		
		FEEDER PANELS				
		Supply, installation and commissioning of 800 A, metal clad switchgear as specified in PSE 3				
20.1.5		Supply	No	1		
20.1.6		Install	No	1		
		GENERATOR INCOMER PANELS				
		Supply, installation and commissioning of 800 A, metal clad switchgear as specified in PSE 3				
20.1.7		Supply	No	2		
20.1.8		Install	No	2		
		BUS SECTION PANELS				
		Supply, installation and commissioning of 800 A, metal clad switchgear as specified in PSE 3				
20.1.9		Supply	No	1		
20.1.10		Install	No	1		
20.2		MIMIC AND CONTROL PANELS				
		Supply and install Floor Standing Mimic Panel (2m x 2m) as detailed in and shown on drawing (Control for 8 MV Panels and Indication for 5 LV Panels)				
20.2.1		Supply	No	1		
20.2.2		Install	No	1		
20.3		HIGHBURY BATTERY CHARGER				
CARRIED FORWARD						

CONTRACT: ORTDM SCMU 43-24/25 ADDENDUM#1 **BILL OF QUANTITIES**
CONTRACT TITLE: 50ML/D Highbury Water Treatment Works and Raw & Clear Water Pumpstations:
 MECHANICAL & ELECTRICAL
SECTION: 20 MV SWITCHGEAR

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
		Supply, installation and commissioning of a dual 110 V, trickle charger with low maintenance type Ni cad batteries (50Ah per battery charger). The battery charger must be equipped with boost charge facility, ammeter, voltmeter, spare fuses and circuit diagram.				
20.3.1		Supply	No	1		
20.3.2		Install	No	1		
20.4		MUNICIPAL SWITCHGEAR (11kV)				
		INCOMER PANELS				
		Supply, installation and commissioning of 800 A, metal clad switchgear as specified in PSE 4				
20.4.1		Supply	No	1		
20.4.2		Install	No	1		
		FEEDER PANELS				
		Supply, installation and commissioning of 800A, metal clad switchgear as specified in PSE 4				
20.4.3		Supply	No	2		
20.4.4		Install	No	2		
20.5		MUNICIPAL BATTERY CHARGER				
		Supply, installation and commissioning of a 110 V, trickle charger with low maintenance type Ni cad batteries (50Ah). The battery charger must be equipped with boost charge facility, ammeter, voltmeter, spare fuses and circuit diagram.				
20.5.1		Supply	No	1		
20.5.2		Install	No	1		
20.6		SUBSTATION OPERATING TOOLS				
20.6.1		Supply	Sum	2		
20.6.2		Install	Sum	2		
20.7		MISCELLANEOUS ITEMS				
		Safety signs and notices:				
		Supply and attach sign to switchgear, transformer, generator and MCC room doors. Unauthorised entry.				
CARRIED FORWARD						

CONTRACT: ORTDM SCMU 43-24/25-ADDENDUM#1

BILL OF QUANTITIES

CONTRACT TITLE: 50ML/D Highbury Water Treatment Works and Raw & Clear Water Pump Stations:
MECHANICAL & ELECTRICAL

SECTION: 22 TELEMETRY

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
22.1		TELEMETRY The supply, delivery, installation, configuration and commissioning of the following instrumentation as specified in PSE 13 and GSE 17a. Each remote station will include the following: • 8 analogue inputs (4-20mA, 0-10V) • 16 Digital inputs (24Vdc) • 8 digital outputs (relay). The preferred telemetry radio equipment is as follows: • Digital UHF data radios: Trio MR450 • Analogue UHF data radios: Motorola.				
22.1.1		Conduct site survey for telemetry	Sum	1		
22.1.2		HIGHBURY WTW Telemetry master station including all required equipment such as antenna, power supply, cables, lighting protection, IP65 enclosure, ect.				
22.1.2.1	PI 4	Supply	Sum	1		
22.1.2.2		Install	Sum	1		
		Telemetry master station 15m mast, mast foundation and earthing				
22.1.2.3		Supply	Sum	1		
22.1.2.4		Install	Sum	1		
		Radio configuration for COMMs, I/O and basic level control				
22.1.2.5		Supply	Sum	1		
22.1.2.6		Install	Sum	1		
		Telemetry equipment integration link to Highbury SCADA/PLC				
22.1.2.7		Supply	Sum	1		
22.1.2.8		Install	Sum	1		
22.1.3		ROSEDALE CLEARWATER COMMAND RESERVOIRS Telemetry remote station including all required equipment such as antenna, power supply, cables, lighting protection, IP65 enclosure, ect.				
22.1.3.1		Supply	Sum	1		
22.1.3.2		Install	Sum	1		
CARRIED FORWARD						

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
22.1.3.3		BROUGHT FORWARD	Sum	1		
		Telemetry remote station 15m mast, mast foundation and earthing				
		Supply				
CARRIED FORWARD						

CONTRACT: ORTDM SCMU 43-24/25 ADDENDUM #1 **BILL OF QUANTITIES**
CONTRACT TITLE: 50ML/D Highbury Water Treatment Works and Raw & Clear Water Pumpstations:
 MECHANICAL & ELECTRICAL
SECTION: 22 TELEMETRY

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
22.1.6.1		Supply	Sum	0	***omit***	0.00
22.1.6.2		Install	Sum	0	***omit***	0.00
		Telemetry remote station 15m mast, mast foundation and earthing				
22.1.6.3		Supply	Sum	0	***omit***	0.00
22.1.6.4		Install	Sum	0	***omit***	0.00
		Radio configuration for COMMs, I/O and basic level control				
22.1.6.5		Supply	Sum	0	***omit***	0.00
22.1.6.6		Install	Sum	0	***omit***	0.00
		Configure communication between Highbury and Thornhill WTW's				
22.1.6.7		Supply	Sum	0	***omit***	0.00
22.1.6.8		Install	Sum	0	***omit***	0.00
22.1.7		REPEATER STATIONS				
		Telemetry remote station including all required equipment such as antenna, power supply, cables, lighting protection, IP65 enclosure, ect.				
22.1.7.1		Supply	Sum	1		
22.1.7.2		Install	Sum	1		
		Telemetry remote station 15m mast, mast foundation and earthing				
22.1.7.3		Supply	Sum	1		
22.1.7.4		Install	Sum	1		
		Radio configuration for COMMs, I/O and basic level control				
22.1.7.5		Supply	Sum	1		
22.1.7.6		Install	Sum	1		
		Photovoltaic installation including batteries as follows: 20% Cycle Lifetime, 48h lithium type (maintenance free)				
22.1.7.7		Supply	Sum	1		
22.1.7.8		Install	Sum	1		
CARRIED FORWARD						