

# **Brief Description of Budhi Gandaki Hydropower Project**

## **Introduction:**

Budhi Gandaki Hydropower Project is a storage type project located in Central/ Western Development region on the Budhi Gandaki River of Nepal. This project was identified during the Gandaki Basin Study in late 70's. In 1984, a prefeasibility study of the project was prepared. The prefeasibility study of the Project has recommended 600 MW capacity plant with FSL 520 masl.

## **Location and Access:**

The project lies in Gorkha and Dhading districts in Western/ Central Development region of Nepal. The project site is accessible through Benighat (At about a distance of 85 km from Kathmandu) on Prithvi Highway (Kathmandu - Pokhara). From Benighat, a pedestrian suspension bridge (Motorable Bridge is under construction) can be used to cross the Trishuli River and access the Dam and Powerhouse site both of which are at a distance of about 2 km from the road head.

## **Salient Features:**

The salient features of the project based on the prefeasibility study of 1984 are as follows:

**Installed Capacity: 600 MW**

**Average Annual Energy: 2495 GWh**

### **1. Reservoir**

Full Supply Level	El.520 m
Minimum Operating Water Level	El. 445 m
Gross Capacity (at FSL)	3 320 Million m <sup>3</sup>
Effective Storage Capacity	2 755 Million m <sup>3</sup>
Surface Area	50 km <sup>2</sup>

### **2. Hydrology**

Catchment Area	5 370 km <sup>2</sup>
Long Term Average Flow	195 m <sup>3</sup> /s
Construction Flood	3 176 m <sup>3</sup> /s
Design Flood Discharge	12 827 m <sup>3</sup> /s
Probable Maximum Flood	15 126 m <sup>3</sup> /s

### **3. Diversion System**

Design Flood (Routed)	1 170 m <sup>3</sup> /s
Type	Circular
Diameter	10 m
Crest Elevation of U/S Cofferdam	El.365 m
Crest Elevation of D/S Cofferdam	El.320 m

### **4. Dam**

Type	Zoned rockfill with inclined core.
Crest Level	El.525 m
Maximum Height	225 m
Crest Length	510 m
Upstream and Downstream Slopes	1:2.3; 1:1.8

### **5. Spillway**

Type	Ogee type with open chuteway
Channel width	50 m
Crest Level	El. 502 m
Design Flood (Routed)	10 053 m <sup>3</sup> /s
Gate Type	Radial
Gate size	18m x 12.5 m, Four gates

### **6. Waterway and Powerhouse**

Intake	Shaft Type
Invert Level of Intake	El. 428 m
Gate Size	4.25 m x 10m, Three gates
Headrace Tunnel	Circular lined
Diameter	12.0 m
Length	276 m
Penstock	

Length	240 m
Diameter	4.0 m
Powerhouse	
Type	Underground
Width, Length and Height	24 m x 120m x 43.5 m
<b>7. Generating Equipment</b>	
Turbine	
Type	Francis Type, vertical axis,
Net Head at Rated Water Level	185 m
Rated Discharge	430 m <sup>3</sup> /s
Installed Capacity	4 x 150 MW
Turbine Rated Speed	214.3 rpm
Normal Taiwater level	312.0 m
Generator	
Type	Vertical shaft revolving
Capacity	4 x 166 MVA
<b>8. Surge Tank</b>	
Location	Tailrace tunnel
Type	Simple
Dimension	13mx80mx34.5m
<b>9. Tailrace Tunnel</b>	
Shape	D Shape
Dimension	13m x 13m
Length	1.1 km
<b>10. Access Tunnel</b>	
Shape	D Shape
Dimension	8m x 10m
Length	976.0 m