# BREIF SUMMARY OF BANDU PUMPED STORGAE PROJECT(4 x 225MW)

### **1.0 INTRODUCTION-**

Pre-Feasibility Report of Bandu Nala Pumped Storage Project (900 MW) was prepared by WBSEDCL in the year 2013 and further updated in year 2018 by WAPCOS.

The proposed Bandu Pumped Storage Project is located near Ayodhya village in Purulia district of West Bengal, India. Ayodhya village is about 40km from Bagmundi village which is connected through an all-weather metalled road (58 km via NH-32 & SH-4) with Purulia town, Headquarters of the Purulia District, which is further connected both by rail and road with Kolkata (about 250 km). The Bandu Project areas come within the confines of Ayodhya hills which is a part of Chotonagpur Plateau. The scheme is located in between Latitude 23° 14' 17.237" North and 23° 13' 57.734" North; Longitude 86° 10' 15.95" East and 86° 09' 22.7585" East. Reference Topo-sheet for the project is No.73I/4/ NE (Everest/Polyconic) or F45C/4/NE (UTM/WGS84) of Survey of India.

# 2. PROJECT DESCRIPTION

The Scheme envisages construction of:

- A 71 metre high Rockfill upper dam with central impervious clay core across river Bandu to provide a live storage of 13.49 million cum with Full Reservoir Level at 480.00 metre and Minimum draw down Level at 460.83 metre. Poundage for 1 MCM Irrigation requirement is also proposed in Upper Reservoir. The MDDL for Irrigation depletion is EL 458.75m.
- A 53 metre high Rockfill lower dam with central impervious clay core across river Bandu to provide a live storage of 13.49 million cum with Full Reservoir Level at 340.44 metre and Minimum Draw down Level at 325.00 metre.
- An underground power house with four numbers Francis type reversible pump-turbine of capacity 225/255 MW.
- An underground Transformer cavern with four numbers Power Transformer of capacity 280 MVA.
- ✤ One 400 kV Gas insulated Switchgear.
- 1687 metre long headrace, Pressure Shaft, draft tube and tailrace tunnel for conveyance of water.

# > Installed Capacity and Power Generation

The details are summarized below:

Installed Capacity (MW)	900
No of units	4
Unit Size (MW)	225
Head (max)	155



Head (Min)	120.39
Hours of Peaking Operation	5
Annual Energy Generation (GWh)	1642.5
Annual Pumping Energy (GWh)	2135.25
Cycle Efficiency	76.92 %

### Estimates of the Cost

The breakup of the cost estimates for option-I and Option-II is given below at December, 2017 price levels:

**Option: I -** Considered all 4 machines are Fixed Speed Machines

Option: II- Considered 2 (Two) machines are Variable Speed machines + 2 (Two)

ltem	Estimated Cost (Rs. In Crore)		
	Option: I	Option: II	
Civil Works	2032.11	2036.93	
Electro-mechanical Works	1687.77	2041.89	
Transmission line	90.00	90.00	
Total	3809.88	4168.82	

machines are Fixed Speed Machines

# Financial Aspects

The estimated cost of the Bandu nala Pumped Storage Scheme for option-I and Option-II is **Rs. 3809.88 Crore** and **4168.82 Crore** respectively and the annual energy generation will be of 1642.5 GWh. The project is scheduled to be completed by a period of 5 years 3months.

# i) Option-I

SI. No.	Off Peak Energy Rate (Rs/kWh)	First Tariff (Rs/kWh)	Levelized Tariff (Rs/kWh)
1	1	7.54	6.86
2	2	8.89	8.20
3	3	10.23	9.55

# ii) Option-II

SI. No.	Off Peak Energy Rate (Rs/kWh)	First Tariff (Rs/kWh)	Levelized Tariff (Rs/kWh)
1	1	8.11	7.36
2	2	9.45	8.70
3	3	10.79	10.05

