

PEOPLES ENERGY LIMITED
KHIMTI-2 HYDROELECTRIC PROJECT
(48.8 MW)



PROGRESS REPORT

November 2023

PEOPLES ENERGY LTD.

Shree Krishna Sadan – 6th Floor, New Baneshwor-10,
Kathmandu, Nepal.

Tel.: +977-1-4781891, 4786030

Email: pplsenergyltd@gmail.com, info.pel@rmgroup.com.np

Website: www.peoplesenergy.com.np

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Contact Details:

Head Office:

Shree Krishna Sadan, New Baneshwor-10,
Kathmandu Metropolitan City,
Kathmandu, Bagmati Province, Nepal.
Tel.: 01-4781891, 4786030

Site Office:

Bhimsenthan,
Gokulganga Rural Municipality,
Ramechhap, Bagmati Province, Nepal.
Tel.: 9849150807, 9840231804

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LIST OF ABBREVIATIONS

PEL	Peoples Energy Ltd.
PHCL	Peoples Hydro Co-operative Ltd.
PPA	Power Purchase Agreement
NEA	Nepal Electricity Authority
K2HEP	Khimti-2 Hydroelectric Project
HEP	Hydroelectric Project
MW	Mega Watts
RCOD	Required Commercial Operation Date
HCE	Hydro-Consult Engineering Limited
CWTW	Chongqing Water Turbine Works Co. Ltd.
IEE	Initial Environmental Examination
EPC-F	Engineering Procurement Construction-Financing
TOR	Term of Reference
LC	Letter of Credit
FC	Financial Closure
DFO	District Forest Office
KV	Kilo Volt
PH	Power House
MoU	Memorandum of Understanding
BDR	Basic Design Report

CHAPTER – 1 PREAMBLE

1.1 Introduction

Peoples Energy Limited is developing Khimti-2 Hydroelectric Project (48.8 MW) located in the border of Ramechhap and Dolakha districts of Janakpur zone. Khimti River is a tributary of Tamakoshi a major branch of Saptakoshi river system of Nepal. The Khimti River originates at EL. 4500m and converges with the Tamakoshi River at EL. 600m. The total drainage area of the Khimti River is 492.4km², and the drainage area in front of the intake and powerhouse is 295.34km² and 351.4km² respectively. The river section from the dam site to powerhouse is about 7km long. The ridges on both banks are at EL. 2,300~3,000m; the riverbed at the dam is at EL. 1,627m; the riverbed at the powerhouse tailrace is at EL. 1,278m. The run-of-river development scheme is selected.

The headworks site is located at Rasnal/Gokulganga Rural Municipality of Ramechhap and Jiri Municipality of Dolakha district whereas the powerhouse site is located at Simlep and Hawa/Tamakoshi Rural Municipality of Dolakha District. The headwork is located about 150m downstream the confluence of Jiri Khola and Khimti Khola with headrace alignment passing along the right bank of Khimti Khola and powerhouse site also located on the right bank.

Geographical Coordinates of Khimti-2 Hydroelectric Project

Coordinates	From	To
Latitude	27°33'07"N	27°35'13"N
Longitude	86°09'26"E	86°14'18"E

1.2 Objective of this report

Objective of this report is;

- To update the status of various development activities completed and being undertaken in implementation of 48.8 MW Khimti-2 Hydroelectric Project.
- To update the status of schedules and planning
- To bring forward the difficulties & issues being faced / envisaged at site to the notice of concern authorities and stakeholders

1.3 Key Dates and Milestones

S/N	Activity	Date	Remarks
1.	Survey License Issuance (27.2 MW)	2069 Kartik 15	Closed
2.	Feasibility Study Completed (48.8 MW)	2070 Falgun	Closed
3.	Updated Survey License Issuance (48.8 MW)	2070 Chaitra 7	Closed
4.	IEE ToR Approval	2071 Bhadra 28	Closed
5.	Grid Connection Agreement	2071 Kartik 13	Closed
6.	IEE Report Approval	2072 Kartik 22	Closed
7.	Power Purchase Agreement (PPA) with NEA	2072 Ashwin 14	Closed
8.	Application for Generation License	2072 Kartik 11	Closed
9.	Public Notice of Generation License	2073 Kartik 9-10	Closed
10.	Generation License Issuance	2073 Paush 25	Closed
11.	Generation License Transfer from PHCL to PEL	2073 Falgun 5	Closed
12.	Land Ownership Transfer from PHCL to PEL	2074 Jestha 11	Closed
13.	IEE Report Approval transfer from PHCL to PEL	2074 Ashoj 2	Closed
14.	PPA Transfer from Peoples Hydro to Peoples Energy Limited	2074 Ashad 22	Closed
15.	Financial Closure	2074 Ashoj 8	Closed
16.	Updated IEE Report	2076 Poush	Closed
17.	Civil work contract signing with High Himalaya Hydro Construction Pvt. Ltd.	2077 Mangsir 15	Closed
18.	Design Consultant Contract signing with Hydro Tunneling and Research Pvt. Ltd.	2077 Mangsir 25	Closed
19.	Civil Contractor mobilization to site	2077 Poush 14	Closed
20.	Civil Construction work	2077 Chaitra	Ongoing
21.	Shifting of Grid Connection for Power Evacuation (loop-in, loop-out with 132 kV line near PH site)	2078 Bhadra	Approved
22.	Forest and Government Land Approval/Cabinet approval	2078 Jestha	Approved
23.	Explosive License	2078 Ashard	Approved
24.	Required Commercial Operation Date (RCOD)	2021 July 16 (2078 Shrawan 1)	Extended
25.	132 kV Transmission Line IEE Approval	2080 Asoj 12	Approved
26.	Generation License Amendment	2080 Karthik 1	1 st amendment

1.4 Bank Consortium

Financial closure (FC) for the development of Khimti-2 HEP was concluded with the bank consortium of erstwhile ten Class 'A' Commercial Banks of Nepal with Sanima Bank as the lead bank, on September 24th, 2017.

1.5 The Employer

Peoples Energy Ltd. (PEL), previously Peoples Hydro Co-operative Ltd. (PHCL), is the developer of Khimti-2 Hydroelectric Project, situated at Dolakha and Ramechhap districts. PEL obtained the survey license for the project on 2012/10/31. After, feasibility level investigation was concluded and the Power Purchase Agreement (PPA) was signed with Nepal Electricity Authority (NEA) on 2015/10/01. Generation license was obtained for the project on 2017/01/06 by PHCL, and later transferred to PEL on 2017//02/16.

1.6 Local Contractors for Site Infrastructures

PEL has engaged several local contractors for the construction of site infrastructures as pre-construction activities such as access track opening and slope protection works for Access Road, drainage and stone soling for improvement of Access Road, Project Camp, Boundary wall construction and construction of three motorable bailey bridges etc. To execute the mentioned works PEL has engaged some of the local contractors employed at site are:

- **For Bridge Construction (Three bridges over Khimti Khola)**
 - S.K. Construction (for Dharapani Bridge at Dam Site)- Bridge I
 - Likhu Nirman Sewa (for Hodampa Bridge for HRT adit site)- Bridge II
 - Him Sagarmatha Construction (for Palate Bridge/PH site)-Bridge III
- **For Road Access and Gabion Works**
 - Bhimeshwor Nirman Sewa
 - Chandrama Nirman Sewa
 - Dangdunge Nirman Sewa
 - Dharmasthali Suppliers
 - Dipshree Construction
 - Greenland Construction
 - Khani Nirman Sewa
 - Kritim Nirman Sewa
 - Likhu Nirman Sewa
 - Moti Construction Pvt. Ltd.
 - New Jagriti Nirman Sewa
 - Peoples Nirman Sewa
 - Prakriti Nirman Sewa
 - Rambole Construction Pvt. Ltd.
 - Serakali Builders Pvt. Ltd.

- Seti Bhumi Nirman Sewa
- Sunuwar Nirman Sewa
- Jiri Nirman Sewa
- Mama Bhanja Construction

➤ **For Camp Construction**

- Edgemark Consultancy Pvt. Ltd.
- Jyoti Shree Interior Pvt. Ltd.

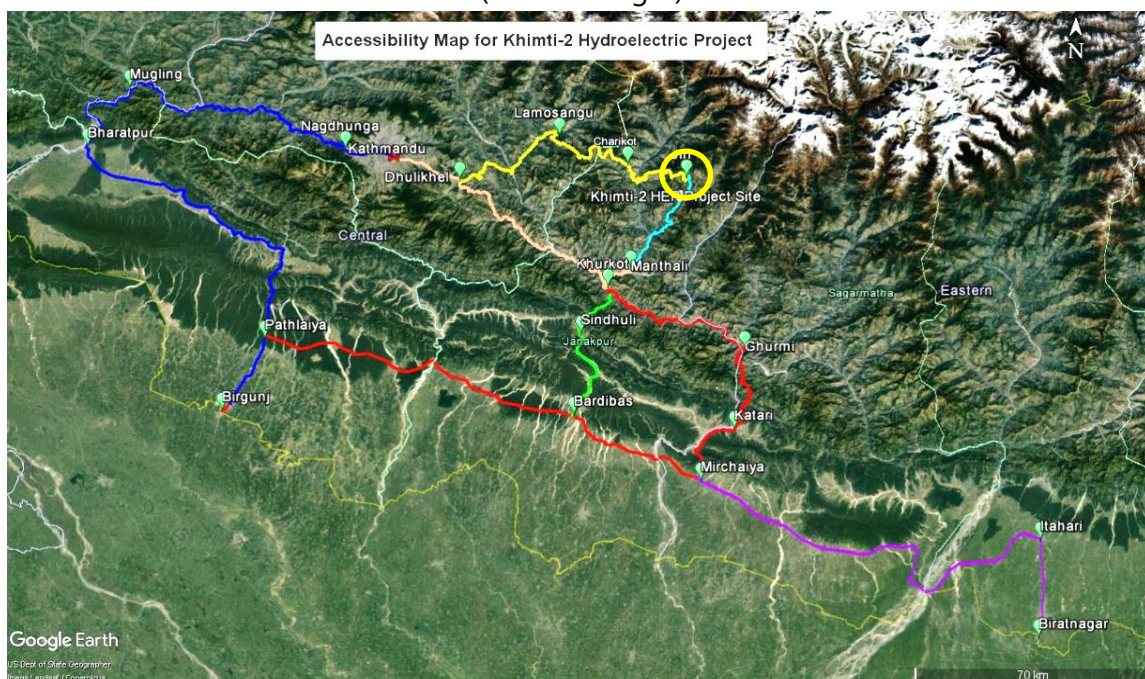
➤ **Transmission Line-Construction Power**

- New Satakri Khimti Construction Pvt. Ltd.

1.7 Access to the Site

The project site is accessible from Kathmandu by the following roads:

- Kathmandu – Dhulikhel - Dolalghat – Lamosangu - Charikot - Jiri – Headworks site (198 km length)
- Kathmandu – Dhulikhel – Nepalthok – Khurkot – Manthali – Khimti – Betali – Bhimsenthan – Powerhouse site (174 km length)



CHAPTER – 2 TECHNICAL FEATURES OF THE PROJECT

2.1 Salient Features of the Project

Name of Project: Khimti -2 Hydroelectric Project
Installed Capacity: 48.8 MW
Type of Project: Run of River (ROR)
Location: Jiri Municipality and Tamakoshi Rural Municipality of Dolkha District (Previous Jiri, Thulopatal and Hawa VDC) of Dolkha District)
 Gokulganga Rural Municipality of Ramechhap District (Previous Rasnalu VDC of Ramechhap District)

Comparative Salient Features of the Project:

Project Features	Features Details	Remarks
General		
Project Boundary	27°33'07"N to 27°35'13"N 86°09'26"E to 86°14'28"E	
Gross Head	351.5m	
Rated Head	341.643m	
FSL	1633.00 masl	
Normal TWL	1275.96 masl	
Minimum TWL	1275.25 masl	
Hydrology		
Turbine Centre Line	1279.3 masl	
Catchment area at Intake site	317.94 km ²	
Catchment area at Powerhouse	351.4 km ²	
Average Flow	27.36 m ³ /sec	
Minimum Monthly flow	4.45m ³ /sec	
Design Discharge(Q ₄₀)	16.11 m ³ /sec	
Design flood at intake site (Q ₁₀₀)	1165 m ³ /sec	
Design flood at intake site (Q ₁₀₀₀)	1439 m ³ /sec	
Diversion Structure		
Type of diversion structure	Ogee weir with U/ S vertical face and under sluice gates	
D/S Slope	1:0.7	
Weir crest level	1633.00masl	
Crest length of Ogee section	7.50 m	

Total Crest Length of Weir	7.50 m	
Width of Weir	7.50 m	
River bed Level	1627.00 masl	
Undersluice		
Length of undersluice base	53m	
Width of undersluice	7.2m	
Dimension of undersluice (L x B)	2 Nos. 5m x 6m	
Undersluice crest level of gate	1628 masl	
Undersluice Gate	Radial gate, 2nos. 3m x 3m	
Stilling Basin		
Stilling Basin for Ogee Weir (L x B)	41.50 m X 38.20 m	
Stilling basin for Undersluice (L x B)	15.7 m*7.20	
Floor level of stilling basin	1623.00 masl	
End level of stilling basin	1623.00 masl	
Intake		
Side Intake orifice	4 nos. 2.3(H) x 3.0(B)	
Invert Level	1630.0 masl	
No. of openings	4	
Intake Discharge	16.11m ³ /s	
Settling Basin		
Location	Surface	
Type	Intermittent conventional flushing	
Number of compartments	2	
Effective length	72.0m	
Total width of basin	19.0 m	
Width of one compartment	8.0 m	
Height in rectangular section	8.0 m	
Side slope of the compartment	1:1	
Flushing system	Intermittent	
Longitudinal slope of flushing channel	1:50	
Invert level at the beginning of flushing channel	1621.10 masl	
Invert level at the end of flushing channel	1620.85 masl	
Width of the flushing channel	1.20 m	

Flushing Culvert (L x H)	2m x 2.5m	
Invert level at the beginning of flushing culvert	1621 masl	
Size	72m (L) x 8.0m (W) x 8.0m (H) 3.4m hopper depth	
Flushing	Gated Box Culvert 1.2m (W) x 1.2m (H) x 60m (L)	
Primary Gravel Trap		
Size (B x H)	8.60m x 8.50m	
Length	20.5m	
Flushing Culvert		
Size (B x H)	1.5m x 1.8m	
Length	21.5m	
Number of culverts	1	
Flushing Gate	Two, 2.1m x 1.8m	
Invert level of Opening	1627.10 masl	
Level at beginning of culvert	1627.10 masl	
Level at Flushing end	1626.67 masl	
Secondary Gravel Trap		
Size (B x H)	8.0m x 8.30m	
Length	18.10m	
Flushing Culvert		
Size (B x H)	1.5m x 1.8m	
Length	28.0m	
Number of culverts	1	
Flushing Gate	Two, 2.1m x 1.8m	
Invert level of Opening	1626.26 masl	
Level at beginning of culvert	1626.26 masl	
Level at Flushing end	1625.14 masl	
Water Conveyance System (Headrace Tunnel)		
Shape of Tunnel	Inverted D type	
Length	6.321 km	
Finish Diameter	3.50m	
Finish Height	3.90m	
Gradient of HRT	1:500	
Tunnel Portal Level	1621.80 masl	
Surge shaft bottom	1599.80 masl	

No. of bends in HRT	7	
Support	Shotcrete and Concrete lining	
Adit Tunnels		
No. of Adit Tunnels	3	
Total Length of Adit Tunnel	522.67 m	
Diameter	4.40m (W) x 4.55m (H)	
Shape	Inverted D type	
Phulping Adit		
Adit -1 Length	284.6m	
Adit -1 HRT junction chainage	3+383.25m	
Adit -1 Portal level	1615.00 masl	
Hawa Adit		
Adit -2 Length	198.07m	
Adit -2 HRT junction chainage	6+784.6m	
Adit -2 Portal level	1580.00 masl	
Adit -3 Powerhouse Area		
Adit -3 Length	40m	
Adit -3 HRT junction chainage	7+473.55m	
Adit -3 Portal level	1278.52 masl	
Pressure Shaft/Tunnel		
Diameter	2.3m	
Total Length (with bends)	954.23m	
Length up to Manifold	917m	
Valve house to VIP-1	53.95m	
Vertical section (VS-1)	69.00m	
VIP-2 to Upper pressure tunnel portal (AB1)	391.70m	
Surface Penstock Length	207m	
Vertical section (VS-2)	61.40m	
Pressure shaft up-to Manifold (From VS-2)	110.65m	
Diameter of pressure after manifold	1.3m	
Lining	Shotcrete wire mesh and bolts lining	
Surge Shaft		
Diameter	6 m	
Shape	Circular	
Height	64.67m	

Surge Tunnel –HRT junction chainage	6+719.05m	
Invert level of surge tunnel junction	1599.80 masl	
Invert level of ventilation tunnel portal	1667 masl	
Powerhouse		
Type of Power house	Surface	
Powerhouse cavern dimension (l x B x H)	45m (L) x 16m (W) x 32m (H)	
Turbine Axis Level	EL. 1279.30 masl	
Machine floor level	EL. 1283.42 masl	
Tailrace		
Type	Free Flow Box Culvert	
Length	209.26m	
Shape	Rectangular	
Size	Culvert: 4.00m (B) x 2.5m (H)	
Outlet Level	1275.25 masl	
Turbine		
Type of turbine	Pelton	
Shaft configuration	Vertical Axis	
No. of turbine	3	
Turbine Output	16.451 MW per unit	
No of nozzle	6	
Rated speed	600 rpm	
Rated Efficiency	91.0%	
Generator		
Type	Synchronous 3 Phase	
Rated Power	19.176 MVA	
Rated output capacity per unit	16.267 MW	
Power Factor	0.85	
Voltage	11kV	
Frequency	50 Hz	
No. of Units	3	
Efficiency	97.5%	
Transformer		
No. of Transformer	3 Nos., three-phase	
Capacity	16/21.33MVA ONAN/ONAF	

Voltage ratio	11/132 kV	
Efficiency	99.5%	
Transmission line		
Length	Approx. 2 km to Garjyang Hydro 132 TL	
Connection	New Khimti S/S	
Type	132 kV, Single circuit	
Cable	ASCR, Bear	
Power and Energy Generation		
Wet Energy	219.5 GWh	
Dry Energy	40.8 GWh	
Total Energy	260.3 GWh	
Firm Energy	107 GWh	
Financial		
Total Project cost	NRs. 8.646 billion	
Revenue	NRs. 1.4 billion	
B/C Ratio	1 .41	
IRR	16.01 %	
Access to the site		
Kathmandu- Charikot – Jiri	198 km (188 km blacktopped)	
Jiri to Dam site	11 km Gravel Road	
Dam Site to Powerhouse site	16 km Gravel Road	
Birgunj-Bardibas-Khurkot-Manthali-Kirnetar/Khimti	290 km	
Khimti to Powerhouse site	27 km Gravel Road	

Progress CHAPTER – 3 PROGRESS DETAILS

3.1 Summary on Construction of Site Infrastructures

S/N	Project Activity	Description	Status/Progress
CONTRACTOR/CONSULTANT'S PROGRESS			
1.	Civil Construction work	<ul style="list-style-type: none"> • High Himalaya Hydro Construction (3HC) 	<ul style="list-style-type: none"> • Contract Signing on 30th November 2020 with High Himalaya Hydro Construction (3HC) • Contractor Mobilized to site on 17th March 2021 • Army mobilized to site on 15th June 2021 • HRT Inlet portal, Adit-1 Portal, Adit-2 Portal work completed. • Excavation at intake (1626.5m), gravel trap (1632m), approach culvert (1633m) and settling basin going on with breaker and blasting and shotcrete/rock bolting going on. • Tunnel face chainage <ul style="list-style-type: none"> • Adit-1: 0+284 m (Completed^d) • HRT Inlet F1: 1+350.80 m • Adit 1 Junction U/S F2: 0+966.20 m • Adit 1 Junction D/S F3: 0+969.85 m • Adit-2: 0+196 m (Completed^d) • Adit-2 U/S F4: 1+039.95 m • Adit-2 D/S F5: 0+035.40m (Completed^d) • Adit-2 VS1(Top): 0+071.30 m VS2(Bottom): 0+057m • Adit-2, Bifurcation Tunnel 0+056m (Completed^d) • Adit-2, VS1-VC (HRT) F6: 0+080.70 m (Completed^d). • Adit-2, Ventilation Tunnel (Surge Shaft Dome): 0+113.10m, Tunnel section is completed^d. HRT to Surge Shaft connecting tunnel excavation work is completed^d on (0+043.25m).

			<ul style="list-style-type: none"> • Upper Pressure Tunnel: 0+519m (Completed). • Lower Vertical Shaft (VS2): 0+067m (Completed). • Powerhouse area site clearance and excavation (1273m) completed & concreting work is going on. • Pressure tunnel from Powerhouse to Lower Vertical Shaft: 0+180m (Completed). • Adit-3: 0+039.60m (Completed). • Manifold Tunnel-1: 0+023.380m • Manifold Tunnel-2: 0+016.020m • Manifold Tunnel-3: 0+036.708m
2.	Design Consultant	<ul style="list-style-type: none"> • Hydro Tunneling and Research 	<ul style="list-style-type: none"> • Contract Signing on 10th December 2020 with Hydro Tunneling and Research • IFC drawings of Headworks, Approach Channel, Settling Basin, HRT Inlet portal & Tunnel, Adit-1 portal & Tunnel, Adit-2 portal & Tunnel, Upper Pressure Tunnel and Powerhouse has been received from Consultant and same are issued to Contractor. • Balance design work along with structural design is ongoing.
3.	Electromechanical works	<ul style="list-style-type: none"> • Global Hydro GmbH 	<ul style="list-style-type: none"> • Contract signing of EM works done at 22nd February 2022. • Earthing of powerhouse area has been completed. • Embedded parts for turbine casing have been installed. • Supply of embedded parts of powerhouse foundation and installation has been completed below machine casing level. • Way forward- Finalization of detail design, mobilization of first stage equipments like crane, first stage machine parts etc • Amendment of Single line diagram of LILO switching station of grid connection agreement.

			<ul style="list-style-type: none"> Design document of Generator, Power Transformer and Outdoor Switch Gear equipment has been approved.
4.	Hydromechanical Works	<ul style="list-style-type: none"> CMW India Cream KHS JV 	<ul style="list-style-type: none"> Contract signing between CBM India and Peoples Energy Limited for the entire gates and hoists as hydromechanical components of headworks on 9th March 2022 Contract signing between Cream KHS JV and Peoples Energy Limited for the complete works of penstock and accessories on 3rd of May 2022 Steel lining work of headworks- 50% completed Rolling of pipe- 50% completed Installation of bend at lower vertical shaft has been completed and concreting work is also completed. Pipe erection is ongoing from the bend of LPT towards lower vertical shaft and powerhouse.
5.	132 KV Transmission Line works	<ul style="list-style-type: none"> Royal Construction Pvt. Ltd 	<ul style="list-style-type: none"> IEE final report has been approved from Ministry of Energy, Water Resources and Irrigation Land acquisition works going on. Rebar, frames for foundation work of dead end tower at Loop in Loop out Substation received at site. Contract awarded to Royal Construction Pvt. Ltd on 6th September for Design, Manufacture, Shop test, Supply and Delivery of Plant and Equipment for S/C 132 kV Transmission line.
ACCESS ROAD			
6.	Dharapani to Dam site (Ramechhap side)	<ul style="list-style-type: none"> 1.0 km 	<ul style="list-style-type: none"> 1.0 km of Track opening works – Completed. Road Handed Over to the contractor
7.	Intake-Dharapani Road (Dolakha Side)	<ul style="list-style-type: none"> 0.5 km 	<ul style="list-style-type: none"> 200 m of Track Opening towards intake – completed. 250 m of access road to Inlet portal completed.
8.	Burke – Hodampa/Phulping (Ramechhap side)	<ul style="list-style-type: none"> 2.5 km 	<ul style="list-style-type: none"> 2.5 km track opening completed Gabion works and Maintenance of Burke-Bhage road- Completed.

9.	Thulopatal – Hodampa/Phulping - Gaighat (Dolakha side)	<ul style="list-style-type: none"> • 2.0 km 	<ul style="list-style-type: none"> • 2.0 km Track opening - Completed. • Road Handed Over to the contractor
10.	Hanwa - Palate (Dolakha side)	<ul style="list-style-type: none"> • 5.5 km 	<ul style="list-style-type: none"> • 5.5 Km Track opening – Completed. • Protection work going on
11.	Bhimsenthan – Palate/Powerhouse site new track (Ramechhap side)	<ul style="list-style-type: none"> • 0.5 km 	<ul style="list-style-type: none"> • 0.5 km of Track opening – Completed. • Road Handed Over to the contractor
12.	Bhimsenthan – Palate/Powerhouse site Old track to be upgraded (Ramechhap side)	<ul style="list-style-type: none"> • 3.0 km 	<ul style="list-style-type: none"> • Road Handed Over to the contractor
PROJECT CAMP			
13.	Camp Building Construction works	<ul style="list-style-type: none"> • Total 12 Buildings 	<ul style="list-style-type: none"> • Construction work completed. • Furnishing works completed.
14.	Water Supply System	<ul style="list-style-type: none"> • Drinking water to Project Camp 	<ul style="list-style-type: none"> • Construction of water supply system completed and is in operation.
		<ul style="list-style-type: none"> • Drinking water to Locals 	<ul style="list-style-type: none"> • 9 no of Public Tap stand constructed. • Reservoir tank construction is completed. • Water supply to locals is in operation.
33KV TRANSMISSION LINE FOR CONSTRUCTION POWER			
15.	Transmission Line for Construction power	<ul style="list-style-type: none"> • 9 km 33 kV sub-transmission line 	<ul style="list-style-type: none"> • Contract awarded to New Satakri Khimti Construction • Transmission line work for construction power completed • Electricity connection at all site is in operation.
BAILEY BRIDGE			
16.	Dharapani Bridge (Bridge I)	<ul style="list-style-type: none"> • 42.672m 	<ul style="list-style-type: none"> • Civil works Completed. • Erection work Completed. • Bridge Handed Over to the contractor
17.	Hodampa Bridge (Bridge II)	<ul style="list-style-type: none"> • 33.528m 	<ul style="list-style-type: none"> • Civil works Completed. • Erection work Completed. • Bridge Handed Over to the contractor
18.	Hawa-Palate Bridge (Bridge III)	<ul style="list-style-type: none"> • 51.816m 	<ul style="list-style-type: none"> • Civil works Completed. • Erection work Completed. • Bridge Handed Over to the contractor

OTHER ACTIVITIES			
19.	Hydrology and Sediment Study	<ul style="list-style-type: none"> • Hydrology and Sediment Study 	<ul style="list-style-type: none"> • Sediment collection & Analysis by HydroLab-Completed. • Discharge Measurement & Hydrological Analysis by Recham Consult - Completed.

3.2 Administrative Works

20.	ADMINISTRATIVE WORKS	<ul style="list-style-type: none"> • Various administrative issues 	<ul style="list-style-type: none"> • Forest Land Approval-Completed • Land acquisition: about 95% completed • Survey License for Transmission Line (Power Evacuation): Documents being compiled.
		<ul style="list-style-type: none"> • Shifting grid Connection for Power Evacuation 	<ul style="list-style-type: none"> • Approval received for loop in loop out connection shifting grid connection.
		<ul style="list-style-type: none"> • Updated IEE Report 	<ul style="list-style-type: none"> • Final approval received.
		<ul style="list-style-type: none"> • Electromechanical works 	<ul style="list-style-type: none"> • Contract agreement with Global Hydro Energy GmbH has been completed
		<ul style="list-style-type: none"> • Hydro Mechanical Works 	<ul style="list-style-type: none"> • Contract Agreement with CBMW India for gate and hoist part of the project • Contract Agreement with Cream KHS JV for penstock works
21.	LOCAL STAKEHOLDERS ENGAGEMENT	<ul style="list-style-type: none"> • Local issues 	<ul style="list-style-type: none"> • Local Stakeholders Engagement through various discussion addressing the project related environmental and social issues are continued • Implementing various social and local infrastructural development works

3.3 Design and Physical Model Study

22.	PHYSICAL HYDRAULIC MODEL STUDY	<ul style="list-style-type: none"> • Model of Revised Headworks 	<ul style="list-style-type: none"> • Consulting contract award to Hydrolab • Provided required documents • completed model construction of structures. • All the details of the model are finalized and model run successfully completed. • waiting for the final report of the hydraulic model design.
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3.4 Progress Work in Detail

3.4.1 Civil Construction work

The civil construction contract work was awarded to High Himalaya Hydro Construction on 30th November, 2020. The Employer issued Notice to proceed to the contractor on 1st December 2020.

Major Activities by the Civil contractors at different sites are listed below:

Headworks Site:

- Excavation at gravel flushing area of Intake area and river diversion, excavation and concrete work in Undersluice is stopped due to landslide and flash flood which affected major site work in undersluice.
- Excavation, rock bolting & shotcrete is going on for Gravel Trap is going on
- Excavation, rock bolting and Shotcrete for settling basin area is completed and rebar work, excavation and concrete work at flood wall is going on
- Rock crusher setup is completed.
- **Intake structures:** Divide wall in panel 4 is completed.
- **Undersluice structures:** Concrete work in panel 2 wall is completed.
- Panel 1: Concrete work, rebar work, formworks ongoing.
- Right side of Floodwall D/S: Mucking work ongoing.
- Panel 2: Concrete work, rebar work, formworks ongoing.
- Panel 3: Concrete work, rebar work, formworks ongoing.
- Panel 4: Riverside wall completed.
- **Approach culvert structures:** Slope excavation , rockbolting and shotcreting work was completed upto the level of 1633m and concrete in base slab of Panel 1 to 3 is completed. Concrete work in Panel 5 is ongoing.
- **Secondary gravel trap:** Slope excavation, rockbolting and shotcreting work is completed. Concrete work at flushing chamber is ongoing.
- **Settling basin Flood wall:** Concrete work in Panel 1 to 8 is completed. Concrete work in Panel 9 to Panel 11 is ongoing.
- **Settling basin:** Backfill in flood wall up to 4m in Panel 1 to 11 is completed. Masonry work in Panel 1 and 2 is completed and masonry work in 3 is ongoing.



Headworks



Intake area

HRT Inlet site (HRT Face-1):

- Access to HRT inlet tunnel portal is completed.
- Slope support work at the inlet portal completed.
- Tunnel Excavation work: **1+350.80 m face chainage reached (28.55 m length achieved this month).**
- Rock class V was encountered.



Inlet Tunnel

HRT from Adit-1 site:

- Portal slope support work is completed.
- Rock crusher installation is completed and is successfully producing materials.
- Adit Tunnel Excavation work: **0+284 m** face chainage reached and completed^d

HRT Face-2

- Tunnel excavation work at U/S HRT from Adit 1 junction: **0+973.20 m face chainage reached** (41.20 m length achieved in this month).
- Rock class of IV and V were encountered.

HRT Face-3

- Tunnel excavation work at D/S HRT from Adit 1 junction: **0+971.1 m face chainage reached** (31.90m length achieved in this month).
- Rock class of V was encountered.



Adit-1 Tunnel

Adit-2 Portal (Surge Tunnel/HRT Outlet) site:

- Portal slope support work is completed.
- Adit Tunnel excavation work: **0+200 m face chainage reached** and completed^d.

HRT Face-4

- Excavation work at U/S HRT from Adit 2 junction: **1+039.95 m face chainage reached** (53.65 m length achieved in this month). Excavation of 4th Niche is completed reaching (10.8m)
- Excavation work at Vertical Shaft (VS1) Top to Bottom: **0+071.30m face chainage reached** (7.8 m length achieved in this month)
- Excavation work at Vertical Shaft (VS1) Bottom to Top: **0+057m face chainage reached**
- Excavation work at D/S HRT from Adit 2 junction: **0+035.4 m face chainage reached** and completed^d.
- Excavation work at bifurcation to vertical shaft from Adit 2: **0+055 m face chainage reached** and completed^d.

- Excavation work at Ventilation Tunnel: **0+104 m face chainage reached** and completed.
- Excavation work at HRT VS1-VC: **0+080.7 m face chainage reached** and completed.
- Dome construction work is completed in Surge Shaft Dome. Pilot hole from top to bottom for Surge Shaft: **0+043m chainage reached** and completed. Excavation work in HRT to Surge Shaft connecting tunnel is completed (**0+043.25m**).
- Concrete work in surge shaft is ongoing.
- Installation of concrete batching plant is completed.



Adit-2 Tunnel

Underground works Progress Summary

Khimti-2, Hydroelectric Project 48.8 MW								
Ramechhap/ Dolakha								
Monthly Progress Report - November 2023								
S.N	Description of Work site	Unit	Total Length	Progress upto		This month progress	Progress in %	Remaining Length
				1st Nov	30th Nov			
1	HRT from inlet to Adit 1 (F1)	M	1486	1322.25	1350.8	28.55	90.90	135.2
2	HRT from Adit 1 Junction to U/S (F2)	M	1478	932	973.2	41.2	65.85	504.8
3	Adit 1	M	284	284	284	0	100.00	completed
4	HRT from Adit 1 Junction to D/S (F3)	M	1650	939.2	971.1	31.9	58.85	678.9
5	HRT from Adit 2 Junction to U/S (F4)	M	1651	986.2	1039.85	53.65	62.98	611.15
6	Adit 2	M	200	200	200	0	100.00	completed
7	HRT from Adit 2 Junction to D/S (F5)	M	30	30	30	0	100.00	completed
8	HRT from VS1 to Adit 2 Junction U/S (F6)	M	90	90	90	0	100.00	completed
9	Ventilation Tunnel	M	104	104	104	0	100.00	completed
10	Surge shaft	M	65	65	65	0	100.00	completed
11	Surge shaft to HRT connecting	M	43.25	43.25	43.25	0	100.00	completed
12	Bifurcation from Adit 2 to VS1	M	55	55	55	0	100.00	completed
13	Upper Vertical Shaft (VS1) Top - Bottom	M	81	63.5	71.3	7.8	88.02	9.7
14	Upper Vertical Shaft (VS1) Bottom - Top	M	81.25	57	57	0	70.15	24.25
15	HRT from VS1 access junction to VS1	M	23.5	23.5	23.5	0	100.00	completed
16	Upper Pressure Tunnel (F7)	M	519	519	519	0	100.00	completed
17	Lower Vertical Shaft (VS2)	M	67	67	67	0	100.00	completed
18	Pressure tunnel from PH to Lower Vertical S	M	180	180	180	0	100.00	completed
19	Adit-3	M	40	40	40	0	100.00	completed
20	Niche	M	200	121.52	140.72	19.2	70.36	59.28
21	Total volume		8328.00	6122.42	6304.72	182.30	75.71	2023.28

Army Barrack and Explosive Bunker Camp:

- *Officer/Junior officer building:* Construction of 2 officer buildings is completed.
- *Cadre Building:* 2 nos. Cadre building is completed.
- *Weapon House:* Completed.
- *Gelatin House:* Completed.
- *Detonator House:* Completed.
- *Army Mobilization:* completed.



Army Barrack and Explosive Bunker

Powerhouse Site:

- Excavation work is completed^d.
- Shotcrete work is completed^d for slope protection
- SDA and Rockbolt insertion work is completed^d.
- Excavation and slope protection work reached to the level of 1273 m and completed^d.
- Pressure tunnel from powerhouse to lower vertical shaft: **0+0180m face chainage reached** and completed^d.
- Adit 3 tunnel: **0+039.60m face chainage reached** and completed^d.
- Manifold tunnel 1: **0+022.380m chainage reached** and completed^d.
- Manifold tunnel 2: **0+016.020m chainage reached** and completed^d.
- Manifold tunnel 3: **0+036.708m chainage reached** and completed^d.
- Concrete work in beam, column (reached upto 2.3m from corbel beam) is ongoing.
- Loading bay: Concrete work (reached upto 2.3m from 1st beam) is ongoing.
- Turbine outlet gate: Rebar work upto top slab is completed.
- Tailrace gate: Rebar work upto top slab is completed.
- Tailpool: Rebar work of bottom slab is completed.
- Manifold tunnel 1,2,3: Plum concrete upto junction is completed.
- Tailrace: Work resumed after rainy season and excavation of panel 10 and 11 is completed.



Powerhouse site

Upper Pressure Tunnel site:

- Portal slope support work is completed^d.
- Excavation work at Upper Pressure Tunnel: **0+519 m face chainage reached** and completed^d.
- Excavation work at Vertical Shaft-2: **0+067 m face chainage reached** and (Completed^d).



Upper Pressure Tunnel and Vertical Shaft-2 site

3.4.2 Hydro Mechanical work

- Installation of bend 07(VS-2 bottom bend), out of which fitting has been successfully completed^d and welding is in progress.
- Plate cutting: 380pcs (49 pcs of 30mm, 22pcs of 28mm, 15 pcs of 24mm, 100pcs of 22mm, 97pcs of 20mm, 10pcs of 18mm, 24pcs of 16mm & 63 pcs of 12mm) completing **17pcs (17pcs of 12mm) in this month.**

- Plate rolling: 319pcs (43pcs of 30mm, 22 pcs of 28mm, 15pcs of 24mm, 100 pcs of 22mm, 87 pcs of 20mm, 10pcs of 18mm, 24pcs of 16mm & 8pcs of 12mm).
- Sand blasting: 77 pcs completed.
- UT: 255 pcs completed **(36 pcs in this month)**.
- Pipe fabrication: 797.50m (76.47%) completed.
- Gantry erection and winch machine for VS-2 is completed.
- Breakdown of winch machine stopped the work in VS-2 from 11th October and **work resumes from 23th of November**.



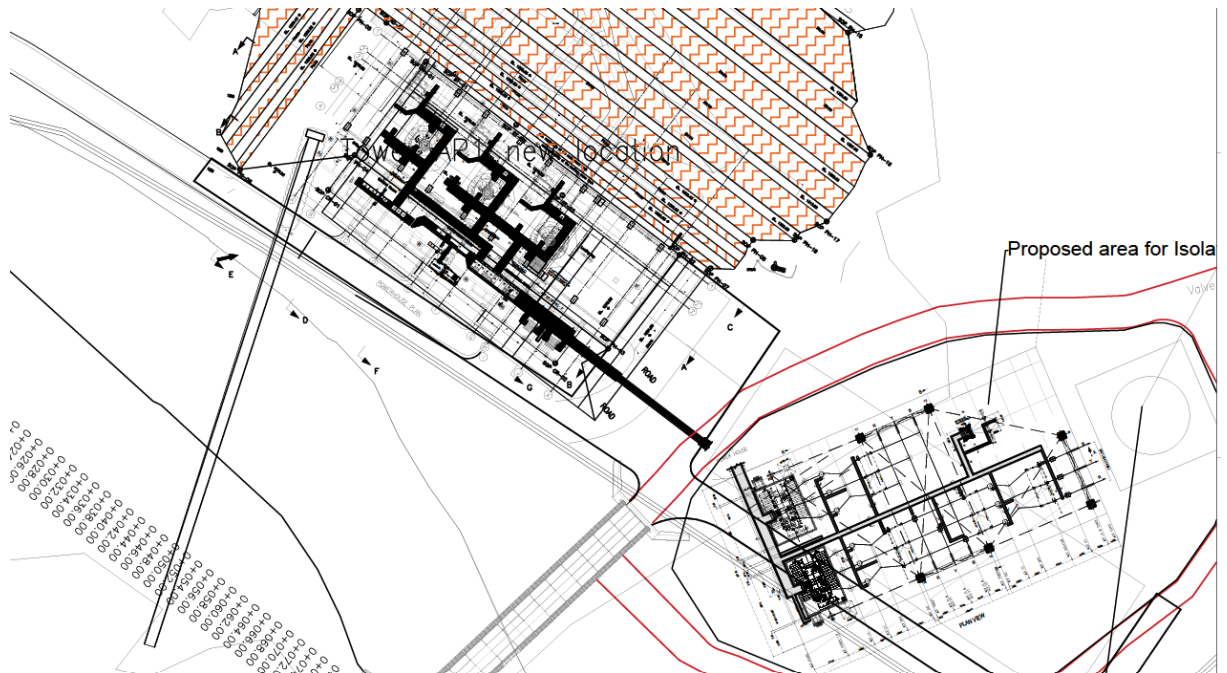
Plate rolling and Plate cutting



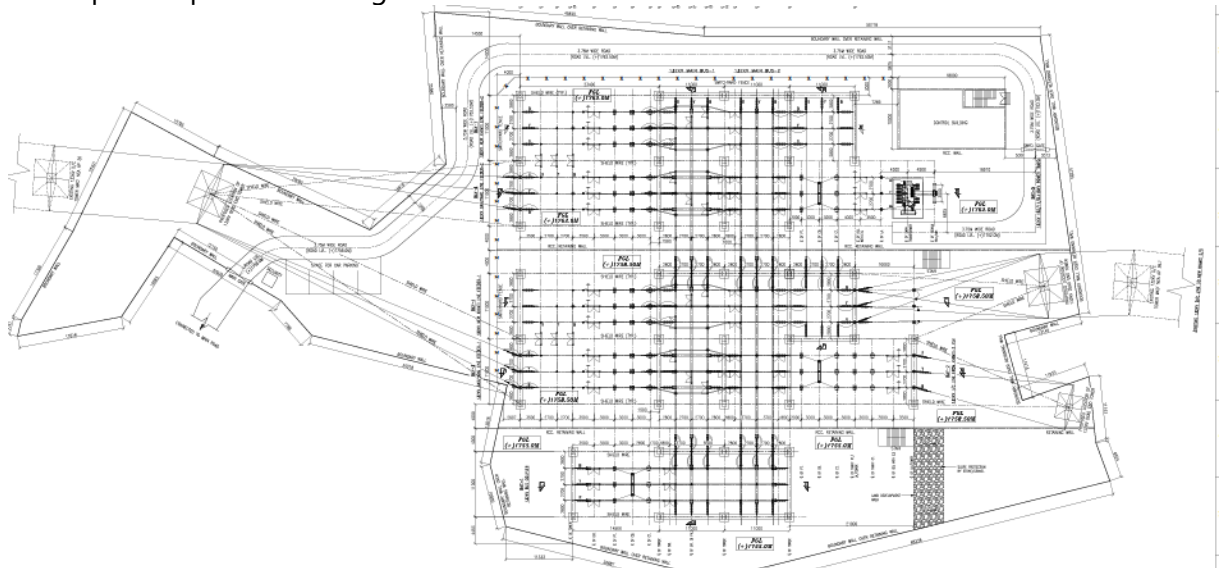
Pipe welding and pipe lowering in VS-2

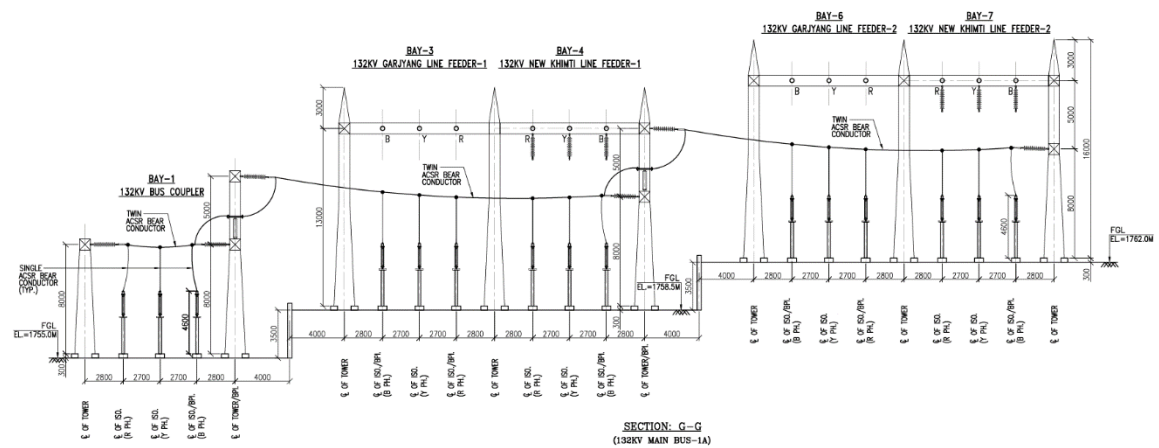
3.4.3 Electro-mechanical works

- Approval and issued for construction (IFC) of the switchyard's layout, below ground earthing layout and cable trench layout of powerhouse.



- Approval and issued for construction of Single line diagram (SLD) and Layout diagram of Loop in loop out switching station.





- Approval and issued or construction of C&R Panels, TVM Cubicles, ACDB Panels, Station supply Transformer, Battery & Battery Charger of Receiving end substation (LILO).
- Approval and issued or construction of C&R Panels, Firefighting system, Lighting System, Above ground earthing layout, Lightning protection system layout, HT and LT panels and internal telephone layout of powerhouse.
- EOT Crane and their embedded parts has been dispatched from the supplier workshop.



- Manufacturing of Various Electromechanical components for both EU Scope and INR scope has already commenced.

	
Unit 1	Unit 2
	
Unit 3	Further Ring line parts
	
Further Ring line parts	Nozzle preparation
 	



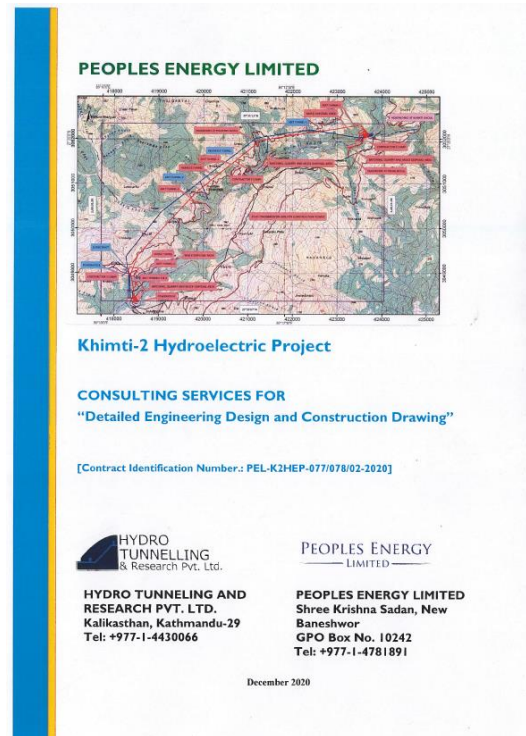
Nozzle and Ring Circuit cutoff

3.4.4 Design Consultant's Progress

For the consulting services for detailed engineering design and construction drawing Hydro Tunneling and Research Pvt. Ltd. was awarded the contract on 10th December 2020.

Major Activities by the Design Consultant are listed below:

- Total of 79 IFC drawings have been issued till now.



3.4.5 132 kV Transmission Line works


- 4 The process of acquiring the land required for the construction of the transmission tower has progressed significantly and is now approximately 90% complete.
- 5 The Initial Environmental Examination (IEE) report of 132Kv transmission line route from Khimti-2 powerhouse to LILO Switching station (Receiving end substation) has received approval from ministry of Energy, Water resource and Irrigation (MoEWRI).
- 6 A Contract agreement has been established with the Royal Construction company Pvt. Ltd. for the design, manufacture, shop test, supply and delivery of plant and equipment for S/C 132kv Transmission line from K2HEP power house to LILO switching has been made.
- 7 The Contractor has conducted a check survey of transmission line route for design of the transmission towers.



Tower Schedule of 132kV Single Circuit Transmission Line of Khimti 2 HEP

S. N.	AP No.	Type of Tower	Extension	Angle of Deviation	Span (m)	Cum. Length	R.L./ M.S.L.	C.P.D.	Level Difference	Wind Span (m)	Weight Span (cold)			Weight Span (hot)			Major Crossing	Remarks	Co-ordinates	
											Left	Right	Total	Left	Right	Total			Easting	Northing
1	AP1	SD+0	0	0°0'0"	161.595	161.595	1293.600	0.0	17.580	81.300	0	-75	-75	0	-6	-6	River		418523.798	3048365.668
2	AP2	SD+0	0	32°29'56"L	376.822	538.417	1311.180	0.0	129.820	280.600	237	-136	101	169	-102	67	Road-2 nos. and Kholsi		418509.225	3048204.731
3	AP3	SD+3	3	66°02'53"L	420.270	958.687	1438.000	0.0	74.500	412.700	537	42	579	503	56	559	Road, Kholsi	Tower Strengthening/auxiliary crossarm is suggested	418668.868	3047863.397
4	AP4	SB+9	9	3°42'10"L	435.442	1394.129	1506.500	0.0	146.900	443.200	388	-89	299	375	-65	310	Kholsi	Tower Strengthening is suggested	419068.925	3047876.770
5	AP5	SD+6	6	37°39'18"R	322.183	1716.312	1656.400	0.0	70.244	394.700	553	-57	495	529	-27	502	Road-2 nos. Foot Trail		419521.556	3047926.167
6	AP6	SD+0	0	35°55'13"L	97.048	1813.360	1732.644	0.0	15.776	214.000	388	-304	84	359	-61	298	Kholsi, Foot Trail		419782.675	3047737.438
7	AP7	SD+0	0	0°0'0"			1748.420	0.0		49.200	403	0	403	159	0	159			419879.583	3047742.655

NEA Dead End Towers




नेपाल सरकार
ऊर्जा, जलस्रोत तथा सिँचाई मन्त्रालय
विद्युत विकास विभाग

फोन नं.: { ४५३४११९
४५११५३७
४५१९५०१
४५३९३६२ }

फ्याक्स: ४५३९९०३
पोष्ट बक्स नं.: २५००७
सानो गौचरण, काठमाडौं, नेपाल

मिति: २०८०/०६/१२

प.सं.: ०१०/०९
च.नं.: २४९




विषय:-
खिम्ती-२ जलविद्युत आयोजनाको १३२ के.भी विद्युत प्रसारण लाइन आयोजनाको प्रारम्भिक वातावरणीय परीक्षण प्रतिवेदन स्वीकृत भएको सम्बन्धमा।

श्री पिपुल्स इनर्जी .लि,
नयाँ बानेश्वर, काठमाडौं, नेपाल।

उपरोक्त विषयमा त्यहाँबाट प्रस्तावित खिम्ती-२ जलविद्युत आयोजनाको १३२ के.भी विद्युत प्रसारण लाइन आयोजनाको प्रारम्भिक वातावरणीय परीक्षण प्रतिवेदन ऊर्जा, जलस्रोत तथा सिँचाई मन्त्रालयको मिति २०८०/०६/०४ को सचिव स्तरीय निर्णयानुसार निम्न अनुसारको शर्तहरू सहित स्वीकृत भएको व्यहोरा अनुरोध छ। स्वीकृत प्रतिवेदनको एक प्रति संलग्न छ।

सर्तहरू:

१. आयोजना निर्माण एवं सञ्चालनको समयमा हाल पहिचान वा आङ्गलन हुन नसकेका प्रभावहरू देखिएमा, अनुकूल प्रभावलाई अधिकतम गर्ने र प्रतिकूल प्रभावलाई निराकरण वा न्यूनीकरण गर्ने कार्यहरू प्रस्तावकले आफ्नै खर्चमा कार्यान्वयन तथा व्यवस्थापन गर्ने।
२. स्वीकृत प्रारम्भिक वातावरणीय परीक्षण (IEE) प्रतिवेदनमा उल्लेख भए अनुसारको वातावरणीय अनुगमन योजनालाई आधार बनाई प्रस्तावकले प्रस्तावको निर्माण तथा सञ्चालन गर्ने चरणमा सो बाट वातावरणमा परेको प्रभावको विषयमा प्रत्येक छ महिनामा स्व:अनुगमन गरि सोको प्रतिवेदन ऊर्जा, जलस्रोत तथा सिँचाई मन्त्रालय तथा विद्युत विकास विभागमा पेश गर्नु पर्नेछ।
३. स्वीकृत प्रारम्भिक वातावरणीय परीक्षण (IEE) प्रतिवेदनमा उल्लिखित आयोजनाको भौतिक पूर्वाधार वा डिजाइन वा स्वरूप वा संरचना स्थानान्तरण वा फेरबदल गर्नु पर्ने भएमा सोको पूर्व जानकारी यस विभागमा गराई थप अध्ययन गर्न आवश्यक विषयहरूका बारेमा अनुमति लिनु पर्ने छ।
४. आयोजना निर्माण गर्दा उक्त आयोजना क्षेत्र वरपर निर्माणको लागि प्रस्ताव गरिएका वा निर्माणाधीन आयोजनाहरूसँग समन्वय गरी गर्नु पर्नेछ।


 (सुनिता खनाल)
 वातावरणविद

बोधार्थ:

श्री ऊर्जा जलस्रोत तथा सिँचाई मन्त्रालय, सिंहदरबार, काठमाडौं
 श्री वन तथा वातावरण मन्त्रालय, सिंहदरबार, काठमाडौं
 श्री गोकुलगंगा गाउँपालिका गाउँकार्यपालिकाको कार्यालय रस्नालु रामेछाप
 श्री तामाकोशी गाउँपालिका गाउँकार्यपालिकाको कार्यालय जेफ, दोलखा

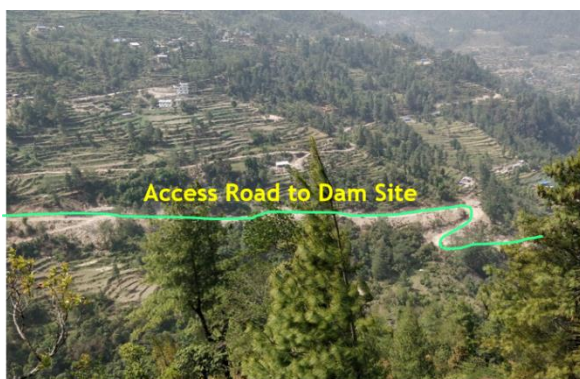
(पत्र सहित १/१ प्रति प्रतिवेदन संलग्न गरि प्रस्तावकले नै उपलब्ध गराउने)

7.1.1 Handover of Internal Access Roads and Bridges

Completed handover of following internal access roads and bridges to the contractor:

Access Road

- Access road to headworks (Dharapani to headworks - 0.920 Km)
- Access road to HRT Adit-1 (Phulping - Gaighat - 1.978 Km)
- Access road to HRT Adit-2 (Hawa – Tuspe - 3.900 Km)
- Access road to powerhouse (Bhimsenthan – Palate - 3.010 Km)



Dharapani Access Road



Phulping-Gaighat Access Road



Hawa-Palate Access Road



Bhimsenthan-Palate Access Road

Bailey Bridge

- Dharapani bridge to headworks (42.672 m, 24-ton capacity)
- Phulping Bridge (33.528m, 16-ton capacity)
- Palate bridge to powerhouse site (51.816m, 30-ton capacity)



Bailey Bridge I: Dharapani Bridge



Bailey Bridge II: Hodampa Bridge



Bailey Bridge III: Hawa-Palate Bridge

3.4.4 33 KV Transmission line for Construction Power

About 9 Km sub-transmission line from headworks area of Khimti-2 HEP, Dharapani to powerhouse site of Khimti-2 hydroelectric project is required to supply power to different sites during the construction phase.

Major Activities

- Pole erection, cable installation along with all necessary accessories from headworks to powerhouse site in Ramechhap and Dolakha side is completed.
- Pole erection, cable installation of 11kV transmission line at Hawa for construction power at Adit-2 is completed.
- 11 kV Electricity connection at Hawa has been completed and is in operational.
- 33 kV Electricity connection at Headworks, Adit-1, Powerhouse has been completed and is in operational



11kv connection



33kv connection

3.4.5 Administrative Works

Progress on Civil Contract

- Contract signed with High Himalaya Hydro Construction(3HC) on 30th November 2020.

Progress on Design Consultant Contract

- Contract was awarded to Hydro Tunneling and Research
- Design consultant is issuing drawings as per the requirement of the site.

Progress on Electromechanical Contract

- Contract signed with Global Hydro Energy GmbH on 22nd February 2022.

Progress on 132 kV Transmission Line Contract

- A Contract agreement has been established with the Royal Construction company Pvt. Ltd. for the design, manufacture, shop test, supply and delivery of plant and equipment for S/C 132kv Transmission line from K2HEP power house to LILO switching has been made.

Progress on Hydromechanical Contract

- Contract signed for entire gates and hoists as hydromechanical components of headworks between Peoples Energy Limited and CBMEW(India) on 9th March 2022.
- Contract signed for complete works of penstock and accessories between Cream-KHS JV and Peoples Energy on 3rd May 2022.

Progress on Survey License for Loop in Loop out

- Discussion was done with NEA for shifting the connection agreement
- A study for the technical and economical assessment has been done and submitted to NEA.
- Application for Grid Impact System is completed.
- Loop in loop out connection approval received.
- 132kV single circuit transmission line from khimti-2 power house to LILO switching station route survey completed by consultant team. Survey report is awaited.

Progress on Other Administrative works

- Technical Verification of works till date-Completed.
- Loop in loop out connection approval received.
- Forest Clearance Approval is received.

3.5 Force Majeure/Difficulties & issues faced

- Force majeure condition of COVID-19 Pandemic has affected the project and delayed the works by 2 years.
- Delay to open the access to surge shaft due to forest land approval.
- Forest clearance approval has been pending and hampering the progress of the project for last 3 years.
- Floods during the monsoon season of 2022 has disrupted the access and slowed down the progress.
- Locals' various demands like infrastructure development, contracts as well as employment has been hindering the smooth pick up of the progress.
- Flood and landslides significantly disturb the works during monsoon period of 2023

3.6 Site Progress Photographs



Headworks



HRT Inlet Tunnel



Adit-1 Tunnel Excavation



Adit-2 Tunnel Excavation



Vertical Shaft-2 and LPT site



Powerhouse site