# Salient Features of the Project

## General

| | |
|---|---|
| Development region | Central |
| Zone | Janakpur |
| District | Dolakha |
| District headquarter | Charikot |
| VDC | Chankhu and Suri |
| Project location (same as before) | |
| *Longitude* | 86° 15' 10" to 86° 12' 50" East |
| *Latitude* | 27° 45' 13.85" to 27° 44' 10" North |
| Type of scheme | Run of river (RoR) |
| Source river | Suri Khola |

## Hydrology

| | |
|---|---|
| Catchment area | 36.40 $km^2$ at intake site |
| Mean annual precipitation | 1650 mm |
| Design discharge | 2.75 $m^3/s$ ($Q_{40\%}$) |
| Compensation flow | 0.066 $m^3/s$ |
| 1 in 100 years return period design flood | 167.75 $m^3/s$ |
| 1 in 5 years return period operation flood | 61.22 $m^3/s$ |
| 1 in 2 years return period diversion flood | 34.55 $m^3/s$ |

## Power and energy

| | |
|---|---|
| Gross head | 282.0 m |
| Rated net head | 273.19m |
| Installed capacity | 6400 kW |
| Dry season energy | 5.28 GWh |
| Wet season energy | 27.56 GWh |
| Annual energy | 32.85 GWh |

## Project components

| | |
|---|---|
| Weir | |
| *Type* | Concrete lined weir |
| *Crest level* | 1395 m amsl |
| *Length of weir* | 20 m including undersluice |
| *Spillway type* | Free overflow |
| Intake | |
| *Type* | Gated submerged orifice intake with course |

| | |
|---|---|
| | trash rack |
| *Nos. of opening* | 2 nos |
| *Opening size* | 2.5m long X1.0 m |

Conneting canal

| | |
|---|---|
| *Type* | Box type |
| *Length* | 18.37 m |
| *Width* | 1.50 m |
| *Overall depth* | 1.65 m |
| *L-slope* | 1:250 |
| *Overflow spillway length* | 7.84 m |
| *Overflow spillway capacity* | 10 $m^3/s$ |

Gravel trap

| | |
|---|---|
| *Type* | Continuous flushing hopper type |
| *Overall length* | 8.17 m |
| *Width* | 3.75 m |
| *Overall depth* | 2.60 m |
| *Particle size to be trapped* | 5 mm |
| *Design flow* | 3.16 $m^3/s$ |
| *Flushing flow* | 0.41 $m^3/s$ |

Settling basin

| | |
|---|---|
| *Type* | Double chamber, gravity flushing type |
| *Settling zone length* | 43.00 m |
| *Inlet transition length* | 16.20 m |
| *Single basin width* | 5.00 m |
| *Overall depth* | 3.77 m |
| *Particle size to be settled* | 0.15 mm with 90% settling efficiency |
| *Design flow* | 2.75 $m^3/s$ |

Headpond

| | |
|---|---|
| *Type* | RCC tank |
| *Storage period* | 60 s |
| *Effective length* | 11.45 m |
| *Width* | 7.50 m |
| *Effective depth* | 1.91 m |
| *Effective storage* | 165 $m^3$ |

| | |
|---|---|
| *Normal water level* | 1394.726 m amsl |
| Penstock | |
| *Type* | Surface, mild steel circular shaped |
| *Length* | 3384 m |
| *Internal diameter* | 1.30 m |
| *Thickness* | 6-22 mm |
| *Design flow* | 2.75 $m^3/s$ |
| *No. of anchor blocks* | 52 |
| *No. of support piers* | 370 |
| Powerhouse | |
| *Type* | Surface type, RCC structure |
| *Length* | 27.82 m |
| Width | 16.24 m |
| *Height* | 12.00 m |
| *Tailrace length* | 80 m |
| Turbine | |
| *Type* | Pelton (2 units) |
| *Rated capacity* | 3392 kW one unit |
| *Turbine axis level* | 1113 m amsl |
| *Design flow* | 1.375 $m^3/s$ for one unit |
| Generator | |
| *Type* | 3 Phase brushless synchronous (2 units) |
| *Rated capacity* | 4000 kVA each |
| *Rating* | 50 Hz, 750 rpm |
| Governor | Electro-Hydraulic |
| Overhead crane | Lifting capacity 25 T |
| Step up transformer | |
| *Type* | 3-Phase, ONAN cooled, Outdoor type |
| *Rating* | 2 x 4000 kVA, 690/33kV, 50 Hz |
| Transmission line | 33 kV Single circuit, 3 phase, 50 Hz, 5.8 km long |
| Connection with grid | Singati sub-station |
| Access road | Earthen road, 3.5 km long |
| **Cost and finance** | |
| Project cost (with IDC, ) | 1052.993 Mill NRs |

| | |
|---|---|
| Cost per kW (with IDC) | 1617.47 US$/kW |
| Debt equity ratio | 70/30 |
| FIRR | 13.60% |
| NPV | 104.435 Mill NRs |
| BC ratio | 1.24 |
| Return on equity | 15.60% |