TAMIL NADU TRANSMISSION CORPORATION LIMITED

ABSTRACT

TANTRANSCO – Establishment of 110/33-11 kV SS at Ammoor with 1x16 MVA, 110/33 kV power transformer and 2x10 MVA, 110/11 kV power transformers in Thiruvalam Operation Circle (Vellore EDC) of Vellore Region – Administrative approval – Accorded

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TECHNICAL BRANCH

(Per) CH TANTRANSCO Proceedings No. 40

Dated: 08 .05.2026
Parabhaava Varudam
Chithirai - 25
Thiruvalluvar Aandu 2057

READ: Chairman's approval dated 09.04.2026

PROCEEDINGS:

1. The Tamil Nadu Transmission Corporation Limited hereby approves the proposal for establishment of 110/33-11 kV SS at Ammoor with 1x16 MVA, 110/33 kV power transformer and 2x10 MVA, 110/11 kV power transformers in Thiruvalam Operation Circle (Vellore EDC) of Vellore Region at an estimated cost of Rs.1700.013 lakhs Gross and Nett subject to following conditions:

   (i) Commissioning of Sathumadurai 230/110 kV SS ii) Strengthening of the Thiruvalam-Kaveripakkam 110 kV feeder from Leopard conductor to Panther conductor iii) Commissioning of 3rd 230 kV link feeder between Thiruvalam 400 kV SS and Thiruvalam 230 kV SS (iv) No additional loads shall be added to the proposed Ammoor 110 kV SS other than the already existing loads of Sipcot 110/11 kV SS and Kaveripakkam 110/33-11KV SS which are proposed to be transferred to the proposed Ammoor 110 kV SS (v) No further loads shall be added in the Sipcot - Kaveripakkam 110 kV feeder.The detailed estimate and report are annexed to these proceedings.

2. The expenditure is chargeable to TANTRANSCO - Funds - Capital Expenditure – Thiruvalam Operation Circle (Vellore EDC) - A/C code No:1020500.

3. By virtue of the provisions contained in sub-section (2) (a) of section 185 of the Electricity Act, 2003, TANTRANSCO being the Transmission utility, Licensee and successor entity of Tamil Nadu Electricity Board will exercise the powers of the Telegraph Authority under the provisions of section 164 of the Electricity Act,

2003, which have already been conferred upon the Board under section 51 of the Indian Electricity Act, 1910.

4. The works will be taken up after ensuring necessary budget provision.

// BY ORDER OF THE CHAIRMAN//

J.PREMALATHA
CHIEF ENGINEER /TRANSMISSION

Encl: Report and detailed estimate.

To

The Chief Engineer/Distribution/Vellore Region

Copy to:

The Managing Director/TANTRANSCO/Chennai-2
The Director/Distribution/TNPDCL/Chennai-2
The Director/Transmission Projects/TANTRANSCO/Chennai-2
The Director/Operation/TANTRANSCO/Chennai-2
The Director/Finance/TANTRANSCO/Chennai-2
The Chief Engineer/TP & SO/ Chennai
The Chief Engineer/ TP & SO/ Salem
The Superintending Engineer/Operation/ Thiruvalam
The Superintending Engineer/ Vellore EDC
The Superintending Engineer/GCC/Salem
The Superintending Engineer/Transmission -I/Chennai -2
The Superintending Engineer/Transmission -II/Chennai -2
The Superintending Engineer/System Studies/Chennai -2
The Resident Audit Officer (AGO'S Unit)/Chennai -2
B.P.Section (Administrative Branch)
Stock file

//FORWARDED BY ORDER//

08/05/2026

EXECUTIVE ENGINEER/MASTER PLAN II

Enclosure to (Per) CH TANTRANSCO Proceedings No. 40 dated : 08.05.2026

REPORT TO ACCOMPANY THE ESTIMATE

This proposal envisages establishment of 110/33-11 kV SS at Ammoor with 1x16 MVA,110/33 kV power transformer and 2x10 MVA,110/11 kV power transformers in Thiruvalam Operation Circle (Vellore EDC) of Vellore Region at an estimated cost of Rs.1700.013 Lakhs Gross and Nett. subject to (i) Commissioning of Sathumadurai 230/110 kV SS ii) Strengthening of the Thiruvalam-Kaveripakkam 110 kV feeder from Leopard conductor to Panther conductor iii) Commissioning of 3rd 230 kV link feeder between Thiruvalam 400 kV SS and Thiruvalam 230 kV SS (iv) No additional loads shall be added to the proposed Ammoor 110 kV SS other than the already existing loads of Sipcot 110/11 kV SS and Kaveripakkam 110/33-11KV SS which are proposed to be transferred to the proposed Ammoor 110 kV SS (v) No further loads shall be added in the Sipcot - Kaveripakkam 110 kV feeder.

Need:

At present Ammoor and its surrounding area are being fed by SIPCOT 110/11 kV SS, Walaja 33/11 kV SS and Ozhugur 33/11 kV SS.

The details of the substations and the feeders feeding these areas are furnished as detailed below:

The details of the feeders fed from SIPCOT 110/11 kV SS feeding a portion of the above area is furnished below:

Sl. No	Name of the 11 kV feeder	C.L. in MVA	Length in kms	Peak in MVA	Voltage regulation in %	Line loss in LU
1.	11 kV Walaja	12.82	6.38	4.8	21.72	42.62
2.	11 kV Chettithangal	10.52	9.91	3.7	20.86	26.23

The details of the feeders fed from Walaja 33/11 kV SS feeding a portion of the above area is furnished below:

Sl. No	Name of the 11 kV feeder	C.L. in MVA	Length in kms	Peak in MVA	Voltage regulation in %	Line loss in LU
1	11 kV Calsea	9.61	8.65	4.3	18.62	14.59

The details of the feeders fed from Ozhugur 33/11 kV SS feeding remaining portion of the above area is furnished below:

Sl. No	Name of the 11 kV feeder	C.L. in MVA	Length in kms	Peak in MVA	Voltage regulation in %	Line loss in LU
1	11 kV Sengadu	6.88	9.39	2.37	18.05	17.56

From the above, it may be seen that the voltage regulation of all the above said 11 kV feeders have exceeded the permissible limit of 8%. Even if the entire lengths of the feeders are strengthened with ACSR 7/4.09 mm conductor, the voltage regulation could not be brought down within the permissible limits. The length of 11 kV SIPCOT – Chettithangal feeder and 11 kV Ozhugur – Sengadu feeder feeding Ammoor and its surrounding area are more than 9 Kms and bifurcation of these feeders will not solve the low voltage problem, since loads are at tail end of the feeders. To limit the voltage regulation of feeders and to improve supply conditions, establishment of new Ammoor 110/11 kV SS is very essential.

The 33 kV supply is being extended to the following 33 kV substations from Kaveripakkam 10/33-11 kV SS:

Sl. No	Name of the 33 kV feeder	Name of the 33 kV SS	Pr. Tr capacity (MVA)	Remarks
1	Walaja	Walaja	2x8	
2	Musiri	Musiri	1x8	Sanctioned 2x8 MVA
3	Ozhugur	Ozhugur	1x8+1x5	
4	Karivedu	Karivedu	1x8	Sanctioned 2x8 MVA
5	Kalavai	Chennaleri (Main source is from Kalavai 110 kV SS)	2x8	Only Back feeding

Enhancement of power transformer capacity from 1x8 MVA to 2x8 MVA at both Karivedu 33/11 kV SS and Musiri 33/11 kV SS has been sanctioned to be fed from Kaveripakkam 110 kV SS vide (Per) MD TNPDCL BP.No.78, dt.05.07.25 and BP.No.88, dt.08.08.25 respectively.

Further, the Chief Engineer/Distribution/Vellore Region has stated that out of the above said substations, Walaja 33 kV SS (2x8 MVA) and Musiri 33 kV SS (Ext-1x8 MVA, Sanc. 2x8 MVA) which are at a distance of 10.8 km and 10.9 km respectively away from Kaveripakkam 110 kV SS are proposed to be transferred to the proposed Ammoor 110 kV SS thereby reducing the distance to 9.1 km and 9.3 km which in turn will reduce the line loss.

In this regard it is to be stated that, about 61 MVA of load is proposed to be connected to Kaveripakkam 110/33-11 kV SS as against the installed capacity of 48 MVA. If on transferring total 32 MVA loads of Walaja 33 kV SS (2x8 MVA) and Musiri 33 kV SS (Ext-1x8 MVA, Sanc. 2x8 MVA) to the proposed Ammoor 110 kV SS, the existing Kaveripakkam 110 kV SS having 3x16 MVA, 110/33 kV power transformer will be under loaded.

Further, any breakdown in Kaveripakkam 110 kV SS, supply will be interrupted to the above said 4 nos. 33 kV SS, leading to black out in the area.

Hence based on field condition, Walaja 33 kV SS may be proposed to be connected at the proposed Ammoor 110 kV SS.

On establishment of proposed Ammoor 110/33-11 kV SS, the feeder regulation details and load to be retained in the existing feeders post establishment of the proposed SS are detailed below:

Sl. No	Name of the feeder	CL in (MVA)	Length in kms.	VR in %	Line loss in LU
1	11 kV SIPCOT – Walaja	3.30	5.202	3.635	1.73
2	11 kV SIPCOT – Chettithangal	3.84	4.183	1.912	0.81
3	11 kV Walaja – Calsea	5.18	6.003	3.266	2.24
4	11 kV Ozhugur – Sengadu	3.23	5.511	4.110	1.67

1 No. 33 kV breaker and 4 Nos. 11 kV feeder breakers are proposed to be erected in the proposed Ammoor 110/33-11 kV SS. Being TRANSCO scheme, provision for 33 kV link lines and laying of 11 kV cable for additional feeders has not been included in the estimate. Hence, the CE/Distribution/Vellore Region may arrange to evolve the same separately and obtain the approval of the competent authority, separately.

DETAILS OF POWER TRANSFORMER CAPACITY PROPOSED:

A connected load of 24.25 MVA is proposed to be transferred from SIPCOT 110/11 kV SS, Walaja 33/11 kV SS and Ozhugur 33/11 kV SS to the proposed 110/11 kV SS. The anticipated peak to be incident on the proposed Ammoor SS on 110/11 kV side will be of 9.12 MVA with diversity factor 2.66. Hence, it is proposed to install 2x10 MVA, 110/11 kV power transformer considering the load incident on the new substation.

It is also proposed to transfer the existing loads of Walaja 33/11 kV SS (2x8 MVA) to the proposed Ammoor SS, thereby providing load relief to the existing Kaveripakkam 110 kV SS and reduction in length of the 33 kV feeder. Hence, it is proposed to install 1x16 MVA, 110/33 kV power transformer at Ammoor 110 kV SS.

ADEQUACY OF TRANSMISSION SYSTEM:

The 110 kV source to the proposed Ammoor 110/33-11 kV SS is proposed to be extended from Thiruvalam 230/110 kV SS by making LILO of 110 kV Thiruvalam – Kaveripakkam feeder.

Details of the Source SS:

a.	Name of the source SS	Thiruvalam 230/110 kV SS
b.	Capacity of the auto tr.	4x100 MVA
c.	Present peak reached	356 MVA
d.	Whether the auto tr. capacity is adequate: As per the load flow study results, on considering the upcoming Sathumadurai 230/110 kV SS, the Source SS, ie, Thiruvalam 230/110 kV SS is found to be adequate.	

Details of the Source feeder:

a.	Name of the feeder	110 kV Thiruvalam – Kaveripakkam (SIPCOT – Kaveripakkam) feeder
b.	Size/Loading capacity of the conductor	Panther - 84 MVA Leopard – 55 MVA
c.	Present loading in MVA	74 MVA
f.	Whether the conductor is adequate: As per the load flow study results, Thiruvalam – Kaveripakkam 110 kV feeder has been observed to be overloaded even after considering the conversion of Leopard Conductor to Panther Conductor.	

In load flow study report dated:06.05.2025, it has been stated that "based the SE/EDC/Vellore letter dated-10.02.25 and 25.04.25, the proposal for establishment of proposed Ammoor 110/33-11 kV Substation may be considered subject to operating conditions and the following works are to be expedited:

(i) Commissioning of Sathumadurai 230/110 kV SS.
(ii) Strengthening of the Thiruvalam-Kaveriapkkam 110 kV feeder from Leopard conductor to Panther conductor.
(iii) Commissioning of 3rd 230 kV link feeder between Thiruvalam 400 kV SS and Thiruvalam 230 kV SS.
(iv) No additional loads shall be added to the proposed Ammoor 110kV SS other than the already existing loads of Sipcot 110/11kV SS and Kaveripakkam 110/33-11 kV SS which are proposed to be transferred to the proposed Ammoor 110 kV SS.
(v) No further loads shall be added in the Sipcot - Kaveripakkam 110kV feeder.

For both High RE & Non RE scenarios the details received from field is as follows:(P.213)

Name of the SS	Capacity (in MVA)	Present Maximum Load/Sustained Peak (in MVA)	Load expected after new SS (After load bifurcation) (in MVA)	Load Relief (in MVA)
SIPCOT 110/11 kV SS	3x16	44.16	37.66	6.5
Walaja 33/11 kV SS	2x8	14.80	12.88	1.9
Ozhugur 33/11 kV SS	1x8+1x5	9.5	8.1	1.4
				9.8

The loading of proposed SS (New SS)

Name of the SS	Capacity	Load expected/ Anticipated Load in new SS (After load bifurcation from the existing nearby substations)	Remarks
Ammoor 110/33-11 kV SS	1x16	Load transfer – 9.8 MVA	Total anticipated – 9.8 MVA

DETAILS OF WORKS INVOLVED:

- Establishment of 110/33-11 kV SS at Ammoor with 1x16 MVA, 110/33 kV power transformer and 2x10 MVA, 110/11 kV power transformers with associated equipments.
- Erection of 110 kV DC line on DC tower with Panther conductor for a route length of 0.6 kms. for making LILO of the existing 110 kV Thiruvalam – Kaveripakkam (SIPCOT – Kaveripakkam) feeder at the proposed SS.

LAND AVAILABILITY:

G.O. has been approved for the land allotment/alienation of Government land to an extent of 1.85.0 Hectares (4.571 Acres) at Ammoor village vide G.O.(Ms). No. 228, DT:06.05.2025.

The name transfer in the name of SE/O/ Thiruvalam /TANTRANSCO is under process. The land should be acquired within two months after getting administrative approval.

The Superintending Engineer/GCC/Salem has certified that the above land is suitable for establishment of 110/33-11 kV SS at Ammoor subject to condition that one number tower of Thiruvalam-Kaveripakkam 110 kV line existed near the proposed site shall be deviated before handing over of site for execution of work.

08/05/2026

EXECUTIVE ENGINEER/MASTER PLAN II

DETAILED ESTIMATE FOR ESTABLISHMENT OF 110/33-11 kV SS AT AMMOOR WITH 1x16 MVA, 110/33 kV & 2x10 MVA, 110/11 kV POWER TRANSFORMERS IN THIRUVALAM OPERATION CIRCLE (VELLORE EDC)

Rs in Lakhs

SL No.	DESCRIPTION	QTY	RATE	PER	AMOUNT	TOTAL AMOUNT
I	**CIVIL WORKS**					
1	Land cost (actuals)				40.109	
2	Control room building with internal electrification, bore well with septic tank			LS	81.323	
3	Plinths, Fencing, Road and cable duct etc.,			LS	189.094	
4	Filling the yard with Well Gravel			LS	16.211	
5	Filling the yard with stone dust and 20 mm HBG metal			LS	8.224	
6	Total				294.852	
7	Total (including Contingencies @1%, Establishment & Supervision charges @15% & GST @18%)				405.307	
	Total (Civil work)				**445.416**	**445.416**
II	**ELECTRICAL WORKS**					
1	110 kV AB Switch with earth blade	2 Nos	2.300	E	4.600	
2	110 kV AB Switch without earth blade	9 Nos	1.814	E	16.326	
3	110 kV SF6 Breaker	2 Nos	5.648	E	11.296	
4	110 kV CTs (Single Phase)	6 Nos	1.665	E	9.990	
5	110 kV PTs (Single Phase)	3 Nos	1.125	E	3.375	
6	110 kV LAS (Single Phase)	9 Nos	0.323	E	2.907	
7	33 kV AB Switch	4 Nos	0.395	E	1.580	
8	33 kV VCB (LV-1+ Feeder-1)	2 Nos	2.483	E	4.966	
9	33 kV CTs	6 Nos	0.260	E	1.560	
10	33 kV PTs	3 Nos	0.284	E	0.852	
11	33 kV LAS (Single Phase) - Station type	3 Nos	0.032	E	0.096	
12	33 kV LAS (Single Phase) - Distribution type	3 Nos	0.032	E	0.096	
13	11 kV breaker (LV-2+ Feeder-4)	6 Nos	1.378	E	8.268	
14	11 kV CTS	18 Nos	0.212	E	3.816	
15	11 kV AB Switch	12 Nos	0.390	E	4.680	
16	11 kV Bus PT (3 phase)	1 set	0.433	set	0.433	
17	11 kV LAS - Station type	6 Nos	0.015	E	0.090	

DETAILED ESTIMATE FOR ESTABLISHMENT OF 110/33-11 kV SS AT AMMOOR WITH 1x16 MVA, 110/33 kV & 2x10 MVA, 110/11 kV POWER TRANSFORMERS IN THIRUVALAM OPERATION CIRCLE (VELLORE EDC)

Rs in Lakhs

SL No.	DESCRIPTION	QTY	RATE	PER	AMOUNT	TOTAL AMOUNT
18	11 kV LAS - Distribution type	12 Nos	0.007	E	0.084	
19	Earthing and Yard lighting			LS	10.000	
20	Control & Relay panels			LS	25.000	
21	Control cable			LS	10.000	
22	110 V Battery with Charger	2 sets	5.853	set	11.706	
23	Fire Fighting equipments		5.000	LS	5.000	
24	110 V D.C Panel	1 No	0.830	E	0.830	
25	A.C Panel	1 No	1.029	E	1.029	
26	110 V DC Annunciator panel	1 No	0.97	E	0.970	
27	100 kVA,11 kV/433V, Stn.Transformer	1 No	4.014	E	4.014	
28	P&T Phone	1 No	0.100	E	0.100	
29	T&P materials & furnitures			LS	4.000	
30	Scientific Instruments			LS	10.000	
31	11 kV capacitor bank/2.4 MVAR	2 set	19.367	set	38.734	
32	Sub total				196.398	
33	Contingencies 1%				1.964	
34	Cost of materials				198.362	
35	Labour & Transport @ 15%				29.754	
36	Sub total for material, labour & transport (A)				**228.116**	
	POWER TRANSFORMERS					
37	16 MVA,110/33 kV Pr.Tr with OLTC	1 No.	188.012	E	188.012	
38	10 MVA, 110/11 kV Pr.Tr. With OLTC	2 Nos.	123.725	E	247.450	
39	Labour & Transport for transformer	3 loc	20.000	loc	60.000	
40	Earthing	3 loc	0.550	loc	1.650	
41	Sub total for Transformer, labour & transport (B)				**497.112**	
42	Sub total (A)+(B)				725.228	
43	Establishment & Supervision charges @15%				108.784	
44	Sub total				834.013	

DETAILED ESTIMATE FOR ESTABLISHMENT OF 110/33-11 kV SS AT AMMOOR WITH 1x16 MVA, 110/33 kV & 2x10 MVA, 110/11 kV POWER TRANSFORMERS IN THIRUVALAM OPERATION CIRCLE (VELLORE EDC)

Rs in Lakhs

SL No.	DESCRIPTION	QTY	RATE	PER	AMOUNT	TOTAL AMOUNT
45	GST @18%				150.122	
46	Total				**984.135**	
47	110 kV Structure	1 set	136.721	set	136.721	
48	33 kV Structure	1 set	38.090	set	38.090	
49	11 kV Structure	1 set	33.791	set	33.791	
	Total SUBSTATION Electrical work				**1192.737**	
	Total SUBSTATION WORK (Civil & Electrical work)					**1638.153**
	ASSOCIATED TRANSMISSION LINES					
50	110 kV DC line on DC tower with Panther conductor with LILO arrangements, Tapping at existing Thiruvalam - Kaveripakkam 110kV Feeder (incl. of all taxes, Land & Tree Compensation)	0.6 kms	103.100	km	61.860	
	TOTAL (G&N)					**1700.013**

08/05/2026

Executive Engineer/Master Plan II

Annexure - I

TAMILNADU TRANSMISSION CORPORATION LIMITED

110 KV DC line on DC Towers with Panther conductor (SOR 25-26)

Sl. No.	Quantity		DESCRIPTION	Rate in Rs.	Per	Amount in Rs.
1			Galvanised steel tower materials with extension part wherever necessary, and bolts and nuts etc.,			
a	244.95	MT	MS tower parts	93,926.24	MT	2,30,07,232.49
b	15.47	MT	Ordinary Bolts & nuts	1,10,160.13	MT	17,04,177.21
2	1,111.00	No.	90 KN Disc Insulators	376.80	No.	4,18,624.80
3	2,057.00	No.	120 KN Disc Insulators	500.00	No.	10,28,500.00
			Conductor & Earth wire accessories			
4	120.00	Set	Single Suspension fittings for ACSR Panther	1,074.42	Set	1,28,930.40
5	36.00	Set	Sus. fittings for Jumper	1,074.42	Set	38,679.12
6	240.00	Set	Single Tension fittings for ACSR Panther	1,292.40	Set	3,10,176.00
7	12.00	Set	Double Tension Fittings for ACSR Panther	3,678.60	Set	44,143.20
8	240.00	Set	Vibration Damper for Panther	490.22	Set	1,17,652.80
9	30.00	Set	Mid span comp.joint for ACSR Panther	438.87	Set	13,166.10
10	10.00	Set	Repair sleeve for ACSR Panther	235.42	Set	2,354.20
11	120.00	Set	PA Rod for Panther	590.98	Set	70,917.60
12	60.60	KM	ACSR PANTHER conductors 1.0% sag	1,98,583.19	KM	1,20,34,141.31
13	10.50	KM	OPGW - 48 Fibre with accessories	2,50,185.00	KM	26,26,942.50
			Earthing materials			
14	40.00	No.	Pipe type earthing	1,613.08	No.	64,523.20
15	2.00	No.	Counter poise earthing (120m length)	3,870.43	No.	7,740.86
			Tower Accessories			
16	40.00	No.	Number plate	218.76	No.	8,750.40
17	40.00	No.	Danger Board	242.95	No.	9,718.00
18	40.00	No.	Phase plate (Set of three)	252.41	No.	10,096.40
19	40.00	No.	Circuit plate	235.58	No.	9,423.20
20			**Total Cost of materials**			**4,16,55,889.79**
			TOWER FOUNDATIONS			
21	20.00	No.	GCR type tower 0° to 2° Suspension tower	1,02,547.00	No.	20,50,940.00
22	8.00	No.	HCR type tower 2° to 30° Medium angle tower	2,64,604.00	No.	21,16,832.00
23	12.00	No.	KCR type tower 30° to 60° High angle & Dead end tower	4,69,820.00	No.	56,37,840.00

TAMILNADU TRANSMISSION CORPORATION LIMITED						
110 KV DC line on DC Towers with Panther conductor (SOR 25-26)						
Sl. No.	**Quantity**		**DESCRIPTION**	**Rate in Rs.**	**Per**	**Amount in Rs.**
24			Tower protection works			5,00,000.00
25			Total Cost of Foundations			1,03,05,612.00
26			Erection charges(10% on item 20)			41,65,588.98
27	10.00	KM	Tree/Crop compensation	10,00,000.00	KM	1,00,00,000.00
			Total amount (item 20+25+26+27)			6,61,27,090.77
28			GST @ 18% on total amount			1,19,02,876.34
29			Transportation & Insurance charges (5% on Item 20)			20,82,794.49
30			Contingencies (1% on item 20, 25 & 26)			5,61,270.91
31			Total Cost of Materials, Foundation and Erection charges but excluding GST			6,87,71,156.17
32			Establishment & Supervision Charges at 15.0% on item 31			1,03,15,673.00
33			Total Cost of materials, Foundation and Erection charges including GST			8,06,74,032.51
34			TOTAL COST (Item 32 & 33)	10.00	KM	9,09,89,705.51
35			Land compensation			1,06,50,519.03
36			TOTAL COST PER	10.00	KM	10,16,40,224.54
37			TOTAL COST PER 1 KM (Rounding to nearest 1000)	SAY		1,01,64,022.45 **1,01,65,000.00**
			TOTAL COST/KM in LAKHS			**101.65**