

SALIENT FEATURES OF UMHP 37 MW

1. Project name	:	Upper Myagdi Hydroelectric project (UMHP)
2. Source river(s)	:	Myagdi Khola
3. Location of the Project		
Administrative location	:	Dhaulagiri Rural Municipality-4, Myagdi District
Geographical co-ordinates	:	83° 21' 35" E and 83° 23' 20" E longitudes 28° 31' 05" N and 28° 33' 20" N latitudes
4. Type of project	:	Run-of-the-River (RoR)
5. Hydrology		
Catchment area at intake	:	384.34 km ²
40 percentile flow (Q _{40%})	:	14.42 m ³ /s
100-yrs design flood at intake	:	928.51 m ³ /s
100-yrs design flood at tailrace	:	963.18 m ³ /s
6. Diversion Headworks		
Type of weir	:	Ogee Concrete Weir
Length of weir	:	24.00 m
Weir crest elevation	:	1713.00 amsl
Under sluice type	:	Radial gate
Under sluice opening	:	3.0 m x 5.0 m (W x H), 2 Nos.
Under sluice sill level	:	1,707.70 amsl
Intake type	:	Side intake, orifice type
Intake opening	:	3.0 m x 2.0 m (W x H), 4 Nos.
Intake invert level	:	1,710.27 amsl
7. Gravel trap and Spillway		
Length	:	10.0 m
Type	:	Dufour, 1- Bay
Section	:	8.0 m (W) x 2.64 m (H) x 1 (Nos.)
Flushing gallery size	:	1.0 m x 1.0 m (W x H)
Spillway Length	:	11.00 m
Spillway Crest	:	1713.05

8. Trash passage

Gate Type, Size	:	Flap Gate, 2 m x 1.5 m, 1 No.
Canal size	:	16.15 m x 2 m (L x W)

9. Fish passage

Gate Size	:	0.6 m x 0.8 m, 1 No.
Canal size	:	1.5 m x 0.6 m (W x H)

10. Approach Culvert

Size	:	3 m x (8-3.6) m x 2 m (L x W x H)
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11. Settling Basin

Type	:	Surface, Dufour
Number of chambers	:	2 Nos
Particle size to be removed	:	≥ 0.20 mm
Efficiency (By Vetter's Method)	:	89.59 %
Inlet Transition Length	:	41.87 m
Inlet gate	:	1.5 m x 2 m (W x H), 2 Nos.
Basin size	:	90.00 m x 10.00 m x 5.11 m (L x B x H)
Outlet gate	:	2 m x 2 m (W x H), 4 Nos.
Flushing gallery	:	1.0 m x 1.0 m (W x H), 2 Nos

12. Head Pond

Section	:	Trapezoidal
Length	:	18.0 m
Width	:	20.5 m – 6 m
Depth	:	4.81 m - 9.81 m (varies)
Spillway Length	:	8 m

13. Headrace Pipe

Type	:	Material: IS 2062:2011 E350 BR,
Internal diameter	:	3.00 m
Thickness	:	12 mm
Length	:	231.00 m (15 m inside tunnel)

14. Headrace & Adit Tunnel

Headrace Tunnel Length	:	3866.00 m
Tunnel Excavation Size	:	4.0 m x 4.10 m (Inverted D-Shaped)

Adit Tunnel length	:	237.00 m
Niche	:	6 m x 4 m x 3.5 m , 14 Nos.
15. Surge Shaft & Vent Tunnel		
Type	:	Underground, Circular
Minimum Internal Diameter	:	7.50 m
Height from base	:	56.08 m
Static level	:	1712.10 masl
Normal Water Level	:	1709.45 masl
Max. upsurge level	:	1726.57 masl
Max. downurge level	:	1694.03 masl
Vent Tunnel Length	:	10.00 m
16. Penstock Pipe		
Total Steel Penstock Pipe	:	804.50 m
Type	:	Material: IS 2062:2011 E350 BR,
Diameter	:	1.69 -2.4 -2.5 m
Thickness	:	12 mm to 44 mm
17. Powerhouse		
Powerhouse type	:	Surface
Size (L × B × H)	:	38.00 m x 22.10 m x 14.55 m
Number of units	:	2 Nos.
Type of turbine	:	Pelton, Vertical Shaft Arrangement
Rated Turbine Output at Shaft	:	19.35 MW
Turbine Center Line	:	1392.50 m amsl
18. Tailrace		
Type	:	RCC Box, rectangular
Size	:	100 m x 4.8 m x 1.8 m (After Merging)
	:	22 m x 3.8 m x 2.9 m (Before Merging)
Slope	:	1 in 500
Gate size	:	4.8 m x 1.8 m (W × H)
19. Generator		
Type	:	Salient pole synchronous
Specification	:	22.1 MVA, 11 kV, 50 Hz, x 2 Nos.

20. Transformer

Step-up Transformer Rating : 24.5 MVA x 2 Nos., 132/11 kV, 3-phase

21. Transmission line

Connection (length) : Powerhouse to Dadakhet Substation – 10 km

Voltage : 132 kV, single circuit

22. Access road

Proposed : Access road about 20 km upto Powerhouse is completed.

In about 9 km of internal access road to Headworks, Adit and Outlet, 0.7 km to Headworks and 1 km to Outlet remaining and ongoing on site.

23. Power and energy

Gross head : 320.50 m

Rated net head : 314.67 m

Installed capacity : 37 MW

Efficiency : 90 %, 97 % and 99 % (turbine, generator and transformer)

Minimum power output : 10.48 MW (in Falgun)

Net dry season energy : 67.23 GWh / yr (31.16%)

Net wet season energy : 148.495 GWh / yr (68.84%)

Net marketable energy : 215.731 GWh / yr

24. Project Cost

: MNPR. 6,715.22 (Without IDC)

: MNPR. 7,395.42 (With IDC)

25. Financial Indicators

Net Present Value (NPV) : 2,729.31 MNPR

Internal Rate of Return (IRR) : 14.05 %

Return on Equity (RoE) : 21.49 %

Benefit Cost Ratio (B/C Ratio) : 1.40

Average DSCR : 1.55

26. Construction period

: 3 years

