



Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
		<b>BILL NO 7.1</b>				
		<b>SWITCHING STATION SS 1A4</b>				
		<b>CIVIL WORKS</b>				
7.1.1		(a) Make provision for temporary works to accommodate existing cables during extension of the switching station building	Sum	1		
		<b>BUILDINGS</b>				
		<u>Extension to existing control building</u>				
		Construct an extension to the switching room building inclusive of all required foundations, brickwork, roof & tiles, gutters, down-pipes, plumbing, electrical works, earth bonding to main earthgrid, carpentry, plastering, painting, doors, air ventilation, concrete ramp/porch and control cable trench entry into building. All accessories such as nuts, bolts, brackets, supports, etc. included				
7.1.2		.1 Supply	m <sup>2</sup>	25		
7.1.3		.2 Install	m <sup>2</sup>	25		
		<u>Demolish existing wall 5m long and 3 meter high</u>				
7.1.4		.1 Supply	ea	-		
7.1.5		.2 Install	ea	1		
		<u>Wall mounted cable rack (flush to wall) - heavy duty</u>				
7.1.6		.1 Supply	m	10		
7.1.7		.2 Install	m	10		
		<u>Overhead mounted cable rack - heavy duty</u>				
7.1.8		.1 Supply	m	10		
7.1.9		.2 Install	m	10		
		<u>Safety signs/Danger labels</u>				
7.1.10		.1 Supply	ea	2		
7.1.11		.2 Install	ea	2		
		<u>Hardwood wall mounted drawing frame to house drawings</u>				
7.1.12		.1 Supply	ea	1		
7.1.13		.2 Install	ea	1		
		<u>6m 300mm PE sleeves for power cable entry</u>				
7.1.14		.1 Supply	ea	7		
7.1.15		.2 Install	ea	7		
		<u>Lock and keys for doors and gates</u>				
7.1.16		.1 Supply	ea	2		
7.1.17		.2 Install	ea	2		
Carried Forward						

			Brought Forward		
		<b><u>EARTHING</u></b>			
		<b><u>Main Earthgrid</u></b>			
		Extend the existing switching station's earthgrid to cover the switching station building's extension			
		(a) Trenching			
7.1.18		.1 Supply	m <sup>3</sup>	-	
7.1.19		.2 Install	m <sup>3</sup>	18	
		<b><u>Install Horizontal Grid (10mm<sup>2</sup> annealed round copper - 0.7kg/m)</u></b>			
7.1.20		.1 Supply	m	50	
7.1.21		.2 Install	m	50	
		<b><u>Equipment Earth Tails (50x3mm - 1.38kg/m)</u></b>			
7.1.22		.1 Supply	m	21	
7.1.23		.2 Install	m	21	
		<b><u>Vertical 16mm<sup>2</sup> rods</u></b>			
7.1.24		.1 Supply	m	8	
7.1.25		.2 Install	m	8	
		<b><u>Bentonite (conductive concrete)</u></b>			
7.1.26		.1 Supply	m <sup>3</sup>	1	
7.1.27		.2 Install	m <sup>3</sup>	1	
		<b><u>Exo-welding (bonding)</u></b>			
7.1.28		.1 Supply	ea	4	
7.1.29		.2 Install	ea	4	
		<b><u>Backfill and compaction</u></b>			
7.1.30		.1 Supply	m <sup>3</sup>	10	
7.1.31		.2 Install	m <sup>3</sup>	10	
		<b><u>Indoor Equipment earthing</u></b>			
		<b><u>11 kV Switchgear panels</u></b>			
7.1.32		.1 Supply	ea	7	
7.1.33		.2 Install	ea	7	
		<b><u>Earthing accessories (1000x100x50 earth bar, down conductor, BCEW) for extension</u></b>			
7.1.34		.1 Supply	Lot	1	
7.1.35		.2 Install	Lot	1	
		<b><u>Measure Earthgrid Resistance (Soil resistivity testing to be included)</u></b>			
7.1.36		.1 Supply	ea	1	
7.1.37		.2 Install	ea	1	
			Carried Forward		

				Brought Forward	
		<b><u>PRIMARY PLANT - OUTDOOR</u></b>			
		Allow for all costs which the Contractor may incur in terms of any or all of descriptions the drawings which costs are not specifically covered in the Schedule hereafter.			
		<u>Install 11 kV Cables</u>			
		Complete installation of two 11kV three core cables per between Leaches Bay MV panel (switchgear) and and SS 1A4 11kV switchgear including all indoor terminations and connections. Complete installation of wooden cable supports in the Switching Station cable trenches and sealing off of cable ducts/sleeves across road. Rearrange panels such that power is balanced as much as possible on the MV board's busbar			
		<u>Trenching (Note existing services. Any damage will be to the contractor's cost)</u>			
7.1.38	.1	Supply	m <sup>3</sup>	-	
7.1.39	.2	Install	m <sup>3</sup>	1600	
		<u>11 kV 240mm<sup>2</sup> three core Cu XLPE SWA cable</u>			
7.1.40	.1	Supply	m	8000	
7.1.41	.2	Install	m	8000	
		<u>Backfill and compaction and test</u>			
7.1.42	.1	Supply	m <sup>3</sup>	1280	
7.1.43	.2	Install	m <sup>3</sup>	1280	
		<u>Install 160mm dia. Class 6 sleeves</u>			
7.1.44	.1	Supply	m	500	
7.1.45	.2	Install	m	500	
		<u>Install 110mm dia. Class 6 sleeves</u>			
7.1.46	.1	Supply	m	180	
7.1.47	.2	Install	m	180	
		<u>Make-off 11 kV 240mm<sup>2</sup> three core Cu XLPE cable indoor shrouded termination</u>			
7.1.48	.1	Supply	ea	4	
7.1.49	.2	Install	ea	4	
		<u>Make-off 11 kV 240mm<sup>2</sup> three core Cu XLPE SWA cold shrink cable joint</u>			
7.1.50	.1	Supply	ea	27	
7.1.51	.2	Install	ea	27	
		<u>Install 2 x 70mm<sup>2</sup> BCEW ECC including joints, termination and other accessories</u>			
7.1.52	.1	Supply	m	16000	
7.1.53	.2	Install	m	16000	
		<u>Install 120mm<sup>2</sup> BCEW ECC including joints, termination and other accessories</u>			
7.1.54	.1	Supply	m	1	
7.1.55	.2	Install	m	1	
		<u>Concrete Cable Route Markers</u>			
7.1.56	.1	Supply	no	54	
7.1.57	.2	Install	no	54	
		<u>Danger Tape: Orange/Yellow PVC material (300mm above cable)</u>			
7.1.58	.1	Supply	m	8000	
7.1.59	.2	Install	m	8000	
		<u>Built of a complete 800 x 800 mm brick manhole with concrete lid as indicated on the drawing</u>			
7.1.60	.1	Supply	no	4	
7.1.61	.2	Install	no	4	
				Carried Forward	

			Brought Forward		
		<b><u>PRIMARY PLANT -INDOOR</u></b>			
		Supply & installation of complete switchboard including all inter-panel			
		<u>11kV Switchboard</u>			
		11kV 630A Circuit Breaker (outgoing feeder)			
7.1.62		.1 Supply	ea	6	
7.1.63		.2 Install	ea	6	
		11kV 800A (incoming feeder) Circuit Breaker with differential protection and OC/EF as backup			
7.1.64		.1 Supply	ea	2	
7.1.65		.2 Install	ea	2	
		11kV 630A Bus-Section Circuit Breaker (including riser panel)			
7.1.66		.1 Supply	ea	1	
7.1.67		.2 Install	ea	1	
		11kV Voltage Transformer panel			
7.1.68		.1 Supply	ea	1	
7.1.69		.2 Install	ea	1	
		<b><u>CONTROL PLANT</u></b>			
		<u>Design, supply and install all protection, metering, control, telecommunication, AC/DC and security systems:</u> Panels to be fully equipped with all relays, switches, indication lamps, mimic display, terminals, fuses, links and all other equipment required for the HV and MV protection and control system as generally specified and indicated for HV & MV plant on the drawings. Supply, delivery & installation of control panels, including all connections, inter-panel cabling, complete testing and commissioning to ensure a fully functional system			
		<u>Make provision for new AC/DC Panel (3x3Phase Circuit, 6x1Phase Circuits, 9 DC circuits) with 25% spare space</u>	sum	1	
		Make provision for 110V Charger & Batteries (54 cells 161 Ah lead acid cells), 30A charger and Battery cabinet	sum	1	
		Integration of the new board to the existing or existing AC/DC source including any upgrade required	lot	1	
		<b><u>MISCELLANEOUS</u></b>			
		<u>Pipes and Sleeves</u>			
		<u>160mm 6m PE pipe/sleeve, include sealing and draw wires</u>			
7.1.73		.1 Supply	Item	2	
7.1.74		.2 Install	Item	2	
		<u>110mm 6m PE pipe/sleeve, include sealing and draw wires</u>			
7.1.75		.1 Supply	Item	5	
7.1.76		.2 Install	Item	5	
		<u>Testing</u>			
		<u>Testing of power cables</u>			
7.1.77		.1 Supply	Item	-	
7.1.78		.2 Install	Item	2	
			Carried Forward		

		Brought Forward	
	<u>Earth continuity test between structure and earthgrid</u>		
7.1.79	.1 Supply	Item	-
7.1.80	.2 Install	Item	7
	<u>Resistance test of Switching Station earthgrid with report</u>		
7.1.81	.1 Supply	Item	-
7.1.82	.2 Install	Item	1
	<u>Signs/Notices</u>		
	Station labels (safety/danger/access/medical/identification)		
7.1.83	.1 Supply	Lot	2
7.1.84	.2 Install	Lot	2
	<u>Equipment labels</u>		
7.1.85	.1 Supply	Lot	14
7.1.86	.2 Install	Lot	14
	<u>Excavations</u>		
	Excavations - pickable soil		
7.1.87	.1 Supply	m <sup>3</sup>	-
7.1.88	.2 Install	m <sup>3</sup>	7040
	<u>Excavations - Intermediate soil</u>		
7.1.89	.1 Supply	m <sup>3</sup>	-
7.1.90	.2 Install	m <sup>3</sup>	4224
	<u>Excavations - soft rock (machine)</u>		
7.1.91	.1 Supply	m <sup>3</sup>	-
7.1.92	.2 Install	m <sup>3</sup>	1408
	<u>Excavations - hard rock (machine)</u>		
7.1.93	.1 Supply	m <sup>3</sup>	-
7.1.94	.2 Install	m <sup>3</sup>	1408
	<u>Side wall protection of 1.2m to 2m deep trenches</u>		
7.1.95	.1 Supply	m <sup>2</sup>	1
7.1.96	.2 Install	m <sup>2</sup>	1
	<u>Imported bedding sand/ riversand for bedding &amp; backfilling materials</u>		
7.1.97	.1 Supply	m <sup>3</sup>	160
7.1.98	.2 Install	m <sup>3</sup>	160
	<u>Removal of excavated material (rock, etc.) and spoil not suitable for backfilling and transport</u>		
7.1.99	.1 Supply	m <sup>3</sup>	160
7.1.100	.2 Install	m <sup>3</sup>	160
	<u>Drill pit (For drilling underneath road)</u>		
7.1.101	.1 Supply	m <sup>3</sup>	12
7.1.102	.2 Install	m <sup>3</sup>	12
	<u>Horizontal drilling (soft soil)</u>		
7.1.103	.1 Supply	m <sup>3</sup>	2.9
7.1.104	.2 Install	m <sup>3</sup>	2.9
		Carried Forward	

		Brought Forward	
		<u>Horizontal drilling (hard rock)</u>	
7.1.105	.1 Supply	m³	2.9
7.1.106	.2 Install	m³	2.9
		<u>Boulders – Class A</u>	
7.1.107	.1 Supply	m³	3
7.1.108	.2 Install	m³	3
		<u>Concrete works</u>	
		Stone (19mm stone size)	
7.1.109	.1 Supply	m³	5
7.1.110	.2 Install	m³	5
		Sand	
7.1.111	.1 Supply	m³	5
7.1.112	.2 Install	m³	5
		50kg pockets of 25MPa cement	
7.1.113	.1 Supply	ea	25
7.1.114	.2 Install	ea	25
		<u>Building services</u>	
		Bricks	
7.1.115	.1 Supply	m²	45
7.1.116	.2 Install	m²	45
		Brickforce	
7.1.117	.1 Supply	m	36
7.1.118	.2 Install	m	36
		Concrete Lintol (1,2m)	
7.1.119	.1 Supply	m	2
7.1.120	.2 Install	m	2
		Concrete Lintol (2,4m)	
7.1.121	.1 Supply	m	1
7.1.122	.2 Install	m	1
		Paint (20 litre)	
7.1.123	.1 Supply	ea	5
7.1.124	.2 Install	ea	5
		Tools (brick laying, shovels/markings/waterpas/mixer)	
7.1.125	.1 Supply	Lot	1
7.1.126	.2 Install	Lot	1
		Truck (1 Ton)	
		km	300
		4 x 4 LDV	
		km	300
		Other please specify:	
		Item	1
		Make provision for the architectural design of the switching station extension	
		Sum	1
		Make provision for the civil design of the switching station extension	
		Sum	1
		Carried Forward	

		Brought Forward		
		Install OPTEX (purpose designed) duct system for 7 cores optic fibre		
7.1.119	.1	Supply	m	2000
7.1.120	.2	Install	m	2000
		Install 7 Core 2.5mm2 Cu PVCPVCSWASWA Pilot Cable		
7.1.121	.1	Supply	m	4000
7.1.122	.2	Install	m	4000
	(a)	Make provision for the decommissioning of the old switch - board and commissioning of the new switch-board	item	1
		<b>BILL NO 7.1</b> <b>SWITCHING STATION SS 1A4</b>		
Carried forward to Summary of Bills			<b>Total</b>	