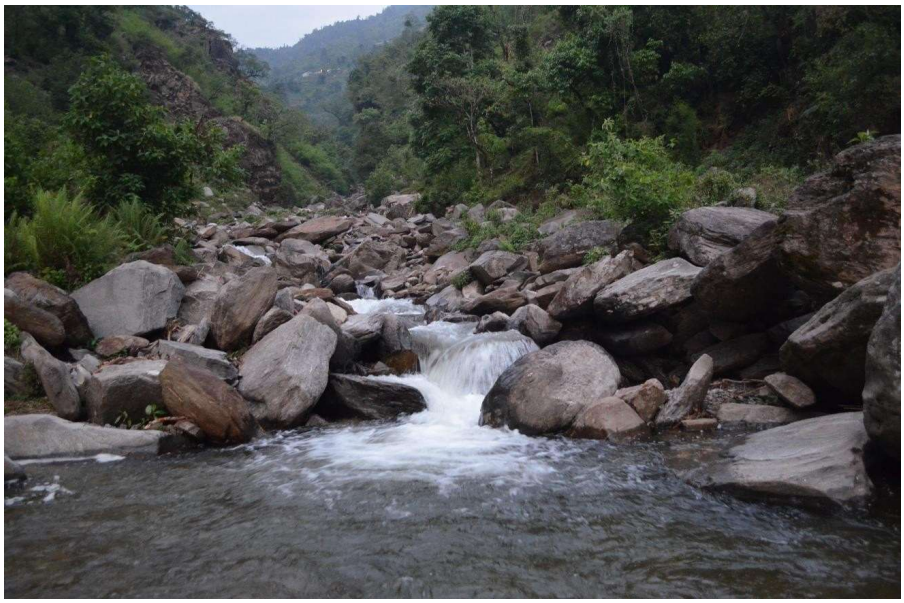
HIMSTAR URJA COMPANY PVT. LTD.

BUKU KAPTI HYDROPOWER PROJECT (5 MW)

SOLUKHUMBU AND OKHALDHUNGA

DISTRICT, NEPAL



DETAILED PROJECT REPORT

OF

33 KV TRANSMISSION LINE

JUNE - 2024

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List of Acronym

˚C	:	Degree Centigrade
AC	:	Alternating current
ACSR	:	Aluminum Conductor Steel Reinforced
ASME	:	American Society of Mechanical Engineers
ASTM	:	American Society for Testing and Materials
AWS	:	American Welding Society
AL	:	Alternate Line
CH	:	Chainage
CL	:	Centre Line
COL	:	Continuous Overloading
Cumecs	:	Cubic meter per second
Dia	:	Diameter
DPR	:	Detailed Project Report
E&M	:	Electromechanical
EL	:	Elevation
FOS	:	Factor of Safety
GON	:	Government of Nepal
GPS	:	Global Positioning System
HPP	:	Hydro Power Project
Hz	:	Hertz
IDC	:	Interest during Construction
INPS	:	Integrated National power System
IPs	:	Intersection Points
IR	:	Insulating Resistance
IS	:	Indian Standard
ISO	:	International Standard Organization
kA	:	Kilo Ampere
Km	:	Kilo Meter
kV	:	Kilo Volt
kVA	:	Kilo Ampere Volt
kW	:	Kilo Watt
LA	:	Lightning Arrester
m	:	meter

mm	:	millimeter
msl	:	Mean Sea Level
MW	:	Mega Watt
MWh	:	Mega Watt hour
NEA	:	Nepal Electricity Authority
PF	:	Power Factor
PH	:	Power House
PI	:	Pin Insulator
RCC	:	Reinforced Cement Concrete
RoR	:	Run of River
RM	:	Rural Municipality
rpm	:	Rotation per minute
s	:	second
sq km	:	Square kilo meter
S/S	:	Substation
T/L	:	Transmission Line
UTM	:	Universal Transverse Mercator
UTS	:	Ultimate Tensile Strength

Salient Features

FEATURES	DESCRIPTION
GENERAL	
Owner Name	Himstar Urja Company Private Limited
Project Name	Buku Kapti Hydropower Project
Location	Goli VDC (Solukhumbu District) & and Bhusinga VDC (Okhaldunga District)
PROVINCE	**1**
District	Solukhumbu District & Okhaldunga District
Ambient Temperature	18 °C
Type of power plant	Run off the River (RoR)
TL Starting Point	Buku Kapti Power House Switchyard (33 kV)
Evacuation Point	Bampti Bhandare Substation (33/11 kV)
Evacuation district.	Ramechhap district, Bampti Bhandare
TRANSMISSION LINE	
Type of Circuit	Single circuit line
System Voltage	33 kV
Maximum Voltage kV	36 kV
Latitude	27° 30’ 00” N to 27° 31’ 20” N
Longitude	86° 22’ 34” E to 86° 24’ 10” E
Conductor Diameter	14.15 mm
Conductor Bundling	Unbundled
Length of T/L	Approx. 9.2 km
Ground Clearance	6 m
ASSEMBLY TYPE	Single Pole Assembly Double Pole Assembly
Pole Type	Self-standing lattice tower/poles
No of river crossing	2
Power to be Evacuated	5 MW
Average Span	80 m
Conductor	ACSR (DOG)
Conductor Size	100 sq. mm

Conductor Type	ACSR
Pole Average Height	13 m
HYDROLOGY	
Catchment Area	Buku Khola: 39 km²
	Kapti Khola: 18 km²
Design Discharge	2.40 m³/s
Probability of Exceedance of Design Flow	40%
Compensation Flow	51 lps from Buku and 24 lps from Kapti
Design Flood at Intake (100 yrs flood)	270 m³/s
BUKU HEADWORKS AND WATERWAY DIVERSION WEIR	
Type of Weir	Concrete weir
Crest Length	26 m broad crested
Weir Crest Level	1844.5 masl
Number of Sluice	1
INTAKE	
Side Intake Orifice	1.5 m X 1 m dimension
Invert Level of Sill	1843 masl
Number of Openings	2
Intake Discharge	2.4 m³/s
GRAVEL TRAP	
Size	5 m X 3.5 m X 2.1 m (L X B X H)
Flushing	19 m X 0.5 m X 0.5 m (L X B X H)
APPROACH CULVERT	
Length of Culvert	14 m
Number of Culvert	1
Size of Culvert	2 m X 1.5 m (B X H)
SETTLING BASIN	
Type	Surface
Number of Basins	2

Designed Particle Trap Efficiency	90%
Parallel Section Dimensions	35 m X 4.5 m X 4.25 m (L X B X H)
HEADRACE PIPE	
Material	Steel
Internal Diameter	1.3 m
Length	1911 m
Shell Thickness	8 mm
FOREBAY	
Size	12m X 8.5m X 5.1m (L X B X H)
Normal Water Level	1840.827 masl
KAPTI HEADWORKS AND WATERWAY DIVERSION WEIR	
Type of Weir	
Crest Length	15m broad crested
Weir Crest Level	1909 masl
INTAK	
Side Intake Orifice	0.6m X 0.5m dimension (Used for dry season only)
Invert Level of Sill	1908 masl
Number of Openings	2
Intake Discharge	0.5 m^3/s
UNDERSLUICE	
Number of Sluice	1
Invert Level of Sill	1907 masl
Width of Canal	1.5m
GRAVEL TRAP	
Size	2.5m X 1.7m X 1.5m (L X B X H)
Flushing	3.35m X 0.5m X 0.5m (L X B X H)
APPROACH CULVERT	
Length of Culvert	10m
Number of Culvert	1
Size of Culvert	1m X 1m (B X H)
SETTLING BASIN	
Type	Surface
Number of Basins	2