



# Environmental Monitoring Report

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## **PUBLIC**

Semestral Report: July 2022 – December 2022  
February 2024

## India: Assam Power Sector Investment Program - Tranche 3

Part 1 of 3: Main Report (Pages 1 – 163) and Annexures 1 – 3

Prepared by Assam Power Generation Corporation Limited (APGCL) for the Asian Development Bank (ADB).

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**Asian Development Bank**

# Environmental Monitoring Report

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Project No. 47101-004  
Semi-Annual Report  
January 2023

SFG Log: 5916

India: Assam Power Sector Investment Program -  
Tranche 3

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# **Environmental Monitoring Report**

**(as of 31<sup>st</sup> December 2022)**

Loan Number 4029-IND

## **Assam Power Sector Investment Program – Project-3**

Reporting Period : from July, 2022 to December, 2022

**Loan Signing Date : 30<sup>th</sup> December 2020**



Prepared by the Assam Power Generation Corporation Limited (APGCL) for the Asian Development Bank

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## **LIST OF ABBREVIATIONS**

ADB	Asian Development Bank
AEGCL	Assam Electricity Grid Corporation Limited
APDCL	Assam Power Distribution Company Limited
APGCL	Assam Power Generation Corporation Limited
CPCB	Central Pollution Control Board
CTE	Consent to Establish
CTO	Consent to Operate
DC	Double Circuit
EA	Project Executing Agency
EARF	Environmental Assessment and Review Framework
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
GOI	Government of India
IEE	Initial Environment Examination
MPH	Main Power House
PAM	Project Administration Manual
PCBA	Pollution Control Board of Assam
PMU	Project Management Unit
SPS	Safeguard Policy Statement
TL	Transmission Line

## **Glossary of Terms**

Environmental Safeguards – means the principles and requirements set forth in Chapter V, Appendix 1 and Appendix 4 (as applicable) of the SPS.

## TABLE OF CONTENTS

Executive Summary .....	7
1.0 Introduction .....	10
2.0 Compliance to National Regulations and International Agreements .....	31
3.0 Compliance to Environmental Covenants from the ADB Loan Agreement .....	41
4.0 Compliance to Project Administration Manual (PAM) .....	46
5.0 Compliance to Contract .....	52
6.0 Compliance to Environmental Management Plan .....	61
7.0 Environmental Supervision and Monitoring Results .....	109
8.0 Training.....	140
9.0 EMP Expenditure.....	145
10.0 Meaningful Consultation and Grievance Redress .....	148
11.0 Observation of External Monitor on SEMR Jan-June 2022.....	149
12.0 Corrective Action Plan .....	154
13.0 Conclusions and Recommendations .....	163

## LIST OF FIGURES

- Figure 1: Project Location Map
- Figure -2 : Detail Layout Plan (as on 31.12.2022)
- Figure 3 A: Layout of Transmission line (Google earth)
- Figure 3 B: Layout of Transmission line (Toposheet)
- Figure 5A : Organogram of environmental safeguards staffing
- Figure 5B : Organogram of Package 2 Contractors Safeguard Team
- Figure 5C : Organogram of Package 4 Contractor
- Figure 5D : Organogram of Package 4 Contractor
- Figure 6: Implementation schedule
- Figure 7: Analysis of Noise Level
- Figure 8: Analysis of Air Quality
- Figure 9: Analysis of Ground water Quality
- Figure 10: Monitoring River water pH

## LIST OF TABLES

- Table 1: Contact Details of the Environment Team under Project Director
- Table 2 : Project Progress status
- Table 3.1: International Treaties and Agreement Signed and Ratified by India
- Table 3.2 : Statutory Clearances
- Table 4 : Compliance of Loan Covenants
- Table 5 : Compliance to PAM
- Table 6 : Compliance to Contract provisions
- Table 7. Compliance to Environmental Management Plan
- Table 8: Corrective Actions taken till 31<sup>st</sup> December, 2022
- Table 9. Noise Monitoring Results
- Table 10. Air Quality Monitoring Results
- Table 11. Ground Water Quality Monitoring Results
- Table 12 : Surface Water Quality Monitoring Results
- Table 13 : RO water Quality
- Table 14 : Analysis of the all test results.
- Table 15 : Fire extinguishers installed at site
- Table 16 : Summary of HSE at site

**ANNEXURES.....164-240**

6

## EXECUTIVE SUMMARY

### Project Name : Assam Power Sector Investment Program – Project-3

Executing Agency	Government of Assam acting through Assam Power Generation Corporation Limited (APGCL)
Implementing Agency	Assam Power Generation Corporation Limited (APGCL)
Environment Safeguards Categorization	A
Environment Safeguards Documentation	<p>EARF - 2013, EIA - 2018, EMP - 2018 (EIA, EMP being updated)</p> <p>EIA was also prepared and disclosed in the MoEF&amp;CC, GOI website for the LKHEP in connection with the Environment Clearance for the project. Initially prepared in March 2017 and finally submitted to MoEF&amp;CC in July 2019. On the basis of that Environment Clearance was accorded to the project vide letter No. J-12011/26/2012-IA-I dated 4<sup>th</sup> September, 2019.</p> <p>The disclosed EIA (June 2018) in the ADB's website was prepared on the base document of the EIA and EMP prepared by WAPCOS. As both the Ministry and ADB have different GENERIC STRUCTURE OF ENVIRONMENTAL IMPACT ASSESMENT both the reports were structurally different. But the basic assessment and information provided in the EIA report were the same.</p> <p>Additionally, as per ADB's requirement supplementary EIA were carried out in the year 2017 by ES Safeguards consultants.</p> <p>EIA addendum is updated with the current layouts and additional mitigation measures and will be submitted to ADB for finalization.</p>
Project Stage Obtained	Construction
Detailed Design Required Post-Approval	Yes. It all are EPC mode of contract. Currently Package 1 – Building and Infrastructures works; Package 2 (Civil and Hydromechanical), Package 3 - Electro Mechanical and Package 4 – Transmission line were awarded.
Contract(s) Awarded	Yes. Package 1 – Building and Infrastructures works, Package 2 (Civil and Hydromechanical), Package 3 - Electro Mechanical & Package 4 – Transmission line awarded
Bidding Document(s) Include EMP Cleared by ADB	Yes. Bidding document of 1 – Building and Infrastructures works, Package 2 (Civil and Hydromechanical), Package 3 Electro mechanical works and Package 4 – Transmission line EMP includes relevant sections of the EMP and all were cleared by ADB.
Contract(s) Awarded Include EMP Cleared by ADB	Yes. Contract document of all the 4 packages included EMP which was cleared by ADB. Package 1 ADB cleared EMP for Building and Infrastructures works. <b>Annexure 1</b> . Rest EMPs already shared in the last report.
National Environment, Health and Safety	All clearances/permits required for the project have been obtained like Environment Clearance, Forest Clearance Stage II, Ministry of Defense, Ministry of Home Affairs, Central Electric Authority, Ministry of Tribal Affairs, etc.

Clearance(s) Obtained	As per the EC clause no ix. of X, which stipulates 'No further expansion or modification in the plant shall be carried out without prior approval of the Ministry of Environment and Forests & Climate Change (MoEF&CC)'. MoEF&CC, New Delhi and Integrated Regional Office of MoEF&CC, Guwahati; were intimated by the APGCL about CEA approved changes due to detail engineering on 28.11.2022.  Contractor of CP-2 have the Labour License, CTO for Batching Plant (near Power House), CTO for Crusher, Clearances from PESO for establishment of Explosive Magazine, CTO for Batching Plant (near Dam), etc.																							
Contractor(s) Given Access to Site	Yes. Initially contractor given access on 20 <sup>th</sup> November 2020 for package 2. <table><tr><th>Date of handover</th><th colspan="2">Description of the land</th></tr><tr><td>20<sup>th</sup> Nov'20</td><td colspan="2">Approx. 37 Hectare revenue land -1 handed over to Contractor.</td></tr><tr><td>20<sup>th</sup> Nov'20</td><td colspan="2">Approx. 63.2 Hectare revenue land -2 handed over to Contractor.</td></tr><tr><td>2<sup>nd</sup> Jan'21</td><td colspan="2">Approx. 150 Hectare revenue land handed over to Contractor.</td></tr><tr><td>11<sup>th</sup> Jun'21</td><td colspan="2">477.76 Hectare, diverted forest land handed over to Contractor.</td></tr><tr><td>03rd Jul'21</td><td colspan="2">45.28 Hectare, diverted reserved forest land handed over to Contractor.</td></tr><tr><td colspan="3">Total 917.716 Ha land was handed over by the end of June 2022 which is 58.19 % of the total land. All the construction activities of Package 2, Package 3 and Package 1 will be concentrated within this area only. This figure of 773.24 Ha is excluding the submergence area in Dima Hasao.</td></tr></table>			Date of handover	Description of the land		20 <sup>th</sup> Nov'20	Approx. 37 Hectare revenue land -1 handed over to Contractor.		20 <sup>th</sup> Nov'20	Approx. 63.2 Hectare revenue land -2 handed over to Contractor.		2 <sup>nd</sup> Jan'21	Approx. 150 Hectare revenue land handed over to Contractor.		11 <sup>th</sup> Jun'21	477.76 Hectare, diverted forest land handed over to Contractor.		03rd Jul'21	45.28 Hectare, diverted reserved forest land handed over to Contractor.		Total 917.716 Ha land was handed over by the end of June 2022 which is 58.19 % of the total land. All the construction activities of Package 2, Package 3 and Package 1 will be concentrated within this area only. This figure of 773.24 Ha is excluding the submergence area in Dima Hasao.		
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Construction Progress (%)	<b>Physical &amp; Financial Progress : Package wise</b> <table><tr><th>Sl.</th><th>Package Details</th><th>Physical Progress</th><th>Financial Progress</th></tr><tr><td>1</td><td>Civil &amp; Hydro Mechanical (Pkg. 2)</td><td>38.9%</td><td>21.8%</td></tr><tr><td>2</td><td>Electro Mechanical (Pkg. 3)</td><td>10%</td><td>0.2%</td></tr><tr><td>3</td><td>Building and Infrastructure (Pkg. 1)</td><td>1%</td><td>-</td></tr><tr><td>4</td><td>Transmission line (Pkg. 4)</td><td>17%</td><td>15%</td></tr></table>			Sl.	Package Details	Physical Progress	Financial Progress	1	Civil & Hydro Mechanical (Pkg. 2)	38.9%	21.8%	2	Electro Mechanical (Pkg. 3)	10%	0.2%	3	Building and Infrastructure (Pkg. 1)	1%	-	4	Transmission line (Pkg. 4)	17%	15%	
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3	Building and Infrastructure (Pkg. 1)	1%	-																					
4	Transmission line (Pkg. 4)	17%	15%																					
Unanticipated Impacts including Change of Scope or Design	As per Forest Advisory Committee's (MoEF&CC) suggestion the miscellaneous area and Muck disposal site has been shifted from Forest Land to Revenue Land. EIA addendum is under preparation as :-																							

	<ul style="list-style-type: none"><li>there are some changes due to detail engineering approved by Central Electricity Authority as per Memorandum of Changes on 09.11.2022</li><li>As per FAC during Forest clearance suggested to shift the dumping area form Forest to Revenue land. EPC contractor of Package 2 selected 4 dumping ground in Revenue land.</li><li>Reservoir area 620 ha as per DPR and MOC.</li><li>Possibility of presence of pyrites in the excavated materials and the mitigation measures.</li><li>A section of Langka Umrangso road now National Highway and the bridge over Langku Nala falling within submergence area will be constructed by State PWD, etc.</li></ul>		
Number of Site Inspections and Audits Undertaken by Environment Safeguards Staff in Reporting Period	<p>14 nos of site inspection of all the components (Pkg.1, Pkg.2, Pkg3) were carried out. Day to day monitoring on EHS were carried out by site staffs of PMC and APGCL and reported to Environment Safeguard team of PMC and APGCL.</p> <p>During joint site inspections Environment Specialist of PMC and Environment Expert of APGCL participated along with Environment engineer of contractor.</p> <p>Joint Site inspections were carried out on 3<sup>rd</sup> July, 24<sup>th</sup> July, 10<sup>th</sup> August, 21<sup>st</sup> August, 8<sup>th</sup> September, 19<sup>th</sup> September, 3<sup>rd</sup> October, 21<sup>st</sup> October, 11<sup>th</sup> November, 25<sup>th</sup> November, 10<sup>th</sup> December and 20<sup>th</sup> December.</p> <p>Training was conducted by PMC and APGCL the contractor on EHS. Training was also given by Contractor to their staff on EHS.</p>		
Corrective Action Required	Corrective actions as per site visits, ADB Aide Memoire for the ADB Mission 5 <sup>th</sup> to 9 <sup>th</sup> December 2022 and External Monitor's observation. All the corrective actions suggested by PMC, APGCL, External Monitor and ADB were not closed during the reporting period. Status of compliances are mentioned in Table 8, 9, 10.		
Outstanding Corrective Action this Reporting Period	Environment Safeguards – Outstanding Corrective Action Plan upto December, 2022 are mentioned in Table 8.		
Non-Compliances Recorded this Reporting Period	Corrective actions mentioned in Table 8, 9.		
Corrective Action Required			
Number of Health and Safety Incidents	<b>COVID 19 incidents :</b>		
	Month	COVID 19 +ve	Recovered
	July to December 2022 Total	0	0
	COVID vaccination status of the staff and workers.		
	Month	1 <sup>st</sup> Dose	2 <sup>nd</sup> Dose
	July 2022	80	205
	August 2022	76	201
September 2022	37	125	
October 2022	45	130	

	November 2022		43	116			
	December 2022		43	167			
	Jul - Dec Total		324	944			
	Other incidents :						
	Month	Work force	LTI	Dangerous occurrence	Non-Work Related Incident	First Aid Cases	Near Miss Reports
	July 2022	890		1	1	3	
	Aug 2022	981				2	
	Sept 2022	946				3	
	Oct 2022	884					1
	Nov 2022	913					
	Dec 2022	929			1	1	1
	Jul - Dec 2022		-	1	2	9	2
(Dangerous occurrence on (20/7/2022))							
Safety Statistics :							
Description			Cumulative for the Project				
No. of Reportable Lost Time Injuries			0				
Frequency Rate (FR)			-				
Severity Rate (SR)			-				
Million Man-hours worked			4587319				
No. of Fatalities			-				
Safe man hours from last reportable lost time injury (man-hours)			2542932				
Non Work Related Accident :			1 worker died on 15th July, 2022. Another accident occurred on 5.12.22 and succumbed to death on 28.12.22 in hospital.				
GRM Functional		Yes. Project GRM is a three-tier system approved by Government of Assam. Grievances were on land compensation issues. No grievances were on environment, Health and Safety. Contractors own GRM is also there to address contractor's staff and labour grievances.					
Number of Unresolved Grievances from Prior Reporting Period		Nil related to environment Health and Safety.					
Number of Grievances Received in Reporting Period		Nil related to environment Health and Safety.					
Number of Grievances Resolved this Reporting Period		NA					

Number of Grievances Outstanding	NA
Number of Grievances referred to Court of Law	Nil related to environment Health and Safety
Number of Grievances referred to the Accountability Mechanism	Nil related to environment Health and Safety

Note : Supplementary environmental assessment studies (CIA, WQRP, WRMP) carried out during project preparation are part of the June 2018 EIA as disclosed on the ADB website.

## 1.0 Introduction

### 1.1 Brief Project Description

Government of Assam is the Executing Agency for the Assam Power Sector Investment Program – Project-3 and acting through Assam Power Generation Corporation Limited (APGCL). The Assam Power Generation Corporation Limited and its Project Management Unit are wholly responsible for the implementation of ADB-financed projects, as agreed jointly between the borrower and ADB, and in accordance with the policies and procedures of the government and ADB. ADB staff is responsible for supporting implementation including compliance by Assam Power Generation Corporation Limited and its Project Management Unit of their obligations and responsibilities for project implementation in accordance with ADB's policies and procedures.

The objective of the project is to increase generation from clean energy sources in the State of Assam. The project shall comprise of the following :

- Output 1 : Lower Kopili hydropower generation capacity expanded through the construction and commissioning of the 120 megawatt (MW) Lower Kopili Hydroelectric Project and its connection to the transmission grid. This comprises 2 units of 55 MW main powerhouse, 2 units of 2.5 MW and 1 unit of 5 MW auxiliary powerhouse.
- Output 2 : Institutional capacity of APGCL strengthened. Through capacity building on construction, operations and maintenance and safeguards for 30 staff (including 6 women).
- Output 3 : Resource Management and community resilience initiatives implemented. Through (i) installation of sensors and monitoring equipment. (ii) development of dashboards for state and local government agencies for resource management and (iii) development of plans and training for at least 500 people (including 40% women) along the Kopili River basin for increased capacity for managing disaster.

The Project's impact will be aligned with increased availability of electricity in Assam. The outcome of the project will be increased capacity of energy generation in Assam, where electricity generation will be increased by 469 gigawatt-hour/year (GWh/year). Greenhouse



gas generation from electricity generation will decrease by 360,000 tCO<sub>2</sub>/year from 2024 onwards.

The dam proposed to be built at Longku (Figure-1) will be a concrete gravity dam, of height 66.5 m and top longitudinal cross section 335 m. The crest of the dam will be 229 m above mean sea level (MSL). The dam will create a reservoir at Longku with a spread of 620 hectares (ha), with live storage of 77 million cubic meter. This is the current design and that this has changed since the 2018 EIA. A tunnel will be excavated to deliver the water from the reservoir to the main power plant. Water from the intake to the main power plant enters the tunnel of diameter 7.0 meter on the right bank of the Kopili river. This tunnel will be 3.64122 kilometer (km) long. At the end of this low-pressure tunnel, water will enter the pressure shaft. The pressure shaft will be circular of 6.1 / 5.2 m diameter (UG section, 610m + 81.9m). The pressure shaft will deliver water to two steel penstocks each of length of about 16.3 m, which in turn would convey water to the turbines. Water to the auxiliary power plant will be taken directly along a steel-lined circular pressure shaft of diameter 3.3 m and of length 64 m, and delivered to the turbine through three steel penstocks, each about 26.2m to 24.2m m long. The designed discharge capacity is 112.71 cubic meter per second (m/s), at a flow velocity of 3.86 m/s and 5.31 m/s.

The power evacuation system, an essential component of LKHEP, will be used to evacuate power it generates into the National / local grid. The power evacuation system will include the construction of a 220 kV Double Circuit (DC) transmission line (TL) from the Main Power House (MPH) site of LKHEP to an existing 132/33 kV Substation (S/S) at Sankardev Nagar (Lanka) and the construction of a 33 kV Single Circuit (SC) TL from the Auxiliary Power House (APH) site of LKHEP to an existing 132/33 kV S/S at Umrangsu. The length of TL between the MPH to Sankardev Nagar is 46.013 km (final alignment survey not completed yet), and between the APH to Umrangsu is 22 km. This is the current design and this has changed since the 2018 EIA. The TL corridors are envisaged to by-pass some villages / settlements and to avoid forests (Figure 3A, 3B).

The power evacuation system will also involve upgrading of an existing 132/33 kV S/S at Sankardev Nagar with the existing 2 power transformers of capacity 2x25 MVA to 220kV with 2 inter-connected transformers (ICT) of capacity 2 x 160 MVA. The relevant switchgear proposed type is a Gas Insulated Substation (GIS). There is no land acquisition associated with the transmission system activity, and no potential impacts on biodiversity are anticipated.

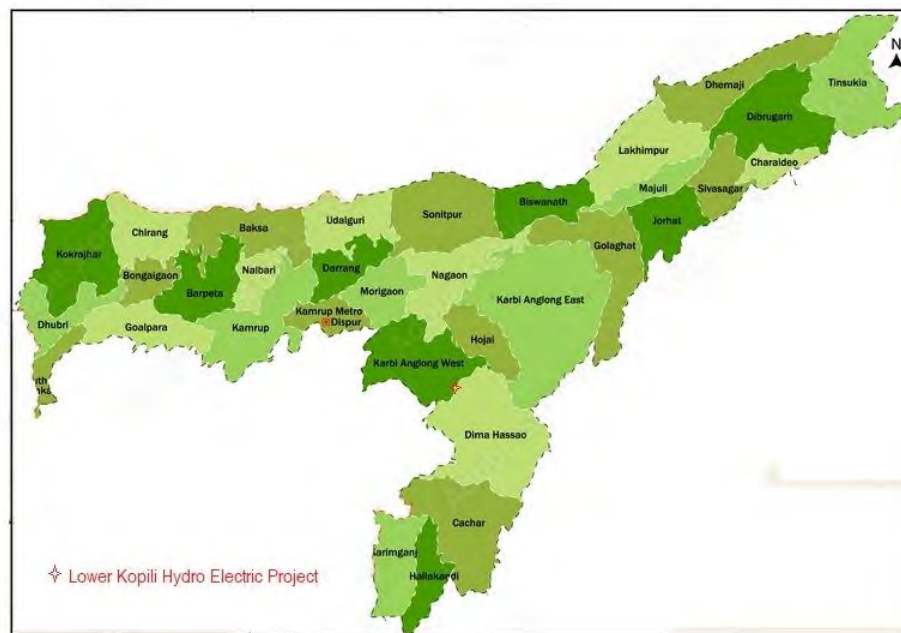
The Lower Kopili HEP (subproject) is classified as Environment Category A, Involuntary Resettlement (IR) Category A, and Indigenous Peoples (IP) Category A ("triple A") in accordance with ADB's Safeguard Policy Statement (SPS 2009). Additionally, based on the results of the climate change risk assessment, the subproject is High Risk for Multi-Hazard Index and Climate. To fulfill national regulatory requirements and ADB's SPS 2009, APGCL prepared an Environmental Impact Assessment (EIA) with environmental no-objection obtained from the Ministry of Environment, Forest and Climate Change of Government of India.

There is a change in layout since the EIA during the Forest Clearance process as per Forest Advisory Committee (FAC), MoEF&CC. The Figure 2 has been prepared as per the updated layout map as on 31.12.2022. As transmission line is on the Revenue Land there is a

change in the alignment and the length is reduced from 52 km to 46.013 km Figure 3. Correspondingly number of towers also reduced from 187 to 153.

The comprehensive environmental management plan (EMP) includes plans and programs for physical and biological mitigation for aquatic habitat, terrestrial fauna and flora, and hydrological impacts both upstream and downstream of the subproject as well as prescribes quality monitoring activities. As required by ADB's SPS 2009 and the Access to Information Policy 2018, draft EIA was disclosed in April 2018. As per GOI requirements EIA was also approved by MoEF&CC and the EIA was disclosed in the Pollution Control Board of Assam site ([http://pcbassam.org/EIAREPORT/EIA%20Report\\_APGCL/Draft%20EIA%20Report%20Lower%20%20Kopli.pdf](http://pcbassam.org/EIAREPORT/EIA%20Report_APGCL/Draft%20EIA%20Report%20Lower%20%20Kopli.pdf)). Summary EIA in English, Hindi and Assamese was disclosed in web site (<https://ercindia.org.in/archive.ercindia.org.in/index.php/public-hearings-main?start=22>). June 2018 EIA disclosed in the ADB site was uploaded in the APGCL web site (<https://old.apgcl.org/EIA.pdf>; <https://old.apgcl.org/EIA%20annexures.pdf> ; <https://old.apgcl.org/EIA%20Transmission%20line.pdf> ) with all the supplementary EIA studies. Environment Clearance was accorded for the project on 4<sup>th</sup> September, 2019. As the project requires diversion of forest land stage 1 and stage 2 Forest Clearance was also accorded for the project on 5<sup>th</sup> February, 2019 and 4<sup>th</sup> December, 2020 respectively by MoEF&CC. APGCL will adhere to the EIA/EMP and will be responsible for timely implementation to ensure that all activities are in compliance with the applicable national and local policy, legal and administrative framework as well as ADB's SPS 2009.

**Figure 1: Project Location Map**





**Figure -2 : Detail Layout Plan** (as on 31.12.2022)

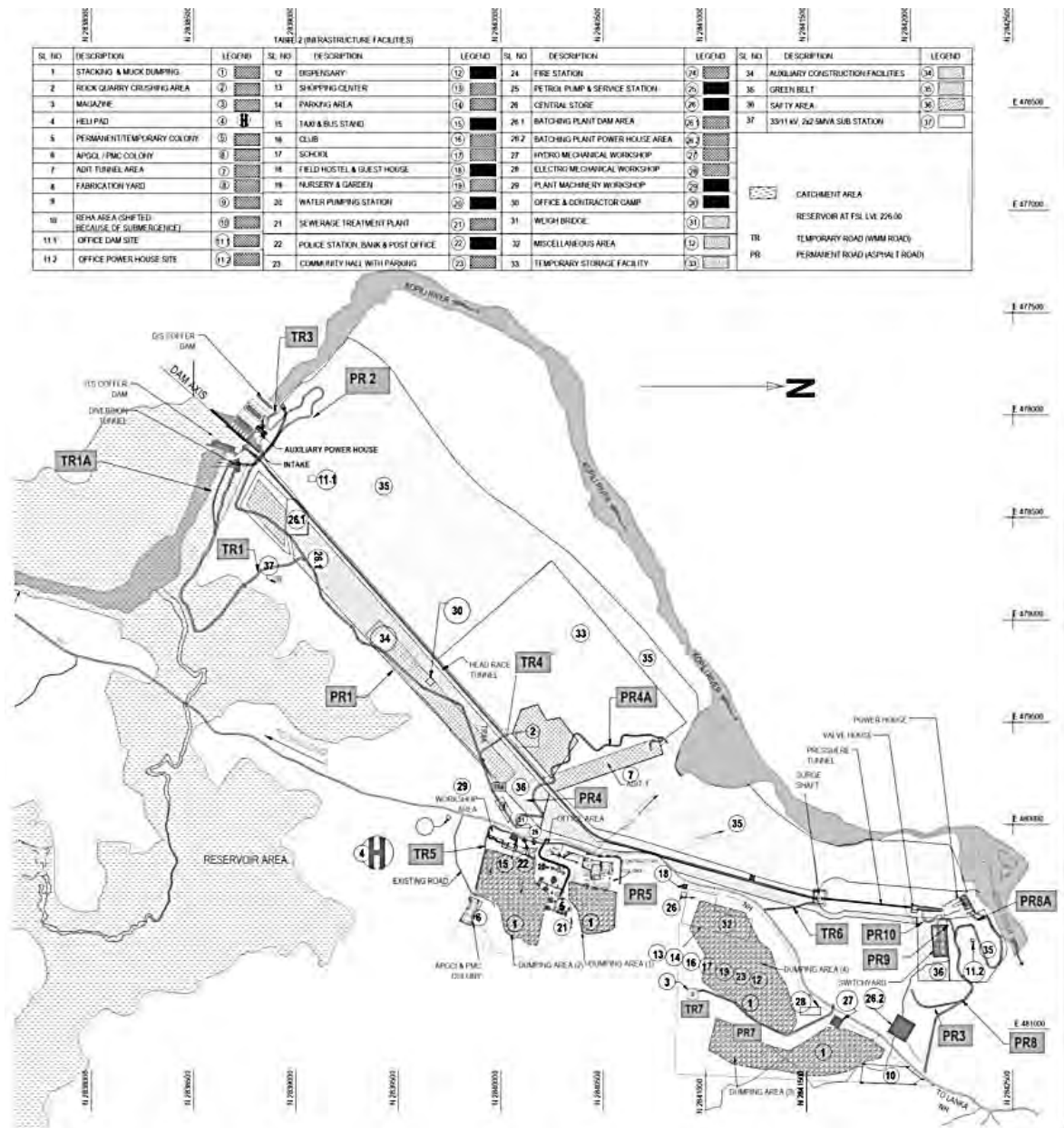
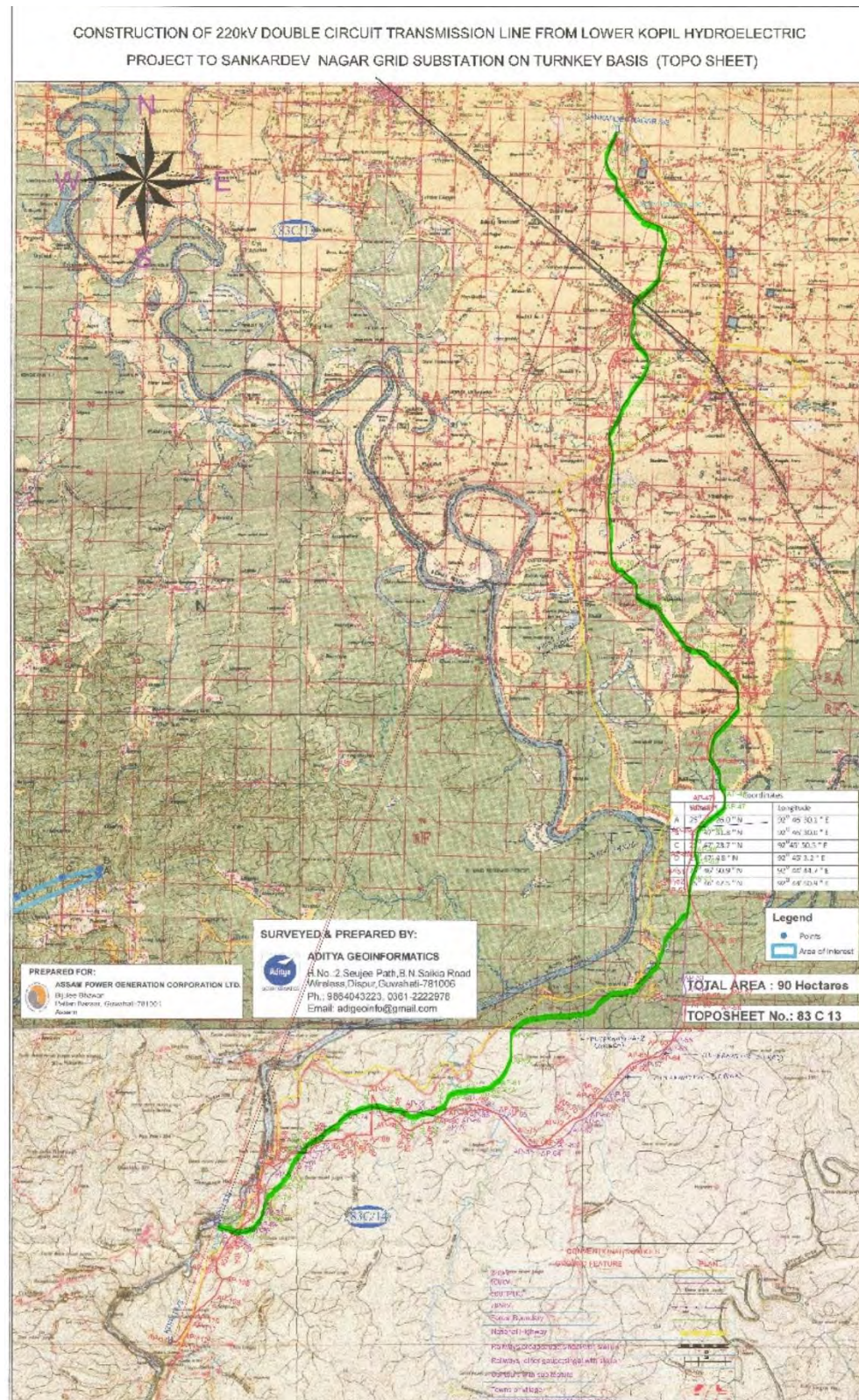


Figure 3 A: Layout of Transmission line (Google earth)



Figure 3 B: Layout of Transmission line (Toposheet)





A grievance redress mechanism (GRM) is established to deal with complaints on environmental and social issues is also in place and its mandate is to resolve the grievances

in a timely manner and the approved GRM was adequately publicized amongst the affected peoples.

Organogram of environmental safeguards staffing and relationships between executing and implementing agencies, consultants, contractors, subcontractors (Figure 5A, 5B). Contact details of Environment Safeguard team is given in the table 1.

Figure 5A : Organogram of environmental safeguards staffing

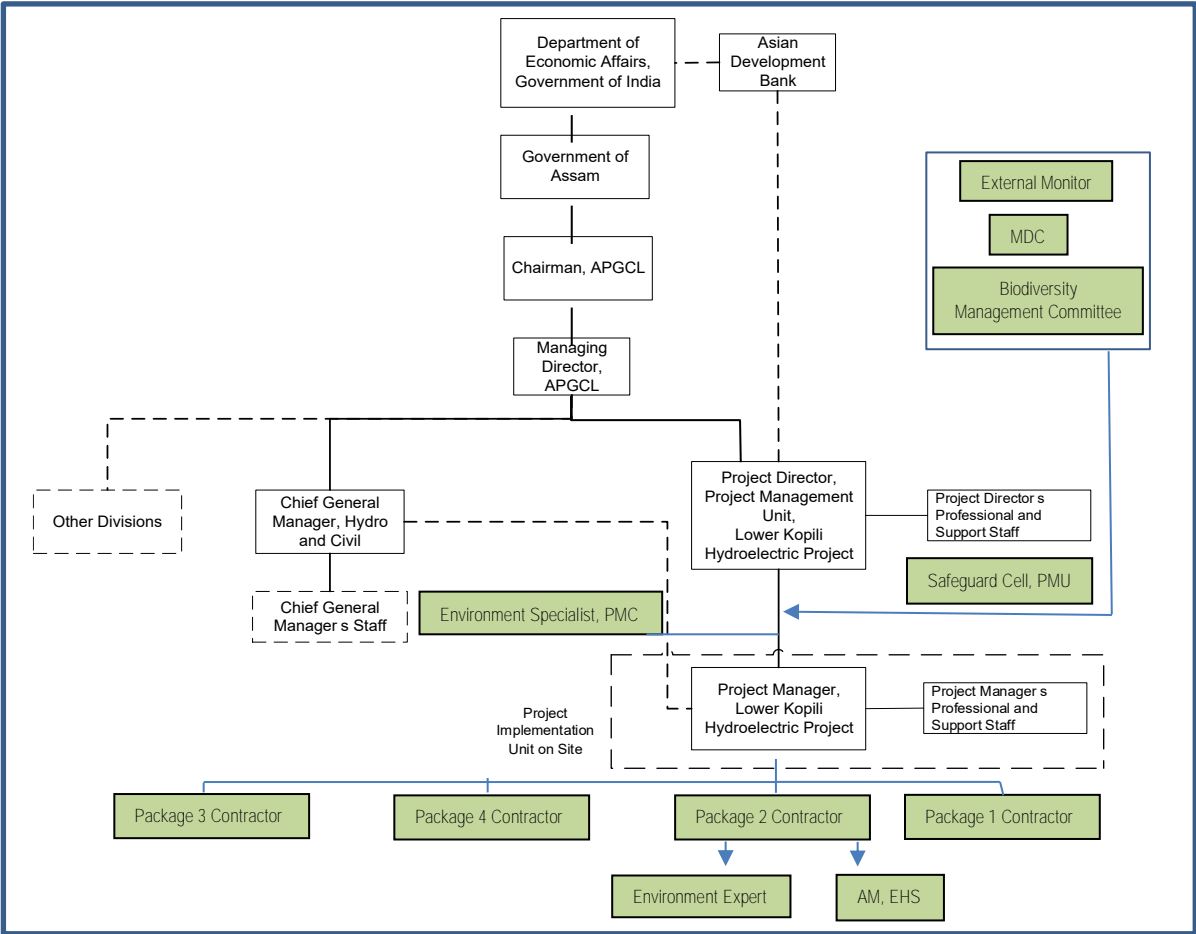


Figure 5B : Organogram of Package 2 Contractors Safeguard Team

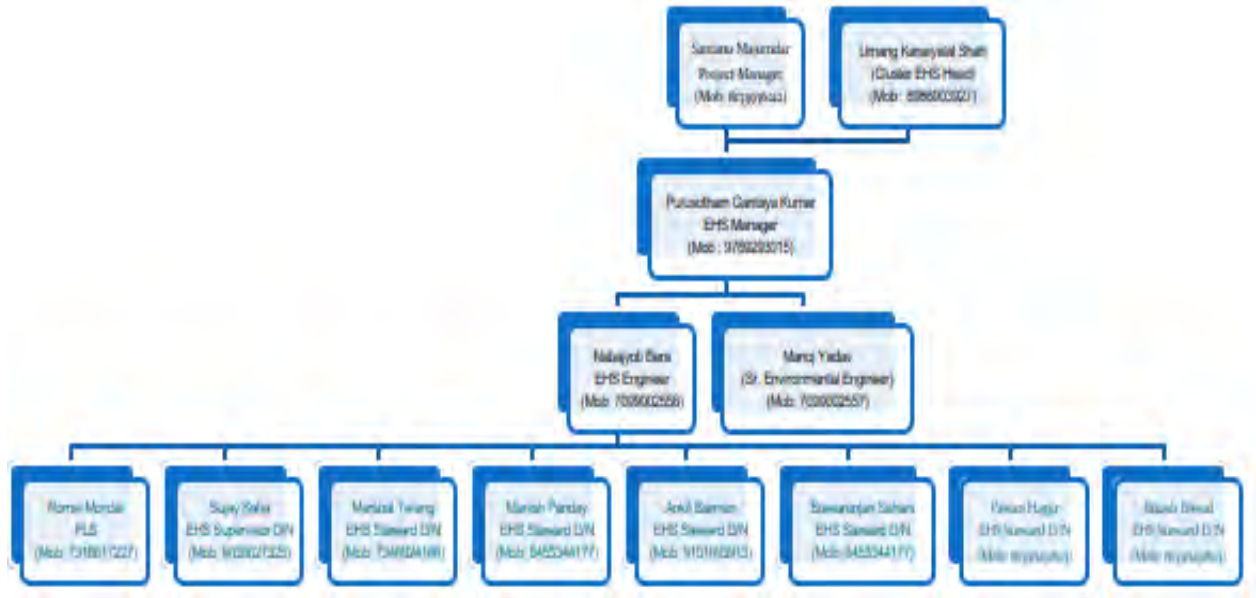


Figure 5C : Organogram of Package 4 Contractor

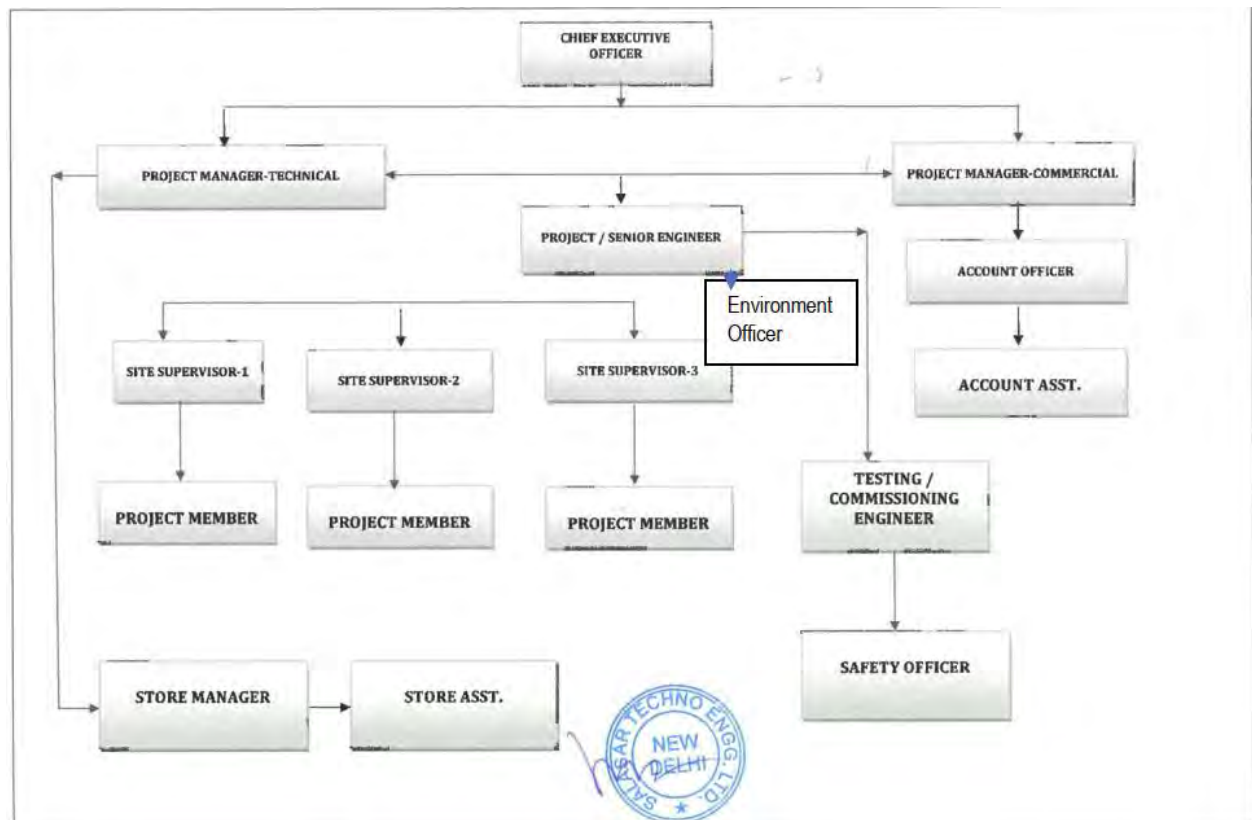
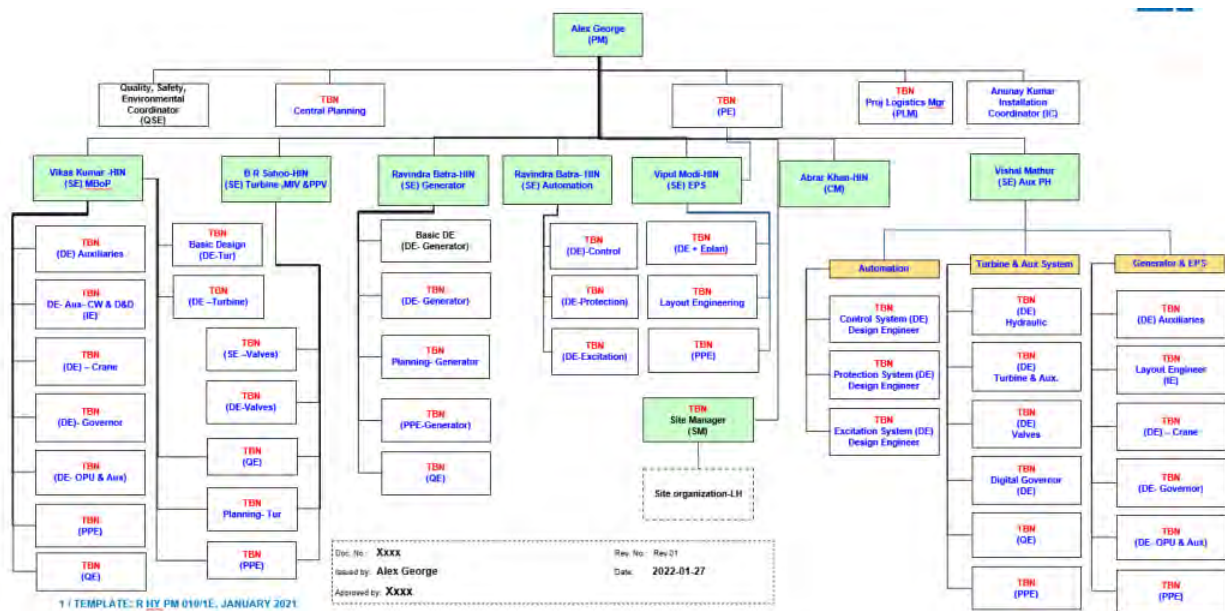


Figure 5D : Organogram of Package 4 Contractor





**Table 1: Contact Details of the Environment Team under Project Director.**

	Name	Contact no	Email Address
PMU, EE	Dr Deepak Kumar Baruah	9435113521	deepakbaruah007@gmail.com
PIU, EHS	Mr. Dhiraj Borthakur	9435526416	
PMC	Dr Jayanta Das	9435406966	gibbonconservation@gmail.com
Contractor Package 2	Mr. P. G. Kumar	9769293015	
	Mr Manoj Yadav Environment Engineer L&T	7838013312	manojyadav@Intecc.com
	Mr. Naba Jyoti Bera Assistant Manager EHS L&T	7099002556	nabajyotibera@Intecc.com
Contractor Package 3	Mr Mohit Mittal. Head HSE	8860085825	mohit.mittal@andritz.com
	Mr. R Ramkumar, HSE Manager at site	9384549075	
Contractor Package 4	Mr. Dharamveer Kumar Sharma Environment Health and Safety Expert	9368772851	veerdharama36@gmail.com

(Note : Contract of External monitor signed and kick-off meeting was held on 28.12.21 at APGCL, Assam. Subsequent site visits were carried out the month of February and May, 2022. For this reporting period site visits by external monitor were done in the last week of November and first week of December, 2022).

Field level supervision are carried out by the Environment Engineer, EHS Manager and Assistant Manager EHS of the contractor (CP2) and they prepare monthly Environment Report and Monthly Safety Reports and submit it to APGCL. PMC environment specialist visit the sites and prepare field reports and corrective actions to be complied. PMC also carry out joint visit with APGCL environment expert, APGCL EHS Officer and monitor the compliances. Monthly reports submitted by the contractor and field information received from the PMC staff and APGCL staff on the EHS issues are regularly reviewed and necessary actions are being suggested for the compliance and proper implementation of EMP. Trainings are also given on the implementation of EMP, EHS issues, Test of ambient environment for the contractor personal as well as APGCL and PMC staff.

Contractor carry out EHS inspection by EHS Engineer and supervision one per week; EHS inspection by Project EHS 2 per month and Executive EHS inspection 1 per month.

## 1.2 Project Progress Status and Implementation Schedule

Project progress status are shown in table 2.

Table 2 : Project Progress status

Project Component/Stage	Awarded on	Target Completion Date	Progress Status	Physical Progress	Remarks
<ul style="list-style-type: none"> <li>Contract award (Package 2) (Civil and Hydromechanical) (Construction phase)</li> </ul>	<ul style="list-style-type: none"> <li>5.8.2020</li> <li>Start Date 1<sup>st</sup> Sept, 2020</li> </ul>	<ul style="list-style-type: none"> <li>31<sup>st</sup> December 2023 (as per Loan agreement)</li> <li>30<sup>th</sup> June 2024 (as per PAM)</li> <li>31<sup>st</sup> August 2024 (as per Contract agreement with Contractor)</li> <li>30<sup>th</sup> April 2024 as per Best effort schedule</li> </ul>	Ongoing	38.9%	Contract awarded to L&T contractor, Relevant section of the EMP included in the contract Labour license and insurance covered 1000 workers.
<ul style="list-style-type: none"> <li>Contract Package 3 (Electro Mechanical)</li> </ul>	<ul style="list-style-type: none"> <li>NOA 9<sup>th</sup> Nov, 2021</li> <li>Signing of contract - 2<sup>nd</sup> November, 2021.</li> <li>Awarded 9<sup>th</sup> Sept, 2021</li> <li>Commencement date : 12th November 2021.</li> </ul>	<ul style="list-style-type: none"> <li>13<sup>th</sup> March, 2025</li> </ul>	Ongoing	10.0%	Contract awarded to M/s Andritz Hydro Private Limited contractor, Relevant section of the EMP included in the contract. Copy of the labour license pending but insurance submitted.
<ul style="list-style-type: none"> <li>Contract Package 1 (Buildings)</li> </ul>	<ul style="list-style-type: none"> <li>NOA 24<sup>th</sup> August, 2022</li> </ul>	30 <sup>th</sup> April, 2024	Ongoing	1.0%	EMP provisions included in the

Project Component/Stage	Awarded on	Target Completion Date	Progress Status	Physical Progress	Remarks
	<ul style="list-style-type: none"> <li>Contract signed 30<sup>th</sup> Sept, 2022</li> <li>Start date 1<sup>st</sup> Nov, 2022</li> </ul>				Tender Document. Copy of labour license and insurance not submitted.
<ul style="list-style-type: none"> <li>Contract Package 4 (Transmission Line)</li> </ul>	<ul style="list-style-type: none"> <li>Award: 30.06.2022</li> <li>NOA- 20.04.2022</li> <li>Start date 1<sup>st</sup> June 2022</li> </ul>	31 <sup>st</sup> May, 2024	Ongoing	17.0%	EMP provisions included in the Tender Document. M/S. Salasar Techno Engineering Limited JV with M/s. Akelik Group OJCS Insurance submitted by the contractor but Labour License yet to be submitted.
<ul style="list-style-type: none"> <li>ERP Packages (Package no 6)</li> </ul>	Start date 1 <sup>st</sup> June 2019			43.0%	Lot 4, NOA issues on 27 <sup>th</sup> Dec, 2022
<ul style="list-style-type: none"> <li>Resources and Community Resilience (under JFPR)</li> </ul>	NOA, Contract award date, Start date 28.10.2022		ongoing		Inception report submitted on 28 <sup>th</sup> December 2022.

ERP - Enterprise resource planning

### 1.2.1. Physical Progress of Package 2 :

#### 1.2.1.1. Road work

Activity	UoM	Scope	Achieved up to Nov'22	Achieved FTM Dec'22	Cum Achieved till Dec'22	Balance Qty	Status of Drawing Approval
Excavation of Permanent Road-01	M	2,488	2,488	-	2,488	Completed	Cat-A
Excavation of Permanent Road-02	M	680	680	-	680	Completed	Cat-A
Excavation of Permanent Road-03	M	310	310	-	310	Completed	Cat-A
Excavation of Permanent Road-04	M	1,329	1,329	-	1,329	Completed	Cat-A
Excavation of Permanent Road-05	M	397	397	-	397	Completed	Cat-A
Excavation of Permanent Road-07	M	584	584	-	584	Completed	Cat-A

Activity	UoM	Scope	Achieved up to Nov'22	Achieved FTM Dec'22	Cum Achieved till Dec'22	Balance Qty	Status of Drawing Approval
Excavation of Permanent Road-08	M	1,552	1,552	-	1,552	Completed	Cat-A
Excavation of Permanent Road-08A	M	95	95	-	95	Completed	Cat-A
Excavation of Permanent Road-09	M	165	165	-	165	Completed	Cat-A
Excavation of Permanent Road-10	M	188	188	-	188	Completed	Cat-A
Excavation of Temporary Road-01	M	1,590	1,590	-	1,590	Completed	Cat-A
Excavation of Temporary Road-01A	M	346	346	-	346	Completed	Cat-A
Excavation of Temporary Road-03	M	168	168	-	168	Completed	Cat-A
Excavation of Temporary Road-04A	M	252	252	-	252	Completed	Cat-A
Excavation of Temporary Road-05	M	1,099	1,099	-	1,099	Completed	Cat-A
Excavation of Temporary Road-06	M	254	254	-	254	Completed	Cat-A
Excavation of Temporary Road-07	M	188	188	-	188	Completed	Cat-A
Cross Drainage (Box Culvert + Hume pipe culvert)	Nos	12	12	-	12	Completed	Cat-A
Rectangular RCC Cross Drainage's	Nos	9	9	-	9	Completed	Cat-A
Road drain concreting (side drain)	M	10,545	10,545	-	10,545	Completed	Cat-A
Road GSB laying	M	11,915	11,915	-	11,915	Completed	Cat-A
Road WMM laying (1st Layer)	M	11,842	11,842	-	11,842	Completed	Cat-A
Road WMM laying (2nd Layer)	M	11,842	11,842	-	11,842	Completed	Cat-A
Road DBM laying	M	7,742	801	4,273	5,074	2,668	Cat-A

#### 1.2.1.2. Main work

Activity	UoM	Scope	Achieved up to Nov'22	Achieved FTM Dec'22	Cum Achieved till Dec'22	Balance Qty	Status of Drawing Approval
<b>Adit Tunnel UG Excavation</b>							
In tunnel RM	M	355	355	-	355	Completed	Cat-A

Activity	UoM	Scope	Achieved up to Nov'22	Achieved FTM Dec'22	Cum Achieved till Dec'22	Balance Qty	Status of Drawing Approval
w.r.t Percentage	%	100	100%	-	100%	Completed	
Adit To HRT Excavation Open Excavation							
w.r.t Volume	cum	19,000	19,000	-	19,000	Completed	Cat-A
w.r.t Percentage	%	100	100%	-	100%	Completed	
Diversion Tunnel UG Excavation (Heading)							
From Outlet Portal	M	264.9	264.9	-	264.9	Completed	Cat-A
w.r.t Percentage	%	100	100%	-	100%	Completed	
Diversion Tunnel UG Excavation (Heading)							
From Inlet Portal	M	148.4	148.4	-	148.4	Completed	Cat-A
w.r.t Percentage	%	100	100%	-	100%	Completed	
Diversion Tunnel UG Excavation (Benching)							
Portal (Benching)	M	413	413	-	413	Completed	Cat-A
w.r.t Percentage	%	100	100%	-	100%	Completed	
DT Inlet Open Excavation							
w.r.t Volume	Cum	37,431	37,431	-	37,431	Completed	Cat-A
w.r.t Percentage	%	100	100%	-	100%	Completed	
DT Outlet Open Excavation							
w.r.t Volume	cum	7,000	7,000	-	7,000	Completed	Cat-A
w.r.t Percentage	%	100	100%	-	100%	Completed	
DT Inlet Structure Concrete							
w.r.t Volume	Cum	4,361	4,361	-	4,361	Completed	Cat-A
w.r.t Percentage	%	100	100%	-	100%	Completed	
DT Surface lining (Invert Concrete)							
w.r.t Volume	RM	413	413	-	413	Completed	Cat-A
w.r.t Percentage	%	100	100%	-	100%	Completed	
DT Inlet Structure: 2 <sup>nd</sup> Stage Concrete							
w.r.t Volume	Cum	83	83	-	83	Completed	Cat-A
w.r.t Percentage	%	100	100%	-	100%	Completed	
Left Bank Open Excavation							
w.r.t Volume	Cum	44,375	44,375	-	44,375	Completed	Cat-A
w.r.t Percentage	%	100	100%	-	100%	Completed	
Surge Shaft Open Excavation							
w.r.t Volume	cum	75,014	75,014	-	75,014	Completed	Cat-A

Activity	UoM	Scope	Achieved up to Nov'22	Achieved FTM Dec'22	Cum Achieved till Dec'22	Balance Qty	Status of Drawing Approval
w.r.t Percentage	%	100	100%	-	100%	Completed	
Surge Shaft Collar Beam Excavation							
w.r.t Volume	cum	1,078	1,078	-	1,078	Completed	Cat-A
w.r.t Percentage	%	100	100%	-	100%	Completed	
Surge Shaft Collar Beam & Gantry Foundation Concrete							
w.r.t Volume	Cum	438	438	-	438	Completed	Cat-A
w.r.t Percentage	%	100	100%	-	100%	Completed	
Surge Shaft-Pressure Shaft Junction							
In tunnel RM	M	10.5	10.5	-	10.5	Completed	Cat-A
w.r.t Percentage	%	100	100%	-	100%	Completed	
Surge Shaft-HRT Junction							
In tunnel RM	M	10.5	10.5	-	10.5	Completed	Cat-A
w.r.t Percentage	%	100	100%	-	100%	Completed	
Switch Yard Excavation							
w.r.t Volume	cum	17,400	17,400	-	17,400	Completed	Cat-C
w.r.t Percentage	%	100	100%	-	100%	Completed	
Valve House Open Excavation							
w.r.t Volume	cum	22,018	22,018	-	22,018	Completed	Cat-A
w.r.t Percentage	%	100	100%	-	100%	Completed	
Horizontal Pressure Shaft Open Excavation							
w.r.t Volume	cum	68,006	68,006	-	68,006	Completed	Cat-A
w.r.t Percentage	%	100	100.0%	-	100%	Completed	
Inclined Pressure Shaft Open Excavation							
w.r.t Volume	cum	56,861	56,861	-	56,861	Completed	Cat-A
w.r.t Percentage	%	100	100%	-	100%	Completed	
Pressure Tunnel UG Excavation							
In tunnel RM	M	449.8	449.8	-	449.8	Completed	Cat-A
w.r.t Percentage	%	100	100%	-	100%	Completed	
Intake Structure Open Excavation							
w.r.t Volume	Cum	82,042	82,042	-	82,042	Completed	Cat-A
w.r.t Percentage	%	100	100.0%	-	100.0%	Completed	
Right Bank Drift Tunnel Excavation @ EL-190							
In tunnel RM	M	30	30	-	30	Completed	Cat-A

Activity	UoM	Scope	Achieved up to Nov'22	Achieved FTM Dec'22	Cum Achieved till Dec'22	Balance Qty	Status of Drawing Approval
w.r.t Percentage	%	100	100%	-	100%	Completed	
Right Bank Drift Tunnel Excavation @EL-188							
w.r.t Volume	M	45	45	-	45	Completed	Cat-A
w.r.t Percentage	%	100	100%	-	100%	Completed	
Powerhouse Open Excavation [Variation order]							
w.r.t Volume	Cum	1,02,710	1,02,710	-	1,02,710	Completed	Cat-A
w.r.t Percentage	%	100	100%	-	100%	Completed	
Powerhouse Service Bay PCC [Variation order]							
w.r.t Volume	Cum	309	309	-	309	Completed	Cat-A
w.r.t Percentage	%	100	100%	-	100%	Completed	
Powerhouse Service Bay Raft Concrete [Variation order]							
w.r.t Volume	Cum	553	553	-	553	Completed	Cat-A
w.r.t Percentage	%	100	100%	-	100%	Completed	
HRT UG Excavation Face: I (Power Intake to Adit)							
Portal (UG Excavation)	M	950	366.8	108	474.8	475.3	Cat-A
w.r.t Percentage	%	100	39%	11%	50%	50%	
HRT UG Excavation Face: II (Adit to Power Intake)							
Portal (UG Excavation)	M	1,241	501.1	101	602.1	638.9	Cat-A
w.r.t Percentage	%	100	40%	9%	49%	51%	
HRT UG Excavation Face: III (Adit to Surge Shaft)							
Portal (UG Excavation)	M	1,109	480.1	93.5	573.6	535.4	Cat-A
w.r.t Percentage	%	100	43%	8%	51%	49%	
HRT UG Excavation Face: IV (Surge Shaft to Adit)							
Portal (UG Excavation)	M	340.8	240.5	100.3	340.8	Completed	Cat-A
w.r.t Percentage	%	100	71%	29%	100%	Completed	
Surge Shaft UG Excavation							
In tunnel RM	M	47	37	-	37	10	Cat-A
w.r.t Percentage	%	100	79%	-	79%	21%	
Tail Race Channel Open Excavation [Variation order]							
w.r.t Volume	cum	69,138	64,138	-	64,138	5,000	Cat-B
w.r.t Percentage	%	100	92.8%	-	92.8%	7.2%	

Activity	UoM	Scope	Achieved up to Nov'22	Achieved FTM Dec'22	Cum Achieved till Dec'22	Balance Qty	Status of Drawing Approval
Tail Race Channel PCC [Variation order]							
w.r.t Volume	cum	500	27	-	27	473	Cat-A
w.r.t Percentage	%	100	5%	-	5%	95%	
Right Bank Open Excavation							
w.r.t Volume	Cum	1,03,000	68,184	300	68,484	34,516	Cat-A
w.r.t Percentage	%	100	66%	0.3%	66%	34%	
River Bed Excavation							
w.r.t Volume	Cum	44,000	3,298	35,708	39,006	4,994	-
w.r.t Percentage	%	100	8%	81%	89%	11%	
Dam Plunge Pool Excavation							
w.r.t Volume	Cum	1,50,000	-	9,072	9,072	1,40,928	-
w.r.t Percentage	%	100	-	6%	6%	94%	
Auxiliary Powerhouse Open Excavation							
w.r.t Volume	Cum	1,50,000	15,628	-	15,628	1,34,372	Cat-A
w.r.t Percentage	%	100	10.5%	-	10.5%	89.5%	
Coffer Dam Excavation							
w.r.t Volume	Cum	22,700	19,557	3,010	22,567	133	Cat-A
w.r.t Percentage	%	100	86%	13%	99%	1%	
D/S Coffer Dam Rock Filling works							
w.r.t Volume	Cum	7,000	2,380	4,620	7,000	Completed	Cat-A
w.r.t Percentage	%	100	34%	66%	100%	Completed	
U/S Cofferdam Concrete							
w.r.t Volume	Cum	33,300	10,189	8,111	18,300	15,000	Cat-A
w.r.t Percentage	%	100	31%	24%	55%	45%	
Inclined Pressure Shaft Cover Concrete							
w.r.t Volume	Cum	644	230	108	338	306	Cat-A
w.r.t Percentage	%	100	36%	16%	52%	48%	
Transformer Hall Concrete [Variation order]							
w.r.t Volume	Cum	353	118	-	118	235	-
w.r.t Percentage	%	100	33%	-	33%	67%	
Machine Hall PCC & Raft Concrete [Variation order]							
w.r.t Volume	Cum	1,166	-	129	129	1,037	
w.r.t Percentage	%	100	-	11%	11%	89%	



Activity	UoM	Scope	Achieved up to Nov'22	Achieved FTM Dec'22	Cum Achieved till Dec'22	Balance Qty	Status of Drawing Approval
Service Bay: Column Concrete [Variation order]							
w.r.t Volume	Cum	200	42	50	92	108	Cat-A
w.r.t Percentage	%	100	21%	25%	46%	54%	
Service Bay: Beam Concrete [Variation order]							
w.r.t Volume	Cum	350	-	16	16	334	Cat-A
w.r.t Percentage	%	100	-	5%	5%	95%	
Service Bay: RCC Wall [Variation order]							
w.r.t Volume	Cum	300	69	70	139	161	Cat-A
w.r.t Percentage	%	100	23%	23%	46%	54%	
Flood Protection Wall at Main Powerhouse [Variation order]							
w.r.t Volume	Cum	9,410	539	314	853	8,557	Cat-A
w.r.t Percentage	%	100	6%	3%	9%	91%	
Valve House PCC							
w.r.t Volume	Cum	100	50	-	50	50	-
w.r.t Percentage	%	100	50%	-	50%	50%	

\* Tentative quantities.

#### 1.2.1.3. Site Infrastructure Facility Work:

**Employer/PMC Office:** Handed over to Employer/PMC.

**Employer/PMC Accommodation Status:** Current Construction status are as follows [Already occupied by PMC & Employer]:

1. **APGCL Camp (Kopili Block):** Handed over to the Employer.
2. **Dihing Block-1 (10 Units Double bedroom accommodation for Bachelors):** Handed over to the Employer.
3. **Named after one tributary of Meghna Block (4 Units 2 BHK Family Accommodation):** Handed over to the Employer.
4. **Bhogdoi Block (3 Units 2 BHK family Accommodation cum 2 Units Double bedroom bachelors Accommodation):** Handed over to the Employer.
5. **Diyung Block (Mess cum 6 units of Double bedroom bachelors Accommodation):** Handed over to the Employer.
6. **Fencing Work:** Completed

#### 1.2.1.4. Contractor's Worker Camp Accommodation Status:

- Labour Block No.1 (Manas Block): Completed.
- Labour Block No.2 (Lohit Block): Completed.
- Labour Block No.3 (Digaru Block): Completed.
- Labour Block No.4: Completed.
- Labour Block No.5: Completed.
- Labour Block No.6 (Mess cum 6 units of accommodation): Completed.
- Labour Block No.7: Completed.
- Labour Block No.8: Completed.

- Labour Block No.9: Completed.
- Labour Block No.10 (Toilet Block): Completed.
- Labour Block No.11 (Shower Block): Completed.
- Labour Block No.12 (Toilet Cum Shower Block): Completed.
- Labour Block No.13 (Toilet Block): Completed.
- Labour Block No.14 (Shower Block): Completed.
- Labour Block No.15 (Toilet Cum Shower Block): Completed.
- Labour Block No.16 (Mess Block-1 & 2): Completed.
- Labour Block No.17 (Mess Block-3): Completed.
- Labour Block No.18 (Mess Block-4): Completed.
- Labour Block No.19 (Mess Block-5): Completed.

1.2.1.5. **Contractor's site Office:** Completed.

**Staff Mess:** Completed.

**RMP Centre:** Completed.

**Staff - Manager Accommodation-1:** Completed.

**Staff - Manager Accommodation-2:** Completed.

**Staff - Manager Accommodation-3:** Completed.

**Staff - Bachelor Accommodation-1:** Completed.

**Staff - Bachelor Accommodation-2:** Completed.

**Staff - Bachelor Accommodation-3:** Completed.

**Staff - Bachelor Accommodation-4:** Completed.

**Staff - Bachelor Accommodation-5:** Completed.

**Staff - Bachelor Accommodation-6:** Completed.

**Staff - Bachelor Accommodation-7:** Completed.

**P&M Workshop:** Completed.

**Fabrication Workshop:** Completed.

**Main Store:** Completed.

**Store No. 2:** Completed.

**Quality Assurance & Quality Control Lab:** Completed.

**Crusher Plant (200 TPH):** Completed.

**Batching Plant (60 cum/hr Capacity) at Powerhouse complex:** Completed.

**Batching Plant-1 (120 cum/hr Capacity) at Dam complex:** Completed.

**Batching Plant-2 (120 cum/hr Capacity) at Dam complex:** Completed.

**Explosive Magazine:** Completed.

**Weigh Bridge:** Completed.

**P&M/Store Office:** Completed.

During July 2022 to December 2022 there was no change in the scope of the works, location and alignment of the components, construction method and implementation schedule. But between June 2018 and December 2020 the layout was changed as per recommendation of Forest Advisory Committee, MoEF&CC in 2019. During the period June 2018 to December 2020 the layout of the project changed as per recommendation of Forest Advisory Committee. The F.C proposal was examined at the different level of forest department GOA, and GOI. Site visit was conducted both by the officials of State and Central government Regional office MoEF & CC during the year 2018. The F.C proposal was discussed in the Forest Advisory Committee (FAC) meeting held on 26.10.2018. FAC raised certain observations/Suggestions. Finally, the proposal for division of 523.046 Ha of forest land for construction of Lower Kopili H.E Project was deliberated in the FAC MoEF&CC meeting held on 19.12.2018. After thorough deliberations and interaction with

APGCL, APCCF, Regional Office, representative of Govt. of Assam, recommended to grant in Principal approval in favour of APGCL, with the certain suggestions. Which were compiled by APGCL.. Moreover, memorandum of changes was approved by the Central Electricity Authority, Central Water Commission, Geological Survey of India, Central Soil and Materials Research Station, GOI on 9th November, 2022. In this process the layout was modified The EIA is being updated to reflect the change in layout.

There was no change in the environmental safeguards staffing during the reporting period.

Moreover no unanticipated impacts and updates to EIA/EMP that were required during the reporting period.

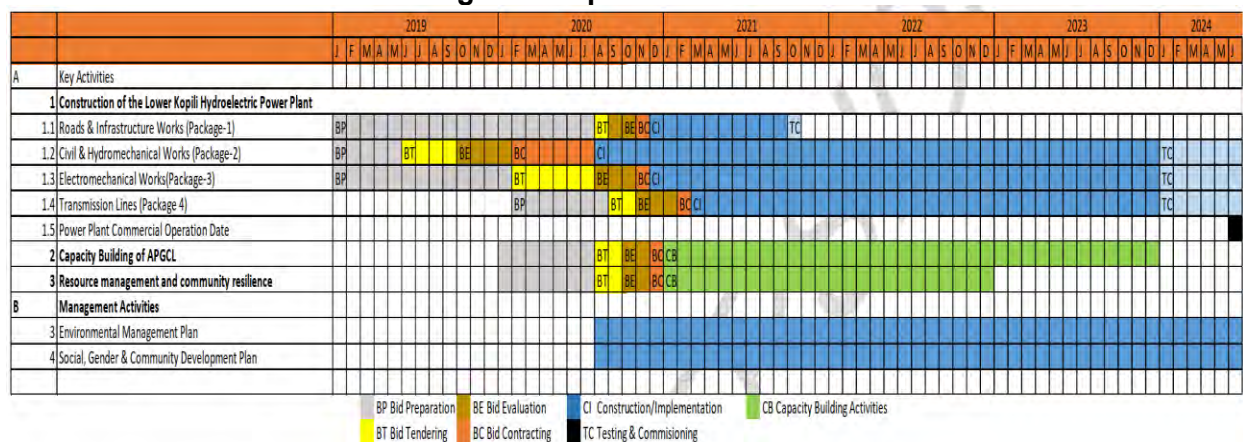
#### Contractor's Resource Mobilization CP2 :

Number of workers on site – 929 for the month of December 2022 and 39 key personnel and 69 other support staff for the Contractor.

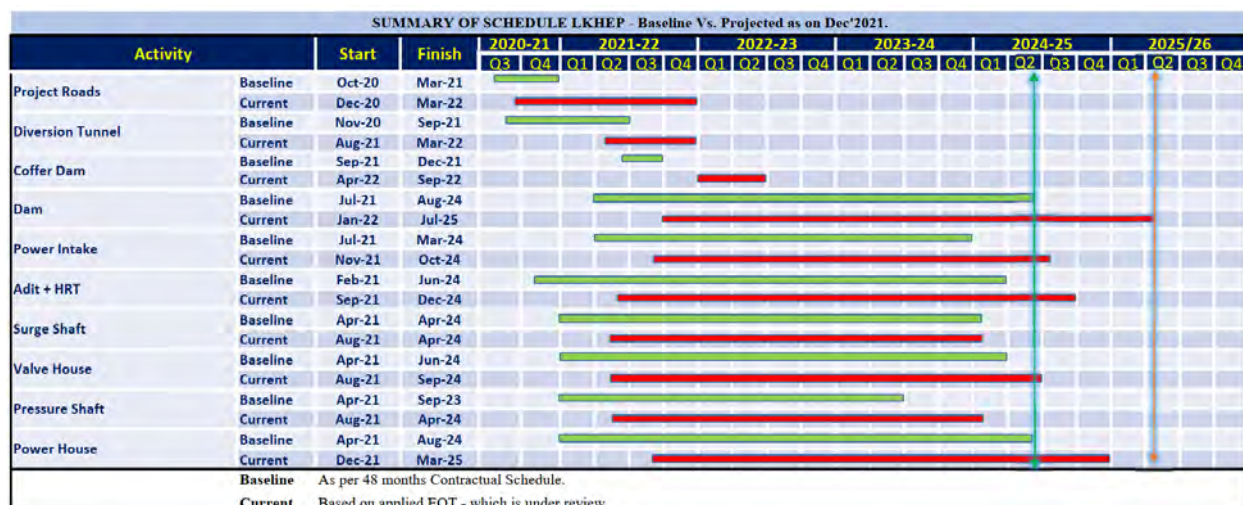
Month	Number of workers
Jul'22	890
Aug'22	981
Sept'22	946
Oct'22	884
Nov'22	913
Dec'22	929

Implementation schedule is shown in the figure 6.

**Figure 6 Implementation schedule**



(As per PAM)



(As per QPR April to June 2022)

## 2.0 Compliance to National Regulations and International Agreements

This section describes only the compliances of the national regulatory requirements.

Status of international agreement compliance are given below.

**Table 3.1: International Treaties and Agreement Signed and Ratified by India**

S. No.	International Agreements and Commitments	Applicability	Date of Signing / Ratifying	Status of Compliance
	<b>Nature Conservation</b>			
1	Convention on International Trade in Endangered Species of Fauna and Flora (CITES)	Yes	Signed by India in 1976	Being Complied
2	The Wildlife Trade Monitoring Network (TRAFFIC)	Yes	-	
3	Convention on Migratory Species (CMS)	Yes	-	
4	Coalition Against Wildlife Trafficking (CAWT)	Yes	-	
5	Convention on Biological Diversity (CBD)		Ratified February 1994 and September 2003 by Protocol.	
6	International Tropical Timber Organization (ITTO)	Yes	-	
7	United Nations Forum on Forests (UNFF)	Yes	-	
8	International conventions such as the International Union for Conservation of Nature and Natural Resources (IUCN)	Yes	-	
	<b>Hazardous Material</b>			
9	Strategic Approach to International Chemicals Management (SAICM)	Yes	-	Being Complied
10	Basel Convention on the Control of Trans- boundary Movement of Hazardous Waste and Their Disposal	Yes	Adopted on 22 March 1989	

11	Rotterdam Convention on Prior Informed Consent (PIC) for certain Hazardous Chemicals and Pesticides in International Trade	Yes	Adopted in 1998	
	Atmospheric Emissions			
12	United Nations Framework Convention on Climate Change (UNFCCC)	Yes		Being Complied
13	Kyoto Protocol	Yes	Signed by India in August 2002 and ratified in February 2005.	
14	Paris Agreement	Yes	Ratified by India on 2 October 2016. The agreement entered into force on 4 November 2016.	
15	Montreal Protocol (on Ozone Depleting Substances)	Yes	India signed on 17-9- 1992 and also ratified on 3rd March, 2003	

Source: MoEF&CC, India.

Status of the statutory clearances are shown in the table 3.2.

**Table 3.2 : Statutory Clearances**

Sl. No	Activities for which clearances are required	Statutory Requirement under the Act	Statutory Authority	Compliance Status as on 31 <sup>st</sup> December 2022	Remarks
1	Environment Clearance	Environment Protection Act 1986	MoEF&CC, GOI	a. Accorded.  b. EA to expedite the process of amendment of Environment Clearance (EC) to reflect the modifications in Project components as per MOC dated 9.11.22.	a. EC No. J-12011/26/2012-IA-I dated 04th September, 2019  b. Under process  c. EC compliance report submitted for June to November 2022.
2	Forest Clearance	Forest Conservation Act, 1980	MoEF&CC, GOI	Accorded	<ul style="list-style-type: none"> <li>Stage 1 F.No.8-53/2018-FC dated 5th February, 2019</li> <li>Stage 2 File No. 8-53/2018FC dated 4th December, 2020</li> <li>FC Compliance report submitted for April 2021 to March, 2022.</li> </ul>

Sl. No	Activities for which clearances are required	Statutory Requirement under the Act	Statutory Authority	Compliance Status as on 31 <sup>st</sup> December 2022	Remarks	
3	Consent to Establish (CTE) for Hydro Power Plant.		PCBA	Will be applied by APGCL		
4	Quarry					
A	Permission of the State Government for extraction of boulders from quarry. Location: Longku, Dima Hasao	1.NOC from North Sachar Hills Autonomous Council commencement Concession Rules, 2013	Stage-1. North Cachar hills Autonomous Council	Approval to operate quarry received from NCHAC on 8th July, 2022.		
		2. Mining Plan approval from department of geology and mining, Assam. Assam Minor Minerals commencement Concession Rules, 2013	Stage-2. Department of geology and mining, govt. of Assam	Mining Plan Approval received on dtd. 11th <b>May'22</b> vide reference no: 31:33GM/MM/86-B (40)/Pt. VI/667-73.D31		
		3. Approval from Divisional Forest Officer, Haflong	DFO, Dima Hasao West, Halflong	DFO gave order to RO to realize Royalty from Hi-Tech Rock Products and Aggregates Limited for 3,36,000 cum on 11th july, 2022..		
	Note: FC clearance not required for quarry at Kala Nala and other quarry site. Forest Department has accorded permission for deposition of Forest Royalty and given permission for extraction. Separate EC required before extraction.					
B	Permission for crushing of boulders from excavated materials	1. Permission for crushing 80,000 cum of boulders from excavated materials	DFO, Dima Hasao West, Halflong	Permission received from DFO, Dima Hasao West, Halflong on 20th <b>Dec'21</b> vide letter no . refer letter no: FRS/G/101(a) Stone-Chips/L&T/2020-21/Pt-IV/2853-56		
		2. Permission for crushing 2,00,000 cum	DFO, Dima Hasao West, Halflong	Permission received from Principal		

Sl. No	Activities for which clearances are required	Statutory Requirement under the Act	Statutory Authority	Compliance Status as on 31 <sup>st</sup> December 2022	Remarks
		of boulders from excavated materials		Secretary (N), NCHAC on 8th Mar'22 vide letter No. letter no: FRS/Sectt/SP/15 5/2010-21/L/2/278	
C	Permission of the State Government for extraction of Fine aggregate from quarry. Location: Up Stream and Downstream of Dam, Dima Hasao. (2 quarries)	1.NOC from North Sachar Hills Autonomous Council 2. Mining Plan approval from department of geology and mining, Assam. Assam Minor Minerals commencement Concession Rules, 2013	Stage-1. North Cachar hills Autonomous Council Stage-2. Department of geology and mining, govt. of Assam	Sand requirement will be met by the crushed sand.	
5	Batching Plant (Near Power House)				
A	Permission of Village Panchayats (Gaon burah) for installation of batching plant. Location: Totelangso, Dima Hasao	Permission from Village Panchayats.	Applied to Village Panchayats for installation of Crushers on 30-06-2021	Approval Received on 30.06.2021	NOC Received from Village Panchayats for setting up Batching Plant near Totelangso, Dima Hasao.
B	Permission of the State Government	NOC from North Cachar Hills Autonomous Council	North Cachar Hills Autonomous Council	NOC received from NC Hills Autonomous Council vide letter no. FRS.Sectt./S. Crusher/45/2018-19-20/L/2 dated 19th Oct, 2021.	
C	Clearance of Pollution Control Board for setting up Batching Plant. Consent to Establish – (CTE) Location: Powerhouse, Totelangso, Dima Hasao	CTE from State Pollution Control Board, Assam	Pollution control board, Assam for installation of Batching Plant.	CTE obtained from PCBA vide Ref. No. WB/SLC/T-1191/21-22/7/1076 dated 11th November, 2021	

Sl. No	Activities for which clearances are required	Statutory Requirement under the Act	Statutory Authority	Compliance Status as on 31 <sup>st</sup> December 2022	Remarks
D	Clearance of Pollution Control Board for setting up Batching Plant. Consent to Operate – (CTO) Location: Powerhouse, Totelangso, Dima Hasao	CTO from State Pollution Control Board, Assam	State Pollution Control Board, Assam	CTO Received vide order No. WB/SLC/T-1191/21-22/17 dated 27th December 2021. Valid till 31.03.2025	CTO application submitted on 838921 dated November 2021
5	Batching Plant (Near Dam)				
A	Batching Plan (Dam), CTE, CTO	CTE	State Pollution Control Board, Assam	CTE obtained on 23rd June 2022 vide No. WB/SLC/T-1191/21-22/24.	
B		CTO	State Pollution Control Board, Assam	CTO obtained in Oct 2022 vide No. WB/SLC/T-1191/21-22/31	Annexure- 1
C	CTO obtained for 714 cum/day against the requirement of 1000 cum/day – Needs to be amended prior to increasing the production rate			Will be initiated by CP2	
6	Crusher				
A	Permission of Village Panchayats (Gaon burah) for installation of crushers. Location: Totelangso, Dima Hasao.	Permission from Village Panchayats. The Assam Stone Crusher Establishment and regulation rule 2013 (Crusher)	Applied to Village Panchayats for installation of Crushers on 30-06-2021	Approval received.	NOC Received from Village Panchayats for setting up Crusher
B	Permission of Pollution Control Board for installation of crushers. Consent to establish – (CTE)	Permission from Pollution Control Board, Assam	Applied to Pollution Control Board for installation of Crushers.	CTE obtained from PCBA vide Ref. No. WB/SLC/T-1184/21-22/06/1065 dated 22nd October, 2021	CTO application submitted on 5 <sup>th</sup> November 2021. CTO Application number 810264.
C	Permission of Pollution Control	Permission from Pollution	Pollution Control Board Assam	CTO received from PCBA on	



Sl. No	Activities for which clearances are required	Statutory Requirement under the Act	Statutory Authority	Compliance Status as on 31 <sup>st</sup> December 2022	Remarks
	Board for installation of crushers. Consent to Operate –(CTO)	Control Board, Assam		7/12.2021 vide Ref no. WB/SLC/T-1184/21-22/09/1152.	
D	Consent to Operate (CTO) obtained for primary and secondary crusher only. CTE and CTO for tertiary crusher to be obtained/ amended in the consent letters.		Pollution Control Board Assam	Will be initiated by CP2	
6	Fuel dispensing Unit				
A	(NOC) from Deputy Commissioner Govt of Assam, for setting up Fuel dispensing Unit at Project location.	Deputy Commissioner Govt of Assam / Petroleum Act, 1934 and Rules 2002	The Deputy Commissioner, Dima Hasao, Haflong; Government of Assam.	NOC received from The Deputy Commissioner, Dima Hasao, Haflong; Govt. of Assam	
B				NOC Received from PESO. P/EG/AS/14/1630 (P502141) dated 6/12/21	Valid till 31/12/2021
C				Jt. Chief Controller of Explosives, Guwahati	Permission of storage of 20 kl. Valid till 31/12/2021
7	CTE/CTO to be obtained for RO		Pollution Control Board Assam	Will be initiated by CP2	
8	CTE/CTO for proposed 6 lakh liter water treatment plant for construction		Pollution Control Board Assam	Will be initiated by CP2	
9	Magazine				
A	No Objection Certificate Obtained from “PESO” for establishment of Explosive magazine.	Petroleum and Explosives Safety Organization / Explosive Rules, 2008 (under act of 1884)	Petroleum and Explosives Safety Organization, Kolkata.	NOC obtained from Employer. Storage approval received from PESO. on 26th Nov'21 (Licence No.);	

Sl. No	Activities for which clearances are required	Statutory Requirement under the Act	Statutory Authority	Compliance Status as on 31 <sup>st</sup> December 2022	Remarks
				E/EG/AS/22/63(E 134742) from PESO, Guwahati.	
B	Permission for storage of Explosives (Explosive Van) at Longku police station for blasting operation for construction 120 MW Lowe Kopili Hydel Electric Project at Longku, Dima Hasao	The Superintendent of Police, Dima Hasao District, Haflong. / Explosive Rules, 2008 (under act of 1884)	The Superintendent of Police, Dima Hasao District, Haflong.	Permission Received vide letter No. HFG/DSB/80/2021/1122 dated 02.06.2021	Permission Received from Superintendent of Police, Dima Hasao District, Haflong.
C	No objection Certificate for third party handling of explosives and its blasting operation which will be carried out by M/s. R.L. Poddar and North East Associates, Shillong		District Magistrate, Dima Hasao, Haflong	NOC received on 22 <sup>nd</sup> October 2021 vide letter no. NCH/M-8/2021/6378-83	
D	No objection Certificate for grant of Explosive license and Magazine construction in favour of M/S R.L. Poddar for L&T.		District Magistrate, Dima Hasao, Haflong	NOC received on 27 <sup>th</sup> October 2021 vide letter no. NCH/M-3/20-21/L/2-A	
E	Fire NOC / Fire License	As per NOC of District Magistrate, Dima Hasao, a fire tendering facility is essential for storage of explosives in the Magazine	Sr. Station Officer, Fires and Emergency Service Station, Haflong, Dima Hasao	Application submitted on 19 <sup>th</sup> November 2021 vide letter no LKHEP-PKG2/LNT/155/G L/085.	
F		NOC	Office of the Director, Fire and Emergency Services, Assam, Guwahati.	NOC obtained vide letter no. F&ES/FPW/3995/1531/22 dated 17.03.2022	

Sl. No	Activities for which clearances are required	Statutory Requirement under the Act	Statutory Authority	Compliance Status as on 31 <sup>st</sup> December 2022	Remarks
			Application for Fire Safety NOC submitted vide Letter No: LKHEP-PKG2/LNT/153/GL/102 dtd. 23th Dec'21.		
10	Blasting				
A	Non Objection Certificate for blasting operations for construction of 120 MW Lowe Kopili Hydel Electric Project at Longku Dim Hasao	Deputy Commissioner, Dima Hasao District, Haflong. / Explosive Rules, 2008 (under act of 1884)	Deputy Commissioner, Dima Hasao District, Haflong.	Approval Obtained. Letter no. NCH/M-8/2021 dated 14th Jul'21	
			The Superintendent of Police, Dima Hasao District, Haflong, Assam	Permission received vide letter No. HFG/DSB/80/2021/1122	Permission Received from Hon'ble Superintendent of Police, Dima Hasao District, Haflong.
			Sr. Station Officer, Fire & Emergency Service Station, Dima Hasao, Haflong, Assam	Permission received.	Application for Granting No objection for blasting operation vide Letter No: LKHEP-PKG2/LNT/153/G L/26 dtd. 2nd July'21
B			The District Magistrate, Dima Hasao, Haflong, Assam	Permission received.	Application for Granting No objection for blasting operation vide Letter No: LKHEP-PKG2/LNT/153/G L/NIL dtd. 13th July'21
			ASI L Bishuk Singha In-Charge, Longku out post.		Intimated vide letter No. LKHEP-PKG2/LNT/153/LL/33 dtd. 15th July'21
			Gaon Burah, Village- SAPRU	Intimated Blasting Timing 07 am to 8 am 1 pm to 2 pm	Intimated vide letter No. LKHEP-PKG2/LNT/153/LL/34 dtd. 15th July'21

Sl. No	Activities for which clearances are required	Statutory Requirement under the Act	Statutory Authority	Compliance Status as on 31 <sup>st</sup> December 2022	Remarks
				4 pm to 5 pm	
			Office-in-Charge Umrangsu Police Station	Intimated Blasting Timing 07 am to 8 am 1 pm to 2 pm 4 pm to 5 pm	-Intimated vide letter No. LKHEP-PKG2/LNT/153/LL/35 dtd. 15th July'21
C		Request for issuing No Objection Certificate for explosive supply chain management & blasting operation	<b>The Hon'ble</b> Deputy Commissioner, Dima Hasao District, Haflong, Assam	Permission Received vide letter No. NCHM/M-8/2021/6378-83 dtd. 22nd Oct'21	
D	Blasting permission at Hamren Division, Karbi Anglong [Left Bank of Dam]			Permission received from DC Office, West Karbi Anglong, Hamren. Valid till 30th June 2022. Blasting time 10:00 to 16:00. Order No. HCA.26/2009-16/498 dated 12th January, 2022.	
E	Night Shift Blasting Permission inside tunnels [Panimur range]		DC Office, Haflong, Dima Hasao.	Permission Received vide letter No. HCA.26/2009-16/498 dated 12 January, 2022. Valid up to 31.03.2023.	
F	Request for permission for storage of Explosives (Explosive Van) at Longku police station for blasting operation for construction 120 MW LKHEP at Longku, Dima Hasao		Letter No: LKHEP-PKG2 /LNT /153 /GL/23 dtd. 31st May'21	Permission given upto 21st July 2021 and revoked back on 22nd July 2021.	
11	Labour License CP2				

Sl. No	Activities for which clearances are required	Statutory Requirement under the Act	Statutory Authority	Compliance Status as on 31 <sup>st</sup> December 2022	Remarks
A	Permission of Labor commission for labour license	Labour Laws / Factories Act, 1948 and Amendments (1987)	Government of Assam Office of the Labour Commissioner Assam Gopinath Nagar, Guwahati 781016	S.No.327 2 License No. CLL (Assam) 06/2020/3 272 dt. 9.12.20	Valid till 9/12/2022 Covered 1000 workers. <b>Annexure 2</b> Copy of the Labour License
B	Building and other construction works	Building and other construction works (Regulation of Employment & Conditions of Service) Act, 1996 and the Rules made thereof.	Government of Assam Office of the Labour Officer, Dima Hasao, Halflong	Sl No. 133 License No. B&OCW-133 Dated 21st September 2021	Validity 1/11/2021 to 31/09/2024
C				Amendment for 1000 workmen received on 05th <b>Apr'22.</b>	For 1000 workers / day.
12	Labour License CP3	Labour Laws / Factories Act, 1948 and Amendments (1987)	Government of Assam Office of the Labour Commissioner Assam Gopinath Nagar, Guwahati 781016	Yet to obtain Labour License	
13	Labour License CP4	Labour Laws / Factories Act, 1948 and Amendments (1987)	Government of Assam Office of the Labour Commissioner Assam Gopinath Nagar, Guwahati 781016	Yet to obtain Labour License	
14	Labour License CP1	Labour Laws / Factories Act, 1948 and Amendments (1987)	Government of Assam Office of the Labour Commissioner Assam Gopinath Nagar, Guwahati 781016	Yet to obtain Labour License	
15	Tree Cutting				

Sl. No	Activities for which clearances are required	Statutory Requirement under the Act	Statutory Authority	Compliance Status as on 31 <sup>st</sup> December 2022	Remarks
A	NOC for tree Cutting (CP2)	Indian Forest Act, 1927	Forest Department Assam	Tree cutting in progress with assistance/ presence of officials of Forest Department, Panimur Range, Dima Hasao (West) Division and APGCL. All the trees are marked and felled by the respective Forest Department.	.
B	NOC for tree Cutting (CP1)	Indian Forest Act, 1927	Forest Department Assam	NOC not available and the works were not initiated.	
C	NOC for tree Cutting (CP4)	Indian Forest Act, 1927	Forest Department Assam	NOC yet to be obtained	Contractor was requested to submit the same from the respective Forest Divisions
16	Ground water extraction				
	Permission of the State Government for drawing water from river.	Water (Prevention & Control of Pollution) Act, 1974; and Amendments (1988)	Central Ground water Board or District Administration	Application for Permission of ground water extraction submitted vide Letter No: LKHEP-PKG2/LNT/153/G L/78 dtd. 09th Nov'21	As surface water will be used for construction works, the NOC was not taken from CGWB.
17	Surface water extraction				
A	NOC for surface Water use for construction				Yet to obtain NOC from Water Resource Department and instruction given to the contractor to comply.

Sl. No	Activities for which clearances are required	Statutory Requirement under the Act	Statutory Authority	Compliance Status as on 31 <sup>st</sup> December 2022	Remarks
B	Permission from Gaon Bura for water extraction from Longkuna			Permission taken	
18	Permission from grid power				
	Permission for Temporary grid power connection at Site Infrastructure facility			Available.  Contractor's Letter LKHEP-PKG2/LNT/153/G L/009 dtd. 28th Dec'20	
19	PUC of the vehicles		Pollution Control Board Assam		PUC status of 11 vehicles given in the Table 7A. Compliance to Environmental Management Plan
20	CTE for sewage treatment plant proposed under CP-1 for a built-up area of 6720 sqm of permanent colony		Pollution Control Board Assam	Will be applied before construction of the STP	
21	Insurance Policies				
A	Insurance Policies of CP2				
		Policy Name		Policy Number	Coverage Period
		Group Personal Accident Policy for staff		4005/101781287/07/000	01-04-22 to 31-03-23
		Group Personal Accident Policy for workers		4005/102843874/07/000	31-03-22 to 30-03-23
		Contractor's Plant and Machinery		5011/R/150019780/04/000	01-04-22 to 31-03-23
		CAR Insurance		12070044200300000015	28-10-20 to 31-08-24
B	Insurance Policies (CP3)			Obtained on 22.08.22	Valid till 22.12.24 (Annexure 3)
		Policy Name		Policy Number	Coverage Period
		Workman Compensation Insurance (10 skilled, 30 Semi skilled, 10 unskilled)		4514044220800000004	22.08.22 to 13.03.25
C	Insurance Policies (CP4)			Obtained on 12.07.22	Valid till 11.07.23 (Annexure 4)
		Policy Name		Policy Number	Coverage Period
		Workman Compensation Insurance (10 skilled, 30 Semi skilled, 10 unskilled)		4010/252569944/00/000	12.07.22 to 11.07.2023
D	Insurance Policies (CP1)			Yet to be obtained	

### 3.0 Compliance to Environmental Covenants from the ADB Loan Agreement

Compliance to the environment safeguard loan covenants are shown in the table no 4.

**Table 4 : Compliance of Loan Covenants**

Covenant	Compliance Status	Remarks
<b>Schedule 4, Para 6</b>		
The Borrower shall ensure or cause the EA to ensure that it shall not allow commencement of civil works under a Works contract which involves environmental impacts until the EA has obtained the final approval of the EIA from the relevant environmental authority of the Borrower and the State and ADB :	Being Complied	Environment Clearance obtained on 04 September 2019 from MoEFCC. EIA has been cleared by ADB in 2018. The approval of the changes in the EC for the changes during detail engineering is yet to be obtained from MoEF&CC and the EIA addendum reflecting modifications in design/ unanticipated impacts etc. is under preparation.
ii)The EA has incorporated the relevant provisions form the EMP into the Works contract	Being Complied	
iii)The EIA is updated to reflect the turnkey contractor's detail design and up to date baseline.	Partially Complied	Pre-construction baseline for environment (10 km radius of project component locations including 220kV power evacuation line and 33kV power transmission line) and biodiversity including annual bird count will be conducted. EIA Addendum will incorporate all assessments related to scope/ design modifications and unnoticed/ unanticipated impacts.
iv) such updated EIA is cleared by ADB	Being complied	EIA Addendum reviewed and corrections suggested by ADB. Revised EIA Addendum is under preparation.
<b>Schedule 4, Para 8</b>		
The Borrower shall ensure or cause the EA to ensure to recruit a consulting firm for external validation of the environmental monitoring reports produced by APGCL.	Complied	Contract awarded on 24 <sup>th</sup> December 2021.
The Borrower shall ensure or cause the EA to apply individual consultant selection for Consulting Services.	Being complied	



Covenant	Compliance Status	Remarks
<b>Schedule 5, Para 5</b>		
The Borrower shall ensure, or cause the EA to ensure, that the preparation, design, construction, implementation, operation and decommissioning of the project, and all Project facilities comply with (a) all applicable laws and regulations of the Borrower and the State relating to environment, health and Safety,	Partially Complied	Majority of the statutory requirements obtained and few are in the process viz. EC approval, CTE for hydro power plant, relevant permission for extraction of minor minerals etc.
(b) the Environmental Safeguards,	Being Complied	
(c) the EARF, and	Being Complied	
(d) all measures and requirements set forth in the EIA and EMP, and any corrective or preventive actions set forth in a Safeguards Monitoring Report.	Partially Complied.	Corrective action plans of earlier virtual Missions have been partially complied. Outstanding issues included in the ESCAP agreed during the Mission and will be complied.
<b>Schedule 5, Para 9</b>		
The Borrower shall ensure or cause the EA to ensure that all necessary budgetary and human resources to fully implement the EMP, and the RIPP as required, are made available on a timely basis.	Being complied	The last ADB Mission recommended appointment of a Qualified Health and Safety expert under PMU and PMC considering the risks involved in the construction activities. Also recommended the appointment of a Sr. Env. Expert in PMC to assist the Environment Safeguards Specialist and expedite implementation of environmental safeguards through day-to-day supervision and guidance at site. APGCL is considering the proposal for approval and compliance.
<b>Schedule 5, Para 10</b>		
Safeguard related provisions in Bidding Documents and Works Contracts. The Borrower shall ensure, or cause the EA to ensure, that all the bidding documents and contracts for works contain provisions that require contractors to : (a) comply with the measures and requirements relevant to the contractor set	Being Complied.	To be updated as per ADB cleared EIA Addendum when applicable

Covenant	Compliance Status	Remarks
forth in the EIA, EMP and the RIPP and any corrective or preventive actions set forth in a safeguard Monitoring Report.		
(b) make available a budget for all such environmental and social measures.	Being Complied	
(c) provide the EA with a written notice of any unanticipated environmental or resettlement risks or impacts that arise during construction, implementation or operation of the Project that were not considered in the EIA, EMP, RIPP, RF or the IPPF.	Being complied	
(d) adequately record the condition of roads, agricultural land the other infrastructure prior to starting to transport materials and construction and	Being Complied.	
(e) fully reinstate pathways, other local infrastructure and agricultural land to at least their pre project condition upon the completion of construction.	Being complied	
<b>Schedule 5, Para 11</b>		
Safeguard Monitoring and Reporting. The Borrower shall ensure or cause the EA to ensure the following: (a) submit semi-annual Safeguard Monitoring Reports to ADB and disclose relevant information from such reports to affected persons promptly upon submission.	Being complied	EMC will submit Quarterly and Semiannual external validation reports to ADB
(b) if any unanticipated environmental and or social risks and impacts arise during construction, implementation, or operation of the Project that were not considered in the EIA, EMP, RIPP,RF or the IPPF as applicable promptly inform ADB of the occurrence of such risks or impacts with detailed description of the event and proposed corrective action plan and	Being complied	EIA Addendum is under preparation.
(c) report any breach of compliance with the measures and requirements set forth in the EMP or RIPP promptly after becoming aware of the breach.	Being Complied	
<b>Schedule 5, Para 12</b>		
The Borrower shall ensure, or cause the EA to ensure, that no proceeds of the Loan under the Project are used to finance any activity included in the list of prohibited	Being complied	

Covenant	Compliance Status	Remarks
investment activities provided in Appendix 5 of the SPS.		
<b>Schedule 5, Para 13</b>		
Labour Standards Health and Safety. The Borrower shall ensure or cause the EA to ensure that works contracts under that Project follow all applicable labour laws of the Borrower and the State and that these further include provisions to the effect that the contractors: (a) carry out HIV / AIDS awareness programs for labour and disseminate information at worksites on risks of sexually transmitted diseases and HIV / AIDS as part of health and safety measures for those employed during construction. and	Being complied	HIV /AIDS awareness camps will be conducted regularly
(b) follow and implement all statutory provisions on labour (including not employing or using children as labour, equal pay for equal work) health, safety welfare, sanitation, and working conditions.	Being complied	Sanitation facilities, working conditions at tunnels for CP-2; and camp facilities for CP-4 will be improved.
Such contracts shall also include clauses for termination in case of any breach of the stated provisions in the contract	Being complied	

#### 4.0 Compliance to Project Administration Manual (PAM)

Compliance to the Project Administration Manual on Environment Safeguards are shown in table 5.

**Table 5 : Compliance to PAM**

Organization		Tasks	Compliance Status	Remarks
Executing Agency	Government of Assam			
	Project steering committee- Comprising Principal Secretary, Energy with Managing Director, APGCL and AEGCL		Complied	The committee is in place.

Organization		Tasks	Compliance Status	Remarks
	Grant fund related advisory committee- Comprising Principal Secretary, Energy; Managing Director, APGCL; Principal Secretary, Water Resources Department; representatives of Dima Hasao and Karbi Anglong ADC as well as districts of Nagaon, Morigaon and Hojai			Will be formed before the implementation of the early warning system. Coordination between the relevant departments are being maintained for the implementation of the Grant.
Implementing Agency	Assam Power Generation supported by PMC Corporation Limited (APGCL)	(i) Conduct overall coordination, preparation, planning, and implementation of all field level activities; (ii) Implement EMPs following ADB's Safeguards Policy Statement 2009, IFC's Environment, Health and Safety general guidelines and national regulations etc. at the project site; (iii) Undertake and supervise compensation to the affected persons based on the entitlement matrix in the RIPP; (iv) Oversight construction contractor(s) on monitoring and implementing mitigation measures during design, construction and operation phases of the project before contracts completed; (v) Advise and coordinate to finalize survey and detailed design and update that safeguard documents following detailed design and survey result;	Complied  Being complied  Being complied  Being complied  Complied and ongoing  Complied through APGCL and ongoing	Adhered

Organization		Tasks	Compliance Status	Remarks
		(vi) Engage in grievance redress and ensure the prompt resolution of complaints; (vii) Set up appropriate record keeping system; (viii) Disclose relevant information to the affected people and continue consultations; (ix) Provide training and awareness on environmental and social issues to the project staff and EPC contractor(s); (x) Preparation of semi-annual and annual environmental monitoring reports and semi-annual social monitoring reports; and (xi) Liaise with the concerned ministries, authorities, and government departments for the environmental and resettlement related issues of the project implementation.	Complied through MPR Ongoing Ongoing  Complied and ongoing  Being complied	Since the EIA was based on environmental surveys completed in 2015, given the passage of time, APGCL undertook an up-to-date suite of surveys (including flora and fauna surveys following previous methodologies) in 2021 to confirm if there have been any significant changes to the environmental baseline in the past 5 years and the impact assessment remains valid. These surveys also provide an up-to-date baseline for the purposes of monitoring the project's environmental impacts during construction and operation.

Organization		Tasks	Compliance Status	Remarks
				<p>The EIA is being updated to reflect the detailed designs and survey results for review and clearance of ADB, including any temporary enabling works.</p> <p>The CEMP of the Package 2, 3 contractor are being updated by APGCL to include the environmental clearance and forest clearance conditions and, in response to the ongoing COVID- 19 pandemic.</p>
		The designated dedicated social and environmental safeguards cell (SESC) with a full-time environmental specialist and a full-time social specialist. The SESC will implement EMP and RIPP and be responsible for safeguards monitoring.	Social and environmental safeguards cell (SESC) formed within PMU	Dr Deepak Kumar Baruah as Environment Expert and Mr Pankaj Kumar Hazarika as Social Expert with a support team from APGCL.
Para 49. GRM		A grievance redress mechanism (GRM) will be established to deal with complaints on environmental and social issues in a timely manner and adequately publicized amongst the affected peoples.	Being complied. The structure of the GRM and methodology for grievance redress are described in section 8 of this report below.	<p>Resettlement NGO gave awareness training on the GRM of the LKHEP.</p> <p>No grievances reported on environment so far.</p>

Organization		Tasks	Compliance Status	Remarks
Para 53.		a) training and capacity building b) Dam safety expert	a) Ongoing b) Internal Dam Safety Expert of the External Monitor will act as the Independent Dam Safety Expert for the project.	<p>TOR for training and capacity building are being prepared.</p> <p>Independent Dam Safety Expert of External Monitor will review and designs of the dam components and implementation of the provisions of Dam Safety.</p> <p>As per the provision of the Dam Safety Act 2021, State Dam Safety Committee has been constituted by Government of Assam. Training and capacity building will be carried out under Dam Safety organization as soon as it is formed under the same Act.</p>
		a) External monitor appointment	External monitor engaged.	<p>External Monitor was engaged in the month do December, 2021.</p> <p>Subsequent visits were carried out in</p>

Organization		Tasks	Compliance Status	Remarks
				the month of February, May, 2022 and Nov-Dec 2022. Inception report and Validation report of six monthly Semi Annual Report for July to December, 2021, Jan to June 2022 submitted to ADB.
Para 56. Unanticipated impact		In the event of any unanticipated environmental impacts during project implementation, including change in project scope or design, APGCL will update the EIA/EMP as appropriate, which will be disclosed on the ADB website. For any non-compliance with the EMP APGCL will take necessary corrective actions to bring the project back into compliance.	Project layout changed for the compliance of FAC, MoEF&CC and MOC of CEA. Addendum for EIA update is under process.	
Para 62. HIV/AIDS		NGO will carry out HIV/AIDS awareness for their laborers at work sites	Being complied and ongoing	AIDS awareness were done by the package 2 contractor.
Para 63. Health		APGCL will ensure that contractors provide adequately for the health and safety of construction workers	Being complied	
Para 64. Labour		APGCL will ensure that civil works contractors comply with all applicable labor laws and regulations, do not employ child labor for construction and maintenance activities, and provide appropriate facilities for women and children in construction campsites; contractors do not differentiate wages between men and women for work of equal value.	Being complied	
Para 67. Safeguards monitoring.		APGCL must adhere to the EMP and CRTDP during contract implementation as prepared in accordance with ADB's SPS 2009 and as agreed and/or endorsed	Being complied.	



Organization		Tasks	Compliance Status	Remarks
		by the government. APGCL will provide environmental and social monitoring reports to ADB on a semi-annual basis during construction phase and on an annual basis during operation phase. The reports will describe implementation progress of environment and resettlement activities and compliance issues and include quantitative monitoring data in accordance with the EIA/EMP and CRTDP and CRIPP, respectively. The environmental and social monitoring reports and other relevant safeguard reports will be posted to the ADB website and disclosed locally by APGCL. In the event of any unanticipated environmental or resettlement impacts during implementation, or if monitoring identifies a breach of performance standards that should be complied with by APGCL and/or their contractors, APGCL will submit to ADB an updated EIA/EMP, CRTDP and CRIPP or a time-bound corrective action plan. The External Monitor will also prepare semi-annual monitoring validation reports during project construction and annual monitoring validation reports during project operation for submission to ADB for disclosure on the ADB website.	External monitor engaged and will continue to prepare the validation reports every six months and quarterly reports every three months. These reports will be submitted to ADB.	

## 5.0 Compliance to Contract

The table 6 shows the compliance to the contract provision during the period July 2022 to December 2022.

**Table 6 : Compliance to Contract provisions**

Contract Package	Contract Provisions / Status of the contract package	Compliance Status	Remarks
Package 2	Construction phase :		

Contract Package	Contract Provisions / Status of the contract package	Compliance Status	Remarks
	<p>Section 6, General conditions <u>clause 6.1.3.2.</u></p> <ul style="list-style-type: none"> <li>• The Contractor shall within one month of receipt of Commencement Date, appoint an Environmental Officer</li> <li>• Environmental Officer will submit a Monthly Environment Report every month.</li> </ul>	<p>Complied</p> <p>Complied for CP2.</p>	<p>L&amp;T appointed Mr Manoj Yadav as Environment Expert.</p> <p>Submission of monthly Environment Report started from November 2020. The 20<sup>th</sup> MER was submitted for the month of June 2022. <b>Annexure 5</b> App based safety monitoring system of L&amp;T.</p> <p>Although package 3 and package 4 were already awarded on 12<sup>th</sup> November, 2021 and 30<sup>th</sup> June 2022.</p> <p>For CP-3 labour camps and office were not established till 31<sup>st</sup> December, 2022. CEMP were being prepared. Monthly environment reports were not submitted. As agreed, implementation of EMP for CP-4 to be monitored by the AEGCL team. Latter APGCL decided to monitor Environment and social aspects by PMC. Monthly environment reports were not submitted by CP-4.</p> <p>EMP for Roads will be incorporated during the construction of road bridge over Longku Nala by PWD.</p>
	<p><u>Clause 6.1.10.1.a.</u></p> <ul style="list-style-type: none"> <li>• The Employer has a goal to create a zero-incident work environment with a safety culture</li> </ul>	Being complied	<p>Package 2 CEMP and H&amp;S Plans submitted by the contractor and it has been approved by APGCL and PMC.</p> <p>Package 3 CEMP and H&amp;S Plans are being prepared.</p> <p>Root cause analysis are carried out by the contractor and accordingly the corrective action are taken to avoid such kind of accidents in future after any dangerous occurrences, near miss, non-work-related fatalities, LTI.</p>
	<p><u>Clause 6.1.10.1.b.</u></p> <ul style="list-style-type: none"> <li>• The Contractor will be responsible for the security, safety &amp; health</li> </ul>	Complied	<p>After reviewing all the monthly safety and Monthly Environment reports PMC and APGCL observations are made and communicated to the</p>

Contract Package	Contract Provisions / Status of the contract package	Compliance Status	Remarks
	<p>and Group insurance of his Employees.  <u>Clause 6.1.10.1.c.</u>  • Provide and maintain at his own cost, fencing, warning signs and watch &amp; ward.  <u>Clause 6.1.10.1.d.</u>  • Take all reasonable steps to protect the environment.  <u>Clause 6.1.10.1.e.</u>  • The contractor will protect the environment following the principles of Approved Environment Management Plan.</p> <p><u>Clause 6.1.10.1.f.</u>  • The Officer-in-Charge of Safety will submit monthly safety report  <u>Clause 6.26.3</u>  • Environmental obligations</p>	<p>Being complied</p> <p>Being complied</p> <p>Being complied</p> <p>Being complied</p> <p>Being complied</p>	<p>contractor for compliance. All the observations are also mentioned in the PMC's MPRs. Those which are not complied are flagged in the Six monthly monitoring reports.</p> <p>Non compliance with corrective actions are reported in Table 8, 9.</p> <p>Although L&amp;T has online safety reporting system, Monthly Safety Report submitted regularly. Sample copy for the month of June 2022 is annexes in <b>Annexure 6</b>.</p> <p>Compliance of the status of implementation of EMP of CP-3 and Cp-4 will be incorporated in the J-J 23 EMR. Compliance of the status of the implementation of Road EMP will be reported during the construction of the Bridge by PWD, Assam</p>

Contract Package	Contract Provisions / Status of the contract package	Compliance Status	Remarks
Package 3  (Electro Mechanical)	<p><b>General conditions of the contract</b></p> <p>22.2 Labour</p> <p>22.2.1 engagement of staff and labour a) except as otherwise stated in the specification, the contractor shall make arrangements for the engagement of all staff and labour, local or otherwise, and for their payment, housing, feeding and transport.</p> <p>22.2.3 Labour laws a) the contractor shall comply with all the relevant labour laws applicable to the contractor's personnel, including laws relating to their employment, health, safety, welfare, immigration and emigration, and shall allow them all their legal rights.</p> <p>22.2.7 Health and safety a) the contractor shall at all times take all responsible precautions to maintain the health and safety of the contractor's personnel.... b) the contractor shall appoint an accident prevention officer at the site, responsible for maintaining safety and protection against accidents. c) the contractor shall send to the project manager, details of any accident as soon as practicable after its occurrence.</p> <p>22.2.11 Supply of water The contractor shall, having regard to local conditions, provide on the site and adequate supply of drinking and other water for the use of contractor's personnel.</p> <p>22.4 Site regulations and safety Such site regulations shall include, but shall not be limited to, rules in respect of security safety of the facilities, gate control, sanitation, medical care and fire prevention.</p> <p>22.8 Watching and lighting The contractor shall provide and maintain at its own expense all lighting, fencing and watching when and where necessary for the proper execution and the protection of the facilities, or for the safety of the owners and occupiers off adjacent property and for the safety of public.</p> <p>34. Insurance a) cargo insurance during transport b) installation all risks insurance c) 3rd party liability insurance</p>	<p>Ongoing</p> <p>Partially complied</p> <p>Partially complied and to be improved To be appointed</p> <p>Will adhere</p> <p>Complied</p> <p>Partially complied</p> <p>Ongoing and improvements required</p> <p>Complied</p>	

Contract Package	Contract Provisions / Status of the contract package	Compliance Status	Remarks
	<p>d) automobile liability insurance e) workers compensation f) employers liability</p> <p><b>Special Conditions of the contract</b></p> <p>46.4 the contractor shall comply with all applicable national provincial, and local environmental laws and regulations. The contractor shall comply with (i) the measures and requirements set forth in the initial environment examination and the environmental management plan and (ii) any corrective or preventive actions set out in the safeguards monitoring reports that the employer will repair from time to time to monitor implementation of the initial environmental examination and the environmental management plan. The contractors location with these measures requirements and actions.</p>	<p>Partially complied and improvement required. CEMP submitted. (Annexure 7)</p>	

Contract Package	Contract Provisions / Status of the contract package	Compliance Status	Remarks
Package 4	<p><b>General Condition of the Contract</b></p> <p>9.4 The contractor shall comply with all laws in force in the country where the facilities are to be implemented. The laws will include all local, state, national, or other laws that effect the performance of the contract and bind upon the contractor.</p> <p>22.2 Labor</p> <p>22.2.3 Labor Laws The Contractor shall provide equal wages and benefits to men and women for work of equal value or type and comply with the measures set forth in the Gender Action Plan.</p> <p>22.2.5 Working Hours (a) Normal working hours are: 8:00 a.m. to 5:00 p.m. inclusive of one-hour lunch break</p> <p>22.2.7 Health and Safety a) the contractor shall at all times take all responsible precautions to maintain the health and safety of the contractor's personnel....</p>	<p>Ongoing and to be improved</p> <p>Complied and ongoing</p> <p>Complied and ongoing Complied and ongoing To be appointed</p>	

Contract Package	Contract Provisions / Status of the contract package	Compliance Status	Remarks
	<p>b) the contractor shall appoint an accident prevention officer at the site, responsible for maintaining safety and protection against accidents.</p> <p>c) the contractor shall send to the project manager, details of any accident as soon as practicable after its occurrence.</p> <p>22.2.11 Supply of water The contractor shall, having regard to local conditions, provide on the site and adequate supply of drinking and other water for the use of contractor's personnel.</p> <p>22.4 Site regulations and safety such site regulations shall include, but shall not be limited to, rules in respect of security safety of the facilities, gate control, sanitation, medical care and fire prevention.</p> <p>22.8 Watching and lighting The contractor shall provide and maintain at its own expense all lighting, fencing and watching when and where necessary for the proper execution and the protection of the facilities, or for the safety of the owners and occupiers off adjacent property and for the safety of public.</p> <p>34. Insurance a) cargo insurance during transport b) installation all risks insurance c) 3rd party liability insurance d) automobile liability insurance e) workers compensation f) employers liability</p> <p><b>Special Condition of the Contract</b> 22.2.3 Labor Laws Added the following as sub-paragraph (d) under Sub-Clause 22.2.3: (d) The Contractor shall not make employment decisions based upon personal characteristics unrelated to job requirements. The Contractor shall base the employment relationship upon equal opportunity and fair treatment, and shall not discriminate with respect to aspects of the employment relationship, including recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment or retirement, and discipline.</p> <p>22.2.7 Health and Safety Added the following as sub-paragraph (d) under Sub-Clause 22.2.7</p>	<p>Ongoing</p> <p>Complied and ongoing Partially complied</p> <p>Partially complied</p> <p>Complied</p> <p>Complied</p> <p>Partially complied.</p>	

Contract Package	Contract Provisions / Status of the contract package	Compliance Status	Remarks
	<p>(d) The Contractor shall conduct health and safety programs for workers employed under the project, and shall include information on the trafficking of women and the risk of sexually transmitted diseases, including HIV/AIDs in such programs. The Contractor shall throughout the contract (including the Defect Liability Period):</p> <p>(iv) The contractor shall follow all covid related protocol issued by competent authority during execution of the work.</p> <p>(e) The Contractor is responsible for establishment of preventive and emergency preparedness and response measures to avoid, and where avoidance is not possible, to minimize, adverse impacts and risks of the construction site work to the health and safety of local communities.</p>	<p>(Women not engaged so far)</p> <p>Partially complied</p> <p>Partially complied</p>	

Contract Package	Contract Provisions / Status of the contract package	Compliance Status	Remarks
Package 1 (Building and internal roads)	<p><b>General conditions of the contract</b></p> <p>4.8 Safety procedures</p> <p>The contractor shall</p> <p>(a) Comply with all applicable safety regulations</p> <p>(b) take care for safety of all persons entitled to be on site</p> <p>(c) use reasonable efforts to keep the site and works clear for unnecessary obstruction so as to avoid danger to these persons</p> <p>(d) Provide fencing lightings gardening and watching of the works until completion and taking over under clause 10 and</p> <p>(e) Provide any temporary works (including roadways, footpaths, guards and fence) which may be necessary, because of the execution of the works, for the use and protection of the public and of owners and occupiers of adjacent land.</p> <p>4.18 Protection of the environment the contractor shall take all necessary reasonable steps to protect the environment (both on and off the site) and to limit damage and missions to people and property resulting pollution, noise and other results of his operation.</p> <p>The contractor shall ensure that emissions surface discharges and effluent from the contractors activities</p>	<p>Ongoing</p> <p>Ongoing</p> <p>Ongoing</p> <p>To be initiated</p> <p>To be initiated</p> <p>To be initiated.</p> <p>CEMP not submitted.</p> <p>To be followed</p>	



Contract Package	Contract Provisions / Status of the contract package	Compliance Status	Remarks
	<p>shall not exceed the clause stated in the specification or prescribed by applicable laws.</p> <p>6.4 Labour laws</p> <p>The contractor shall comply with all the relevant labour laws applicable to the contractor's personnel including laws resulting to their employment health safety welfare immigration and emigration and shall allow them all their legal rights.</p> <p>The contractor shall require his employees to obey all applicable laws including those concerning safety at work.</p> <p>6.5 Working hours</p> <p>No work shall be carried out on the side on locally recognised days of rest or outside the normal working hours stated in the contract data unless</p> <p>a) Otherwise stated in the contract,</p> <p>b) the engineer gives consent, or</p> <p>c) Is unavoidable, or necessary for the protection of life or property or of the safety of the works, in which case the contractor shall immediately advise the Engineer</p> <p>6.6 Facilities for staff and labour except as otherwise stated in the specification the contractor shall provide and maintain all necessary accommodation and welfare facilities for the contractors personnel the contractor shall also provide facilities for the employers personnel as stated in the specification.</p> <p>The contractor shall not permit any of the contractors personnel to maintain any temporary or permanent living quarters within the structures forming part of the permanent works.</p> <p>6.7 Health and safety</p> <p>The contractor shall at all time take all responsible precautions to maintain the health and safety of the contractors personnel.</p> <p>The contractor shall appoint an accident prevention officer at site responsible for maintaining safety and protection against accidents.</p> <p>the contractor shall send to the engineer details of any accident as soon as practicable after its occurrence.</p> <p>The contractor shall conduct and HIV aids awareness programme via an approved service provider.</p> <p>18.2 Insurance for workers and contractors equipment</p> <p>the insuring party shall ensure the works plant materials and contractors documents for not less than the full</p>	<p>To be initiated</p> <p>Ongoing</p> <p>To be initiated</p> <p>To be appointed</p> <p>Complied</p>	




Contract Package	Contract Provisions / Status of the contract package	Compliance Status	Remarks
	<p>reinstatement cost including the cost of demolition removal of debris and professional fees and profit.</p> <p>18.4 Insurance for contractors personnel The contractor shall effect and maintain Insurance against liability for claims, damages, losses and expenses (including legal fees and expenses) arising from injury, sickness diseases or death of any person employed by the contractor or any other of the contractor's personal.)</p> <p><b>Special conditions of the contract</b></p> <p>1.3 Environmental compliance 1.3 .1 General reference is made to the environmental requirements given in:</p> <p>a) The law and regulation of the comment of a Assam/ India and relevant standards b) employers requirement for environmental compliance c) sub clause of general condition of the contract and any other clause or sub clause have any relevance to environment. d) Local traditions and customs of project area.</p> <p>1.3.2 environmental compliance and miscellaneous The contractor shall within one month of receipt of the commencement date, appoint an Environmental Officer for the works, who's broad responsibilities are to guide the construction personnel on environmental matters, to communicate and to make liaison with the Employer, the PMC, Government of Assam and local authorities.</p> <p>1.11 Environmental Protection 1.11.1 Health, safety and security a) the employer has a goal to create zero-incident work environment with an safety culture based on teamwork and leadership. b) the contractor will be responsible for the security, safety and health and group insurance of his employees. c) provide and maintain at his own cost, fencing warning science and watch and ward, when and where necessary or required by the PMC / Engineer or by any duly constituted authority for the protection of the works or for the safety and convenience of the public or others. d) take all responsible steps to protect the environment on and off the site and to avoid damage or nuisance to person or property of the public or others resulting from pollution noise or other causes arising as a consequence of its method of operation,</p>	<p>Complied</p> <p>Ongoing</p> <p>Will be followed</p> <p>To be appointed.</p> <p>(a-e) will be followed during construction</p>	




Contract Package	Contract Provisions / Status of the contract package	Compliance Status	Remarks
	<p>e) the contractor will protect the environment following the principles of approved environment management plan the contractor will submit with his tender a return statement assuring compliances with all environments safeguard related clause under section 6.</p> <p>f) The Officer-in-charge of safety will submit monthly safety report.</p> <p>1.15 electrical safety measures</p> <ul style="list-style-type: none"> <li>• Lightning protection to be done as per is codes applicable.</li> <li>• Safety parameters as indicated under Indian electricity rules 1956 , etc.</li> </ul>	<p>f) Will be initiated</p> <p>Will be followed</p>	


## 6.0 Compliance to Environmental Management Plan


Right now only package 2 contractor is in place, so it is now a combined one. From the next Six monthly reports all the contract packages compliance will be dealt separately.

**Table 7. Compliance to Environmental Management Plan**




Sl.	Environmental Issue	Activity/ Location	Mitigation Measures	Compliance as on 31 <sup>st</sup> December 2022
<b>DESIGN AND PRE-CONSTRUCTION PHASE</b>				
1	<p>Impact on air, water, noise, soil</p> <p>Exposure to safety related risks</p>	Location and design of power house, office, substation and colony	<ul style="list-style-type: none"> <li>• Siting of colony away from construction areas including plantation all around colony.</li> <li>• Drainage system with de-silting chamber, will be provided all around power house, office, substation and colony.</li> <li>• Solid waste storage bin system will be provided at required location.</li> <li>• All buildings are designed and will be constructed as per seismic zone provision.</li> <li>• The site-specific earthquake study has been completed by Department of Earthquake Engineering, IIT Roorkee. The site-specific design parameters recommended by IIT for</li> </ul>	<p>Planned and is in tender doc and in contract EMP.</p>   

Sl.	Environmental Issue	Activity/ Location	Mitigation Measures	Compliance as on 31 <sup>st</sup> December 2022
			<p>MCE and DBE conditions are recommended as 0.36g and 0.18g for horizontal and 0.24g and 0.12g for vertical ground motion, respectively have been considered. The design has been reviewed by independent experienced dam expert appointed by ADB and found to be adequate.</p> <ul style="list-style-type: none"> <li>Dam safety surveillance and monitoring aspects are included. Personnel Safety equipment will be provided at required location.</li> </ul>	   <p>Plantation all around colony.</p>
2	Release of chemicals ashes in receptors (air, water, land)	Equipment specifications and design parameters.	<ul style="list-style-type: none"> <li>CFC not used in substation transformers or other project facilities or equipment by concerned agencies.</li> <li>Processes, equipment, and systems will not to use chlorofluorocarbons (CFCs), including halon, and their use.</li> </ul>	<p>Incorporated in tender doc.</p> <p>CFC not used in substation transformers or other project facilities or equipment so far.</p>
3	Exposure to noise	Power Plant /Substation location	Design of plant enclosures to comply with IFC EHS noise regulations (85 dB(A) at work sites for heavy industry.	Planned and is in tender doc EMP
4	Acquisition of private land	Location of powerhouse, head works.	Acquisition of agricultural and cultivable land minimized.	Construction work zones are clustered to minimized the use of agricultural and cultivable land. Package 1, 2 & 3 facilities are concentrated in three


Sl.	Environmental Issue	Activity/ Location	Mitigation Measures	Compliance as on 31 <sup>st</sup> December 2022
				<p>patches in revenue land and in 4 patches of Forest land.</p> 
5	Social inequities	Involuntary resettlement or land acquisition.	<ul style="list-style-type: none"> <li>• Compensation will be paid for temporary / permanent loss of productive land as per Govt. rules and regulation.</li> <li>• A list of all the affected persons by type of losses and extent of damages has been prepared through and the same will be compensated as per Resettlement and Tribal Development Plan prepared as per GoI and ADB SPS 2009 requirements.</li> </ul>	<p>Compensation done as per entitlement matrix of CRDTP. Mostly completed. Land compensation completed 100 %. and other R&amp;R assistance also initiated from April 2022.</p>
6	Loss of precious Ecological values/impacts on precious species due to acquisition of 523 ha of forest land	Encroachment into precious ecological areas.	<ul style="list-style-type: none"> <li>• Minimize acquisition of forest areas.</li> <li>• Avoid encroachment by careful site and alignment selection of access roads, and transmission lines.</li> <li>• Afforestation of 1,046 ha (1:2 tree planting ratio) of degraded forest land.</li> <li>• A compensatory afforestation and biodiversity conservation and</li> </ul>	<p>If both permanent (including underground areas) and temporary use areas are included, only 297.75 Ha will be required rest will be kept as Green Belt (198.746 Ha) and Safety Area (26.55 Ha) out of 523.465 ha forest land.</p> <p>As per Government norms it is 1:1 is for Compensatory afforestation of Government projects. If CAT plan plantation areas</p>

Sl.	Environmental Issue	Activity/ Location	Mitigation Measures	Compliance as on 31 <sup>st</sup> December 2022
			<p>management plan has been prepared (Annex 9).</p> <ul style="list-style-type: none"> <li>Cut only trees marked by the Forest Department</li> <li>Ensure that the area is cleared as per directives/delineation of Forestry staff</li> </ul>	<p>are included it comes around 1:3.</p> <p>Compensatory Afforestation plan is planned to be included in the Annual Operation Plan of the Forest Department, Govt. of Assam for the year 2022-2023.</p> <p>Biodiversity Conservation plan is yet to be initiated but the Biodiversity Management Committee was formed and 1<sup>st</sup> meeting was conducted on 21.12.22 during this reporting period. <a href="#">Annexure 5</a>. Biodiversity Management Committee.</p> <p><a href="#">Annexure 6</a>: Minutes of the 1<sup>st</sup> Meeting of the Committee.</p> <p>Trees are marked and cut by the Forest Department only.</p> 
7	Nuisance to neighbouring properties	Noise related	<ul style="list-style-type: none"> <li>Substations, powerhouse, head works designed to ensure noise will not be a nuisance. Noise will be controlled within IFC</li> <li>EHS noise standards. In any case, there is no proximity of residences to these features.</li> </ul>	Quarterly test are being carried out in September – 2022 and found within the IS 10500 : 2012 amended upto 2015 norms.
8	Flooding hazards/ loss of agricultural production	Interference with drainage patterns/ Irrigation channels	<ul style="list-style-type: none"> <li>The alignment of river channel and siting of project facilities are done to avoid any flooding hazard. Detailed hydrological assessments have been carried out as part of detailed design. Additional IWRM management plan has been prepared.</li> <li>Dam Break Analysis and disaster management</li> </ul>	<p>Followed</p> <p>Dam Break Analysis and Disaster Management Plan already done in EIA</p>





Sl.	Environmental Issue	Activity/ Location	Mitigation Measures	Compliance as on 31 <sup>st</sup> December 2022
			plan has been prepared (Annex 30).	consultant. The plan is available in the EIA Annexure 30.
9	Environmental pollution	Escape of polluting materials	<ul style="list-style-type: none"> <li>Transformers designed with oil spill containment systems, and purpose-built oil, lubricant and fuel storage system, complete with spill cleanup equipment</li> <li>Construct 110% fenced and bermed area with impermeable concrete floor.</li> <li>Powerhouses/substations to include drainage and sewage disposal systems (septic tanks, sewage treatment plant) to avoid offsite land and water pollution.</li> </ul>	<p>Designed and implemented for the construction power substation. Bermed constructed in substation.</p>  <p>Fence constructed.</p>  
10	Contamination of receptors (land, water)	Equipment submerged under flood	Powerhouses/substations constructed above the high flood level (HFL) i.e. 185.34 m, by raising the foundation pad. This level also includes any possible effects from future climate change.	Designed and implemented for construction power and will be implemented for evacuation substation.






Sl.	Environmental Issue	Activity/ Location	Mitigation Measures	Compliance as on 31 <sup>st</sup> December 2022
				
11	Natural disaster frequently observed	Ground subsidence/ landslide	Civil design and siting of project facilities has been done with due considerations to earthquake and landslide so as to avoid any hazard.	Designed and implemented
12	Fire hazards	Explosions/fire	<ul style="list-style-type: none"> <li>• Design of Powerhouses/ substations has included modern fire control systems/firewalls in accordance with the norms of National Fire Protection Association (NFPA) and Tariff Advisory Committee (TAC).</li> <li>• Provision of fire fighting equipment to be located within 20 m of transformers, power generation equipment.</li> <li>• Fire protection and Safety practice have been prepared (Annex 28, 29).</li> </ul>	Designed and implemented. All the measures were taken into consideration during the pre construction and design.
13	Tree cutting	Cutting of trees during site clearance	<ul style="list-style-type: none"> <li>• Restricting tree cutting within construction limit.</li> <li>• Avoiding tree cutting at ancillary sites.</li> <li>• Providing and maintaining compensatory tree plantation i.e. three times of cutting.</li> <li>• Compensatory afforestation plan prepared.</li> </ul>	<p>Planned and under implementation.</p> <p>Bare minimum trees were removed when it was absolutely necessary. Tree cutting were done under the supervision of Forest Department of both the divisions.</p> <p>Compensatory afforestation plan prepared by the Forest Department and the cost for implementation was deposited to CAMPA account by APGCL. As informed work</p>

Sl.	Environmental Issue	Activity/ Location	Mitigation Measures	Compliance as on 31 <sup>st</sup> December 2022
				will start within first part of 2023.
14	Removal of vegetative covers (dust, pollution)		<ul style="list-style-type: none"> <li>• Use of controlled clearing activities</li> <li>• Use of dust controlled measures</li> <li>• Collection and disposal of debris and muck.</li> </ul>	Planned and being implemented.
15	Removal of utilities		<ul style="list-style-type: none"> <li>• Necessary planning and coordination with concerned authority and local body.</li> <li>• Prior notice to and consultation with concerned authority, local body and public to be affected so as to ensure that work does not get affected and impact on public is minimum.</li> </ul>	Shifting of utility is not required so far.
16	Religious places	Work site	<ul style="list-style-type: none"> <li>• Suitable mitigation measures have been incorporated in social impact assessment report.</li> </ul>	Reported in SSMR.
17	Camp site and contractor facilities	Establishment of contractors' facilities	<ul style="list-style-type: none"> <li>• Obtain permits and NOCs from ASPBC and other statutory agencies.</li> <li>• Contractor to submit a camp and site office plan defining all facilities to be created. These include human waste disposal facilities and solid waste management facilities. The basic plans provided in Annex 17) to be updated and finalized by contractor.</li> </ul>	<p>Office site plan approved by PMC and APGCL. Site EMP submitted by Package 2 contractor and approved by APGCL after review of Environment cell of APGCL &amp; PMC. Additional Plans like Influx management plan, revised Solid waste Management Plan etc to be incorporated by Package 2 contractor. Construction EMP approved by APGCL.</p> <p>Solid waste Management Plan submitted to APGCL by Package 2 contractor and final design of the landfill site under preparation.</p> <p>All the toilets have the septic tanks and potable water are connected to all the toilets.</p>





Sl.	Environmental Issue	Activity/ Location	Mitigation Measures	Compliance as on 31 <sup>st</sup> December 2022
				 <p>Drinking water was supplied from the RO Plant.</p>  <p>Waste segregation at source</p> 
18	Project facilities and commencement of construction	Clearances and permits	<ul style="list-style-type: none"> <li>Obtain environmental clearance from MoEF&amp;CC</li> <li>Obtain forest clearance from forest departments</li> <li>Include EMP in the contract documents.</li> </ul>	Obtained EC and FC. EMP included in the Contract document. <b>Annexure 16</b> – EMP of the package 1 contract.



Sl.	Environmental Issue	Activity/ Location	Mitigation Measures	Compliance as on 31 <sup>st</sup> December 2022																																																												
<b>CONSTRUCTION PHASE</b>																																																																
1.	Impact and air, water, noise, soil	Civil construction work for power house, tunnel, office, substation, access roads, colony etc.	<p><b>Air Pollution:</b></p> <ul style="list-style-type: none"> <li>All the vehicles must have valid PUC certificates at all the</li> </ul> <p><b>PUC of the vehicles</b></p> <table border="1"> <thead> <tr> <th>No</th><th>Registration No</th><th>Certificate No</th><th>PUC Date</th><th>PUC Expires</th></tr> </thead> <tbody> <tr><td>1</td><td>RJ14GH9976</td><td>D4RJ41105255</td><td>28.11.2022</td><td>27.05.2023</td></tr> <tr><td>2</td><td>RJ14GH9427</td><td>D4RJ41105257</td><td>28.11.2022</td><td>27.11.2023</td></tr> <tr><td>3</td><td>RJ14GJ9425</td><td>D4RJ1105072</td><td>29.09.2022</td><td>28.09.2023</td></tr> <tr><td>4</td><td>RJ14GJ6355</td><td>D4RJ1105073</td><td>29.09.2022</td><td>28.09.2023</td></tr> <tr><td>5</td><td>RJ14GH9975</td><td>D4RJ41105258</td><td>28.11.2022</td><td>27.05.2023</td></tr> <tr><td>6</td><td>RJ14GJ9405</td><td>D4RJ41105261</td><td>28.11.2022</td><td>27.11.2023</td></tr> <tr><td>7</td><td>AS01EQ1244</td><td>AS03100170000565</td><td>09.11.2022</td><td>08.11.2023</td></tr> <tr><td>8</td><td>AS01EP5996</td><td>AS03100170000602</td><td>12.11.2022</td><td>11.11.2023</td></tr> <tr><td>9</td><td>AS08A2540</td><td>AS03100170000569</td><td>09.11.2022</td><td>08.05.2023</td></tr> <tr><td>10</td><td>AS01EP7097</td><td>AS03100170000577</td><td>10.11.2022</td><td>09.11.2023</td></tr> <tr><td>11</td><td>AS01EP8909</td><td>AS03100170000567</td><td>09.11.2022</td><td>08.11.2023</td></tr> </tbody> </table> <p>time during construction phase of the project.</p> <ul style="list-style-type: none"> <li>Water sprinkling shall be done to suppress the dust emissions from the site.</li> <li>All the DG sets used for construction shall have valid consents from Assam State Pollution Control Board and shall have built-in stacks to reduce the air emission impacts.</li> <li>Refer to Annex 24: Measures for Air Pollution Control.</li> </ul> <p><b>Control of Emission</b></p> <ul style="list-style-type: none"> <li>The contractor will be responsible for maintaining properly functioning construction equipment to minimize exhaust.</li> <li>Construction equipment and</li> </ul>	No	Registration No	Certificate No	PUC Date	PUC Expires	1	RJ14GH9976	D4RJ41105255	28.11.2022	27.05.2023	2	RJ14GH9427	D4RJ41105257	28.11.2022	27.11.2023	3	RJ14GJ9425	D4RJ1105072	29.09.2022	28.09.2023	4	RJ14GJ6355	D4RJ1105073	29.09.2022	28.09.2023	5	RJ14GH9975	D4RJ41105258	28.11.2022	27.05.2023	6	RJ14GJ9405	D4RJ41105261	28.11.2022	27.11.2023	7	AS01EQ1244	AS03100170000565	09.11.2022	08.11.2023	8	AS01EP5996	AS03100170000602	12.11.2022	11.11.2023	9	AS08A2540	AS03100170000569	09.11.2022	08.05.2023	10	AS01EP7097	AS03100170000577	10.11.2022	09.11.2023	11	AS01EP8909	AS03100170000567	09.11.2022	08.11.2023	<p>PUC monitored for vehicles time to time. (Table 7A)</p> <p>Table 7A: PUC of the Vehicles</p>  <p>Water sprinkling -Being mostly complied.</p> <p>CTO for DG sets available.</p>  <p>Complied Stack height of DG sets are maintained as per norms i.e, 15 ft for 250 KVA.</p>
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			<p>vehicles will be turned off when not used for extended periods of time.</p> <ul style="list-style-type: none"> <li>• Unnecessary idling of construction vehicles to be prohibited.</li> <li>• Effective traffic management to be undertaken to avoid significant delays in and around the project area.</li> <li>• Road damage caused by sub-project activities will be promptly attended to with proper road repair and maintenance work.</li> </ul> <p><b>DG sets :</b></p> <ul style="list-style-type: none"> <li>• Location of DG sets and other emission generating equipment should be decided to keep in view the predominant wind direction so that emissions do not effect nearby residential areas.</li> <li>• Stack height of DG sets to be kept in accordance with CPCB norms.</li> </ul> <p><b>Dust Control :</b></p> <ul style="list-style-type: none"> <li>• Identification of construction limits (minimal area required for construction activities).</li> <li>• When practical, excavated spoils will be removed as the contractor proceeds</li> </ul>	<p>Complied</p> <p>Complied</p> <p>Mostly complied. For internal road 100 % complied.</p>  <p>Complied</p> <p>Complied</p> <p>Complied</p> <p>Complied</p>



Sl.	Environmental Issue	Activity/ Location	Mitigation Measures	Compliance as on 31 <sup>st</sup> December 2022
			<p>along the length of the activity.</p> <ul style="list-style-type: none"> <li>• When necessary, stockpiling of excavated material will be covered or stacked at offsite location with muck being delivered as needed during the course of construction.</li> <li>• Excessive soil on paved areas will be sprayed (wet) and/or swept and unpaved areas will be sprayed and/or mulched.</li> <li>• Contractors will be required to cover stockpiled soils and trucks hauling soil, sand, and other loose materials.</li> <li>• Clean the wheels of vehicles leaving the site to control the mud spread onto the public road.</li> <li>• Contractor shall ensure that there is effective traffic management at site.</li> <li>• Dust Suppression – The roads, construction area and vicinity (access roads, and working areas) shall be swept, sprinkled with water on daily basis to suppress dust.</li> </ul>	<p>Stockpiled</p>  <p>Not initiated</p> <p>Not initiated</p> <p>Complied</p> <p>Complied</p> 





Sl.	Environmental Issue	Activity/ Location	Mitigation Measures	Compliance as on 31 <sup>st</sup> December 2022
			<b>Noise Pollution:</b> <ul style="list-style-type: none"> <li>Construction materials shall be properly maintained and noise barriers, if needed, shall be provided around worksites, to reduce the noise levels. Design of such barriers will be finalized by CSC environment specialist.</li> <li>All the workers will be provided with personal protective equipment including ear plugs and other necessary provisions by the contractor.</li> <li>Refer to Annex 25: Measures for Noise Pollution Control</li> </ul>	<ul style="list-style-type: none"> <li>DG sets has acoustic enclosures to prevent noise. Workers are using ear plug at drilling and blast sites along with other safety equipment.</li> </ul>  <ul style="list-style-type: none"> <li>PPE- mostly complied. PPE kits are used 95 %. Use of hand gloves 100 %. Use of proper ear muffler/ plug - 50%. Use oh Jackets, helmet and safety shoes-100 %.</li> </ul>   
			<b>Water Quality:</b> <ul style="list-style-type: none"> <li>Quality of water (river and wastewater discharged from the construction site)</li> </ul>	<p>Waste water generation from the construction site monitored.</p> <p>Waste water from labour camp are kept in a stabilization pond</p>

Sl.	Environmental Issue	Activity/ Location	Mitigation Measures	Compliance as on 31 <sup>st</sup> December 2022
			<p>shall be analyzed monthly during construction, for its compliance to the disposal standards of pollution control authority.</p> <ul style="list-style-type: none"> <li>Refer to Annex 26: Measures for Water Pollution Control</li> </ul>	<p>adjacent to the colony and the overflow is chlorinated before reaching the receiving body. Grey water from the camp do not go through the septic tank But all the toilets are connected with Septic Tank.</p> <p>Wastewater from all kitchens, bathing areas, washing areas were diverted to the settling tanks prior to releasing in the environment. Still there are instances for direct release of wastewater. CP2 contractor has ordered DRDO approved biodigester septic tanks for treatment of wastewater before release into the environment.</p> <p>Monitoring of water quality after treatment and that of the receiving water body shall be monitored regularly</p>
	Exposure to safety related risks		<p><b>Others:</b></p> <ul style="list-style-type: none"> <li>Proper plantation all around colony. Refer to Annex 21: Green Belt Development Plan</li> <li>Drainage with the silting chamber, will be provide all around power house, office, substation and colony.</li> </ul>	<p>Plantation initiated as per green belt development plan in some areas.</p>  <p>Drainage provided in the substation and camp area but outlet and desilting chambers to be constructed.</p> 





Sl.	Environmental Issue	Activity/ Location	Mitigation Measures	Compliance as on 31 <sup>st</sup> December 2022
			<ul style="list-style-type: none"> <li>Solid waste storage bin system will be provided at required location. Refer to Annex 22: Solid Waste Management Plan</li> </ul>	 <p>Solid waste storage bin kept at different sites</p>  <p>Waste are segregated designated bins at source and then biodegradable waste are taken to composting area and recyclable wastes are sent to vendors partially. A secured land fill site is being constructed as per rules and following the IFC Health and Safety guidelines.</p> <p>All the building designs are constructed as per seismic zone provision.</p>  <p>Safety systems are provided at site.</p>
			<ul style="list-style-type: none"> <li>All buildings designed constructed as per seismic zone provision.</li> </ul>	


Sl.	Environmental Issue	Activity/ Location	Mitigation Measures	Compliance as on 31 <sup>st</sup> December 2022
			<ul style="list-style-type: none"> <li>Safety system will be provided at required location. Refer to Annex 18, Annex 28, Annex 29 for Occupational, Health and Safety Plans.</li> </ul>	 <p>Magazine</p> <p>Electric panel covered. Compliance of EIA Annexure 29 is provided in <a href="#">Annexure 14</a>. Structural condition of buildings/ properties likely to be impacted will be recorded to act as baseline and vibration monitoring is conducted regularly at all blasting and surrounding sites as per relevant Indian Standard/ codes, such as IS-14881:2001 and statutes and results will be incorporated in next EMRs. The ambulances with appropriate and essential lifesaving medical facilities are stationed at 2 critical construction sites by the contractors. The first aid kits at all sites have all unexpired medicines and medical items are in adequate quantity related to the work force at site. The back up alarms and reverse blinkers of all construction vehicles are functional. The sturdy and stable barricading is provided around all deep excavated areas.</p>
2.	Infrastructure provisions at labor camps	Health and hygiene at workers camps	<ul style="list-style-type: none"> <li>Contractor during the progress of work will provide, erect and maintain necessary living.</li> <li>Accommodation and ancillary facilities for labor as per the requirements of applicable labor</li> </ul>	Housekeeping and Hygiene at workers camps and bathrooms/toilets to be improved. Accommodation facilities have proper celling to control heat.

Sl.	Environmental Issue	Activity/ Location	Mitigation Measures	Compliance as on 31 <sup>st</sup> December 2022
			<p>regulations of Government of India.</p> <ul style="list-style-type: none"> <li>All the work sites and camp sites shall also be provided with basic sanitation and infrastructure as per the requirements of Building and other Construction Workers (regulation of Employment and Conditions of Service) Act, 1996.</li> <li>Refer to Annex 12: Public Health Delivery System</li> <li>Refer to Annex 18: Project Personnel Health Plan</li> <li>Refer to Annex 28: Fire Protection in Labor Camps and Staff Colonies</li> <li>Refer to Annex 29: Safety Practices during Construction</li> </ul>	<p>Celling were placed in all accommodations to reduce heat.</p> <p>Drainage facilities to be constructed/ completed at camps and facilities.</p> <p>Camp sites also be provided with basic sanitation and infrastructure as per the requirements of Building and other Construction Workers.</p>
	Fire Protection in Labor Camp and Staff Colonies	<ul style="list-style-type: none"> <li>Safety Practices During Construction Phase</li> </ul>	<ul style="list-style-type: none"> <li>Safety Practices During Construction Phase</li> <li>Refer to Annex 28: Fire Protection in Labor Camps and Staff Colonies</li> </ul>	<p>Fire extinguishers are placed at vulnerable sites.</p> <p>Status of Fire Extinguisher at Project sites <b>(Table 15)</b>.</p>  <p>Water hydrant at Magazine</p>
3.	Solid Waste Management	Construction camps	<ul style="list-style-type: none"> <li>Collection and disposal of human waste as per waste management plan.</li> <li>Refer to Annex 22: Solid Waste Management Plan</li> </ul>	<p>Solid waste disposal mechanism is only dumping in a pit. MSW management plan is being developed.</p> <p>Discussion is going on with the Umrangsoo Town Committee for disposal of solid wastes after segregation.</p>
4.	Muck disposal	Tunneling and excavation activities	<ul style="list-style-type: none"> <li>Muck generated from various tunnelling and excavation activities would</li> </ul>	<p>4 muck dumping sites identified and currently all the 4 are being used.</p>

Sl.	Environmental Issue	Activity/ Location	Mitigation Measures	Compliance as on 31 <sup>st</sup> December 2022
			<p>be dumped suitably to designated sites</p> <ul style="list-style-type: none"> <li>Refer to Annex 13: Muck Disposal Plan</li> </ul>	<p>Muck disposal plan approved by APGCL.</p> <p>Requested the contractor to immediately replant the slope up with grass to prevent soil erosion and replacement trees to compensate for numbers that were lost due to muck disposal.</p> <p>For levelling of the road 60% of the materials were used and the usable stones were taken to crusher plant. Rest are at site. Contractor will collect the remaining materials to the dumping yard and left over materials after compaction will be revegetated.</p> <p>Quantity of muck generated, reuse and disposed at muck dumping site and slope achieved are being maintained by the contractor.</p>
5.	Construction sites	Restoration of sites	<ul style="list-style-type: none"> <li>Restoration of construction sites.</li> <li>Refer Annex 19: Construction Site Restoration Plan.</li> </ul>	Not yet arises.
6.	Noise and vibrations	Equipment layout and installation	<ul style="list-style-type: none"> <li>Construction techniques and machinery selection seeking to minimize ground disturbance.</li> <li>Refer to Annex 25: Measures for Noise Pollution Control</li> </ul>	<p>Being partially complied. Construction activities done in barren areas only and on acquired land. Document related to the construction methodology and machine specification prepared and submitted for each activity.</p> <p>Vibration monitoring of the blasting activities were not done so far. CP2 agrees to initiate the vibration monitoring from March 2023 onwards.</p>
7.	Disturbed farming activity	Physical construction	<ul style="list-style-type: none"> <li>Construction activities on cropping land time to avoid disturbance of field crops (within 1 month of harvest wherever possible).</li> </ul>	Being complied.


Sl.	Environmental Issue	Activity/ Location	Mitigation Measures	Compliance as on 31 <sup>st</sup> December 2022
8.	Noise vibration and operator safety, efficient operation, equipment wear and tear	Mechanized construction	<ul style="list-style-type: none"> <li>Construction Mechanized maintenance and turning of plant.</li> <li>Proper maintenance and turning of plant</li> <li>Implement environmental mitigation and good-construction as integral component of each civil activity and as day-to-day activity</li> </ul>	Being complied and monitored.
9.	Increase in airborne dust particles	Construction of access roads	<ul style="list-style-type: none"> <li>Existing roads and tracks used for construction and maintenance access to the site wherever possible.</li> <li>Refer to Annex 24: Measures for Air Pollution Control</li> </ul>	<p>Being mostly complied. Water sprinkling to reduce dust.</p>  <p>Laying of bitumen on internal roads not yet initiated till 30<sup>th</sup> June 2022.</p> 
10.	Increased land requirement for temporary accessibility	Construction of access roads	<ul style="list-style-type: none"> <li>New access ways restricted to a single /intermediate carriageway width. Refer to Annex 20: Road Construction Management Plan</li> </ul>	Being complied. Permanent and temporary roads are constructed as per plan approved. As per EMP roads under EIA 2018.
11.	Temporary blockage of utilities	Construction work	Temporary placement of fill in drains/canals not permitted	Being complied. Whenever observed, immediately cleared.
12.	Loss of vegetative cover	Site clearance	Marking of vegetation to be removed prior to clearance, and strict control on clearing activities to ensure minimal clearance.	Being complied. Tree cutting are done in presence of Forest Department only after enumeration and recording.

Sl.	Environmental Issue	Activity/ Location	Mitigation Measures	Compliance as on 31 <sup>st</sup> December 2022
				Tree marking & cutting at Power house area in presence of Panimure Forest Department Team.
13	Fire hazards	Trimming/cutting of trees	<ul style="list-style-type: none"> <li>Trees allowed growing up to a specified height within the work areas by maintaining adequate clearance between the top of tree and the conductor as per the regulations.</li> </ul>	Will be complied.
14	Loss of vegetation and deforestation		<ul style="list-style-type: none"> <li>Trees that can survive pruning to comply should be pruned instead of cleared.</li> <li>Felled trees and other cleared or pruned vegetation to be disposed of as authorized by the statutory bodies.</li> </ul>	Being complied.
	Loss of vegetation and deforestation	Reservoir clearing	<ul style="list-style-type: none"> <li>Removal of maximum commercially viable timber.</li> <li>All remaining timber, after commercial and salvage logging operations have been completed, will be cut as necessary and burnt.</li> <li>Avoid removing stumps, as disturbed soil may release far more nutrients in water.</li> </ul>	Will be complied.
15	Loss of vegetation and deforestation	Wood/vegetation harvesting	<ul style="list-style-type: none"> <li>Construction workers prohibited from harvesting wood in the project area during their employment, (apart from locally employed staff continuing current legal activities).</li> <li>Contractor should arrange LPG gas for cooking of food for their workers.</li> <li>Refer to Annex 17: Plan for Construction Camp Management</li> </ul>	Fire wood collection not allowed. LPG are used for cooking. In few cases induction stoves are used.
16	Loss of Biodiversity, Disturbance / accidents/ injury, to wildlife and avian fauna	Construction and clearing of forest areas	<ul style="list-style-type: none"> <li>Implementation of Compensatory afforestation plan.</li> <li>Creation of a greenbelt around the perimeter of various project appurtenances, selected</li> </ul>	<ul style="list-style-type: none"> <li>Not yet initiated by the Forest Department. Letter given to Nodal Officer to initiate the CA works. <a href="#">Annexure 7</a></li> </ul>

Sl.	Environmental Issue	Activity/ Location	Mitigation Measures	Compliance as on 31 <sup>st</sup> December 2022
			<p>stretches along reservoir periphery, access roads to compensate for the loss of habitat</p> <ul style="list-style-type: none"> <li>• Provisions of adequate signages and speed limit on road sections within forest areas to avoid accidental road kills.</li> <li>• Poaching activities should be monitored in workers areas and well as community areas (as per Annex 9).</li> <li>• Implementation of Biodiversity Conservation and Management Plan (Annex 9)</li> <li>• Compliance with guidelines issued by the National Wildlife Board of India for linear intrusion in natural area pertaining to roads and power lines.</li> <li>• Compliance with guidelines issued by the Central Electricity Authority (CEA) for laying transmission lines in areas critical from the point of view of saving wildlife.</li> <li>• Provision of wild fruit plantation for wildlife</li> <li>• Annual bird count of migratory birds by involving locals and bird experts</li> <li>• Rehabilitation with local fruit bearing species in gaps</li> </ul> <p>Anti-grazing drive in drawdown area to protect the bird breeding areas in proximity to reservoir during breeding season – only in winter season. Grazing by local people will be allowed during dry season.</p>	<ul style="list-style-type: none"> <li>• Not yet initiated.</li> <li>• Signages placed in the forest area to reduce the speed limit.</li> <li>• Poaching activities monitored and awareness carried out among the workers.</li> </ul>  <ul style="list-style-type: none"> <li>• BMP not yet initiated. Plantation initiated and discussion with forest department going on for the implementation for BMP.</li> <li>• NABL clearance not taken as there is no WLS in 10 km radius.</li> <li>• CEA guideline complied during construction of transmission line.</li> <li>• Wild fruit plantation initiated.</li> <li>• Annual Bird count not initiated. Annual bird count will be initiated in the winter months with support of forest department.</li> <li>• Rehabilitation with local fruit bearing species in gaps not initiated.</li> <li>• Anti-grazing drive in drawdown area to protect the bird breeding areas in proximity to reservoir – not initiated.</li> </ul>





Sl.	Environmental Issue	Activity/ Location	Mitigation Measures	Compliance as on 31 <sup>st</sup> December 2022
			<ul style="list-style-type: none"> <li>Construction of check posts / watch towers in key locations</li> <li>Conservation actions as proposed by IUCN (during construction and during the initial project operation) such as conducting a comprehensive survey and monitoring in and around the project area to establish range, distribution and population status of vulnerable and critical habitats in the project area for assessing its habitat requirements and identifying threats are proposed.</li> <li>Establishment of biodiversity conservation committee.</li> <li>Refer to Annex 9: Biodiversity Conservation and management Plan</li> <li>Refer to Annex 21: Green Belt Development Plan</li> </ul>	<ul style="list-style-type: none"> <li>Construction of check posts – not initiated</li> <li>Implementation of Conservation action plan – not initiated.</li> <li>Biodiversity conservation committee – constituted. Discussion with forest department going on for the implementation for BMP. 1<sup>st</sup> meeting of BMP was done on 21.12.22.</li> </ul>
17	Runoff to cause water pollution, solid waste disposal	Surplus earth work/soil	<ul style="list-style-type: none"> <li>Excess fill from excavations disposed of next to roads or on barren land or personal in agreement with the local community or land owner.</li> <li>Soil excavated from power houses will be disposed as safe &amp; scientific manner by placement on barren land or along back fill trench weir etc.</li> </ul>	<ul style="list-style-type: none"> <li>Does not arise as entire land is acquired for the project including the dumping area.</li> <li>Will be adhered.</li> <li>Material has been stocked as backfilling will be required in the Power House.</li> </ul>
18	Loss of soil and water pollution	Substation construction	<ul style="list-style-type: none"> <li>Fill for the substation foundation obtained by creating or improving local water supply ponds or drains, with the agreement of local communities.</li> <li>Construction activities involving significant ground disturbance (i.e., substation</li> </ul>	<ul style="list-style-type: none"> <li>Does not arise.</li> <li>Followed during construction of construction power substation.</li> </ul>





Sl.	Environmental Issue	Activity/ Location	Mitigation Measures	Compliance as on 31 <sup>st</sup> December 2022
			land forming) not undertaken during the monsoon season.	
19	Contamination of receptors (land, water, air)	Storage of chemicals and materials	<ul style="list-style-type: none"> <li>Fuel and other hazardous materials securely stored above high flood level with safety measures.</li> <li>Refer to Annex 18: Project Personnel Health Plan</li> </ul>	<p>Mostly followed for fuel. Fuel dispensing unit approval received.</p> <p>All Hazardous chemicals are stored on concrete floor with tarpaulin cover shade.</p>  <p>20KL petrol pump station is established.</p> <p>For hazardous chemical materials stores to be constructed.</p>
20	Noise nuisance	Construction schedules	During work near settlements construction activities only undertaken during the day and local communities will be informed of the construction schedule.	<p>Construction scheduled for day only in the revenue land near villages. Construction during night are done in the areas away from the human habitation.</p> <p>Local people were informed about the daily construction schedule and the blasting timings. Sign boards were also installed with the blasting timings.</p>
21	Contamination of receptors (land, water, air)	Provision of facilities for construction workers	<ul style="list-style-type: none"> <li>Construction workforce will be provided for certain facilities it includes proper sanitation, water supply and waste disposal facilities.</li> <li>Refer to Annex 17: Construction Camp Management Plan</li> </ul>	<p>Housekeeping and Hygiene at workers camps and bathrooms/toilets to be improved. Drainage facilities to be constructed/completed at camps and facilities. Sedimentation tanks constructed.</p> <p>Municipal Solid Waste Management facility partially developed.</p>

Sl.	Environmental Issue	Activity/ Location	Mitigation Measures	Compliance as on 31 <sup>st</sup> December 2022
22	Loss of agricultural productivity	Encroachment into agricultural land	<ul style="list-style-type: none"> <li>• Use of existing roads wherever possible.</li> <li>• Ensure existing irrigation facilities are maintained in working condition.</li> <li>• Protect/Preserve topsoil and reinstate after construction completed.</li> <li>• Repair/reinstate damaged bunds, etc. after construction completed</li> </ul>	<ul style="list-style-type: none"> <li>- Followed.</li> <li>- Does not arise so far.</li> <li>- Top soil preservation not initiated. Instructed to contractor to adhere.</li> <li>- Will be followed if bunds are damaged.</li> </ul>
23	Social inequities	Encroachment into agricultural land	Compensation for temporary loss in agricultural production as per provisions of Resettlement and Tribal Development Plan	Followed
24	Soil loss, downstream siltation; etc.	Uncontrolled erosion/silt runoff	<ul style="list-style-type: none"> <li>• Need for access tracks minimised, use of existing roads.</li> <li>• Limit site clearing to work areas regeneration of vegetation to stabilize works areas on completion (where applicable).</li> <li>• Avoidance of excavation in wet seasons.</li> <li>• Water courses protected from siltation through use of bunds and sediment ponds.</li> </ul> <p>Refer to Annex 26: Water Pollution Control Measures</p>	<ul style="list-style-type: none"> <li>- Followed</li> <li>- Site clearing is done where necessary.</li> <li>- Excavations are avoided during wet season.</li> <li>- Water courses will be protected from siltation through use of bunds and sediment ponds.</li> <li>- Bund prepared for construction of culverts.</li> </ul>
25	Losses to neighbouring land uses/values	Nuisance to nearby properties.	<ul style="list-style-type: none"> <li>• Contract clauses specifying careful construction practices on every stage.</li> <li>• Maximum existing access ways will be used.</li> <li>• Productive land will be reinstated following completion of construction.</li> </ul>	<ul style="list-style-type: none"> <li>- Followed.</li> <li>- Existing access roads are mostly used.</li> <li>- Productive land will be reinstated following completion of construction.</li> </ul>
26	Social inequities	Nuisance to nearby properties.	Compensation will be paid for loss of production, if any as per provisions of Resettlement and Tribal Development Plan	Being followed.
27	Flooding and loss of soils, contamination of receptors (land, water)	Flooding hazards due to construction impediments of natural drainage.	<ul style="list-style-type: none"> <li>• Avoid natural drainage pattern/ facilities being disturbed/ blocked/ diverted by ongoing construction activities.</li> </ul>	Natural drainages are not blocked through any kind of construction activity.

Sl.	Environmental Issue	Activity/ Location	Mitigation Measures	Compliance as on 31 <sup>st</sup> December 2022
			Refer to Annex 30: Dam Break Analysis And Disaster Management Plan	
28	Contamination of receptors (land, water)	Equipment submerged under flood	Equipment stored at secure place above the high flood level (HFL) i.e. 185.34 m.	Complied. Storage facility are above the HFL.
29	Loss of land values	Inadequate siting of borrow areas	Existing sites (if available) will be used, therefore, no need to develop new sources of aggregates.	Aggregates are used from the excavated materials. For use of existing quarries fresh permissions are required like EC. Permission taken from NCHAC for aggregate quarry. Fine aggregates are used from the crusher dust.
30	Injury and sickness of workers and members of the public.	Environment, Health and safety	<ul style="list-style-type: none"> <li>• Arrangement of Environment awareness programme.</li> <li>• Contract provisions specifying minimum requirements for construction camps.</li> <li>• Preparation and implementation of health and safety plan.</li> <li>• Arrangement of primary health centre with medicine and instrument with a knowledgeable health staff.</li> <li>• Arrangement for health and safety training sessions.</li> <li>• Refer to Annex 12: Public Health Delivery System</li> <li>• Annex 16: Plan for Environmental Training of Workers</li> </ul>	<ul style="list-style-type: none"> <li>• Arrangement of Environment awareness programme initiated.</li> <li>• Followed.</li> <li>• Health and safety plan prepared and implementation is ongoing.</li> <li>• Primary health centre constructed with trained health staff.</li> <li>• Health camps are being organised by the contractor for the community people.</li> <li>• Anti malarial measures taken by the contractor for the labours.</li> <li>• Health Facilities at Construction sites and labor camp established</li> <li>• For implementation of Public Health Delivery system discussion with respective departments will be initiated soon.</li> <li>• Health and safety training conducted by L&amp;T</li> <li>• Training were also given to the subcontractor personals.</li> <li>• PMC and PMU will also arrange Health and Safety trainings.</li> <li>• Sample First Aid Box.</li> </ul>

Sl.	Environmental Issue	Activity/ Location	Mitigation Measures	Compliance as on 31 <sup>st</sup> December 2022
				   <p>Environment Management</p>  <p>Fire Safety and Demonstration @ Dam Site</p>

Sl.	Environmental Issue	Activity/ Location	Mitigation Measures	Compliance as on 31 <sup>st</sup> December 2022
				 <p>Fire Safety and Demonstration @ Fabrication Yard</p>  <p>Fire Safety and Demonstration @ Valve House Site</p>
31	Likely to maximize damages	Inadequate construction stages monitoring.	<ul style="list-style-type: none"> <li>• Training to personal of implementing agency for environmental monitoring work.</li> <li>• Implementation of effective environmental monitoring and reporting system using checklist of all contractual environmental requirement.</li> <li>• Appropriate contact clauses to ensure satisfactory implementation of contractual environmental mitigation measures.</li> </ul>	<ul style="list-style-type: none"> <li>• Informal Trainings are conducted by the PMC and PIU regularly.</li> <li>• PMC and PIU carried out formal training on EHS and implementation of EMP on 28.6.22.</li> <li>• Check list prepared and implementation monitored.</li> <li>• Letters issued to the contractor on the contractual obligations of noncompliance and this will be continued.</li> </ul>
<b>OPERATION PHASE</b>				<b><i>Operation phase monitoring will be carried out during operation.</i></b>

**6.1** Action Taken on the corrective actions on compliances to EMP are shown in Table 8, Table 9.

**Table 8: Corrective Actions taken till 31<sup>st</sup> December, 2022**

Sl.no	Agreed Action	Responsibility	Agreed timeline	Action taken till 31 <sup>st</sup> December 2022
1	EA to expedite the process of amendment of Environment Clearance (EC) to reflect the modifications in Project components viz. increase in submergence area, reduction in dam height, width, changes in project cost and resultant CER funds etc. that were earlier not reflected in the documents submitted for obtaining EC and in the EC letter. EA is requested to prepare a comparison list of all components that stands modified at present against those reflected in the documents submitted to MoEF&CC for obtaining EC and the EC letter itself.	PMC/APGCL/EM	Application to be submitted by 15 February 2023	<p>Shifting of components as per recommendation of FAC (Forest Advisory Committee) of MoEF&amp;CC, GOI and minor adjustments during detail design with approval from CEA and other departments has been communicated to IA Division of MoEF&amp;CC, GOI through the six-monthly compliance Reports and separate letter vide No. APGCL/CGM(H)/W2007/140/Pt-VI/54, dated 28.11.2022 was submitted for necessary approval of the EC on the changes. Subsequent visit to Integrated Regional Office of MoEF&amp;CC at Guwahati informed that the matter will be discussed and accordingly they will intimate APGCL for necessary actions if required. So APGCL have to wait till the communication received from MoEF&amp;CC.</p> <p>(a) MoEF&amp;CC has not raised any quarry or instructions on six monthly compliance reports as submitted during June to Nov, 2021 and June to Nov 2022 on EC modification.</p> <p>(b) Please note that the dam design has not been finalised and geological survey is going on.</p> <p>(c) drone survey of the submergence area is in process.</p>

Sl.no	Agreed Action	Responsibility	Agreed timeline	Action taken till 31 <sup>st</sup> December 2022
2	EA to ensure that Consent to Establish for the hydro power plant is obtained post facto	PMC/AP GCL/EM	Application to be submitted by 15 February 2023	Online application is in progress, fees will be submitted to PCBA through RTGS. Timeline will be adhered.
3	EA to ensure that post facto environmental clearance (EC) for the 4.6 ha quarry near kala nala is obtained and work is commenced after obtaining the EC if not exempted as was reported.	Contract or/ PMC/AP GCL/EM	Application to be submitted by 15 February 2023	Online application will be submitted to Parivesh portal in SEIAA, Assam by CP2.
4	EA to ensure that Contractors obtain: (a) post facto labour license for CP- 4. (b) post facto labour insurance for CP-3. (c) post facto CTE and CTO for the water treatment plant installed at the Project Office site under CP-2. (d) post facto consent from gaon burah for sourcing water for construction from Longku nala under CP-2. (e) post facto CTE and CTO for - 6 lakh litre water treatment plant for construction in CP -2. (f) Environmental clearance for new landfill site, prior to construction, if applicable under CP-2. (g) post facto authorization for generation of solid waste from the SPCB, if applicable under CP-2.	Contract or/ PMC/AP GCL/EM	(a) 15 February 2023 (b) 15 February 2023 (c) 15 February 2023 (d) 15 February 2023 (e) 15 February 2023 (f) 15 February 2023 (g) 15 February 2023	(a) Not yet submitted but the contractor has applied for the labour license. (b) Not yet submitted but told that only 4 labours were engaged. At present the labour strength is less than 10, so application could not be submitted by the contractor. Letter from the Package 3 contractor is enclosed. (Annexure 1) (c) CTE (RO Plant) will be applied. (d) Not yet obtained. (e) CTE (water treatment Plant) will be applied (f) Planning for alternative mechanism for disposal. (g) After finalization of alternative plant the requirement of the authorization will be decided.
5	PMU to ensure that all (a) post facto clearances are obtained prior to recommencement of the relevant works. (b) <b>all works are commenced only after</b>	Contract or/ PMC/AP GCL/EM	As and when applicable till Project completion	(a) Will be complied (b) Certainly, assure as proposed. (c) Agreed

Sl.no	Agreed Action	Responsibility	Agreed timeline	Action taken till 31 <sup>st</sup> December 2022
	obtaining the requisite regulatory permissions; and (c) permissions remain valid throughout the implementation period for all CPs.			
6	EA to ensure (a) that ADB is informed about any other activities requiring statutory permissions and their status that were not listed or reported during the Mission. (b) that the conditions stipulated along with all regulatory permissions are complied with in timely manner including online submission of six- monthly monitoring reports for EC compliance to MoEFCC for both general and specific conditions. (c) that the construction materials sources, plants and equipment are compliant with the environmental regulations of India. (d) ensure that the license and insurance of all labour (including all skilled, semi-skilled and unskilled labour) for all CPs are obtained and remains valid. (e) that details of number of trees permitted to be cut and status of tree felling in both forest and non-forest areas for all CPs are provided along with supporting documents; and (f) trees are cut only where unavoidable for the Project activities to be conducted successfully;	Contract or/ PMC/AP GCL/EM	Ongoing throughout Project Implementation period  (e) Status by 15 February 2023	(a) Till now all statutory requirements for the activities performed by the contractors are listed and shared with ADB. During the course of implementation if any additional statutory requirements arise it will be intimated to ADB. (b) Submission of six-monthly monitoring reports for EC compliance to MoEFCC for both general and specific conditions submitted for June to November 2022. (c) Package 2 materials complied and documents submitted, but for package 1, package 3 and package 4 supportive documents not submitted so far. (d) Except package 2, other 3 packages yet to submit the labour license. (e) As per tree cutting permission has been accorded for 45349 trees in Karbi Anglong and 20846 trees in Dima Hasao as per Forest Clearance. Till date CP-2 has 241 number of trees.
7	EA to ensure that (a) CTE for sewage treatment plant proposed under CP-1 for a	Contract or/	(a) to (c) Prior to commence	(a) CTE will be applied before construction of the STP



Sl.no	Agreed Action	Responsibility	Agreed timeline	Action taken till 31 <sup>st</sup> December 2022
	built-up area of 6720 sqm of permanent colony; (b) permission from water resource department for proposed extraction construction water from river/surface water; (c) CTE and CTO for proposed service station; and (d) labour license for CP -3 is obtained in timely manner.	PMC/AP GCL/EM	ment of construction activities (d) as and when applicable	(b) Permission from WRD will be applied by 15 <sup>th</sup> February 2023 by the package 2 contractor (c) CTE and CTO for proposed service station not required at present. (d) Agreed
8	EA to expedite follow up with North Cachar Autonomous Council for obtaining the letter confirming the archaeological status of newly identified site in Longku and thereafter take requisite action as per SPS,2009 and GOI requirements	PMC/AP GCL/EM	31 March 2022	Agreed. A reminder letter has been issued to Principal Secretary (NCHAC) from APGCL.
9	EA to ensure that (a) qualified and well experienced H&S expert is appointed under both PMU and PMC due to the critical nature of construction activities and serious health and safety lapses reported/ noted (b) Sr. Environment Expert is appointed under PMC for day-to-day supervision at site. (c) one qualified Environment and one qualified H&S expert is appointed under CP-3 contractor. (d) one qualified Environment expert is appointed under Package-4 Contractor: and (e) all positions of environment and H&S under PMU, PMC, EM, JPRF grant Consultant and all contractors are continued till physical completion of the Project and are served by experts	Contract or/ PMC/AP GCL/ EM/ Grant funded consultant	(a) to (d) Appointment status to be updated by 15 February 2023  (e) Ongoing throughout Project Implementation period	(a) under process (b) Only one Environment Specialist is available in the PMC contract document (c) Will be complied under package 3 (d) one qualified Environment expert is appointed under Package-4 (e) Agreed. EM will be during DLP also.

Sl.no	Agreed Action	Responsibility	Agreed timeline	Action taken till 31 <sup>st</sup> December 2022
	qualified on Environment, Health, and Safety subjects			
10	<p>PMU to ensure (a) submission of labour influx and revised solid waste management plan by contractor of CP -2 is expedited incorporating compliance of ADB's comments.</p> <p>(b) submission of CEMP for CP-1 is expedited</p> <p>(c) Monthly environment report is submitted by contractors under CP 1,2,3 &amp;4.</p> <p>(d) updated EMP of EIA Addendum is made part of the contract agreements, when cleared by ADB.</p> <p>(e) the CEMPs are updated based on updated EMP of EIA Addendum after clearance from ADB.</p> <p>(f) EMP updated so far is implemented by the contractors.</p>	Contract or/ PMC/AP GCL/EM	<p>(a) By 15 February 2023</p> <p>(b) 15 February 2023</p> <p>(c) By 1<sup>st</sup> week of every following month</p> <p>(d) &amp; (e) As and when Applicable</p> <p>(f) Interim period till the EIA Addendum is cleared by ADB</p>	<p>(a) Agreed for submission of labour influx and revised solid waste management plan by contractor of CP - 2</p> <p>(b) CEMP for CP-1 will be submitted</p> <p>(c) Monthly environment report submitted by CP2 only. Others will initiate from January, 2023</p> <p>(d) Agreed</p> <p>(e) Agreed</p> <p>(f) Yes</p>
11	<p>EA to ensure that contractors (a) maintain data logs of waste / treated water, muck, waste cement concrete, cement slurry generated and reused and submit as part of Monthly Environment report that should get reflected as good practices in the quarterly and semi-annual Environmental Monitoring Reports (EMR) submitted to ADB by APGCL.</p> <p>(b) channelize all wastewater from all kitchens, bathing areas, washing areas to the tanks for appropriate treatment prior to releasing in the environment.</p> <p>(c) expedite the process of segregation and</p>	Contract or/ PMC/AP GCL/EM	<p>(a) Ongoing throughout Project Implementation period</p> <p>(b) 15 February 2023</p> <p>(c) 15 February 2023</p> <p>(d) Ongoing throughout Project Implementation period</p>	<p>(a) from February onward maintain data logs of waste / treated water, muck, waste cement concrete, cement slurry generated and reused and submit as part of Monthly Environment report -CP-2 and others.</p> <p>(b) Agreed</p> <p>(c) Agreed</p> <p>(d) Partially complied</p>

Sl.no	Agreed Action	Responsibility	Agreed timeline	Action taken till 31 <sup>st</sup> December 2022
	management of waste, identification of authorized vendors to hand over hazardous wastes, recyclable wastes, commence composting of biodegradable wastes so that these are not released into the environment untreated; and (d) adopt appropriate dust control measures at all the construction sites, approach roads etc.			
12	EA to ensure (a) that the fresh air volume inside the tunnels is maintained and gases monitored regularly as per the recommendations given in ADB-Cleared EMP and summarized results are incorporated in the EMRs; (c) that the gas, air flow and light monitoring meters are calibrated timely; and (d) that adequate lighting/illumination is maintained inside tunnels as per IFC EHS guidelines.	Contract or/ PMC/AP GCL/EM	Ongoing throughout Project Implementation period	(a) Agreed (b) Agreed and will be reported in the monthly Safety Report (c) Agreed
13	EA to (a) expedite the implementation of all the sub-plans annexed and supplemented as part of the ADB-cleared EIA; (b) ensure that provisions recommended as part climate risk assessment and management plan are incorporated in the detailed designs; (c) follow up with the concerned stakeholders to ensure timely implementation; (d) ensure that the status is regularly updated in both internal and external EMRs; and (e) coordinate with the owner of existing 400 kV power transmission line for implementation of	Contract or/ PMC/AP GCL/EM	Status on action taken to be provided by 15 February 2023	(a) All plans will be implemented (b) Already included (c) Agreed (d) Agreed (e) Will be initiated.

Sl.no	Agreed Action	Responsibility	Agreed timeline	Action taken till 31 <sup>st</sup> December 2022
	recommendations made in the critical habitat assessment study as part of EIA Addendum.			
14	EA to monitor the Contractors to ensure (a) that muck dumping sites are managed as per the provisions recommended in ADB-cleared EIA viz. levelling, compaction, stabilization measures for top and slope at the edges etc.; (b) that muck dumped on road side in the forest land, camp site etc. are moved to the designated dumping sites; (c) assessment of the slope condition and geological aspects at dam site and adopt appropriate protection and corrective measures including that for all other cut/exposed slopes; (d) that chemical characterization (to identify presence of pyrites or other obnoxious substances) is conducted for the water drained out of tunnel/ weep holes, dumped muck and the muck being generated from the tunnel regularly and adopt suitable disposal/neutralization measures as would be applicable to avoid adverse impact on the water (river) and soil environment; (e) that settling tanks of appropriate capacity are constructed for water drained out of the tunnels so that appropriate treatment could be done based on the results of chemical characterization and the water can be reused suitably; (f) preparation and implementation of emergency	Contract or/ PMC/AP GCL/EM	Point wise status on action taken to be provided by 15 February 2023.  Ongoing throughout Project Implementation period	(a) Will be adhered and CP-2 has been instructed time to time (b) Muck are kept for backfilling and rest will be finally transported to the designated dumping sites. (c) Contractor, PMC and APGCL will take appropriate measures as and when required. (d) It is under examination as stated. (e) Not yet initiated (f) Will be prepared after the study under JFPR. (g) Will be recorded for vibration baseline (h) Will be adhered and necessary instructions sent to all the contractors. (i) Instructed to CP-2 contractor for compliance (j) Partially complied and communicated to the contractors for compliance (k) Complied during inspection and will be complied (l) Not initiated but under construction in the Batching Plant near Dam (m) Will be adhered and necessary instruction communicated to contractor. (n) Will be adhered and communicated to contractor of Pkg 2 (o) Complied and will be adhered in future also (p) Mostly complied and will be adhered

Sl.no	Agreed Action	Responsibility	Agreed timeline	Action taken till 31 <sup>st</sup> December 2022
	and evacuation plan for the community especially in the downstream in case of accidental flood, fire etc. during construction factoring delineation of areas to be inundated, functionality of warning system, time required for evacuation, coordination with district administration etc; (g) structural condition of buildings/ properties likely to be impacted are recorded to act as baseline and vibration monitoring is conducted regularly at all blasting and surrounding sites as per relevant Indian Standard/ codes, such as IS-14881:2001 and statutes and results are incorporated in EMRs as requested by the Mission (h) OHS provisions as per ADB-cleared EMP including Annex 12, 17, 29 are fully implemented at all construction sites with a special attention to the critical construction areas; (i) that ambulances with appropriate and essential lifesaving medical facilities along with medical practitioners and/ or well-trained first aiders are stationed at critical construction sites by the contractors; (j) that first aid kits at all sites shall have all unexpired medicines and medical items in adequate quantity as are mentioned in relevant statutes such as the Contract Labour (Regulation and Abolition) Central rules, 1971; (k) that back up alarms and reverse blinkers of all construction vehicles are			<ul style="list-style-type: none"> <li>(q) Will be complied and communicated to contractor</li> <li>(r) Will be complied and communicated to contractor</li> <li>(s) Will be adhered and instructions given to all the contractors</li> <li>(t) Communicated to CP2 for compliance</li> <li>(u) Communicated to CP2 for compliance</li> <li>(v) Communicated to CP2 for compliance</li> <li>(x) Being complied except for Bhutan Registration vehicles under CP2. Rest contractors to submit the documents</li> <li>(y) Complied</li> <li>(z) Mostly complied further Communicated to CP2 for adherence</li> </ul>

Sl.no	Agreed Action	Responsibility	Agreed timeline	Action taken till 31 <sup>st</sup> December 2022
	functional; (l) that batching plants are in operation only with sedimentation tank of appropriate design and capacity that would not adversely impact the surrounding soil and vegetation; (m) that the water and cement slurry separated out of sedimentation tanks can be reused for washing the plant and construction of temporary, non-structural works as appropriate; (n) that dust screens are installed at all dust generating sources in batching plants such as silos, aggregate batcher etc; (o) that Project information boards are updated and installed at all requisite locations; (p) that sturdy and stable barricading is provided around all excavated areas; (q) that housekeeping at all sites is improved, loose materials storage areas are bunded and covered, all trip and fall hazards are removed; (r) that loose materials are covered while transportation; (s) that details of action taken for resolution of complaints are recorded in the registers; (t) that provision for detachable lid /cover is made for the underground fuel tank to ensure safety as per relevant standards; (u) that separate spill trays are used for different types of chemicals and fuels and stored separately for reuse or disposal through authorized vendors; (v) that all chemical and fuel storage locations have 110% bunded paved surface with roof cover and			

Sl.no	Agreed Action	Responsibility	Agreed timeline	Action taken till 31 <sup>st</sup> December 2022
	spill trays; (x) that all vehicles/ equipment registered under Indian regulation and pollution under control (PUC) certificates are obtained; (y) that heat control ceiling are installed in all rooms of the er labor/ staff camp using materials non-toxic to indoor environment; (z) tag-in tag-out system or badge system is in place for workers trained for different jobs at critical sites like tunnel, height works etc.			
15	EA to ensure that the Contractors including CP-4 Contractor (a) provides well ventilated labour camps along with cooking gas, dedicated kitchen area where possible, beds, mosquito nets, safe drinking water etc. for labourers. for laborers as per GOI guidelines and international good practices as recommended by the International Labour Organization (ILO) for workers accommodation;(b) provides gender segregated (if female labour are engaged) mobile and bio toilets; (c) ensures availability and adequate usage of PPE kits; (d)secures construction sites from unauthorized access; (e) provides adequate lighting; (f) provides hard barricading of excavated areas with reflective tapes.	Contract or/ PMC/AP GCL/EM	Status on action taken to be provided by 15 February 2023. Ongoing throughout Project Implementation period	(a) Will be adhered and communicated to all the contractors (b) Will be adhered (c) Will be adhered (d) Will be adhered (e) Complied for CP2 for rest CPs will be complied (f) Mostly complied and communicated to CP2 for adherence
16	EA to coordinate with AEGCL to ensure that the activities at the Sankardev Nagar substation are being conducted as per the SPS, 2009 and GoI requirements.	PMC/AP GCL/ EM/AEG CL & its Contract or	Ongoing throughout Project Implementation period	Will be communicated to AEGCL by 15 <sup>th</sup> Feb, 2023

Sl.no	Agreed Action	Responsibility	Agreed timeline	Action taken till 31 <sup>st</sup> December 2022
17	EA to monitor the Contractors to ensure (a) that paving of all temporary and permanent approach roads are expedited and maintained in all-weather motorable condition; (b) that fire extinguishers are inspected regularly and maintained in working condition; (c) that sanitation facilities at labour and staff camp meets the national and International standards viz. International Labour Organization (ILO); (d) that the stack height of DG sets are increase where required as per the relevant guidelines of state pollution control board considering the adjacent building height; (e) that regular health check-ups are conducted for workers; (f) that the sites are closed and restored in environmentally responsible manner as per ADB-cleared EMPs and include status with photo evidence in the EMRs, if applicable; (g) that measures to prevent spread of vector borne diseases are adopted; (h) that construction of drains at all sites are completed before next monsoon; and (i) that flagmen are deployed at road junctions and turnings for traffic management	Contract or/ PMC/AP GCL/EM	Status on action taken to be provided by 15 February 2023.  Ongoing throughout Project Implementation period	(a) Will be adhered (b) Contractor has been instructed to inspect the fire extinguishers regularly (c) Mostly adhered by CP2, rest under construction (d) Mostly adhered, rest will be complied (e) Complied for CP2, rest packages not initiated (f) Will be adhered (g) Cleanliness around the labour colonies will be maintained and do not allow water logging. (h) Will be adhered and necessary instructions given to the contractor (CP2 and others). (i) Mostly complied
18	EA to take adequate measures to ensure (a) safety of workers at workplace and surrounding community both during construction and operations; (b) that appropriate compensation plan is prepared for disability, loss of life/livelihood /property etc. of workers or community	Construction stage- Contract or/PMC/ APGCL. Operation stage- APGCL/ PMC	Construction-15 February 2023. Operation- By 31 March 2023	(a) Being complied (b) Appropriate compensation plan is prepared for disability, loss of life/livelihood /property etc. will be prepared



Sl.no	Agreed Action	Responsibility	Agreed timeline	Action taken till 31 <sup>st</sup> December 2022
	members due to Project activities and/ or accidental failures of Project activities both during construction and operation.			
19	<p>EA to ensure incorporation of the following in the EIA Addendum:</p> <p>(a) field based environmental due diligence of the revised alignment of 220 kV transmission line under CP-4.</p> <p>(b) assessment of detailed dam design with respect to ascertaining that the recommended environmental flow during lean, monsoon and non-lean &amp; non-monsoon season will be maintained.</p> <p>(c) assessment of the likely impacts of the additives being used/ tested for ascertaining that the hydro-mechanical equipment/structures are acid resistant.</p> <p>(d) provisions for management of possible presence of pyrites/ any other obnoxious substances on the excavated rocks of Project area such as chemical characterization of the muck and water draining out of weep holes and tunnel along with suitable measures for neutralization or disposal.</p> <p>(e) findings of geological study conducted or being conducted post award of contract for the dam site and slopes.</p> <p>(f) environmental assessment for Longku Nala stretch of NH-627 that is proposed to be elevated by PWD, Assam (construction yet to commence);</p>	PMC/ Contract or/ APGCL/ EM	28 February 2023	<p>(a) 20 towers completed so far</p> <p>(b) Agreed</p> <p>(c) Results not furnished so far from CP2,</p> <p>(d) Yet to initiate</p> <p>(e) Will be updated from GSI observations and other investigations</p> <p>(f) Environmental assessment for Longku Nala stretch of NH-627 will be done in due course</p> <p>(g) Not initiated</p> <p>(h) CTE application submitted to PCBA and environmental assessment under preparation</p> <p>(i) Drone survey will be carried out with LiDAR to finalize the area. Tender floated for the survey. As soon as the contract is awarded survey will be carried out.</p> <p>(j) Will be done in due course</p> <p>(k) Already submitted and if there is any change in the submergence area it will again be incorporated in the final KML map</p> <p>(l) CP2 will submit the reports on the vibration as informed</p> <p>(m) At present there is no change further</p>

Sl.no	Agreed Action	Responsibility	Agreed timeline	Action taken till 31 <sup>st</sup> December 2022
	<p>(g) environmental assessment of detailed Project components finalized under CP -1 (construction yet to commence) including that of proposed STPs (for odour, noise, reuse of treated water, sludge management etc.).</p> <p>(h) environmental assessment of the water neutralization plant under construction.</p> <p>(i) confirmation on submergence area of 620 ha.</p> <p>(j) confirmation if greenhouse gas (GHG) emission from construction activities owing to modification in design and changes in submergence (including reservoir methane) area would remain within 100,000 ton carbon dioxide equivalent per year in compliance with SPS, 2009.</p> <p>(k) map of Project area including submergence area with demarcation of forest and other land uses superimposed on satellite imagery (kml file may also be submitted separately).</p> <p>(l) assessment of magnitude of vibrations due to operations of components of hydro power plant and its impact on land and structures during Operations period; and</p> <p>(m) any other changes in scope or component or unanticipated impacts that were not reported earlier or during the Mission.</p>			
20	<p>EA to expedite completion of pending baseline data collection and assessments viz.</p> <p>(a) Baseline environmental and biodiversity monitoring of</p>	EM & Contract or Grant Funded Consulta	(a) & (b) Survey to commence by 31 January 2023	<p>(a) Not initiated</p> <p>(b) Not initiated for 220 KV. 33 KV already constructed so there will be no baseline and biodiversity study</p>

Sl.no	Agreed Action	Responsibility	Agreed timeline	Action taken till 31 <sup>st</sup> December 2022
	<p>220 kV power evacuation line and 33kV power transmission line.</p> <p>(b) Pre-construction baseline for environment (10 km of project component locations including 220kV power evacuation line and 33kV power transmission line) and biodiversity.</p> <p>(c) peaking power impact, assessment of optimum reservoir operation and downstream impact study (to ensure no net loss of biodiversity in the downstream); and</p> <p>(d) community emergency and evacuation plan for construction and operations period etc.</p>	nt/ PMC/ APGCL	<p>(c) study to be commenced by March 2023</p> <p>(d) By 30 May 2023</p>	<p>(c) Will be carried out</p> <p>(d) community emergency and evacuation plan not initiated</p>
21	<p>EA to ensure (a) that community awareness campaigns are expedited.</p> <p>(b) toolbox trainings/ talks are conducted regularly for EHS aspects.</p> <p>(c) mock drills are conducted regularly at all critical areas including magazine, tunnel, dam site, powerhouse locations.</p> <p>(d) workers under all CPs are regularly trained and made aware regarding EHS, biodiversity conservation, HIV/AIDs etc.</p>	<p>(a) APGCL/ Forest Department</p> <p>(b) to (d) Contractor/ PMC/AP GCL/EM</p>	Ongoing throughout the Project implementation period	<p>(a) Will be initiated</p> <p>(b) Complied for CP2, rest packages to initiate</p> <p>(c) Complied for CP2</p> <p>(d) Complied for CP2, rest packages to initiate.</p>
22	EA to ensure that (a) meaningful public consultations (including all genders) are continued throughout the Project implementation period covering environmental aspects; (b) issues raised and suggestions given by public are adopted, if feasible; (c)	Contractor & PMC/AP GCL/EM	Ongoing throughout the Project implementation period	<p>(a) 2 meetings done do far. Rest will continue</p> <p>(b) Issues addressed and they are basically related to the requirement of drinking water containers</p> <p>(c) Will be consulted in the next meeting</p>

Sl.no	Agreed Action	Responsibility	Agreed timeline	Action taken till 31 <sup>st</sup> December 2022
	nearby communities are consulted to confirm if there are any impacts seen on the structures due to blasting; (d) records of public consultation viz. the minutes of meetings, attendance sheets, photographs are maintained throughout the project implementation period that can be retrieved for responding to queries and grievances, if any, in future.			(d) Will be shared in the January to June 2023 SEMR
23	EA to ensure that (a) GRC meetings are held regularly; (b) complaints if received are resolved in timely manner and recorded appropriately; (c) contact details of GRC representatives are displayed on the information boards at construction camp, sites and villages; and (d) information on GRC is disseminated amongst the communities residing near the National Highways, common approach roads, power evacuation lines, any other areas being or likely to be affected	PMC/AP GCL/EM	(a)&(b) Ongoing throughout Project implementation period (c)&(d) immediately	(a) GRC tire 2 meetings held twice to resolve the pending issues. (b) No environment related complaints so far lodged. (c) Will be adhered (d) Already communicated in local language
24	EMC is requested (a) to submit quarterly and semi-annual environmental validation report to ADB for clearance and disclosure; (b) expedite submission of revised environment validation report for the reporting period of January to June 2022 to APGCL and ADB and monthly reports to APGCL; (c) incorporate validation of implementation of all provisions mentioned in the EMP and EMonP including the plans given in annexures and supplementary EIAs cleared	EM/ APGCL	(a)within one month following end of reporting period till closure of Project. (b) immediately (c) to (e) Ongoing throughout the Project implementation period	(a) Communicated to EM for compliance (b) Communicated to EM for compliance (c) Communicated to EM for compliance (d) Communicated to EM for compliance (e) Communicated to EM for compliance

Sl.no	Agreed Action	Responsibility	Agreed timeline	Action taken till 31 <sup>st</sup> December 2022
	by ADB and EMP updated so far including additional recommendations for critical habitat management as part of EIA addendum that is under preparation; (d) verify the internal EMRs prepared by APGCL in timely manner; and (e ) manage inputs of all experts to ensure adequate monitoring at field.			
25	EA to ensure that (a) PMC extensively monitors the implementation of environmental safeguards provisions mentioned in ADB cleared EMP and EMonP (including supplementary plans and those included as annexures to EMP) and the EMP updated so far as part of the EIA Addendum under preparation; (b) all relevant data are shared timely with the EMC through an appropriate platform that shall have restricted access to ensure liability of the concerned officials sharing and receiving the data; and (c) submission of internal EMRs and external validation reports are done within one month following the end of reporting period.	PMC/ APGCL/ EM	(a), (b) & (c) Ongoing throughout the Project implementation period	(a) Communicated to PMC for adherence (b) Common platform created to share data with EM (c) Will be adhered. SEMR Jan to June 2023 will be submitted by 20 <sup>th</sup> February, 2023.
26	EA to ensure that (a) regular meetings of the Committees for biodiversity, CER, Dam Safety, MDC are held and minutes are incorporated into the internal EMRs; (b) recommendations and guidance of the Committees are implemented, as would be appropriate and implementation status of the same is validated in the Quarterly and Semi-annual	APGCL/ PMC/ Contract or	As and when applicable	(a) Agreed (b) Being complied (c) Agreed and being complied so far

Sl.no	Agreed Action	Responsibility	Agreed timeline	Action taken till 31 <sup>st</sup> December 2022
	validation report of EMC; (c) dam construction commences only after the detailed design is checked and approved by the 3-layer committee including EM and state dam safety Committee.			
27	EA to ensure that variation order for EIA update and supervision of EHS implementation of CP 4 and proposed elevated road at Longku Nala is given to the existing PMC (for CP-1,2 and 3) or hire other qualified experts for the same.	APGCL	By 15 February 2023	Variation order will be issued soon to existing PMC.

**Table 9: Action Taken report on the Corrective Actions Plan (CAP) suggested by External Monitor during May, 2022.**

Note : Visit of EM again carried out in the last week of November and first week of December, 2022 but the reports are awaited till 31<sup>st</sup> December 2022. This table will be updated in the next SEMR after APGCL receives the observation from EM.

	PRIMARY FINDINGS AT INCEPTION STAGE (Feb and May, 2022)	Response on the findings
1	Obtain Wildlife Clearance as a condition to Environment Clearance: As pointed out during the second site visit, the applicability of wildlife clearance as stipulated under specific condition of Environment Clearance accorded to the project needs to be discussed and closed with MoEF&CC.	<p>a. As per stipulation of MoEF&amp;CC it is clearly mentioned that “The project proponent shall obtain clearance from the National Board for Wildlife, <b>if applicable.</b>”</p> <p>b. While applying for Environment Clearance and Forest Clearance it was mentioned that there is no Wildlife Sanctuary or National Park within 10 km radius of the project.</p> <p>c. DFO and Conservator of Dima Hasao and Karbi Anglong ; Nodal Officer FC Act, Govt of Assam and the CCF of Regional Office of MoEF &amp;CC, Shilong had also put forward their views in this regard.</p> <p>d. As per requirement APGCL had submitted kml file to ministry to ascertain the situation and verify the facts in their DMS (Decision Management System).</p> <p>e. The ministry said that prior wildlife clearance will be required by projects located within 10 km of national park/wildlife sanctuary which need environmental clearance.</p>

	PRIMARY FINDINGS AT INCEPTION STAGE (Feb and May, 2022)	Response on the findings
		<p>f. Based on the aforesaid facts Ministry has accorded both EC and FC for LKHEP.</p> <p><b><i>In such circumstance it will not be wise to ask Ministry to modify the stipulation and asked for.</i></b></p>
2	<p>Issues related with Archaeological Site:</p> <p>1. A cultural/religious site of archaeological importance was discovered during the survey. The site is located within the submergence area of the Project.</p> <p>2. APGCL reported that the site is not listed under Archaeological Survey of India (ASI).</p> <p>3. However, the consultant team recommended that APGCL should prepare a note after discussing with local authorities and the State Archaeological Department to resolve the issue as soon as possible</p>	<p>a. As per the list of protected Archaeological sites and monuments Directorate of Archaeology, Department of Cultural Affairs, Government of Assam, the site at Longku, Dima Hasao is not enlisted.</p> <p>b. This was again verified by personal visit and discussion with Mr Girish Baishys, of Directorate of Archaeology, Ambari, Guwahati.</p> <p>c. As it is not a recognised protected Archaeological site or monument there is no specified display boards highlighting the historical and archaeological significance.</p> <p>d. After discussion with the officer at Directorate of Archaeology, Govt. of Assam, this is suggested that <b>APGCL consulted with the Local authority 26.08.202. (Annexure 8)</b></p> <p>e. Reminder letters (2 Nos) issued for NOC from APGCL.</p>
3	A sewage treatment plant of 0.1 MLD (100 KLD) also needs to be installed to treat the sewage generated from the labour camps along with supporting collection drains/networks, the same will be implemented soon.	Already informed Package 2 contractor to take steps for installation of STP as suggested.
4	The remedial measures suggested in Supplementary EIA (Vol-4) like Anoxic Limestone Drains (ALD) and Oxidic Limestone Drains (OLD) may also be considered based upon further assessment of water quality in coming seasons from Kopili River and accessibility opportunity to various AMD sources located in Meghalaya.	<p>The entire matter related to illegal/unauthorized mining takes place in Meghalaya and combat plan and mining mishap plan illegal/unauthorized mining takes place in Meghalaya and combat plan and mining mishap plan ready to avoid any kind of eventualities and MoEF&amp;CC had taken up proposals for rejuvenation under the directive of NGT. Moreover, as part of rejuvenation of polluted river stretches in the country, CPCB has also selected river stretches in Meghalaya which are mainly polluted with Acid Mine Drainage (AMD) from the coal mines.</p> <p>Currently, under the aegis of the minister, the Forest and Environment Department has collaborated with Delhi-based Trinity Impex International for treatment of acid mined water in selected rivers in Meghalaya for restoration. Detail technology adopted is not shared. So, in this context</p>


	PRIMARY FINDINGS AT INCEPTION STAGE (Feb and May, 2022)	Response on the findings
		<ul style="list-style-type: none"> <li>- regular monitoring of water quality of the river stretch of Kopili within the project area as per EMP is going on and</li> <li>- the protection measures towards safeguarding electro-mechanical equipment and dam structure and other components of the HEP from the acidic water as per approved designs by the competent authorities are taken up and are being implemented.</li> </ul> <p>In such a situation overlapping of efforts of similar task will not be acceptable by the authority.</p>
5	Control of Air Pollution: Regular maintenance of vehicles and machinery needs to be conducted to ensure less possible emissions.	<p>At site monitoring of the emission from the vehicles are not possible, as only valid PUCs are checked at site. It is difficult / not possible to ascertain the high or less possible emission of vehicles and machinery and as well as correlate with the regular maintenance of vehicles and machinery.</p> <p>Instructed to the Package 2 contractor to ensure PUC for all vehicles and submit the copies.</p>
6	Catchment Area Treatment (CAT) Implementation Plan: 1. It was reported that Catchment Area Treatment (CAT) Implementation Plan for the Project has already been shared with the respective Forest Department. 2. Consultant team recommends that APGCL should have a regular follow up with the concerned agency for the concurrence of the CAT plan and closely monitor the implementation.	<p>The required budget for its implementation has already been deposited in the CAMPA fund.</p> <p>As informed budget for implementation of CAT plan will be included in the AOP of 2022-23. APGCL is in constant touch with the Forest Department and as soon as it is implemented APGCL will monitor and report accordingly.</p>
7	Excavated Soil: Excavated soil from the construction could easily be washed away and pollute local water bodies. Therefore, excavated soil should be graded according to soil type and stored separately. Heaps of soil should be covered with geotextile or and grass and vegetation.	Already informed to the package 2 contractor.
8	Biodiversity Management: 1. After reviewing the biodiversity management activities, the	<ul style="list-style-type: none"> <li>- A committee comprising with the experts from different sectors as mentioned in the EC is being constituted and nomination from the concerned</li> </ul>



	PRIMARY FINDINGS AT INCEPTION STAGE (Feb and May, 2022)	Response on the findings
	<p>consultant team recommends APGCL to form a Biodiversity Monitoring Committee as stipulated in the EIA to monitor the Biodiversity Management activities at the Project site.</p> <p>Also, a Biodiversity Management Awareness Program may be developed having a detailed schedule to provide biodiversity awareness training to the Local community, school, and other institutions at local levels.</p> <p>2. Consultant team further recommends that Self-help groups may be formed for implementing and monitoring the Biodiversity Management activities at local level. If possible and available women may be motivated to participate in self-help groups.</p>	<p>departments and organisations will be sought within next week. Biodiversity monitoring committee notified. 1<sup>st</sup> meeting of the committee has also been done on 21.12.22.</p> <ul style="list-style-type: none"> <li>- There is no role of NGO in monitoring the implementation of the Biodiversity Conservation and Management Plan as stipulated in the EC.</li> <li>- Biodiversity Conservation and Management Plan will be implemented in association with the Forest Department as per existing Government norms.</li> </ul>
9	<p>Compensatory Afforestation:</p> <p>1. In relation to Compensatory Afforestation, it is understood that the Forest Department has identified eight (08) areas within Dima Hasao for Compensatory Afforestation; the consultant team has sought detailed information on identified Compensatory Afforestation areas.</p> <p>2. Further, the consultant team has asked PMC to update on the status of the plantation with the total number species planted L&amp;T at the project site, around the camp area and project vicinity preferably in Google Map.</p>	<p>Already in touch with Forest Department.</p> <p>Package 2 contractor was already intimated to record the plantation in Google map.</p>
10	<p>Impact of Transmission Line on Birds:</p> <p>In relation to anti-climbing devices and bird deflectors for the Transmission line, the</p>	<ul style="list-style-type: none"> <li>- As discussed in the meeting and as it was part of the contract Pkg 4, so it will be implemented as per contract provisions.</li> <li>- Hence additional studies are not required as of now.</li> </ul>

	PRIMARY FINDINGS AT INCEPTION STAGE (Feb and May, 2022)	Response on the findings
	consultant team suggested APGCL to undertake in-house study for ascertaining its necessity to take prudent decisions.	
11	<p>Dam Safety :</p> <p>Detailed design drawings of the dam and foundations are missing, only the list of drawings has been delivered, as well as dam monitoring plan and dam risk assessment.</p> <p>The actualized project implementation schedule should also be always available, in order to identify the priorities for activities to develop taking into account the safety aspects of the dam.</p>	Detail drawings of the dam and foundations along with project implementation schedule available are shared with Dam Safety Expert.
12	<p>Emergency Contact Numbers of First Aider and Medical register: APGCL needs to ensure that EHS protocols are strictly followed by construction contractor and all workers, Emergency Contact numbers should be reachable to all and may to be updated as and when needed, First Aid Boxes needs to be handled and maintained properly at site, timely trainings to First Aider and other site staff should be provided and all Logs/Records to be maintained properly.</p> <p>It is also suggested to undertake mock drilling exercises for emergency preparedness on regular basis to aware crew members. The emergency mock drilling exercises may be designed for but not limited to; emergency evacuation, fire, flooding, earthquake etc.</p>	Already in place.

	PRIMARY FINDINGS AT INCEPTION STAGE (Feb and May, 2022)	Response on the findings
13	Oil and Chemical handling: APGCL to ensure that EHS protocols for handling, storing, and transporting hazardous material/chemicals are strictly followed at site as oil and chemical drums kept at the Project site were not stored properly.	Complied
14	Medical test for Drivers: Construction contractor is required to organised Eyesight and Randomized drug testing (drug and alcohol test) for all Commercial Truck Drivers as per safety protocol for the safety of site staff and locals.	Already intimated to the package 2 contractor.
15	PUC of the Project vehicles: The PUC details of the Project vehicles submitted by the contractor does not include the PUC of vehicle with Bhutanese registration number which includes an ambulance, staff buss and water sprinkling vehicles. All such vehicles with registered in Bhutan must be registered with Indian numbers.	Already intimated to the package 2 contractor.
16	Safety Signages: The safety signages and other instruction displayed at the Project site needs to be updated/replaced with multilingual signs mainly with the local language which Local residents can read and understand. Multilingual signages are important for the safety of workers and the public for whom English is a second language.	Complied

	PRIMARY FINDINGS AT INCEPTION STAGE (Feb and May, 2022)	Response on the findings
		
17	<p>Site specific trainings: All trainings related to EHS, fire safety, electrical safety and Mock Drills etc. undertaken by Construction Contractor for their worker should also be extended to APGCL and PMC staff working at project site.</p>	<p>Already intimated to the package 2 contractor.</p>

## 7.0 Environmental Supervision and Monitoring Results

### 7.1 Environmental Supervision

Site inspections and audits completed during the reporting period January to June 2022 in table 9.

### 7.2 Quantitative Environmental Monitoring

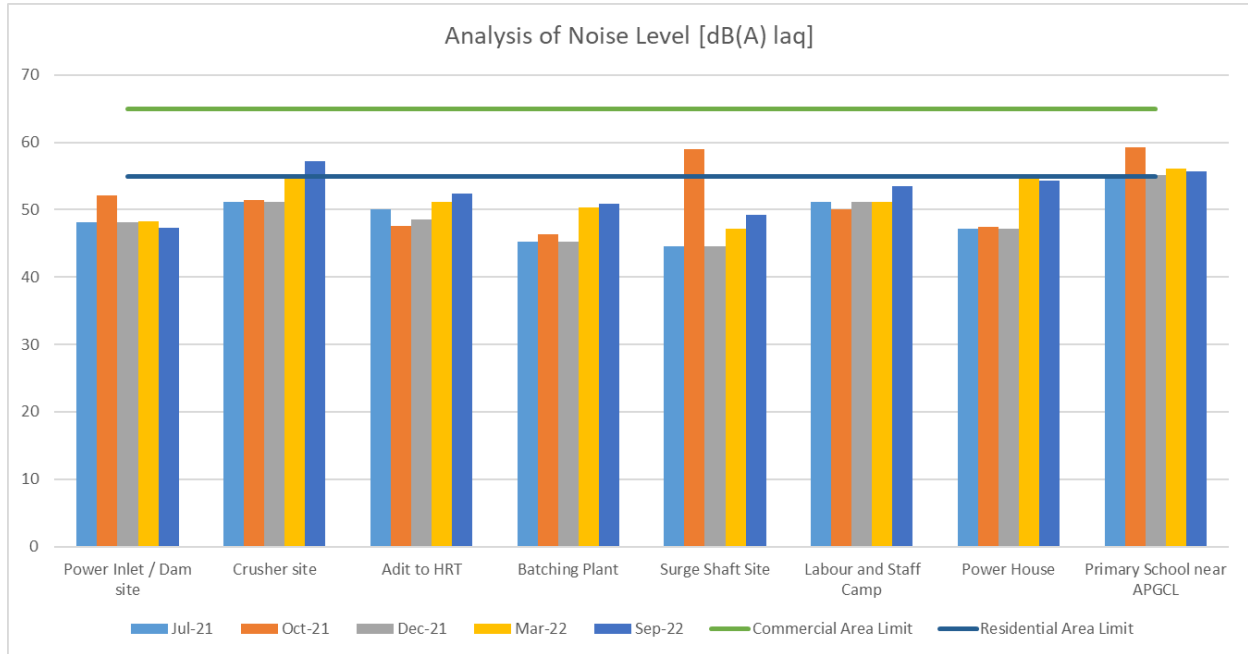
**Monitoring :** Test of ambient environment of Air, Water, Noise in all the 8 locations were carried out in the month of March 2022. Test results are within the CPCB & IS standards except for Kopili river water quality (Table 9, 10, 11, 12, 13, 14). All test reports are in [Annexure 9](#).

**Table 9. Noise Monitoring Results**

CPCB Standard Limit [dB (A) Leq]					WHO standard limit	Monitoring Dates	Day/ Night	Power Inlet / Dam site	Crusher site	Adit to HRT	Batchin g Plant	Surge Shaft Site	Labour and Staff Camp	Power House	Primary School near APGCL
	Day 6AM- 10 PM	Night 10AM- 6PM	Day 6AM- 10 PM	Night 10AM-6PM											
Industrial Area	75	70	70	70	Jul-21		48.1	51.2	50	45.2	44.6	51.2	47.2	55.2	
Commercial Area	65	55			Oct-21		52.1	51.4	47.6	46.4	59.0	50.0	47.5	59.2	
Residential Area	55	45	55	45	Dec-21		48.1	51.2	48.6	45.2	44.6	51.2	47.2	55.2	
Silence Zone	50	40	CPCB more stringent		Mar-22		48.3	55.3	51.2	50.3	47.2	51.2	55.2	56.1	
					Sep-22	Day	47.3	57.2	52.4	50.9	49.2	53.5	54.3	55.7	
						Night	38.6	44.2	40.3	44.5	37.3	44.7	42.8	40.8	

(Noise Monitoring Sampling Dates 19<sup>th</sup> to 30<sup>th</sup> September, 2022)

**Figure 7: Analysis of Noise Level**



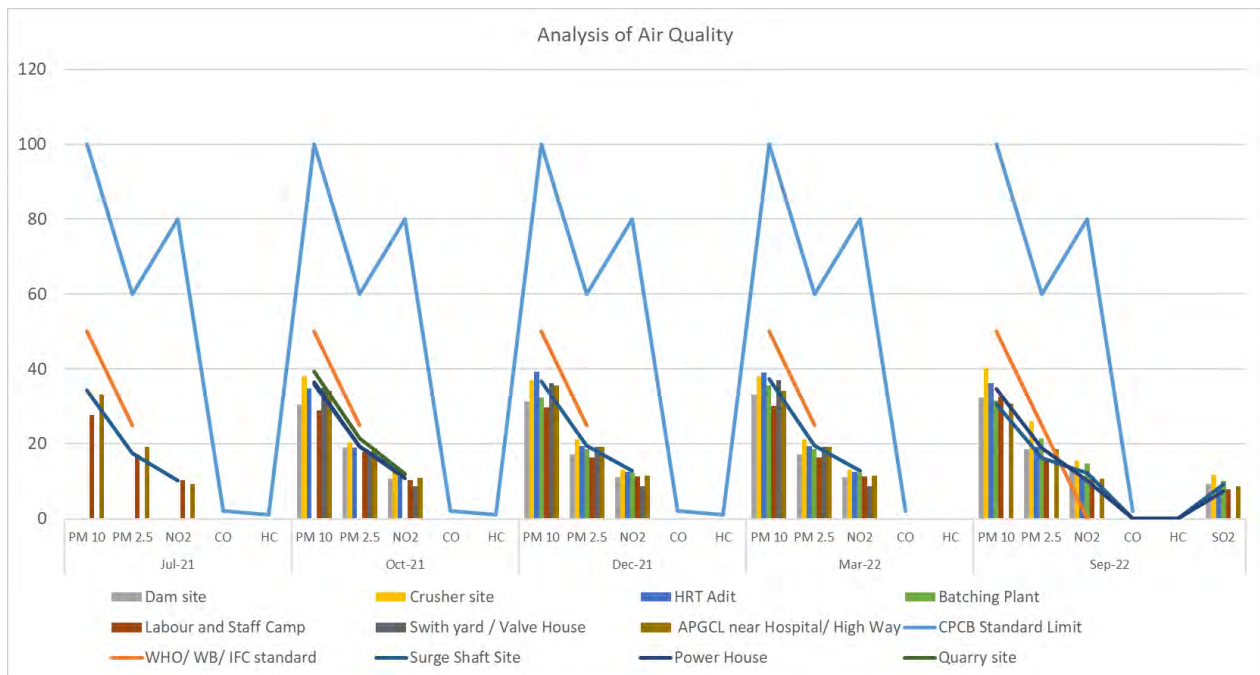
**Table 10. Air Quality Monitoring Results**

Parameters	Unit	CPCB Standard Limit	WHO/ WB/ IFC standard	Monitoring Dates	Dam site	Crusher site	HRT Adit	Batching Plant	Surge Shaft Site	Labour and Staff Camp	Swing yard / Valve House	APGCL near Hospital/ High	Power House	Quarry site
PM 10	(µg/m³)	100		Jul-21					34.3	27.6		33.1		
PM 2.5	(µg/m³)	60							17.5	17.1		19.1		
NO2	(µg/m³)	80							10.1	10.2		9.2		
CO	(mg/m³)	2							BDL	BDL		0.03		
HC	(mg/m³)	1							BDL	BDL		0.01		
PM 10	(µg/m³)	100		Oct-21	30.6	38	34.7		35.8	28.9	34.9	34.2	36.5	39.4
PM 2.5	(µg/m³)	60			18.9	20.5	19		19.3	17.7	18	18.8	19.2	21.6
NO2	(µg/m³)	80			10.6	12.7	11.4		11.9	10.2	8.6	10.9	10.8	12
CO	(mg/m³)	2			BDL	BDL	BDL		BDL	BDL	BDL	0.04	BDL	BDL
HC	(mg/m³)	1			BDL	BDL	BDL		BDL	BDL	BDL	0.03	BDL	BDL
PM 10	(µg/m³)	100		Dec-21	31.3	37	39.3	32.3	36.7	29.8	36.1	35.6		
PM 2.5	(µg/m³)	60			17.1	21.3	19.4	18.6	19.5	16.3	19.2	19.2		
NO2	(µg/m³)	80			11.2	13.2	12.5	12.3	12.8	11.4	8.7	11.6		
CO	(mg/m³)	2			BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.03		
HC	(mg/m³)	1			BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.02		
PM 10	(µg/m³)	100	50	Mar-22	33.1	38.1	39.1	35.6	37.3	30.2	37.1	34.2		
PM 2.5	(µg/m³)	60	25		17.1	21.3	19.4	18.6	19.5	16.3	19.2	19.2		
NO2	(µg/m³)	80	NA		11.2	13.2	12.5	12.3	12.8	11.4	8.7	11.6		
CO	(mg/m³)	2			BDL	0.04	BDL	BDL	BDL	BDL	BDL	BDL		
HC	(mg/m³)					0.03	BDL	BDL	BDL	BDL	BDL	BDL		
PM 10	(µg/m³)	100	50	Sep-22	32.3	40.3	36.2	31.6	30.7	32.6		30.7	34.6	
PM 2.5	(µg/m³)	60	25		18.6	26.1	19.2	21.5	16.2	15.7		18.6	18.8	
NO2	(µg/m³)	80	NA		13.8	15.6	10.8	14.8	12.2	11.3		10.6	10.2	
CO	(mg/m³)	2			BDL	0.03	BDL	BDL	BDL	BDL		BDL	BDL	
HC	(mg/m³)				BDL	0.04	BDL	BDL	BDL	BDL		BDL	BDL	
SO <sub>2</sub>	(µg/m³)	80	20		9.2	11.8	8.3	10	9.2	7.8		8.7	7.4	

(Air Quality Monitoring Sampling Dates 19<sup>th</sup> to 30<sup>th</sup> September, 2022)



Figure 8: Analysis of Air Quality



### Photographs of test of ambient environment





**Soil sample collected for landfill design analysis and water sample collected from APGCL Hostel.**





**Air and noise sample collected from Batching plant and powerhouse area.**



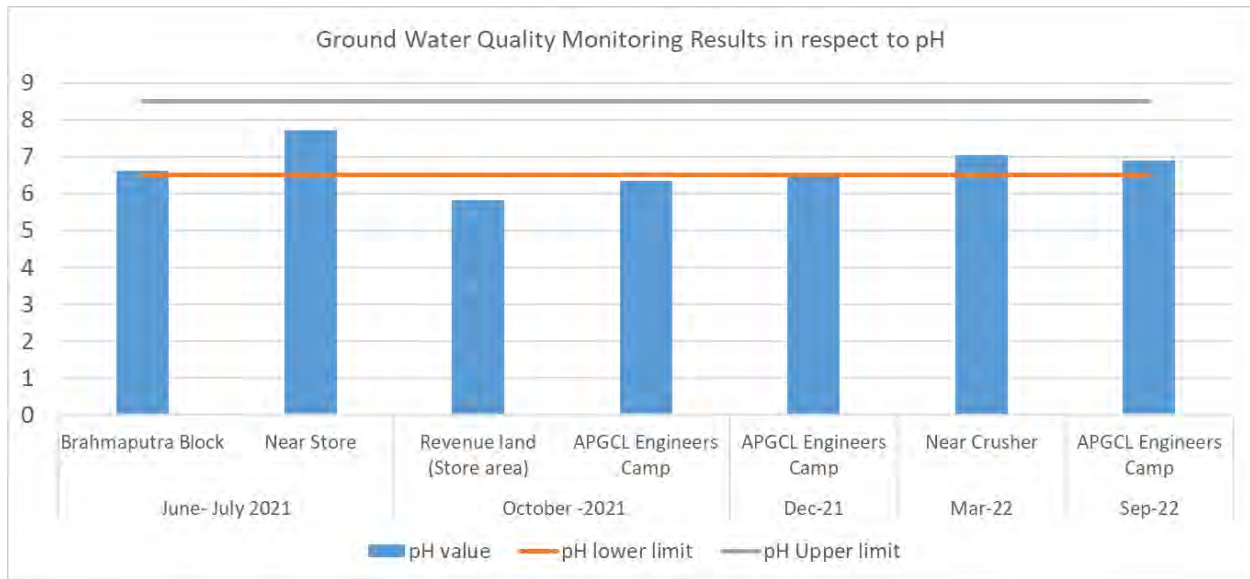
Note : Contractor and the monitoring agency was informed to maintain the water sampling protocol as prescribed

**Table 11. Ground Water Quality Monitoring Results**  
Sampling Date for 19<sup>th</sup> to 30<sup>th</sup> September, 2022.

Parameters	Units	Standard limits as per WHO Drinking Water Criteria (mg/L)	IS 10500:2012 Drinking water Specification	October -2021		June- July 2021		Dec-21	Mar-22	Sep-22
		Requirement (Acceptable limit)		Revenue land (Store area)	APGCL Engineer's Camp	Brahmaputra Block	Near Store	APGCL Engineer's Camp	Near Crusher	APGCL Engineer's Camp
pH value		6.5-8.5	6.5-8.5	5.83	6.35	6.61	7.71	6.57	7.04	6.9
Turbidity	NTU, Max	1	1	0.84	1.6	1.26	5.9	1.92	11.2	1.76
TDS	mg/l	No health-based guideline value is proposed	500	226.2		210	186.1		145.2	179
Total Hardness as CaCO <sub>3</sub>	mg/l		200		64.3			83.3	29.6	77.3
Calcium as Ca	mg/l		75						11.5	33.6
Magnesium as Mg	mg/l		30						7.1	19.5
Total Alkalinity as CaCO <sub>3</sub>	mg/l		200		88.9				305.5	63.7
Chloride as Cl	mg/l	200-300	250						13.5	18.1
Phosphate as PO <sub>4</sub>	mg/l								<0.02	<0.02
Sulphate as SO <sub>4</sub>	mg/l	No health-based guideline value has been derived	200						11.7	10.5
Nitrates as NO <sub>3</sub>	mg/l	50	45						3.3	3.8
Conductivity	µs/cm								230.6	440
Arsenic as As	mg/l	0.01	0.01						<0.001	BDL
Irons as Fe	mg/l	No health-based guideline value is proposed	0.3						0.13	1.7
Fluoride as F	mg/l	1.5	1						0.68	
TSS	mg/l								42.8	85.2
Oil & Grease	mg/l		0.5						<5	<5
Salinity	mg/l								0.2	0.3
Copper as Cu	mg/l	2	0.05						0.13	
Cadmium as Cd	mg/l	0.003	0.003						<0.001	
Lead as Pb	mg/l	0.01	0.01						0.002	
Zinc as Zn	mg/l	No health-based guideline value is proposed	5						0.06	
Total Chromium	mg/l	0.05							<0.001	
Manganese	mg/l	0.4	0.1						0.03	
Fecal Coliform	MPN/100ml		Shall not be detectable						Nil	Nil
Total Coliforms Organisms MPN/100 ml	MPN/100ml		Shall not be detectable	2	Nil	3	3	Nil	Nil	3
<b>CPCB standard</b>										
DO	mg/l	No health-based guideline value is recommended	5	4.9		5.4	5.1			7.1
BOD (5 days 20 <sup>0</sup> C)	mg/l		2-3	4.5		10	8.5		<2	5
COD	mg/l								<5	11

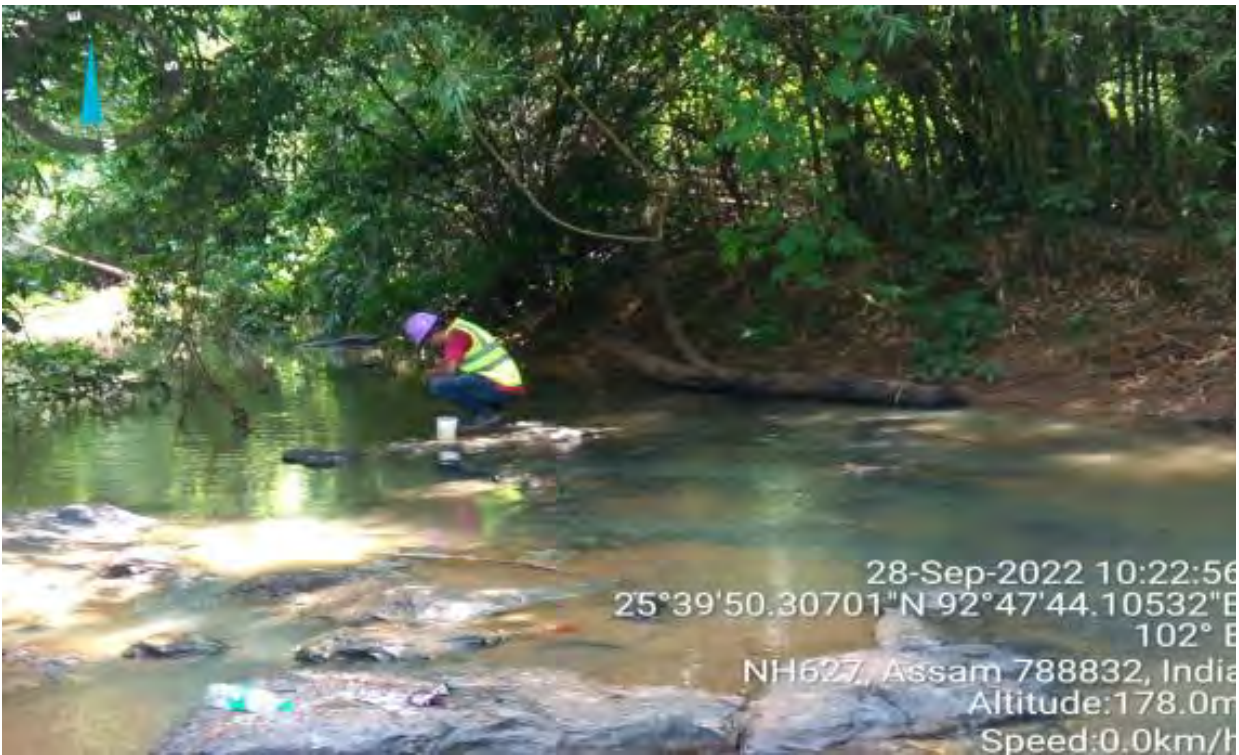


Figure 9: Analysis of Ground water Quality



**Acceptable limits for pH are between 6.5 to 8.5**





Note : Contractor and the monitoring agency was informed to maintain the water sampling protocol as prescribed.



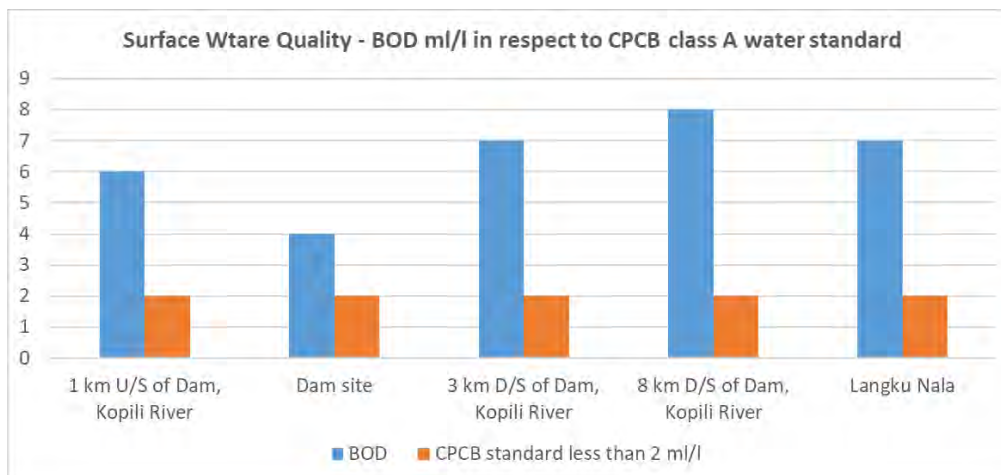
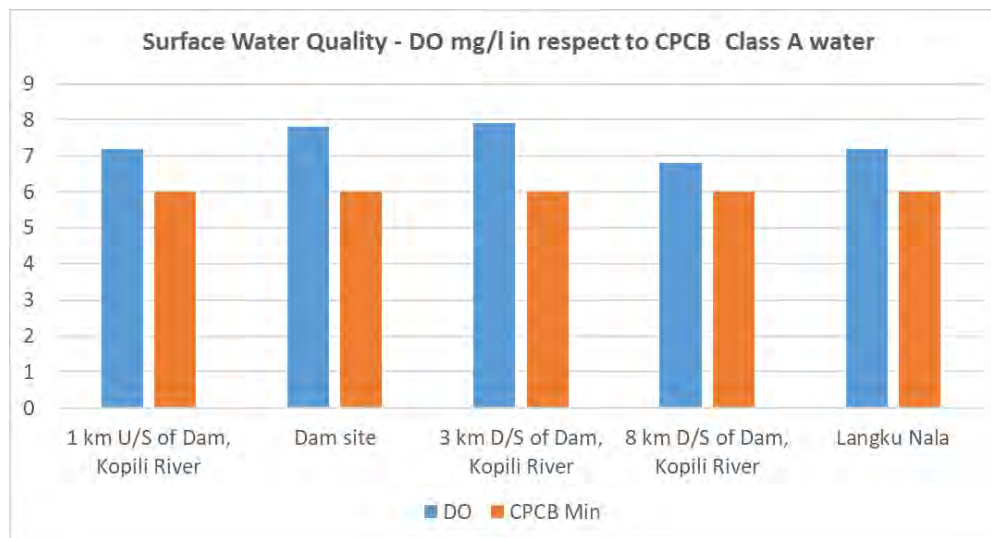
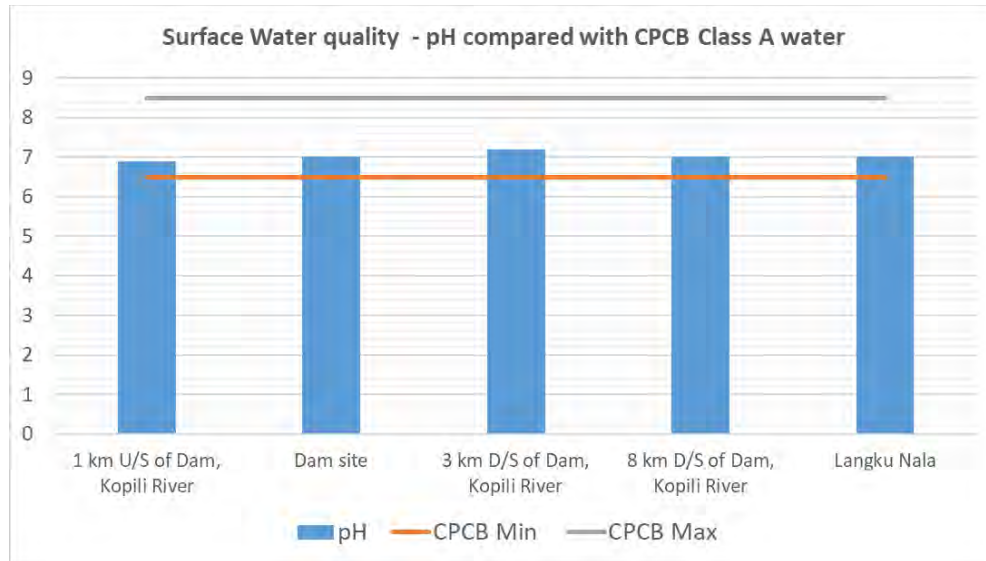


Note : Contractor and the monitoring agency was informed to maintain the water sampling protocol as prescribed.

**Table 12 : Surface Water Quality Monitoring Results**  
Sampling Date for 29<sup>th</sup> September 2022.

Parameters	Units	Standard limits as per WHO Drinking Water Criteria (mg/L)	IS 10500:2012 Drinking water Specification	1 km U/S of Dam, Kopili River	Dam site	3 km D/S of Dam, Kopili River	8 km D/S of Dam, Kopili River	Langku Nala
pH value		6.5-8.5	6.5-8.5	6.9	7	7.2	7	7
Turbidity	NTU, Max	1	1	5.6	2.4	2.13	2.78	2.8
TDS	mg/l	No health-based guideline value is proposed	500	32.4	32	36	35	112.6
TSS	mg/l			67.9	58.6	71.3	23.6	81.4
Oil & Grease	mg/l		0.5	<5	<5	<5	<5	<5
Total Hardness as	mg/l		200	71.4	59	62.4	74.3	58.6
Calcium as Ca	mg/l		75	34.6	29.5	30.5	38.5	28.9
Magnesium as Mg	mg/l		30	15.9	15.5	15.2	17.3	14.5
Total Alkalinity as	mg/l		200	36.7	36.7	44.9	121.6	215.8
Chloride as Cl	mg/l	200-300	250			16.3	14.2	17.4
Sulphate as SO <sub>4</sub>	mg/l	No health-based guideline value has been derived	200	11.3	10.2	11.6	18.9	12.3
Nitrates as NO <sub>3</sub>	mg/l	50	45	3.8	5.3	10.5	4.6	3.1
Phosphate as PO <sub>4</sub>	mg/l			<0.02	<0.02	<0.02	BDL	<0.02
Salinity	mg/l			0.5	0.2	0.3	0.4	0.6
Conductivity	µs/cm			90	81	79	90	190
Arsenic as As	mg/l	0.01	0.01	BDL	<0.001	BDL	<0.001	BDL
Irons as Fe	mg/l	No health-based guideline value is proposed	0.3	1.5	0.67	1.5	2.1	1.1
Fecal Coliform	MPN/100 ml		Shall not be detectable	Nil	Nil	Nil	Nil	Nil
Total Coliforms Organisms MPN/100	MPN/100 ml		Shall not be detectable	3	3	3	5	3
			<b>CPCB standard</b>					
DO	mg/l	No health-based guideline value is recommended	5	7.2	7.8	7.9	6.8	7.2
BOD (5 days 20 <sup>0</sup> C)	mg/l		2-3	6	4	7	8	7
COD	mg/l			22	121	48	59	21

(Note : Test Results in Annexure 9)





**Table 13 : RO water Quality**

Parameters	Units	Standard limits as per WHO Drinking Water Criteria (mg/L)	IS 10500:2012 Drinking water Specification	RO water
pH value		6.5-8.5	6.5-8.5	6.7
Turbidity	NTU, Max	1	1	<0.2
Total Hardness as CaCO <sub>3</sub>	mg/l		200	29.6
Total Alkalinity as CaCO <sub>3</sub>	mg/l		200	69.3
Chloride as Cl	mg/l	200-300	250	14.9
Irons as Fe	mg/l	No health-based guideline value is proposed	0.3	0.05
Total Coliforms Organisms MPN/100 ml	MPN/100 ml		Shall not be detectable	Nil
Fluoride				0.34
Residual Chlorine				<0.01

(Test Reports in Annexure 9)

Note : RO reject water not yet tested but will be tested and reported in next SEMR.



**Regular monitoring of RO water before and after treatment**

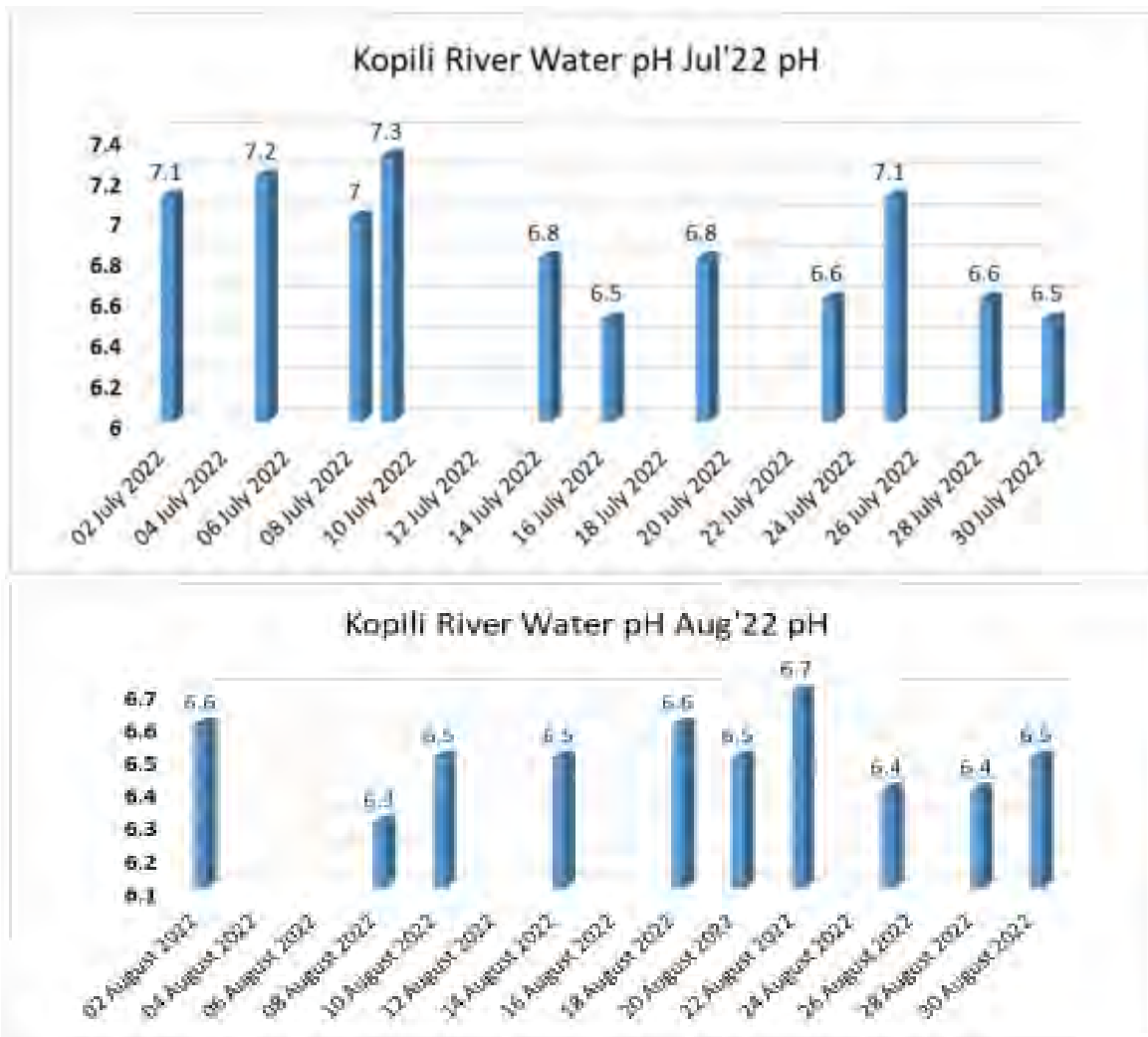
**Regular water quality monitoring in the RO Plant**

**Table 14 : Analysis of the all test results.**

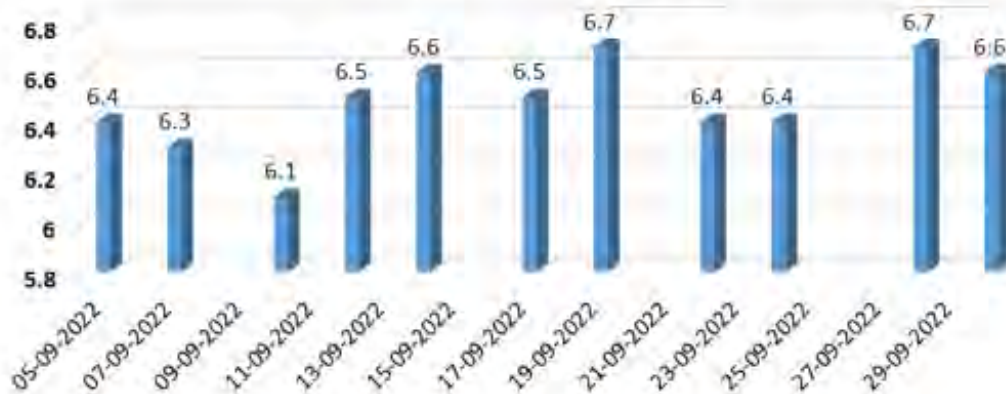
Ambient Environment condition		Explanatory comments
Good		Construction phase monitoring for LKHEP performed in the month of July, 2021; October, 2021; December , 2021, March, 2022 and September, 2022.
		Air qualities are within prescribed limits of CPCB, IS and IFC norms
		Primary school is located near the National Highway 627 connecting Lanka to Umrangso with heavy vehicular movement. This increases the noise level beyond the Residential area noise limit. This area is also near crusher.
		Testing and samplings were done as per the frequencies and parameters recommended in ADB-cleared environment monitoring plan
		Ground water quality results are within the permissible limits in the month of December 21, March 22 and September 2022.
		The surface water quality of various sampling stations were found within the standard limits. As such the water quality may be considered as suitable for various uses after obtaining necessary permissions from the concerned authorities.

### Monitoring of river water quality :

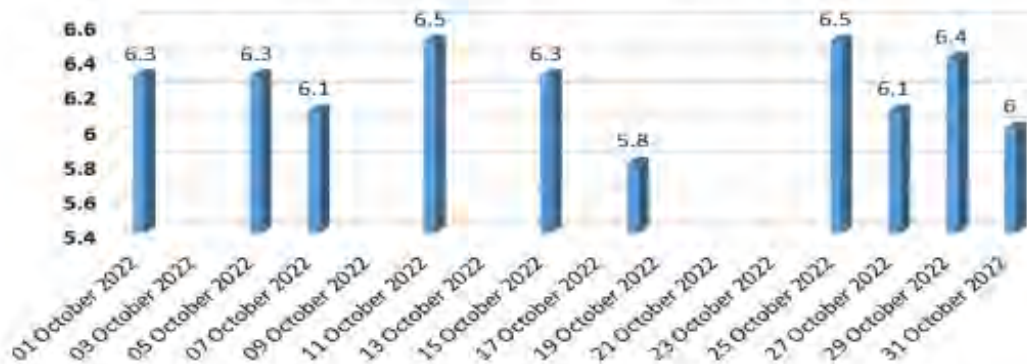
Figure 10: Monitoring River water pH



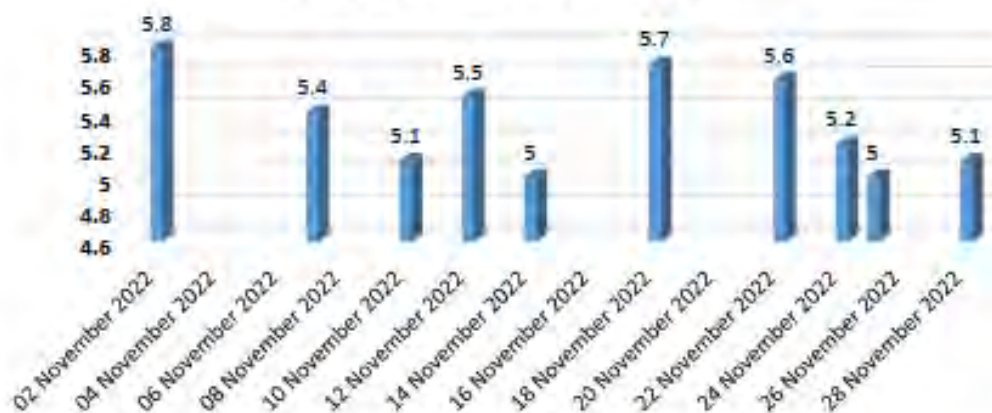
Kopili River Water pH Sep'22 pH



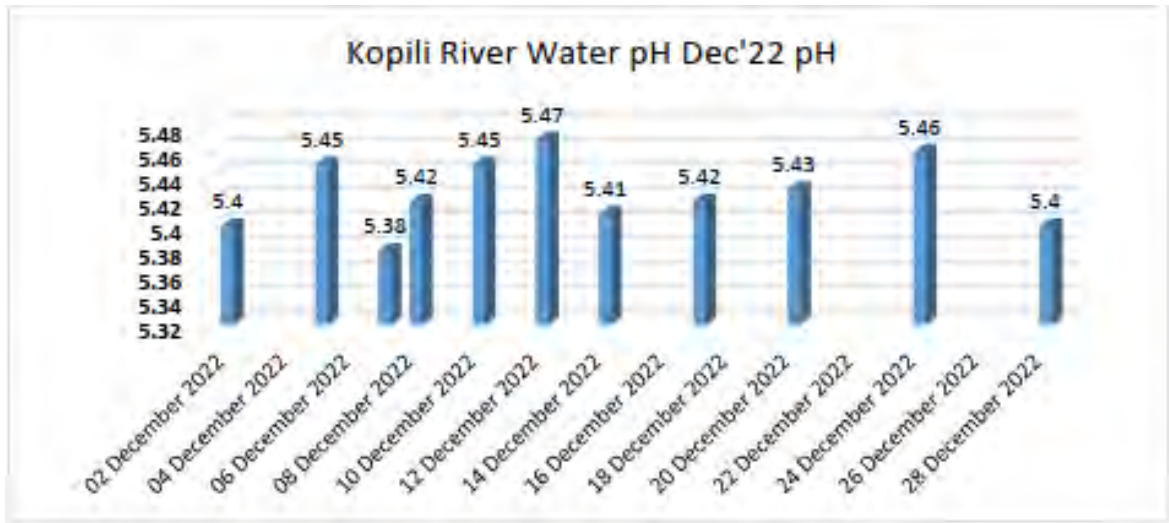
Kopili River Water pH Oct'22 pH



Kopili River Water pH Nov'22







Kopili River weekly test

Site visits of ADB (5<sup>th</sup> to 9<sup>th</sup> December 2022)



Site visits with External Monitor 28<sup>th</sup> November 2022



**Review meetings (all the package contractors with PD, APGCL)**







**Executive EHS Risk management audit of Package 2 (Internal)**

## **7.4 Occupational and Community Health and Safety Monitoring**

L&T uses app based monitoring for safety. Following 2 applications are used

1. L&T Safety App
  - a. Prestart Briefing
  - b. Work Permit system
  - c. Near Miss case Reporting
  - d. EHS Observation
  - e. Covid 19 Check list



2. IB4U
  - A. Fire Extinguisher Inspection
  - B. Safety Full body Harness Inspection
  - C. Vehicles and Earth moving Equipment inspection
  - D. Crane Inspection
  - E. DG Inspection
  - F. Earthing Inspection
  - G. Electrical Inspection

- H. Mobile Crane Inspection
- I. RCCB/ELCB Inspection
- J. Scaffold Inspection

Monthly Safety report for the month of December 2022 is given in the [Annexure 6](#).

List of fire extinguishers installed at site in table 15.

**Table 15 : Fire extinguishers installed at site**

Sl .no	Location	Type	Capacity (kg)	No's
1.	Surge Shaft Container	CO2	6.5	2
		DCP	1.0	4
2.	Valve House Container	CO2	6.5	1
		DCP	1.0	3
3.	Crusher Plant Area	CO2	6.5	2
		DCP	1.0	3
4.	HRT Adit	CO2	6.5	2
		DCP	1.0	3
5.	Kopili Block	DCP	1.0	4
6.	APGCL Canteen	DCP	6.0	1



Sl.no	Location	Type	Capacity (kg)	No's
7.	APGCL Barak	DCP	6.0	2
8.	Eco Green Canteen	DCP	6.0	1
9.	Lohit Block	DCP	1.0	4
10.	Manas Block	DCP	1.0	4
11.	Dihing Block	DCP	1.0	4
12.	Kolong Block	DCP	2.0	4
13.	Kamang Block	DCP	2.0	4
14.	Brahmapurta Block	DCP	2.0	4
15.	Diju Block	DCP	1.0	4
16.	Digaru Block	DCP	1.0	4
17.	Dikhaw Block	DCP	1.0	4
18.	Bhogdoi Block	DCP	1.0	4
19.	Borgang Block	DCP	1.0	4
20.	New Workmen Camp			
21.	Kulse Block			
22.	Subansiri Block	DCP	2.0	3
23.	Store Container	DCP	1.0	1
24.	P&M Container	DCP	1.0	1
25.	Store	CO2	6.5	2
		DCP	1.0	3
		FOAM	6.2	2
		Fire Bucket		2
26.	P&M Workshop	DCP	1.0	1
27.	Fabrication Yard	DCP	1.0	1
28.	Bhuoender Singh Container	DCP	1.0	1

Sl.no	Location	Type	Capacity (kg)	No's
29.	Diesel Browser	DCP	1.0	2
30.	DT Outlet Fire Stand	DCP	2.0	2
		CO2	6.0	1
		Fire sand Bucket	5.0	1
31.	Dam Site Office	DCP	2.0	2
		Fire sand Bucket	5.0	2
32.	Dame Site DG	CO2	6.5	1
33.	Digaru Block	DCP	1.0	4
34.	Dhansiri Block	DCP	1.1	4
35.	Explosive Magazine	DCP	2.0	4
		Fire Sand Bucket	5.0	4
36.	Fuel Substation	DCP	5.0	2
		Foam	9.0	2
		Fire Sand Bucket	5.0	2
37.	PMC Blocks	DCP	1.0	14

Health and Safety related issued are monitored and reported in the Monthly Environment Report by the Contractor. To contain further spread of COVID 19 at worksite COVID 19 SOP has been prepared. Compliance to COVID 19 SOP are also reported along with the Monthly Environment Report. Summary of HSE at site is shown in the table 16.

**Table 16 : Summary of HSE at site**

Month	No. of Fatalities	No. of Reportable Injuries	No. of Man days Lost	Dangerous Occurrences	Reportable Sick Cases	Major Environment Incidents	Non-Work-Related Incident (not included in statistics)	First Aid Cases	Near Miss Reports	Minor Environment Incidents	Frequency Rate - No. of RLTI	Severity Rate - No. of Man days lost per million Man hours worked
July 22	-	-	-	1	-	-	-	3	-	-	-	-
Aug 22	-	-	-	-	-	-	-	2	-	-	-	-
Sept 22	-	-	-	-	-	-	-	3	-	-	-	-
Oct 22	-	-	-	-	-	-	-	1	1	-	-	-
Nov 22	-	-	-	-	-	-	-	-	-	-	-	-
Dec 22	-	-	-	-	-	-	-	1	1	-	-	-
July- Dec Total	-	-	-	1	-	-	-	10	2	-	-	-

○ **Non Work Related Accident :**

<b>1</b>	Late Roberston Hanse died on 15th July, 2022. Non accidental fatal case. (Annexure 12)	Death due to Cardio respiratory failure due to sudden cardiac arrest and compensation paid.
<b>2</b>	Accident occurred on 5.12.22 as Late Sudham Sarkar had fallen from height of 1.6 m and succumbed to death on 28.12.22 in hospital. He was shifted to HAMM Hospital, Hojai immediately. Later for better treatment shifted to Swagat Super specialty Hospital. (Annexure 13)	After the implantation on 8 <sup>th</sup> Dec, 2022 patient deceased due to SEPSIS with MODS on 28 <sup>th</sup> Dec 2022. Compensation is under process.

A non work-related injury is one that has been suffered or sustained outside of work and/or outside of any functions relating to the workplace.

In the 2<sup>nd</sup> incident, water tank was installed as a backup arrangement for utensil washing and the job was not assigned to him on that day. Water tank was only a backup arrangement planned during peak water requirement/crisis. Contractor has following arrangements in workmen mess for daily usage:

- Filling of water to utensil cleaning area into 4-5 small drums through water tanker.
- Water supply from main RO plant in CANS for drinking and cooking.

Actions taken by the contractor :

- After the accident the patient was taken to Hospital immediately for the treatment. For better treatment later shifted to another hospital in Guwahati. After the death, the Commissioner, Employees Compensation was intimated with the death certificate, post-mortem report and the copy of FIR. Contractor deposited the compensation amount decided by the Commissioner, Employees Compensation to his office and the compensation was paid to the diseased family by the department.
- Root cause analysis was carried out by the contractor and accordingly the corrective action was taken to avert such kind of accidents in future.

Action taken by APGCL :

- Contractor's to report accidents immediately to the employer.

**Safety Measures adopted at site**



**Warning sign board for Narrow Road.**



**Scaffolding inspection Tag**



Display of Emergency Response Flow chart



Color Coding for Tunnel air / Water pipeline.





Cautionary Sign board for Tunnel.



Hard edge protection for Surge Shaft deep excavation



Goal post for overhead electrical line



Demarcation of Emergency Exit on Tunnel





Lifting Tools and tackles color coding system



Cautionary Signe board



Warning Signe Board



Fancying arrangement for High voltage Electrical equipment at Underground





Warning Signage for Electrical Safety



Safe Access for Surge Shaft



Access control arrangement for Gantry Crane





Earthing pit for Metal Office Cabin



Man-Basket Arrangement for Safe Access to Surge Shaft



Hard Barricading for DAM Site



Basting Shelter



Hard Barricading for Raiser Shaft



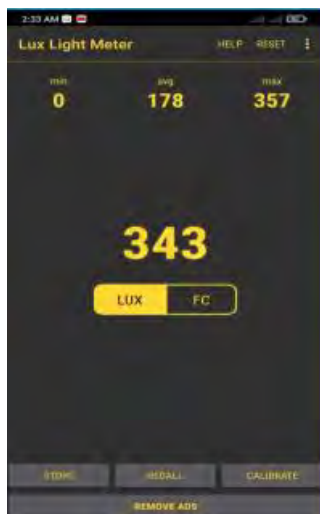
Night vision Traffic diversion



Edge protection at Calvert



Alcohol testing workers



Measuring bright ness in Lux Gas Monitoring in tunnels Anemometer measure wind speed





Safety Poster with Local Language “Safety Guideline for the Mobile crane Operation”



Safety Poster with Local Language “Do’s and Don’ts for Using Portable Power Tools”

## 8. Training

Details of the Trainings are given in Table 17.

**Table 17: Training conducted by package 2 contractor**

(Here workers means Labour, Supervisors engaged by Contractor and sub contractors under package 2 and staff means engineers, and skilled workers engaged directly under L&T pay roll)

	EHS Training	Number of Workers attended this Month						Number of staff completed in this Month					
		Jul 22	Aug 22	Sept 22	Oct 22	Nov 22	Dec 22	Jul 22	Aug 22	Sept 22	Oct 22	Nov 22	Dec 22
1	Incident Investigation		0						12				
2	Underground Safety		64		33				0		4		
3	Scaffolding inspection Training				2						1		
4	Emergency Response Management			0						18			
5	Defensive Driving /Blind Spot Training		9	0			8		2	10			
6	Safety Evacuation	4	0	0				4	5	14			
7	Site BBS Training			0		5	5			4			
8	All new procedures Standards briefing	5	0	44	44			5	5	5			
9	Occupational Health and Management awareness	7	0	0				7	7	7			
10	Underground Safety	5						5					
11	Inspection of Vehicles and Earthmoving Equipment	6						0					
12	P&M Safety						14						
13	Awareness on Environment Protection	3						28					
14	EHS Leadership and Risk Management training	0						24					
15	EHS-Subcontractor Management Training * To Subcontractor Supervisors			12									
16	Front Line Supervisor EHS Training (site appointed supervisors, JV partner, sub-			4	7	14					14		

	EHS Training	Number of Workers attended this Month						Number of staff completed in this Month					
	contractor supervisors)-*100%												
17	P&M Safety * To relevant workers.			8									
18	Rigger Training (Site-nominated Rigger)*100%			2									
19	Safety on Grinding machine operation training			8						1			
20	Safety on Crusher operation			12						1			
21	Tunnel Safety					7							
22	Work at Height						9						
23	Pre-deployment induction training	254	274					15	3				
24	EHS Induction			206	124					5	5		

	
Safety in Excavation	All new procedures Standards briefing
	
Underground Safety	Inspection of Vehicles and Earthmoving Equipmen





Awareness on Environment Protection



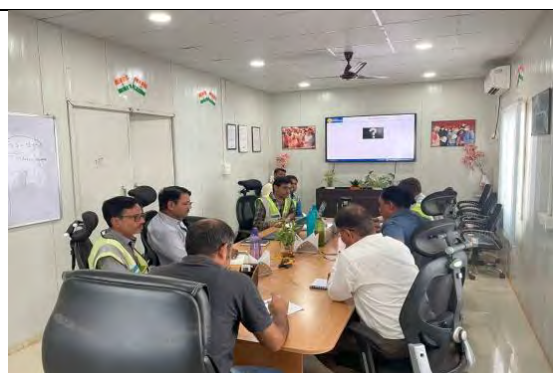
Pre-deployment induction training



EHS Leadership and Risk Management training



Underground Safety



Incident Investigation



All New procedures and standards briefing



Defensive Driving Training



Medical Mock drill at site



	
<p>P&amp;M Safety related training at sit</p>	<p>Fire Mock Drill at DAM Site</p>
	
<p>Fire Mock Drill at DAM Site</p>	<p>Onsite Underground Safety</p>
	
<p>Onsite Underground safety Training</p>	<p>All New procedures &amp; standards briefing * To workers.</p>
	



Training on safety on Grinding machine operation	Training on Use of Full body harness during Work at height
	
EHS-Subcontractor Management Training * To Subcontractor Supervisors.	Onsite – On job Form work Training
	
Defensive Driving trainings	

## 9. EMP Expenditure :

EMP Expenditure table (Table 18, 19) summarize details of budget allocated for EMP implementation and the current spend profile.

The EMP Budget is revised as per recommendation and direction of MoEF&CC for the Environmental Clearance.

The originally EMP Budget (as per disclosed EIA, 2018) was US\$12.90 m and now it is US\$16.76 million incorporating the revised compensatory afforestation cost, biodiversity conservation cost, cost for external monitor, LAD, etc.

**Table 18: EMP Expenditure**

S. No.	Item Cost	Revised	Remarks	Expenditure so far (₹ Million)
		(₹ Million)		
1	Compensatory Afforestation, and Bio-diversity conservation, etc.	390.259	CA 159.42, Biodiv.	390.959

S. No.	Item Cost	Revised (₹ Million)	Remarks	Expenditure so far (₹ Million)
			190.979, SMC 39.86, CTE fees 0.7	
2	Catchment Area Treatment	282.960		282.960
3	Public health delivery system	42.360		
4	Muck management	34.000		*
5	Stabilization of quarry sites	11.500		
6	Restoration and Landscaping of construction sites	10.000		
7	Environmental management in road construction	16.952		* details in table 19
8	Greenbelt development	2.000		
9	Solid Waste Management	23.484		* details in table 19
10	Water pollution control	18.500		
11	Energy Conservation measures	10.000		
12	Disaster Management Plan	37.000		
13	Local Area Development Plan	37.400	As approved per CRDTP (May 2017)	
14	Plan to preserve cultural identity of the locals	12.286		
15	Environmental Monitoring during construction phase	10.992		* details in table 19
16	Monitoring and Evaluation Aspects	6.000		
17	Purchase of meteorological instruments	1.000		
18	Purchase of noise meter	0.100		
19	Water Quality Restoration Plan	65.000		
20	Training and Awareness Building	2.000		
21	External Monitor	159.800	As per PAM	
22	Pre-construction baseline monitoring	50.000		0.300
23	Environmental Monitoring during operation phase (for initial three years)	6.849		
	<b>Total</b>	<b>1230.442</b>		674.219 (54.79%)

Note :

1. As per the Stage I condition of the Forest Clearance Project Proponent has to deposit the CAT (Catchment Area Treatment) Plan budget in the CAMPA Fund prior to Stage II Forest Clearance. Accordingly the amount was deposited CAMPA fund of MoEF&CC. The work on Catchment Area treatment has not been initiated by the Forest Department. APGCL will pursue the matter with the Forest Department for implementation.
2. Biodiversity study was carried out and the expenditure incurred is reflected in the expenditure statement. As soon as the External Monitor is engaged the baseline studies will be carried out before initiation of contract packages 1, 3, 4. Test of Environment parameters were also carried out as per EMP in the month of October, 2020 as a baseline study through the third party engaged by the L&T so the expenditure was not incorporated.
3. BMP will be implemented by APGCL and Forest Department jointly but CAT Plan will be implemented by Forest Department alone. The required amount for implementation of CAT Plan has been deposited to CAPMA, MoEF&CC, Govt. of India.

**Table 19 : Details of the \*EMP Expenditure till December 2022.**

S.I	Item	Amount (Rs. lakh)
1	Expenditure for Environmental Monitoring (Air, Water & Noise)	6.31
2	Expenditure for DG Stake Monitoring	1.03
3	Portable bio toilet , (4 no.)	2.8
4	Portable prefab toilet , (2 no.)	2.8
5	Making road for local village.	0.25
6	Cement bag Provided for community toilet construction	0.15
7	DRDO Bio tank 4000 litre (2 no.)	3.37
8	Prefab container toilet (2 no.)	7.71
9	Plantation on spoil tips (plain area) including bio-fertilizer cost & tree guard cost	1.12
10	Fencing cost for 5000 sqm	17.41
11	Cost of two portable water pumps, (flow 20 cum/hr, 20m head, along with 200 m pipe, 100 mm dia, HDPE)	65.43
12	Watch & Ward for tree plantation	6.81
13	Safety Supervisor	15.14
14	Regular water sprinkling through water tanker on entire roads and NH (water tank capacity 20000 Litter & 12000 litter)	16.98
15	Fire extinguisher DCP 1KG 50 no./ 2KG 50 no./6KG 30 no./ 9 KG 20 no./BUCKET 20no.	0.41
a)	Fire extinguisher CO2 6.5 KG 20 no.	2.56
16	PPE for staff & workmen (Jacket, Helmet, Shoe, Hand gloves, mask, face shield, ear muffs, ear plugs, safety google, face shield, rain coat, face mask, gum boot, umbrella)	66.6

S.I	Item	Amount (Rs. lakh)
17	First Aid medicine	5.18
18	Two First aider	17.36
	<b>TOTAL</b>	<b>239.42</b>


[Note : DRDO biodigester's Effluent is free from off odour and safe for environmental discharge. Hence the expenditure incurred were kept under environment management. ]

## 10. Meaningful Consultation and Grievance Redress

Few consultations were carried out during the reporting period July 2022 to December 2022 (Table 20).

**Table 20 : Consultation carried out during the reporting period**

Date	Format/Venue	Participants (Occupation, M/F)	Main Issues Raised
16.08.2022 17.08.2022	APGCL, Conference Hall at Longku	Forest Department, Villagers, PAPA, Other Govt Departments, School Teachers	On environmental perspectives with reference to Environmental Impact Assessment, Environmental Management Plan adhered so far along with additional measures for shifted components and based on the critical habitat analysis for avoidance or mitigation of the adverse impacts on the environmental components. (Annexure 10)
13.11.2022	Borolongku village community Hall	villagers, gaon buras and the representatives of APGCL, PMC	On environmental perspectives with reference to Environmental Impact Assessment, Environmental Management Plan adhered so far along with additional measures for shifted components and based on the critical habitat analysis for avoidance or mitigation of the adverse impacts on the environmental components for the conservation of biotic components and long term survival of the plants, wildlife and human being.

Date	Format/Venue	Participants (Occupation, M/F)	Main Issues Raised
			 (Annexure 11)

### 10.1 Grievance Redress Mechanism

A three-tier grievance redress mechanism has already been notified for handling grievances. The first tier is the grassroots level mechanism. Grievances of the APs are first dealt with by gaon buras in consultation with the field officials, and the contractors of the project. Complaints that cannot be addressed at the level of gaon buras are forwarded to the Project-level grievance redress committee (GRC) which is the second tier. The third tier is the appellate GRC at the state level. APGCL deal with the complaints and grievances as the appellate GRC. There is no bar to take grievances and complaints to national courts for arbitration.

Details of the GRM given in the last EMR.

No cases registered so far on environment issues.

GRM is open to all (communities and workers). Moreover, the workers grievances are additionally addressed by the contractor through their own system. Site Register is maintained in the contractor's camp and in APGCL office. All the complaints are recorded. A format has been developed by Social Expert to record the grievances. Grievance Box was placed at APGCL site office. GRM training given by APGCL Social Expert and R&R NGO to all the affected villages. All the complaints lodged by the workers/labour are addressed by admin department of the contractor. Registers are maintained at site.

### 11. Initiatives for the Community or Good Engineering Practices :

Water sample collected from nearby school drinking water source (date 29.19.22) as requested by Choto Longfer ME School Headmaster for quality check.







To,  
The Project Manager,  
M/S LET  
Longku.

Sub - Request for help in testing water used  
for drinking purposes for students in M.E.  
School Chotolangpher.

Sir,

With the help of Government, school has established  
the running water facilities for drinking purposes.  
However, we are not aware that the water which children  
are using is fit for drinking or not. I came to know  
through the Gaon Bura that you are using the RO  
plant and regular testing is being done.

It is therefore requested to please help us  
to get the water parameters check from your  
side, so that we can use it without any kind  
of worries.

On behalf of the children of the M.E. School  
Gaon Bura, we will be thankful to you for your  
kind help.

Thank you

Regards

Nandu Singh Yadav.

Headmaster

Mob-9085309521

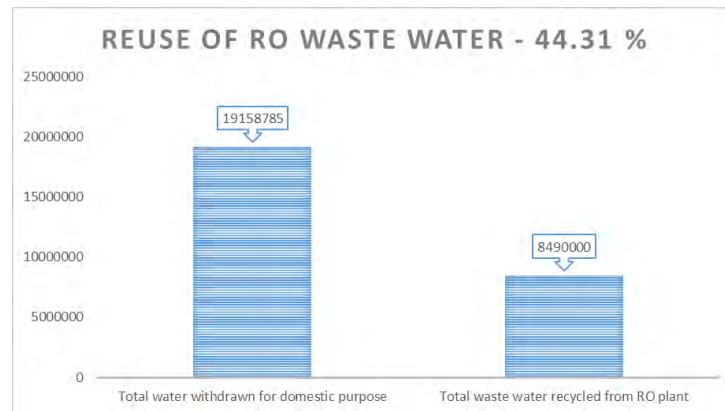
Headmaster  
Chotolangpher M.E. School  
Dryungbra, Dima Hasao

Note : Results in the Annexure 9.

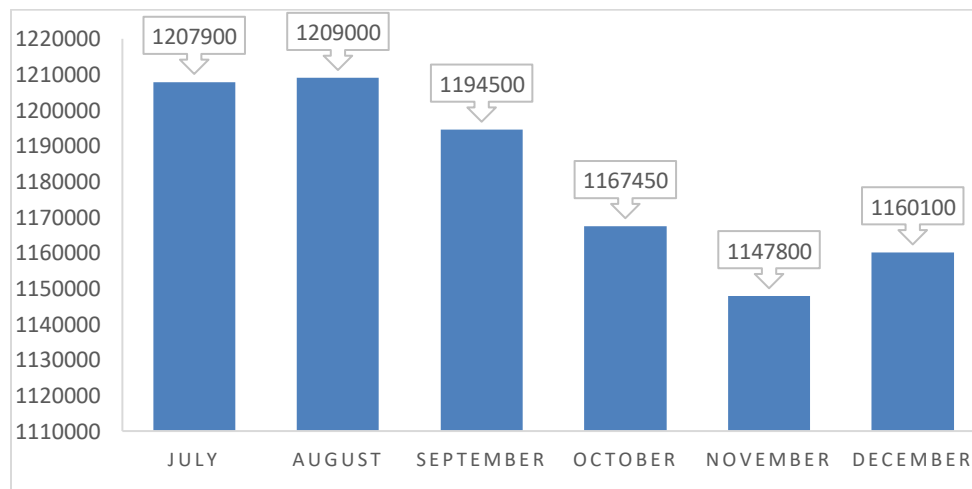


Reuse of concrete blocks

### Reuse of RO Waste water



### Use of RO Wastewater from July to December, 2023





Using transparent sheet in store and other sheds to reduce electricity consumption.

## 12.0 Corrective Actions

Corrective actions are listed in the table 21 for compliance.

**Table 21 : Corrective Actions Plan (CAP)**

Sl. no	Agreed Action	Responsibility	Agreed timeline
1	EA to expedite the process of amendment of Environment Clearance (EC) to reflect the modifications in Project components viz. increase in submergence area, reduction in dam height, width, changes in project cost and resultant CER funds etc. that were earlier not reflected in the documents submitted for obtaining EC and in the EC letter. EA is requested to prepare a comparison list of all components that stands modified at present against those reflected in the documents submitted to MoEFCC for obtaining EC and the EC letter itself.	PMC/AP GCL/EM	Application to be submitted by 15 February 2023
2	EA to ensure that Consent to Establish for the hydro power plant is obtained post facto	PMC/AP GCL/EM	Application to be submitted by 15 February 2023
3	EA to ensure that post facto environmental clearance (EC) for the 4.6 ha quarry near kala nala is obtained and work is commenced after obtaining the EC if not exempted as was reported.	Contract or/ PMC/AP GCL/EM	Application to be submitted by 15 February 2023
4	EA to ensure that Contractors obtain: (a) post facto labour license for CP- 4. (b) post facto labour insurance for CP-3. (c) post facto CTE and CTO for the water treatment plant installed at the Project Office site under CP-2. (d) post facto consent from gaon burah for sourcing water for construction from Longku nala under CP-2. (e) post facto CTE and CTO for - 6 lakh litre water treatment plant for construction in CP -2. (f) Environmental clearance for new landfill site, prior to construction, if applicable under CP-2. (g) post facto authorization for generation of solid waste from the SPCB, if applicable under CP-2.	Contract or/ PMC/AP GCL/EM	(h) 15 February 2023 (i) 15 February 2023 (j) 15 February 2023 (k) 15 February 2023 (l) 15 February 2023 (m) 15 February 2023 (n) 15 February 2023



Sl. no	Agreed Action	Responsibility	Agreed timeline
5	PMU to ensure that all (a) post facto clearances are obtained prior to recommencement of the relevant works. (b) <b>all works are commenced only after obtaining the requisite regulatory permissions</b> ; and (c) permissions remain valid throughout the implementation period for all CPs.	Contract or/ PMC/AP GCL/EM	As and when applicable till Project completion
6	EA to ensure (a) that ADB is informed about any other activities requiring statutory permissions and their status that were not listed or reported during the Mission. (b) that the conditions stipulated along with all regulatory permissions are complied with in timely manner including online submission of six- monthly monitoring reports for EC compliance to MoEFCC for both general and specific conditions. (c) that the construction materials sources, plants and equipment are compliant with the environmental regulations of India. (d) ensure that the license and insurance of all labour (including all skilled, semi-skilled and unskilled labour) for all CPs are obtained and remains valid. (e) that details of number of trees permitted to be cut and status of tree felling in both forest and non-forest areas for all CPs are provided along with supporting documents; and (f) trees are cut only where unavoidable for the Project activities to be conducted successfully;	Contract or/ PMC/AP GCL/EM	Ongoing throughout Project Implementation period  (e) Status by 15 February 2023
7	EA to ensure that (a) CTE for sewage treatment plant proposed under CP-1 for a built-up area of 6720 sqm of permanent colony; (b) permission from water resource department for proposed extraction construction water from river/ surface water; (c) CTE and CTO for proposed service station; and (d) labour license for CP -3 is obtained in timely manner.	Contract or/ PMC/AP GCL/EM	(a) to (c) Prior to commencement of construction activities (d) as and when applicable
8	EA to expedite follow up with North Cachar Autonomous Council for obtaining the letter confirming the archaeological status of newly identified site in Longku and thereafter take requisite action as per SPS,2009 and GOI requirements	PMC/AP GCL/EM	31 March 2022
9	EA to ensure that (a) qualified and well experienced H&S expert is appointed under both PMU and PMC due to the critical nature of construction activities and serious health and safety lapses reported/ noted (b) Sr. Environment Expert is appointed under PMC for day-to-day supervision at site.	Contract or/ PMC/AP GCL/ EM/ Grant funded	(a) to (d) Appointment status to be updated by 15 February 2023  (e) Ongoing throughout Project

Sl. no	Agreed Action	Responsibility	Agreed timeline
	(c) one qualified Environment and one qualified H&S expert is appointed under CP-3 contractor. (d) one qualified Environment expert is appointed under Package-4 Contractor: and (e) all positions of environment and H&S under PMU, PMC, EM, JPRF grant Consultant and all contractors are continued till physical completion of the Project and are served by experts qualified on Environment, Health, and Safety subjects	consultant	Implementation period
10	PMU to ensure (a) submission of labour influx and revised solid waste management plan by contractor of CP -2 is expedited incorporating compliance of ADB's comments. (b) submission of CEMP for CP-1 is expedited (c) Monthly environment report is submitted by contractors under CP 1,2,3 &4. (d) updated EMP of EIA Addendum is made part of the contract agreements, when cleared by ADB. (e) the CEMPs are updated based on updated EMP of EIA Addendum after clearance from ADB. (f) EMP updated so far is implemented by the contractors.	Contract or/ PMC/AP GCL/EM	(a) By 15 February 2023 (b) 15 February 2023 (c) By 1 <sup>st</sup> week of every following month (d) & (e) As and when Applicable (f) Interim period till the EIA Addendum is cleared by ADB
11	EA to ensure that contractors (a) maintain data logs of waste / treated water, muck, waste cement concrete, cement slurry generated and reused and submit as part of Monthly Environment report that should get reflected as good practices in the quarterly and semi-annual Environmental Monitoring Reports (EMR) submitted to ADB by APGCL. (b) channelize all wastewater from all kitchens, bathing areas, washing areas to the tanks for appropriate treatment prior to releasing in the environment. (c) expedite the process of segregation and management of waste, identification of authorized vendors to hand over hazardous wastes, recyclable wastes, commence composting of biodegradable wastes so that these are not released into the environment untreated; and (d) adopt appropriate dust control measures at all the construction sites, approach roads etc.	Contract or/ PMC/AP GCL/EM	(a) Ongoing throughout Project Implementation period (b) 15 February 2023 (c) 15 February 2023 (d) Ongoing throughout Project Implementation period
12	EA to ensure (a) that the fresh air volume inside the tunnels is maintained and gases monitored regularly as per the recommendations given in ADB-Cleared EMP and summarized results are incorporated in the EMRs; (c) that the gas, air flow and light monitoring meters are calibrated timely; and (d) that adequate	Contract or/ PMC/AP GCL/EM	Ongoing throughout Project Implementation period



Sl. no	Agreed Action	Responsibility	Agreed timeline
	lighting/illumination is maintained inside tunnels as per IFC EHS guidelines.		
13	EA to (a) expedite the implementation of all the sub-plans annexed and supplemented as part of the ADB-cleared EIA; (b) ensure that provisions recommended as part climate risk assessment and management plan are incorporated in the detailed designs; (c) follow up with the concerned stakeholders to ensure timely implementation; (d) ensure that the status is regularly updated in both internal and external EMRs; and (e) coordinate with the owner of existing 400 kV power transmission line for implementation of recommendations made in the critical habitat assessment study as part of EIA Addendum.	Contract or/ PMC/AP GCL/EM	Status on action taken to be provided by 15 February 2023
14	EA to monitor the Contractors to ensure (a) that muck dumping sites are managed as per the provisions recommended in ADB-cleared EIA viz. levelling, compaction, stabilization measures for top and slope at the edges etc.; (b) that muck dumped on road side in the forest land, camp site etc. are moved to the designated dumping sites; (c) assessment of the slope condition and geological aspects at dam site and adopt appropriate protection and corrective measures including that for all other cut/ exposed slopes; (d) that chemical characterization (to identify presence of pyrites or other obnoxious substances) is conducted for the water drained out of tunnel/ weep holes, dumped muck and the muck being generated from the tunnel regularly and adopt suitable disposal/ neutralization measures as would be applicable to avoid adverse impact on the water (river) and soil environment; (e) that settling tanks of appropriate capacity are constructed for water drained out of the tunnels so that appropriate treatment could be done based on the results of chemical characterization and the water can be reused suitably; (f) preparation and implementation of emergency and evacuation plan for the community especially in the downstream in case of accidental flood, fire etc. during construction factoring delineation of areas to be inundated, functionality of warning system, time required for evacuation, coordination with district administration etc; (g) structural condition of buildings/ properties likely to be impacted are recorded to act as baseline and vibration monitoring is conducted regularly at all blasting and surrounding sites as per relevant Indian Standard/ codes, such as IS-14881:2001 and statutes and results are incorporated in EMRs as requested by the Mission (h) OHS provisions	Contract or/ PMC/AP GCL/EM	Point wise status on action taken to be provided by 15 February 2023.  Ongoing throughout Project Implementation period

Sl. no	Agreed Action	Responsibility	Agreed timeline
	<p>as per ADB-cleared EMP including Annex 12, 17, 29 are fully implemented at all construction sites with a special attention to the critical construction areas; (i) that ambulances with appropriate and essential lifesaving medical facilities along with medical practitioners and/ or well-trained first aiders are stationed at critical construction sites by the contractors; (j) that first aid kits at all sites shall have all unexpired medicines and medical items in adequate quantity as are mentioned in relevant statutes such as the Contract Labour (Regulation and Abolition) Central rules, 1971; (k) that back up alarms and reverse blinkers of all construction vehicles are functional; (l) that batching plants are in operation only with sedimentation tank of appropriate design and capacity that would not adversely impact the surrounding soil and vegetation; (m) that the water and cement slurry separated out of sedimentation tanks can be reused for washing the plant and construction of temporary, non-structural works as appropriate; (n) that dust screens are installed at all dust generating sources in batching plants such as silos, aggregate batcher etc; (o) that Project information boards are updated and installed at all requisite locations; (p) that sturdy and stable barricading is provided around all excavated areas; (q) that housekeeping at all sites is improved, loose materials storage areas are bunded and covered, all trip and fall hazards are removed; (r) that loose materials are covered while transportation; (s) that details of action taken for resolution of complaints are recorded in the registers; (t) that provision for detachable lid /cover is made for the underground fuel tank to ensure safety as per relevant standards; (u) that separate spill trays are used for different types of chemicals and fuels and stored separately for reuse or disposal through authorized vendors; (v) that all chemical and fuel storage locations have 110% bunded paved surface with roof cover and spill trays; (x) that all vehicles/ equipment registered under Indian regulation and pollution under control (PUC) certificates are obtained; (y) that heat control ceiling are installed in all rooms of the er labor/ staff camp using materials non-toxic to indoor environment; (z) tag-in tag-out system or badge system is in place for workers trained for different jobs at critical sites like tunnel, height works etc.</p>		
15	EA to ensure that the Contractors including CP-4 Contractor (a) provides well ventilated labour camps along with cooking gas, dedicated kitchen area where possible, beds, mosquito nets, safe drinking water etc.	Contract or/ PMC/AP GCL/EM	Status on action taken to be provided by 15 February 2023.

Sl. no	Agreed Action	Responsibility	Agreed timeline
	for labourers. for laborers as per GOI guidelines and international good practices as recommended by the International Labour Organization (ILO) for workers accommodation;(b) provides gender segregated (if female labour are engaged) mobile and bio toilets; (c) ensures availability and adequate usage of PPE kits; (d)secures construction sites from unauthorized access; (e) provides adequate lighting; (f) provides hard barricading of excavated areas with reflective tapes.		Ongoing throughout Project Implementation period
16	EA to coordinate with AEGCL to ensure that the activities at the Sankardev Nagar substation are being conducted as per the SPS, 2009 and GoI requirements.	PMC/AP GCL/ EM/AEG CL & its Contract or	Ongoing throughout Project Implementation period
17	EA to monitor the Contractors to ensure (a) that paving of all temporary and permanent approach roads are expedited and maintained in all-weather motorable condition; (b) that fire extinguishers are inspected regularly and maintained in working condition; (c) that sanitation facilities at labour and staff camp meets the national and International standards viz. International Labour Organization (ILO); (d) that the stack height of DG sets are increase where required as per the relevant guidelines of state pollution control board considering the adjacent building height; (e) that regular health check-ups are conducted for workers; (f) that the sites are closed and restored in environmentally responsible manner as per ADB-cleared EMPs and include status with photo evidence in the EMRs, if applicable; (g) that measures to prevent spread of vector borne diseases are adopted; (h) that construction of drains at all sites are completed before next monsoon; and (i) that flagmen are deployed at road junctions and turnings for traffic management	Contract or/ PMC/AP GCL/EM	Status on action taken to be provided by 15 February 2023.  Ongoing throughout Project Implementation period
18	EA to take adequate measures to ensure (a) safety of workers at workplace and surrounding community both during construction and operations; (b) that appropriate compensation plan is prepared for disability, loss of life/livelihood /property etc. of workers or community members due to Project activities and/ or accidental failures of Project activities both during construction and operation.	Construction stage-Contract or/PMC/ APGCL. Operation stage-APGCL/ PMC	Construction-15 February 2023. Operation-By 31 March 2023
19	EA to ensure incorporation of the following in the EIA Addendum:	PMC/	28 February 2023

Sl. no	Agreed Action	Responsibility	Agreed timeline
	<p>(a) field based environmental due diligence of the revised alignment of 220 kV transmission line under CP-4.</p> <p>(b) assessment of detailed dam design with respect to ascertaining that the recommended environmental flow during lean, monsoon and non-lean &amp; non-monsoon season will be maintained.</p> <p>(c) assessment of the likely impacts of the additives being used/ tested for ascertaining that the hydro-mechanical equipment/structures are acid resistant.</p> <p>(d) provisions for management of possible presence of pyrites/ any other obnoxious substances on the excavated rocks of Project area such as chemical characterization of the muck and water draining out of weep holes and tunnel along with suitable measures for neutralization or disposal.</p> <p>(e) findings of geological study conducted or being conducted post award of contract for the dam site and slopes.</p> <p>(f) environmental assessment for Longku Nala stretch of NH-627 that is proposed to be elevated by PWD, Assam (construction yet to commence);</p> <p>(g) environmental assessment of detailed Project components finalized under CP -1 (construction yet to commence) including that of proposed STPs (for odour, noise, reuse of treated water, sludge management etc.).</p> <p>(h) environmental assessment of the water neutralization plant under construction.</p> <p>(i) confirmation on submergence area of 620 ha.</p> <p>(j) confirmation if greenhouse gas (GHG) emission from construction activities owing to modification in design and changes in submergence (including reservoir methane) area would remain within 100,000 ton carbon dioxide equivalent per year in compliance with SPS, 2009.</p> <p>(k) map of Project area including submergence area with demarcation of forest and other land uses superimposed on satellite imagery (kml file may also be submitted separately).</p> <p>(l) assessment of magnitude of vibrations due to operations of components of hydro power plant and its impact on land and structures during Operations period; and</p> <p>(m) any other changes in scope or component or unanticipated impacts that were not reported earlier or during the Mission.</p>	Contract or/ APGCL/ EM	

Sl. no	Agreed Action	Responsibility	Agreed timeline
20	EA to expedite completion of pending baseline data collection and assessments viz. (a) Baseline environmental and biodiversity monitoring of 220 kV power evacuation line and 33kV power transmission line. (b) Pre-construction baseline for environment (10 km of project component locations including 220kV power evacuation line and 33kV power transmission line) and biodiversity. (c) peaking power impact, assessment of optimum reservoir operation and downstream impact study (to ensure no net loss of biodiversity in the downstream); and (d) community emergency and evacuation plan for construction and operations period etc.	EM & Contract or Grant Funded Consultant/ PMC/ APGCL	(a) & (b) Survey to commence by 31 January 2023 (c) study to be commenced by March 2023 (d) By 30 May 2023
21	EA to ensure (a) that community awareness campaigns are expedited. (b) toolbox trainings/ talks are conducted regularly for EHS aspects. (c) mock drills are conducted regularly at all critical areas including magazine, tunnel, dam site, powerhouse locations. (d) workers under all CPs are regularly trained and made aware regarding EHS, biodiversity conservation, HIV/AIDS etc.	(a) APGCL/ Forest Department  (b) to (d) Contract or/ PMC/AP GCL/EM	Ongoing throughout the Project implementation period
22	EA to ensure that (a) meaningful public consultations (including all genders) are continued throughout the Project implementation period covering environmental aspects; (b) issues raised and suggestions given by public are adopted, if feasible; (c) nearby communities are consulted to confirm if there are any impacts seen on the structures due to blasting; (d) records of public consultation viz. the minutes of meetings, attendance sheets, photographs are maintained throughout the project implementation period that can be retrieved for responding to queries and grievances, if any, in future.	Contract & PMC/AP GCL/EM	Ongoing throughout the Project implementation period
23	EA to ensure that (a) GRC meetings are held regularly; (b) complaints if received are resolved in timely manner and recorded appropriately; (c) contact details of GRC representatives are displayed on the information boards at construction camp, sites and villages; and (d) information on GRC is disseminated amongst the communities residing near the National Highways, common approach roads, power evacuation lines, any other areas being or likely to be affected.	PMC/AP GCL/EM	(a)&(b) Ongoing throughout Project implementation period (c)&(d) immediately



Sl. no	Agreed Action	Responsibility	Agreed timeline
	(e) After any accident - causes consequences to be analysed, immediate actions taken to be reported, information to be sent to labour commissioner and corrective actions taken also to be reported to the employer.		
24	EMC is requested (a) to submit quarterly and semi-annual environmental validation report to ADB for clearance and disclosure; (b) expedite submission of revised environment validation report for the reporting period of January to June 2022 to APGCL and ADB and monthly reports to APGCL; (c) incorporate validation of implementation of all provisions mentioned in the EMP and EMonP including the plans given in annexures and supplementary EIAs cleared by ADB and EMP updated so far including additional recommendations for critical habitat management as part of EIA addendum that is under preparation; (d) verify the internal EMRs prepared by APGCL in timely manner; and (e ) manage inputs of all experts to ensure adequate monitoring at field.	EM/ APGCL	(a)within one month following end of reporting period till closure of Project. (b) immediately (c) to (e) Ongoing throughout the Project implementation period
25	EA to ensure that (a) PMC extensively monitors the implementation of environmental safeguards provisions mentioned in ADB cleared EMP and EMonP (including supplementary plans and those included as annexures to EMP) and the EMP updated so far as part of the EIA Addendum under preparation; (b) all relevant data are shared timely with the EMC through an appropriate platform that shall have restricted access to ensure liability of the concerned officials sharing and receiving the data; and (c) submission of internal EMRs and external validation reports are done within one month following the end of reporting period.	PMC/ APGCL/ EM	(a), (b) & (c) Ongoing throughout the Project implementation period
26	EA to ensure that (a) regular meetings of the Committees for biodiversity, CER, Dam Safety, MDC are held and minutes are incorporated into the internal EMRs; (b) recommendations and guidance of the Committees are implemented, as would be appropriate and implementation status of the same is validated in the Quarterly and Semi-annual validation report of EMC; (c) dam construction commences only after the detailed design is checked and approved by the 3-layer committee including EM and state dam safety Committee.	APGCL/ PMC/ Contract or	As and when applicable
27	EA to ensure that variation order for EIA update and supervision of EHS implementation of CP 4 and proposed elevated road at Longku Nala is given to the existing PMC (for CP-1,2 and 3) or hire other qualified experts for the same.	APGCL	By 15 February 2023

### **13.0 Conclusions and Recommendations**

This is the fourth six monthly Environment Monitoring Report for the period July to December 2022. During this period few noncompliance on the environment safeguard issues were observed and are listed in Table 22. As per CAP few statutory compliances are to be amended or renewed and few new CTE /CTO are to be applied. Results of the test of ambient air, noise and water also found within the permissible limit September 2022. Regarding safety there were two non-work-related deaths, and work related 2 near misses, 10 first aid cases were reported during this reporting period. Contractor followed COVID 19 SOP and reported monthly on the compliance, vaccination status, etc. During this reporting period no COVID positive persons were identified. Most of the support facilities are under final stage of construction. Provisions are kept for environmental compliance. Besides tree plantation, awareness programmes were held. Critical habitat assessment were done and it will be reflected in the EIA addendum which is under preparation. Further continuous monitoring of biodiversity covering all the aspects during the implementation of the project will be carried out. So far the environmental safeguards measures taken by the contractor was mostly satisfactory but in some fields improvements can be done.

## Annexure

### Annexure 1 – CTO of Dam Batching Plant

	<b>Pollution Control Board:: Assam</b> <b>Bamunimaidam; Guwahati-21</b> (Department of Environment & Forests :: Government of Assam) Phone: 0361-2652774 & 2550258; Fax: 0361-2550259 Website: <a href="http://www.pcbassam.org">www.pcbassam.org</a>	
No. WB/SLC/T-1191/21-22/31		Dated Guwahati, the 31 <sup>st</sup> Oct, 2022

#### "CONSENT TO OPERATE"

'CONSENT TO OPERATE' (CTO) under Section 21 of the Air (Prevention & Control of Pollution) Act, 1981, as amended and Rules Framed thereunder, is granted to:

- i) Name of the unit : M/s Larsen & Toubro Ltd. (Batching Plant)
- ii) Name of the Occupier / Applicant and Designation : Sri Santanu Majumder, Project Manager
- iii) Address of the unit : Lower Kopili Hydro Electric Power Project, Vill - Longku, P.O. Umrangso, Dist. Dima Hasar, Assam-788931.
- iv) Cost of the project : Rs. 744.69 Lakhs.
- v) Details of the project & category : Batching Plant (Green Category)

Sl. No.	Product	Capacity
I.	Cement Concrete	20,000 m <sup>3</sup> /month

- vi) D.G. Set : 2 x 15 KVA + 2 x 500 KVA

#### General Conditions:

1. The Consent to Operate (CTO) has been accorded based on the particulars furnished by the applicant vide **Application ID: 1410031** and subject to addition of further or more conditions, if so warranted by subsequent developments. The Consent will automatically become invalid, if any change or alteration or deviation made in actual practice.
2. The CTO is valid till **31.03.2025**.
3. The CTO may be modified, suspended in whole or in part or withdrawn by the Board during its term for cause including, but not limited to the following:-
  - a) Violation of any Terms and Conditions of this CTO;
  - b) Obtaining the CTO by misrepresentation or failure to disclose fully all relevant facts;
  - c) If any genuine complaint received;
4. The unit shall obtain prior 'Consent to Establish' from the Board for any further expansion, alteration, and modification of the project.
5. **The project proponent shall develop a greenbelt/plantation area with native trees covering atleast 33% of the total plot area.**
6. **The project authority should install a Display Board as per the Boards notification No. PCBA/LGL-95/2021/Notification/01 dtd.11.11.2021 (Annexure-A).**
7. **Proper housekeeping shall be maintained. Burning of any waste inside the unit premises is strictly prohibited.**
8. The unit shall apply for renewal of CTO atleast 90 days before expiry. The Board has decided to renew the CTO for validity of 5 (five) years after payment of due fees, for the entire period.
9. As per the provisions of the Water (Prevention and Control of Pollution) Act, 1974 as amended and the Air (Prevention and Control of Pollution) Act, 1981, as amended, any Officer, empowered by the Board on its behalf shall have without interruption, the right at any reasonable time to enter the unit for inspection, collection of sample for analysis and may call for any information as deemed necessary. Denial of this right will cause withdrawal of the Consent Order.

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**Specific Conditions:**

**A) Air Aspects:**

1. The unit shall install the screening machine, with proper enclosure and dust extraction and treatment mechanism.
2. The following air pollution control measures shall be implemented by the project authority to control source emission and fugitive emission:
  - a) Dust containment cum suppression system at Raw Material Feed Hopper, all material transfer & dropping points.
  - b) Construction of the metallic roads within the premises.
  - c) Regular cleaning and wetting of ground within the premises.
3. The unit shall comply with the standards and guidelines for control of noise pollution from stationary Diesel Generator (DG) set as attached in Appendix-B.
4. The unit shall comply with the Noise Level Standard notified by MoEF&CC, Govt. of India, vide GSR.7; dtd: 22/12/1998, as mentioned herein under:

Limit in dB (A) Leq	
Day Time (6:00AM-10:00PM)	Night Time (10:00PM-6:00AM)
75	70

5. The Ambient Air Quality within the Plant premises shall be maintained within the National Ambient Air Quality Standards as notified by MoEF&CC, Govt. of India, vide G.S.R.826(E) dtd.18.11.2009, especially w.r.t. PM<sub>2.5</sub> & PM<sub>10</sub>, as mentioned herein under:

Sl. No.	Pollutant	Time Weighted Average	Concentration in Ambient Air	
			Industrial, Residential, Rural & Other Area	Ecologically Sensitive Area (notified by Central Government)
1.	Particulate Matter (size less than 10µg) or PM <sub>10</sub> (µg/m <sup>3</sup> )	Annual* 24 hours**	60 100	60 100
2.	Particulate Matter (size less than 2.5µg) or PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Annual* 24 hours**	40 60	40 60

**B) Water Aspects:**

1. Source of Water : Surface water
2. Water consumption : 200.0 KLD
3. Storm Water Aspect:
  - a) Storm water shall not be allowed to mix with effluent and/or floor washings.
  - b) Storm water within the battery limits of the unit shall be channelized through separate drain/pipe passing through an Oil & Grease Trap cum Sedimentation Tank.
  - c) Storm water discharge shall meet with general effluent discharge parameters standard, notified by MoEF & CC, GOI vide G.S.R.422 (E); dated 31.12.1993 (Appendix - C).
4. Rain water harvesting facility shall be installed and maintained.

**C) Solid Waste Aspects:**

1. Adequate facility should be created for collection, storage, transportation, treatment & disposal of non-hazardous industrial solid waste generated from the Industry.
2. Adequate system should be adopted on reduction of waste generation and enhancement of re-utilization & recycling of waste materials.
3. The unit shall strictly comply with all the provisions of the Solid Waste Management Rules, 2016.

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**D) Plastic Waste Aspects:**

1. Plastic waste generated in the unit shall be disposed of scientifically as per the provisions of the **Plastic Waste Management Rules, 2016**.
2. The unit shall submit a report on generation and disposal of Plastic Wastes within June every year.


**E) E-Waste Aspects:**

1. Electronic wastes generated in the unit shall be disposed of as per the provisions of **E-Waste Management Rules, 2016**.
2. The unit shall submit the Annual Report in the Form-III within 30<sup>th</sup> June every year.


**F) Hazardous Waste Aspects:**

1. **Authorization under Hazardous & Other Wastes (Management & Trans-boundary Movement) Rules, 2016 shall be obtained from the Board.**
2. The project authorities shall comply with the provisions of the said Rules.
3. Adequate facility shall be provided for collection and storage of used/spent oil, which shall be sent to registered recyclers for recycling.
4. The unit shall dispose of any other Hazardous Waste generated by the unit as per the provisions of the Rules.
5. The unit shall identify and quantify all streams of Hazardous Waste generation as per Schedule-I and maintain proper record in Form-III of the said Rules.
6. The unit shall submit annual return in Form-IV under the said rules on or before 30<sup>th</sup> June every year.

The unit shall submit compliance report of the mandated conditions by April, 15, every year to Member Secretary, PCBA as well as to Regional Office, Silchar. The Board will have the liberty to withdraw the CTO, if adequate pollution control and safety measures are not implemented by the unit.


  
(Shantanu Kr. Dutta)  
Member Secretary

Dated Guwahati, the 21<sup>st</sup> Oct, 2022

Memo No. WB/SLC/T-1191/21-22/31 -A. 

Copy to:

- ✓ I. M/s Larsen & Toubro Ltd. (Batching Plant), Lower Kopili Hydro Electric Power Project, Vill: Longku, P.O. Umrangso, Dist. Dima Hasao, Assam-788931 – for information & compliance of conditions.

  
(Shantanu Kr. Dutta)  
Member Secretary



ANNEXURE A



Pollution Control Board, Assam  
Bamunimaidam, Guwahati-21



**NOTIFICATION**

No. PCBA/LGL-95/2021/Notification/01

Dated Guwahati, the 11<sup>th</sup> Nov. 2021

In exercise of the powers conferred under Section-5 of the Environment (Protection) Act, 1986 as amended till date and keeping in view the need of public interest towards dissemination of vital information regarding Consent/Authorization of this Board, all industries are hereby directed to install a Display Board of minimum size 5'x4', near the main entrance gate.

The format of the display board is given below:

Name and Address of the Unit : M/s.	
Consent/Authorization	
Consent to Establish (CTE)	No.: Date of Issue:
Consent to Operate (CTO)	No.: Date of validity:
Authorization under Hazardous & Other waste (Management & Transboundary Movement) Rules, 2016 (if applicable)	No.: Date of Issue: Date of validity:

Member Secretary

Memo No. PCBA/LGL-95/2021/Notification/01-A  
Copy to:

Dated Guwahati, the 11<sup>th</sup> Nov. 2021

1. The Commissioner & Secretary to the Govt. of Assam, Department of Environment & Forest, Dispur for kind information.
2. P.A. to the Chairman, PCBA for kind appraisal of the Hon'ble Chairman.
3. The All Regional Heads, PCBA for information & necessary action.
4. M/S APS Advertising Pvt. Ltd, Guwahati-1. They are requested to publish the "NOTICE" in "The Assam Tribune" and "Dainandini Barta" on 12.11.2021.
5. Notice Board, Head Office / Website ([www.pcbaassam.org](http://www.pcbaassam.org)), PCBA.

*[Signature]*  
Member Secretary



## APPENDIX – B

### 1.66.0 STANDARDS AND GUIDELINES FOR CONTROL OF NOISE POLLUTION FROM STATIONARY DIESEL GENERATOR (DG) SETS.

#### (A) Noise standards for DG sets (15-500KVA)

The total sound power level (LW) of DG set should less than  $94 = 10 \log 10\text{KVA}$ , dB (A), at the manufacturing stage, whether KVA is the nominal power rating of a DG set.

This level should fall by 5dB (A) every five years, till 2007, i.e. in 2002 and then in 2007.

#### (B) Mandatory Acoustic enclosure/Acoustic treatment of room for stationary DG sets (5KVA and above):

Noise from the DG set should be controlled by providing an acoustic enclosure or by treating the room acoustically.

The acoustic enclosure/acoustic treatment of the room should be designed for minimum 25 dB (A) insertion Loss or for meeting the ambient noise standards, whichever is on the higher side (if the actual ambient noise is on the higher side, it may not be possible to check the performance of the acoustic enclosure/acoustic treatment. Under circumstances the performance may be checked for noise reduction up to actual ambient noise level, preferably, in the night time). The measurement for insertion Loss may be done at different points at 0.5 from the acoustic enclosure/room, and then averaged. (See the Schematic Diagram).

The DG set should also be provided with proper exhaust muffler with Insertion Loss of minimum 25 dB (A).

#### Guidelines for the manufacturers Users of DG sets 5KVA and above:

- ❑ The manufacture should offer to the user a standard acoustic enclosure of 25dB(A). Insertion Loss and also a suitable exhaust muffler with Insertion Loss of 25dB(A).
- ❑ The user should make efforts to bring down the noise levels due to the DG set, outside his premises, within the ambient noise requirements by proper siting and control measures.
- ❑ The manufacturer should furnish noise power levels of the unsalaried DG sets as per standards prescribed under (A).
- ❑ The total sound power level of a DG set, at the user's end, shall be within 2dB(A) of the total sound power level of the DG set, at the manufacturing stage, as prescribed under (A).
- ❑ Installation of DG set must be strictly in compliance with the recommendation of the DG set manufacture.
- ❑ A proper routines and preventive maintenance procedure for the DG set manufacturer which would help prevent noise levels of the DG set from deteriorating with use.

### 2.44.0 NOISE (AMBIENT STANDARDS)

Area Code	Category of Area	Limit in dB(A) Leq.	
		Day time	Night time
A.	Industrial area	75	70
B.	Commercial area	65	55
C.	Residential area	55	45
D.	Silence Zone	50	40

**Note – 1 :** Day time is reckoned in between 6.00 A.M. and 9.00 P.M.

**Note – 2 :** Night time is reckoned in between 9.00P.M. and 6.00 A.M.

**Note – 3 :** Silence zone is defined as areas up to 100 meters around such premises as hospitals, educational institutions and courts. The silence zones are to be declared by the competent Authority.

**Note – 4 :** Mixed categories of areas should be declared as one of the four above mentioned categories by the competent Authority and the corresponding standard shall apply.

*Source: EPA, 1986  
[GSR 7, dated Dec.22, 1998]*



8

Source : EPA, Notification  
[GSR 1063 (E), dated Dec., 26, 1998]

**8.22.0 DIESEL GENERATOR SETS - STACK HEIGHT**

1. The minimum stack height to be provided with each generator set shall be worked out as per the following formula:  $H = h + 0.2 \sqrt{\text{KVA}}$ , where H = Total height of stack in meter

h = Height of the building in meters where generator set is installed.

KVA = Total generator capacity

Adequate fire fighting measures have to be provided by the occupier of the premises. Based on the above formula the minimum stack height to be provided with different range of generator sets may be categories as follows:

Range of Generator sets	Minimum Stack Height
50 KVA	Ht. of the building + 1.5 metre.
50 - 100 KVA	Ht. of the building + 2.0 metre.
100 - 150 KVA	Ht. of the building + 2.5 metre.
150 - 200 KVA	Ht. of the building + 3.0 metre.
200 - 250 KVA	Ht. of the building + 3.5 metre.
250 - 300 KVA	Ht. of the building + 3.5 metre.

Similarly for higher KVA rating a stack height can be worked out using the above formula.

Source : Evolved by CPCB  
[Emission Regulations Part-IV: COINDS/26 1986-87]

**4. A .32.0 Part - C**

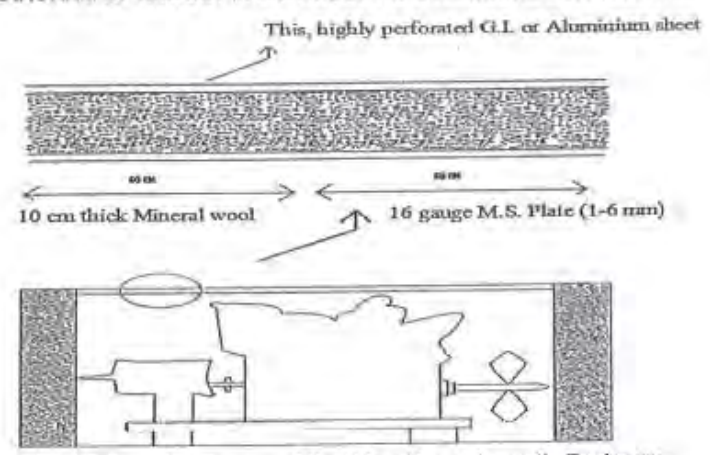
Sl. No. 1      Stack Gas : PM - 150  $\mu\text{g}/\text{Nm}^3$

**B. Ambient Air Standards:**

Residential Area	Industrial Area	Sensitive Area
SO <sub>2</sub> : 80* $\mu\text{g}/\text{m}^3$	120* $\mu\text{g}/\text{m}^3$	30* $\mu\text{g}/\text{m}^3$
NO <sub>2</sub> : 80* $\mu\text{g}/\text{m}^3$	120* $\mu\text{g}/\text{m}^3$	30* $\mu\text{g}/\text{m}^3$
CO : 2.0** $\mu\text{g}/\text{m}^3$	5.0** $\mu\text{g}/\text{m}^3$	1.0** $\mu\text{g}/\text{m}^3$

\*24 hourly; \*\* 8 hourly

**5. SCHEMATIC DIAGRAM OF D.G. SET IN AN ACOUSTIC ENCLOSURE No. Process/71/1998-99.**



**Fig. 4 Schematic Diagram of the DG set in an Acoustic Enclosure**

Air required for the ventilation and breathing of the engine will have to be provided by means of intake louvers and exhaust louvers (called parallel baffle mufflers) projecting out of the enclosure.

*Handwritten signature/initials*

## General Standards for discharge of environment Pollutants Part-A: Effluents

S. No.	Parameter	Standards			
		Inland surface water	public Sewers	Land for irrigation	Marine coastal areas
1	2	3			
		(a)	(b)	(c)	(d)
1	Color and Odor	5 to 25 Agreeable	-	5 to 25 Agreeable	5 to 25 Agreeable
2	Suspended Solids mg/l, Max.	100	600	200	(a) For process waste water-100 (b) For Cooling water effluent 10 percent above total suspended matter of influent
3	Particular size of suspended solids	Shall pass 850 micron 15 Sieve	-	-	(a) Floatable solids, max. 3 mm (b) Settleable solids, max 850 microns
4*	---	-	-	---	-
5	pH value	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0
6	Temperature	Shall not exceed 5°C above the receiving water temperature	-	-	Shall not exceed 5°C above the receiving water temperature
7	Oil and grease mg/L Max	10	20	10	20
8	Total residual chlorine mg/l, Max	1.0	-	-	1.0
9	Ammonical nitrogen (as N), mg/l max.	50	50	-	50
10	Total Kjeldhal nitrogen (as NH <sub>3</sub> ) mg/l, Max	100	-	-	100
11	Free Ammonia (as NH <sub>3</sub> ) mg/l, Max	5.0	-	-	5.0
12	Biochemical oxygen demand (5 days at 20°C), mg/l Max	30	350	100	100
13	Chemical Oxygen demand, mg/l Max	250	-	-	250
14	Arsenic (as As) mg/l Max	0.2	0.2	0.2	0.2
15	Mercury (As Hg), mg/l max)	0.01	0.01	-	0.01
16	Lead (as Pb) mg/L, Max	0.1	1.0	-	2.0
17	Cadmium (as Cd) mg/l, Max	2.0	1.0	-	2.0
18	Hexavalent chromium, (as Cr) mg/l, Max	0.1	2.0	-	1.0
19	Total chromium (as Cr) mg/l, Max	2.0	2.0	-	2.0



20	Copper (as Cu) g/l, Max	3.0	3.0	-	3.0
21	Zinc (as Zn) mg/l, Max	5.0	15	-	15
22	Selenium (as Se) mg/l, Max	0.05	0.05	-	0.05
23	Nickel (as Ni) mg/l, Max	3.0	3.0	-	5.0
24*	-	-	-	-	-
25*	-	-	-	-	-
26	-	-	-	-	-
27	Cyanide (as CN), mg/l Max	0.2	2.0	0.2	0.2
28*	-	-	-	-	-
29	Fluoride (as F) mg/l Max	2.0	15	-	15
30	Dissolved Phosphates (as p), mg/l Max	5.0	-	-	-
31*	-	-	-	-	-
32	Sulphide (as S) mg/l Max	2.0	-	-	5.0
33	Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH) mg/l Max	1.0	5.0	-	5.0
34	Radioactive materials:				
	(a) Alpha emitter micro curie/ml	10 <sup>-7</sup>	10 <sup>-7</sup>	10 <sup>-8</sup>	10 <sup>-7</sup>
	(b) Beta emitter micro curie/ml	10 <sup>-6</sup>	10 <sup>-6</sup>	10 <sup>-7</sup>	10 <sup>-6</sup>
35	Bio-assay test	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent
36	Manganese (as Mn)	2 mg/l	2 mg/l	-	2 mg/l
37	Iron (as Fe)	3 mg/l	3 mg/l	-	3 mg/l
38	Vanadium (as V)	0.2 mg/l	0.2 mg/l	-	0.2 mg/l
39	Nitrate Nitrogen	10 mg/l	-	-	20 mg/l
40	-	-	-	-	-

\* Omitted by Rule 2 (d) (i) of the Environment (Protection) Third Amendment Rules, 1993 vide Notification No. G.S.R 801 (E) dated 31.12.1993

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## Annexure 2: Renewal of Labour License CP2

STOP CHILD LABOUR

 <b>FORM-VI</b> [See Rule-25(1)]	
<b>Office of the Commissionerate of Labour</b> <b>LICENSE UNDER CONTRACT LABOUR (REGULATION &amp; ABOLITION) ACT, 1970</b>	
<b>UBIN :</b>	299/566476/AAACL0140P/11/2022
<b>UAIN :</b>	LCFORMIVCL/2022/22183
<b>License No. :</b>	CLL/2022/22183
<b>Date of Issue :</b>	06/12/2022
<p>1. Licence is hereby granted to <b>LARSEN AND TOUBRO LIMITED</b> under Section 12(1) of the Contract Labour (Regulation and Abolition) Act, 1970 subject to the conditions specified in the Annexure.</p> <p>2. The Licence is for doing the work of <b>CIVIL, HYDRO, MECHANICAL AND ELECTRICAL WORKS FOR CONSTRUCTION OF 120 MW LOWER KOPILI HEP</b>, in the Establishment of <b>CHIEF GENERAL MANAGER PP AND I APGCL, C/O. ASSAM POWER GENERATION CORPORATION LIMITED</b> at <b>PALTAN BAZAR, GUWAHATI, KAMRUP METRO - 781001, ASSAM</b>.</p> <p>3. The Licence shall remain in force till <b>09/12/2023</b>.</p> <p>4. Maximum No of contract labour proposed to be employed in the establishment on any date : <b>1000 nos.</b></p>	
	
<b>KIMTING SINGSON</b> Digitally signed by KIMTING SINGSON Date: 2022.12.06 16:26:49 +05'30' Signature of the Licensing Officer	

STOP CHILD LABOUR

Reference No: LCFORMIVCL/2022/22183 To View: <https://eodb.assam.gov.in/t/14Aw/986A429D> Token No: 986A429D



## Annexure 3 Copy of the insurance of CP3

THE NEW INDIA ASSURANCE CO. LTD.  
(Government of India Undertaking)



### MARINE-CUM-ERECTION INSURANCE POLICY

Insured's Name	: ANDRITZ HYDRO PRIVATE LIMITED		
<b>Insured's Details</b>		<b>Issuing Office Details</b>	
Customer ID	: PO53331999	Office Code	: BRANCH OFFICE(451404) (451404)
Address	: 04 BHAWANI MOHANI HOMES BHWANI NAGAR PIPLANI BHEL  Bhopal ,MADHYA PRADESH, 462001	Address	: 217, M P NAGAR, 1ST FLOOR, ZONE-I, BEHIND JYOTI CINEMA COMPLEX BHOPAL,462011
Phone No	: XXXXXX3811	Phone No	: 07554203297 / 07554278280
E-mail/Fax	: /	E-mail/Fax	: nia.451404@newindia.co.in/07554203297
PAN No	:	S.Tax Regn. No	: AAACN4165CST178
GSTIN/UIN	: NA/NA	GSTIN	: 23AAACN4165C1ZZ
		SAC	: 997137 (Other property insurance services)

<b>Policy Details</b>			
Policy Number	: 45140444220800000004	<b>Business Source Code</b>	
Period of Insurance	: 22/08/2022 02:44:16 PM to 13/03/2025 11:59:59 PM	Dev.Off. level/Broker/Corp. Agent	: NA / NA
Date of Proposal	: 22-Aug-22	Agent/Bancassurance	:
Prev. Policy no.	:	Phone No	: NA / NA
Client Type	:	E-mail/Fax	:

Premium:	GST:	Stamp Duty	Total ( ` )	Receipt No. & Date:
10056882	1810238	0	11867120	4514048122000000117 6 - 25/08/22

Limit : By Rail/ Road ` : 100000000	PERIOD: The cover commences from the date of the first consignment of despatch from the manufacturer's/ supplier's warehouse either in India or abroad and remains in force for the period as mentioned above (the said period starting from the arrival of the first consignment or despatch at the site of erection) or the completion of erection including test period not exceeding----- weeks, whichever is earlier.
Limit : By Air / Sea ` : 100000000 any one vessel	
Limit as per Location Clause ` : 200000000	
LOCATION CLAUSE : In case of loss and/ or damage before shipment after discharge to the Insured interest in any one locality the underwriter notwithstanding anything to the contrary contained in this contract, shall not be liable in respect of any one accident or series of accidents arising, out of the same event for more than its proportion of an amount upto, but not exceeding, the sum of _____. The conveyance of the insured interest upon interior or by land transit shall not be deemed to be shipment within the meaning of this clause.	Special Conditions: 1% of shipment value subject to minimum to ` 25,000 for each and every claim and minimum ` 1 Lakh for ODC cargo
Excess for Cargo: 25000	PREMIUM: As per Premium Endorsement hereunder:

<b>Voyage</b>		
Sl. No.	From	To
1	From Any-Where In India	Project Site at Assam India

CLAIMS PAYABLE: On the basis of the actual loss sustained at the time of claim. NOTICE of loss or damage to be given and survey arranged and a certificate obtained from the Company's Agent at port of discharge or in case where the Company has no agent, by a Certificate from Lloyd's Agents, without which Certificates no claim for loss will be paid. In the event of loss or damage which may result in claim under this Insurance, immediate notice must be given to policy issuing Office/ any office nearest to the destination who are the Company's agent at port of discharge, in order they may examine the goods and issue a survey report. Where the Company has no agent, the notice must be given to W. K. Webster's local agent.

Digitally signed  
by SRINIVASAN  
VAIDYSARAN  
Date: 2022.08.25  
17:12:09 IST

Policy No. : 45140444220800000004 Document generated by 18987 at 25/08/2022 17:12:09 Hours.

Regd. & Head Office: New India Assurance Bldg., 87 M.G. Road, Fort, Mumbai - 400 001. TOLL FREE No. 1 800 209 1415.



Closing Particulars - All shipments are to be declared to the Company immediately upon receipt of shipping documents and stamped certificates to be obtained from the Company's Office at the issuing Office.

\* Premium subject to adjustment on completion of the Project

Sl. No.	Type of Project/Description of Project
1	082603 - Hydro Power Plants - Above 100 MW and up to 150 MW / 1) Procurement of plant Design & Engineering , Manufacturing , Supply, Erection, Testing, and Commissioning of Electromechanical Equipment for 120 MW Lower Kopili Hydroelectric Project , Assam India.15 DAYS WAITING FROM 22.08.22 FOR AOG PERILS

Site of Erection	Risk Address : 1 non liable period till 22.08.2022,kopilli,AS002,GUWAHATI, AS,ASSAM, INDIA, 781015
------------------	--

Principal(s)/ Contractor/ sub-contractor Details:		
Sl. No.	Name	Address
1	ANDRITZHYDRO PRIVATE LTD	D-17 MPAKVN INDUSTRIAL AREA
2	MANY SUB CONTRACTORS	A.BAD
3	ASSAM POWER GENERATION CORPORATION LIMITED	3RD FLOOR, BIJULEE BHAWAN, PALTAN BAZAR, GUWAHATI, ASSAM

Sl. No.	Period of Insurance
1.	Period of Insurance From : 22/08/2022 02:44:16 PM To : 13/03/2025 11:59:59 PM (including 1 months Testing ) plus 12 months maintenance period

**Section I - Material Damage :**

**1. Plant & Equipments to be erected (New Machine)**

**a ) Landed Cost of Imported machinery as at Factory site at exchange Rate : NA (sub divided as)**

Sl. No.	Invoice Cost	Freight insurance, handling, Clearing and Forwarding charges up to Factory site	Custom duty
1	0	0	0

**b ) On machinery fabricated or manufactured in India (sub divided as)**

Sl. No.	Invoice Cost including Insurance, handling, clearing and transport up to Factory site	Excise Duty
1	3106650124	0

**Second Hand Machinery(to be Erected)**

**i) Landed cost of Imported machinery as at Factory site at exchange rate : «SHEXchange\_Rate\_ER\_ME» (sub divided as)**

Sl. No.	Invoice Cost	Freight insurance, handling, Clearing and Forwarding charges up to Factory site	Custom duty
1	NA	NA	NA

**ii ) On machinery fabricated or manufactured in India (sub divided as)**

Sl. No.	Invoice Cost including Insurance, handling, clearing and transport up to Factory site
1	0

Sl. No.	c ) On Cost of erection including salaries of all Foreign and Indian Technicians and Wages of all skilled and unskilled labour employed at Factory Site during erection :
1	420670000

**d ) On Building in which the above Plant and Machinery is to be erected**

Sl. No.	a) Permanent Civil Engineering Works	b) Temporary Works	Completely erected value
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# Environmental Monitoring Report

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## **PUBLIC**

Semestral Report: July 2022 – December 2022  
February 2024

## India: Assam Power Sector Investment Program - Tranche 3

Part 2 of 3: Annexure 3 (continued) and Annexures 4 - 14

Prepared by Assam Power Generation Corporation Limited (APGCL) for the Asian Development Bank (ADB).

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**Asian Development Bank**





Sl. No.	a) Permanent Civil Engineering Works	b) Temporary Works	Completely erected value
1	0	0	3527320124

2. Contractors Plant and Machinery (Memo 4) as per list enclosed								
Item No.	Quantity	Description of Items (Type, Manufacture, Capacity)	Year of Manufacture	Sum Insured (In `)	Risk Code	Excess due to AOG Perils	Excess due to Other than AOG Perils	Excess for Boom Section
1	0	NA	2007	2500000	PROJECT-Project	0	0	20% of claim amount subject to minimum of 10/-

3. Add on Covers		
1. Owners Surrounding Property		
Sl. No.	Limit of Indemnity	Excess
1	Upto 10% of SI With Flexa	0

2. Additional Custom Duty		
Sl. No.	Limit of Indemnity	Excess
1	10000000	0

3. Removal of Debris per occurrence		
Sl. No.	Limit of Indemnity	Excess
1	50000000	0

4. Professional Fees		
Sl. No.	Limit of Indemnity	Excess
1	8813000	0

5. Expediting Cost including Air Freight & Express Freight		
Sl. No.	Limit of Indemnity	Excess
1	Up to 30% of net claim amount	0

6. Offsite Storage/ Fabrication		
Sl. No.	Limit of Indemnity	Excess
1	176366006	0

7. on increased replacement value (including duty on such additional replacement value) which may have to be paid on replacement of imported Plant and Machinery as per 1(a) above		
Sl. No.	Limit of Indemnity	Excess
1	0	0

8. on increased replacement value which may have to be paid on replacement of indigenous Plant and Machinery as per 1(b) above		
Sl. No.	Limit of Indemnity	Excess
1	0	0

on increased replacement value which may have to be paid on replacement of Plant and Machinery as per 1(d) a) above		
Sl. No.	Limit of Indemnity	Excess
1	0	0

9. Dismantling cover for Used /Second Hand Machinery		
--	--	--



Sl. No.	Limit of Indemnity	Excess
1	0	0

10. Automatic Reinstatement clause

Sl. No.	Limit of Indemnity	Excess
1	Up to 10% of SI	0

11. Loss minimisation expenses

Sl. No.	Limit of Indemnity	Excess
1	10000000	0

12. Cover for valuable documents

Sl. No.	Limit of Indemnity	Excess
1	5000000	0

13. Continuity of cover during operational phase for unit / plant tested but awaiting integral testing (along with other units / plants)

Sl. No.	Limit of Indemnity	Excess
1	0	0

14. Design Defect Cover

Sl. No.	Limit of Indemnity	Excess
1	DE-4 of Munich Re	5 times AOG excess

15. Waiver of Subrogation clause

Sl. No.	Limit of Indemnity	Excess
1	YES	0

Section II - Third Party Liability :

Limit of Indemnity

Sl. No.	For any one accident	For all accidents during the period	Any One Person
1	100000000	100000000	100000000

EXCESS for Section I and II :

Sl. No.	For Storage & Erection Claims	For Testing Period Claims/ maintenance period claims	For Acts of God Claims (as per Memo 6)/Maintenance Cover ( to be removed)	For Fire / Explosion Claims	Terrorism
1	5 % of the claim amount subject to a minimum of ` 100000	5 % of the claim amount subject to a minimum of ` 400000	10 % of the claim amount subject to a minimum of testing period excess & a maximum of ` 5 Crores	10% of the claim amount subject to a minimum of testing period excess & a maximum of ` 2 Crores	0.5 % of Total Sum Insured subject to minimum of 1,00,000/-for each and every claim

Excesses For Specific AddOn Covers :

Sl. No.	Description Of Cover	Excess
---------	----------------------	--------

Terrorism Covered	Terrorism Premium
YES	1779074

Deductibles Opted for Terrorism Pool	: 5% of the claim amount for each and every claim subject to Minimum of ` 1,00,000 and Maximum of ` 2,50,00,000
--------------------------------------	---

Risk Serial No.	STFI Cover
-----------------	------------





Risk Serial No.	STFI Cover
2	YES
Risk Serial No.	Earth Quake Cover
1	YES

Installment Details		
Installment Number	Installment Date	Installment Amount ( ` )
1	22/08/2022	9767816
2	22/08/2022	2099304

The policy is subject to endorsements, warranties attached.

ENDORSEMENTS ATTACHED TO & FORMING PART OF THE POLICY		
Sl. No.	Endorsement Number	Endorsement Title
	ENG 002	Extension of terrorism damage
	SLEC	Section Limitation and Exclusion Clause
Risk Code	Excess	
NA	NA	

In witness whereof the undersigned being duly authorized by the Insurers and on behalf of the Insurers has (have) hereunder set his (their) hand(s) on this 25th day of August, 2022

For and on behalf of  
The New India Assurance Company  
Limited

Duly Constituted Attorney(s)

Premium and GST Details

	Rate of Tax	Amount in INR
Premium		` 10056882
SGST	9	905119
CGST	9	905119
IGST	0	0

In witness whereof the undersigned being duly authorized by the Insurers and on behalf of the Insurers has (have) hereunder set his (their) hand(s) on this 25th day of August, 2022

For and on behalf of  
The New India Assurance Company  
Limited

Duly Constituted Attorney(s)

**THE NEW INDIA ASSURANCE CO. LTD.**  
(Government of India Undertaking)



We hereby declare that though our aggregate turnover in any preceding financial year from 2017-18 onwards is more than the aggregate turnover notified under sub-rule (4) of rule 48, we are not required to prepare an invoice in terms of the provisions of the said sub-rule.

Tax Invoice No : 45140422P0002573

<b>IRDA Registration Number: 190</b> <b>NIA PAN NUMBER: AAACN4165C</b>
---

**THIS ANNEXURE IS IN CONJUNCTION WITH MCE POLICY NO 45140444220800000004  
MARINE CUM ERECTION POLICY INSURED M/S ANDRITZ HYDRO PRIVATE LIMITED**

S.No	Insured Interest Code	Sum Insured (in Rs)	Premium (in Rs)	Coverages	Description
1	CARGO	3376793613.00	515849.00	ITC-A,WAR&SRCC	ALL THE DETAIL OF EXCESS, COVERAGES EXTENSION AS PER SCHEDULE ATTACHED
2	PROJECT	3527320124.00	9541033.00	ARC,CPM,MD, TERR,AC,TPL	Hydro Power Plants - Above 100 MW and up to 150 MW,Nature of Project :CLR,Description of Project - Description1 :Procurement of plant Design & Engineering , Manufacturing , Supply, Erection, Testing, and Commissioning of Electromechanical Equipment for 120 MW Lower Kopili Hydroelectric Project , Assam India.15 DAYS WAITING FROM 22.08.22 FOR AOG PERILS

**Coverage, terms and conditions and exclusion :**

Insured: Andritz Hydro Pvt Ltd & Assam Power Generation Corporation Limited

Type of Policy: MARINE OPEN POLICY

Description of the Cargo: Material related to Construction Procurement of plant Design & Engineering , Manufacturing , Supply, Erection, Testing, and Commissioning of Electromechanical

Equipment for 120 MW Lower Kopili Hydroelectric Project , Assam India

Nature of packing in detail: Standard & Customary, closed

Mode of Transport/Conveyance:	Rail/Road
Limit Per sending ( rail/road/ ): INR 10 Cr / ODC cargo PBL - INR 15 CR	Limit Per location; INR 20 Crore
Voyage From and to:	ANY WHERE IN INDIA to ANY WHERE IN INDIA only(related to project work)
Sum Insured:	337,67,93,613 (INR 337.67 CR)
Basis of valuation:	Invoice + 10% + Duties where applicable
premium rate -	0.0125% (incl. SRCC) / 0.05%- For ODC consignments only
PER BOTTOM LIMIT	10 CRORE(NON ODC CARGO), 40 CRORE (ODC CARGO)
coverage	- ITC A 2010 'A' and SRCC clause
Removal Of Debris Charges	As Per Actual or Maximum 1 Lac (AOA & AOY: 1 Lac)
Concealed Damage Clause	15 days
Express Freight Clause	Covered -(AOA: AOY- 1 Lac)
Extension of Duration Clause	as per duration clause
Return Of Goods Clause Used/Second Hand Items/ Damaged Returns are covered under the policy for ITC B + SRCC + ND of entire consignment. BOV - Market Depreciated Value Coverage for Returns of Sound Cargo in Original Packing are covered against ITC A + SRCC, BOV: Invoice ValueUs	Agreed , for return sound cargo concealed damages excluded and market depreciated Value
P50:50 Clause	Covered
Accumulation Clause	Covered - up to PLL( per location limit)
Declaration Clause	Waived
ODC cargo need to be declared prior to inception of risk and all other declaration at the end of month  Claims will be settled at 90% in cases where recovery rights are prejudiced.	Agree



Missing Goods Clause	- 90 Days
Multi Transit Clause	subject to normal course of transit and duration clause.
Nominated Adjusters Clause	Need to be agreed prior inception of risk
Self Survey limit	upto 50,000
Sorting Charges	agreed up to INR 1 lakh in the event of admissible claim
Tail End Risk -	ITC A + SRCC
For imported Shipment Purchase on CIF basis, Where the risk is originating from any Indian Port, the Coverage will be as per ITC (B) + SRCC only. The Coverage shall be converted from ITC (B) to ITC (A) Subject to satisfactory pre-dispatch survey prior to	Agreed
Transshipment in ordinary course of Transit is held covered.	subject to normal course of transit and duration clause.
Waiver of Subrogation rights & Damage certificate upto INR 50,000 of Claims	Covered
Facilities of sorting and repacking are allowed at each stage	up to INR 1 lakh in the event of admissible claim
<p>Deductibles / Excess : 1% of shipment value subject to minimum to INR 25,000 for each and every claim and Rs. 1 Lakh for ODC cargo.</p> <p>Subject to;</p> <ul style="list-style-type: none"> <li>* Coverage is strictly as per INCOTERMS in sale contract</li> <li>* Sanction , limitation and exclusion clause</li> <li>* Subject to Institute Replacement Clause</li> <li>* Warrant properly treated and dried material used for packing.</li> <li>* Excluding electrical and mechanical derangement</li> <li>* Exclusion of damage due to rusting, denting and scratching</li> <li>* Warranted Pre inspection Survey of ODC cargo should be done at insured's expense before dispatch of cargo and all recommendations and report should submit to insurer and complied with before, during and after voyages.</li> <li>* Warranted Surveyor should ascertain lashing and packaging of cargo before commencement of journey.</li> <li>* Warranted surveyor should ascertain road/sea worthiness of cargo carrying vehicle/vessel.</li> <li>* The outer extreme ends of the over-dimensional cargo to be put with enough electrical light signals and both parking lights of the carrying vehicle and electrical light signals of the cargo to be</li> </ul>	



switched on in the night while the carrying vehicle remains stationary.

\* Special precaution must be taken during rainy season and cargo must be adequately protected by tarpaulins.

\* The supervising Surveyor to suggest to the driver of the subject vehicle about the road map of the contemplated transit, with special emphasis on the overhead bridges / road curves.

\* The subject vehicle's speed should be maintained as per the directions / advises of the supervising Surveyor. The load carried should be within the approved carrying capacity of the subject vehicle

For ODC cargo following conditions to be incorporated

\* Full condition warranty survey i.e. loading, unloading, approval of conveyance ,lashing survey and route survey at all points by Lloyds/IRDAI approved surveyor at insured's cost. All recommendation of surveyor for safe transit of material to be complied by the Insured for ODC cargo.

- Common Carrier to be a reputed transporter sound financial. OD Cargo to be properly loaded and sufficiently secured.
- Load carried should be within the approved carrying capacity of the subject vehicle.
- Vehicle speed should be maintained as per the directions/advice of the supervising person.
- Supervising person to suggest to driver about the road map of the contemplated transit, with special emphasis on the overhead bridges/road curves and electrical wires/high-tension lines etc.
- Outer extreme ends of the OD Cargo to be put with enough electrical light signals and both parking lights of the carrying vehicles and electrical light signals of the cargo to be switched on in the night while the carrying vehicle remains stationary.
- Warranted that goods are transported in closed wagons/trucks or trucks to be covered with tarpaulin or any other waterproof material.

**THIS ANNEXURE IS IN CONJUNCTION WITH MCE POLICY NO 45140444220800000004**

**PAGE**

**MARINE CUM ERECTION POLICY INSURED M/S ANDRITZ HYDRO PRIVATE LIMITED**

**Add On Covers :**

	Agreed limits
STFI	Full SI

Earthquake	Full SI
Terrorism	project SI + half the escalated value
Owners' Surrounding Property WITH FLEXA COVER	10% OF Sum insured
Automatic Reinstatement Clause up to	10% OF Sum insured
Loss Minimizations Expenses	5% of claim amount subject to max of INR 1 crore AOA and in aggregate necessarily and reasonably incurred
Professional Fees	5% of claim amount subject to max of INR 1 crore AOA and in aggregate
Removal of Debris covered up to	INR 5 crores AOA and in aggregate excl foreign debris
Dewatering & foreign Debris Cover	INR 50 lakh AOA and in aggregate within sub limits of ROD cover
Loss Of Document	INR 50 lakh AOA and in aggregate
Cover for Offsite Storage	offsite storage covered upto 5% of project SI, AOA and in aggregate as per MR 013 in non flood prone areas subject to 24*7 watch and guard facility
TPL with Cross Liability INCLUDING MAINTAINCE PERIOD	INR 5 crores AOA, 10 crores in aggregate
Escalation	25% of project SI
Additional Customs Duty	INR 1 crore AOA and in aggregate
Extended Maintenance Cover	12 MONTHS
Temporary Building,shades,sites,support structure,Camps & Stores	INR 2.50 crores subject to included in TSI
Cover for Contractor Plant and Machinery	25 lacs
Continuity Cover during operaitonal phase	Agreed for 6 months as per MR 116
Design Defect Cover	DE -4 for machinery as per MunRe
50/50 Clause	Covered subject to submission of marine policy at placement of risk

72 hrs. Clause	Agreed for AOG perils
Expediting Cost including Air Freight & Express Freight	30% of net Claim Amount
Amendment in fire fighting wordings	AGREED
Nominated surveyor clause	Agreed for claims upto INR 2 crores. Panel to be agreed
Waiver of Contribution	Agreed between principle and main contractor
Waiver of Subrogation	Agreed between principle and main contractor
On account payment Clause	As per surveyor recommendation
Designation of Property Clause	AGREED
Custody & Control Clause	WITH IN ABOVE SUM INSURED
Primary insurance clause	Primary and contributory
Loss payee clause	Agreed
Multiple insured clause	Agreed
Local Authority clause	Agreed
Pro Rata Extension	Agreed if ICR is less than 60% and policy period do not exceed 84 months, subject to treaty revision

#### EXCESS :

<p><b>EXCESS</b></p> <p><b>Deductible**</b></p> <p>Normal claims :10% of the claim amount subject to minimum of Rs 22.5 Lacs.</p> <p>Testing Claims : 10% of the claim amount subject to minimum of Rs 15 Lacs.</p> <p>AOG/Fire/major perils/collapse/maintenance period/offsite storage Claims : 20% of the claim amount subject to minimum of Rs 75Lacs.</p> <p>Design Defect : 5 times of AOG excess.</p> <p>Air Freight-5 % of the Air Freight incurred per claim, in addition to policy Excess.</p>
--



\*\*Deductible for hydro power projects have been revised by New India w.e.f from 15.08.2022 viz. Normal Perils : INR 22.50 lakh and for AOG perils INR 75 lakh.

No work started on the site before 22-08-2022

Terms Conditions and Warranties:

ENGG/END-102: Endorsements for Fire/Explosion claims and Fire Fighting -

ENGG/END-103: ENDORSEMENT REGARDING CROSS LIABILITY COVER -

ENGG/END-104: ENDORSEMENT REGARDING ESCALATION -

ENGG/END-105: ENDORSEMENT REGARDING AIR FREIGHT -

ENGG/END-106: ENDORSEMENT REGARDING ADDITIONAL CUSTOMS DUTY

ENGG/END-109: HYDROCARBON ENDORSEMENT FOR TESTING & COMMISSIONING

ENGG/END-110: ENDORSEMENT CONCERNING STORAGE

ENGG/END-112: ENDORSEMENT REGARDING DAMAGE TO CROPS, FORESTS ETC.

ENGG/END-113: MAINTENANCE VISITS AND EXTENDED MAINTENANCE COVER -

ENGG/END-114: WARRANTY CONCERNING UNDERGROUND CABLES AND PIPES -

ENGG/END-115: SPECIAL CONDITIONS FOR OPEN TRENCHES DURING LAYING OF PIPELINES DUCTS AND CABLES

ENGG/END-116: COVER OF LEAK SEARCH COSTS WHEN LAYING PIPELINES

MR 100 Testing-of-machinery-and-installations

MR 104 Special conditions concerning the construction of dams and water reservoirs

MR 109 Construction Material

MR 110-Safety-measures-with-respect-to-precipitation-flood-and-inundation

MR 111-Removal-of-debris-from-landslides

MR 112-Special conditions concerning fire-fighting facilities and fire safety on construction sites

MR 114- Serial losses

MR 116- Put into Service

MR 008- Warranty concerning structures in earthquake zones

EPI 46 Ground Water Pumping

EPI 47 Underground Construction

Contract Work Schedule

LR 003 : 72 hours clause

POLITICAL RISKS EXCLUSION ENDORSEMENT

CYBER RISK EXCLUSION CLAUSE - NMA 2915

Electronic Data Processing Media Valuation

INDUSTRIES, SEEPAGE, POLLUTION AND CONTAMINATION RISK - NMA 1685

INSTITUTE RADIOACTIVE CONTAMINATION, CHEMICAL, BIOLOGICAL,  
BIOCHEMICAL AND ELECTROMAGNETIC WEAPONS EXCLUSION CLAUSE CL.370  
10.11.2003

Sanction Limitation and Exclusion Clause

Communicable Diseases Exclusion Clause

POLITICAL RISKS EXCLUSION ENDORSEMENT

CYBER RISK EXCLUSION CLAUSE - NMA 2915

Electronic Data Processing Media Valuation

INDUSTRIES, SEEPAGE, POLLUTION AND CONTAMINATION RISK - NMA 1685

**SR.BRANCH MANAGER  
THE NEW INDIA ASSURANCE CO. LTD  
MP NAGAR BRANCH BHOPAL.**



**Annexure 4:** Insurance of Package 1



## Policy Schedule



### Digit Employees Compensation Insurance Policy

UIN: IRDAN158RP0020V01201920

**Go Digit General Insurance Ltd**

Validate your Policy Copy



## Insured & Policy Details

Insured Details		Policy Details			
Name	MS BVG India Limited	Policy Number	D094467557		
Address	Midas Touch, 4th Floor, Rajiv Gandhi Infotech Park, Phase 1, Hinjawadi, Pune, 411057	Receipt Number		Policy Issue Date	20-Feb-2023
GST State Code	27	Policy Period	From	20-Feb-2023	00:00:01
City / Location	Pune		To	19-Feb-2024	23:59:59
Contact No	+917002886683	Partner Code and Name	1000090 Salasar Services Insurance Brokers Private Limited		
Email ID	deebec1apgcl@gmail.com	Partner Contact and Email ID	8336878521 opsretail@salasarservices.com		
GSTIN Number	27AACCB0943N1ZK	Address of Insured Premises / Location covered	Lower Kopili Hydroelectric Project , Longku, Dima Hasao, Assam North Cachar Hills 788832		
Policy Form	Table A				

## Coverage Details

Work Description	No. of Employees	Estimated Total wages/salary	Classification No.
Engineering, Procurement, construction of Building	3	540000	157A
Engineering, Procurement, construction of Building	2	384000	157A
Engineering, Procurement, construction of Building	1	360000	157A
Engineering, Procurement, construction of Building	2	600000	157A
Engineering, Procurement, construction of Building	1	300000	157A
Engineering, Procurement, construction of Building	1	300000	157A
Engineering, Procurement, construction of Building	1	300000	157A
Engineering, Procurement, construction of Building	1	300000	157A
Engineering, Procurement, construction of Building	1	300000	157A
Engineering, Procurement, construction of Building	1	300000	157A
Engineering, Procurement, construction of Building	1	300000	157A
Engineering, Procurement, construction of Building	12	2160000	157A
Engineering, Procurement, construction of Building	8	2016000	157A
Total	35	8160000	
<b>Scope of Cover:</b> 1. Coverage as per Employee's Compensation Act, 1923 and subsequent amendments thereof prior to the date of issue of this Policy 2. Liability under the Fatal Accidents Act & Common Law			

## Endorsement Details

	Opted/ Not-Opted	Limit	Aggregate Limit
Medical Expenses Cover	Opted	Each employee INR 100000	For all accidents
Occupational Disease Cover	Not-Opted	NA	NA
Coverage for Contractors and/or SubContractors Workers/ Employees	Opted	The amount of liability incurred by the Insured as per Employee's Compensation Act, 1923 and subsequent amendments.	

## Special Terms and Conditions

- Any change in "location" or "nature of employment", if any during the policy period should be informed to the insurer mandatorily and the same shall be covered at the discretion of the Insurer. Where additional premium is required the same shall be charged.
- Occupational diseases shall only mean diseases listed in Part "C" of Schedule III to W.C. Amendment Bill 1989.
- Warranted that attendance and wage register is maintained at the place of employment by the Insured as per statutory requirements/compliance and to be submitted when required by insurer.
- Warranted that at any point in time the total No. of workers on the site Should not exceed No. of employees mentioned in the policy.
- Warranted that employees working at a height, especially exceeding 9 meters should be harnessed using adequate and well maintained fall arrest equipment with personal protective equipment, including harness, ropes, safety helmets, gloves, etc.
- Exclusion: Any work involving blasting, tunnelling, work on high tension live wires, off shore work, underground/ under water work, subaqueous work or any related services in connection therewith.
- Exclusion: Workers predominantly engaged in wrecking or demolition and/or Standalone demolition only Projects and/or collection or removal of scrap metal and any related activities including Loading and unloading. However, demolition in conjunction with re-construction/construction/alteration will be covered.
- Exclusion: Workers involved in maintenance of towers, steeples, bridges, Dams, chimney shafts and excavation > 3mts unless specifically agreed and mentioned on this schedule.
- Exclusion: Any interest and/or penalty imposed on the insured on account of his /their failures to comply with the requirements laid down under the Employee's Compensation ACT, 1923.
- Work Description-
- Project Manager-30,000-1
- Building works Engineer-25,000-2
- Quality assurance/quality control engineer-25,000-1
- HSE Engineer-25,000-1
- Planning/ QSS Engineer-25,000-1
- Surveyor-25,000-1
- Electrical Engineer-25,000-1
- Mechanical Engineer-25,000-1
- Design Engineer (Buildings)-25,000-1
- Unskilled Labours-15,000-12
- Skilled Labourers-21,000-8
- Driver-15,000-3
- Site Supervisor-16,000-2

## Premium and Payment Details

Total Net Premium	27307.56	
CGST rate and amount		0.00
SGST/UTGST rate and Amount		
IGST rate and Amount	18%	4915.36
Final Premium	32222.92	

## Endorsement

Invoice Number	Invoice Date	Net Premium	Igst	Cgst	Sgst	Utgst	Cess	Gross Premium
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## Annexure 5: Biodiversity Management Committee



### ASSAM POWER GENERATION CORPORATION LIMITED

Registered Office: Bijulee Bhawan, 3<sup>rd</sup> floor, Paltanbazar, Guwahati-781 001, Assam

**Mridul saikia**  
Chief General Manager (PP&I)  
Project Director (PMU)  
Email: mridul.saikia@apgcl.org

No: APGCL/LKHEP/PD/2022-23/81/02

Dated: 12.10.2022

#### OFFICE ORDER

A Biodiversity Management Committee is hereby constituted for Lower Kopili Hydro Electric Project for effective implementation, monitoring and evaluation of the Biodiversity Conservation and Wildlife Management Plan with the following members:

1. Project Director (PMU), APGCL- **Chairman**
2. GM, LKHEP, APGCL- **Convenor**
3. DGM (Civil), LKHEP, Longku, APGCL- **Member**
4. DGM (PP&I), APGCL HQ – **Member**
5. AGM, F&A, APGCL HQ- **Member**
6. Environment Expert, APGCL- **Member**
7. Representative from Department of Environment & Forest, GoA- **Member**
8. Chief Conservator of Forest, Dima Hasao- **Member**
9. DFO, West Karbi Anglong- **Member**
10. Representative from Assam Biodiversity Board- **Member**

The committee will look after the demarcated conservation areas, monitor and enforce regulatory provisions and ensure that the structure and functions of the natural ecosystems in the area are not changed or subjected to any threat. The Committee would also propose other approaches for the biodiversity conservation plan, whenever deemed necessary including the proposed measures for conservation of the endangered and critically endangered species of the area.

Memo No: APGCL/LKHEP/PD/2022-23/81/02(a)

Copy to:

- 1) The OSD to the Chairman, APGCL - for kind information of Hon'ble Chairman, APGCL
- 2) The OSD to the MD, APGCL- for kind information of MD, APGCL
- 3) Officers concerned.
- 4) Relevant file.

Project Director (PMU)

APGCL

Dated: 12.10.2022

Project Director (PMU)

APGCL



## Annexure 6 : Biodiversity Management Committee



### Minutes of the 1<sup>st</sup> Biodiversity Management Committee Meeting held on 21.12.2022 at 11.30 am at APGCL Bijulee Bhawan, Guwahati

Following members were present.

Sl no	Name	
1	Mr Mridul Saikia, Project Director, APGCL	Chairman
2	Mr Dilip Das, General Manager, LKHEP	Convenor
3	Mr Tuhin Langthasa, DFO, Dima Hasao West Division	Member
4	Mr Rajiv Engti, DFO Hamren Division	Member
5	Mr Jonardhan Rongpi, DGM (Civil), LKHEP	Member
6	Mr Akshay Talukder, DGM (PP&I)	Member
7	Mr Anjan Pathak, AM (F&A), APGCL	Member
8	Dr Deepak Baruah, Environment Expert, APGCL	Member
9	Dr Jayanta Das, Environment specialist	PMC

At the onset Mr Akshay Talukder, DGM (PP&I), APGCL welcomed the members and explained the purpose of the meeting and requested to extend support for effective implementation of the Biodiversity Plan. The plan will not only comply the stipulations of EC conditions and ADB's safeguards policy 2009 requirements but also support to achieve the sustainable development goals set by UN.

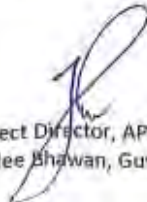
A brief presentation was given on this aspect by PMC and APGCL covering all the measures to be taken and highlighted the prioritization of the action as per the need in a phase manner. APGCL emphasised that both the measures and recommendations of MoEF&CC and ADB to be considered during implementation within the stipulated budget from the state share. Actions for the next 6 months (Jan to June 2023) were also explained.

During discussion DFO of Hamran suggested to incorporate human wildlife conflict mitigation measures in the six monthly implementation plan. DFO Dima Hasao requested for the EIA and EMP report for the project and APGCL agreed to provide the same.

PPT is shared to all the members so that they can provide their views and suggestions for effective Implementation of the Plan.

After getting the suggestions from the respective members within 28<sup>th</sup> December, 2022; final plan of operation for the next six months will be formulated and will be forwarded for necessary budgetary approval from competent authority.

The meeting ended with the vote of thanks.

  
Project Director, APGCL  
Bijulee Bhawan, Guwahati



**Annexure 7 :** Reminder letters given to Nodal Officer for implementation of CA, CAT Plan, etc.



**ASSAM POWER GENERATION CORPORATION LIMITED**

Registered Office: Bijulee Bhawan, 3<sup>rd</sup> floor, Paltanbazar, Guwahati-781 001, Assam

**Mridul saikia**

Project Director (PMU)

Chief General Manager (PP&I)

E-mail: [mridul.saikia@apgcl.org](mailto:mridul.saikia@apgcl.org)

No: APGCL/CGM(H)/W/2007/140/Pt-VI/ 52

Dated : 16/11/2022

To,

The Chief Conservator of Forests & Nodal Officer (FC Act)

O/o PCCF & HoFF, Assam

Aranya Bhawan, Punjabari,

Guwahati, Kamrup (Metropolitan)

Sub: Implementation of (Catchment Area Treatment) CAT Plan and Compensatory Afforestation (CA) Programme for Lower Kopili Hydro Electric Project , 120 MW.


- Ref:
1. MoEF&CC Forest Clearance Stage 2 vide No. 8-53/2018FC dated 4<sup>th</sup> December, 2020.
  2. Environment Clearance issued by MoEF&CC vide No. J-12011/26/2012-IA-I dated 4<sup>th</sup> September, 2019.
  3. APGCL Letter No. APGCL/CGM(H)/W/2007/140/Pt-VI/42 dated:10.01.2022.
  4. Your Office Letter No. FG.27/Nodal/Lower Kopili HE Project/ Part III dated: 29.03.2022.

Sir,

With reference to the subject cited above, it is for your kind information that the construction work of the Lower Kopili Hydro Electric Project- 120 MW has been already initiated. As such the implementation of Catchment Area Treatment Plan, Soil & Moisture Conservation Plan and Compensatory Afforestation programme in 8 (eight) patches of Reserved Forests declared by Govt. of Assam in Dima Hasao and Karbi Anglong districts shall be implemented in synchronized with the construction of the project as per requirement of MoEF&CC, Govt. of India, New Delhi. As per your earlier communication it was mentioned that the implementation of the above plan was included in the APO of 2022-23 in the SLEC meeting.

Therefore, you are requested kindly to apprise the status of implementation of the above mentioned plans to APGCL with a brief report so that APGCL can include it in the compliance report of EC and FC.

Yours faithfully,

  
Project Director (PMU)  
Assam Power Generation Corporation Ltd.,  
Bijulee Bhawan, Paltanbazar, Ghy-01.

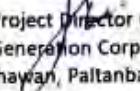
1st

Memo No: APGCL/CGM(H)/W/2007/140/Pt-VI/ 52(a)

Dated : 16/11/2022

Copy to:

1. The Principal Secretary, Department of Power, Govt. of Assam, Block-C, Ground Floor, Dispur, Guwahati-781006, Assam for favour of kind information.
2. The Principal Secretary, Department of Environment and Forest, Govt. of Assam Block-C, Ground Floor, Dispur, Guwahati-781006, Assam for favour of kind information.
3. The Managing Director, APGCL- for kind information.
4. The General Manager, LKHEP, APGCL, Longku- for information
5. Relevant File.

  
Project Director (PMU)  
Assam Power Generation Corporation Ltd.,  
Bijulee Bhawan, Paltanbazar, Ghy-01.

2nd

**Annexure 8 :** Meeting with the villagers on the Archaeological site mentioned in one gate and its relevance



Following Resolution has been resolved while discussions on the spot.

- 1) Recollections of old History of "Vothung Rongkes" by Sri - Biran Singh Engti, G.B of Longku-II village.
- 2) It was Resolved that, Sri - Rasing Teron G.Bs of Tortelungso and Sri - Haasing bey Motizos of Choto Longku village to performs Jungle Clearance nearby the Surrounding Vothung Rongkes site.
- 3) Sri - Bidya. Singh Engti, President of LKHEP will take incharge of Overall development toward the Site of Vothung- Rongkes.

A meeting was concluded around at 2:26 p.m.




A meeting was conducted by the "NIMRIM"  
Committee. ~~Present~~ Sharply at 11:00 A.M on 26<sup>th</sup> Aug  
2022 On the Spot of Vothung. Kongsar.

Following Person has been present on this  
day:-


Sr. No.	Name of the person	village	Designations	Sig.
1.	Sai-Mohan Sing phangcho	Longku-II	Executive member	
2.	Sri Chandra Engli	Jangphong Langso	Chhri	
3.	Sri Sang Engli	Choto Longku	Ph	
4.	Sri Bidyasing Engli	Borolangk.	26/8/22	
5.	Sri Ra Sing Teran G.B.	Tortelampo	Ph	
6.	Sri Lam Sing Engli	Boro Langklam	Ph	
7.	Sri Hemai phara	Boro Longku	Ph	
8.	Sri Gopal Sing B.S.	Kokdanglang	Ph	
9.	Sri KLR Sing Jung	Boro Longku	Ph	
10.	Sri Biron Ura	Borolangk	26/08/22	
11.	Sri Har Sing B.S.	Choto Longku	Ph	
12.	Sri, Birsing Engli	Longku-II GB	26/08/22	
13.	Sri Rajit Rongphat	Choto Langphat	R. Rongphat	
14.	Sri John phangcho	B/Langklam	Jak 26/08/22	
15.	Sri Prodi Phongsu	B/Longku	P. Phongsu 26/8/22	

# Annexure 9 : Results of the test of Ambient Environments



Envision Technologies North East  
Technologies for Better Tomorrow

Recognized by Pollution Control Board, Assam



**AMBIENT AIR ANALYSIS REPORT**  
Rep.No. AAAR\_1503163\_01\_820  
Sample ID: EETNE/SEPT/17(1)/22  
Issued to : M/s. Lower Kopili HEP Project, Lanku, Dist.- Dima Hasao, Assam.

**TESTREPORT**

**NABL ACCREDITED**  
Date: 07/10/2022  
ULR NO.: TC 7669  
TE 766922000000802P

Sample Drawn By : UTPAL BEZBARUAH  
Sampling Plan & Procedure : EETNE/SOP/01  
Analysis Duration : 20/09/22 TO 24/09/22, 21/09/22 TO 25/09/22, 22/09/22 TO 26/09/22  
23/09/22 TO 27/09/22, 24/09/22 TO 28/09/22  
25/09/22 TO 29/09/22, 26/09/22 TO 30/09/22, 27/09/22 TO 01/10/22  
Sampling Instrument Used : AMBIENT AIR SAMPLER/RDS  
Pollution Control Device, if any : NO

SL. NO.	DATE OF SAMPLING	LOCATION/ SOURCE (Latitude & Longitude)	WEATH ER	PARAMETERS					
				PM <sub>10</sub> (µg/m <sup>3</sup> )	PM <sub>2.5</sub> (µg/m <sup>3</sup> )	NO <sub>2</sub> (µg/m <sup>3</sup> )	HC (mg/m <sup>3</sup> )	CO (mg/m <sup>3</sup> )	SO <sub>2</sub> (µg/m <sup>3</sup> )
i)	20/09/22	Power Inlet / Dam Site Lat N 25°39'57.39" Long E 92°46'53.62"	Clear	32.3	18.6	13.8	BDL	BDL	9.2
ii)	21/09/22	Crusher Site Lat N 25°40'37.79" Long E 92°47'43.13"		40.3	26.1	15.6	0.03	0.04	11.8
iii)	22/09/22	HRT Adit Lat N 25°40'47.89" Long E 92°48'9.67"		36.2	19.2	10.8	BDL	BDL	8.3
iv)	23/09/22	Primary Hospital Near APGCL Camp Lat N 25°39'59.93" Long E 92°47'45.52"		30.7	18.6	10.6	BDL	BDL	8.7
v)	24/09/22	Batching plant Lat N 25°41'45.31" Long E 92°48'39.79"		31.6	21.5	14.8	BDL	BDL	10.0
vi)	25/09/22	Surge Shaft Site Lat N 25°41'29.28" Long E 92°48'16.47"		30.7	16.2	12.2	BDL	BDL	9.2
vii)	26/09/22	Labour & Staff Camp Lat N 25°40'54.97" Long E 92°48'9.67"		32.6	15.7	11.3	BDL	BDL	7.8
viii)	27/09/22	Power house Lat N 25°41'54.02" Long E 92°46'53.62"		34.6	18.8	10.2	BDL	BDL	7.4

Remarks: - Sampling were done within the annual based,  
**NATIONAL AMBIENT AIR QUALITY STANDARDS:**

Sl. No.	Pollutant	Test Method	Time Average	Weighted	Concentration in Ambient Air Industrial, Residential, Rural and Other Area
1	Particulate Matter (PM <sub>10</sub> ), µg/m <sup>3</sup>	IS:5182 Part-XXIII/ CPCB	Annual		60
2	Particulate Matter (PM <sub>2.5</sub> ), µg/m <sup>3</sup>	EETNE/SOP/01/2017	Annual	24 hours	100
3	Nitrogen Dioxide (NO <sub>2</sub> ), µg/m <sup>3</sup>	IS:5182 Part-VI/ CPCB	Annual	24 hours	60
4	Carbon Monoxide (CO), mg/m <sup>3</sup>			24 hours	80
5	Sulphur Dioxide (SO <sub>2</sub> ), µg/m <sup>3</sup>	IS:5182 Part-II/ CPCB	Annual	8 Hours	2.0
				24 hours	50
				24 hours	80

Utpal Bezbaruah  
(Environmental Chemist)

Dr. Pragna Ghoshgorty  
Authorized by (Quality Manager)

Note: i) Tests undertaken twice a week in each location.  
ii) The results relate only to the parameters tested.  
iii) The test report shall not be reproduced except in full, without written approval of laboratory.

Page 1 of 1

House No. 8, 1st Floor, Sankardev Path, Pub-Saranik, Chandmanj, Guwahati-781003, Assam.

Phone : +91 8811096201 \* e-mail : envisionghy@gmail.com





**NABL ACCREDITED**  
Certificate No. TC-7669

Recognized by Pollution Control Board, Assam

**TEST REPORT**

**AMBIENT NOISE LEVEL MEASUREMENT REPORT**

Rep.No. ANLMR\_1503163\_06A\_821

Sample ID: EETNE/SEPT/17(1)/22

Date: 07/10/2022

ULR NO.: TC766922000000802P

Issued to : M/s. Lower Kopill HEP Project, Lanku, Dist.- Dima Hasao, Assam.

SL. NO.	DATE OF SAMPLING	LOCATION /SOURCE (Latitude and Longitude)	NOISE LEVEL in dB(A)Leq	
			Day (6:00 am to 10:00 pm)	Night (10:00 pm to 6:00 am)
i)	21/09/22	Power Inlet / Dam Site Lat N 25°39'57.39" Long E 92°46'53.62"	47.3	38.6
ii)	22/09/22	Crusher Site Lat N 25°40'37.79" Long E 92°47'43.13"	57.2	44.2
iii)	23/09/22	HRT Adit Lat N 25°40'47.89" Long E 92°48'9.67"	52.4	40.3
iv)	24/09/22	Primary Hospital Near APGCL Camp Lat N 25°39'59.93" Long E 92°47'45.52"	55.7	40.8
v)	25/09/22	Batching plant Lat N 25°41'45.31" Long E 92°48'39.79"	50.9	44.5
vi)	26/09/22	Surge Shaft Site Lat N 25°41'29.28" Long E 92°48'16.47"	49.2	37.3
vii)	27/09/22	Labour & Staff Camp Lat N 25°40'54.97" Long E 92°48'9.67"	53.5	44.7
viii)	28/09/22	Power house Lat N 25°41'54.02" Long E 92°46'53.62"	54.3	42.8

Remarks: Noise level is carried out during 75% of the Day Time & Night Time.  
Method of analysis : CPCB July 2015 guideline.

Sampling Instrument Used : Lutron SL-4033SD, HTC SL 1350

**Ambient Noise Standards:**

Area Code	Category of area	Limits in dB(A) Leq	
		Day (6:00 am to 10:00 pm)	Night (10:00 pm to 6:00 am)
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

Utpal Bezbaruah  
(Environmental Chemist)

For Envision Enviro Technologies North East, Guwahati  
Dr. Pranita Chakraborty  
Authorized by (Quality Manager)

Note: i) The results relate only to the parameters tested.  
ii) The test report shall not be reproduced except in full, without written approval of laboratory.  
iii) Monitoring is performed twice a week in each location.

Page 1 of 1



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**TEST REPORT:**

Report No: 221010\_1503163\_0

ULR No: TC766922000000217P

Sample ID No: EETNE/Sept/21/22/D

Test Starting Date: 29/09/22

Date of Report: 10/10/22

Date of sample receipt: 29/09/22

Test completion Date: 10/10/22

Test Starting Date: 27/09/22		Date of sample receipt: 29/09/22			
Test completion Date: 10/10/22					
Name & Address of Client	M/s. Lower Kopili Project. Near Lanka, Dist: Dima Hasao.				
Sample Description	Type: Surface Water (3 km D/S of dam site)	Source: Kopili River	Location: Latitude: N 25°41'02.68'' Longitude: E 92°47'17.59''		
	Sample collected by M/s. En-vision Enviro Technologies North East				
Sample Collection Particulars	Date 27/09/2022	Time 2:40 P.M	Temperature 30°C	Quantity Drawn:4L	Sampling Method: EETNE/SOP/02

Sl No.	Parameters	Unit	Result	Reference Method
1	pH	---	7.20	APHA 23 <sup>rd</sup> Edition, 4500 H <sup>+</sup> , Page: 4-95
2	Turbidity	NTU	2.13	APHA 23 <sup>rd</sup> Edition, 2130, Page: 2-13
3	TDS	mg/L	36	APHA 23 <sup>rd</sup> Edition, 2540 C, Page: 2-69
4	TSS	mg/L	71.3	APHA 23 <sup>rd</sup> Edition, 2540, Page: 2-70
5	Oil and Grease	mg/L	<5	APHA 23 <sup>rd</sup> Edition, 5520 B, Page: 5-42
6	Dissolved Oxygen	mg/L	7.9	APHA 23 <sup>rd</sup> Edition, 4500-O C, Page: 4-146
7	Total hardness	mg/L	62.4	APHA 23 <sup>rd</sup> Edition, 2340 B, Page: 2-48
8	Calcium	mg/L	30.5	APHA 23 <sup>rd</sup> Edition, 3500-Ca B, Page: 3-69
9	Magnesium	mg/L	15.2	APHA 23 <sup>rd</sup> Edition, 3500-Mg B, Page: 3-86
10	Total Alkalinity	mg/L	44.9	APHA 23 <sup>rd</sup> Edition, 2320, Page: 2-37
11	Sulphate	mg/L	11.6	APHA 23 <sup>rd</sup> Edition, 4500-SO <sub>4</sub> <sup>2-</sup> E, Page: 4-199
12	Nitrates	mg/L	10.5	APHA 23 <sup>rd</sup> Edition, 4500-NO <sub>3</sub> <sup>-</sup> B, Page: 4-127
13	Phosphate	mg/L	<0.02	APHA 23 <sup>rd</sup> Edition, 4500-P, Page: 4-163
14	Salinity	‰	0.3	APHA 23 <sup>rd</sup> Edition, 2520B, Page: 2-60
15	Conductivity	µS/cm	79	APHA 23 <sup>rd</sup> Edition, 2520B, Page: 2-60



Page 1 of 2

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Certificate No. TC-7669


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Sample ID No: EETNE/Sept/21/22/D  
Test Starting Date: 29/09/22

Date of sample receipt: 29/09/22  
Test completion Date: 10/10/22

SI No.	Parameters	Unit	Result	Reference Method
16	Chloride	mg/L	16.3	APHA 23 <sup>rd</sup> Edition, 4500-Cl B, Page: 4-75
17	Arsenic	mg/L	BDL	APHA 23 <sup>rd</sup> Edition, 3114A, Page: 3-36
18	Iron(as Fe)	mg/L	1.5	APHA 23 <sup>rd</sup> Edition, 3500-Fe B, Page: 3-80
19	Total Coliform	MPN/100	3	APHA 23 <sup>rd</sup> Edition, 9222B, Page: 9-81
20	Fecal Coliform	MPN/100	Nil	APHA 23 <sup>rd</sup> Edition, 9222 D, Page: 9-89
21	BOD	mg/L	7	APHA 23 <sup>rd</sup> Edition, 5210B, Page: 5-6
22	COD	mg/L	48	APHA 23 <sup>rd</sup> Edition, 5220 b, Page: 5-18

For Envision Enviro Technologies North East, Guwahati

  
**Rimpi Sarma**  
Environmental Chemist  
Test Done By

  
**Dr. Pranita Chakraborty**  
Quality Manager  
Authorized Signatory

Note: i) The results relate only to the parameters tested.  
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**End of report**

Page 2 of 2



**TEST REPORT:**

Report No: 221010\_1503163\_0

ULR NO-TC766922000000222P

Sample ID No: EETNE/Sept/26/22/D

Test Starting Date: 29/09/22

Date of Report: 10/10/22

Date of sample receipt: 29/09/22

Test completion Date: 10/10/22

NABL ACCREDITED

Plate No. TC-7669

Name & Address of Client		M/s. Lower Kopili Project. Near Lanka, Dist: Dima Hasao.			
Sample Description	Type: RO Water	Source: Office	Location: Latitude: N 25°40'54.91// Longitude: E 92°48'9.59//		
	Sample collected by M/s. L & T Staff Of Lower Kopili Project				
Sample Collection Particulars	Date 27/09/2022	Time 12:15 P.M	Temperature 31°C	Quantity Drawn: 4L	Sampling Method: EETNE/SOP/02

Sl No.	Parameters	Unit	Result	Reference Method	IS 10500: 2012	
					Acceptable limit	Permissible limit
1	pH	---	6.7	APHA 23 <sup>rd</sup> Edition, 4500 H <sup>+</sup> , Page: 4-95	6.5-8.5	No relaxation
2	Turbidity	NTU	<0.2	APHA 23 <sup>rd</sup> Edition, 2130, Page: 2-13	1.0	5.0
3	Total hardness	mg/L	29.6	APHA 23 <sup>rd</sup> Edition, 2340 B, Page: 2-48	200	600
4	Total Alkalinity	mg/L	69.3	APHA 23 <sup>rd</sup> Edition, 2320 B, Page: 2-37	200	600
5	Residual Chlorine	mg/L	<0.01	APHA 23 <sup>rd</sup> Edition, 4500-Cl B, Page: 4-63	0.2	1.0
6	Fluoride	mg/L	0.34	APHA 23 <sup>rd</sup> Edition, 4500-F <sup>-</sup> D, Page: 4-90	1.0	1.5
7	Chloride	mg/L	14.9	APHA 23 <sup>rd</sup> Edition, 4500-Cl B, Page: 4-75	250	1000
8	Iron (as Fe)	mg/L	0.05	APHA 23 <sup>rd</sup> Edition, 3500-Fe B, Page: 3-80	0.3	No relaxation
9	Total coliform	MPN/100 mL	Nil	APHA 23 <sup>rd</sup> Edition, 9222B, Page: 9-81	Absent	Absent

For Envision Enviro Technologies North East

Rimpi Sarma  
Environmental Chemist  
Test Done By

Dr. Pranita Chakraborty  
Quality Manager  
Authorized Signatory

Note: i) The results relate only to the parameters tested.  
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End of report

Page 1 of 2





**NABL ACCREDITED**

Certificate No. TC-7669

Recognized by Pollution Control Board, Assam

**TEST REPORT:**

Report No: 211022\_1503163\_0

ULR No: TC766922000000216P

Sample ID No: EETNE/Sept/20/22/D

Test Starting Date: 29/09/22

Date of Report: 10/10/22

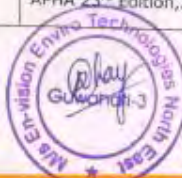
Date of sample receipt: 29/09/22

Test completion Date: 10/10/22

Name & Address of Client		M/s. Lower Kopili Project. Near Lanka, Dist: Dima Hasao.			
Sample Description	Type: Surface Water(1 km U/S of dam site)		Source: Kopili River	Location: Latitude: N 25°39'37.82 Longitude:E 92°47'26.10	
Sample collected by		M/s. En-vision Enviro Technologies North East			
Sample Collection Particulars	Date 28/09/2022	Time 10:42 A.M	Temperature 27°C	Quantity Drawn:4L	Sampling Method: EETNE/SOP/02

Sl No.	Parameters	Unit	Result	Reference Method	IS 10500:2012
					Permissible Limit
1	pH	---	6.9	APHA 23 <sup>rd</sup> Edition, 4500 H <sup>+</sup> , Page: 4-95	6.5-8.5
2	Turbidity	NTU	3.56	APHA 23 <sup>rd</sup> Edition, 2130, Page: 2-13	5
3	TDS	mg/L	32.4	APHA 23 <sup>rd</sup> Edition, 2540 C, Page: 2-69	2000
4	TSS	mg/L	67.9	APHA 23 <sup>rd</sup> Edition, 2540, Page: 2-70	---
5	Oil and GREASE	mg/L	<5	APHA 23 <sup>rd</sup> Edition, 5520 B, Page: 5-42	---
6	Dissolved Oxygen	mg/L	7.2	APHA 23 <sup>rd</sup> Edition, 4500-O C, Page: 4-146	100
7	Total hardness	mg/L	71.4	APHA 23 <sup>rd</sup> Edition, 2340 B, Page: 2-48	600
8	Calcium	mg/L	34.6	APHA 23 <sup>rd</sup> Edition, 3500-Ca B, Page: 3-69	200
9	Magnesium	mg/L	15.9	APHA 23 <sup>rd</sup> Edition, 3500-Mg B, Page: 3-86	100
10	Total Alkalinity	mg/L	36.7	APHA 23 <sup>rd</sup> Edition, 2320, Page: 2-37	600
11	Sulphate	mg/L	11.3	APHA 23 <sup>rd</sup> Edition, 4500-SO <sub>4</sub> <sup>2-</sup> E, Page: 4-199	400
12	Nitrates	mg/L	3.8	APHA 23 <sup>rd</sup> Edition, 4500-NO <sub>3</sub> B, Page: 4-127	No relaxation
13	Phosphate	mg/L	<0.02	APHA 23 <sup>rd</sup> Edition, 4500-P, Page: 4-163	No relaxation
14	Salinity	%	0.5	APHA 23 <sup>rd</sup> Edition, 2520B, Page: 2-60	No relaxation
15	conductivity	µS/cm	90	APHA 23 <sup>rd</sup> Edition, 2520B, Page: 2-60	No relaxation

Page 1 of 2



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Sample ID No: EETNE/Sept/20/22/D  
Test Starting Date: 29/09/22

Date of sample receipt: 29/09/22  
Test completion Date: 10/10/22

SI No.	Parameters	Unit	Result	Reference Method	IS 10500:2012
					<b>Permissible Limit</b>
16	Arsenic	mg/L	BDL	APHA 23 <sup>rd</sup> Edition, 3114A, Page: 3-36	No relaxation
17	Iron(as Fe)	mg/L	1.5	APHA 23 <sup>rd</sup> Edition, 3500-Fe B, Page: 3-80	No relaxation
18	Total Coliform	MPN/100ml	3	APHA 23 <sup>rd</sup> Edition, 9222B, Page: 9-81	Shall not be detectable in any 100 ml Sample
19	Fecal Coliform	MPN/100ml	Nil	APHA 23 <sup>rd</sup> Edition, 9222 D, Page: 9-89	Shall not be detectable in any 100 ml Sample
20	BOD	mg/L	6	APHA 23 <sup>rd</sup> Edition, 5210B, Page: 5-6	No relaxation
21	COD	mg/L	22	APHA 23 <sup>rd</sup> Edition, 5220 b, Page: 5-18	No relaxation

For Envision Enviro Technologies North East, Guwahati

  
**Rimpi sarma**  
Environmental Chemist  
Test Done By

  
**Dr. Pranita Chakraborty**  
Quality Manager  
Authorized Signatory

Note: i) The results relate only to the parameters tested.  
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End of report

Page 2 of 2



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**TEST REPORT:**

Report No: 221010\_1503163\_0

ULR No: TC766922000000218P

Sample ID No: EETNE/Sept/22/22/D

Test Starting Date: 29/09/22

Date of Report: 10/10/22

Date of sample receipt: 29/09/22

Test completion Date: 10/10/22

Test Starting Date: 29/09/22		Test completion Date: 10/10/22			
Name & Address of Client	M/s. Lower Kopili Project. Near Lanka, Dist: Dima Hasao.				
Sample Description	Type: Surface Water (8 km D/S of dam site)	Source: Kopili River	Location: Latitude: N 25°42'44.97"/ Longitude: E 92°49'6.20"/		
Sample collected by	M/s. En-vision Enviro Technologies North East				
Sample Collection Particulars	Date 28/09/2022	Time 4:50 P,M	Temperature 29°C	Quantity Drawn:4L	Sampling Method: EETNE/SOP/02

Sl No.	Parameters	Unit	Result	Reference Method
1	pH	---	7.00	APHA 23 <sup>rd</sup> Edition, 4500 H <sup>+</sup> , Page: 4-95
2	Turbidity	NTU	2.78	APHA 23 <sup>rd</sup> Edition, 2130, Page: 2-13
3	TDS	mg/L	35.0	APHA 23 <sup>rd</sup> Edition, 2540 C, Page: 2-69
4	TSS	mg/L	23.6	APHA 23 <sup>rd</sup> Edition, 2540, Page: 2-70
5	Oil and Grease	mg/L	<5	APHA 23 <sup>rd</sup> Edition, 5520 B, Page: 5-42
6	Dissolved Oxygen	mg/L	6.8	APHA 23 <sup>rd</sup> Edition, 4500-O C, Page: 4-146
7	Total hardness	mg/L	74.3	APHA 23 <sup>rd</sup> Edition, 2340 B, Page: 2-48
8	Calcium	mg/L	38.5	APHA 23 <sup>rd</sup> Edition, 3500-Ca B, Page: 3-69
9	Magnesium	mg/L	17.3	APHA 23 <sup>rd</sup> Edition, 3500-Mg B, Page: 3-86
10	Total Alkalinity	mg/L	121.6	APHA 23 <sup>rd</sup> Edition, 2320, Page: 2-37
11	Sulphate	mg/L	14.2	APHA 23 <sup>rd</sup> Edition, 4500-SO <sub>4</sub> <sup>2-</sup> E, Page: 4-199
12	Nitrates	mg/L	4.6	APHA 23 <sup>rd</sup> Edition, 4500-NO <sub>3</sub> B, Page: 4-127
13	Phosphate	mg/L	BDL	APHA 23 <sup>rd</sup> Edition, 4500-P, Page: 4-163
14	Salinity	‰	0.4	APHA 23 <sup>rd</sup> Edition, 2520B, Page: 2-60
15	Conductivity	µS/cm	90	APHA 23 <sup>rd</sup> Edition, 2520B, Page: 2-60



Page 1 of 2

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Sample ID No: EETNE/Sept/22/22/D  
Test Starting Date: 29/09/22

Date of sample receipt: 29/09/22  
Test completion Date: 10/10/22

SI No.	Parameters	Unit	Result	Reference Method
16	Chloride	mg/L	18.9	APHA 23 <sup>rd</sup> Edition, 4500-Cl <sup>-</sup> B, Page: 4-75
17	Arsenic	mg/L	<0.001	APHA 23 <sup>rd</sup> Edition, 3114A, Page: 3-36
18	Iron(as Fe)	mg/L	2.1	APHA 23 <sup>rd</sup> Edition, 3500-Fe B, Page: 3-80
19	Total Coliform	MPN/100	5	APHA 23 <sup>rd</sup> Edition, 9222B, Page: 9-81
20	Fecal Coliform	MPN/100	Nil	APHA 23 <sup>rd</sup> Edition, 9222 D, Page: 9-89
21	BOD	mg/L	8	APHA 23 <sup>rd</sup> Edition, 5210B, Page: 5-6
22	COD	mg/L	59	APHA 23 <sup>rd</sup> Edition, 5220 b, Page: 5-18

For Envision Enviro Technologies North East, Guwahati

  
**Rimpi Sarma**  
Environmental Chemist  
Test Done By

  
**Dr. Pranita Chakraborty**  
Quality Manager  
Authorized Signatory

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End of report

Page 2 of 2





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## TEST REPORT:

Report No: 221010\_1503163\_0

ULR No: TC766922000000220P

Sample ID No: EETNE/Sept/24/22/D

Test Starting Date: 29/09/22

Date of Report: 10/10/22

Date of sample receipt: 29/09/22

Test completion Date: 10/10/22

Name & Address of Client		M/s. Lower Kopili Project. Near Lanka, Dist: Dima Hasao.			
Sample Description	Type: Surface Water	Source: APGCL IB		Location: Latitude: N 25°39'59.93'' Longitude: E 92°47'45.52''	
	Sample collected by				
Sample Collection Particulars		Date 28/09/2022	Time 10:57 A.M	Temperature 30°C	Quantity Drawn:4Lt
		Sampling Method: EETNE/SOP/02			

Sl No.	Parameters	Unit	Result	Reference Method
1	pH	---	6.9	APHA 23 <sup>rd</sup> Edition, 4500 H <sup>+</sup> , Page: 4-95
2	Turbidity	NTU	1.76	APHA 23 <sup>rd</sup> Edition, 2130, Page: 2-13
3	TDS	mg/L	179	APHA 23 <sup>rd</sup> Edition, 2540 C, Page: 2-69
4	TSS	mg/L	85.2	APHA 23 <sup>rd</sup> Edition, 2540, Page: 2-70
5	Oil and Grease	mg/L	<5	APHA 23 <sup>rd</sup> Edition, 5520 B, Page: 5-42
6	Dissolved Oxygen	mg/L	7.1	APHA 23 <sup>rd</sup> Edition, 4500-O C, Page: 4-146
7	Total hardness	mg/L	77.3	APHA 23 <sup>rd</sup> Edition, 2340 B, Page: 2-48
8	Calcium	mg/L	33.6	APHA 23 <sup>rd</sup> Edition, 3500-Ca B, Page: 3-69
9	Magnesium	mg/L	19.5	APHA 23 <sup>rd</sup> Edition, 3500-Mg B, Page: 3-86
10	Total Alkalinity	mg/L	63.7	APHA 23 <sup>rd</sup> Edition, 2320, Page: 2-37
11	Chloride	mg/L	18.1	APHA 23 <sup>rd</sup> Edition, 4500-Cl B, Page: 4-75
12	Sulphate	mg/L	10.5	APHA 23 <sup>rd</sup> Edition, 4500-SO <sub>4</sub> <sup>2-</sup> E, Page: 4-199
13	Nitrates	mg/L	3.8	APHA 23 <sup>rd</sup> Edition, 4500-NO <sub>3</sub> <sup>-</sup> B, Page: 4-127
14	Phosphate	mg/L	<0.02	APHA 23 <sup>rd</sup> Edition, 4500-P, Page: 4-163
15	Salinity	%	0.3	APHA 23 <sup>rd</sup> Edition, 2520B, Page: 2-60
16	conductivity	µS/cm	440	APHA 23 <sup>rd</sup> Edition, 2520B, Page: 2-60



Page 1 of 2

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Sample ID No: EETNE/Sept/24/22/D  
Test Starting Date: 29/09/22Date of sample receipt: 29/09/22  
Test completion Date: 10/10/22

Sl No.	Parameters	Unit	Result	Reference Method
17	Arsenic	mg/L	BDL	APHA 23 <sup>rd</sup> Edition, 3114A, Page: 3-36
18	Iron(as Fe)	mg/L	1.7	APHA 23 <sup>rd</sup> Edition, 3500-Fe B, Page: 3-80
19	Total Coliform	MPN/100	3	APHA 23 <sup>rd</sup> Edition, 9222B, Page: 9-81
20	Fecal Coliform	MPN/100	Nil	APHA 23 <sup>rd</sup> Edition, 9222 D, Page: 9-89
21	BOD	mg/L	5	APHA 23 <sup>rd</sup> Edition, 5210B, Page: 5-6
22	COD	mg/L	11	APHA 23 <sup>rd</sup> Edition, 5220 b, Page: 5-18

For Envision Enviro Technologies North East, Guwahati

  
**Rimpi Sarma**  
Environmental Chemist  
Test Done By  
**Dr. Pranita Chakraborty**  
Quality Manager  
Authorized Signatory

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End of report

Page 2 of 2





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Certificate No. TC-7669

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**TEST REPORT:**

Report No: 211022\_1503163\_0

ULR No: TC766922000000215P

Sample ID No: EETNE/Sept/19/22/D

Test Starting Date: 29/09/22

Date of Report: 10/10/22

Date of sample receipt: 29/09/22

Test completion Date: 10/10/22

Test Starting Date: 29/09/22		Test completion Date: 10/10/22			
Name & Address of Client	M/s. Lower Kopili Project. Near Lanka, Dist: Dima Hasao.				
Sample Description	Type: Surface Water(Submergence area, dam site)	Source: Kopili River	Location: Latitude: N 25°39'57.38// Longitude:E 92°46'53.10//		
Sample collected by	M/s. En-vision Enviro Technologies North East				
Sample Collection Particulars	Date 27/09/2022	Time 10:49 A.M	Temperature 31°C	Quantity Drawn:4L	Sampling Method: EETNE/SOP/02

Sl No.	Parameters	Unit	Result	Reference Method	IS 10500:2012
					Permissible Limit
1	pH	---	7.00	APHA 23 <sup>rd</sup> Edition, 4500 H <sup>+</sup> , Page: 4-95	6.5-8.5
2	Turbidity	NTU	2.54	APHA 23 <sup>rd</sup> Edition, 2130, Page: 2-13	5
3	TDS	mg/L	32	APHA 23 <sup>rd</sup> Edition, 2540 C, Page: 2-69	2000
4	TSS	mg/L	58.6	APHA 23 <sup>rd</sup> Edition, 2540, Page: 2-70	---
5	Oil and GREASE	mg/L	<5	APHA 23 <sup>rd</sup> Edition, 5520 B, Page: 5-42	---
6	Dissolved Oxygen	mg/L	7.8	APHA 23 <sup>rd</sup> Edition, 4500-O C, Page: 4-146	---
7	Total hardness	mg/L	59	APHA 23 <sup>rd</sup> Edition, 2340 B, Page: 2-48	600
8	Calcium	mg/L	29.5	APHA 23 <sup>rd</sup> Edition, 3500-Ca B, Page: 3-69	200
9	Magnesium	mg/L	15.5	APHA 23 <sup>rd</sup> Edition, 3500-Mg B, Page: 3-86	100
10	Total Alkalinity	mg/L	36.7	APHA 23 <sup>rd</sup> Edition, 2320, Page: 2-37	600
11	Sulphate	mg/L	10.2	APHA 23 <sup>rd</sup> Edition, 4500-SO <sub>4</sub> <sup>2-</sup> E, Page: 4-199	400
12	Nitrates	mg/L	5.3	APHA 23 <sup>rd</sup> Edition, 4500-NO <sub>3</sub> <sup>-</sup> B, Page: 4-127	No relaxation
13	Phosphate	mg/L	<0.02	APHA 23 <sup>rd</sup> Edition, 4500-P, Page: 4-163	No relaxation
14	Salinity	%	0.2	APHA 23 <sup>rd</sup> Edition, 2520B, Page: 2-60	No relaxation
15	conductivity	µS/cm	81	APHA 23 <sup>rd</sup> Edition, 2520B, Page: 2-60	No relaxation



Page 1 of 2

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Certificate No. TC-7669


Sample ID No: EETNE/Sept/19/22/D  
Test Starting Date: 29/09/22

Date of sample receipt: 29/09/22  
Test completion Date: 10/10/22

Sl No.	Parameters	Unit	Result	Reference Method	IS 10500:2012
					Permissible Limit
16	Arsenic	mg/L	<0.001	APHA 23 <sup>rd</sup> Edition, 3114A, Page: 3-36	No relaxation
17	Iron(as Fe)	mg/L	0.67	APHA 23 <sup>rd</sup> Edition, 3500-Fe B, Page: 3-80	No relaxation
18	Total Coliform	MPN/100ml	3	APHA 23 <sup>rd</sup> Edition, 9222B, Page: 9-81	Shall not be detectable in any 100 ml Sample
19	Fecal Coliform	MPN/100ml	Nil	APHA 23 <sup>rd</sup> Edition, 9222 D, Page: 9-89	Shall not be detectable in any 100 ml Sample
20	BOD	mg/L	4	APHA 23 <sup>rd</sup> Edition, 5210B, Page: 5-6	No relaxation
21	COD	mg/L	121	APHA 23 <sup>rd</sup> Edition, 5220 b, Page: 5-18	No relaxation

For Envision Enviro Technologies North East, Guwahati

  
**Rimpi Sarma**  
Environmental Chemist  
Test Done By

  
**Dr. Pramita Chakraborty**  
Quality Manager  
Authorized Signatory

Note: i) The results relate only to the parameters tested.  
ii) The test report shall not be reproduced except in full, without written approval of laboratory  
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End of report

Page 2 of 2



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Certificate No. TC-7669

**TEST REPORT:**

Report No: 221010\_1503163\_0

ULR No: TC766922000000223P

Sample ID No: EETNE/Sept/27/22/D

Test Starting Date: 29/09/22

Date of Report: 10/10/22

Date of sample receipt: 29/09/22

Test completion Date: 10/10/22

Name & Address of Client		M/s. Lower Kopili Project. Near Lanka, Dist: Dima Hasao.			
Sample Description	Type: Surface Water	Source: Lanku Nala		Location: Latitude: N 25°39'49.8'' Longitude: E 92°47'42.7''	
Sample collected by	M/s. En-vision Enviro Technologies North East				
Sample Collection Particulars	Date 27/09/2022	Time 10:26 A.M	Temperature 29°C	Quantity Drawn: 4Ltg	Sampling Method: EETNE/SOP/02

Sl No.	Parameters	Unit	Result	Reference Method
1	pH	---	7.00	APHA 23 <sup>rd</sup> Edition, 4500 H <sup>+</sup> , Page: 4-95
2	Turbidity	NTU	2.8	APHA 23 <sup>rd</sup> Edition, 2130, Page: 2-13
3	TDS	mg/L	112.6	APHA 23 <sup>rd</sup> Edition, 2540 C, Page: 2-69
4	TSS	mg/L	81.4	APHA 23 <sup>rd</sup> Edition, 2540, Page: 2-70
5	Oil and Grease	mg/L	<5	APHA 23 <sup>rd</sup> Edition, 5520 B, Page: 5-42
6	Dissolved Oxygen	mg/L	7.2	APHA 23 <sup>rd</sup> Edition, 4500-O C, Page: 4-146
7	Total hardness	mg/L	58.6	APHA 23 <sup>rd</sup> Edition, 2340 B, Page: 2-48
8	Calcium	mg/L	28.9	APHA 23 <sup>rd</sup> Edition, 3500-Ca B, Page: 3-69
9	Magnesium	mg/L	14.5	APHA 23 <sup>rd</sup> Edition, 3500-Mg B, Page: 3-86
10	Total Alkalinity	mg/L	215.8	APHA 23 <sup>rd</sup> Edition, 2320, Page: 2-37
11	Chloride	mg/L	17.4	APHA 23 <sup>rd</sup> Edition, 4500-Cl <sup>-</sup> B, Page: 4-75
12	Sulphate	mg/L	12.3	APHA 23 <sup>rd</sup> Edition, 4500-SO <sub>4</sub> <sup>2-</sup> E, Page: 4-199
13	Nitrates	mg/L	3.1	APHA 23 <sup>rd</sup> Edition, 4500-NO <sub>3</sub> <sup>-</sup> B, Page: 4-127
14	Phosphate	mg/L	<.02	APHA 23 <sup>rd</sup> Edition, 4500-P, Page: 4-163
15	conductivity	µS/cm	190	APHA 23 <sup>rd</sup> Edition, 2520B, Page: 2-60



Page 1 of 2

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Certificate No. TC-7669


Sample ID No: EETNE/Sept/27/22/D  
Test Starting Date: 29/09/22

Date of sample receipt: 29/09/22  
Test completion Date: 10/10/22

Sl No.	Parameters	Unit	Result	Reference Method
16	Arsenic	µg/L	BDL	APHA 23 <sup>rd</sup> Edition, 3114A, Page: 3-36
17	Iron(as Fe)	mg/L	1.1	APHA 23 <sup>rd</sup> Edition, 3500-Fe B, Page: 3-80
18	Salinity	‰	0.6	APHA 23 <sup>rd</sup> Edition, 2520B, Page: 2-60
19	Total Coliform	MPN/100 mL	3	APHA 23 <sup>rd</sup> Edition, 9222B, Page: 9-81
20	Fecal Coliform	MPN/100 mL	Nil	APHA 23 <sup>rd</sup> Edition, 9222 D, Page: 9-89
21	BOD	mg/L	7	APHA 23 <sup>rd</sup> Edition, 5210B, Page: 5-6
22	COD	mg/L	21	APHA 23 <sup>rd</sup> Edition, 5220 b, Page: 5-18

For Envision Enviro Technologies North East, Guwahati

  
**Rimpi Sarma**  
Environmental Chemist  
Test Done By

  
**Dr. Pranita Chakraborty**  
Quality Manager  
Authorized Signatory

Note: i) The results relate only to the parameters tested.  
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**End of report**

Page 2 of 2





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**TEST REPORT:**

Report No: 221010\_1503163\_0

ULR No: TC766922000000219P

Sample ID No: EETNE/Sept/23/22/D

Test Starting Date: 29/09/22

Date of Report: 10/10/22

Date of sample receipt: 29/09/22

Test completion Date: 10/10/22

Test completion Date: 10/10/22					
Name & Address of Client	M/s. Lower Kopili Project. Near Lanka, Dist: Dima Hasao.				
Sample Description	Type: Surface Water	Source: PMC Pond		Location: Latitude: N 25°40'39.12'' Longitude:E 92°48'13.87''	
Sample collected by	M/s. En-vision Enviro Technologies North East				
Sample Collection Particulars	Date 28/09/2022	Time 10:20 A.M	Temperature 30.5°C	Quantity Drawn:4Lt	Sampling Method: EETNE/SOP/02

Sl No.	Parameters	Unit	Result	Reference Method
1	pH	---	6.8	APHA 23 <sup>rd</sup> Edition, 4500 H <sup>+</sup> , Page: 4-95
2	Turbidity	NTU	1.68	APHA 23 <sup>rd</sup> Edition, 2130, Page: 2-13
3	TDS	mg/L	117	APHA 23 <sup>rd</sup> Edition, 2540 C, Page: 2-69
4	TSS	mg/L	74.3	APHA 23 <sup>rd</sup> Edition, 2540, Page: 2-70
5	Oil and Grease	mg/L	<5	APHA 23 <sup>rd</sup> Edition, 5520 B, Page: 5-42
6	Dissolved Oxygen	mg/L	6.9	APHA 23 <sup>rd</sup> Edition, 4500-O C, Page: 4-146
7	Total hardness	mg/L	71.5	APHA 23 <sup>rd</sup> Edition, 2340 B, Page: 2-48
8	Calcium	mg/L	34.2	APHA 23 <sup>rd</sup> Edition, 3500-Ca B, Page: 3-69
9	Magnesium	mg/L	17.8	APHA 23 <sup>rd</sup> Edition, 3500-Mg B, Page: 3-86
10	Total Alkalinity	mg/L	66.3	APHA 23 <sup>rd</sup> Edition, 2320, Page: 2-37
11	Chloride	mg/L	15.4	APHA 23 <sup>rd</sup> Edition, 4500-Cl <sup>-</sup> B, Page: 4-75
12	Sulphate	mg/L	14.8	APHA 23 <sup>rd</sup> Edition, 4500-SO <sub>4</sub> <sup>2-</sup> E, Page: 4-199
13	Nitrates	mg/L	2.7	APHA 23 <sup>rd</sup> Edition, 4500-NO <sub>3</sub> <sup>-</sup> B, Page: 4-127
14	Phosphate	mg/L	<0.02	APHA 23 <sup>rd</sup> Edition, 4500-P, Page: 4-163
15	Salinity	%	0.4	APHA 23 <sup>rd</sup> Edition, 2520B, Page: 2-60
16	conductivity	µS/cm	290	APHA 23 <sup>rd</sup> Edition, 2520B, Page: 2-60



Page 1 of 2

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Sample ID No: EETNE/Sept/23/22/D  
Test Starting Date: 29/09/22Date of sample receipt: 29/09/22  
Test completion Date: 10/10/22

Sl No.	Parameters	Unit	Result	Reference Method
17	Arsenic	mg/L	BDL	APHA 23 <sup>rd</sup> Edition, 3114A, Page: 3-36
18	Iron (as Fe)	mg/L	1.3	APHA 23 <sup>rd</sup> Edition, 3500-Fe B, Page: 3-80
19	Total Coliform	MPN/100	3	APHA 23 <sup>rd</sup> Edition, 9222B, Page: 9-81
20	Fecal Coliform	MPN/100	Nil	APHA 23 <sup>rd</sup> Edition, 9222 D, Page: 9-89
21	BOD	mg/L	3	APHA 23 <sup>rd</sup> Edition, 5210B, Page: 5-6
22	COD	mg/L	9	APHA 23 <sup>rd</sup> Edition, 5220 b, Page: 5-18

For Envision Enviro Technologies, North East, Guwahati

  
**Rimpal Sarma**  
Environmental Chemist  
Test Done By  
**Dr. Pranita Chakraborty**  
Quality Manager  
Authorized Signatory

Note: i) The results relate only to the parameters tested.  
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End of report

Page 2 of 2

# Soil Testing Results

# en-VISION

**Enviro Technologies North East**

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## SOIL ANALYSIS REPORT

Rep.No: 221010\_1503163\_0

Date: 10/10/22

Name & Address of Client	M/s. Lower Kopili Project. Near Lanka, Dist: Dima Hasao.
Sample Description	Pre Construction Stage
Date of Sampling	28/09/22
Sample collected by	M/s. En-vision Enviro Technologies North East

Sl No.	Soil Parameters	Unit	Result	Reference Method
1	p <sup>H</sup>	---	6.5	Potentiometric
2	Soil type	---	Silt highly organic clay	Hydrometer
	Permeability of soil	Cm/sec	$1 \times 10^{-6}$	Constant head test method
	Sand	%	72.1	Hydrometer
	Clay	%	10.4	Hydrometer
	Silt	%	17.5	Hydrometer
3	Nitrogen	kg/ha	86.3	Alkaline KMnO <sub>4</sub>
4	Phosphorus	mg/kg	11.2	Olsen method
5	Potassium	mg/Kg	28.9	NH <sub>4</sub> -acetate extraction
6	Electrical conductivity	mS/cm	10	Conductivity Meter
7	Water holding capacity	%	21.6	Standard method
8	Organic matter	%	5.4	Titrimetric



Page 1 of 2

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Sl No.	Parameters	Unit	Result	Reference Method
9	Organic Carbon	%	3.13	Rapid Dichromate Oxidation Technique
10	Iron	g/kg	35.2	Flame AAS(mg/kg)
11	Copper	mg/kg	7.5	Flame AAS
12	Nickel	mg/kg	12.9	Flame AAS
13	Manganese	g/kg	8.7	Flame AAS(mg/kg)
14	Zinc	mg/kg	33.2	Flame AAS
15	Arsenic	mg/kg	3.4	HG- AAS
16	Cadmium	mg/kg	0.02	Flame AAS
17	Lead	mg/kg	4.5	Flame AAS
18	Chromium	mg/kg	6.3	Flameless AAS
19	Aluminum	mg/kg	BDL	Flameless AAS

For En-vision Enviro Technologies North East, Guwahati

  
**Dr. Pranita Chakraborty**  
 (Quality Manager)  
 Authorised Signatory

Note: i) The results relate only to the parameter tested.  
 ii) The test report shall not be reproduced except in full, without written approval of laboratory.  
 iii) Parameter no.9 to 19 are analysed in B. Boorah College as per our MOU.

End of Report

Page 2 of 2



# Drinking Water Quality of a School

**en-vision**

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Certificate No. TC-7669

## TEST REPORT:

Report No: 221010\_1503163\_0

ULR No: TC766922000000221P

Sample ID No:EETNE/Sept/25/22/D

Test Starting Date: 29/09/22

Date of Report: 10/10/22

Date of sample receipt: 29/09/22

Test completion Date: 10/10/22

Name & Address of Client			M/s. Lower Kopili Project. Near Lanka, Dist: Dima Hasao.		
Sample Description			Type: Ground Water	Source: Choto Langpher ME School	Location: Latitude: N 25°41'55.88// Longitude:E 92°48'56.07//
Sample collected by			M/s. En-vision Enviro Technologies North East		
Sample Collection Particulars			Date 28/09/2022	Time 09:30 A.M	Temperature 29°C
			Quantity Drawn:4L	Sampling Method: EETNE/SOP/02	

SI No.	Parameters	Unit	Result	Reference Method	IS 10500:2012 Permissible Limit
1	pH	---	7.05	APHA 23 <sup>rd</sup> Edition,4500 H <sup>+</sup> ,Page:4-95	6.5-8.5
2	Turbidity	NTU	1.1	APHA 23 <sup>rd</sup> Edition,2130,Page:2-13	5
3	TDS	mg/L	125.6	APHA 23 <sup>rd</sup> Edition,2540 C ,Page :2-69	2000
4	TSS	mg/L	74.2	APHA 23 <sup>rd</sup> Edition,2540,Page:2-70	---
5	Oil and Grease	mg/L	<5	APHA 23 <sup>rd</sup> Edition,5520 B,Page:5-42	---
6	Dissolved Oxygen	mg/L	7.1	APHA 23 <sup>rd</sup> Edition,4500-O C,Page:4-146	100
7	Total hardness	mg/L	78.2	APHA 23 <sup>rd</sup> Edition,2340 B,Page:2-48	500
8	Calcium	mg/L	38.7	APHA 23 <sup>rd</sup> Edition,3500-Ca B,Page:3-69	200
9	Magnesium	mg/L	19.3	APHA 23 <sup>rd</sup> Edition,3500-Mg B,Page:3-86	100
10	Total Alkalinity	mg/L	223	APHA 23 <sup>rd</sup> Edition,2320,Page:2-37	600
11	Sulphate	mg/L	16.9	APHA 23 <sup>rd</sup> Edition,4500-SO <sub>4</sub> <sup>2-</sup> E,Page:4-199	400
12	Nitrates	mg/L	3.8	APHA 23 <sup>rd</sup> Edition,4500-NO <sub>3</sub> <sup>-</sup> B,Page:4-127	No relaxation
13	Phosphate	mg/L	<0.01	APHA 23 <sup>rd</sup> Edition,4500-P,Page:4-163	No relaxation
14	Conductivity	µS	240	APHA 23 <sup>rd</sup> Edition,2520B,Page:2-60	No relaxation



Page 1 of 2

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Sample ID No: EETNE/Sept/25/22/D  
Test Starting Date: 29/09/22


Date of sample receipt: 29/09/22  
Test completion Date: 10/10/22  
Certificate No: 153869

Sl No.	Parameters	Unit	Result	Reference Method	IS 10500:2012
					Permissible Limit
15	Arsenic	mg/L	BDL	APHA 23 <sup>rd</sup> Edition, 3114A, Page:3-36	No relaxation
16	Iron(as Fe)	mg/L	0.184	APHA 23 <sup>rd</sup> Edition, 3500-Fe B, Page:3-80	No relaxation
17	Total Coliform	MPN/100	Nil	APHA 23 <sup>rd</sup> Edition, 9222B, Page:9-81	Shall not be detectable in any 100 ml Sample
18	Fecal Coliform	MPN/100	Nil	APHA 23 <sup>rd</sup> Edition, 9222 D, Page:9-89	Shall not be detectable in any 100 ml Sample
19	BOD	mg/L	<2	APHA 23 <sup>rd</sup> Edition, 5210B, Page:5-6	No relaxation
20	COD	mg/L	<5	APHA 23 <sup>rd</sup> Edition, 5220 b, Page:5-18	No relaxation

NOTE: (BOD) Biochemical Oxygen Demand, (COD) Chemical Oxygen Demand, (TSS) Total Suspended Solids, (TDS) Total Dissolved Solids.

For Envision Enviro Technologies North East

  
**Rimpi Sarma**  
Environmental Chemist  
Test Done By

  
**Dr. Pranita Chakraborty**  
Quality Manager  
Authorized Signatory

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**End of report**



**Annexure 10 : Minutes of the Consultation (16-17 August, 2022)**

**Minutes of the meeting**

**On Environmental Perspective of Lower Kopili Hydro Electric Project with reference to  
EIA and EMP**

**held on 16<sup>th</sup> and 17<sup>th</sup> August, 2022 at Engineers Hostel Premises, LKHEP Project Site, APGCL,  
Longku, Dima Hasao.**

A consultation / discussion meeting is organised by Assam Power Generation Corporation Limited to apprise the fringe communities and the other Government officials in and around the Lower Kopili Hydro Electric Project (120 MW) in the Dima Hasao and West Karbi Anglong districts on environmental perspectives with reference to Environmental Impact Assessment, Environmental Management Plan adhered so far along with additional measures for shifted components and based on the critical habitat analysis for avoidance or mitigation of the adverse impacts on the environmental components for the conservation of biotic components and long term survival of the plants, wildlife and human being. So that we can achieve no net loss of biodiversity as well as maintain a sustainable environment.

Mr. Janardhan Rongpi, Deputy General Manager, LKHEP, APGCL welcomed all the participants and guests present in the meeting. Subsequently the purpose and objective of the meeting was delivered by Dr Deepak Baruah, Environment Expert, APGCL highlighting the shifted components from Forest Land to Revenue Land as per suggestion and recommendations of the Forest Advisory Committee, MoEF&CC along with the few salient features related to the project. He also explained about the conservation of biotic community of the landscape so that our environment components are not deteriorate for the construction works and maintain pristine conditions as far as possible. Further it was clarified that there is no change in the scope of the project due to shifting of the components to the revenue land as well as the power generation will also remain same i.e. 120 MW. After this, a PPT presentation is given Dr Jayanta Das, Environment Specialist of PMC elaborating the shifting of components shown in the layout plan. Further he also explained the avoidance and mitigation measures suggested in the Environment Management Plan and additional measures suggested for protection of endangered species of flora and fauna exist in the project area in details.



## **Minutes of the meeting**

### **On Environmental Perspective of Lower Kopili Hydro Electric Project with reference to EIA and EMP**

**held on 16<sup>th</sup> and 17<sup>th</sup> August, 2022 at Engineers Hostel Premises, LKHEP Project Site, APGCL, Longku, Dima Hasao.**

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	Name	Gender	Address	Views / suggestions
				<ul style="list-style-type: none"> <li>It was again clarified that no muck will spill outside the designated area as all the precautionary measures are taken or will be taken so that no adverse impact may arise due to spillage muck soil / runoff.</li> </ul> <p>2. Further he enquired about the environmental documents so that they can also monitor the compliance.</p> <ul style="list-style-type: none"> <li>In this regard it was informed that all the documents are available in the website of ADB and AAPGCL. Links were also shared. Moreover, the changes and additional steps for combating the adverse impact after the Critical Habitat analysis were also explained in details.</li> </ul>
7	Mr Joynath Longmailai	M	Disabra Village	<p>He suggested that the people of this area depends on agriculture so there should not be any adverse environmental impacts on it and requested to take necessary steps for abatement.</p> <p>He also advised to aware the local people on environmental avoidance or mitigation measures to be adhered.</p> <ul style="list-style-type: none"> <li>APGCL assured him to carry out awareness camp on conservation of wildlife and their habitats jointly with Forest Department, Local community and Contractors.</li> </ul>

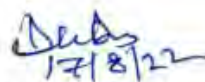
*Devi*



	Name	Gender	Address	Views / suggestions
8	Mr Mohon Singh Phangso	M		<p>He also pointed out about the preservation of local culture and also cited about the religious belief site near Longku River (Signage mentioning Archaeological site).</p> <ul style="list-style-type: none"> <li>• APGCL accepted the point and clearly mentioned that the organization respects other's believe and culture.</li> </ul>
9.	Mr. Bidya Singh Ingti	M	President, PAPA	<p>He informed the house that a meeting will be organised with the local villagers on Sunday (21<sup>st</sup> August, 2022) and new site for shifting of the stone (or belief site) will be intimated with photographs to APGCL through GM, LKHEP by Tuesday (23<sup>rd</sup> August, 2022) in writing.</p>

After that presidential address and remarks was put forward by Mr. Dilip Das, General Manager, LKHEP, APGCL. He requested all the guests and participants to extend their support to maintain a sustainable environment so that all the biotic components survive and flourish for future generations and requested the contractors to adhere EMP measures for proper implementation. Further he emphasised on the awareness generation for the conservation of the plants and animals and requested contractors, NGOs and Forest Department to come forward to achieve the following Sustainable Development Goals, i.e., Good health and well-being, Sustainable communities, Clean water and Climate action etc. He has agreed to receive the proposal for shifting the stone (related to Religious believe of a particular community) from the existing site immediately for necessary action.

The meeting was ended with the vote of thanks.



(Mr. Dilip Das)  
GM, LKHEP, APGCL  
Longku

Attendance Sheet for the Consultation/ Discussion  
on Environmental Perspective of LKHEP  
with reference to EIA & EMP.

classmate

Date 16/8/22

Page


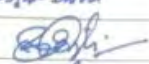



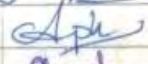
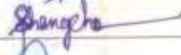

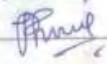
Consultation was held on 16<sup>th</sup> August  
2022 and 17<sup>th</sup> August, 2022.

SL NO	NAME	GENDER	ADDRESS	SIGNATURE
1	Dilip Kr. Das		GM, APGCL, Longkha	Dilip
2	Jatan Naiding	M	Panimur Forest Range office	Jatan
3	Prem chandra Mishra	M	CRADLE (NGO)	Prem Mishra
4	Suman Das	F	CRADLE (NGO)	Suman
5	Koruna Bora	M	GUS	Koruna
6	Rupak Debnath	M	CRADLE (NGO)	Rupak
7	V. K. RIEDDY	M	PMC	V. K. Rieddy
8	Rangan Jyoti Gohain	M	APGCL	Rangan
9	Monish Bonifa	M	APact	Monish
10	Bijon Linha	M	Zanku out Post	Bijon Linha
11	Tejhan Nain	M	Longkha op.	Tejhan
12	Manoj Yadav	M	Environmental Expert L4T	Manoj
13	Pooja Jyoti Ligisa	M	APGCL	Pooja
14	Deepak Kr Baruah	M	APGCL	Deepak





classmate  
Date 11/08/2022  
Page

SL NO	NAME	GENDER	ADDRESS	SIGNATURE
15	Santiga Phangh		PCN 'mer	
16	Sondan Langpi		LKHEP. DGM	
17	Dr Jayanta Das		PMC, Env. Specialist	Jayanta Das
18	Dijanta Dutta		JM APGL	Dijanta Dutta
19	Bidyasing Singh	M	President of LKHEPAPN	
20	Jogna Langmaia	M	Vice president LKHEPAPN	
21	Chinetaimai Thasun		Disanta	
22	Debonata Karmai		Disaboa	
24	Rupasing Kres	M	Chotolamppher	R Kres
25	Majadi Lamse	M	n	M Lamse
26	Rajit Rongphor	M	G-B Chot-danaphor	R Rongphor
27	Ra Sing Teron	M	G.B. Tontelongs	R Sing
28	Abit Phangcho	M	Boro Longku	
29	Sri-Mahan Sing Phangcho	M	Longku-Si	
30	Sri Mukut Das	M	GKL Bant, GUS.	
31	Sri Lanki Famshe	M	Torlangphar	Wamshe
32	Sri Pankaj K. Hengmaia	M	APGL, Bgalekthawon	



## ASSAM POWER GENERATION CORPORATION LIMITED

Registered Office: Bijulee Bhawan, 3<sup>rd</sup> floor, Paltanbazar, Guwahati-781007, Assam

CIN: U101AS2003SGC007239

O/o The General Manager, Lower Kopili Hydro Electric Project  
APGCL, Longku, Dima Hasao, Assam

No. APGCL/GM/LKHEP/ENV/22/98

Date: 11.08.2022

### NOTICE

### CONSULTATION ON ENVIRONMENTAL PERSPECTIVES

FOR LOWER KOPILI HYDROELECTRIC PROJECT (120 MW) IN KARBI ANGLONG AND DIMA HASAO

AT LONGKU.

#### Date & Time:

16<sup>th</sup> August 2022  
at 3 00 PM

#### Venue

Engineers Hostel (Project Site), APGCL, Longku, Dima Hasao

A discussion / consultation on Environmental Perspective is organised for the Lower Kopili Hydro Electric Project at Longku on date, time and venue as stated above for appraisal likely environmental impact and mitigation measures so far adhered. Therefore, persons residing in an around the LKHEP project area, including officials of Government Departments in Dima Hasao and Karbi Anglong districts are requested to participate in the discussion to offer suggestions, comments and views in this aspect.

Your kind presence is highly solicited.

Deputy General Manager,  
LKHEP, APGCL  
Longku

**Annexure 11 : Minutes of the Consultation (13<sup>th</sup> November, 2022)**

**Minutes of the meeting**

**On Environmental Perspective of Lower Kopili Hydro Electric Project with reference to EIA and EMP held on 13<sup>th</sup> November, 2022 at Borolongku Village, LKHEP Project Site, Dima Hasao.**

In continuation with the earlier consultations on 16<sup>th</sup> and 17<sup>th</sup> August, 2022, a consultation / discussion meeting is organised by Assam Power Generation Corporation Limited to apprise the fringe communities in and around the Lower Kopili Hydro Electric Project (120 MW) in the Dima Hasao and West Karbi Anglong districts on environmental perspectives with reference to Environmental Impact Assessment, Environmental Management Plan adhered so far along with additional measures for shifted components and based on the critical habitat analysis for avoidance or mitigation of the adverse impacts on the environmental components for the conservation of biotic components and long term survival of the plants, wildlife and human being.

Dr Deepak Baruah, Environment Expert, APGCL welcomed all the participants present in the meeting. Subsequently the purpose and objective of the meeting was delivered by Dr Jayanta Das, Environment Specialist, PMC highlighting the shifted components from Forest Land to Revenue Land as per suggestion and recommendations of the Forest Advisory Committee, MoEF&CC along with the few salient features related to the project. He also explained about the conservation of biotic community of the landscape so that our environment components are not deteriorate for the construction works and maintain pristine conditions as far as possible. Further it was clarified that there is no change in the scope of the project due to shifting of the components to the revenue land as well as the power generation will also remain same i.e. 120 MW. After this, a PPT presentation is given. Further he also explained the avoidance and mitigation measures suggested in the Environment Management Plan and additional measures suggested for protection of endangered species of flora and fauna exist in the project area in details. Mr. Sangram Singh, Social and Rehabilitation Specialist of PMC also explained all the probable impacts of the project related to labour influx and its management measures adopted.

**Views and Comments from Participants :**

	Name	Gender	Address	Views / suggestions
1	Kareng Korpi	F	Borolongku	She liked to know whether there will be any impact on the nearby agricultural land near dumping area in future. <u>APGCL explained:</u> Explained that there will be no spillover from the dumping areas to the agricultural areas. Moreover all the designated dumping yards are far away from the paddy fields.
2	Kampi Eingtipi	F	Borolongku	Elderly people want plastic containers (Drum) to reserve water and requested APGCL to provide the used plastic containers from contractor.

The meeting was ended from the vote of thanks.







ASSAM POWER GENERATION CORPORATION LIMITED  
120 MW LOWER KOPI LI HYDRO ELECTRIC POWER PROJECT  
ON ENVIRONMENTAL PERSPECTIVE ETC  
(ATTENDANCE SHEET)



Venue/Location: Borolongku

Date & Time: 13 Nov 2022

Purpose of Meeting: On Environmental Perspective Etc, with Women of the project area

Sl. No.	Name	Age	Occupation	Contact no.	Signature
1	Sanam Tinungpi	25	House wife	600697094	[Signature]
2	Monjir Ronghang	28	Dr	8099423611	M. Ronghang
3	Maloti Tenangpi	22	17	6002211058	[Signature]
4	Monika Rongphur	22	house wife	6002088742	[Signature]
5	Kareng Kropi	36	house wife	N/A	[Signature]
6	Lina Patompi	38	House wife	8091557234	R. Patompi
7	Dalim Jerompi	25	House wife	N/A	[Signature]
8	Kache Kropi	27	House wife	8099419305	[Signature]
9	Rena Patompi	23	House wife	7099195414	R. Patompi
10	Maina phurapi	25	House wife	7637920995	M. phurapi
11	Maina phangcho	35	4	N/A	[Signature]
12	Babapi Rongphur	29	house wife	N/A	[Signature]
13	Kamti Engtipi	50	u	N/A	[Signature]
14	Sika phangcho	27	4	N/A	[Signature]





ASSAM POWER GENERATION CORPORATION LIMITED  
120 MW LOWER KOPILI HYDRO ELECTRIC POWER PROJECT  
ON ENVIRONMENTAL PERSPECTIVE ETC  
(ATTENDANCE SHEET)



Venue/Location: Borolongku

Date & Time: 13 Nov 2022

Purpose of Meeting: On Environmental Perspective Etc, with Women of the project area

Sl. No.	Name	Age	Occupation	Contact no.	Signature
15	Me Koi Terongpi	30	House wife	N/A	
16	Lahon patorpi	50	"	4	
17	Sika patorpi	29	"	4	S. Patorpi
18	Dalimi Rongkipi	26	"	4	Dalimi Rongkipi
20	Kalme Engkipi	40	"	4	Kalme Engkipi
21	Ratna Terongpi	22	"	4	Ratna
22	Meli Terongpi	18	student	4	M. Terongpi
23	Kave Ronghampi	32	House wife	4	Dalini
24	Basari Phamchon	45	House wife	4	Basari Phamchon

**Annexure 12 : Non work Related Accident on 15<sup>th</sup> July 2022**



Larsen & Toubro Limited,  
L&T Construction  
Heavy Civil Infrastructure  
Mount Poonamallee Road  
Manapakkam, P. B. No. 979  
Chennai - 600 089, INDIA  
CIN: L99999MH1946PLC004768  
**Date: 27<sup>th</sup> Feb'23**

**Letter No.: LKHEP-PKG2/LNT/141/LL/667**

To,  
The Project Director (PMU),  
Lower Kopili H.E. Project,  
Assam Power Generation Corporation Limited,  
3<sup>rd</sup> Floor, Bijulee Bhawan, Paltan Bazar, Guwahati-1, Assam.

The General Manager,  
Lower Kopili H.E. Project  
APGCL Hostel, Longku, Near Police Station,  
Dist.: Dima Hasao, Assam, Pin: 788931.

**Project:** Engineering, Procurement, Construction and Commissioning of Project Roads, Civil & Hydro-mechanical works for 120 MW- Lower Kopili Hydroelectric Project, Assam (Package-2).

**Sub: Intimation on disbursement of compensation against non-work related accident case - reg.**

Ref:

1. Contract Agreement no. APGCL/CGM (PP&I)/ADB/LKHEP/Pkg-2/02 of 2020-21, dtd. 21<sup>st</sup> Aug'20
2. L&T Letter No. LKHEP-PKG2/LNT/153/GL/163 dtd. 22nd Jul'22 (addressed to the Employee Compensation Commissioner)
3. Employee's Compensation Commissioner Letter No. LE/HAF/EC/01/2020/311 dtd. 08<sup>th</sup> Dec'22
4. L&T Letter No. LKHEP-PKG2/LNT/153/GL/225 dtd. 22<sup>nd</sup> Dec'22 (addressed to the Employee Compensation Commissioner)

Dear Sir,

This is for the kind information of the Employer that the Contractor had disbursed the compensation of ₹ 9,89,022/- to Ms. Rina Engtipi, wife of deceased workman, Late Roberston Hanse, who died on 15<sup>th</sup> Jul'22 due to non-work related accident (sudden cardiac arrest). Photo copy of Post Mortem Report No. 1135-36 dtd. 20<sup>th</sup> Jul'22 is also attached herewith for reference, please.

Photo copies of other relevant correspondences and money receipt with regard to the above are also attached herewith for kind information and record of the Employer, as detailed below:

Sr. No.	Details of Document attached	Date	Remarks
1.	Post Mortem Report No. 1135-36	20 <sup>th</sup> Jul'22	Post Mortem conducted at B. P. Civil Hospital, Nogaon on 16 <sup>th</sup> Jul'22
2.	L&T letter No. LKHEP-PKG2/LNT/153/GL/163	22 <sup>nd</sup> Jul'22	Intimated the death to the Commissioner, Employees Compensation
3.	Commissioner Letter No. LE/HAF/EC/01/2020/311	08 <sup>th</sup> Dec'22	Advise of Commissioner for depositing the compensation

**Registered Office:**

Tel: +91 4422526000 Fax: +91 44 22552 6868/8811 [www.lntsec.com](http://www.lntsec.com)  
L&T House, N.M.Marg ,Ballard Estate, Mumbai - 400 004, INDIA



Page 1 of 2





Larsen & Toubro Limited,  
L&T Construction  
Heavy Civil Infrastructure  
Mount Poonamallee Road  
Manapakkam, P. B. No. 979  
Chennai - 600 089, INDIA  
CIN: L99999MH1946PLC004768

			amount
4.	L&T Letter No. No. LKHEP-PKG2/ LNT/153/GL/225	22nd Dec'22	Deposit of compensation amount OF ₹ 9,89,022/- to the Commissioner, Employees Compensation
5.	Order sheet from the Court of Employee's Compensation Commissioner, Cachar, Silchar.	21 <sup>st</sup> Feb'23	Court ordered for handing over payment to Ms. Rina Engtipi, w/o Late Robertson Hanse.
6.	Money Receipt vide which Ms. Rina Engipi Received an amount of ₹ 9,89,022/-	21 <sup>st</sup> Feb'23	Compensation amount paid by Employee's Compensation Commissioner vide Cheque No. 222773 dtd. 21.02.'23 on Indian Bank, Silchar Branch.

Thanking you and assuring you of our best services at all the times.

Yours faithfully,  
For Larsen & Toubro Limited

Santanu Majumdar  
Project Manager  
120 MW-Lower Kopili HEP (Package-2)



Encl: Photocopies of documents, as tabulated above.

Registered Office:  
Tel: +91 4422526000 Fax: +91 44 22552 6868/8811 www.Lntecc.com  
L&T House, N.M.Marg, Ballard Estate, Mumbai - 400 001, INDIA

Page 2 of 2

Annexure 13 : Non work Related Accident on 5<sup>th</sup> December 2022



Larsen & Toubro Limited,  
L&T Construction  
Heavy Civil Infrastructure  
Mount Poonamallee Road  
Manapakkam, P. B. No. 979  
Chennai - 600 089, INDIA  
CIN: L99999MH1946PLC004768  
Date: 14<sup>th</sup> Feb'23

Letter No.: LKHEP-PKG2/LNT/141/LL/641

To,  
The Project Director (PMU),  
Lower Kopili H.E. Project,  
Assam Power Generation Corporation Limited,  
3<sup>rd</sup> Floor, Bijulee Bhawan, Paltan Bazar, Guwahati-1, Assam.

The General Manager,  
Lower Kopili H.E. Project  
APGCL Hostel, Longku, Near Police Station,  
Dist.: Dima Hasao, Assam, Pin: 788931.

Project: Engineering, Procurement, Construction and Commissioning of Project Roads, Civil & Hydro-mechanical works for 120 MW- Lower Kopili Hydroelectric Project, Assam (Package-2).

Sub: Intimation of non-work related accident case - reg.

Ref:

1. Contract Agreement no. APGCL/CGM (PP&I)/ADB/LKHEP/Pkg-2/02 of 2020-21, dtd. 21<sup>st</sup> Aug'20
2. L&T Letter No. LKHEP-PKG2/LNT/153/GL/230 dtd. 30<sup>th</sup> Dec'22

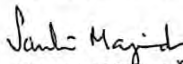
Dear Sir,

The Contractor is forwarding herewith a photocopy of the letter cited at Sr. No. 2 above, which is self-explanatory with regard to a non-work related accident case intimated to the Employee Compensation Commissioner, Regional Labour Office, Haflong, Dima Hasao, Assam.

The above is for kind information of the Employer. A delay in communicating the above information to the Employer is occurred inadvertently, which is deeply regretted.

Thanking you and assuring you of our best services at all the times.

Yours faithfully,  
For Larsen & Toubro Limited

  
Santanu Majumdar 14/02/2023  
Project Manager  
120 MW-Lower Kopili HEP (Package-2)



Encl: Photo copies of Letter LKHEP-PKG2/LNT/153/GL/230 dtd. 30<sup>th</sup> Dec'22

Registered Office:  
Tel: +91 4422526000 Fax: +91 44 22552 6868/8811 www.Lntecc.com  
L&T House, N.M.Marg, Ballard Estate, Mumbai - 400 001, INDIA

Page 1 of 1



**Non-Work-related incident.**

**Person Details:**

Late Sudham Sarkar  
Age: 46 Years  
Work Profile: Plumber

**Incident:** While climbing ladder to feed water tank of workmen mess, Late Subham Sarkar had fallen from height of 1.6 m and injured himself.



**Date & Time of Incident:** 05<sup>th</sup> Dec'22 around 8:50 PM

**Immediate Treatment:** First Aid given to Late Sudham Sarkar and shifted to HAMM Hospital for medical investigation.


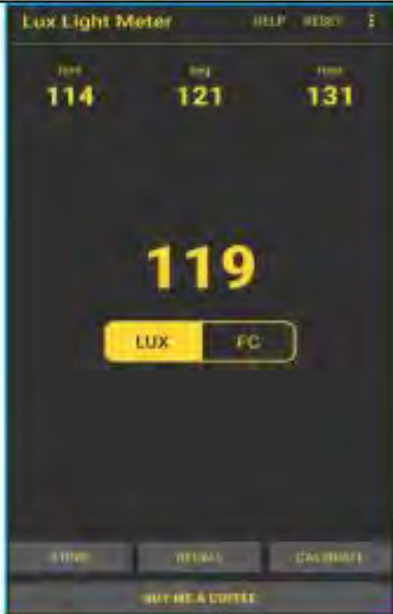
**Diagnosed:** D12 Compression Fracture.

**Treatment:** Surgery with implantation done on 08<sup>th</sup> Dec'22.


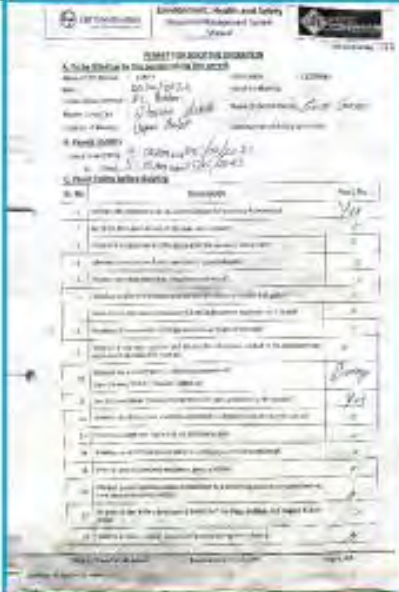

**Post Treatment details:**

After the implantation on 08<sup>th</sup> Dec'22, Late Sudham Sarkar was shifted to ICU due to breathing issue. His condition was improved on 20<sup>th</sup> Dec'22 as per Doctor's report. On 28<sup>th</sup> Dec'22, Site got information from Hospital that patient deceased due to **SEPSIS with MODS**.

Annexure 14 : Compliance to EIA Annexure 29 by CP2.

S.N.	SAFETY PRACTICES	Compliance																																																						
01	Personal Safety Equipment	<div></div> <p>100% PPE Compliance at site</p>																																																						
02	Rescue Team	<div><p>Members of the Project Emergency Response Team along with Contact details</p><table><tr><th>Sl</th><th>Role in ERT</th><th>Name of the person</th><th>Designation</th><th>Contact number</th><th>Email</th></tr><tr><td>1</td><td>Incident controller-Project Head</td><td>Santana Majumdar</td><td>Project Manager</td><td>8130036212</td><td>santanumajumdar@mecc.com</td></tr><tr><td>2</td><td>ERTS In charge</td><td>P.G. Kumar</td><td>ERTS - In charge</td><td>9789283015</td><td>pusuotham.kumar@mecc.com</td></tr><tr><td>3</td><td>ERT Member 1 - Fire</td><td>N. Bala</td><td>ERTS Rep</td><td>7896002356</td><td>nabaiyellabala@mecc.com</td></tr><tr><td>4</td><td>ERT Member 2 - Section Incharge</td><td>Zahir Hussain Hazonika</td><td>GMM - In charge</td><td>9752493367</td><td>zahir@mecc.com</td></tr><tr><td>5</td><td>ERT Member 3 - IR Incharge</td><td>Jaydeep B. Acharya</td><td>IR - In charge</td><td>9875611595</td><td>jacharya@mecc.com</td></tr><tr><td>6</td><td>First Aiders</td><td>Alex</td><td>First Aider</td><td>8453784596</td><td>-</td></tr><tr><td>7</td><td>Security Staff</td><td>-</td><td>-</td><td>-</td><td>-</td></tr><tr><td>8</td><td>Others (specify)</td><td>Alex</td><td>First Aider</td><td>8453254586</td><td>-</td></tr></table></div> <p>Emergency Response Team</p>	Sl	Role in ERT	Name of the person	Designation	Contact number	Email	1	Incident controller-Project Head	Santana Majumdar	Project Manager	8130036212	santanumajumdar@mecc.com	2	ERTS In charge	P.G. Kumar	ERTS - In charge	9789283015	pusuotham.kumar@mecc.com	3	ERT Member 1 - Fire	N. Bala	ERTS Rep	7896002356	nabaiyellabala@mecc.com	4	ERT Member 2 - Section Incharge	Zahir Hussain Hazonika	GMM - In charge	9752493367	zahir@mecc.com	5	ERT Member 3 - IR Incharge	Jaydeep B. Acharya	IR - In charge	9875611595	jacharya@mecc.com	6	First Aiders	Alex	First Aider	8453784596	-	7	Security Staff	-	-	-	-	8	Others (specify)	Alex	First Aider	8453254586	-
Sl	Role in ERT	Name of the person	Designation	Contact number	Email																																																			
1	Incident controller-Project Head	Santana Majumdar	Project Manager	8130036212	santanumajumdar@mecc.com																																																			
2	ERTS In charge	P.G. Kumar	ERTS - In charge	9789283015	pusuotham.kumar@mecc.com																																																			
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7	Security Staff	-	-	-	-																																																			
8	Others (specify)	Alex	First Aider	8453254586	-																																																			
03	Illumination and Earthing	<div></div> <p>Measuring bright ness in Lux</p>																																																						

		 <p>Earthing Provided</p>
04	Maintenance of Traffic and Safety on Public Roads	 

		
		Cross barriers provided and Speed sign boards displayed.
05	Blasting	<div>   </div>
		Blasting permit in place during the before blasting







06


Ventilation of  
Underground  
Works






Anemometer measure wind speed

07	Control of Dust, Silica and Noxious Gases in Underground Works	<b>Tunnel Ventilation system dated on 18-03-2023 ADIT - HRT Tunnel F3</b>						
					Tender requirement	Present Tunnel	available	Evidence
		Air velocity	m/s	Meter per second	0.3m/s	✓	0.6m/s CMS	
		Fresh Air Volume	CMM	Cubic meters per minute	3.0m3/min	✓	87.59 CMM	
		<b>Lux monitoring work location inside Tunnel -dated on 22-02-2023 ADIT - HRT Tunnel F3</b>						
			✓ Proper illumination provided inside Tunnel. Maintained.					
			<b>Gas Monitoring work location inside Tunnel -dated on 22-02-2023 ADIT - HRT Tunnel F3</b>					
			✓ No Dangerous gases present inside Tunnel and oxygen level within the limit.					



Tunnel ventilation system



		Water sprinkler done on road.
08	Measures to be taken during excavation of earth	 
		Daily Prestart Briefing before start of work.

09	Safety practices during construction phase	<div>  </div> <div>Virtual Reality training</div> <div>  </div> <div>Alcohol testing workers</div>
----	--	--



		 <p>Alcohol testing operators / Drivers</p>
10	Fire protection in labor camp and staff colonies	  <p>Fire Extinguisher provided prompt locations at Camp locations</p>



LKHEP



# Environmental Monitoring Report

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## **PUBLIC**

Semestral Report: July 2022 – December 2022  
February 2024

## India: Assam Power Sector Investment Program - Tranche 3

Part 3 of 3: Validation Report

Prepared by Assam Power Generation Corporation Limited (APGCL) for the Asian Development Bank (ADB).

This environmental monitoring report is a document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or staff, and may be preliminary in nature. Your attention is directed to the “terms of use” section of ADB's website.

In preparing any country program or strategy, financing any project, or by making any designation of or reference to a particular territory or geographic area in this document, ADB does not intend to make any judgments as to the legal or other status of any territory or area.

**Asian Development Bank**

**External Semi-annual Monitoring Validation Report**  
**for**  
**Environmental Safeguards Implementation from July to December 2022**  
**120 MW Lower Kopili Hydroelectric Project**

**Submitted to**  
**Assam Power Generation Corporation Limited**



**Submitted by**  
Feedback Infra Private Limited **ENERGY DIVISION**  
AQUALOGUS – Engenharia e Ambiente, Lda  
Jade Consult Pvt. Ltd.










## Validation of Six-Monthly Environmental Monitoring Report (Jul-Dec'22)

Action→ Category↓	Description	1	2	3	4	5
A	For Approval	Released For Construction	Clear Approval	Approved With Comments	Approved With Comments but Resubmit with Revision	Disapproved
B	For Reference	X				
C	As Built					
D	Preliminary For Information Only					

<b>Consultancy Services for External Monitoring of 120 MW Lower Kopili Hydroelectric Project</b>					
<b>CONTRACT No 01</b> <b>DATED: 24<sup>th</sup> December 2021</b>					
<b>PURPOSE:</b>  <b>External Monitoring for implementation of Environment Safeguards for the period July to December 2022.</b>					

1	Submission to Client (Draft)	19.10.2023	AQ, AW, JK, VR, SM	SM	SM
Rev.	Description	Date	Prepared	Checked	Approved
		<b>Assam Power Generation Corporation Ltd,</b> <b>Bijulee Bhawan, Paltan Bazar, Guwahati - 781001</b>			
  		<b>Feedback Infra Private Limited</b> <b>First Floor, Tower East 77A, Sector 18, IFFCO Road, Gurugram 122 015, India.</b> <b>AQUALOGUS – Engenharia e Ambiente, Lda.</b> <b>Rua do Mar da China n.º 1, Office 2.4, 1990-137 Lisbon, Portugal .</b> <b>Jade Consult Pvt. Ltd.</b> <b>42/34 – Kabil Marg, Thapathali, Kathmandu, Nepal</b>			
<b>Doc. No: FIPL/ED/APGCL/Semi Annual Summary-Jul-Dec 22/Oct23/01</b>			<b>Size :</b> <b>ISO-A4 /A3</b>	<b>No of Pages:</b> <b>73</b>	<b>REV</b> 

List of Abbreviations	
ADB	Asian Development Bank
AMD	Acid Mine Drainage
APGCL	Assam Power Generation Corporation Limited
APO	Assistant Personnel Officer
APSIP	Assam Power Sector Investment Program
ASTM	American Society for Testing and Materials
CAP	Corrective action plan
CATP	Catchment Area Treatment Plan
CAMPA	Compensatory Afforestation Fund Management and Planning Authority
CEMP	Contractor Environmental Management Plan
CGWB	Central Ground Water Board
CP	Contract Packages
CIA	Cumulative Impacts Assessment
CTO	Consent to operate
CTE	Consent to establish
DC	Double Circuit
EA	Executing Agency
EC	Environment Clearance
EIA	Environmental Impact Assessment
EHS	Environment Health and Safety
EMC	External Monitoring Consultant
EMP	Environmental Management plan
EMoP	Environmental Monitoring Plan
EMR	External Monitoring Report
FAC	Forest Advisory Committee
FC	Forest Clearance
FIPL	Feedback Infra Private limited
GIIPS	Good International Industrial Practices
GIS	Gas Insulated Substation
GOI	Government of India
GOA	Government of Assam
GRC	Grievance Redressal Committee
GRM	Grievance Redress Mechanism
ICT	Interconnected Transformers
IWRMP	Integrated Water Resources Management Plan
L&T	Larsen & Toubro
LKHEP	Lower Kopili Hydroelectric Project
MEPF	Meghalaya Environmental Protection Fund
MS	Management of Study
MOC	Memorandum of Change

MoEF & CC	Ministry of environment Forest and Climate Change
MPR	Monthly Progress Reports
MSL	Mean Sea Level
MW	Megawatt
NOC	No Objection Certificate
NGT	National Green Tribunal
NGO	Non-Governmental Organization
PESO	Petroleum and Explosives Safety Organization
PMC	Project Management Contractor
PMU	Project Management Unit
SEMR	Six-Monthly Environment Monitoring report
SESC	Social and Environment Safeguards Cell
SRC	Sulphate Resistant Cement
SPS 2009	Safeguard Policy Statement (ADB,2009)
TL	Transmission Line
UMB	Umrangsu Municipal Board
WQR	Water Quality Restoration
WQRP	Water Quality Restoration Plan

## Contents

1.0	PROJECT BACKGROUND .....	6
1.1	PROJECT SALIENT FEATURES.....	6
1.2	PROJECT PROGRESS STATUS .....	9
1.3	MONITORING REQUIREMENT .....	10
1.4	SCOPE OF WORK, VALIDATION OF SEMR BY EXTERNAL MONITORING CONSULTANT:.....	10
2.0	IMPLEMENTATION OF THE ENVIRONMENTAL SAFEGUARDS .....	11
2.1	ENVIRONMENTAL COMPLIANCE STATUS .....	13
2.2	COMPLIANCE WITH NATIONAL/LOCAL STATUTORY REQUIREMENT.....	14
2.3	ENVIRONMENTAL LOAN COVENANT COMPLIANCE .....	17
3.0	COMPLIANCE TO ENVIRONMENT MANAGEMENT PLAN .....	23
3.1	BIODIVERSITY CONSERVATION AND WILDLIFE MANAGEMENT PLAN.....	23
3.2	CATCHMENT MANAGEMENT PLAN .....	24
3.3	FISH MANAGEMENT PLAN .....	25
3.4	WATER QUALITY RESTORATION.....	26
3.5	INSTITUTIONAL ARRANGEMENTS & CAPACITY BUILDING:.....	28
3.6	DAM SAFETY MEASURES:.....	28
3.7	SOLID & LIQUID WASTE MANAGEMENT.....	29
3.8	MUCK MANAGEMENT MEASURES:.....	30
3.9	INTEGRATED WATER RESOURCE MANAGEMENT PLAN .....	31
3.10	MAINTAINING THE REQUIRED ENVIRONMENTAL FLOW.....	31
3.11	OCCUPATIONAL HEALTH AND SAFETY MEASURES: .....	32
3.12	LABOUR INFLUX MANAGEMENT.....	32
3.13	ENVIRONMENTAL MONITORING: .....	32
3.14	GRIEVANCES REDRESS MECHANISM.....	33
3.15	CONSULTATION AND INFORMATION DISCLOSURE .....	33
3.16	OTHER ANTICIPATED IMPACT .....	34
3.17	CORRECTIVE ACTION IN COMPLIANCE TO ADB MISSION (5-9th Dec 2022): .....	34
4.0	CONCLUSION AND RECOMMENDATION .....	35
	Annexure-I.....	39
	Annexure-II.....	41
	Annexure-III.....	42
	Annexure-IV .....	43
	Annexure V.....	46
	Annexure-VI .....	47



Annexure- VII .....	63
Annexure- VIII .....	64

## 1.0 PROJECT BACKGROUND

1. Assam Power Generation Corporation Limited (APGCL), is in the process of building a 120 MW Lower Kopili Hydroelectric Project. The Lower Kopili H.E. Project (LKHEP or "project") involves the construction of 120 MW hydroelectric power plants and an associated 50 km long 220 kV transmission line in Karbi Anglong and Dima Hasao Districts in the north-eastern State of Assam, India. The project will use the hydropower potential of the Kopili River, a south bank tributary of the Brahmaputra River, at Longku, utilizing the regulated discharge from Kopili HEP, spills from Khandong and Umrong Dams in the upstream, and the discharge from the intermediate catchment. The project is designed to operate as a run-of-river power plant with diurnal storage with a total capacity of 120 megawatts (MW), comprising a main plant rated at 110 MW (2X55 MW) and an auxiliary plant rated at 10 MW (1x5 MW+2x2.5 MW) at the toe of the dam for utilizing the mandatory releases for ecological purposes. The scheme has been contemplated to run at full potential in the monsoon season and operate as a peaking station in the non-monsoon season.
2. APGCL, through the Government of Assam (GoA) and subsequently through the Government of India (GOI), has applied for a loan from the Asian Development Bank (ADB) towards the cost of LKHEP under the Assam Power Sector Investment Programme (APSIP) in Environment Tranche 3.
3. The project has been accorded environmental clearance by MoEF&CC on September 4, 2019, as it falls under **Category 'A'** of the Environmental Impact Assessment (EIA) Notification, dated September 14, 2006 (and amendments thereafter). The project has also received stage 1 and stage 2 forest clearance from MoEF&CC on February 5, 2019, and December 4, 2020, respectively, as a result of the project's requirement to divert forest land.

## 1.1 PROJECT SALIENT FEATURES

4. The proposed dam will be a concrete gravity dam with a top longitudinal cross section of 335 m and a height of 66.5 m. The crest of the dam will be 229 m above mean sea level (MSL). The dam will create a reservoir at Longku with a spread of 620 hectares (ha) and live storage of 77 million cubic metres. The designed discharge capacity is 112.71 cubic metres per second (m/s) at a flow velocity of 3.86 m/s and 5.31 m/s. Within the Project Site Area of LKHEP, 14 new Access Roads are included for access to various Project Components. The Civil work and electromechanical work are in progress. The project's salient features are given in **Table 1.1**.

**Table 1.1: Project Salient Features**

Particulars	Description	
Name of the Project	Lower Kopili Hydroelectric Project	
State	Assam	
District	East of Karbi Anglong and West of Dima Hasao (North Cachar) Hills District (Project Location Map is attached as <b>Annexure-I</b> )	
River	Kopili	
Catchment area	2,076.62 sq. km	
Environmental flow (e-flow)	Minimum 5.345 m³/s	
DAM		
Dam Type	Concrete Gravity Dam	
Maximum height of the dam	66.50 m	
Overflow spillway for debris removal size (W x H)	4.0 m x 3.0 m	
Sluice spillway No. & size (W x H)	6 Nos., 10 m x 12.50 m	
Sluice spillway capacity	11,030 m³/s	
Gate type and Number	Radial gate and 6 No. with hydraulic hoist	
RIVER DIVERSION		
Diversion type	Coffer dams, Diversion Tunnel of 10.5 m diameter at right bank	
Upstream Coffer dam		
Type	Plum Concrete	
Height	21.50 m	
Top Length and Level	179.5 m, EL. 193.0 m	
Downstream Coffer dam		
Type	Earth & Rockfill	
Height	10.0 m	
Top Length and Level	132.0 m, EL.181.0 m	
INTAKE	MAIN POWERHOUSE	AUXILIARY POWERHOUSE
Number of openings	1	1
Nominal discharge	112.71 m³/s	24.94 m³/s (e-flow of 5.345 m³/s within this)
HEAD RACE TUNNEL		
Location	Right bank of Kopili river	
Length	3,641.22 m	
Nominal discharge	112.71 m³/s	

ADIT-1 TO HRT		
Shape and Size	D-Shape, 6.0 m	
Length	354.66 m	
Type & Number of Gate	Hinge type, One	
Gate Size (W x H)	2.5 m x 2.5 m	
SURGE SHAFT		
Type	Restricted orifice type	
Diameter	25 m	
VALVE HOUSE		
Type & Number	Surface, 1	
Size (L x W x H)	14 m x 23 m x 27.50 m	
PRESSURE SHAFT	MAIN POWERHOUSE	AUXILIARY POWERHOUSE
Type	Circular steel lined	Circular steel lined
Nominal discharge	112.71 m³/s	24.94 m³/s
Length of pressure shaft Length of Surface Penstock	610m (Dia 6.1m)/ 81.9 m (Dia 5.2m)	64 m
Number of pressure shaft	1	1
Specification of steel plates	ASTM A537 Class II (YS-415 Mpa)	ASTM A537 Class II (YS-415 Mpa)
Penstock	2	3
Internal diameter	3.70 m	2 Nos.1.65 m & 1 No.2.35 m
Length	16.3 m	26.20 m/ 26.20 m/ 24.20 m
POWERHOUSE	MAIN POWERHOUSE	AUXILIARY POWERHOUSE
Installed capacity	2x55 MW=110 MW	2x2.5 MW+1x5 MW=10 MW
Location	Right side of river Kopili	Right side of river Kopili
Type	Surface powerhouse	Surface powerhouse
Powerhouse dimensions (L x W x H)	76.5 m x 19.1 m x 30 m	50.5 m x 10 m x 27 m
Average gross head	114 m	48.30 m
Type of turbines	Francis, vertical	Francis, horizontal
Number of units	2	3
Installed capacity per unit	55 MW	2.5 MW / 5 MW
TRANSFORMER YARD		



Type	Single phase, ONAN/ONAF	Three phase, ONAN/ONAF Cooled Generator Transformer
Location	Upstream of powerhouse	Upstream of powerhouse
Number	7 (6+1 spare) nos.	2 nos.
Rated capacity	24 MVA	6.5 MVA
<b>TAIL RACE CHANNEL</b>		
Type	Rectangular	Three separate ducts merging into one common duct
Numbers	1	[2 Nos of 2m (W) X 1.8m (H) and 1 No of 3m (W) X 1.8m (H)] – merging into (3+4) m (W) X 1.8m (H)
Size (L x W)	40 m x 26 m	
<b>SWITCH YARD</b>		
Type & Size	Outdoor-146 m x 72 m	Outdoor-24 m x 21 m
Voltage level	220 kV	33 kV
<b>CONSTRUCTION PERIOD</b>		
Total construction period	4 Years	

5. In addition to the dam and its structures, an officer's colony is being established with adequate facilities for the treatment of wastewater generated from the colony.
6. The power evacuation system includes the construction of a 220 kV Double Circuit (DC) transmission line (TL) from the Main Powerhouse (MPH) site of LKHEP to an existing 132/33 kV Substation (S/S) at Sankardev Nagar (Lanka) and the construction of a 33 kV Single Circuit (SC) Transmission Line (TL) from the Auxiliary Powerhouse (APH) site of LKHEP to an existing 132/33 kV S/S at Umrangsu. The length of TL between the MPH and Sankardev Nagar is 46.013 km, and between the APH and Umrangsu it is 22 km. The power evacuation system will also involve upgrading an existing 132/33 kV S/S at Sankardev Nagar with the existing 2 power transformers of capacity 2x25 MVA to 220kV with 2 interconnected transformers (ICT) of capacity 2x160 MVA. The relevant switchgear type proposed is a gas-insulated substation (GIS).
7. As per ADB's Safeguard Policy Statement (SPS 2009), the Project is classified as **Category 'Triple A'**.

## 1.2 PROJECT PROGRESS STATUS

8. The project is divided in to 4 packages and their selection, and work progress is reported in **Table 1.2** below:

**Table 1.2: Project Progress Status**

S.N.	Contract Packages	Nature of Work	Date of Award	Name of Contractor	Work Status/ Physical Progress
1	CP-1	Establishing Housing colony for APGCL officers	30.09.2022	BVG India Ltd.	1%
2	CP-2	Civil and Hydro mechanical works for the Dam and ancillary structures	21.08.2020	L&T	38.9%
3	CP-3	Electromechanical Works	09.09.2021	Andritz Hydro (P) Ltd.	10%
4	CP-4	Transmission Lines	20.04.2022	M/s. Salasar Techno Engineering Limited JV with M/s. Akelik Group	17%

### 1.3 MONITORING REQUIREMENT

9. The proposed project is a '**Category A**' project under the ADB Environmental Safeguard Project categorization (ADB SPS, 2009). Accordingly, an Environmental Impact Assessment (EIA) was carried out by APGCL. In the EIA report, applicable laws and legislation and the policy framework have been reviewed, and environmental mitigation measures have been recommended for implementation during the construction and operation stages of the project and its associated facilities. Accordingly, a comprehensive Environmental Management Plan (EMP) and Environmental Monitoring Plan (EMoP) were provided, along with guidelines for a detailed construction method statement to be prepared by the contractor (and subcontractors). Also, a Biodiversity Management Plan (BMP) under the EMP has been formulated and is part of the package of activities designed to meet the requirements of ADB's Safeguards Policy Statement (SPS) 2009.

### 1.4 SCOPE OF WORK, VALIDATION OF SEMR BY EXTERNAL MONITORING CONSULTANT:

10. An External Monitoring Consultant (EMC) has been engaged under the project to provide technical guidance and monitor the implementation and effectiveness of Environmental and Social (E&S) Safeguards activities as per the requirements of national regulatory requirements and ADB's SPS 2009 safeguards requirements with respect to project construction activities. External Monitoring Consultant are required to verify the status of mitigation and monitoring activities for the project, with overall supervision of the implementation of:
- ✓ Compliance conditions stipulated under various clearances, permits, and NOCs obtained for the project.
  - ✓ Environmental safeguard requirements as given in the ADB SPS 2009
  - ✓ Compliance with loan covenants related to Environmental Safeguards
  - ✓ Independent monitoring of the implementation of the Environmental Management Plan by the Construction Contractors
11. EMC has already validated the Six-Monthly Environmental Monitoring report (SEMR) and Six-Monthly Social Monitoring report (SSMR) for the periods July–December 2021 and January–June 2022. In

addition, regular site visits are conducted, and site visits and monthly and quarterly reports are submitted to APGCL. The SEMR verification report for the period July–December 2022 was submitted to APGCL on July 18, 2022. The current report is the Draft SEMR Validation Report covering the period from July 2022 to December 2022, based on the version received on May 18, 2023, from APGCL. The verification and validation studies were carried out employing the following approach:

- ✓ Desktop-based review of documentation and literature such as previous Monthly and Quarterly Progress reports for the project, Six-month Environmental Monitoring Reports, other records, and plans.
- ✓ Site inspections of different construction sites, labour camps, and the staff accommodation areas upstream and downstream of the dam.
- ✓ Interaction with project staff, the contractor's EHS team, the local community, and other stakeholders where needed.
- ✓ Validation and verification of compliance status of various permissions (CTEs, CTOs, groundwater abstraction permissions, tree cutting permissions, etc.)
- ✓ Validation, verification, and compliance status of ADB's loan covenants
- ✓ Validation and verification of the compliance status of EMP implementation measures

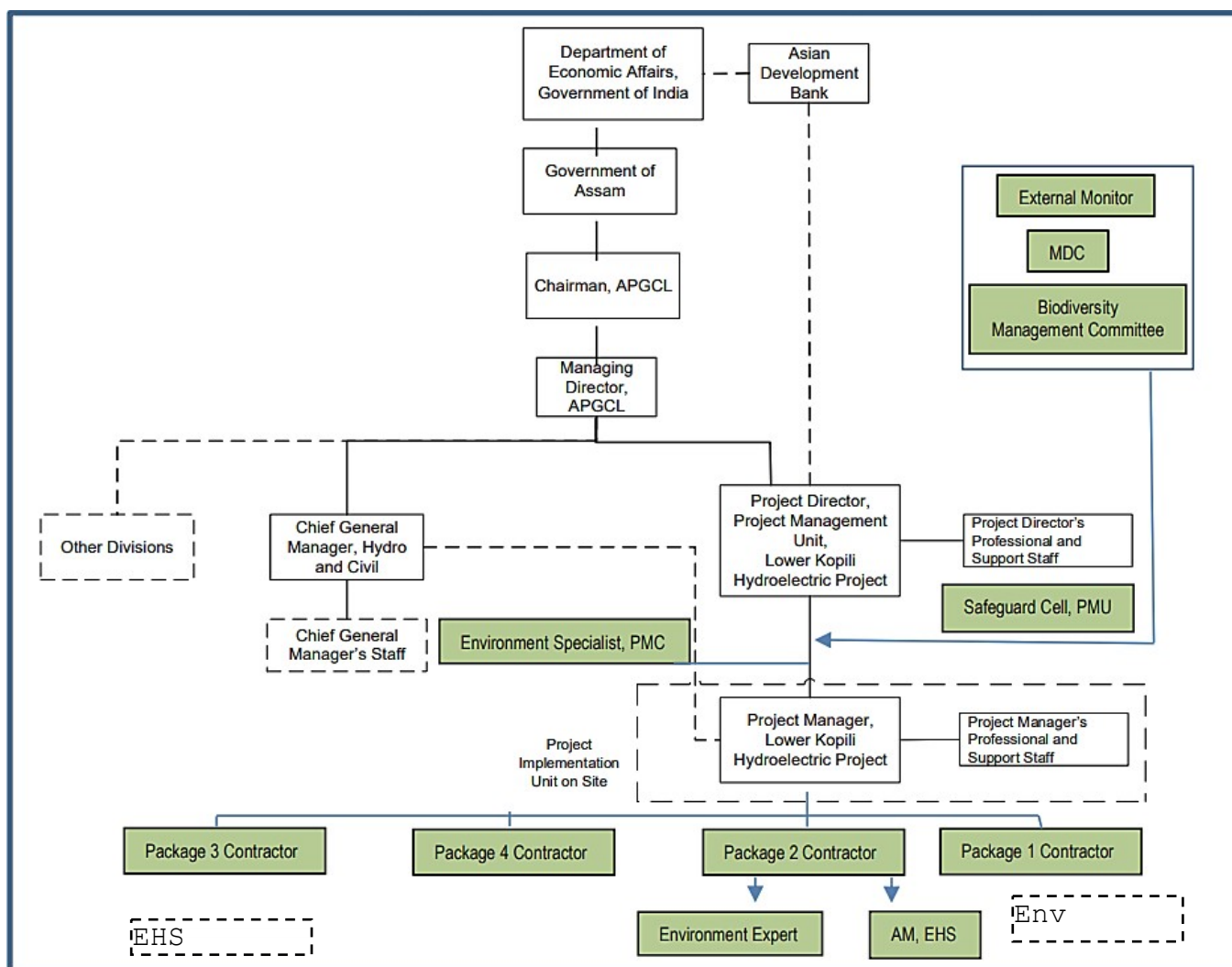
## **2.0 IMPLEMENTATION OF THE ENVIRONMENTAL SAFEGUARDS**

### **Implementation Arrangement:**

12. As the project's Executing Agency (EA), APGCL is responsible for carrying out all environmental protection measures. APGCL has a fully operational Project Management Unit (PMU) and a dedicated Social and Environmental Safeguards Cell (SESC), both of which are overseen by a Project Director (PD). The SESC coordinates overall environmental safeguards activities for the project, including the implementation of environmental and social safeguards plans and compliance monitoring. The SESC has one qualified environment expert and one qualified social expert, both on a contract basis. There was no change in staffing during the reporting period. As indicated in previous SEMR validation, it is suggested that SESC appoint a dedicated biodiversity or ecology expert and an Environment, Health, and Safety (EHS) professional for the project. As of this date, it has been communicated that one site engineer has been designated with additional responsibility for EHS compliance for the project.
13. The APGCL is supported by the Project Management Consultant (PMC) that was awarded to AF Consultant. PMC had a qualified environmental and social safeguards specialist; however, there is no dedicated EHS expert appointed for the project.
14. During the assessment period, EMC also had interactions with the personnel of the contractors for Packages 2, 3, and 4 and noted that:
  - ✓ The Package 2 contractor has appointed a qualified environment expert, a cluster EHS head followed by an EHS manager, and trained EHS field staff. They are responsible for preparing Monthly Review reports and Monthly Safety Reports and submitting them to APGCL.

- ✓ Package 3 contractors did not have dedicated environment and EHS experts.
- ✓ The Package 4 contractor had an environment expert on site; however, there was no EHS expert on site.

15. An organogram showing the relationships and staffing for environmental and social protections between the executing and implementing agencies, the project management consultant, contractors, and the external monitoring consultant is presented below:



### Assessment of prerequisite for EMP implementation:

16. To assess the readiness of EMP implementation, the External Monitoring Consultant first determined if the APGCL was prepared to proceed with the construction of the proposed project and transmission line. The indicators used for the assessment are listed in **Table 2.1** below:



**Table 2.1: EMP Readiness Assessment**

Indicator	Assessment Criteria	Compliance	Remarks
EIA approval and disclosure	The EIA was cleared by ADB and disclosed on ADB's project website	Complied	
Mitigation measures described in the EMP adopted during detailed design and construction of the project	Measures defined in EIA and EMP are included in detailed designs for each project component.	Complied	EMP and the EMoP have been included as part of the contract documents with all contractors involved.
EIA/EMP update	Whether the EIA/EMP is updated after detailed design and cleared by ADB.	Being Complied	An update EIA and EMP is needed and is under preparation
Compliance with loan covenants	The borrower complies with loan covenants related to project design and environmental management planning.	Being Complied	Detail provided in section 2.3.
Environmental Monitoring	The monitoring parameters, locations, and methods for the ambient air, noise and surface water defined in the EMoP.	Being Complied	This is a continuous process and has been taken up by APGCL in the reporting period.

## 2.1 ENVIRONMENTAL COMPLIANCE STATUS

17. The compliance status of the project's implementation has two aspects:

- Compliance status with National/State/Local statutory environmental requirements
- Compliance status with ADB's loan covenants affecting environmental parameters.

18. Checking the status of compliance serves the objective of confirming and validating any deviations from loan covenant conditions and project-specific environmental law requirements. If there are any deviations, the APGCL must be consulted before proposing any corrective measures.

## 2.2 COMPLIANCE WITH NATIONAL/LOCAL STATUTORY REQUIREMENT

19. The SEMR have rightly presented the availability and pending status of all the necessary statutory consent, approval, permit, and clearance during the period July 2022 to December 2022.
20. The project has received the following clearances and permissions:
  - ✓ Environment Clearance was accorded to the project on 4<sup>th</sup> September 2019.
  - ✓ Stage-I forest clearance received on 5<sup>th</sup> February 2019 and Stage-II on **4<sup>th</sup> December 2020**
  - ✓ Permission for extraction of boulders from quarry (Location: Longku, Dima Hasao), **stage-I** clearance received from North Cachar Hills Autonomous Council (NCHAC) on **8<sup>th</sup> July 2022**; **Stage 2** from Department of Geology and Mining Department Govt. of Assam (GoA) on **11<sup>th</sup> May 2022** and DFO (Dima-Hasao) gave order to RO to realize Royalty from Hi-Tech Rock Products and Aggregates Limited for 3,36,000 cum on **11<sup>th</sup> July 2022**.
  - ✓ Permission for crushing of boulders from excavated materials received from DFO (Dima Hasao) for 80,000 cum on 20<sup>th</sup> Dec, 2021 and from NCHAC for 20,000 cum, on 8<sup>th</sup> Mach 2022;
  - ✓ Permission for installation of batching plant at Totelangso, Dima Hasao received from Gaon Burah on 30.06.21 and from NCHAC on 19<sup>th</sup> Oct 21;
  - ✓ CTE and CTP for the batching plant at Totelangso, Dima Hasao (near Powerhouse) received from PCBA on 11<sup>th</sup> November 2021 and 27<sup>th</sup> December 2021 respectively.
  - ✓ CTE and CTO for the batching plant near Dam site received from PCBA on 23<sup>rd</sup> June 2022 and on 31<sup>st</sup> October 2022; however, the CTO is only for 714cum/day as against 1000cum/day required. Necessary follow up to change is needed.
  - ✓ Permission received from Gaon Burah for the establishment of crusher plant.
  - ✓ Permission for installation of crusher plant at Totelangso, Dima Hasao received from Gaon Burah;
  - ✓ CTE and CTO for the crusher plant at Totelangso, Dima Hasao received from PCBA on 22<sup>nd</sup> October 2021 and on 7<sup>th</sup> December 2021; However, the CTO is only primary and secondary crusher; CTP for the tertiary crusher to be obtained.
  - ✓ NOC for tree cutting obtained for CP-2.
  - ✓ (NOC) from Deputy Commissioner Govt. of Assam, for setting up Fuel dispensing Unit at Project location has been obtained.
  - ✓ NOCs for Magazine area for the storage of explosives are obtained including file NOC/license prior to July 2022.
  - ✓ NOC for Blasting operation have been received from Deputy commissioner, SP, DM, and Sr. Station Officer (SSO) -Fire and Emergency service station, Dima Hasao
  - ✓ Night shift blasting permission received and is valid till March 2023.
  - ✓ CP-2 contractor has obtained group personal accident policy for staff and labours along with insurance for contractor plant and machinery and car insurance.
  - ✓ CP-3 and CP-4 contractors have obtained workmen compensation insurance.
  - ✓ Memorandum of Changes was approved by CEA, CWC, GSI, CSMRS, Govt. of India on 9<sup>th</sup> November 2022.

During this period the consents, permits that are still pending are reported in **Table 2.2** along with their latest position (if the permission is received in the subsequent months) is also mentioned.

**Table 2.2: Compliance with Statutory Requirements**

S.N.	Outstanding issue	Compliance Status	Remarks
1	Amendment of Environment Clearance	APGCL sent letters to MoEF&CC on 28.11.22 for the EC amendment.	<b>Annexure III</b>
2	Consent to Establish for the Hydro-Power Plant from Pollution Control Board of Assam (PCBA)	It is under process	
3	CTO for Batching Plant at Dam site	Obtained for 20,000 m <sup>3</sup> /month	<b>Annexure IV</b> CTO amendment will be initiated by CP-2 increasing the quantity up-to 1000 cum/day.
4	Post facto environmental clearance (EC) for the 4.6 ha quarry selected for coarse aggregates near Kala Nala	Being Complied	Handover of Forest Land from State Forest Department to APGCL is awaited.
5	Environmental clearance for new landfill site, prior to construction, if applicable under CP-2. And, authorization for generation of solid waste from the SPCB, if applicable under CP-2.	Being Complied	CP-2 contractor does not have a land fill site, they only have a segregation yard. It is proposed that after segregation the waste will be disposed at authorized landfill site at Umrangsu. An agreement in this regard will be executed with Umrangsu Municipality Board.
6	NOC from setting up fuel dispensing unit at project location	Validity expired	NOC under from PESO for the fuel dispensing unit was valid till 31.12.21 and similarly permission from Joint Controller of explosives was taken but validity expired on 31.12.21.
7	CTE and CTO for tertiary crusher to be obtained/ amended in the consent letters	Pending	
8	Permission for abstraction of ground water CP1	Pending	
9	Permission for abstraction of ground water CP2	Still awaited	Application for Permission of ground water extraction submitted to CGWB vide Letter No: LKHEP-

S.N.	Outstanding issue	Compliance Status	Remarks
			PKG2/LNT/153/GL/78 dated. 09.11.21
10	NOC for surface water use for construction	Pending	NOC received from Gaon Burah on 10.12.2022 ( <b>Annexure VI</b> ) However, NOC from WRD is pending.
11	CTE and CTO for the RO plant installed at the Project Office site under CP-2	Pending	Action was pending in the reporting period.
12	CTE and CTO for 6 lakh litre water treatment plant installed for the treatment of construction water by CP-2	Pending	Action was pending in the reporting period.
13	CTE for the proposed STP under CP-1	Pending	CTE will be applied before the construction of STP
14	NOC for tree cutting CP-1	Pending	
15	NOC for tree cutting CP-4	Pending	
16	Contractor labour license and labour insurance policy for CP- 1	Pending	Pending in the reporting period.
17	Inter-state migrant licence for CP -2 under Inter-state Migrant Workmen Act	Pending	
18	Contractor labour license for CP- 3	Pending	
19	Contractor labour license and Inter-state migrant licence for CP- 4	Pending	
20	Permission of the State Government for extraction of Fine aggregate from 2 quarries near Sudariang Nala (10 km u/s of dam axis) and near Langpher Nala (7 km d/s of proposed Powerhouse) respectability	EC and other permission pending	Currently no extraction of fine aggregates from these two locations has been initiated by CP-2 contractor. Crusher dust is mostly used in the concrete and natural sand required is met from the procurement from the third party.

#### Verification & Validation of Statutory Clearances:

21. The available NOCs and NOC's pending are clearly indicated in the SEMR (Jul-Dec 2022). However, following corrections/clarification are suggested SEMR verification report are concluded as follows:

- ✓ NOC for ground water from CGWB was not followed up since surface water was used, but the CTE and CTO for the RO and water treatment plant were still not available during the reporting period (Jul-Dec 2022). The progress will be reported in the subsequent progress reports of next period i.e., SEMR (Jan-June 2023).
- ✓ It has been confirmed that sand queries are still not taken up by the CP-2 contractor during the reporting period (Jul-Dec 2022). If the same is required in future, the mining plan to be submitted for approval.
- ✓ DFO, Dima Hasao (West Halflong) gave an order to RO to realise royalties from HiTech Rock Products and Aggregates Limited for 3,36,000 cum on 11<sup>th</sup> July 2022. APGCL have confirmed that the land does not belong to forest, and hence no approval/forest clearance is needed.

## 2.3 ENVIRONMENTAL LOAN COVENANT COMPLIANCE

22. The loan agreement between ADB and the Government of India was signed for the Assam Power Sector Investment Programme (Project 3) on December 30, 2020. The Environmental loan covenants are mostly described in Schedules 4 and 5 of the loan agreement. Schedule 4 of the agreement provides details of "Procurement of Goods, Works, and Consulting Services." Under this schedule, Paras. 6 and 8 pertain to compliance. Paragraph 6 specifies that no work shall commence until and unless the EIA for the scheme is approved, and Paragraph 8 mentions the selection of an external monitoring consultant and the validation of Environmental Monitoring reports by APGCL. Schedule 5, on the other hand, is related to "Execution of Projects", its implementation arrangements, safeguarding the environment and social, safeguard-related provisions in the bidding documents and works contracts, and safeguard monitoring and reporting.
23. The loan covenants for environmental safeguards stated under various schedules of the loan agreement are either complied with or being complied with and are presented in **Table 2.3**.



**Table 2.3: Compliance with Loan Covenants**

S. N.	Reference	Specific covenant/condition	Compliance as on December 2022	Remark
1	Schedule 4, Para 6 related to clearance of updated EIA by ADB	The borrower shall ensure or cause the APGCL to ensure that it shall not allow commencement of civil works under a works contract which involves environmental impacts until the APGCL has obtained the final approval of the EIA from the relevant Environmental Authority of the borrower and the state and the ADB;	Being complied.	The main EIA, along with three supplementary EIAs, was cleared by ADB in 2018, and Environmental clearance was granted by MoEF&CC via an EC letter dated September 4th, 2019. The revised EIA Addendum is under preparation, and the amendment of the EC is also under process. APGCL sent letters to MoEF&CC on 28.11.22. Also, as per the ADB mission held during the 5-9th December 2022, it was agreed that the EC amendment will be initiated soon and will be completed in the next reporting period along with EIA addendum i.e., in Jan-June 2023.
		(ii)APGCL has incorporated the relevant provisions from the EMP into the works contract;	Being Complied	
		(iii) the EIA is updated to reflect the turnkey contractors detailed design and up to date baseline and	Being Complied.	
		(iv) such updated EIA is cleared by ADB		
2	Schedule 4, Para8 related to engagement of EMand submission of various reports to ADB	The borrower shall ensure or cause the APGCL to ensure to recruit a consulting firm for external validation of the Environmental Monitoring report produced by APGCL.	Being complied	APGCL has appointed M/S Feedback Infra Private Limited (JV) with Jade Consult P. Ltd. and Aqualogus-Engenharia Ambienteas EMC. Contract awarded on 24thDecember 2021.
		The Borrower shall ensure or cause the APGCL to apply individual consultant selection for Consulting Services.	Being complied by APGCL	
3	Schedule 5, Para 5, related to Health and Safety measures and its inclusion in Contractor’s design	The borrower shall ensure or cause the APGCL to ensure that the preparation, design, construction, implementation, operation and decommissioning of the project	Partially complied.	There are still a few permits, clearances, and NOCs required for the project, which are pending and are mentioned in the SEMR prepared by APGCL.

S. N.	Reference	Specific covenant/condition	Compliance as on December 2022	Remark
		and all the project facilities comply with (a) all applicable laws and regulations of the borrower and the state relating to Environment, Health and Safety (b) The Environmental Safeguards, (c) the EARF (d) all the measures and requirements set forth in the EIA and EMP and any corrective or preventive action set forth in a Safeguard Monitoring Report.		<p>Even though environmental, health, and safety measures are mentioned in the respective contractor's bid document, the health and safety procedures still need to be improved. To reduce risks, near-miss accidents, and deadly incidents, safety gaps should be avoided. To reduce risks, near-miss accidents, and deadly incidents, safety gaps should be avoided.</p> <p>Similar to CP-2 contractors, CP-1, 3, and 4 contractors are expected to provide monthly environmental safeguard and monthly EHS reports, as well as to update their individual CEMPs.</p>
4	Schedule 5, Para 9, budgetary provision, and human resource provision related to full implementation of EMP	The borrower shall ensure or cause the APGCL to ensure that all necessary budgetary and human resources to fully implement the EMP and the RIPP as required are made available on a timely basis.	Being complied	<p>It is suggested that qualified and well-experienced EHS experts need to be appointed under SESC (PMU) for EHS and OHS compliance and supervision.</p> <p>PMC also requires the appointment of an EHS and senior environmental expert.</p>
5	Schedule 5, Para 10: Safeguard related documents in bidding document and works document.	<p>Safeguard Related Provisions in Bidding Document and Works contracts:</p> <p>The borrower shall ensure or cause the APGCL to ensure that all bidding documents and contractor for works contain provisions that require contractors to:</p> <p>comply with the measures and requirements relevant to the contractor set forth in the EIA, EMP and the RIPP and any corrective or</p>	Being Complied.	Such details are included in the bid document for the individual work items. Any revisions to the amended EMP that are necessary must also be updated in the Bid document.

S. N.	Reference	Specific covenant/condition	Compliance as on December 2022	Remark
		preventive actions set forth in a safeguard Monitoring Report;		
		(ii) budget for environment and social measures;	Being Complied	
		(iii) unanticipated environmental and social risks that arise during construction, implementation and operation stage of the project and is not included in the EIA/EMP or RIPP, RF or IPPF.	Being complied	
		(iv) Record conditions of roads, agricultural land other infrastructure prior to starting transport materials and construction.	Being Complied	The CP-2 contractor has already constructed approach roads for reaching the dam site, powerhouse site, and other ancillary areas of the project for the transport of construction materials and E&M equipment to be installed by the CP-3 contractor.
		(v) fully reinstate pathways, other local infrastructure, and agricultural land to their pre-project conditions upon completion of construction	Being Complied	
6	Scheule5, Para 11: Safeguard Monitoring and Reporting	The borrower shall ensure or cause the APGCL to ensure the following: Submit semi-annual Safeguard Monitoring Reports to ADB and disclose relevant information from such reports to affected persons promptly upon submission.	Being Complied	Semi-annual safeguards monitoring reports are being submitted to ADB for review on a regular basis; the revised SEMR for the period July–December 2022 was submitted on May 18, 2023.
		(ii) if any unanticipated environmental and or social risks and impacts arise during construction, implementation, or operation of the Project that were	Being Complied	The EIA addendum is yet to be finalized in the reporting period.

S. N.	Reference	Specific covenant/condition	Compliance as on December 2022	Remark
		not considered in the EIA, EMP, RIPP, RF or the IPPF as applicable promptly inform ADB of the occurrence of such risks or impacts with detailed description of the event and proposed corrective action plan and		
		(iii) report any breach of compliance with the measures and requirements set forth in the EMP or RIPP promptly after becoming aware of the breach.	Being complied	Semi-annual safeguards monitoring reports are being submitted to ADB for review. Further compliance with corrective actions suggested during past missions is also submitted by APGCL subsequently.
7	Schedule 5 para 12, (Prohibited Investment Activities)	The Borrower shall ensure, or cause the APGC to ensure, that no proceeds of the Loan under the Project are used to finance any activity included in the list of prohibited investment activities provided in Appendix 5 of the SPS.	Being complied	The project scope does not include any activity included in the list of prohibited investment activities.
8	Schedule 5 para 13, Labour Standards, Health and Safety	Labour Standards Health and Safety. The Borrower shall ensure or cause the APGCL to ensure that works contracts under that Project follow all applicable labour laws of the Borrower and the State and that these further include provisions to the effect that the contractors: (i) carry out HIV / AIDS awareness programs for labour and disseminate information at worksites on risks of sexually transmitted diseases and HIV / AIDS	Partially Complied	Only CP-2 is complying with the labour laws of the GoI; other contractors are still applying for contractor labour licences and insurance. No instance of child labour, forced labour, or discrimination in job opportunities was observed during the assessment surveys. PMC reported that HIV/AIDS awareness camps were not organized during the assessment period. Social, HIV/AIDS awareness, and labour law-related trainings need to be organized regularly and scheduled in every quarter.

S. N.	Reference	Specific covenant/condition	Compliance as on December 2022	Remark
		as part of health and safety measures for those employed during construction.		
		(ii) follow and implement all statutory provisions on labour (including not employing or using children as labour, equal pay for equal work) health, safety welfare, sanitation, and working conditions.	Partially complied	Sanitation facilities in labour camps and kitchen areas need improvement. Only the CP-2 contractor has established a proper plant for drinking water facilities.
		(iii) Such contracts shall also include clauses for termination in case of any breach of the stated provisions in the contract.	Being complied	

#### Verification and Validation of Environmental Loan Covenants:

- ✓ The EIA addendum is under preparation as per the approved Memorandum of Changes (MOC) dated November 9, 2022; there is a change in layout and detailed engineering is required. The same is mentioned in the SEMR.
- ✓ Based on these changes, a necessary EC amendment or modification is also required, and the same is under process and clearance is yet to be obtained. During the ADB mission (5–9 December), it was agreed that the application shall be made through the Parivesh Portal of MoEF&CC by January 15, 2023. The same is mentioned in SEMR (July–December 22).
- ✓ CTE for the Hydropower plant and other pending compliances, as mentioned in Section 2.1, need to be obtained.
- ✓ The rest of the covenants are being complied with and accordingly reported in the SEMR.



### 3.0 COMPLIANCE TO ENVIRONMENT MANAGEMENT PLAN:

24. The main EIA, along with three supplementary EIAs, was cleared by ADB in 2018, and Environmental clearance was granted by MoEF&CC via an EC letter dated September 4th, 2019. The revised EIA Addendum is under preparation, and the amendment of the EC is also under process.
25. The Main EIA and the supplementary EIAs also consist of an Environment Management Plan (EMP) with detailed mitigation measures. The time frame and location for implementation of such mitigation measures are also defined in the EMP, along with costs and responsible agencies for the implementation and supervision of the EMP.
26. In addition, an Environmental Monitoring Plan (EMoP) has been prepared to guide key monitoring activities and ensure the effectiveness of EMP implementation. Contractors who are currently working on the project (CP1, CP-2, CP-3, and CP-4) are assigned the duty of adhering to all management strategies outlined in the EMP. Each contractor must adhere to all applicable laws and ADB's safeguard specifications. Additionally, contractors will need to adhere to any project-specific regulations for soil, water, air, noise, and biodiversity.

### 3.1 BIODIVERSITY CONSERVATION AND WILDLIFE MANAGEMENT PLAN

27. **Establishment of a Biodiversity Management Committee:** The Biodiversity conservation and wildlife management plan requires the formation of a Biodiversity Management Committee (BMC) for effective implementation of the Biodiversity Conservation Programme enlisted in the EMP. The committee is required to have representatives from the project authority, members of the Autonomous Council of Dima Hasao and Karbi Anglong, the Department of Environment and Forests, the Forests and Wildlife Division, and the Assam Biodiversity Board.
28. A Biodiversity Management Committee, as required, has been established, including members of the autonomous council (Dima Hasao and Karbi Anglong), the department of environment and forest and wildlife division, and the Assam biodiversity board. Till June 2022, no meeting has been initiated by the committee; however, in the current period (July–Dec 2022), one meeting has happened on December 21, 2022. The MoM is enclosed in **Annexure-VII**. BMC has recently been formed; they have yet to arrange any awareness programme among locals, but it is expected to be planned and implemented soon, and accordingly, the same will be reported in the next report of SEMR Validation or in Monthly/Quarterly report of EMC.
29. **Conservation Plan for Floral Species:** The plan requires rehabilitation and restoration of all cleared sites; further, as required under the plan, there is no proposal review suggesting up-gradation of a recreational area at Panimur Forest Ranger Station downstream of the dam, which is currently used as a picnic spot by the general public.
30. **Compensatory Afforestation Programme:** An amount of Rs. 15, 94, 23,850.00 (Rs. Fifteen Crores, Ninety-Four Lakhs, and Twenty-Three Thousand Eight Hundred Fifty) has already been paid to the Forest Department for Compensatory Afforestation (CA) by the Compensatory Afforestation Fund Management and Planning Authority (CAMPA). As per departmental norms, the Forest Department will implement the

CA. The 8 patches of revenue land have already been notified as "reserved forest" by the government of Assam. The Forest Department, Govt. of Assam, has taken up the CA for Dima Hasao and Karbi Anglong in the APO of 2022–2023. APGCL will monitor the activities, and the Department will submit the six-monthly progress report to EA so that EA can update the status of CA to the MoEF&CC.

31. The Forest Department, Govt. of Assam, has taken up the CA for Dima Hasao and Karbi Anglong in the APO of 2022-2023. APGCL has monitored some activities. Establishment of five nurseries have been initiated at locations namely: (i) Wayungdisa RF; (ii) Tartelangso RF; (iii) Bagha Dima RF; (iv) Choto Longku RF; and (v) Bagha Dima RF, including site selection, preparation of the beds, seed collection, clearance of weeds etc. After these nurseries are developed, they will be maintained by the respective forest offices. Vegetative fencing and watch and ward persons, as suggested in the EIA, are yet to be initiated since no afforestation work is there at this time. More details will be given in the next reporting period (Jan.–June 2023).

32. After reviewing the EMP and BMP and communicating with the site staff, the EMC suggests that the following activities be initiated in close coordination with the Forest Department:

- Compensatory Afforestation is a seasonal activity and therefore can only be carried out during the pre-monsoon season to ensure a high survival rate for plant species. Therefore, it is suggested to plant at least 15-30 days before the onset of the pre-monsoon.
- A biodiversity monitoring awareness programme can be developed with a timeline to provide awareness of biodiversity to the local community.
- Rehabilitate and restore all cleared sites through compensatory afforestation as and when the structures are complete.

33. Tree Cutting: As per tree cutting permission, permission has been accorded for **45349 trees** in Karbi Anglong and 20846 trees in Dima Hasao as per Forest Clearance. NOC for tree cutting has been received for CP-2. However, in the SEMR, it's not clear whether the 241 trees have been cut by CP-2. EMC checked, and it was found that 241 trees have actually been cut by the CP-2 contractor in progress with the assistance and presence of officials of the Forest Department, Panimur Range, Dima Hasao (West) Division, and APGCL. All the trees are marked and felled by the respective Forest department.

### **3.2 CATCHMENT MANAGEMENT PLAN**

34. As a requirement, the Catchment Area Treatment Plan (CATP) as proposed in the EIA/EMP report needs to be implemented in consultation with the State Forest Department and in synchronization with the construction of the project.

35. As communicated by EA, an amount of Rs. 28, 29, and 67,000.00 (Rs. Twenty-Eight Crore, Twenty-Nine Lakh, and Sixty-Seven Thousand) has already been paid to the Forest Department for the implementation of CATP.

36. The CATP includes afforestation in 683 ha of area, for which work has yet to start. However, some nursery development work was in process in Panimur Range, Garampani Range, and Hamren Range, Dima Hasao District. More details will come up in the next SEMR Validation report (Jan.–June 2023).
37. GAP Plantation on 281 ha of land is yet to be started, but more details will come up in the next SEMR validation report (Jan.–June 2023). Pasture development on 574 ha of land is yet to start, and further developments will be reported in the next SEMR (Jan.–June 2023).
38. As per the EIA and EMP, 17 Check dams are to be constructed, for which work has yet to be initiated.
39. A detailed biodiversity survey is proposed in the next quarter (January–March 2023), and as part of this, the terrestrial and aquatic biodiversity parts will be presented accordingly in the next reporting period. However, the annual bird count study is yet to be done by EA. EA has indicated that Annual bird count will be initiated in the winter months with support of forest department. The data will be needed by EMC for analysis and additional feedback.

### 3.3 FISH MANAGEMENT PLAN

40. As per the supplementary EIA (Vol. 3), It is estimated that total annual fish production is about 254 million metric tonnes in this area (Kopili-Kallang Basin Master Plan, Brahmaputra Board, 1995). The supplementary EIA report also mentions that indigenous lotic (fast-water) fish species are found along the Kopili River and its hilly tributaries.
41. The many hydropower schemes that are being constructed or are in planning will affect these indigenous fisheries by reducing the lean season flows downstream of the dams. Designing and implementing a comprehensive fisheries reintroduction plan is therefore very important in conjunction with the environmental flow measures, including specifications of lotic and lentic species, timing and locations of reintroduction, as well as the implementation budget and responsibilities.
42. As stated in the EIA, no fish or fishing activities were recorded in the main channel of the Kopili River. However, fish are present in the local streams, which support small-scale fisheries using traps and small gear. As per environmental monitoring reports, the pH of the water has increased (but it varies seasonally), but it is not clear whether the change in pH is due to an influx of floodwater or due to the mining ban in the upstream catchment of the river. During the field visit, no local fish were recorded in the market. Interviews with the local communities revealed that small-scale fishing is done in local streams during the monsoon and post-monsoon periods. The proposed fish management plan should investigate the reason for the change in pH to have a more practical fish management plan. A detailed biodiversity survey is proposed for the next quarter (January–March 2023) by EMC, and as part of this, the aquatic biodiversity part will be presented accordingly in the next reporting period.
43. After reviewing the management plans and communicating with the site staff and locals, EMC suggests that the following activities be initiated or implemented for fish management:

- ✓ Care should be taken to avoid alien invasive species in the river, both fish and fauna. Lentic water is more likely to have invasive plant species, such as *Eichornia* and *Ludvegia Pruviana* (Barua et al., 2017), and fish species, such as Tilapia.
- ✓ There should be a regular invasive species monitoring plan at all stages of the project, including the operational phase.

### 3.4 WATER QUALITY RESTORATION

44. Draft EIA prepared by WAPCOS (October 2016) was finalized with 3 additional reports namely (i) Cumulative Impacts Assessment (CIA), (ii) an Integrated Water Resources Management Plan (IWRMP) and (iii) a Water Quality Restoration Plan (WQRP) including a mitigation strategy. The supplementary EIA (Volume 4) to the main EIA report is prepared mainly with an objective of Water Quality Restoration (WQR). The main objectives of the WQRP are to determine the sources of acidity due to Rat-hole mining and to identify and design remedial alternatives based on feasibility, cost, and relative effectiveness. As per this WQRP, the Kharkar river is the upstream source of the Acid Mine Drainage (AMD) due to rat hole coal mining practices. The Overall objective of the WQRP is:
- ✓ Reduce and eventually eliminate the AMD and consequent surface water contamination, up and downstream of Kharkar and Kopili river.
  - ✓ Remediate abandoned mine areas to isolate AMD-producing geologic material.
  - ✓ Restore coal mine affected land to eventually support pre-mine land eco-systems including its flora and fauna;
  - ✓ Restore pre-mining land use including agriculture, horticulture and grazing.
  - ✓ Restore riverine system to pre-AMD quality to support fisheries; and
  - ✓ Guide eventual land use and local economy away from coal mining, to one that promotes sustainable development.
45. AMD problem in the Kopili river Basin: Acid mine drainage (AMD) forms when sulphide minerals have been exposed to oxidising conditions during mining and other excavation activities, such as highway construction. In the presence of oxygen and water, sulphide minerals oxidise to form sulphate-rich and often metal-laden soil. AMD are toxic to vegetation and can reduce the potability of water supplies.
46. Water Quality in the Kopili River Basin: As per the EIA report (April 2018) for the LKHEP scheme, the Water quality in River Kopili has been reported as acidic (pH 3.3 to 5.2) making it unfit for drinking or usage in construction. Further samples were collected during January 17, indicates that Kharkar River, a tributary of Kopili actually carries exceptionally low pH (2.5-3.3) water leading to acidic nature in River Kopili. The supplementary EIA (Vol4: WQRP) reported that the AMD from the rat hole mining in Meghalaya is the major reason for such low pH value in Kharkar River; measures of AMD show pH value in the range of 2.2 to 3.7. In October 2017, MoEF&CC subcommittee reported that the pH value from river Kopili in the range 6.76-6.86 and at Umrang Reservoir in the range of 4.54-4.62. This report of MoEF&CC sub-committee therefore does not report high acidic water in River Kopili.

47. Further water quality was measured at Dam site and its upstream and downstream parts by APGCL in 2018, 2019 and 2021 which has shown some improvement in pH value (5.9 to 6.25) while the data collected in March 22, has shown remarkable improvement in pH value showing almost 7 (neutral value) in all the sample collected sites upstream r downstream. This was reported in the SEMR validation report Jan-June 2022.
48. The water quality monitoring was again carried out in the current period between Sept-Oct 2022 from locations like (i) 3 km Downstream of dam site from river Kopili; (ii) submergence area of dam site from river Kopili; (iii) 1 km upstream of dam site from river Kopili; (iv) 8 km downstream of dam site from river Kopili; (v) RO water; (vi) APGCL –inspection bungalow; (vii) PMC Pond and (viii) Lanku Nala. The pH ranges between 6.9 to 7.2 and hence not acidic in nature.
49. Management Measures proposed under WQRP for LKHEP is given in detail in the SEMR validation report of Jan-June 2022. As per the report for the safeguard of the dam from the acid water of river Kopili care is required both at the level of govt. of Meghalaya in order to close down the rat-hole mines as per the order of supreme court and make necessary compliances as per the NGT order along with afforestation in the abandoned coal mines (as remedial measure) and phytoremediation in the AMD. Whereas at the project level various safeguard measures like usage of SRC cement for the protection of water retaining civil structures, acid protection paints in the H&M structures and E&M equipment, and other protection measures as discussed during the meeting are to be initiated and actual status to be reported.
50. Water Treatment plant for the construction water and RO plant established. CTE and CTO to be obtained. These details are mentioned in the EMR.
- ✓ However, actual safeguard measures taken for the protection of civil, H&M structures from the acidic water quality of river Kopili is yet to be reported in the SEMR (Jul-Dec 2022). The same may be included. Measures like usage of SRC cement for the various water retaining structures, usage of acid protection paints may also be included. Specific drawings in this regard, if available may be included in the SEMR.
  - ✓ It is mentioned that in batching plant the sedimentation tank was under construction. [The same was verified during the EMC's site visit in the reporting period.](#)
51. The project already includes budget provisions for safeguarding components from acid water. No expenditure is incurred in this reporting period (Jul-Dec 2022) but some measures and discussion were ongoing for establishing water treatment plant for the neutralization of acid water for the construction water demand. Further a sedimentation tank [was under construction at the](#) batching plant area.
- ✓ In Page 107 of the SEMR, as per the finding of EMC (Feb-May 2022), it is mentioned that CP-2 contractor has already been instructed to construct **100 KLD STP**. However, even in December 2022, no such initiation could be seen.
  - ✓ [Budget has been allocated in the Environmental Management Plan \(EMP\) for water pollution control measures. The 100 KLD STP could be funded from this budget.](#)
  - ✓ Additional funds have been designated for the Water Quality Restoration Plan (WQRP), and as of now, no expenditures have been made from this allocation.



- ✓ The procurement of various facilities such as 4 portable bio toilets, 2 portable prefab toilets, 2 DRDO bio tanks of 4000 liters each, and 2 prefab container toilets has been successfully completed under the Environmental Management Plan (EMP) budget. The effluent quality may need to be checked and to be reported in the next SEMR/MPR of contractors.
- ✓ In the revised SEMR, it has been mentioned that “wastewater from labour camp is kept in a stabilization pond adjacent to the colony and the overflow is chlorinated before reaching the receiving body”. During the previous visit, EMC team have noticed that wastewater from the labor camp accumulates in two designated areas of size 70mX25m and 35mX50m. The team of L&T has placed some boulders/pebbles of 40mm, 20mm, and 10mm at the bed of these sites and natural vegetation is growing on it now therefore creating a natural treatment system now. This arrangement is being used for the treatment of grey water. Black water is managed using septic tanks. CP-2 contractor has been requested for records of chlorination and along with a test report for the final treated wastewater from this natural arrangement. The same will be reported in the next SEMR and its validation report.

### 3.5 INSTITUTIONAL ARRANGEMENTS & CAPACITY BUILDING:

52. Overall, no change in the institutional arrangements of APGCL was reported during the reporting period. It is observed that regular EHS trainings and fire safety mock drills are being conducted by the CP-2, and regular EHS trainings and toolbox talks are being held by the CP-4. However, it is observed that:

- ✓ The appointment of experienced H&S experts under PMU, an environment expert under PMC, and a qualified Environment Expert and H&S expert under CP-3 Contractor is still pending. However, both PMC and CP-3 have indicated that they will appoint the desired experts for the project by next quarter.
- ✓ None of the contractors have provided training on the Prevention of Sexual Harassment (POSH) of Women at Workplace at the project site, as mandated by the Prevention, Prohibition, and Redressal Act of 2013 during the reporting period.
- ✓ Since two fatal accidents have already happened under CP-2, necessary care shall be taken towards avoiding such incidents by providing regular training to the employee and labourers with respect to harmful chemicals, dangerous activities, working at heights, electrical hazards, and other hazards.
- ✓ All staff and workers working at the site are required to undergo social awareness training on local customs, culture, and heritage.
- ✓ All staff and workers working at the site are required to undergo wildlife awareness training covering the protocols to be followed in the event of an encounter with a wild animal.
- ✓ The EHS training module for all package contractors must include incidents of snake and insect bites and train the required staff on how to tackle such medical emergencies.
- ✓ In addition to the above, the CP-1 contractor is required to undertake mock drills and training in EHS-related trainings for construction safety, life and fire safety, electrical safety, etc.
- ✓ As part of the project, EMC shall also provide necessary on-the-job training and will organise half-day to one-day workshops on various subjects like dam safety, biodiversity, environmental aspects including occupational health and safety, sustainable development, biodiversity and wildlife management, water quality restoration, etc.

### 3.6 DAM SAFETY MEASURES:

53. The International Dam Safety Expert visited in December 2022 and provided an initial set of observations, especially concerning the environmental flow release. In fact, in the Consultant's understanding, the proposed manual slide valve and hooded cone valve could complicate the ease of operation (which must be well coordinated with the auxiliary powerhouse operation as per the assumed Contractor's rationale). Therefore, an automatic regulation valve (e.g., a needle-type control valve) and an ultrasonic flowmeter are recommended.
54. The document concerning dam stability, namely *Dam General Arrangement and Stability Analysis (Non-overflow and Overflow Blocks)*, was received and analysed, but to complete the analysis concerning dam stability, the construction plans of the dam blocks and foundation treatment have to be provided, as demanded by the external expert.
55. Training and capacity building have been proposed under the dam safety organization once it is formed under the Dam Safety Act 2021. The organization was programmed to organize the first training and capacity-building by the end of the next semester.

### 3.7 SOLID & LIQUID WASTE MANAGEMENT

56. As required by the EC condition, a Solid Waste Management Plan and a biomedical waste management plan were still under preparation.
57. There was no evidence of a solid waste management system on the project site of the package 2 contractor. It was learned that CP-2 is coordinating with the Umrangsu Municipal Board (UMB) for the disposal of the waste generated at the designated landfill site of UMB. Communications in this regard have been initiated in this reporting period (July–Dec 2022). CP-2 will only segregate the waste on their premises and will transfer the waste to the designated landfill site at UMB. A few observations made during the validation visits are given below:
- ✓ There was no categorization or segregation of waste, either.
  - ✓ Moreover, biomedical waste from the first-aid dispensary unit was also not separated and dumped alongside other waste in the same spot.
58. After reviewing the EMP and communicating with the site staff, the External Monitoring Consultant suggested EA to:
- ✓ Solid waste should be scientifically treated to avoid leachate.
  - ✓ An area designed for temporary storage of solid waste must have a shed to protect it from rain.
  - ✓ To prevent scavengers from dispersing waste, structures for the management of food waste should be gated.
  - ✓ Proper quantification, categorization, segregation, handling, and disposal of waste are required to be followed.
  - ✓ Sewage water management should be improved. There should be primary and secondary treatment of sewage.

### 3.8 MUCK MANAGEMENT MEASURES:

59. As per the EIA 2018, it was projected that 0.985 million m<sup>3</sup> of the total 1.407 million m<sup>3</sup> of muck that needs to be handled will be disposed of at the two designated disposal sites located within the forest area. However, as per the Forest Advisory Committee's (MoEF&CC) suggestion, the muck disposal site has been shifted from forest land to revenue land. Therefore, according to the updated muck estimate provided in the EIA addendum, overall, 1.66 million m<sup>3</sup> of muck will be generated from the project, of which 1.28 million m<sup>3</sup> will be disposed of at the four designated disposal sites, all of which are situated in the revenue land more than 500 metres from the river. The disposed muck needs to be piled at an angle of repose at the disposal sites, followed by Phyto-remedial measures for materials stabilization as suggested in the EIA, such as plantation, slope turfing, provision of retaining walls and fencing, and further re-vegetation through an "Integrated Biological and Biotechnological Approach". Afforestation with local plant species may be adapted. The cost for remediation of muck disposal sites includes slope turfing, ground preparation, manure application, providing 5 cm of soil cover, building a retaining wall, transportation and carriage, fencing, maintenance, and irrigation. Funding has already been allocated for the stabilization of muck disposal sites.
60. It is mentioned in the SEMR (July–December 2022) that the muck disposal plan is approved. Slope compaction and tree plantation towards prevention of soil erosion at the disposal site have yet to start. This is crucial and should be initiated at the earliest possible time.
61. Further, it is observed that, so far, no expenditure has been made for muck management, landscaping, or restoration work. The slope stabilization measures were constructed at the disposal sites. It was informed that around 3,10,000 cum of muck was dumped so far in three dumping sites against the capacity of 27,05,000 cum of 4 dumping sites. A temporary dumping site near crusher has the capacity of 9,00,000 cum where the storage varies because of continuous usage. Height achieved at PR-5 was around 7 to 8 m in the rear side (originally a depression) and 0.5 m towards the access roadside and at PR-7 it was at ground level at the access roadside and 4 to 5 m at the rear side (originally a depression).
62. Muck generated from the tunnel was majorly crushed and reused as aggregates for the construction purpose; rejected concrete test blocks were being reused for temporary non-structural construction purposes; muck dumping sites are managed as per the provisions given in the approved EIA i.e. levelling, compaction, stabilization measures for top and slope at the edges, etc.; that muck dumped on road side in the forest land, camp site etc. are moved to the designated dumping sites;
63. It is suggested to maintain data logs of waste / treated water, muck, waste cement concrete, cement slurry generated and reused and submit as part of monthly environment reports that should get reflected in the next Environmental Monitoring Reports (EMR).

### 3.9 INTEGRATED WATER RESOURCE MANAGEMENT PLAN:

64. APGCL has awarded the downstream impact assessment to M/s RMSI in the month of December 2022. As per the contract, RMSI is required to prepare a Resource Management System in the Kopili River Catchment Area Community and a Resilience and Disaster preparedness plan for the project. [As of December, no survey has been initiated by M/s RMSI in this regard.](#) The scope of the assessment includes:

- ✓ To collect real-time data on water inflows and outflows from the hydropower dams on the Kopili River and other relevant tributaries of the Kopili River, as well as to support resource management in the autonomous district councils;
- ✓ Correlate the real-time water inflow data with rainfall data;
- ✓ Undertaking a mapping of the two autonomous district councils to cover village data (including ground water), mineral resources, forest cover, agriculture assets, disaster-prone areas (flooding areas and landslides), etc.;
- ✓ To provide data and help APGCL, the state government, the autonomous district council, the district authorities, and other state agencies such as the Assam State Disaster Management Authority (ASDMA), the state Water Resources Department (WRD), and the Flood and River Erosion Management Agency of Assam (FREMAA) so that they can make informed decisions on the likely impacts on communities and physical infrastructure and take necessary measures to mitigate the impacts;
- ✓ Undertake downstream assessment of the existing 110 km of river embankments;
- ✓ Undertake erosion protection and the needs assessment of additional embankments of 80 km.
- ✓ to protect the downstream districts of Nagaon, Hojai, and Morigaon;
- ✓ Assist the district authorities of Hojai, Nagaon, and Morigaon, the WRD, ASDMA, and FREMAA, to address disasters through better prediction of flooding, improved hydrology modelling, and better disaster risk maps;
- ✓ Prepare a wetland development plan and undertake restoration of wetlands to hold flood waters to help manage the floods.
- ✓ Identify five villages, one in each district, and undertake a needs assessment;
- ✓ Design and implement a participatory village resilience and disaster risk reduction plan to increase resilience and disaster preparedness;
- ✓ Implement the village disaster risk reduction plan in consultation with village communities.

### 3.10 MAINTAINING THE REQUIRED ENVIRONMENTAL FLOW

65. The river flow is not completely cut off. According to the PMC and package 2 contractor, the imperative to sustain river flow for environmental purposes was taken into account in dam design. As intimated by APGCL, RMSI, under the Japan Fund Poverty Reduction (JFPR) grant, will initiate the downstream study under integrated water resource management (IWRM). [Concerning the e-flow circuit, main conclusions are summarized under Point 53 \(item 3.6\).](#)

### 3.11 OCCUPATIONAL HEALTH AND SAFETY MEASURES:

66. Many good practices are also observed, including the professional **safety app (by L&T) and IB4U**. There is VR-based safety training, which helps the workers understand the safety briefing at their convenience. All these details are nicely captured in the SEMR.
67. In the SEMR, one casualty was reported, which has been mentioned as a non-work-related incident, on December 5, 2022. The annexure provided in the SEMR regarding this incident provided treatment and post-treatment details; however, the incident report should also include a Root Cause Analysis and Corrective Action measures for the incident with proof. APGCL has agreed to include these aspects in the SEMR along with the orders and guidelines passed by APGCL to the contractor for the reporting of Fatal/Near-miss accidents.
68. The following few observations require some attention:
- ✓ In the subsequent EMRs (Jan-June 23 onwards) it is suggested to keep the status of (i) Dangerous occurrences, (ii) non-work-related incidents, and (iii) First aid cases reported same at various places. In the current EMR this is now rectified.
  - ✓ Compliance status with respect to incidence reporting need to be added in the subsequent SEMRs.
  - ✓ For the incidence report, the compliance status with respect to the following measures must be added to the subsequent SEMRs:
    - Root cause analysis of any incidence for identifying the actual reason towards any incident;
    - Mention the corrective active actions actually taken in avoiding and minimizing such incidents in future may be included.
    - APGCL to issue necessary office order to the contractors for taking up stringent precautionary measure with zero tolerance approach toward the near miss and fatal incidence;
    - Enhancement and revision of Tool Box Talk (TBT) as may be needed;
    - Increasing the frequency of OHS training to the staff and labours;
    - Refresher training to staff and labours as well as well as to any new labour gang/staff;
    - Increase in number of safety supervisor
    - Paring of experienced and new labour for carrying of dangerous works

### 3.12 LABOUR INFLUX MANAGEMENT

69. Labour Influx Management Plan is under preparation during this period.

### 3.13 ENVIRONMENTAL MONITORING:

70. As informed by CP-2, quantitative Environmental Monitoring for Air, Water (Surface and Ground), Soil, and Noise quality is being conducted every quarter by M/s. En-vision Enviro Technologies Northeast. During the assessment period, quarterly environmental monitoring was conducted in the months of September and October 2022. However, no noise quality monitoring was conducted for the period. It should be noted that M/s R.L. Poddar was awarded the contract for the blasting operations, and the blasting activities started in July 2021. However, there is no vibration impact study, and vibration monitoring due to the impact of blasting activities was undertaken for the assessment period (July–Dec 2022). It is suggested that preconstruction monitoring of the ambient environment for baseline needs to be carried out for ambient air, surface and ground water, ambient noise, and soil through a



NABL/NABET/QCI accredited agency by CP-1, CP-3, and CP-4 and presented in Monthly Environment Reports.

71. SEMR has informed us about the various Environmental Monitoring measures, like Air quality and water quality. The vibration monitoring has yet to be started, and the status of the same may be captured for the next six-monthly environmental monitoring reports for the period January–June 2023.

### **3.14 GRIEVANCES REDRESS MECHANISM**

72. A Grievance Redress Mechanism (GRM) has been established for the project to handle complaints about environmental and social issues. A grievance redressal committee (GRC) is also in place, and its mandate is to resolve the grievances in a timely manner. As of December 2022, only social grievances pertaining to land and compensation-related grievances were reported and recorded for the project in a grievance register maintained at the project site; no grievances pertaining to environmental parameters such as air, water, or noise pollution, traffic congestion due to project vehicles, community health and safety concerns due to project activities including blasting, etc. have been reported so far.
73. After reviewing the GRM records and communicating with the GRC members, EMC suggests:
- ✓ Ensure the strengthening of GRM at site level for its effective implementation.
  - ✓ Ensure that all grievances registered at the project site are recorded and resolved, whether reported by the general public or by labourers or workers engaged in the project's construction.
  - ✓ The grievance register needs to be updated and reviewed on a regular basis, and all logs and records need to be maintained properly.
  - ✓ Ensure monthly consultation with the local community to record community concerns pertaining to environmental as well as EHS issues, if any. The outcome of the meetings should be recorded in the Monthly Environment Report (MER).
  - ✓ GRC meetings should be held every quarter, involving local representatives. Suggestions from the meetings should be recorded in the SEMR.

### **3.15 CONSULTATION AND INFORMATION DISCLOSURE**

74. APGCL, through SESC and PMC, is regularly conducting consultations that include informal and formal discussions and meetings with affected persons (APs), local representatives, and concerned committees. Residents in the area have been informed about the timing of blasting activities and have been given general instructions to avoid entering the project construction site.
75. As understood, an updated downstream impact assessment has been awarded to M/s RMSI. The downstream impact assessment, along with a project-specific disaster management plan that also includes a project site emergency preparedness and evacuation plan, is under preparation. EMC suggests that the same should be communicated to relevant stakeholders, including local residents and communities residing in the downstream areas.

### 3.16 OTHER ANTICIPATED IMPACT

76. There is a need for immediate interventions (particularly on the right bank of the dam axis) because of significant slope instability and deep rain cuts. There are several locations with loose rocks and boulders on steep slopes that require immediate attention to prevent the risk of subsidence, landslides, and rock falls and to ensure the safety of people moving around on the roads and the workers located below. As agreed during the ADB mission (5–9 December 2022), slope protection measures need to be initiated at the earliest.
77. At the package 4 contractor's, the construction workers are provided with very poor accommodation in the labour camp. There were no beds, mattresses, or mosquito nets, and there was no kitchen, bathing, or washing area. There is no provision for first aid at the construction site or labour camp. Firefighting arrangements were also not observed at the construction site and labour camp.
78. A few workers in the community kitchen provided by the package 2 contractor were observed to have been using firewood for cooking.
79. Fire extinguishers placed at the petrol pump by the package 2 contractor are not being audited for service and maintenance checks.
80. These aspects will be checked by EMC on a regular basis and will be reported in the next deliverables, like monthly or quarterly reports, to see compliance.

### 3.17 CORRECTIVE ACTION IN COMPLIANCE TO ADB MISSION (5-9th Dec 2022):

81. The corrective actions taken in compliance with ADB mission observations are captured in Table 8 of SEMR (July–December 2022). In these corrective actions, one of the major points is that the EC amendment application is yet to be done, and APGCL is waiting for further instructions from the regional office of MoEF&CC after their visit in this period. It is also mentioned that MoEF&CC has not raised any observations on the six-monthly compliance report related to the EC amendment. It is further mentioned that the Dam design is yet to be completed, and a drone survey of the submergence area is yet to be done. However, it is in the process of submitting the EC application and EC amendment letter, and no clearance letter has been received from MoEF&CC. It is also agreed in the SEMR that CEMPs will be updated based on the updated EMP of the EIA Addendum after clearance from ADB. The EIA addendum is yet to be completed and is expected to be submitted to ADB by March or April 2023. The labour influx and revised Solid waste management plan are to be submitted by the CP-2 contractor. Another important point is to incorporate climate risk assessment and management plans into the detailed design of the dam. The details pertaining to the corrective actions need to be included in the SEMR (January–June 2023). EMC will monitor these aspects in the subsequent monthly or quarterly report to be submitted in 2023.

#### 4.0 CONCLUSION AND RECOMMENDATION:

82. Overall, the SEMR version is quite an improved version compared to previous versions. It has truly addressed the statutory compliance status, ADB loan covenants and corrective measures proposed in the previous ADB mission.

83. Some of the critical things that require important attention are given below:

- ✓ Community emergency and evacuation plans are yet to be prepared by CP-2 to manage emergencies arising due to accidental failure of cofferdams, etc.
- ✓ Construction of a treatment plant for the treatment of black and grey water generated from CP-2 contractors labour camps, kitchens, and other areas. The bio-digester septic tank may not be a feasible solution until its results are checked and monitored. An STP of 100 KLD capacity, as agreed earlier, [may be established and cost of the same may be met out from the approved EMP budget of Rs 1.85 Cr.](#)
- ✓ Photographs related to the stabilization pond may be given along with its functioning details to understand its effectiveness in the [next SEMR.](#)
- ✓ [OHSA measures taken by the CP-2 contractor is found to be ok though there is a need for improvement of safety training and regular toolbox talks regarding the various potentials of incidents during safety training. However, the accident reporting must be prompt to the authority \(preferably within 24-48 hours\). The fatal accident happened during a non-working period but still requires adequate procedures for compensation and other formalities and other training as mentioning in para 68.](#)
- ✓ The next versions of SEMR (i.e., January–June 2023) need to elaborate on the CATP, other GAP plantations, Pasture development, check dam construction, fish management plan, Integrated Water Resource Management Plan (IWRMP), climate risk and adaptation in the dam design, and environmental flow calculation.
- ✓ [The details related to the protection of the muck disposal site may be given in the next SEMR \(Jan.- June 2023\), along with the amount of muck excavated, reused, and finally disposed of by CP-2.](#)
- ✓ [Similarly, it is recommended that CP-1 and CP-3 also implement a robust record-keeping system for tracking muck generation, reuse, and disposal on a monthly basis.](#)
- ✓ [It is suggested to maintain data logs of waste / treated water, muck, waste cement concrete, cement slurry generated and reused and submit as part of monthly environment reports that should get reflected in the next Environmental Monitoring Reports \(EMR\).](#)
- ✓ The EC amendment is very important, along with the amendment to the EIA. It is learned that actions on both of these amendments are in progress and expected to be completed in the next reporting period of January–June 2023. Since, as per the last mission (5–9 December 2022), ADB has specifically asked to stop work without the EC amendment for components where changes have been envisaged as per the MOC, expeditious obtaining of the EC amendment is thus critical for the project.
- ✓ No unauthorized abstraction shall be allowed; all contractors, where required, should obtain permissions from the Central Ground Water Board and Gaon-burah for the abstraction of groundwater and surface water.
- ✓ CP-2 is required to obtain an NOC from the Water Resource Department for the use of river water before use.
- ✓ Tree cutting NOCs to be taken for CP-4 and CP-1 from the Forest Department

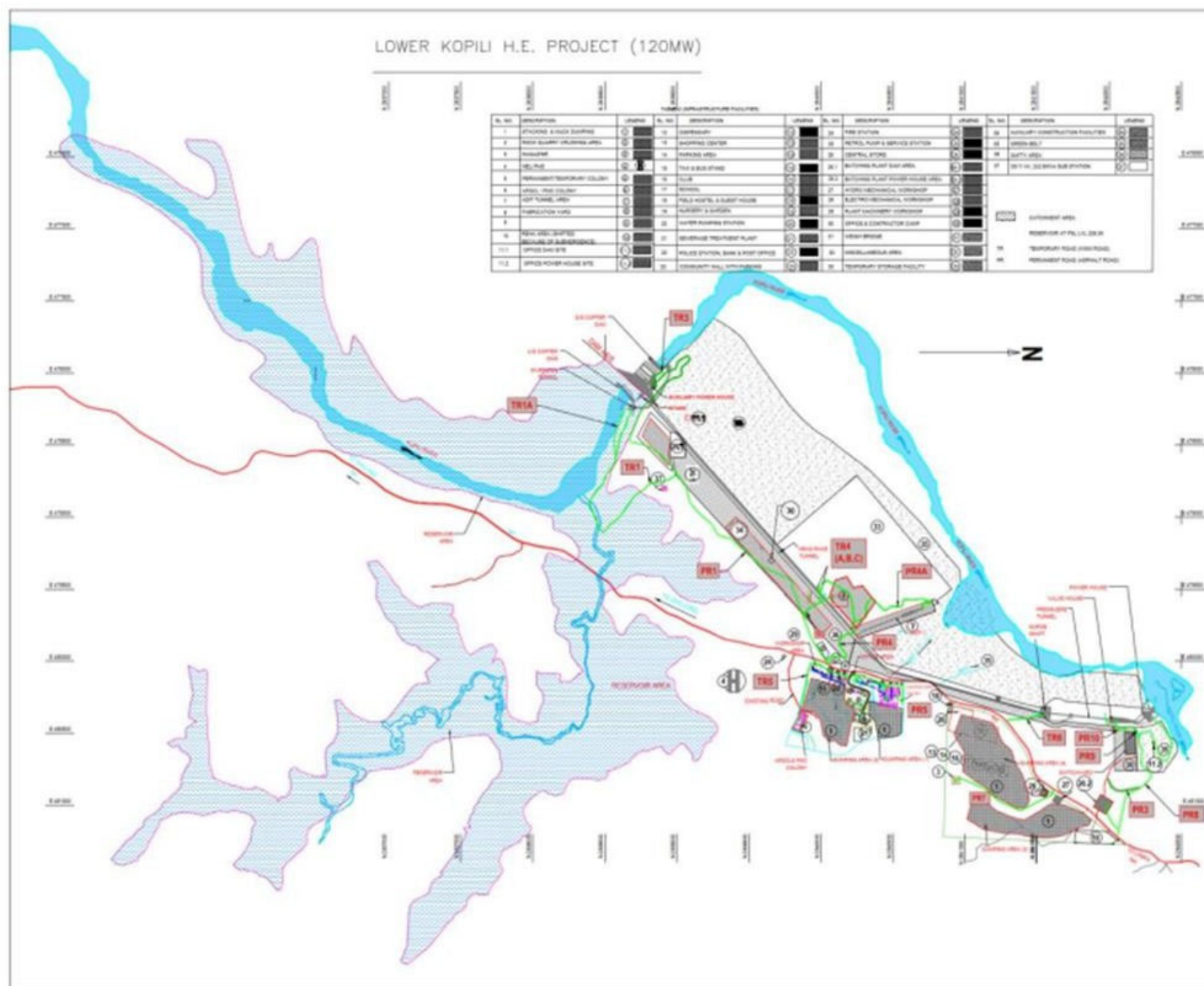
- ✓ As applicable, contractors are required to submit an environmental statement as Form V to the State Pollution Control Board for every financial year.
- ✓ Excavated soil should be graded according to soil type and stored separately.
- ✓ Ensure that soils exposed on slopes are immediately vegetated or temporarily covered with geotextile and vegetation to help stabilize them and prevent sediment-laden surface water runoff.
- ✓ Vibration monitoring as per IS-14881:2001 needs to be conducted by CP-2.
- ✓ Ensure the installation of an effectively designed and operated sedimentation tank for sediment-laden runoff from concrete batching and exposed soils across the construction site and monitor it.
- ✓ Qualified and well-experienced EHS experts need to be appointed under the SESC and PMC, and a Health and Safety Committee shall be formed soon with representation of all parties involved in project construction.
- ✓ All contractors are required to prepare and implement a waste management plan that addresses muck management as well.
- ✓ All sanitary and toilet facilities should maintain the availability of adequate water, adequate lighting, and proper cleaning with an adequate number of bathing and urinal units. They must be kept in working condition and cleaned frequently.
- ✓ Proper drainage systems need to be provided with de-silting chambers all around the powerhouse, office, substation, and colony.
- ✓ An annual bird count survey is to be initiated.
- ✓ No untreated discharge from the camp or plant site should be discharged to any of the adjacent water bodies. Release of grey water from the labour Colony and all Community Kitchens to the natural water channel to be treated before release.
- ✓ Adopt appropriate dust control measures at all the construction sites, approach roads, etc.
- ✓ Care should be taken to ensure that road safety measures are worked out and implemented to ensure accident-free working stretches.
- ✓ Regular maintenance of vehicles and machinery needs to be conducted to ensure the lowest possible emissions.
- ✓ All the remaining vehicles (4 in number) registered in Bhutan must be registered with Indian numbers, and a PUC must be obtained.
- ✓ Accident reports, if any, are to be submitted to APGCL within 24 hours of the incident.
- ✓ The rooms at the camp site for CP-1, CP-2, and CP-3 (under construction) should be provided with proper illumination, a smoke detector, and proper insulation of the electrical system. Labourers at CP-1, CP-3, and CP-4 should be provided with clean water, adequate toilet facilities with respect to the number of labourers, and clean bedding facilities with proper space between two beds.
- ✓ Adequate supply of potable water both on construction sites and in labour camps. The water quality must be monitored regularly. Drinking water should be tested for IS:10500-2012 parameters for contract packages CP-1, CP-3 and CP-4. The details related to be this may be reported in the next EMRs.
- ✓ Labourers and other project site officials must also be provided with medicated mosquito nets for protection against malaria, dengue, and other vector-borne diseases.
- ✓ The use of firewood for cooking should be stopped with immediate effect, and cooking gas should be provided in common kitchens.

- ✓ Adequate provisions for emergency fire services, including fire breaks and firefighting equipment supplies, should be made for all construction works and the labour camps.
  - ✓ There should be necessary provision for first aid in an easily accessible location at all construction sites and labour camps, and the workers should be informed accordingly. An emergency project clinic must be coordinated.
  - ✓ Timely training for First aiders and other site staff should be provided, and all logs and records should be maintained properly.
  - ✓ Emergency contact information for First Aiders must be accessible to all and updated as needed.
  - ✓ A project awareness programme for HIV/AIDS, wildlife protection, wildlife-human conflict, general EHS requirements, community health safety, and grievance redressal needs to be planned and scheduled every quarter.
  - ✓ All contractors are required to submit a Monthly Environment Report with monthly updates on the implementation status of environmental safeguard compliance and the implementation status of EMP provisions.
  - ✓ Every month, a joint site inspection between the PMC and contractor's (all packages as relevant) representatives is to be made, after which the best solutions to address the inspection's results are to be decided and submitted as a Monthly Environmental Report along with a monthly EHS review report.
  - ✓ All contractors are required to develop a legal register to keep track of statutory requirements applicable to the project, such as clearances, NOCs, permits, permissions, etc., for all project components.
  - ✓ All contractors are required to prepare an incident or accident register record, and all incidents need to be reported in the monthly EHS report.
  - ✓ Ensure the strengthening of GRM at site level for its effective implementation.
  - ✓ All formal and informal complaints, requests, and grievances should be recorded, and adequate closure should be provided. Post-closure, the complainant should be adequately informed.
  - ✓ All contractors must maintain a grievance register that is updated and evaluated on a regular basis, and all logs and documents must be kept up-to-date.
  - ✓ Ensure monthly consultation with the local community to record community concerns pertaining to environmental as well as EHS issues, if any. The outcome of the meetings should be recorded in the Monthly Environment Report (MER).
  - ✓ EMC suggests that corrective action, such as the installation of a noise barrier, may be explored areas of identified hot spots.
  - ✓ EA has indicated that Annual bird count will be initiated in the winter months with support of forest department. The data will be needed by EMC for analysis and additional feedback.
  - ✓ GRC meetings should be held every quarter, involving local representatives. Suggestions from the meetings should be recorded in the SEMR.
  - ✓ All contractors are required to ensure that their staff and workers working at the site are trained on POSH at work.
84. Subject to these observations, the project's environmental safeguard measures seem to have captured mostly and the suggested measures will be validated again in the next validation report for the period (Jan-June 2023).

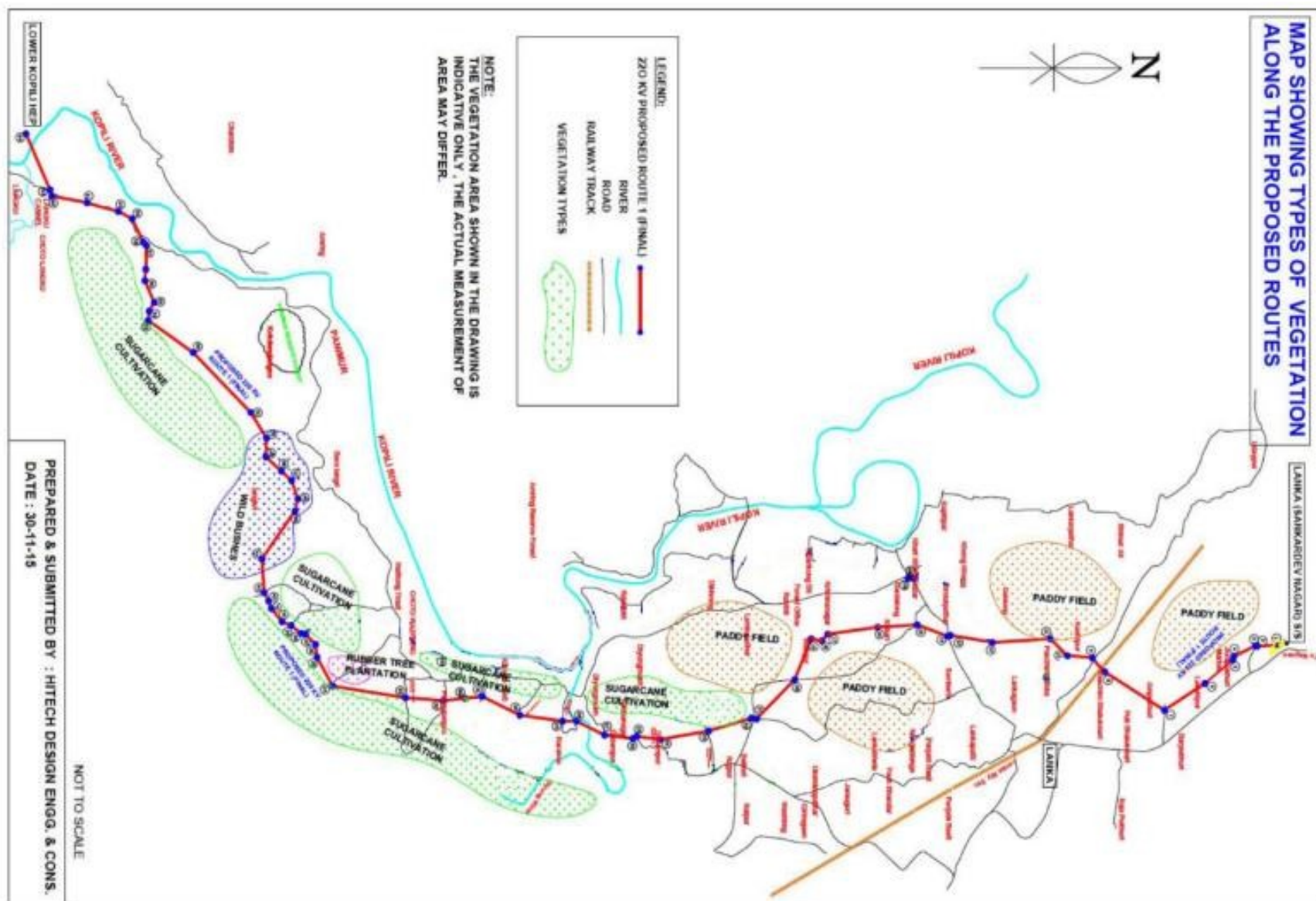


# Annexures

## Project Layout



## Layout of Transmission Lines



CGM PP&amp;I &lt;mridul.saikia@apgcl.org&gt;

15 July 2023 at 16:45

To: salivendula hari &lt;salivendula.hari@feedbackinfra.com&gt;, Saumyasib Mukhopadhyay &lt;saumyasib1975@gmail.com&gt;

Cc: Bidyut Bikash Das &lt;bidyut.das@feedbackinfra.com&gt;, GM PP&amp;I &lt;akshay.talukdar@apgcl.org&gt;

Sub : Information on SEMR verification

Ref : Email from Mr. Jhamak Karki, International Biodiversity Expert of External Monitor on 10.07.2023 and copy to Mr. Saumyasib Mukhopadhyay.

Dear Sir,

In response to the queries raised by Mr. Jhamak Karki, International Biodiversity Expert of External Monitor, the following response has been prepared.

**Quarry No 1.** The SEMR June-July 2023 does not mention the construction of those five nurseries started by Dec.2022? in Halflong and Dima Hasao.

Was it true, which means it started only after Jan.2023?.

**Response from APGCL :**

**As informed by the Forest Department, Nurseries for CA will start within the first part of 2023 and it was mentioned in the page no 60 and 61 of the SEMR.**

**Quarry No 2.** Page 89 Of SEMR (July-Dec.'23) in the last column says " (e) As per tree cutting permission has been accorded for 45349 trees in Karbi Anglong and 20846 trees in Dima Hasao as per Forest Clearance. Till date CP-2 has 241 number of trees". The last sentence ..has 242 trees.." not clear-is it means the permission to cut those 241 trees was provided to CP-2 or ??

**Response from APGCL :**

**Forest clearance permission was accorded for the cutting of 45349 trees in Karbi Anglong and 20846 trees in Dima Hasao in the diverted Forest land and for which related expenses were submitted to CAMPA and the respective Forest Divisions by APGCL.**

**So far 241 number of trees were felled by the Forest Department in the Forest land and revenue land for the activities related to the project under CP2.**

**Quarry No 3.** What were the names/locations of those five nurseries constructed for the afforestation purpose (In Panimur range, In Garampani Range, in Hamren range, ....., Dima Hasao district In Hamren range,

**Response from APGCL :**

**The 5 nurseries are located in the following Reserved Forests under Dima Hasao Forest Division (West).**

1. **Wayungdisa RF**
2. **Tertelangso RF**
3. **Bagha Dima RF**
4. **Choto Longkhu RF**
5. **Bagha Dima One RF**

With Regards,  
Shri Mridul Saikia  
Project Director (PMU)  
APGCL



Letter to MOEF&CC for Change in Project Component**ASSAM POWER GENERATION CORPORATION LIMITED**Registered Office: Bijulee Bhawan, 3<sup>rd</sup> floor, Paltanbazar, Guwahati-781 001, Assam**Shri. Mridul Saikia****Chief General Manager (PP&I),****Project Director (PMU)**

E-mail: mridul.saikia@apgcl.org

No: APGCL/CGM (H)/W/2007/140/Pt-VI/54

Dated: 28/11/2022

To,

The Director  
IA-I Division  
Ministry of Environment, Forest & Climate Change  
Government of India  
Indira Paryavaran Bhawan  
3<sup>rd</sup> Floor, Vayu Wing, Jor Bagh Road  
New Delhi-110003

Sub: Environmental Clearance for Lower Kopili HEP (120 MW) in Karbi Anglong & Dima Hasao, Assam by M/s Assam Power Generation Corporation Ltd. accorded by MoEF&CC vide Reference No. No. J- 12011/26/2012-IA-I dated 4<sup>th</sup> September, 2019 – reg. appraisal w.r.t. minor change of few components.

Sir,

With reference to the subject cited above, it is for your kind information that some of the components of the project has been shifted from the forest land to the Revenue Land as per the recommendation of Forest Advisory Committee dated 26.10.2018 and 11.01.2019, for which, the muck disposal site and miscellaneous areas has been shifted to revenue land, keeping 198.746 Ha as green belt within the diverted forest land. Subsequently Forest Clearance and Environment Clearance was accorded.

During the detail designing and execution of the EPC contract minor adjustments were made with the approval from Central Electricity Authority, Central Water Commission, Geological Survey of India, Central Soil and Materials Research Station, GOI keeping the power generation capacity of 120 MW, location of the Dam axis, FRL of 226m, alignment of HRT remaining same as mentioned in the EC. But the height of the dam was reduced from 70.13m to 66.5m without changing the submergence area of 620 Ha as the FRL (226m) will remain same. The reduced height will certainly reduce the requirement of minor minerals for construction and APGCL will also support plantation for 1 : 3 through CA, CAT Plan, S&M conservation plan, Green belt development etc to achieve 'no net loss of biodiversity'.

The salient features as approved by the CEA, CWC, GSI, etc are attached for your ready reference.

This is for your kind appraisal. Your kind cooperation in the matter is highly solicited.

Encl: As above

Yours Sincerely,

Project Director (PMU),  
APGCL

Copy to:

1. The Managing Director, APGCL, Bijulee Bhawan, Paltan Bazar, Ghy-01, for kind information
2. The Inspector General of Forests, Ministry of Environment, Forest and Climate Change, Integrated Regional Office, Guwahati, 4th Floor, HOUSEFED Building, G.S. Road Rukminigaon, Guwahati – 781022, for favour of kind information
3. Relevant file



CTO for Batching Plant at Dam Site

**Pollution Control Board:: Assam**  
**Bamunimaidam; Guwahati-21**  
 (Department of Environment & Forests :: Government of Assam)  
 Phone: 0361-2652774 & 2550288; Fax: 0361-2550259  
 Website: [www.pcbassam.org](http://www.pcbassam.org)



No. WB/SLC/T-1191/21-22/31

Dated Guwahati, the 31<sup>st</sup> Oct, 2022**"CONSENT TO OPERATE"**

'CONSENT TO OPERATE' (CTO) under Section 21 of the Air (Prevention & Control of Pollution) Act, 1981, as amended and Rules Framed thereunder, is granted to:

- i) Name of the unit : M/s Larsen & Toubro Ltd. (Batching Plant)
- ii) Name of the Occupier / Applicant and Designation : Sri Santanu Majumder, Project Manager
- iii) Address of the unit : Lower Kopili Hydro Electric Power Project, Vill - Longku, P.O. Umrangso, Dist. Dima Hasan, Assam-788931.
- iv) Cost of the project : Rs. 744.69 Lakhs.
- v) Details of the project & category : Batching Plant (Green Category)

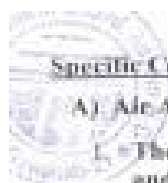
Sl. No.	Product	Capacity
1.	Cement Concrete	20,000 m <sup>3</sup> / month

- vi) D.G. Set : 2 x 15 KVA + 2 x 500 KVA

**General Conditions:**

- The Consent to Operate (CTO) has been accorded based on the particulars furnished by the applicant vide **Application ID: 1410031** and subject to addition of further or more conditions, if so warranted by subsequent developments. The Consent will automatically become invalid, if any change or alteration or deviation made in actual practice.
- The CTO is valid till **31.03.2025**.
- The CTO may be modified, suspended in whole or in part or withdrawn by the Board during its term for cause including, but not limited to the following:-
  - Violation of any Terms and Conditions of this CTO;
  - Obtaining the CTO by misrepresentation or failure to disclose fully all relevant facts;
  - If any genuine complaint received;
- The unit shall obtain prior 'Consent to Establish' from the Board for any further expansion, alteration, and modification of the project.
- The project proponent shall develop a greenbelt/plantation area with native trees covering atleast 33% of the total plot area.
- The project authority should install a Display Board as per the Boards notification No. PCBA/LGL-95/2021/Notification/01 dtd.11.11.2021 (Annexure-A).
- Proper housekeeping shall be maintained. Burning of any waste inside the unit premises is strictly prohibited.
- The unit shall apply for renewal of CTO atleast 90 days before expiry. The Board has decided to renew the CTO for validity of 5 (five) years after payment of due fees, for the entire period.
- As per the provisions of the Water (Prevention and Control of Pollution) Act, 1974 as amended and the Air (Prevention and Control of Pollution) Act, 1981, as amended, any Officer, empowered by the Board on its behalf shall have without interruption, the right at any reasonable time to enter the unit for inspection, collection of sample for analysis and may call for any information as deemed necessary. Denial of this right will cause withdrawal of the Consent Order.

Contd...p/2



### Specific Conditions:

#### **A) Air Aspects:**

1. The unit shall install the screening machine, with proper enclosure and dust extraction and treatment mechanism.
2. The following air pollution control measures shall be implemented by the project authority to control source emission and fugitive emission:
  - a) Dust containment cum suppression system at Raw Material Feed Hopper, all material transfer & dropping points.
  - b) Construction of the metallic roads within the premises.
  - c) Regular cleaning and wetting of ground within the premises.
3. The unit shall comply with the standards and guidelines for control of noise pollution from stationary Diesel Generator (DG) set as attached in Appendix-B.
4. The unit shall comply with the Noise Level Standard notified by MoEF&CC, Govt. of India, vide GSR.7; dtd: 22/12/1998, as mentioned herein under:

Limit in dB (A) Leq	
Day Time (6:00AM-10:00PM)	Night Time (10:00PM-6:00AM)
75	70

5. The Ambient Air Quality within the Plant premises shall be maintained within the National Ambient Air Quality Standards as notified by MoEF&CC, Govt. of India, vide G.S.R.826(E) dtd.18.11.2009, especially w.r.t.  $PM_{2.5}$  &  $PM_{10}$ , as mentioned herein under:

Sl. No.	Pollutant	Time Weighted Average	Concentration in Ambient Air	
			Industrial, Residential, Rural & Other Area	Ecologically Sensitive Area (notified by Central Government)
1.	Particulate Matter (size less than $10\mu g$ ) or $PM_{10}$ ( $\mu g/m^3$ )	Annual* 24 hours**	60 100	60 100
2.	Particulate Matter (size less than $2.5\mu g$ ) or $PM_{2.5}$ ( $\mu g/m^3$ )	Annual* 24 hours**	40 60	40 60

#### **B) Water Aspects:**

1. Source of Water : Surface water
2. Water consumption : 200.0 KLD
3. Storm Water Aspect:
  - a) Storm water shall not be allowed to mix with effluent and/or floor washings.
  - b) Storm water within the battery limits of the unit shall be channelized through separate drain/pipe passing through an Oil & Grease Trap cum Sedimentation Tank.
  - c) Storm water discharge shall meet with general effluent discharge parameters standard, notified by MoEF & CC, GOI vide G.S.R.422 (E); dated 31.12.1993 (Appendix - C).
4. Rain water harvesting facility shall be installed and maintained.

#### **C) Solid Waste Aspects:**

1. Adequate facility should be created for collection, storage, transportation, treatment & disposal of non-hazardous industrial solid waste generated from the industry.
2. Adequate system should be adopted on reduction of waste generation and enhancement of re-utilization & recycling of waste materials.
3. The unit shall strictly comply with all the provisions of the Solid Waste Management Rules, 2016.

*Handwritten signature*

Contd...p/3

**D) Plastic Waste Aspects:**

1. Plastic waste generated in the unit shall be disposed of scientifically as per the provisions of the Plastic Waste Management Rules, 2016.
2. The unit shall submit a report on generation and disposal of Plastic Wastes within June every year.

**E) E-Waste Aspects:**

1. Electronic wastes generated in the unit shall be disposed of as per the provisions of E-Waste Management Rules, 2016.
2. The unit shall submit the Annual Report in the Form-III within 30<sup>th</sup> June every year.

**F) Hazardous Waste Aspects:**

1. Authorization under Hazardous & Other Wastes (Management & Trans-boundary Movement) Rules, 2016 shall be obtained from the Board.
2. The project authorities shall comply with the provisions of the said Rules.
3. Adequate facility shall be provided for collection and storage of used/spent oil, which shall be sent to registered recyclers for recycling.
4. The unit shall dispose of any other Hazardous Waste generated by the unit as per the provisions of the Rules.
5. The unit shall identify and quantify all streams of Hazardous Waste generation as per Schedule-I and maintain proper record in Form-III of the said Rules.
6. The unit shall submit annual return in Form-IV under the said rules on or before 30<sup>th</sup> June every year.

The unit shall submit compliance report of the mandated conditions by April, 15, every year to Member Secretary, PCBA as well as to Regional Office, Silchar. The Board will have the liberty to withdraw the CTO, if adequate pollution control and safety measures are not implemented by the unit.

  
(Shantanu Kr. Dutta)  
Member Secretary

Dated Guwahati, the 28<sup>th</sup> Oct, 2022

Memo No. WB/SLC/T-1191/21-22/31 -A  
Copy to: 

- ✓ 1. M/s Larsen & Toubro Ltd, (Batching Plant), Lower Kopili Hydro Electric Power Project, Vill: Longka, P.O. Umrangso, Dist. Dima Hasao, Assam-788931 – for information & compliance of conditions.

  
(Shantanu Kr. Dutta)  
Member Secretary

Annexure V

Consent from Gaon-burah for sourcing water for construction from Longku nala under CP-2

Date: 10/12/22

To

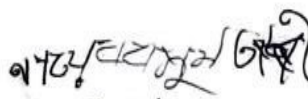
L&T Lower Kopili Project

G.B. Of SOKPURO boro Basti  
P/O. Langku, P/S- Umrang  
Dima Hasao (Assam)

Sub: NOC for drawing of water from Longku Nalla

Dear Sir,

I Nayeb Basumatory, Gaon Burah of village of Supuru (Longku) has no objection on drawing water by L&T from Longku Nalla for LKHEP Project work.

  
Yours Sincerely

Witness:

1. P. B. B. C.

2. H. A. S.

G.B. Of SOKPURO boro Basti  
P/O. Langku, P/S- Umrang  
Dima Hasao (Assam)

## Environmental Monitoring Reports

**en-vision**  
Enviro Technologies North East  
Technologies for better tomorrow

Recognized by Pollution Control Board, Assam

**TEST REPORT**

**AMBIENT AIR ANALYSIS REPORT**  
Rep.No. AAAR\_1503163\_01\_820  
Sample ID: EETNE/SEPT/17(1)/22  
Issued to : M/s. Lower Kopili HEP Project, Lanku, Dist.- Dima Hasao, Assam.

**NABL ACCREDITED**  
Date: 07/10/2022 TC 7669  
ULR NO.: TE76692200000802P

Sample Drawn By : UTPAL BEZBARUAH  
Sampling Plan & Procedure : EETNE/SOP/01  
Analysis Duration : 20/09/22 TO 24/09/22, 21/09/22 TO 25/09/22, 22/09/22 TO 26/09/22, 23/09/22 TO 27/09/22, 24/09/22 TO 28/09/22, 25/09/22 TO 29/09/22, 26/09/22 TO 30/09/22, 27/09/22 TO 01/10/22  
Sampling Instrument Used : AMBIENT AIR SAMPLER/RDS  
Pollution Control Device, if any : NO

SL. NO.	DATE OF SAMPLING	LOCATION/SOURCE (Latitude & Longitude)	WEATHER	PARAMETERS					
				PM <sub>10</sub> ( $\mu\text{g}/\text{m}^3$ )	PM <sub>2.5</sub> ( $\mu\text{g}/\text{m}^3$ )	NO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	HC ( $\text{mg}/\text{m}^3$ )	CO ( $\text{mg}/\text{m}^3$ )	SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )
i)	20/09/22	Power Inlet / Dam Site Lat N 25°39'57.39" Long E 92°46'53.62"	Clear	32.3	18.6	13.8	BDL	BDL	9.2
ii)	21/09/22	Crusher Site Lat N 25°40'37.79" Long E 92°47'43.13"		40.3	26.1	15.6	0.03	0.04	11.8
iii)	22/09/22	HRT Adit Lat N 25°40'47.89" Long E 92°48'9.67"		36.2	19.2	10.8	BDL	BDL	8.3
iv)	23/09/22	Primary Hospital Near APGCL Camp Lat N 25°39'59.93" Long E 92°47'45.52"		30.7	18.6	10.6	BDL	BDL	8.7
v)	24/09/22	Batching plant Lat N 25°41'45.31" Long E 92°48'39.79"		31.6	21.5	14.8	BDL	BDL	10.0
vi)	25/09/22	Surge Shaft Site Lat N 25°41'29.28" Long E 92°48'16.47"		30.7	16.2	12.2	BDL	BDL	9.2
vii)	26/09/22	Labour & Staff Camp Lat N 25°40'54.97" Long E 92°48'9.67"		32.6	15.7	11.3	BDL	BDL	7.8
viii)	27/09/22	Power house Lat N 25°41'54.02" Long E 92°46'53.62"		34.6	18.8	10.2	BDL	BDL	7.4

Remarks: - Sampling were done within the annual based.

**NATIONAL AMBIENT AIR QUALITY STANDARDS:**

Sl. No.	Pollutant	Test Method	Time Average	Weighted	Concentration in Ambient Air Industrial, Residential, Rural and Other Area
1	Particulate Matter (PM <sub>10</sub> ), $\mu\text{g}/\text{m}^3$	IS:5182 Part-XXIII/ CPCB	Annual		60
2	Particulate Matter (PM <sub>2.5</sub> ), $\mu\text{g}/\text{m}^3$	EETNE/SOP/01/2017	Annual	24 hours	100
3	Nitrogen Dioxide (NO <sub>2</sub> ), $\mu\text{g}/\text{m}^3$	IS:5182 Part-VI/ CPCB	Annual	24 hours	40
4	Carbon Monoxide (CO), $\text{mg}/\text{m}^3$		Annual	24 hours	60
5	Sulphur Dioxide (SO <sub>2</sub> ), $\mu\text{g}/\text{m}^3$	IS:5182 Part-II/ CPCB	Annual	8 hours	40
				24 hours	80
				24 hours	2.0
				24 hours	50
				24 hours	80

For Envision Enviro Technologies North East, Guwahati

Utpal Bezbaruah  
(Environmental Chemist)

Dr. Pratik Chakraborty  
Authorized by (Quality Manager)

Note: i) Tests undertaken twice a week in each location.  
ii) The results relate only to the parameters tested.  
iii) The test report shall not be reproduced except in full, without written approval of laboratory.

Page 1 of 1

House No. 6, 1st Floor, Sankardev Path, Pub-Sarania, Chandmari, Guwahati-781003, Assam.

Phone : +91 8811096201 ♦ e-mail : envisionghy@gmail.com





**NABL ACCREDITED**

Certificate No. TC-7669

Recognized by Pollution Control Board, Assam

**TEST REPORT**

**AMBIENT NOISE LEVEL MEASUREMENT REPORT**

Rep.No. ANLMR\_1503163\_06A\_821

Sample ID: EETNE/SEPT/17(1)/22

Date: 07/10/2022

ULR NO.: TC76692200000802P

Issued to : M/s. Lower Kopili HEP Project, Lanku, Dist.- Dima Hasao, Assam.

SL. NO.	DATE OF SAMPLING	LOCATION /SOURCE (Latitude and Longitude)	NOISE LEVEL in dB(A) Leq	
			Day (6:00 am to 10:00 pm)	Night (10:00 pm to 6:00 am)
i)	21/09/22	Power Inlet / Dam Site Lat N 25°39'57.39" Long E 92°46'53.62"	47.3	38.6
ii)	22/09/22	Crusher Site Lat N 25°40'37.79" Long E 92°47'43.13"	57.2	44.2
iii)	23/09/22	HRT Adit Lat N 25°40'47.89" Long E 92°48'9.67"	52.4	40.3
iv)	24/09/22	Primary Hospital Near APGCL Camp Lat N 25°39'59.93" Long E 92°47'45.52"	55.7	40.8
v)	25/09/22	Batching plant Lat N 25°41'45.31" Long E 92°48'39.79"	50.9	44.5
vi)	26/09/22	Surge Shaft Site Lat N 25°41'29.28" Long E 92°48'16.47"	49.2	37.3
vii)	27/09/22	Labour & Staff Camp Lat N 25°40'54.97" Long E 92°48'9.67"	53.5	44.7
viii)	28/09/22	Power house Lat N 25°41'54.02" Long E 92°46'53.62"	54.3	42.8

Remarks: Noise level is carried out during 75% of the Day Time & Night Time.

Method of analysis : CPCB July 2015 guideline.

Sampling Instrument Used : Lutron SL-4033SD, HTC SL 1350

**Ambient Noise Standards:**

Area Code	Category of area	Limits in dB(A) Leq	
		Day (6:00 am to 10:00 pm)	Night (10:00 pm to 6:00 am)
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

Utpal Bezbaruah  
(Environmental Chemist)

For Enviro Enviro Technologies North East, Guwahati  
Dr. Pranita Chakraborty  
Authorized by (Quality Manager)

Note: i) The results relate only to the parameters tested.  
ii) The test report shall not be reproduced except in full, without written approval of laboratory.  
iii) Monitoring is performed twice a week in each location.

Page 1 of 1



**NABL ACCREDITED**  
Certificate No. TC-7669

Recognized by Pollution Control Board, Assam

**TEST REPORT:**

Report No: 221010\_1503163\_0  
ULR No: TC766922000000217P  
Sample ID No: EETNE/Sept/21/22/D  
Test Starting Date: 29/09/22

Date of Report: 10/10/22  
Date of sample receipt: 29/09/22  
Test completion Date: 10/10/22

Test Starting Date: 25/09/22		Date of sample receipt: 29/09/22			
Test completion Date: 10/10/22					
Name & Address of Client	M/s. Lower Kopili Project. Near Lanka, Dist: Dima Hasao.				
Sample Description	Type: Surface Water (3 km D/S of dam site)	Source: Kopili River	Location: Latitude: N 25°41'02.68// Longitude: E 92°47'17.59//		
Sample collected by	M/s. En-vision Enviro Technologies North East				
Sample Collection Particulars	Date 27/09/2022	Time 2:40 P.M	Temperature 30°C	Quantity Drawn: 4L	Sampling Method: EETNE/SOP/02

Sl No.	Parameters	Unit	Result	Reference Method
1	pH	---	7.20	APHA 23 <sup>rd</sup> Edition, 4500 H <sup>+</sup> , Page: 4-95
2	Turbidity	NTU	2.13	APHA 23 <sup>rd</sup> Edition, 2130, Page: 2-13
3	TDS	mg/L	36	APHA 23 <sup>rd</sup> Edition, 2540 C, Page: 2-69
4	TSS	mg/L	71.3	APHA 23 <sup>rd</sup> Edition, 2540, Page: 2-70
5	Oil and Grease	mg/L	<5	APHA 23 <sup>rd</sup> Edition, 5520 B, Page: 5-42
6	Dissolved Oxygen	mg/L	7.9	APHA 23 <sup>rd</sup> Edition, 4500-O C, Page: 4-146
7	Total hardness	mg/L	62.4	APHA 23 <sup>rd</sup> Edition, 2340 B, Page: 2-48
8	Calcium	mg/L	30.5	APHA 23 <sup>rd</sup> Edition, 3500-Ca B, Page: 3-69
9	Magnesium	mg/L	15.2	APHA 23 <sup>rd</sup> Edition, 3500-Mg B, Page: 3-86
10	Total Alkalinity	mg/L	44.9	APHA 23 <sup>rd</sup> Edition, 2320, Page: 2-37
11	Sulphate	mg/L	11.6	APHA 23 <sup>rd</sup> Edition, 4500-SO <sub>4</sub> <sup>2-</sup> E, Page: 4-199
12	Nitrates	mg/L	10.5	APHA 23 <sup>rd</sup> Edition, 4500-NO <sub>3</sub> B, Page: 4-127
13	Phosphate	mg/L	<0.02	APHA 23 <sup>rd</sup> Edition, 4500-P, Page: 4-163
14	Salinity	%	0.3	APHA 23 <sup>rd</sup> Edition, 2520B, Page: 2-60
15	Conductivity	µS/cm	79	APHA 23 <sup>rd</sup> Edition, 2520B, Page: 2-60



Page 1 of 2

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**NABL ACCREDITED**

Certificate No. TC-7669

Recognized by Pollution Control Board, Assam

Sample ID No: EETNE/Sept/21/22/D  
Test Starting Date: 29/09/22

Date of sample receipt: 29/09/22  
Test completion Date: 10/10/22

Sl No.	Parameters	Unit	Result	Reference Method
16	Chloride	mg/L	16.3	APHA 23 <sup>rd</sup> Edition, 4500-ClB, Page: 4-75
17	Arsenic	mg/L	BDL	APHA 23 <sup>rd</sup> Edition, 3114A, Page: 3-36
18	Iron(as Fe)	mg/L	1.5	APHA 23 <sup>rd</sup> Edition, 3500-Fe B, Page: 3-80
19	Total Coliform	MPN/100	3	APHA 23 <sup>rd</sup> Edition, 9222B, Page: 9-81
20	Fecal Coliform	MPN/100	Nil	APHA 23 <sup>rd</sup> Edition, 9222 D, Page: 9-89
21	BOD	mg/L	7	APHA 23 <sup>rd</sup> Edition, 5210B, Page: 5-6
22	COD	mg/L	48	APHA 23 <sup>rd</sup> Edition, 5220 b, Page: 5-18

For Envision Enviro Technologies North East, Guwahati

  
**Rimpi Sarma**  
Environmental Chemist  
Test Done By

  
**Dr. Pranita Chakrabarty**  
Quality Manager  
Authorized Signatory

Note: i) The results relate only to the parameters tested.  
ii) The test report shall not be reproduced except in full, without written approval of laboratory  
iii) Parameter no.11 to 20 are analyzed by Department of Chemistry, B. Borooah College as per our MOU.  
**End of report**

Page 2 of 2

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**NABL ACCREDITED**

Certificate No. TC-7669

**TEST REPORT:**

Report No: 221010\_1503163\_0

ULR No: TC766922000000221P

Sample ID No:EETNE/Sept/25/22/D

Test Starting Date: 29/09/22

Date of Report: 10/10/22

Date of sample receipt: 29/09/22

Test completion Date: 10/10/22

Name & Address of Client	M/s. Lower Kopili Project. Near Lanka, Dist: Dima Hasao.				
Sample Description	Type: Ground Water	Source: Choto Langpher ME School	Location: Latitude: N 25°41'55.88'' Longitude: E 92°48'56.07''		
Sample collected by	M/s. En-vision Enviro Technologies North East				
Sample Collection Particulars	Date 28/09/2022	Time 09:30 A.M	Temperature 29°C	Quantity Drawn: 4L	Sampling * Method: EETNE/SOP/02

Sl No.	Parameters	Unit	Result	Reference Method	IS 10500:2012 Permissible Limit
1	pH	---	7.05	APHA 23 <sup>rd</sup> Edition, 4500 H <sup>+</sup> , Page:4-95	6.5-8.5
2	Turbidity	NTU	1.1	APHA 23 <sup>rd</sup> Edition, 2130, Page:2-13	5
3	TDS	mg/L	125.6	APHA 23 <sup>rd</sup> Edition, 2540 C, Page :2-69	2000
4	TSS	mg/L	74.2	APHA 23 <sup>rd</sup> Edition, 2540, Page:2-70	----
5	Oil and Grease	mg/L	<5	APHA 23 <sup>rd</sup> Edition, 5520 B, Page:5-42	----
6	Dissolved Oxygen	mg/L	7.1	APHA 23 <sup>rd</sup> Edition, 4500-D C, Page:4-146	100
7	Total hardness	mg/L	78.2	APHA 23 <sup>rd</sup> Edition, 2340 B, Page:2-48	600
8	Calcium	mg/L	38.7	APHA 23 <sup>rd</sup> Edition, 3500-Ca B, Page:3-69	200
9	Magnesium	mg/L	19.3	APHA 23 <sup>rd</sup> Edition, 3500-Mg B, Page:3-86	100
10	Total Alkalinity	mg/L	223	APHA 23 <sup>rd</sup> Edition, 2320, Page:2-37	600
11	Sulphate	mg/L	16.9	APHA 23 <sup>rd</sup> Edition, 4500-SO <sub>4</sub> <sup>2-</sup> E, Page:4-199	400
12	Nitrates	mg/L	3.8	APHA 23 <sup>rd</sup> Edition, 4500-NO <sub>3</sub> <sup>-</sup> B, Page:4-127	No relaxation
13	Phosphate	mg/L	<0.01	APHA 23 <sup>rd</sup> Edition, 4500-P, Page:4-163	No relaxation
14	Conductivity	µS	240	APHA 23 <sup>rd</sup> Edition, 2520B, Page:2-60	No relaxation



Page 1 of 2

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Sample ID No: EETNE/Sept/25/22/D  
Test Starting Date: 29/09/22


Date of sample receipt: 29/09/22  
Test completion Date: 10/10/22  
NABL ACCREDITED  
Certificate No: 157869

Sl No.	Parameters	Unit	Result	Reference Method	IS 10500:2012
					Permissible Limit
15	Arsenic	mg/L	BDL	APHA 23 <sup>rd</sup> Edition, 3114A, Page: 3-36	No relaxation
16	Iron(as Fe)	mg/L	0.184	APHA 23 <sup>rd</sup> Edition, 3500-Fe B, Page: 3-80	No relaxation
17	Total Coliform	MPN/100	Nil	APHA 23 <sup>rd</sup> Edition, 9222B, Page: 9-81	Shall not be detectable in any 100 ml Sample
18	Fecal Coliform	MPN/100	Nil	APHA 23 <sup>rd</sup> Edition, 9222 D, Page: 9-89	Shall not be detectable in any 100 ml Sample
19	BOD	mg/L	<2	APHA 23 <sup>rd</sup> Edition, 5210B, Page: 5-6	No relaxation
20	COD	mg/L	<5	APHA 23 <sup>rd</sup> Edition, 5220 b, Page: 5-18	No relaxation

NOTE: (BOD) Biochemical Oxygen Demand, (COD) Chemical Oxygen Demand, (TSS) Total Suspended Solids, (TDS) Total Dissolved Solids.

For Envion Enviro Technologies North East

  
Rimpi Sarma  
Environmental Chemist  
Test Done By

  
Dr. Pranita Chakraborty  
Quality Manager  
Authorized Signatory

Note: i) The results relate only to the parameters tested.  
ii) The test report shall not be reproduced except in full, without written approval of laboratory  
iii) Parameter no.11 to 18 were analysed by Department of Chemistry, B. Borooah College as per our MOU.  
**End of report**

Page 2 of 2

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**NABL ACCREDITED**

Certificate No. TC-7669

Recognized by Pollution Control Board, Assam

**TEST REPORT:**

Report No: 211022\_1503163\_0

ULR No: TC766922000000216P

Sample ID No: EETNE/Sept/20/22/D

Test Starting Date: 29/09/22

Date of Report: 10/10/22

Date of sample receipt: 29/09/22

Test completion Date: 10/10/22

Test starting Date: 28/09/22		Test completion Date: 10/10/22			
Name & Address of Client	M/s. Lower Kopili Project, Near Lanka, Dist: Dima Hasao.				
Sample Description	Type: Surface Water(1 km U/S of dam site)	Source: Kopili River	Location:		
			Latitude: N 25°39'37.82	Longitude: E 92°47'26.10	
Sample collected by	M/s. En-vision Enviro Technologies North East				
Sample Collection Particulars	Date	Time	Temperature	Quantity	Sampling
	28/09/2022	10:42 A.M	27°C	Drawn:4L	Method:
					EETNE/SOP/02

Sl No.	Parameters	Unit	Result	Reference Method	IS 10500:2012
					Permissible Limit
1	p <sup>H</sup>	---	6.9	APHA 23 <sup>rd</sup> Edition, 4500 H <sup>+</sup> , Page: 4-95	6.5-8.5
2	Turbidity	NTU	3.56	APHA 23 <sup>rd</sup> Edition, 2130, Page: 2-13	5
3	TDS	mg/L	32.4	APHA 23 <sup>rd</sup> Edition, 2540 C, Page: 2-69	2000
4	TSS	mg/L	67.9	APHA 23 <sup>rd</sup> Edition, 2540, Page: 2-70	---
5	Oil and GREASE	mg/L	<5	APHA 23 <sup>rd</sup> Edition, 5520 B, Page: 5-42	---
6	Dissolved Oxygen	mg/L	7.2	APHA 23 <sup>rd</sup> Edition, 4500-O C, Page: 4-146	100
7	Total hardness	mg/L	71.4	APHA 23 <sup>rd</sup> Edition, 2340 B, Page: 2-48	600
8	Calcium	mg/L	34.6	APHA 23 <sup>rd</sup> Edition, 3500-Ca B, Page: 3-69	200
9	Magnesium	mg/L	15.9	APHA 23 <sup>rd</sup> Edition, 3500-Mg B, Page: 3-86	100
10	Total Alkalinity	mg/L	36.7	APHA 23 <sup>rd</sup> Edition, 2320, Page: 2-37	600
11	Sulphate	mg/L	11.3	APHA 23 <sup>rd</sup> Edition, 4500-SO <sub>4</sub> <sup>2-</sup> E, Page: 4-199	400
12	Nitrates	mg/L	3.8	APHA 23 <sup>rd</sup> Edition, 4500-NO <sub>3</sub> <sup>-</sup> B, Page: 4-127	No relaxation
13	Phosphate	mg/L	<0.02	APHA 23 <sup>rd</sup> Edition, 4500-P, Page: 4-163	No relaxation
14	Salinity	‰	0.5	APHA 23 <sup>rd</sup> Edition, 2520B, Page: 2-60	No relaxation
15	conductivity	µS/cm	90	APHA 23 <sup>rd</sup> Edition, 2520B, Page: 2-60	No relaxation

Page 1 of 2



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**NABL ACCREDITED**

Certificate No. TC-7669


Recognized by Pollution Control Board, Assam

Sample ID No: EETNE/Sept/20/22/D  
Test Starting Date: 29/09/22

Date of sample receipt: 29/09/22  
Test completion Date: 10/10/22

Sl No.	Parameters	Unit	Result	Reference Method	IS 10500:2012
					Permissible Limit
16	Arsenic	mg/L	BDL	APHA 23 <sup>rd</sup> Edition, 3114A, Page: 3-36	No relaxation
17	Iron(as Fe)	mg/L	1.5	APHA 23 <sup>rd</sup> Edition, 3500-Fe B, Page: 3-80	No relaxation
18	Total Coliform	MPN/100ml	3	APHA 23 <sup>rd</sup> Edition, 9222B, Page: 9-81	Shall not be detectable in any 100 ml Sample
19	Fecal Coliform	MPN/100ml	Nil	APHA 23 <sup>rd</sup> Edition, 9222 D, Page: 9-89	Shall not be detectable in any 100 ml Sample
20	BOD	mg/L	6	APHA 23 <sup>rd</sup> Edition, 5210B, Page: 5-6	No relaxation
21	COD	mg/L	22	APHA 23 <sup>rd</sup> Edition, 5220 b, Page: 5-18	No relaxation

For Envision Enviro Technologies North East, Guwahati

  
Rimpi sarma  
Environmental Chemist  
Test Done By

  
Dr. Pranita Chakraborty  
Quality Manager  
Authorized Signatory

Note: i) The results relate only to the parameters tested.  
ii) The test report shall not be reproduced except in full, without written approval of laboratory.  
iii) Parameter no.11 to 19 are analyzed by Department of Chemistry, B. Borooah College as per our MOU.  
End of report

Page 2 of 2

House No. 8, 1st Floor, Sankardev Path, Pub-Sarania, Chandmari, Guwahati-781003, Assam.

Phone : +91 8811096201 ♦ e-mail : envisionghy@gmail.com



**NABL ACCREDITED**

Certificate No. TC-7669

Recognized by Pollution Control Board, Assam

**TEST REPORT:**

Report No: 221010\_1503163\_0

ULR No: TC766922000000218P

Sample ID No: EETNE/Sept/22/22/D

Test Starting Date: 29/09/22

Date of Report: 10/10/22

Date of sample receipt: 29/09/22

Test completion Date: 10/10/22

		Test completion Date: 10/10/22			
Name & Address of Client	M/s. Lower Kopili Project. Near Lanka, Dist: Dima Hasao.				
Sample Description	Type: Surface Water (8 km D/S of dam site)	Source: Kopili River	Location: Latitude: N 25°42'44.97// * Longitude: E 92°49'6.20//		
Sample collected by	M/s. En-vision Enviro Technologies North East				
Sample Collection Particulars	Date 28/09/2022	Time 4:50 P.M	Temperature 29°C	Quantity Drawn:4L	Sampling Method: EETNE/SOP/02

Sl No.	Parameters	Unit	Result	Reference Method
1	p <sup>H</sup>	---	7.00	APHA 23 <sup>rd</sup> Edition, 4500 H <sup>+</sup> , Page: 4-95
2	Turbidity	NTU	2.78	APHA 23 <sup>rd</sup> Edition, 2130, Page: 2-13
3	TDS	mg/L	35.0	APHA 23 <sup>rd</sup> Edition, 2540 C, Page: 2-69
4	TSS	mg/L	23.6	APHA 23 <sup>rd</sup> Edition, 2540, Page: 2-70
5	Oil and Grease	mg/L	<5	APHA 23 <sup>rd</sup> Edition, 5520 B, Page: 5-42
6	Dissolved Oxygen	mg/L	6.8	APHA 23 <sup>rd</sup> Edition, 4500-O C, Page: 4-146
7	Total hardness	mg/L	74.3	APHA 23 <sup>rd</sup> Edition, 2340 B, Page: 2-48
8	Calcium	mg/L	38.5	APHA 23 <sup>rd</sup> Edition, 3500-Ca B, Page: 3-69
9	Magnesium	mg/L	17.3	APHA 23 <sup>rd</sup> Edition, 3500-Mg B, Page: 3-86
10	Total Alkalinity	mg/L	121.6	APHA 23 <sup>rd</sup> Edition, 2320, Page: 2-37
11	Sulphate	mg/L	14.2	APHA 23 <sup>rd</sup> Edition, 4500-SO <sub>4</sub> <sup>2-</sup> E, Page: 4-199
12	Nitrates	mg/L	4.6	APHA 23 <sup>rd</sup> Edition, 4500-NO <sub>3</sub> B, Page: 4-127
13	Phosphate	mg/L	BDL	APHA 23 <sup>rd</sup> Edition, 4500-P, Page: 4-163
14	Salinity	%	0.4	APHA 23 <sup>rd</sup> Edition, 2520B, Page: 2-60
15	Conductivity	µS/cm	90	APHA 23 <sup>rd</sup> Edition, 2520B, Page: 2-60



Page 1 of 2

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Enviro Technologies North East

Technologies for better tomorrow

**NABL ACCREDITED**



Certificate No. TC-7669

Recognized by Pollution Control Board, Assam

Sample ID No: EETNE/Sept/22/22/D  
Test Starting Date: 29/09/22Date of sample receipt: 29/09/22  
Test completion Date: 10/10/22

Sl No.	Parameters	Unit	Result	Reference Method
16	Chloride	mg/L	18.9	APHA 23 <sup>rd</sup> Edition, 4500-Cl <sup>-</sup> B, Page: 4-75
17	Arsenic	mg/L	<0.001	APHA 23 <sup>rd</sup> Edition, 3114A, Page: 3-36
18	Iron(as Fe)	mg/L	2.1	APHA 23 <sup>rd</sup> Edition, 3500-Fe B, Page: 3-80
19	Total Coliform	MPN/100	5	APHA 23 <sup>rd</sup> Edition, 9222B, Page: 9-81
20	Fecal Coliform	MPN/100	Nil	APHA 23 <sup>rd</sup> Edition, 9222 D, Page: 9-89
21	BOD	mg/L	8	APHA 23 <sup>rd</sup> Edition, 5210B, Page: 5-6
22	COD	mg/L	59	APHA 23 <sup>rd</sup> Edition, 5220 b, Page: 5-18

For Envision Enviro Technologies North East, Guwahati

  
Rimpi Sarma  
Environmental Chemist  
Test Done By  
Dr. Pranita Chakraborty  
Quality Manager  
Authorized SignatoryNote: i) The results relate only to the parameters tested.  
ii) The test report shall not be reproduced except in full, without written approval of laboratory

End of report

Page 2 of 2

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**TEST REPORT:**

Report No: 211022\_1503163\_0  
ULR No: TC766922000000215P  
Sample ID No: EETNE/Sept/19/22/D  
Test Starting Date: 29/09/2

Date of Report: 10/10/22  
Date of sample receipt: 29/09/22  
Test completion Date: 10/10/22

Test Starting Date: 27/09/22		Test completion Date: 10/10/22			
Name & Address of Client	M/s. Lower Kopili Project. Near Lanka, Dist: Dima Hasao.				
Sample Description	Type: Surface Water(Submergence area, dam site)	Source: Kopili River	Location: Latitude: N 25°39'57.38'' Longitude: E 92°46'53.10''		
Sample collected by	M/s. En-vision Enviro Technologies North East				
Sample Collection Particulars	Date 27/09/2022	Time 10:49 A.M	Temperature 31°C	Quantity Drawn:4L	Sampling Method: EETNE/SOP/02

Sl No.	Parameters	Unit	Result	Reference Method	IS 10500:2012 Permissible Limit
1	pH	---	7.00	APHA 23 <sup>rd</sup> Edition, 4500 H <sup>+</sup> , Page: 4-95	6.5-8.5
2	Turbidity	NTU	2.54	APHA 23 <sup>rd</sup> Edition, 2130, Page: 2-13	5
3	TDS	mg/L	32	APHA 23 <sup>rd</sup> Edition, 2540 C, Page: 2-69	2000
4	TSS	mg/L	58.6	APHA 23 <sup>rd</sup> Edition, 2540, Page: 2-70	---
5	Oil and GREASE	mg/L	<5	APHA 23 <sup>rd</sup> Edition, 5520 B, Page: 5-42	---
6	Dissolved Oxygen	mg/L	7.8	APHA 23 <sup>rd</sup> Edition, 4500-O C, Page: 4-146	---
7	Total hardness	mg/L	59	APHA 23 <sup>rd</sup> Edition, 2340 B, Page: 2-48	600
8	Calcium	mg/L	29.5	APHA 23 <sup>rd</sup> Edition, 3500-Ca B, Page: 3-69	200
9	Magnesium	mg/L	15.5	APHA 23 <sup>rd</sup> Edition, 3500-Mg B, Page: 3-86	100
10	Total Alkalinity	mg/L	36.7	APHA 23 <sup>rd</sup> Edition, 2320, Page: 2-37	600
11	Sulphate	mg/L	10.2	APHA 23 <sup>rd</sup> Edition, 4500-SO <sub>4</sub> <sup>2-</sup> E, Page: 4-199	400
12	Nitrates	mg/L	5.3	APHA 23 <sup>rd</sup> Edition, 4500-NO <sub>3</sub> <sup>-</sup> B, Page: 4-127	No relaxation
13	Phosphate	mg/L	<0.02	APHA 23 <sup>rd</sup> Edition, 4500-P, Page: 4-163	No relaxation
14	Salinity	‰	0.2	APHA 23 <sup>rd</sup> Edition, 2520B, Page: 2-60	No relaxation
15	conductivity	µS/cm	81	APHA 23 <sup>rd</sup> Edition, 2520B, Page: 2-60	No relaxation



Page 1 of 2

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Sample ID No: EETNE/Sept/19/22/D  
Test Starting Date: 29/09/22

Date of sample receipt: 29/09/22  
Test completion Date: 10/10/22

Sl No.	Parameters	Unit	Result	Reference Method	IS 10500:2012
					Permissible Limit
16	Arsenic	mg/L	<0.001	APHA 23 <sup>rd</sup> Edition, 3114A, Page: 3-36	No relaxation
17	Iron(as Fe)	mg/L	0.67	APHA 23 <sup>rd</sup> Edition, 3500-Fe 8, Page: 3-80	No relaxation
18	Total Coliform	MPN/100ml	3	APHA 23 <sup>rd</sup> Edition, 9222B, Page: 9-81	Shall not be detectable in any 100 ml Sample
19	Fecal Coliform	MPN/100ml	Nil	APHA 23 <sup>rd</sup> Edition, 9222 D, Page: 9-89	Shall not be detectable in any 100 ml Sample
20	BOD	mg/L	4	APHA 23 <sup>rd</sup> Edition, 5210B, Page: 5-6	No relaxation
21	COD	mg/L	121	APHA 23 <sup>rd</sup> Edition, 5220 b, Page: 5-18	No relaxation

For Envision Enviro Technologies North East, Guwahati

  
**Rimpal Sarma**  
Environmental Chemist  
Test Done By

  
**Dr. Pramita Chakraborty**  
Quality Manager  
Authorized Signatory

Note: i) The results relate only to the parameters tested.  
ii) The test report shall not be reproduced except in full, without written approval of laboratory  
iii) Parameter no.11 to 19 are analyzed by Department of Chemistry, B. Borooah College as per our MOU.

End of report

Page 2 of 2

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Certificate No. TC-7669

**TEST REPORT:**

Report No: 221010\_1503163\_0

ULR No: TC766922000000223P

Sample ID No: EETNE/Sept/27/22/D

Test Starting Date: 29/09/22

Date of Report: 10/10/22

Date of sample receipt: 29/09/22

Test completion Date: 10/10/22

			Test completion Date: 10/10/22		
Name & Address of Client	M/s. Lower Kopili Project. Near Lanka, Dist: Dima Hasao.				
Sample Description	Type: Surface Water	Source: Lanku Nala		Location:	
				Latitude: N 25°39'49.8// Longitude: E 92°47'42.7//	
Sample collected by	M/s. En-vision Enviro Technologies North East				
Sample Collection Particulars	Date 27/09/2022	Time 10:26 A.M	Temperature 29°C	Quantity Drawn: 4Ltg	Sampling Method:
	EETNE/SOP/02				

Sl No.	Parameters	Unit	Result	Reference Method
1	p <sup>H</sup>	---	7.00	APHA 23 <sup>rd</sup> Edition, 4500 H <sup>+</sup> , Page: 4-95
2	Turbidity	NTU	2.6	APHA 23 <sup>rd</sup> Edition, 2130, Page: 2-13
3	TDS	mg/L	112.6	APHA 23 <sup>rd</sup> Edition, 2540 C, Page: 2-69
4	TSS	mg/L	81.4	APHA 23 <sup>rd</sup> Edition, 2540, Page: 2-70
5	Oil and Grease	mg/L	<5	APHA 23 <sup>rd</sup> Edition, 5520 B, Page: 5-42
6	Dissolved Oxygen	mg/L	7.2	APHA 23 <sup>rd</sup> Edition, 4500-O C, Page: 4-146
7	Total hardness	mg/L	58.6	APHA 23 <sup>rd</sup> Edition, 2340 B, Page: 2-48
8	Calcium	mg/L	28.9	APHA 23 <sup>rd</sup> Edition, 3500-Ca B, Page: 3-69
9	Magnesium	mg/L	14.5	APHA 23 <sup>rd</sup> Edition, 3500-Mg B, Page: 3-86
10	Total Alkalinity	mg/L	215.8	APHA 23 <sup>rd</sup> Edition, 2320, Page: 2-37
11	Chloride	mg/L	17.4	APHA 23 <sup>rd</sup> Edition, 4500-Cl <sup>-</sup> B, Page: 4-75
12	Sulphate	mg/L	12.3	APHA 23 <sup>rd</sup> Edition, 4500-SO <sub>4</sub> <sup>2-</sup> E, Page: 4-199
13	Nitrates	mg/L	3.1	APHA 23 <sup>rd</sup> Edition, 4500-NO <sub>3</sub> <sup>-</sup> B, Page: 4-127
14	Phosphate	mg/L	<.02	APHA 23 <sup>rd</sup> Edition, 4500-P, Page: 4-163
15	conductivity	µS/cm	190	APHA 23 <sup>rd</sup> Edition, 2520B, Page: 2-60



Page 1 of 2

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Sample ID No: EETNE/Sept/27/22/D  
Test Starting Date: 29/09/22

Date of sample receipt: 29/09/22  
Test completion Date: 10/10/22

Sl No.	Parameters	Unit	Result	Reference Method
16	Arsenic	µg/L	BDL	APHA 23 <sup>rd</sup> Edition, 3114A, Page: 3-36
17	Iron(as Fe)	mg/L	1.1	APHA 23 <sup>rd</sup> Edition, 3500-Fe B, Page: 3-80
18	Salinity	‰	0.6	APHA 23 <sup>rd</sup> Edition, 2520B, Page: 2-60
19	Total Coliform	MPN/100 mL	3	APHA 23 <sup>rd</sup> Edition, 9222B, Page: 9-81
20	Fecal Coliform	MPN/100 mL	Nil	APHA 23 <sup>rd</sup> Edition, 9222 D, Page: 9-89
21	BOD	mg/L	7	APHA 23 <sup>rd</sup> Edition, 5210B, Page: 5-6
22	COD	mg/L	21	APHA 23 <sup>rd</sup> Edition, 5220 b, Page: 5-18

For Envision Enviro Technologies North East, Guwahati

  
**Rimpi Sarma**  
Environmental Chemist  
Test Done By

  
**Dr. Prabha Chakraborty**  
Quality Manager  
Authorized Signatory

Note: i) The results relate only to the parameters tested.  
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End of report

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## SOIL ANALYSIS REPORT

Rep.No: 221010\_1503163\_0

Date: 10/10/22

Name & Address of Client	M/s. Lower Kopili Project. Near Lanka, Dist: Dima Hasao.
Sample Description	Pre Construction Stage
Date of Sampling	28/09/22
Sample collected by	M/s. En-vision Enviro Technologies North East

Sl No.	Soil Parameters	Unit	Result	Reference Method
1	pH	---	6.5	Potentiometric
2	Soil type	---	Silt highly organic clay	Hydrometer
	Permeability of soil	Cm/sec	$1 \times 10^{-4}$	Constant head test method
	Sand	%	72.1	Hydrometer
	Clay	%	10.4	Hydrometer
	Silt	%	17.5	Hydrometer
3	Nitrogen	kg/ha	86.3	Alkaline KMnO <sub>4</sub>
4	Phosphorus	mg/kg	11.2	Olsen method
5	Potassium	mg/Kg	28.9	NH <sub>4</sub> -acetate extraction
6	Electrical conductivity	mS/cm	10	Conductivity Meter
7	Water holding capacity	%	21.6	Standard method
8	Organic matter	%	5.4	Titrimetric



Page 1 of 2

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Sl No.	Parameters	Unit	Result	Reference Method
9	Organic Carbon	%	3.13	Rapid Dichromate Oxidation Technique
10	Iron	g/kg	35.2	Flame AAS(mg/kg) *
11	Copper	mg/kg	7.5	Flame AAS
12	Nickel	mg/kg	12.9	Flame AAS
13	Manganese	g/kg	8.7	Flame AAS(mg/kg)
14	Zinc	mg/kg	33.2	Flame AAS
15	Arsenic	mg/kg	3.4	HG- AAS
16	Cadmium	mg/kg	0.02	Flame AAS
17	Lead	mg/kg	4.5	Flame AAS
18	Chromium	mg/kg	6.3	Flameless AAS
19	Aluminum	mg/kg	BDL	Flameless AAS

For En-vision Enviro Technologies North East, Guwahati

  
**Dr. Pranita Chakraborty**  
 (Quality Manager)  
 Authorised Signatory

Note: i) The results relate only to the parameter tested.  
 ii) The test report shall not be reproduced except in full, without written approval of laboratory.  
 iii) Parameter no.9 to 19 are analysed in B. Boorah College as per our MOU.

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**Minutes of the 1<sup>st</sup> Biodiversity Management Committee Meeting  
held on 21.12.2022 at 11.30 am at APGCL Bijulee Bhawan, Guwahati**

Following members were present.

Sl no	Name	
1	Mr Mridul Saikia, Project Director, APGCL	Chairman
2	Mr Dilip Das, General Manager, LKHEP	Convenor
3	Mr Tuhin Langthasa, DFO, Dima Hasao West Division	Member
4	Mr Rajiv Engti, DFO Hamren Division	Member
5	Mr Jonardhan Rongpi, DGM (Civil), LKHEP	Member
6	Mr Akshay Talukder, DGM (PP&I)	Member
7	Mr Anjan Pathak, AM (F&A), APGCL	Member
8	Dr Deepak Baruah, Environment Expert, APGCL	Member
9	Dr Jayanta Das, Environment specialist	PMC

At the onset Mr Akshay Talukder, DGM (PP&I), APGCL welcomed the members and explained the purpose of the meeting and requested to extend support for effective implementation of the Biodiversity Plan. The plan will not only comply the stipulations of EC conditions and ADB's safeguards policy 2009 requirements but also support to achieve the sustainable development goals set by UN.

A brief presentation was given on this aspect by PMC and APGCL covering all the measures to be taken and highlighted the prioritization of the action as per the need in a phase manner. APGCL emphasised that both the measures and recommendations of MoEF&CC and ADB to be considered during implementation within the stipulated budget from the state share. Actions for the next 6 months (Jan to June 2023) were also explained.

During discussion DFO of Hamran suggested to incorporate human wildlife conflict mitigation measures in the six monthly implementation plan. DFO Dima Hasao requested for the EIA and EMP report for the project and APGCL agreed to provide the same.

PPT is shared to all the members so that they can provide their views and suggestions for effective implementation of the Plan.

After getting the suggestions from the respective members within 28<sup>th</sup> December, 2022; final plan of operation for the next six months will be formulated and will be forwarded for necessary budgetary approval from competent authority.

The meeting ended with the vote of thanks.

  
Project Director, APGCL  
Bijulee Bhawan, Guwahati

Snippets of The Site Visit



Dam Site





**Batching Plants at Powerhouse Site**





### **Construction of Sedimentation Tank at Batching Plants (Dam Site)**





**Surge Shaft**



**Quarry Area**





HRT



**Soil Erosion at Right Bank of Dam Site**



**Use of Firewood in CP-2**





**Grey water Discharged into Nature at CP-2 labour Camp**



**Fire Extinguisher at HRT**





**Fire Extinguisher at Petrol Dispensing Unit**



**Transmission Tower Construction at CP-4**





**Labour Accommodation at CP-4**



### **Contact Details**

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