

**Lekhnath Damauli 220 kV Transmission Line Project**  
**Package B: Substations**  
**BMZ201667773/KfW508598**  
Amendment № B\_2  
November 12, 2022

No	Reference	Amendment																																												
1.	Part I Schedule I / II / IV Item 1.1.2.3	Part I Schedule I / II / IV Item 1.1.2.3 shall read "Surge arresters for the tertiary (33 kV) side"																																												
2.	Part I Schedule I / II / IV Item 1.9.1 / 1.9.3 / 2.10.1	Part I Schedule I / II / IV shall be updated to read as follows: 1.9.1 220 kV OHL Protection Terminals <u>incl. POW control</u> and BCU (D04, D06) 1.9.3 300MVA 220 kV side autotransformer protection <u>incl. POW control</u> and BCU (D03, D07) 2.10.1 220 kV OHL Protection Terminals <u>incl. POW control</u> and BCU (D06, D07, D08, D13, D14, D15)																																												
3.	Part I Schedule III	After Schedule III Item 2.2.12, the following items shall be added: <table><tr><td>3</td><td>TRAINING OF EMPLOYER'S STAFF (Abroad)</td><td>-</td><td>-</td></tr><tr><td>3.1</td><td>High voltage switchgear</td><td>lot</td><td>1</td></tr><tr><td>3.2</td><td>Medium voltage switchgear</td><td>lot</td><td>1</td></tr><tr><td>3.3</td><td>Auto and power transformers</td><td>lot</td><td>1</td></tr><tr><td>3.4</td><td>LV auxiliary systems</td><td>lot</td><td>1</td></tr><tr><td>3.5</td><td>Protection and control systems</td><td>lot</td><td>1</td></tr><tr><td>3.6</td><td>SCMS</td><td>lot</td><td>1</td></tr><tr><td>3.7</td><td>SCADA</td><td>lot</td><td>1</td></tr><tr><td>3.8</td><td>Telecommunication</td><td>lot</td><td>1</td></tr><tr><td>3.9</td><td>CCTV System</td><td>lot</td><td>1</td></tr><tr><td>3.10</td><td>Fire protection system</td><td>lot</td><td>1</td></tr></table>	3	TRAINING OF EMPLOYER'S STAFF (Abroad)	-	-	3.1	High voltage switchgear	lot	1	3.2	Medium voltage switchgear	lot	1	3.3	Auto and power transformers	lot	1	3.4	LV auxiliary systems	lot	1	3.5	Protection and control systems	lot	1	3.6	SCMS	lot	1	3.7	SCADA	lot	1	3.8	Telecommunication	lot	1	3.9	CCTV System	lot	1	3.10	Fire protection system	lot	1
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3.10	Fire protection system	lot	1																																											
4.	Part I Schedule IV	Schedule No IV: Installation & Other Services, Item no. 3. Training of Employer's Staff shall be updated to read "Training of Employer's Staff (On Site / In Nepal)"																																												

№	Reference	Amendment
5.	Part I Schedule IV	Schedule No. IV Installation and Other Services- Item 2.20.1.2.4 shall be disregarded / deleted.
6.	Part II VII-9 Annexes	The following Annexes are attached for reference: Annex D5-28 132kV AIS Lekhnath Exstg Layout Sections Annex D5-29 132kV AIS Lekhnath Exstg Layout Annex D5-30 Proposed Damauli boundary
7.		Revised Price Schedules covering Items 1 to 6 of this amendment are attached and shall be used for bidding. Updated line items are highlighted in yellow color for ease of reference.

Substation Package B						
Kreditanstalt für Wiederaufbau (KfW)						
Nepal Electricity Authority (NEA)						
Schedule No. I: Plant, and Mandatory Spare Parts Supplied from Abroad						
Item	Description	Code (Country of origin)	Unit	Quantity	Unit Price CIP	Total Price CIP
				1	2 (USD)	3=1x2 (USD)
<b>1</b>	<b>220kV Extension of the 132kV switchyard in Lekhnath</b>					
<b>1.1</b>	<b>Extension of existing 132kV Switchyard</b>					
<b>1.1.1</b>	<b>132kV Transformer Bays (E13, E14)</b>					
1.1.1.1	Set of 3-pole circuit breaker		set	2		
1.1.1.2	Sets of 3-pole disconnecter with earthing switch		set	4		
1.1.1.3	Set of 3-pole pantograph disconnecter		set	2		
1.1.1.4	1-pole current transformer		nos	6		
1.1.1.5	1-pole voltage transformer		nos	6		
1.1.1.6	Gantries for busbar and feeders		lot	1		
1.1.1.7	Busbar and feeder conductors		lot	1		
1.1.1.8	Insulators and fittings		lot	1		
1.1.1.9	All other necessary equipment and materials to complete the supply and the installation		lot	1		
<b>1.1.2</b>	<b>Transformer AIS equipment and auxiliary system for fast reconnection of the spare transformer unit</b>					
1.1.2.1	Surge arresters for the 220 kV transformer side		nos	7		
1.1.2.2	Surge arresters for the 132 kV transformer side		nos	7		
1.1.2.3	Surge arresters for the tertiary (33 kV) side		nos	7		
1.1.2.4	Gantries for 220 kV and 132 kV auxiliary busbar		lot	1		
1.1.2.5	OHL conductors for 220 kV and 132 kV auxiliary busbar for fast reconnection of the spare transformer unit		lot	1		
1.1.2.6	220 kV insulators and fittings		lot	1		
1.1.2.7	132 kV insulators and fittings		lot	1		
1.1.2.8	Materials for the interconnection of the auto-transformers tertiary with the new 33 kV switchgear by means of busbar and cable including facility for fast reconnection of spare transformer		lot	1		
1.1.2.9	All other necessary equipment and materials to complete the supply and the installation		lot	1		
<b>1.1.3</b>	<b>Additional extension and relocation works</b>					
1.1.3.1	All necessary equipment and materials for relocation of existing lighting poles affected by the extension of the 132 kV switchyard		lot	1		
1.1.3.2	All necessary equipment and materials for relocation of two (2) existing lightning protection masts affected by the extension of the 132 kV switchyard		lot	1		
1.1.3.3	All necessary equipment and materials for relocation, within the substation's property, of an out-of-service transformer currently located in front of bay E14		lot	1		
<b>1.2</b>	<b>220/132/33kV Autotransformer</b>					
1.2.1	Single-phase autotransformers 220/132/33 kV 100 MVA/phase, equipped with on-load tap changer		nos	7		
1.2.2	Automatic voltage regulator, including the relevant software and integration in the SCMS		set	2		
1.2.3	Online transformer condition monitoring system, including the relevant software and integration in the SCMS		set	7		
1.2.4	All other necessary equipment and materials to complete the supply and the installation		lot	1		
<b>1.3</b>	<b>220 kV Gas Insulated Switchgear</b>					
1.3.1	Transformer bay (D03, D07) with GIB and SF6/air bushings		set	2		
1.3.2	Local control panel with bay cabling for feeder D03, D07		set	2		
1.3.3	OHL Bay (D04, D06) with GIB and SF6/air bushings		set	2		
1.3.4	Local control panel with bay cabling for feeder D04, D06		set	2		
1.3.5	Measuring Bay (D05)		set	1		
1.3.6	Bus Coupler Bay D05		set	1		
1.3.7	Local control panel with bay cabling for feeder D05 and (D05), including cable connections to bus bar measuring and bus bar earthing		set	1		
1.3.8	Sensors for partial discharge measurement		lot	1		
1.3.9	Provision (light sensor) for future arc detection		lot	1		
1.3.10	GIS steel supports for all bays and for GIB's, including wall bushings (material from GIS manufacturer for closing the wall openings)		lot	1		
1.3.11	Wall boards as specified (typical bay sections, single line diagram and gas compartment plan, gas density rules, gas temperature pressure curves etc.)		lot	1		

Substation Package B						
Kreditanstalt für Wiederaufbau (KfW)						
Nepal Electricity Authority (NEA)						
Schedule No. I: Plant, and Mandatory Spare Parts Supplied from Abroad						
Item	Description	Code (Country of origin)	Unit	Quantity	Unit Price CIP	Total Price CIP
					(USD) 2	(USD) 3=1x2
1.3.12	Key box including specified labelled keys and pad locks for 220kV GIS		lot	1		
1.3.13	All other necessary equipment and materials to complete the supply and the installation		lot	1		
<b>1.4</b>	<b>220 kV AIS Equipment</b>					
1.4.1	220kV OHL surge arresters		nos	6		
1.4.2	220kV capacitive voltage transformers		unit	6		
1.4.3	220 kV OHL gantry		lot	1		
1.4.4	220 kV insulators and fittings		lot	1		
1.4.5	All other necessary equipment and materials to complete the supply and the installation		lot	1		
<b>1.5</b>	<b>33 kV Switchgear</b>					
1.5.1	Outgoing feeder to auxiliary transformer (K02, K04)		set	2		
1.5.2	Riser measurement panel (K01, K03)		set	2		
1.5.3	All other necessary equipment, accessories and materials to complete the supply and the installation		lot	1		
<b>1.6</b>	<b>Zig Zag Earthing Auxiliary Transformers</b>					
1.6.1	Three-phase zig zag auxiliary transformers 33/0.4 kV, hermetically sealed type with off load tap changer, each of minimum 630 kVA		nos	2		
1.6.2	Tank mounted surge arresters for the primary (33 kV) side.		unit	6		
1.6.3	All other necessary equipment and materials to complete the supply and the installation		lot	1		
<b>1.7</b>	<b>LV Auxiliary Power Supply System</b>					
1.7.1	0.4 kV main switchgear, metal-clad type		set	1		
1.7.2	220 V DC switchgear with two bus sections		set	1		
1.7.3	220 V battery chargers		set	2		
1.7.4	220 V DC batteries of Ni-Cd type, each with a minimum capacity of 600 Ah (10h discharge rate)		set	2		
1.7.5	48 V DC switchgear with two bus sections		set	1		
1.7.6	48 V battery chargers		set	2		
1.7.7	48 V DC batteries of Ni-Cd type, each with a minimum capacity of 150 Ah		set	2		
1.7.8	230 V AC UPS System		set	2		
1.7.9	All other necessary equipment and materials to complete the supply and the installation		lot	1		
<b>1.8</b>	<b>Diesel generator unit (DGU)</b>					
1.8.1	Diesel generator unit, minimum of 50 kVA, in a prefabricated container equipped with fire-detection system and exhaust gas evacuation system including fuel tank		set	1		
1.8.2	All other necessary equipment and materials to complete the supply and the installation		lot	1		
<b>1.9</b>	<b>Protection &amp; Control</b>					
1.9.1	220 kV OHL Protection Terminals <i>incl. POW control</i> and BCU (D04, D06)		set	2		
1.9.2	220kV Bus coupler (D05) and Busbar Protections and BCU		set	1		
1.9.3	300MVA 220 kV side autotransformer protection <i>incl. POW control</i> and BCU (D03, D07)		set	2		
1.9.4	300MVA 132kV side autotransformer protection and BCU (E13, E14)		set	2		
1.9.5	20MVA 33kV side autotransformer bay control and protection BCPU (K01, K03) (installed in MV Switchgear)		set	2		
1.9.6	Auxiliary Earthing Transformer bay control and protection BCPU (K02, K04) (installed in MV Switchgear)		set	2		
1.9.7	Marshalling panel for the transformer control circuits for fast reconnection of spare transformer		set	2		
1.9.8	All other necessary equipment and materials to complete the supply and the installation		lot	1		

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					(USD) 2	(USD) 3=1x2
				1		
<b>1.10</b>	<b>Synchrophasor Measurement Unit (PMU)</b> for monitoring voltage and current as defined in the Scope, including software, documentation, cubicles, accessories		lot	1		
<b>1.11</b>	<b>SCADA and SCMS</b>					
1.11.1	SCADA and SCMS system for new 220/132/33/11 kV Substation including all necessary cabling, cubicles, desks, chairs, equipment and materials to complete the supply and the installation, The Contractor shall ensure that after handing over, a minimum of 50% spare function capacity (hardware and software, number of I/Q to be handled by the SCMS)		set	1		
1.11.2	Equipment and material for interfacing with NLDC/ECC including all necessary cabling, cubicles, equipment and materials to complete the supply and the installation		set	1		
1.11.3	Equipment and material for interfacing with Existing Lekhnath 132 kV Substation including all necessary cabling, cubicles, equipment and materials to complete the supply and the installation		set	1		
<b>1.12</b>	<b>Telecommunication</b>					
1.12.1	SDH Equipment SDH node for FOC connections to the new 220/132/33/11kV GIS Damauli Substation and to the existing 132/33/11kV Lekhnath Substation		lot	1		
1.12.2	Fibre optical cables and patch cords		lot	1		
1.12.3	Optical Distribution Frame and accessories		lot	1		
1.12.4	IP-PBX telephony system, including appropriate telephone sets		lot	1		
1.12.5	All other necessary cubicles, software, equipment and materials to complete the supply and the installation		lot	1		
<b>1.13</b>	<b>Metering</b>					
1.13.1	Meter for 220kV OHL Main & Control		set	2		
1.13.2	Meter for 220/132/33 kV autotransformers (220 kV side and 132 kV side) Main & Control		set	4		
1.13.3	Meter for auxiliary transformers Main & Control		set	4		
1.13.4	Communication equipment (Ethernet Switches / Patch Panels / FOs / Cables etc..)		lot	1		
1.13.5	GPRS-GSM communication device		set	1		
1.13.6	Cabinet		lot	1		
1.13.7	Notebook PC including related software for local access for meter reading		set	1		
1.13.8	All other necessary, software, equipment and materials to complete the supply and the installation		lot	1		
<b>1.14</b>	<b>Power and Control Cables</b>					
1.14.1	33 kV Cables, sealing ends, terminals and accessories for 33kV auxiliary system including accessories		lot	1		
1.14.2	LV Power and Control cables and accessories for auxiliary supply, protection, control, metering, fire protection, including accessories		lot	1		
1.14.3	All other necessary equipment and materials to complete the supply and the installation		lot	1		
<b>1.15</b>	<b>Earthing and lightning protection systems</b>		lot	1		
<b>1.16</b>	<b>Lighting and small power system</b>		lot	1		
<b>1.17</b>	<b>Fire Protection system</b>					
1.17.1	Fire detection system		lot	1		
1.17.2	Portable fire extinguishers		lot	1		
<b>1.17.3</b>	<b>Fire fighting system</b>					
1.17.3.1	Containerised fire fighting pump system		lot	1		
1.17.3.2	Fire fighting water tank		lot	1		
1.17.3.3	Fire fighting water supply pump with well		lot	1		
1.17.3.4	Transformer deluge systems for power transformers		set	7		
1.17.3.5	Fire hydrant network and interconnection piping		lot	1		
1.17.3.6	All accessories necessary for the satisfactory operation of the system but which are not separately listed		lot	1		

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					(USD)	(USD)
				1	2	3=1x2
<b>1.18</b>	<b>CCTV system</b>					
1.18.1	Central unit		set	1		
1.18.2	Control panel		set	1		
1.18.3	Monitor		set	2		
1.18.4	Indoor Camera		lot	1		
1.18.5	Outdoor Camera		lot	1		
1.18.6	All other necessary equipment and materials to complete the extension		lot	1		
<b>2</b>	<b>Construction of 220/132/33/11 kV substation in Damauli</b>					
<b>2.1</b>	<b>220 kV Gas Insulated Switchgear</b>					
2.1.1	OHL Bays with GIB and SF6/air bushings (D06, D07, D08, D13, D14, D15)		set	6		
2.1.2	Local control panel with bay cabling for feeder (D06, D07, D08, D13, D14, D15)		set	6		
2.1.3	220/132kV Transformer Bay with GIB and SF6/air bushings (D09 and D12)		set	2		
2.1.4	Local control panel with bay cabling for feeder (D09 and D12)		set	2		
2.1.5	Bus Coupler Bays (D05, D16)		set	2		
2.1.6	Local control panel with bay cabling for feeder (D05, D16)		set	2		
2.1.7	Measuring Bays (D10) and (D11))		set	2		
2.1.8	Busbar Sectionalizers (D10, D11)		set	2		
2.1.9	Local control panel with bay cabling for feeder D10 and D11, including cable connections to bus bar measuring and bus bar earthing		set	2		
2.1.10	Sensors for partial discharge measurement		lot	1		
2.1.11	Provision (light sensor) for future arc detection		lot	1		
2.1.12	GIS steel supports for all bays and for GIB's, including wall bushings (material from GIS manufacturer for closing the wall openings)		lot	1		
2.1.13	Wall boards as specified (typical bay sections, single line diagram and gas compartment plan, gas density rules, gas temperature pressure curves etc.)		lot	1		
2.1.14	Key box including specified labelled keys and pad locks for 220kV GIS		lot	1		
2.1.15	All other necessary equipment and materials to complete the supply and the installation		lot	1		
<b>2.2</b>	<b>220 kV AIS Equipment</b>					
2.2.1	220kV OHL surge arresters		nos	18		
2.2.2	220kV capacitive voltage transformers		nos	18		
2.2.3	220 kV OHL gantry		lot	1		
2.2.4	220 kV insulators and fittings		lot	1		
2.2.5	All other necessary equipment and materials to complete the supply and the installation		lot	1		
<b>2.3</b>	<b>132 kV Gas Insulated Switchgear</b>					
2.3.1	220/132kV Transformer Bays with GIB and SF6/air bushings (E02, E06)		set	2		
2.3.2	Local control panel with bay cabling for feeder E02, E06		set	2		
2.3.3	OHL Bays with GIB and SF6/air bushings (E03, E07)		set	2		
2.3.4	Local control panel with bay cabling for feeder E03, E07		set	2		
2.3.5	132/33kV Transformer Bay with cable connections (E01, E05)		set	2		
2.3.6	Local control panel with bay cabling for feeder E01, E05		set	2		
2.3.7	Measuring Bay (E04)		set	1		
2.3.8	Bus Coupler E04		set	1		
2.3.9	Local control panel with bay cabling for feeder E04 and (E04), including cable connections to bus bar measuring and bus bar earthing		set	1		
2.3.10	Sensors for partial discharge measurement		lot	1		
2.3.11	Provision (light sensor) for future arc detection		lot	1		
2.3.12	GIS steel supports for all bays and for GIB's, including wall bushings (material from GIS manufacturer for closing the wall openings)		lot	1		
2.3.13	Wall boards as specified (typical bay sections, single line diagram and gas compartment plan, gas density rules, gas temperature pressure curves etc.)		lot	1		
2.3.14	Key box including specified labelled keys and pad locks for 132kV GIS		lot	1		
2.3.15	All other necessary equipment and materials to complete the supply and the installation		lot	1		

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					(USD) 2	(USD) 3=1x2
<b>2.4</b>	<b>132 kV AIS Equipment</b>			1		
2.4.1	132 kV OHL surge arresters		nos	6		
2.4.2	132 kV capacitive voltage transformers		nos	6		
2.4.3	132 kV OHL gantry		lot	1		
2.4.4	132 kV insulators and fittings		lot	1		
2.4.5	All other necessary equipment and materials to complete the supply and the installation		lot	1		
<b>2.5</b>	<b>Power Transformers</b>					
<b>2.5.1</b>	<b>220/132 Power Transformer</b>					
2.5.1.1	Three-phase power transformer 220/132 kV 50/63 MVA, equipped with on-load tap changer		nos	2		
2.5.1.2	line surge arresters for the primary (220 kV) side		nos	6		
2.5.1.3	line surge arresters for the secondary (132 kV) side		nos	6		
2.5.1.4	automatic voltage regulator, including the relevant software and integration in the SCMS		set	2		
2.5.1.5	All other necessary equipment and materials to complete the supply and the installation		lot	1		
<b>2.5.2</b>	<b>132/33 kV Power Transformer</b>					
2.5.2.1	Three-phase power transformer 132/33kV 24/30 MVA, equipped with on-load tap changer		nos	2		
2.5.2.2	Line surge arresters for the secondary (132 kV) side		nos	6		
2.5.2.3	Line surge arresters for the secondary (33 kV) side		nos	6		
2.5.2.4	Automatic voltage regulator, including the relevant software and integration in the SCMS		set	2		
2.5.2.5	All other necessary equipment and materials to complete the supply and the installation		lot	1		
<b>2.5.3</b>	<b>33/11 kV Power Transformer</b>					
2.5.3.1	Three-phase power transformer 33/11kV 6/8 MVA, equipped with on-load tap changer		nos	2		
2.5.3.2	Line surge arresters for the secondary (33 kV) side		nos	6		
2.5.3.3	Line surge arresters for the secondary (11 kV) side		nos	6		
2.5.3.4	Automatic voltage regulator, including the relevant software and integration in the SCMS		set	2		
2.5.3.5	All other necessary equipment and materials to complete the supply and the installation		lot	1		
<b>2.6</b>	<b>MV Metal Clad AIS Switchgear</b>					
<b>2.6.1</b>	<b>33 kV Switchgear</b>					
2.6.1.1	Incomers for 132/33kV transformer connection (J02, J11)		nos	2		
2.6.1.2	Outgoing feeders (J04, J10)		nos	2		
2.6.1.3	Outgoing feeder 33/11 kV transformer (J03, J12)		nos	2		
2.6.1.4	Outgoing feeders to auxiliary transformer (J05, J09)		nos	2		
2.6.1.5	Bus tie (J07)		nos	1		
2.6.1.6	Riser measurement panel (J08)		nos	1		
2.6.1.7	Measurement panel (J06)		nos	1		
2.6.1.8	All other necessary equipment, accessories and materials to complete the supply and the installation		lot	1		
<b>2.6.2</b>	<b>11 kV Switchgear</b>					
2.6.2.1	Incomers for 33/11kV transformer connection (K03, K08)		nos	2		
2.6.2.2	Outgoing feeders (K04, K05, K09, K11, K12)		nos	5		
2.6.2.3	Bus tie (K07)		nos	1		
2.6.2.4	Riser measurement panel (K06)		nos	1		
2.6.2.5	Measurement panel (K10)		nos	1		
2.6.2.6	All other necessary equipment, accessories and materials to complete the supply and the installation		lot	1		
<b>2.7</b>	<b>Auxiliary Transformers</b>					
2.7.1	Three-phase auxiliary transformers 33/0.4 kV, hermetically sealed type with off load tap changer, each of minimum 630 kVA		nos	2		
2.7.2	Tank mounted surge arresters for the primary (33 kV) side.		nos	6		

Substation Package B						
Kreditanstalt für Wiederaufbau (KfW)						
Nepal Electricity Authority (NEA)						
Schedule No. I: Plant, and Mandatory Spare Parts Supplied from Abroad						
Item	Description	Code (Country of origin)	Unit	Quantity	Unit Price CIP	Total Price CIP
				1	2	3=1x2
2.7.3	All other necessary equipment and materials to complete the supply and the installation		lot	1		
<b>2.8</b>	<b>LV Auxiliary Power Supply System</b>					
2.8.1	0.4 kV main switchgear, metal-clad type		set	1		
2.8.2	220 V DC switchgear with two bus sections		set	1		
2.8.3	220 V battery chargers		set	2		
2.8.4	220 V DC batteries of Ni-Cd type, each with a minimum capacity of 600 Ah (10h discharge rate)		set	2		
2.8.5	48 V DC switchgear with two bus sections		set	1		
2.8.6	48 V battery chargers		set	2		
2.8.7	48 V DC batteries of Ni-Cd type, each with a minimum capacity of 150 Ah		set	2		
2.8.8	230 V AC UPS System		set	2		
2.8.9	All other necessary equipment and materials to complete the supply and the installation		lot	1		
<b>2.9</b>	<b>Diesel generator unit (DGU)</b>					
2.9.1	Diesel generator unit, minimum of 100 kVA, in a prefabricated container equipped with fire-detection system and exhaust gas evacuation system including fuel tank		set	1		
2.9.2	All other necessary equipment and materials to complete the supply and the installation		lot	1		
<b>2.10</b>	<b>Protection &amp; Control</b>					
2.10.1	220 kV OHL Protection Terminals <i>incl. POW control</i> and BCU (D06, D07, D08, D13, D14, D15)		set	6		
2.10.2	220kV Bus-sectionaliser and Busbar protection and BCU (D10, D11)		set	2		
2.10.3	220kV Bus-coupler and Busbar protection (D05, D16)		set	2		
2.10.4	50/63 MVA 220/132 kV Transformer 220 kV side protection and BCU (D09, D12)		set	2		
2.10.5	50/63 MVA 220/132/ kV Transformer 132 kV side protection and BCU (E02, E06)		set	2		
2.10.6	132 kV OHL Protection Terminals and BCU (E03, E07)		set	2		
2.10.7	132kV Bus-coupler and Busbar protections and BCU (E04)		set	1		
2.10.8	132/33kV 24/30 MVA Transformer feeder protection 132 kV side and BCU (E01, E05)		set	2		
2.10.9	132/33kV 24/30 MVA Transformer feeder bay control and protection (BCPU) 33 kV side (J02, J09) (installed in 33 kV switchgear)		set	2		
2.10.10	33kV Bus-coupler bay control and protection (BCPU) (J07) (installed in 33 kV switchgear)		set	1		
2.10.11	33kV Feeder bay control and protection (BCPU) (J04, J08)		set	2		
2.10.12	33/11kV 8/10MVA Transformer feeder bay control and protection (BCPU) 33 kV side (J03, J10)		set	2		
2.10.13	33/11kV 8/10MVA Transformer feeder protection 11 kV side (K03, K08) (installed in 11 kV switchgear)		set	2		
2.10.14	11kV Feeder bay control and protection (BCPU) (K04, K05, K11, K12, K13, K14) (installed in 11 kV switchgear)		set	5		
2.10.15	11kV Auxiliary Transformer Feeder bay control and protection (BCPU) (K06, K10) (installed in 11 kV switchgear)		set	2		
2.10.16	11kV Bus-coupler protection (K07)		set	1		
2.10.17	All other necessary equipment and materials to complete the supply and the installation		lot	1		
<b>2.11</b>	<b>Synchrophasor Measurement Unit (PMU)</b> for monitoring voltage and current as defined in the Scope, including software, documentation, cubicles, accessories		set	1		



Substation Package B						
Kreditanstalt für Wiederaufbau (KfW)						
Nepal Electricity Authority (NEA)						
Schedule No. I: Plant, and Mandatory Spare Parts Supplied from Abroad						
Item	Description	Code (Country of origin)	Unit	Quantity	Unit Price CIP	Total Price CIP
					(USD)	(USD)
				1	2	3=1x2
<b>2.12</b>	<b>SCADA and SCMS</b>					
2.12.1	SCADA and SCMS system for new 220/132/33/11 kV Substation including all necessary cabling, cubicles, desks, chairs, equipment and materials to complete the supply and the installation, The Contractor shall ensure that after handing over, a minimum of 50% spare function capacity (hardware and software, number of I/O to be handled by the SCMS)		lot	1		
2.12.2	Equipment and material for interfacing with NLDC/ECC including all necessary cabling, cubicles, equipment and materials to complete the supply and the installation		lot	1		
2.12.3	Equipment and material for interfacing with future New Damauli 400 kV Substation including all necessary cabling, cubicles, equipment and materials to complete the supply and the installation		lot	1		
<b>2.13</b>	<b>Telecommunication</b>					
2.13.1	SDH Equipment SDH node for FOC connections of new 220 kV GIS Lekhnath Substation, to Tanahu HPP, 220 kV Bharatpur Substation, Old Damauli and 132 kV Bharatpur.		lot	1		
2.13.2	Fibre optical cables, including approach cable from splicing box to SDH equipment and patch cords		lot	1		
2.13.3	Optical Distribution Frame and accessories		lot	1		
2.13.4	IP-PBX telephony system, including appropriate telephone sets		lot	1		
2.13.5	All other necessary cubicles, software, equipment and materials to complete the supply and the installation		lot	1		
<b>2.14</b>	<b>Metering</b>					
2.14.1	Meter for 220kV OHL Main & Control		set	6		
2.14.2	Meter for 132 OHL Main & Control		set	2		
2.14.3	Meter for 220/132 kV Transformers, (220 kV side and 132 kV side), Main & Control		set	4		
2.14.4	Meter for 132/33 kV Transformers, 132 kV side and 33 kV side), Main & Control		set	4		
2.14.5	Meter for 33/11 kV Transformers, (33 kV side and 11 kV side), Main & Control		set	4		
2.14.6	Meter for 33 kV Feeders Main & Control		set	2		
2.14.7	Meter for 11 kV Feeders Main & Control		set	5		
2.14.8	Meter for auxiliary transformers Main & Control		set	2		
2.14.9	Communication equipment (Ethernet Switches / Patch Panels / FOs / Cables etc..)		lot	1		
2.14.10	GPRS-GSM communication device		lot	1		
2.14.11	Cabinet		lot	1		
2.14.12	Notebook PC including related software for local access for meter reading		set	1		
2.14.13	All other necessary, software, equipment and materials to complete the supply and the installation		lot	1		
<b>2.15</b>	<b>Power and Control Cables</b>					
2.15.1	HV cable systems comprising 132 kV XLPE cables for the connection between the secondary windings of 220/132 kV transformers and the 132 kV switchgear		lot	1		
2.15.2	MV cable systems comprising 33 kV XLPE cables for the connection between secondary windings of 132/33 kV transformers and 33 kV switchgear		lot	1		
2.15.3	MV cable systems comprising 33 kV XLPE cables for the connection between 33 kV switchgear and 33/11 kV transformers		lot	1		
2.15.4	MV cable systems comprising 33 kV XLPE cables for the connection between 33kV switchgear and auxiliary transformers		lot	1		
2.15.5	MV cable systems comprising 11 kV XLPE cables for the connection between secondary windings of 33/11 kV transformers and 11 kV switchgear		lot	1		
2.15.6	MV cable systems comprising 11 kV XLPE cables for the connection of three 11 kV feeders between between 11 kV switchgear and distribution OHL pole location on the north side of the substation towards the river		lot	1		

Substation Package B						
Kreditanstalt für Wiederaufbau (KfW)						
Nepal Electricity Authority (NEA)						
Schedule No. I: Plant, and Mandatory Spare Parts Supplied from Abroad						
Item	Description	Code (Country of origin)	Unit	Quantity	Unit Price CIP	Total Price CIP
					(USD) 2	(USD) 3=1x2
				1		
2.15.7	LV Power and Control cables and accessories for auxiliary supply, protection, control, metering including accessories		lot	1		
2.15.8	All other necessary equipment and materials to complete the supply and the installation		lot	1		
<b>2.16</b>	<b>Earthing and lightning protection systems</b>		lot	1		
<b>2.17</b>	<b>Lighting and small power system</b>		lot	1		
<b>2.18</b>	<b>Fire Protection system</b>					
2.18.1	Fire detection system		lot	1		
2.18.2	Portable fire extinguishers		lot	1		
<b>2.18.3</b>	<b>Fire fighting system</b>					
2.18.3.1	Containerised fire fighting pump system		lot	1		
2.18.3.2	Fire fighting water tank		lot	1		
2.18.3.3	Fire fighting water supply pump with well		lot	1		
2.18.3.4	Transformer deluge systems for power transformers		set	6		
2.18.3.5	Fire hydrant network and interconnection piping		lot	1		
2.18.3.6	All accessories necessary for the satisfactory operation of the system but which are not separately listed		lot	1		
<b>2.19</b>	<b>CCTV system</b>					
2.19.1	Central unit		set	1		
2.19.2	Control panel		set	1		
2.19.3	Monitor		set	2		
2.19.4	Indoor Camera		lot	1		
2.19.5	Outdoor Camera		lot	1		
2.19.6	All other necessary equipment and materials to complete the extension		lot	1		
<b>3</b>	<b>Mandatory Spare Parts</b>					
<b>3.1</b>	<b>High Voltage GIS equipment</b>					
<b>3.1.1</b>	<b>For 220 kV GIS</b>					
3.1.1.1	Close coils (four of each type installed)		lot	1		
3.1.1.2	Trip coils (four of each type installed)		lot	1		
<b>3.1.2</b>	<b>For 132 kV GIS</b>					
3.1.2.1	Close coils (four of each type installed)		lot	1		
3.1.2.2	Trip coils (four of each type installed)		lot	1		
<b>3.2</b>	<b>High Voltage AIS equipment</b>					
<b>3.2.1</b>	<b>For 220 kV equipment</b>					
3.2.1.1	1-ph capacitive voltage transformer		nos	2		
3.2.1.2	1-ph lightning arrester, including one counter		nos	3		
3.2.1.3	Tension insulator set		set	3		
3.2.1.4	Suspension insulator set		set	3		
3.2.1.5	Clamps and fittings (five of each type installed)		set	1		
<b>3.2.2</b>	<b>For 132 kV circuit breakers</b>					
3.2.2.1	Single pole of circuit breaker		set	1		
3.2.2.2	Driving mechanism single-pole		set	1		
3.2.2.3	Close coils (four of each type installed)		lot	1		
3.2.2.4	Trip coils (four of each type installed)		lot	1		
<b>3.2.3</b>	<b>For 132 kV disconnectors and earthing switches</b>					
3.2.3.1	Disconnector contacts		set	2		
3.2.3.2	Earthing switch contacts		set	2		
3.2.3.3	Motor of disconnector drive		set	1		
3.2.3.4	Motor of earthing switch drive		set	1		
3.2.3.5	Aux. contact block for disconnector and earthing switch		set	1		
<b>3.2.4</b>	<b>For other 132 kV equipment</b>					
3.2.4.1	1-ph lightning arrester, including one counter		nos	1		
3.2.4.2	Tension insulator set		set	5		
3.2.4.3	Suspension insulator set		set	5		
3.2.4.4	Clamps and fittings (ten of each type installed)		set	1		

Substation Package B						
Kreditanstalt für Wiederaufbau (KfW)						
Nepal Electricity Authority (NEA)						
Schedule No. I: Plant, and Mandatory Spare Parts Supplied from Abroad						
Item	Description	Code (Country of origin)	Unit	Quantity	Unit Price CIP	Total Price CIP
				1	2	3=1x2
<b>3.3</b>	<b>Autotransformers and Power Transformers</b>					
<b>3.3.1</b>	<b>Bushing (one of each type HV/MV/LV/Neutral)</b>					
3.3.1.1	For 220/132/33 kV Autotransformers		lot	2		
3.3.1.2	For 220/132 kV Power Transformers		lot	1		
3.3.1.3	For 132/33 kV Power Transformers		lot	1		
3.3.1.4	For 33/11 kV Power Transformers		lot	1		
3.3.1.5	Transformer oil set of drums with minimum 5% of total oil volume of all transformers installed		lot	1		
3.3.1.6	Air drying agent sufficient quantity for 5 replacements for all transformers installed		lot	1		
<b>3.4</b>	<b>For MV switchgear</b>					
<b>3.4.1</b>	<b>For 33 kV switchgear</b>					
3.4.1.1	33kV Withdrawable Circuit Breaker with breaker trolley		nos	1		
3.4.1.2	33kV Surge arrester		nos	3		
3.4.1.3	33kV Fuse (six of each rating)		lot	1		
<b>3.4.2</b>	<b>For 11 kV switchgear</b>					
3.4.2.1	11kV Withdrawable Circuit Breaker with breaker trolley		nos	2		
3.4.2.2	11kV Surge arrester		nos	3		
3.4.2.3	11kV Fuse (six of each rating)		lot	1		
<b>3.5</b>	<b>For LV Auxiliary Power Supply System</b>					
<b>3.5.1</b>	<b>For 0.4 kV main switchgear / 220 V DC switchgear / 48 V DC switchgear</b>					
3.5.1.1	Incoming Circuit Breaker 5% of each type and rating totally installed but as a minimum 2 unit of each type and size		lot	1		
3.5.1.2	Outgoing Circuit Breaker 5% of each type and rating totally installed but as a minimum 2 unit of each type and size		lot	1		
3.5.1.3	Outgoing feeder terminal block (five complete three phase / PE / N blocks of each type and size)		lot	1		
3.5.1.4	Surge arrester		lot	1		
<b>3.5.2</b>	<b>Batteries</b>					
3.5.2.1	220 V battery cell Connector		nos	5		
3.5.2.2	48 V battery cell Connector		nos	5		
<b>3.6</b>	<b>For Diesel generator unit (DGU)</b>					
3.6.1	Air filter		set	3		
3.6.2	Oil filter		set	5		
3.6.3	Fuel filter		set	5		
3.6.4	Motor lube oil (three fillings)		lot	1		
3.6.5	Gaskets (two of each type)		lot	1		
<b>3.7</b>	<b>For protection equipment</b>					
3.7.1	Line differential protection relay (one of each type)		set	1		
3.7.2	Transformer differential protection relay (one of each type)		set	1		
3.7.3	Busbar differential protection relay decentral field unit (one of each type)		set	1		
3.7.4	Busbar differential protection relay entral unit (one of each type)		set	1		
3.7.5	Overcurrent protetction relay (one of each type)		set	1		
3.7.6	HV Bay Control unit (one of each type)		set	1		
3.7.7	Combined protection and bay control for MV switchgear		set	1		
3.7.8	Lockout Relay		set	4		
3.7.9	Trip circuit supervision Relay		set	4		
3.7.10	CT circuit test terminal block (complete for three phase circuit, ten of each type and size)		lot	2		
3.7.11	VT circuit test terminal block (complete for three phase circuit, ten of each type and size)		lot	2		

Substation Package B						
Kreditanstalt für Wiederaufbau (KfW)						
Nepal Electricity Authority (NEA)						
Schedule No. I: Plant, and Mandatory Spare Parts Supplied from Abroad						
Item	Description	Code (Country of origin)	Unit	Quantity	Unit Price CIP	Total Price CIP
					(USD)	(USD)
				1	2	3=1x2
<b>3.8</b>	<b>For SCMS and SCADA system</b>					
3.8.1	Complete set of spare parts for the entire SCMS System of Lekhnath and Damauli substations, comprising at minimum 20% of each device applied per system but as a minimum 1 pc of each item		lot	1		
<b>3.9</b>	<b>For telecommunications system</b>					
3.9.1	Complete set of spare parts for the entire Telecommunication System of Lekhnath and Damauli substations, comprising at minimum 20% of each device applied per system but as a minimum 1 pc of each item		lot	1		
<b>3.10</b>	<b>Metering system</b>					
3.10.1	Meters (one of each type)		nos	2		
3.10.2	Communication equipment (Ethernet switches and Patch panels)		set	2		
3.10.3	GPRS-GSM communication device		set	1		
<b>3.11</b>	<b>For LV Auxiliary System, Protection, Metering and Control Cubicles, etc. in General</b>					
3.11.1	Miniature Circuit Breaker (MCB) 10% of each type and rating totally installed but as a minimum 2 units of each item		lot	1		
3.11.2	Fuses 10% of each type and rating totally installed but as a minimum six units of each type and rating		lot	1		
3.11.3	LV surge arrestors 10% of each type and rating totally installed but as a minimum two units of each type and rating		lot	1		
3.11.4	Control Switches, Selector Switches, Push buttons etc. 5% of each type and configuration totally installed but as a minimum 2 units of each type and size		lot	1		
3.11.5	Indicating lights 10% of each type and color totally installed but as a minimum 5 units of each type and color		lot	1		
3.11.6	Terminal block 10% of each type and size/rating totally installed but as a minimum: 50 terminals of each type and size up to and including 10 mm <sup>2</sup> 10 terminals of each type and size larger than 10 mm <sup>2</sup>		lot	1		
<b>3.12</b>	<b>For LV Installation</b>					
3.12.1	Small power outlets 10% of each type and rating installed but as a minimum 10 units of each type and rating		lot	1		
3.12.2	Power outlets 5% of each type and rating installed but as a minimum 2 units of each type and rating		lot	1		
3.12.3	Junction boxes 10% of each type and rating installed but as a minimum 5 units of each type and rating		lot	1		
3.12.4	Lighting Fixtures 5% of each type and rating installed but as a minimum 2 units of each type and rating		lot	1		
3.12.5	LED modules 20% of each type and rating installed but as a minimum 10 units of each type and rating		lot	1		
3.12.6	LED electronic control gear (ECG) 10% of each type and rating installed but as a minimum 5 units of each type and rating		lot	1		
<b>3.13</b>	<b>Fire Protection System</b>					
3.13.1	Fire detectors 5% of each type and rating installed but as a minimum 4 units of each type		lot	2		
3.13.2	Fire alarm break glass units 5% of each type and rating installed but as a minimum 4 units of each type		lot	2		
3.13.3	Spare break glass for fire alarm break glass units set with 10 break glasses		set	5		

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Substation Package B					
Kreditanstalt für Wiederaufbau (KfW)					
Nepal Electricity Authority (NEA)					
Schedule No. II: Plant, and Mandatory Spare Parts Supplied from within the Employer's Country					
Item	Description	Unit	Quantity	Unit Price	Total Price
				EXW	EXW
				(NPR)	(NPR)
			1	2	3=1x2
<b>1</b>	<b>220kV Extension of the 132kV switchyard in Lekhnath</b>				
<b>1.1</b>	<b>Extension of existing 132kV Switchyard</b>				
<b>1.1.1</b>	<b>132kV Transformer Bays (E13, E14)</b>				
1.1.1.1	Set of 3-pole circuit breaker	set	2		
1.1.1.2	Sets of 3-pole disconnector with earthing switch	set	4		
1.1.1.3	Set of 3-pole pantograph disconnector	set	2		
1.1.1.4	1-pole current transformer	nos	6		
1.1.1.5	1-pole voltage transformer	nos	6		
1.1.1.6	Gantries for busbar and feeders	lot	1		
1.1.1.7	Busbar and feeder conductors	lot	1		
1.1.1.8	Insulators and fittings	lot	1		
1.1.1.9	All other necessary equipment and materials to complete the supply and the installation	lot	1		
<b>1.1.2</b>	<b>Transformer AIS equipment and auxiliary system for fast reconnection of the spare transformer unit</b>				
1.1.2.1	Surge arresters for the 220 kV transformer side	nos	7		
1.1.2.2	Surge arresters for the 132 kV transformer side	nos	7		
1.1.2.3	Surge arresters for the tertiary (33 kV) side	nos	7		
1.1.2.4	Gantries for 220 kV and 132 kV auxiliary busbar	lot	1		
1.1.2.5	OHL conductors for 220 kV and 132 kV auxiliary busbar for fast reconnection of the spare transformer unit	lot	1		
1.1.2.6	220 kV insulators and fittings	lot	1		
1.1.2.7	132 kV insulators and fittings	lot	1		
1.1.2.8	Materials for the interconnection of the auto-transformers tertiaries with the new 33 kV switchgear by means of busbar and cable including facility for fast reconnection of spare transformer	lot	1		
1.1.2.9	All other necessary equipment and materials to complete the supply and the installation	lot	1		
<b>1.1.3</b>	<b>Additional extension and relocation works</b>				
1.1.3.1	All necessary equipment and materials for relocation of existing lighting poles affected by the extension of the 132 kV switchyard	lot	1		
1.1.3.2	All necessary equipment and materials for relocation of two (2) existing lightning protection masts affected by the extension of the 132 kV switchyard	lot	1		
1.1.3.3	All necessary equipment and materials for relocation, within the substation's property, of an out-of-service transformer currently located in front of bay E14	lot	1		
<b>1.2</b>	<b>220/132/33kV Autotransformer</b>				
1.2.1	Single-phase autotransformers 220/132/33 kV 100 MVA/phase, equipped with on-load tap changer	nos	7		
1.2.2	Automatic voltage regulator, including the relevant software and integration in the SCMS	set	2		
1.2.3	Online transformer condition monitoring system, including the relevant software and integration in the SCMS	set	7		
1.2.4	All other necessary equipment and materials to complete the supply and the installation	lot	1		
<b>1.3</b>	<b>220 kV Gas Insulated Switchgear</b>				
1.3.1	Transformer bay (D03, D07) with GIB and SF6/air bushings	set	2		
1.3.2	Local control panel with bay cabling for feeder D03, D07	set	2		
1.3.3	OHL Bay (D04, D06) with GIB and SF6/air bushings	set	2		
1.3.4	Local control panel with bay cabling for feeder D04, D06	set	2		
1.3.5	Measuring Bay (D05)	set	1		
1.3.6	Bus Coupler Bay D05	set	1		
1.3.7	Local control panel with bay cabling for feeder D05 and (D05), including cable connections to bus bar measuring and bus bar earthing	set	1		
1.3.8	Sensors for partial discharge measurement	lot	1		
1.3.9	Provision (light sensor) for future arc detection	lot	1		
1.3.10	GIS steel supports for all bays and for GIB's, including wall bushings (material from GIS manufacturer for closing the wall openings)	lot	1		
1.3.11	Wall boards as specified (typical bay sections, single line diagram and gas compartment plan, gas density rules, gas temperature pressure curves etc.)	lot	1		
1.3.12	Key box including specified labelled keys and pad locks for 220kV GIS	lot	1		

Substation Package B					
Kreditanstalt für Wiederaufbau (KfW)					
Nepal Electricity Authority (NEA)					
Schedule No. II: Plant, and Mandatory Spare Parts Supplied from within the Employer's Country					
Item	Description	Unit	Quantity	Unit Price	Total Price
				EXW	EXW
				(NPR)	(NPR)
			1	2	3=1x2
1.3.13	All other necessary equipment and materials to complete the supply and the installation	lot	1		
<b>1.4</b>	<b>220 kV AIS Equipment</b>				
1.4.1	220kV OHL surge arresters	nos	6		
1.4.2	220kV capacitive voltage transformers	unit	6		
1.4.3	220 kV OHL gantry	lot	1		
1.4.4	220 kV insulators and fittings	lot	1		
1.4.5	All other necessary equipment and materials to complete the supply and the installation	lot	1		
<b>1.5</b>	<b>33 kV Switchgear</b>				
1.5.1	Outgoing feeder to auxiliary transformer (K02, K04)	set	2		
1.5.2	Riser measurement panel (K01, K03)	set	2		
1.5.3	All other necessary equipment, accessories and materials to complete the supply and the installation	lot	1		
<b>1.6</b>	<b>Zig Zag Earthing Auxiliary Transformers</b>				
1.6.1	Three-phase zig zag auxiliary transformers 33/0.4 kV, hermetically sealed type with off load tap changer, each of minimum 630 kVA	nos	2		
1.6.2	Tank mounted surge arresters for the primary (33 kV) side.	unit	6		
1.6.3	All other necessary equipment and materials to complete the supply and the installation	lot	1		
<b>1.7</b>	<b>LV Auxiliary Power Supply System</b>				
1.7.1	0.4 kV main switchgear, metal-clad type	set	1		
1.7.2	220 V DC switchgear with two bus sections	set	1		
1.7.3	220 V battery chargers	set	2		
1.7.4	220 V DC batteries of Ni-Cd type, each with a minimum capacity of 600 Ah (10h discharge rate)	set	2		
1.7.5	48 V DC switchgear with two bus sections	set	1		
1.7.6	48 V battery chargers	set	2		
1.7.7	48 V DC batteries of Ni-Cd type, each with a minimum capacity of 150 Ah	set	2		
1.7.8	230 V AC UPS System	set	2		
1.7.9	All other necessary equipment and materials to complete the supply and the installation	lot	1		
<b>1.8</b>	<b>Diesel generator unit (DGU)</b>				
1.8.1	Diesel generator unit, minimum of 50 kVA, in a prefabricated container equipped with fire-detection system and exhaust gas evacuation system including fuel tank	set	1		
1.8.2	All other necessary equipment and materials to complete the supply and the installation	lot	1		
<b>1.9</b>	<b>Protection &amp; Control</b>				
1.9.1	220 kV OHL Protection Terminals <i>incl. POW control</i> and BCU (D04, D06)	set	2		
1.9.2	220kV Bus coupler (D05) and Busbar Protections and BCU	set	1		
1.9.3	300MVA 220 kV side autotransformer protection <i>incl. POW control</i> and BCU (D03, D07)	set	2		
1.9.4	300MVA 132kV side autotransformer protection and BCU (E13, E14)	set	2		
1.9.5	20MVA 33kV side autotransformer bay control and protection BCPU (K01, K03) (installed in MV Switchgear)	set	2		
1.9.6	Auxiliary Earthing Transformer bay control and protection BCPU (K02, K04) (installed in MV Switchgear)	set	2		
1.9.7	Marshalling panel for the transformer control circuits for fast reconnection of spare transformer	set	2		
1.9.8	All other necessary equipment and materials to complete the supply and the installation	lot	1		
<b>1.10</b>	<b>Synchrophasor Measurement Unit (PMU)</b>				
	for monitoring voltage and current as defined in the Scope, including software, documentation, cubicles, accessories	lot	1		

Substation Package B					
Kreditanstalt für Wiederaufbau (KfW)					
Nepal Electricity Authority (NEA)					
Schedule No. II: Plant, and Mandatory Spare Parts Supplied from within the Employer's Country					
Item	Description	Unit	Quantity	Unit Price	Total Price
				EXW	EXW
				(NPR)	(NPR)
			1	2	3=1x2
<b>1.11</b>	<b>SCADA and SCMS</b>				
1.11.1	SCADA and SCMS system for new 220/132/33/11 kV Substation including all necessary cabling, cubicles, desks, chairs, equipment and materials to complete the supply and the installation, The Contractor shall ensure that after handing over, a minimum of 50% spare function capacity (hardware and software, number of I/O to be handled by the SCMS)	set	1		
1.11.2	Equipment and material for interfacing with NLDC/ECC including all necessary cabling, cubicles, equipment and materials to complete the supply and the installation	set	1		
1.11.3	Equipment and material for interfacing with Existing Lekhnath 132 kV Substation including all necessary cabling, cubicles, equipment and materials to complete the supply and the installation	set	1		
<b>1.12</b>	<b>Telecommunication</b>				
1.12.1	SDH Equipment SDH node for FOC connections to the new 220/132/33/11kV GIS Damauli Substation and to the existing 132/33/11kV Lekhnath Substation	lot	1		
1.12.2	Fibre optical cables and patch cords	lot	1		
1.12.3	Optical Distribution Frame and accessories	lot	1		
1.12.4	IP-PBX telephony system, including appropriate telephone sets	lot	1		
1.12.5	All other necessary cubicles, software, equipment and materials to complete the supply and the installation	lot	1		
<b>1.13</b>	<b>Metering</b>				
1.13.1	Meter for 220kV OHL Main & Control	set	2		
1.13.2	Meter for 220/132/33 kV autotransformers (220 kV side and 132 kV side) Main & Control	set	4		
1.13.3	Meter for auxiliary transformers Main & Control	set	4		
1.13.4	Communication equipment (Ethernet Switches / Patch Panels / FOs / Cables etc..)	lot	1		
1.13.5	GPRS-GSM communication device	set	1		
1.13.6	Cabinet	lot	1		
1.13.7	Notebook PC including related software for local access for meter reading	set	1		
1.13.8	All other necessary, software, equipment and materials to complete the supply and the installation	lot	1		
<b>1.14</b>	<b>Power and Control Cables</b>				
1.14.1	33 kV Cables, sealing ends, terminals and accessories for 33kV auxiliary system including accessories	lot	1		
1.14.2	LV Power and Control cables and accessories for auxiliary supply, protection, control, metering, fire protection, including accessories	lot	1		
1.14.3	All other necessary equipment and materials to complete the supply and the installation	lot	1		
<b>1.15</b>	<b>Earthing and lightning protection systems</b>	lot	1		
<b>1.16</b>	<b>Lighting and small power system</b>	lot	1		
<b>1.17</b>	<b>Fire Protection system</b>				
1.17.1	Fire detection system	lot	1		
1.17.2	Portable fire extinguishers	lot	1		
<b>1.17.3</b>	<b>Fire fighting system</b>				
1.17.3.1	Containerised fire fighting pump system	lot	1		
1.17.3.2	Fire fighting water tank	lot	1		
1.17.3.3	Fire fighting water supply pump with well	lot	1		
1.17.3.4	Transformer deluge systems for power transformers	set	7		
1.17.3.5	Fire hydrant network and interconnection piping	lot	1		
1.17.3.6	All accessories necessary for the satisfactory operation of the system but which are not separately listed	lot	1		
<b>1.18</b>	<b>CCTV system</b>				
1.18.1	Central unit	set	1		
1.18.2	Control panel	set	1		
1.18.3	Monitor	set	2		
1.18.4	Indoor Camera	lot	1		
1.18.5	Outdoor Camera	lot	1		



Substation Package B					
Kreditanstalt für Wiederaufbau (KfW)					
Nepal Electricity Authority (NEA)					
Schedule No. II: Plant, and Mandatory Spare Parts Supplied from within the Employer's Country					
Item	Description	Unit	Quantity	Unit Price	Total Price
				EXW	EXW
				(NPR)	(NPR)
			1	2	3=1x2
1.18.6	All other necessary equipment and materials to complete the extension	lot	1		
<b>2</b>	<b>Construction of 220/132/33/11 kV substation in Damauli</b>				
<b>2.1</b>	<b>220 kV Gas Insulated Switchgear</b>				
2.1.1	OHL Bays with GIB and SF6/air bushings (D06, D07, D08, D13, D14, D15)	set	6		
2.1.2	Local control panel with bay cabling for feeder (D06, D07, D08, D13, D14, D15)	set	6		
2.1.3	220/132kV Transformer Bay with GIB and SF6/air bushings (D09 and D12)	set	2		
2.1.4	Local control panel with bay cabling for feeder (D09 and D12)	set	2		
2.1.5	Bus Coupler Bays (D05, D16)	set	2		
2.1.6	Local control panel with bay cabling for feeder (D05, D16)	set	2		
2.1.7	Measuring Bays ((D10) and (D11))	set	2		
2.1.8	Busbar Sectionalizers (D10, D11)	set	2		
2.1.9	Local control panel with bay cabling for feeder D10 and D11, including cable connections to bus bar measuring and bus bar earthing	set	2		
2.1.10	Sensors for partial discharge measurement	lot	1		
2.1.11	Provision (light sensor) for future arc detection	lot	1		
2.1.12	GIS steel supports for all bays and for GIB's, including wall bushings (material from GIS manufacturer for closing the wall openings)	lot	1		
2.1.13	Wall boards as specified (typical bay sections, single line diagram and gas compartment plan, gas density rules, gas temperature pressure curves etc.)	lot	1		
2.1.14	Key box including specified labelled keys and pad locks for 220kV GIS	lot	1		
2.1.15	All other necessary equipment and materials to complete the supply and the installation	lot	1		
<b>2.2</b>	<b>220 kV AIS Equipment</b>				
2.2.1	220kV OHL surge arresters	nos	18		
2.2.2	220kV capacitive voltage transformers	nos	18		
2.2.3	220 kV OHL gantry	lot	1		
2.2.4	220 kV insulators and fittings	lot	1		
2.2.5	All other necessary equipment and materials to complete the supply and the installation	lot	1		
<b>2.3</b>	<b>132 kV Gas Insulated Switchgear</b>				
2.3.1	220/132kV Transformer Bays with GIB and SF6/air bushings (E02, E06)	set	2		
2.3.2	Local control panel with bay cabling for feeder E02, E06	set	2		
2.3.3	OHL Bays with GIB and SF6/air bushings (E03, E07)	set	2		
2.3.4	Local control panel with bay cabling for feeder E03, E07	set	2		
2.3.5	132/33kV Transformer Bay with cable connections (E01, E05)	set	2		
2.3.6	Local control panel with bay cabling for feeder E01, E05	set	2		
2.3.7	Measuring Bay (E04)	set	1		
2.3.8	Bus Coupler E04	set	1		
2.3.9	Local control panel with bay cabling for feeder E04 and (E04), including cable connections to bus bar measuring and bus bar earthing	set	1		
2.3.10	Sensors for partial discharge measurement	lot	1		
2.3.11	Provision (light sensor) for future arc detection	lot	1		
2.3.12	GIS steel supports for all bays and for GIB's, including wall bushings (material from GIS manufacturer for closing the wall openings)	lot	1		
2.3.13	Wall boards as specified (typical bay sections, single line diagram and gas compartment plan, gas density rules, gas temperature pressure curves etc.)	lot	1		
2.3.14	Key box including specified labelled keys and pad locks for 132kV GIS	lot	1		
2.3.15	All other necessary equipment and materials to complete the supply and the installation	lot	1		
<b>2.4</b>	<b>132 kV AIS Equipment</b>				
2.4.1	132 kV OHL surge arresters	nos	6		
2.4.2	132 kV capacitive voltage transformers	nos	6		
2.4.3	132 kV OHL gantry	lot	1		
2.4.4	132 kV insulators and fittings	lot	1		
2.4.5	All other necessary equipment and materials to complete the supply and the installation	lot	1		

Substation Package B					
Kreditanstalt für Wiederaufbau (KfW)					
Nepal Electricity Authority (NEA)					
Schedule No. II: Plant, and Mandatory Spare Parts Supplied from within the Employer's Country					
Item	Description	Unit	Quantity	Unit Price	Total Price
				EXW	EXW
				(NPR)	(NPR)
			1	2	3=1x2
<b>2.5</b>	<b>Power Transformers</b>				
<b>2.5.1</b>	<b>220/132 Power Transformer</b>				
2.5.1.1	Three-phase power transformer 220/132 kV 50/63 MVA, equipped with on-load tap changer	nos	2		
2.5.1.2	line surge arresters for the primary (220 kV) side	nos	6		
2.5.1.3	line surge arresters for the secondary (132 kV) side	nos	6		
2.5.1.4	automatic voltage regulator, including the relevant software and integration in the SCMS	set	2		
2.5.1.5	All other necessary equipment and materials to complete the supply and the installation	lot	1		
<b>2.5.2</b>	<b>132/33 kV Power Transformer</b>				
2.5.2.1	Three-phase power transformer 132/33kV 24/30 MVA, equipped with on-load tap changer	nos	2		
2.5.2.2	Line surge arresters for the secondary (132 kV) side	nos	6		
2.5.2.3	Line surge arresters for the secondary (33 kV) side	nos	6		
2.5.2.4	Automatic voltage regulator, including the relevant software and integration in the SCMS	set	2		
2.5.2.5	All other necessary equipment and materials to complete the supply and the installation	lot	1		
<b>2.5.3</b>	<b>33/11 kV Power Transformer</b>				
2.5.3.1	Three-phase power transformer 33/11kV 6/8 MVA, equipped with on-load tap changer	nos	2		
2.5.3.2	Line surge arresters for the secondary (33 kV) side	nos	6		
2.5.3.3	Line surge arresters for the secondary (11 kV) side	nos	6		
2.5.3.4	Automatic voltage regulator, including the relevant software and integration in the SCMS	set	2		
2.5.3.5	All other necessary equipment and materials to complete the supply and the installation	lot	1		
<b>2.6</b>	<b>MV Metal Clad AIS Switchgear</b>				
<b>2.6.1</b>	<b>33 kV Switchgear</b>				
2.6.1.1	Incomers for 132/33kV transformer connection (J02, J11)	nos	2		
2.6.1.2	Outgoing feeders (J04, J10)	nos	2		
2.6.1.3	Outgoing feeder 33/11 kV transformer (J03, J12)	nos	2		
2.6.1.4	Outgoing feeders to auxiliary transformer (J05, J09)	nos	2		
2.6.1.5	Bus tie (J07)	nos	1		
2.6.1.6	Riser measurement panel (J08)	nos	1		
2.6.1.7	Measurement panel (J06)	nos	1		
2.6.1.8	All other necessary equipment, accessories and materials to complete the supply and the installation	lot	1		
<b>2.6.2</b>	<b>11 kV Switchgear</b>				
2.6.2.1	Incomers for 33/11kV transformer connection (K03, K08)	nos	2		
2.6.2.2	Outgoing feeders (K04, K05, K09, K11, K12)	nos	5		
2.6.2.3	Bus tie (K07)	nos	1		
2.6.2.4	Riser measurement panel (K06)	nos	1		
2.6.2.5	Measurement panel (K10)	nos	1		
2.6.2.6	All other necessary equipment, accessories and materials to complete the supply and the installation	lot	1		
<b>2.7</b>	<b>Auxiliary Transformers</b>				
2.7.1	Three-phase auxiliary transformers 33/0.4 kV, hermetically sealed type with off load tap changer, each of minimum 630 kVA	nos	2		
2.7.2	Tank mounted surge arresters for the primary (33 kV) side.	nos	6		
2.7.3	All other necessary equipment and materials to complete the supply and the installation	lot	1		

Substation Package B					
Kreditanstalt für Wiederaufbau (KfW)					
Nepal Electricity Authority (NEA)					
Schedule No. II: Plant, and Mandatory Spare Parts Supplied from within the Employer's Country					
Item	Description	Unit	Quantity	Unit Price	Total Price
				EXW	EXW
				(NPR)	(NPR)
			1	2	3=1x2
<b>2.8</b>	<b>LV Auxiliary Power Supply System</b>				
2.8.1	0.4 kV main switchgear, metal-clad type	set	1		
2.8.2	220 V DC switchgear with two bus sections	set	1		
2.8.3	220 V battery chargers	set	2		
2.8.4	220 V DC batteries of Ni-Cd type, each with a minimum capacity of 600 Ah (10h discharge rate)	set	2		
2.8.5	48 V DC switchgear with two bus sections	set	1		
2.8.6	48 V battery chargers	set	2		
2.8.7	48 V DC batteries of Ni-Cd type, each with a minimum capacity of 150 Ah	set	2		
2.8.8	230 V AC UPS System	set	2		
2.8.9	All other necessary equipment and materials to complete the supply and the installation	lot	1		
<b>2.9</b>	<b>Diesel generator unit (DGU)</b>				
2.9.1	Diesel generator unit, minimum of 100 kVA, in a prefabricated container equipped with fire-detection system and exhaust gas evacuation system including fuel tank	set	1		
2.9.2	All other necessary equipment and materials to complete the supply and the installation	lot	1		
<b>2.10</b>	<b>Protection &amp; Control</b>				
2.10.1	220 kV OHL Protection Terminals <i>incl. POW control</i> and BCU (D06, D07, D08, D13, D14, D15)	set	6		
2.10.2	220kV Bus-sectionaliser and Busbar protection and BCU (D10, D11)	set	2		
2.10.3	220kV Bus-coupler and Busbar protection (D05, D16)	set	2		
2.10.4	50/63 MVA 220/132 kV Transformer 220 kV side protection and BCU (D09, D12)	set	2		
2.10.5	50/63 MVA 220/132/ kV Transformer 132 kV side protection and BCU (E02, E06)	set	2		
2.10.6	132 kV OHL Protection Terminals and BCU (E03, E07)	set	2		
2.10.7	132kV Bus-coupler and Busbar protections and BCU (E04)	set	1		
2.10.8	132/33kV 24/30 MVA Transformer feeder protection 132 kV side and BCU (E01, E05)	set	2		
2.10.9	132/33kV 24/30 MVA Transformer feeder bay control and protection (BCPU) 33 kV side (J02, J09) (installed in 33 kV switchgear)	set	2		
2.10.10	33kV Bus-coupler bay control and protection (BCPU) (J07) (installed in 33 kV switchgear)	set	1		
2.10.11	33kV Feeder bay control and protection (BCPU) (J04, J08)	set	2		
2.10.12	33/11kV 8/10MVA Transformer feeder bay control and protection (BCPU) 33 kV side (J03, J10) (installed in 33 kV switchgear)	set	2		
2.10.13	33/11kV 8/10MVA Transformer feeder protection 11 kV side (K03, K08) (installed in 11 kV switchgear)	set	2		
2.10.14	11kV Feeder bay control and protection (BCPU) (K04, K05, K11, K12, K13, K14) (installed in 11 kV switchgear)	set	5		
2.10.15	11kV Auxiliary Transformer Feeder bay control and protection (BCPU) (K06, K10) (installed in 11 kV switchgear)	set	2		
2.10.16	11kV Bus-coupler protection (K07)	set	1		
2.10.17	All other necessary equipment and materials to complete the supply and the installation	lot	1		
<b>2.11</b>	<b>Synchrophasor Measurement Unit (PMU)</b>				
2.11	for monitoring voltage and current as defined in the Scope, including software, documentation, cubicles, accessories	set	1		
<b>2.12</b>	<b>SCADA and SCMS</b>				
2.12.1	SCADA and SCMS system for new 220/132/33/11 kV Substation including all necessary cabling, cubicles, desks, chairs, equipment and materials to complete the supply and the installation, The Contractor shall ensure that after handing over, a minimum of 50% spare function capacity (hardware and software, number of I/O to be handled by the SCMS)	lot	1		

Substation Package B					
Kreditanstalt für Wiederaufbau (KfW)					
Nepal Electricity Authority (NEA)					
Schedule No. II: Plant, and Mandatory Spare Parts Supplied from within the Employer's Country					
Item	Description	Unit	Quantity	Unit Price	Total Price
				EXW	EXW
				(NPR)	(NPR)
			1	2	3=1x2
2.12.2	Equipment and material for interfacing with NLDC/ECC including all necessary cabling, cubicles, equipment and materials to complete the supply and the installation	lot	1		
2.12.3	Equipment and material for interfacing with future New Damauli 400 kV Substation including all necessary cabling, cubicles, equipment and materials to complete the supply and the installation	lot	1		
<b>2.13</b>	<b>Telecommunication</b>				
2.13.1	SDH Equipment SDH node for FOC connections of new 220 kV GIS Lekhnath Substation, to Tanahu HPP, 220 kV Bharatpur Substation, Old Damauli and 132 kV Bharatpur.	lot	1		
2.13.2	Fibre optical cables, including approach cable from splicing box to SDH equipment and patch cords	lot	1		
2.13.3	Optical Distribution Frame and accessories	lot	1		
2.13.4	IP-PBX telephony system, including appropriate telephone sets	lot	1		
2.13.5	All other necessary cubicles, software, equipment and materials to complete the supply and the installation	lot	1		
<b>2.14</b>	<b>Metering</b>				
2.14.1	Meter for 220kV OHL Main & Control	set	6		
2.14.2	Meter for 132 OHL Main & Control	set	2		
2.14.3	Meter for 220/132 kV Transformers, (220 kV side and 132 kV side), Main & Control	set	4		
2.14.4	Meter for 132/33 kV Transformers, 132 kV side and 33 kV side), Main & Control	set	4		
2.14.5	Meter for 33/11 kV Transformers, (33 kV side and 11 kV side), Main & Control	set	4		
2.14.6	Meter for 33 kV Feeders Main & Control	set	2		
2.14.7	Meter for 11 kV Feeders Main & Control	set	5		
2.14.8	Meter for auxiliary transformers Main & Control	set	2		
2.14.9	Communication equipment (Ethernet Switches / Patch Panels / FOs / Cables etc..)	lot	1		
2.14.10	GPRS-GSM communication device	lot	1		
2.14.11	Cabinet	lot	1		
2.14.12	Notebook PC including related software for local access for meter reading	set	1		
2.14.13	All other necessary, software, equipment and materials to complete the supply and the installation	lot	1		
<b>2.15</b>	<b>Power and Control Cables</b>				
2.15.1	HV cable systems comprising 132 kV XLPE cables for the connection between the secondary windings of 220/132 kV transformers and the 132 kV switchgear	lot	1		
2.15.2	MV cable systems comprising 33 kV XLPE cables for the connection between secondary windings of 132/33 kV transformers and 33 kV switchgear	lot	1		
2.15.3	MV cable systems comprising 33 kV XLPE cables for the connection between 33 kV switchgear and 33/11 kV transformers	lot	1		
2.15.4	MV cable systems comprising 33 kV XLPE cables for the connection between 33kV switchgear and auxiliary transformers	lot	1		
2.15.5	MV cable systems comprising 11 kV XLPE cables for the connection between secondary windings of 33/11 kV transformers and 11 kV switchgear	lot	1		
2.15.6	MV cable systems comprising 11 kV XLPE cables for the connection of three 11 kV feeders between 11 kV switchgear and distribution OHL pole location on the north side of the substation towards the river	lot	1		
2.15.7	LV Power and Control cables and accessories for auxiliary supply, protection, control, metering including accessories	lot	1		

Substation Package B					
Kreditanstalt für Wiederaufbau (KfW)					
Nepal Electricity Authority (NEA)					
Schedule No. II: Plant, and Mandatory Spare Parts Supplied from within the Employer's Country					
Item	Description	Unit	Quantity	Unit Price	Total Price
				EXW	EXW
				(NPR)	(NPR)
			1	2	3=1x2
2.15.8	All other necessary equipment and materials to complete the supply and the installation	lot	1		
<b>2.16</b>	<b>Earthing and lightning protection systems</b>	lot	1		
<b>2.17</b>	<b>Lighting and small power system</b>	lot	1		
<b>2.18</b>	<b>Fire Protection system</b>				
2.18.1	Fire detection system	lot	1		
2.18.2	Portable fire extinguishers	lot	1		
<b>2.18.3</b>	<b>Fire fighting system</b>				
2.18.3.1	Containerised fire fighting pump system	lot	1		
2.18.3.2	Fire fighting water tank	lot	1		
2.18.3.3	Fire fighting water supply pump with well	lot	1		
2.18.3.4	Transformer deluge systems for power transformers	set	6		
2.18.3.5	Fire hydrant network and interconnection piping	lot	1		
2.18.3.6	All accessories necessary for the satisfactory operation of the system but which are not separately listed	lot	1		
<b>2.19</b>	<b>CCTV system</b>				
2.19.1	Central unit	set	1		
2.19.2	Control panel	set	1		
2.19.3	Monitor	set	2		
2.19.4	Indoor Camera	lot	1		
2.19.5	Outdoor Camera	lot	1		
2.19.6	All other necessary equipment and materials to complete the extension	lot	1		
<b>3</b>	<b>Mandatory Spare Parts</b>				
<b>3.1</b>	<b>High Voltage GIS equipment</b>				
<b>3.1.1</b>	<b>For 220 kV GIS</b>				
3.1.1.1	Close coils (four of each type installed)	lot	1		
3.1.1.2	Trip coils (four of each type installed)	lot	1		
<b>3.1.2</b>	<b>For 132 kV GIS</b>				
3.1.2.1	Close coils (four of each type installed)	lot	1		
3.1.2.2	Trip coils (four of each type installed)	lot	1		
<b>3.2</b>	<b>High Voltage AIS equipment</b>				
<b>3.2.1</b>	<b>For 220 kV equipment</b>				
3.2.1.1	1-ph capacitive voltage transformer	nos	2		
3.2.1.2	1-ph lightning arrester, including one counter	nos	3		
3.2.1.3	Tension insulator set	set	3		
3.2.1.4	Suspension insulator set	set	3		
3.2.1.5	Clamps and fittings (five of each type installed)	set	1		
<b>3.2.2</b>	<b>For 132 kV circuit breakers</b>				
3.2.2.1	Single pole of circuit breaker	set	1		
3.2.2.2	Driving mechanism single-pole	set	1		
3.2.2.3	Close coils (four of each type installed)	lot	1		
3.2.2.4	Trip coils (four of each type installed)	lot	1		
<b>3.2.3</b>	<b>For 132 kV disconnectors and earthing switches</b>				
3.2.3.1	Disconnector contacts	set	2		
3.2.3.2	Earthing switch contacts	set	2		
3.2.3.3	Motor of disconnector drive	set	1		
3.2.3.4	Motor of earthing switch drive	set	1		
3.2.3.5	Aux. contact block for disconnector and earthing switch	set	1		
<b>3.2.4</b>	<b>For other 132 kV equipment</b>				
3.2.4.1	1-ph lightning arrester, including one counter	nos	1		
3.2.4.2	Tension insulator set	set	5		

Substation Package B					
Kreditanstalt für Wiederaufbau (KfW)					
Nepal Electricity Authority (NEA)					
Schedule No. II: Plant, and Mandatory Spare Parts Supplied from within the Employer's Country					
Item	Description	Unit	Quantity	Unit Price	Total Price
				EXW	EXW
				(NPR)	(NPR)
			1	2	3=1x2
3.2.4.3	Suspension insulator set	set	5		
3.2.4.4	Clamps and fittings (ten of of each type installed)	set	1		
<b>3.3</b>	<b>Autotransformers and Power Transformers</b>				
<b>3.3.1</b>	<b>Bushing (one of each type HV/MV/LV/Neutral)</b>				
3.3.1.1	For 220/132/33 kV Autotransformers	lot	2		
3.3.1.2	For 220/132 kV Power Transformers	lot	1		
3.3.1.3	For 132/33 kV Power Transformers	lot	1		
3.3.1.4	For 33/11 kV Power Transformers	lot	1		
3.3.1.5	Transformer oil set of drums with minimum 5% of total oil volume of all transformers installed	lot	1		
3.3.1.6	Air drying agent sufficient quantity for 5 replacements for all transformers installed	lot	1		
<b>3.4</b>	<b>For MV switchgear</b>				
<b>3.4.1</b>	<b>For 33 kV switchgear</b>				
3.4.1.1	33kV Withdrawable Circuit Breaker with breaker trolley	nos	1		
3.4.1.2	33kV Surge arrester	nos	3		
3.4.1.3	33kV Fuse (six of each rating)	lot	1		
<b>3.4.2</b>	<b>For 11 kV switchgear</b>				
3.4.2.1	11kV Withdrawable Circuit Breaker with breaker trolley	nos	2		
3.4.2.2	11kV Surge arrester	nos	3		
3.4.2.3	11kV Fuse (six of each rating)	lot	1		
<b>3.5</b>	<b>For LV Auxiliary Power Supply System</b>				
<b>3.5.1</b>	<b>For 0.4 kV main switchgear / 220 V DC switchgear / 48 V DC switchgear</b>				
3.5.1.1	Incoming Circuit Breaker 5% of each type and rating totally installed but as a minimum 2 unit of each type and size	lot	1		
3.5.1.2	Outgoing Circuit Breaker 5% of each type and rating totally installed but as a minimum 2 unit of each type and size	lot	1		
3.5.1.3	Outgoing feeder terminal block (five complete three phase / PE / N blocks of each type and size)	lot	1		
3.5.1.4	Surge arrester	lot	1		
<b>3.5.2</b>	<b>Batteries</b>				
3.5.2.1	220 V battery cell Connector	nos	5		
3.5.2.2	48 V battery cell Connector	nos	5		
<b>3.6</b>	<b>For Diesel generator unit (DGU)</b>				
3.6.1	Air filter	set	3		
3.6.2	Oil filter	set	5		
3.6.3	Fuel filter	set	5		
3.6.4	Motor lube oil (three fillings)	lot	1		
3.6.5	Gaskets (two of each type)	lot	1		
<b>3.7</b>	<b>For protection equipment</b>				
3.7.1	Line differential protection relay (one of each type)	set	1		
3.7.2	Transformer differential protection relay (one of each type)	set	1		
3.7.3	Busbar differential protection relay decentral field unit (one of each type)	set	1		
3.7.4	Busbar differential protection relay entral unit (one of each type)	set	1		
3.7.5	Overcurrent protetction relay (one of each type)	set	1		
3.7.6	HV Bay Control unit (one of each type)	set	1		
3.7.7	Combined protection and bay control for MV switchgear	set	1		
3.7.8	Lockout Relay	set	4		
3.7.9	Trip circuit supervision Relay	set	4		
3.7.10	CT circuit test terminal block (complete for three phase circuit, ten of each type and size)	lot	2		
3.7.11	VT circuit test terminal block (complete for three phase circuit, ten of each type and size)	lot	2		

Substation Package B					
Kreditanstalt für Wiederaufbau (KfW)					
Nepal Electricity Authority (NEA)					
Schedule No. II: Plant, and Mandatory Spare Parts Supplied from within the Employer's Country					
Item	Description	Unit	Quantity	Unit Price	Total Price
				EXW	EXW
				(NPR)	(NPR)
			1	2	3=1x2
<b>3.8</b>	<b>For SCMS and SCADA system</b>				
3.8.1	Complete set of spare parts for the entire SCMS System of Lekhnath and Damauli substations, comprising at minimum 20% of each device applied per system but as a minimum 1 pc of each item	lot	1		
<b>3.9</b>	<b>For telecommunications system</b>				
3.9.1	Complete set of spare parts for the entire Telecommunication System of Lekhnath and Damauli substations, comprising at minimum 20% of each device applied per system but as a minimum 1 pc of each item	lot	1		
<b>3.10</b>	<b>Metering system</b>				
3.10.1	Meters (one of each type)	nos	2		
3.10.2	Communication equipment (Ethernet switches and Patch panels)	set	2		
3.10.3	GPRS-GSM communication device	set	1		
<b>3.11</b>	<b>For LV Auxiliary System, Protection, Metering and Control Cubicles, etc. in General</b>				
3.11.1	Miniature Circuit Breaker (MCB) 10% of each type and rating totally installed but as a minimum 2 units of each item	lot	1		
3.11.2	Fuses 10% of each type and rating totally installed but as a minimum six units of each type and rating	lot	1		
3.11.3	LV surge arrestors 10% of each type and rating totally installed but as a minimum two units of each type and rating	lot	1		
3.11.4	Control Switches, Selector Switches, Push buttons etc. 5% of each type and configuration totally installed but as a minimum 2 units of each type and size	lot	1		
3.11.5	Indicating lights 10% of each type and color totally installed but as a minimum 5 units of each type and color	lot	1		
3.11.6	Terminal block 10% of each type and size/rating totally installed but as a minimum: 50 terminals of each type and size up to and including 10 mm <sup>2</sup> 10 terminals of each type and size larger than 10 mm <sup>2</sup>	lot	1		
<b>3.12</b>	<b>For LV Installation</b>				
3.12.1	Small power outlets 10% of each type and rating installed but as a minimum 10 units of each type and rating	lot	1		
3.12.2	Power outlets 5% of each type and rating installed but as a minimum 2 units of each type and rating	lot	1		
3.12.3	Junction boxes 10% of each type and rating installed but as a minimum 5 units of each type and rating	lot	1		
3.12.4	Lighting Fixtures 5% of each type and rating installed but as a minimum 2 units of each type and rating	lot	1		
3.12.5	LED modules 20% of each type and rating installed but as a minimum 10 units of each type and rating	lot	1		
3.12.6	LED electronic control gear (ECG) 10% of each type and rating installed but as a minimum 5 units of each type and rating	lot	1		
<b>3.13</b>	<b>Fire Protection System</b>				
3.13.1	Fire detectors 5% of each type and rating installed but as a minimum 4 units of each type	lot	2		
3.13.2	Fire alarm break glass units 5% of each type and rating installed but as a minimum 4 units of each type	lot	2		
3.13.2	Spare break glass for fire alarm break glass units set with 10 break glasses	set	5		
3.13.3	Fire Alarm horn	set	2		

Substation Package B					
Kreditanstalt für Wiederaufbau (KfW)					
Nepal Electricity Authority (NEA)					
Schedule No. II: Plant, and Mandatory Spare Parts Supplied from within the Employer's Country					
Item	Description	Unit	Quantity	Unit Price EXW (NPR)	Total Price EXW (NPR)
			1	2	3=1x2
3.14	For containerised fire fighting pump system				
3.14.1	Air filter	set	3		
3.14.2	Oil filter	set	5		
3.14.3	Fuel filter	set	5		
3.14.4	Motor lube oil (three fillings)	lot	1		
3.14.5	Gaskets (two of each type)	lot	1		
3.15	For deluges systems and hydrant network				
3.15.1	Gaskets (two of each type)	lot	1		
3.16	For Water supply system				
3.16.1	Valve (one of each size and type)	lot	2		
3.16.2	Gaskets (five of each type)	lot	2		
3.16.3	Water filter	set	5		
3.17	For Airconditioning system				
3.17.1	Gaskets (five of each type)	set	2		
3.17.2	Air filter (three of each type)	set	4		
4.	Special Tools				
4.1	SF6 gas service cart	nos	1		
4.2	SF6 gas filling cart	nos	3		
4.3	Analyser for gas measurement	nos	1		
4.4	Portable SF6 gas leakage detector in a case	nos	3		
4.5	Density guard testing device in a case	nos	1		
4.6	Precision gauge with hose in transport case	nos	1		
4.7	Tool box with torque spanner for GIS (each type if different), etc..	set	3		
4.8	SF6 bottle (each type, if different) 40 kg (with gas)	set	6		
4.9	Insulation resistance test set (range 0.5 –1.0 - 2.5 - 5 - 10 kV)	set	2		
4.10	Calibration instruments for the line type heat detection	set	2		
4.11	Tools and test equipmnet for fore detectors	set	2		
	TOTAL (to Schedule No. VI Grand Summary)				
	Name of Bidder:				
	Signature of Bidder:				



Substation Package B					
Kreditanstalt für Wiederaufbau (KfW)					
Nepal Electricity Authority (NEA)					
Schedule No. III: Design Services					
Item	Description	Unit	Quantity	Unit Price (USD)	Total Price (USD)
			1	2	3=1x2
<b>1</b>	<b>Construction of 220kV Extension of the 132kV switchyard in Lekhnath</b>				
<b>1.1</b>	<b>Electrical Works</b>	lot	1		
1.1.1	Electrical System Design	lot	1		
1.1.2	Protection system design including PMU and metering	lot	1		
<b>1.1.3</b>	<b>SCADA and SCMS design</b>				
1.1.3.1	SCADA and SCMS system for new 220 kV Substation	lot	1		
1.1.3.2	Design for interfacing with NLDC/ECC	lot	1		
1.1.3.3	Design for interfacing with Existing Lekhnath 132 kV Substation	lot	1		
1.1.4	Telecommunication design	lot	1		
1.1.5	Electical installation design, including power and control cable systems, earthing and lightning protection systems, lighting and small power system, fire detection system	lot	1		
<b>1.1.6</b>	<b>Other design items</b>				
1.1.6.1	Earthing resistance test, earthing study and earthing system test	lot	1		
1.1.6.2	Insulation Coordination Study	lot	1		
1.1.6.3	Protection Settings Study and Adjustments	lot	1		
1.1.6.4	132 kV Cable System Studies	lot	1		
1.1.6.5	Transport study for large and heavy equipment	lot	1		
<b>1.2</b>	<b>Civil Works</b>				
1.2.1	Topographical surveys soil investigations	lot	1		
1.2.2	Document Preparation and Submission for Permits	lot	1		
1.2.3	Building design	lot	1		
1.2.4	Transformer and equipment foundation design	lot	1		
1.2.5	Design of channels, ducts etc. for cables	lot	1		
1.2.6	Design of roads, paving, landscaping, fencing, gates	lot	1		
1.2.7	Design of site preparation, leveling and compacting, temporary facilities	lot	1		
1.2.8	Design of water supply system	lot	1		
1.2.9	Design of drainage and sewage systems	lot	1		
1.2.10	Design of air-conditioning, ventilation and heating systems	lot	1		
1.2.11	Design of overhead Traveling Crane	lot	1		
1.2.12	Design of fire protection system	lot	1		
<b>2</b>	<b>Construction of 220/132/33/11 kV Substation in Damauli</b>				
<b>2.1</b>	<b>Electrical Works</b>	lot	1		
2.1.1	Electrical System Design	lot	1		
2.1.2	Protection system design including PMU and metering	lot	1		
<b>2.1.3</b>	<b>SCADA and SCMS design</b>				
2.1.3.1	SCADA and SCMS system for new 220 kV Substation	lot	1		
2.1.3.2	Design for interfacing with NLDC/ECC	lot	1		
2.1.3.3	Design for interfacing with future New Damauli 400 kV	lot	1		
2.1.4	Telecommunication design	lot	1		
2.1.5	Electical installation design, including power and control cable systems, earthing and lightning protection systems, lighting and small power system, fire detection system	lot	1		
<b>2.1.6</b>	<b>Other design items</b>				
2.1.6.1	Earthing resistance test, earthing study and earthing system test	lot	1		
2.1.6.2	Insulation Coordination Study	lot	1		
2.1.6.3	Protection Settings Study and Adjustments in Other Substations	lot	1		
<b>2.2</b>	<b>Civil Works</b>				
2.2.1	Topographical surveys soil investigations	lot	1		
2.2.2	Document Preparation and Submission for Permits	lot	1		
2.2.3	Building design	lot	1		
2.2.4	Transformer and equipment foundation design	lot	1		
2.2.5	Design of channels, ducts etc. for cables	lot	1		
2.2.6	Design of roads, paving, landscaping, fencing, gates	lot	1		
2.2.7	Design of site preparation, leveling and compacting, temporary facilities	lot	1		
2.2.8	Design of flood protection works	lot	1		
2.2.9	Design of water supply system	lot	1		
2.2.10	Design of drainage and sewage systems	lot	1		
2.2.11	Design of air-conditioning, ventilation and heating systems	lot	1		
2.2.12	Design of overhead Traveling Crane	lot	1		
2.2.12	Design of fire protection system	lot	1		
<b>3</b>	<b>TRAINING OF EMPLOYER'S STAFF (Abroad)</b>				
3.1	High voltage switchgear	lot	1		
3.2	Medium voltage switchgear	lot	1		
3.3	Auto and power transformers	lot	1		

Substation Package B					
Kreditanstalt für Wiederaufbau (KfW)					
Nepal Electricity Authority (NEA)					
Schedule No. III: Design Services					
Item	Description	Unit	Quantity	Unit Price (USD)	Total Price (USD)
			1	2	3=1x2
3.4	LV auxiliary systems	lot	1		
3.5	Protection and control systems	lot	1		
3.6	SCMS	lot	1		
3.7	SCADA	lot	1		
3.8	Telecommunication	lot	1		
3.9	CCTV System	lot	1		
3.10	Fire protection system	lot	1		
	<b>TOTAL (to Schedule No. III Grand Summary)</b>				
		<b>Name of Bidder:</b>			
		<b>Signature of Bidder:</b>			

Substation Package B						
Kreditanstalt für Wiederaufbau (KfW)						
Nepal Electricity Authority (NEA)						
Schedule No. IV: Installation and Other Services						
Item	Description	Unit	Quantity	Unit Price Inland Transportation	Unit Price Installation and other Services	Total Price
			1	(NPR) 2	(NPR) 3	(NPR) 4=1x(2+3)
<b>1</b>	<b>220kV Extension of the 132kV switchyard in Lekhnath</b>					
<b>1.1</b>	<b>Extension of existing 132kV Switchyard</b>					
<b>1.1.1</b>	<b>132kV Transformer Bays (E13, E14)</b>					
1.1.1.1	Set of 3-pole circuit breaker	set	2			
1.1.1.2	Sets of 3-pole disconnector with earthing switch	set	4			
1.1.1.3	Set of 3-pole pantograph disconnector	set	2			
1.1.1.4	1-pole current transformer	units	6			
1.1.1.5	1-pole voltage transformer	units	6			
1.1.1.6	Gantries for busbar and feeders	lot	1			
1.1.1.7	Busbar and feeder conductors	lot	1			
1.1.1.8	Insulators and fittings	lot	1			
1.1.1.9	All other necessary equipment and materials to complete the supply and the installation	lot	1			
<b>1.1.2</b>	<b>Transformer AIS equipment and auxiliary system for fast reconnection of the spare transformer unit</b>					
1.1.2.1	Surge arresters for the 220 kV transformer side	units	7			
1.1.2.2	Surge arresters for the 132 kV transformer side	units	7			
1.1.2.3	Surge arresters for the tertiary (33 kV) side	units	7			
1.1.2.4	Gantries for 220 kV and 132 kV auxiliary busbar	lot	1			
1.1.2.5	OHL conductors for 220 kV and 132 kV auxiliary busbar for fast reconnection of the spare transformer unit	lot	1			
1.1.2.6	220 kV insulators and fittings	lot	1			
1.1.2.7	132 kV insulators and fittings	lot				
1.1.2.8	Interconnection of the auto-transformers tertiary with the new 33 kV switchgear by means of busbar and cable including facility for fast reconnection of spare transformer	lot	1			
1.1.2.9	All other necessary work to complete the supply and the installation	lot	1			
<b>1.1.3</b>	<b>Additional extension and relocation works</b>					
1.1.3.1	Relocation of existing lighting poles affected by the extension of the 132 kV switchyard	lot	1			
1.1.3.2	Relocation of two (2) existing lightning protection masts affected by the extension of the 132 kV switchyard	lot	1			
1.1.3.3	Relocation, within the substation's property, of an out-of-service transformer currently located in front of bay E14	lot	1			
<b>1.2</b>	<b>220/132/11kV Autotransformer</b>					
1.2.1	Single-phase autotransformers 220/132/33 kV 100 MVA/phase, equipped with on-load tap changer	unit	7			
1.2.2	Automatic voltage regulator, including the relevant software and integration in the SCMS	set	2			
1.2.3	Online transformer condition monitoring system, including the relevant software and integration in the SCMS	set	7			
1.2.4	All other necessary equipment and materials to complete the supply and the installation	lot	1			
<b>1.3</b>	<b>220 kV Gas Insulated Switchgear</b>					
1.3.1	Transformer bay (D03, D07) with GIB and SF6/air bushings	set	2			
1.3.2	Local control panel with bay cabling for feeder D03, D07	set	2			
1.3.3	OHL Bay (D04, D06) with GIB and SF6/air bushings	set	2			
1.3.4	Local control panel with bay cabling for feeder D04, D06	set	2			
1.3.5	Measuring Bay (D05)	set	1			
1.3.6	Bus Coupler Bay D05	set	1			
1.3.7	Local control panel with bay cabling for feeder D05 and (D05), including cable connections to bus bar measuring and bus bar earthing	set	1			
1.3.8	Online switchgear monitoring system for all 6 bays, including the relevant software and integration in the SCMS	lot	1			
1.3.9	PD UHF measuring system for periodical measurement on site	lot	1			
1.3.10	GIS steel supports for all bays and for GIB's, including wall bushings (material from GIS manufacturer for closing the wall openings)	lot	1			
1.3.11	Wall boards as specified (typical bay sections, single line diagram and gas compartment plan, gas density rules, gas temperature pressure curves etc.)	lot	1			
1.3.12	Key box including specified labelled keys and pad locks for 220kV GIS	lot	1			
1.3.13	All other necessary equipment and materials to complete the supply and the installation	lot	1			
<b>1.4</b>	<b>220 kV AIS Equipment</b>					
1.4.1	220kV OHL surge arresters	unit	6			
1.4.2	220kV capacitive voltage transformers	unit	6			
1.4.3	220 kV OHL gantry	lot	1			
1.4.4	220 kV insulators and fittings	lot	1			
1.4.5	All other necessary equipment and materials to complete the supply and the installation	lot	1			
<b>1.5</b>	<b>33 kV Switchgear</b>					
1.5.1	Outgoing feeder to auxiliary transformer (K02, K04)	set	2			
1.5.2	Riser measurement panel (K01, K03)	set	2			
1.5.3	All other necessary equipment, accessories and materials to complete the supply and the installation	lot	1			
<b>1.6</b>	<b>Zig Zag Earthing Auxiliary Transformers</b>					
1.6.1	Three-phase zig zag auxiliary transformers 33/0.4 kV, hermetically sealed type with off load tap changer, each of minimum 630 kVA	unit	2			
1.6.2	Tank mounted surge arresters for the primary (33 kV) side	unit	6			
1.6.3	All other necessary equipment and materials to complete the supply and the installation	lot	1			
<b>1.7</b>	<b>LV Auxiliary Power Supply System</b>					
1.7.1	0.4 kV main switchgear, metal-clad type	set	1			
1.7.2	220 V DC switchgear with two bus sections	set	1			
1.7.3	220 V battery chargers	set	2			

Substation Package B						
Kreditanstalt für Wiederaufbau (KfW)						
Nepal Electricity Authority (NEA)						
Schedule No. IV: Installation and Other Services						
Item	Description	Unit	Quantity	Unit Price Inland Transportation	Unit Price Installation and other Services	Total Price
				(NPR)	(NPR)	(NPR)
			1	2	3	4=1x(2+3)
1.7.4	220 V DC batteries of Ni-Cd type, each with a minimum capacity of 600 Ah (10h discharge rate)	set	2			
1.7.5	48 V DC switchgear with two bus sections	set	1			
1.7.6	48 V battery chargers	set	2			
1.7.7	48 V DC batteries of Ni-Cd type, each with a minimum capacity of 150 Ah	set	2			
1.7.8	230 V AC UPS System	set	2			
1.7.9	All other necessary equipment and materials to complete the supply and the installation	lot	1			
<b>1.8</b>	<b>Diesel generator unit (DGU)</b>					
1.8.1	Diesel generator unit, minimum of 50 kVA, in a prefabricated container equipped with fire-detection system and exhaust gas evacuation system including fuel tank	set	1			
1.8.2	All other necessary equipment and materials to complete the supply and the installation	lot	1			
<b>1.9</b>	<b>Protection</b>					
1.9.1	220 kV OHL Protection Terminals <i>incl. POW control</i> and BCU (D04, D06)	set	2			
1.9.2	220kV Bus coupler (D05) and Busbar Protections and BCU	set	1			
1.9.3	300MVA 220 kV side autotransformer protection <i>incl. POW control</i> and BCU (D03, D07)	set	2			
1.9.4	300MVA 132kV side autotransformer protection and BCU (E13, E14)	set	2			
1.9.5	20MVA 33kV side autotransformer bay control and protection BCPU (K01, K03) (installed in MV Switchgear)	set	2			
1.9.6	Auxiliary Earthing Transformer bay control and protection BCPU (K02, K04) (installed in MV Switchgear)	set	2			
1.9.7	marshalling panel for the transformer control circuits for fast reconnection of spare transformer	set	2			
1.9.8	All other necessary equipment and materials to complete the supply and the installation	lot	1			
<b>1.10</b>	<b>Synchrophasor Measurement Unit (PMU)</b> for monitoring voltage and current as defined in the Scope, including software, documentation, cubicles, accessories	lot	1			
<b>1.11</b>	<b>SCADA and SCMS</b>					
1.11.1	SCADA and SCMS system for new 220 kV Substation including all necessary cabling, cubicles, equipment and materials to complete the supply and the installation	set	1			
1.11.2	Equipment and material for interfacing with NLDC/ECC including all necessary cabling, cubicles, equipment and materials to complete the supply and the installation	set	1			
1.11.3	Equipment and material for interfacing with Existing Lekhnath 132 kV Substation including all necessary cabling, cubicles, equipment and materials to complete the supply and the installation	set	1			
<b>1.12</b>	<b>Telecommunication</b>					
1.12.1	SDH Equipment SDH node for FOC connections to the new 220/132/33/11kV GIS Damauli Substation and to the existing 132/33/11kV Lekhnath Substation	lot	1			
1.12.2	Fibre optical cables and patch cords	lot	1			
1.12.3	Optical Distribution Frame and accessories	lot	1			
1.12.4	IP-PBX telephony system, including appropriate telephone sets	lot	1			
1.12.5	All other necessary cubicles, software, equipment and materials to complete the supply and the installation	lot	1			
<b>1.13</b>	<b>Metering</b>					
1.13.1	Meter for 220kV OHL Main & Control	set	2			
1.13.2	Meter for 220/132/33 kV autotransformers (220 kV side and 132 kV side) Main & Control	set	4			
1.13.3	Meter for auxiliary transformers Main & Control	set	2			

Substation Package B						
Kreditanstalt für Wiederaufbau (KfW)						
Nepal Electricity Authority (NEA)						
Schedule No. IV: Installation and Other Services						
Item	Description	Unit	Quantity	Unit Price Inland Transportation	Unit Price Installation and other Services	Total Price
			1	(NPR) 2	(NPR) 3	(NPR) 4=1x(2+3)
1.13.4	Communication equipment (Ethernet Switches / Patch Panels / FOs / Cables etc..)	lot	1			
1.13.5	GPRS-GSM communication device	set	1			
1.13.6	Cabinet	lot	1			
1.13.7	Notebook PC including related software for local access for meter reading	set	1			
1.13.8	All other necessary, software, equipment and materials to complete the supply and the installation	lot	1			
<b>1.14</b>	<b>Power and Control Cables</b>					
1.14.1	33 kV Cables, sealing ends, terminals and accessories for 33kV auxiliary system including accessories	lot	1			
1.14.2	LV Power and Control cables and accessories for auxiliary supply, protection, control, metering including accessories	lot	1			
1.14.3	All other necessary equipment and materials to complete the supply and the installation	lot	1			
<b>1.15</b>	<b>Earthing and lightning protection systems</b>	lot	1			
<b>1.16</b>	<b>Lighting and small power system</b>	lot	1			
<b>1.17</b>	<b>Fire Protection system</b>					
1.17.1	Fire detection system	lot	1			
1.17.2	Portable fire extinguishers	lot	1			
<b>1.17.3</b>	<b>Fire fighting system</b>					
1.17.3.1	Containerised fire fighting pump system	lot	1			
1.17.3.2	Fire fighting water tank	lot	1			
1.17.3.3	Fire fighting water supply pump with well	lot	1			
1.17.3.4	Transformer deluge systems for autotransformers	set	7			
1.17.3.5	Fire hydrant network and interconnection piping	lot	1			
1.17.3.6	All accessories necessary for the satisfactory operation of the system but which are not separately listed	lot	1			
<b>1.18</b>	<b>CCTV system</b>					
1.18.1	Central unit	set	1			
1.18.2	Control panel	set	1			
1.18.3	Monitor	set	2			
1.18.4	Indoor Camera	lot	1			
1.18.5	Outdoor Camera	lot	1			
1.18.6	All other necessary equipment and materials to complete the extension	lot	1			
<b>1.19</b>	<b>Civil Works</b>					
<b>1.19.1</b>	<b>Site Development Works</b>	lot	1			
1.19.1.1	General Site Development works	lot	1			
1.19.1.2	Removal and disposal of existing building	lot	1			
<b>1.19.2</b>	<b>Site installation and temporary works</b>	lot	1			
<b>1.19.3</b>	<b>Temporary Site Facilities</b>					
1.19.3.1	Temporary site facilities and accommodations, including office containers, sanitary containers, rest rooms, etc., for Contractor's own staff	lot	1			
1.19.3.2	Office container for Employer / Engineer	lot	1			
<b>1.19.4</b>	<b>Buildings</b>					
1.19.4.1	220 kV GIS Building	lot	1			
1.19.4.2	Overhead travelling crane in 220kV GIS room	unit	1			
1.19.4.3	Ventilation system for 220kV GIS room	lot	1			
1.19.4.4	Control Building	lot	1			
1.19.4.5	Airconditioning and ventilation for Control Building	lot	1			
1.19.4.6	Storage shelter	lot	1			
1.19.4.7	Furniture as defined in VII-6 Technical Requirements Civil Works	lot	1			
<b>1.19.5</b>	<b>Transformer Foundations</b>					
1.19.5.1	220/132/33 kV 100 MVA single phase auto-transformer foundations with oil catch and pits and fire separation walls for seven (7) transformers	lot	1			
1.19.5.2	Auxiliary transformer foundations with sunshade and oil catch pits for two (2) transformers	lot	1			
1.19.5.3	Common oil collection pit with oil separator	lot	1			
<b>1.19.6</b>	<b>Outdoor foundations - HV equipment</b>					
1.19.6.1	220 kV gantry foundations	lot	1			
1.19.6.2	220 kV AIS equipment foundations for voltage transformers and surge arrestors	lot	1			
1.19.6.3	220 kV GIB and SF6/air termination foundations	lot	1			
1.19.6.4	132 kV gantry foundations	lot	1			
1.19.6.5	132 kV AIS AIS equipment foundations for switchgear extension	lot	1			
1.19.6.6	132 kV GIB and SF6/air termination foundations	lot	1			
<b>1.19.7</b>	<b>Outdoor foundations - other equipment</b>					
1.19.7.1	Foundation for the diesel generator and fuel storage	lot	1			
1.19.7.2	Foundation for the containerised fire fighting pump system	lot	1			

Substation Package B						
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Nepal Electricity Authority (NEA)						
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				(NPR)	(NPR)	(NPR)
			1	2	3	4=1x(2+3)
1.19.7.3	Foundation for the fire water tank	lot	1			
<b>1.19.8</b>	<b>Channels, ducts etc. for:</b>					
1.19.8.1	33 kV power cables from 220/132/33 kV autotransformers to 33 kV switchgear	lot	1			
1.19.8.2	33 kV power cables from 33 kV switchgear to auxiliary transformers	lot	1			
1.19.8.3	LV power and control cables from 220 kV GIS building to autotransformer and outdoor equipment	lot	1			
1.19.8.4	LV power and control cables from 220 kV GIS building to existing 132 kV switchyard and control building	lot	1			
<b>1.19.9</b>	<b>Roads, paving and gravel bed surfacing</b>					
<b>1.19.10</b>	<b>Site Preparation, leveling and compacting</b>					
<b>1.19.11</b>	<b>Water supply system</b>					
1.19.11.1	Water treatment plant	lot	1			
1.19.11.2	Internal water supply system	lot	1			
<b>1.19.12</b>	<b>Drainage and sewage systems</b>					
1.19.12.1	Storm water drainage system	lot	1			
1.19.12.2	Sanitary sewage drainage system	lot	1			
<b>1.19.13</b>	<b>Landscaping</b>	lot	1			
<b>1.19.14</b>	<b>Fencing and gates</b>	lot	1			
<b>1.20</b>	<b>Communication and Visibility</b>	lot	1			
<b>2</b>	<b>Construction of 220/132/33/11 kV substation in Damauli</b>					
<b>2.1</b>	<b>220 kV Gas Insulated Switchgear</b>					
2.1.1	OHL Bays with GIB and SF6/air bushings (D06, D07, D08, D13, D14, D15)	set	6			
2.1.2	Local control panel with bay cabling for feeder (D06, D07, D08, D13, D14, D15)	set	6			
2.1.3	220/132kV Transformer Bay with GIB and SF6/air bushings (D09 and D12)	set	2			
2.1.4	Local control panel with bay cabling for feeder (D09 and D12)	set	2			
2.1.5	Bus Coupler Bays (D05, D16)	set	2			
2.1.6	Local control panel with bay cabling for feeder (D05, D16)	set	2			
2.1.7	Measuring Bays ((D10) and (D11))	set	2			
2.1.8	Busbar Sectionalizers (D10, D11)	set	2			
2.1.9	Local control panel with bay cabling for feeder D10 and D11, including cable connections to bus bar measuring and bus bar earthing	set	2			
2.1.10	Online switchgear monitoring system for all 6 bays, including the relevant software and integration in the SCMS.	lot	1			
2.1.11	PD UHF measuring system for periodical measurement on site	lot	1			
2.1.12	GIS steel supports for all bays and for GIB's, including wall bushings (material from GIS manufacturer for closing the wall openings)	lot	1			
2.1.13	Wall boards as specified (typical bay sections, single line diagram and gas compartment plan, gas density rules, gas temperature pressure curves etc.)	lot	1			
2.1.14	Key box including specified labelled keys and pad locks for 220kV GIS	lot	1			
2.1.15	All other necessary equipment and materials to complete the supply and the installation	lot	1			
<b>2.2</b>	<b>220 kV AIS Equipment</b>					
2.2.1	220kV OHL surge arresters	unit	18			
2.2.2	220kV capacitive voltage transformers	unit	18			
2.2.3	220 kV OHL gantry	lot	1			
2.2.4	220 kV insulators and fittings	lot	1			
2.2.5	All other necessary equipment and materials to complete the supply and the installation	lot	1			
<b>2.3</b>	<b>132 kV Gas Insulated Switchgear</b>					
2.3.1	220/132kV Transformer Bays with GIB and SF6/air bushings (E02, E06)	set	2			
2.3.2	Local control panel with bay cabling for feeder E02, E06	set	2			
2.3.3	OHL Bays with GIB and SF6/air bushings (E03, E07)	set	2			
2.3.4	Local control panel with bay cabling for feeder E03, E07	set	2			
2.3.5	132/33kV Transformer Bay with cable connections (E01, E05)	set	2			
2.3.6	Local control panel with bay cabling for feeder E01, E05	set	2			
2.3.7	Measuring Bay (E04)	set	1			
2.3.8	Bus Coupler E04	set	1			
2.3.9	Local control panel with bay cabling for feeder E04 and (E04), including cable connections to bus bar measuring and bus bar earthing	set	1			
2.3.10	Online switchgear monitoring system for all bays, including the relevant software and integration in the SCMS.	lot	1			

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Kreditanstalt für Wiederaufbau (KfW)						
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				(NPR)	(NPR)	(NPR)
			1	2	3	4=1x(2+3)
2.3.11	PD UHF measuring system for periodical measurement on site	lot	1			
2.3.12	GIS steel supports for all bays and for GIB's, including wall bushings (material from GIS manufacturer for closing the wall openings)	lot	1			
2.3.13	Wall boards as specified (typical bay sections, single line diagram and gas compartment plan, gas density rules, gas temperature pressure curves etc.)	lot	1			
2.3.14	Key box including specified labelled keys and pad locks for 132kV GIS	lot	1			
2.3.15	All other necessary equipment and materials to complete the supply and the installation	lot	1			
<b>2.4</b>	<b>132 kV AIS Equipment</b>					
2.4.1	132 kV OHL surge arresters	unit	6			
2.4.2	132 kV capacitive voltage transformers	unit	6			
2.4.3	132 kV OHL gantry	lot	1			
2.4.4	132 kV insulators and fittings	lot	1			
2.4.5	All other necessary equipment and materials to complete the supply and the installation	lot	1			
<b>2.5</b>	<b>Power Transformers</b>					
<b>2.5.1</b>	<b>220/132 Power Transformer</b>					
2.5.1.1	Three-phase power transformer 220/132 kV 50/63 MVA, equipped with on-load tap changer	unit	2			
2.5.1.2	Line surge arresters for the primary (220 kV) side	unit	6			
2.5.1.3	Line surge arresters for the secondary (132 kV) side	unit	6			
2.5.1.4	Automatic voltage regulator, including the relevant software and integration in the SCMS	set	2			
2.5.1.5	All other necessary equipment and materials to complete the supply and the installation	lot	1			
<b>2.5.2</b>	<b>132/33 kV Power Transformer</b>					
2.5.2.1	Three-phase power transformer 132/33kV 24/30 MVA, equipped with on-load tap changer	unit	2			
2.5.2.2	Line surge arresters for the secondary (132 kV) side	unit	6			
2.5.2.3	Line surge arresters for the secondary (33 kV) side	unit	6			
2.5.2.4	Automatic voltage regulator, including the relevant software and integration in the SCMS	set	2			
2.5.2.5	All other necessary equipment and materials to complete the supply and the installation	lot	1			
<b>2.5.3</b>	<b>33/11 kV Power Transformer</b>					
2.5.3.1	Three-phase power transformer 33/11kV 6/8 MVA, equipped with on-load tap changer	unit	2			
2.5.3.2	Line surge arresters for the secondary (33 kV) side	unit	6			
2.5.3.3	Line surge arresters for the secondary (11 kV) side	unit	6			
2.5.3.4	Automatic voltage regulator, including the relevant software and integration in the SCMS	set	2			
2.5.3.5	All other necessary equipment and materials to complete the supply and the installation	lot	1			
<b>2.6</b>	<b>MV Metal Clad AIS Switchgear</b>					
<b>2.6.1</b>	<b>33 kV Switchgear</b>					
2.6.1.1	Incomers for 132/33kV transformer connection (J02, J11)	unit	2			
2.6.1.2	Outgoing feeders (J04, J10)	unit	2			
2.6.1.3	Outgoing feeder 33/11 kV transformer (J03, J12)	unit	2			
2.6.1.4	Outgoing feeders to auxiliary transformer (J05, J09)	unit	1			
2.6.1.5	Bus tie (J07)	unit	1			
2.6.1.6	Riser measurement panel (J08)	unit	1			
2.6.1.7	Measurement panel (J06)	unit	1			
2.6.1.8	All other necessary equipment, accessories and materials to complete the supply and the installation	lot	1			
<b>2.6.2</b>	<b>11 kV Switchgear</b>					
2.6.2.1	Incomers for 33/11kV transformer connection (K03, K08)	unit	2			
2.6.2.2	Outgoing feeders (K04, K05, K09, K11, K12)	unit	5			
2.6.2.3	Bus tie (K07)	unit	1			
2.6.2.4	Riser measurement panel (K06)	unit	1			
2.6.2.5	Measurement panel (K10)	unit	1			
2.6.2.6	All other necessary equipment, accessories and materials to complete the supply and the installation	lot	1			
<b>2.7</b>	<b>Auxiliary Transformers</b>					
2.7.1	Three-phase auxiliary transformers 33/0.4 kV, hermetically sealed type with off load tap changer, each of minimum 630 kVA	unit	2			
2.7.2	Tank mounted surge arresters for the primary (33 kV) side.	unit	6			
2.7.3	All other necessary equipment and materials to complete the supply and the installation	lot	1			
<b>2.8</b>	<b>LV Auxiliary Power Supply System</b>					
2.8.1	0.4 kV main switchgear, metal-clad type	set	1			

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2.8.2	220 V DC switchgear with two bus sections	set	1			
2.8.3	220 V battery chargers	set	2			
2.8.4	220 V DC batteries of Ni-Cd type, each with a minimum capacity of 600 Ah (10h discharge rate)	set	2			
2.8.5	48 V DC switchgear with two bus sections	set	1			
2.8.6	48 V battery chargers	set	2			
2.8.7	48 V DC batteries of Ni-Cd type, each with a minimum capacity of 150 Ah	set	2			
2.8.8	230 V AC UPS System	set	2			
2.8.9	All other necessary equipment and materials to complete the supply and the installation	lot	1			
<b>2.9</b>	<b>Diesel generator unit (DGU)</b>					
2.9.1	Diesel generator unit, minimum of 100 kVA, in a prefabricated container equipped with fire-detection system and exhaust gas evacuation system including fuel tank	set	1			
2.9.2	All other necessary equipment and materials to complete the supply and the installation	lot	1			
<b>2.10</b>	<b>Protection &amp; Control</b>					
2.10.1	220 kV OHL Protection Terminals <i>incl. POW control</i> and BCU (D06, D07, D08, D13, D14, D15)	set	6			
2.10.2	220kV Bus-sectionaliser and Busbar protection and BCU (D10, D11)	set	2			
2.10.3	220kV Bus-coupler and Busbar protection (D05, D16)	set	2			
2.10.4	50/63 MVA 220/132/11 kV Transformer 220 kV side protection and BCU (D09, D12)	set	2			
2.10.5	50/63 MVA 220/132/11 kV Transformer 132 kV side protection and BCU (E02, E06)	set	2			
2.10.6	132 kV OHL Protection Terminals and BCU (E03, E07)	set	2			
2.10.7	132kV Bus-coupler and Busbar protections and BCU (E04)	set	1			
2.10.8	132/33kV 24/30 MVA Transformer feeder protection 132 kV side and BCU (E01, E05)	set	2			
2.10.9	132/33kV 24/30 MVA Transformer feeder bay control and protection (BCPU) 33 kV side (J02, J09) (installed in 33 kV switchgear)	set	2			
2.10.10	33kV Bus-coupler bay control and protection (BCPU) (J07) (installed in 33 kV switchgear)	set	1			
2.10.11	33kV Feeder bay control and protection (BCPU) (J04, J08)	set	2			
2.10.12	33/11kV 8/10MVA Transformer feeder bay control and protection (BCPU) 33 kV side (J03, J10) (installed in 33 kV switchgear)	set	2			
2.10.13	33/11kV 8/10MVA Transformer feeder protection 11 kV side (K03, K08) (installed in 11 kV switchgear)	set	2			
2.10.14	11kV Feeder bay control and protection (BCPU) (K04, K05, K11, K12, K13, K14) (installed in 11 kV switchgear)	set	5			
2.10.15	11kV Auxiliary Transformer Feeder bay control and protection (BCPU) (K06, K10) (installed in 11 kV switchgear)	set	2			
2.10.16	11kV Bus-coupler protection (K07)	set	1			
2.10.17	All other necessary equipment and materials to complete the supply and the installation	lot	1			
<b>2.11</b>	<b>Synchrophasor Measurement Unit (PMU)</b> for monitoring voltage and current as defined in the Scope, including software, documentation, cubicles, accessories	set	1			
<b>2.12</b>	<b>SCADA and SCMS</b>					
2.12.1	SCADA and SCMS system for new 220/132/33/11 kV Substation including all necessary cabling, cubicles, equipment and materials to complete the supply and the installation	lot	1			
2.12.2	Equipment and material for interfacing with NLDC/ECC including all necessary cabling, cubicles, equipment and materials to complete the supply and the installation	lot	1			
2.12.3	Equipment and material for interfacing with future New Damauli 400 kV Substation including all necessary cabling, cubicles, equipment and materials to complete the supply and the installation	lot	1			
<b>2.13</b>	<b>Telecommunication</b>					
2.13.1	SDH Equipment SDH node for FOC connections of new 220 kV GIS Lekhnath Substation, to Tanahu HPP, 220 kV Bharatpur Substation, Old Damauli and 132 kV Bharatpur.	lot	1			
2.13.2	Fibre optical cables, including approach cable from splicing box to SDH equipment and patch cords	lot	1			
2.13.3	Optical Distribution Frame and accessories	lot	1			



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2.13.4	IP-PBX telephony system, including appropriate telephone sets	lot	1			
2.13.5	All other necessary cubicles, software, equipment and materials to complete the supply and the installation	lot	1			
<b>2.14</b>	<b>Metering</b>					
2.14.1	Meter for 220kV OHL Main & Control	set	6			
2.14.2	Meter for 132 OHL Main & Control	set	2			
2.14.3	Meter for 220/132 kV Transformers, (220 kV side and 132 kV side), Main & Control	set	2			
2.14.4	Meter for 132/33 kV Transformers, 132 kV side and 33 kV side), Main & Control	set	2			
2.14.5	Meter for 33/11 kV Transformers, (33 kV side and 11 kV side), Main & Control	set	2			
2.14.6	Meter for 33 kV Feeders Main & Control	set	2			
2.14.7	Meter for 11 kV Feeders Main & Control	set	7			
2.14.8	Meter for auxiliary transformers Main & Control	set	2			
2.14.9	Communication equipment (Ethernet Switches / Patch Panels / FOs / Cables etc.)	lot	1			
2.14.10	GPRS-GSM communication device	lot	1			
2.14.11	Cabinet	lot	1			
2.14.12	Notebook PC including related software for local access for meter reading	set	1			
2.14.13	All other necessary, software, equipment and materials to complete the supply and the installation	lot	1			
<b>2.15</b>	<b>Power and Control Cables</b>					
2.15.1	HV cable systems comprising 132 kV XLPE cables for the connection between the secondary windings of 220/132 kV transformers and the 132 kV switchgear	lot	1			
2.15.2	MV cable systems comprising 33 kV XLPE cables for the connection between secondary windings of 132/33 kV transformers and 33 kV switchgear	lot	1			
2.15.3	MV cable systems comprising 33 kV XLPE cables for the connection between 33 kV switchgear and 33/11 kV transformers	lot	1			
2.15.4	MV cable systems comprising 33 kV XLPE cables for the connection between 33kV switchgear and auxiliary transformers	lot	1			
2.15.5	MV cable systems comprising 11 kV XLPE cablesfor the connection between secondary windings of 33/11 kV transformers and 11 kV switchgear	lot	1			
2.15.6	MV cable systems comprising 11 kV XLPE cables for the connection of three 11 kV feeders between between 11 kV switchgear and distribution OHL pole location on the north side of the substation towards the river	lot	1			
2.15.7	LV Power and Control cables and accessories for auxiliary supply, protection, control, metering including accessories	lot	1			
2.15.8	All other necessary equipment and materials to complete the supply and the installation	lot	1			
<b>2.16</b>	<b>Earthing and lightning protection systems</b>	lot	1			
<b>2.17</b>	<b>Lighting and small power system</b>	lot	1			
<b>2.18</b>	<b>Fire Protection system</b>					
2.18.1	Fire detection system	lot	1			
2.18.2	Portable fire extinguishers	lot	1			
<b>2.18.3</b>	<b>Fire fighting system</b>					
2.18.3.1	Containerised fire fighting pump system	lot	1			
2.18.3.2	Fire fighting water tank	lot	1			
2.18.3.3	Fire fighting water supply pump with well	lot	1			
2.18.3.4	Transformer deluge systems for autotransformers	set	6			
2.18.3.5	Fire hydrant network and interconnection piping	lot	1			
2.18.3.6	All accessories necessary for the satisfactory operation of the system but which are not separately listed	lot	1			
<b>2.19</b>	<b>CCTV system</b>					
2.19.1	Central unit	set	1			
2.19.2	Control panel	set	1			
2.19.3	Monitor	set	2			
2.19.4	Indoor Camera	lot	1			
2.19.5	Outdoor Camera	lot	1			
2.19.6	All other necessary equipment and materials to complete the extension	lot	1			

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				(NPR)	(NPR)	(NPR)
			1	2	3	4=1x(2+3)
<b>2.20</b>	<b>Civil Works</b>					
<b>2.20.1</b>	<b>Site Development Works</b>	lot	1			
<b>2.20.1.1</b>	<b>Phase 1</b>					
2.20.1.1.1	General Site Development works	lot	1			
2.20.1.1.2	Temporary bridge from existing access road over Chabdi river for temporary access during site development works and enhancement of existing access road	lot	1			
2.20.1.1.3	Removal and disposal of existing building	lot	1			
2.20.1.1.4	External drainage collector 1 (hill side south of substation)	lot	1			
2.20.1.1.5	External drainage collector 2 (400 kV side east of substation)	lot	1			
2.20.1.1.6	Development of the 220kV substation platform (excavation, filling and compaction, flood protection works). The temporary access road and temporary bridge may be used for these works.	lot	1			
2.20.1.1.7	Permanent access road, including related rainwater protection works	lot	1			
2.20.1.1.8	Inner fencing surrounding the substation area with main access gate and maintenance access gates to area between the 220kV substation platform and the riverbed	lot	1			
2.20.1.1.9	Access road (3 m wide) from maintenance access gates to area between the 220kV substation platform and the riverbed	lot	1			
<b>2.20.1.2</b>	<b>Phase 2</b>					
2.20.1.2.1	Removal and disposal of temporary access bridge	lot	1			
2.20.1.2.2	Levelling of the area between the 220kV substation platform and the riverbed (no filling required for the area between the 220kV substation platform and the riverbed) and development of a drainage system to drain water from this area	lot	1			
2.20.1.2.3	Development flood retaining wall and external chain link fence	lot	1			
2.20.1.2.4	Flood retaining wall north-west, adjacent to the riverbed	lot	4			
2.20.1.2.5	Low wall along external drainage collector on south side	lot	1			
2.20.1.2.6	Low wall along east side of substation platform (towards future 400 kV substation)	lot	1			
<b>2.20.2</b>	<b>Site installation and temporary works</b>	lot	1			
<b>2.20.3</b>	<b>Temporary Site Facilities</b>					
2.20.3.1	Temporary site facilities and accommodations, including office containers, sanitary containers, rest rooms, etc., for Contractor's own staff	lot	1			
2.20.3.2	Office container for Employer / Engineer	lot	1			
<b>2.20.4</b>	<b>Buildings</b>					
2.20.4.1	220 kV GIS Building	lot	1			
2.20.4.2	Overhead travelling crane for 220kV GIS room	unit	1			
2.20.4.3	Ventilation System for 220kV GIS room	unit	1			
2.20.4.4	132 kV GIS Building	lot	1			
2.20.4.5	Overhead travelling crane for 132kV GIS room	unit	1			
2.20.4.6	Ventilation System for 132kV GIS room	unit	1			
2.20.4.7	Control Building	lot	1			
2.20.4.8	Airconditioning and Ventilation for Control Building	lot	1			
2.20.4.9	Separate store building	lot	1			
2.20.4.10	Guard house	lot	1			
2.20.4.11	Airconditioning for Guard House	lot	1			
2.20.4.12	Furniture as defined in VII-6 Technical Requirements Civil Works	lot	1			
<b>2.20.5</b>	<b>Transformer Foundations</b>					
2.20.5.1	220/132 kV 50/63 MVA power transformer foundations with oil catch and pits and fire separation walls for two (2) transformers	lot	1			
2.20.5.2	132/33 kV 24/30 MVA power transformer foundations with oil catch and pits and fire separation walls for two (2) transformers	lot	1			
2.20.5.3	33/11 kV 8/10 MVA power transformer foundations with oil catch and pits and fire separation walls for two (2) transformers	lot	1			
2.20.5.4	Auxiliary transformer foundations with sunshade and oil catch pits for two (2) transformers	lot	1			
2.20.5.5	Common oil collection pit with oil separator	lot	1			
<b>2.20.6</b>	<b>Outdoor foundations - HV equipment</b>					
2.20.6.1	220 kV gantry foundations	lot	1			
2.20.6.2	220 kV AIS equipment foundations for voltage transformers and surge arrestors	lot	1			
2.20.6.3	220 kV GIB and SF6/air termination foundations	lot	1			
2.20.6.4	132 kV gantry foundations	lot	1			
2.20.6.5	132 kV AIS equipment foundations for voltage transformers and surge arrestors	lot	1			
2.20.6.6	132 kV GIB and SF6/air termination foundations	lot	1			
<b>2.20.7</b>	<b>Outdoor foundations - other equipment</b>					
2.20.7.1	Foundation for the diesel generator and fuel storage	lot	1			
2.20.7.2	Foundation for the containerised fire fighting pump system	lot	1			
2.20.7.3	Foundation for the fire water tank	lot	1			

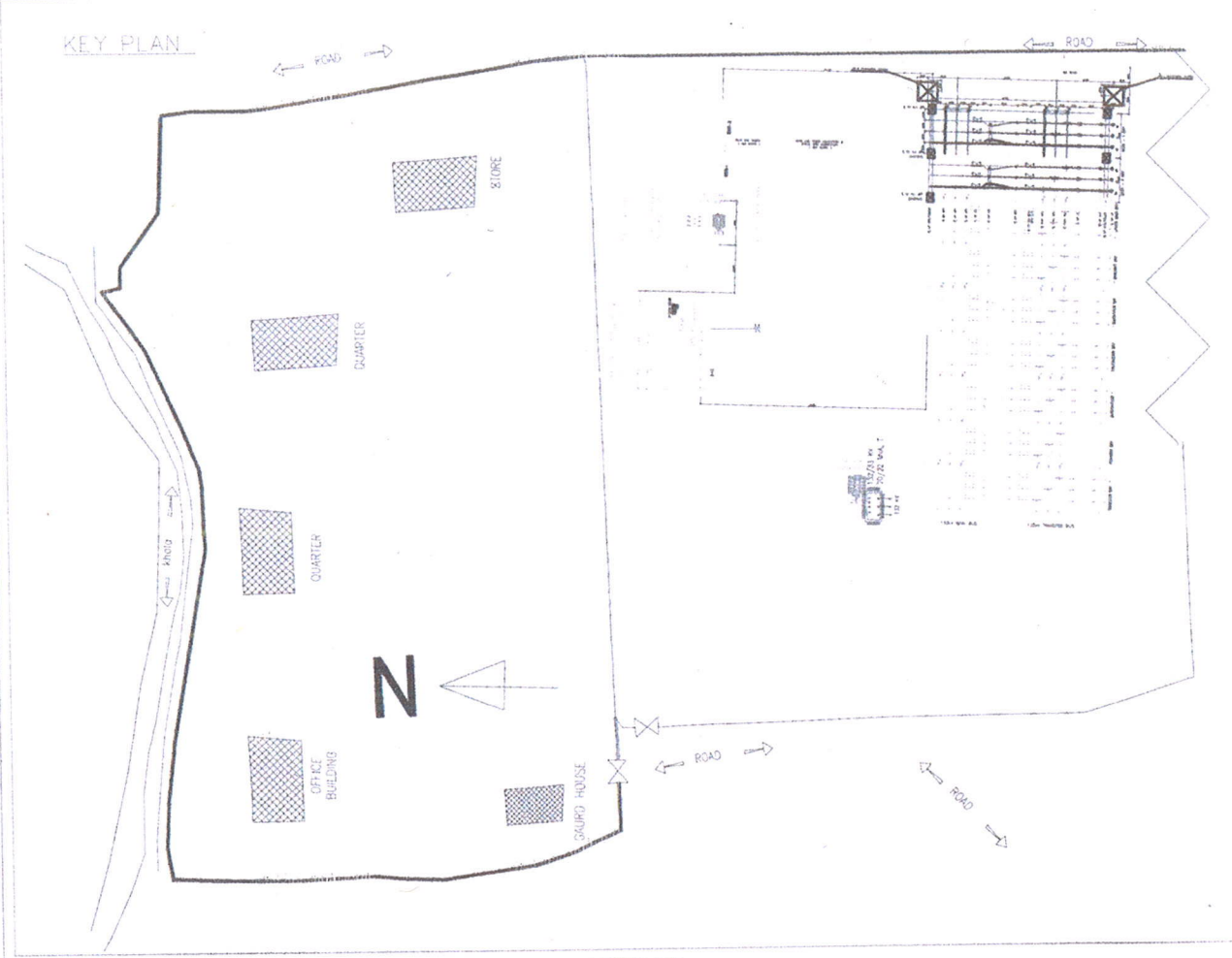
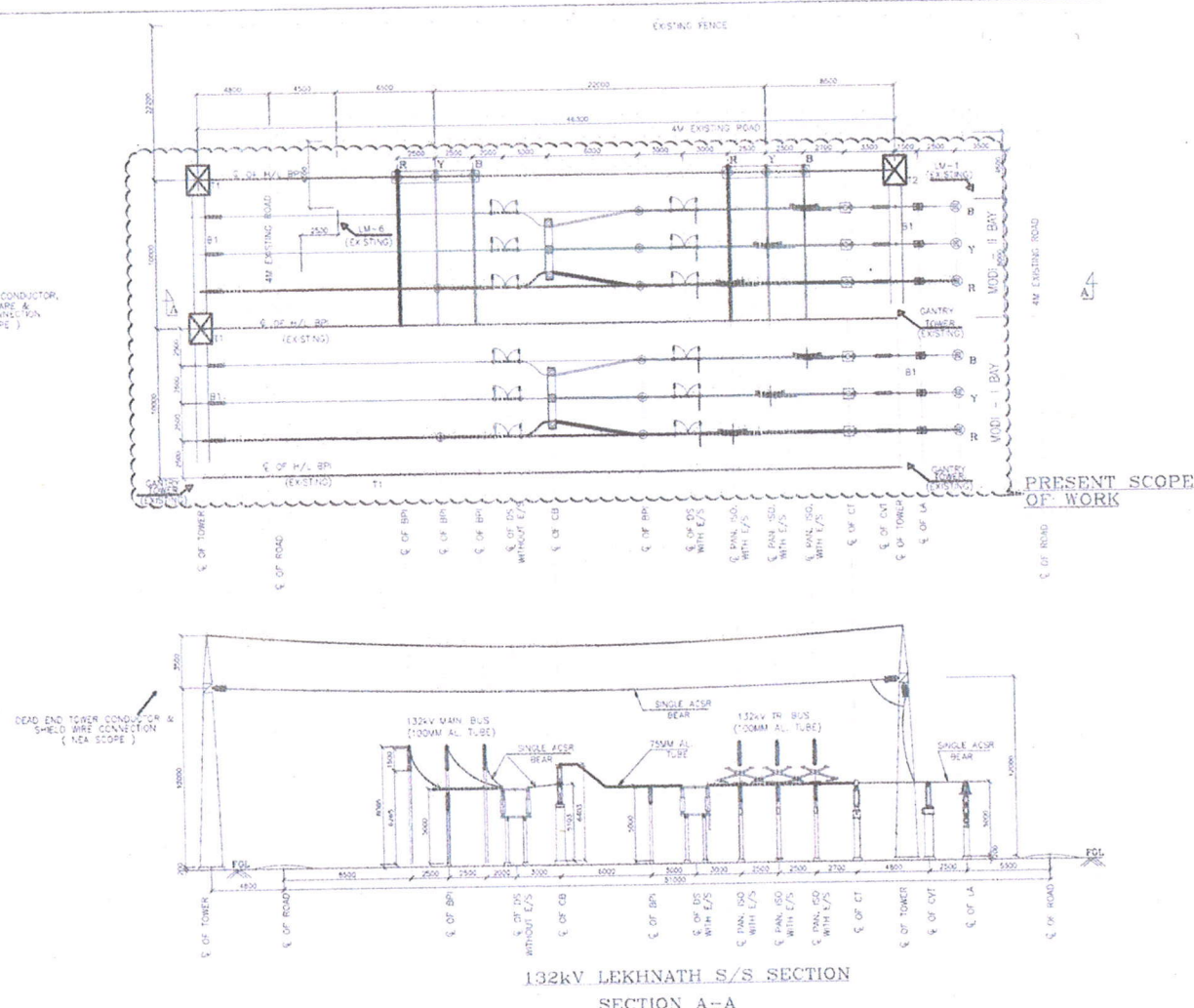
Substation Package B						
Kreditanstalt für Wiederaufbau (KfW)						
Nepal Electricity Authority (NEA)						
Schedule No. IV: Installation and Other Services						
Item	Description	Unit	Quantity	Unit Price Inland Transportation	Unit Price Installation and other Services	Total Price
				(NPR)	(NPR)	(NPR)
			1	2	3	4=1x(2+3)
<b>2.20.8</b>	<b>Channels, ducts etc. for:</b>					
2.20.8.1	220 kV cables from the 220 kV GIS up to the fence towards the future 400 kV Substation	lot	1			
2.20.8.2	220 kV cables from the 220 kV GIS up to the fence towards the future 220 kV gantries	lot	1			
2.20.8.3	132 kV cables from the 220/132 kV transformers to the 132 kV switchgear	lot	1			
2.20.8.4	33 kV cables from 132/33 kV transformers to 33 kV switchgear and from 33 kV switchgear to 33/11 kV transformers	lot	1			
2.20.8.5	33 kV cables from and 33 kV switchgear to auxiliary 33/0.4 kV transformer	lot	1			
2.20.8.6	11 kV power cables from 132/11 kV transformers to 11 kV switchgear	lot	1			
2.20.8.7	11 kV power cables from 11 kV switchgear to auxiliary transformers	lot	1			
2.20.8.8	11 kV outgoing feeder cables between between 11 kV switchgear and distribution OHL pole location on the north side of the substation towards the river	lot	1			
2.20.8.9	33 kV outgoing feeder cables between between 33 kV switchgear and distribution OHL pole location on the north side of the substation towards the river	lot	1			
2.20.8.10	LV power and control cables from 220 kV GIS building to autotransformer and outdoor equipment	lot	1			
2.20.8.11	LV power and control cables from 132 kV GIS building to power transformer and outdoor equipment	lot	1			
2.20.8.12	LV power and control cables from 220 kV GIS building to 132 kV building	lot	1			
<b>2.20.9</b>	<b>Roads, paving and gravel bed surfacing</b>					
2.20.9.1	Concrete roads and surfacing inside subststion as indicated in the Substation Layout drawing	lot	1			
2.20.9.2	Car Park with roof shade as indicated in the Substtation Layout drawing	lot	1			
2.20.9.3	Crushed rock surfacing inside subststion as indicated in the Substation Layout drawing	lot	1			
<b>2.20.10</b>	<b>Water supply system</b>					
2.20.10.1	Water treatment plant	lot	1			
2.20.10.2	Internal water supply system	lot	1			
<b>2.20.11</b>	<b>Drainage and sewage systems</b>					
2.20.11.1	The storm water drainage system inside substation area	lot	1			
2.20.11.2	Sanitary sewage drainage system inside substation area	lot	1			
<b>2.20.12</b>	<b>Landscaping</b>	lot	1			
2.20.12.1	Plantations using low to medium-high growing plants and grass along the main roads and buildings, as indicated on the layout drawings	lot	1			
<b>2.21</b>	<b>Communication and Visibility</b>	lot	1			
<b>3</b>	<b>TRAINING OF EMPLOYER'S STAFF (On Site / In Nepal)</b>					
3.1	High voltage switchgear	lot	1			
3.2	Medium voltage switchgear	lot	1			
3.3	Auto and power transformers	lot	1			
3.4	LV auxiliary systems	lot	1			
3.5	Protection and control systems	lot	1			
3.6	SCMS	lot	1			
3.7	SCADA	lot	1			
3.8	Telecommunication	lot	1			
3.9	CCTV System	lot	1			
3.10	Fire protection system	lot	1			
	<b>TOTAL (to Schedule No. VI Grand Summary)</b>					
		<b>Name of Bidder:</b>				
		<b>Signature of Bidder:</b>				

Substation Package B			
Kreditanstalt für Wiederaufbau (KfW)			
Nepal Electricity Authority (NEA)			
Schedule No. V: ESHS Requirements			
Item	Description	Unit	Total (NPR)
<b>1</b>	<b>ESHS Requirements</b>		
1.1	Resources allocated to ESHS management as per the ESMP requirements	Lump sum	
1.2	Required tools, equipment, facilities (toilets/cabin/tents/security), and transportation for Archaeological Clerk of Works for any archaeological excavations required	Lump sum	
1.3	Required tools, equipment, facilities (toilets/cabin/tents/security), and transportation for Biodiversity Clerk of Work to sites required (Biodiversity Clerk of Work appointed by NEA)	Lump sum	
1.4	Drafting and updating the ESHS documentation, reporting, inspections as per the ESMP requirements	Lump sum	
1.5	Implementation of the Health and Safety Plan: meetings, health care center, medical check-ups, emergencies and evacuations, safety protective equipment, hygiene as per the ESMP requirements	Lump sum	
1.6	Accommodation, drinking water, meals and transportation of staff(*) as per the ESMP requirements (*) : The Bidder shall detail the financial conditions of the supply of accommodation, meals and transport to its staff.		
1.6.1	- Accommodation	Lump sum	
1.6.2	- Meals	Lump sum	
1.6.3	- Transport	Lump sum	
1.7	Local recruitment and training management costs	Lump sum	
1.8	Biodiversity studies, surveys and related activities as per ESMP requirements	-	
1.9	Temporary access rights, land take and compensation as per the ESMP requirements	Lump sum	
1.10	Vegetation and tree removal as per ESMP requirements	Lump sum	
1.11	Protection of the biodiversity, adjacent areas, prevention of erosion at work sites and access tracks as per the ESMP requirements	Lump sum	
1.12	Traffic, noise and atmospheric emissions management as per the ESMP requirements	Lump sum	
1.13	Contamination studies, wastewater, waste and hazardous products management as per the ESMP requirements	Lump sum	
1.14	Site reinstatement as per the ESMP requirements	Lump sum	
1.15	Other material, equipment or studies not specifically mentioned but deemed necessary based on ESMP requirements	Lump sum	
1.15.1	River training structures	Lump sum	
1.15.2	Culvert for Chaabdi Khola (near substation)	Lump sum	
	<b>TOTAL (to Schedule No. VI Grand Summary)</b>		
		<b>Name of Bidder:</b>	
		<b>Signature of Bidder:</b>	

Substation Package B			
Kreditanstalt für Wiederaufbau (KfW)			
Nepal Electricity Authority (NEA)			
Schedule No. VI: Grand Summary			
Schedule	Description	Total	Total
		(USD)	(NPR)
1	Plant, and Mandatory Spare Parts supplied from abroad		
2	Plant, and Mandatory Spare Parts supplied from within the Employer's Country		
3	Design Services		
4	Installation and Other Services		
5	ESHS Requirements		
6	TOTAL (to Bid Form)		
Name of Bidder:			
Signature of Bidder:			

[illegible]





- NOTES:-
- 1- ALL DIMENSIONS ARE IN MM. AND CO-ORDINATES ARE IN MTR. UNLESS OTHERWISE SPECIFIED
  - 2- MINIMUM CLEARANCE ARE AS PER EC61936-1:2002
  - 3- THE PARAMETERS FOR WHICH THE SYSTEM IS DESIGNED ARE:
    - a) NORMAL SYSTEM VOLTAGE: 132kV
    - b) HIGHEST SYSTEM VOLTAGE (RATED VOLTAGE): 145kV
    - c) LIGHTNING IMPULSE WITHSTAND VOLTAGE (DRY & WET): ±650kVp
    - d) POWER FREQUENCY WITHSTAND VOLTAGE (DRY & WET): 275kV(rms)
    - e) NOMINAL CREEPAGE DISTANCE (25mm/kV): 3625MM
    - f) MAXIMUM FAULT LEVEL: 31.5kA/1Sec

- 4- CONNECTION TYPES
- LEVEL FROM PLINTH TOP
- 132kV SWAYD
- a) MAIN BUS: +805MM
  - b) JACK BUS: +1200MM
  - c) EQPT. TO EQPT: +500MM
  - d) DROPPERS: -
  - e) EARTH WIRE: +15500MM
- 132kV SWITCHYARD CONDUCTOR TYPE
- 132kV SWAYD
- a) 100MM (NOMINAL SIZE) AL TUBE
  - b) SINGLE AC SR BEAR
  - c) 75MM (NOMINAL SIZE) AL TUBE/SINGLE AC SR BEAR
  - d) SINGLE AC SR BEAR
  - e) 7/3.35MM GS WIRE
- 5- PLINTH HEIGHT OF FOUNDATION WILL BE +200MM FROM THE FINISHED GROUND LEVEL (F.G.L.). STONE TOP LEVEL WILL BE +150MM FROM THE F.G.L.
- 6- CONTROL ROOM "CONTROL AND RELAY PANEL LINEUP SEQUENCE"
- 1 = 132kV NEW MOD - I LINE BAY PANEL
  - 2 = 132kV NEW MOD - II LINE BAY PANEL
- LEGENDS:
- EXISTING BAY EQUIPMENTS
  - PRESENT SCOPE OF SUPPLY
- REFERENCE DRAWINGS:
- 1- SINGLE LINE DIAGRAM FOR 132kV S/S AT LEKHNATH SS, DRG. NO.3VN1806520001\_RA
  - 2- LAYOUT PLAN OF LEKHNATH SUBSTATION, VOLUME-II, DRG. NO. -6
  - 3- 132kV LEKHNATH SUBSTATION CHINA INTERNATIONAL WATER AND ELECTRIC CORP. DRAWING NUMBER - S-500024-11-10-2\_RB
  - 4- 132kV LEKHNATH SUBSTATION LAYOUT OF EQUIPMENT FOUNDATIONS - TPH/2033/5602/N/027 REV B (TATA INTERNATIONAL LTD)
  - 5- 132kV LEKHNATH SUBSTATION EQUIPMENT FOUNDATIONS - TPH/2033/5602/N/025 REV C (TATA INTERNATIONAL LTD)

No of Sheets .....  
☒ Approved  
☐ Approved except As Noted  
☐ Returned For correction  
 Date: 19 June 2019 Sign: \_\_\_\_\_

### BOQ ITEMS :

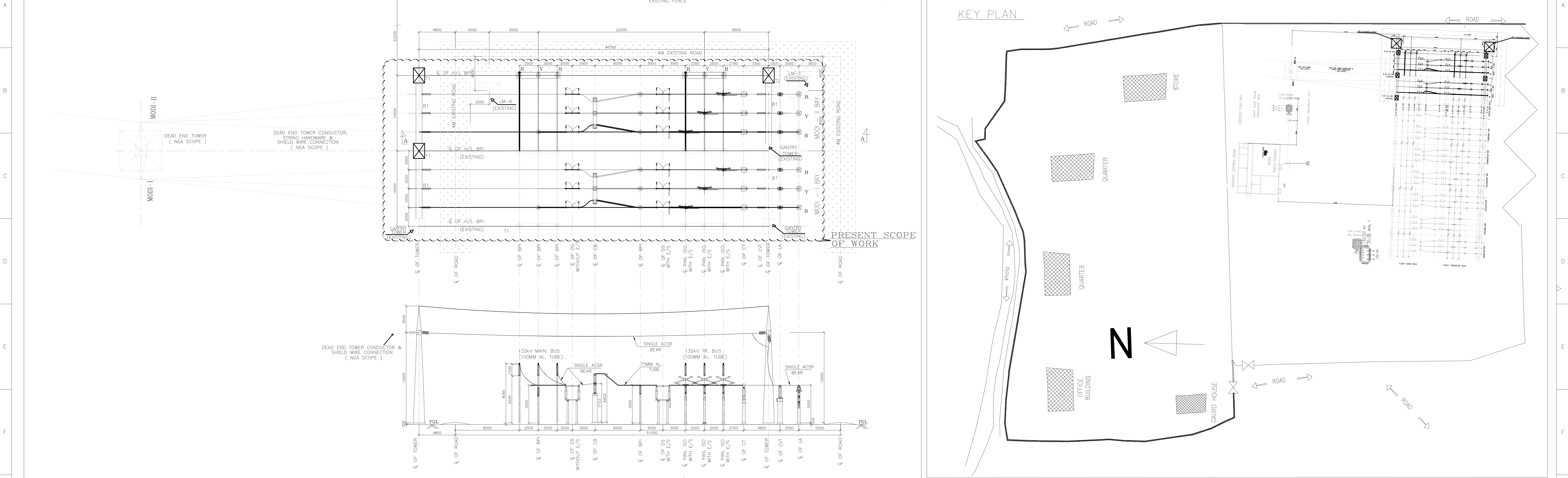
SL	TYPE	PATICULAR	BOQ ITEMS
LIST OF LATTICE STRUCTURES			
01	B1	132kV BEAM	03
02	T1	132kV TOWER WITH PEAK	03
03	1HPI	SUPPORT FOR HIGH LEVEL 132kV BPL FOR MAIN BUS	06
04	1PI	SUPPORT FOR LOW LEVEL 132kV BPL FOR EQUIPMENT BUS	08
05	1CT	SUPPORT FOR 132kV CT	06
06	1SA	SUPPORT FOR 132kV LA	06
07	1VT	SUPPORT FOR 132kV PT/CVT	06
08	3ISO	SUPPORT FOR 132kV ISO (WITH / WITHOUT EARTH SWITCH)	04
09	1PIS	SUPPORT FOR 132kV PANTO ISO (WITH EARTH SWITCH)	02
OTHER ITEMS			
10		STRING INSULATORS & HARDWARE	12 SETS
11		SUSPENSION INSULATORS & HARDWARE	06 SETS
12		STRING AC SR CONDUCTOR	300MTRS

RELEASED FOR CONSTRUCTION  
**ABB**  
 SIGN \_\_\_\_\_ DATE \_\_\_\_\_



RC	2019-06-12	UPDATED AS PER THE CUSTOMER COMMENTS DATED ON 2019-04-22	✓	✓	✓
RB	2018-12-17	REVISED AS PER THE COMMENTS RECEIVED ON 2018-07-17	✓	✓	✓
RA	2018-07-16	FIRST SUBMISSION	✓	✓	✓
REV	DATE	DESCRIPTION	E.L.E. CIV. STR. C.M. P.M. REVIEWED BY		
CUSTOMER: <b>NEPAL ELECTRICITY AUTHORITY</b> (A Government of Nepal Undertaking) Transmission Directorate Grid Development Department NOA LETTER IFB NO : ML/SS/074/75-01.					
Prepared	2018-02-28	SP	Document Kind	FOR APPROVAL	Project
Checked	2018-03-01	PK	DESIGN & ENGINEERING BY:		NEW MODI LEKHNATH 132kV TRANSMISSION LINE PROJECT
Approved	2018-03-10	PG			Title
Resp. (division/department)	IN PGO-2882				PLAN AND SECTION LAYOUT FOR 132kV LEKHNATH SS
					Scale
					N'S
					Sheet
					61/01
					Date
					2018-07-03
					Rev.
					C





**NOTES:-**

1- ALL DIMENSIONS ARE IN MM. AND CO-ORDINATES ARE IN MTR. UNLESS OTHERWISE SPECIFIED

2- MINIMUM CLEARANCE ARE AS PER IEC61936-1:2002

3- THE PARAMETERS FOR WHICH THE SYSTEM IS DESIGNED ARE:

4- CONNECTION TYPES

5- PLINTH HEIGHT OF FOUNDATION WILL BE +200MM FROM THE FINISHED GROUND LEVEL (F.G.L.), STONE TOP LEVEL WILL BE +150MM FROM THE F.G.L.

6- CONTROL ROOM "CONTROL AND RELAY PANEL LINEUP SEQUENCE"

1 = 132kV NEW MODI -I LINE BAY PANEL

2 = 132kV NEW MODI -II LINE BAY PANEL

**LEGENDS:**

----- EXISTING BAY EQUIPMENTS

———— PRESENT SCOPE OF SUPPLY

**REFERENCE DRAWINGS :-**

1- SINGLE LINE DIAGRAM FOR 132kV S/S AT LEKHNATH SS, DRG. NO.3VIN180652C001\_RA

2- LAYOUT PLAN OF LEKHNATH SUBSTATION, VOLUME-II , DRG . NO -6

3- 132kV LEKNATH SUBSTATION CHINA INTERNATIONAL WATER AND ELECTRIC CORP- DRAWING NUMBER - SHSD002J-71-10-2\_RB

4- 132kV LEKNATH SUBSTATION LAYOUT OF EQUIPMENT FOUNDATIONS - TPH/2033/5602/N/027 REV B (TATA INTERNATIONAL LTD)

5- 132kV LEKNATH SUBSTATION EQUIPMENT FOUNDATIONS - TPH/2033/5602/N/025 REV C (TATA INTERNATIONAL LTD)

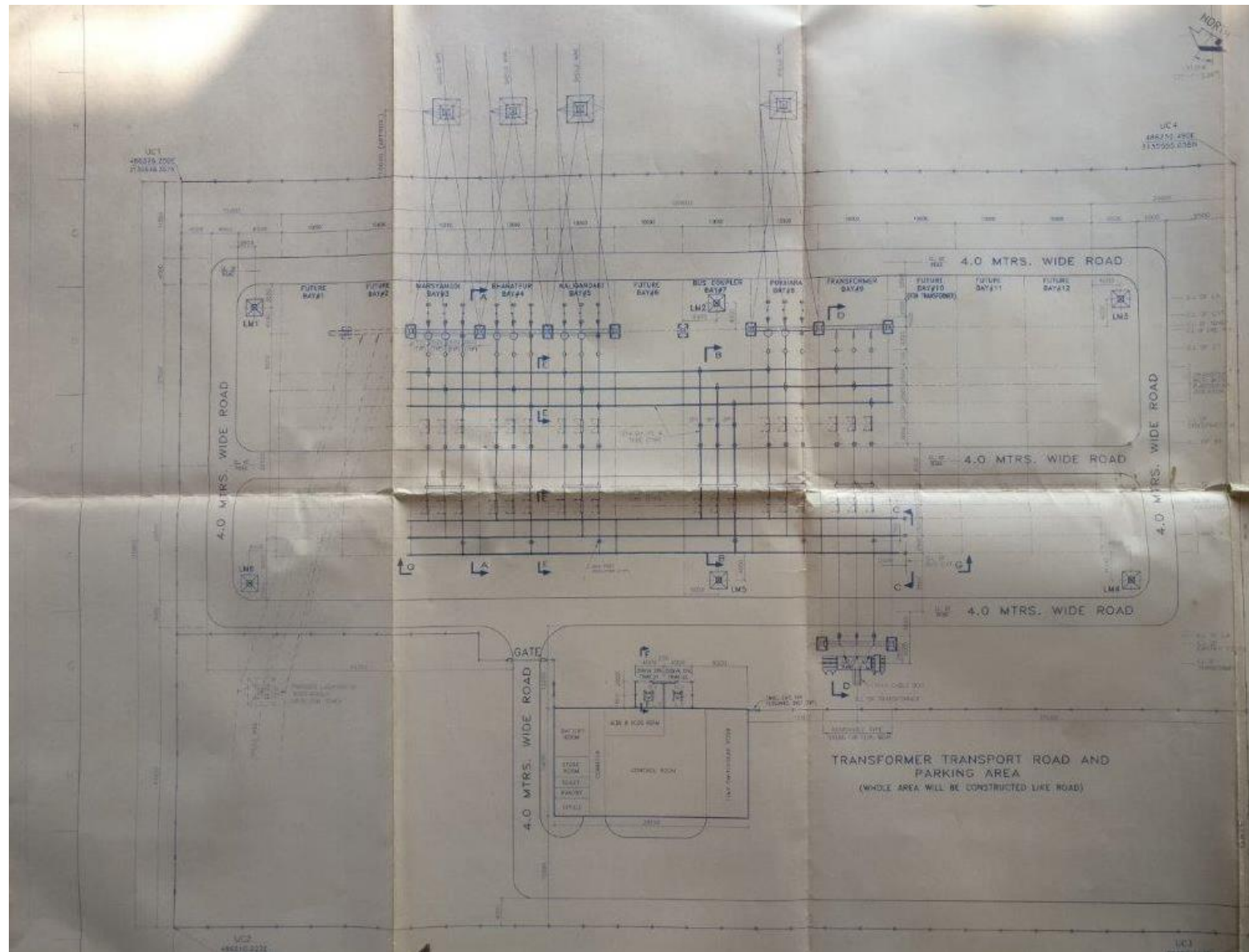
Note from ABB: This working copy shall be read in line with the Customer Approved document 3VIN 18 062 X0 \_052 RC ( sh 1 of 1 )

BOQ ITEMS :

SL.	TYPE	PATICULAR	BOQ ITEMS
LIST OF LATTICE STRUCTURES			
01	B1	132kV BEAM	03
02	T1	132kV TOWER WITH PEAK	03
03	1HPI	SUPPORT FOR HIGH LEVEL 132kV BPL FOR MAIN BUS	06
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06	1SA	SUPPORT FOR 132kV LA	06
07	1VT	SUPPORT FOR 132kV PT/CVT	06
08	3ISO	SUPPORT FOR 132kV ISO (WITH / WITHOUT EARTH SWITCH)	04
09	1PIS	SUPPORT FOR 132kV PANTO ISO (WITH EARTH SWITCH)	02
OTHER ITEMS			
10		STRING INSULATORS & HARDWARE	12 SETS
11		SUSPENSION INSULATORS & HARDWARE	06 SETS
12		STRING ACSR CONDUCTOR	300MTRS



## Lekhnath 132kV Substation Layout








NOTES

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SENSOR: PLEIADES  
RESOLUTION: 50 CM, RGB  
ACQ DATE: 2021/01/10, 2020/10/30, 2020/05/08

DRAWING REFERENCE

TITLE	DRG. No.
NEW DAMALI 400/220/132kV SUBSTATION	NDM-200-1

LEGEND

CADASTRAL BOUNDARY	
SUBSTATION 220kV-400kV BOUNDARY	

1	2020/09/21	SI	AH	PG	ISSUED FOR TENDER
REV.	DATE	DRN.	CH'D.	AP'D.	DESCRIPTION

TITLE: DAMAULI PROPOSED  
SUBSTATION 400/220kV  
BOUNDARIES ADJUSTED

SCALE: 1 : 2000  
GEOREF: UTM 45 N, WGS84

FICHTNER