22nd April 2026

NOTICE INVINTING TENDER (NIT)

The Tata Power Company Limited Invites Tenders through E-Tender Two-Part bidding process from interested bidders (with manufacturing / assembling facilities in India) for the following package required for its Transmission Divisions in Mumbai: -

A. Summary of the tendered package:

For the following packages contact person shall be Mr. Naman Patel (naman.patel@tatapower.com) & Mr. Vivek Mittal (vivek.mittal@tatapower.com)

Sr No.	Description	Tender Reference no.	Bid Guarantee Fee / EMD (Rs.)	Tender Fee (Rs.)
1.	Supply and Services for Upgradation of SCADA Automation system at various locations of Transmission Receiving stations in Mumbai	CC27NP005	3,50,000/-	2000/-

For additional technical details and Pre-Qualification criteria for the subject works please refer **Section C** below.

B. Guidelines for Participating:

Interested bidders having executed similar projects can participate by submitting the following up to **1500 hrs. Thursday 30th April 2026**: -

1. Non-Refundable Tender Fee, as indicated in table above, in the form of Direct deposit in the following bank account and submit the receipt along with a covering letter clearly indicating the Tender Reference number.

   Beneficiary Name – The Tata Power Co. Ltd.

   Bank Name – HDFC Bank Ltd.

   Branch Name – Fort Branch, Mumbai

   Address – Maneckji Wadia Building, Nanik Motwani Marg, Fort, Mumbai 400023.

   Branch Code – 60

   Bank & Branch Code – 400240015

Account No – 00600110000763

Account type – CC

IFSC Code – HDFC0000060

2. Bidders to also submit duly signed and stamped letter indicating name of authorized person, contact number and e-mail id (mandatory) on Bidder's letterhead. It is mandatory to mention Tender Reference no. in the said letter.

Note: Once the above-mentioned documents are received, detailed RFQ shall be issued through our e-tender system (ARIBA).

It may be please noted that all future correspondence will be strictly done only with **Interested Bidders** who have done the above steps in time with Authorized Person only through Tata Power E-Tender System.

Earnest Money Deposit (EMD) of **INR 3.50 Lakh** is not to be submitted now and is required at a later stage along with tender submission in the form of Bank Guarantee.

Section C: Pre-Qualification requirement and Bill of Quantity: (Please refer the following pages for details).

Automation PQR for SCADA Upgradation at Various Locations

Bidder's Pre- Qualifying Requirement

Parameter	Tata Power Requirement	Documents to be submitted Vendors to ascertain meeting of Pre-qualification Requirement
Infrastructure	Bidder must be OEM of protection relays, Sub-station Automation and Communication system, having manufacturing and testing facility in India.	Self Undertaking to be submitted in this regard. Tata Power reserves right to inspect the said manufacturing facility as a proof compliance to this Parameter
Supply & Experience	The bidder should have supplied minimum 20 nos. Protection, Automation and Communication systems for 110 kV and above sub-stations with at least 10,000 Input-Output Points (of Gateways) for each project. The system supplied should have been in satisfactory commercial operation for a minimum period of 05 years as on scheduled date of the bid opening. Bidder shall offer latest software on open architecture and should have supplied these at least for 5 projects in last 2 years. Protection and Sub-Station Automation must be from the same OEMs provided SAS OEMs are approved OEMs.	Supply List and Performance Certiifcate from Utilities and Clients
	Indian Subsidiaries of global companies having plant in India are also eligible to bid if the qualification requirements stated above are met independently or in combination with the parent company. Declaration from parent company needs to be submitted. In case the bidder has a previous association with any of Tata Power Group companies for similar products and services, the performance feedback of the bidder by the Tata Power Group companies shall only be considered for evaluation purpose, irrespective of performance certificates issued by any third organization	Self Undertaking to be submitted in this regard. Tata Power reserves right to inspect the said manufacturing facility as a proof compliance to this Parameter
Type Test	The bidder shall submit Type test reports obtained from NABL/ International Accredited Lab for the equipment / material offered. The type tests should have been conducted on the equipment / material of the same design.	Type Test Report
	The type tests should have been conducted within 5 years prior to the date of bid opening. Time period for type test may be extended by another 5 years as a special case, if there is no change in design / material of construction (MOC).	Undertaking that there is no change in design / material of construction (MOC) (if there is Type Test Report older than 5 Years but less than 10 years prior to date of opening bids) has to be considered
	In case the type test reports furnished are not for the quoted equipment / material , but for the equipment / material with higher voltage class and/or different capacity, then type test shall be carried out for the offered equipment / material from NABL / International Accredited Lab without any cost implication to the owner and the Type Test reports shall be submitted before despatch of the equipment / material.	Undertaking that Type Testing is carried for offered material/equipment from NABL/International Accrediated Lab without any cost implication to the owner and Type Test results shall be submitted before dispatch of the equipment/material in case type test reports furnished are not for the quoted equipment/material but for the equipment/material with higher voltage class and/or different capacity (if applicable)
Commercial Capability	Average Annual turnover of the bidder for last three years shall not be less than INR 15 Crore.	Profit and Loss Statements, Balance Sheet, Cash Flow Statements for the Three (3) preceding financial years duly audited and approved by Authorized Audit Firm / CA.

Bill of Material of SAS for 110 KV Mahalaxmi - Conventional Substation				
Sl. No.	Item		Description	Qty
				110kV Mahalaxmi
1	RTUs for accomodating Bay Points Ground Floor	1.1	**Pre-wired RTUs with accessories for 110 KV Bays Status and Control** **I/O Requirement :** With minimum 784 DI , 230 DO , 20 AI with 4 No. of RS-485 Ports for Modbus Integration **Power Supply:** Redundant 48 V DC (DC-DC Converter, Diode Oring Unit and MCBs with Power Cables to be considered) **Accessories**: Mounting kit,Pre-fabricated cables for I/Os, Field termination interface modules with LEDs, Disconnecting (Knife edge CKT4U) type Terminal blocks for Digital Inputs & Digital Outputs ,Droppable stud type terminal blocks (Elmex KLTDM4) for all Power Supplies. **Mounting:** To be retrofitted in Existing RTU Panel. De-commissioning of exisitng RTUs and associated accessories is in Bidders Scope. **Location** :- Ground Floor **Note :-** 1) RTUs considered by Bidders to be retro-fitted in Single Panel available at Site 2) DI TBs to be considered in same Panel of RTU 3) Bidder need not consider Omron Relays. Exisitng Omron Relays to be utilised. 4) Omron Relays and Field TBs are in Separate SIC Panels (2 No.) next to RTU 5) Bidder to consider Pre-fab Cables from DI, DO and AI upto Field TBs (For DI,AI) and Omron Relays (for DO) 6) Bidder to consider Disconnecting (Knife edge CKT4U) type Terminal blocks for Digital Inputs & Digital Outputs 7) Bidder to decide on no. of Racks to be considered to fulfill DI, DO and AI requirement. However, all Racks to be mounted in Single Panel.	1 Set
	RTU for accomodating Misc Siganls and Protection Commands on 1st Floor	1.2	**Pre-wired RTUs with accessories for 110 KV Bays Misc Signals and Protection Commands** **I/O Requirement :** With minimum 1024 DI , 100 DOs , 20 AI with 4 No. of RS-485 Ports for Modbus Integration **Power Supply:** Redundant 48 V DC (DC-DC Converter, Diode Oring Unit and MCBs with Power Cables to be considered) **Accessories**: Mounting kit,Pre-fabricated cables for I/Os, Field termination interface modules with LEDs, Disconnecting (Knife edge CKT4U) type Terminal blocks for Digital Inputs & Digital Outputs ,Droppable stud type terminal blocks (Elmex KLTDM4) for all Power Supplies. **Mounting:** To be retrofitted in Existing RTU Panel. De-commissioning of exisitng RTUs and associated accessories is in Bidders Scope. **Location** :- First Floor **Note :-** 1) RTUs considered by Bidders to be retro-fitted in Single Panel available at Site 2) DI TBs to be considered as per current site locations 3) Bidder need not consider Omron Relays. Exisitng Omron Relays to be utilised. 4) Omron Relays and Field TBs to be considered as per current site locations 5) Bidder to consider Pre-fab Cables from DI, DO and AI upto Field TBs (For DI,AI) and Omron Relays (for DO) 6) Bidder to consider Disconnecting (Knife edge CKT4U) type Terminal blocks for Digital Inputs & Digital Outputs 7) Bidder to decide on no. of Racks to be considered to fulfill DI, DO and AI requirement. However, all Racks to be mounted in Single Panel.	1 Set

	Ground Floor Bay RTU-1	1.3	**Pre-wired RTUs with accessories for 110 KV Bay RTU-1** **I/O Requirement :** With minimum 64 DI , 40 DOs , 20 AI with 4 No. of RS-485 Ports for Modbus Integration **Power Supply:** Redundant 48 V DC (DC-DC Converter, Diode Oring Unit and MCBs with Power Cables to be considered) **Accessories**: Mounting kit,Pre-fabricated cables for I/Os, Field termination interface modules with LEDs, Disconnecting (Knife edge CKT4U) type Terminal blocks for Digital Inputs & Digital Outputs ,Droppable stud type terminal blocks (Elmex KLTDM4) for all Power Supplies. **Mounting:** To be retrofitted in Existing RTU Panel. De-commissioning of exisitng RTUs and associated accessories is in Bidders Scope. **Location** :- Ground Floor **Note :-** 1) RTUs considered by Bidders to be retro-fitted in Single Panel available at Site 2) DI TBs to be considered as per current site locations 3) Bidder need not consider Omron Relays. Exisitng Omron Relays to be utilised. 4) Omron Relays and Field TBs to be considered as per current site locations 5) Bidder to consider Pre-fab Cables from DI, DO and AI upto Field TBs (For DI,AI) and Omron Relays (for DO) 6) Bidder to consider Disconnecting (Knife edge CKT4U) type Terminal blocks for Digital Inputs & Digital Outputs 7) Bidder to decide on no. of Racks to be considered to fulfill DI, DO and AI requirement. However, all Racks to be mounted in Single Panel.	1 Set
	Ground Floor Bay RTU-2	1.4	**Pre-wired RTUs with accessories for 110 KV Bay RTU-2** **I/O Requirement :** With minimum 64 DI, 20 DOs , 20 AI with 4 No. of RS-485 Ports for Modbus Integration **Power Supply:** Redundant 48 V DC (DC-DC Converter, Diode Oring Unit and MCBs with Power Cables to be considered) **Accessories**: Mounting kit,Pre-fabricated cables for I/Os, Field termination interface modules with LEDs, Disconnecting (Knife edge CKT4U) type Terminal blocks for Digital Inputs & Digital Outputs ,Droppable stud type terminal blocks (Elmex KLTDM4) for all Power Supplies. **Mounting:** To be retrofitted in Existing RTU Panel. De-commissioning of exisitng RTUs and associated accessories is in Bidders Scope. **Location** :- Ground Floor **Note :-** 1) RTUs considered by Bidders to be retro-fitted in Single Panel available at Site 2) DI TBs to be considered as per current site locations 3) Bidder need not consider Omron Relays. Exisitng Omron Relays to be utilised. 4) Omron Relays and Field TBs to be considered as per current site locations 5) Bidder to consider Pre-fab Cables from DI, DO and AI upto Field TBs (For DI,AI) and Omron Relays (for DO) 6) Bidder to consider Disconnecting (Knife edge CKT4U) type Terminal blocks for Digital Inputs & Digital Outputs 7) Bidder to decide on no. of Racks to be considered to fulfill DI, DO and AI requirement. However, all Racks to be mounted in Single Panel.	1 Sets
		2.1	**Redundant Gateway for 110 KV System (RTU Based)** **Power Supply:** Redundant 48 V DC (DC-DC Converter and Diode Oring Unit to be considered) **Serial Ports :** Min 8 No of RS485 Ports for Modbus RTU **Mounting:** To be supplied with New Pre-wired panel.	

2	Station Gateway	2.2	**Managed L3 Ethernet Switch for Communication (SAS) with LIUs** **Communication Ports:** 24 PORT L3 W/100/1000 MBPS, Combination of FO & Copper Ports as per System Architecture Requirement. 2 No of Single Mode 1 GBPS SFP based Ports with SFP. **Power Supply:** Redundant 48 V DC (DC-DC Converter and Diode Oring Unit to be considered) **Mounting Arrangement:** To be mounted in Gateway panel **Qty:** 2 nos. of Switch	1 Set
3	Networking Accessories	3.1	**For all supplied items at 110kV Mahalaxmi** Networking accessories like Ethernet Switches, SM and MM LIU, patch panel (for each Ethernet switch), Pre-fabricated Patch cords (SM/MM Fibre optic, UTP) of suitable length, Conduits for all non-armoured cables, I/O boxes with Quad face plate, RJ45 connectors etc.	1 Lot
		3.2	**Managed L2 Ethernet Switch with LIUs for Communication (SAS) between Ground Floor IEDs and 1st Floor Gateway** **Communication Ports:** 24 PORT L2 W/100/1000 MBPS, Combination of FO & Copper Ports as per System Architecture Requirement. **Power Supply:** Redundant 48 V DC (DC-DC Converter and Diode Oring Unit to be considered) **Mounting Arrangement:** To be mounted in Ground Floor RTU Panel **Qty:** 1 No of L2 Switch and 2 No of LIUs	1 Set
		3.3	**Configuration Laptop for SAS** **Hardware:** Laptop with latest processor, 1 TB SSD, 32 GB RAM, DVD RW, 4 USB Ports, 1no Ethernet port, 15" Display with 1 no. RS-485 to USB converter **Power Supply:** 230 V AC Microsoft Windows compatible with latest version of configuration software, latest Microsoft Office License pack, Trend Micro Antivirus (Apex One) with three-year subscription, Configuration & maintenance software tools, Diagnostic tools. Logic building Application of RTU, Gateway **Note** :- RS-485 to USB Converter should have TX-RX Port at One End and USB at Other which can be connected in Laptop	1 Set
		3.4	**Communication Cable:** 4P X 0.36 Sq.mm armoured multistrand pair and overall shielded for serial communication	305 mtrs
		3.5	Armoured CAT6 UTP Cable	1000 mtrs
		3.6	Armoured Fibre Optic Cable for SCADA 8 core, MM	1000 mtrs
		3.7	Armoured Fibre Optic Cable for SCADA 8 core, SM	305 mtrs
		3.8	Temperature & Humidity Sensors for indivudual panel with Modbus Protocol Support	8 nos.
		3.9	Voltage & Current monitoring device in each panel with Modbus Protocol Support	5 nos.
		3.10	Conduit	500 mtrs
4	Multifunction Meter	4.1	**Multifunction Meter : For all 110 KV Bays and Bus PTs** Accuracy Class: 0.2S Auxiliary Supplies: 90V-260 V AC or DC (Selectable) (PAS Software required for configuration of MFM to be installed in Laptop)	12 No.
5	GPS Receiver	5.1	**GPS Receiver ,Clock with redundant antenna, Surge protector and cables** **Mounting Arrangement :** GPS Receiver to be mounted in Gateway Panel **Power Supply** : Redundant 48 V DC	1 Set
6	Mandatory Spares	6.1	Supply of Mandatory Spares as per the specification (Refer Table-3 of the B2-3E Automation specification)	1 Lot

Services- Automation				
Sl. No.	**Item**	**Description**		**110kV Mahalaxmi**
7	**Services**	7.1	a) Engineering b) Installation and commissioning of all supplied items c) Retrofitting of Supplied Material in Exisitng Panel with minimum Outage Time d) De-commissioning of existing Devices from Panel e) Power Cable wiring from MCBs to Devices, Pre-fab Cable Wiring from DI,DO and AI to upto TBs, Installation of RTUs, MCBs & TBs f) Cable termination, continuity check of all communication cables g) All Protection Relay, MFM looping, T&H looping, Transformer Monitoring Devices, Cable Monitoring Devices (Shealth Monitoring, DTS, DAS etc), Auxillary System (Chargers, UPS, BESS,ACDB, DCDB etc) and their Integration with Gateway h) Preparation of ICS and Signal List i) Configuration and Testing of IED's, RTUs, Gateway, Monitoring Devices etc. j) Time Synchronization of Gateway, BCU,RTU, IEDs with GPS Receiver k) I/O testing, Pre- SAT testing of Hardware and Software functionality l) Integrated testing with Unified SCADA System m) 100% Integrated FAT & SAT for Hardware and Software n) Submission of as-built drawing in AutoCAD and PDF Format o) warranty for Hardware & Software inclusive of patch management and software upgradation for the period of 5 Years (Refer specification for more details)	Lumpsum
			Notes :-	
			Quantities indicated are Indicative only and shall vary based on site conditions and layout. The rates shall be fixed. Contractor has to provide a separate list with rate and cost separately and give total price for complete Electrical works. Items not listed but required for completing the works shall be done by the contractor without any additional payments.	
			Supply: Rates for Supply shall include all taxes, Duties, levies, Packing and forwarding, Transport to site, Transit insurance etc.	
			Considering the Nature of Job of retrofitting in the existing Panel, Bidders are requested to have site visit before submission of Quotes.	
			Installation: Rates for installation shall include all taxes. Handling, movement to site, assembly, alignment, cleaning, installation, testing and commissioning including labour, tools, tackles, consumables etc. complete.	

Bill of Material of SAS for 110 KV Malad - Conventional Substation				
Sl. No.	Item		Description	Qty
				110kV Malad
	Miscellaneous RTUs for 110kV Bays and Miscellaneous Signals	1.1	**Pre-wired RTUs with accessories for 110 KV Bays** **I/O Requirement :** With min 160 DI, 32 DO, 8 AI with MM2XPD (24 Nos) & MM4XPD (8 Nos) OMRON make Relays for each Digital Output, 4 No. of RS-485 Ports for Modbus Integration **Power Supply:** Redundant 48 V DC (DC-DC Converter and Diode Oring Unit to be considered) **Accessories**: Mounting kit,Pre-fabricated cables for I/Os, Field termination interface modules with LEDs, Disconnecting (Knife edge CKT4U) type Terminal blocks for Digital Inputs ,Droppable stud type terminal blocks (Elmex KLTDM4) for all Digital Outputs and power supplies. **Mounting:** To be supplied with New Pre-wired panel .Number of Panels shall be based on the configuration and with suitable clearance on maintenance aspects.	3 Sets
	Retrofitting of Existing RTUP3 RTU	1.2	**Pre-wired RTUs with accessories for 110 KV RTUP3 RTU** **I/O Requirement :** With minimum 80 DI , 40 DOs , 16 AI with 4 No. of RS-485 Ports for Modbus Integration **Power Supply:** Redundant 48 V DC (DC-DC Converter, Diode Oring Unit and MCBs with Power Cables to be considered) **Accessories**: Mounting kit,Pre-fabricated cables for I/Os, Field termination interface modules with LEDs, Disconnecting (Knife edge CKT4U) type Terminal blocks for Digital Inputs & Digital Outputs ,Droppable stud type terminal blocks (Elmex KLTDM4) for all Power Supplies. **Mounting:** To be retrofitted in Existing RTU Panel. De-commissioning of exisitng RTUs and associated accessories is in Bidders Scope. **Location** :- Ground Floor **Note :-** 1) RTUs considered by Bidders to be retro-fitted in Single Panel available at Site 2) DI/DO/AI TBs to be considered in the same Panel of RTU 3) Bidder need not consider Omron Relays. Exisitng Omron Relays to be utilised. 4) Omron Relays and Field TBs are in same RTU Panels 5) Bidder to consider Pre-fab Cables from DI, DO and AI upto Field TBs (For DI,AI) and Omron Relays (for DO) 6) Bidder to consider Disconnecting (Knife edge CKT4U) type Terminal blocks for Digital Inputs & Digital Outputs 7) Bidder to decide on no. of Racks to be considered to fulfill DI, DO and AI requirement. However, all Racks to be mounted in Single Panel.	1 Set

1	**Retrofitting of Existing RTUP4 RTU**	1.3	**Pre-wired RTUs with accessories for 110 KV RTUP4 RTU** **I/O Requirement :** With minimum 80 DI , 30 DOs , 16 AI with 4 No. of RS-485 Ports for Modbus Integration **Power Supply:** Redundant 48 V DC (DC-DC Converter, Diode Oring Unit and MCBs with Power Cables to be considered) **Accessories**: Mounting kit,Pre-fabricated cables for I/Os, Field termination interface modules with LEDs, Disconnecting (Knife edge CKT4U) type Terminal blocks for Digital Inputs & Digital Outputs ,Droppable stud type terminal blocks (Elmex KLTDM4) for all Power Supplies. **Mounting:** To be retrofitted in Existing RTU Panel. De-commissioning of exisitng RTUs and associated accessories is in Bidders Scope. **Location** :- Ground Floor **Note :-** 1) RTUs considered by Bidders to be retro-fitted in Single Panel available at Site 2) DI/DO/AI TBs to be considered in the same Panel of RTU 3) Bidder need not consider Omron Relays. Exisitng Omron Relays to be utilised. 4) Omron Relays and Field TBs are in same RTU Panels 5) Bidder to consider Pre-fab Cables from DI, DO and AI upto Field TBs (For DI,AI) and Omron Relays (for DO) 6) Bidder to consider Disconnecting (Knife edge CKT4U) type Terminal blocks for Digital Inputs & Digital Outputs 7) Bidder to decide on no. of Racks to be considered to fulfill DI, DO and AI requirement. However, all Racks to be mounted in Single Panel.	1 Set
	Retrofitting of Existing Bay RTUs	1.4	**Pre-wired RTUs with accessories for 110 KV Bay RTUs** **I/O Requirement :** With minimum 64 DI , 20 DOs , 0 AI with 4 No. of RS-485 Ports for Modbus Integration **Power Supply:** Redundant 48 V DC (DC-DC Converter, Diode Oring Unit and MCBs with Power Cables to be considered) **Accessories**: Mounting kit,Pre-fabricated cables for I/Os, Field termination interface modules with LEDs, Disconnecting (Knife edge CKT4U) type Terminal blocks for Digital Inputs & Digital Outputs ,Droppable stud type terminal blocks (Elmex KLTDM4) for all Power Supplies. **Mounting:** To be retrofitted in Existing RTU Panel. De-commissioning of exisitng RTUs and associated accessories is in Bidders Scope. **Location** :- Ground Floor **Note :-** 1) RTUs considered by Bidders to be retro-fitted in Single Panel available at Site 2) DI/DO/AI TBs to be considered in the same Panel of RTU 3) Bidder need not consider Omron Relays. Exisitng Omron Relays to be utilised. 4) Omron Relays and Field TBs are in same RTU Panels 5) Bidder to consider Pre-fab Cables from DI, DO and AI upto Field TBs (For DI,AI) and Omron Relays (for DO) 6) Bidder to consider Disconnecting (Knife edge CKT4U) type Terminal blocks for Digital Inputs & Digital Outputs 7) Bidder to decide on no. of Racks to be considered to fulfill DI, DO and AI requirement. However, all Racks to be mounted in Single Panel.	2 Sets
		2.1	**Redundant Gateway for 110 KV System (RTU Based)** **Power Supply:** Redundant 48 V DC (DC-DC Converter and Diode Oring Unit to be considered) **Serial Ports :** Min 8 No of RS485 Ports for Modbus RTU **Mounting:** To be supplied with Pre-wired panel.	

2	Station Gateway - 110kV	2.2	**Managed L3 Ethernet Switch for Communication (SAS)** **Communication Ports:** 24 PORT L3 W/100/1000 MBPS, Combination of FO & Copper Ports as per System Architecture Requirement. 2 No of Single Mode 1 GBPS SFP based Ports with SFP. **Power Supply:** Redundant 48 V DC (DC-DC Converter and Diode Oring Unit to be considered) **Mounting Arrangement:** To be mounted in Gateway panel **Qty:** 2 nos. of Switch	1 Set
	Station Gateway - 22kV (Retrofitting)	2.3	**Redundant Gateway for 33kV/22kV System (RTU Based)** **Power Supply:** Redundant 48 V DC (DC-DC Converter and Diode Oring Unit to be considered) **Serial Ports :** Min 8 No of RS485 Ports for Modbus RTU **Mounting:** To be retofitted in existing Gateway Panel	1 Set
		2.4	**Managed L3 Ethernet Switch for Communication (SAS)** **Communication Ports:** 24 PORT L3 W/100/1000 MBPS, Combination of FO & Copper Ports as per System Architecture Requirement. 2 No of Single Mode 1 GBPS SFP based Ports with SFP. **Power Supply:** Redundant 48 V DC (DC-DC Converter and Diode Oring Unit to be considered) **Mounting Arrangement:** To be retofitted in existing Gateway Panel **Qty:** 2 nos. of Switch	
3	Networking Accessories	3.1	**For all supplied items at 110kV Malad** Networking accessories like Ethernet Switches, SM and MM LIU, patch panel (for each Ethernet switch), Pre-fabricated Patch cords (SM/MM Fibre optic, UTP) of suitable length, Conduits for all non-armoured cables, I/O boxes with Quad face plate, RJ45 connectors etc.	1 Lot
		3.2	**Managed L2 Ethernet Switch with LIUs for Communication (SAS) between IEDs & Gateway** **Communication Ports:** 24 PORT L2 W/100/1000 MBPS, Combination of FO & Copper Ports as per System Architecture Requirement. **Power Supply:** Redundant 48 V DC (DC-DC Converter and Diode Oring Unit to be considered) **Mounting Arrangement:** To be mounted in Ground Floor RTU Panel **Qty:** 1 No of L2 Switch and 2 No of LIUs	1 Set
		3.3	**Configuration Laptop for SAS** **Hardware:** Laptop with latest processor, 1 TB SSD, 32 GB RAM, DVD RW, 4 USB Ports, 1no Ethernet port, 15" Display with 1 no. RS-485 to USB converter **Power Supply:** 230 V AC Microsoft Windows compatible with latest version of configuration software, latest Microsoft Office License pack, Trend Micro Antivirus (Apex One) with three-year subscription, Configuration & maintenance software tools, Diagnostic tools. Logic building Application of RTU, Gateway **Note** :- RS-485 to USB Converter should have TX-RX Port at One End and USB at Other which can be connected in Laptop	2 Sets
		3.4	**Communication Cable:** 4P X 0.36 Sq.mm armoured multistrand pair and overall shielded for serial communication	305 mtrs
		3.5	Armoured CAT6 UTP Cable	1000 mtrs
		3.6	Armoured Fibre Optic Cable for SCADA 8 core, MM	1000 mtrs
		3.7	Armoured Fibre Optic Cable for SCADA 8 core, SM	305 mtrs
		3.8	Temperature & Humidity Sensors for indivudual panel with Modbus Protocol Support	8 nos.
		3.9	Voltage & Current monitoring device in each panel with Modbus Protocol Support	8 nos.
		3.10	Conduit	500 mtrs

4	**Multifunction Meter**	4.1	**Multifunction Meter : For all 110 KV Bays and Bus PTs** Accuracy Class: 0.2S Auxiliary Supplies: 90V-260 V AC or DC (Selectable) (PAS Software required for configuration of MFM to be installed in Laptop)	10 No.
5	**GPS Receiver**	5.1	**GPS Receiver ,Clock with redundant antenna, Surge protector and cables** **Mounting Arrangement :** GPS Receiver to be mounted in Gateway Panel **Power Supply**: Redundant 48 V DC	1 Set
6	**Mandatory Spares**	6.1	Supply of Mandatory Spares as per the specification (Refer Table-3 of the B2-3E Automation specification)	1 Lot

Services- Automation				
Sl. No.	Item	Description		110kV/22kV Malad
7	Services	7.1	a) Engineering b) Installation and commissioning of all supplied items c) Retrofitting of Supplied Material in Exisitng Panel with minimum Outage Time d) De-commissioning of existing Devices from Panel e) Power Cable wiring from MCBs to Devices, Pre-fab Cable Wiring from DI,DO and AI to upto TBs, Installation of RTUs, MCBs & TBs f) Cable termination, continuity check of all communication cables g) All Protection Relay, MFM looping, T&H looping, Transformer Monitoring Devices, Cable Monitoring Devices (Shealth Monitoring, DTS, DAS etc), Auxillary System (Chargers, UPS, BESS,ACDB, DCDB etc) and their Integration with Gateway h) Preparation of ICS and Signal List i) Configuration and Testing of IED's, RTUs, Gateway, Monitoring Devices etc. j) Time Synchronization of Gateway, BCU,RTU, IEDs with GPS Receiver k) I/O testing, Pre- SAT testing of Hardware and Software functionality l) Integrated testing with Unified SCADA System m) 100% Integrated FAT & SAT for Hardware and Software n) Submission of as-built drawing in AutoCAD and PDF Format o) warranty for Hardware & Software inclusive of patch management and software upgradation for the period of 5 Years (Refer specification for more details)	Lumpsum
			Notes :-	
			Quantities indicated are Indicative only and shall vary based on site conditions and layout. The rates shall be fixed. Contractor has to provide a separate list with rate and cost separately and give total price for complete Electrical works. Items not listed but required for completing the works shall be done by the contractor without any additional payments.	
			Supply: Rates for Supply shall include all taxes, Duties, levies, Packing and forwarding, Transport to site, Transit insurance etc.	
			Considering the Nature of Job of retrofitting in the existing Panel, Bidders are requested to have site visit before submission of Quotes.	
			Installation: Rates for installation shall include all taxes. Handling, movement to site, assembly, alignment, cleaning, installation, testing and commissioning including labour, tools, tackles, consumables etc. complete.	

Bill of Material of SAS for 110 KV Kalyan - Conventional Substation				
Sl. No.	Item		Description	Qty
				110kV Kalyan
1	Miscellaneous RTUs for 110kV Bays and Miscellaneous Signals	1.1	**Pre-wired RTUs with accessories for 110 KV Bays** **I/O Requirement :** With min 1500 DI, 500 DO, 50 AI with OEN Relay (400 No.), MM2XPD (85 Nos) & MM4XPD (15 Nos) OMRON make Relays for each Digital Output, 4 No. of RS-485 Ports for Modbus Integration **Power Supply:** Redundant 48 V DC (DC-DC Converter and Diode Oring Unit to be considered) **Accessories**: Mounting kit,Pre-fabricated cables for I/Os, Field termination interface modules with LEDs, Disconnecting (Knife edge CKT4U) type Terminal blocks for Digital Inputs ,Droppable stud type terminal blocks (Elmex KLTDM4) for all Digital Outputs and power supplies. **Mounting:** To be supplied with New Pre-wired panel .Number of Panels shall be based on the configuration and with suitable clearance on maintenance aspects. (Max 7 Panels to be considered)	1 Set (Panel quantity to be calculated by Bidder)
2	Station Gateway	2.1	**Redundant Gateway for 110 KV System (RTU Based)** Power Supply: Redundant 48 V DC (DC-DC Converter and Diode Oring Unit to be considered) Serial Ports : Min 8 No of RS485 Ports for Modbus RTU Mounting: To be supplied with New Pre-wired panel.	1 Set
		2.2	**Managed L3 Ethernet Switch for Communication (SAS)** **Communication Ports:** 24 PORT L3 W/100/1000 MBPS, Combination of FO & Copper Ports as per System Architecture Requirement. 2 No of Single Mode 1 GBPS SFP based Ports with SFP. **Power Supply:** Redundant 48 V DC (DC-DC Converter and Diode Oring Unit to be considered) **Mounting Arrangement:** To be mounted in Gateway panel **Qty:** 2 nos. of Switch	
3	Networking Accessories	3.1	**For all supplied items at 110kV Kalyan** Networking accessories like Ethernet Switches, SM and MM LIU, patch panel (for each Ethernet switch), Pre-fabricated Patch cords (SM/MM Fibre optic, UTP) of suitable length, Conduits for all non-armoured cables, I/O boxes with Quad face plate, RJ45 connectors etc.	1 Lot
		3.2	**Managed L2 Ethernet Switch with LIUs for Communication (SAS) between IEDs & Gateway** **Communication Ports:** 24 PORT L2 W/100/1000 MBPS, Combination of FO & Copper Ports as per System Architecture Requirement. **Power Supply:** Redundant 48 V DC (DC-DC Converter and Diode Oring Unit to be considered) **Mounting Arrangement:** To be mounted in Ground Floor RTU Panel **Qty:** 1 No of L2 Switch and 2 No of LIUs	1 Set
		3.3	**Configuration Laptop for SAS** **Hardware:** Laptop with latest processor, 1 TB SSD, 32 GB RAM, DVD RW, 4 USB Ports, 1no Ethernet port, 15" Display with 1 no. RS-485 to USB converter **Power Supply:** 230 V AC Microsoft Windows compatible with latest version of configuration software, latest Microsoft Office License pack, Trend Micro Antivirus (Apex One) with three-year subscription, Configuration & maintenance software tools, Diagnostic tools. Logic building Application of RTU, Gateway **Note** :- RS-485 to USB Converter should have TX-RX Port at One End and USB at Other which can be connected in Laptop	1 Set

		3.3	**Communication Cable:** 4P X 0.36 Sq.mm armoured multistrand pair and overall shielded for serial communication	305 mtrs
		3.4	Armoured CAT6 UTP Cable	1000 mtrs
		3.5	Armoured Fibre Optic Cable for SCADA 8 core, MM	1000 mtrs
		3.6	Armoured Fibre Optic Cable for SCADA 8 core, SM	305 mtrs
		3.7	Temperature & Humidity Sensors for indivudual panel with Modbus Protocol Support	As Per Panel Quantity
		3.8	Voltage & Current monitoring device in each panel with Modbus Protocol Support	As Per Panel Quantity
		3.9	Conduit	500 mtrs
4	**Multifunction Meter**	4.1	**Multifunction Meter : For all 110 KV Bays and Bus PTs** Accuracy Class: 0.2S Auxiliary Supplies: 90V-260 V AC or DC (Selectable) (PAS Software required for configuration of MFM to be installed in Laptop)	5 No.
5	**GPS Receiver**	5.1	**GPS Receiver ,Clock with redundant antenna, Surge protector and cables** **Mounting Arrangement :** GPS Receiver to be mounted in Gateway Panel **Power Supply**: Redundant 48 V DC	1 Set
6	**Mandatory Spares**	6.1	Supply of Mandatory Spares as per the specification (Refer Table-3 of the B2-3E Automation specification)	1 Lot

Services- Automation				
Sl. No.	Item	Description		110kV Kalyan
7	Services	7.1	**Installation, Integration and Commissioning of Automation System - 110kV Kalyan for the supplied items** a) Engineering b) Installation and commissioning of all supplied items c) Cable termination, continuity check of all communication cables d) All Protection Relay, MFM looping, T&H looping, Transformer Monitoring Devices, Cable Monitoring Devices (Shealth Monitoring, DTS, DAS etc), Auxillary System (Chargers, UPS, BESS,ACDB, DCDB etc) and their Integration with Gateway e) Preparation of ICS and Signal List f) Configuration and Testing of IED's, RTUs, Gateway, Monitoring Devices etc. g) Time Synchronization of Gateway, BCU,RTU, IEDs with GPS Receiver h) I/O testing, Pre- SAT testing of Hardware and Software functionality i) Integrated testing with Unified SCADA System j) 100% Integrated FAT & SAT for Hardware and Software k) Submission of as-built drawing in AutoCAD and PDF Format l) warranty for Hardware & Software inclusive of patch management and software upgradation for the period of 5 Years (Refer specification for more details)	Lumpsum
			Notes :-	
			Quantities indicated are Indicative only and shall vary based on site conditions and layout. The rates shall be fixed. Contractor has to provide a separate list with rate and cost separately and give total price for complete Electrical works. Items not listed but required for completing the works shall be done by the contractor without any additional payments.	
			Supply: Rates for Supply shall include all taxes, Duties, levies, Packing and forwarding, Transport to site, Transit insurance etc.	
			Installation: Rates for installation shall include all taxes. Handling, movement to site, assembly, alignment, cleaning, installation, testing and commissioning including labour, tools, tackles, consumables etc. complete.	

Bill of Material of SAS for 33kV/22kV Other Stations - Conventional Substation				
Sl. No.	Item		Description	Qty
				33kV/22kV Other Stations
1	Station Gateway (Retrofitting)	1.1	**Redundant Gateway for 33kV/22kV System (RTU Based)** **Power Supply:** Redundant 48 V DC (DC-DC Converter and Diode Oring Unit to be considered) **Serial Ports :** Min 8 No of RS485 Ports for Modbus RTU **Mounting:** To be retofitted in existing Gateway Panel	6 Sets
		1.2	**Managed L3 Ethernet Switch for Communication (SAS)** **Communication Ports:** 24 PORT L3 W/100/1000 MBPS, Combination of FO & Copper Ports as per System Architecture Requirement. 2 No of Single Mode 1 GBPS SFP based Ports with SFP. **Power Supply:** Redundant 48 V DC (DC-DC Converter and Diode Oring Unit to be considered) **Mounting Arrangement:** To be retofitted in existing Gateway Panel **Qty:** 2 nos. of Switch	
3	Networking Accessories	3.1	**For all supplied items at 110kV Bhokarpada** Networking accessories like Ethernet Switches, SM and MM LIU, patch panel (for each Ethernet switch), Pre-fabricated Patch cords (SM/MM Fibre optic, UTP) of suitable length, Conduits for all non-armoured cables, I/O boxes with Quad face plate, RJ45 connectors etc.	6 Lot
		3.2	**Managed L2 Ethernet Switch with LIUs for Communication (SAS) between IEDs & Gateway** **Communication Ports:** 24 PORT L2 W/100/1000 MBPS, Combination of FO & Copper Ports as per System Architecture Requirement. **Power Supply:** Redundant 48 V DC (DC-DC Converter and Diode Oring Unit to be considered) **Mounting Arrangement:** To be mounted in Ground Floor RTU Panel **Qty:** 1 No of L2 Switch and 2 No of LIUs	6 Set
		3.3	**Configuration Laptop for SAS** **Hardware:** Laptop with latest processor, 1 TB SSD, 32 GB RAM, DVD RW, 4 USB Ports, 1no Ethernet port, 15" Display with 1 no. RS-485 to USB converter **Power Supply:** 230 V AC Microsoft Windows compatible with latest version of configuration software, latest Microsoft Office License pack, Trend Micro Antivirus (Apex One) with three-year subscription, Configuration & maintenance software tools, Diagnostic tools. Logic building Application of RTU, Gateway **Note** :- RS-485 to USB Converter should have TX-RX Port at One End and USB at Other which can be connected in Laptop	6 Set
		3.4	**Communication Cable:** 4P X 0.36 Sq.mm armoured multistrand pair and overall shielded for serial communication	305 mtrs
		3.5	Armoured CAT6 UTP Cable	305 mtrs
		3.6	Armoured Fibre Optic Cable for SCADA 8 core, MM	305 mtrs
		3.8	Temperature & Humidity Sensors for indivudual panel with Modbus Protocol Support	6 nos.
		3.9	Voltage & Current monitoring device in each panel with Modbus Protocol Support	6 nos.
5	GPS Receiver	5.1	**GPS Receiver ,Clock with redundant antenna, Surge protector and cables (PRP Enabled - 2 Ports, SNTP - 2 Ports)** **Mounting Arrangement :** GPS Receiver to be mounted in Gateway Panel **Power Supply**: Redundant 48 V DC	3 Set
6	Training	6.1	**Training: (Sub-Station Automation & 3rd party items)** 20 Engineers x 5 man-days (100 mandays) at Vendor's work	1 Set

7	**Mandatory Spares**	7.1	Supply of Mandatory Spares as per the specification (Refer Table-3 of the B2-3E Automation specification)	1 Lot

Services- Automation				
Sl. No.	**Item**	**Description**		
8	**Services**	8.1	a) Engineering b) Installation and commissioning of all supplied items c) Retrofitting of Supplied Material in Exisitng Panel with minimum Outage Time d) De-commissioning of existing Devices from Panel e) Power Cable wiring from MCBs to Devices, Pre-fab Cable Wiring from DI,DO and AI to upto TBs, Installation of RTUs, MCBs & TBs f) Cable termination, continuity check of all communication cables g) All Protection Relay, MFM looping, T&H looping, Transformer Monitoring Devices, Cable Monitoring Devices (Shealth Monitoring, DTS, DAS etc), Auxillary System (Chargers, UPS, BESS,ACDB, DCDB etc) and their Integration with Gateway h) Preparation of ICS and Signal List i) Configuration and Testing of IED's, RTUs, Gateway, Monitoring Devices etc. j) Time Synchronization of Gateway, BCU,RTU, IEDs with GPS Receiver k) I/O testing, Pre- SAT testing of Hardware and Software functionality l) Integrated testing with Unified SCADA System m) 100% Integrated FAT & SAT for Hardware and Software n) Submission of as-built drawing in AutoCAD and PDF Format o) warranty for Hardware & Software inclusive of patch management and software upgradation for the period of 5 Years (Refer specification for more details)	Lumpsum
			Notes :-	
			Quantities indicated are Indicative only and shall vary based on site conditions and layout. The rates shall be fixed. Contractor has to provide a separate list with rate and cost separately and give total price for complete Electrical works. Items not listed but required for completing the works shall be done by the contractor without any additional payments.	
			Supply: Rates for Supply shall include all taxes, Duties, levies, Packing and forwarding, Transport to site, Transit insurance etc.	
			Considering the Nature of Job of retrofitting in the existing Panel, Bidders are requested to have site visit before submission of Quotes.	
			Installation: Rates for installation shall include all taxes. Handling, movement to site, assembly, alignment, cleaning, installation, testing and commissioning including labour, tools, tackles, consumables etc. complete.	