KERALA STATE ELECTRICITY BOARD Ltd
(Incorporated under the Companies Act, 1956)
Registered Office: Vydyuthi Bhavanam, Pattom,
Thiruvananthapuram – 695 004
CIN: U40100KL2011SGC027424
Website: www.kseb.in
Phone: +91 4712448720,
Email: dgkseb@kseb.in

ABSTRACT

Letchmi HEP (240MW) - Pre Feasibility Report (PFR) - Preparation of Detailed Project Report (DPR) for implementation of the Scheme - Sanction accorded - Orders issued.

CORPORATE OFFICE (SBU - G/C)

BO (FTD)No.821/2022(DGC/AEE I/Letchmi HEP/PFR/2022) Thiruvananthapuram,Dated: 10.10.2022

Read: 1. Pre Feasibility Report (PFR) of Letchmi HE Scheme.
2. Note No. CECICC/Letchmi/2021/479 dated 23.08.2022 of the Chief Engineer (Civil-Investigation & Construction Central).
3. Note No. DGC/AEE I/Letchmi HEP/PFR/2022 dated 23.09.2022 of the Director (Generation - Civil) to the Full Time Directors (Agenda 74/9/22).

ORDER

The Chief Engineer (Civil-Investigation & Construction Central) as per note read as 2nd above has reported that the preliminary study for the implementation of the proposed Letchmi Hydro Electric Scheme is carried out and the Pre Feasibility Report (PFR) is prepared. The scheme is located in Devikulam Grama Panchayat of Devikulam Taluk in Idukki District. The installed capacity proposed for the scheme is 240MW with an annual peaking energy of 347 Mu. The proposed Letchmi Hydro Electric Project is envisaged to enhace the peak hour generation by utilizing the inflow from Mudirapuzha and its tributary stream Letchmi Ar, Sevenmalai Ar and diverting the inflow of upper Rajamalayar, a tributary of Puyankutty river.

The water available for power generation under the scheme are

a) Yield from own catchment area of 16.95 km^2 of Letchmi Ar and Sevenmalai Ar.

b) The off peak hour inflow pumped from Mudirapuzha upstream of RA Head Works comprising

I. The release and spill from Madupetty Dam (101.21 Km^2)

II. Munnar free catchment (113.81 Km^2)

III. Diversion from Rajamala catchment (17.76 km^2).

The non-peak time inflow from RA Head works is proposed to be pumped in to Letchmi reservoir from a Pump House proposed to be constructed upstream of RA Head Works at Munnar. The existing Pallivasal HEP (37.50 MW) and ongoing Pallivasal Extension Scheme (60MW generation on completion), depends on water from RA Head Works and hence the pumping of water to Letchmi Reservoir will result in a non-peak annual generation loss of about 171Mu and peak generation increase by 60Mu at Pallivasal HEP & PES (97.50 MW) together. Since peak tariff is steadily increasing, this loss in generation during off peak at Pallivasal HEPs (97.50 MW) can be justified with peak generation at Letchmi HEP and Pallivasal HEPs.

The stored water from Letchmi reservoir can be released to RA Head works for power generation at Pallivasal HEPs if necessary, considering Letchmi Reservoir as a storage of Pallivasal HEPs also, particularly when RA head works spills quite often. The annual spill at RA Head works (live storage - 0.189 Mm3) is 73 Mm3. When considering the inflow from Upper Rajamala Diversion also, which has repeated generation potential in downstream projects, it is highly necessary that a storage facility is required upstream of RA head works and Letchmi HEP assumes paramount importance in the above scenario.

The scheme will help in generation benefit to cascading schemes in the downstream viz. Sengulam, Neriamangalam and Lower Periyar. The scheme will also make new prospects for power generation at the proposed Ellackal SHP (20 MW) and augmentation to the ongoing Chinnar SHP.

This is a storage type project with an 80 m high Concrete Gravity Dam across Letchmi Ar, a tributary of Muthirapuzha in Periyar basin. A "morning glory" type Intake at Ottupara estate, 85 m Power Conduit, 1400m long Head Race Tunnel, 18m long LPP, underground Valve House, 776m long Inclined Pressure Shaft and an underground Power House with 2 Pelton turbines and generators having 120MW unit capacity and a Tail race tunnel of 2100 m are the other major components of the scheme. After power generation, the tail water is let into the Sengulam reservoir.

The Rainfall data for 30 years (1990-2020) from 18 Rain gauge stations in Pallivasal catchment area was considered for the analysis of Hydrology and Power Potential. The inflow corresponding to 75% dependable year is adopted for water availability determination. From the peak hour generation angle, the installed capacity of the scheme is selected as 2X120 MW. The annual generation expected from the Letchmi HEP alone is 347 Mu (peak power).

The Construction is proposed to be carried out in two phases. The Phase I consists of construction of 6.8 km long Rajamala Diversion Tunnel to Kannimalai Ar at Neymakad which is passing very close to the Eravikulam National Park. The tunnel can be completed within 2 years. The Phase II consists of construction of 80m high Dam across Letchmi Ar, Diversion roads, Water conductor system, Inclined Pressure Shaft, Underground Power House, access tunnel, cable cum ventilation tunnel, Pump House, pumping line and other project components etc. and the works can be simultaneously carried out with Phase I and completed within a period of 60 months. By early completion of Phase I works, the diverted water from Rajamala can be utilised for Power Generation at Pallivasal HE Schemes 3 years prior to the scheduled completion of phase II activities and commercial operation of Letchmi HE Scheme.

The land requirement for the Project is approximately 385.80 Ha. (including the submergence area of 352 Ha.), in which 97.50 Ha. of land is Tea Estate, 66 Ha. Energy Plantation, 89.50 Ha. Chola, 20.80 Ha. River Puramboke, 107.80 Ha. Light Jungle & Barren land, 3 Ha. Revenue land, 1 Ha. Private land and 0.20 Ha. Cardamom. No forest land is required for the Project.

The estimate cost of the project is Rs 1630 crores including IDC. An interest rate of 4% (NABARD-RIDF) has been reckoned for working out the financial returns. The budgetary support of low interest rate for flood moderation projects is considered but waiving of IDC is not considered. For financial analysis, peak hour tariff is assumed as Rs 12/ kwh and non peak hour tariff as Rs 4/ kwh during 2022 escalated in every two years. The life of the project is taken as 40 years. The levelised tariff is worked out as Rs 4.55/kwh and the tariff at the first year of commercial operation is Rs 5.67/kwh. The Internal rate of return and Net Present Value of the project are 57.70% and Rs 11341.62 Cr respectively which is found very attractive. The payback period is 5 years.

The Chief Engineer (Civil-Investigation & Construction Central) has further reported that the Detailed Project Report (DPR) and other investigation work and surveys can be carried out indigenously.The external consultants can be engaged for conducting Environmental Impact

Assessment (EIA) study, including liaison work at Central Water Commission (CWC), Central Electricity Authority (CEA) , Ministry of Environment, Forest and Climate Change (MoEF& CC) etc, if so required.The Pre Feasibility Report for the proposed Letchmi HE Scheme was submitted by the Chief Engineer (Civil-Investigation & Construction Central) and requested sanction to proceed with the detailed investigation of the scheme including EIA study and preparation of Detailed Project Report.

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

Having considered the matter in detail, the Full Time Directors in the meeting held on 28.09.2022, resolved to accord sanction to proceed with the implementation of Letchmi HE Scheme and take the following actions simultaneously.

1. Submit proposal to the Government for land.
2. Arrange workshop inviting EPC Contracting agencies.
3. Selection of qualified PMC through competitive tender with prequalification.
4. Bidding.
5. Arrange financing.

Orders are issued accordingly.

By Order of the
Full Time Directors

sd/-

LEKHA G
Company Secretary

To:

The Chief Engineer (Civil - Investigation & Construction Central)

Copy to: The Chief Engineer (IT,CR&CAPS)/ Company Secretary/ Financial Advisor/ LA&DEO
The TA to the Chairman & Managing Director / Director (Generation-Civil)/ Director (Generation-Electrical)/ Director (Distribution, IT & SCM)/ Director (Transmission, SO, P & S)/ Director (REES, SOURA, Nilaavu Projects, S & W)
The PA to the Director (Finance & HRM)
The RCAO/RAO
The Senior CA to the Secretary (Administration)
Library.

Forwarded / By Order

Assistant Executive Engineer