
**HUNDRU TAILRACE SMALL HYDRO POWER PROJECT(11MW)
SALIENT FEATURES**

Location

State	Jharkhand
District	Ranchi
River	Subarnarekha
Diversion Weir	23 ⁰ 27' 02.53" N, 85 ⁰ 40' 09" E
Power House Site	23 ⁰ 26' 53.72" N, 85 ⁰ 42' 16.50" E

Hydrology

Catchment Area At Intake Site	840 km ²
Design Flood	205 m ³ /s (Gumbel's Flood Frequency Analysis)
Design Discharge	56.6 m ³ /s

Diversion Structure

Type	Weir(Vertical Drop Type)
Built	Stone masonry with Concrete floors
Length of Weir	45.11 m
Top elevation of weir	EL. 310 m
Average River Bed Level	EL. 306 m
FRL at Weir	EL. 310 m

Head Regulator

Built	RCC
Invert Level	EL. 306.00 m
Size	14.6m(L) X 14m(W) X 6m(H)

Intake Channel

Type	Trapezoidal Open channel
Built	RCC
Size	35m(L)X11.34m top(W)X10.35m(H)

Power Channel

Type	Trapezoidal Open channel
Built	Stone masonry
Size	3098m(L)X11.34mtop(W)X5.39m(H)
Invert Level(at start)	EL. 305.36 m
Top Level(at start)	EL. 310.00 m

Forebay

Type & Shape	Trapezoidal (stepped)
Size(plan area)	57m(L) X 35m(W)
Invert Level(bottommost)	EL. 297.20 m
Top Level	EL. 310.50 m
C/L penstock	EL. 301.53 m
MDDL	EL. 304.86 m
FRL at Forebay	EL. 309.50 m

Penstock

Type	Steel lined circular-Surface
Size	4.22m diameter
Length	42m
Design Discharge	56.6 m ³ /s

Power House

Type	Surface
Total Installed Capacity	11MW
No. of Units	1
Capacity of Units	1 X 11 MW
Size Of power house	21m(L) X 19m(W)
Type Of Turbine	Vertical Kaplan
Gross Head	24 m
Net Operating Head Design Discharge	22 m

Tail Race Channel

Max. Tail Water Level	EL 287 m
Min. Tail Water Level	EL 286 m
Type	Rectangular Open Channel
Size	5m(W)x3m(H)
Length	90m

Power Generation

Installed Capacity	11 MW
Generation Energy	16.38 GWh
Plant Load factor	17%
Levellised Tariff at bus bar	Rs 5.10/kWh

COST ESTIMATE

INR (Crores)

Civil & HM Works	19.83
Electro Mechanical Works	15.60
TOTAL COST WITHOUT TRANSMISSION	35.43
Cost of Transmission Works	0.36
TOTAL COST WITH TRANSMISSION	35.79