

SWET GANGA HYDROPOWER & CONSTRUCTION LIMITED

Sankha Park, Dhumbarahi, G.P.O.Box 19737, Kathmandu Nepal
Site Office: Sirise, Ramechhap

TALLO LIKHU JALAVIDHYUT AAYOJANA (28.1 MW)



MONTHLY PROGRESS REPORT # 47

MARCH, 2022

(17 Falgun, 2078 to 17 Chaitra, 2078)

Prepared By:



SANIMA HYDRO AND ENGINEERING PVT. LTD.

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	Signature	Date
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1 PROJECT OVERVIEW AND INSTITUTIONAL ARRANGEMENT

Tallo Likhu Jalavidhyut Aayojana is a run-of-river (RoR) hydropower project which utilizes Gross Head 118 m and Design Discharge of 29.75 m³/s resulting to an installed capacity of 28.1 MW. The entire project area (headworks to powerhouse) is located in Likhu-Tamakoshi Rural Municipality (Saipu, ward no. 2 and Bijulikot ward no. 4) of Ramechhap, Bagmati Province of Nepal. Geographically, the project lies between Longitudes 86°15'38" E to 86°13'17" E and Latitudes 27°25'56" N to 27°22'47"N. Geologically, the project area belongs to the Lesser Himalayas.

The project's headworks area is accessible via two different road routes. One from Kathmandu-Dhulikhel-Charikot-Nayapul-Dhobi-Sirise (227 km) and another from Kathmandu-Dhulikhel-Khurkot-Manthali-Dhobi-Sirise (170 km).

CONSTRUCTION MANAGEMENT

The Employer/Owner	Swet Ganga Hydropower & Construction Ltd. (SGHCL)
The Engineer/ Consultant	Sanima Hydro and Engineering Pvt. Ltd. (SHEPL)
The Contractor (Civil Construction Works)	High Himalaya Hydro-Bavari Construction J.V.
The Contractor (Hydro-mechanical Works)	Machhapuchhre Metal & Machinery Works (P.) Ltd. (3MW)
The Contractor (Electro-mechanical Works)	Asia Pacific Power-Tech Co. Ltd., China
The Contractor (Transmission-line Works)	Aster Teleservices Nepal Pvt. Ltd.
Pre-construction works, camp facilities, social environment	Direct by the Employer

2 KEY DATES

Table 1: Key dates of major events of the project

Description	Date
Generation License issued by Department Electricity Development (DoED), Ministry of Energy (MoE), Government of Nepal (GoN)	2 Baisakh 2073 (14 April 2016)
	The license period of the project is from
	28 Chaitra 2072 to 27 Chaitra 2107 B. S.
Power Purchase Agreement (PPA) with Nepal Electricity Authority (NEA)	14 Poush 2073 (29 December 2016)
Financial Closure	10 Falgun 2074 (22 February 2018)
Contract of Main Civil Works	5 Chaitra 2074 (19 March 2018)
Contract of Hydro-mechanical Works	9 Poush 2075 (24 December 2018)
Contract of Electro-mechanical Works	18 Bhadra 2076 (4 September 2019)
Contract of Transmission Line Works	8 Shrawan 2077 (23 July 2020)
RCOD	15 Mangsir 2078 (1 December 2021)

3 CONTRACT PACKAGES AND IMPLEMENTATION

Main civil construction works	Contract Package 1
Hydro-mechanical works	Contract Package 2
Electro-mechanical works	Contract Package 3
Transmission Line works	Contract Package 4
Pre-construction works, camp facilities, social environment	Direct by the Employer

4 FINANCING

Equity	Promoters	25% of the total Project Cost
Debt	Consortium of Banks	75% of the total Project Cost (Lead Bank: Laxmi Bank Ltd, Member Banks: Kumari Bank Ltd., Hydroelectricity Investment and Development Company Ltd. Century Commercial Bank Ltd., and Prabhu Bank Ltd.)

5 RESOURCES AT SITE

5.1 MANPOWER FROM EMPLOYER AND ENGINEER'S SIDE:

Table 2: Human Resource at site from the Employer and Engineer's side

Description	Number
General Manager	1
Resident Engineer	1
Environment and Social Officer	2
Finance/Admin Officer	1
Civil Engineer	4
Electrical Engineer	2
Mechanical Engineer	1
Engineering Geologist	1
Safety Coordinator	1
Civil Overseer/Sub-overseer	4
Mechanical Overseer	6
Electrical Overseer/Sub-overseer	8
Surveyor	2
Social Mobilizer	3
Admin Assistant	2
Driver	4
Cook	3
Office Helper	5
Construction Helper	7
Store keeper	1
Total:	59

5.2 MANPOWER FROM CIVIL CONTRACTOR'S SIDE:

Table 3: Human Resource at site from the Civil Contractor's side

Description	Number
Technical Manpower	19
Financial and Administrative manpower	27
Skilled workers(Machine Operators, Electricians, Heavy Drivers)	31
Semi-Skilled workers(Light Drivers, Civil workers)	24
Unskilled workers(Helpers, Kitchen workers, Pump operators)	22

Description	Number
Security guards	23
Total (A)	146
Other Workers (Sub-Contractors)	
DL/Bhimeshwor Construction (Headworks, Seti and Powerhouse)	65
Shaili Construction (Headworks)	9
Karan-Arjun Construction (Main Inlet)	42
Dreamland construction (Seti Outlet)	40
Gaiya Devi Construction (VB02)	24
Total (B)	180
Grand Total (A+B)	326

Note: Data as per weekly report provided by the Main Civil Contractor on 31st March 2022.

5.3 MANPOWER FROM HYDRO-MECHANICAL CONTRACTOR'S SIDE:

Table 4: Human Resource at site from the Hydro-Mechanical Contractor's side

Description	Number
Site Project Engineer	1
Site Supervisor	3
Safety Officer	1
Store In-charge	1
Quality Controller	1
Electrician	1
Sand Blasting Operator	1
Hydra Operator	1
Tractor driver	1
Fitter	4
Welder	6
Helper	10
Cook	3
Total	34

5.4 EQUIPMENT MOBILIZED BY CIVIL CONTRACTOR

Table 5: Equipment mobilized by the Civil Contractor

S.N.	Equipment Name	Number	S.N.	Equipment Name	Number
1	Generator 62.5KVA	2	24	Pusher leg	37
2	Generator 30KVA	1	25	Blaster (Exploder)	6
3	Generator 125KVA	1	26	Siren	6
4	Generator 25 KVA	1	27	Core Cutting machine	2
5	Generator 160 KVA	3	28	Hand drilling machine	3
6	Generator 250 KVA	2	29	Air compressor	7
7	Air Receiver tank	4	30	Vibrators	8
8	Ohm meter	6	31	Water pump 10"	2
9	Excavator	4	32	Water pump 12"	1
10	Dump Truck	11	33	Water Pump 1.5"	6
11	Transportation Truck	1	34	Water pump 6"	4
12	Backhoe Loader (JCB)	3	35	Grinding machine(4")	6

S.N.	Equipment Name	Number	S.N.	Equipment Name	Number
13	Wheeled loader	4	36	Grinding machine(7")	1
14	Tractor	3	37	Welding machine	8
15	Light vehicle	6	38	Ply cutter machine (8"/7")	1
16	Concrete Batching Plant	1	39	Prism with tripod set	5
17	Concrete mixer	10	40	Leveling staff (5m)	4
18	Grouting pump	4	41	Total station (Topcon)	3
19	Concrete pump	3	42	Auto level with tripod set	4
20	Transit mixer	4	43	Shotcrete machine PZ5	3
21	Blower fan set	2	44	Compressive test machine	2
22	Pull out test machine	1	45	Lubricator	43
23	Shotcrete Robot (Jacon)	1	46	Diesel Tank 16000Ltr	3

5.5 EQUIPMENT MOBILIZED BY HYDRO-MECHANICAL CONTRACTOR

Table 6: Equipment mobilized by the Hydro-Mechanical Contractor

S.N.	Equipment	Number
1	Hydraulic Crane	1
2	Excavator	1
3	Tractor	1
4	Diesel Generator (200 KVA)	1
5	Diesel Generator (40 KVA)	1
6	Diesel Generator (12.5 KVA)	1
7	Welding Machine	14
8	Compressor	1
9	Grinding Machine (7")	14
10	Grinding Machine (4")	8
11	Master Oven	1
12	Portable Oven	14

5.6 CONSTRUCTION MATERIALS STORED BY CIVIL CONTRACTOR AT SITE:

Table 7: Construction material stored by the Main Civil Contractor

Materials	Unit	Balance Quantity
Diesel	Litres	13,550
Rebar (25mm dia.)	Ton	2.00
Rebar (20mm dia.)	Ton	7.00
Rebar (16mm dia.)	Ton	12.00
Rebar (12mm dia.)	Ton	61.50
Cement	Bags	8,554
Plasticizer	Kg	1,680.00
Steel Fibre	Kg	125.00
Micro Silica	Kg	400.00
Accelerator	Kg	275.00

Note: Data as per weekly report 191 provided by the Main Civil Contractor on 31 March 2022.

6 CIVIL CONSTRUCTION WORK PROGRESS

6.1 HEADWORKS

The work progress achieved at headworks area in March, 2022 is as follows:

- Concreting has been completed for 43.54 m stretch of the fish passage (from chainage 0+115.00 to 0+158.54 m). One lift wall concreting (1.2 m height) has been completed for chainage 0+087 to 0+115.00 m.
- Construction of the settling basin spillway panel 5 has been completed. Reinforcement installation is ongoing in panel 1.
- C25 concrete work is ongoing at the main inlet kholsi casing block.

Table 8: Progress at Headworks in March, 2022

S. N.	Description	Unit	Quantity	Remarks
1	C25 concrete	m ³	150.00	
2	C35 concrete	m ³	-	
3	1:6 Stone masonry	m ³	-	
4	Rebar	Ton	12.00	



Figure 1: Top view of Weir, Intake and Undersluice



Figure 2: View of fish passage



Figure 3: Top view of settling basin and conveyance tank

6.2 HEADRACE TUNNEL, SYPHON CROSSING AND SURGE SHAFT

HRT FROM MAIN INLET PORTAL TO SETI OUTLET PORTAL

The full concrete lining work has been completed for 287 m stretch in March 2022. (Total completed = 651 m out of 865 m)

Table 9: Work progress for the tunnel stretch from Main inlet portal to Seti outlet portal

Lining Type	Face	Design length (m)	Completed length (m)	Remaining (m)
Shotcrete	Face 1	528.32	528.32	-
	Face 2	292.80	292.80	-
	Total	821.12	821.12	-
Wall concrete	Face 1	528.32	528.32	-
	Face 2	292.80	292.80	-
	Total	821.12	821.12	-
Full concrete	Face 1	263.00	228.00	35.00
	Face 2	602.00	423.00	179.00
	Total	865.00	651.00	221.00
Pipe Section	Face 1	37.00	-	37.00
	Face 2	25.00	-	25.00
	Total	62.00	-	62.00



Figure 4: Headrace tunnel (left side) and connecting tunnel to surge shaft (right side)

HRT FROM SETI INLET PORTAL TO POKU OUTLET PORTAL

All construction work has been completed at this stretch.

HRT FROM POKU INLET PORTAL TO MAIN OUTLET PORTAL

All construction work has been completed in this stretch.

SETI CROSSING

No civil work has been carried out in the month of March 2022.

POKU CROSSING

All civil works have been completed in the Poku kholsi crossing.



Figure 5: View of Poku kholsi crossing

SURGE SHAFT, ROCK TRAP AND CONNECTING TUNNEL

The roofing work of the surge shaft has been completed including the block masonry wall, truss works and chain link wire fencing.



Figure 6: Surge shaft from top

6.3 PENSTOCK, POWERHOUSE AND TAILRACE

PENSTOCK ALIGNMENT:

Penstock Protection Valve (PPV) House:

Construction of Penstock Protection Valve house has been ongoing outside the main outlet portal. The concreting has been completed up to the level of 715.54m amsl (first beam level).

Anchor block VB01:

Excavation has been completed for the Anchor block VB01.

Anchor block VB02:

The construction of the geo-grid structure of road retaining wall at the left side of anchor block VB02 has been completed for 17 layers out of 25.

POWERHOUSE:

Electro-Mechanical installation works is ongoing. Painting works is ongoing inside the Powerhouse walls and planning for painting at outer wall is scheduled for next month.

CONTROL ROOM AND OFFICE BUILDING:

Block masonry construction work is ongoing in the office building along with plaster and painting works.

TAILRACE:

The construction of the all civil works of the tailrace culvert has been completed.

SWITCHYARD:

All civil works of the switchyard have been completed.

Table 10: Progress at penstock, powerhouse and tailrace in March 2022

S.N.	Description	Unit	Quantity (Powerhouse and control building)	Quantity (Penstock)
1	C25 concrete	m ³	-	-
2	Re-bar	ton	-	3.00
3	C25 Plum concrete	m ³	-	200.00



Figure 7: View of the PPV house



Figure 8: Geo-grid structure at either sides of anchor block VB02



Figure 9: Top view of Powerhouse and Switchyard area



Figure 10: View of powerhouse from tailrace side

7 HYDRO-MECHANICAL WORKS

The progress of hydro-mechanical installation works achieved in March 2022 is listed below:

- Electrical connection of undersluice monorail hoist is ongoing.
- Installation of settling basin inlet gate leaf is ongoing.
- 43 m additional pipe has been erected in the headrace pipe section in March 2022. With this, 253 m length pipe has been fitted out of 344 m. Final welding has been completed for 232 m and UT test has been completed for 220 m.



Figure 11: Headrace pipe alignment



Figure 12: Installation of settling basin inlet gate leaf

8 ELECTRO-MECHANICAL WORK PROGRESS

The work progress of the electro-mechanical installation works in March 2022 is below:

Unit 1:

- Pre-assembly of unit 1 has been completed up to the stator top level 629.09 m amsl.
- Installation of firefighting pipe and cooling pipe is ongoing.
- Installation of cable tray has been completed.

Unit 2:

- Runner-shaft assembly has been lowered inside the pit of unit 2.
- Exterior connection of cooling pipe (outside generator pit) has been completed.
- Rotor pole assembly of unit 2 has been completed and kept in service bay.
- Installation of firefighting pipe and cooling pipe is ongoing.
- Final welding of cable tray is ongoing.

Switchyard:

- Installation of main equipment has been completed except installation of isolation transformer, lighting tower, filtering transformer oil, cable laying and termination works.

New Khimti Substation:

- Installation of main substation equipment is ongoing.
- Transportation of EM equipment from Powerhouse to New Khimti is ongoing.
- Metering equipment (NEA side) has also been delivered to New Khimti substation.



Figure 13: Runner-shaft assembly lowered inside the unit 2 pit



Figure 14: Rotor-pole assembly for unit 2



Figure 15: Installation of cooling water pipeline for unit 2



Figure 16: Switchyard at Powerhouse



Figure 17: Switchyard at New Khimti Substation

9 CONSTRUCTION POWER

The 12 km long construction power line has been erected from headworks area to Sangutar in coordination with NEA and the public. The line has been charged from a 6 MVA transformer at Manthali on 16 Mangsir, 2076. The NEA's dedicated line has been made available to all working fronts. Regular monitoring and bush-cutting is ongoing.

10 TRANSMISSION LINE WORKS (132 KV)

In March 2022, erection of one tower has been completed. Including this, the erection works have been completed for 58 tower locations. The concreting works have been completed for 59 tower foundations. Conductor stringing works have been completed for 16.63 km stretch and OPGW cable has been installed for 4.7 km.



Figure 18: Erection of AP48 tower



Figure 19: View of AP65 tower

Table 11: Transmission line progress

S.N	Location	Type of Tower	Excavation	Foundation concrete	Backfill	Erection
1	AP0	SD+0	-	-	-	-
2	AP1	SB+0	Completed	Completed	Completed	Completed
3	AP2	SC+0	Completed	Completed	Completed	Completed
4	AP3	SM+0	Completed	Completed	Completed	Completed
5	AP4	SM+0	Completed	Completed	Completed	Completed
6	AP5	SM+0	Completed	Completed	Completed	Completed
7	AP6	SC+0	Completed	Completed	Completed	Completed
8	AP7	SB+0	Completed	Completed	Completed	Completed
9	AP8	SB+0	Completed	Completed	Completed	Completed
10	AP9	SM+0	Completed	Completed	Completed	Completed
11	AP10	SM+0	Completed	Completed	Completed	Completed
12	AP12	SM*+0	Completed	Completed	Completed	Completed
13	AP13	SM+0	Completed	Completed	Completed	Completed
14	AP14	SM+0	Completed	Completed	Completed	Completed
15	AP15	SM*+0	Completed	Completed	Completed	Completed
16	AP16	SM+0	Completed	Completed	Completed	Completed
17	AP17	SM+6M	Completed	Completed	Completed	Completed
18	AP19	SM*+0	Completed	Completed	Completed	Completed
19	AP20	SM*+6	Completed	Completed	Completed	Completed

S.N	Location	Type of Tower	Excavation	Foundation concrete	Backfill	Erection
20	AP21	SM*+0	Completed	Completed	Completed	Completed
21	AP22	SM*+0	Completed	Completed	Completed	Completed
22	AP23	SM+0	Completed	Completed	Completed	Completed
23	AP24	SM+0	Completed	Completed	Completed	Completed
24	AP25	SC+0	Completed	Completed	Completed	Completed
25	AP26	SB+0	Completed	Completed	Completed	Completed
26	AP27	SC+0	Completed	Completed	Completed	Completed
27	AP28	SC+0	Completed	Completed	Completed	Completed
28	AP29	SM+0	Completed	Completed	Completed	Completed
29	AP30	SB+0	Completed	Completed	Completed	Completed
30	AP31	SC+0	Completed	Completed	Completed	Completed
31	AP32	SM+0	Completed	Completed	Completed	Completed
32	AP33	SB+0	Completed	Completed	Completed	Completed
33	AP34	SC+0	Completed	Completed	Completed	Completed
34	AP35	SC+0	Completed	Completed	Completed	Completed
35	AP36	SC+0	Completed	Completed	Completed	Completed
36	AP37	SB+0	Completed	Completed	Completed	Completed
37	AP38	SC+6M	Completed	Completed	Completed	-
38	AP39	SM+0	Completed	Completed	Completed	Completed
39	AP40	SM+0	Completed	Completed	Completed	Completed
40	AP41	SM+0	Completed	Completed	Completed	Completed
41	AP42	SM*+0	Completed	Completed	Completed	Completed
42	AP43	S90	Completed	Completed	Completed	Completed
43	AP44	S90	Completed	Completed	Completed	Completed
44	AP45	SB+0	Completed	Completed	Completed	Completed
45	AP46	SM+0	Completed	Completed	Completed	Completed
46	AP47	SC+0	Completed	Completed	Completed	Completed
47	AP48	SM+6	Completed	Completed	Completed	Completed
48	AP49	SM*+0	Completed	Completed	Completed	Completed
49	AP50	SM+0	Completed	Completed	Completed	Completed
50	AP51	SM+0	Completed	Completed	Completed	Completed
51	AP53	SM+0	Completed	Completed	Completed	Completed
52	AP54	SM+6	Completed	Completed	Completed	Completed
53	AP56	SM+0	Completed	Completed	Completed	Completed
54	AP57	SM*+6	Ongoing	-	-	-
55	AP58	SB+0	Ongoing	-	-	-
56	AP59	SC+0	Completed	Completed	Completed	Completed
57	AP60	SC+0	Completed	Completed	Completed	Completed
58	AP61	SC+0	Completed	Completed	Completed	Completed
59	AP62	SC+0	Completed	Completed	Completed	Completed
60	AP63	SC+0	Completed	Completed	Completed	Completed
61	AP64	SM*+3	Completed	Completed	Completed	Completed
62	AP65	SD+0	Completed	Completed	Completed	Completed

11 SOCIAL AND PUBLIC

The major social activities undertaken in March 2022 are:

- Distribution of compensation to the affected people of Transmission Line ROW.
- Office vehicle has been provided to the locals during emergency situations for transportation to hospital.

12 OCCUPATIONAL SAFETY AND HEALTH (OSH)

Along with the construction activities, Occupational Safety & Health (OSH) is also considered as one of the major components of the project. The OSH team at site promotes a safe and healthy environment at the working fronts by implementing safety and health standards and safe working procedure through awareness and monitoring. The OSH team ensures preparedness in accidents and emergencies. Regular meeting with the contractors and workers are conducted for the enhancement of safety culture. The OSH team regularly monitors the working fronts to ensure safe practice and discourage the safety non-compliance.

The company has also hired an external consultant team (SMS Environment and Engineering Pvt. Ltd) for monitoring the safe working environment. The external consultant regularly performs safety audits at site to ensure the compliance of OSH and provide necessary corrective measures.

12.1 OSH IMPLEMENTATION BY THE CONTRACTORS

Table 12: OSH implementation by the Civil Contractor

Particular	Description	Remarks
Surge shaft covering	The surge shaft has been surrounded with block masonry wall, metal works and chain link with CGI sheet roofing.	Completed. Risk of human/animal entry has been eliminated.
Compliance of PPE at all working fronts	Workers have been provided with appropriate PPE. The use of PPE is well monitored.	
Fencing at VB02 area	TMT bars have been used for barricading of VB02 area.	Completed
Waste management	Waste management works have been initiated at the labour camp area.	Ongoing
Electric bulb installation	Additional bulbs have been installed at the main inlet tunnel for enhancing visibility.	Continued
Signage	Safety signage has been replaced by new ones at several work fronts.	

Table 13: OSH implementation by the Hydro-mechanical contractor

Particular	Description	Remarks
PPE	Appropriate PPE has been provided to the welders, fitters, helpers and site supervisors as per work nature.	

Penstock pipe shielding	The penstock pipe opening at VB02 has been shielded with steel plate to ensure safety of passersby.	Completed
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Table 14: OSH implementation by the TL contractor

Particular	Description	Remarks
Toolbox talk	Toolbox talks have been organised regularly before start of work.	Ongoing
Use of drone	Drone has been used for stringing of conductor at relatively unsafe areas.	Ongoing
Use of safety harness	The workers have been provided with safety harness and it is utilized during stringing works.	Ongoing

12.2 TEST RESULTS

Table 15: Illumination Intensity in the Tunnel

S. N.	Location	Readings at working face (LUX)	Min. Light required, (LUX), Nepal	Readings inside tunnel (LUX)	Min. Light required, (LUX), Nepal	Status
1	Main inlet	115	100	65	50	Normal
2	Set outlet	125	100	60	50	Normal
3	Seti inlet	Work Completed, tunnel has been closed				
4	Poku outlet					
5	Poku inlet					
6	Main outlet	120	100	65	50	Normal
7	Surge shaft	120	100	120	50	Normal

Table 16: Oxygen level in the tunnel

S.N	Locations	Status
1	Main inlet	Natural air circulation between Face 1 and 2. Oxygen level above 19.5
2	Set outlet	
3	Seti inlet	Natural air circulation between Face 3 and 4. Oxygen level above 19.5
4	Poku outlet	
5	Poku inlet	Natural air circulation between Face 5 and 6. Oxygen level above 19.5
6	Main outlet	
7	Surge shaft	Natural air circulation between connecting tunnel and surge shaft. Oxygen level above 19.5

Table 17: Sound intensity in the tunnel

S.N.	Locations	Measured Noise Level (dBA)	Status
1	Main inlet	Breakthrough on 2078-02-13. No loud noise after breakthrough	After Breakthrough, generally noise level does not exceed 85dBA. Workers are provided noise protection PPE
2	Set outlet		
3	Seti inlet	Break through on 2076-08-30. No loud noise after breakthrough	
4	Poku outlet		

5	Poku inlet	Break through on 2077-02-20. No loud noise after breakthrough	
6	Main outlet		
7	Surge Shaft	Breakthrough on 2077-04-20 No loud noise after breakthrough	

12.3 DISCUSSION WITH THE CONTRACTORS REGARDING OSH

Table 18: Discussion at site with Main Civil Contractor

Topic	Discussed	Implementation Status
Interaction between workers and equipment	Discussion was made with the contractor regarding interaction between workers and equipment.	The contractor has assured to make additional monitoring in machine-man interactive works.
Slope protection between VB01 to VB02	Several discussions have been made with the contractor about protection of the slope between VB01 and VB02.	Boulder lining with C25 concrete infill has been constructed at the toe of the slope for protection.
Dewatering at Face 1	The contractor has been instructed to provide continuous dewatering at the main inlet tunnel for maintaining proper walkway.	The contractor has been using 1.5 inch pump for dewatering in the main inlet tunnel.

Table 19: Discussion at Site with Hydro Mechanical Contractor

Topic	Discussed	Implementation Status
Safety during radial gate installation works	Discussion was made with the HM contractor regarding the safe working procedures during installation of radial gate and seal works.	The openings at the undersluice slab have been covered with steel plates for safety.
Interaction between workers and equipment	Discussion was made with the contractor regarding interaction between workers and equipment.	The contractor has assured to make additional monitoring in machine-man interactive works.

Table 20: Discussion at site with TL contractor

Topic	Discussed	Implementation Status
Safety during road crossing	Discussion was made with the TL contractor regarding safe stringing of conductor at the road crossing between AP42 to AP43.	Road barriers have been used during the time of stringing in coordination with the local Police.
Working at height	The contractor has been instructed to provide safety harness to the workers and make mandatory during jumpering and final sag works.	The use of harness has been observed during these works.

12.4 COVID-19 VACCINATION STATUS

Table 21: Details of COVID-19 vaccination

Company	Only First dosage	Both dosage	Remaining to be vaccinated
SGHCL	-	58	1
HHH-BC JV	-	308	6
MMMWW	9	23	1
Aster Teleservices	4	14	77
EM supplier staff (APP)	-	3	-

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Figure 20: Ariel view of Headworks



Figure 21: Weir and Undersluice



Figure 22: Seti Outlet portal



Figure 23: Excavation of penstock anchor block VB01



Figure 24: Cable tray installation at powerhouse



Figure 25: Excavation of slope between VB01 to VB02



Figure 26: Cooling pipe installation works at Unit 1

14 PROGRESS CHART

