



# KERALA STATE ELECTRICITY BOARD LIMITED

(Incorporated under the Companies Act, 1956) CIN: U40100KL2011SGC027424  
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## Abstract

Retender of Execution of the E&M works of Pazhassi Sagar (3X2.5 MW) SHEP - Finalisation of type of turbine, tendering methodology, revised Administrative Sanction - Accorded - Orders issued.

### Corporate Office (SBU-G/E)

B.O. (DB) No. 195 /2020 (D(GE)/G2/P.Sagar /2019-20) Thiruvananthapuram. Dated: 17 - 03 - 2020

- Read:-
1. B.O(DB) No.3116/2015(DGC/AEEVI/PSR/2014) dated 16-12-2015.
  2. B.O (FTD) No. 1665/2018(D(GE)/G2/P.Sagar/2018-19) dated 18-07-2018.
  3. B.O (DB) No.362/2019 (D(GE)/G2/P.Sagar/2019-20) dated 06-05-2019.
  4. Note No. D(GE)/G2/P.Sagar/2019-20 dated 23-10-2019 of the Chairman and Managing Director to the Board of Directors.
  5. Proceedings of the 50<sup>th</sup> meeting of the Board of Directors held on 07-11-2019 (Agenda Item No. 08- 11/2019).
  6. Note No. D(GE)/G2/P.Sagar/2019-20/ dated 24-12-2019 of Director (GE&SCM) to Full Time Directors (Agenda Item No. 86/12/2019).
  7. B.O. (FTD) No. 28 /2020 (D(GE)/G2/P.Sagar/2019-20) dated 16-01-2020.
  8. Letter No.129/AE4/2018/CE(PED)/1139 dated 15-02-2020 and No. 1169 dated 20-02-2020 of the Chief Engineer (Gen.&PED).
  9. Note No. D(GE)/G2/P.Sagar/2019-20 dated 25-02-2020 of the Director(GE&SCM) to Full Time Directors (Agenda No. 86/2/20).
  10. Note No. D(GE)/G2/P.Sagar/2019-20 dated 27-02-2020 of the Chairman and Managing Director to the Board of Directors.
  11. Proceedings of the 52<sup>nd</sup> Meeting of the Board of Directors held on 04-03-2020 vide Agenda No. 22-03/2020.

## ORDER

As per the B.O read as 1<sup>st</sup> above, the revised Administrative Sanction was accorded for the implementation of Pazahssi Sagar project (Kannur Dist.) with Vertical Full Kaplan, for an amount of Rs.73.80 Crore at 2015 price level (Civil part-Rs 54.65 Crore & Electrical part including power evacuation- Rs 19.15 Crore).

Accordingly, the Chief Engineer (Projects-Electrical Designs) had floated e-tender for the execution of Electro Mechanical works of Pazhassi Sagar SHEP (3X2.5MW) with a PAC of Rs. 18.60 Crore. The first tender turned out to be a single tender and was cancelled. For the second re-tender, the rate quoted by the single prequalified bidder was exorbitantly high, and the Board as per B.O read as 2<sup>nd</sup> above accorded sanction to cancel the second tender. It was also directed to obtain budgetary offers from reputed Contractors of E&M works at current price level with GST for revising the estimate and to re-tender the E&M works of Pazhassi Sagar SHEP with revised estimate. Accordingly, the re-e-tender was cancelled.

Subsequently, budgetary offers were collected from prospective bidders and the E&M estimate was revised based on the offer from M/s. Voith Hydro Pvt Ltd., which worked out to Rs. 54.45 Crore against the originally sanctioned estimate of Rs. 18.60 Crore. The estimate was placed before the Board and sanction was requested. The Board noted that there has been an abnormal increase from Rs. 18.60 Crore to Rs. 54.45 Crore on account of the E&M works and (as per Proceedings of the 43<sup>rd</sup> Meeting of the Board of Directors held on 30 -11- 2018 in Agenda Item

No. 14- 11/2018) directed to explore whether a schedule of rates for E&M works of Hydel projects can be prepared and to place a detailed report on the item wise increase required in the cost estimate of ElectroMechanical equipment for 3x2.5MW Pazhassi Sagar SHEP in a comparative form between the old estimate and new estimate. Accordingly, as directed by the Board of Directors the item wise price variation in the cost estimate of E&M equipment between the original sanctioned estimate of Rs 18.60 Crore and the revised estimate of Rs 54.45 Crore along with the reasons was, placed before the FTD. The FTD in the meeting held on 30/01/2019, discussed the matter in detail and resolved to explore all possibilities for reduction of estimate for the E&M works, for making the project financially viable.

Accordingly, the Chief Engineer (PED) had explored all the possibilities for reduction of estimate for the execution of the E&M works of Pazhassi Sagar SHEP (3X2.5MW). Also, based on the remarks offered by the Chief Engineer, Civil Construction, North as per Letter No CECCN/DB/07/PSGR-Works/2017-18/1547 dated 25/01/2019, the reputed E&M contractors were requested to intimate their budgetary offer for the same configuration (3 x 2.5 MW), but with few changes in the technical specification (viz. Vertical Semi Kaplan Turbine instead of Vertical Full Kaplan Turbine, single seal MIV instead of double seal MIV, 11kV Generator instead of 3.3 kV Generator and 10 MVA, 11/33kV transformer instead of 10 MVA, 3.3/33kV transformer) with an intention for cost reduction for same output. The revised estimate of Rs 49.22 Crore was placed before the Board and sanction was requested.

Subsequently, as per the B.O read as 3<sup>rd</sup> above, the Board accorded Administrative sanction for the revised cost estimate of Rs.104.37 Crore for the construction of Pazhassi Sagar SHEP (Civil works- Rs. 54.65 Crore & E&M works - Rs. 49.22 Crore and Power Evacuation- Rs 0.50 Crore). And after incorporating the necessary changes in technical specification, the third e-tender was floated, as per e-Tender Notice No: CEPED/02/2019-20 dated 03-06-2019, with Vertical semi Kaplan turbine and single seal MIV with revised PAC of Rs 49.22 Crore for the E & M works of the Project. The Scheduled date of PQ opening was on 07-09-2019.

However, some of the prospective bidders informed certain technical constraints faced by them while designing the E & M equipment for the project such as the rated speed of the generator, turbine configuration and capacity specified in the tender document and that they were not in a position to provide a technically feasible design matching to the tender conditions. They also suggested for a change in the rated speed of the Generator, configuration of the turbine and the capacity of the machine against the specification in the tender document which will be more economical and technically feasible. Subsequently, sanction was also accorded to modify the rated speed of the Generator as 375 rpm with Gear box, as against 750 rpm stipulated in the tender document and also to obtain the rate for 250 rpm Generator and suitable EOT crane, to select the optimum generator design as per the site requirement of Pazhassi Sagar SHEP. However, considering the fact that changing the machine configuration from vertical to horizontal at the last stage of bidding was not justifiable, it was decided to continue with the existing turbine configuration. However, only single bid was seen offered in the e-portal for the E & M works of Pazhassi Sagar SHEP after the scheduled last date of bid submission on 03-09-2019. Hence, based on the direction of Director (GE&SCM), on letter No.496/AEE6/2013/ CE(PED)/ 542 dated 06/09/2019 the tender was cancelled on 06-09-2019. It was also directed that decision regarding the retender of the subject work with horizontal/ vertical configuration turbine can be finalized after discussion with the concerned officials.

Accordingly based on the decision in the meeting held on 27/09/2019 for deciding the machine configuration/capacity for Pazhassi Sagar SHEP, the E & M works of Pazhassi Sagar SHEP

was retendered as per e- tender Notice No. CEPED/5/2019-20 dated 05-10-2019 with Vertical Semi Kaplan Turbine on a fast track basis, excluding pre bid meetings and with scheduled PQ opening date on 31/10/2019.

Meanwhile, in the review meeting convened by the Director (GE&SCM) on 15/10/2019, the delay in execution of Civil works of Pazhassi Sagar and Peruvannamuzhy SHEPs due to delay in finalization of tender for E&M works was discussed in detail. After detailed deliberations on the issues and considering the urgency of completing the projects, it was decided that tendering of both projects shall be done without specifying turbine type/ configuration (horizontal/vertical), Generator speed etc. as against the designed values in the approved DPRs, but by specifying unit capacity & station capacity, hydro mechanical parameters etc. enabling more flexibility in the tender conditions and improved participation from the bidders. It was also directed to cancel the tender already invited for E&M works of Pazhassi Sagar SHEP and for both Peruvannamuzhy and Pazhassi Sagar projects, new tender will be invited. The evaluation methodology shall be clearly mentioned in the tender. Accordingly, the tender floated by the Chief Engineer (Gen.&PED) for the E&M works of Pazhassi Sagar SHEP with Vertical semi Kaplan turbine, as per e tender Notice No. CEPED/5/2019-20 dated 05-10-2019 was cancelled on 19-10-2019.

Considering the above decisions, the Chief Engineer (Gen.&PED) has requested sanction to invite tenders for Pazhassi Sagar (3x2.5 MW) and Peruvannamuzhy (2 X 3 MW) SHEPs without stringently specifying the turbine type like Kaplan or Francis, turbine configuration (horizontal/vertical) and Generator speed, deviating from the parameters in the approved DPR, but precisely specifying unit capacity, station capacity and hydro mechanical parameters for the projects and to modify the technical specifications by including the specifications of both the Kaplan and Francis Turbines along with the methodology of price evaluation of the Bids. Sanction was also requested to entrust the Civil Wing to assess the price implication in Civil construction works for the different alignment of turbine, after the PQ Bid opening so that the same can be loaded for price evaluation of bids.

Accordingly, as per the Note read as 4<sup>th</sup> above, the Board was apprised about the poor participation in the tenders floated for Pazhassi Sagar(3X2.5 MW) and Peruvannamuzhy (2X3 MW) SHEPs and sanction was requested for the new methodology for the tendering process as above. The Board discussed the matter in detail and observed that extra merits in the new situation vis a vis the old situation have to be prepared in a comparative form to take a final decision in the matter, vide Proceedings read as 5<sup>th</sup> above. Accordingly, the new methodology proposed as well as the old methodology adopted earlier for the tendering process of Peruvannamuzhy and Pazhassi Sagar SHEPs along with the merits/demerits of each methodology and a flow chart showing the methodology for evaluating the Electro-mechanical works, considering the cost implication of civil part was placed before the Full time Directors as per Note read as 6<sup>th</sup> above. The FTD in the meeting held on 26-12-2019 discussed the matter in detail and resolved to invite all manufacturers/ contractors/ vendors in the field and conduct a detailed discussion by a special technical team of KSEBL to finalize the type of turbine with tender condition modifications within a month for getting sufficient bids. Subsequently, as per B.O. read as 7<sup>th</sup> above, a Technical Committee was constituted for finalizing the tender conditions/ new methodology of tendering for Pazhassi Sagar (3X2.5 MW) and Peruvannamuzhy (2X3 MW) Small Hydro Electric Projects, to collect suggestions from the bidders and to submit the report within one month.

The Chief Engineer (Gen.&PED) as per letter read as 8<sup>th</sup> above, has reported that the technical committee meeting was convened on 18-01-2020 and apart from members,

representatives from different firms participated in the meeting. The meeting discussed tender conditions/ new methodology of tendering. However, in the meeting, all the prospective bidders have opined that KSEBL shall specify the type of turbine, orientation & speed in the tender to avoid the difficulty in bid evaluation. It is decided in the meeting that majority of the opinion from the bidders will be considered for selection and orientation of turbine. Hence it is suggested that bidders shall not be given the option to select the turbine, but KSEBL shall specify the type of turbine, orientation & speed in the tender. Also many of the firms have suggested that commercial conditions are the hurdles which prevent them from participating in KSEBL projects.

As per the technical committee report, turbine is finalized as Horizontal Full Kaplan with 750 rpm Generator through gearbox and single seal MIV. Considering the report of the technical committee, the Chief Engineer (Gen. & PED) has recommended to invite tender for Pazhassi Sagar SHEP specifying turbine as horizontal full Kaplan with 750 rpm Generator through gearbox. Also as ordered in B.O. dated 06.05.2019, single seal MIV and 11 kV Generator may be specified in the tender. The evaluation of E & M tenders for the above project may be done as is done presently in other projects without considering the cost implication of civil part of E & M equipment as KSEBL specifies the type of turbine, orientation & speed in the tender. Also as the commercial conditions modification is not yet finalized, the existing commercial conditions in the bid documents may be continued for these projects also.

The budgetary offers were collected from the prospective bidders and two prospective bidders viz. M/s Kirloskar Brothers Ltd. and M/s Voith Hydro Pvt. Ltd. submitted their budgetary offers including supply, transport, erection, testing and commissioning. It is reported that on comparing the two offers, the rate offered by M/s. KBL seems more realistic. Hence the revised estimate amount comes to Rs. 57.87 Crore (Rupees Fifty Seven Crore and Eighty Seven Lakh only). It is also pointed out that variation of the revised estimate amount of Rs. 57.87 Crore for execution of E&M Works for Pazhassi Sagar SHEP from the sanctioned estimate of Rs. 49.22 Crore are mainly due to the facts that Full Kaplan turbine has movable guide vanes and movable runner blades. Due to this construction feature, Full Kaplan turbine can operate with wider power range and head range. Also, it will give additional generation benefits throughout lifecycle of project, and better efficiency at part loads. Considering the revised estimate of Rs. 57.87 Crore for E&M portion, the total estimate including Civil & Power Evacuation becomes Rs. 113.02 Crore (Civil works - Rs. 54.65 Crore, E&M- Rs. 57.87 Crore and Power Evacuation- Rs. 0.5 Crore).

The Chief Engineer (Generation & PED) reported that the contract for Civil work for the project is already awarded and the works are in progress. Also, the first tranche of the MNRE grant for Pazhassi Sagar SHEP is already sanctioned. Hence it is recommended that the E & M works needs to be tendered at the earliest as further progress in Civil work is related to the availability of turbine elevation, centerline details and layout of E & M equipment. Considering all above., the Chief Engineer (Gen.&PED) has requested sanction for the revised cost estimate for E&M works amounting to Rs. 57.87 Crore including taxes for Pazhassi Sagar SHEP against Rs. 49.22 Crore sanctioned earlier as per B.O dated 06-05-2019 and to retender the E&M works with the revised PAC.

The matter was considered by the Full Time Directors in the meeting held on 26-02-2020 and resolved to place the matter before the Board of Directors. Accordingly, the matter was placed before the Board of Directors as per Note read as 10<sup>th</sup> above. After discussion the Board

**Resolved to** accord revised Administrative Sanction for the cost estimate of Rs. 113.02 Crore for the construction of Pazhassi Sagar (3X2.5MW) SHEP with a split up of Civil works Rs. 54.65 Crore, E&M works - Rs. 57.87 Crore and Power evacuation - Rs. 0.50 Crore.

**Resolved also to** accord sanction to retender the E&M works of Pazhassi Sagar SHEP with the revised PAC, and to modify the turbine type to Horizontal Full Kaplan with 750 rpm Generator through Gearbox and single seal MIV.

**Resolved further to** continue the existing commercial condition for the above project though there was request for modification from various vendors/contractors.

**Resolved further to** ratify the decision of the Director (GE&SCM) to cancel the tender floated by the Chief Engineer (Gen.& PED) for the E& M works of Pazhassi Sagar SHEP with Vertical Semi Kaplan Turbine as per e- tender Notice No. CEPED/5/2019-20 dated 05-10-2019.

Orders are issued accordingly.

By Order of the Director Board,

Sd/-  
Lekha G  
Company Secretary (In charge)

To

The Chief Engineer (Generation & PED), Moolamattom.  
The Deputy Chief Engineer (Projects-Electrical Designs).

Copy to:

The Chief Engineer (Civil Construction - North), Kozhikode.  
The Financial Advisor/ The Chief Internal Auditor/ The Company Secretary.  
The Deputy Chief Engineer (IT)/ The RCAO/ The RAO.  
The TA to Chairman & MD/ Director (GE&SCM)/ Director(GC)/ Director(Trans.,SO&S)/  
Director (D,IT&HRM).  
The PA to Director (Finance).

Forwarded / By Order

*Sunil Kumar*  
Asst. Exe. Engineer

DESPATCHED

No. 400

Date 23.03.20