

DARAM KHOLA HYDROELECTRIC PROJECT

(9.6MW)

Galkot-11, Baglung

MONTHLY PROGRESS REPORT



ASHWIN 2079



UNITS ENGINEERING CONSULTANCY PVT. LTD.



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1.0 PROJECT OVERVIEW & INSTITUTIONAL ARRANGEMENT

This monthly progress report covers a progress status of the project and work accomplished from 1st Ashwin, 2079 to 31st Ashwin, 2079. It represents all the key information of the project activities that have been implemented so far in the project. In order to ensure the project was achieving its intended goals and objectives, the interventions were carried out with their corresponding outputs and indicators in this report.

Daram Khola Hydroelectric Project is a run-of-river project located in Galkot-11 of Baglung district and utilizes the water from Daram Khola, the project has an installed capacity of 9.6 MW. The project comprises diversion weir with Undersluice, intake arrangements followed by settling basin, headrace pressure pipe, surge-tank followed by penstock pipe and powerhouse, tailrace canal and switchyards. The generated power will be connected to 33 kV Harichaur Sub-station via 14KM manewa to harichaur single circuit 33KV transmission line based on LILO provision.

The project's Headworks site is accessible from Bhalupaile, 50 km towards Burtibang from Baglung, of Madya Pahadi Lok Marga in the Baglung district. An earthen road of 600m length has been constructed to connect the Headworks and 400m length has been constructed to connect the powerhouse form this Rajmarga.

Institutional arrangement

- The Employer/Owner: Daram Khola Hydro Energy Ltd. (DKHEL)
- The Engineer/Consultant: Units Engineering Consultancy Pvt. Ltd. (UECPL)
- The Contractor (Civil Construction): Ramechhap Sherpa Construction Pvt. Ltd.
- The Contractor (Hydro-Mechanical): North Hydro/Cream Hydel Pvt. Ltd.
- The Contractor (Generating Equipment): Flovel Energy Pvt.Ltd.
- The Contractor (Transmission line): In coordination with NEA Contractor (New Satkari Khimti Construction Pvt.Ltd.).



Figure: Project Location Map

Salient Features of Daram Khola Hydroelectric Project (9.6MW)

1. General		Description
Source River	:	Daram Khola
VDC	:	Galkot Municipality (Baglung); Musikot Municipality (Gulmi)
District	:	Baglung
State	:	State no.4,Gandaki
Development Region	:	Western
Location of the Project		28° 11' 00" to 28° 12' 30" N
		83° 18' 00" to 83° 21' 43" E
2. Power Development		
Type of Power Generation	:	Run-of-River
Turbine Discharge	:	2 Nos. x 5.15 m ³ /sec
Total Gross Head	:	126 m
Rated Net Head	:	111.2 m
Installed Capacity	:	9.6 MW
3. Average Annual Energy		
Total Energy	:	56.09 GWh
Dry Energy	:	9.99 GWh
Wet Energy	:	46.10 GWh
4. Hydrology and Meteorology		
Catchment Area at Intake	:	247 km ²
Area > 3000 m	:	7 km ²
Area < 3000 m	:	240 km ²
Average Annual Precipitation	:	2,255 mm
Design 100-yrs Flood at Intake	:	740 m ³ /sec
Downstream Release	:	263 lps
Long-term Average Flow	:	16.61 m ³ /sec
40 Percentile flow (Q40%)	:	10.30 m ³ /sec
5. Weir and Undersluice		
Type of Weir	:	Free flow concrete gravity weir
Crest Length of Weir	:	24 m
Crest Level of Weir	:	938.50 masl
Top Width of Weir	:	2 m
Crest Length of Undersluice	:	4 m
Floor elevation of Undersluice	:	934 masl
Nos. of gates in Undersluice	:	2 Nos.
6. Intake		

Type	:	Orifice
No. of Opening	:	3
Crest Level	:	936.0 masl
Width x High	:	3.0 m x 2.0 m (each)
7. Gravel Trap		
Length	:	4.5
Size (B x D)	:	7.0 m x 3.8 m
Gravel Flushing Channel	:	1.0 m x 1.0 m
8. Approach Canal		
Type	:	RCC Rectangular
Length	:	16.5 m
Size (B x D)	:	1.75 m x 1.75 m
9. Settling Basin		
Type	:	Conventional with intermittent flushing
Size of Each Chamber (L x B x H)	:	50.0 m x 7.5 m x 7.5 m
Particle Size to be Removed	:	≥ 0.2 mm
No. of Flushing Channel	:	2
Size of Flushing Pipe (diameter)	:	1 m
Water Level in Head Pond	:	938.0 masl
10. Headrace Pipe/Penstock pipe		
Type	:	Pressurized MS Circular
Size	:	2.2 m, 2.0, 2.1 m, 1.8 m & 1.275 m
Length	:	4226m
Thickness	:	10mm to 18 mm
11. Surge Tank		
Type and Material	:	Non-Restricted RCC Circular tank and steel pipe
Normal Water Operating Level	:	930.5 masl
Internal Diameter	:	8 m for Concrete tank and 2.2m dia for steel pipe
Height from its Base	:	12.5 m for concrete tank
Upsurge Level	:	950.2 masl
Down Surge Level	:	891.3 masl
12. Powerhouse		
Type	:	Surface
Size (L x B x H)	:	35.3 m x 16.3 m x 20 m
Number of Units	:	2

13. Type of Turbine	:	Francis
Rated Capacity	:	2 x 4.8 MW
Tail Water Level	:	811 masl
Rated Speed	:	600 rpm
14. Tailrace Canal		
Type	:	RCC Rectangular
Size (B x D)	:	2.9 m x 2.2 m
Length	:	41.30 m
Tailrace Outlet	:	Daram Khola
15. Generator		
Type	:	Brushless, synchronous, 3 phase
Specification	:	0.8PF,5648 kVA, 6.6 kV, 50 Hz x 2 Nos.
16. Transmission Line		
Specification	:	LILO based(Manewa to Harichaur 14KM S/C 33KV transmission Line)
Length	:	14 km
17. Financial Indicators	:	
Project Cost (Excluding IDC)	:	1,742.49 million NRs.
Project Cost (Including IDC)	:	1,872.49 million NRs.
Financial Cost per MW	:	195.05 million NRs.
Total Construction Period (years)	:	24 months
Remaining Construction Period (years)	:	12 months
Interest Rate	:	9% <i>(revision required)</i>
FIRR	:	13.25% <i>(revision required)</i>
NPV	:	445.95 million NRs. <i>(revision required)</i>

2.0 RESOURCES AT SITE

2.1 MANPOWER FROM CLIENT

Table: Human Resources of Client

S.N.	Description	Nos.
1	Board of Directors (BOD)	11
2	Project Manager	1
3	Civil Engineer (<i>Site based</i>)	1
4	Finance Manager	1
5	Receptionist	0
6	Driver	1
	Total:	15

2.2 MANPOWER FROM CONSULTANT

Table: Human Resources at site from consultant

S.N.	Description	Nos.
1	Resident Engineer	1
2	Civil Engineer	2
3	Electrical Engineer	0
4	Mechanical Engineer	0
5	Mechanical Quality Controller	1
6	Civil Supervisor	1
7	Cook	1
	Total:	6

*Mechanical Engineer Narayan Banjade assigned for inspection of second lot pipes(JCO) from 10th October,2022 and till the Date 200Pipes rolled out of 366 and will start the dispatch from November 08,2022.

2.3 MANPOWER FROM CIVIL CONTRACTOR'S

Table: Manpower from Civil Contractor side

SN.	Description	Nos.
1	Civil Technician	6
	Project Manager	0
	Deputy Construction Manager	1
	Civil Engineer	0
	Civil Overseer	1

	Civil Sub-Overseer	3
	Supervisor	1
2	Civil Workers	7
	Skilled labor	2
	Unskilled labor	4
	Cook	1
3	Store Incharge	1
4	Accountant	0
5	Mechanical	0
	Mixer Mechanic	0
	Welder	0
6	Electrician	2
7	Driver	5
	Excavator operator	2
	Tipper Driver	1
8	Helper	4
9	Cook	1
	Others	0
	Total:	26

Notes:

- 54 nos. of manpower are present at starting of Ashwin.
- 8 nos. manpower of Anchor Block left site on Ashwin 10 (Total 46)
- 18 nos. of manpower left powerhouse site on Ashwin 12. (Total 28 nos.)
- 22 manpower left powerhouse site on Ashwin 26. (Total 6 nos.)

2.4 MANPOWER FROM HYDRO MECHANICAL CONTRACTOR

Table: Manpower from Hydromechanical side

S.N.	Description	Nos.
1	Site Project Engineer	1
2	Site Supervisor	0
3	Site Incharge	1
4	Electrician	0
5	Welder	9
6	Fitter	6
7	Grinder men	5
8	Helper	2
9	Cook	1
10	Hydra Driver & Helper	2
11	Bolero Driver	1
	Total:	28

2.5 EQUIPMENT MOBILIZED BY CIVIL CONTRACTOR

Table: Equipment mobilized by Civil Contractor

S.N.	Equipment	Nos.	S.No	Equipment Name	Nos.
1	Excavator	3	2	Backhoe	1
3	Dump Truck	1	4	Monkey Jumper	1
5	Diesel Generator, 30 kVA	1	6	Water Pump	6
7	Welding Machine	4	8	Concrete Mixture	5
9	Wheel Barrow	10	10	Rod Cutter	2
11	Total Station	2	12	Level Machine	2

2.5 EQUIPMENT MOBILIZED BY HYDROMECHANICAL CONTRACTOR

Table: Equipment mobilized by Hydromechanical Contractor

S.N.	Equipment	Nos.
1	Diesel Generator, 82.5 KVA	1
2	Welding Machine	12
4	Grinding Machine	12
5	Gas cutting set	3
6	Oxygen cylinder	16
7	Vee Lever	3
8	Chain Pulley	12
9	LPG Gas	4
10	Electric Oven	9
11	Hydra	1
12	Bolero	1
13	Paint	200 ltr

2.6 CONSTRUCTION MATERIAL STORED BY CIVIL CONTRACTOR AT SITE

Table: Construction material stored by Civil Contractor

S.N.	Materials	Received	Consumed	In Stock
1	Cement (bag)	660	827	1008
2	Sand (m ³)	52.5	45	150
3	Aggregate (m ³)	90	52.5	150
4	Rebar (ton)	17	5.38	3.78
5	Diesel (liters)	6000	3320	4100

3.0 CIVIL CONSTRUCTION WORK PROGRESS

3.1 HEADWORKS

Construction works at headworks is almost complete however; some portion of Desander, Undersluice & protection works are still remaining. The remaining work of Headworks is ceased due to rise in river water level for now.

3.1.1 DIVERSION WEIR

Following table presents the percentage of physical work progress, based upon activities of BoQ of Civil Work.

Table: Diversion Weir Quantity

A1	Description of Items	Unit	Quantity	Quantity upto now	Progress %
1	River Diversion	LS	1	1	100%
2	Dewatering	LS	1	1	100%
3	Site clearance	m ²	1431	1431	100%
4	Excavation in common top soil	m ³	616.1	616	100%
5	Excavation of boulder mix soil	m ³	4739	4738.59	100%
6	Excavation of hard rock	m ³	3099	3098.79	100%
7	E/W in backfilling	m ³	168	167.41	100%
8	Dry stone soling	m ³	58	57.53	100%
9	Gravel sand filter	m ²	848	847.974	100%
10	Compacted red clay	m ²	653	652.789	100%
11	Boulder riprap	m ²	871	870.363	100%
12	C15 Concrete	m ³	34	32.997	100%
13	C15 Plum Concrete	m ³	1250	1248.770	100%
14	C25 Concrete	m ³	1145	1144.720	100%
15	C30 Concrete	m ³	322	321.015	100%
16	Formworks	m ²	1920	1956.5	100%
17	Reinforcement	MT	64.5	64.326	100%
18	Geo-textile	m ²	196	195.185	100%
19	PVC Water Stopper	rm	70	68.81	100%
20	Joint Sealant	rm	25	-	100%
21	Joint Filler	m ²	15	4.67	100%
22	HDPE Pipe	rm	121	121	100%
TOTAL PROGRESS					100%

3.1.2 UNDERSLUICE

Most of the civil works is finished in Undersluice except vertical wall of 1.2m height & top slab. Civil works at Undersluice will be started after radial gate frame installation by Hydromechanical team which is possible only after Kartik, 2079 due to high flood level. Item wise progress is tabulated below.

Table: Undersluice Quantity

A2	Description of Works	Unit	Quantity	Quantity upto now	Progress %
1	River Diversion	LS	1	1	100%
2	Dewatering	LS	1	1	100%
3	E/W in backfilling	m ³	445	403.224	91%
4	C15 Concrete	m ³	23	22.77	99%

5	C25 Concrete	m ³	720	650.676	90%
6	Formworks	m ²	850	414.619	49%
7	Reinforcement	MT	62	60.85	98%
8	Hard Stone Lining	m ³	40	39.72	99%
9	PVC Water Stopper	rm	16.5	16.13	98%
10	Joint Sealant	rm	15	-	0%
11	Joint Filler	m ²	53	42.95	81%
TOTAL PROGRESS					97%

3.1.3 INTAKE & GRAVEL TRAP

All civil works at Intake & Gravel Trap is completed except spillway. The physical progress detail of intake and gravel trap work based on BoQ item is presented in following table below

Table: Intake & Gravel Trap Quantity

A3	Description of Works	Unit	Quantity	Quantity upto now	Progress %
1	Site Clearance	m ²	390	388.44	100%
2	Excavation in common top soil	m ³	178	177.15	100%
3	Excavation of boulder mix soil	m ³	1474	1473.31	100%
4	Excavation of hard rock	m ³	152	151.86	100%
5	E/W in backfilling	m ³	230	208.19	100%
6	C15 Concrete	m ³	23	22.35	100%
7	C25 Concrete	m ³	642	592.72	100%
8	C30 Concrete	m ³	3.1	3.05	100%
9	Formworks	m ²	1480	1257.88	100%
10	Reinforcement	MT	59	57.60	100%
11	C15 Plum Concrete	m ³	107	106.53	100%
12	Stone Masonry	m ³	20	0.00	0%
13	Gravel sand filter	m ³	27	26.71	100%
14	Geo-textile	m ²	169	168.70	100%
15	PVC Water Stopper	rm	114	113.06	100%
16	Joint Sealant	rm	60	53.66	100%
17	Joint Filler	m ²	100	95.09	100%
18	HDPE PIPE	rm	47	46.86	100%
19	Hard Stone Lining	m ²	41	40.97	100%
TOTAL PROGRESS					99%

3.1.4 APPROACH CANAL

All civil works at Approach Canal is completed. The physical progress detail of intake and gravel trap work based on BoQ item is presented in following table below.

Table: Approach Canal Quantity

A4	Description of Works	Unit	Quantity	Quantity upto now	Progress %
1	Site Clearance	m ²	297	296.37	100%
2	Excavation in common top soil	m ³	119	118.23	100%
3	Excavation of boulder mix soil	m ³	2490	2489.85	100%
4	Excavation of hard rock	m ³	251	250.72	100%
5	E/W in backfilling	m ³	866	786.99	100%
7	C15 Concrete	m ³	9	8.8	100%
8	C25 Concrete	m ³	146	145.41	100%

9	Formworks	m ²	561	560.45	100%
10	Reinforcement	MT	14.2	14.2	100%
11	PVC Water Stopper	rm	16.8	16.8	100%
12	Joint Sealant	rm	33.6	33.6	100%
13	Joint Filler	m ²	11.76	11.76	100%
TOTAL PROGRESS					100%

3.1.5 SETTLING BASIN

Most of the civil works are completed except in headpond, outlet wall & bell mouth portion. Vertical wall upto EL 935.75m is completed until now. Also, Outlet portion base slab concreting works is completed. No physical progress is noticed in settling basin this month due to rise in rivel level & absence of access road. The physical progress detail of Settling Basin based on BoQ is presented in following table:

Table: Settling Basin Quantity

A 6	Description of Works	Unit	Quantity	Quantity upto now	Progress %	Remarks
1	Site Clearance	m ²	2820	2797.15	99%	
2	Excavation in common top soil	m ³	1333	1229.031	92%	
3	Excavation of boulder mix soil	m ³	25875	21223.319	82%	
4	Excavation of hard rock	m ³	2442	2429.147	99%	
5	E/W in backfilling	m ³	3225.3	2466.904	76%	
6	Dry stone soling	m ³	190	187.281	99%	
7	M10 Concrete	m ³	70	67.99	97%	
8	C15 Concrete	m ³	52	51.757	100%	
9	C25 Concrete	m ³	2346.8	2035.948	87%	
10	C15 Plum Concrete	m ³	78.1	78.03	100%	
11	Formworks	m ²	5000	4477.342	90%	
12	Reinforcement	MT	223	201.248	90%	
13	Stone Masonry	m ³	1400	1143.999	82%	
14	Gravel sand filter	m ³	120.29	76.654	64%	
15	Geo-textile	m ²	550	484.128	88%	
16	HDPE Pipe	rm	200	140.48	70%	
17	PVC Water Stopper	rm	291.5	250.96	86%	
18	Joint Sealant	rm	346	221.6	64%	
19	Joint Filler	m ²	180	135.1	75%	
TOTAL PROGRESS					90%	

3.1.6 PROTECTION WORKS

All civil works of protection work is completed except skin wall at upstream left bank of river. Civil works at floodwall is stopped for now due to absence of access road. The physical progress detail of Protection works based on BoQ item is presented in following table below:

Table: Protection works Quantity

A5	Description of Works	Unit	Quantity	Quantity upto now	Progress %	Remarks
1	Site Clearance	m ²	1840.82	1590.715	86%	
2	Excavation in common top soil	m ³	817.8	769.758	94%	
3	Excavation of boulder mix soil	m ³	10326.19	10175.873	99%	

4	Excavation of hard rock	m ³	3817.09	3789.395	99%	
5	E/W in backfilling	m ³	6879.12	5577.680	81%	
6	Dry stone soling	m ³	96.06	83.123	87%	
7	C15 Concrete	m ³	13	12.938	100%	
8	C20 Concrete	m ³	136	85.212	63%	
9	C25 Concrete	m ³	538	526.431	98%	
10	C15 Plum Concrete	m ³	18.2	15.130	83%	
11	Formworks	m ²	1810	1448.908	80%	
12	Reinforcement	MT	38.5	31.61	82%	
13	Stone Masonry	m ³	1560	1542.36	99%	
14	Gabion works.	m ³	2121	1821.00	86%	
15	Boulder Riprap	m ²	910	909.84	100%	
16	Geo-textile	m ²	1527	1274.58	83%	
17	HDPE Pipe	rm	66	65.37	99%	
18	PVC Water Stopper	m ²	31	30.78	99%	
19	Joint Sealant	rm	35	0.00	100%	
20	Joint Filler	m ²	10	0.24	2%	
21	Gravel Sand filter	m ³	430	428.59	100%	
TOTAL PROGRESS					95%	

3.2 HEADRACE AND PENSTOCK ALIGNMENT

Civil works on Headrace alignment is in progress. Excavation works, soling, PCC, rebar, formworks & RCC works is on-going on Headrace alignment. Component wise detail progress is as follows:

3.2.1 EARTHWORK

No excavation works is carried out this month at alignment as excavators is working on surge alignment, transporting HM pipes & clearing landslide deposit due to heavy rainfall during Dashain festive. The physical progress detail of headrace and Penstock Pipe Alignment works based on BoQ item is presented in following table below.

Table: Headrace & Penstock earthwork Quantity

B 1	Description of Items	U nit	Quantity	Ashwin Progress		Quantity upto now	Progress %	Remarks
				Target Qty	Achieved Qty			
1	Dewatering	LS	1	-	-	0.50	50%	
2	Site clearance	m ²	36800	-	-	22770.36	62%	
3	Excavation of Common soil	m ³	78,872.83	-	-	64577.67	82%	IP19-IP29
4	Excavation in Boulder mix soil	m ³	50528.676	-	-	27365.25	54%	IP19-IP29
5	Excavation in soft rock	m ³	6733.582	-	-	6733.36	100%	
6	Excavation in hard rock	m ³	23380.194	-	-	22253.35	95%	
7	E/W in Backfilling	m ³	29185.664	-	-	1096.56	4%	
8	Stone Masonry	m ³	800	-	-	246.86	31%	protection
9	Gabion works	m ³	1,200.00	-	-	741.50	62%	works
10	Geo-textile	m ²	600	-	-	453.10	76%	
11	150mm HDPE Pipe	rm	120	-	-	453.00	0%	
TOTAL PROGRESS							62%	

3.2.2 ANCHOR BLOCKS

Anchor Block concreting works is on-going at alignment. Plum Concreting works for AB44 is completed & it is planned to initiate civil works on AB43 but bend of IP43 is shifted due to landslide. As a result, further Anchor Block work is halted. The physical progress detail of Anchor Block work based on BoQ item is presented in following table below:

Table: Anchor Block Quantity

B2	Description of Items	Unit	Quantity	Ashwin Progress		Quantity upto now	Progress %	Remarks
				Targeted Qty	Achieved Qty			
1	Dry Stone Soling	m ³	359.51	-	-	38.06	11%	
2	C10 Concrete	m ³	242.29	-	-	46.75	19%	
3	C15 Plum Concrete	m ³	6,486.32	84.96	111.99	336.21	5%	AB44
4	Formworks	m ²	4,042.05	71.04	89.38	272.08	7%	AB44
5	Reinforcement	Kg	194,589.56	3335.62	4395.56	15808.23	8%	AB44
TOTAL PROGRESS							10%	



AB44 after completion

3.2.3 SADDLE SUPPORTS

Civil works at alignment is halted due to lack of manpower during festive, rainfall & landslide. Only 2nd lift M20 concrete of 9 saddle supports is completed this month. Overall, 211 nos. of saddle supports are completed upto now. The physical progress detail of saddle support works based on BoQ item is presented in following table below:

Table: Saddle Supports Quantity

B3	Description of Items	Unit	Quantity	Ashwin Progress		Quantity upto now	Progress %	Remarks
				Targeted Qty	Achieved Qty			
2	Dry Stone Soling	m ³	623.87	0.00	0.00	161.59	26%	IP28-IP29
3	C10 Concrete	m ³	343.08	0.00	0.00	128.76	38%	
4	C20 Concrete	m ³	2,110.36	9.03	7.76	821.91	39%	
5	Formworks	m ³	5,544.16	32.07	31.98	2169.82	39%	
6	Reinforcement	Kg	140,042.76	0.00	981.00	63964	46%	
7	Stone Masonry	m ³	344.32	0.00	0.00	182.082	53%	
TOTAL PROGRESS							40%	



Saddle support works between IP28-IP29

3.2.4 CROSSING & COVERED SECTION

River crossing related civil works was completed upto PCC level between IP2-IP4 but due to flash flood & continuous rainfall, water level at river rises & civil works is stopped for now in this section. The physical progress detail of Crossing & Covered section works based on BoQ item is presented in following table below:

Table: Crossing & Covered Section Quantity

B4 .	Description of Items	Unit	Quantity	Quantity upto now	Progress %	Remarks
1	Dry Stone Soling	m3	155.004	35.564	23%	
2	C10 Concrete	m3	103.336	35.919	35%	
3	C15 Plum Concrete	m3	1995.989	0	0%	
4	C25 Concrete	m3	468.324	101.123	22%	
5	Formworks	m2	2814.61	287.66	10%	
6	Reinforcement	ton	87.05	3.21	4%	
8	Boulder Riprap	m3	990	410.56	41%	
9	Anchorage Bar	rm	200	20	10%	
10	Joint Filler	m2	11.28	2.91	26%	
TOTAL PROGRESS					17%	

3.3 SURGE TANK

Excavation works at Surge tank is on-going. About 2-meter depth is achieved in this month. Total 2 nos. excavators are working at surge tank area for excavation & dumping. Excavation works can't be achieved as expected due to rainfall & landslide at various sections of access road. Design drawing of surge tank is on progress.



Surge Tank excavation works

3.4 POWERHOUSE, TAILRACE & PROTECTION WORKS.

3.4.1 POWERHOUSE

Civil works at powerhouse is stopped at powerhouse for now due to absence of manpower from civil contractor. Rebar works & formworks is completed upto EL 809.95m around

unit 1 till now for shear wall. Targeted volume of concrete can't be achieved due labor strike, festive, rainfall & landslide in bifurcation area. The physical progress detail of Powerhouse works based on BoQ item is presented in following table below:

Table: Powerhouse Quantity

D 1	Description of Items	Unit	Quantity	Bhadra Progress		Quantity upto now	Progress %	Remarks
				Targeted Qty	Achieved Qty			
1	Dewatering	LS	1	-	-	0.75	75%	
2	Site Clearance	m2	836	-	-	825.75	99%	
3	Excavation of Common soil	m3	1543	-	-	1442.83	94%	
4	Excavation in Boulder mix soil	m3	3626	-	-	3547.79	98%	
5	Excavation in soft rock	m3	2236	-	-	2234.92	100%	
6	Excavation in hard rock	m3	2275	-	-	2273.21	100%	
7	Backfilling	m3	4,295.03	-	-	44.592	1%	
8	Backfilling with graded materials	m3	800.00	-	-	0	0%	
9	Dry Stone Soling	m3	99.17	-	-	9.82	10%	
10	C15 Plum Concrete	m3	175	-	-	174.386	100%	
11	C15 Concrete	m3	78.2	-	-	38.375	49%	
12	C25 Concrete	m3	999.17	89.09	0.000	753.531	75%	
13	C30 Concrete	m3	40.00	-	-	0	0%	
14	Formworks	m2	2,105.12	172.26	24.860	777.219	37%	Shear wall
15	Reinforcement	MT	119.27	3.70	3.700	97.210	82%	Shear wall
16	Stone Masonry	m3	84.69	-	-	55.340	65%	
17	Gabion Works	m3	240.00	-	-	0	0%	
31	Scaffolding	L.S.	1	-	-	0	0%	
TOTAL PROGRESS							33%	



3.4.2 TAILRACE & PROTECTION WORKS

Tailrace civil works will be started after completion of powerhouse raft foundation because there is risk of earth sliding towards powerhouse area during excavation of tailrace. Protection works of 68m wall along the river is already completed. Civil works is completed in floodwall upto EL 816.60m from Ch. 0+015m to 0+028.61m. Floodwall is erected upto safe level to protect powerhouse from flood. The physical progress detail of tailrace and protection works based on BoQ item is presented in following table below.

Table: Tailrace & Protection work Quantity

D1	Description of Items	Unit	Quantity	Quantity upto now	Progress %	Remarks
1	Site Clearance	m2	807.5	0	0%	
2	Excavation of Common soil	m3	815.2	141.62	17%	
3	Excavation in Boulder mix soil	m3	2165.7	1260.05	58%	
4	Excavation in hard rock	m3	2470.1	14.49	1%	
5	Backfilling	m3	4360.8	488.65	11%	
6	Dry Stone Soling	m3	51.66	16.6	32%	
7	C15 Concrete	m3	39.84	0	0%	
8	C20 Concrete	m3	686.28	271.13	40%	
9	Formworks	m2	1876.76	821.39	44%	
10	Reinforcement	MT	64.65	16.41	25%	
11	Gabion works	m3	2351.5	981.5	42%	
12	Geo-textile	m2	3110	0	0%	
13	Boulder Packing	m2	82.50	0	0%	
14	PVC Water Stopper	m	55	53.53	97%	
15	Joint filler	m2	36.96	15.17	41%	
16	Joint Sealant	m	105.6	0	0%	
17	HDPE pipe	no	208	23	11%	
18	Anchorage Bars	no	50	23	48%	
TOTAL PROGRESS					26%	

4.0 HYDROMECHANICAL PROGRESS

Hydro mechanical work is on-going on various site. However, work progress retarded due to labor strike, festive, rainfall & landslide. Also, Pipe between IP42-IP44 is shifted & IP6 is damaged due to landslide. Details of Hydro mechanical works are pointed out below:

- Bend fabrication for AB9, AB35 & Bend erection for AB6, AB21 is completed in this month. Total 16 nos. of bend fabrication & 6 nos. of Bend erection work are completed till now.
- 0 nos. of saddle installation work are done during this month due to lack of work front from civil side & Overall, 201 nos. of saddle plate are installed at site until now.
- 116m of pipe is erected at site this month & total 878m of pipe is erected, 708m welded & 546m tested till now.

The physical progress detail of Hydro mechanical works based on BoQ item is presented in following table below:

Table: Hydro mechanical work Quantity – Schedule 2 (Cream Hydel Pvt. Ltd.)

S.N	Description of work	Unit	Set (a)	Total Quantity	Ashwin Progress		Upto date Qty	Progress %	Remarks
					Targeted Qty	Achieved Qty			
1	Headrace Pipe of diameter 2.2 m, thickness 10mm	kg	1	755,020.55	73,032.57	10,900.38	135,164.76	18%	IP6-IP10
2	Headrace Pipe of diameter 2.1 m, thickness 10-12 mm	kg	1	1,075,881.90	69,727.93	28,750.97	171,149.25	16%	IP22-IP27, IP35-IP36
3	Penstock Pipe of diameter 2.0 m, thickness 12-18 mm	kg	1	748,054.96	79,787.26	23,817.09	184,582.47	25%	IP42-IP46
4	Penstock Pipe of diameter 1.80 m, thickness 18-20mm	kg	1	84,373.59		-	-	0%	
5	Manifold Pipes after Bifurcation of diameter 1275 mm, thickness 16 mm	kg	1	15,282.24		-	-	0%	
6	Surge Tank Connection Pipe of Dia. 2.2 m, thickness 10-12mm	kg	1	75,186.78		-	-	0%	
7	Asymmetrical Bifurcation with sickle plate and stiffeners	kg	1	5,192.65		-	-	0%	
8	T-Branch for Surge Tank	kg	1	2,728.33		-	-	0%	
9	Reducers	kg	3	3,058.30		-	-	0%	
10	Circular Bellmouth of Outlet Diameter 2200mm	kg	2	1,582.56		-	-	0%	
11	Expansion joints	kg	48	91,200.00		-	-	0%	
12	Circular Manholes of Diameter 600 mm and height 300 mm	kg	5	2,700.00		-	-	0%	
13	Saddle plates/ Wear Plates	kg	400	50,270.01	2,116.80	-	24,089.93	48%	
14	Undersluide, sand flushing and gravel flushing conduit steel lining	kg	1	33,013.33		-	-	0%	
15	Bend pipes	kg	58	109,891.49	8,382.43	6,302.58	13,651.20	12%	AB6,21
16	Stiffeners, Thrust Rings, Seepage Rings	kg	1	44,609.44	560.70	400.50	786.50	2%	AB6,21
17	HDPE Sheets for Saddle Support	Nos	400	400.00	45.00	14.00	90.00	23%	
18	MS Pipe Hand rails and Ladders in Headworks	m	350	350.00		-	-	0%	
19	Steel supports, brackings etc required for installation	Kg	1	2,500.00		-	-	0%	
20	Air Release/ Suction Valve DN300, PN5 for Headrace Pipe	no	1	1.00		-	-	0%	
TOTAL PROGRESS								32%	



IP21 Bend erection

5.0 ELECTROMECHANICAL WORK PROGRESS

No more progress occurred for Electro-Mechanical work during this month but the last lot(Lot-08) equipment will be arrived in site in next month and will Call for the EM contractor for EOT crane installation after completion of Power house civil works up to crane beam.

6.0 TRANSMISSION LINE WORK PROGRESS

No more progress occurred for Transmission Line work during this month.

7.0 OVERALL PROJECT STATUS

On an average 75% work has been completed at Daram Khola Hydroelectric Project till Ashwin, 2079. Component wise progress is presented below

Table: Over Project Status

Contractor	Component	Sub-component	Work Completion %
Civil	Headworks	Diversion Weir & Stilling Basin	100%
		Undersluice	97%
		Intake & Gravel Trap	99%
		Approach Canal	100%
		Settling Basin	90%
		Protection Works	95%
	Headrace & Penstock Alignment	Earthworks	62%
		Anchor Blocks	10%
		Saddle Support	40%
		Highway Crossing & Covered Sections	17%
		Surge Tank	8%
	Powerhouse & Protection Works	Powerhouse	33%
		Tailrace & Protection Works	26%
Hydro mechanical	Headworks	80%	
	Alignment	30%	
	Surge Alignment	5%	
Electromechanical			28%
Transmission Line			38%
Overall physical progress of the Project.			75%

8.0 ISSUES & RECOMMENDATION

The commissioning date of Daram Khola Hydroelectric Project is revised on 16th July, 2023. As per schedule, only 9 months' time is remaining to complete the project in planned time frame for which an implementation schedule is prepared & implementing at site while working. While implementing project schedule, some issues arise which affected the working schedule and listed below with their recommendation.

- Civil works isn't progressing as per the schedule provided by the contractor due to lack of manpower at all site. Most of the labor left site around mid of the month & didn't return. Contractor is instructed formally to add manpower in a meeting as soon as possible to avoid project delay. Civil Contractor assured to add around 105 manpower in recent minutes of meeting.
- Hydromechanical works isn't progressing as planned due to insufficient site & manpower. As per MoM between & Contractor; HM Contractor assured to complete 25m pipe erection per day from upcoming month. Work front should be provided to HM contractor by constructing saddle supports at least from 3 sections.
- Due to post-monsoon between Ashwin 18 to Ashwin 24, Civil & HM works at headworks is ceased for a week. Also, Civil & HM work is stopped for about 1 week due to labor strike by both contractor labors during this month. Moreover, Local people closed site for 3 days. As a result, work progress of this month is halted.
- Landslide triggered at different section of project after post-monsoon. Pipe between IP5-IP6 is severely damaged & Pipe between IP42-IP44 is shifted from alignment due to landslide. Also, bifurcation area is covered with landslide debris. All of these factors shrunk work progress & affect future working schedule & increase project cost.
- Social issues & land acquisition isn't solved in many sections of headrace & penstock alignment due to which work progress on upcoming months may be disturbed. So, it's better to solve issues on time to finish the project on scheduled time frame.
- Work progress in Kartik will decelerate due to upcoming festive but Civil works at alignment will continue even in festive.
- Transmission line is based on the LILO provision and will be evacuated via Harichaur-14KM away from power house but there is instability in workers from contractor.

9.0 PROGRESS MONITORING

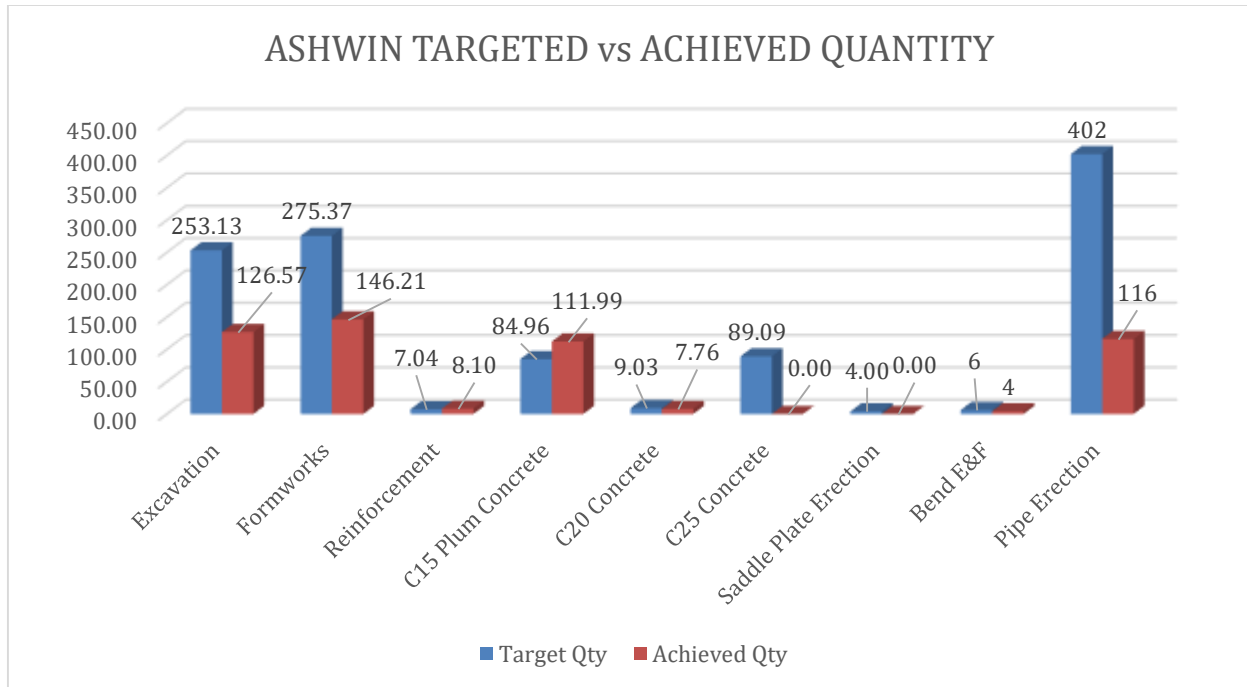
In this heading, work schedule and its achievement are compared so that planner has a clear idea about the progress achieved, delayed or expedited. The major components are compared rather than individual items of works.

9.1 TARGETED VS. ACHIEVED WORK COMPARISON

In this section, targeted work volume of previous month is compared with actual work volume achieved. By comparison shown below in the table, 60% of targeted work volume is achieved this month. Item wise quantities is show in below table.

Table: Targeted vs. Achieved work

SN	Description of Items	Unit	Ashwin Targeted Quantity	Ashwin Achieved Quantity	Progress Achieved	Remarks
Civil Works						
B2	Anchor Blocks					
	C15 Plum Concrete	m ³	84.96	111.99	132%	AB44
	Formworks	m ²	71.04	89.38	126%	
	Reinforcement	MT	3.34	4.40	132%	
B3	Saddle Supports					
	C20 Concrete	m ³	9.03	7.76	86%	IP28-29
	Formworks	m ²	32.07	31.98	100%	
C	Surge Tank					
	Excavation works	m ³	253.13	126.57	50%	
D1	Powerhouse					
	Formworks ¹	m ²	172.26	24.86	14%	Shear wall
	Reinforcement	MT	3.70	3.70	100%	
	C25 Concrete	m ³	89.09	0.00	0%	
Hydromechanical Works						
1	Saddle Plate Installation	Nos.	4	0	0%	
2	Bend Erection & Fabrication	Nos.	6	4	67%	
3	Pipe Erection	rm	402	116	29%	



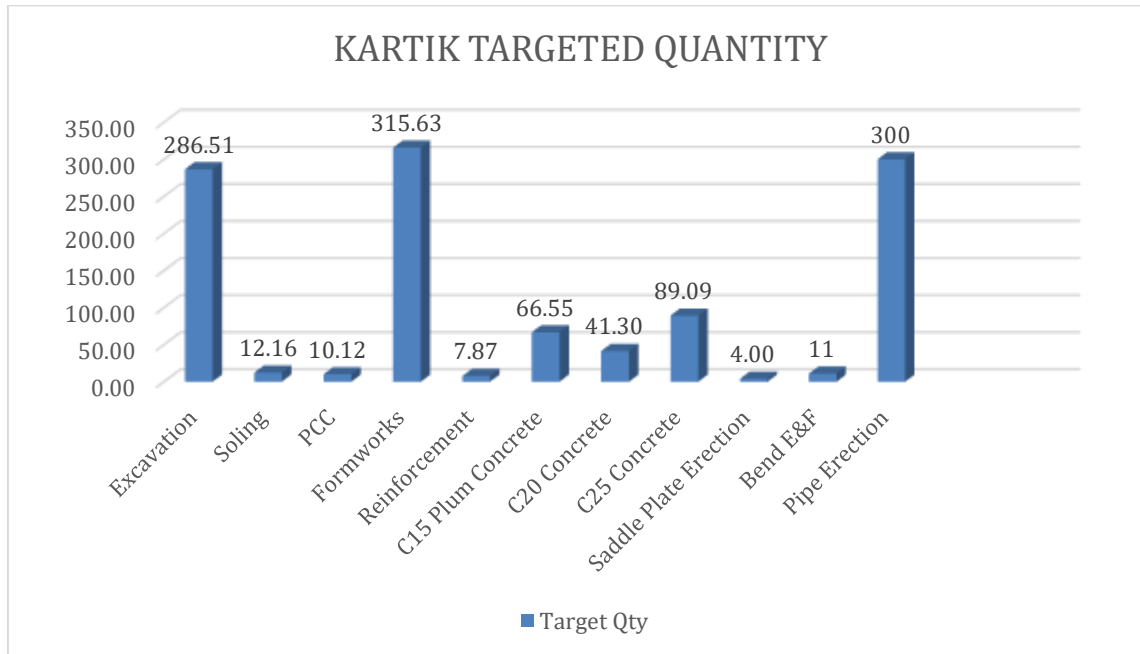
9.2 UPCOMING MONTH SCHEDULE

Civil & HM works will primarily focus on Powerhouse & Alignment. It is planned to complete at least 12 saddle supports; 1 Anchor Blocks & 1 lift powerhouse shear wall this month. HM work will be focused on saddle plate installation, bend, Y & pipe erection. Targeted quantity for Kartik month is tabulated below:

Table: Kartik Targeted Quantity

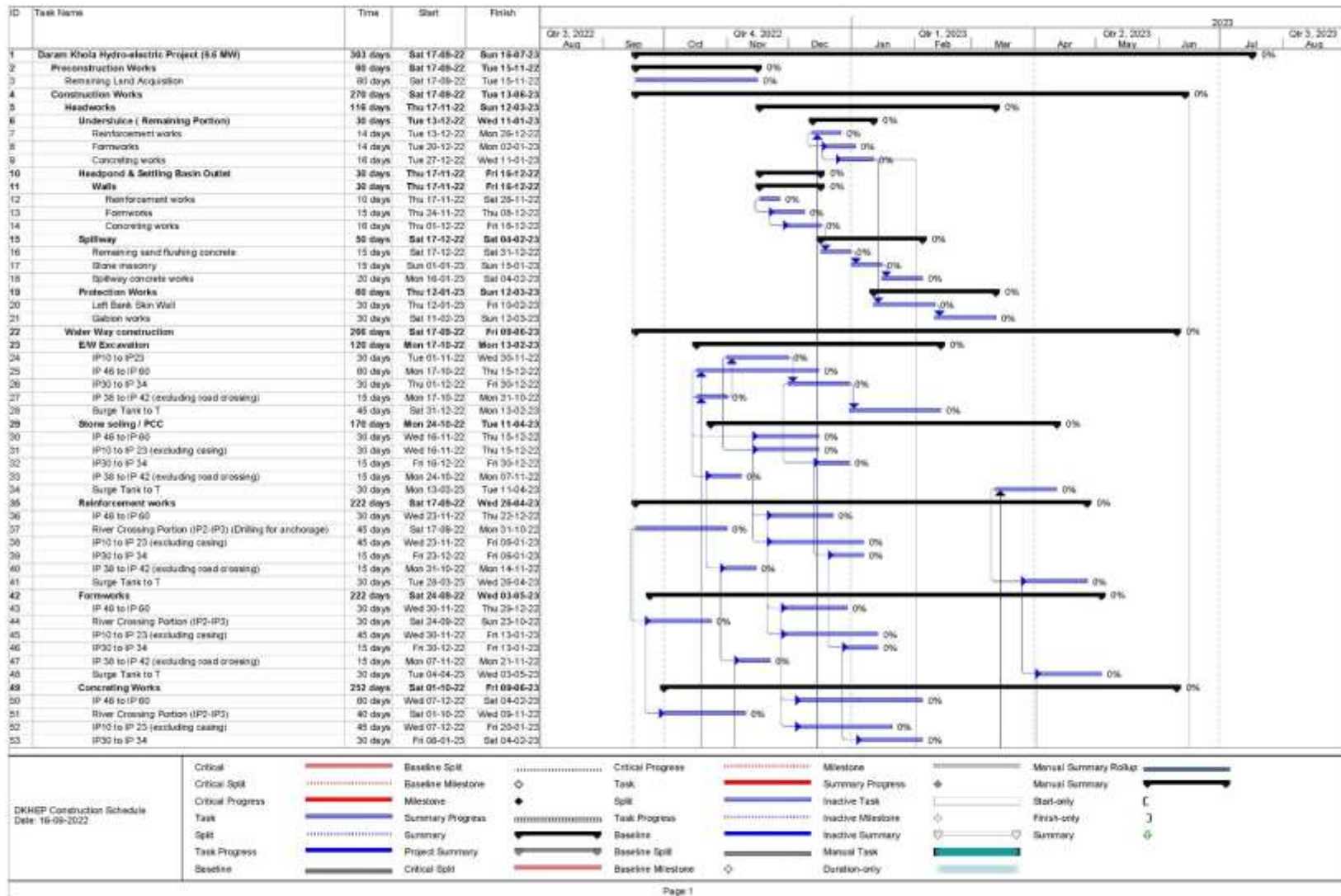
SN	Description of Items	Unit	Kartik Targeted Quantity	Remarks
Civil Works				
B1	Earthwork & Protection Works			
	Saddle support Excavation	m ³	37.128	IP19-IP21/IP58-IP60
	Stone masonry works	m ³	24	IP19-IP21
B2	Anchor Blocks			AB8,8,9,22
	Soling	m ³	8.63	
	PCC	m ³	5.76	
	C15 Plum Concrete	m ³	66.55	
	Formworks	m ²	26.40	
	Reinforcement	MT	1.57	
B3	Saddle Supports			
	Soling	m ³	3.53	

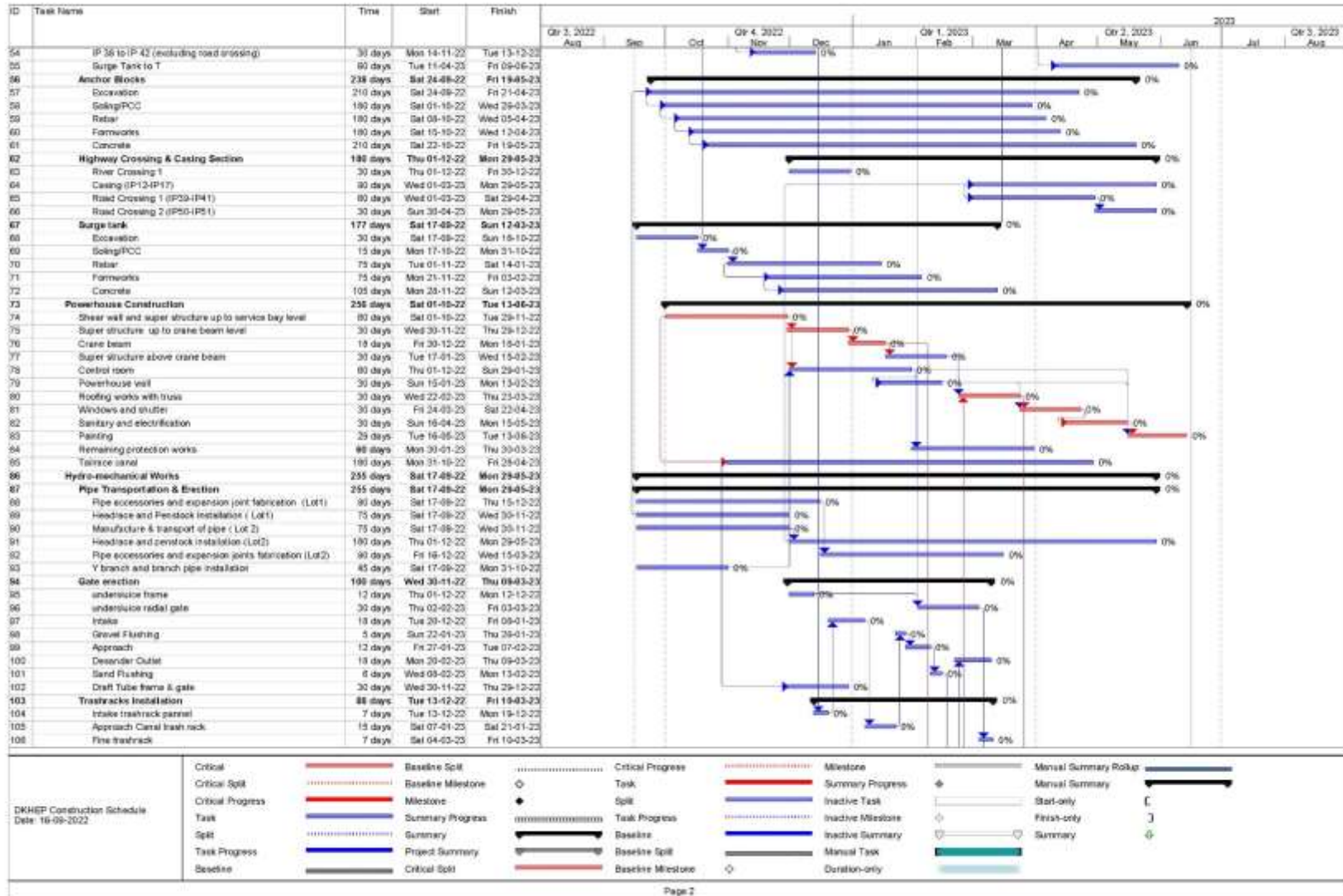
	PCC	m ³	4.37	IP19- IP22/IP58- IP60
	C20 Concrete	m ³	41.30	
	Formworks	m ²	116.97	
	Reinforcement	MT	2.59	
C	Surge Tank			
	Excavation works	m ³	249.38	
D1	Powerhouse			
	Formworks'	m ²	172.26	Shear wall
	Reinforcement	MT	3.70	
	C25 Concrete	m ³	89.09	
Hydromechanical Works				
1	Saddle Plate Installation	Nos.	4	IP21-IP22
2	Bend Erection & Fabrication	Nos.	11	
3	Pipe Erection	rm	300	



9.3 IMPLEMENTATION SCHEDULE

The implementation schedule for the remaining works is prepared on 2022.04.13 and progress based on that schedule are presented in Gantt Chart as below. The critical tasks are marked with red bar.





ANNEXES



River water level at Headworks



Saddle support 2nd lift concreting between IP28-IP29



Saddle support rebar works between IP21-IP22



Saddle support formworks



AB44 Rebar works



Anchor Block 44 concreting works



Landslide around AB6



Landslide between IP42-IP44



Surge Tank excavation works I



Surge Tank excavation works II



Landslide at Surge Tank



Landslide Behind Powerhouse



Rebar works for powerhouse shear wall



Formworks for powerhouse shear wall



Powerhouse Top View



Landslide clearance at powerhouse



Pipe erection between IP6-IP8



Pipe erection between IP-IP9



Pipe erection between IP9-IP10



2100mm dia. Expansion joint unloaded at site



Pipe erection between IP22-IP24



Pipe erection between IP25-IP27



Pipe erection between IP35-IP36



Pipe erection between IP42-IP43



Pipe erection between IP43-IP44



Pipe erection between IP44-IP45



Pipe erection between IP45-IP46



Site clearance between IP48-IP49



IP21 Bend erection



2nd lot pipe rolling works at Factory

DARAM KHOLA HYDROELECTRIC PROJECT - 9.6 M.W.																																	
Galkot-11, Baglung																																	
Monthly Working Schedule																																	
2079, Kartik																																	
SN	Description of Works	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Remarks	
CIVIL WORKS																																	
B1	Excavation Surge tank Up to EL 938.0m																																
B2	Anchor Blocks Formworks & Concreting 2 lift (AB-8)																																
B3	Saddle Supports All complete IP21-22 (4 nos.) All complete IP19-21 (4 nos.) All complete IP58-60 (4 nos.)																																
B4	Protection works (IP19-IP21)																																
D1	Powerhouse Shear wall (3rd lift EL 811.95 m)																																
HYDROMECHANICAL WORKS																																	
1	Bend erection IP5, IP25, IP48, IP60, IP11&2 (5 nos.)																																
2	Bend fabrication IP22, IP23, IP48, IP38, IP60 (5 nos.)																																
3	Saddle plate installation IP21, IP22 (4 nos.)																																
4	Pipe erection 380m																																
5	Pipe testing 150m																																

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Kartik month Working Schedule

**THANK
YOU
&**

**HAPPY
TIHAR**