



Environmental Monitoring Report

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India: Assam Power Sector Investment Program - Tranche 3

Prepared by Assam Power Generation Corporation Limited (APGCL) for the Asian Development Bank (ADB). This environmental monitoring validation report is an addendum to the environmental monitoring report originally posted in January 2022 available on <https://www.adb.org/projects/documents/ind-47101-004-emr-0>.

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Asian Development Bank

Review Summary of Semi-Annual Environment and Social Monitoring Report of 120 MW LKHEP

Submitted to
Assam Power Generation Corporation Limited



Submitted by
Feedback Infra Private Limited **ENERGY DIVISION**
AQUALOGUS – Engenharia e Ambiente, Lda
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Review Summary of Semi-Annual Environment and Social Monitoring Report

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					

Lower Kopili Hydroelectric Project (LKHEP) 120MW


Consultancy Services for External Monitoring of LKHEP 120 MW

Contract No. APGCL/ADB/Tranch-3/LKHEP/External
Monitoring DATED: 24TH December 2021

PURPOSE:

External Monitoring for implementation of Environment and Social (E&S) safeguard aspects as per the requirements of national regulatory requirements and ADB's SPS 2009 For 120 MW LKHEP during design, construction, and operation Phases

Rev.	Description	Date	Prepared	Checked	Approved
R.01	Revised as per APGCL comments	27/06/2022	PA, AQ, SM, SD, Anu, ZA, VR, SW, AB	PA	SLN
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List of Abbreviations

AES	Aquatic Ecological Specialist
ADB	Asian Development Bank
APGCL	Assam Power Generation Corporation Limited
APs'	Affected Persons
APSIP	Assam Power Sector Investment Program
B & WS	Biodiversity and Wildlife Specialist
BCWMP	Biodiversity Conservation and Wildlife Management Plan
CAP	Corrective action plan
CAT	Catchment Area Treatment
CIAR	Cumulative Impact Assessment Report
CRIPP	Combined Resettlement and Indigenous Peoples Plan
CRTDP	Combined Resettlement and Tribal Development Plan
CTO	Consents to operate
CTE	Consents to establish
EHS	Environment Health and Safety
EC	Environment Clearance
EMP	Environmental Management plan
EMoP	Environmental Monitoring Plan
ESHS	Environmental Social Health and Safety
ESIA	Environment Social Impact Assessment
ESMF	Environment and social Management Framework
ESMP	Environmental Social Management Plan
ESSM	Eco System Science and Management
E S & WQR	Environment Specialist- Water Quality Restoration
FC	Forest Clearance
GIIPS	Good International Industrial Practices
GOI	Government of India
GOA	Government of Assam
GS	Gender Specialist
HO	Head Office
IDSE	Independent Dam Safety Expert
LKHPL	Lower Kopili Hydroelectric Project
MS	Management of Study
MoEF & CC	Ministry of environment Forest and Climate Change
MPR	Monthly Progress Reports
NGT	National Green Tribunal
NGO	Non-Governmental Organisation
PMC	Project Management Contractor
PCP	Public Communication Policy
SASMR	Semi Annual Social Monitoring Report
SAEMR	Semi Annual Environment Monitoring Report
SDSO	State Dam Safety Organizations
SPS 2009	Safeguard Policy Statement
TOR	Terms of Reference

Contents

1.0	PROJECT SYNOPSIS	4
2.0	PROJECT BACKGROUND	4
3.0	PROJECT SALIENT FEATURES	5
4.0	CONSULTANT SCOPE OF WORK	9
A.	Objective of The Project.....	9
B.	Scope of Service.....	9
5.0	REVIEW SUMMARY OF SEMI-ANNUAL ENVIRONMENT AND SOCIAL MONITORING.....	13

1.0 PROJECT SYNOPSIS

Name of the Project	
Consultancy Services for External Monitoring of LKHEP 120 MW	
Client Name	Assam Power Generation Corporation Limited
Consultant Agency	M/s Feedback Infra Pvt. Ltd AQUALOGUS – Engenharia e Ambiente, Lda. Jade Consult Pvt. Ltd.
Project Area	Lower Kopili H. E. Project (LKHEP) is located in Karbi Anglong and Dima Hasao District in north-eastern State of Assam, India The details are provided in the subsequent sections of this report.
Project Duration	6 Years

2.0 PROJECT BACKGROUND

Assam Power Generation Corporation Limited (APGCL) is executing a 120 MW Lower Kopili Hydroelectric Project (LKHEP). APGCL through Government of Assam (GoA) and subsequently through Government of India (GOI) has applied for a loan from the Asian Development Bank (ADB) towards the cost of LKHEP under Assam Power Sector Investment Program (APSIP) - Tranche 3.

The LKHEP involves construction of 120 MW hydroelectric power plants and associated 50 km long 220 KV transmission line in north-eastern State of Assam, India. LKHEP 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 (2X55MW) and an auxiliary plant rated at 10 MW (1x5 MW+2x2.5 MW) at the toe of the dam for utilizing the mandatory release of water for ecological purposes. The scheme has been contemplated to run at full potential in monsoon season and operate as a peaking station in non-monsoon season.

The project will use the hydropower potential of the Kopili River, a south bank tributary of the Brahmaputra River. The proposed LKHEP is downstream development of existing Kopili HEP. The LKHEP is located in Karbi Anglong and Dima Hasao districts of Assam. The Project location (dam site at Longku) is defined by 25°39'57.39" N latitude and 92°46'53.62" E longitude. The project envisages utilization of the regulated discharge from Kopili HEP, spills of Khandong and Umrong Dam and the discharge from the intermediate catchment.

The LKHEP (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 fulfil 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. In addition, APGCL developed a Resettlement and Indigenous Peoples Plan (RIPP) comprised of a Combined Resettlement and Tribal Development Plan (CRTDP) for hydropower component, and a Combined Resettlement and Indigenous Peoples Plan (CRIPP) for transmission line component.

As required by the ADB's SPS 2009 and Access to Information Policy (AIP) 2019, draft EIA was disclosed in April 2018 and Resettlement and Tribal Development Plan (RIPP) in October 2018. The entitlement matrix has been disclosed in May 2018 by APGCL.

3.0 PROJECT SALIENT FEATURES

The Lower Kopili Hydroelectric Project comprise the following salient features:

PROJECT LOCATION	
State	Assam
District	East of Karbi Anglong and West of Dima Hasao (North Cachar) Hills District (Project Location Map is attached as Annexure II)
River	Kopili
Latitude	Diversion Site Powerhouse Site 25°39'57.39" N 25°41'54.02" N
Longitude	92°46'53.62" E 92°48'15.98" E
Nearest railway station	Lanka (BG), 48 km away
Nearest road	Lanka – Garampani road
Nearest township	Lanka 48 km away
HYDROLOGY	
Catchment area	2,076.62 sq. km
Snow fed catchment area	0
Lower Kopili (uncontrolled) catchment area	788 sq.km.
Average annual rainfall	1,557 mm

Annual evaporation rate	638.81 mm
Temperature	Summer – 23°C to 32°C Winter – 6°C to 14°C
90% dependable yield	2,214.64 MCM
50% dependable yield	2,466.90 MCM
Flood discharge for river diversion (25 years) Non monsoon flow (Nov. to May)	720 m ³ /s
Standard Project Flood (SPF)	7,510 m ³ /s
Probable Maximum Flood (PMF)	11,030 m ³ /s
Sedimentation rate	0.1 Ha-m / km ² /year
Environmental flow (e-flow)	Minimum 5.345 m ³ /s
RESERVOIR	
Reservoir spread (at FRL)	620 ha
Maximum water level (MWL)	EL 226.00 m
Full reservoir level (FRL)	EL 226.00 m
Minimum draw down level (MDDL)	EL 202.00 m
Capacity at FRL	106.29 MCM
Capacity at minimum draw down level	29.00 MCM
Live storage	77.29 MCM
DAM	
Type	Concrete Gravity Dam
Maximum height of dam	65.50 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
Total width of dam structure including overflow & non overflow blocks	335.00 m
Crest level of overflow spillway for debris removal	EL 223.00 m
Crest level of sluice spillway	EL 190.00 m
Energy dissipation arrangement	Flip bucket type with Plunge Pool
Sluice spillway capacity	11,030 m ³ /s
Gate type & Number	Radial gate & 6 No. with hydraulic hoist
RIVER DIVERSION	
Diversion type	Coffer dams, Diversion Tunnel of 10.5m diameter at right bank

Upstream Cofferdam		
Type	Plum Concrete	
Height	17.80 m	
Top Length	167.17 m	
Top Level	EL. 189.80 m	
Downstream Cofferdam		
Type	Earth & Rockfill	
Height	4.50 m	
Top Length	100.58 m	
Top Level	EL.175.50 m	
Diversion channel size (W x H)	Diversion Channel replaced by 10.5m Diameter 436m long Diversion Tunnel	
INTAKE	MAIN POWERHOUSE	AUXILIARY POWERHOUSE
Number of openings	1	1
Nominal discharge	112.71 m ³ /s	24.94 m ³ /s (e-flow of 5.345 m ³ /s within this)
HEAD RACE TUNNEL		
Location	Right bank of Kopili river	
Length	3,641.60 m	
Finished diameter	7.00 m	
Nominal discharge	112.71 m ³ /s	
ADIT-1 TO HRT		
Shape & 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	
Size (L x W x H)	23 m x 14 m x 27.50 m	
PRESSURE SHAFT	Main Powerhouse	Auxiliary Powerhouse
Type	Circular steel lined	Circular steel lined
Nominal discharge	112.71 m ³ /s	24.94 m ³ /s
Length of pressure shaft	451.20 m (Dia 6.1m)	152.83 m (Dia 6.1m)
Length of Surface Penstock	87.36 m (Dia 5.2m)	
Number of pressure shaft	1	1
Specification of steel plates	ASTM A537	ASTM A537
Penstock	2	3

Internal diameter	3.70 m	2 Nos.1.65 m & 1 No.2.35 m
Length	17.82 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	1 phase, ONAF cooled Generator Transformer	3 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
TAIL RACE CHANNEL		
Type	Rectangular Channel	Rectangular Duct
Numbers	1	Three separate ducts merging into one common duct
Size (L x W)	208.4 m x 26 m	43.40m (Duct Size of 3 m x 1.8 m) for 5 MW unit 29.65m (Duct Size of 4 m x 1.8 m) for two 2.5 MW Units after Junction
SWITCH YARD		
Type & Size	Outdoor-146 m x 72 m	Outdoor-24 m x 21 m
Voltage level	220 kV	33 kV
POWER BENEFITS		
90% dependable energy with 95% plant availability	415.78 MU	53.80 MU
90% dependable energy with 95% plant availability (Total)	469.58 MU	
CONSTRUCTION PERIOD		
Mobilisation and	9 Months	

infrastructure development	
Main construction period	3 Years 3 Months
Total construction period (Mobilisation and Infrastructure Development)	4 Years

4.0 CONSULTANT SCOPE OF WORK

External Monitor Consultant has been engaged under the project to monitor the implementation of Environmental and Social Safeguards as per the scope of SPS 2009 safeguards requirements w.r.t project activities. External Monitor Consultant is required to verify the status of undergoing mitigation and monitoring activities for the project with over all supervision of implementation of:

- Compliance conditions stipulated under various clearances, permits and NOC's obtained for the project.
- Environmental and Management Plan (CEMP) prepared by the Construction Contractor
- Combined Resettlement and Indigenous Peoples Plan (CRIPP) prepared for the project.
- Combined Resettlement and Tribal Development Plan (CRTDP) prepared for the project.

The External Monitor Consultant is expected to undertake regular site visits to the project site during project construction and operation for the same.

A. Objective of the Project

The objective of the assignment is to independently monitor of the implementation of Environment and Social (E&S) safeguards aspects as per the requirement of national regulatory requirements and ADB's SPS 2009 for 120 MW LKHEP during design, construction, and operation phases. The tentative contract period will be for 6 years which includes 4 years of construction phase and two years of operation phase.

B. Scope of Service

The broad scope of service as defined in the ToR is stipulated below:

- To provide technical guidance and monitor implementation and effectiveness of all the environment safeguard activities including wildlife conservation related activities under the project relating to construction of the 120MW power plant and transmission line, compensatory afforestation, and other habitat improvement.
- Ensure that all environment safeguard requirements as given in ADB SPS 2009, and applicable laws and rules under MoEF &CC are being complied with during all stages of respective projects under the loan.
- Independent monitoring of implementation of EMP and Biodiversity Conservation and Wildlife Protection Plans.
- Pre-construction baseline surveys on environment and biodiversity (flora, fauna, and critical habitats).
- Conduct training and awareness programs.
- Advise APGCL on environment and biodiversity issues during construction and initial years of operation.
- Compliance monitoring of Environment Clearance (EC); Forest Clearance (FC); Consents to establish (CTE), Consents to operate (CTO) from Pollution Control Board, Assam; EC for mining related activities etc.
- Ensure compliance of Loan covenants related to Environment Safeguards.
- Monitor, audit, evaluate and supervise negative and positive project environmental impacts during pre-construction, construction, and operation stage.
- As per several management plans (CAT Plan, Restoration Plans for quarry areas, Local Area Development Plan, Disaster Management Plan, Plan to preserved cultural Identity, Muck Management Plan, Soil and Moisture Conservation Plan, Wildlife Conservation Plan, Green belt development Plan, etc.), the external monitoring agency will regularly apprise ADB and APGCL on the affectivity of the Monitoring of Ambient Environment as per Environment Monitoring Plan, mitigation measures as per Environment Management Plan and practices.
- Ensure full implementation of mitigation measures identified.
- Monitoring the activities and review the reports related to Corporate Social Responsibility and Corporate Environment Responsibility to be carried out as per direction of MoEF & CC, GOI.
- Prepare the compliance reports of - Environment Clearance, GOI; Forest Clearance, GOI; Environment Clearance, SEIAA, Consent, PCB Assam.

- Monitoring and reporting on the Government guidelines for containment of COVID- 19.
- The external monitoring agency will regularly apprise ADB and APGCL on the affectivity of the mitigation measures and practices and if inadequate recommend additional measures or studies.
- To assess whether the CRTDP and CRIPP are implemented on schedule and within budget and whether the goals and principles of the CRTDP and CRIPP are achieved. Specifically, monitoring and evaluation will focus on the following aspects of the Affected Persons (APs') situation and the resettlement process.
- Special attention will be paid to women, indigenous peoples/ethnic minorities/groups, as well as the poor and vulnerable groups during monitoring.
- To verify the payment of compensation and the implementation of income restoration program and its results.
- Review and verification of monitoring reports prepared by PMU.
- Monitor the work carried out by the NGO and SESC.
- Train and guide them on CRTDP implementation.
- Review the performance of the grievance redress mechanism and report on its working.
- Conduct mid-term safeguard impact assessment.
- Review corrective action plans.
- Consult displaced persons, officials, community leaders to prepare monitoring and review reports.
- Assess resettlement efficiency, effectiveness, and the efficiency of PMU, impact of the project and its sustainability.
- If the findings indicate significant compliance gaps, the External Monitor will prepare a separate corrective action plan (CAP) in cooperation with the relevant stakeholders, to address pending or new impacts. The Expert will monitor and report on the implementation of the CAP.
- Draw lessons for future resettlement policy formulation and planning.
- External monitoring will also alert the project authorities and ADB on the risks, safeguard non-compliances, and early warnings in non-implementation of the CRTDP.
- Consultant will document good practices as well as difficulties encountered in implementing CRTDP.

- Consultant will submit semi-annual monitoring reports to APGCL and ADB for review. Each report will specifically note whether a CAP is needed to bring the implementation of CRTDP to safeguard compliance.
- Assisting APGCL with independent monitoring reports. 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 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.

5.0 REVIEW SUMMARY OF SEMI-ANNUAL ENVIRONMENT AND SOCIAL MONITORING

S.N.	Activity	External Monitoring Agency Remarks	Responsibility	Timeline	APGCL Response
1	Consent to Operate (CTO) on Batching Plant, Crusher Plant, Operation Quarry Operation, etc.	This need to be expedited. Continuous follow ups and coordination is required.	Contractor		Consent to Operate (CTO) was accorded for Batching Plant (Near Powerhouse) on 27.12.21 and for Crusher Plant on 7.12.21. For Quarry operation, CTO is not required in Assam.
2	Noise and vibrations	Construction methodology and machine specification need to be prepared and submitted for approval.	Contractor		Construction methodology and machine specification prepared and submitted by the package 2 contractor, and it was approved by PMC and APGCL during the tender process. Moreover, Contractor submits Method statement before starting of each

S.N.	Activity	External Monitoring Agency Remarks	Responsibility	Timeline	APGCL Response
					component and they are reviewed and approved by PMC and APGCL. Sample of method statement is provided as annexure I.
3	CTO for batching plant at Dam site	Latest status to be provided	Contractor	Application of CTE submitted in March 22 to PCBA.	CTE obtained from PCBA and subsequently the contractor will obtain CTO.
4	Obtain outstanding permissions for ground water abstraction.	Latest status to be provided	Contractor	Contractor pursuing the matter with CGWB for the same.	Application submitted to CGWB in November 2021.
5	Obtain outstanding permissions for vehicle registration; ensure that all vehicles being used have requisite PUC (pollution under control) in place.	All such vehicles with registered inBhutan must be registered with Indian numbers and PUC to be obtained.	Contractor	Will be complied by the end of July 22.	Letter has been issued to Contractor to obtain Indian registration of the vehicles along with PUC.

S.N.	Activity	External Monitoring Agency Remarks	Responsibility	Timeline	APGCL Response
6	Compliance to Environment Clearance specific condition.	Status of wildlife clearance as stipulated under specific condition of Environment Clearance accorded to the project needs to be updated.	PMU (APGCL)		<p>a). As per stipulation of MoEF&CC it is clearly mentioned that “The project proponent shall obtain clearance from the National Board for Wildlife, if applicable.”</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 &CC, Shilong had also put forward their views in this regard.</p>

S.N.	Activity	External Monitoring Agency Remarks	Responsibility	Timeline	APGCL Response
					<p>d). As per requirement PGCL had submitted a MZ 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> <p>f). Based on the aforesaid facts Ministry has accorded both EC and FC for LKHEP.</p> <p>Please note that the condition given in 'Annexure I are all Standard EC</p>

S.N.	Activity	External Monitoring Agency Remarks	Responsibility	Timeline	APGCL Response
					<p>Conditions for River Valley and Hydro Electric Projects' are not project specific.</p> <p>In such circumstance it will not be justified to ask Ministry to modify the stipulation as asked for.</p>
7	NOC for surface water use	NOC for surface water use for construction is yet to be obtained.	Contractor	Before the use of surface water from river Kopili.	Package 2 contractors was already intimated, and they are in touch with the Water Resource Department, Govt. of Assam for obtaining NOC for the use of river water for processing to use in construction purpose only.
8	Water Quality: Measures for Water Pollution Control	As per the CTO attached in SEMR, the unit must construct an Effluent treatment plant for the treatment of wastewater	Contractor	Construction will be completed by end of June 2022 and subsequently test will be carried out by the	Treatment facility of wastewater generated from Batching plant is under construction.

S.N.	Activity	External Monitoring Agency Remarks	Responsibility	Timeline	APGCL Response
		<p>generated from the plant and the parameter should meet the general discharge standards as given in Appendix D of the CTO. For the current project the discharge standard for releasing in surface water body shall be taken. Current progress towards the establishing the treatment plant as well as discharge quality need to be updated. Also, Wastewater shall always be written as wastewater with no gap in between.</p>		<p>recognized laboratory through the Contractor.</p>	

S.N.	Activity	External Monitoring Agency Remarks	Responsibility	Timeline	APGCL Response
9	Drinking water quality test reports to be submitted	The water quality test report is provided for the APGCL Engineer camp, APGCL colony, RO plant, Labour and Staff Colony, Revenue Land. Except for the Revenue Landsample, for the rest of places water quality is potable. However, weekly pH data from these selected sources, not reported. Further, the SEMR should also need to report the physical progress of safeguard measures taken up by contractor to protect the plant equipment's (mechanical and electrical) and dam from the acidic water.	Contractor	July 2022.	Weekly pH data not reported as it is not mentioned in the EMoP. But daily pH data were collected for the RO water. Physical progress of safeguard measures taken up by contractor to protect the plant equipment's (mechanical and electrical) and dam from the acidic water will be reported in the next Six-monthly report.

S.N.	Activity	External Monitoring Agency Remarks	Responsibility	Timeline	APGCL Response
10	Direction of Honorable NGT to Government of Meghalaya to implement afforestation program and rejuvenation of all the polluted river stretches in Meghalaya along with regular monitoring of the water quality of river (pH).	<p>1). Afforestation with Conventional method needs to be taken up for plantation in 224.26 Ha of land across 8 districts of Meghalaya; in the upcoming SEMR, the progress of such afforestation program needs to be captured with administrative support from APGCL.</p> <p>2). Rejuvenation of degraded coal mines through soil amendment and microbial technology to be taken up in Meghalaya, therefore progress of such activities also needs to be reported in the next SEMR.</p> <p>3). The River Rejuvenation Committee (RCC) of Govt. of Meghalaya has recommended the proposal of M/s Trinity Impex International for a Pilot</p>	PMU (APGCL), PMC		The entire work is under the supervision of NGT and accordingly they have constituted a committee for proper implementation. So APGCL cannot enter in this matter.

S.N.	Activity	External Monitoring Agency Remarks	Responsibility	Timeline	APGCL Response
		Project of Phytoremediation through Micro Algae treatment of the acidic water for Kyrhukhla River. The progress also to be monitored from the next SEMR.			
11	Environmental Flow	How much flow of water will be allowed during lean period?	PMU (APGCL).		The environmental release for the lean period, computed as 20% of the average flow of the four leanest months, is 5.345 m ³ /s. (Already mentioned in EIA and DPR)
12	Drainage system	Drainage system needs to be provided with de-silting chamber all around powerhouse, office, substation, and colony however no such progress was observed during field visit in February 2022.	Contractor	Drainage system will be completed by end of October 2022 around office and colony.	

S.N.	Activity	External Monitoring Agency Remarks	Responsibility	Timeline	APGCL Response
13	Muck Management Plan, Biomedical waste plan and Influx management plan pending from Package 2 contractor.	Status to be provided, whether they are part of C-EMP.	Contractor	Muck management plan will be approved 30 th July 2022. Biomedical waste plan and Influx management plan will be submitted by the contractor by 30 th July 2022.	Muck management plan submitted, reviewed by PMC and APGCL and returned to Contractor to incorporate the observations and submit it for approval. Biomedical waste plan and Influx management plan under preparation.
14	Muck Disposal Plan	It should be prepared and shared for approval. It should be part of C-EMP. Native grass seeds need to scatter on naked slopes of muck disposal sites once site has accommodated the estimated quantity after discussing with forest authority at local level.	Contractor	After completion of all excavation works landscaping of the muck disposal sites will be initiated.	After approval of the Muck Management Plan, it will be annexed to the CEMP. Muck disposal plan is part of Muck Management Plan. As the Muck disposal sites are in the revenue land provisions for

S.N.	Activity	External Monitoring Agency Remarks	Responsibility	Timeline	APGCL Response
					discussion with Forest Department were not kept in the plan. Only during selection of native and value-added plants forest departments will be consulted during stabilization and landscaping of the muck disposal areas.
15	The miscellaneous area and Muck disposal site has been shifted from Forest Land to Revenue Land as per the suggestion of Forest Advisory Committee's (MoEF&CC) suggestion. The EPC contractor of Package 2 selected 4 additional muck disposal sites in Revenue land. According to ADB SPS 2009 the impacts associated with the	Possible impacts due to muck disposal and mitigating measures for the same needs to be updated in the EIA before execution of any such activity.	PMC, APGCL, ADB	Disclosure of the EIA addendum depends on the time taken for approval of ADB and ADB consultant. All the supportive information and required feedbacks were provided to ADB consultant on 9 th May 2022.	As the muck disposal facility has been shifted to revenue land the expected impact has been minimized and as per recommendation of FAC the 22 Ha of the earlier muck disposal site inside the forest has been kept and maintained as green belt by the EA. Subsequently the disposal sites will be converted to green

S.N.	Activity	External Monitoring Agency Remarks	Responsibility	Timeline	APGCL Response
	change in the project's footprints termed as "unanticipated impacts" and requires EIA update				cover with plantation of value-added native tree species for the conservation of in-situ biodiversity. EIA update is under process through ADB consultant and will be finalized and disclosed as EIA addendum.
16	Muck disposal	At muck disposal site protectionwall provide to valley side sospillage of into the river muck can be avoided.	Contractor	Muck management plan will be approved 30 th July 2022.	Designs are under preparation for the protection of spillage of soil, etc. from the Disposal sites.
17	Compensatory AfforestationPlan.	This is seasonal activity only can becarried out during pre-monsoon season to ensure high survival rate. Hence, it is suggested to plant at least 3-4 months before the onset of the pre-monsoon.	Forest Department	Six monthly and yearly compliance reports to MoEF&CC under EC and FC.	APGCL has already paid necessary amount for compensatory Afforestation under CAMPA fund of MoEF&CC. The Forest Department, Govt. of Assam has taken up the CA for Dima Hasao and Karbi Anglong in

S.N.	Activity	External Monitoring Agency Remarks	Responsibility	Timeline	APGCL Response
					the APO of 2022-2023. As per departmental norms Forest Department will implement the CA. APGCL will monitor the activities and the Department will submit the six-monthly progress report to APGCL, so that APGCL can update the status of CA to the Ministry.
18	Biodiversity Management Plan	It needs to be initiated and planned for coming rainy season being a seasonal activity. One season missed means one year lost. The following activities inclose coordination with the Department of Forest to be initiated: 1). Formulation of Biodiversity Monitoring Committee to monitor the BMP activities at project	APGCL, PMC	By 30 th July 2022 By 20 th August 2022.	Biodiversity Monitoring Committee has already been proposed and after obtaining the nominations from the concerned department's

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		<p>site.</p> <p>2). Biodiversity Monitoring awareness program to be developed with timeline to provide awareness of biodiversity to local community, school and other institutions actively engaged at local levels (if any).</p> <p>3). Self-help groups to be formed for implementing and monitoring the Biodiversity Monitoring activities at local level. If possible and available women may be motivated to participate in self-help groups etc.</p> <p>4). It is also suggested to construct water holes, wherever possible and applicable inside the forest for quenching wild animal thirst, which may also greatly avoid human animal</p>		<p>By 20th August 2022.</p> <p>By 20th August 2022.</p>	<p>notification will be issued.</p> <p>After constitution of the Biodiversity Monitoring Committee all the activities under the BMC including awareness will be planned and implemented.</p> <p>The committee will decide on the formation of SHGs under BMP. However, there is no provision for formation of SHGs for monitoring the biodiversity.</p> <p>Proposal for construction of water holes inside the forest will be discussed with the committee and finalize the</p>

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		encounterand conflicts.			implementation plan.
19	Loss of Biodiversity, Disturbance / accidents/ injury, to wildlife and avian fauna	To avoid road killing subways/culvert should be constructed for road crossing for wildlife. Information on Critical habitat assessment study required for theproject needs to be updated.	APGCL, PMC, Forest Department	By 20 th August 2022. ADB will disclose the EIA addendum after their review.	APGCL will take up the issue during the Biodiversity Monitoring Committee meeting and explore the feasibility. Based on the Biodiversity Assessment carried out during February 2021, the Critical habitat assessment was updated by ADB, and additional measures were suggested by the ADB experts. This will be part of the EIA addendum.
20	Catchment Area Treatment(CAT) Plan implementation	Regular follow up with the concerned agency for the concurrence of the CAT plan and closely monitor the implementation.	APGCL, PMC, Forest Department	Six monthly and yearly compliance reports to MoEF&CC under EC and FC	The CAT Plan implementation authority is the Forest Department. APGCL has deposited the amount for implementation in the

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					CAMPA fund of MoEF&CC. As intimated by the Forest department CAT Plan implementation will start this year and it approved in the AOP of 2022-2023. APGCL will monitor during implementation.
21	Camp site facilities	The rooms at camp site should be provided with proper illumination, smoke detector, proper insulation of electrical system. Labor should be provided with provision of clean water, adequate toilet facilities with respect of number of labor ratio and clean bedding facilities with proper space between two beds.	Contractor, PMC, PIU, APGCL	Contractor will be requested to install the smoke detector in the rooms by 20 th June 2022. PMC and APGCL will monitor the implementation.	All the necessary requirements in the camps were initiated to the contractor. Installation of smoke detector in the rooms will be intimated to the contractor.
22	Installation of effectively designed and operated	Latest status to be provided	Contractor	By 30 th June 2022	Already intimated to the contractor long

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	sedimentation tanks for sediment laden runoff from concrete batching and exposed soils across the construction site and monitoring.				back for execution. Updated status will be provided soon.
23	Soak pit for canteen wastewater will be installed	Latest status to be provided	Contractor	By 30 th June 2022	Already intimated contractor to treat the wastewater and comply the standard limit before discharge. Updated status will be provided soon.
24	Ensure that soils exposed on slopes are immediately vegetated or temporarily covered with geotextile to help stabilize them and prevent sediment laden surface water runoff.	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. Latest status to be provided.	Contractor Sri@2020	By 30 th June 2022	All the observations made by External Monitor related to contractor were intimated to the contractor for implementation. Updated status will be provided soon.
25	Soil and Sediment testing Pre-construction phase- At identified locations 1 km upstream	It is mentioned in the report that " <i>As testing of soil was in the scope of the External Monitor it was not initiated.</i> "	PIU, PMC		Soil and Sediments monitoring during pre-construction was the responsibility of

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	of submergence site Submergence area: 1 and 3 km downstream of dam site.	Sample will be taken from the undisturbed site". To clarify it, it should be undertaken by PIU or PMC responsible for executing the project. The external monitoring agency will scrutinize it.			PMSC/External Monitor as mentioned in the ADB approved EMP.
26	Downstream impact study on aquatic ecology	Latest status?? It is mentioned that it was carried out in Feb. 21. Report to be shared.	APGCL, PIU and PMC	Please update status & Timeline	As, both the upper HEP are not in operation, downstream Impact study cannot be initiated now. Considering the facts ADB has extended the period till Q4, 2022 to execute the study.
27	Environmental pollution	For hazardous material a separate storage space with impermeable concrete floor and proper bund to be constructed to avoid oil spillages	Contractor	By 30 th June 2022	Intimated to the Contractor for implementation. Updated status will be provided soon.
28	EMP Expenditure	Detailed information of the EMP expenditure is missing.	APGCL and PIU		Details of EMP expenditure are provided in the SEMR

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					table 20 A & 20 B, pages no 112-114.
29	Environment, Health, and Safety	<p>1.) Peripheral drain around the canteen needs to be provided with fenced to avoid accident.</p> <p>2.) Labor and other project site official must be provided with medicated mosquito nets for protection against malaria, dengue and other vector bornediseases.</p> <p>3.) The safety signage 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.</p>	APGCL, PIU, PMC, and Contractor	31 st July 2022.	All the observations of the External Monitor related to Contractor have been intimated to package 2 contractor for implementation.

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		<p>4). Training should be provided to kitchen staff, regarding how fire extinguishers operate.</p> <p>5). AIDS / HIV awareness training for workers needs to be incorporated during induction training.</p> <p>6). First Aid Boxes needs to be handled and maintained properly, timely trainings to First Aider and other site staff should be provided and all Logs/Records to be maintained properly.</p> <p>7). Emergency Contact of First Aider should be reachable to all and may be updated as and when needed</p> <p>8). For underground works</p>			

S.N.	Activity	External Monitoring Agency Remarks	Responsibility	Timeline	APGCL Response
		<p>permitsystem must be implemented.</p> <p>9). To ensure traffic controls is in place, training program on traffic management for alldrivers should be planned.</p> <p>10). All staffs & labors working at the site should be trained on Prevention of Sexual Harassment at Workplace (POSH). Orientation of all staff on local culture & heritage.</p>			
30	Constitution of R & R committee as per LARR 2013.	Status to be provided.	APGCL & PIU, NGO		APGCL has intimated regarding constitution of an R & R Committee to be constituted on 30-07-2020. In this regard necessary instructions were issued from the Revenue and Disaster Management, GOA.

S.N.	Activity	External Monitoring Agency Remarks	Responsibility	Timeline	APGCL Response
					Whereby Revenue Secretaries of respective autonomous councils were notified to function as Administrator of R & R for LKHEP.
31	Socioeconomic surveys for all the affected households/persons based on the final list and final design in order to update the CRTDP.	It is reported that socioeconomic survey for Dima Hasao has been completed. However, in Karbi Anglong the permission from the ADC is still pending therefore, the socioeconomic survey at Karbi Anglong has not been initiated yet.	NGO, PMC, PIU, APGCL		NGO has completed the Socio-economic Survey for Dima Hasao after permission for conduct of the same was received from Karbi Anglong Autonomous council Authorities. The Socio-economic data of Project Affected Families (PAFs) collected from the SEC survey are being analyzed for preparation of Micro-plans by the NGO.
32	Public Consultation Meetings with the	Meeting should be carried out on regular basis and the	NGO, PMC, PIU, APGCL		Meeting and Consultations is an on-

S.N.	Activity	External Monitoring Agency Remarks	Responsibility	Timeline	APGCL Response
	affected households.	points discussed in meetings to be recorded in the form of meeting minute and shared. Proper documentation is required for all the meetings.			going process and is being carried out on a regular basis by NGO, Social Safeguards (PMU), PMC Social AND Resettlement Specialist with active cooperation of APGCL officials based at Lanka. NGO documents the minutes of these consultative meeting and the same is included in the Monthly Progress Report (MPR). Safeguards Expert presents the outcome of these interactions in the form of a field report addressed to the Project Director, LKHEP.

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33	Finalize budget in line with Entitlement Matrix (EM) and timeline for approval of Micro plan.	Draft Micro plan for Dima Hasao District has been prepared as per EM and submitted to APGCL for approval. The budget should be approved to disburse the same to the AHs	NGO, PMC, PIU, APGCL		Micro plan prepared by NGO based on the EM for Dima Hasao has been approved by a committee comprising the PD, CGM (F &A) and other officials on 30-03-2022. Presently the Disbursement to 807 Project Affected Families has been completed and the remaining 107 Project Affected Families will be processed in the next few days.
34	Disclosure of final entitlements to all Affected Persons (AP's)	Entitlement to be disclosed with APs as part of implementation of resettlement activities. The activity has already been delayed and need to be expedited.	APGCL, NGO and PMC		Summarized version of CRTDP including Assamese version has been disclosed on APGCL website and the summarized version including the EM shared with the Project Affected Families in

S.N.	Activity	External Monitoring Agency Remarks	Responsibility	Timeline	APGCL Response
					2018 itself. Both the Assamese and English version was shared with Village Headman and the Project Affected families. 27-04-2018
35	R&R assistance	It has not yet initiated. It is suggested to start soon to win the confidence of directly impacted communities.	APGCL/NGO		R & R assistances already being disbursed for Project Affected Families in Dima Hasao. For Karbi Anglong the R & R Assistances will be disbursed after Micro plans are submitted by NGO.
36	Payment compensation to APs yet to be paid.	NGO to be closely coordinate with District Council taking support from APGCL.	APGCL, PIU, District Council, NGO, and PMC		R & R assistances already being disbursed for Project Affected Families in Dima Hasao. For Karbi Anglong the R & R Assistances will be disbursed after Micro

S.N.	Activity	External Monitoring Agency Remarks	Responsibility	Timeline	APGCL Response
					plans are submitted by NGO.
37	Consultations with the APs during CRTDP rehabilitation activities implementation.	Close & meaningful consultation during this activity is highly desirable. Nonetheless, it is noted that NGO's presence at grass root level seems passive, which may have serious implications on project.	NGO, PIU, PMC		NGO functionaries have been instructed to be present at site and they have assured that once rented premises are available, they would shift to project Location.
38	Implementation of income restoration programs	Based on the education of APs, interest field etc. data needs to be captured. No activity has been started yet.	NGO, PMC, PIU, District Council		NGO has developed a data base of eligible youths who may enlist for skill enhancement training. The same will be submitted as a proposal to APGCL for final approval.
39	Implementation of Grievances Redress Mechanism	Grievances Redress Mechanism has been initiated at 1st tire level only.	PMU, District Council, NGO		GRC was constituted to address grievances arising due to Social and Environmental related adverse impacts. Out of the

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					total grievances received majority is related to non-receipt of compensation for loss of land and other structures. As these issues are related and comes under the purview of the revenue department of the council the grievances were forwarded to Council for their comments and resolution.
40	Land Acquisition and Involuntary Resettlement	This activity is at initial stage which needs to be expedited.	APGCL, PIU, NGO, PMC		Land compensation fully paid for Karbi Anglong numbering 231 Persons. Compensation for land to 1376 Project Affected Persons already paid through Cheques completed. Land hand-over for Karbi Anglong

S.N.	Activity	External Monitoring Agency Remarks	Responsibility	Timeline	APGCL Response
					completed. Land handover for Dima Hasao nearly complete.
41	Gender Action Plan	Gender Action Plan has been prepared but yet to be implemented.	NGO, PMC, PIU, APGCL		GAP implementation will be undertaken very soon. NGO has during interaction with Affected Families has overseen the representation of women and their views were recorded.
42	Sex Dis aggregated data	Collect sex, caste & ethnically dis aggregated data, and ensure to fill up the gaps.	NGO, PMC, PIU, APGCL		NGO is working on the Socio-economic Data for Karbi Anglong and Dima Hasao and segregated data including Impacts categorization and the same will be made available to APGCL very soon.



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