



Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
		<b>BILL NO 6.1</b> <b>SWITCHING STATION SS 1A3</b>				
		<b>CIVIL WORKS</b>				
6.1.1		(a) Make provision for temporary works to accommodate existing cables during extension of the switching station building	Sum	1		
		<b><u>BUILDINGS (Contractor to do quantity survey on all buildings extensions)</u></b> <b><u>Extension to existing control building</u></b>				
		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				
6.1.2		.1 Supply	m <sup>2</sup>	25		
6.1.3		.2 Install	m <sup>2</sup>	25		
		<b><u>Demolish existing wall 5m long and 3 meter high</u></b>				
6.1.4		.1 Supply	ea	-		
6.1.5		.2 Install	ea	0		
		<b><u>Wall mounted cable rack (flush to wall) - heavy duty</u></b>				
6.1.6		.1 Supply	m	10		
6.1.7		.2 Install	m	10		
		<b><u>Overhead mounted cable rack - heavy duty</u></b>				
6.1.8		.1 Supply	m	10		
6.1.9		.2 Install	m	10		
		<b><u>Safety signs/Danger labels</u></b>				
6.1.10		.1 Supply	ea	2		
6.1.11		.2 Install	ea	2		
		<b><u>Hardwood wall mounted drawing frame to house drawings</u></b>				
6.1.12		.1 Supply	ea	1		
6.1.13		.2 Install	ea	1		
		<b><u>6m 300mm PE sleeves for power cable entry</u></b>				
6.1.14		.1 Supply	ea	7		
6.1.15		.2 Install	ea	7		
		<b><u>Lock and keys for doors and gates</u></b>				
6.1.16		.1 Supply	ea	2		
6.1.17		.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			
(a) Trenching			
6.1.18	.1 Supply	m <sup>3</sup>	-
6.1.19	.2 Install	m <sup>3</sup>	18
<b><u>Install Horizontal Grid (10mm<sup>2</sup> annealed round copper - 0.7kg/m)</u></b>			
6.1.20	.1 Supply	m	50
6.1.21	.2 Install	m	50
<b><u>Equipment Earth Tails (50x3mm - 1.38kg/m)</u></b>			
6.1.22	.1 Supply	m	21
6.1.23	.2 Install	m	21
<b><u>Vertical 16mm<sup>2</sup> rods</u></b>			
6.1.24	.1 Supply	m	8
6.1.25	.2 Install	m	8
<b><u>Bentonite (conductive concrete)</u></b>			
6.1.26	.1 Supply	m <sup>3</sup>	1
6.1.27	.2 Install	m <sup>3</sup>	1
<b><u>Exo-welding (bonding)</u></b>			
6.1.28	.1 Supply	ea	4
6.1.29	.2 Install	ea	4
<b><u>Backfill and compaction</u></b>			
6.1.30	.1 Supply	m <sup>3</sup>	10
6.1.31	.2 Install	m <sup>3</sup>	10
<b><u>Indoor Equipment earthing</u></b>			
<b><u>11 kV Switchgear panels</u></b>			
6.1.32	.1 Supply	ea	7
6.1.33	.2 Install	ea	7
<b><u>Earthing accessories (1000x100x50 earth bar, down conductor, BCEW) for extension</u></b>			
6.1.34	.1 Supply	Lot	1
6.1.35	.2 Install	Lot	1
<b><u>Measure Earthgrid Resistance (Soil resistivity testing to be included)</u></b>			
6.1.36	.1 Supply	ea	1
6.1.37	.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 1A1 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>			
6.1.38	.1 Supply	m <sup>3</sup>		
6.1.39	.2 Install	m <sup>3</sup>	2480	
	<u>Install 11 kV 240mm<sup>2</sup> three core Cu XLPE SWA cable</u>			
6.1.40	.1 Supply	m	8400	
6.1.41	.2 Install	m	8400	
	<u>Backfill and compaction and test</u>			
6.1.42	.1 Supply	m <sup>3</sup>	1984	
6.1.43	.2 Install	m <sup>3</sup>	1984	
	<u>Install 160mm dia. Class 6 sleeves</u>			
6.1.44	.1 Supply	m	500	
6.1.45	.2 Install	m	500	
	<u>Install 110mm dia. Class 6 sleeves</u>			
6.1.46	.1 Supply	m	180	
6.1.47	.2 Install	m	180	
	<u>Make-off 11 kV 240mm<sup>2</sup> three core Cu XLPE cable indoor shrouded termination</u>			
6.1.48	.1 Supply	ea	6	
6.1.49	.2 Install	ea	6	
	<u>Make-off 11 kV 240mm<sup>2</sup> three core Cu XLPE SWA cold shrink cable joint</u>			
6.1.50	.1 Supply	ea	28	
6.1.51	.2 Install	ea	28	
	<u>Install 11 kV 185mm<sup>2</sup> three core Cu XLPE SWA cable</u>			
6.1.52	.1 Supply	m	20	
6.1.53	.2 Install	m	20	
	<u>Make-off 11 kV 185mm<sup>2</sup> three core Cu XLPE cable indoor shrouded termination</u>			
6.1.54	.1 Supply	ea	2	
6.1.55	.2 Install	ea	2	
	<u>Install 2 x 70mm<sup>2</sup> BCEW ECC including joints, termination and other accessories</u>			
6.1.56	.1 Supply	m	16800	
6.1.57	.2 Install	m	16800	
	<u>Install 1 x 70mm<sup>2</sup> BCEW ECC including joints, termination and other accessories</u>			
6.1.58	.1 Supply	m	20	
6.1.59	.2 Install	m	20	
			Carried Forward	

				Brought Forward	
		<u>Concrete Cable Route Markers</u>			
6.1.60		.1 Supply	no	56	
6.1.61		.2 Install	no	56	
		<u>Danger Tape: Orange/Yellow PVC material (300mm above cable)</u>			
6.1.62		.1 Supply	m	8400	
6.1.63		.2 Install	m	8400	
		<u>Built of a complete 800 x 800 mm brick manhole with concrete lid as indicated on the drawing</u>			
6.1.64		.1 Supply	no	4	
6.1.65		.2 Install	no	4	
		<b><u>PRIMARY PLANT -INDOOR</u></b>			
		Supply & installation of complete switchboard including all inter-panel connections, busbars and bus wiring; switchboard consisting of:			
		<u>11kV Switchboard</u>			
		<u>11kV 630A Circuit Breaker (outgoing feeder)</u>			
6.1.66		.1 Supply	ea	8	
6.1.67		.2 Install	ea	8	
		<u>11kV 800A (incoming feeder) Circuit Breaker with differential protection and OC/EF as backup</u>			
6.1.68		.1 Supply	ea	2	
6.1.69		.2 Install	ea	2	
		<u>11kV 630A Bus-Section Circuit Breaker (including riser panel)</u>			
6.1.70		.1 Supply	ea	1	
6.1.71		.2 Install	ea	1	
		<u>11kV Voltage Transformer panel</u>			
6.1.72		.1 Supply	ea	1	
6.1.73		.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	
				Carried Forward	

				Brought Forward		
<b>MISCELLANEOUS</b>						
<u>Pipes and Sleeves</u>						
160mm 6m PE pipe/sleeve, include sealing and draw wires						
6.1.77	.1	Supply	item	2		
6.1.78	.2	Install	item	2		
110mm 6m PE pipe/sleeve, include sealing and draw wires						
6.1.79	.1	Supply	item	5		
6.1.80	.2	Install	item	5		
<u>Testing</u>						
Testing of power cables						
6.1.81	.1	Supply	item	-		
6.1.82	.2	Install	item	2		
Earth continuity test between structure and earthgrid						
6.1.83	.1	Supply	item	-		
6.1.84	.2	Install	item	7		
Resistance test of Switching Station earthgrid with report						
6.1.85	.1	Supply	item	-		
6.1.86	.2	Install	item	1		
<u>Signs/Notices</u>						
Station labels (safety/danger/access/medical/identification)						
6.1.87	.1	Supply	Lot	2		
6.1.88	.2	Install	Lot	2		
Equipment labels						
6.1.89	.1	Supply	Lot	14		
6.1.90	.2	Install	Lot	14		
<u>Excavations</u>						
Excavations - pickable soil						
6.1.91	.1	Supply	m <sup>3</sup>	-		
6.1.92	.2	Install	m <sup>3</sup>	7392		
Excavations - Intermediate soil						
6.1.93	.1	Supply	m <sup>3</sup>	-		
6.1.94	.2	Install	m <sup>3</sup>	4435		
Excavations - soft rock (machine)						
6.1.95	.1	Supply	m <sup>3</sup>	-		
6.1.96	.2	Install	m <sup>3</sup>	1478		
Excavations - hard rock (machine)						
6.1.97	.1	Supply	m <sup>3</sup>	-		
6.1.98	.2	Install	m <sup>3</sup>	1478		
				Carried Forward		

				Brought Forward		
		Side wall protection of 1.2m to 2m deep trenches				
6.1.99	.1	Supply	m <sup>3</sup>	1		
6.1.100	.2	Install	m <sup>3</sup>	1		
		Imported bedding sand/ riversand for bedding & backfilling materials				
6.1.101	.1	Supply	m <sup>3</sup>	160		
6.1.102	.2	Install	m <sup>3</sup>	160		
		Removal of excavated material (rock, etc.) and spoil not suitable for backfilling and transport to an approved dumping site (50km radius)				
6.1.103	.1	Supply	m <sup>3</sup>	160		
6.1.104	.2	Install	m <sup>3</sup>	160		
		Drill pit (For drilling underneath road)				
6.1.105	.1	Supply	m <sup>3</sup>	12		
6.1.106	.2	Install	m <sup>3</sup>	12		
		Horizontal drilling (soft soil)				
6.1.107	.1	Supply	m <sup>3</sup>	2.9		
6.1.108	.2	Install	m <sup>3</sup>	2.9		
		Horizontal drilling (hard rock)				
6.1.109	.1	Supply	m <sup>3</sup>	2.9		
6.1.110	.2	Install	m <sup>3</sup>	2.9		
		Boulders – Class A				
6.1.111	.1	Supply	m <sup>3</sup>	3		
6.1.112	.2	Install	m <sup>3</sup>	3		
		Boulders – Class A				
		<u>Concrete works</u>				
		Stone (19mm stone size)				
6.1.113	.1	Supply	m <sup>3</sup>	5		
6.1.114	.2	Install	m <sup>3</sup>	5		
		Sand				
6.1.115	.1	Supply	m <sup>3</sup>	5		
6.1.116	.2	Install	m <sup>3</sup>	5		
		50kg pockets of 25MPa cement				
6.1.117	.1	Supply	ea	25		
6.1.118	.2	Install	ea	25		
		<u>Building services</u>				
		Bricks				
6.1.119	.1	Supply	m <sup>2</sup>	45		
6.1.120	.2	Install	m <sup>2</sup>	45		
		Brickforce				
6.1.121	.1	Supply	m	36		
6.1.122	.2	Install	m	36		
				Carried Forward		

				Brought Forward		
		Concrete Lintol (1,2m)				
6.1.123		.1 Supply	ea	2		
6.1.124		.2 Install	ea	2		
		Concrete Lintol (2,4m)				
6.1.125		.1 Supply	ea	1		
6.1.126		.2 Install	ea	1		
		Paint (20 litre)				
6.1.127		.1 Supply	ea	5		
6.1.128		.2 Install	ea	5		
		Tools (brick laying, shovels/marking/waterpas/mixer)				
6.1.129		.1 Supply	Lot	1		
6.1.130		.2 Install	Lot	1		
		Transport - travelling required other than allowed for on contract				
		Truck (1 Ton)				
6.1.131		.1 Supply	km	300		
6.1.132		.2 Install	km	300		
		4 x 4 LDV				
6.1.133		.1 Supply	km	300		
6.1.134		.2 Install	km	300		
		Make provision for the architectural design of the switching station extension				
6.1.135		.1 Supply	Sum	1		
6.1.136		.2 Install	Sum	1		
		Make provision for the civil design of the switching station extension				
6.1.137		.1 Supply	Sum	1		
6.1.138		.2 Install	Sum	1		
		Install OPTEX (purpose designed) duct system for 7 cores optic fibre				
6.1.139		.1 Supply	m	1600		
6.1.140		.2 Install	m	1600		
		Install 7 Core 2.5mm2 Cu PVCPCSWASWA Pilot Cable				
6.1.141		.1 Supply	m	3200		
6.1.142		.2 Install	m	3200		
		(a) Make provision for the decommissioning of the old switch - board and commissioning of the new switch-board	item	1		
		<b>BILL NO 6.1</b>				
		<b>SWITCHING STATION SS 1A3</b>				
<b>Carried forward to Summary of Bills</b>				<b>Total</b>		