



**FOURTEENTH KERALA LEGISLATIVE ASSEMBLY**

**COMMITTEE  
ON  
PUBLIC UNDERTAKINGS  
(2016-2019)**

**SEVENTIETH REPORT**  
(Presented on 25th June, 2018)

**SECRETARIAT OF THE KERALA LEGISLATURE  
THIRUVANANTHAPURAM**

**2018**

FOURTEENTH KERALA LEGISLATIVE ASSEMBLY

**COMMITTEE  
ON  
PUBLIC UNDERTAKINGS  
(2016-2019)**

**SEVENTIETH REPORT**

**On**

**The action taken by Government on the Recommendations contained  
in the Twenty Second Report of the Committee on Public  
Undertakings (2011-2014) relating to Kerala  
State Electricity Board, based on the  
Report of the Comptroller and  
Auditor General of India  
for the year ended  
31-3-2005 and  
31-3-2007  
(Commercial)**

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COMMITTEE ON PUBLIC UNDERTAKINGS (2016-2019)

**COMPOSITION**

*Chairman :*

Shri C. Divakaran.

*Members :*

Shri T. A. Ahammed Kabeer

Shri K. B. Ganesh Kumar

Shri C. Krishnan

Shri S. Rajendran

Shri Thiruvanchoor Radhakrishnan

Shri P. T. A. Rahim

Shri Raju Abraham

Shri Sunny Joseph

Shri C. F. Thomas

Shri P. Unni.

*Legislature Secretariat :*

Shri V. K. Babu Prakash, Secretary

Smt. Sumakumari. G., Special Secretary

Shri Harish . G., Deputy Secretary

Smt. Deepa V., Under Secretary.

## INTRODUCTION

I, the Chairman, Committee on Public Undertakings having been authorised by the Committee to present the Report on their behalf, present this Seventieth Report on the action Taken by Government on the Recommendations contained in the Twenty Second Report of the Committee on Public Undertakings (2011-2014) relating to the Kerala State Electricity Board based on the Reports of the Comptroller and Auditor General of India for the years ended 31st March, 2005 and 2007 (Commercial).

The Statement of Action Taken by the Government included in this Report was considered by the Committee constituted for the year (2016-2019) at its meeting held on 17-5-2018.

This report was considered and approved by the Committee at its meeting held on 19-6-2018.

The Committee place on record its appreciation for the assistance rendered to them by the Accountant General (Audit), Kerala during the examination of the Action Taken Statements included in this Report.

Thiruvananthapuram,  
19th June, 2018.

C. DIVAKARAN,  
*Chairman,*  
*Committee on Public Undertakings.*

## **REPORT**

This report deals with the action taken by Government on the recommendations contained in the Twenty Second report of the Committee on Public Undertakings (2011-2014) relating to Kerala State Electricity Board based on the Report of the Comptroller and Auditor General of India for the years ended 31st March, 2005 and 2007 (Commercial).

The Twenty Second Report of the Committee on Public Undertakings (2011-2014) was presented to the House on 2nd April 2013. The Report contained 10 recommendations in Para numbers 4,8,9,15,16,17,24,25,26 and 27, of which the Government furnished Action Taken Statements to all of them. The Committee considered the replies to the recommendations in Paragraph Nos.15,16,17,24,25,26 and 27 on 9-9-2015, Paragraph Nos. 8 and 9 on 24-11-2015 and Paragraph No. 4 on 17-5-2018 and accepted them without remarks. The recommendations of the Committee and the corresponding Action Taken Statements furnished by the Government are included in this Report.

**ACTION TAKEN STATEMENTS FURNISHED BY GOVERNMENT WHICH HAS BEEN ACCEPTED BY THE  
COMMITTEE**

(1)	(2)	(3)	(4)	(5)
Sl. No.	Para. No.	Department Concerned	Recommendations/Conclusions	Action taken by Government
1	4	Power	<p>The Committee finds that the audit para could have been avoided had K S .E. B showed some attention in furnishing the replies to queries in time. The Committee therefore recommends that earnest efforts must be taken by K.S.E.B to furnish replies to audit objections and make sure that they have been furnished promptly so that the similar situations, can be avoided in future. The Committee desires to be furnished with the details of collection of the centage charges due from PGCIL in respect of stores, incidental and supervision of the equipments/materials procured.</p>	<p>K.S.E.Board had entered into a Memorandum of Understanding (MoU) with M/s PGCIL dated 31-3-1997 for the construction of 220KV bays at pallom substation, in order to accommodate 220KV Kayamkulam-Pallom DC line, at an estimate cost of ₹ 5.2 Cr. on deposit work basis. As per Cl.6.1 of MoU, M/s PGCIL had to pay the centage charges for the equipments supplied for the 220 KV bay extension work at Pallom Substation. But, while preparing the final accounts the centage charges</p>

				<p>amounting to ₹ 17.44 lakh (21% of the cost of equipments supplied by M/s PGCIL, ie; ₹ 83.38 lakh) was omitted.</p> <p>The subject matter was pointed out in the report of the Committee on Public Undertakings (COPU) (2011-2014) 22nd report Recommendation No. 4 (Audit para 4.8 of the C&amp;AG report for the year ended on 31-3-2005). KSEB was directed to demand the left out amount from M/s PGCIL. In spite of repeated requests, PGCIL did not remit the amount and vide letters dated 31-10-2006 &amp; 9-9-2013, it was intimated that the accounts in respect of Kayamkulam system bays have already been settled in full and final in April 2002 and hence no further claim is admissible.</p>
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				<p>Chairman and Managing Director, K.S.E.B limited once again requested PGCIL that re-open the matter and remit the amount to K.S.E.B Limited's Account as K.S.E.B Limited is accountable for the amount and hence is constrained to recover the amount from PGCIL.</p> <p>In reply to the above, Executive Director, PGCIL intimated that the accounts in respect of Pallom bays commissioned in November 1999 had already been settled full and final in April, 2002 after confirmation from K.S.E.B Limited. Hence it is not possible to reopen the same and admit any additional claim.</p> <p>Full Time Directors (FTD) in the meeting held on 28-7-2016 decided to waive the amount as PGCIL is not ,</p>
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				admitting the claim of K.S.E.B. Limited and as it has been pending for more than 15 years and issued order accordingly vide Board Order B.O (FTD) No. 2243/2016/D(T&SO) TI/CoPU/2016-17 dated 30-7-2016.				
2	8	Power	The Committee finds that failure on the part of the K.S.E.B in keeping the contractual obligations with Andrew Yule & Company Ltd., Calcutta. (AYL) in an agreement for the work of Commissioning of 33/11 KV substations in the State had resulted in the loss of ₹ 1. 27 crore. The Committee is surprised to note that in spite of the spending of ₹ 3.5 crore, hardly one fourth of the works could be completed. The Committee therefore wants to have a detailed report on the total expenditure incurred for all the works, the manner in which and the stage at which Andrew Yule	<p><b>1.Total expenditure incurred towards the whole work</b> (Thiruvalloor, Melady and Ramanattukara 33/11 KV Substations and bay extension at 110KV Substation, Vadakara .</p> <table border="1"> <tr> <td>(a)Total value of materials supply / work done and billed by AYL</td> <td>₹ 3,04,46,789.00</td> </tr> <tr> <td>(b)Balance Amount for works done not billed.</td> <td>₹ 17,89,570.20</td> </tr> </table>	(a)Total value of materials supply / work done and billed by AYL	₹ 3,04,46,789.00	(b)Balance Amount for works done not billed.	₹ 17,89,570.20
(a)Total value of materials supply / work done and billed by AYL	₹ 3,04,46,789.00							
(b)Balance Amount for works done not billed.	₹ 17,89,570.20							

			& Company Ltd. had terminated the contract. The Committee also desires to have a detailed report on the total amount given to company and the loss incurred to the Board in the deal.	(c) Balance Amount for materials supplied not billed	₹ 10,52,187.58
				(d) Amount / Value for the line materials supplied by Andrew Yule (used by Board for line construction work)	₹ 64,76,164.20
				(e) Expenditure incurred by Board for completing the balance work (Annexure II)	₹ 6,58,05,587.00
				(f) Total expenditure for the works under Balussery Project (except 33KV S / S	₹ 10,55,70,297.98

				<p>Orkattery which was not executed since 220k VS /S Vadakara is nearer to it) - Sum of (a) to (e)</p>	
				<p><b>2. Manner and stage at which M/s Andrew Yule was terminated</b></p> <p>The agreement for the execution of transmission project Balussery was executed on 26-5-2000. As per agreement, the firm had to complete the works within 6 months from the date of handing over of the site. It is true that a delay occurred in handing over of all sites to the contractor as scheduled. But K.S.E.B Ltd. handed over the site of Melady, Vadakara and Orkattery on 18-11-2000 and Thiruvallur and Ramanattukara on</p>	

				<p>24-1-2002. After the sites were taken over by the firm, no sincere attempts were made by the Turnkey contractor to properly schedule and complete the works instead the Turnkey contractor tried to just dump the equipments and materials required for the erection at the substation sites. In this context, several meetings were convened with the contractor and notices were served to them to restart the work in all sites and the responses in this regard were not convincing. It was very clear that the firm had no intention to complete the work within time and hence a termination notice was issued to the contractor for termination of the contract as per clause number 54 (1) and 53 (3) (a) of volume I of bid document, which forms an integral part of agreement. The facts furnished</p>
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				<p>by the contractor in response to the letter were not satisfactory. In spite of all the assistance offered by the Board, by way of releasing pending payments of passed bills, the Turnkey contractor did not show any interest in the execution of the project and instead the firm was requesting more time to start the work stating so many excuses. At this stage the Board had no other option but to terminate the contract.</p> <p><b><u>3.Total payment made to the company and loss incurred to Board.</u></b></p> <p><b><u>a. Total amount paid to the company (details given in Annexure I)</u></b></p> <table border="1" data-bbox="1024 895 1461 966"> <tr> <td data-bbox="1024 895 1270 966">Total Bill amount</td> <td data-bbox="1270 895 1461 966">₹ 3,04,46,789</td> </tr> </table>	Total Bill amount	₹ 3,04,46,789
Total Bill amount	₹ 3,04,46,789					

				Retention amount at Circle Office	₹ 30,44,679
				Penalty of delay	₹ 15,94,206
				Amount payable to the firm [1-(2+3)]	₹ 2,58,07,904
				Statutory recoveries (IT, WCT, KCWWF etc]	₹ 24,67,143
				Net payment by cheque (4-5)	₹ 2,33,40,761
<b><u>b. The proposed loss statement/ risk and cost amount to be recovered from M/s Andrew Yule is calculated as follows:</u></b>					
				1 Risk and cost/ penalty amount	₹ 6,56,33,278.80

					calculated (as per the terms and conditions of agreement)	
					2 Less Amount payable to M/s Andrew Yule for line materials supplied by them (used by the Board for the line construction work)	₹ 64,76,164.20
					3 Amount payable to AYL for works done not billed	₹ 17,89,570.20
					4 Amount payable to AYL for materials supplied, not billed	₹ 10,52,187.58



				5	Total amount payable to M/s Andrew Yule for materials/work done (2+3+4)	₹ 93,17,921.98
				6	Balance amount recoverable from M/s Andrew Yule [1-5]	₹ 5,63,15,356.82
				7	Bank Guarantee encashed by Board	₹ 95,22,465.00
				8	Retention amount available with Board	₹ 30,44,679.00
				9	Net amount to be recovered from M/s Andrew Yule [6-(7+8)]	₹ 4,37,48,212.82

3	9	Power	<p>The Committee recommends that K.S.E.B. should comply with the terms and conditions of the contract so, that avoidable losses incurred due to the delay in handing over sites, in making payments etc. can be checked in future.</p>	<p>K S E Board always tried to comply with the terms and conditions of contract in time but the major delay faced is in acquisition of land. The land acquisition is done either by compulsory acquisitions or by negotiated purchase. Compulsory acquisition takes too much time because of involvement of lot of Government procedures to be followed by Revenue Department. Hence now a days Board only opts for negotiated purchase, but this also takes a minimum of 9 to 12 months since the negotiation committee consisting of Dist. Collector, Land Acquisition Deputy Collector and Deputy Chief Engineer, KSEB Limited has to meet a minimum of 3 times if the rate is acceptable to party. If there is dispute between rates, the</p>
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				<p>committee has to meet several times to persuade the party to accept the rate approved by District Collector. Also necessary Board order and Government order has to be obtained before doing registration. All the above procedures, to be followed as per the relevant statutes, are time consuming. Hence any delay in land purchase is not because of KSEB official's lethargy but because of statutory obligations. At present commencement of project is being done only after the purchase of the land by KSEB. As per the procedure now being adopted, K.S.E.B purchases, land before the tendering process begins so as to prevent disputes in the deal and to eliminate the delay in completion of Projects.</p>
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				Regarding payments, the delay occurs when the bills are not properly prepared. All efforts are taken to process the bills faster at Circle level. The Deputy Chief Engineers who are the paying officers have been directed to make payments immediately after completion of works and submission of bills.
4	15	Power	The Committee observes that due to the delay on the part of the K.S.E.B in completing work of tree-cutting approval of profile and tower schedules, foundation designs, etc. envisaged in the tender conditions, the construction work of 220KV line at Kundara could not be started even after the scheduled completion date. The committee understands that the scope, design, profile, survey, tower spotting, foundation, etc. of the work have	As per agreement with M/s Tata Projects Ltd. (TPL), the period of completion for the Kundara line work was from 14-5-2001 to 13-5-2002. As mentioned in the recommendations no delay has occurred in carrying out the tree cutting work. The contractor started the work on 23-6-2001 and completed the route survey on 22-9-2001. The line route had been finalized so as to keep off from inhabited areas to

			<p>been totally changed and because of these large variations in the quantity of work involved, has resulted in the huge escalation of cost to ₹ 34.64 crore.</p>	<p>avoid public complaints. The profile of the line to Kundara for the total length of 24 kms was submitted by the contractor as three stretches in August 2001, October 2001 and March 2002. On technical scrutiny these profiles needed modifications and necessitated corrections. The profile was finally approved on 16-5-2002.</p> <p>Delay was caused in finalization of tower design due to the following reasons:</p> <p>The tower for the line work was designed by M/s TPL using a software package named I-soft. As KSEB doesn't possess this package, scrutiny of the same was to be done manually. On scrutiny of the tower designs furnished by M/s TPL, it was found that further modification was required</p>
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				<p>according to the wind condition of Kerala by which revision of foundation design was necessitated. The weight of tower assumed for estimation was almost equivalent to the actual weight of tower designed and finalized for the work. But the estimate prepared based on walkover survey was only a standard estimate being prepared for execution of 110 KV/220 KV line or lesser capacity and with conductor size of Single Kundah. However since the specification of the line had to conform with that of PGCIL'S line from where the LILO arrangements had to be made, the line had to be constructed using Double moose conductor. Usage of double moose conductor lead to the increase in number of towers and requirement of</p>
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				<p>higher extensions and thereby increasing total weight of the towers.</p> <p>In the case of foundation design, the design of foundations could be verified and finalized after the finalization of tower super structure based on which tower foundation forces are calculated. The foundation designs for various towers were submitted by the contractor during the period November 2001 to November 2002. Based on soil investigation report furnished by Dr. Paul K. Mathew, Professor, Department of Civil Engineering, M.A. College of Engineering, Kothamangalam, 2 to 4 numbers of piles in each location with 1m diameter and length varying from 8 m to 40m were proposed by M/s Tata Projects Limited and this extensive</p>
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				<p>variation in design necessitated a thorough review by KSEB. The soil testing done by M/s TPL in some locations were limited to only 7 m depth as in KSEB contract specifications. The test results did not give the depth at which the desired strength was available and this also made in finalization of the design of foundation difficult. The quantity in respect of foundation for towers increased based on the soil profile of the tower locations and due to heavier foundation forces of towers.</p> <p>On finalization of the profile and completion of soil testing and finalization of designs for towers and foundation, it became clear that towers and foundation of bigger and heavier sizes were needed for the</p>
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				<p>work. In view of these unexpected variations in design the time delay for finalization of the designs was unavoidable. M/s TPL insisted that the revised designs of pile foundation being extra items, they could start the work only after the rate for such extra items were agreed upon. The extent of variation in quantities of work that was necessitated is detained in the comparative statement given below showing estimated and actual quantities of major items of the work:</p> <table border="1"> <thead> <tr> <th>Sl. No.</th> <th>Particulars</th> <th>Estimated Quantity</th> <th>Actual Quantity</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Length</td> <td>23 km</td> <td>23.912 km</td> </tr> <tr> <td>2</td> <td>No. of tower locations</td> <td>75</td> <td>90</td> </tr> </tbody> </table>	Sl. No.	Particulars	Estimated Quantity	Actual Quantity	1	Length	23 km	23.912 km	2	No. of tower locations	75	90
Sl. No.	Particulars	Estimated Quantity	Actual Quantity													
1	Length	23 km	23.912 km													
2	No. of tower locations	75	90													

				3	Angle towers	30	67
				4	Total weight of street structures	596MT	1150MT
				5	Foundation 1. Shallow 2. Pile	1512m3 120m (30cm dia)	1700m3 4264m (100 cm dia)
				6	Steel Reinforcements	30.5 MT	573.54 MT
				Kindly note that at that time, the works of Kundara Substation was almost 80 percent completed, Delay in charging the substation due to non availability of transmission lines, might have resulted in blockage of			

				<p>huge funds as invested in substation without yielding any benefit and would have also adversely affected the power scenario in that area.</p> <p>Considering the above facts, even though there was a huge escalation in estimated quantity, the line work was carried out so that 220 KV Substation, Kundara could be energized without delay.</p>
5	16	Power	<p>The Committee does not agree with the explanation submitted by the witness to justify the decision of the Board's expert Committee to entrust the work to TATA projects without going in for a re-tender. The Committee wants to know the reason for not re-tendering the work and expresses its displeasure over the action of granting the redesigned project to TATA again depriving the other participants of their</p>	<p>A High Level committee was constituted vide G.O. (RT) 239/03/PD dated 3-7-2003 with Chief Technical Examiner of Finance Department as Government nominee and Chief Electrical Inspector as one of, its members to negotiate and fix the rates of all items in the revised offer of M/s TPL and for all extra items.</p>

			<p>chances to participate in the initial tender. The Committee expresses dissatisfaction over the fact that the Board showed least interest in monitoring the utilization of public funds while estimation and execution of the project awarded to TATA.</p>	<p>In the meeting held on 20-8-2003 with the High level Committee, M/s TPL informed that they were unable to agree to the rates in their revised offer dated 2-12-2002, because eight months had already elapsed since they submitted their offer and there had been steep increase in prices of steel, aluminium etc. Accordingly they submitted a revised schedule on 1-9-2003.</p> <p>The High Level Committee conducted the negotiation and fixed the rate after considering the following:-</p> <ol style="list-style-type: none"> <li>1. Further delay in commencing the work of construction of lines would result in blockage of huge funds invested in Substation works. Delay in commissioning of Sub Station would have adversely affected the power situation in that area.</li> </ol>
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				<p>2. Kerala State Electricity Board's efforts to construct a multi circuit line as an alternative arrangement to this work could not turn to be successful as no prospective bidders quoted for the work:</p> <p>3. Invitation of fresh tenders would involve a minimum period of 6 months for finalization. The prices of construction materials especially that of steel was getting increased day by day. There was a hike in demand of steel internationally and shortage was expected in the subsequent months. Hence delaying the transmission line works would not be wise economically as well.</p> <p>A comparative statement of prices of raw material for steel towers and aluminium conductor (as per IEEMA circular) as given below shows that there was substantial increase in raw material prices during this period.</p>
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Statement showing increase in raw materials for steel towers and aluminium conductors (as per IEEMA circular)			
Materials	Price as on 6/2000 (tender date) in (₹)	Price as on 8/03 (month prior to 2 <sup>nd</sup> revised offer of TPL) in (₹)	Percentage changing rates
Tower parts (Heavy angle)	14,778/ MT	21,081/ MT	42.65 %
Tower parts (Light angle)	16,072/ MT	19,650/ MT	22.62 %
Aluminium	84,350/ MT	89,797/ MT	6.46 %

				<p>The minutes of the High Level Committee revealed that the decision to accept the revised offer was taken on the basis of the overall percent hike in the contract amount which the High level committee estimated at 44.96% above the sanctioned revised estimate, inclusive of the extra items amounting to ₹ 25.24 crores. Upon verification of the rate quoted by other bidders for this work in the original tenders and the rate quoted by bidders for identical works tendered during that period the High Level Committee considered that the negotiated revised offer of 45% above the sanctioned estimate was reasonable and the chances of getting a better offer at that stage of work from a comparably qualified bidder was very remote. The committee also considered other factors namely,</p>
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				<p>the steep hike in prices of construction materials, urgency for completing the line, rates offered in subsequent tenders for similar works and difficulty to get suitable fresh bidders in case the work was re-tendered.</p> <p>In the light of the above it may kindly be noted that all possible efforts had been taken by the Board for completing the Work by effectively utilizing the public funds.</p>
6	17	Power	<p>The Committee finds that though the agreed rates were applicable against variations, the Board had unreasonably revised the prices against quantity variations in the supplementary agreement. The Committee also notices that the High Level Committee constituted by the Government had failed to take into account the prevailing market rates while negotiating and finalising the revised</p>	<p>M/s. TPL was allowed to continue with the work as per the decision of the High Level Committee constituted for the purpose, with the Chief Technical Examiner of Finance as the Government nominee. It may be noted that the High Level Committee had ascertained the contract amount after carrying out negotiations, analyzing various aspects such as the hike in price-of raw material based on market</p>



			<p>contract prices. Lack of planning, absence of proper estimation and execution of the project led to an undue benefit of ₹5.80 crore to the contractor. The Committee therefore recommends that the matter should be enquired into by the Finance Department and submit a detailed report in this regard without delay.</p>	<p>situations, rates received for similar works etc. It was also observed that the possibility of receiving suitable offers against retender was very remote. Further, also considering the urgent nature of the work, the High Level Committee accepted the revised offer of 44.96% above the sanctioned revised estimate. Hence it can be seen that no laxity has been occurred on the part of the Board in the planning or preparation of estimate and the Board has taken due care on all aspects in the execution of the project.</p>
7	24	Power	<p>The Committee finds that the implementation of Lower Meenmutty Small Hydro Electric Project, a run of river project, with a view to generate 7.63 MU of energy per year in the state, could not be materialised in time due to the reasons of natural factors which are beyond the control of the Board or the contractor of</p>	<p>In the implementation of Hydel Projects only tentative time schedule and estimates of work can be prepared at the beginning of the contract, since the design of power house and appurtenant components can be finalized only after finalizing the design of generators, turbines and</p>

			<p>the project-Asian Techs-VA. The project, which is delayed for a period of 1 ¼ years, could only be taken place on 31<sup>st</sup> May, 2006 and its units synchronised to the grid during the period from 12th March to 28th April, 2006. Because of this delayed synchronisation of units the Board has to bear ₹ 3.13 crore as revenue losses. Moreover the liquidated damage though payable by the contractor was ₹ 61.91 lakh the Board had realised only 15 lakh from them giving undue benefit by way of waiving 46.91 lakh. The Committee considers this action totally unjustifiable.</p>	<p>associated equipments as per the requirements and specifications of the machine suppliers, after awarding the work.</p> <p>Several changes in designs and dimensions were to be made for availing advantage of maximum power potential and for providing certain amenities to the local people. Further the project was not completed in the tentative date due to Force Majeure conditions beyond the control of the Board and the Contractor. This fact has been appreciated by the Hon'ble Committee on Public Undertakings also in the Report. Hence delay in execution of the work and the consequent generation loss could not be assessed based on the tentative schedule of work. In fact no</p>
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				<p>hydel projects implemented in the State has been completed within the initial tentative schedule. Also when compared to various other projects of the Board, which were executed in the past, time and cost overrun in the Lower Meenmutty Small Hydro Electric Project is nominal and inconsequential. Eventhough the agreement conditions do not permit realization of liquidated damages for delay caused by Force majeure conditions, the Board settled the accounts of the contractor after levying liquidated damages amounting to ₹ 15 lakh, in the best interest of Board's revenue.</p>
8	25	Power	The Committee does not agree with the stand taken by the Board that the estimated revenue loss is only something presumptive	Generation of electricity from Hydel projects depends on various factors such as rainfall, condition of machines,

		<p>one and not anything related to actual situation. The Committee opines firmly that the loss is actually accrued to in terms of the targets envisaged in the project. It is estimated in the potential generation of power based on average daily generation of 21015 kwh during the post commissioning period of the project.</p>	<p>etc. Besides capable transmission, lines are also to be functional for evacuation of electricity generated. Even if, it is assumed that all these factors were favourable in this project the rainfall received beyond a particular limit would overflow without any chance to generate electricity as this project is a run off the river project having limited capacity to store water. A project can be said to be idle only if no generation is made on completion and full investment is made. In the case of Meenmutty SHEP not a single day was delayed in generating electricity after commissioning. In fact generation and distribution of electricity to KSEB grid commenced from the project even before the official date of commissioning.</p>
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9	26	Power	<p>The Committee thinks that the Board had started the work without any proper investigation and planning done by a competent agency, that ultimately led to the delay in its commissioning and thus, the non-generation of power during the delayed period of 1 1/4 years resulted in huge loss.</p>	<p>The Board had made necessary and sufficient investigation and planning as accurately as possible. This is evident from the fact that the excess project cost could be kept well within 10% of the original project cost even after execution of excess and extra works consequent on the unexpected nature of substratum which could not be foreseen based on the technology available and also due to the construction of foot bridge, temple, etc. to meet needs of the local people.</p> <p>In the case of this project a parallel down to earth study was initiated from the commencement of work and the correction and rectifications needed in the implementation were carried out simultaneously. If a down to earth study was conducted prior to the</p>
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				<p>commencement of work, the time so spent on such a comprehensive study will also have to be taken into account. In effect completion of the project would definitely have taken more time than by which it was actually completed. Actually the study was done during the course of execution and corrective measures taken as required during each stage of work.</p>
10	27	Power	<p>The Committee, therefore, recommends that whenever power generation projects, minor or major, are to be commenced in the State, the Board should have to conduct a proper down-to-earth study and investigation relating to all aspects of the projects as preliminary measures. With regard to the excavation work, the sample examination pursuing in all cases should be</p>	<p>It may please be noted that even before the observations of COPU, Board had issued General Guidelines in June 2007 to be followed for the implementation of Hydro Electric Projects. All matters related to pre-execution stage, execution stage and post-execution stage and covering the entire aspects, right from project identification to completion have been</p>

			<p>changed into a more realistic manner. The Committee recommends that liability for the loss of 46.91 lakh should be fixed and to recover the amount from the officials responsible for the same.</p>	<p>provided in the guidelines. Now, the Board is implementing all Hydel Projects based on the above guidelines, and is taking utmost care in all stages of project execution.</p> <p>The team involved in the execution of the project successfully completed the project in just three years observing all formalities and without any room for any allegations or litigations. The total expenditure of the project was ₹ 16,01,00,299 as against the agreed probable amount of contract of ₹ 14,55,56,094 and hence the overall excess was only 9.99%. First time in the history of KSE Board an exhaustive and foolproof completion report covering each and every aspect of the project was prepared by the team entrusted with the project.</p>
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				In the light of the above facts and explanations, Committee on Public Undertakings may kindly apprise the facts and the recommendations may please be dropped.
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Thiruvananthapuram,  
19-6-2018.

C.DIVAKARAN,  
*Chairman,*  
*Committee on Public Undertakings.*



## ANNEXURE - 1

Details

made to M/s Andrew Yule & Co Ltd from Transmission Circle  
Malappuram

	PP No.1	PP No.2	PP No.3	PP No.4	Cumulative Amount
Bill amount	8327652	6177077	11570378	3935351	30010458
Retention Amount	832765	617708	1157038	393535	3001046
Income Tax	183208	126013	236036	82642	627899
WC & LT	416383	308854	578519	196768	1500524
Welfare Fund	NIL	NIL	NIL	300105	300105
Penalty	NIL	NIL	1157038	393535	1550573
Cheque Amount	6895296	5124502	8441747	2568766	23030311

Material Cost A1= 26075107/- (PP1+PP2+PP3)

Labour Cost A2=3935351/- (PP4)

Details of payment made to M/s. Andrew Yule & Co. Ltd. from  
Transmission Circle, Kozhikode.

	PP No. 5	PP No. 6	Cumulative Amount
Bill Amount	240757	195574	436331
Retention Amount	24076	19557	43633
Income Tax	5056	4107	9163
WC & LT	13844	11245	25089
Welfare Fund	2408	1955	4363
Penalty	24076	19557	43633
Cheque Amount	171297	139153	310450

Material Cost B1 = Nil

Labour Cost B2 = 436331 (PP5+PP6)

Total Expenditure incurred for Material A1+B1 = 26075107

Total Expenditure incurred for Labour A2+B2 = 4371682

Total amount paid Rs.(26075107+4371682) = **Rs.30446789**

Total cost incurred by K.S.E.B for completing the project

33KV Substation, Ramanattukara.				
1	33KV VCB	No	3	871176
2	33KV Line Isolator	No	1	51400
3	33KV Bus Isolator	No	0	413811
4	33KV CT	No	9	238721
5	33KV NCT	No	1	17231
6	33KV PT	No	3	104378
7	33KV LA	No	9	74495
8	11KV CT	No	8	72384
9	11KV PC VCB	No	3	384900
10	11KV PT	No	7	78652
11	11KV Bus Isolator	No	12	311173
12	11KV LA	No	24	68533
13	11KV NCT	No	2	30000
14	Flat terminal clamp for KUNDAH	No	14	9103
15	CT clamp for KUNDAH	No	38	21339
16	Transformer Bushing clamp	No	8	12485
17	GI earth Strip	Kg	302	42741
18	33/11KV 5MVA Transformer	No	2	5170770
19	Structure for 220KV LA	No	2	16000
20	Dismantled control box for ABCB	No	3	0
21	KUNDAH conductor	M	144	29935
22	A pole 14mtr. Special type	No	12	228000
23	A pole 12mtr. Special type	No	10	122600
24	Channel cross arm 3mtr.	No	8	6841
25	11KV pin with insulator	Set	78	10296
26	LT pin with insulator	Set	120	2280
27	LT packing clamp	Set	72	648
28	GI stay wire 7/3.15mm	Kg	250	187
29	HT stay insulator	No	37	592
30	4 line cross arm	Set	10	2070
31	45KN disc insulator	No	643	109310
32	Channel cross arm 2.4mtr.	No	32	16160
33	H/W for Disc insulator	No	179	19332
34	GI earth pipe 2.5mtr.	No	140	38640
35	LT shackle	Set	5	125
36	33KV pin with insulator	No	445	287025
37	H/W for AAAC	No	60	27300
38	Midspan joint for AAAC	No	12	2112
39	Midspan joint for Dog	No	10	1410
40	PG clamp	No	320	22380
41	Knee bracing	No	29	5075
42	Turn buckle	No	20	2190
43	V cross arm	No	43	31218
44	HT stay rod	No	44	5720
45	ISMB 250	No	24	541409
46	ISMB 200	No	13	198298
47	GI wire No.8	Kg	984	23138
48	A pole 14mtr.	No	60	1140000
49	A pole 12mtr.	No	9	110340
50	Spring washer	No	4400	5481
51	Damaged rail pole	No	2	8400
52	11KV feeder ODC	No	3	70821
53	11KV bus Isolator insulator	No	6	153091
54	Sub structure for 33KV LA	No	3	29274
55	33KV Bus Isolator structure	No	6	141739
56	33KV LA structure	Set	3	29274
57	Control Box of ABCB	No	3	8250
58	Yard Structure 220KV	No	2	16000
59	Elmax connector	No	100	3000
60	40mm GI pipe	M	12.18	1519
61	25mm GI pipe	M	18.1	1819
62	4 m girder	No	13	104641
63	5 m girder	No	19	186751
64	Bolt & Nut	Kg	1837.232	90375.44
65	Assorted Bolt & Nut	Kg	345.268	13257.5
66	Washer	Kg	16.8	772.8
67	3x300mm2 cable end termination	No	4	21634
68	Battery charger	No	1	114216
69	MS plate 5mm	Kg	395	12245
70	LT AC Panel	No	1	89275

71	11KV AB switch 400	No	2	11140
72	LF cable 70mm <sup>2</sup>	M	150	44321
73	UG cable 3x300mm <sup>2</sup>	M	124	117872
74	Transformer oil	L	1050	38481
75	PSC pole 9m	No	12	19520
76	Battery 100AH	No	1	46809
77	GI Assorted Angle	Kg	1249	36221
78	160mm PVC pipe	M	12	3723
79	GI scrap	Kg	377	9000
80	Earth clamp	No	50	1930
81	Steel tail clamp	No	50	5000
82	Fabricated yard structure	Kg	1250	44111
83	Tension clamp for earth wire with copper bond	No	150	72900
84	Tension clamp for earth wire	No	40	19440
85	Double tension hardware for Kundah	No	50	53000
86	Transformer bushing clamp LT	No	4	2570
87	Transformer bushing clamp HT	No	4	2570
88	crimping type Al T clamp for Kundah	No	50	33290
89	crimping type Al tail clamp for Kundah	No	50	19250
90	120 KN Disc insulator	No	144	34560
91	AAAC 150 mm <sup>2</sup>	M	4980	193025
92	GI strip 50*6	Kg	2859.13	237736.5042
93	Control cable 2cx2.5	M	230	16916
94	Control cable 2cx4	M	280	29128
95	Control cable 4cx2.5	M	509	47490
96	Control cable 4cx4	M	263	361850
97	Control cable 7cx2.5	M	581	101036
98	Control cable 12cx2.5	M	185	44401
99	Control cable 12cx4	M	546	223380
100	Control cable 19cx2.5	M	211	31650
101	PVC pipe 63mm	M	5	773
102	PVC pipe 50mm	M	15	668
103	PVC pipe 32mm	M	15	147
104	CFL street light fittings	No	10	4392
105	CFL 45 W	No	10	4451
106	400W metal halide light fitting	No	4	24200
107	400W metal halide lamp	No	4	3600
108	Streetlight fittings	No	15	6237
109	CFL 20W	No	30	3589
110	Heat shrinkable out door end 300sqmm XLPE cable	No	4	18000
111	11KV AB switch	No	2	18584
112	MS rod	Kg	120	2820
113	Earthpipe	No	10	1415
114	11KV UG cable 3x300sqmm	Mtr	83	78724
115	11KV UG cable 3x300sqmm (used)	Mtr	116	0
116	Assorted angle GI	Kg	1800	52200
117	66KV Dismantled Tower parts	Kg	400	0
118	Dismantled angle iron	Kg	267.3	0
	Total			14191264.24
1	Erection of equipments and structures - 2nd Bay			114622
2	Construction of 33KV line from Kinfra to Ramanattukara (second and final)			338692
3	Construction of 33KV line from Kinfra to Ramanattukara (First and part bill)			1066012.17
4	Construction of cable trench, cover slab, drainage, etc. at 33KV Ramanattukara			176409
5	Construction of structure foundation I part bill			914271
6	Construction of structure foundation II part bill			190889
7	Erection of equipments & structures			162302
8	Oil filtering erection of control panel etc.			82444
9	Fabrication of yard & equipment structure Bus bar & earth sheet			213701
10	Construction of foundation of balance equipments and re painting of compound			84967
11	Yard fencing and partition wall			340910
12	Earthing of equipments and structure			152977
13	Spreading metal inside the yard			319572
14	Cutting of trees and tree branches along the line route			221736
15	Cable laying, and termination of feeder bay and transformer bay			66147
16	Providing PCC padding near culvert			5562

19	Providing and outdoor lighting				183790
19	Electrification of control room				111206
20	Construction of beam over the				22327
21	Providing temporary road				33637
22	Security cabin				69059
23	Construction of toilet near security cabin				46973
24	Construction of borewell				155390
25	Construction of DP structure and				87592
26	Digging open well and providing				32057
27	Cable trench, culvert & drainage 1st part				750440.84
28	Cable trench, culvert & drainage 2nd & final				302808
29	Construction of Road				326284
30	Construction of Auxiliary plinth				6043
31	Construction of Control room Building				820019
32	Construction of loading plinth				132729
33	Numbering line support to Kinfra-Ramanattukara O/H line				6983
34	Providing PCC padding near culverts				4375002
35	Earth filling and construction of retaining wall				687219
36	Security cabin				28623
37	Flooring work				24858
38	Painting of electrical equipments				63969
39	Earth filling and construction of compound wall				405182
40	Earth filling and construction of compound wall				542442
41	Construction of culvert				123259
42	Cable laying and end termination				26006
43	Erection of A pole outdoor lighting				49521
44	33KV line Ramanattukara				1289029
45	Earth mat				240938
46	Providing Relays in the existing control panels				80000
	<b>Total labour</b>				<b>15560845.81</b>
	<b>Grand Total</b>				<b>29752410.05</b>
	<b>33KV Substation, Melady</b>				
1	33KV CT	No.	3		79907
2	33KV PT	No.	3		104378
3	33KV/LA	No.	9		74495
4	11KV CT	No.	1		9048
5	11KV PT	No.	2		21120
6	11KV Isolator	No.	8		155586
7	11KV LA	No.	15		34267
8	LT AC panel	No.	1		66282
9	8m PSC pole	No.	4		4480
10	Superior quality ALCO sheet	No.	4		3620
11	11KV AB switch 630A	No.	5		46460
12	Plate washer	Kg.	28		3288
13	Bolt & Nut assorted	Kg.	110		4950
14	GI angle 150x150x18mm	Kg.	678.72		24616
15	GI angle 110x110x10mm	Kg.	135.3		3924
16	GI angle 130x130x12mm	Kg.	1221.4		49841
17	GI angle 100x100x8mm	Kg.	183		21149
18	GI angle 50x50x6mm	Kg.	182.4		3648
19	GI Strip 50x6mm	Kg.	159.6		12822
20	GI Strip 25x3mm	Kg.	137.96		8098
21	Copper crimping socket 185mm <sup>2</sup>	No.	13		1443
22	Al. long barrel socket 240mm <sup>2</sup>	No.	4		444
23	Al. long barrel socket 400mm <sup>2</sup>	No.	12		1332
24	Stay block	No.	226		47748
25	HT stay rod	No.	244		38084
26	HT stay wire	Kg.	1127		32401
27	GI wire	Kg.	365		9001
28	Earth pipe	No.	28		7728
29	HT Stay insulator	No.	285		4580
30	10mtr. A pole	No.	47		417689
31	12m A pole	No.	30		387806
32	13m A pole	No.	4		47748
33	14m A pole	No.	5		65000
34	V Cross Arm	No.	142		62784
35	8 FT. channel	No.	169		85485
36	GI cleat	No.	350		14350
37	Stay wire	Kg.	273		7849
38	H/W fittings	No.	402		43418
39	70KN Disc insulator	No.	549		258200
40	Bolt & Nut 10" x 5/8"	Kg.	170		11846
41	Bolt & Nut 4" x 5/8"	Kg.	70		4876
42	Bolt & Nut 6" x 1/2"	Kg.	80		5574

43	33KV Pin	No.	182	36218
44	33KV Pin with insulator	No.	511	290324
45	Bolt & Nut 8" x 3/4"	Kg.	100	6864
46	Bolt & Nut 5" x 5/8"	Kg.	50	3432
47	RS Joist ISCB 150	Kg.	213	7348
48	9mtr. PSC pole	No.	100	164000
49	45KN disc insulator	No.	230	39100
50	Stay tightner	No.	30	2100
51	G I Strip 50x6 mm	kg	1004	80660
52	GI washer	kg	6.5	435
53	Bolt and nut	kg	25	1625
54	GI earthwire 7/3.15	Mtr	371	10666
55	Marshalling kiosk	No	3	23360
56	LT fuse box	No	1	81862
57	LT UG cable	Mtr	60	10440
58	10 feet channel	No	41	40180
59	120KN disc insulator	No	54	12960
60	Tension hardware fitting	No	18	2988
61	ACSR kundah conductor	kg	465	96669
62	ACSR WOLF conductor	Kg	85	7398
63	Pad clamp 1 end Kundah & other end flat 75x75x12	No.	8	2932
64	Pad clamp 1 end Wolf & other end flat 75x75x12	No.	20	7331
65	Pad clamp 1 end Kundah & other end flat 100x80mm	No.	18	6598
66	Straight clamp for CT Kundah to Kundah	No.	8	2933
67	Straight clamp for CT Wolf to Kundah	No.	5	1833
68	T clamp Kundah to Kundah	No.	15	5499
69	T clamp Kundah to Wolf	No.	9	3299
70	copper clamp	No.	9	45
71	copper belt	No.	9	2223
72	Control cable 2x2.5sqmm	Mtr.	262	19270
73	Control cable 4x2.5sqmm	Mtr.	163	15208
74	Control cable 10x2.5sqmm	Mtr.	1022	151900
75	Control cable 12x2.5sqmm	Mtr.	395	89941
76	Control cable 14x2.5sqmm	Mtr.	310	46075
77	Cable gland 19mm brass	No.	55	1045
78	Cable gland 25mm brass	No.	119	3332
79	Copper 2.5mm crimping socket	No.	550	1100
80	Copper 2.5mm ring socket	No.	150	253
81	PVC Number ferrules 2.5mm	No.	57	114
82	Binding tape	No.	4	56
83	Button for binding tape	No.	4	40
84	Elmex channel	No.	6	150
85	Elmex connector 4mm	No.	140	3500
86	Elmex stopper	No.	15	120
87	Backelite fuse unit 20amps	No.	55	3300
88	Indo-Asia FGN -8A/4A HRC.	No.	32	768
89	Insulation tape (PVC)	No.	8	56
Total				3590819
1	Providing 11kV outlet			62505
2	Spreading quarry dust and metal			177620
3	Plastering cable trench, fencing post etc.			33357
4	Meppayur - Melady line (2nd Part)			62184
5	Meppayur - Melady line (1st Part)			224770
6	Meppayur - Melady line (3rd & final)			33836
7	Painting of transformers & equipments			32695
8	Balance work of Controlroom			50908
9	Meppayur-Melady line 1st part (Alikutty)			119866
10	Meppayur-Melady line 2nd & final bill (Alikutty)			109016
11	Electrification of control room			59256
12	Tree cutting compensation Mepayur-Melady line			2553
				141409
				224930
				694437
				71143
				2967
				18436
				18359



30	10mtr. A pole	No.	14	124418
31	45/120KN Disc insulator	No.	1153	196010
32	6FL Channel	Set	12	4764
33	2 line cross arm	Set	12	1032
34	Stay block	No.	242	48400
35	H/T stay lighter	Set	218	23544
36	7/3.15 stay wire	Kg.	1843	52986
37	GI wire 5mm	Kg.	432	10368
38	GI/MS plate	No.	248	7440
39	GI earth pipe	No.	44	6227
40	Bolt and nut 10x5/8"	Kg.	30	2090
41	Bolt and nut 4x5/8"	Kg.	30	2090
42	Bolt and nut 6x1/2"	Kg.	20	1394
43	25mm MS rod	Kg.	4361	102248
44	20mm MS rod	Kg.	880	15980
45	GI strip 50x6mm	Kg.	1195.3	96031
46	GI strip 25x3mm	Kg.	3.27	192
47	Earthwire 7/3.15mm	Mts	310	2912
48	D Shackles	Nos	52	1040
49	Control cable 4X4Sqmm	Mts	938	129069
50	Control cable 12X2.5Sqmm	Mts	761	173272
51	Control cable 10X2.5Sqmm	Mts	262	37455
52	Cable end 19mm brass	Nos	49	931
53	Cable end 25mm brass	Nos	49	1372
54	Cu crimping socket 25mm	Nos	612	7344
55	Cu ring socket	Nos	200	2400
56	PVC numbering ferrules	Nos	57	114
57	Binding tape	Nos	4	56
58	Elmex channel	Nos	5	120
59	Elmex stopper	Nos	10	80
60	Elmex connector 4mm	Nos	130	3250
61	Backelite fuse 20A	Nos	25	1425
62	PVC insulation tape	Nos	4	28
63	HRC fuse 6A/4A	Nos	41	1640
64	25mm Cu wire	Mts	33	4125
65	Tension hardware fittings for Kundah	No.	12	10710
66	Pad clamp for one end Kundah and other end flat 75x75x12mm	No.	15	5499
67	Pad clamp for one end Wolf and other end flat 75x75x12mm	No.	21	7698
68	Pad clamp for one end Kundah and other end flat 100x80mm	No.	6	2196
69	Straight clamp for CT, Kundah to Kundah.	No.	12	4399
70	Straight clamp for CT, Wolf to Kundah	No.	5	2200
71	T clamp Kundah to Kundah	No.	12	4399
72	T clamp Kundah to Wolf	No.	3	1100
73	T clamp Wolf to Wolf	No.	3	1100
74	Assorted bolt and nut	Kg.	38.5	1732
75	ACSR wolf	Mtr.	10	587
76	1HP pump set	No.	1	4846
77	1/4" PVC valve spring	No.	1	50
78	1 1/4" x 18" B nipple	No.	1	25
79	Galco Starter	No.	1	950
80	GI Socket	No.	1	15
81	GI Bent	No.	1	40
82	GI Union	No.	1	103
83	40mm PVC bent	No.	2	14
Total				8026669
1	33KV Vatakara - Thiruvallur line (2nd part bill)			273478
2	33KV Vatakara - Thiruvallur line (1st part bill)			175839
3	Flooring of battery room			29466
4	Providing fencing			84972
5	Construction of cable trench			112721
6	Vatakara - Thiruvallur line (3rd and final)			114267
7	Transporting A pole from Kolathara to various sites			33000
8	Fabricating and supplying connector pipe to fit new cooling fans of 5MVA Transformer			19440

9	Earthmat				110801
10	Equipment earthing				55149
11	Earthwire stringing				11512
12	Purchase of Marshalling Kiosk				14625
13	Shifting of faulty transformer				22730
14	Laying of control cables				31433
15	Changing battery and allied works				5896
16	Construction of drainage				16970
17	Stringing bus bar interconnections and providing dopper connections				31142
18	Erection of autoreclosure				25073
19	Foundation of Autoreclosure and providing stay for ISMB				11565
20	Construction of stay block				82583
21	Protection charges of RSNL				50000
22	Hot oil circulation of transformer				8764
23	Providing water supply facility				8563
24	Supplying Name Board and panel indicating sticker				4900
25	Transformer oil filtering				12586
26	Yard Metallaling				154683
27	Open well				15000
28	Tree cutting compensation				3225468
29	Tree cutting compensation				13064
30	Tree cutting compensation				80425
31	Tree cutting compensation				16408
32	Vatakara - Thiruvallur line				59000
<b>Total Labour</b>					<b>4900983</b>
<b>Grand Total</b>					<b>12927652</b>
<b>110KV Substation, Vatakara</b>					
1	110/33KV:16 MVA transformer	No.	1		10936.872
2	110KV CT	No.	4		136000
3	110KV LA	No.	3		96357
4	33KV VCB	No.	2		580784
5	33KV NCT	No.	1		17231
6	33KV LA	No.	6		49662
7	110KV NCT	No.	1		16000
8	GI earth strip	Kg.	1400.4		112532
9	Cast iron plate heavy 1200x1200x12.5	No.	10		15000
10	GI earth pipe 10mtr	No.	10		5960
11	GI strip 50x6mm	Kg.	48.44		3891
12	PG clamp for earth wire	No.	20		3300
13	Steel tail clamp for earth wire	No.	25		2500
14	ACSR Wolf	Kg.	84		4931
15	Hardware fittings single suspension for wolf	No.	8		10981
16	Hardware fittings single tension for wolf	No.	8		3240
17	Disc insulator 90KN	No.	60		12300
18	GL spring washer 4mm/12mm	No.	1000		66923
19	Disc insulator 120KN	No.	50		12000
20	Hardware single tension for Kundah conductor	No.	14		18120
21	GI Bolt and Nut	No.	50		3250
22	Pad clamp one end kundah and other flat 75x75x12	No.	18		5865
23	Pad clamp one end Wolf and other flat 75x75x12	No.	7		2586
24	Straight clamp Kundah to Kundah	No.	10		3666
25	Straight clamp for CT wolf = Kundah	No.	7		2567
26	ACSR Kundah conductor	Mtr.	115		17958
27	D shackle	No.	93		1680
28	Earthwire 7/3.15	No.	487		14001
29	Alco sheet 300x300x1mm	No.	5		5430
30	Hardware fittings for earth wire	No.	125		20000
31	Control cable 4x4sqmm	Mtr.	1073.5		147714
32	12x2.5sqmm	Mtr.	716		163033
33	19x2.5sqmm	Mtr.	632.5		262190
34	Cable gland 19mm brass	No.	16		394
35	Cable gland 25mm brass	No.	24		872
36	Cable gland 16mm brass	No.	40		1400
37	PVC cable tie 150mm	No.	200		400
38	PVC cable tie 100mm	No.	200		400



39	Copper crimping socket 2.5sqmm	No.	3300	600
40	Copper crimping socket 4sqmm	No.	400	1800
41	PVC Ferrule 2.5mm	No.	9	36
42	Backelite fuse unit 20A	No.	10	570
43	HRC fuse 2A / 4A	No.	10	400
44	Elmex connector	No.	108	2700
45	Bolt&Nut-16X-85	Kg	50	2250
46	PVC cable tie 250mm	No.	300	600
47	PVC ferrule 2.5/4mm	No.	35	140
48	PVC sleeve 4mm	No.	10	100
49	Insulation tap	No.	5	50
50	Copper 2.5mm fork socket	No.	100	2000
51	Copper 2.5mm Pin socket	No.	200	4000
52	Cable gland 22mm Brass	No.	10	300
53	Cable gland 20mm Brass	No.	10	300
54	Cable tray 45/45mmPVC	No.	2	1040
55	Cable tray 75/75mmPVC	No.	2	1500
56	Star pipe -4"	No.	4	4400
57	PVC Bent	No.	4	240
	<b>Total</b>			<b>12779388</b>
1	Construction of cable trench			142065
2	Widening and extending cable trench for the installation of 33kV Control Panel			9402
3	Earthwork excavation of 33KV yard			96474
4	Plate earthing and equipment earthing			121139
5	Replacing faulty 33KV Breaker			19400
6	Stringing of Bus Bar			52200
7	Foundation and erection of yard structure			186610
8	Laying of control cables			38760
9	Erection of 33KV Feeder control panel			2211
10	Loading and unloading transformer C&R panel from Andrew Yule store to			2425
11	Erection of C2 Column			8296
12	Excavation of yard			42153
13	Foundation of yard structures and erection of equipments			72733
14	Erection of assembling of Transformer			120685
15	Hot oil circulation of 16MVA transformer			34382
16	Loading positioning and assembling 16MVA transformer			36049
17	Loading and un loading of Bus Isolator			52672
18	Loading and un loading of yard equipments			36838
19	Overhauling of 110KV CB			204675
20	Overhauling of 33KV CB			13500
21	Purchase of marshalling kiosk			16500
22	Repairing & servicing of transformer cooling fans			4900
	<b>Total labour</b>			<b>1314069</b>
	<b>Grand Total</b>			<b>14093457</b>

Abstract			
	Material	Labour	Total
33KV Substation, Ramanathukara	14191264	15560846	29752110.05
33KV Substation, Melady	3590910	5441449	9032368.00
33KV Substation, Thiruvallur	8026669	4900983	12927652.00
110KV Substation, Vatakara	12779388	1314069	14093457.00
<b>Total</b>	<b>38582240</b>	<b>27217347</b>	<b>65805587.05</b>

Rs. 65805587.05

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