

TALLO LIKHU JALAVIDHYUT AAYOJANA (28.1MW)



MONTHLY PROGRESS REPORT # 37

MAY, 2021

(18th Baisakh, 2078 to 17th Jestha, 2078)

Prepared By:



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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 in 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 (MoEn), Government of Nepal (GoN)	2 nd Baisakh 2073 (14 th April 2016)
	The license period of the project is from
	28 th Chaitra 2072 to 27 th Chaitra 2107 B. S.
Power Purchase Agreement (PPA) with Nepal Electricity Authority (NEA)	14 th Poush 2073 (29 th December 2016)
Financial Closure	10 th Falgun 2074 (22 nd February 2018)
Contract of Main Civil Works	5 th Chaitra 2074 (19 th March 2018)
Contract of Hydro-mechanical Works	9 th Poush 2075 (24 th December 2018)
Contract of Electro-mechanical Works	18 th Bhadra 2076 (4 th September 2019)
Contract of Transmission Line Works	8 th Shrawan 2077 (23 rd July 2020)
RCOD	15 th Mangsir 2078 (1 st 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
Public Relation Officer	1
Environment Officer	1
Finance/Admin Officer	1
Civil Engineer	4
Electrical Engineer	2
Mechanical Engineer	1
Engineering Geologist	2
Safety Coordinator	1
Civil Overseer/Sub-overseer	4
Mechanical Overseer	3
Electrical Overseer/Sub-overseer	2
Surveyor	3
Social Mobilizer	3
Admin Assistant	2
Welder	3
Driver	4
Cook	2
Office Helper	4
Construction Helper	7
Total:	52

5.2 MANPOWER FROM CIVIL CONTRACTOR'S SIDE:

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

Description	Number
Technical Manpower	11
Financial and Administrative manpower	15
Skilled workers(Machine Operators, Electricians, Heavy Drivers)	20
Semi-Skilled workers(Light Drivers, Civil workers)	10
Unskilled workers(Helpers, Kitchen workers, Pump operators)	30

Description	Number
Security guards	24
Other Workers (Sub-Contractors)	
Karan-Arjun Construction (Main Inlet)	17
NPS Construction (Poku Inlet Tunnel)	7
Hem Construction (Surge shaft and main outlet)	15
GaiyaDevi Construction (Poku Outlet Anchor Block))	18
DL/Bhimeshwor Construction (Headworks, Seti and Powerhouse)	28
Shaili Construction (Headworks)	18
Likhu Saipu Construction (Poku Crossing Anchor Block)	21
Total	234

Note: Data as per weekly report provided by the Main Civil Contractor on 31st May2021.

5.3 MANPOWER FROM HYDRO-MECHANICAL CONTRACTOR'S SIDE:

Table 4: Manpower list of Hydro-Mechanical Contractor

Description	Number
Site Project Engineer	-
Site Supervisor	2
Safety Officer	1
Store In-charge	1
Quality Controller	1
Electrician	1
Sand Blasting Operator	1
Hydra Operator	1
Tractor driver	1
Fitter	3
Welder	7
Helper	12
Cook	3
Total	34

5.4 EQUIPMENT MOBILIZED BY CIVIL CONTRACTOR

Table 5: Equipment mobilized by Civil Contractor

S.No.	Equipment Name	Number	S.No.	Equipment Name	Number
1	Generator 62.5KVA	2	25	Pusher leg	37
2	Generator 30KVA	1	26	Blaster (Exploder)	6
3	Generator 125KVA	1	27	Siren	6
4	Generator 25 KVA	1	28	Core Cutting machine	2
5	Generator 160 KVA	3	29	Hand drilling machine	3
6	Generator 250 KVA	2	30	Air compressor	7
7	Air Receiver tank	4	31	Vibrators	8
8	Ohm meter	6	32	Water pump 10"	2
9	Excavator	4	33	Water pump 12"	1
10	Dump Truck	11	34	Water Pump 1.5"	6
11	Transportation Truck	1	35	Water pump 6"	4

S.No.	Equipment Name	Number	S.No.	Equipment Name	Number
12	Backhoe Loader (JCB)	3	36	Grinding machine(4")	6
13	Wheeled loader	4	37	Grinding machine(7")	1
14	Tractor	3	38	Welding machine	8
15	Light vehicle	6	39	Ply cutter machine (8"/7")	1
16	Concrete Batching Plant	1	40	Prism with tripod set	5
17	Concrete mixer	10	41	Leveling staff (5m)	4
18	Grouting pump	4	42	Total station (Topcon GM-105)	3
19	Concrete pump	3	43	Auto level with tripod set	4
20	Jackhammer	38	44	Shotcrete machine PZ5	3
21	Blower fan set	2	45	Compressive test machine	2
22	Pull out test machine	1	46	Lubricator	43
23	Shotcrete Robot (Jacon)	1	47	Diesel Tank 16000Ltr	3
24	Transit mixer	4	48	Muck loader on wheel base	1

5.5 EQUIPMENT MOBILIZED BY HYDRO-MECHANICAL CONTRACTOR

Table 6: Equipment mobilized by Hydro-Mechanical Contractor

S.No.	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	17
8	Compressor	1
9	Grinding Machine (7")	14
10	Grinding Machine (4")	10
11	Mother Oven	1
12	Portable Oven	17
13	Hand Cutter Set	4
14	Hand Drill Machine	2
15	Pug Machine	2

5.6 CONSTRUCTION MATERIALS STORED BY CIVIL CONTRACTOR AT SITE:

Table 7: Construction material stored by Main Civil Contractor

Materials	Unit	Balance Quantity
Diesel	Litres	35,000
Rebar (25mm dia.)	Ton	20.00
Rebar (20mm dia.)	Ton	22.00
Rebar (16mm dia.)	Ton	38.00
Rebar (12mm dia.)	Ton	50.00
Cement	Bags	8,300
Plasticizer	Kg	400.00
Steel Fibre	Kg	13,000.00

Materials	Unit	Balance Quantity
Micro Silica	Kg	12,000.00
Accelerator	Kg	8,000.00
Rock bolt (2m long 20mm dia.)	Nos.	200
Rock bolt (3m long 20mm dia.)	Nos.	50
Rock bolt (4m long 25mm dia.)	Nos.	4
Steel rib (ISMB 150)	Set	1
Wire mesh (100mm x 100mm x 4mm)	Kg	900.00
Explosive (Stored in Army Camp)	Ton	2.400

Note: Data as per civil contractor's store record made on 31st May 2021.

6 CIVIL CONSTRUCTION WORK PROGRESS

6.1 HEADWORKS

The progress at Headworks as of May 2021 is as follows:

- The construction of the weir panel 4 has been completed. With this, all four panels of the weir have been completed, including the flushing arrangement and retaining wall for access road beside weir.
- The construction of the fish passage has been ongoing. Panels 4 and 5 have been completed.
- The civil construction works for the trash rack cleaning mechanism (TRCM) have been going on.
- The construction of settling basin panel 1, 2 and 3 has been completed. The hill side walls of the panels 5 and 6 have been completed and one lift is remaining in the hillside wall of panel 4. The construction works of mid walls and riverside walls of these panels are also ongoing.
- The construction of the settling basin panel 7 and 8 has been completed except one riverside wall in which 2.7m height is remaining.
- The settling basin panel 9 gated portion has been completed.
- The concreting in 33 number of saddle supports has been completed in the Head-race pipe.

Table 8: Progress at headworks in May, 2021

S.NO.	Description	Unit	Quantity	Remarks
1	C25 concrete	m ³	286.50	
2	C35 concrete	m ³	-	
3	C25 Plum concrete	m ³	318.00	
4	Rebar	Ton	25.00	



Figure 1: Completion of weir



Figure 2: Hillside walls of Settling basin panel 4, 5,6



Figure 3: Conveyance tank top slab



Figure 4: Conveyance tank trash-rack frame area

6.2 HEADRACE TUNNEL, SYPHON CROSSING AND SURGE SHAFT

6.2.1 HRT INLET – SETI OUTLET PORTAL

The breakthrough of the Main inlet- Seti outlet tunnel stretch has been achieved on 27th May, 2021.

In May 2021, the excavated length of tunnel from the main inlet portal is 31.77m and that from the Seti Outlet portal is 27.90m. The equivalent volume of excavation totals 1355.046 cubic meters. Most of the support type observed during this month is support type IV and V.

Table 9: Work progress from Face 1 and Face 2 in May, 2021

Portal	Excavation (m)	Excavation (m ³)	Rock bolt (Nos.)	Shotcrete (m ²)
Main inlet portal+ Seti outlet portal	59.67	1355.046	550	751.245



Figure 5: Breakthrough of tunnel stretch between Face 01 and Face 02.

6.2.2 SETI INLET-POKU OUTLET TUNNEL STRETCH

Till the end of May 2021, the concrete lining in this tunnel stretch has been completed in the invert, walls and crown for all portions. The construction of plug block section has been completed in the Seti Inlet portal. The saddles have been completed at the Poku Outlet portal.

6.2.3 POKU INLET- MAIN OUTLET TUNNEL STRETCH

Till the end of May 2021, the final concreting in this tunnel stretch has been completed for 1331m out of 1361m length in invert and wall. The final shotcrete in the Poku inlet tunnel has been completed. The final concreting carried out from Poku inlet portal is 836.00 m and that from main outlet portal it is 428.80m.



Figure 6: Reinforcement installation for full concrete lining at Face 5

Table 10: Tunnel Progress as of May, 2021

Portal	Length of tunnel (m)	Excavation length (m)	Remaining length (m)	Progress (%)
Inlet portal	826.07	826.07	0	100.00
Seti outlet	922.05	892.05	0	100.00
Seti inlet	654.90	654.90	0	100.00
Poku outlet	564.00	564.00	0	100.00
Poku inlet	936.40	936.40	0	100.00
Outlet portal	818.55	818.55	0	100.00
Total	4,721.97	4721.97	0.00	100.00

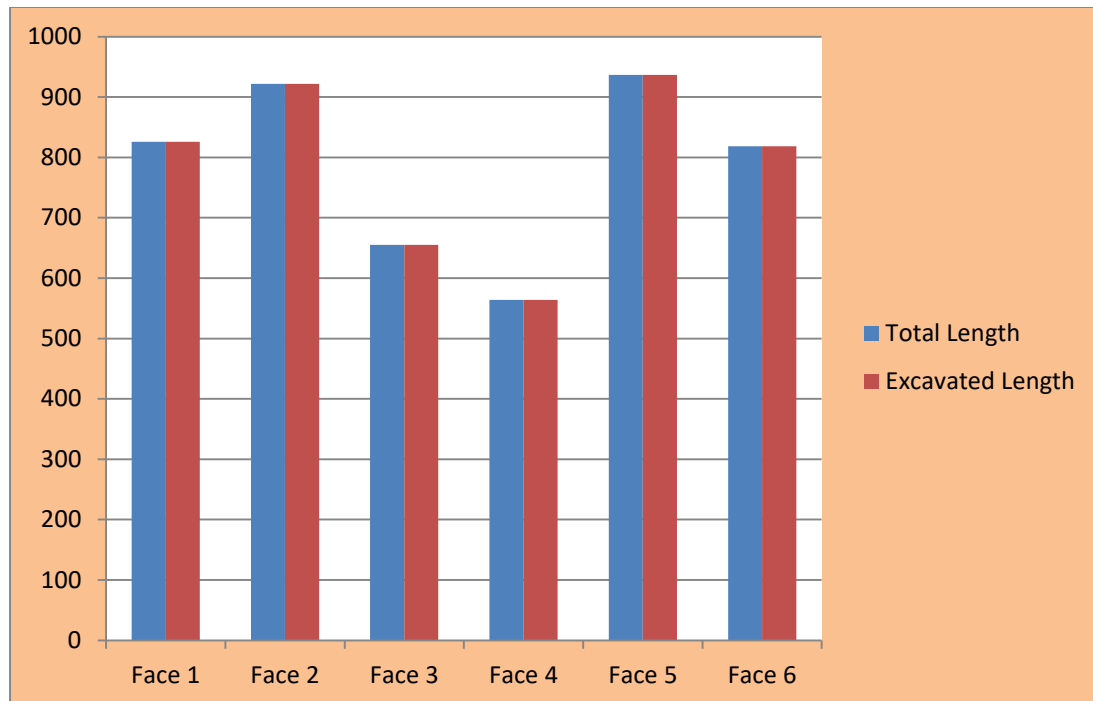


Figure 7: Tunnel Excavation Progress

6.2.4 SETI CROSSING

The construction of the Seti crossing anchor block SK-VB02 has been completed and backfilling over the block has been ongoing for the channelization of the Seti Kholsi.

The reinforcement works have been ongoing for the Anchor Block SK-CB03. Arrangement has been made for passage of irrigation canal across the siphon alignment near Seti inlet portal. The concrete work for the pipe alignment from the anchor block SK-VB02 to the Seti Outlet portal has been ongoing.



Figure 8: Seti inlet, Seti crossing Anchor block and siphon pipe

6.2.5 POKU CROSSING

The plum concrete work at the Poku Anchor block has been completed. Rock cutting for pipe alignment at the right side of the crossing is in the verge of completion. The construction of the anchor block PK CB01 has been started.



Figure 9: Poku crossing anchor block and flushing chamber

6.2.6 SURGE SHAFT, ROCK TRAP AND CONNECTING TUNNEL

Till the end of May 2021, the concreting in the wall of surge shaft has been completed up to 43.70m from the base. The full concrete lining of the connecting tunnel has also been completed. No work has been carried out in May, 2021 due to COVID-19 precaution procedures.



Figure 10: Surge shaft from top

6.3 PENSTOCK, POWERHOUSE AND TAILRACE

In May 2021, no civil work has been carried out in the penstock alignment since all the saddle supports between wyee and VB02 have already been casted and handed over to the HM contractor.

In the powerhouse bay 01, concrete has been casted at outer shear walls up to the level of 633.83m amsl. The front shear wall has been completed up to the level of 630.43m amsl (machine floor level). Column casting has been ongoing above this level.

In the powerhouse bay 02, concrete has been casted at outer shear walls up to the level of 633.83m amsl. The front shear wall has been completed up to the level of 630.43m amsl (machine floor level). Column casting has been ongoing above this level.

The concrete casting in the columns and beams of Bay 03 has been completed.

The construction of the tailrace has been completed except the gate wall at panel 1, in which final lift concrete is remaining.

Table 11: Progress at penstock, powerhouse and tailrace in May, 2021

S.N o.	Description	Unit	Quantity (Powerhouse)	Quantity(Penstock)	Quantity (Tailrace)
1	C25 concrete	m ³	117.01	-	53.45
2	Re-bar	Ton	11.02	-	3.35



Figure 11: Powerhouse and PH outlet chamber



Figure 12: Drainage works at switchyard boundary

7 HYDRO-MECHANICAL WORKS

The progress of hydro-mechanical works achieved till the end of May, 2021:

- Frames have been installed for conveyance tank fine trash rack.
- The weir flushing stoplog leaf has been installed.
- The bend pipe for AB-02 bend at headrace pipe has been installed.
- 130.27m length of Headrace pipe has been installed out of 331.47m.
- At the Seti crossing, pipe has been installed for 85.27m stretch out of 161.9m. Manhole has been installed at upstream of SK-VB02 block.
- At the Poku crossing, pipe has been installed for 50.00m stretch out of 182.88m.
- Expansion joint has arrived at site.
- Tailrace stoplog leaf has arrived at site.

Till date, 664 number of 14mm thick plates have been cut out of 670. Out of the 664 plates, 564 have been rolled.



Figure 13: Pipe installation at Face 4 portal



Figure 14: Unloading of expansion joint

8 ELECTRO-MECHANICAL WORK PROGRESS

The work progress of the Electro-mechanical installation works till the end of May 2021 has been listed below:

- Fitting of the spiral case is in the verge of completion in Bay 01.
- The outside welding of Spiral case at Bay 02 has been finalized. Back cheeping and final welding is ongoing inside this unit.
- The cooling, filter and embedded pipeline layout at the tailrace side has been completed in Bay 02.
- The foundation bolts of EOT crane and earthing plates have been installed in Bay 3. The installation of rails and plates has been under progress.



Figure 15: Spiral case installation in Bay 01



Figure 16: Spiral case in Bay 02

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 16th of Mangsir, 2076. The NEA dedicated line has been made available to all working fronts.

10 TRANSMISSION LINE WORKS (132 KV)

Till the end of May 2021, 37 private lands out of 39 have been purchased. The excavation works have been completed for 48 tower foundations. The concreting works have been completed for 42 tower foundations. Tower erection has been completed for 13 tower locations and protection works have also been completed for ten tower locations.

Excavation works for the LLHP bay at New-Khimti Substation have been started.

608 numbers of composite long rod insulators, 23 Km length OPGW cable along with accessories have arrived at site and stocked at Khimti yard.



Figure 17: Excavation for LLHP bay at New Khimti Substation



Figure 18: Delivery of 23km length OPGW cable and accessories at Khimti yard

Table 12: Transmission Line progress

S. N	Location	Type of Tower	Excavation	Stub Setting	Reinforcement	PCC	RCC	Backfill	Erection
1	AP0	SD+0	-	-	-	-	-	-	-
2	AP1	SB+0	Completed	Completed	Completed	Completed	Completed	Completed	-
3	AP2	SC+0	Completed	Completed	Completed	Completed	Completed	Completed	Completed
4	AP3	SM+0	Completed	Completed	Completed	Completed	Completed	Completed	Completed
5	AP4	SM+0	Completed	Completed	Completed	Completed	Completed	Completed	Completed
6	AP5	SM+0	Completed	Completed	Completed	Completed	Completed	Completed	Completed
7	AP6	SC+0	Completed	Completed	Completed	Completed	Completed	Completed	Completed
8	AP7	SC+0	3 legs excavated, hard rock encountered in one leg						
9	AP8	SB+0	Completed	Completed	Completed	Completed	Completed	Completed	-
10	AP9	SM+0	Completed	Completed	Completed	Completed	Completed	Completed	Completed
11	AP10	SM+0	Completed	Completed	Completed	Completed	Completed	Completed	Completed
12	AP12	SM*+0	ROW Land issue						
13	AP13	SM+0	Completed	Completed	Completed	Completed	Completed	Completed	Completed
14	AP14	SM+0	Concreting of 3 legs completed, excavation of one leg remaining due to hard rock						
15	AP15	SM*+0	Completed	Completed	Completed	Completed	Completed	Completed	-
16	AP16	SM+0	Completed	Completed	Completed	Completed	Completed	Completed	-
17	AP17	SM+6M	Completed	Completed	Completed	Completed	Completed	Completed	-
18	AP19	SM*+0	Completed	Completed	Completed	Completed	Completed	Completed	-
19	AP20	SM*+6	Completed	Completed	Completed	Completed	Completed	Completed	-
20	AP21	SM*+0	Completed	Completed	Completed	Completed	Completed	Completed	-
21	AP22	SM*+0	Completed	Completed	Completed	Completed	Completed	Completed	-

22	AP23	SM+0	Completed	-	-	-	-	-	-
23	AP24	SM+0	Completed	ROW Land issue					
24	AP25	SC+0	Completed	Completed	Completed	Completed	Completed	Completed	Completed
25	AP26	SB+0	Excavation ongoing but hard rock encountered						
26	AP27	SC+0	Completed	Completed	Completed	Completed	Completed	Completed	Completed
27	AP28	SC+0	Completed	Completed	Completed	Completed	Completed	Completed	Completed
28	AP29	SM+0	Planning to use excavator						
29	AP30	SB+0	Completed	Completed	Completed	Completed	Completed	Completed	-
30	AP31	SC+0	Completed	Completed	Completed	Completed	Completed	Completed	Completed
31	AP32	SM+0	Completed	Completed	Completed	Completed	Completed	-	-
32	AP33	SB+0	Completed	Completed	Completed	Completed	Completed	-	-
33	AP34	SC+0	Completed	Completed	Completed	Completed	Completed	-	-
34	AP35	SC+0	Completed	Completed	Completed	Completed	Completed	-	-
35	AP36	SC+0	Completed	-	-	-	-	-	-
36	AP37	SB+0	Completed	Completed	Completed	Completed	Completed	-	-
37	AP38	SC+6M	Completed	Completed	Completed	Completed	Completed	-	-
38	AP39	SM+0	Completed	Completed	Completed	Completed	Completed	-	-
39	AP40	SM+0	Completed	Completed	Completed	Completed	Completed	-	-
40	AP41	SM+0	Completed	-	-	-	-	-	-
41	AP42	SM*+0	Planning to use excavator						
42	AP43	S90	Completed	-	-	-	-	-	-
43	AP44	S90	Completed	-	-	-	-	-	-
44	AP45	SB+0	Completed	Completed	Completed	Completed	Completed	Completed	-
45	AP46	SM+0	Completed	Completed	Completed	Completed	Completed	Completed	-
46	AP47	SC+0	Completed	Completed	Completed	Completed	Completed	Completed	-
47	AP48	SM+6	Completed	Completed	Completed	Completed	Completed	Completed	-
48	AP49	SM*+0	Completed	Completed	Completed	Completed	Completed	Completed	-
49	AP50	SM+0	Completed	Completed	Completed	Completed	Completed	Completed	-
50	AP51	SM+0	Completed	Completed	Completed	Completed	Completed	Completed	-
51	AP53	SM+0	Completed	Completed	Completed	Completed	Completed	Completed	-
52	AP54	SM+6	Concreting ongoing, 2 legs completed						
53	AP56	SM+0	Completed	-	-	-	-	-	-
54	AP57	SM*+6	Ongoing	-	-	-	-	-	-
55	AP58	SB+0	ROW Land issue						
56	AP59	SC+0	Ongoing	-	-	-	-	-	-
57	AP60	SC+0	Completed	3 legs completed, ongoing for one leg					
58	AP61	SC+0	Completed	Completed	Completed	Completed	Completed	Completed	Completed
59	AP62	SC+0	-	-	-	-	-	-	-
60	AP63	SC+0	Completed	Completed	Completed	Completed	Completed		
61	AP64	SM*+3	Completed	Completed	Completed	Completed	Completed	Completed	-
62	AP65	SD+0	-	-	-	-	-	-	-

Note: Data as per report provided by the TL Contractor on 31st May 2021.

11 SOCIAL AND PUBLIC

The major public support activities undertaken in May, 2021 are:

- Construction of gabion wall for river training and bank protection at left bank of Likhu River at Birebesi area.
- Management of PCR testing facility at Shree Arunodaya Madhyamik Vidhyalaya for workers as well as public
- Management of isolation center at Shree Arunodaya Madhyamik Vidhyalaya in coordination with ward office for COVID-19 infected workers and public.



Figure 19: PCR testing facility provided to public and workers

12 OCCUPATIONAL SAFETY AND HEALTH (OSH)

Swet Ganga Hydropower & Construction Limited is concerned with protecting the safety, health and welfare of people engaged in work or employment. A separate department has been formed for monitoring the Occupational Safety and Health compliance. The goal of the department is directed in fostering a safe work environment. The OSH department determines vulnerabilities and provides mitigating and adoptive measures to overcome any work related adversities. It analyses problems through surveillance in determining hazards, conditions of work, and exposure of workers. Also, the OSH department assesses the health of workers and takes measures to reduce vulnerability of hazards and risk which can cause health impairment. It also dictates on measures to prevent unnecessary exposure during normal operating conditions.

The scope of the OSH department also includes emergency preparedness to continue on in case of possible accidents and emergencies. The team has been providing health and safety education, health promotion, and promotion of work ability through disseminating Information on identified workplace health hazards. Regular meetings are conducted for the improvement of safety culture.

The company has made the use of PPE mandatory as per the nature of job. Lifebuoy rings have been installed at the working areas near to the river with sufficient length of ropes. The deep excavation areas have been indicated by signage and barricades. The electric panel boards have been fenced with the implementation of LOTO (Lock Out-Tag Out). Also, water spraying in the access road has been carried out daily with two tractor mounted tanks for dust control. Fire extinguishers are installed at the working fronts for fire safety. Fire extinguishers use training is given.

The safety consultant SMS Environment and Engineering Ltd conducts safety audits at regular interval for enhancement of OSH practice. The records of OSH related activities at site during the month of May, 2021 are:

12.1 MAIN CIVIL CONTRACTOR

Table 13: OSH implementation by the Civil Contractor

Particular	Description	Remarks
Compliance of PPE	All workers have been instructed to comply with the PPE requirements. Workers not complying with PPE requirements are removed from site for one hour and given safety education by the Safety Officer as per the degree of non-compliance.	Ongoing
Isolation of COVID-infected workers	The workers and employees who tested positive for COVID-19 have been kept under isolation for fourteen days in Shree Arunodaya Madhyamik Vidhyalaya premises. Only the workers testing negative for COVID-19 have been allowed to work.	
Electrical safety	The contractor has used electrical panel boards with proper insulation at all working fronts.	Regular monitoring ongoing
Signage	Signage have been replaced by new ones at all the working fronts	
COVID protocol	COVID protocol has been prepared and is being followed with proper monitoring.	Ongoing

12.2 HYDRO-MECHANICAL CONTRACTOR

Table 14: OSH implementation by Hydro-Mechanical Contractor

Particular	Description	Remarks
Isolation of COVID-infected workers	The worker who tested positive for COVID-19 has been kept under isolation for fourteen days in Shree Arunodaya Madhyamik Vidhyalaya premises.	
Safety briefing	The HM contractor has been conducting work related safety briefings at site on regular basis.	Ongoing
COVID protocol	COVID protocol has been prepared and is being followed with proper monitoring.	Ongoing

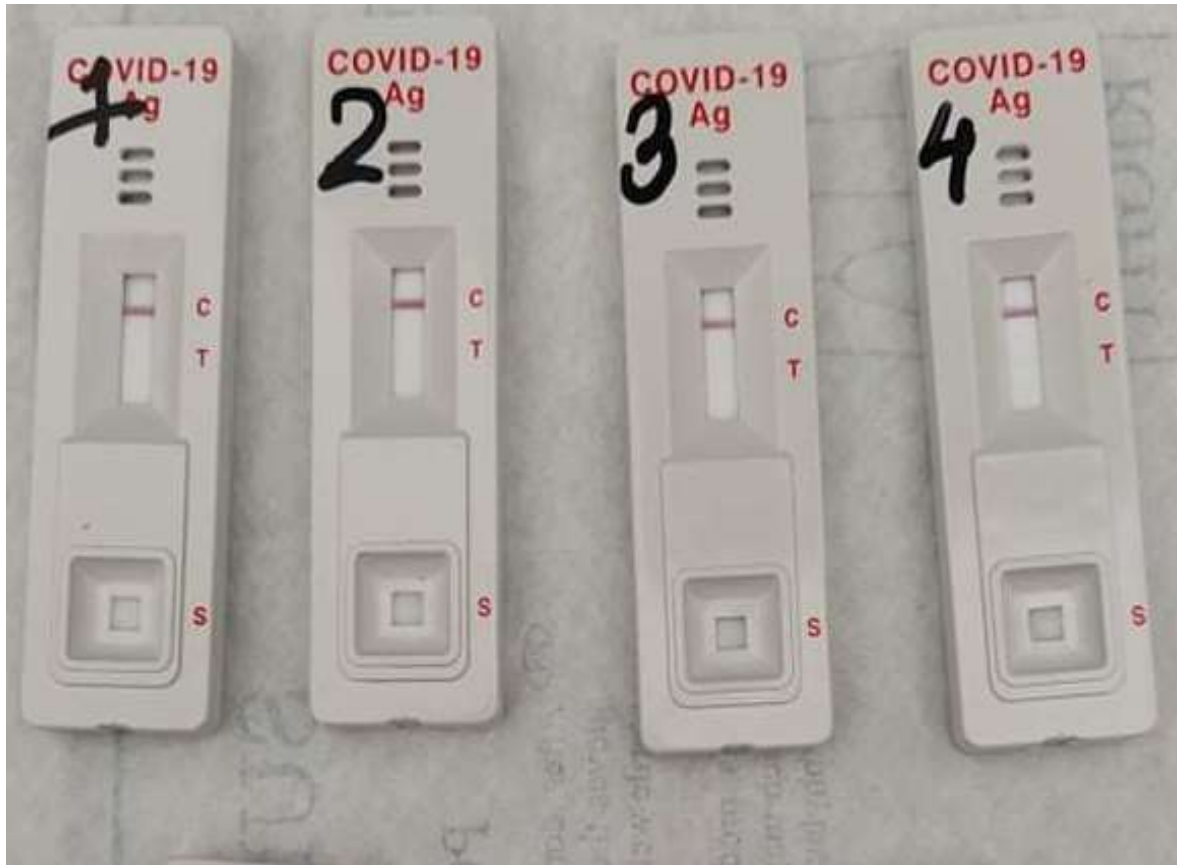


Figure 20: Testing for COVID during arrival of new workers (As a part of COVID protocol)



Figure 21: Isolation room with oxygen cylinders (As a part of COVID protocol)

12.3 TEST RESULTS

Table 15: Luminous intensity inside the tunnel

S.No.	Location	Readings at working face (LUX)	Min. Light Required (LUX)	Readings inside tunnel (LUX)	Min. Light required, (LUX)	Status
1	Main inlet	115	100	78	50	No drilling
2	Set outlet	110	100	79	50	No drilling
3	Seti inlet	105	100	65	50	No drilling
4	Poku outlet	110	100	69	50	No drilling
5	Poku inlet	110	100	75	50	No drilling
6	Main outlet	102	100	69	50	No drilling
7	Surge shaft	140	100	-	-	Normal

Table 16: Oxygen level inside the tunnel

S.No.	Locations	Oxygen level (%)	Oxygen required (% V/V)	Status
1	Main inlet	Natural air circulation between Face 01 and 02		
2	Set outlet			
3	Seti inlet	Natural air circulation between Face 03 and 04		
4	Poku outlet			
5	Poku inlet	Natural air circulation between Face 05 and 06		
6	Main outlet			
7	Surge shaft	Natural air circulation between Surge shaft and connecting tunnel		

Table 17: Noise level inside the tunnel

S.No	Locations	Measured Noise Level (dBA)		Status
		Drilling ON	Drilling OFF	
1	Main inlet	No drilling (Excavation completed)		Tunnel excavation has been completed
2	Set outlet			
3	Seti inlet	No drilling (Excavation completed)		
4	Poku outlet			
5	Poku inlet	No drilling (Excavation completed)		
6	Main outlet			
7	Surge shaft	No drilling (Excavation completed)		

Table 18: Isolation status

S.No.	Company	Total Persons	Total Infected in May, 2021	Total Recovered in May, 2021	Still in Isolation	Remarks
1	SGHCL	57	4	4	-	
2	HHH-BC JV	234	50	10	40	All workers are normal and planned for discharge on 2 nd June
3	3MW	31	1	-	1	Planned for discharge on 2 nd June
4	ATNPL	11	-	-	-	

13 PROGRESS PHOTOGRAPHS



Figure 22: View of weir, intake and undersluice including retaining wall at left bank



Figure 23: Settling basin area



Figure 24: Breakthrough of tunnel stretch between Face 1 and Face 2



Figure 25: Spraying of shotcrete inside the tunnel (Face 5)



Figure 26: Composite long rod insulators stored at Khimti yard



Figure 27: Construction of new staff quarter building at Powerhouse camp



Figure 28: Disinfection of isolation center at Shree Arunodaya Madhyamik Vidhyalaya



Figure 29: Health checkup of COVID-19 infected workers and employees



Figure 30: Excavation of tower foundation at AP 63



Figure 31: Tower erection at AP 27

14 PROGRESS CHART

