SALIENT FEATURES

1. PLANT			
	Type	:	Run-of-River
	Capacity	:	5.0 MW
	Gross Head	:	198.0 m
	Design Discharge	:	3.0 m^3/s
2. LOCATION			
2.1	**Coordinates at Weir Location**		
	Longitude	:	76° 55' 46" E
	Latitude	:	31° 59' 54" N
2.2	**Coordinates at Powerhouse Location**		
	Longitude	:	76° 54' 41" E
	Latitude	:	31° 58' 55" N
	State	:	Himachal Pradesh
	District	:	Mandi
	Stream	:	Thaltukhorh Stream, a tributary of Uhl river
	Vicinity	:	Weir is located near Village Garaman & Power house is near Village Thaltukhorh
3. HYDROLOGY			
	Catchment area at diversion	:	22 km^2
	50 year Return Period Flood	:	260 m^3/s
	10-Daily Average Discharge with 75% Dependability	:	1.03 m^3/s
	10-Daily Average Discharge with 50% Dependability	:	1.68 m^3/s
	%ge of flow available for project design discharge (3 m^3/s) – from flow duration curve	:	31.24%
4. UPSTREAM WORKS			
a. DIVERSION STRUCTURE			
	Type	:	Trench Weir
	Maximum Flood Level	:	El. 1974.60 m
	Average River Bed Level at Trench Weir	:	El. 1972.00 m
	FSL at Trench Weir	:	El. 1972.25 m
	Crest Level of Trench Weir	:	El. 1972.75 m
	Length of the Trench Weir	:	14.0 m

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	Width of the Trench Weir	:	2.00 m
	Slope of the Trench Weir	:	1V:10H
b. SHINGLE FLUSHING ARRANGEMENT			
	Shape of Flushing Pipe	:	Circular Steel Lined
	Size	:	1000 mm diameter
	No. & Size of shingle exluder gate	:	One No. of 1.0 m (W) x 1.0 (H)
	Length	:	77.40 m
	Slope	:	1 in 50
	Invert level at Inlet	:	El. 1970.05 m
	Invert level at Outlet	:	El. 1968.50 m
	Type & thickness of steel liner	:	IS:2002, Grade-II and 8 mm thick
c. INTAKE STRUCTURE & FEEDER PIPE			
	Size of Intake well	:	3.50 m (L) x 4.76 m (W) x 6.05 m (H)
	Nos. & Size of Intake Gate	:	One no. service gate & one no. stop log gate each of 1.80 m (W) x 1.50 m (H)
d. FEEDER PIPE			
	No.	:	One
	Size	:	1.80 m diameter circular steel lined
	Length	:	30.0 m
	Invert Level at Inlet	:	El. 1971.00 m
	Invert Level at Outlet	:	El. 1970.40 m
	Type & thickness of steel liner	:	IS:2002, Grade-II and 8 mm thick
e. DESILTING ARRANGEMENT			
	Type	:	Surface Desilting Basin
	No. & Size	:	1 No., and 35.0 m (L) x 6.0 m (W) x 6.70 m (H) including free board
	Particle size to be excluded	:	0.20 mm and above
	Design Discharge	:	3.90 m^3/s (including 20% flushing discharge)
	Actual Flow Through Velocity	:	0.16 m/s
	Settling Velocity	:	0.0235 m/s
	Silt Flushing Pipe	:	600 mm Ø Circular & 85 m long
	Valve for Flushing Conduit	:	600 mm
f. COLLECTION POOL AFTER DESILTING BASIN			
	Invert Level	:	El. 1970.42 m
	Size of Collection Pool	:	10.0 m (L) x 6.0 m (W) x 3.0 m (H)

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	Crest Level of spillover from desilting basin to collection pool	:	El. 1971.00 m
	Full Supply Level	:	El. 1971.50 m
	Elevation of cutout of overflow arrangement	:	El. 1971.80 m
	Length of cutout for overflow arrangement	:	6.0 m
5. CONNECTING PIPE			
	No. & Flow type	:	One & Free flow
	Size	:	1.80 m diameter circular steel lined
	Length	:	116.00 m
	Invert Level at Inlet	:	El. 1970.42 m
	Invert Level at Outlet	:	El. 1970.28 m
	Type & thickness of steel liner	:	IS:2002, Grade-II and 8 mm thick
6. HEAD RACE TUNNEL (FREE FLOW)			
	Type and Size	:	Concrete & Shotcrete Lined, Arch – Shaped, 1.80 (W) x 2.25 m (H) m Finished
	Velocity at rated Discharge	:	1.58 m/s
	Length	:	2471 m
	Design discharge	:	3.0 m^3/s
	Average Slope of Tunnel	:	1V:710H
7. ADIT			
	Adit-I (for HRT Construction)	:	D-Shaped, 2.5 m (W) x 2.5 m (H) m dia Finished & 92 m long
8. FOREBAY TANK			
	Size of Forebay Tank	:	30.0 m (L) x 10.0 m (W) & height vary from 2.70 m to 6.05 m
	Invert Level	:	El. 1963.45 m
	Top Level	:	El. 1969.50 m
	Full Supply Level	:	El. 1967.85 m
	MDDL	:	El. 1967.10 m
9. ESCAPE TANK			
	Size	:	10.0 m (L) x 4.0 m (W) & height vary from 3.60 m to 6.05 m
	Invert Level	:	El. 1963.45 m
	Full Supply Level	:	El. 1967.85 m
10. PENSTOCK			
	Type	:	Surface
	Size Main Pipe	:	1 No. 1.2 m diameter 418 m long

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	No. of Anchor Blocks	:	12 Nos. (including bifurcation)
	Branche Pipe		2 nos., 0.85 m dia, 9.65 m each (average length)
	Velocity in Main Pipe	:	2.65 m/s
	Velocity in Branch Pipe		2.65 m/s
	Type & thickness of steel liner	:	IS:2002, Grade-II and 8 mm to 16 mm thick
11. ESCAPE PIPE			
	Type	:	Surface
	Length	:	442 m
	Size	:	1 No. 1.0 m diameter for an initial upstream length of 15.0 m beyond that 0.8 m diameter and 427.0 m long upto energy dissipation tank
	No. of Anchor Blocks	:	14 Nos.
	Flow	:	Free flow upto 439 m upstream length and thereafter the flow will be pressurised
	Type & thickness of steel liner	:	IS:2002, Grade-II, and 8 mm thick
12. ENERGY DISSIPATION TANK			
	Size of Tank	:	6.0 m (L) x 3.0 m (W) X 4.0 m (H)
	Invert Level & Top Level	:	El. 1767.45 m & El. 1771.45 m
13. ESCAPE CHANNEL			
	Size	:	3.0 m (W) x 1.0 m (H)
	Length	:	19.0 m
	Slope of Channel	:	1V:20H
14. POWER HOUSE			
	Type	:	Surface
	Installed Capacity	:	5.0 MW (2 x 2.5 MW)
	Size	:	29.00 m (L), 20.0 m (W), & 15.90 m (H) (i.e. El.1782.85-1766.95)
	Size of Control Room	:	6.0 m (L) x 13.00 m (W) x 4.50 m (H)
	Size of Battery Room		6.0 m (L) x 4.80 m (W) x 4.50 m (H)
	Service bay Level	:	El. 1768.35 m
	Gross Head		198.5 m (El 1967.85-1769.35)
	Total Head loss from Forebay (on rated discharge = 3.0 m^3/s)	:	2.0 m
	Rated Net Head	:	196.00 m (198.0-2.0)
	Center Line of Unit Penstock	:	El. 1768.55 m
	Center Line of Turbine	:	El. 1769.35 m
	EOT Crane beam level	:	El. 1779.35 m

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15. TAIL RACE CHANNEL			
	No of channel	:	Two, separate tail race channels
	Average Length of each channel	:	14.0 m
	Size of Channel (each)	:	2.0 (w) x 1.4 m (H)
16. TURBINES			
	No. & Type	:	2 Nos., Pelton Horizontal
	Rated Power	:	2.5 MW of each Unit
	Overload capacity	:	10 % on Rated Power
	Rated Net Head	:	196.0 m
	Design Discharge	:	1.5 m^3/s per Unit
	Speed	:	428.60 rpm
	Turbine Efficiency	:	91.00 %
17. MAIN INLET VALVE			
	Type	:	Butterfly Valve
	Diameter	:	850 mm
	Location	:	Powerhouse
18. GENERATOR			
	Number	:	2
	Rated Capacity	:	2 X 2.5 MW
	Efficiency	:	95.50%
	Overload Capacity	:	10 % COL
	Synchronize Speed	:	428.60 rpm
19. SWITCH YARD			
	Type	:	Surface Switch Yard
	Area	:	30.0 m X 15 .0 m
20. TRANSMISSION LINE			
	33 kV Single Circuit Transmission Line with ACSR DOG conductor and connect the same to existing 33/11 kV Tikkan Sub-station of HPSEB	:	2.80 km
21. ANNUAL ENERGY CORRESPONDING TO 100% PLANT AVAILABILITY			
	75% Dependable Year	:	25.67 MU
22. COST ESTIMATE			
	Cost of Thaltukhorh-I		
	Civil and H&M Works	:	Rs. 30.10 Crores
	Electro-Mechanical (E&M Works)	:	Rs. 10.50 Crores

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	Pre Operative Works	:	Rs. 3.48 Crores
	Transmission Line Works	:	Rs. 1.20 Crores
	Interest During Construction (IDC)	:	Rs. 3.27 Crores
	Escalation	:	Rs. 0.54 Crores
	Fund Management Expenses	:	Rs. 0.18 Crores
	Total Project Cost	:	**Rs. 49.27 Crores**
23. TARIFF DETAILS			
Capital Cost without MNRE Subsidy			
	1st Year Tariff per KWh	:	Rs. 4.24
	Levelised Tariff per KWh	:	Rs. 3.83
Capital Cost with MNRE Subsidy			
	1st Year Tariff per KWh	:	Rs. 4.05
	Levelised Tariff per KWh	:	Rs. 3.67

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