Nyadi Hydropower Limited

Nyadi Hydropower Project (30 MW)

Progress Report

(May 2019)

Kathmandu, Nepal

Nyadi Hydropower Limited (NHL)

Buddha Nagar, Kathmandu, Nepal

Nyadi Hydropower Project (30MW)

Monthly Progress Report

May 2019

		Position	Date
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1. Introduction

1.1. Background

Nyadi Hydropower Project (NHP) was first identified in 1993 during the preparation of the Small Hydropower Master Plan. The feasibility study of the project (20 MW) was completed by Lamjung Electricity Development Company (LEDCO) in the year 2000.

In October 2006, Butwal Power Company Limited (BPC) and Lamjung Electricity Development Company (LEDCO) had an understanding to develop the NHP together. As per agreement made between BPC and LEDCO, Nyadi Hydropower Limited (NHL) was established on 2063/11/17 (01/03/2007) to undertake the NHP independently. The project is being developed through a Special Purpose Vehicle (SPV), by Nyadi Hydropower Limited with BPC as a major stakeholder. Feasibility study of NHP (30 MW) was completed by NHL in October 2010.

1.2. Overall Project Description

The Nyadi Hydropower Project (NHP) is a run-of-river type project, located in Lamjung District of Western Development Region of Nepal. The entire component from intake to powerhouse area located within the Ward no. 6 of Marsyangdi Rural Municipality, Lamjung District.

The project has an installed capacity of 30 MW and will generate 168.55GWh of energy annually. The generated power will be connected to a proposed NEA's Hub that will be constructed at Marsyangdi corridor, about 6 km south of the powerhouse. Moreover, about 250 m long adit tunnels which include Naiche adit, Surge adit and ventilation adit are also proposed to make 4 headings for excavation and construction of the headrace tunnel. Surge shaft is designed near the end of the headrace tunnel having diameter of 5.0 m and 35 m height.

An about 14 m diversion dam has been designed to construct across the Nyadi River. The water from intake is feed to underground settling basin and conveys it through about 3840 m long headrace tunnel and 745 m long penstock pipe. A surface powerhouse has been proposed on the right bank of Nyadi River at the Thulibesi. The gross head of the project is 334.40 m while design discharge of the project is 11.08 m^3/s.

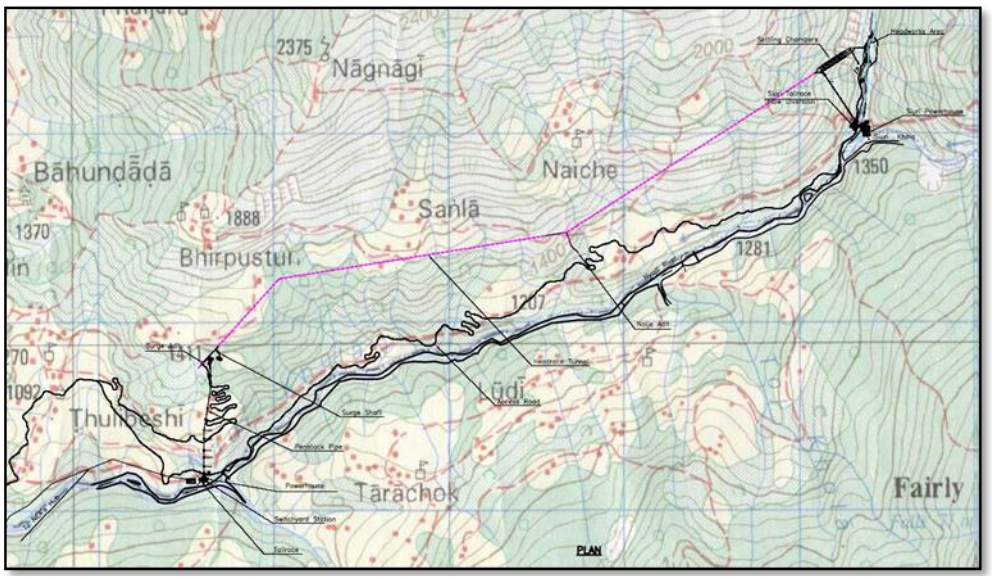


Figure 1: General Project Layout of Nyadi Hydropower Project

1.3. Completed Milestones

S.N.	Milestones	Date
1.	Electricity Generation License	Feb 27, 2013
2.	Power Purchase Agreement (PPA)	May 26, 2015
3.	Financial Closure or facility agreement	Feb 03, 2016
4.	Contract for the Government land lease and Tree Cutting approval signed with Ministry of Forestry & Soil Conservation	March16, 2016
5.	Financial Consultant appointed: A tripartite agreement between NHL, EBL and T.N Acharya & Co., Chartered	December 2, 2016
6.	Required Commercial Operation Date (RCOD) extended up to April 18, 2020	December 26, 2016
7.	EPC Contract Agreement with ZHCIC for Lot 1: Civil works and Hydro-mechanical works Including Electro-mechanical	January 16, 2017
8.	EIA of Transmission Line Approved	March 29, 2017
9.	Client Consulting Services – Employer's Representatives for Lot-1 and Lot-2	April 07, 2017
10.	Technical Consultant appointed: A tripartite agreement between NHL, EBL and Jade Consult P. Ltd.	June 27, 2017
11.	132 kV Transmission line License	June 29, 2017
12.	EPC Contract Agreement with Urja International P. Ltd for 132 kV Transmission Line Works (Lot II)	July 12, 2018

2. Institutional Arrangement

Following entities constitute the whole institutional arrangement of Nyadi Hydropower Project having Installed Capacity 30 MW

The Employer/Owner : Nyadi Hydropower Limited (NHL)

The Engineer/Consultant : Hydro-Consult Engineering Limited (HCEL)

Financing Institution : Everest Bank Limited as Lead Bank; Nabil Bank Limited and Global IME Bank Limited as Co-Lead Banks; Himalayan Bank Limited, Sunrise Bank Limited and Hydroelectricity Investment and Development Company Limited (HIDCL)

3. Tender Lot - I (Civil Works and Hydro-mechanical Works)

A contract for the major works of the project was signed on January 16, 2017 -- EPC Contract for Civil Works and Hydro-mechanical Works (Lot 1) including Electromechanical Works for Nyadi Hydropower Project (30MW) (Contract Identification No.NHL/NHP-2015/016-CH-1). The details are listed below.

1	Contractor:	Zhejiang Hydropower Construction & Installation Co. Ltd
2	Works:	EPC Contract for Civil Works and Hydro-mechanical Works (Lot 1) including Electromechanical Works for Nyadi Hydropower Project (30MW) (Contract No.NHL/NHP-2015/016-CH-1)
3	Contract Price Contract signed on :	US$ 39,500,000 or NPR 4,207,540,000 at the Exchange rate of USD1=NPR106.52, Jan 16,2017

4	Date of Commencement of work:	2017/02/10,delayed by contractor and Commenced on 2017/03/22
5	Intended Work Completion Date:	April 05,2020 (1150days)
6	RCOD Date:	April 18,2020 (Extended)

4. 132 kV Transmission Line

The Contract agreement was signed on July 12, 2018 between NHL and Urja International P. Ltd. for EPC Contract for 132 kV Transmission Line Works (Lot II) of Nyadi Hydropower Project, the Contract No. NHL/NHP-2017/019-TR-1. Check Survey of Transmission line has been recently completed by the Contractor, Urja International P. Ltd. The Construction Schedule has been submitted by Urja International P. Ltd. on July 19, 2018.

The Contractor Urja International P. Ltd. also submitted the design of Transmission line including structural tower drawing with calculation for approval. NHL submitted a Contingency Plan of Power Evacuation to NEA. Coordination committee meetings were held at different time intervals in NEA in respect of contingency plan and power evacuations issues. NEA had made site visit in this regard and load flow study is recommended to be carried by NEA for the approval of NHL contingency plan.

The Contractor Urja International P. Ltd. has commenced the excavation of tower foundation and has planned to complete the excavation of foundation for at least two towers by the end of this monsoon.

5. Contractor's Status of Site Mobilization

The Contractor ZHCIC's mobilization commenced on March 22, 2017 at site with the arrival of Temporary Building materials and Excavators. 151 workers including technical personnel are presently at the site. Contractor has completed about 90% of mobilization till date. All equipment and staff have been mobilized in the site. The main camp is near to the powerhouse. All labor camps and other yards like storage yard, Hydro-mechanical, etc. are completed. The status of equipment, materials and personnel are as in the follows tables.

Table 1.1: Equipment List at Project site

S.N.	Name	Nos.	S.N.	Name	Nos.
1	Excavator	4	25	Mucking tractor	12
2	Generator	7	26	Concrete mixture	5
3	Pick-up	4	27	Electric pump	20
4	Vibrator	2	28	Electric pump (Submersible)	20
5	Air Compressor	7	29	Sewage pump	17
6	Drill Machine Pusher Leg	20	30	Electric winch machine	3
7	Breaker	1	31	Scrapper bucket type rock debris transporting machine	4
8	Crawler down hole drill	1	32	Bar bender	3
9	Auto Transformer Starter	5	33	Steel plate rolling machine	1 set
10	Dump truck	3	34	Steel flange correcting machine	1

11	Total station (TS02 plus)	1 set	35	Pneumatic Pick	5
12	Air drilling (Jackhammer)	20	36	Wheel barrow	25
13	Air storage tank	5	37	Electronic truck scale	1
14	Shotcrete machine	1	38	Electric wire rope hoist	1
15	Cutting machine (Abrasive cutter)	18	39	Threading machine	2
16	Vibrating screen	2	40	Grouting Machine	1
17	Bar straightening cutter	1	41	Vibrator	2
18	Wheel Loader	2	42	Wheel loader(Small)	3
19	Welding machine	32	43	Concrete pump	3
20	Blower fan	7	44	Submerged water pump	15
21	Air receivers	5	45	Sump pump	20
22	Fuel tank	2	46	Self-priming pump	5
23	Transformers	4	47	Mortar mixture	2
24	Low voltage Distributor	4			

Table 1.2: Lab Equipment List at Project site

S.N.	Name	Nos.	S.N.	Name	Nos.
1	Grinding machine	2	15	Concrete Anti seepage Instrument	1
2	Steel model for mortar	6	16	Thermoelectric Thermostat Air-blowing Drying Chamber	1
3	Grinding compressive fixture	1	17	Concrete Mixer Controller	1
4	Plain bumper motor	2	18	Standard Square Hole Sieve	1
5	Universal testing machine controller	1	19	Cement Anti-compression and Anti-bending tester	1
6	Sieve shaker	1	20	ISO Cement Mortar Plain Bumper	1
7	Punching machine	1	21	Rebound Hammer	2
8	Thermostatted water curing chamber	1	22	Electronic Scale	1
9	Cement concrete standard curing chamber	1	23	Digital Caliper	1
10	Electronic Balance	2	24	Flaky Normalized Device	1
11	Cement Density Condensation Tester	1	25	Universal Material Testing Machine	1
12	Slump cone	2	26	Los Angeles abrasion test machine	1
13	Electric folding machine	1	27	Core cutter machine	1
14	Concrete Anti seepage Instrument Controller	1	28	Bolt puller (Pull out test machine)	1

Table 1.3: Materials stock at Project site

S.N.	Materials	Quantity	S.N.	Materials	Quantity
1	Drill Rod	400 pcs	16	Engine oil	9 drums
2	Stellidium alloy bit (42*22 mm)	2600 pcs	17	Safety belt	42 pcs
3	Ventilation pipe (45 mm)	6 pcs	18	Mortar spraying pipe	70 rolls
4	Hose pipe (25 mm dia.)	120 pcs	19	Metal sheet plate 8 mm (8"*4")	25 pc
5	Scaffold couples	3000 pcs	20	Jag shakti TMT rebar (16mm)	80 tons
6	Steel rope	3 roll	21	Jag Shakti TMT rebar (20mm)	60 tons
7	M.S. Sheet (2mm)	1700 kg	22	Jagdamba TMT rebar (25mm)	22 tons
8	M.S. Angle ISA (40x40x5mm)	400 kg	23	Formwork board	1200 pcs
9	M.S. Black pipe (20x20x2mm)	2000 kg	24	Lubricating oil	40 drum
10	M.S. Black pipe (38x38x2.2mm)	45 ton	25	Wood planning machine and its spare parts	5 boxes
11	M.S. Black pipe (2.7mm)	37060 kg	26	Steel plates for Penstock	500 ton
12	M.S. beam ISMB (150*75 mm)	7000 kg	27	Cement	70 ton
13	Channel (125*65 mm)	2375 kg	28	Sand	1200 m^3
14	Channel (150*75 mm)	1580 kg	29	Aggregates	1100 m^3
15	Hume pipe (75cm dia.)	6 pc	30	Diesel	9000 ltr

Table 1.4: Mobilized Contractors personnel

S.N.	Position	Nos.	S.N.	Position	Nos.
1	Project Manager	1	4	Admin	3
2	Deputy Project Manager	-	5	Skilled Workers	65
3	Engineer	3	6	Worker (Nepali)	79
Total Personnel = 151					

6. Project Progress

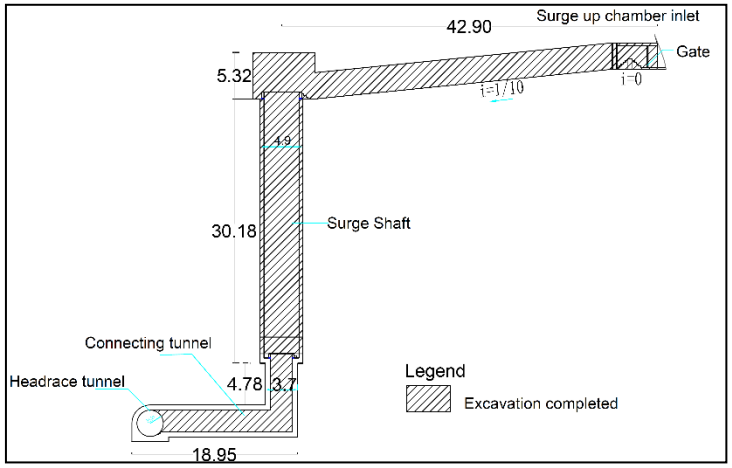
Table 1.5: Project major progress up to May 2019

S.N.	Description	Total	Construction completed up to		% completed
			April 2019	May 2019	
1.	**Mobilization**	**100%**	**~80%**	**~90%**	**~90%**
2.	**Access Road Construction**				
a.	Naiche to Headworks (New Track opening)	3000 m	~3000 m (1650 m as per	~3000 m	~100%

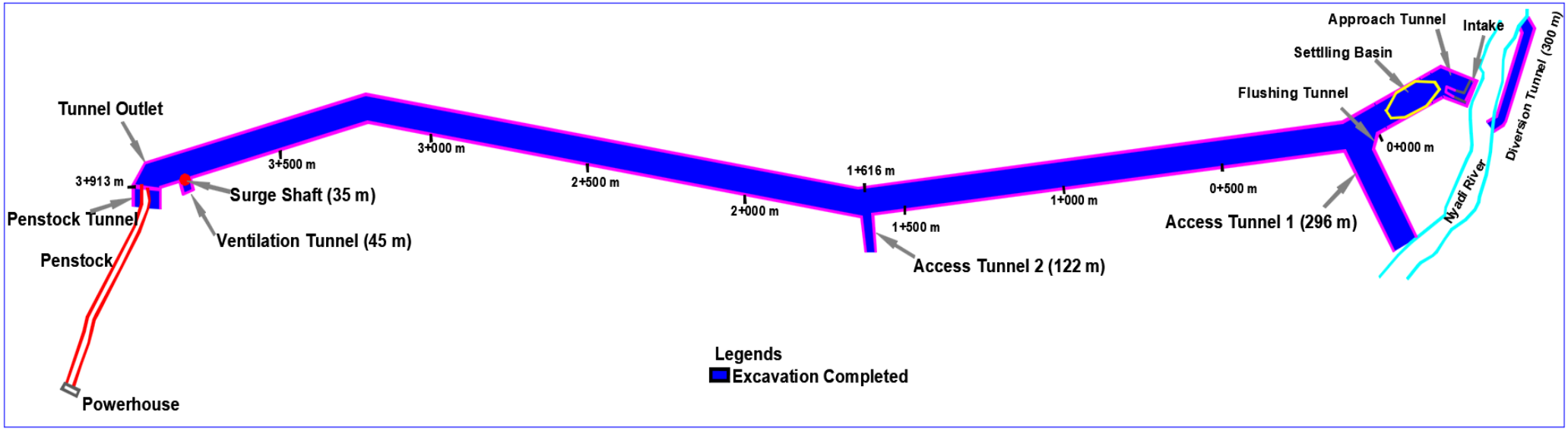
S.N.	Description	Total	Construction completed up to		% completed
			April 2019	May 2019	
			design drawing and 1350 m along river bank)		
b.	Headworks to Diversion Tunnel				~100%
3.	**Access Road Upgrading of Existing Track**				
a.	Marshyangdi Bridge to Thulibesi Village	100%	~55%	~55%	~55%
b.	Thulibesi Village to Surge Shaft	100%	~55%	~55%	~55%
c.	Thulibesi Village to Naiche	100%	~55%	~55%	~55%
4.	**Temporary camp construction**	**100%**	**~90%**	**~90%**	**~90%**
5.	**Tunnel portal surface excavation**				
a.	At Outlet	100%	~75%	~75%	~75%
b.	At Naiche Access Tunnel 2	100%	~75%	~75%	~75%
c.	At Access Tunnel 1	100%	~75%	~75%	~75%
d.	At Intake	100%			~75%
6.	**Access Tunnel Excavation**				
a.	Access Tunnel 1 at Headworks	296 m		~296 m	~100%
b.	Access Tunnel 2 at Naiche	122 m		~122 m	~100%
c.	Flushing Tunnel	63 m		63 m	~100%
7.	**Headrace Tunnel Excavation**	**3840 m**	**~3840 m**	**~3840 m**	**~100%**
a.	From Outlet		~1738 m	~1738 m	
b.	Access tunnel 1 towards Headworks		~50 m	~50 m	
c.	Access tunnel 1 towards Access tunnel 2		~519 m	~519 m	
d.	From Naiche Access tunnel-2 towards Headworks		~1053 m	~1053 m	
e.	From Naiche Access tunnel-2 towards Outlet		~480 m	~480 m	
f.	From Intake	230 m	~230 m	~230 m	100%
g.	Penstock tunnel	68 m	68 m	68 m	100%
8.	**Surge Shaft**				
a.	Ventilation Tunnel Excavation	40 m	40 m	40 m	100%
b.	Surge Shaft Excavation	35 m	35 m	35 m	100%
c.	Surge Shaft Concreting	35 m	35 m	35 m	100%
9.	**Penstock**				
a.	Surface Excavation	100%	~40%	~40%	~40%
b.	Anchor Blocks	11 Nos.	~5%	~5%	Concreting base of 2 anchor block
10.	**Headwork's**				
a.	Cofferdam	100%		~100%	Diversion by

S.N.	Description	Total	Construction completed up to		% completed
			April 2019	May 2019	
					Distributary Structure
b.	Diversion Tunnel Excavation	300 m	~300 m	~300 m	~100%
i.	Concreting of Inlet portion	112 m^3		112 m^3	~100%
ii.	Concreting of Outlet portion	53 m^3		53 m^3	~100%
c.	Dam side slope excavation	100%	~90%	~90%	~90%
d.	Intake excavation				Excavation completed
e.	Approach Tunnel	230 m	~230 m	~230 m	Excavation completed
f.	Settling Basin	62 m	11 m	62 m	Excavation and Widening completed
11.	**Powerhouse**				
a.	Excavation	100 %	~80%	~80%	~80%
b.	Concreting	100 %	~65%	~75%	~75%
12.	**Tailrace**				
a.	Excavation	100%		100%	100%
b.	PCC (C20)	100%		100%	100%
13.	**Powerhouse River Protection Works**	1988 m^3	1988 m^3	1988 m^3	100%

Project Status of underground Surge Shaft and Ventilation Tunnel



Project Status: Tunnel Excavation



6.1. Distributary Structure

River diversion from the Distributary structure to the Diversion tunnel has been completed on 1st January 2019.

Fig 2: Distributary Structure

6.2. Diversion Tunnel and Cofferdam

The 300 m long diversion tunnel excavation has been finished. Concreting at Inlet and outlet part has been completed. Construction of coffer dam for river diversion has been accomplished.

6.3. Dam and Intake

Excavation and concreting of first cut-off wall up to level 1368.50 m at dam site have been completed and the curtain grouting work have also been completed. Rock excavation was done by drilling and blasting method. About 95% excavation at right and left bank slope have been completed. Drilling and blasting at undercut portion of Intake site is completed. Excavation of Approach tunnel (230 m) has been completed. Concreting at downstream cut off wall has been started from the level 1362.00 m.

Figure 3: Excavation Works for Downstream Cut off wall at Headworks

Figure 4: Formworks Placement Level from 1361.50 m at Downstream Cut off Wall

Figure 5: First Lift Concreting Works at Downstream Cut off Wall at Headworks

6.4. Underground Settling Basin

Excavation of Underground Settling Basin has been completed and breakthrough from the Flushing tunnel to the Settling Basin was completed on 23rd January, 2019. The length of Settling basin is 62 m and its dimension is 8m x 8m x 62 m. Excavation has been completed as size of approach tunnel and widening to its full size is completed and shotcrete lining has been completed.

Figure 6: Platform Arrangement for Shotcrete at Crown Part of Settling Basin

6.5. Headrace Tunnel

Excavation of Headrace tunnel (3840 m) has been concluded. HRT from outlet has been excavated up to 1738 m. Tunnel excavation was carried out in two stages first central part then the peripheral part. Some over break has occurred at weak shear zone. Temporary supports have been provided to those over break portion. 11 Nos. of steel ribs, 7 Nos of steel ribs and 6 Nos. of steel ribs have been provided to HRT from outlet at Ch.3+182 m to 3+192.6 m, 3+202 m to 3+210 m and 3+979.82 m to 3+984.82 m respectively. 6 nos. of steel ribs provided to Ch.0+1066-1071.10 m due to over break. HRT from access tunnel 2 towards Outlet has been excavated up to 480 m. At Ch.0+2330 large over break about 25-30 m occurred with debris flow, cleaning of the debris is going on till this month. 519 m HRT tunnel excavation was completed from Access tunnel1 towards Access tunnel 2, over break from Ch. 0+886 m to Ch. 0+898 m has been provided with the permanent support.

S. N	Tunnel	Excavation Size (m)	Total length (m)	Progress up to last month (m)	Progress this month (m)	Total Progress (m)
1.	Headrace tunnel (HRT)	3-3.6m (w) x 3-3.6m (h)	**3840**	**3840**	**0**	**3840**
1.1	HRT from outlet			1738	0	1738
1.2	HRT from access tunnel 2 towards Headwork's			1053	0	1053
1.3	HRT from access tunnel 2 towards Outlet			480	0	480
1.4	HRT from access tunnel 1 towards Headworks			50	0	50
1.5	HRT from access tunnel 1 towards Outlet			519	0	519
2	Ventilation tunnel	2.6m (w) x 3m (h)	40	40	0	40
3	Surge Shaft	4.9m Diameter	35	35	0	35
4	Access tunnel 1	4m (w) x 3.5 (h)	296	296	0	296
5	Access tunnel 2	2.6m (w) x 2.8m (h)	122	122	0	122
6	Penstock Tunnel	3-3.6m(w)x3-3.6m(h)	68	68	0	68
7	Diversion Tunnel	3(w)-3.2(h)	300	300	0	300
8	Intake Tunnel		230	230	0	230
	Total		**4931**	**4931**	**0**	**4931**

Figure 7: Shotcrete Lining of Tunnel at the Upstream of Adit 2

6.6. Ventilation Tunnel, Surge Shaft and Connecting Tunnel

Concreting of Ventilation tunnel and Surge shaft has been completed. Concreting in the Connecting tunnel has been concluded in the month of January. Length of Ventilation tunnel is 40 m and Surge shaft is 35 m.

6.7. Outlet Portal

Excavation of portal has been accomplished but slope stabilization has yet to be done. There is 68 m penstock tunnel from outlet.

6.8. Penstock

The length of penstock alignment is 780 m. 13 nos. of saddle support (40%), 11 nos. of anchor blocks (5%) and concrete staircase has been constructed at back slope of powerhouse. About 40 % of excavation of penstock alignment has been finished. Steel plate for the penstock fabrication has arrived at the site and cutting and rolling of steel plate has been started; welding of the bifurcation has been finished in the month of January. Concrete casing of Penstock pipe has been started.

Figure 8: Concreting Works at Penstock Alignment between AB 7 to AB 6

Figure 9: Reinforcement Work at Anchor Block No. 11 of Penstock Pipe Alignment

6.9. Powerhouse, Tailrace and River training works

Final level of powerhouse excavation is completed and the concreting is ongoing. About 75% of the concreting has been finished in the month of May. Concreting work at slab of Assembly bay level 1047.00 m has been completed. Concreting of Main Unit Section up to level 1050.845 m and Control room slab level 1051.10 m has been completed.

Structural concrete of tailrace has been completed. River protection works has been completed in the powerhouse area. Retaining wall about 153 m has been completed. Storage yard has been established about 300 m away from the powerhouse towards Naiche.

Figure 10: Reinforcement Works at Main Unit Section up to Level 1050.845 m of Powerhouse

Figure 11: Reinforcement and Formworks Placement at Beam and Column of Control Bay of Powerhouse

Figure 12: Concreting at Main Unit Section up to Level 1050.845 m of Powerhouse

Figure 13: Concreting at Main Unit Section up to Level 1050.845 m of Powerhouse

6.10. Access Road

Contractor has upgraded and maintained the access road of all the components of Project area. Side drainage has been constructed at different stretches of road but cross drainage and retaining structures is yet to be constructed. Maintenance of access road from Marsyangdi Bridge to Thulibesi village has been accomplished. Access road was upgraded using granular materials and gravelling was done after monsoon. Side drain and cross drainage works for the road on some stretches has been done but not completed for all of the location. The length of access road at different components of project site is as follows:

Road Stretch	Length
Marsyangdi Bridge to Thulibesi Village	~3.7 km
Thulibesi Village to Surge Shaft	~2.52 km
Thulibesi Village to Naiche	~4.25 km
Naiche to Headwork's	~3 km

6.11. Camp Facilities

Permanent housing building works have been finished in the month of January. There are total 9 blocks of permanent housing camp. Flooring, painting, house wiring and sanitary works have been completed. Fencing and leveling was done in this month but installation of Gate and outdoor area preparation is still remaining. Employer's team and the Employer's Representatives team shifted to the permanent housing on 30th, January 2019.

6.12. Quality Control Works

Concrete cube test (7 days and 28 days), tensile strength test and shotcrete test is continued to the period closing.

6.13. Hydro-mechanical Works

6.13.1 Gates

The following table shows the progress work of gates for the month of May

SN	Description of Gates	Quantity	Embedded Parts		Frame				Leaf						
					Fabrication		Installation		Fabrication				Installation		
			Fabrication	Installation	Plate Cutting	Welding	Second Stage concreting	Frame Ins.	Plate Cutting	Welding	Drilling	Typical Parts	Fabrication of superstructure	Super Structure Ins.	Leaf Installation
A					**HEADWORKS**										
1	Under sluice Radial	2	0	0	0	0	0	0	0	0	0	0	-	-	0
2	Under sluice stoplog	2	0	0	0	0	0	0	0	0	0	0	0	0	0
3	Sewage sluice gate	1	0	0	0	0	0	0	0	0	0	0	0	0	0
4	Intake gate	1	0	0	0	0	0	0	0	0	0	0	0	0	0
B	**SUB TOTAL**	6				**OTHER GATES**									0
1	Bulkhead gate NAICHE	1	0	0	0	0	0	0	0	0	0	0	-	-	0
2	Bulkhead gate adit 1	2	0	0	0	0	0	0	0	0	0	0	0	0	0
C	**SUB TOTAL**	3													0
	TOTAL	**9**													

6.13.2 Penstock Pipes

Fabrication of High pressure penstock Pipe of Various thickness is ongoing at Hydro Mechanical Yard of ZHCIC. The following table shows the detail progress of the month of May.

a) Overall Progress in Fabrication of Pipe till May 2019

The following table shows the overall fabrication of penstock pipe for the month April 2019.

SN	Thickness (mm)	Total length (m)	Fabrication (length m)						Remarks
			plate cutting	Rolling	welding	NDT test	Sand blasting	Painting	
1	10	61.52	61.52	0	0	0	0	0	dia 2000
2	10	208	208	150	120	90	90	90	Dia 1750
3	12	114.23	114.23	114.20	114	114	114	114	
4	14	70.41	70.41	70.41	70.41	70.41	70.41	70.41	
5	16	150.61	150.61	150.60	130	130	130	130	
6	20	79.61	79.61	79.61	79.61	79.61	79.61	79.61	
7	22	41.68	41.68	41.68	41.68	41.68	41.68	41.68	
8	25	50.5	50.5	50.5	40	40	40	40	
	TOTAL LENGTH	**776.56**	**776.56**	**657.04**	**616.31**	**565.70**	**565.70**	**565.70**	
	TOTAL PROGRESS %		**100**	**84.61**	**79.36**	**72.85**	**72.85**	**72.85**	

79.36% pipe has been welded by length

72.85% has gone through NDT test

72.85% has gone through sandblasting

72.85% pipe has gone through painting

b) Fabrication Details by Weight

The following table shows the Progress of Penstock Pipe by weight for the month May 2019

SN	Thickness (mm)	Total length (m)	total weight(kg)	This month progress (m)	This month progress (kg)	Net fabricated(kg)	Net remaining (kg)
1	10	61.52	30328.1	0	0	0	30328.1
2	10	208	89722.4	90	38822.2	38822.2	50900.2

SN	Thickness (mm)	Total length (m)	total weight(kg)	This month progress (m)	This month progress (kg)	Net fabricated(kg)	Net remaining (kg)
3	12	114.23	59128.8	60	31057.7	59009.7	119.1
4	14	70.41	42520.6	18	10870.2	42520.6	0
5	16	150.61	103946.8	40	27606.9	89722.4	14224.4
6	20	79.61	68680.7	40	34508.6	68680.7	0
7	22	41.68	39553.8	20	18979.8	39553.8	0
8	25	50.5	54458.9	40	43135.8	43135.8	11323.1
	TOTAL LENGTH	**776.56**	**488340.1**	**308**	**204981.08**	**381445.1**	**106894.9**
	308	**m OF PIPE HAS BEEN FABRICATED THIS MONTH**					
	204981.8	**Kg OF PIPE HAS BEEN FABRICATED THIS MONTH**					

Figure 14: Fabrication of Penstock Pipe at Hydro-mechanical Yard

c) Progress made in Installation of Penstock Pipe

The following table shows the Progress of installation of Bends of Penstock Pipe for the month of May

SN	Description	Diameter(m)	Length(m)	Till last month	This month progress (m)
1	Inside tunnel	2000	61.52	0	0
2	TB 1 - TB 2	1750	27.8	0	0
3	TB 2 - TB 3	1750	13.02	0	0
4	TB 3 - TB 4	1750	80.44	0	0
5	TB 4 - TB 5	1750	101.2	0	0
6	TB 5 - TB 6	1750	114.2	0	113.5
7	TB 6 - TB 7	1750	62.5	0	62.5
8	TB 7- TB 8	1750	109.9	30	0
9	TB 8 - TB 9	1750	42.5	0	0
10	TB 9 - TB 10	1750	84.6	0	0
11	TB 10 - TB 11	1750	73.1	0	0
		TOTAL	**772.52**	**0**	**176.1**

Figure 15: Installation of Penstock Pipe at High Pressure Alignment between AB 7 to AB 5

d) Progress made in Fabrication of Bends

The following table shows the details about fabrication of Bends of Penstock pipe for the month of May

SN	Description	Total wt.(kg)	Fabrication	Installation
1	Underground penstock bend	2270	Not Completed	Not Completed
2	Bend 1	2072	Not Completed	Not Completed
3	Bend 2	820	Not Completed	Not Completed
4	Bend 3	1259	Not Completed	Not Completed
5	Bend 4	1003	Not Completed	Not Completed
6	Bend 5	1195	Completed	Not Completed
7	Bend 6	780	Completed	Not Completed
8	Bend 7	1409	Completed	Completed
9	Bend 8	1914	Completed	Not Completed
10	Bend 9	2174	Completed	Not Completed
11	Bend 10	1525	Completed	Not Completed
12	Bend 11	5840	Completed	Completed
13	Reducer bend at unit 1	1274	Completed	Completed
14	Reducer bend at unit 2	1274	Completed	Completed

6.14. Electro-mechanical Works

6.14.1 Main Stage Work Progress

The following are the major stage work progress for the month of May 2019.

a. Generator Foundation

The placing of form work and rebar for generator foundation at the level of 1050.845 m as per the drawing was started on May 01, 2019 and the final concreting was done May 28, 2019. The outer diameter is 7200 mm and the internal diameter of 5480 mm has been constructed as per the design.

b. Fabrication of Cable Brackets

Three different types of cable brackets were fabricated in the month of May 2019. Type A, B and C were the major types of cable brackets to be used throughout the Powerhouse for lying down the high voltage as well as low voltage along with the communication cables.

Type C cable brackets has already been installed on the wall of Pump House and MIV room in the month of May 2019. It consists of L63x6, L40x4 of Galvanized Angle Steel. The dimension of this type of cable bracket is 300x300x400 mm height and 400 mm of length. This cable bracket was welded on th 1047.6 masl of the Powerhouse wall.

c. Earthing Mat

Galvanized MS strip of 0.5 mm thick and 6 mm flat has been lied down for about approximately 1599.5 m^2 of switch yard and 893.4 m^2 above the tailrace culvert area. The spacing of the earth mat was 4x3.5 m gapping. The earth mat was joined by the thermal welding process. It is to be noted that this Earth Mat is not the final earth mat for the Powerhouse and Switch Yard as the design is yet to be finalized, but this is done by the installation team for additional safety only. The switch yard area is not yet finalized. Thus, Earth mat lying down work might be extended after the final layout of the switch yard being provided. Similarly, the MS strip also has been lied down along the Bifurcation section of the Penstock pipe.

d. Transmission System

Walk over survey and desk study was conducted in the month of May for 132 kV transmission system from Powerhouse at Thulibesi VDC up to Bandre village of Khudi VDC crossing the Marsyangdi River. Feasibility study was conducted for a new alignment of double circuit transmission line for power evacuation as NEA proposed Substation at Khudi Hub may not go under construction even at the start of power generation of Nyadi HEP. Geologist, Environment Engineer and Electrical Engineer were involved for this purpose. Total of 9.43 km length and 26 nos. of towers were finalized for new alignment route.

6.14.2 Electro-mechanical Equipment Dispatched at Site

50/10 T bridge crane and its accessories were delivered to the site on May 25, 2019. The Hangzhou Zhengqi Lifting Equipment Co. Ltd. (China) was the main vendor to supply the system for Zhejiang Hydropower Construction and Installation Co. Ltd. (China).

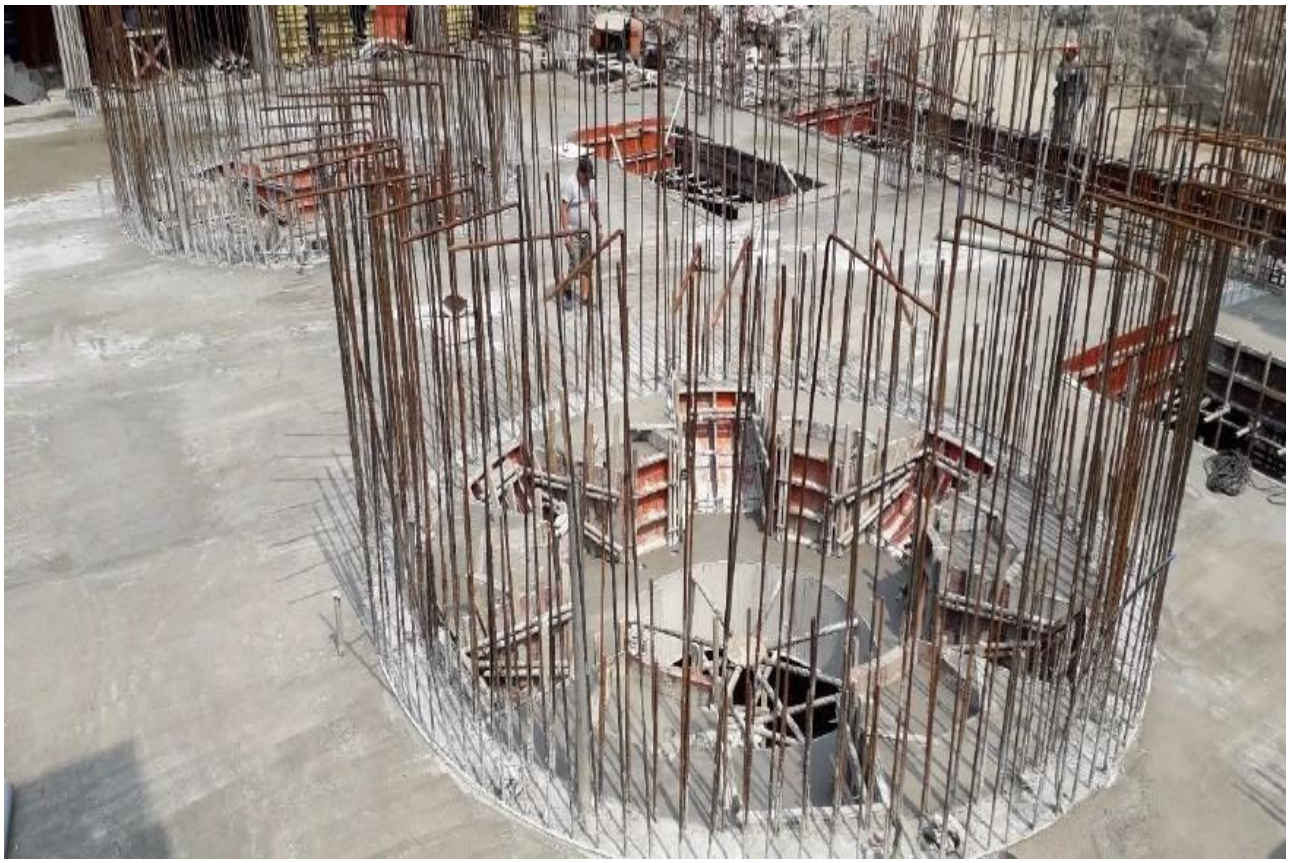


Figure 16: Generator Foundation at 1050.845 masl

Figure 17: EOT Crane and its Accessories received at Site

Figure 18: Type C Cable Brackets inside Pump House

Figure 19: Walkover Survey for Transmission Line 132 kV

Figure 20: Earth Mat Laying at Downstream of Switch Yard Area

7. Government Land Leasing and the purchase of the private land

NHL had received letter from Department of Land Management and Archive dated January 17, 2019 on the waiver of land ceiling limit beyond 75 Ropanis as per the Ministry Level decision. NHL now, can retain 313 Ropanis of land in its ownership as mentioned in project IEE Report irrespective of Land Reform Act by such relaxation to hydropower projects.

The lease of government land for 132kV transmission line in forest area of Nepal Government has now been finally approved from the Cabinet of Ministers. The Department of Forest & Soil Conservation has instructed NHL to sign a tripartite agreement between Department of National Park & Wild Life Conservation and Department of Forest & Soil Conservation for leasing of forest land to NHL with other necessary substantiating documents and which shall be executed by the end of June 2019.

Similarly, in respect of private land acquisition, adequate process has already been started and procurement shall be completed by November 2019.

8. Work Related to Corporate Social Responsibility

NHL has been carrying the works on Corporate Social Responsibility in the affected areas of the project with the mutual understanding with locals including Uppallo Nyadi Jaal Bidyut Sahayog Tatha Sarokar Samaj (UNJSSS) as per the directives of Government of Nepal.

NHL has conducted following CSR works in Project Affected Area at Marsyangdi Rural Municipality

S.N	CSR Program	No. of Locals Benefited	Location	Expenses In NPR.	Status	Remarks
Year 2009						
1	Electrical training	10	Project Affected Areas	7,51,000	Completed	390 hrs. Training, held at CTEVT
	Mechanical training	10				
	Plumbing training	5				
	Mason training	15				
	Scaffolding training	15				
Year 2017						
1	Electrical training	20	Project Affected Areas	4,43,395	Completed	390 hrs. Training, held at CTEVT
Year 2018						
1	Scaffolding, Welding and Mason training	10	Project Affected Areas	1,80,000	Completed	390 hrs. Training held at CTEVT. NHL has sponsored 10 out of 65 trainees. Organized by Marsyangdi Rural Municipality

S.N	CSR Program	No. of Locals Benefited	Location	Expenses In NPR.	Status	Remarks
2	Naiche Community Building	~300	Naiche Village	7,00,000	Constructio n	
3	Village road	~700	Thulibesi 6	5,00,000	Completed	
4	Community Kitchen Building	~210	Thulibesi 9	3,50,000	Completed	
5	Village road	~635	Tarachowk	3,50,000	Completed	
6	Temple		Thankan	2,50,000	Completed	4 temples
7	Electricity Wiring		Chandradaya School,	1,00,000	Completed	
8	Village road	~500	Thulibesi 6	3,00,000	Completed	
9	Water Supply	~200	Nana Bhirphustung	8,32,400	Completed	
10	Water Supply	~300	Naiche Village 6	4,40,089	Completed	
11	Internal Pedestrian Way	~300	Naiche Village 6	7,00,000	Completed	
12	Muda Weaving Training	30	Bahundanda	30,365		
13	Poultry Farming and Livestock	30	Thulibesi 6	59,350	Completed	
14	Women Health Education Training	548	Naiche, Tarachwok, Shera,		Completed	Expenses yet to come
15	Free Health Check Up Camp	493	Naiche, Tarachwok,		Completed	Expenses yet to come
Year 2019						
1	Plumbing Training	10	Thulibesi 9 (Participants are from Shera, Ludi, Tarachwok, Naich, Bahundanda, Thulibesi, Ding Ding, Ngadi, Lampata)	74,850	Completed	
2	Bee Keeping Training	30	Thulibesi 9 (Participants are from Marsyangdi Rural Municipality, Ward No. 6)	16,145	Completed	

S.N	CSR Program	No. of Locals Benefited	Location	Expenses In NPR.	Status	Remarks
3	Public Awareness Program on World Environment Day 2076		Thulibesi 9	41,106	Completed	

9. Initial Public Offer (IPO) of Nyadi Hydropower Limited

The Company as per the prescheduled capital plan has initiated the IPO process to meet up the equity and cash flow requirements. Global IME Capital has been appointed as an Issue Manager for the public issue of shares of NHL and an agreement has been executed accordingly. Similarly, agreement with CARE Nepal Ltd. has been executed for the rating of initial public offer of shares of NHL.

Annex 1: Salient Features of Project

S.N.	Items	Descriptions
1	**Project Name**	Nyadi Hydropower Project
2	**Location**	Thulibesi and Naiche Village, Marshyangdi Municipality, Lamjung District
3	**Type of Power Plant**	
	Type	Run-of-River (RoR)
4	**Hydrology**	
	Catchments area at intake site	154.7 km^2
5	**General Hydraulics**	
	Gross head	334.4 m
	Design flow	11.08 m^3/s
	Installed Capacity	30 MW
7	**Diversion Weir**	
	Diversion Type	RCC Gravity Free Flow
	Crest length	14 m
	Height	10 m above natural river bed
12	**Headrace tunnel**	
	Length	3840 m
14	**Surge Shaft**	

	Type	Vertical shaft (Underground)
	Internal diameter	5.0 m
	Height of surge shaft	28.74 m
	Connecting conduit size	Circular with 3.2 m dia. and 2.80 m Height
16	**Ventilation Adit**	
	Length	30 m
17	**Penstock**	
	Type	Surface and Buried , steel penstock
	Diameter	1750 mm
	Length of surface penstock	745 m
18	**Powerhouse**	
	Type	Surface
	Size	45.5 m long, 16.0 m wide and 29.2 m high
19	**Tailrace Canal**	
	Length	37.0 m
21	**Turbines**	
	Type	Pelton turbine
	No of units	2 Nos.
23	**Transmission Line**	
	Length	6 km (Nyadi Switchyard to proposed 132 kV NEA Hub at Marsyangdi Corridor)
	Voltage	132 kV
	No. of Circuits	Single
25	**Energy Generation**	
	Mean annual energy per year	168.55GWh
26	**Access Road**	
	From Marshyangdi Bridge at Thakanbeshi to Headwork's site	10.615 km
	From Thulibesi to Surge shaft	2.393 km
	Total length	13.50 km
27	**Construction Period**	1150 Days

Annex 2: Project Schedule

Nyadi Hydropower Project (30 MW)

Construction Activities	Start Date	Finish Date
As per PPA with NEA		
Required Commercial Operation Date	2020-04-18	
CIVIL WORKS		
Preparatory works	2017-02-10	2017-12-05
Tunnel and Surge Shaft	2017-05-17	2019-12-18
Headworks	2017-12-11	2019-12-08
Settling Basin (Excavation)	2018-10-16	2018-11-14
Penstock	2017-09-15	2019-09-05
Powerhouse	2018-02-15	2019-11-28
HYDROMECHANICAL WORKS		
Equipment design, manufacturing, transportation to the Site	2018-04-15	2018-11-10
Fabrication and installation of Gates and other Accessories	2019-04-20	2019-12-18
Penstock production and Installation	2018-11-11	2019-05-19
ELECTROMECHANICAL WORKS		
Equipment finalization, design, manufacturing, transportation to the Site	2018-04-10	2019-08-02
All EM installation at Headworks, Powerhpuse and switchyard	2019-06-27	2019-12-03
TRANSMISSION LINE		
Tender Document Preparation Tendering, Evaluation and Award of Contract	2017-07-01	2018-06-14
Construction	2018-07-20	2019-11-30
Dry test	**2019-12-04**	**2019-12-18**
Preparatory works and water filling	**2019-12-19**	**2019-12-28**
Testing and Commisionning	**2019-12-29**	**2020-02-26**
Trial Run & Taking Over	**2020-02-27**	**2020-04-04**