ARKI MINI HYDRO POWER PROJECT
SALIENT FEATURES

Location	
State	Jharkhand
District	Ranchi
River/Tributary	Tajna
Diversion Weir	23^0 01' 24.13" N , 85^0 22' 45.46" E
Power House Site	23^0 0' 49.02" N , 85^0 22' 40.02" E
Hydrology	
Catchment Area At Intake Site	189.2 km^2
Design Flood	340 m^3/s
Design Discharge	5.37 m^3/s
Diversion Structure	
Type	Trench weir(below bed level)
Built	RCC
Length of Weir	32 m
Top elevation of weir	EL. 508.5 m
Average River Bed Level	EL. 508.5 m
FRL	EL. 506.30 m
Pondage	45 m^3
Intake Structure	
Type	Open chamber
Built	RCC
Invert Level	EL. 505.7 m
Size	5m(L) X 4m(W) X 5.8m(H)

Intake Channel

Type	Rectangular Open channel
Built	Stone masonry
Size	243m (L) X 2.2m (W) X 3.5m/2m (H)

Desilting Basin

Type	surface desilting basin
Built	RCC
Size of Basins	75 m (L) X 5 m (W) X 6.25 m (H) (including hopper)
Minimum size of particles to be removed	0.2 mm and above
Settling velocity	2.5 cm/s
Silt Flushing arrangement	RCC Ducts

Power Channel

Type	Rectangular Open channel
Built	Stone masonry
Size	695m (L) X 2.2m (W) X 2m (H)
Invert Level(at start)	505.74
Top Level(at start)	507.74

Forebay

Type	Rectangular tank(stepped)
Size(plan area)	12 m (L) X 4.5 m (W)
Invert Level(bottommost)	EL. 498.70 m
Top Level	EL. 507.24 m
C/L penstock	EL. 499.65 m

Penstock

Type	Steel lined circular-Surface
Size	1.3 m diameter
Length	69.85m up to bifurcation1; and 74.85 m upto bifurcation 2 and 17m after bifurcation 2 to power house.
Design Discharge	5.37 m^3/s

Bifurcation 1

Dia(m)	Length(m)
1.0	5
0.85	22

Bifurcation 2

Dia(m)	Length(m)
0.85	17
0.5	17

Power House

Type	Surface
Total Installed Capacity	1.5 MW
No. of Units	3
Capacity of Units	2 X 650 KW and 1 X 200 KW
Size Of power house	28.5 m (L) X 8.5 m (W)
Type Of Turbine	Horizontal Francis
Speed Of Turbine	650 KW - 600 rpm 200 KW – 1000 rpm
Gross Head	32.8 m
Net Operating Head Design Discharge	31.30 m

Tail Race Channel

Max. Tail Water Level	EL 474.5 m
Min. Tail Water Level	EL 473.5 m
Type	Rectangular Open Channel
Size	2 m (W) X 2 m (H)
Length	22 m

Power Generation

Installed Capacity	1.5 MW
75% Dependable Energy	4.34 GWh
Plant Load factor	33 %
Levellised Tariff at bus bar	Rs 4.89/kWh

COST ESTIMATE	**INR (Crores)**
Civil & HM Works	6.94
Electro Mechanical Works	2.40
TOTAL COST WITHOUT TRANSMISSION	9.34
Cost of Transmission Works	2.00
TOTAL COST WITH TRANSMISSION	11.34