

**MULTI ENERGY DEVELOPMENT PVT. LTD.**  
**LANGTANG KHOLA HYDROELECTRIC PROJECT**  
**(20 MW)**  
**PROGRESS REPORT**



**SUBMITTED TO**  
**Department of Electricity Development**  
**Gyaneshwor, Kathmandu**

**December 2023**

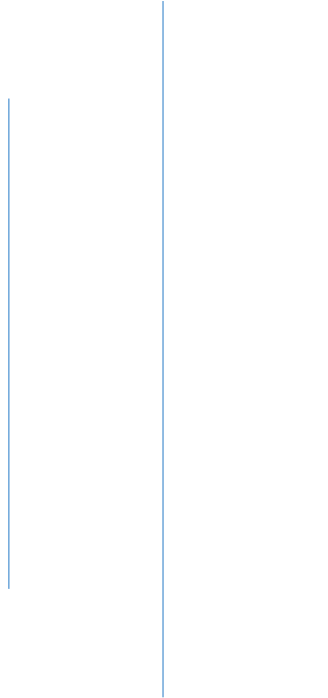
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### Langtang Khola Hydroelectric Project (20 MW)



### Progress Report

December 2023

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## LIST OF ABBREVIATIONS

BDR	Basic Design Report
B/C	Benefit-to-Cost
CWTW	Chongqing Water Turbine Works Co. Ltd.
DFO	District Forest Office
DoED	Department of Electricity Development
EIA	Environmental Impact Assessment
EPC-F	Engineering Procurement Construction & Financing
FC	Financial Closure
HEP	Hydroelectric Project
IEE	Initial Environmental Examination
IRR	Internal Rate of Return
KV	Kilo Volt
LKHEP	Langtang Khola Hydroelectric Project
MoFE	Ministry of Forest and Environment
MoU	Memorandum of Understanding
MW	Mega Watts
NEA	Nepal Electricity Authority
PH	Power House
PPA	Power Purchase Agreement
RCOD	Required Commercial Operation Date
RoE	Return on Equity
SD10	Survey and Design Institute of Sinohydro Bureau 10
TOR	Term of Reference

## **1 CHAPTER – 1 PREAMBLE**

### **1.1 Background**

Langtang Khola hydroelectric Project (LKHEP) area is located in Gosainkunda Rural Municipality ward no. 5 (Previous Syaphru VDC), Rasuwa District, Bagmati Province, Nepal. The proposed headworks site is decided about 20 m below the confluence of Langtang and Chopche Khola with principal headrace tunnel alignment passing through the left bank and powerhouse being located on the left bank of the Bhotekhosi River. Geographically, the headworks is located at latitude of 28°09'06.55"N and 85°22'7.07"E, whereas the powerhouse is located just downstream of the confluence of Langtang Khola with Bhotekhosi River with latitude as 28°09'49.58"N and Longitude as 85°20'26.86" E.

### **1.2 The Employer**

Multi Energy Development Pvt. Ltd. is the developer of Langtang Hydroelectric Project (20 MW), situated at Rasuwa district. Multi Energy Development Pvt. Ltd. obtained the survey license for the project on 2069/12/09. After, feasibility level investigation was concluded and the Power Purchase Agreement (PPA) was signed with Nepal Electricity Authority (NEA) on 2072/09/29 for 10 MW and on 2074/07/16 for additional 10 MW.

The inhouse technical team of Multi Energy Development Pvt. Ltd. are responsible for detailed engineering and design as well as procurement of works and construction supervision.

### **1.3 The EPC-F Contractor**

The Employer has identified Chongqing Water Turbine Works (CWTW) as the Contractor appropriate party to execute and implement Langtang Khola HEP in an EPC-F modality. LKHEP and CWTW have signed a contract agreement in EPC-F modality on 5<sup>th</sup> May 2017. The contract has been terminated by the Employer under the clause 15.2 of Condition of Contract.

### **1.4 Civil Contractor**

After the termination of EPC-F contract with CWTW, the Employer has completed the Civil Construction Contract. The elected Civil contractor is M/S Waiba Infratech Pvt. Ltd.

### **1.5 Contractors for Site Infrastructures**

LKHEP has engaged several local contractors for pre-construction activities such as track opening and slope protection works for Access Road, excavator and tractor hire, stone soling and improvement of Access Road, construction of motorable bridge, etc. Some of the local contractors employed at site are:

- **Bridge Construction**
  - Laligurans/Waiba/Ganapati J/V
  
- **Road Access and Gabion Works**
  - Shrinkhala Nirman Sewa Pvt. Ltd.
  - Suresh Nirman Sewa
  - Suryakunda Nirman Sewa
  - L.I.K. Engineering Services Pvt. Ltd.
  - Gupche Nirman Sewa
  - Ganapati Nirman sewa

- Talkharka Nirman Sewa
- Rasuwa Construction P. Ltd.
- Construction of Semi-Permanent Camp Facilities
  - Laharepauwa/ Bhotekoshi Nirman Sewa

## 1.6 Key Dates and Milestones

S/N	Activity	Key Dates
1.	Survey License from DoED for 10MW	2069 Chaitra 9
2.	EIA Report Approval (10 MW)	2072 Chaitra 5
3.	Generation License obtained for 10 MW	2072 Ashwin 19
4.	Registration in Department of Industry for 10MW	2070 Chaitra 17
5.	Power Purchase Agreement (PPA) signed for 10 MW	2072 Poush 29
6.	Theoretical Consent from DoED for 20 MW	2073 Ashwin 5
7.	Financial Closure with Bank Consortium (10 MW)	2073 Mangsir 29
8.	Connection Agreement with NEA (20 MW)	2073 Falgun 20
9.	Power Purchase Agreement (PPA) signed for additional 10 MW	2074 Kartik 16
10.	Contract Agreement signed with CWTW in EPC-F modality	2074 Baisakh 22
11.	S-EIA Report Approval (20 MW)	2074 Chaitra 22
12.	EPC-F Contractor's Site Mobilization	2075 Ashwin 15
13.	Project Completion	2077 Chaitra 31
14.	Required Commercial Operation Date (RCOD)	2076 Chaitra 30 (10 MW) 2078 Shrawan 3 (+10 MW)
15.	Financial Closure with Bank Consortium for additional 10MW	2075 Bhadra 20.
16.	Generation License for Additional 10MW	2075 Aswin 04
17.	Approval Final Basic Design Report	19 <sup>th</sup> December 2018
18.	Advance Payment Guarantee	5 <sup>th</sup> May 2019
19.	Contractor Mobilization	12th August 2019
20.	Survey License for Transmission line	2076 Poush 11
21.	Contract Termination with CWTW	14 <sup>th</sup> January 2021
22.	Civil Construction Contract (ITEM Rate Contract)	26 <sup>th</sup> Feb 2021
23.	EM contract	22th Feb 2022
24.	Transmission line contract	11th August 2023

## 1.7 Access to the Site

There are two principal access to the project area from Kathmandu.

- I. Kathmandu-Galchhi-Bidur-Betrawati-Dhunche-Syaphrubesi-Project site (134 km)
- II. Kathmandu-Kakani-Bidur-Betrawati-Dhunche-Syaphrubesi-Project site (127 km)

## 2 CHAPTER – 2 TECHNICAL FEATURES OF THE PROJECT

### 2.1 Salient Features of the Project

#### General

- Name of Project **Langtang Khola Hydroelectric Project**
- Installed Capacity **20.0 MW**
- Location **Syaphrubesi ward no.5, Rasuwa District**

<b>1</b>	<b>Project Location</b>		
	Development Region		Central Development Region
	Province		Bagmati
	District		Rasuwa
1.1	Intake Site		Syaphrubesi VDC
			Goisaikunda Rural Municipality
1.2	Powerhouse Site		Syaphrubesi VDC
			Goisaikunda Rural Municipality
1.3	Geographical Co-ordinates		
	Latitude		28°6' N to 28°23' N
	Longitude		85°18' E to 85°48' E
<b>2</b>	<b>General</b>		
	Name of River		Langtang Khola
	Nearest Town		Syaphrubesi Bazar
	Type of Scheme		ROR Hydro
	Full Reservoir Level (FRL)		1615.50 masl
	Turbine Center Level		1409.70 masl
	Normal Tailwater Level		1410.67 masl
	Gross Head		204.83 m
	Net Rated Head		195.66 m
	Installed capacity		20 MW
	Average Annual Energy after Outage		119.15 GWh
<b>3</b>	<b>Hydrology</b>		
	Catchment Area		573 sq.km
	Catchment Area at Powerhouse		3554 sq.km
	Design Discharge (at 40% PoE)		11.5 m <sup>3</sup> /s
	Average Flow		29.24 m <sup>3</sup> /s
	Minimum monthly flow		6.25 m <sup>3</sup> /s

<b>4</b>	<b>Weir</b>	
	Type	WES Overflow Concrete Weir
	Crest Elevation	1615.50 masl
	Length of weir	31.76 m
	Width of weir	21.09 m
	U/S Slope	1V: 2H
	U/S Height	3 m
	U/S Apron Level	1612.50 masl
<b>5</b>	<b>Intake</b>	
	Type	Side Intake
	Number of Openings	2
	Size of Opening (W x H)	5.5 m x 2.75 m
	Invert Level	1612.25 masl
	Normal water level	1615.50 masl
<b>6</b>	<b>Approach Culvert</b>	
	Number	2 nos.
	Length	~59.8 m and ~43.6 m (considering only after expansion joint)
	Size (B x H)	3.4 m x 2.5 m and 3.0 x 2.5 m
	Slope	~1V: 38H and ~1V: 27.7H (considering only after expansion joint)
<b>7</b>	<b>Gravel Trap</b>	
	Type	Hopper, Intermittent flushing
	Length	7.5 m
	Width	13.0 m
	Flushing Gate	Vertical Gate (2 nos. 1.2m x 1.2m)
<b>8</b>	<b>Undersluice</b>	
	Gate Type	Radial Gate
	Width	3 m
	Height	3 m
	Invert Level of Undersluice Gate	1608.00 masl



	Number of openings	2 nos.
<b>9</b>	<b>Settling Basin</b>	
	Type	Hopper, Open surface
	Number of Basins	2 nos.
	Effective Length	70.0 m
	Total width of basin (Internal)	18.0 m
	Width of one compartment	8.5 m
	Height in rectangular section	8 m
	Side slope of compartment	1V: 1.07H
	Flushing System	Intermittent
	Longitudinal slope of Flushing Channel	1:50
	Flushing Culvert (L x H)	1.2 m x 1.0 m
<b>10</b>	<b>Trash Passage</b>	
	No. of Openings	1 nos.
	Width	2.0 m
	Height	1.25 m
	Gate type	Vertical Gate
	Invert level of Trash Passage Gate	1614.75 masl
<b>11</b>	<b>Headrace Tunnel</b>	
	Type	Inverted D-shape
	Finish Size (W x H)	3.4 m x 3.5 m
	Start Invert Level	1604.5 masl
	Length	2900 m
	Thickness of concrete lining	0.25 m
<b>12</b>	<b>Surge Tank</b>	
	Type	Underground inclined surge tunnel
	Inner Diameter	4 m
	Effective Depth	36.92 m
	Upsurge Level	1626.75 masl

	Down surge Level	1600.52 masl
<b>13</b>	<b>Adit Tunnel</b>	
	Type	Inverted D-Shape
	Finish Size (W x H)	4 m x 4 m
	No. of Adit Tunnel	1 Nos
	Length of Adit 1	147.00 m
<b>14</b>	<b>Upper Penstock Tunnel</b>	
	Type	D-Shape
	Finish Size (W x H)	3.3 m x 3.3 m
	Length	57.60 m
	Penstock Pipe Diameter	2.0 m
	Slope	1V in 18H
<b>15</b>	<b>Inclined Pressure Shaft</b>	
	Type	Circular
	Finish Size (W x H)	3.3 m
	Length	191.20 m
	Penstock Pipe Diameter	2.0 m
	Slope	50% with horizontal
<b>16</b>	<b>Lower Penstock Tunnel</b>	
	Type	D-Shape
	Finish Size (W x H)	3.6 m x 3.2 m
	Length	174.83 m
	Penstock Pipe Diameter	2.0 m
	Slope	1 in 20
<b>17</b>	<b>Powerhouse</b>	
	Type	Surface
	Size (L x W)	35 m x 11.60 m
	Height	18.60 m
	Turbine Axis Level	1409.70 masl
	Length of Tail pool	25.83 m
	Tailrace Channel Type	Rectangular Box culvert

	Tailrace Channel Length	74.67 m
	Bottom Width	3 m
	Side Slope	Vertical
	Height of the Channel	2.93 m (normal water depth: 2m)
	End Tailrace Invert Level	1409.14 m
	Tailrace Water Level	1410.67 m
<b>18</b>	<b>Turbine</b>	
	Type	Francis, Horizontal
	Number	2
	Rated Output Capacity per Unit	10.356 MW
	Turbine Axis Level	1409.70 masl
	Net Head	195.66 m
	Discharge per Unit	5.75 m <sup>3</sup> /s
	Efficiency	91%
<b>19</b>	<b>Governor</b>	
	Type	Electronic with PID control
	Adjustment for Speed Drop	Between 0-5%
<b>20</b>	<b>Generator</b>	
	Type	Synchronous, 3 Phase
	Rated Output Capacity per unit	11940 kVA
	Power Factor	0.85
	Generation Voltage	11 kV
	Frequency	50 Hz
	No. of Units	2
	Excitation System	Brushless excitation system
	Efficiency	98%
<b>21</b>	<b>Transformer</b>	
	Type	Oil immersed, Single Phase, 50 Hz
	Rated Capacity	30 MVA
	Voltage ratio	11/132 kV
	Efficiency	99%

	No. of Units	2
	Vector Group	Ynd11
	Frequency	50 Hz
	Efficiency	99%
<b>22</b>	<b>Transmission Line</b>	
	Voltage Level	132 kV single circuit
	Length	4.5 km
	Conductor Type	Bear
	From	Langtang Khola HPP switchyard
	To	NEA's Chilime Hub

### 3 CHAPTER – 3 PROGRESS DETAILS

#### 3.1 Progress Summary

S/N	Project Activity	Status/Progress	Remarks
	<b>ACCESS ROAD</b>		
1	Syaphrubesi to Powerhouse Site	<ul style="list-style-type: none"> <li>• <b>500.0 m</b> (Out of <b>500.0 m</b>) track opening works – Completed.</li> <li>• Gabion works/Slope protection completed.</li> </ul>	
2	Powerhouse to Headworks site	<ul style="list-style-type: none"> <li>• <b>3.0 Km</b> (out of <b>3.0 Km</b>) track opening works – Completed.</li> <li>• Gabion works/Slope protection – Ongoing.</li> </ul>	
3	Adit Portal access road	<ul style="list-style-type: none"> <li>• <b>Completed</b></li> <li>• Gabion works/Slope protection – Ongoing.</li> <li>• <b>Repair and Maintenance: Ongoing</b></li> </ul>	
4	<b>PROJECT CAMP</b>	<ul style="list-style-type: none"> <li>• Designing and Planning – Lot 1 Completed</li> <li>• Construction: Completed</li> </ul>	
5	<b>BRIDGE OVER BHOTEKOSHI RIVER</b>	<ul style="list-style-type: none"> <li>• Civil works on Abutments – Completed.</li> <li>• Bailey Bridge superstructure installation – Completed.</li> <li>• River training and protection works at Abutments – Completed.</li> </ul>	
6	<b>ADMINISTRATIVE WORKS</b>	<ul style="list-style-type: none"> <li>• Supplementary EIA - Approved from Ministry of Forest Environment (MOFE)</li> <li>• Power Purchase Agreement Signed for 20 MW</li> <li>• Generation License - Completed</li> <li>• Forest Clearance - 100 % Completed</li> <li>• Land Acquisition – 100 % Completed</li> </ul>	
7	<b>MAIN CONSTRUCTION ACTIVITIES</b>	<ul style="list-style-type: none"> <li>• Site Mobilization of Contractor- 17<sup>th</sup> March 2021</li> <li>• Completed the Camping works for contractor.</li> <li>• Construction power electrical pole erection and wire stringing completed.</li> <li>• Connection Approval for Construction power - Completed</li> <li>• MoU with Kalikjung Brigade has been completed to start explosive work at site.</li> <li>• Overall headworks construction about 80% completed</li> <li>• Adit Tunnel excavation – 100% completed</li> <li>• Head Race Tunnel excavation – Breakthrough on 13<sup>th</sup> August.</li> <li>• Head race tunnel Adit U/S excavation- 1+091.10 chainage completed (100 % completed)</li> <li>• Head race tunnel Adit D/S excavation – 2+896.80 (100 % completed)</li> <li>• Horizontal penstock outlet tunnel excavation- 100% completed</li> <li>• Headworks construction- 80 % completed</li> <li>• Powerhouse construction about 80% completed</li> <li>• Overall Civil works- 80% completed</li> <li>• Hydromechanical works- 65% completed</li> <li>• Electromechanical works- 70% completed</li> <li>• Transmission line- 30% completed</li> <li>• Land Acquisition- 30% completed.</li> </ul>	

S/N	Project Activity	Status/Progress	Remarks
8	<b>OTHER ACTIVITIES</b>	<ul style="list-style-type: none"> <li>River survey for Physical Hydraulic Modelling - Completed.</li> <li>Hydro Lab has done the Physical Hydraulic Modelling.</li> <li>Final model run for Physical Hydraulic Modelling completed</li> <li>Detailed design works- 90 % completed</li> </ul>	

### 3.2 Local Contractors Engaged at Site (Sub-Contractors)

1.	Excavator hire for access road excavation	<b>Gupche Nirman Sewa</b> Syphru-8, Rasuwa.	Falgun 30,2073	Completed	
2.	Excavator hire for access road excavation	<b>Rasuwa Constuction P. Ltd,</b> Kathamandu	Falgun 2074	Completed	
3.	Excavator hire for access road excavation	<b>Gupche Nirman Sewa</b> Syphru-8, Rasuwa.	Falgun 2074	Completed	
4.	Excavator hire for access road excavation	<b>Talkharka Nirman Sewa</b> Baudha, Kathamandu	Jestha 2075	Completed	
5.	Damage Repair and Rehabilitation of Pasang Lyhmu Highway along the Access Road	<b>Gupche Nirman Sewa</b> Syphru-8, Rasuwa.	Jestha 2075	Completed	
6.	Construction of Semi-Permanent Camp facilities	<b>Laharepauwa/ Bhotekoshi Nirman sewa</b> Rasuwa	18 <sup>th</sup> Dec 2018	Completed	

### 3.3 Contract Status

S.N.	Contract Title	Contractor/Consultant	Date of Contract Signing	Status	Remarks
1.	Construction of Motorable Bridge over Bhotekoshi River	<b>D Laligurans/Waiba/Ganapati J/V</b>	July 4, 2017	Completed	
2.	Stone Masonry works for maintenance of access road	<b>Shrinkhala Nriman Sewa Pvt. Ltd.</b> Bidur-4, Battar, Nuwakot.	Ashwin 6, 2074	Completed	
3.	Gabion works for Maintenance of access road	<b>Suresh Nirman Sewa</b> Syphru-5, Rasuwa.	Sep 11, 2017	Completed	
4.	Gabion works for Maintenance of access road	<b>Suryakunda Nirman Sewa</b> Syphru-5, Rasuwa.	July 17, 2017	Completed	
5.	Stone Masonry works for maintenance of access road	<b>L.I.K. Engineering Services Pvt. Ltd.</b> Manmaiju,Kathmandu.	August 17, 2017	Completed	

S.N.	Contract Title	Contractor/Consultant	Date of Contract Signing	Status	Remarks
6.	Excavator hire for access road excavation	<b>Gupche Nirman Sewa</b> Syphru-8, Rasuwa.	Falgun 30,2073	Completed	
7.	Excavator hire for access road excavation	<b>Rasuwa Constuction P. Ltd,</b> Kathamandu	Falgun 2074	Completed	
8.	Excavator hire for access road excavation	<b>Gupche Nirman Sewa</b> Syphru-8, Rasuwa.	Falgun 2074	Completed	
9.	Excavator hire for access road excavation	<b>Talkharka Nirman Sewa</b> Baudha, Kathamandu	Jestha 2075	Completed	
10.	Damage Repair and Rehabilitation of Pasang Lyhmu Highway along the Access Road	<b>Gupche Nirman Sewa</b> Syphru-8, Rasuwa.	Jestha 2075	Completed	
11.	Masonry Wall, manual rock cutting	<b>Ganapti Nirman Sewa,</b> Bidur, Nuwakot		Completed	
12.	Construction of Semi-Permanent Camp Facilities	<b>Laharepauwa/ Bhotekoshi Nirman Sewa</b>		Completed	

### 3.4 Major Activity on this month

#### 3.4.1 Head Works: -

- Boulder riprap at upstream langtang khola and concrete infill (ongoing)
- Boulder riprap at downstream, Drilling for anchor and concrete infill (ongoing)
- Steel lining at undersluice and intake completed.
- Preparation for river diversion
- Concreting base of gupchhe khola along with cutoff and others activities ongoing
- Concreting at settling basin p5 upto 1612.65m
- Concreting of base of headpond, and concreting of right wall upto 1609.2 and left wall 1612.5
- Concreting of sand flushing gate chamber upto 1614.1
- Excavation at sand flushing protection wall
- Backfill at settling basin left wall

**Overall cumulative headworks progress:- 80% Completed.**



*Figure: Gupche Diversion Works*



*Figure: Rebar works in headpond area*



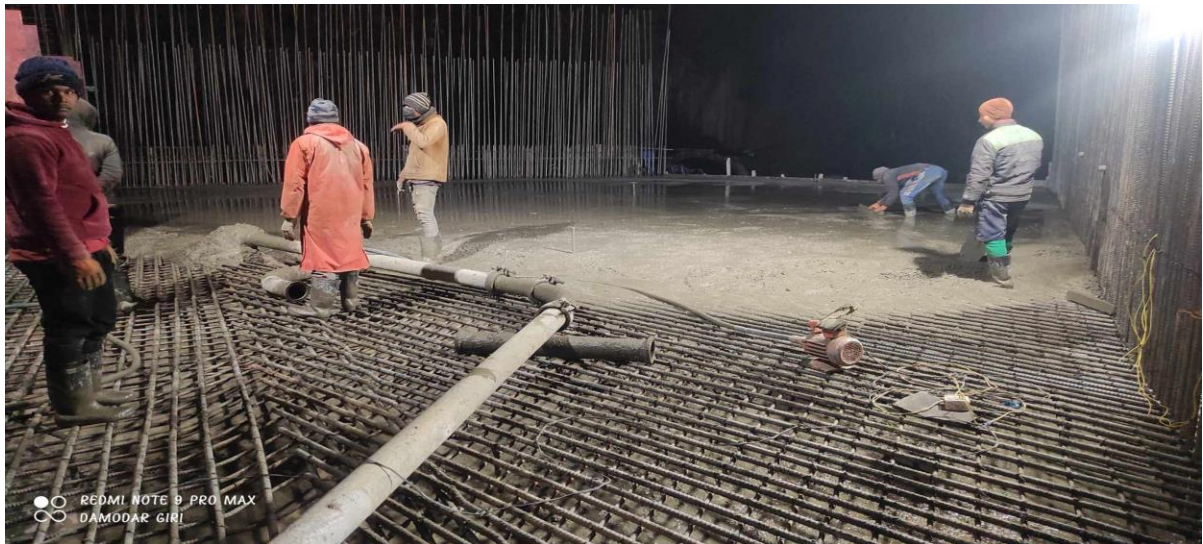


Figure: Headpond base concreting



Figure: Headworks area



Figure: Steel lining work at undersluice area

### 3.4.1 Tunnel Works: -

➤ **Head Race Tunnel**

- Invert Cleaning and trimming Chainage 680m to 315m
- Excavation work Chainage 2043.15m to 2059.6m
- Rock class III
- Adit-Y junction breakthrough

➤ **Surge tunnel**

- Excavation works going on. Chainage 249.2 to 268.8m
- Rock class III
- Remaining

➤ **Outlet tunnel**

- Undercut trimming and cleaning work.

**Overall cumulative progress of tunnel:- 80%**



*Figure: HRT hole drilling for Lugeon test*



Figure: Surge Tunnel



Figure: HRT invert cleaning

### 3.4.2 Powerhouse

- Retaining wall of switchyard Panel 1,2,3,4,5 completed.
- Brick masonry wall towards tailrace side completed.
- Plastering on both sides of tailrace side walls and column completed.
- Control building base preparation and rebar work completed.
- Bend 2 of penstock concreting going on.
- Steel column and beam installation toward 3 unit continues.
- Concrete casing above anchor block 1&2 going on.

**Overall cumulative progress of Powerhouse :- 80%**





*Figure: Powerhouse*



*Figure: Rebar works in retaining wall of switchyard*



Figure: Rebar works and Formworks in tailrace outlet gate

### 3.5.4 HM (Hydro Mechanical) Work

- 1) Fitting and Welding of Manhole on Penstock Branch Pipe (Right to the flow direction).
  - 2) Installation of Rail line of total length 186 meters.
  - 3) Welding of Circumferential Joint of 6 Branch Pipes Joints.
  - 4) Lowering and fitting of 15 Meter Penstock Pipes.
- **Overall Cumulative Progress of Hydromechanical Works:- 65%**

#### Total pipe fabricated and erected upto now:

Total Fabrication				
SN	Pipe Diameter (I)	Pipe Thickness	Total Number	Total Length (m)
1	1400	20	37	92.5
2	2020	12	24	60
3	2020	18	32	80
4	2020	24	59	147.5
Total Erection				
SN	Pipe Diameter (I)	Pipe Thickness	Total Length (m)	
1	1400	20	64.64	
4	2020	24	27.8	



*Figure: Assembly of Powerhouse Steel Partition and Lowering of Penstock Pipes with the help of Trolley*





Figure: Steel Lining work and Erection of Manhole

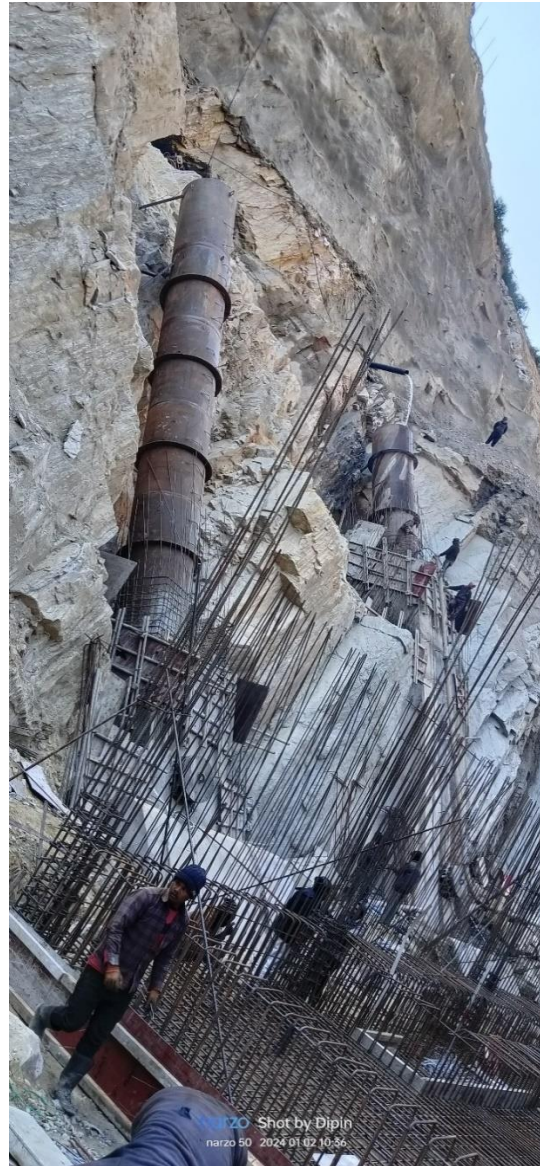


Figure: Image of base of Control Room with ranch Pipe in the background.

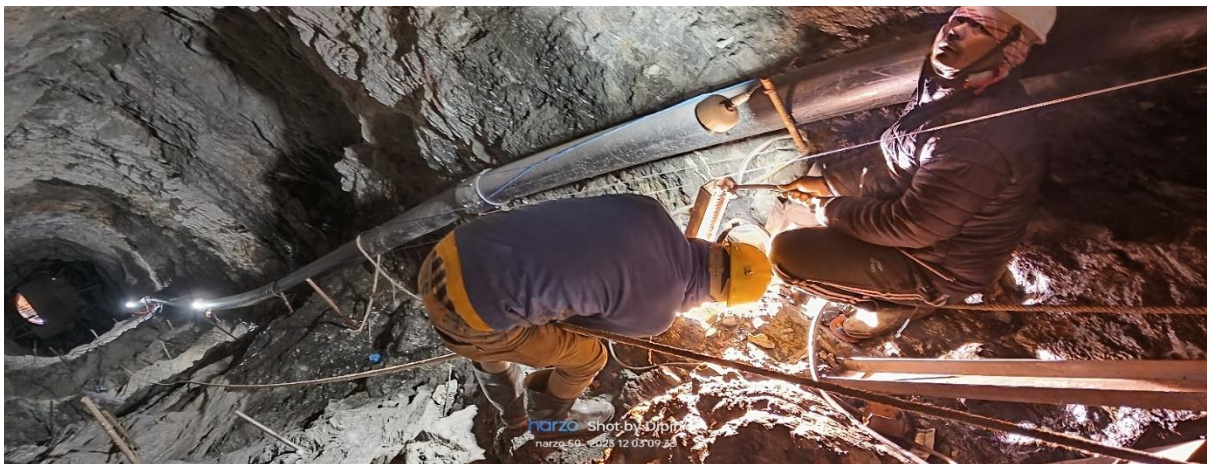


Figure: Installation of Rail line in the inclined tunnel.

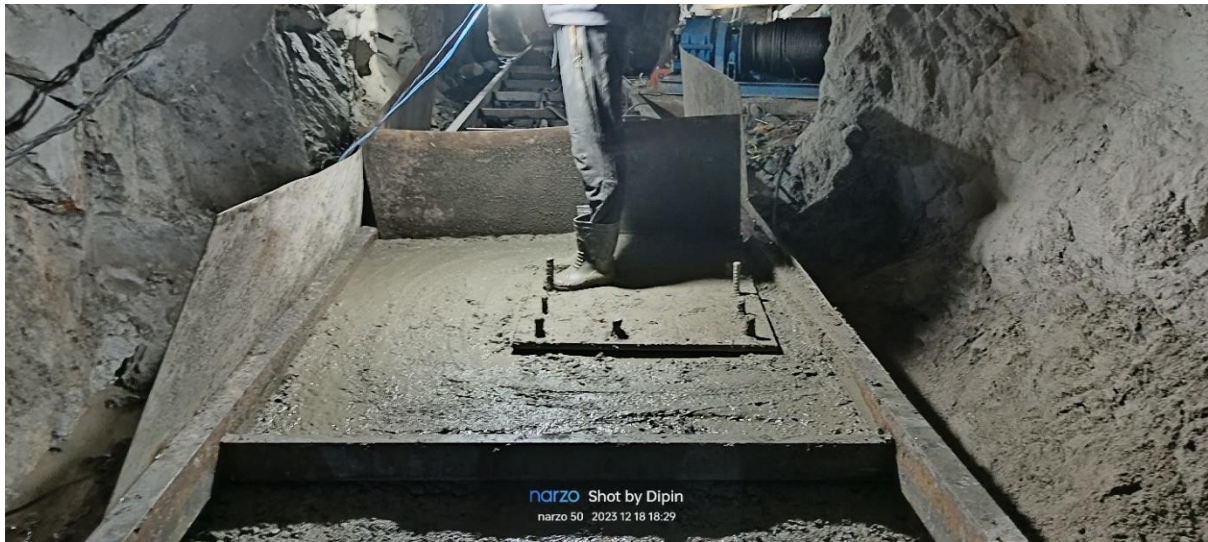


Figure: Base plate for Main Pulley



Figure: Trash Pass screw hoist with control Panel arrangement



*Figure: Erection of Penstock Pipes*

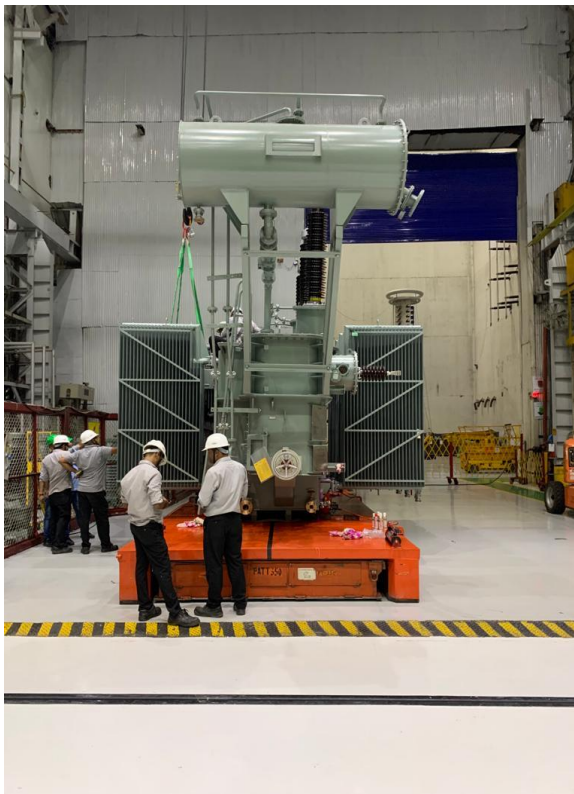


*Figure: Welded pipe being stored at Butwal Workshop*

### 3.5.5 EM (Electro Mechanical) Works: -

1. Material Dispatch Clearance Certificate (MDCC) provided for 132kV SF6 Circuit Breaker and 132kV Isolator.
2. Material Dispatch Clearance Certificate (MDCC) provided for 132kV Current Transformer, Potential transformer and Lightning Arrestor.
3. Factory Acceptance Test of Power Transformer completed.
4. Material Dispatch Clearance Certificate (MDCC) provided for Power Transformer and Battery & Battery charger.
5. EU Scope equipment's (Runner, MIV, Governor, Generator Excitation system, etc.) reached at site.
6. MDCC given for Isolation, Station and Distribution Transformers.
7. 132kV Lightning arrestors, 132kV Current transformer, 132kV Potential transformer, 132kV SF6 Circuit Breaker, 132kV Isolators, 65/10T DGEOT crane, NIFPS system for Power Transformer reached at site.
8. Approval of Communication system, Chilime Hub GIS Single Line Diagram
9. FAT of Generator and Spiral Casing.
10. Material dispatch clearance certificate given for Generator and Spiral Casing.

### Overall Cumulative Progress of Electromechanical works:- 70%



*Figure Complete assembly of power transformer*



*Figure SFRA test of power transformer*



Figure: EM components received at site.



Figure: Draft tube Visual Inspection



*Figure: Spiral casing ready for pressure and leakage test*



*Figure: Generator*

### 3.5.7 132 KV Single Circuit Transmission line (From Langtang Khola Powerhouse (20MW) to Chilime Hub (GIS Substation))

- Request for Proposal (RFP) for Feasibility Study and Design of 132 kV Transmission line for Langtang Khola Hydroelectric Project (20MW) issued on July 2021.
- Evaluations of Bids.
- Contract agreement with Paramount Construction Pvt. Ltd. (“the Consultant”) for Feasibility study and design of 132kV Transmission line from Langtang Khola Powerhouse (20MW) to Chilime Hub (GIS Substation) on 10<sup>th</sup> August 2021.
- Desk Study report submitted by the Consultant with three alternative routes of 132kV SC Transmission line on 14<sup>th</sup> September 2021.
- Walkover survey conducted on proposed routes.
- Monumentation and Detail Topographical Survey work carried out on Proposed route.
- Contract signing of Transmission line works on 11<sup>th</sup> August 2023 with Royal Construction Company Pvt. Ltd
- Check Survey Completed.
- Land acquisition in progress.
- Design of tower work in progress.

**Overall cumulative progress of transmission line works:- 30%**



*Figure: Check Survey along the alignment of transmission line*