

**ABSTRACT**

Sengulam Augmentation Scheme (85 Mu) - Construction of a concrete gravity weir across Western Kallar, Intake arrangements, Diversion Tunnel, Exit Channel and access roads - Contract with Dr. Sasi Eloor, UNIDEC Joint Venture - Execution of Balance tunneling Works - Techno/Commercial proposal from M/s. NIRM for carrying out the Geophysical Investigations - Ratified - Orders Issued.

**CORPORATE OFFICE (SBU-G/C)**

BO (FTD)No.269/2023(No.DGC/AEEIV/SAS/2014)

Thiruvananthapuram,Dated: 22.05.2023

- Read: 1. B.O. (FTD) No.153/2023 (No. DGC/AEEIV/SAS/2014) dated 25.03.2023.  
2. Techno-Commercial proposal of M/s. NIRM dated 27.03.2023.  
3. Note No. DGC/AEEIV/SAS/2014 dated 31.03.2023 of the Director (Generation-Civil).  
4. Office Order (CMD) No.514/2023 (No. DGC /AEEIV /SAS/2014) dated 03.04.2023.  
5. Note No. DGC/AEEIV/SAS/2014 (19) dated 09.05.2023 of the Director (Generation-Civil) to the Full Time Directors (Agenda Item No. 35/5/23).

**ORDER**

The Sengulam Augmentation Scheme envisages diversion of water from Western Kallar River to the existing Sengulam reservoir by constructing a 12.50m high and 80m long concrete gravity Weir, just upstream of Kallar bridge across Western Kallar river (tributary of Mudirapuzha of Periyar basin in Idukki District) along Aluva - Munnar road. Water is proposed to be diverted through a 6.71km long, 3.5m 'D' shaped unlined diversion tunnel and 376m long exit channel for augmenting power generation at Sengulam Power House by 85 Mu.

The Tunnel driving was carried out through different faces such as intake, exit and intermediate Adits. Tunnel driving from Face V through Adit II and Face VI from exit was completed. As the Adit-I was abandoned as per the recommendations of the consultant NHPC Ltd., tunnel driving through Face II & III could not be done thereby limiting the tunnel driving only from Face IV through Adit II and Face I through Intake. As driving progressed from intake, i.e., Face I, water seepage was encountered in most of the stretches and heavy water seepage at Ch: 800m, 1380m etc. Tunnel driving was advanced along with remedial measures such as dewatering using pumps, grouting with micro fine cement etc. During blasting at Ch: 1830m, heavy water jetting occurred and it became uncontrollable and hence the tunneling work from Face I was stopped on 08.03.2020. In order to enhance the progress and to complete the Project within the scheduled time, KSEB Ltd. has explored various possibilities to sort out the water jetting issue through various organizations like Geological Survey of India (GSI), Centre for Water Resources Development and Management (CWRDM), Ground Water Department, ISRO etc., but no fruitful / practically viable procedure / methodology was obtained.

In order to ensure a scientific study based decision, the Chairman & Managing Director has

convened a meeting on 01.02.2023 along with the participants from Kerala State Council for Science, Technology and Environment (KSCSTE), Kerala State Disaster Management Authority (KSDMA) and Centre for Water Resources Development and Management (CWRDM). It was decided in the meeting to form a Standing Technical Committee to assess and suggest the Geology, Hydrology, soil related studies etc. in any Hydro Electric Projects for the existing, ongoing and future planned projects and the committee was constituted as per the B.O. read as 1<sup>st</sup> above.

A meeting of the Standing Technical Committee was convened by the Chairman & Managing Director on 01.03.2023 along with representatives from Norwegian Geotechnical Institute (NGI). It was decided in the meeting to contact M/s. NIRM for carrying out the studies and through M/s. NIRM the technical assistance of NGI can be taken. Accordingly, the CMD, KSEBL have conducted an on-line meeting with officials from M/s. NIRM on 23.03.2023. Based on the decisions in the meeting, M/s. NIRM has submitted their techno-commercial proposal read as 2<sup>nd</sup> above for carrying out the Geophysical investigations at Sengulam Augmentation Scheme which includes a comprehensive Geophysical investigation using two different methods, viz-a-viz Seismic Refraction Tomography (SRT) and Electrical Resistivity Imaging (ERI) and the cost of investigations is tabulated as below:

Sl. No	Work Description	Amount
1	Seismic Refraction Tomography (maximum profile length-3800m)	21,00,000
2	ERI Survey (maximum profile length-3800m)	21,00,000
3	Charges for licensed blaster with zero delay electric detonators/explosives.	5,00,000
	Total :	47,00,000
	Total (including GST 18%):	55,46,000

Based on the techno-commercial proposal of M/s. NIRM, a detailed note read as 3<sup>rd</sup> above had been submitted by the Director (Generation-Civil) to the Chairman & Managing Director and accordingly sanction was accorded as per the Office Order read as 4<sup>th</sup> above for the techno-commercial proposal submitted by M/s. NIRM to carry out the Geophysical Investigation for a lump sum amount of Rs. 47,00,000+18% GST with 100% advance payment by entrusting the Chief Engineer (Civil-Construction) South to issue Work Order and to nominate the Project Manager, Sengulam Augmentation Scheme as nodal officer for coordinating with M/s. NIRM for carrying out the Geophysical investigations subject to ratification by the Full Time Directors.

The matter was placed before the Full Time Directors as per the note read as 5<sup>th</sup> above for ratification.

Having considered the matter in detail, the Full Time Directors in its meeting held on 11.05.2023, resolved to ratify the action of according sanction to the techno-commercial proposal submitted by M/s. NIRM to carry out the geophysical Investigation for a lump sum

amount of Rs. 47,00,000 + 18% GST with 100% advance payment by entrusting the Chief Engineer (Civil-Construction) South to issue Work Order and to nominate the Project Manager, Sengulam Augmentation Scheme as nodal officer for coordinating with M/s. NIRM for carrying out the geophysical investigations.

Orders are issued accordingly.

**By Order of the  
Full Time Directors**



**LEKHA G  
Company Secretary**

To:

The Chief Engineer (Civil-Construction) South, Vidyuthi Bhavanam, Thiruvananthapuram.

Copy to: The Chief Engineer (IT,CR&CAPS)/ Chief Internal Auditor/ Company Secretary/  
Financial Advisor/ LA&DEO

The TA to the Chairman & Managing Director / Director (Generation-Civil) / Director  
(Distribution, SCM, IT, REES & SOURA) / Director (Transmission, SO, Plng, Safety &  
Generation - Electrical).

The PA to the Director (Finance & HRM).

The RCAO/RAO

The Sr.CA to the Secretary (Administration).

Stock File.

Forwarded / By Order



Assistant Executive Engineer