

SCOPE OF WORK (SOW)

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1. GENERAL

Kallam Transmission Limited ("KTL") has been awarded ISTS transmission scheme "Implementation of 1 no. 400kV bay at Kallam PS for interconnection of RE project of Torrent Solar Power Private Limited (TSPPL)" ("Project").

1.1.Associated Transmission System:

The following transmission system is envisaged under the scheme:

- 400 kV line bay (including associated tie bay) – 1 no.

2. SCOPE OF WORK

The scope of work shall cover following:

Design, engineering, supply, testing at manufacturer's works, transportation, unloading and delivery at site including insurance & storage, associated civil works, erection, testing and commissioning at site along with all equipment's, fittings, accessories, foundation bolts (if any), cables and Mandatory Spare Parts at Kallam PS on LSTK basis as per the details given below:

- 400 kV line bay (including associated tie bay) – 1 no.

3. BID PRICE SCHEDULE:

The Bid Price Schedule is attached separately in Volume-III.

4. PHYSICAL AND OTHER PARAMETERS

4.1.Location of the substation and status of Kallam PS- The location of substation is indicated below:

Name of Substation	Tentative Co-ordinates	Name of State	Address
Kallam PS	<ul style="list-style-type: none">• 18°37'25.91"N, 75°52'12.40"E• 18°37'28.70"N, 75°52'13.44"E• 18°37'25.85"N, 75°52'22.07"E• 18°37'23.79"N, 75°52'21.33"E	Maharashtra	Village- Selu, Tehsil- Washi, District- Dharashiv (erstwhile Osmanabad)- 413507.

Name of Substation	Tentative Co-ordinates	Name of State	Address
	<ul style="list-style-type: none"> 18°37'25.67"N, 75°52'15.56"E 18°37'24.96"N, 75°52'15.29"E 		

The Kallam PS is under development stage and is expected to be Commissioned/energized by March 2024. The Contractor has to take precautionary measures during execution of the aforementioned Scope of Work so that the existing transmission system/ operational transmission system could not get impacted due to the execution of the current Scope of Work. The Contractor is advised to take all safety measures during the entire performance of the Contract.

4.2. Access to Site -

KTL shall provide land for the said augmentation work at Kallam PS ("Site") with non-exclusive access and handover such portion of the Site to Contractor on as is basis to commence the services under the Contract.

The Contractor shall (and shall cause all its sub-contractors) use only the entrance(s) to the Site specified by KTL for ingress and egress of all Contractor's and its Subcontractors' personnel, the Services, Contractor's Equipment, vehicles and the like.

The Contractor shall be responsible for planning and conducting its operations and those of its sub-contractors so that neither the Contractor nor any of its sub-contractor shall (a) enter upon lands (other than the designated Site) or waterbodies in their natural state unless authorized by the Project Manager and or appropriate person; (b) close or obstruct any utility installation, highway, waterway, harbor, road or other property unless applicable permits are obtained and authorized by the Project Manager and or appropriate person; or (c) disrupt or otherwise interfere with the operation of any portion of any pipeline, telephone, conduit or electric transmission line, ditch, navigational aid, dock or structure unless otherwise specifically authorized by the appropriate Person.

4.3. Meteorological data - For design purposes, meteorological data are as below:

Altitude	Less than 1000 meters above mean sea level (MSL)
Snow Fall	NIL
Seismic Zone	As per IS 1893

Wind Zone	Wind map as per National Building Code – 2016 (Volume-I)
Min./Max. Design Ambient Temperature	0°C to 50°C
Creepage Requirement	As per Technical Specification

4.4. Fault Level- The system fault level is as mentioned below:

Sl. No	Substation	400 kV	220 kV
1	Kallam PS	63kA for 1 second	50kA for 1 second

1. SCHEDULE OF QUANTITIES

This work is to be awarded on LSTK basis including design, engineering, supply, testing at manufacturer's works, transportation, unloading and delivery at site including insurance & storage, associated civil works, erection, testing and commissioning at site along with all equipments, fittings, accessories, foundation bolts (if any), cables and Mandatory Spare Parts.

The Contractor shall submit a detailed BOQ/ Billing Breakup, for Employer's review and approval, within 15 days of the Effective Date for billing and invoicing purpose, however the total price shall be restricted to the Contract Price.

The bidder is required to estimate the quantities required for entire execution and completion of works and incorporate their price in respective Bid Price Schedule. Bidder shall include all such items in the BOQ / Billing Breakup, which are not specifically mentioned but are essential for the execution of the contract. Items which are not mentioned in the BOQ/ Billing Breakup and required for successful commissioning of the Facilities shall be included in the Bid Price quoted by the bidder and shall be provided at no extra cost to Employer.

The Format for BOQ/ Billing Breakup has been annexed as Annexure- A(SOW).

2. REFERENCE DRAWINGS

The following drawings are enclosed for reference purpose of the Bidder.

1. Tentative Plan Layout
2. Tentative SLD

3. Existing Earthing Layout for Switchyard
4. Existing outdoor Cable Trench Layout
5. Indicative Drawings – Civil Works

Note:

In case of any discrepancy between the drawings and text of specification the requirements of text shall prevail in general. However, the bidder is advised to get these clarified from Employer.

3. DIFFERENT SECTIONS OF TECHNICAL SPECIFICATION

For the purpose of scope of work, technical specification shall consist of following sections, and they should be read in conjunction with each other.

1. Technical Specification for Substations – Civil Works.
2. Technical Specification for Substations – Electrical Works.

4. MANDATORY SPARE PARTS

The Mandatory Spare Parts and Condition Monitoring Instruments shall be included in the bid proposal by the bidder. The prices of these spares/ instruments (as the case may be) shall be quoted by the Bidder in the Bid Price Schedule and shall be considered for evaluation of bid. The Bidder shall submit the detailed Price breakup in the BOQ/ Billing Breakup. The list of Mandatory Spare Parts and Condition Monitoring Instruments is attached at Annexure- B (SOW) and Annexure-C (SOW) respectively.

The bidder is clarified that no mandatory spares shall be used during the commissioning of the equipment. Any spares required for commissioning purpose shall be arranged by the Contractor. The unutilized spares, if any, brought for commissioning purpose shall be taken back by the Contractor.

5. SPECIFIC REQUIREMENT

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6. ANNEXURES

ANNEXURE- A(SOW)

Supply:

<u>S. No.</u>	<u>Item Description</u>	<u>Unit</u>	<u>Quantity</u>	<u>Unit Rate (including Freight and Insurance)</u>	<u>GST (INR)</u>	<u>Total Amount (INR)</u>

Service:

<u>S. No.</u>	<u>Item Description</u>	<u>Unit</u>	<u>Quantity</u>	<u>Unit Rate</u>	<u>GST (INR)</u>	<u>Total Amount (INR)</u>

ANNEXURE-B (SOW)

List of Mandatory Spare Parts

S. NO.	Description of Spare	Qty.
1.0	420kV & 245kV SF6 Circuit Breakers	
1.1	Complete Pole (Phase) of circuit breaker including closing resistor/ CSD, grading capacitor (as applicable), pole column, interrupter, operating mechanism, Marshalling Box and terminal connector but without support structure	1 No. pole of each make & type.
1.2	Grading Capacitor	3 Nos.
1.3	Rubber gaskets, 'O' rings and seals	1 set
1.4	Trip coils with resistor	2 sets
1.5	Closing coils with resistor	2 sets
1.6	Terminal Pads and connectors	2 sets
1.7	Molecular filter	2 Nos.
1.8	Density/pressure monitoring systems	1 No.
1.9	Corona rings	1 No.
1.10	Relays, Power contactors, switch fuse units, limit switches, push buttons, timers & MCB etc.	1 set
1.11	Pressure switches	1 set
1.12	Pressure Gauge and coupling	1 set
1.13	SF6 Gas	15% of total used quantity in substation
1.14	Auxiliary switch assembly	1 set
1.15	Operation Counter	1 No.
1.16	Magnetic ventile, if required	3 Nos.
1.17	Actuator rings, if required	6 Nos.
1.18	Control valves, if required	1 No.
1.19	Fixed, moving and arcing contact assemblies including Insulating Nozzles etc. for 1 Interrupter.	2 Nos.
1.20	Spring Operated Mechanism	
1.20.1	Closing Dashpot	1 set
1.20.2	Opening Dashpot	1 set
1.20.3	Opening Catch gear	1 set
1.20.4	Closing Catch gear	1 set
1.20.5	Complete Spring Operating Mechanism	1 set
1.22.6	Spring Charging Motor	1 Nos.
2.0	420kV & 245kV HDB ISOLATORS	
2.1	One complete pole including support Insulator, motor operating mechanism and terminal connector but excluding structure	1 No.
2.2	Isolator Arms with finger contacts and current carrying assembly	1 set
2.3	Support Insulators	1 set

S. NO.	Description of Spare	Qty.
2.4	Copper contact fingers for male & female contacts	2 sets
2.5	Open / Close contactor assembly, timers, key interlock push button switch & auxiliary switches	1 set
2.6	Limit switch	2 sets
2.7	Motor housing bearing assembly	1 No.
2.8	Terminal Pads and connectors	2 sets
2.9	Motor with gear assembly and bevel gear assembly	1 No.
2.10	Corona shield rings	3 Nos.
2.11	Hinge pins	3 Nos.
2.12	Bearings	1 set
2.13	Interlocking coil with resistor	5 Nos.
2.14	Fuses of each rating	5 Nos.
3.0	420kV & 245kV CURRENT TRANSFORMERS	
3.1	Complete CT with Terminal connector & structure	2 Nos. of each rating for a population up to 20 Nos. 3 Nos. of each rating for a population more than 20 Nos.
3.2	Primary Terminal bushing	2 sets
4.0	VOLTAGE TRANSFORMER (PT/CVT)	
4.1	Complete Potential Transformer/ Capacitor Voltage Transformer with terminal connectors & structure	1 Nos. of each rating for a population up to 20 Nos. 3 Nos. of each rating for a population more than 20 Nos.
5.0	SURGE ARRESTOR	
5.1	Complete Surge Arrester with insulating base and Terminal connector & structure	1 Nos. of each rating (not make) for a population up to 10 Nos. and 3 Nos. of each rating (not make) for population more than 10 Nos.
5.2	Surge counter/ monitor	2 Nos.
6.0	400kV & 220kV BUS POST INSULATOR	
6.1	Bus post insulator assembly (Complete)	2 Nos. for each voltage rating
8.0	PLCC EQUIPMENT	
8.1	Wave Trap LA	1 No.
9.0	Control Relay & Protection System	
9.1	Line Protection Panel Equipment Spare	
9.1.1	Numerical Relay (IED) of each make and type along with software	1 No.

S. NO.	Description of Spare	Qty.
10.0	Conductor (Flexible / Aluminum Pipe)	5% of the length of each type installed at the substation / switchyard
11.0	INSULATORS	
11.1	DISC INSULATORS (IF APPLICABLE)	5% of the total number of discs of each voltage class installed at the substation/switchyard.
11.2	LONG ROD INSULATORS	5% of the total number of insulators of each voltage class installed at the substation / switchyard subject to a minimum no. of 3 insulators of each voltage class.
12.0	CONDUCTOR ACCESSORIES AND HARDWARE	Qty. shall be commensurate with the spare for conductor and insulator.
13.0	COUPLING CAPACITORS	One number of each voltage class installed at the substation / switchyard
14.0	Clamps, Connectors, Shield Wire, CO2 type portable fire extinguishers, spacers, welding sleeves, corona bells,	5% of the total qty. of each type installed at the substation / switchyard with min. 1 no. of each item
15.0	Illumination System	5% of total qty. of each type of fixture installed at the substation / switchyard with min. 1 no. of each fixture type

ANNEXURE-C (SOW)

List of Condition Monitoring Instruments

No Condition Monitoring Instruments are required for this Scope of Work.

----- End of Scope of Work -----