



## KERALA STATE ELECTRICITY BOARD LIMITED

(Incorporated under the Companies Act, 1956)

Reg. Office: Vidyuthi Bhavanam, Pattom, Thiruvananthapuram – 695 004

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### ABSTRACT

Renovation & Capacity enhancement of 110 kV AIS Sub Station , Perumbavoor “ under Transmission Circle, Thodupuzha - Administrative sanction accorded- Orders issued.

### Corporate Office(SBU-T)

B.O(FTD)No.533/2020/D(T&SO)/T3/ TDPZHA /Pbr 110kV AIS S/s/2020-21 Dated Tvpmm 18.08.2020

- Read: - 1. Minutes of the DPR Approval Committee Meeting held on 24.04.2020.  
2. Note no.CE (TS)/ EE2/AEEV/ Perumbavoor/DPR-AIS/ 2019-20/ 10.06.2020 of the Chief Engineer (Transmission South).  
3. Note No. D (T&SO)/T3/ TDPZHA / Pbr 110kV AIS S/s /2020-21/197 Dated: 26.07.2020 of the Director (T&SO) (Agenda No. 17/8/20)

### ORDER

Perumbavoor substation is feeding power to the entire Perumbavoor area. This area is a hub of Industrial consumers. The rapidly expanding town demand includes all Government institutions, hospitals commercial establishments of diverse nature. Also the peak load is occurring on day time. Apart from that with present scenario, it is not possible to meet N-1 criteria for redundancy. Hence in order to provide uninterrupted power supply, it was proposed to renovate and enhance the capacity of 110kV S/S Perumbavoor with 3X20MVA 110/11kV Transformer. In this regard, Power system study was conducted and remark of the FA was collected .

In view of this, the DPR committee held on 24-04-2020 had approved the proposal of renovation and enhancement of the capacity of the 110kV S/S Perumbavoor subject to the condition that install 2 Nos of 20MVA 110/11kV Transformers in the first phase by considering the present load condition with the provision in the yard for installing additional 3<sup>rd</sup> No 20 MVA, 110/11kV ( total of 3 Nos ) Transformer in future. Also it was directed to replace the existing 1X16MVA, 110/33kV Transformer with 25MVA Transformer since load on the present one is about 93%.

The Chief Engineer, Transmission South as per Note read 2<sup>nd</sup> above has submitted a revised DPR. The first Phase of the work requires 2 Nos of 20 MVA Transformers. Since one 20 MVA transformer is already available , cost of only one 20 MVA Transformer is included in the estimate. The cost for replacing the existing 16 MVA 110/33kV Transformer with 25 MVA 110/33kV is also included in the estimate. Accordingly the total revised Estimate amount comes to Rs. 20 Cr. The estimate is prepared based on the transmission cost data 2018-19 and DSR 2016 for the transmission works .

The project involves upgradation and enhancement of the existing 110kV Substation, Perumbavoor by constructing a SCADA enabled double bus switch yard in the existing Substation compound which would receive power from Pallivasal and Idamalayar Generating Stations through Pallivasal - Aluva 110kV line and Idamalayar - Kalamassery 110kV line. The Renovated 110kV Substation at Perumbavoor will have 4 numbers of 110kV feeder bays, 2 numbers of 20 MVA, 110/11kV transformers and one 25MVA , 110/33kV transformer and transformer bays in Double Bus Scheme

The estimated cost of Rs. 20 Cr comprises of cost of Electrical portion of Rs. 1132.131 lakh ( supply & erection ), civil portion of Rs. 351 lakh (Demolishing of existing Control room and construction of new 110kV Control room with 416 sqmm plinth area), Tree cutting & demolishing charges of 66V yard structures etc of Rs. 18.1 lakh and all duties & taxes, overhead charges etc. of Rs. 498.760 lakh .

The following major works were included in the proposal are:

- a. Construction of 110kV double bus scheme, installation of 1X20MVA & 1X25MVA TR (with Tr bays), re arranging of existing 1X20MVA Tr, construction of 2 nos Nos of 110kV feeder bays and re arrangement of existing 2 Nos of 110kV feeder bays. (provision for 1 No 20MV, 110/11kV Tr bay is to be provided for future use along with a spare feeder bay).
- b. Re arrangements in 33kV and 11kV side.
- c. Demolishing of existing 66kV & 110kV Switch yard and control room.
- d. Construction of double storied control room

As per the Clause 2.01 of the prevailing Delegation of Powers, the FTD is authorised to grant administrative sanction to original works of capital nature up to 50Cr.

The matter was placed before the Full Time Directors as per note read as 3<sup>rd</sup> above .

Having considered the above, the Full Time Directors in the meeting held on 12.08.2020,

Resolved to accord Administrative Sanction for an amount of Rs. 20 Crore (Rupees Twenty Crore) for the "Renovation & Capacity enhancement of 110 kV AIS Sub Station , Perumbavoor " under Transmission Circle, Thodupuzha as per the approval of DPR approval committee held on 24-04-2020.

Orders are issued accordingly.

By order of the Full Time Directors,  
Sd/-  
Lekha G.  
Company Secretary (In- Charge),

To,

The Chief Engineer (Transmission South).

Copy to:

The Deputy Chief Engineer, Transmission Circle , Thodupuzha  
The Deputy Chief Engineer (IT)  
The Financial Adviser/ The Chief Internal Auditor/ The RCAO/ RAO.  
The TA to Chairman & MD/ D(T&SO/D(D&HRM)/D(G-C)/ D(G-E&SCM)/D(P&S)  
The PA to Director (Finance)/CA to Company Secretary  
Fair Copy Superintendent/Library/Stock File.

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Assistant Executive Engineer

**Annexure to B.O(FTD) No.533/2020/D(T&SO)/T3/TDPZHA/Pbr 110kV AIS S/s /2020-21 Dated Tvpm  
18.08.2020**

	DESCRIPTION	Unit	Quantity	Rate in Lakhs	Amount in Lakhs
<b>A</b>	<b>PART-I 110kV Side</b>				
1	SF6 Circuit Breaker (SF6)	Set	8	5.180	41.442
2	Current Transformer 400/200/100-1-1-1-1A	No	27	1.205	32.545
3	CVT	No	12	1.368	16.416
4	BUS PT	No	6	0.780	4.680
5	Lightning Arrester with structure	No	21	0.287	6.027
6	Neutral CT 400/200/100/1A	No	3	0.231	0.693
7	1600A Bus Isolator triple pole double break gang operated	Set	23	1.867	42.936
8	800A triple pole double break gang operated Line Isolator	Set	4	2.517	10.069
9	Power Transformer 110/11kV, 20MVA	No	1	115.345	115.345
10	Power Transformer 110/33kV, 25MVA	No	1	158.155	158.155
11	Transformer control and relay panel	Set	3	5.276	15.828
12	Feeder control and relay panel	Set	4	5.272	21.087
13	Bus Coupler control and Relay Panel	Set	1	2.150	2.150
14	Kundah conductor	kM	5	2.002	10.012
15	Insulator and hardware fittings	No	1500	0.005	7.500
16	Earthing arrangements		LS	50.000	50.000
17	Control cables of various sizes	kM	9	2.739	24.653
18	Fabricated steel structure	MT	285	0.750	213.750
19	Bus arrangement	Each	LS	50.000	50.000
	<b>Sub Total</b>				<b>823.289</b>
	<b>Part II - 33kV side</b>				
1	Control cables	km	1.5	2.739	4.109
2	Steel structures	MT	10	0.810	8.101
3	33kV indoor 3 panel set (1 incomer panel, 2 feeder panels )	No	1	31.624	31.624
4	33kV Lightning Arrester	No	9	0.096	0.861
5	33kV Line Isolator	No	2	0.500	1.001
6	33kV Neutal CT 400/200/100/1A	No	1	0.277	0.277
7	33kV 3 x 300 sq.mm XLPE UG Cable	km	0.5	21.783	10.891
8	33kV XLPE 3x300 sq.mm heat shrinkable Indoor cable end kit	No	3	0.140	0.419
9	33kV XLPE 3x300 sq.mm heat shrinkable Outdoor cable end kit	No	3	0.171	0.513
	<b>Sub Total</b>				<b>57.796</b>
	<b>Part - III 11kV Side</b>				
1	11kV 1 x 500 XLPE cable	km	4	6.065	24.258
2	Lightning Arrester with structure	No	9	0.020	0.180
3	Neutral CT 400/200/100/1A	No	2	0.265	0.531
4	Control cables of various sizes	km	6	2.739	16.436
5	11kV indoor 18 panel set (2 incomers, 1 bus coupler, 15 feeder panels)	Set	1	83.157	83.157
6	3 x 300 XLPE UG cable	km	4	9.130	36.521
7	11kV XLPE 1x500 sq.mm heat shrinkable Indoor cable end kit	No	16	0.018	0.288
8	11kV XLPE 1x500 sq.mm heat shrinkable Outdoor cable end kit	No	16	0.019	0.311

9	11kV XLPE 3x300 sq.mm heat shrinkable Indoor cable end kit	No	15	0.030	0.443
10	11kV XLPE 3x300 sq.mm heat shrinkable Outdoor cable end kit	No	15	0.025	0.375
11	160 kVA 11kV/440 V three phase Transformer	No	1	2.355	2.355
12	RMU (GCG)	No	14	2.300	32.195
<b>Sub Total</b>					<b>197.050</b>
<b>Part IV - Other items</b>					
1	110V, 200AH plante type Battery	No	1	8.113	8.113
2	30A Battery charger	No	1	1.159	1.159
3	14m A pole	No.	3	0.303	0.908
4	LT Distribution Panel	No	1	2.422	2.422
5	DC Distribution Panel	No	1	1.78	1.780
6	Yard lighting		LS	7.000	7.000
7	Bus bar protection and SCADA		LS	65.000	65.000
8	Fire Protection		LS	1.000	1.000
9	Insulating mat		LS	1.500	1.500
10	Tools & Plants		LS	10.000	10.000
<b>Sub Total</b>					<b>98.881</b>
<b>Total of Materials Part I + Part II+Part III+Part IV</b>					<b>1177.015</b>
<b>Part - V Civil works</b>					
1	Control room	m2	416.290	0.312	130.000
2	Demolishing quarters, control building, etc	m2	1250.00	0.012	15.000
3	Site levelling	m3	2500.00	0.002	5.000
4	Road construction	m2	1020.00	0.025	26.000
5	Well and water tank		LS		10.000
6	Gate and compound wall maintenance		LS		10.000
7	Drainage		LS		5.000
8	Foundation of equipments, yard structures, Fire wall and cable trench		LS	100.000	100.000
9	Yard metalling and fencing		LS	50.000	50.000
<b>Sub Total</b>					<b>351.000</b>
<b>ABSTRACT</b>					
			<b>Amount in Lakhs</b>		
1	Materials Total (Part I+ Part II+Part III+Part IV)		1177.015	<b>A</b>	
2	Materials Total without GST (A/1.18)		997.471	<b>B</b>	
3	Erection & Commissioning @ 7.5 % of (B)		74.81	<b>C</b>	
4	Transportation, Insurance & Contingency @ 6% of (B)		59.85	<b>D</b>	
5	Civil Works and special works, if any (Part V)		351.00	<b>E</b>	
6	Tree Cutting Compensation if any		0.00	<b>F</b>	
7	Dismantling existing 66kV yard		7.00	<b>G</b>	
8	Dismantling existing 110kV yard		6.10	<b>H</b>	
9	Electrification of Control room building		5.00	<b>I</b>	
10	Sub Total (B+C+D+E+F+G+H+I)		1501.23	<b>J</b>	
11	Overhead charges @ 10% of (J)		150.12	<b>K</b>	
12	Sub Total (J+K)		1651.35	<b>L</b>	
13	GST @ 18%		297.24	<b>M</b>	
14	Total (L+M)		1948.59		
	Unforeseen if any		51.41		
<b>Grand Total</b>			<b>2000.00</b>		
<b>Rupees Twenty Crores Only</b>					

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*[Signature]*  
Assistant Executive Engineer