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## ANNEXTURES

Annex 01: Engineering Estimate for Supply, Delivery, Installation & Commission of complete 132kV/11kV substation with 02 Nos. 22.5MVA Transformers

Item	Description	Qty	Unit	Unit Price		Total Price	
				Foreign	Local LKR	Foreign	Local LKR
<b>1.00</b>	<b>145 kV Indoor Switchgear</b>						
1.01	145 kV GIS Single Busbar with Busbar VT/ES Bay	1	No	341,181.00	341,309.00	341,181.00	341,309.00
1.02	145 kV GIS Line Feeder Bay	2	Nos	116,921.00	116,965.00	233,842.00	233,930.00
1.03	145 kV GIS Transformer Feeder Bay	2	Nos	114,923.00	114,966.00	229,846.00	229,932.00
1.04	145kV Bus Section Bay	1	No	111,421.00	111,463.00	111,421.00	111,463.00
<b>2.00</b>	<b>12 kV Indoor Switchgear</b>						
2.01	12 kV GIS Transformer Feeder Bay	2	Nos	42,650.00	80,263.00	85,300.00	160,526.00
2.02	12 kV GIS Generator Feeder Bay	2	Nos	39,350.00	51,701.00	78,700.00	103,402.00
2.03	12 kV GIS Outgoing Line Feeder Bay	13	Nos	38,150.00	49,690.00	495,950.00	645,970.00
2.04	12 kV GIS Outgoing Line Feeder Bay	5	Nos	37,500.00	55,822.00	187,500.00	279,110.00
2.05	12 kV GIS Auxiliary Transformer Feeder Bay	2	Nos	40,150.00	40,657.00	80,300.00	81,314.00
2.06	12 kV GIS Bus Section Bay	2	Nos	33,650.00	76,958.00	67,300.00	153,916.00
<b>3.00</b>	<b>Auxiliary Supply</b>						
3.01	400 V AC Main Switchboard	1	No	8,818.00	8,821.00	8,818.00	8,821.00
3.02	400 V AC Distribution Panel	1	No	2,672.00	2,673.00	2,672.00	2,673.00
<b>4.00</b>	<b>Batteries, Chargers and Distribution Boards and Inverter Equipment</b>						
4.01	110 V Battery System	1	No	98,586.00	98,623.00	98,586.00	98,623.00
4.02	Inverter System for Substation Automation System	1	No	31,510.00	31,522.00	31,510.00	31,522.00
<b>5.00</b>	<b>Protection, Control, Metering and Monitoring</b>						
5.01	Substation Automation System	1	Lot	289,349.00	289,457.00	289,349.00	289,457.00
5.02	Digital Disturbance Recorder with Analysis Computers	1	Lot	171,618.00	171,682.00	171,618.00	171,682.00
5.03	Power Quality Analyzer	1	Lot	60,058.00	60,080.00	60,058.00	60,080.00
5.04	Remote Work Stations	1	Lot			0.00	0.00
5.05	145 kV Protection and Control					0.00	0.00
5.06	Protection for 145kV Line Feeder Bays	2	Nos	72,025.00	72,052.00	144,050.00	144,104.00

5.07	Control for 145kV Line Feeder Bays	2	Nos			0.00	0.00
5.08	Protection for 145kV Transformer Feeder Bays	2	Nos	93,694.00	93,729.00	187,388.00	187,458.00
5.09	Control for 145kV Transformer Feeder Bays	2	Nos			0.00	0.00
5.10	Automatic Voltage Control 145kV Transformer Feeder	2	Nos			0.00	0.00
5.11	Protection for Bus Section Bay	1	No	125,635.00	125,682.00	125,635.00	125,682.00
5.12	Control for 145kV Bus Section Bay	1	No			0.00	0.00
5.13	Gas Pressure Monitoring System	1	No			0.00	0.00
5.14	12 kV Protection and Control					0.00	0.00
5.15	Protection for 12kV Transformer Feeder Bays	2	Nos	68,892.00	68,918.00	137,784.00	137,836.00
5.16	Control for 12kV Transformer Feeder Bays	2	Nos			0.00	0.00
5.17	Protection for 12kV Generator Feeder Bays	2	Nos			0.00	0.00
5.18	Control for 12kV Generator Feeder Bays	2	Nos			0.00	0.00
5.19	Protection for 12kV Line Feeder Bays	13	Nos			0.00	0.00
5.20	Protection for 12kV Line Feeder Bays	5	Nos			0.00	0.00
5.21	Control for 12kV Line Feeder Bays	18	Nos			0.00	0.00
5.22	Protection for 12kV Auxiliary Transformer Feeder Bays	2	Nos			0.00	0.00
5.23	Control for 12kV Auxiliary Transformer Feeder Bays	2	Nos			0.00	0.00
5.24	Protection for 12kV Bus Section Bay	2	Nos			0.00	0.00
5.25	Control for 12kV Bus Section Bay	2	Nos			0.00	0.00
5.26	12kV Frequency & Voltage Relays to Install in Bus Bar	1	Lot			0.00	0.00
5.27	Gas Pressure Monitoring System	1	No			0.00	0.00
5.28	Alarm Facility for Common Substation Alarm	1	No			0.00	0.00
5.29	Manual Synchronism Facility	1	No			0.00	0.00
<b>6.00</b>	<b>SCADA and Communication System for NCC</b>						
6.01	Fiber Optic Communication Equipment and Accessories	1	Lot	120,316.00	120,361.00	120,316.00	120,361.00
6.02	Hot Line Telephone System Administrative Telephone System	1	Lot			0.00	0.00
6.03	Positive Grounded – 48 V DC Power Supply	1	Lot			0.00	0.00

6.04	SCADA System	1	Lot	64,259.00	64,283.00	64,259.00	64,283.00	
<b>7.00</b>	<b>Substation Earthing</b>	1	Lot		4,221,763.00	0.00	4,221,763.00	
<b>8.00</b>	<b>Lightning Protection System</b>	1	Lot	2,511.00	2,512.00	2,511.00	2,512.00	
<b>9.00</b>	<b>Grounding System</b>	1	Lot	3,917.00	3,918.00	3,917.00	3,918.00	
<b>10.00</b>	<b>Power Cables, Control Cables, Termination Kits, Cable Trays and Supports</b>							
10.01	145 kV Power Cables and Terminations	1	Lot	378,084.00	378,226.00	378,084.00	378,226.00	
10.02	12 kV Power Cables and Terminations	1	Lot	108,429.00	108,470.00	108,429.00	108,470.00	
10.03	All Low Voltage 1/0.6 kV AC Power Cables and Terminations	1	Lot			0.00	6,985,830.00	
10.04	All DC Power and Control Cables and Terminations	1	Lot			0.00	2,666,671.00	
10.05	All cables required for Protection, Control, Instrumentation, Communication, SCADA and Terminations	1	Lot			0.00	16,132,215.00	
10.06	All cables required for Station Lighting, Small Power, Fire Protection, Ventilation Equipment	1	Lot			0.00	278,734.00	
<b>11.00</b>	<b>Transformers</b>							
11.01	31.5 MVA, 132/11 kV Power Transformers	2	Nos	384,000.00	1,000,000.00	768,000.00	2,000,000.00	
11.02	160 kVA, 11/0.4 kV Auxiliary Transformers	2	Nos	25,173.00	25,183.00	50,346.00	50,366.00	
12.00	Neutral Earthing Resisters, Disconnectors and Earthing Switches	1	Lot	7,909.00	7,912.00	7,909.00	7,912.00	
13.00	Diesel Generators	1	No	11,029.00	11,033.00	11,029.00	11,033.00	
14.00	Supporting Structures	1	Lot	3,189.00	3,190.00	3,189.00	3,190.00	
15.00	Miscellaneous Works	1	Lot	168,582.00	168,645.00	168,582.00	168,645.00	
16.00	Spare Parts	1	Lot				65,659,723.00	
17.00	Tools and Instruments	1	Lot			745,284.00	745,566.00	
18.00	Design Services for substation	1	Lot				2,047,679.00	
19.00	Total cost of Civil construction	1	Lot				213,000,000.00	
20.00	Building Services	1	Lot				23,375,949.00	
21.00	Testing & Commissioning	1	Lot				34,404,045.00	
	Sub Total - Local Cost (LKR)							376,035,901.00
	Price Adjustment							0.00
	Total Local Cost (LKR)							<b>376,035,901.00</b>
	Total Foreign Cost (USD)					<b>5,600,663.00</b>		
	Total Cost							<b>1,188,132,036.00</b>

Annex 02: Engineering Estimate for Supply, Delivery, Installation & Commission of complete 132kV/22kV substation with 02 Nos. 22.5MVA Transformers

Item	Description	Qty	Unit	Unit Price		Total Price (Calculated)	
				Foreign (USD)	Local(LKR)	Foreign (USD)	Local (LKR)
<b>1.00</b>	<b>145 kV Indoor Switchgear</b>						
1.01	145 kV GIS Single Busbar with Busbar VT/ES Bay	1	No	341,181.00	341,309.00	341,181.00	341,309.00
1.02	145 kV GIS Line Feeder Bay	2	Nos	116,921.00	116,965.00	233,842.00	233,930.00
1.03	145 kV GIS Transformer Feeder Bay	2	Nos	114,923.00	114,966.00	229,846.00	229,932.00
1.04	145kV Bus Section Bay	1	No	111,421.00	111,463.00	111,421.00	111,463.00
<b>2.00</b>	<b>22 kV Indoor Switchgear</b>						
2.01	22 kV GIS Transformer Feeder Bay	2	Nos	44,150.00	80,263.00	88,300.00	160,526.00
2.02	22 kV GIS Generator Feeder Bay	2	Nos	41,250.00	51,701.00	82,500.00	103,402.00
2.03	22 kV GIS Outgoing Line Feeder Bay	13	Nos	40,150.00	49,690.00	521,950.00	645,970.00
2.04	22 kV GIS Outgoing Line Feeder Bay	5	Nos	39,750.00	55,822.00	198,750.00	279,110.00
2.05	22 kV GIS Auxiliary Transformer Feeder Bay	2	Nos	41,150.00	40,657.00	82,300.00	81,314.00
2.06	22 kV GIS Bus Section Bay	2	Nos	35,150.00	76,958.00	70,300.00	153,916.00
<b>3.00</b>	<b>Auxiliary Supply</b>						
3.01	400 V AC Main Switchboard	1	No	8,818.00	8,821.00	8,818.00	8,821.00
3.02	400 V AC Distribution Panel	1	No	2,672.00	2,673.00	2,672.00	2,673.00
<b>4.00</b>	<b>Batteries, Chargers and Distribution Boards and Inverter Equipment</b>						
4.01	110 V Battery System	1	No	98,586.00	98,623.00	98,586.00	98,623.00
4.02	Inverter System for Substation Automation System	1	No	31,510.00	31,522.00	31,510.00	31,522.00
<b>5.00</b>	<b>Protection, Control, Metering and Monitoring</b>						
5.01	Substation Automation System	1	Lot	289,349.00	289,457.00	289,349.00	289,457.00
5.02	Digital Disturbance Recorder with Analysis Computers	1	Lot	171,618.00	171,682.00	171,618.00	171,682.00
5.03	Power Quality Analyzer	1	Lot	60,058.00	60,080.00	60,058.00	60,080.00
5.04	Remote Work Stations	1	Lot			0.00	0.00
5.05	145 kV Protection and Control					0.00	0.00
5.06	Protection for 145kV Line Feeder Bays	2	Nos	72,025.00	72,052.00	144,050.00	144,104.00
5.07	Control for 145kV Line Feeder Bays	2	Nos			0.00	0.00
5.08	Protection for 145kV Transformer Feeder Bays	2	Nos	93,694.00	93,729.00	187,388.00	187,458.00
5.09	Control for 145kV Transformer Feeder Bays	2	Nos			0.00	0.00
5.10	Automatic Voltage Control 145kV Transformer Feeder	2	Nos			0.00	0.00
5.11	Protection for Bus Section Bay	1	No	125,635.00	125,682.00	125,635.00	125,682.00



5.12	Control for 145kV Bus Section Bay	1	No			0.00	0.00
5.13	Gas Pressure Monitoring System	1	No			0.00	0.00
5.14	22 kV Protection and Control					0.00	0.00
5.15	Protection for 22kV Transformer Feeder Bays	2	Nos	72,336.60	68,918.00	144,673.20	137,836.00
5.16	Control for 22kV Transformer Feeder Bays	2	Nos			0.00	0.00
5.17	Protection for 22kV Generator Feeder Bays	2	Nos			0.00	0.00
5.18	Control for 22kV Generator Feeder Bays	2	Nos			0.00	0.00
5.19	Protection for 22kV Line Feeder Bays	13	Nos			0.00	0.00
5.20	Protection for 22kV Line Feeder Bays	5	Nos			0.00	0.00
5.21	Control for 22kV Line Feeder Bays	18	Nos			0.00	0.00
5.22	Protection for 22kV Auxiliary Transformer Feeder Bays	2	Nos			0.00	0.00
5.23	Control for 22kV Auxiliary Transformer Feeder Bays	2	Nos			0.00	0.00
5.24	Protection for 22kV Bus Section Bay	2	Nos			0.00	0.00
5.25	Control for 22kV Bus Section Bay	2	Nos			0.00	0.00
5.26	22kV Frequency & Voltage Relays to Install in Bus Bar	1	Lot			0.00	0.00
5.27	Gas Pressure Monitoring System	1	No			0.00	0.00
5.28	Alarm Facility for Common Substation Alarm	1	No			0.00	0.00
5.29	Manual Synchronism Facility	1	No			0.00	0.00
<b>6.00</b>	<b>SCADA and Communication System for NCC</b>						
6.01	Fiber Optic Communication Equipment and Accessories	1	Lot	120,316.00	120,361.00	120,316.00	120,361.00
6.02	Hot Line Telephone System Administrative Telephone System	1	Lot			0.00	0.00
6.03	Positive Grounded – 48 V DC Power Supply	1	Lot			0.00	0.00
6.04	SCADA System	1	Lot	64,259.00	64,283.00	64,259.00	64,283.00
<b>7.00</b>	<b>Substation Earthing</b>	1	Lot		4,221,763.00	0.00	4,221,763.00
<b>8.00</b>	<b>Lightning Protection System</b>	1	Lot	2,511.00	2,512.00	2,511.00	2,512.00
<b>9.00</b>	<b>Grounding System</b>	1	Lot	3,917.00	3,918.00	3,917.00	3,918.00
<b>10.00</b>	<b>Power Cables, Control Cables, Termination Kits, Cable Trays and Supports</b>						
10.01	145 kV Power Cables and Terminations	1	Lot	378,084.00	378,226.00	378,084.00	378,226.00
10.02	22 kV Power Cables and Terminations	1	Lot	108,429.00	108,470.00	108,429.00	108,470.00
10.03	All Low Voltage 1/0.6 kV AC Power Cables and Terminations	1	Lot			0.00	6,985,830.00
10.04	All DC Power and Control Cables and Terminations	1	Lot			0.00	2,666,671.00

10.05	All cables required for Protection, Control, Instrumentation, Communication, SCADA and Terminations	1	Lot			0.00	16,132,215.00
10.06	All cables required for Station Lighting, Small Power, Fire Protection, Ventilation Equipment	1	Lot			0.00	278,734.00
11.00	<b>Transformers</b>						
11.01	31.5 MVA, 132/22 kV Power Transformers	2	Nos	408,000.00	1,000,000.00	816,000.00	2,000,000.00
11.02	160 kVA, 22/0.4 kV Auxiliary Transformers	2	Nos	26,431.65	25,183.00	52,863.30	50,366.00
12.00	<b>Neutral Earthing Resistors, Disconnectors and Earthing Switches</b>	1	Lot	7,909.00	7,912.00	7,909.00	7,912.00
13.00	<b>Diesel Generators</b>	1	No	11,029.00	11,033.00	11,029.00	11,033.00
14.00	<b>Supporting Structures</b>	1	Lot	3,189.00	3,190.00	3,189.00	3,190.00
15.00	<b>Miscellaneous Works</b>	1	Lot	168,582.00	168,645.00	168,582.00	168,645.00
16.00	<b>Spare Parts</b>	1	Lot				65,659,723.00
17.00	<b>Tools and Instruments</b>	1	Lot			745,284.00	745,566.00
18.00	<b>Design Services for substation</b>	1	Lot				2,047,679.00
19.00	<b>Total cost of Civil construction</b>	1	Lot				213,000,000.00
20.00	<b>Building Services</b>	1	Lot				23,375,949.00
21.00	<b>Testing &amp; Commissioning</b>	1	Lot				34,404,045.00
	Sub Total - Local Cost (LKR)						376,035,901.00
	Price Adjustment (5% of LKR Cost)						
	Total Local Cost (LKR)						<b>394,837,696.05</b>
	Total Foreign Cost (USD)					<b>5,707,119.50</b>	
	<b>Total Cost</b>						<b>1,222,370,023.55</b>

Annex 03: Engineering Estimate for Supply, Delivery, Installation & Commission of complete 132kV/33kV substation with 02 Nos. 22.5MVA Transformers

Item	Description	Qty.	Unit	Unit Price		Total Price (Calculated)	
				Foreign (USD)	Local (LKR)	Foreign (USD)	Local (LKR)
<b>1.00</b>	<b>145 kV Indoor Switchgear</b>						
1.01	145 kV GIS Single Busbar with Busbar VT/ES Bay	1	No	341,181.00	341,309.00	341,181.00	341,309.00
1.02	145 kV GIS Line Feeder Bay	2	Nos	116,921.00	116,965.00	233,842.00	233,930.00
1.03	145 kV GIS Transformer Feeder Bay	2	Nos	114,923.00	114,966.00	229,846.00	229,932.00
1.04	145kV Bus Section Bay	1	No	111,421.00	111,463.00	111,421.00	111,463.00
<b>2.00</b>	<b>33 kV Indoor Switchgear</b>						
2.01	33 kV GIS Transformer Feeder Bay	2	Nos	54,150.00	80,263.00	108,300.00	160,526.00
2.02	33 kV GIS Generator Feeder Bay	2	Nos	51,750.00	51,701.00	103,500.00	103,402.00
2.03	33 kV GIS Outgoing Line Feeder Bay	13	Nos	50,150.00	49,690.00	651,950.00	645,970.00
2.04	33 kV GIS Outgoing Line Feeder Bay	5	Nos	49,750.00	55,822.00	248,750.00	279,110.00
2.05	33 kV GIS Auxiliary Transformer Feeder Bay	2	Nos	51,150.00	40,657.00	102,300.00	81,314.00
2.06	33 kV GIS Bus Section Bay	2	Nos	49,150.00	76,958.00	98,300.00	153,916.00
<b>3.00</b>	<b>Auxiliary Supply</b>						
3.01	400 V AC Main Switchboard	1	No	8,818.00	8,821.00	8,818.00	8,821.00
3.02	400 V AC Distribution Panel	1	No	2,672.00	2,673.00	2,672.00	2,673.00
<b>4.00</b>	<b>Batteries, Chargers and Distribution Boards and Inverter Equipment</b>						
4.01	110 V Battery System	1	No	98,586.00	98,623.00	98,586.00	98,623.00
4.02	Inverter System for Substation Automation System	1	No	31,510.00	31,522.00	31,510.00	31,522.00
<b>5.00</b>	<b>Protection, Control, Metering and Monitoring</b>						
5.01	Substation Automation System	1	Lot	289,349.00	289,457.00	289,349.00	289,457.00
5.02	Digital Disturbance Recorder with Analysis Computers	1	Lot	171,618.00	171,682.00	171,618.00	171,682.00
5.03	Power Quality Analyzer	1	Lot	60,058.00	60,080.00	60,058.00	60,080.00
5.04	Remote Work Stations	1	Lot			0.00	0.00
5.05	145 kV Protection and Control					0.00	0.00
5.06	Protection for 145kV Line Feeder Bays	2	Nos	72,025.00	72,052.00	144,050.00	144,104.00
5.07	Control for 145kV Line Feeder Bays	2	Nos			0.00	0.00
5.08	Protection for 145kV Transformer Feeder Bays	2	Nos	93,694.00	93,729.00	187,388.00	187,458.00
5.09	Control for 145kV Transformer Feeder Bays	2	Nos			0.00	0.00
5.10	Automatic Voltage Control 145kV Transformer Feeder	2	Nos			0.00	0.00
5.11	Protection for Bus Section Bay	1	No	125,635.00	125,682.00	125,635.00	125,682.00
5.12	Control for 145kV Bus Section Bay	1	No			0.00	0.00
5.13	Gas Pressure Monitoring System	1	No			0.00	0.00

5.14	33 kV Protection and Control					0.00	0.00
5.15	Protection for 33kV Transformer Feeder Bays	2	Nos	91,626.36	68,918.00	183,252.72	137,836.00
5.16	Control for 33kV Transformer Feeder Bays	2	Nos			0.00	0.00
5.17	Protection for 33kV Generator Feeder Bays	2	Nos			0.00	0.00
5.18	Control for 33kV Generator Feeder Bays	2	Nos			0.00	0.00
5.19	Protection for 33kV Line Feeder Bays	13	Nos			0.00	0.00
5.20	Protection for 33kV Line Feeder Bays	5	Nos			0.00	0.00
5.21	Control for 33kV Line Feeder Bays	18	Nos			0.00	0.00
5.22	Protection for 33kV Auxiliary Transformer Feeder Bays	2	Nos			0.00	0.00
5.23	Control for 33kV Auxiliary Transformer Feeder Bays	2	Nos			0.00	0.00
5.24	Protection for 33kV Bus Section Bay	2	Nos			0.00	0.00
5.25	Control for 33kV Bus Section Bay	2	Nos			0.00	0.00
5.26	33kV Frequency & Voltage Relays to Install in Bus Bar	1	Lot			0.00	0.00
5.27	Gas Pressure Monitoring System	1	No			0.00	0.00
5.28	Alarm Facility for Common Substation Alarm	1	No			0.00	0.00
5.29	Manual Synchronism Facility	1	No			0.00	0.00
<b>6.00</b>	<b>SCADA and Communication System for NCC</b>						
6.01	Fiber Optic Communication Equipment and Accessories	1	Lot	120,316.00	120,361.00	120,316.00	120,361.00
6.02	Hot Line Telephone System Administrative Telephone System	1	Lot			0.00	0.00
6.03	Positive Grounded – 48 V DC Power Supply	1	Lot			0.00	0.00
6.04	SCADA System	1	Lot	64,259.00	64,283.00	64,259.00	64,283.00
<b>7.00</b>	<b>Substation Earthing</b>	1	Lot		4,221,763.00	0.00	4,221,763.00
<b>8.00</b>	<b>Lightning Protection System</b>	1	Lot	2,511.00	2,512.00	2,511.00	2,512.00
<b>9.00</b>	<b>Grounding System</b>	1	Lot	3,917.00	3,918.00	3,917.00	3,918.00
<b>10.00</b>	<b>Power Cables, Control Cables, Termination Kits, Cable Trays and Supports</b>						
10.01	145 kV Power Cables and Terminations	1	Lot	378,084.00	378,226.00	378,084.00	378,226.00
10.02	33 kV Power Cables and Terminations	1	Lot	144,210.57	108,470.00	144,210.57	108,470.00
10.03	All Low Voltage 1/0.6 kV AC Power Cables and Terminations	1	Lot			0.00	6,985,830.00
10.04	All DC Power and Control Cables and Terminations	1	Lot			0.00	2,666,671.00
10.05	All cables required for Protection, Control, Instrumentation, Communication, SCADA and Terminations	1	Lot			0.00	16,132,215.00

10.06	All cables required for Station Lighting, Small Power, Fire Protection, Ventilation Equipment	1	Lot			0.00	278,734.00
11.00	<b>Transformers</b>						
11.01	31.5 MVA, 132/33 kV Power Transformers	2	Nos	438,000.00	1,000,000.00	876,000.00	2,000,000.00
11.02	160 kVA, 33/0.4 kV Auxiliary Transformers	2	Nos	25,173.00	25,183.00	50,346.00	50,366.00
12.00	<b>Neutral Earthing Resisters, Disconnectors and Earthing Switches</b>	1	Lot	7,909.00	7,912.00	7,909.00	7,912.00
13.00	<b>Diesel Generators</b>	1	No	11,029.00	11,033.00	11,029.00	11,033.00
14.00	<b>Supporting Structures</b>	1	Lot	3,189.00	3,190.00	3,189.00	3,190.00
15.00	<b>Miscellaneous Works</b>	1	Lot	168,582.00	168,645.00	168,582.00	168,645.00
16.00	<b>Spare Parts</b>	1	Lot				65,659,723.00
17.00	<b>Tools and Instruments</b>	1	Lot			745,284.00	745,566.00
18.00	<b>Design Services for substation</b>	1	Lot				2,047,679.00
19.00	<b>Total cost of Civil construction</b>						213,000,000.00
20.00	<b>Building Services</b>						23,375,949.00
21.00	<b>Testing &amp; Commissioning</b>						34,404,045.00
	Sub Total - Local Cost (LKR)						376,035,901.00
	Price Adjustment (7% of LKR Cost)						26,322,513.07
	Total Local Cost (LKR)						402,358,414.07
	Total Foreign Cost (USD)					6,107,963.29	
	Total Cost						1,288,013,091.12

Annex 04: Engineering Estimate for Supply, Delivery, Installation & Commission of complete 132kV/11kV substation with 02 Nos. 45MVA Transformers

Item	Description	Qty	Unit	Unit Price		Total Price	
				Foreign	Local LKR	Foreign	Local LKR
<b>1.00</b>	<b>145 kV Indoor Switchgear</b>						
1.01	145 kV GIS Single Busbar with Busbar VT/ES Bay	1	No	341,181.00	341,309.00	341,181.00	341,309.00
1.02	145 kV GIS Line Feeder Bay	2	Nos	116,921.00	116,965.00	233,842.00	233,930.00
1.03	145 kV GIS Transformer Feeder Bay	2	Nos	114,923.00	114,966.00	229,846.00	229,932.00
1.04	145kV Bus Section Bay	1	No	111,421.00	111,463.00	111,421.00	111,463.00
<b>2.00</b>	<b>12 kV Indoor Switchgear</b>						
2.01	12 kV GIS Transformer Feeder Bay	2	Nos	42,650.00	80,263.00	85,300.00	160,526.00
2.02	12 kV GIS Generator Feeder Bay	2	Nos	39,350.00	51,701.00	78,700.00	103,402.00
2.03	12 kV GIS Outgoing Line Feeder Bay	13	Nos	38,150.00	49,690.00	495,950.00	645,970.00
2.04	12 kV GIS Outgoing Line Feeder Bay	5	Nos	37,500.00	55,822.00	187,500.00	279,110.00
2.05	12 kV GIS Auxiliary Transformer Feeder Bay	2	Nos	40,150.00	40,657.00	80,300.00	81,314.00
2.06	12 kV GIS Bus Section Bay	2	Nos	33,650.00	76,958.00	67,300.00	153,916.00
<b>3.00</b>	<b>Auxiliary Supply</b>						
3.01	400 V AC Main Switchboard	1	No	8,818.00	8,821.00	8,818.00	8,821.00
3.02	400 V AC Distribution Panel	1	No	2,672.00	2,673.00	2,672.00	2,673.00
<b>4.00</b>	<b>Batteries, Chargers and Distribution Boards and Inverter Equipment</b>						
4.01	110 V Battery System	1	No	98,586.00	98,623.00	98,586.00	98,623.00
4.02	Inverter System for Substation Automation System	1	No	31,510.00	31,522.00	31,510.00	31,522.00
<b>5.00</b>	<b>Protection, Control, Metering and Monitoring</b>						
5.01	Substation Automation System	1	Lot	289,349.00	289,457.00	289,349.00	289,457.00
5.02	Digital Disturbance Recorder with Analysis Computers	1	Lot	171,618.00	171,682.00	171,618.00	171,682.00
5.03	Power Quality Analyzer	1	Lot	60,058.00	60,080.00	60,058.00	60,080.00
5.04	Remote Work Stations	1	Lot			0.00	0.00
5.05	145 kV Protection and Control					0.00	0.00
5.06	Protection for 145kV Line Feeder Bays	2	Nos	72,025.00	72,052.00	144,050.00	144,104.00
5.07	Control for 145kV Line Feeder Bays	2	Nos			0.00	0.00
5.08	Protection for 145kV Transformer Feeder Bays	2	Nos	93,694.00	93,729.00	187,388.00	187,458.00
5.09	Control for 145kV Transformer Feeder Bays	2	Nos			0.00	0.00
5.10	Automatic Voltage Control 145kV Transformer Feeder	2	Nos			0.00	0.00
5.11	Protection for Bus Section Bay	1	No	125,635.00	125,682.00	125,635.00	125,682.00
5.12	Control for 145kV Bus Section Bay	1	No			0.00	0.00

5.13	Gas Pressure Monitoring System	1	No			0.00	0.00
5.14	12 kV Protection and Control					0.00	0.00
5.15	Protection for 12kV Transformer Feeder Bays	2	Nos	68,892.00	68,918.00	137,784.00	137,836.00
5.16	Control for 12kV Transformer Feeder Bays	2	Nos			0.00	0.00
5.17	Protection for 12kV Generator Feeder Bays	2	Nos			0.00	0.00
5.18	Control for 12kV Generator Feeder Bays	2	Nos			0.00	0.00
5.19	Protection for 12kV Line Feeder Bays	13	Nos			0.00	0.00
5.20	Protection for 12kV Line Feeder Bays	5	Nos			0.00	0.00
5.21	Control for 12kV Line Feeder Bays	18	Nos			0.00	0.00
5.22	Protection for 12kV Auxiliary Transformer Feeder Bays	2	Nos			0.00	0.00
5.23	Control for 12kV Auxiliary Transformer Feeder Bays	2	Nos			0.00	0.00
5.24	Protection for 12kV Bus Section Bay	2	Nos			0.00	0.00
5.25	Control for 12kV Bus Section Bay	2	Nos			0.00	0.00
5.26	12kV Frequency & Voltage Relays to Install in Bus Bar	1	Lot			0.00	0.00
5.27	Gas Pressure Monitoring System	1	No			0.00	0.00
5.28	Alarm Facility for Common Substation Alarm	1	No			0.00	0.00
5.29	Manual Synchronism Facility	1	No			0.00	0.00
<b>6.00</b>	<b>SCADA and Communication System for NCC</b>						
6.01	Fiber Optic Communication Equipment and Accessories	1	Lot	120,316.00	120,361.00	120,316.00	120,361.00
6.02	Hot Line Telephone System Administrative Telephone System	1	Lot			0.00	0.00
6.03	Positive Grounded – 48 V DC Power Supply	1	Lot			0.00	0.00
6.04	SCADA System	1	Lot	64,259.00	64,283.00	64,259.00	64,283.00
<b>7.00</b>	<b>Substation Earthing</b>	1	Lot		4,221,763.00	0.00	4,221,763.00
<b>8.00</b>	<b>Lightning Protection System</b>	1	Lot	2,511.00	2,512.00	2,511.00	2,512.00
<b>9.00</b>	<b>Grounding System</b>	1	Lot	3,917.00	3,918.00	3,917.00	3,918.00
<b>10.00</b>	<b>Power Cables, Control Cables, Termination Kits, Cable Trays and Supports</b>						
10.01	145 kV Power Cables and Terminations	1	Lot	378,084.00	378,226.00	378,084.00	378,226.00
10.02	12 kV Power Cables and Terminations	1	Lot	108,429.00	108,470.00	108,429.00	108,470.00
10.03	All Low Voltage 1/0.6 kV AC Power Cables and Terminations	1	Lot			0.00	6,985,830.00
10.04	All DC Power and Control Cables and Terminations	1	Lot			0.00	2,666,671.00
10.05	All cables required for Protection, Control, Instrumentation, Communication, SCADA and Terminations	1	Lot			0.00	16,132,215.00

10.06	All cables required for Station Lighting, Small Power, Fire Protection, Ventilation Equipment	1	Lot			0.00	278,734.00
11.00	<b>Transformers</b>						
11.01	45 MVA, 132/11 kV Power Transformers	2	Nos	744,000.00	1,287,124.00	1,488,000.00	2,574,248.00
11.02	160 kVA, 11/0.4 kV Auxiliary Transformers	2	Nos	25,173.00	25,183.00	50,346.00	50,366.00
12.00	<b>Neutral Earthing Resistors, Disconnectors and Earthing Switches</b>	1	Lot	7,909.00	7,912.00	7,909.00	7,912.00
13.00	<b>Diesel Generators</b>	1	No	11,029.00	11,033.00	11,029.00	11,033.00
14.00	<b>Supporting Structures</b>	1	Lot	3,189.00	3,190.00	3,189.00	3,190.00
15.00	<b>LV installation</b>	1	Lot			0.00	24,200,794.00
16.00	<b>Miscellaneous Works</b>	1	Lot	168,582.00	168,645.00	168,582.00	168,645.00
17.00	<b>Spare Parts</b>	1	Lot				65,659,723.00
18.00	<b>Tools and Instruments</b>	1	Lot			745,284.00	745,566.00
19.00	<b>Design Services for substation</b>	1	Lot				2,047,679.00
20.00	<b>Total cost of Civil construction</b>	1	Lot				213,000,000.00
21.00	Building Services cost	1	Lot				23,375,949.00
22.00	Testing & Commissioning	1	Lot				34,404,045.00
	Sub Total - Local Cost (LKR)						400,810,943.00
	Price Adjustment						28,056,766.01
	Total Local Cost (LKR)						428,867,709.01
	Total Foreign Cost (USD)					6,320,663.00	
	Total Cost						1,345,363,844.01



Annex 05: Engineering Estimate for Supply, Delivery, Installation & Commission of complete 132kV/22kV substation with 02 Nos. 45MVA Transformers

Item	Description	Qty	Unit	Unit Price		Total Price	
				Foreign	Local LKR	Foreign	Local LKR
<b>1.00</b>	<b>145 kV Indoor Switchgear</b>						
1.01	145 kV GIS Single Busbar with Busbar VT/ES Bay	1	No	341,181.00	341,309.00	341,181.00	341,309.00
1.02	145 kV GIS Line Feeder Bay	2	Nos	116,921.00	116,965.00	233,842.00	233,930.00
1.03	145 kV GIS Transformer Feeder Bay	2	Nos	114,923.00	114,966.00	229,846.00	229,932.00
1.04	145kV Bus Section Bay	1	No	111,421.00	111,463.00	111,421.00	111,463.00
<b>2.00</b>	<b>22 kV Indoor Switchgear</b>						
2.01	22 kV GIS Transformer Feeder Bay	2	Nos	43,267.00	80,263.00	86,534.00	160,526.00
2.02	22 kV GIS Generator Feeder Bay	2	Nos	40,425.00	51,701.00	80,850.00	103,402.00
2.03	22 kV GIS Outgoing Line Feeder Bay	13	Nos	39,347.00	49,690.00	511,511.00	645,970.00
2.04	22 kV GIS Outgoing Line Feeder Bay	5	Nos	38,955.00	55,822.00	194,775.00	279,110.00
2.05	22 kV GIS Auxiliary Transformer Feeder Bay	2	Nos	41,150.00	40,657.00	82,300.00	81,314.00
2.06	22 kV GIS Bus Section Bay	2	Nos	35,150.00	76,958.00	70,300.00	153,916.00
<b>3.00</b>	<b>Auxiliary Supply</b>						
3.01	400 V AC Main Switchboard	1	No	8,818.00	8,821.00	8,818.00	8,821.00
3.02	400 V AC Distribution Panel	1	No	2,672.00	2,673.00	2,672.00	2,673.00
<b>4.00</b>	<b>Batteries, Chargers and Distribution Boards and Inverter Equipment</b>						
4.01	110 V Battery System	1	No	98,586.00	98,623.00	98,586.00	98,623.00
4.02	Inverter System for Substation Automation System	1	No	31,510.00	31,522.00	31,510.00	31,522.00
<b>5.00</b>	<b>Protection, Control, Metering and Monitoring</b>						
5.01	Substation Automation System	1	Lot	289,349.00	289,457.00	289,349.00	289,457.00
5.02	Digital Disturbance Recorder with Analysis Computers	1	Lot	171,618.00	171,682.00	171,618.00	171,682.00
5.03	Power Quality Analyzer	1	Lot	60,058.00	60,080.00	60,058.00	60,080.00
5.04	Remote Work Stations	1	Lot			0.00	0.00
5.05	145 kV Protection and Control					0.00	0.00
5.06	Protection for 145kV Line Feeder Bays	2	Nos	72,025.00	72,052.00	144,050.00	144,104.00
5.07	Control for 145kV Line Feeder Bays	2	Nos			0.00	0.00
5.08	Protection for 145kV Transformer Feeder Bays	2	Nos	93,694.00	93,729.00	187,388.00	187,458.00
5.09	Control for 145kV Transformer Feeder Bays	2	Nos			0.00	0.00
5.10	Automatic Voltage Control 145kV Transformer Feeder	2	Nos			0.00	0.00
5.11	Protection for Bus Section Bay	1	No	125,635.00	125,682.00	125,635.00	125,682.00

5.12	Control for 145kV Bus Section Bay	1	No			0.00	0.00
5.13	Gas Pressure Monitoring System	1	No			0.00	0.00
5.14	22 kV Protection and Control					0.00	0.00
5.15	Protection for 22kV Transformer Feeder Bays	2	Nos	72,336.60	68,918.00	144,673.20	137,836.00
5.16	Control for 22kV Transformer Feeder Bays	2	Nos			0.00	0.00
5.17	Protection for 22kV Generator Feeder Bays	2	Nos			0.00	0.00
5.18	Control for 22kV Generator Feeder Bays	2	Nos			0.00	0.00
5.19	Protection for 22kV Line Feeder Bays	13	Nos			0.00	0.00
5.20	Protection for 22kV Line Feeder Bays	5	Nos			0.00	0.00
5.21	Control for 22kV Line Feeder Bays	18	Nos			0.00	0.00
5.22	Protection for 22kV Auxiliary Transformer Feeder Bays	2	Nos			0.00	0.00
5.23	Control for 22kV Auxiliary Transformer Feeder Bays	2	Nos			0.00	0.00
5.24	Protection for 22kV Bus Section Bay	2	Nos			0.00	0.00
5.25	Control for 22kV Bus Section Bay	2	Nos			0.00	0.00
5.26	22kV Frequency & Voltage Relays to Install in Bus Bar	1	Lot			0.00	0.00
5.27	Gas Pressure Monitoring System	1	No			0.00	0.00
5.28	Alarm Facility for Common Substation Alarm	1	No			0.00	0.00
5.29	Manual Synchronism Facility	1	No			0.00	0.00
<b>6.00</b>	<b>SCADA and Communication System for NCC</b>						
6.01	Fiber Optic Communication Equipment and Accessories	1	Lot	120,316.00	120,361.00	120,316.00	120,361.00
6.02	Hot Line Telephone System Administrative Telephone System	1	Lot			0.00	0.00
6.03	Positive Grounded – 48 V DC Power Supply	1	Lot			0.00	0.00
6.04	SCADA System	1	Lot	64,259.00	64,283.00	64,259.00	64,283.00
<b>7.00</b>	<b>Substation Earthing</b>	1	Lot		4,221,763.00	0.00	4,221,763.00
<b>8.00</b>	<b>Lightning Protection System</b>	1	Lot	2,511.00	2,512.00	2,511.00	2,512.00
<b>9.00</b>	<b>Grounding System</b>	1	Lot	3,917.00	3,918.00	3,917.00	3,918.00
<b>10.00</b>	<b>Power Cables, Control Cables, Termination Kits, Cable Trays and Supports</b>						
10.01	145 kV Power Cables and Terminations	1	Lot	378,084.00	378,226.00	378,084.00	378,226.00
10.02	22 kV Power Cables and Terminations	1	Lot	108,429.00	108,470.00	108,429.00	108,470.00
10.03	All Low Voltage 1/0.6 kV AC Power Cables and Terminations	1	Lot			0.00	6,985,830.00
10.04	All DC Power and Control Cables and Terminations	1	Lot			0.00	2,666,671.00
10.05	All cables required for Protection, Control, Instrumentation, Communication, SCADA and Terminations	1	Lot			0.00	16,132,215.00

10.06	All cables required for Station Lighting, Small Power, Fire Protection, Ventilation Equipment	1	Lot			0.00	278,734.00
<b>11.00</b>	<b>Transformers</b>						
11.01	45 MVA, 132/11 kV Power Transformers	2	Nos	744,000.00	1,287,124.00	1,488,000.00	2,574,248.00
11.02	160 kVA, 11/0.4 kV Auxiliary Transformers	2	Nos	25,173.00	25,183.00	50,346.00	50,366.00
<b>12.00</b>	<b>Neutral Earthing Resistors, Disconnectors and Earthing Switches</b>	1	Lot	7,909.00	7,912.00	7,909.00	7,912.00
<b>13.00</b>	<b>Diesel Generators</b>	1	No	11,029.00	11,033.00	11,029.00	11,033.00
<b>14.00</b>	<b>Supporting Structures</b>	1	Lot	3,189.00	3,190.00	3,189.00	3,190.00
<b>15.00</b>	<b>LV installation</b>	1	Lot			0.00	24,200,794.00
<b>16.00</b>	<b>Miscellaneous Works</b>	1	Lot	168,582.00	168,645.00	168,582.00	168,645.00
<b>17.00</b>	<b>Spare Parts</b>	1	Lot				65,659,723.00
<b>18.00</b>	<b>Tools and Instruments</b>	1	Lot			745,284.00	745,566.00
<b>19.00</b>	<b>Design Services for substation</b>	1	Lot				2,047,679.00
<b>20.00</b>	<b>Total cost of Civil construction</b>	1	Lot				213,000,000.00
<b>21.00</b>	<b>Building Services cost</b>	1	Lot				23,375,949.00
<b>22.00</b>	<b>Testing &amp; Commissioning</b>	1	Lot				34,404,045.00
	Sub Total - Local Cost (LKR)						400,810,943.00
	Price Adjustment						28,056,766.01
	Total Local Cost (LKR)						428,867,709.01
	Total Foreign Cost (USD)					6,320,663.00	
	Total Cost						1,345,363,844.01

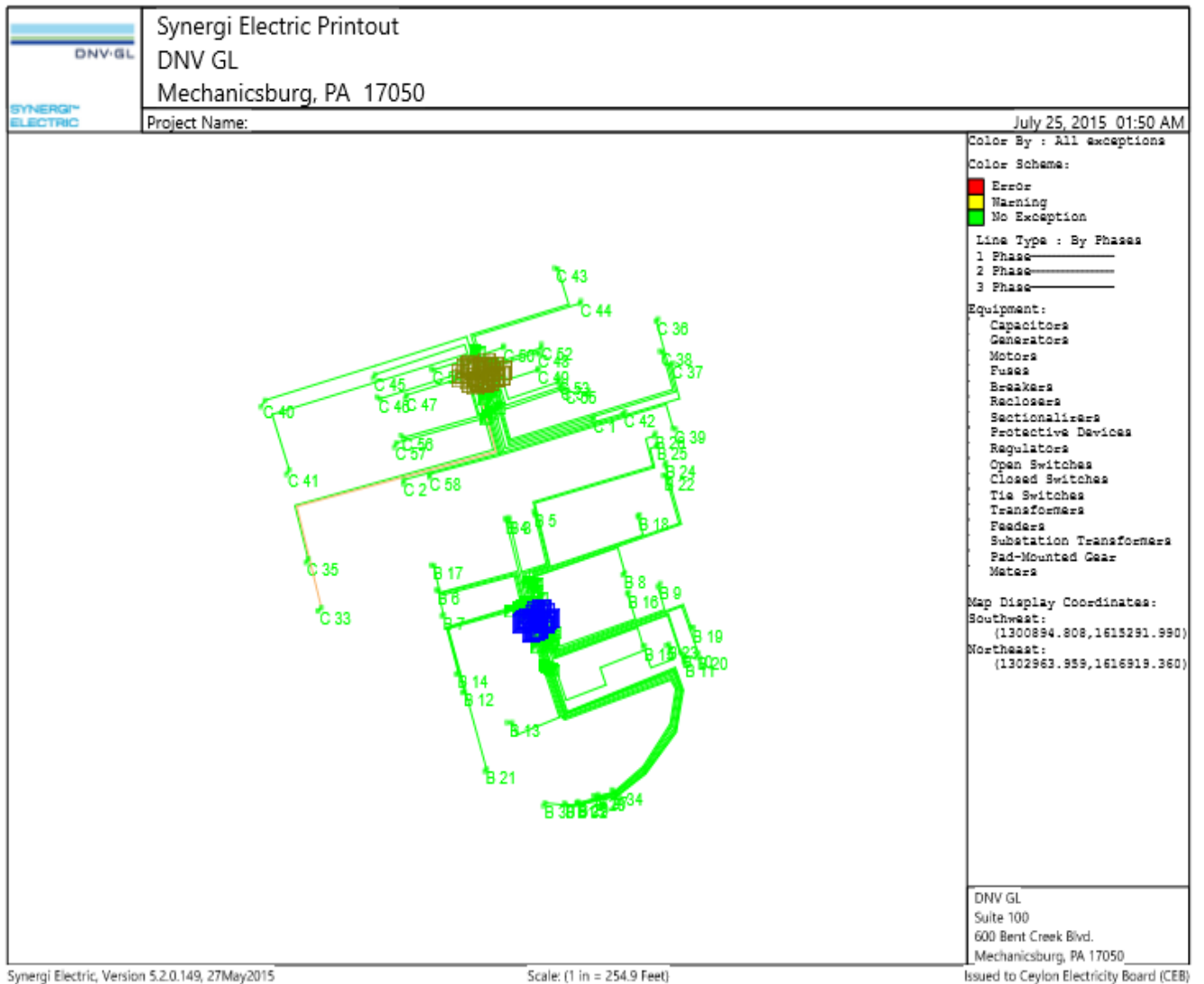
Annex 06: Engineering Estimate for Supply, Delivery, Installation & Commission of complete 132kV/33kV substation with 02 Nos. 45MVA Transformers

Item	Description	Qty	Unit	Unit Price		Total Price (Calculated)	
				Foreign	Local (LKR)	Foreign	Local (LKR)
	<b>Colombo M Substation</b>						
<b>1.00</b>	<b>145 kV Indoor Switchgear</b>						
1.01	145 kV GIS Single Busbar with Busbar VT/ES Bay	1	No	341,181.00	341,309.00	341,181.00	341,309.00
1.02	145 kV GIS Line Feeder Bay	2	Nos	116,921.00	116,965.00	233,842.00	233,930.00
1.03	145 kV GIS Transformer Feeder Bay	2	Nos	114,923.00	114,966.00	229,846.00	229,932.00
1.04	145kV Bus Section Bay	1	No	111,421.00	111,463.00	111,421.00	111,463.00
<b>2.00</b>	<b>33 kV Indoor Switchgear</b>						
2.01	33 kV GIS Transformer Feeder Bay	2	Nos	54,150.00	80,263.00	108,300.00	160,526.00
2.02	33 kV GIS Generator Feeder Bay	2	Nos	51,750.00	51,701.00	103,500.00	103,402.00
2.03	33 kV GIS Outgoing Line Feeder Bay	13	Nos	50,150.00	49,690.00	651,950.00	645,970.00
2.04	33 kV GIS Outgoing Line Feeder Bay	5	Nos	49,750.00	55,822.00	248,750.00	279,110.00
2.05	33 kV GIS Auxiliary Transformer Feeder Bay	2	Nos	51,150.00	40,657.00	102,300.00	81,314.00
2.06	33 kV GIS Bus Section Bay	2	Nos	49,150.00	76,958.00	98,300.00	153,916.00
<b>3.00</b>	<b>Auxiliary Supply</b>						
3.01	400 V AC Main Switchboard	1	No	8,818.00	8,821.00	8,818.00	8,821.00
3.02	400 V AC Distribution Panel	1	No	2,672.00	2,673.00	2,672.00	2,673.00
<b>4.00</b>	<b>Batteries, Chargers and Distribution Boards and Inverter Equipment</b>						
4.01	110 V Battery System	1	No	98,586.00	98,623.00	98,586.00	98,623.00
4.02	Inverter System for Substation Automation System	1	No	31,510.00	31,522.00	31,510.00	31,522.00
<b>5.00</b>	<b>Protection, Control, Metering and Monitoring</b>						
5.01	Substation Automation System	1	Lot	289,349.00	289,457.00	289,349.00	289,457.00
5.02	Digital Disturbance Recorder with Analysis Computers	1	Lot	171,618.00	171,682.00	171,618.00	171,682.00
5.03	Power Quality Analyzer	1	Lot	60,058.00	60,080.00	60,058.00	60,080.00
5.04	Remote Work Stations	1	Lot			0.00	0.00
5.05	145 kV Protection and Control					0.00	0.00
5.06	Protection for 145kV Line Feeder Bays	2	Nos	72,025.00	72,052.00	144,050.00	144,104.00
5.07	Control for 145kV Line Feeder Bays	2	Nos			0.00	0.00
5.08	Protection for 145kV Transformer Feeder Bays	2	Nos	93,694.00	93,729.00	187,388.00	187,458.00
5.09	Control for 145kV Transformer Feeder Bays	2	Nos			0.00	0.00
5.10	Automatic Voltage Control 145kV Transformer Feeder	2	Nos			0.00	0.00
5.11	Protection for Bus Section Bay	1	No	125,635.00	125,682.00	125,635.00	125,682.00
5.12	Control for 145kV Bus Section Bay	1	No			0.00	0.00

5.13	Gas Pressure Monitoring System	1	No			0.00	0.00
5.14	33 kV Protection and Control					0.00	0.00
5.15	Protection for 33kV Transformer Feeder Bays	2	Nos	91,626.36	68,918.00	183,252.72	137,836.00
5.16	Control for 33kV Transformer Feeder Bays	2	Nos			0.00	0.00
5.17	Protection for 33kV Generator Feeder Bays	2	Nos			0.00	0.00
5.18	Control for 33kV Generator Feeder Bays	2	Nos			0.00	0.00
5.19	Protection for 33kV Line Feeder Bays	13	Nos			0.00	0.00
5.20	Protection for 33kV Line Feeder Bays	5	Nos			0.00	0.00
5.21	Control for 33kV Line Feeder Bays	18	Nos			0.00	0.00
5.22	Protection for 33kV Auxiliary Transformer Feeder Bays	2	Nos			0.00	0.00
5.23	Control for 33kV Auxiliary Transformer Feeder Bays	2	Nos			0.00	0.00
5.24	Protection for 33kV Bus Section Bay	2	Nos			0.00	0.00
5.25	Control for 33kV Bus Section Bay	2	Nos			0.00	0.00
5.26	33kV Frequency & Voltage Relays to Install in Bus Bar	1	Lot			0.00	0.00
5.27	Gas Pressure Monitoring System	1	No			0.00	0.00
5.28	Alarm Facility for Common Substation Alarm	1	No			0.00	0.00
5.29	Manual Synchronism Facility	1	No			0.00	0.00
<b>6.00</b>	<b>SCADA and Communication System for NCC</b>						
6.01	Fiber Optic Communication Equipment and Accessories	1	Lot	120,316.00	120,361.00	120,316.00	120,361.00
6.02	Hot Line Telephone System Administrative Telephone System	1	Lot			0.00	0.00
6.03	Positive Grounded – 48 V DC Power Supply	1	Lot			0.00	0.00
6.04	SCADA System	1	Lot	64,259.00	64,283.00	64,259.00	64,283.00
<b>7.00</b>	<b>Substation Earthing</b>	1	Lot		4,221,763.00	0.00	4,221,763.00
<b>8.00</b>	<b>Lightning Protection System</b>	1	Lot	2,511.00	2,512.00	2,511.00	2,512.00
<b>9.00</b>	<b>Grounding System</b>	1	Lot	3,917.00	3,918.00	3,917.00	3,918.00
<b>10.00</b>	<b>Power Cables, Control Cables, Termination Kits, Cable Trays and Supports</b>						
10.01	145 kV Power Cables and Terminations	1	Lot	378,084.00	378,226.00	378,084.00	378,226.00
10.02	33 kV Power Cables and Terminations	1	Lot	144,210.57	108,470.00	144,210.57	108,470.00
10.03	All Low Voltage 1/0.6 kV AC Power Cables and Terminations	1	Lot			0.00	6,985,830.00
10.04	All DC Power and Control Cables and Terminations	1	Lot			0.00	2,666,671.00
10.05	All cables required for Protection, Control, Instrumentation, Communication, SCADA and Terminations	1	Lot			0.00	16,132,215.00

10.06	All cables required for Station Lighting, Small Power, Fire Protection, Ventilation Equipment	1	Lot			0.00	278,734.00
<b>11.00</b>	<b>Transformers</b>						
11.01	45 MVA, 132/33 kV Power Transformers	2	Nos	756,000.00	1,287,124.00	1,512,000.00	2,574,248.00
11.02	160 kVA, 33/0.4 kV Auxiliary Transformers	2	Nos	25,173.00	25,183.00	50,346.00	50,366.00
12.00	Neutral Earthing Resisters, Disconnectors and Earthing Switches	1	Lot	7,909.00	7,912.00	7,909.00	7,912.00
<b>13.00</b>	<b>Diesel Generators</b>	<b>1</b>	<b>No</b>	<b>11,029.00</b>	<b>11,033.00</b>	<b>11,029.00</b>	<b>11,033.00</b>
<b>14.00</b>	<b>Supporting Structures</b>	<b>1</b>	<b>Lot</b>	<b>3,189.00</b>	<b>3,190.00</b>	<b>3,189.00</b>	<b>3,190.00</b>
<b>15.00</b>	<b>Miscellaneous Works</b>	<b>1</b>	<b>Lot</b>	<b>168,582.00</b>	<b>168,645.00</b>	<b>168,582.00</b>	<b>168,645.00</b>
<b>16.00</b>	<b>Spare Parts</b>	<b>1</b>	<b>Lot</b>				<b>65,659,723.00</b>
<b>17.00</b>	<b>Tools and Instruments</b>	<b>1</b>	<b>Lot</b>			<b>745,284.00</b>	<b>745,566.00</b>
<b>18.00</b>	<b>Design Services for substation</b>	<b>1</b>	<b>Lot</b>				<b>2,047,679.00</b>
<b>19.00</b>	<b>Total cost of Civil construction</b>	<b>1</b>	<b>Lot</b>				<b>220,770,708.00</b>
<b>20.00</b>	<b>Building Services cost</b>	<b>1</b>	<b>Lot</b>				<b>23,375,949.00</b>
<b>21.00</b>	<b>Testing &amp; Commissioning</b>	<b>1</b>	<b>Lot</b>				<b>34,404,045.00</b>
	Sub Total - Local Cost (LKR)						384,380,857.00
	Price Adjustment						30,750,468.56
	Total Local Cost (LKR)						<b>415,131,325.56</b>
	Total Foreign Cost (USD)					<b>6,743,963.29</b>	
	Total Cost						<b>1,393,006,002.61</b>

# Annex 07: Load Flow Analysis



	Project Name:	July 25, 2015 01:27 AM
DHY-GL		
Synergi Electric	Feeder Summary	

Source Id	Demand			Amps				Volts		Connected		Load		Loss		Generation			
	kW	kvar	kVA	pf	Avg	%	% lmb	Neut	Avg	% lmb	c.Cust	c.kVA	kW	kvar	kW	%	Tot kW	PV kW	PV %
Feeders for New B																			
AAN_B to 10	1840	764	1992	92	52	---	0.00	0	100.00	0.00	0	0	1839	784	1	0.04	0	0	0.0
AAN_B to 11	1840	761	1991	92	52	---	0.00	0	100.00	0.00	0	0	1839	783	1	0.05	0	0	0.0
AAN_B to 12	2760	1157	2993	92	79	---	0.00	0	100.00	0.00	0	0	2759	1176	1	0.03	0	0	0.0
AAN_B to 13	1104	454	1194	92	31	---	0.00	0	100.00	0.00	0	0	1104	470	0	0.02	0	0	0.0
AAN_B to 14	1840	769	1994	92	52	---	0.00	0	100.00	0.00	0	0	1839	784	1	0.03	0	0	0.0
AAN_B to 15	1840	769	1994	92	52	---	0.00	0	100.00	0.00	0	0	1839	784	1	0.03	0	0	0.0
AAN_B to 16	1104	456	1194	92	31	---	0.00	0	100.00	0.00	0	0	1104	470	0	0.02	0	0	0.0
AAN_B to 17	2760	1156	2992	92	79	---	0.00	0	100.00	0.00	0	0	2759	1175	1	0.03	0	0	0.0
AAN_B to 18	1840	765	1993	92	52	---	0.00	0	100.00	0.00	0	0	1839	784	1	0.04	0	0	0.0
AAN_B to 19	1840	764	1992	92	52	---	0.00	0	100.00	0.00	0	0	1839	784	1	0.04	0	0	0.0
AAN_B to 20	1656	682	1791	92	47	---	0.00	0	100.00	0.00	0	0	1655	705	1	0.05	0	0	0.0
AAN_B to 21	3036	1265	3289	92	86	---	0.00	0	100.00	0.00	0	0	3034	1292	2	0.06	0	0	0.0
AAN_B to 22	1840	758	1990	92	52	---	0.00	0	100.00	0.00	0	0	1839	783	1	0.06	0	0	0.0
AAN_B to 23	1840	762	1991	92	52	---	0.00	0	100.00	0.00	0	0	1839	783	1	0.05	0	0	0.0
AAN_B to 24	1104	445	1190	93	31	---	0.00	0	100.00	0.00	0	0	1104	470	0	0.03	0	0	0.0
AAN_B to 25	2759	1176	2999	92	79	---	0.00	0	100.00	0.00	0	0	2756	1174	3	0.10	0	0	0.0
AAN_B to 26	1840	754	1988	93	52	---	0.00	0	100.00	0.00	0	0	1839	783	1	0.06	0	0	0.0
AAN_B to 27	1840	751	1987	93	52	---	0.00	0	100.00	0.00	0	0	1838	783	1	0.07	0	0	0.0
AAN_B to 28	3035	1249	3282	92	86	---	0.00	0	100.00	0.00	0	0	3033	1292	3	0.09	0	0	0.0
AAN_B to 29	1840	746	1985	93	52	---	0.00	0	100.00	0.00	0	0	1838	783	2	0.08	0	0	0.0
AAN_B to 3	2760	1162	2995	92	79	---	0.00	0	100.00	0.00	0	0	2759	1175	1	0.02	0	0	0.0
AAN_B to 30	2759	1122	2979	93	78	---	0.00	0	100.00	0.00	0	0	2757	1174	3	0.09	0	0	0.0
AAN_B to 31	3035	1243	3280	93	86	---	0.00	0	100.00	0.00	0	0	3032	1291	3	0.10	0	0	0.0
AAN_B to 32	1104	429	1184	93	31	---	0.00	0	100.00	0.00	0	0	1103	470	1	0.05	0	0	0.0
AAN_B to 34	1840	749	1986	93	52	---	0.00	0	100.00	0.00	0	0	1838	783	1	0.08	0	0	0.0
AAN_B to 4	1840	774	1996	92	52	---	0.00	0	100.00	0.00	0	0	1839	784	0	0.02	0	0	0.0
AAN_B to 5	1656	693	1795	92	47	---	0.00	0	100.00	0.00	0	0	1656	705	0	0.02	0	0	0.0
AAN_B to 6	2944	1240	3194	92	84	---	0.00	0	100.00	0.00	0	0	2943	1254	1	0.03	0	0	0.0
AAN_B to 7	3036	1276	3293	92	86	---	0.00	0	100.00	0.00	0	0	3035	1292	1	0.03	0	0	0.0
AAN_B to 8	3036	1275	3292	92	86	---	0.00	0	100.00	0.00	0	0	3035	1292	1	0.04	0	0	0.0
AAN_B to 9	1656	696	1796	92	47	---	0.00	0	100.00	0.00	0	0	1656	705	0	0.02	0	0	0.0
New B Totals	65221	27060	70612	92	N/A	N/A	N/A	N/A	N/A	N/A	0	0	65188	27765	33	0.05	0	0	0.0



	Project Name:	July 25, 2015 01:27 AM
DNV-GL		
Synergi Electric		

### Feeder Summary

Source Id	Demand				Amps				Volts		Connected		Load		Loss		Generation		
	kW	kvar	kVA	pf	Avg	%	% lmb	Neut	Avg	% lmb	c.Cust	c.kVA	kW	kvar	kW	%	Tot kW	PV kW	PV %
Feeders for New C																			
AAN_C to 1	3036	1268	3290	92	86	---	0.00	0	100.00	0.00	0	0	3035	1286	1	0.04	0	0	0.0
AAN_C to 2	1104	449	1192	93	31	---	0.00	0	100.00	0.00	0	0	1104	468	0	0.02	0	0	0.0
AAN_C to 33	1840	686	1954	94	34	---	0.00	0	100.00	0.00	0	0	1839	780	1	0.04	0	0	0.0
AAN_C to 35	3036	1251	3283	92	86	---	0.00	0	100.00	0.00	0	0	3033	1286	2	0.07	0	0	0.0
AAN_C to 36	1840	747	1986	93	52	---	0.00	0	100.00	0.00	0	0	1838	779	1	0.07	0	0	0.0
AAN_C to 37	1840	749	1987	93	52	---	0.00	0	100.00	0.00	0	0	1839	779	1	0.07	0	0	0.0
AAN_C to 38	2760	1136	2984	92	78	---	0.00	0	100.00	0.00	0	0	2758	1169	2	0.06	0	0	0.0
AAN_C to 39	1840	749	1986	93	52	---	0.00	0	100.00	0.00	0	0	1839	779	1	0.07	0	0	0.0
AAN_C to 40	1840	753	1988	93	52	---	0.00	0	100.00	0.00	0	0	1839	779	1	0.06	0	0	0.0
AAN_C to 41	1840	773	1995	92	52	---	0.00	0	100.00	0.00	0	0	1840	780	0	0.02	0	0	0.0
AAN_C to 42	2760	1146	2988	92	78	---	0.00	0	100.00	0.00	0	0	2759	1169	1	0.04	0	0	0.0
AAN_C to 43	3036	1264	3288	92	86	---	0.00	0	100.00	0.00	0	0	3034	1286	1	0.05	0	0	0.0
AAN_C to 44	1840	764	1992	92	52	---	0.00	0	100.00	0.00	0	0	1839	780	1	0.04	0	0	0.0
AAN_C to 45	1840	766	1993	92	52	---	0.00	0	100.00	0.00	0	0	1839	780	1	0.03	0	0	0.0
AAN_C to 46	2760	1159	2993	92	79	---	0.00	0	100.00	0.00	0	0	2759	1170	1	0.02	0	0	0.0
AAN_C to 47	3036	1266	3289	92	86	---	0.00	0	100.00	0.00	0	0	3036	1287	0	0.01	0	0	0.0
AAN_C to 48	1840	775	1996	92	52	---	0.00	0	100.00	0.00	0	0	1840	780	0	0.01	0	0	0.0
AAN_C to 49	1840	777	1997	92	52	---	0.00	0	100.00	0.00	0	0	1840	780	0	0.01	0	0	0.0
AAN_C to 50	2760	1166	2996	92	79	---	0.00	0	100.00	0.00	0	0	2760	1170	0	0.01	0	0	0.0
AAN_C to 51	1840	773	1996	92	52	---	0.00	0	100.00	0.00	0	0	1840	780	0	0.01	0	0	0.0
AAN_C to 52	2760	1160	2994	92	79	---	0.00	0	100.00	0.00	0	0	2759	1170	1	0.03	0	0	0.0
AAN_C to 53	3036	1282	3295	92	86	---	0.00	0	100.00	0.00	0	0	3036	1287	0	0.01	0	0	0.0
AAN_C to 54	1840	772	1995	92	52	---	0.00	0	100.00	0.00	0	0	1840	780	0	0.02	0	0	0.0
AAN_C to 55	1840	770	1994	92	52	---	0.00	0	100.00	0.00	0	0	1839	780	0	0.02	0	0	0.0
AAN_C to 56	1840	767	1993	92	52	---	0.00	0	100.00	0.00	0	0	1839	780	0	0.03	0	0	0.0
AAN_C to 57	1840	766	1993	92	52	---	0.00	0	100.00	0.00	0	0	1839	780	1	0.03	0	0	0.0
AAN_C to 58	1840	764	1992	92	52	---	0.00	0	100.00	0.00	0	0	1839	780	1	0.03	0	0	0.0
<b>New C Totals</b>	<b>59519</b>	<b>24697</b>	<b>64440</b>	<b>92</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>0</b>	<b>0</b>	<b>59499</b>	<b>25223</b>	<b>20</b>	<b>0.03</b>	<b>0</b>	<b>0</b>	<b>0.0</b>