



**SIX-MONTHLY COMPLIANCE REPORT**

**of**

**ENVIRONMENT CLEARANCE**

**(No. J-12011/26/2012-IA-I dated 4th September, 2019)**

**for**

**LOWER KOPILI HYDRO ELECTRIC PROJECT (120 MW), ASSAM**

**TO**

**MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE,**

**IA.I Division, Indira Paryavaran Bhawan, 3<sup>rd</sup> Floor, Vayu Wing, JorBagh Road,  
New Delhi - 110 003**

**SUBMITTED BY**


**ASSAM POWER GENERATION CORPORATION LIMITED**


**May, 2023**



## Compliance of stipulated conditions of Environmental Clearance


Sl. No.	EC conditions	Status of Compliance
<b>Specific Conditions</b>		
<b>I</b>	The Environmental Management Plan (EMP) shall be strictly adhered to and a sum of Rs.26147.5077 lakhs (Capital cost: 15427.689 lakhs & Recurring cost: Rs. 10117.817 lakhs), the budgetary provisions for implementation of EMP, shall be fully utilized and not to be diverted to any other purpose. In case of revision of the project cost or due to price level change, the cost of EMP shall also updated proportionately.	Agreed.
<b>II</b>	The project proponent shall comply with the provisions contained in this Ministry's OM vide F. No.22-6512017-IA.III dated 1 <sup>st</sup> May 2018 regarding Corporate Environment Responsibility. Project proponent shall require to invest Rs 5.81 crore for CER activities as submitted to the Ministry. A total budget of Rs. 5.81 crore shall be spent for upgradation of education facilities in existing schools (Rs. 66.0 lakhs), construction of community toilets (Rs.380.0 lakhs), upgradation of Health care facilities (Rs. 115.0 lakhs) and awareness generation (Rs 20.0 lakhs). The entire activities under CER shall be treated as project and shall be monitored. The monitoring report shall be submitted to the regional office as a part of half-yearly compliance report and to a District Collector.	<p>Committee has been constituted to implement the CER and LAD on 07.02.2022 and on 11.11.2022. <a href="#">Annexure-1</a></p> <p>Both the committee will coordinate the implementation of CER and Local Area Development.</p> <p>A meeting is proposed on 06.06.2023 at Longku.</p> <p>Implementation initiated.</p>
<b>III</b>	The environmental clearance is valid for period of 10 years from the date of issue of this letter for commissioning of the project.	Agreed
<b>IV</b>	After 5 years of the commissioning of the project, a study shall be undertaken regarding impact of the project on the environment and downstream ecology. The study shall be undertaken by an independent agency, decided in consultation with the Ministry.	Agreed
<b>V</b>	Any other clearances/permissions/approvals from any other organization/department, as applicable to the project shall be taken.	<p>Agreed and taken all the required clearances from other organization / department.</p> <p>Memorandum of Changes (MoC) approved by Central Electricity Authority on 09.11.022 (<a href="#">Annexure 2</a>). Accordingly, MoEF&amp;CC was appraised about the changes due to detail engineering on 28.11.2022 (<a href="#">Annexure 3</a>) and MoEF&amp;CC (<a href="#">Annexure 4</a>) and PCB, Assam on 14.02.23 (<a href="#">Annexure 5</a>).</p>
<b>VI</b>	PP shall procure construction material only from those Govt./Pvt. Agencies/Corporations/etc. that are having all applicable legal/statutory clearances/permissions or necessary permission to be obtained for quarrying construction materials for the project as per the EIA Notification, 2006 and subsequent amendments thereof.	<p>Minor minerals are taken from the Govt. approved agencies. For extraction of aggregates, quarry area of 4.61 Ha has been identified and necessary clearances and permissions from North Cachar Hills Autonomous Council, Directorate of Geology and Mines, Forest Department has already been taken. EC accorded for the Quarry (<a href="#">Annexure 6</a>). Mostly the aggregates are being taken from the</p>



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		excavated materials only.
VII	Based on the recommendation of Cumulative Impact Assessment and Carrying capacity study of river basin or as per the ToR conditions or minimum 15% of the average flow of four consecutive leanest months or as submitted in the EIA/EMP report, whichever value is higher, shall be released as environmental flow.	Agreed
<b>Standard conditions of Environmental Clearance</b>		
<b>I. Statutory compliance:</b>		
i	The project proponent shall obtain forest clearance under the provisions of Forest (Conservation) Act, 1986, in case of the diversion of forest land for non-forest purpose involved in the project.	<ul style="list-style-type: none"> <li>• Stage-I Forest Clearance accorded by MoEF &amp; CC, New Delhi on 5th February, 2019.</li> <li>• Stage-II Forest Clearance accorded by MoEF &amp; CC, New Delhi on 04<sup>th</sup> December, 2020. <a href="#">Annexure -7</a></li> </ul>
ii	The project proponent shall obtain clearance from the National Board for Wildlife, if applicable.	Not Applicable. There is no Wildlife Sanctuary or National Parks within 10 km radius of the project site.
iii	The project proponent shall prepare a Site-Specific Conservation Plan & Wildlife Management Plan and approved by the Chief Wildlife Warden, if applicable. The recommendations of the approved Site-Specific Conservation Plan / Wildlife Management Plan shall be implemented in consultation with the State Forest Department. The implementation report shall be furnished along with the six- monthly compliance report, (in case of the presence of Schedule-I species in the study area).	<p>Site Specific Conservation Plan and Wildlife Management Plan submitted to Chief Wildlife Warden, Assam on 25.6. 19. <a href="#">Annexure -8</a></p> <p>Biodiversity Management Committee has been constituted for implementation of the Wildlife Management Plan on 12.10.2022. <a href="#">Annexure -9</a></p> <p>First Biodiversity Management Committee meeting was organized on 21.12.2022. MoM of the 1<sup>st</sup> BMC in <a href="#">Annexure 10</a>. 2<sup>nd</sup> BMC meeting is proposed on 21.06.2023 in the Divisional Forest Office, Dima Hasao West Division, Haflong.</p>
iv	The project proponent shall obtain Consent to Establish / Operate under the provisions of Air (Prevention & Control of Pollution) Act, 1981 and the Water (Prevention & Control of Pollution) Act, 1974 from the concerned State Pollution Control Board/ Committee.	<p>Agreed.</p> <p>Package 2 Contractor has obtained the CTE and CTO for Crusher, 4 nos of DG sets; Batching Plant near power house along with 4 nos of DG sets and CTO for Batching Plant near Dam &amp; 4 DG sets.</p> <p>CTO for crusher and DG sets obtained on 7/12.2021 vide Ref no. WB/SLC/T-1184/21-22/09/1152.</p> <p>CTO for batching plant near Dam and DG sets obtained on 03.01.2023 vide Reference No. WB/SLC/T-1191/21-22/39.</p> <p>CTO for batching plant near Power House and DG sets obtained on 31.10.2023 vide Reference No. WB/SLC/T-1191/21-22/31.</p> <p>CTE will be obtained before construction of the 120 MW power generating plant.</p> <p>All the CTOs were submitted in the last six monthly compliance report to MoEF&amp;CC.</p> <p>Package 2 Contractor has also obtained the</p>

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		following CTOs. CTO for 15 KLD Water Treatment Plant vide No. WB/SLC/T-1191/22-23/9 dated 26.04.2023. ( <a href="#">Annexure 11</a> ) CTO for 15 KLD Water Treatment Plant vide No. WB/SLC/T-1191/22-23/12 dated 26.04.2023. ( <a href="#">Annexure 12</a> )
v	NOC shall be obtained from National Commission of Seismic Design Parameters (NCSDS) of CWC.	Obtained and already submitted.
vi	Necessary approval of CEA shall be obtained for those projects having the project cost more than Rs. 1,000 crore.	Obtained and already submitted.
<b>II. Air quality monitoring and preservation</b>		
i	Regular monitoring of various environmental parameters viz., Water Quality, Ambient Air Quality and Noise levels as per the CPCB guidelines at designated locations shall be carried out on monthly basis and a detailed database of the same shall be prepared and recorded. This shall be used as a baseline data for post construction EIA / Monitoring purposes.	Regular monitoring done at project site at various sampling stations as mentioned in the EMoP (Environmental Monitoring Reports are enclosed in <a href="#">Annexure-13</a> . The monitoring were carried out by MoEF &CC recognized Lab).
ii	Appropriate Air Pollution Control (APC) system shall be provided for all the dust generating points including fugitive dust from all vulnerable sources, so as to comply prescribed standards.	Regular monitoring done at project site. Adequate spraying of water in roads and dust control measures has already been installed in respective dust generation site.
iii	Necessary control measures such as water sprinkling arrangements, etc. bet taken up to arrest fugitive dust at all the construction sites.	Regular monitoring done at project site and water sprinkling done. 
<b>III. Water quality monitoring and preservation</b>		
i	Before impounding of the water, Cofferdams for both at the upstream and downstream are to be decommissioned as per EIA/EMP report so that once the project is commissioned; cofferdam should not create any adverse impact on water environment including the rock mass and muck used for the Cofferdam.	Agreed.

Sl. No.	EC conditions	Status of Compliance
ii	Water depth sensors shall be installed at suitable locations to monitor e-flow. Hourly data to be collected and converted to discharge data. The Gauge and Discharge data in the form of Excel Sheet is submitted to the Regional Office, MoEF & CC and to the CWC on weekly basis.	Regular recording of discharge data were taken from Kopili river. In this reporting period discharge data could not be recorded as the gauze was washed away by the recent flood. Automatic real-time sensor to collect data on water inflow and out flows from the hydropower dam is under process.
<b>IV. Noise monitoring and prevention</b>		
i	All the equipment likely to generate high noise shall be appropriately enclosed or inbuilt noise enclosures be provided so as to meet the ambient noise standards as notified under the Noise Pollution (Regulation and Control) Rules, 2000, as amended in 2010 under the Environment Protection Act (EPA), 1986.	Agreed. All the DG sets are with acoustic enclosures. 
ii	The ambient noise levels should conform to the standards prescribed under E(P)A Rules, 1986 viz. 75 dB(A) during day time and 70 dB(A) during night time.	Monitoring reports are enclosed in <b>Annexure 13</b> and complied the Ambient Noise level standards.
<b>V. Catchment Area Treatment Plan</b>		
i	Catchment Area Treatment (CAT) Plan as proposed in the EIA/EMP report shall be implemented in consultation with the State Forest Department and shall be implemented in synchronization with the construction of the project.	An Amount of Rs. 28, 29, 67,000.00 (Rupees Twenty Eight Crore Twenty Nine Lakh Sixty Seven Thousand) only already paid to Forest Department for implementation of Catchment Area Treatment Plan (CATP). APGCL is pursuing with Forest Department for implementation. At present implementation of the CAT plan is included in the APO 2022-2023 as informed. Implementation report from the State Forest Department not yet received.
<b>VI. Waste management</b>		
i	Muck disposal be carried out only in the approved and earmarked sites. The dumping sites shall be located sufficiently away from the HFL of the river. Efforts be made to reuse the muck for construction and other filling purposes and balanced be disposed of at the designated disposal sites. Once the muck disposal sites are inactive, proper treatment measures like both engineering and biological measures be carried out so that sites are stabilized quickly.	At present dumping of excavated earth in 4 locations in Revenue land are going on. Once the muck disposal sites are inactive, proper treatment measures like both engineering and biological measures will be carried out so that sites are stabilized quickly.
ii	Solid waste management should be planned in details. Land filling of plastic waste shall be avoided and instead be used for various purposes as envisaged in the EIA/EMP reports. Efforts be made to avoid one time use of plastics.	Agreed. SWM plan submitted to APGCL by package 2 contractor. At present segregation is going on at source and composting process is undertaken at site. Recyclable wastes are taken by vendors. Package 2 contractor has an agreement with the Umrangso Municipality Board for

Sl. No.	EC conditions	Status of Compliance
		disposal of Solid wastes. (Annexure 14)
<b>VII. Green Belt, EMP Cost, Fisheries and Wildlife Management</b>		
i	Detailed information on species composition particular to fish species from previous study/literature be inventoried and proper management plan shall be prepared for in situ conservation in the streams, tributaries of river and the main river itself for which adequate budget provision be made and followed strictly.	Agreed. As per EC condition Downstream river ecology study will be conducted after 5 years of commissioning of the project as per the stipulation 7.(IV) to update the baseline information and plan will be updated accordingly.
ii	Wildlife Conservation Plan prepared for both core and buffer zones shall be implemented in consultation with the local State Forest Department, if applicable.	Conservation Plan for Flora and Fauna (Biodiversity) has already been submitted to Forest Department for implementation. Annexure 15. Biodiversity Management Committee has been constituted for implementation of the plan. Annexure 16. One meeting has been conducted in 21 <sup>st</sup> December 2022 and the next meeting is proposed on 21.6.2023. MoM of the 1 <sup>st</sup> BMC is in Annexure 17.
iii	To enrich the habitat of the project site, plantation shall be raised as envisaged in the EIA/EMP report. Plantation to be developed along the periphery of the reservoir in multi-layers with local indigenous species in consultation with the local State Forest Department.	<p>Agreed. Plantation already initiated.</p>  <p>Plantation in the periphery of the reservoir will start soon.</p>
iv	Compensatory Afforestation programme shall be implemented as per the plan approved.	<p>Agreed.</p> <p>An amount of Rs. 15, 94, 23,850.00 (Rupees Fifteen Crore Ninety Four Lakh Twenty Three Thousand Eight Hundred Fifty) plus overhead only already paid to Forest Department for Compensatory Afforestation (CA) in CAMPA head. The 8 patches of Revenue land has already been notified as Reserved Forest by Govt. of Assam. Nursery has been raised under Dima Hasao West Forest Division.</p>  <p>Seedling of different sizes in the newly established nursery nearby the village TorteLangsu</p>


Sl. No.	EC conditions	Status of Compliance
		 <p data-bbox="943 1339 1465 1435">Seedling of different sizes ready for plantation, Longku near the highway around the Forest office.</p>
v	Fish ladder/pass as envisaged in the EIA/EMP report shall be maintained for migration of fishes. Regular monitoring of this facility be carried out to ensure its effectiveness.	As the river water is acidic in nature, during the EIA study no fish ladder / pass was proposed. Hence Fish ladder/pass is not considered in this project.
<b>VIII. Public hearing and Human health issues</b>		
i	Resettlement & Rehabilitation plan be implemented in consultation with the State Govt. as approved by the State Govt., if any.	Agreed. Implementation is going on.
ii	Budget provisions made for the community and social development plan including community welfare schemes shall be implemented in to.	Agreed. Local Area Development Plan will be implemented as per plan. Facilitation Committee for implementation of Local Area Development Plan is constituted and accordingly meetings are conducted. (Annexure 1)

Sl. No.	EC conditions	Status of Compliance
iii	Preventive measures viz. fuming and spraying of mosquito control shall be done in and around the labour colonies, affected villages, stagnated pools, etc. Provisions be made to not to create any stagnated pools to avoid creation of breeding grounds of the vector borne diseases.	Agreed. Package 2 contractor has already taken up appropriate measures to control mosquitos.
iv	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, creche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	Agreed. Package 2 contractor has already constructed labour camps with he following facilities like - common kitchen, Sanitary and mobile toilets, safe drinking water, medical health care, etc. Staff Canteen 
v	Labour force to be engaged for construction works shall be examined thoroughly and adequately treated before issuing them work permit. Medical facilities shall be provided at the construction sites.	Medical facility (First Aid Center) provided by the contractor at site.  Health and AIDS awareness camp at First Aid centre.
vi	Early Warning Telemetric system shall be installed in the upper catchment area of the project for advance intimation of flood forecast.	At present Early warning is given by district administration Disaster Management Cell and discharge data is shared by NEEPCO project authority located upstream. Project specific Early Warning Telemetric system will be installed before impounding of water.
vii	Emergency preparedness plan be made for any eventuality of the dam failure and shall be implemented as per the Dam Break Analysis	Agreed. The Disaster Management Plan is prepared.
<b>IX. Corporate Environment Responsibility</b>		
i	The project proponent shall comply with the provisions contained in this Ministry's OM vide F.No. 22-65/2017-IA.III dated 01.05.2018, as applicable, regarding Corporate Environment Responsibility.	Agreed. Now will be covered under EMP as per OM of MoEF&CC. Moreover, there is also similar provisions in Local Area Development Fund under CRTDP. Activities will be carried out in phase manner.
ii	Skill mapping be undertaken for the youths of the affected project area and based on the skill mapping, necessary trainings to the youths be provided for their	Agreed. NGO has been recruited for various activities including skill mapping. First



Sl. No.	EC conditions	Status of Compliance
	long time livelihood generation	phase of Training plan has also been submitted to APGCL for approval.
iii	The PP shall have a well laid down environmental policy duly approve by the Board of Directors. The environmental policy should prescribe for standard operating procedures to have proper checks and balances and to bring into focus any infringements/deviation/violation of the environmental / forest / wildlife norms / conditions. The company shall have defined system of reporting infringements / deviation / violation of the environmental / forest / wildlife norms / conditions and / or shareholders / stake holders. The copy of the board resolution in this regard shall be submitted to the MoEF&CC as a part of six-monthly report.	Agreed.
iv	A separate Environmental Cell both at the project and company head quarter level, with qualified personnel shall be set up under the control of senior Executive, who will directly to the head of the organization.	A separate Environmental Cell both at the project and company head quarter level, with qualified personnel are in place.
v	Action plan for implementing EMP and environmental conditions along with responsibility matrix of the company shall be prepared and shall be duly approved by competent authority. The year wise funds earmarked for environmental protection measures shall be kept in separate account and not to be diverted for any other purpose. Year wise progress of implementation of action plan shall be reported to the Ministry/Regional Office along with the Six Monthly Compliance Report.	Agreed and initiated.
vi	Post EIA and SIA be prepared for the project through a third party and evaluation report be submitted to the Ministry after five years of commissioning of the project.	Agreed. Will be carried out after 5 years of commissioning of the project.
vii	Multi-Disciplinary Committee (MDC) be constituted with experts from Ecology, Forestry, Wildlife, Sociology, Soil Conservation, Fisheries, NGO, etc. to oversee implementation of various environmental safeguards proposed in EIA/EMP report during construction of the project. The monitoring report of the Committee shall be uploaded in the website of the Company.	Agreed and is in place. 1 <sup>st</sup> MDC meeting was convened on 6 <sup>th</sup> May, 2022. Minutes of the meeting already shared in the last Six monthly compliance report. Next meeting is proposed on 20.06.23 at site. Nomination for one member from MoEF&CC for the MDC is still awaited from IRO, Guwahati.
<b>X. Miscellaneous</b>		
i	The project proponent shall make public the environmental clearance granted for their project along with the environmental conditions and safeguards at their cost by 5 prominently advertising it at least in two local newspapers of the District or State, of which one shall be in the vernacular language within seven days and in addition this shall also be displayed in the project proponent's website permanently.	Already done.  Copy of EC in the APGCL site : <a href="https://www.apgcl.org/lkhep.php">https://www.apgcl.org/lkhep.php</a>
ii	The copies of the environmental clearance shall be submitted by the project proponents to the Heads of local bodies, Panchayats and Municipal Bodies in addition to the relevant offices of the Government who in turn has to	Already done.

Sl. No.	EC conditions	Status of Compliance
	display the same for 30 days from the date of receipt.	
iii	The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and update the same on half-yearly basis.	Agreed and posted in Parivesh portal of MOEF&CC. Displayed in the APGCL site : <a href="https://www.apgcl.org/lkhep.php">https://www.apgcl.org/lkhep.php</a>
iv	The project proponent shall submit six-monthly reports on the status of the compliance of the stipulated environmental conditions on the website of the ministry of Environment, Forest and Climate Change at environment clearance portal.	Agreed and submitted every six months in the Parivesh portal as well as hard copy submitted to IRO.
v	The project proponent shall submit the environmental statement for each financial year in Form-V to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently and put on the website of the company.	Agreed and will be submitted during operation.
vi	The project proponent shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities, commencing the land development work and start of production operation by the project.	Agreed.
vii	The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board and the State Government.	Agreed.
viii	The project proponent shall abide by all the commitments and recommendations made in the EIA/EMP report, commitment made during Public Hearing and also that during their presentation to the Expert Appraisal Committee.	Agreed.
ix	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment, Forests and Climate Change (MoEF&CC).	Agreed. 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 Material 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. Letter has been sent from APGCL to The Director, IA-I Division, MoEF&CC, GOI for appraisal along with the copy of the MOC received from CEA, GOI with justifications vide letter no APGCL/CGM(H)/W/2007/140/Pt-VI/54 dated 28.11.2022. Further on 14.02.2023 APGCL appraised the changes to MoEF&CC ( <a href="#">Annexure 4</a> ) and PCB, Assam ( <a href="#">Annexure 5</a> ).

Sl. No.	EC conditions	Status of Compliance
		 <p data-bbox="943 667 1473 992">During the Site visit from IRO, Guwahati was carried out on 09.03.2023 APGCL has also appraised the changes made due to detail engineering design without changing the production capacity along with the reservoir / submergence area 620 Ha. Accordingly APGCL has received monitoring report on 17.4.2023 vide File no. RO-NE/E/IAAS/HEP/113/3836-38. Project layout. <a href="#">Annexure 18</a></p>
x	Concealing factual data or submission of false/fabricated data may result in revocation of this environmental clearance and attract action under the provisions of Environment (Protection) Act, 1986.	Agreed.
xi	The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.	Agreed.
xii	The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.	Agreed.
xiii	The Regional Office of this Ministry shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information/ monitoring reports.	Agreed.
xiv	The above conditions shall be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 and the Public Liability Insurance Act, 1991 along with their amendments and Rules and any other orders passed by the Hon'ble Supreme Court of India / High Courts and any other Court of Law relating to the subject matter.	Agreed.
xv	Any appeal against this EC shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.	Agreed.

## ANNEXURES : 1 - 18

Annexure -1 : CER implementation Committee & CRTDP implementation Committee.



### ASSAM POWER GENERATION CORPORATION LIMITED

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

Sri. Mridul Saikia

Project Director (PMU)

LOWER KOPILI HYDRO ELECTRIC PROJECT

E-mail: projectdirector@apgcl.com

No: APGCL/CGM(H)/W/2007/140/Pt-VI/43

Dated: 07/02/2022

#### OFFICE ORDER

In the interest of works, a committee is hereby constituted to supervise the works and determine the fund source for executing the works related to Corporate Environment Responsibility (CER), Conservation Plan for Schedule I Species under Environment Management Plan (EMP) and Local Area Development under Combined Resettlement and Tribal Development Plan (CRTDP) w.r.t Lower Kopili H.E. Project. The committee shall execute the works as per the regulations of Ministry of Environment, Forest & Climate Change (MoEF&CC) Govt. of India, Ministry of Tribal Affairs (MoTA) Govt. of India and Asian Development Bank (ADB). The committee shall comprise of the following members:

SL. No:	Members	Designation
1.	Th S. Singha, GM (PP&I), O/o the CGM (PP&I), APGCL	Head of the Committee
2.	Sri Saurav Saikia, GM (Civil) i/c, O/o the CGM (H&C), APGCL	Member
3.	Ph A. Singha, DGM (Civil), O/o the CGM (PP&I), APGCL	Member, Convenor
4.	Sri. A. Talukdar, DGM, O/o the CGM (PP&I), APGCL	Member
5.	Sri. M.J Pandit, AGM (Civil), O/o the CGM (PP&I), APGCL	Member
6.	Sri. P.J. Ligira, DM (ECE), O/o the GM, LKHEP, APGCL,	Member
7.	Sri. Gunjan Kr. Nath, JM (Civil), O/o the CGM (H&C), APGCL	Member
8.	Sri. A.J Pathak, AM (F&A), O/o the CGM (F&A), APGCL	Member
9.	Sri. Pankaj Hazarika, Social Safeguard Expert, APGCL	Member
10.	Dr. Deepak Baruah, Environmental Expert, APGCL	Member

The committee will be assisted by the PMC for LKHEP in the execution of the works.

Project Director (PMU)  
APGCL

Copy to:

1. The OSD to the Chairman, APGCL, for kind information of Hon'ble Chairman.
2. The P.S. to Managing Director, APGCL, for kind information of Hon'ble MD.
3. The General Manager, Lower Kopili H.E. Project, Longku, for information.
4. The Team Leader, LKHEP, AFRY Ltd. for information and necessary action.
5. The Officers concerned.
6. Relevant file.



## 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)

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

No: APGCL/LKHEP/PD/2017-18/21/Part-I/Part file-1/126

Dated: 11.11.2022

### **OFFICE ORDER**

A Co-ordination Committee is hereby constituted for Lower Kopili Hydro Electric Project to facilitate consultation between Affected Peoples (APs), APGCL, District Council and NGO for discussion of APs problem regarding Land Acquisition, Rehabilitation & Resettlement and other aspects relating to Livelihood restoration and hence smooth implementation of CRTDP with the following members:

1. CGM (PP&I) APGCL- **Chairman**
2. GM LKHEP APGCL- **Member Convener**
3. GM (PP&I) APGCL- **Member**
4. DGM (Civil) LKHEP APGCL- **Member**
5. Social Safeguard Expert APGCL- **Member**
6. Environment Expert APGCL- **Member**
7. Social & Resettlement Expert PMC- **Member**
8. NGO CRADLE & GUS representative- **Member**
9. District Council Authority representative from Dima Hasao- **Member**
10. District Council Authority representative from Karbi Anglong- **Member**
11. Affected Peoples Representative- **Member**

NGO will facilitate consultation between the APs, APGCL and District Councils at the field offices and with the APs as and when required to discuss the implementation of CRTDP.

  
Chief General Manager (PP&I)  
APGCL

Dated: 11.11.2022

Memo No: APGCL/LKHEP/PD/2017-18/21/Part-I/Part file-1/126(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) Members concerned.
- 4) Relevant file.

  
Chief General Manager (PP&I)  
APGCL

File No.CEA-SY-25-34/1/2019-PAC Division



भारत सरकार  
Government of India  
विद्युत मंत्रालय  
Ministry of Power  
केन्द्रीय विद्युत प्राधिकरण  
Central Electricity Authority  
जल विद्युत परियोजना मूल्यांकन प्रभाग  
Hydro Project Appraisal Division

To,

The Chairman,  
Assam Power Generation Corporation Ltd. (APGCL),  
3<sup>rd</sup> Floor, Bijulee Bhawan, Guwahati-1.  
Assam.  
Email: chairman@apgcl.com

**विषय: Memorandum of Changes in Design in respect of Lower Kopili HE Project (2x55+2x2.5+1x5=120 MW) in Assam by M/s APGCL-reg.**

**संदर्भ :** (i) M/s APGCL Letter No. APGCL/LKHEP/PD/2019-20/43/17 dated 14.10.2019.  
(ii) CEA e-mail dated 27.09.2022  
(iii) M/s APGCL Letter No. APGCL/REL/Asst/2018-19/325 dated 07.11.2022.

महोदय,

Reference is invited to M/s Assam Power Generation Corporation Limited (APGCL) letter referred at (i) above vide which proposal for Memorandum of Changes (MoC) in project features in Civil, HM and E&M works from the Concurred DPR of Lower Kopili Hydro Electric Project (120 MW) in Assam was submitted for approval of Authority.

CEA hereby, accords approval to the above MoC proposal, as incorporated in "Final Updated DPR" submitted by M/s. APGCL vide letter referred at (iii) above in compliance to CEA email referred at (ii) above, & as summarized at **Annexure**.

This approval is subject to compliance by M/s APGCL to following conditions: -

- 1) M/s APGCL shall submit the copies of the above said "**Final updated DPR**", as submitted to CEA, to the appropriate State Govt., appropriate Electricity Regulatory Commission and appropriate State Transmission Utility under intimation to this office.
- 2) Appraisal is subject to compliance by M/s APGCL of various policies/ guidelines etc. issued by Govt. of Assam/ India from time to time.
- 3) The broad technical aspects of the Memorandum of Changes in Design features of the project have been scrutinized in CEA in consultation with CWC, GSI, CSMRS and other concerned agencies. The scrutiny is based on the data, assessment and

**File No.CEA-SY-25-34/1/2019-PAC Division**

certificates presented in the proposal and information/clarifications received as compliances to the observations on the assumption that the data and information furnished are accurate and have been collected reliably by the project authorities from dependable sources and/or after carrying out detailed surveys and investigations as presented in the report.

- 4) Monthly status report of compliance of the conditions as stipulated in the Concurrence letter dated 24.05.2016 and conditions stipulated in the final approval letter shall be submitted to Chief Engineer (HPA), CEA.
- 5) Monthly Progress Report of the project shall be submitted to Hydro Project Monitoring (HPM) Division of CEA. Three (3) copies of the semi-annual progress report on physical progress of the scheme and expenditure actually incurred, duly certified by statutory auditors shall be submitted to the Authority till the commercial operation date of the plant. The project authorities shall give free accessibility to CEA officers and staff to have on the spot assessment of various aspects of the project.
- 6) The above approval/Concurrence is in continuation to the Concurrence accorded to the project vide CEA O.M. no. 2/ASM/10/CEA/2007-PAC/528-71 dated 24<sup>th</sup> May, 2016.
- 7) The e-flow shall be maintained as per the recommendation of MoEF&CC/ NGT.
- 8) M/s APGCL shall follow all the suggestions of GSI as mentioned in letter dated 18.06.2020.
- 9) M/s. APGCL shall comply with the suggestions made by CSMRS vide letters dated 03.02.2022 & 09.02.2022.
- 10)M/s APGCL shall comply with the conditions of Gates Design Directorate, CWC as mentioned in their letters dated 18.01.2022.
- 11)M/s APGCL shall submit the status of month wise progress on the project, particularly on geotechnical explorations/investigations to GSI and CEA.
- 12)M/s. APGCL shall ensure that funds required for completion of the project are tied up.
- 13)M/s. APGCL shall ensure that PPA or MoU for power purchase is signed at the earliest.
- 14)M/s. APGCL Limited shall set up a sound and scientific safety management system which shall include:
  - Establishing procedures to identify hazards that could give rise to the potential of injury, health impairment or death and measures to control impact of such hazards.
  - Setting up an Early Warning System to deal with hazardous events such as Glacial Lake and Landslide Outburst Floods, Earthquakes, cloudburst, Flash Floods, Avalanches, Dam Break event, etc.

**File No.CEA-SY-25-34/1/2019-PAC Division**

- Establishing Standard Operating Procedure to deal with these hazardous events.

**Encl: as above**

भवदीय,  
अनिल  
(अनिल रघुवशी) 09/11/2022  
उप निदेशक

**Copy for kind information to:**

1. Member (Hydro), CEA.
2. Joint Secretary (Hydro), MoP, Shram Shakti Bhawan, Rafi Marg, New Delhi – 110001.
3. Chief Engineer (HE&TD/ HPM), CEA.
4. Chief Engineer {Designs (E&NE)}, CWC.
5. Director {HCD (E&NE)/ CMDD (E&NE)/ Gates Design (E&NE)}, CWC.
6. Director (LHIM&EPE), GSI, A-II, Pushp Bhawan, Madangir Road, New Delhi – 110062.
7. Director, CSMRS, Olf Palme Marg, Hauz khas, New Delhi-110016.



**Annexure**

**Comparative Statement of Salient features of Lower Kopili Hydro Electric Project**

S. No	Description	Salient Features as per Concurred DPR	Project features as approved in Memorandum of changes
<b>1</b>	<b>Project Location</b>		
1.1	State	Assam	
1.2	District	East of Karbi Anglong and West of Dima Hasao (North Cachar) Hills District	
1.3	River	Kopili	
1.4	Latitude Longitude	Diversion Site 25°39'57.39"N 92°46'53.62"E Powerhouse Site 25°41'54.02"N 92°48'15.98"E	
1.5	Nearest Railway station	Lanka (BG), 48 km away	
1.6	Nearest Road	Lanka-Garampani Road	
1.7	Nearest township	Lanka, 40 km away	
<b>2</b>	<b>Category of Project</b>	Hydro Electric Project	
2.1	Type of Project	ROR with diurnal pondage (peaking > 03 hrs)	
<b>3</b>	<b>Hydrology</b>		
3.1	Catchment area	2076.62 Km <sup>2</sup>	
3.2	Snowfed Catchment Area	0 Km <sup>2</sup>	
3.3	Lower Kopili (Uncontrolled) Catchment Area	788 Km <sup>2</sup>	
3.4	Average rainfall	1557mm	
3.5	Annual evaporation rate	638.81mm	
3.6	Temperature	Summer - 23° C-32° C, Winter - 6° C-14° C	
3.7	90% dependable yield	2184.4 MCM	2214.64 MCM
3.8	50% dependable yield	2483.6 MCM	2466.90 MCM
3.9	Flood discharge for river diversion (25 years) non-monsoon flow (Nov. to May)	720 m <sup>3</sup> /s	
3.10	Standard Project Flood (SPF)	7510 m <sup>3</sup> /s	
3.11	Probable Maximum Flood (PMF)	11030 m <sup>3</sup> /s	
3.12	Sedimentation rate	0.1 Ha-m / km <sup>2</sup> /year	
<b>4</b>	<b>Reservoir</b>		
4.1	Reservoir spread (at FRL)	394 Ha	620 Ha
4.2	Maximum water level (MWL)	EL 229.60 m	EL 226.00 m
4.3	Full reservoir level (FRL)	EL 226.00 m	EL 226.00 m
4.4	Minimum draw down level (MDDL)	EL 202.00 m	EL 202.00 m
4.5	Capacity at FRL	106.29 MCM	106.29 MCM
4.6	Capacity at minimum draw down level	29.00 MCM	29.00 MCM
4.7	Live storage	77.29 MCM	77.29 MCM
<b>5</b>	<b>Dam</b>		
5.1	Type	Concrete Gravity Dam	Concrete Gravity Dam
5.2	Average river bed level at dam axis	EL 174.00 m	EL 174.00 m
5.3	Deepest river bed level	EL 172.00 m	EL 172.00 m
5.4	Deepest foundation level	EL 162.37 m	EL 162.50 m
5.5	Top of the Dam	EL 232.50 m	EL 229.00 m

*[Handwritten Signature]*

5.6	Maximum height of dam	70.13 m	66.50 m
5.7	Overflow spillway for debris removal size (W x H)	5.5 m x 2.0 m	1 no., 4.0 m x 3.0 m
5.8	Sluice spillway No. & size (W x H)	8 No.s, 7.1 m x 8.65 m	6 No.s, 10.0 m x 12.50 m
5.9	Construction Sluice spillway No. & size (W x H)	2 Nos, 5.5 m x 7.5 m	2 Nos, 5.0 m x 5.0 m
5.10	Non overflow length	Left - 97.55 m, Right - 91.80 m	Left – 111.40 m, Right – 110.00 m
5.11	Total length of dam structure including overflow & non overflow blocks	345.05 m	335.00 m
5.12	Crest level of overflow spillway for debris removal	EL 224.00 m	EL 223.00 m
5.13	Crest level of sluice spillway	EL 181.00 m	EL 190.00 m
5.14	Crest level of construction sluice spillway	EL 177.00 m	EL 171.00 m
5.15	Energy dissipation arrangement	Solid roller bucket type	Flip Bucket Type
5.16	Plunge Pool	No	Yes
5.17	Sluice spillway capacity	11030 m <sup>3</sup> /s	11030 m <sup>3</sup> /s
5.18	Gate type & Number	Radial gate & 8 No. with hydraulic hoist	Radial gate & 6 No. with hydraulic hoist
5.19	Gate Size of Sluice Spillway (W x H)	7.1 m x 9.54 m	10.0 m x 12.50 m
5.20	Gate Size of Construction Sluice Spillway (W x H)	5.5 m x 8.475 m	-
5.21	Spillway stoplog gate No. & Size	1 Set, 7.1 m x 14.33 m	1 Set, 10.0 m x 16.426 m
<b>6</b>	<b>River Diversion Scheme</b>		
6.1	Diversion Type	Coffer dams, Channel with construction sluices	Diversion Tunnel, Coffer dams
6.2	Diversion Tunnel (Size & length)	Channel of 11m (W) X 11m (H), U/s – 98.2m, D/s 59.265 m	10.5 m. dia & 409 m long,
6.3	No of Gates in Diversion Channel / Tunnel	-	2.0 nos (4.5m x 10.5m)
6.4	<b>Upstream Coffer dam</b>		
6.4.1	Type	Plum concrete	
6.4.2	Height	18.0 m	21.5 m
6.4.3	Top length	160.10 m	179.5 m
6.4.4	Top Level	EL 188.20 m	EL 193.00 m
6.5	<b>Downstream Coffer dam</b>		
6.5.1	Type	Earth & rockfill	
6.5.2	Height	13.0 m	10.0 m
6.5.3	Top length	126.30 m	132.00 m
6.5.4	Top Level	EL 186.00 m	EL 181.00 m
<b>7</b>	<b>Main Power Intake</b>		
7.1	Number of Openings	1	1
7.2	Invert sill level	EL 186.0 m	EL 189.50 m
7.3	Intake top level	EL 232.50 m	EL 229.0 m
7.4	Nominal discharge	112.71 m <sup>3</sup> /s	112.71 m <sup>3</sup> /s
7.5	Intake gate - Number - Hoist type - Gate sill level - Gate operating platform level	-2 vertical fixed wheel gates, One emergency and other service gate -Independent rope drum hoists -EL 186.0 m -EL 232.50 m	-2 vertical fixed wheel gates, One emergency and other service gate -Independent rope drum hoists -EL 189.50 m -EL 229.0 m
<b>8</b>	<b>Auxiliary Intake</b>		
8.1	Number of Openings	1	1
8.2	Invert sill level	EL 194.25 m	EL 195.00 m

*Ray*

8.3	Intake top level	EL 232.50 m	EL 229.0 m
8.4	Nominal discharge	24.94 m <sup>3</sup> /s	24.94 m <sup>3</sup> /s
8.5	Intake gate - Number  - Hoist type  - Gate sill level - Gate operating platform level	-2 vertical fixed wheel gates, one emergency - and other service gate  -Independent rope drum hoists for emergency gate and hydraulic hoist for service gate -EL 194.25 m -EL 232.50 m	-2 vertical fixed wheel gates, One emergency and other service gate  -Independent rope drum hoists  -EL 195.0 m -EL 229.0 m
<b>9</b>	<b>Head Race Tunnel</b>		
9.1	Location	Right bank of Kopili river	Right bank of Kopili river
9.2	Excavated Shape	Modified horse shoe	Modified horse shoe
9.3	Finished Shape	Modified horse shoe	Circular
9.4	Length	3619.62 m	3641.22 m
9.5	Finished Diameter	6.65 m	7.00 m
9.6	Nominal Discharge	112.71 m <sup>3</sup> /s	112.71 m <sup>3</sup> /s
9.7	Flow Velocity	3.13 m/s	2.93 m/s
9.8	Slope	Chainage 62.58 to 2241.48 m Slope 1 in 88.76, From Chainage 2241.48 m to 3682.20 m Slope 1 in 110.17	Chainage 72.58 to 3704.80 m Slope 1 in 74.89
<b>10</b>	<b>Adit-1 to HRT</b>		
10.1	Shape & Size	D-Shape, 6.0 m	D-Shape, 6.0 m
10.2	Length	334.22m	354.66m
10.3	Type & Number of Gate	Hinged Type, One	Hinged Type, One
10.4	Gate Size (W x H)	2.5m x 2.5 m	2.5m x 2.5 m
<b>11</b>	<b>Adit-2 to HRT and Surge shaft</b>		
11.1	Shape & Size	D-Shape, 6.0 m	NA
11.2	Length	153.35m	NA
<b>12</b>	<b>Adit-3 to valve House</b>		
12.1	Shape & Size	D-Shape, 7.0 m	NA
12.2	Length	149.38m	NA
<b>13</b>	<b>Adit to Ferule erection chamber</b>		
13.1	Shape & Size	D-Shape, 7.0 m	NA
13.2	Length	162.57m	NA
<b>14</b>	<b>Surge Shaft</b>		
14.1	Vertical Shaft	32.21 m	39.00 m
14.2	Type	Restricted Orifice Type	Restricted Orifice Type
14.3	Diameter	25.00 m	25.00 m
14.4	Top Elevation	EL 237.50m	EL 237.50m
14.5	Bottom Elevation	EL 149.40m	EL 147.00m
14.6	Total height	82.90m	90.5 m
14.7	Riser Size, Height	3.6m, 32.21 m	7.0m, 39.00 m
14.8	Minimum Down surge level	EL 188.81 m	EL 188.00m
14.9	Maximum Up-surge level	EL 235.33 m	EL 235.00m
14.10	Dia of Orifice	3.6m	3.8m
<b>15</b>	<b>Valve House</b>		
15.1	Type & Number	Underground, 1	Surface, 1
15.2	Size (L x W x H)	19.9 m x 11.5 m x 17.25 m	14 m x 23 m x 27.50 m
15.3	Butterfly Valves - Number - Diameter	1 5.00m	1 6.10m
<b>16</b>	<b>Pressure Shaft / Penstock (Main Powerhouse)</b>		
16.1	Type	Circular steel lined	Circular steel lined
16.2	Nominal discharge	112.71 m <sup>3</sup> /s	112.71 m <sup>3</sup> /s
16.3	Internal diameter of pressure shaft liner	5.2 m	6.1 m / 5.2 m
16.4	Flow velocity	5.31 m/s	3.86 m/s / 5.81 m/s

*Rayley*

16.5	Length of Pressure shaft / Penstock	703.80 m	610 m (Dia 6.1m) / 81.9m (Dia 5.2m)
16.6	Number of Pressure shaft / Penstock	1	1
16.7	Specification of steel plates	ASTM A537 Class II (YS-415 MPa)	ASTM A537 Class II (YS-415 MPa)
16.8	Unit Penstock Number Internal diameter Length	2 3.70 m 57.06 m/ 65.52 m	2 3.70 m 16.3 m
<b>17</b>	<b>Pressure Shaft / Penstock (Auxiliary Powerhouse)</b>		
17.1	Type	Circular steel lined	Circular steel lined
17.2	Nominal discharge	24.94 m <sup>3</sup> /s	24.94 m <sup>3</sup> /s
17.3	Internal diameter of pressure shaft liner	2.7 m	3.3 m
17.4	Flow velocity	4.36 m/s	2.92 m/s
17.5	Length of Pressure shaft / Penstock	70 m	64 m
17.6	Number of Pressure shaft / Penstock	1	1
17.7	Specification of steel plates	E410 (Fe 540)	ASTM A537 Class II (YS-415 MPa)
17.8	Unit Penstock Number Internal diameter Length	3 2 no.s 1.2 m & 1 no. 1.70 m 30.79 m/27.16 m/31.62 m	3 2 no.s 1.65 m & 1 no. 2.35 m 26.20 m/26.20 m/24.20 m
<b>18</b>	<b>Main Power House</b>		
18.1	Installed capacity	2x55 MW=110 MW	2x55 MW=110 MW
18.2	Location	Right side of river Kopili	Right side of river Kopili
18.3	Type	Surface powerhouse	Surface powerhouse
18.4	Powerhouse dimensions (L x W x H)	77.55 m x 21.5 m x 42.9 m	76.5 m x 19.1 m x 30 m
18.5	Average gross head	114 m	114 m
18.6	Type of turbines	Francis, vertical	Francis, vertical
18.7	Number of units	2	2
18.8	Turbine setting (elevation)	EL 98.80 m	EL 98.80 m
18.9	Rated discharge per unit	56.35 m <sup>3</sup> /s	56.35 m <sup>3</sup> /s
18.10	Installed capacity per unit	55 MW	55 MW
18.11	Continuous overloading	10%	10%
18.12	Spacing of Units	17.5 m	16.5 m
18.13	Rated Net Head	108.00 m	108.00 m
18.14	Normal T.W.L. (2 machines for Main PH & 3 machines for Auxiliary PH in operation)	EL 104 m	EL 104 m
18.15	Minimum T.W.L. (1 machine in operation)	EL 102.8 m	EL 103.2 m
18.16	Maximum T.W.L. (during flood)	EL 111.66 m	EL 111.66 m
	Turbine Efficiency (Considered)	94.0%(WAE)	94.0%(WAE)
	Generator Efficiency (Considered)	98.0%	98.0%
18.17	Draft Tube Gates - Type & Number - Size (W x H)	Fixed Wheel, 4 3.9 m x 4.4 m	Fixed Wheel, 4 3.9 m x 3.23 m
18.18	Main Inlet Valve - Type - Axis elevation - Diameter	-Butterfly type - EL 98.80 m -3.0 m	-Butterfly type - EL 98.80 m -3.0 m
18.19	Generator - Type & Number - Rated capacity - Synchronous speed - Voltage/Frequency	-Vertical synchronous (2 nos) -55MW -230.77 rpm -11 KV/ 50 Hz	-Vertical synchronous (2 nos) -55MW -250 rpm -11 KV/ 50 Hz -0.85 (lagging)

*Rayley*

	- Power factor - Excitation	-0.85 (lagging) -Static excitation	-Static excitation
<b>19</b>	<b>Auxiliary Power House</b>		
19.1	Installed capacity	2x2.5 MW+1x5 MW=10 MW	2x2.5 MW+1x5 MW=10 MW
19.2	Location	Right side of river Kopili	Right side of river Kopili
19.3	Type	Surface powerhouse	Surface powerhouse
19.4	Powerhouse dimensions (L x W x H)	44.2 m x 11.5 m x 36.0 m	50.5 m x 10.0 m x 27.0 m
19.5	Average gross head	48.30 m	48.30 m
19.6	Type of turbines	Francis, horizontal	Francis, horizontal
19.7	Number of units	3	3
19.8	Turbine setting (elevation)	EL 169.50 m/170.5 m	EL 170.50 m
19.9	Rated discharge per unit	6.23 m <sup>3</sup> /s / 12.47 m <sup>3</sup> /s	6.23 m <sup>3</sup> /s / 12.47 m <sup>3</sup> /s
19.10	Installed capacity per unit	2.5 MW / 5 MW	2.5 MW / 5 MW
19.11	Continuous overloading	10%	10%
19.12	Spacing of Units	10 m /12 m	10 m /12 m
19.13	Rated Net Head	47.30 m	47.30 m
19.14	Normal T.W.L. (2 machines for Main PH & 3 machines for Auxiliary PH in operation)	EL 169.70 m	EL 169.70 m
19.15	Minimum T.W.L. (1 machine in operation)	EL 169.00 m	EL 169.16 m
19.16	Maximum T.W.L (during flood)	EL 185.34 m	EL 185.34 m
	Turbine Efficiency (Considered)	90% (WAE)	90% (WAE)
	Generator Efficiency (Considered)	96%	96%
19.17	Draft Tube Gates - Type & Number - Size (W x H)	-Fixed Wheel, 3 -1 No. 3 x 1.8 m, 2 Nos. 2 x1.8 m	-Fixed Wheel, 3 1 No. 3 x 1.8 m, 2 Nos. 2 x1.8 m
19.18	Main Inlet Valve - Type - Axis elevation - Diameter	-Butterfly type -EL 168.00 m -1.2 m / 1.86 m	-Butterfly type -EL 168.00 m -1.4 m / 2.0 m
19.19	Generator - Type & Number - Rated capacity - Synchronous speed - Voltage/Frequency - Power factor - Excitation	-Horizontal synchronous (3 nos) -2.5MW/5MW -750 rpm -6.6kV/ 50 Hz -0.85 (lagging) -Brushless excitation	-Horizontal synchronous (3 nos) -2.5MW/5MW -500 rpm (2.5MW) / 375 rpm (5MW) -6.6kV/ 50 Hz -0.85 (lagging) -Brushless excitation
<b>20</b>	<b>Transformer Yard (Main Powerhouse)</b>		
20.1	Type	1 phase, OFWF cooled Generator Transformer	single phase, ONAN/ONAF
20.2	Location	Upstream of powerhouse	Upstream of powerhouse
20.3	Number	7 (6+1 spare) nos.	7 (6+1 spare) nos.
20.4	Rated capacity	22.5 MVA	24 MVA
20.5	Voltage ratio	11/220/√3 kV	11/220/ kV
<b>21</b>	<b>Transformer Yard (Auxiliary Powerhouse)</b>		
21.1	Type	3 phase, ONAN/ ONAF cooled Generator Transformer	3 phase, ONAN/ ONAF
21.2	Location	Downstream of powerhouse	Upstream of powerhouse
21.3	Number	2 nos.	2 nos.
21.4	Rated capacity	6.5 MVA	6.5 MVA
21.5	Voltage ratio	6.6/33 kV	6.6/33 kV
<b>22</b>	<b>Tail Race Channel (Main Powerhouse)</b>		
22.1	Type	Rectangular	Rectangular
22.2	Numbers	1	1
22.3	Size (L x W)	52 m x 26.3 m	40 m x 26.00 m
22.4	Slope	5H:1V	4H:1V

*Reddy*

22.5	Nominal discharge	112.71 m <sup>3</sup> /s	112.71 m <sup>3</sup> /s
22.6	Outlet sill elevation	EL 102.0 m	EL 102.0 m
<b>23</b>	<b>Tail Race Channel (Auxiliary Powerhouse)</b>		
23.1	Type	Rectangular	Three separate ducts merging into one common duct
23.2	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)
23.3	Size (L x W)	72.18 m x 5 m after junction	
23.4	Slope	5H:1V	
23.5	Nominal discharge	24.94 m <sup>3</sup> /s	24.94 m <sup>3</sup> /s
23.6	Outlet sill elevation	EL 168.50 m	EL 167.50 m
<b>24</b>	<b>Switch Yard (Main Powerhouse)</b>		
24.1	Type & Size	Outdoor-152 m x 71 m	Outdoor-146.00m x 72.00m
24.2	Voltage level	220 kV	220 kV
24.3	Scheme	Double bus with bus coupler	Double bus with bus coupler
24.4	No. of outgoing feeders	4 (Four) nos.	4 (Four) nos.
<b>25</b>	<b>Switch Yard (Auxiliary Powerhouse)</b>		
25.1	Type & Size	Outdoor-19.3 m x 16 m	Outdoor-21 m x 24 m
25.2	Voltage level	33 kV	33 kV
25.3	Scheme	Single bus	Single bus
25.4	No. of outgoing feeders	2 (Two) nos.	2 (Two) nos.

*Ray*

Annexure 3 : Information about the changes to MoEF&CC



**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

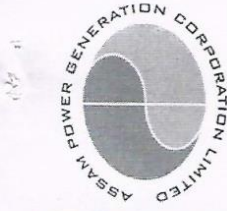
Yours Sincerely,

  
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

Annexure 4 : Information about the changes to MoEF&CC with copy of MoC



**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/62

Dated: 14/02/2023

To,

The Director,  
IA-I Division  
Ministry of Environment, Forest & Climate Change  
Government of India,  
Indira Paryavaran Bhawan  
3rd 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 4th September, 2019 – reg. intimation of the changes as per detail design under section 7(ii) b of the of the MOEF&CC Notification S.O.3518(E) dated 23rd Nov, 2016.

**Ref:** APGCL Office Letter No: APGCL/CGM(H)/W/2007/140/Pt-VI/54 dated 28.11.2022

Dear Sir,

With reference to the letter and 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 keeping the same FRL (226m). Moreover, the total width of dam structure including overflow & non overflow blocks reduced from 245.05 m 235.0 m. The reduced height and width of dam 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 submergence area was inadvertently mentioned as 552 Ha as submitted to MoEF&CC for the EC clearance (prepared by WAPCOS in the EIA Report) but it was 620 ha of submergence area which was initially calculated during the DPR study and was also considered throughout all the other GOI clearances. The recent MOC of the CEA dated 09.11.22 also approved 620 Ha of submergence area as mentioned in the original DPR. The additional 68 ha area of submergence will fall in revenue land only and it is well within the 1577ha of the total project land (as mentioned in the EIA).



The salient features as approved by the CEA, CWC, GSI, etc during detail design of the project components are incorporated in the Memorandum of Changes dated 09.11.22. The copy of which is once again attached for your ready reference (**Annexure-I**).


Details of the changes in the salient features of the EIA along with impact on the environment are given in the **Annexure-II**.

The following information on the changes as per detail design, which is approved by the competent authorities of GOI is furnished to intimate MoEF&CC under section 7(ii) b of the of the MOEF&CC Notification S.O.3518(E) dated 23rd Nov, 2016.

APGCL has tried to upload the information in the PARIVESH portal through the Executing Agencies' login ID but there is no option for uploading the same. This is for your kind appraisal. Please provide the 'No Increase in Pollution Load' certificate from your end. Your kind cooperation in the matter is highly solicited.

Enclosed: As stated.

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. Email.:iro.guwahati-mefcc@gov.in for favour of kind information.
3. The PS to the Chairman, APGCL for kind appraisal to the Honourable Chairman, APGCL
4. Relevant file

Annexure 5 : Information about the changes to PCBA with copy of MoC for issuance of no pollution load certificate



**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/61

Dated: 14/02/2023

To,

The Member Secretary  
Pollution Control Board Assam,  
Bamunimaidam, Guwahati – 21

**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 4th September, 2019 – reg. intimation of the changes as per detail design under section 7(ii) b of the of the MOEF&CC Notification S.O.3518(E) dated 23rd Nov, 2016.

Dear 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 keeping the same FRL (226m). Moreover, the total width of dam structure including overflow & non overflow blocks reduced from 245.05 m 235.0 m. The reduced height and width of dam 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 submergence area was inadvertently mentioned as 552 Ha as submitted to MoEF&CC for the EC clearance (prepared by WAPCOS in the EIA Report) but it was 620 ha of submergence area which was initially calculated during the DPR study and was also considered throughout all the other GOI clearances. The recent MOC of the CEA dated 09.11.22 also approved 620 Ha of submergence area as mentioned in the original DPR. The additional 68 ha area of submergence will fall in revenue land only and it is well within the 1577ha of the total project land (as mentioned in the EIA).

The salient features as approved by the CEA, CWC, GSI, etc during detail design of the project components are incorporated in the Memorandum of Changes dated 09.11.22. The copy of which is once again attached for your ready reference (**Annexure-I**).

Details of the changes in the salient features of the EIA along with impact on the environment are given in the **Annexure-II**.

The following information on the changes as per detail design, which is approved by the competent authorities of GOI is furnished to intimate MoEF&CC under section 7(ii) b of the of the MOEF&CC Notification S.O.3518(E) dated 23rd Nov, 2016.

APGCL has tried to upload the information in the PARIVESH portal through the Executing Agencies' login ID but there is no option for uploading the same.

This is for your kind appraisal. Please provide the 'No Increase in Pollution Load' certificate from your end. Your kind cooperation in the matter is highly solicited.

Enclosed: As stated.

Yours Sincerely,



Project Director (PMU),  
APGCL

Copy to:

1. The Managing Director, APGCL, Bijulee Bhawan, Paltan Bazar, Ghy-01, for kind information
2. The PS to the Chairman, APGCL for kind appraisal to the Honourable Chairman, APGCL.
3. Relevant file

**ENVIRONMENTAL  
CLEARANCE**

**PARIVESH**  
*(Pro-Active and Responsive Facilitation by Interactive,  
and Virtuous Environmental Single-Window Hub)*



**Government of India  
Ministry of Environment, Forest and Climate Change  
(Issued by the State Environment Impact Assessment  
Authority(SEIAA), ASSAM)**

To,

The -1  
HI-TECH ROCK PRODUCTS & AGGREGATES LIMITED  
Hi-Tech Rock Products & Aggregates Limited ,  
Longku Gaon, P.O. Umrongso, Distric: Dima Hasao (Assam) -788931

**Subject:** Grant of Environmental Clearance (EC) to the proposed Project Activity under the provision of EIA Notification 2006-regarding

Sir/Madam,

This is in reference to your application for Environmental Clearance (EC) in respect of project submitted to the SEIAA vide proposal number SIA/AS/MIN/415959/2023 dated 27 Jan 2023. The particulars of the environmental clearance granted to the project are as below.

- |  |  |
|--|--|
| 1. EC Identification No.                   | EC23B001AS114059                           |
| 2. File No.                                | SEIAA. 3341/2023                           |
| 3. Project Type                            | New  |
| 4. Category                                | B  |
| 5. Project/Activity including Schedule No. | 1(a) Mining of minerals                    |
| 6. Name of Project                         | Lower Kopili HEP Stone Quarry              |
| 7. Name of Company/Organization            | HI-TECH ROCK PRODUCTS & AGGREGATES LIMITED |
| 8. Location of Project                     | ASSAM                                      |
| 9. TOR Date                                | N/A  |

The project details along with terms and conditions are appended herewith from page no 2 onwards.

Date: 28/03/2023

(e-signed)  
Indreswar Kalita  
Member Secretary  
SEIAA - (ASSAM)

*Note: A valid environmental clearance shall be one that has EC identification number & E-Sign generated from PARIVESH. Please quote identification number in all future correspondence.*

*This is a computer generated cover page.*

This has reference to your application for Prior Environmental Clearance **proposal no. SIA/AS/MIN/415959/2023 dated 16/02/2023** along with Form-1, Mining Plan, D.F.O. letter, Google map with G.P.S. Co-ordinates and other relevant documents for Collection of Stone from “Lower Kopili Hep Stone Quarry” under Dima Hasao West Forest Division under N C Hills District Council, Haflong.

**The quantity of Stone to be collected is:**


**Stone:** 3,30,000 (Three Lakh Thirty Thousand) cu.m. Stone from the proposed mining site within a period of two (2) years @ 1,50,000 (One Lakh Fifty Thousand) cu.m. Stone in the 1<sup>st</sup> year of mining and rest 1,80,000(One Lakh Eighty Thousand) cu.m. in the 2<sup>nd</sup> year of mining operation.

**Total Allotted area:** 4.61 Ha.

The Stone shall be extracted only from the area of the GPS Co-ordinates as per Mining plan, mentioned below:

S. No	Longitude (E)	Latitude (N)
1	480965.5910	2842295.5840
2	480917.2680	2842267.7180
3	480912.7340	2842227.8330
4	480952.3940	2842144.4680
5	480978.3580	2842166.3650
6	481101.9610	2842264.4310
7	481132.6190	2842243.5210
8	481166.7360	2842251.6950
9	481174.0820	2842257.0930
10	481187.7550	2842274.1650
11	481200.4650	2842295.0830
12	481209.5660	2842319.6650
13	481223.2550	2842348.6830
14	481241.5470	2842371.5250
15	481266.6900	2842413.1400
16	481240.8950	2842440.9850
17	481234.6870	2842448.0520
18	481203.9310	2842448.0480
19	481149.7050	2842426.9370
20	481125.8150	2842418.6650

*The Stone shall be extracted manual/mechanized way (as per mining plan) from “Lower Kopili Hep Stone Quarry” under Dima Hasao West Forest Division under N C Hills District Council, Haflong.*

  
Member Secretary  
SEIAA, Assam  
#pb

The proposal was examined and processed in accordance with EIA Notification 2006 and its amendment thereof. The State Level Expert Appraisal Committee (SEAC), Assam examined the documents of the proposal for Extraction of Stone at its meeting held on 04/03/2023. Accordingly the application was discussed and thoroughly scrutinized by the SEAC and found that the project falls under 1(a) and considered as B2 Category of EIA Notification 2006 and subsequent amendments. The Committee recommended the project to the SEIAA, Assam for issuance of Environmental Clearance.

Based on the recommendation of the SEAC, the State Environment Impact Assessment Authority, Assam (SEIAA) considered the proposal in its meeting held on 20/03/2023 and accords Prior Environmental Clearance to the project as mentioned above under the provision of EIA notification 2006 and its subsequent amendments issued under Environment Protection Act 1986 subject to compliance of the following specific and general conditions.

**The operational area of mining must not exceed the given Mining Area 4.61 Ha and there should not be any other area of mining contiguous to this. The project proponent is required to submit a declaration in writing to this effect before commencement of the work.**

**I. Specific Conditions**

1. The legal status of the mining area remains unchanged.
2. The lease holder shall undertake adequate safeguard during collection of Stone and ensure that due to this activity, the hydro geological and ecological regime of the surrounding area shall not be affected. Regular monitoring of ground water level and quality shall be carried out around the mine lease area during the mining operation. If at any stage, it is observed that the groundwater table is getting depleted due to the mining activity; necessary corrective measures shall be carried out.
3. Manually/semi-mechanized way and low impact Excavation of Stone shall be undertaken (*as per mining plan*).
4. Top soil shall be kept separately and use for refilling the excavated area.
5. Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter as at loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard. The status of implementation of measures taken shall be reported to SEIAA and work shall be completed before the start of mining.
6. Parking of vehicles shall not be made on public road.
7. The following measures are to be further implemented to reduce air pollution during transportation of mineral:

  
Member Secretary  
SEIAA, Assam

- i. Roads shall be graded to mitigate the dust emission.
- ii. Over filling of tippers and consequent spillage on the roads shall be avoided.
8. Measures should be taken to comply with the provisions laid under Noise Pollution (Regulation and Control) (Amendment) Rules, 2010 issued by the MoEF, Govt. of India.
  9. Extraction shall be limited to day time only.
  10. No Stone extraction shall be carried out in the safety zone of any bridge and / or embankment.
  11. No Stone extraction shall be carried out in the vicinity of natural / manmade archaeological sites.
  12. No wildlife habitat will be disturbed along with aquatic Flora & Fauna of the water bodies in the area.
  13. **Green belt development shall be carried out in 20% of total extraction area either along road side considering CPCB guidelines with native tree species in the mining area.**
  14. User agency shall not make any fresh approach road.
  15. Appropriate mitigation measures shall be taken to prevent any kind of pollution. It shall be ensured that there is no leakage of oil and grease from the vehicles used for transportation.
  16. Special Measures shall be adopted to prevent the nearby settlement from the impacts of extraction activities.
  17. Dispensary facilities for first-aid shall be provided at site.
  18. Occupational health surveillance program of the workers should be undertaken periodically.
  19. Conservation measures shall be taken for protection of Flora & Fauna in the core and buffer zone.
  20. It shall be ensured that collection of mining materials does not disturb or change the underlying soil characteristic of river bed/basin, where mining is carried out.
  21. It shall be ensured that mining does not in any way disturb the water quality and flow pattern of nearby water bodies/Streams/ Rivers.
  22. Conservation measures shall be taken for protection of flora & fauna in the core and buffer zone.
  23. The fauna nesting area shall not be disturbed.
  24. A maximum depth of 2 m has been allowed for Stone extraction & nonexistence of mining area within a radius of 500 mts from the proposed location is also discussed.
  25. This Environmental Clearance is applicable only subject to receipt of necessary permit by the project proponent from the Competent Authority as per AMMC Rule, 2013 and subsequent amendment.
  26. Any solid waste generated shall be disposed of as per Solid Waste Management Rules 2016. Segregation of bio degradable and non-biodegradable wastes shall be done at site and disposed of as per Solid Waste Management Rules 2016.
  27. Drills shall either be operated with dust extractors or equipped with water injection system (wet drilling) to suppress air borne dust during drilling.

  
Member Secretary  
SEIAA, Assam

28. Only controlled blasting shall be practiced with necessary protective measures. Blasting operation shall be carried out only during the day time. The blasting shall be performed with all necessary care for protection of public, workers and property from fly rock & vibration risks.
29. Delay detonator shall be used and reduce the weight explosive per delay by decreasing hole size along with depth with proper spacing of holes shall be maintained. Random blasting is not allowed.
30. Blasting shall be done by license holder only.
31. Blasting pattern stemming, charging per hole should be designed on the basis field trial to control flying rocks. Delay detonators & shock tube initiation system blasting shall be used so as to reduce vibration & dust.
32. Safety and security of all members of public shall be sole responsibility of permit holder. Necessary musk, helmet, safety shoes etc. shall be provided to all workers working in the mining.
33. Blasting materials are to be collected from the authorized dealer with permission from District-Authority. Necessary precautionary measures must be taken so that no leakage of explosive occurs during storage & transportation.
34. Blasting shall be done in such a manner to prevent formation of big size boulders and thereby to minimize need for secondary blasting.
35. Adequate sirens, signals, posting of guards at strategic point blasting.
36. Anti-vibration devices shall be provided to vibrating tools/equipment to be used by workers during mining vibration shall be maintained within safe limit.
37. The project proponent shall strive to adopt zero waste mining concepts by reducing the quantum of reject through technological innovation or finding the use of fines through perspective buyers.
38. Top soil from the mining area shall be scrapped. Stacked separately, preserved and utilized for the plantation work.
39. Over burden, waste rock and non-saleable materials generated during prospecting or mining operations shall be stored separately in properly formed dumps on grounds earmarked. Slope & height of such dumps shall be restricted adequately to prevent any slippage of material. Such dumps should be properly terraced, stabilized and secured at toe to prevent the escape material that may cause degradation of the surrounding land or silting of water courses.
40. Overburden or other rejects shall be backfilled into the worked out quarry so far as possible with a view to restore the land to its original use or desired alternative use.
41. Used oil/ waste oil if any, generated shall be sold to the registered recyclers.
42. Mining operation shall be restricted to above ground water table and it shall be ensured that it does not intersect ground water table.
43. The project proponent shall ensure that no natural water course gets obstructed due to mining operation.
44. This Environmental Clearance is applicable only subject to receipt of mining permit by the project proponent from the Competent Authority as per AMMC Rule, 2013.

  
 Member Secretary  
 SEIAA, Assam  
 PAB



45. The blasting operation shall not be permitted below the ground level.
46. The blasting schedule for mining shall be prepared with the consultation concerned DFO. There should be a time gap between each blasting. The project proponents are responsible for any damage cause due to blasting operation during mining and bear the expenditure for loss of life & property. The blasting operation shall be performed in presence of Forest official.
47. Considerable quantity of overburden in the form soil and waste rock will yield which should be dumped systematically for backfilling as mentioned in the mining closure plan.
48. The mining materials should not damage the village land and drainage should be made along the mining area boundary.
49. Road safety measures to be adopted along the road passing through the mining site.
50. The proponent have to strictly follow all the terms and condition laid down in the Mining Plan approved by the DGM, Assam.
51. **The proponent shall have to take utmost care to avoid blockage of the natural water course because of proposed mining activities and over burden etc. shall have to be dumped as prescribed in the approved mining plan.**

**II. General Conditions:**

1. All necessary statutory clearance shall be obtained from competent authority in connection with mining operation and copies of the same shall be submitted to SEIAA, Assam.
2. Special measures shall be adopted to prevent nearby settlements from the impacts of mining activities, maintenance of roads through which transportation of minor mineral is to be undertaken shall be carried out regularly.
3. User agency shall comply with the provisions framed under Assam Minor Mineral concession Rule 2013.
4. The SEIAA Assam may alter/modify the above conditions or stipulate any further condition in the interest of environment protection.
5. Concealing the factual date or failure to comply with any of the conditions mentioned above may result in withdrawals of this clearance and attract action under the provisions of Environment Protection Act. 1986.
6. The SEIAA, Assam may revoke or suspend the order, if implementation of any of the above condition is not found satisfactory. SEIAA, Assam will monitor the operation area time to time and project component shall be extended full support for the same.
7. The above conditions will be enforced inter-alia under the provision of water (Prevention & Control of Pollution) Act 1974, the air (Prevention & Control of Pollution) Act 1981, the Environment Protection Act 1986 and the public liability Insurance Act 1991 along with their amendments & rules.

  
Member Secretary  
SEIAA, Assam  
PAB

8. The Environmental Clearance is valid for period of 2 (two) years only from the date of issue of this order.
9. Under Corporate Environment Responsibility (CER), appropriate budgetary provision shall be made as per MOEF&CC OM F. No. 22-65/2017-IA.III dated 01/05/2018 and 19/06/2018 commensurate with the total value of the work and to be spent for health improvement, education, drinking water facilities, and other socio-economic upliftment in and around the project area (radius of 10 KM from the project site) in consultation with a Committee having representatives from all sections of the population in the nearby villages and with information to the SEIAA on biannual basis.
10. The project proponent shall submit half yearly compliance reports in respect of the terms & conditions stipulated in this order to the SEIAA, Assam in PARIVESH PORTAL through individual User Id to the SEIAA. The Compliance Report should also include the work done under CER as in 9 above and also under Green Belt development in the project area (to be supported with photographs and other documentary evidences in both cases).
11. The Divisional Forest Officer, Dima Hasao West Forest Division under N C Hills District Council, Haflong Assam shall realize the Royalty as per existing rate and he is requested to mount due and regular surveillances on the mining operation to avoid occurrences of irregularities during the mining period. The DFO is also requested to arrange marking of the approved mining area on the ground fixing permanent boundary pillars before starting mining activities as mining is strictly permitted only within the approved mining site and not beyond the limit of the same. He will further ensure that necessary compliance of the terms and condition laid down in the EC be duly complied by the proponent in course of mining operation.

*24.09.2023*  
*10*  
Member Secretary  
SEIAA, Assam  
Bamunimaidam, Guwahati-21.  
#D

Memo No. SEIAA.3341/2023/EC/ 2039 -A

Dated: 24 / 3 /2023

Copy to:

1. The Joint Secretary, Ministry of Environment, Forest and Climate Change, Government of India, MOEF&CC, Indira Paryavaran Bhawan, Jorbagh Rd, New Delhi-110003.
2. The Secretary to the Govt. of Assam, Environment & Forest Department, Dispur, Guwahati-6 Cum Member Secretary, SEIAA, Assam for favour of kind information.
3. The P.C.C.F, HoFF, Govt. of Assam, Panjabari, Guwahati-37 for favour of kind information.
4. The Divisional Forest Officer, Dima Hasao West Forest Division under N C Hills District Council, Haflong, Assam for information & necessary action to ensure that all **Specific Conditions & General Condition** are complied with.
5. The Integrated Regional Office, Ministry of Environment, Forest & Climate Change, 4<sup>th</sup> Floor, Housefed Building, G.S. Road, Rukminigaon, Guwahati-22 for information.
6. Office Copy.

*Handwritten signature*  
24.03.2023

Member Secretary  
SEIAA, Assam

Bamunimaidam, Guwahati-21

Digitally signed by Shri Indreswar  
Kalita  
Member Secretary  
Date: 3/28/2023 6:52:11 PM  
Page 8 of 8

File No.8-53/2018FC

Government of India  
Ministry of Environment, Forest and Climate Change  
(F.C. Division)

Indira Paryavaran Bhawan,  
JorBagh Road, Aliganj,  
New Delhi: 110003,

Dated: 04 December, 2020

To,

The Addl. Secretary (Forests),  
Government of Assam,  
Environment and Forest Department,  
Dispur, Guwahati-6.

**Sub: Diversion of 523.046 ha of forest land for construction of Lower Kopili Hydro Electric Project by Assam Power Generation Corporation under Dima Hasao West Division, Halflong and Hamren Division, Assam.**

Sir,

I am directed to refer to the Govt. of Assam's letter No. FRS/2018/222 dated 30.07.2018 on the subject mentioned above seeking prior approval of the Central Government under Section-2 of the Forest (Conservation) Act, 1980 and to say that the proposal has been examined by the Forest Advisory Committee constituted by the Central Government under Section-3 of the aforesaid Act. After careful consideration of the proposal by the Forest Advisory Committee (FAC) and after its recommendation, and approval of competent authority in the Ministry, *In-principle/Stage-I* approval was accorded vide this Ministry's letter of even number dated 05.02.2019 subject to fulfillment of certain conditions. The State Government has furnished compliance report in respect of the conditions stipulated in the approval and has requested the Central Government to grant final approval.

2. In this connection, I am directed to say that on the basis of the compliance report furnished by the Government of Assam's letters letter No. FRS.152/2018/346 dated 11.09.2020 and No. FRS.152/2018/414 dated 16.10.2020, and clarification on FRA by Ministry of Tribal Affairs letter No.23011/20/2020-FRA dated 30.10.2020, *approval* of the Central Government is hereby accorded under Section-2 of the Forest (Conservation) Act, 1980 for diversion of 523.046 ha of forest land for construction of Lower Kopili Hydro Electric Project by Assam Power Generation Corporation under Dima Hasao West Division, Halflong and Hamren Division, Assam subject to the following conditions:

**A: Conditions which need to be complied prior to handing over of forest land :**

- i. The Government of Assam, Environment and Forest Department shall issue final notification for the proposed Compensatory Afforestation (CA) area as Reserved Forest/Protected Forest prior to handing over the land to the user agency. The State Government shall ensure that the CA area in the final notification shall not be changed without prior approval of the Government of India and shall not be less than 525.27 ha as proposed in the notification nos. FRS152/2018/354, FRS152/2018/353, FRS152/2018/352, FRS152/2018/351, FRS152/2018/350, FRS152/2018/349, FRS152/2018/348 and FRS152/2018/347 dated 11.9.2020 of the Government of Assam.
- ii. The State Government shall ensure that the User Agency will implement the R&R Plan as per the R&R Policy of the State Government in consonance with the National R&R Policy, Government of India before the commencement of the project work. The said R&R Plan will be monitored by the State Government/concern Regional Office of MoEF&CC along with

- indicators for monitoring and expected observable milestones;
- iii. The State Govt. shall ensure the complete compliance on FRA, 2006.
- iv. The State Govt. ensure that the User Agency shall obtain the Environment Clearance as per the provisions of the Environmental (Protection) Act, 1986, if required;

**B: Conditions which need to be complied after handing over of forest land to the user agency :**

- i. Legal status of the diverted forest land shall remain unchanged;
- ii. The State Govt. shall ensure that the State Forest Department will raise the Compensatory Afforestation in identified non -forest land in lieu of 523.046 Ha. of forest land, within three years from the issue of approval and maintained thereafter, from the funds deposited by the User Agency. At least 1000 plants per hectare shall be planted as per approved plan/scheme and maintained thereafter subsequently for ten years. The approved Soil and Moisture Conservation (SMC) activities on the CA land shall be carried out by the State Forest Department;
- iii. The State Govt. shall ensure that 198.746 ha out of proposed diversion of 523.046 ha of forest land shall be maintained as Green Belt at the cost of user agency under the supervision of State Forest Department;
- iv. The User Agency shall pay the additional amount of NPV, if so determined, as per the final decision of the Hon'ble Supreme Court of India;
- v. The State Govt. shall ensure that the approved Catchment Area Treatment (CAT) Plan shall be implemented by the State Forest Department from the funds deposited in the account of CAMPA;
- vi. The State Govt. and the User Agency shall ensure that no residential or labour colony/camp shall be constructed over forest land. The User Agency shall provide fuels preferably alternate fuels to the labourers and the staff working at the site so as to avoid any damage and pressure on the nearby forest areas;
- vii. The State Govt. ensure that the User Agency shall carry out muck disposal at pre-designated sites in such a manner so as to avoid its rolling down and the dumping area for muck disposal shall be stabilized and reclaimed by planting suitable species by the user agency at the cost of project under the supervision of State Forest Department. Retaining walls and terracing shall be carried out to hold the dumping material in place. Stabilization and reclamation of such dumping sites shall be completed before handing over the same to the State Forest Department in a time bound manner as per Plan.
- viii. The State Government and the User Agency shall ensure that the tress available between full reservoir level (FRL) and FRL-4 meters are not felled and the User Agency shall carry out afforestation along the periphery of the reservoir;
- ix. The State Govt. and the User Agency shall ensure that period of diversion of the said forest land under this approval shall be for a period co-terminus with the period of the mining lease granted under the Mines and Minerals (Development and Regulation) Act, 1957, as amended and the Rules framed there-under;
- x. The State Govt. shall ensure that the forest land proposed to be diverted shall under no circumstances be transferred to any other agency, department or person without prior approval of the Central Government and the layout plan of the proposal shall not be changed without the prior approval of the Central Government;
- xi. The State Govt. shall ensure that no damage to the flora and fauna of the adjoining area shall be caused;
- xii. The State Govt. shall ensure that the User Agency shall explore the possibility of translocation

**File No.8-53/2018FC**

of maximum number of trees identified to be felled and any tree felling shall be done only when it is unavoidable and that too under strict supervision of the State Forest Department;

- xiii. The State Govt. shall ensure that the User Agency shall provide free water for the forestry related projects;
- xiv. It may please note that violation of any of these conditions will amount to violation of Forest (Conservation) Act, 1980 and action would be taken as prescribed in para 1.21 of Chapter 1 of the Handbook of comprehensive guidelines of Forest (Conservation) Act, 1980 as issued by this Ministry's letter No. 5-2/2017-FC dated 28.03.2019;
- xv. The State Govt. shall ensure that the User Agency shall submit the annual self-compliance report in respect of the above stated conditions to the State Government, concerned Regional Office and to this Ministry by the end of March every year regularly; and
- xvi. The State Govt. shall ensure that the User Agency shall comply all the provisions of the all Acts, Rules, Regulations, Guidelines, Hon'ble Court Order (s) and NGT Order (s) pertaining to this project, if any, for the time being in force, as applicable to the project.

Yours faithfully,

Sd/-


**(Sandeep Sharma)**

Assistant Inspector General of Forests (FC)

**Copy to:**

1. PCCF (HoFF), Government of Assam, Guwahati.
2. Nodal Officer (FCA), Office of the PCCF (HoFF) Government of Assam, Guwahati.
3. Dy. Director General (Central), Integrated Regional Office, Shillong.
4. User Agency.
5. Monitoring Cell of FC Division, MoEF&CC, New Delhi.
6. Guard file.

Annexure 8: Letter to PCCF (WL) cum Chief Wildlife Warden for approval of Conservation Plan for LKHEP.

 **ASSAM POWER GENERATION CORPORATION LIMITED**  
Registered Office: Bijulee Bhawan, 2<sup>nd</sup> floor, Paltan-bazar, Guwahati-781 001, Assam  
**Mr. Ratnajit Biswanath**  
Chief General Manager (Hydro & Civil)  
Phone-0361-2739522  
E-mail: [cgmh2010@yahoo.in](mailto:cgmh2010@yahoo.in)

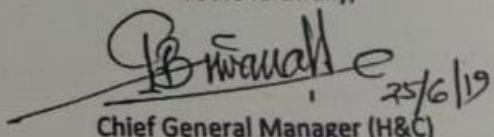
Dated: 25/06/2019

No: APGCL/CGM (H)/W/2015/569/Vol-II/04

To,  
The PCCF (WL) cum Chief Wildlife Warden,  
Govt. of Assam,  
Aranya Bhawan,  
Panjabari, Guwahati-37

Sub: Approval for Conservation Plan for Lower Kopilli Hydro Electric Project, 120MW.


Madam,  
It is for your kind information that, Assam Power Generation Corporation Limited is proposed to install 120 MW hydro electric Project at Kopilli river Basin at Longku of Dima Hasao District and Karbi Anglong District.  
In this context APGCL has received Stage-I forest clearance from MoEF & CC for diversion of 523.046 Ha of forest land. As advised by Forest Advisory Committee (FAC), MoEF, APGCL has kept 198.746 Ha forest as green belt. For necessary fees for NPV, CA, S&M conservation plan, CAT Plans, ETC has been approved by the respective divisions of forest department for payment in CAMPA account. Accordingly APGCL has initiated necessary actions for release of the aforesaid payment at an early date ahead.  
The conservation plan for biodiversity (Flora and Fauna) is enclosed herewith for your kind approval and necessary action.

Thanking You,  
Yours faithfully,  
  
Chief General Manager (H&C)  
APGCL

Copy to-

- 1) The Managing Director, APGCL, Bijulee Bhawan, Paltanbazar, Guwahati-1, for kind information.
- 2) The Project Director, Lower Kopilli H.E. Project, APGCL, Bijulee Bhawan, Paltanbazar, Guwahati -1 for information.
- 3) Relevant File.

*Received on 25.6.19*



## Annexure 9. Constitution of 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.

  
Project Director (PMU)  
APGCL

Dated: 12.10.2022

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





**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 Divison	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.

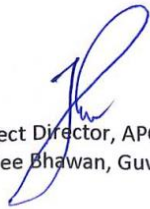
A brief presentation was given on this aspect by PMC and APGCL covering all the measures to be taken and highlighted the prioritization of the action as per the need in a phase manner. APGCL emphasised that both the measures and recommendations of MoEF&CC and ADB to be considered during implementation 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



**Pollution Control Board:: Assam**  
**Bamunimaidam; Guwahati-21**  
Department of Environment & Forests :: Government of Assam  
Phone: 0361-2652774 & 2550258; Fax: 0361-2550259  
Website: [www.pcbassam.org](http://www.pcbassam.org)



No. WB/SLC/T-1269/22-23/9

Dated Guwahati, the 26<sup>th</sup> Apr , 2023

**"CONSENT TO OPERATE"**

**"CONSENT TO OPERATE" (CTO)** under Section 25 of the Water (Prevention & Control of Pollution) Act, 1974, as amended and Rules Framed thereunder are granted to:

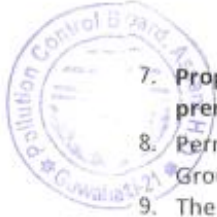
- |      |  |   |  |
|------|--|---|--|
| i)   | Name of Industry                                 | : | M/s Larsen and Turbo Ltd.  |
| ii)  | Name of the Occupier / Applicant and Designation | : | Shri Santanu Majumdar, Project Manager.  |
| iii) | Address of the unit                              | : | 120 MW Lower Kopili Hydro Electric Project, Vill: Longku, P.O.: Umrangso, Dist: Dima Hasao, Assam, PIN:788931. |
| iv)  | Cost of the project                              | : | Rs. 3.56 Lakhs.  |
| v)   | Details of the Project                           | : | Water Treatment Plant (15 KLD)<br>(Green Category)   |

**TERMS AND CONDITIONS**

1. This CTO has been granted based on the information & particulars furnished by the applicant vide **Application ID: 1913145** and subject to addition of further more conditions if so warranted by subsequent developments. The CTO will automatically become invalid if there is any changes, modification, alteration, expansion or deviation made in actual practice.
2. The CTO is valid till **31.03.2024**.
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. 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.
5. The project proponent shall develop a greenbelt/plantation area with native trees.
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)**.

a. Contd...p/2

*Mridul 43*



-2-

7. Proper housekeeping shall be maintained. Burning of any Solid waste inside the unit premises is strictly prohibited.
8. Permission of the Central Ground Water Authority shall be obtained for extraction of Ground Water, if applicable.
9. The unit shall apply for renewal of CTO atleast 90 days before expiry. The Board has decided to renew CTO for five (5) years, if the project proponent submits application with due payment of CTO fees.

**Specific Conditions:**

**A) Water Aspects:**

1. The unit shall meet the specific discharge standard, as mentioned herein under for any discharge from the water treatment plant including RO rejects:

Sl. No.	Parameters	Tolerance Limit
i)	pH	6.0 to 8.5
ii)	Total Suspended Solids	20 mg/l (max.)
iii)	Bio-chemical Oxygen Demand	30 mg/l (max.)
iv)	Chemical Oxygen Demand	250 mg/l (max.)
v)	Oil & Grease	5.0 mg/l (max.)
vi)	Other parameters	As per schedule-VI inserted by Rule 2(d) of the Environment (Protection) Second Amendment Rules, 1993 notified vide G.S.R.422(E) dated 19.05.1993

2. Water consumption & effluent generation:
  - a) Raw water consumption - 25 KLD
  - b) R.O. reject water - 10 KLD
3. Storm water for a unit (having plot size atleast 200 sq. meters) shall not be allowed to mix with effluent and/or floor washings.
4. Storm water within the battery limits of a unit shall be channelized through separate drain/pipe passing through a HDPE lined pit having holding capacity of 10 minutes (hourly average) of rainfall.
5. Rain water harvesting facility shall be installed and maintained.
6. Quality of R.O. reject shall be tested and if possible use of such water including selling or free distribution to nearby people/agencies shall be explored.

**B) 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.**

**C) Plastic Waste Aspects:**

1. Plastic Waste generated in the unit shall be disposed of in accordance of the provisions under the **Plastic Waste Management Rules, 2016.**

Contd...p/3

*Handwritten signature/initials*



**D) Hazardous Waste Aspects:**

1. The project authorities shall comply with the provisions of the Hazardous & Other Waste (Management and Trans Boundary Movement) Rules, 2016.
2. The containers containing chemical should be stored and disposed as per the Hazardous and Other Waste (Management & Trans-boundary Movement) Rules, 2016.
3. Appropriate facility shall be created for handling, storage, treatment & disposal of any Hazardous waste generated by the industry in accordance to the provisions of the HOW Rule including Notification, Guidelines issued there under.
4. The unit should submit the annual return under the said Rule, in Form-IV, within 30<sup>th</sup> 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.

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 taken.

(Shantanu Kr. Dutta)  
Member Secretary

Memo No. WB/SLC/T-1269/22-23/9-A

Dated Guwahati, the 26<sup>th</sup> Apr, 2023

Copy to:

- ✓ 1. M/S. Larsen and Turbo Ltd., 120 MW Lower Kopili Hydro Electric Project, Vill: Longku, P.O.: Umrangso, Dist: Dima Hasao, Assam, PIN:788931 for information & compliance of CTO conditions.

(Shantanu Kr. Dutta)  
Member Secretary



**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.	
Description of Consent/Authorization	Details
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

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

Copy to:

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.pcbassam.org](http://www.pcbassam.org)), PCBA.

  
**Member Secretary**



**Pollution Control Board:: Assam**  
**Bamunimaidam; Guwahati-21**  
Department of Environment & Forests :: Government of Assam)  
Phone: 0361-2652774 & 2550258; Fax: 0361-2550259  
Website: [www.pcbassam.org](http://www.pcbassam.org)



No. WB/SLC/T-1271/22-23/12

Dated Guwahati, the 26<sup>th</sup> April, 2023

**"CONSENT TO OPERATE"**

**"CONSENT TO OPERATE" (CTO)** under Section 25 of the Water (Prevention & Control of Pollution) Act, 1974, as amended and Rules Framed thereunder are granted to:

- |      |  |   |  |
|------|--|---|--|
| i)   | Name of Industry                                 | : | M/s Larsen and Turbo Ltd.  |
| ii)  | Name of the Occupier / Applicant and Designation | : | Shri Santanu Majumdar, Project Manager.  |
| iii) | Address of the unit                              | : | 120 MW Lower Kopili Hydro Electric Project, Vill: Longku, P.O.: Umrangso, Dist: Dima Hasao, Assam, PIN:788931. |
| iv)  | Cost of the project                              | : | Rs. 55.72 Lakhs.   |
| v)   | Details of the Project                           | : | Water Treatment Plant (600 KLD) (Green Category).  |
| vi)  | Name of treatment units                          | : | As per flow chart in Annexure- A   |

**TERMS AND CONDITIONS**

1. This CTO has been granted based on the information & particulars furnished by the applicant vide **Application ID: 1894033** and subject to addition of further more conditions if so warranted by subsequent developments. The CTO will automatically become invalid if there is any changes, modification, alteration, expansion or deviation made in actual practice.
2. The CTO is valid till **31.03.2024**.
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. 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.
5. The project proponent shall develop a greenbelt/plantation area with native trees.
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-B).**
7. Proper housekeeping shall be maintained. Burning of any Solid waste inside the unit premises is strictly prohibited.

*(Handwritten signature)*

Contd...p/2



8. Permission of the Central Ground Water Authority shall be obtained for extraction of Ground Water, if applicable.
9. The unit shall apply for renewal of CTO atleast 90 days before expiry. The Board has decided to renew CTO for five (5) years, if the project proponent submits application with due payment of CTO fees.

**Specific Conditions:**

**A) Water Aspects:**

1. The unit shall meet the specific discharge standard, as mentioned herein under for any discharge from the water treatment plant including RO rejects:

Sl. No.	Parameters	Tolerance Limit
i)	pH	6.0 to 8.5
ii)	Total Suspended Solids	20 mg/l (max.)
iii)	Bio-chemical Oxygen Demand	30 mg/l (max.)
iv)	Chemical Oxygen Demand	250 mg/l (max.)
v)	Oil & Grease	5.0 mg/l (max.)
vi)	Other parameters	As per schedule-VI inserted by Rule 2(d) of the Environment (Protection) Second Amendment Rules, 1993 notified vide G.S.R.422(E) dated 19.05.1993

2. Water consumption & effluent generation:
  - a) Raw water consumption - 600 KLD
  - b) Effluent Generation - 35 KLD (Back wash water)
3. Storm water within the battery limits of a unit shall be channelized through separate drain/pipe passing through a HDPE lined pit having holding capacity of 10 minutes (hourly average) of rainfall.
4. Rain water harvesting facility shall be installed and maintained.

**B) 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.

**C) Plastic Waste Aspects:**

1. Plastic Waste generated in the unit shall be disposed of in accordance of the provisions under the Plastic Waste Management Rules, 2016.

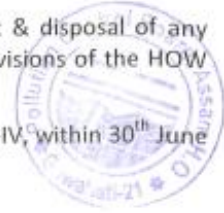
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Contd...p/3

21/05/19

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4. The unit should submit the annual return under the said Rule, in Form-IV, within 30<sup>th</sup> June every year.



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1. Electronic wastes generated in the unit shall be disposed of as per the provisions of E-Waste Management Rules, 2016.
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(Shantanu Kr. Dutta)  
Member Secretary

Memo No. WB/SLC/T-1271/22-23/12-A

Dated Guwahati, the 26<sup>th</sup> April, 2023

Copy to:

- ✓ M/S. Larsen and Turbo Ltd. C/O Santanu Majumdar, Project Manager, 120 MW Lower Kopili Hydro Electric Project, Vill: Longku, P.O.: Umrangso, Dist: Dima Hasao, Assam, PIN: 788931 for information & compliance of CTO conditions.

(Shantanu Kr. Dutta)  
Member Secretary







**Pollution Control Board, Assam  
Bamunimaidam, Guwahati-21**

*Sanam B*



**NOTIFICATION**

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

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

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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

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

Copy to:

- ✓ The Commissioner & Secretary to the Govt. of Assam, Department of Environment & Forest, Dispur for kind information.
- P.A. to the Chairman, PCBA for kind appraisal of the Hon'ble Chairman.
- The All Regional Heads, PCBA for information & necessary action.
- 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.
- Notice Board, Head Office / Website ([www.pcbassam.org](http://www.pcbassam.org)), PCBA.

*Sanam B*  
**Member Secretary**



Technologies for better tomorrow

**TESTREPORT**

**AMBIENT AIR ANALYSIS REPORT**

Rep.No. AAAR\_1503163\_01\_77  
 Sample ID: EETNE/MAR/04/23  
 Issued to : M/s. Lower Kopili HEP Project, Lanku, Dist.- Dima Hasao, Assam.

Date: 13/03/2022 TC-7669  
 ULR NO.: TC766923000000004P

Sample Drawn By : UTPAL BEZBARUAH  
 Sampling Plan & Procedure : EETNE/SOP/01  
 Analysis Duration : 21/02/23 TO 25/02/23, 22/02/23 TO 26/02/23, 23/02/23 TO 27/02/23  
 24/02/23 TO 28/02/23, 25/02/23 TO 01/03/23  
 26/02/23 TO 02/03/23, 27/02/23 TO 03/03/23, 28/02/23 TO 04/03/23  
 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> (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)	21/02/23	Power Inlet / Dam Site Lat N 25°39'57.39" Long E 92°46'53.62"	Clear	34.2	18.6	14.5	BDL	BDL	10.1
ii)	22/02/23	Crusher Site Lat N 25°40'37.79" Long E 92°47'43.13"		45.2	29.5	17.7	0.02	0.03	12.2
iii)	23/02/23	HRT Adit Lat N 25°40'47.89" Long E 92°48'9.67"		37.4	19.2	12.2	BDL	BDL	9.2
iv)	24/02/23	Primary Hospital Near APGCL Camp Lat N 25°39'59.93" Long E 92°47'45.52"		33.1	22.1	11.7	BDL	BDL	8.1
v)	25/02/23	Batching plant Lat N 25°41'45.31" Long E 92°48'39.79"		34.7	20.7	15.9	BDL	BDL	11.0
vi)	26/02/23	Surge Shaft Site Lat N 25°41'29.28" Long E 92°48'16.47"		35.2	20.1	13.2	BDL	BDL	9.5
vii)	27/02/23	Labour & Staff Camp Lat N 25°40'54.97" Long E 92°48'9.67"		34.3	20.3	12.4	BDL	BDL	8.2
viii)	28/02/23	Power house Lat N 25°41'54.02" Long E 92°46'53.62"		34.2	21.6	9.8	BDL	BDL	8.1

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>			8 Hours	80
5	Sulphur Dioxide (SO <sub>2</sub> ), µg/m <sup>3</sup>	IS:5182 Part-II/ CPCB	Annual	24 hours	2.0
					80

For Envision Enviro Technologies North East, Guwahati

Utpal Bezbaruah  
 (Environmental Chemist)

Dr. Pranita Ghosh  
 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.



Recognized by Pollution Control Board, Assam

**TEST REPORT**

**AMBIENT NOISE LEVEL MEASUREMENT REPORT**

Rep.No. ANLMR\_1503163\_06A\_78  
Sample ID: EETNE/MAR/04/23

Date: 13/03/2023  
ULR NO.: TC766923000000004P

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)	22/02/23	Power Inlet / Dam Site Lat N 25°39'57.39" Long E 92°46'53.62"	48.2	37.2
ii)	23/02/23	Crusher Site Lat N 25°40'37.79" Long E 92°47'43.13"	56.3	45.6
iii)	24/02/23	HRT Adit Lat N 25°40'47.89" Long E 92°48'9.67"	53.7	41.3
iv)	25/02/23	Primary Hospital Near APGCL Camp Lat N 25°39'59.93" Long E 92°47'45.52"	57.2	41.7
v)	26/02/23	Batching plant Lat N 25°41'45.31" Long E 92°48'39.79"	52.3	47.2
vi)	27/02/23	Surge Shaft Site Lat N 25°41'29.28" Long E 92°48'16.47"	50.2	38.4
vii)	28/02/23	Labour & Staff Camp Lat N 25°40'54.97" Long E 92°48'9.67"	54.9	46.7
viii)	01/03/23	Power house Lat N 25°41'54.02" Long E 92°46'53.62"	55.7	43.8

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

Method of analysis : . IS 9989 : 1981 RA : 2014

Sampling Instrument Used : SLM100 SLNO484-I-72, SLM 100 (213 DTC-2013)

**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.



TC-7669

**TEST REPORT:**

Report No: 230206\_1503163\_0  
 Sample ID No: EETNE/Jan/04/23/D  
 Test Starting Date: 24/01/23

Date of Report: 06/02/23  
 Date of sample receipt: 24/01/23  
 Test completion Date: 06/02/23

Name & Address of Client	M/s. Lower Kopili Project. Near Lanka, Dist: Dima Hasao.	
Sample Description	Type: Ground Water	Source: APGCL Camp
Sample collected by	M/s. Lower Kopili Project	

Sl No.	Parameters	Unit	Result	Reference Method	IS 10500:2012
					Acceptable Limit
1	p <sup>H</sup>	---	7.48	APHA 23 <sup>rd</sup> Edition, 4500 H <sup>+</sup> , Page:4-95	6.5-8.5
2	Turbidity	NTU	7.0	APHA 23 <sup>rd</sup> Edition, 2130, Page:2-13	1
3	TDS	mg/L	90	APHA 23 <sup>rd</sup> Edition, 2540 C, Page :2-69	500
4	Dissolved Oxygen	mg/L	7.3	APHA 23 <sup>rd</sup> Edition, 4500-O C, Page:4-146	100
5	Total hardness	mg/L	64.7	APHA 23 <sup>rd</sup> Edition, 2340 B, Page:2-48	200
6	Calcium	mg/L	30.4	APHA 23 <sup>rd</sup> Edition, 3500-Ca B, Page:3-69	75
7	Magnesium	mg/L	16.8	APHA 23 <sup>rd</sup> Edition, 3500-Mg B, Page:3-86	30
8	Total Alkalinity	mg/L	133	APHA 23 <sup>rd</sup> Edition, 2320, Page:2-37	200
9	Sulphate	mg/L	15.4	APHA 23 <sup>rd</sup> Edition, 4500-SO <sub>4</sub> <sup>2-</sup> E, Page:4-199	200
10	Nitrates	mg/L	3.5	APHA 23 <sup>rd</sup> Edition, 4500-NO <sub>3</sub> <sup>-</sup> B, Page:4-127	45





Sample ID No: EETNE/Jan/04/23/D  
 Test Starting Date: 24/01/23

TC-7669  
 Date of sample receipt: 24/01/23  
 Test completion Date: 06/02/23

Sl No.	Parameters	Unit	Result	Reference Method	IS 10500:2012
					Acceptable Limit
11	Arsenic	mg/L	BDL	APHA 23 <sup>rd</sup> Edition, 3114A, Page: 3-36	0.01
12	Iron(as Fe)	mg/L	0.247	APHA 23 <sup>rd</sup> Edition, 3500-Fe B, Page: 3-80	0.3
13	Total Coliform	MPN/100	Nil	APHA 23 <sup>rd</sup> Edition, 9222B, Page: 9-81	Shall not be detectable in any 100 ml Sample
14	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

NOTE: (TDS) Total Dissolved Solids.

For Envision Enviro Technologies North East



  
**Rimpi Sarma**  
 Environmental Chemist  
 Test Done By

**Dr. Pranita Chakraborty**  
 Quality Manager  
 Authorized Signatory/Reviewed By

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.9 to 14 were analysed by Department of Chemistry, B. Borooah College as per our MOU.  
**End of report**

**TEST REPORT:**

Report No: 230314\_1503163\_0  
ULR No:TC76692300000002P  
Sample ID No: EETNE/March/02/23/D  
Test Starting Date: 01/03/23

Date of Report: 14/03/23  
Date of sample receipt: 01/03/23  
Test completion Date: 14/03/23

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	Latitude:25.681362	Longitude:92.803848	
Sample collected by	M/s. En-vision Enviro Technologies North East				
Sample Collection Particulars	Date 28/02/2023	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>	---	4.00	APHA 23 <sup>rd</sup> Edition,4500 H*,Page:4-95
2	Turbidity	NTU	1.56	APHA 23 <sup>rd</sup> Edition,2130,Page:2-13
3	TDS	mg/L	63	APHA 23 <sup>rd</sup> Edition,2540 C, Page :2-69
4	TSS	mg/L	41.3	APHA 23 <sup>rd</sup> Edition,2540,Page:2-70
5	Oil and Grease	mg/L	<2	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
7	Total hardness	mg/L	53.8	APHA 23 <sup>rd</sup> Edition,2340 B,Page:2-48
8	Calcium	mg/L	29.1	APHA 23 <sup>rd</sup> Edition,3500-Ca B,Page:3-69
9	Magnesium	mg/L	13.6	APHA 23 <sup>rd</sup> Edition,3500-Mg B,Page:3-86
10	Total Alkalinity	mg/L	125.2	APHA 23 <sup>rd</sup> Edition,2320,Page:2-37
11	Sulphate	mg/L	16.4	APHA 23 <sup>rd</sup> Edition,4500-SO <sub>4</sub> <sup>2-</sup> E,Page:4-199
12	Nitrates	mg/L	3.8	APHA 23 <sup>rd</sup> Edition,4500-NO <sub>3</sub> <sup>-</sup> B,Page:4-127
13	Phosphate	mg/L	BDL	APHA 23 <sup>rd</sup> Edition,4500-P,Page:4-163
14	Salinity	%	0.2	APHA 23 <sup>rd</sup> Edition,2520B,Page:2-60
15	Conductivity	µS/cm	180	APHA 23 <sup>rd</sup> Edition,2520B,Page:2-60





Recognized by Pollution Control Board, Assam


TC-7669

Sample ID No: EETNE/March/02/23/D  
 Test Starting Date: 01/03/23

Date of sample receipt: 01/03/23  
 Test completion Date: 14/03/23

Sl No.	Parameters	Unit	Result	Reference Method
16	Chloride	mg/L	17.2	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	1.1	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	10	APHA 23 <sup>rd</sup> Edition, 5210B, Page: 5-6
22	COD	mg/L	46	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 / Reviewed By

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

End of report

Page 2 of 2

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

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





TC-7669

**TEST REPORT:**

Report No: 230206\_1503163\_0  
 Sample ID No: EETNE/Jan/05/23/D  
 Test Starting Date: 24/01/23

Date of Report: 06/02/23  
 Date of sample receipt: 24/01/23  
 Test completion Date: 06/02/23

Name & Address of Client	M/s. Lower Kopili Project. Near Lanka, Dist: Dima Hasao.	
Sample Description	Type: Surface Water	Source: DT Outlet
Sample collected by	M/s. En-vision Enviro Technologies North East	

Sl No.	Parameters	Unit	Result	Reference Method
1	pH	---	4.97	APHA 23 <sup>rd</sup> Edition, 4500 H <sup>+</sup> , Page: 4-95
2	Turbidity	NTU	2.7	APHA 23 <sup>rd</sup> Edition, 2130, Page: 2-13
3	TDS	mg/L	50	APHA 23 <sup>rd</sup> Edition, 2540 C, Page : 2-69
4	TSS	mg/L	25.3	APHA 23 <sup>rd</sup> Edition, 2540, Page: 2-70
5	Dissolved Oxygen	mg/L	7.8	APHA 23 <sup>rd</sup> Edition, 4500-O C, Page: 4-146
6	Total hardness	mg/L	53.2	APHA 23 <sup>rd</sup> Edition, 2340 B, Page: 2-48
7	Calcium	mg/L	25.7	APHA 23 <sup>rd</sup> Edition, 3500-Ca B, Page: 3-69
8	Magnesium	mg/L	13.5	APHA 23 <sup>rd</sup> Edition, 3500-Mg B, Page: 3-86
9	Total Alkalinity	mg/L	56	APHA 23 <sup>rd</sup> Edition, 2320, Page: 2-37
10	Chloride	mg/L	12.4	APHA 23 <sup>rd</sup> Edition, 4500-Cl <sup>-</sup> B, Page: 4-75
11	Sulphate	mg/L	8.4	APHA 23 <sup>rd</sup> Edition, 4500-SO <sub>4</sub> <sup>2-</sup> E, Page: 4-199
12	Nitrates	mg/L	2.1	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	%	0.2	APHA 23 <sup>rd</sup> Edition, 2520B, Page: 2-60
15	conductivity	μS/cm	130	APHA 23 <sup>rd</sup> Edition, 2520B, Page: 2-60

Page 1 of 2



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

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



Sample ID No: EETNE/Jan/05/23/D  
Test Starting Date: 24/01/23

Date of sample receipt: 24/01/23  
Test completion Date: 06/02/23

Sl No.	Parameters	Unit	Result	Reference Method
16	Arsenic	mg/L	BDL	APHA 23 <sup>rd</sup> Edition,3114A,Page:3-36
17	Iron(as Fe)	mg/L	0.135	APHA 23 <sup>rd</sup> Edition,3500-Fe B,Page:3-80
18	Total Coliform	MPN/100	Nil	APHA 23 <sup>rd</sup> Edition,9222B,Page:9-81
19	Fecal Coliform	MPN/100	Nil	APHA 23 <sup>rd</sup> Edition,9222 D,Page:9-89
20	BOD	mg/L	<2	APHA 23 <sup>rd</sup> Edition,5210B,Page:5-6
21	COD	mg/L	<5	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/Reviewed By

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**

**TEST REPORT:**

Report No: 230206\_1503163\_0  
 Sample ID No: EETNE/Jan/05/23/D  
 Test Starting Date: 24/01/23

Date of Report: 06/02/23  
 Date of sample receipt: 24/01/23  
 Test completion Date: 06/02/23

Name & Address of Client	M/s. Lower Kopilli Project. Near Lanka, Dist: Dima Hasao.	
Sample Description	Type: Surface Water	Source: DT Outlet
Sample collected by	M/s. En-vision Enviro Technologies North East	

Sl No.	Parameters	Unit	Result	Reference Method
1	pH	---	4.97	APHA 23 <sup>rd</sup> Edition, 4500 H <sup>+</sup> , Page: 4-95
2	Turbidity	NTU	2.7	APHA 23 <sup>rd</sup> Edition, 2130, Page: 2-13
3	TDS	mg/L	50	APHA 23 <sup>rd</sup> Edition, 2540 C, Page : 2-69
4	TSS	mg/L	25.3	APHA 23 <sup>rd</sup> Edition, 2540, Page: 2-70
5	Dissolved Oxygen	mg/L	7.8	APHA 23 <sup>rd</sup> Edition, 4500-O C, Page: 4-146
6	Total hardness	mg/L	53.2	APHA 23 <sup>rd</sup> Edition, 2340 B, Page: 2-48
7	Calcium	mg/L	25.7	APHA 23 <sup>rd</sup> Edition, 3500-Ca B, Page: 3-69
8	Magnesium	mg/L	13.5	APHA 23 <sup>rd</sup> Edition, 3500-Mg B, Page: 3-86
9	Total Alkalinity	mg/L	56	APHA 23 <sup>rd</sup> Edition, 2320, Page: 2-37
10	Chloride	mg/L	12.4	APHA 23 <sup>rd</sup> Edition, 4500-Cl <sup>-</sup> B, Page: 4-75
11	Sulphate	mg/L	8.4	APHA 23 <sup>rd</sup> Edition, 4500-SO <sub>4</sub> <sup>2-</sup> E, Page: 4-199
12	Nitrates	mg/L	2.1	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	%	0.2	APHA 23 <sup>rd</sup> Edition, 2520B, Page: 2-60
15	conductivity	μS/cm	130	APHA 23 <sup>rd</sup> Edition, 2520B, Page: 2-60

Page 1 of 2



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

Phone : +91 8811096201 | e-mail : envisionghy@gmail.com | visit us at : www.en-vision.in

Sample ID No: EETNE/Jan/05/23/D  
Test Starting Date: 24/01/23

Date of sample receipt: 24/01/23  
Test completion Date: 06/02/23

Sl No.	Parameters	Unit	Result	Reference Method
16	Arsenic	mg/L	BDL	APHA 23 <sup>rd</sup> Edition,3114A,Page:3-36
17	Iron(as Fe)	mg/L	0.135	APHA 23 <sup>rd</sup> Edition,3500-Fe B,Page:3-80
18	Total Coliform	MPN/100	Nil	APHA 23 <sup>rd</sup> Edition,9222B,Page:9-81
19	Fecal Coliform	MPN/100	Nil	APHA 23 <sup>rd</sup> Edition,9222 D,Page:9-89
20	BOD	mg/L	<2	APHA 23 <sup>rd</sup> Edition,5210B,Page:5-6
21	COD	mg/L	<5	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/Reviewed By

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. 5, 1st Floor, Sankardev Path, Pub-Sarania, Chandmari, Guwahati-781003, Assam.

Phone : +91 8811096201 | e-mail : [envisionghy@gmail.com](mailto:envisionghy@gmail.com) | visit us at : [www.en-vision.in](http://www.en-vision.in)



TC-7669

Recognized by Pollution Control Board, Assam

**TEST REPORT:**

Report No: 230314\_1503163\_0  
ULR No:TC766922000000038P  
Sample ID No: EETNE/March/2\_A/23/D  
Test Starting Date: 01/03/23

Date of Report: 14/03/23  
Date of sample receipt:01/03/23  
Test completion Date: 14/03/23

Name & Address of Client	M/s. Lower Kopili Project. Near Lanka, Dist: Dima Hasao.				
Sample Description	Type: Surface Water (1 km D/S of dam site)			Source: Kopili River	
Sample collected by	M/s. En-vision Enviro Technologies North East				
Sample Collection Particulars	Date 28/02/2023	Time 3:50 P.M	Temperature 27°C	Quantity Drawn: 4 Lt	Sampling Method: EETNE/SOP/02

Sl No.	Parameters	Unit	Result	Reference Method
1	pH	---	4.5	APHA 23 <sup>rd</sup> Edition,4500 H <sup>+</sup> ,Page:4-95 APHA 23 <sup>rd</sup> Edition,2130,Page:2-13
2	Turbidity	NTU	2.10	APHA 23 <sup>rd</sup> Edition,2540 C, Page :2-69
3	TDS	mg/L	32.5	APHA 23 <sup>rd</sup> Edition,2540,Page:2-70
4	TSS	mg/L	83.8	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	74.6	APHA 23 <sup>rd</sup> Edition,2340 B,Page:2-48
8	Calcium	mg/L	34.8	APHA 23 <sup>rd</sup> Edition,3500-Ca B,Page:3-69
9	Magnesium	mg/L	17.5	APHA 23 <sup>rd</sup> Edition,3500-Mg B,Page:3-86
10	Total Alkalinity	mg/L	42.9	APHA 23 <sup>rd</sup> Edition,2320,Page:2-37
11	Chloride	mg/L	14.5	APHA 23 <sup>rd</sup> Edition,4500-Cl <sup>-</sup> B,Page:4-75
12	Sulphate	mg/L	10.8	APHA 23 <sup>rd</sup> Edition,4500-SO <sub>4</sub> <sup>2-</sup> E,Page:4-199
13	Nitrates	mg/L	2.3	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	%	0.6	APHA 23 <sup>rd</sup> Edition,2520B,Page:2-60
16	conductivity	µS/cm	84.5	APHA 23 <sup>rd</sup> Edition,2520B,Page:2-60



Page 1 of 2

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

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



TC-7669

Recognized by Pollution Control Board, Assam

Sample ID No: EETNE/March/2\_A/23/D

Date of sample receipt: 01/03/23

Test Starting Date: 01/03/23

Test completion Date: 14/03/23

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	0.87	APHA 23 <sup>rd</sup> Edition,3500-Fe B,Page:3-80
19	Total Coliform	MPN/100	2	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	23	APHA 23 <sup>rd</sup> Edition,5220 b,Page:5-18

For Envision Enviro Technologies North East, Guwahati

Rimpi Sarma  
Environmental Chemist  
Test Done ByDr. Pranita Chakraborty  
Quality Manager  
Authorized Signatory / Reviewed ByNote: i) The results relate only to the parameters tested and item sampled.  
ii) The test report shall not be reproduced except in full, without written approval of laboratory

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**End of report**

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Page 2 of 2

**TEST REPORT:**

Report No: 230314\_1503163\_0  
ULR No:TC76692300000039P  
Sample ID No: EETNE/Mar/2\_B/23/D  
Test Starting Date: 01/03/23

Date of Report: 14/03/23  
Date of sample receipt: 01/03/23  
Test completion Date: 14/03/23

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			
Sample collected by	M/s. En- vision Enviro Technologies North East				
Sample Collection Particulars	Date 28/02/2023	Time 10:30 A.M	Temperature 25°C	Quantity Drawn:4L	Sampling Method: EETNE/SOP/02

Sl No.	Parameters	Unit	Result	Reference Method	IS 10500:2012
					Permissible Limit
1	p <sup>H</sup>	---	4.4	APHA 23 <sup>rd</sup> Edition,4500 H <sup>+</sup> ,Page:4-95	6.5-8.5
2	Turbidity	NTU	3.61	APHA 23 <sup>rd</sup> Edition,2130,Page:2-13	5
3	TDS	mg/L	30.8	APHA 23 <sup>rd</sup> Edition,2540 C, Page :2-69	2000
4	TSS	mg/L	65.9	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	7.0	APHA 23 <sup>rd</sup> Edition,4500-O C,Page:4-146	100
7	Total hardness	mg/L	69.5	APHA 23 <sup>rd</sup> Edition,2340 B,Page:2-48	600
8	Calcium	mg/L	32.8	APHA 23 <sup>rd</sup> Edition,3500-Ca B,Page:3-69	200
9	Magnesium	mg/L	15.7	APHA 23 <sup>rd</sup> Edition,3500-Mg B,Page:3-86	100
10	Total Alkalinity	mg/L	35.2	APHA 23 <sup>rd</sup> Edition,2320,Page:2-37	600
11	Sulphate	mg/L	11.8	APHA 23 <sup>rd</sup> Edition,4500-SO <sub>4</sub> <sup>2-</sup> E,Page:4-199	400
12	Nitrates	mg/L	3.5	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	%	0.6	APHA 23 <sup>rd</sup> Edition,2520B,Page:2-60	No relaxation
15	conductivity	µS/cm	97	APHA 23 <sup>rd</sup> Edition,2520B,Page:2-60	No relaxation

Page 1 of 2



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

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

Sample ID No: EETNE/March/2\_B/23/D  
 Test Starting Date: 01/03/23

Date of sample receipt: 01/03/23  
 Test completion Date: 14/03/23

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	1.3	APHA 23 <sup>rd</sup> Edition,3500-Fe B,Page:3-80	No relaxation
18	Total Coliform	MPN/100ml	4	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	5	APHA 23 <sup>rd</sup> Edition,52108,Page:5-6	No relaxation
21	COD	mg/L	27	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 / Reviewed By

Note: i) The results relate only to the parameters tested and item sampled.  
 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.Borooh College as per our MOU.  
End of report



Recognized by Pollution Control Board, Assam

**TEST REPORT**

Report No: 230314\_1503163\_0  
 ULR No: TC766923000000040P  
 Sample ID No: EETNE/Mar/2\_C/23/D  
 Test Starting Date: 28/02/23

Date of Report: 14/03/23  
 Date of sample receipt: 01/03/23  
 Test completion Date: 14/03/23

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			
Sample collected by	M/s. En-vision Enviro Technologies North East				
Sample Collection Particulars	Date 28/02/2023	Time 2:42 P.M	Temperature 28°C	Quantity Drawn:4L	Sampling Method: EETNE/SOP/02

SI No.	Parameters	Unit	Result	Reference Method
1	pH	---	4.34	APHA 23 <sup>rd</sup> Edition,4500 H <sup>+</sup> ,Page:4-95
2	Turbidity	NTU	2.21	APHA 23 <sup>rd</sup> Edition,2130,Page:2-13
3	TDS	mg/L	35	APHA 23 <sup>rd</sup> Edition,2540 C, Page :2-69
4	TSS	mg/L	72.8	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	7.5	APHA 23 <sup>rd</sup> Edition,4500-O C,Page:4-146
7	Total hardness	mg/L	60.6	APHA 23 <sup>rd</sup> Edition,2340 B,Page:2-48
8	Calcium	mg/L	31.8	APHA 23 <sup>rd</sup> Edition,3500-Ca B,Page:3-69
9	Magnesium	mg/L	14.9	APHA 23 <sup>rd</sup> Edition,3500-Mg B,Page:3-86
10	Total Alkalinity	mg/L	42.5	APHA 23 <sup>rd</sup> Edition,2320,Page:2-37
11	Sulphate	mg/L	10.7	APHA 23 <sup>rd</sup> Edition,4500-SO <sub>4</sub> <sup>2-</sup> E,Page:4-199
12	Nitrates	mg/L	9.8	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	76	APHA 23 <sup>rd</sup> Edition,2520B,Page:2-60

Page 1 of 2



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

Phone : +91 98640 10097 / 70028 10116 ♦ e-mail : [envisionighy@gmail.com](mailto:envisionighy@gmail.com)

Recognized by Pollution Control Board, Assam

Sample ID No: EETNE/March/2\_C/23/D  
 Test Starting Date: 01/03/23

Date of sample receipt: 01/03/23  
 Test completion Date: 14/03/23

Sl No.	Parameters	Unit	Result	Reference Method
16	Chloride	mg/L	15.9	APHA 23 <sup>rd</sup> Edition, 4500-Cl <sup>-</sup> 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	1.7	APHA 23 <sup>rd</sup> Edition, 3500-Fe B, Page: 3-80
19	Total Collform	MPN/100	3	APHA 23 <sup>rd</sup> Edition, 9222B, Page: 9-81
20	Fecal Collform	MPN/100	Nil	APHA 23 <sup>rd</sup> Edition, 9222 D, Page: 9-89
21	BOD	mg/L	6	APHA 23 <sup>rd</sup> Edition, 5210B, Page: 5-6
22	COD	mg/L	45	APHA 23 <sup>rd</sup> Edition, 5220 b, Page: 5-18

For Envision Enviro Technologies North East, Guwahati

  
 Rimol Sarma  
 Environmental Chemist  
 Test Done By

  
 Dr. Pranita Chakraborty  
 Quality Manager  
 Authorized Signatory / Reviewed By

Note: i) The results relate only to the parameters tested and item sampled.  
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 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



NABL ACCREDITED

**TEST REPORT:**

Report No: 230314\_1503163\_0

ULR NO-TC766923000000008F

Sample ID No: EETNE/March/07/23/D

Test Starting Date: 01/03/23

Date of Report: 14/03/23

Date of sample receipt: 01/03/23

Test completion Date:14/03/23

Name & Address of Client	M/s. Lower Kopili Project. Near Lanka, Dist: Dima Hasao.				
Sample Description	Type: RO Outlet	Source: Canteen	Latitude:25.680759	Longitude:92.80208	
Sample collected by	M/s. Lower Kopili Project .				
Sample Collection Particulars	Date 28/02/23	Time 01:45 P.M	Temperature 29°C	Quantity Drawn:2L	Sampling Method: EETNE/SOP/02

Sl No.	Parameters	Unit	Result	Reference Method	IS 10500: 2012
					Acceptable limit
1	p <sup>H</sup>	---	7.91	APHA 23 <sup>rd</sup> Edition,4500 H <sup>+</sup> ,Page:4-95	6.5-8.5
2	Turbidity	NTU	<0.2	APHA 23 <sup>rd</sup> Edition,2130,Page:2-13	1.0
3	Total hardness	mg/L	43.5	APHA 23 <sup>rd</sup> Edition,2340 B,Page:2-48	200
4	Total Alkalinity	mg/L	56	APHA 23 <sup>rd</sup> Edition,2320 B,Page:2-37	200
5	Residual Chlorine	mg/L	<0.01	APHA 23 <sup>rd</sup> Edition,4500-Cl B,Page:4-63	0.2
6	Fluoride	mg/L	0.21	APHA 23 <sup>rd</sup> Edition,4500-F D,Page:4-90	1.0
7	Chloride	mg/L	11.6	APHA 23 <sup>rd</sup> Edition,4500-Cl <sup>-</sup> B,Page:4-75	250
8	Iron(as Fe)	mg/L	0.04	APHA 23 <sup>rd</sup> Edition,3500-Fe B,Page:3-80	0.3
9	Total coliform	MPN/100 mL	Nil	APHA 23 <sup>rd</sup> Edition,9222B,Page:9-81	Absent

For Envision Enviro Technologies North East



Dr. Pranita Chakraborty  
Quality Manager

Authorized Signatory/Reviewed By

Rimpi Sarma  
Environmental Chemist  
Test Done By

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



**TEST REPORT:**

Report No: 230314\_1503163\_0  
 ULR NO-TC76692300000007F  
 Sample ID No: EETNE/March/06/23/D  
 Test Starting Date: 01/03/23


Date of Report: 14/03/23  
 Date of sample receipt: 01/03/23  
 Test completion Date: 14/03/23


TC-7669

Name & Address of Client	M/s. Lower Kopili Project. Near Lanka, Dist: Dima Hasao.				
Sample Description	Type: RO Inlet	Source: Canteen	Latitude:25.680317	Longitude:92.80195	
Sample collected by	M/s. Lower Kopili Project .				
Sample Collection Particulars	Date 28/02/23	Time 01:35 P.M	Temperature 29°C	Quantity Drawn:3L	Sampling Method: * EETNE/SOP/02

Sl No.	Parameters	Unit	Result	Reference Method	IS 10500: 2012
					Acceptable limit
1	p <sup>H</sup>	---	7.7	APHA 23 <sup>rd</sup> Edition,4500 H <sup>+</sup> ,Page:4-95	6.5-8.5
2	Turbidity	NTU	0.21	APHA 23 <sup>rd</sup> Edition,2130,Page:2-13	1.0
3	Total hardness	mg/L	58.4	APHA 23 <sup>rd</sup> Edition,2340 B,Page:2-48	200
4	Total Alkalinity	mg/L	140	APHA 23 <sup>rd</sup> Edition,2320 B,Page:2-37	200
5	Residual Chlorine	mg/L	BDL	APHA 23 <sup>rd</sup> Edition,4500-Cl B,Page:4-63	0.2
6	Fluoride	mg/L	0.25	APHA 23 <sup>rd</sup> Edition,4500-F <sup>-</sup> D,Page:4-90	1.0
7	Chloride	mg/L	13.7	APHA 23 <sup>rd</sup> Edition,4500-Cl <sup>-</sup> B,Page:4-75	250
8	Iron(as Fe)	mg/L	0.14	APHA 23 <sup>rd</sup> Edition,3500-Fe B,Page:3-80	0.3
9	Total coliform	MPN/100 mL	Nil	APHA 23 <sup>rd</sup> Edition,9222B,Page:9-81	Absent

For Envision Enviro Technologies North East

  
**Rimpi Sarma**  
 Environmental Chemist  
 Test Done By

  
**Dr. Pranita Chakraborty**  
 Quality Manager  
 Authorized Signatory/Reviewed By

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



**TEST REPORT:**

Report No: 230206\_1503163\_0  
Sample ID No: EETNE/Jan/06/23/D  
Test Starting Date: 24/01/23

Date of Report: 06/02/23  
Date of sample receipt: 24/01/23  
Test completion Date: 06/02/23

Name & Address of Client	M/s. Lower Kopili Project. Near Lanka, Dist: Dima Hasao.	
Sample Description	Type: Surface Water	Source: Lanku Nala
Sample collected by	M/s. Lower Kopili Project	

Sl No.	Parameters	Unit	Result	Reference Method
1	pH	---	7.75	APHA 23 <sup>rd</sup> Edition, 4500 H <sup>+</sup> , Page: 4-95
2	Turbidity	NTU	10.1	APHA 23 <sup>rd</sup> Edition, 2130, Page: 2-13
3	TDS	mg/L	86	APHA 23 <sup>rd</sup> Edition, 2540 C, Page: 2-69
4	TSS	mg/L	65.7	APHA 23 <sup>rd</sup> Edition, 2540, Page: 2-70
5	Dissolved Oxygen	mg/L	6.4	APHA 23 <sup>rd</sup> Edition, 4500-O C, Page: 4-146
6	Total hardness	mg/L	51.7	APHA 23 <sup>rd</sup> Edition, 2340 B, Page: 2-48
7	Calcium	mg/L	24.9	APHA 23 <sup>rd</sup> Edition, 3500-Ca B, Page: 3-69
8	Magnesium	mg/L	12.5	APHA 23 <sup>rd</sup> Edition, 3500-Mg B, Page: 3-86
9	Total Alkalinity	mg/L	119	APHA 23 <sup>rd</sup> Edition, 2320, Page: 2-37
10	Chloride	mg/L	15.3	APHA 23 <sup>rd</sup> Edition, 4500-Cl <sup>-</sup> B, Page: 4-75
11	Sulphate	mg/L	9.6	APHA 23 <sup>rd</sup> Edition, 4500-SO <sub>4</sub> <sup>2-</sup> E, Page: 4-199
12	Nitrates	mg/L	4.1	APHA 23 <sup>rd</sup> Edition, 4500-NO <sub>3</sub> <sup>-</sup> B, Page: 4-127
13	Phosphate	mg/L	<.02	APHA 23 <sup>rd</sup> Edition, 4500-P, Page: 4-163
14	Conductivity	μS/cm	250	APHA 23 <sup>rd</sup> Edition, 2520B, Page: 2-60





Sample ID No: EETNE/Jan/06/23/D  
 Test Starting Date: 24/01/23

Date of sample receipt: 24/01/23  
 Test completion Date: 06/02/23

Sl No.	Parameters	Unit	Result	Reference Method
15	Arsenic	µg/L	BDL	APHA 23 <sup>rd</sup> Edition,3114A,Page:3-36
16	Iron(as Fe)	mg/L	1.5	APHA 23 <sup>rd</sup> Edition,3500-Fe B,Page:3-80
17	Salinity	%	0.4	APHA 23 <sup>rd</sup> Edition,2520B,Page:2-60
16	Total Coliform	MPN/100 mL	3	APHA 23 <sup>rd</sup> Edition,9222B,Page:9-81
17	Fecal Coliform	MPN/100 mL	Nil	APHA 23 <sup>rd</sup> Edition,9222 D,Page:9-89
18	BOD	mg/L	5	APHA 23 <sup>rd</sup> Edition,5210B,Page:5-6
19	COD	mg/L	27	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 / Reviewed By

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.9 to 17 are analyzed by Department of Chemistry, B. Borooah College as per our MOU.  
End of report



**TEST REPORT:**

Report No: 230206\_1503163\_0  
 Sample ID No: EETNE/Jan/08/23/D  
 Test Starting Date: 24/01/23

Date of Report: 06/02/23  
 Date of sample receipt: 24/01/23  
 Test completion Date: 06/02/23  
 TC-7669

Name & Address of Client	M/s. Lower Kopili Project. Near Lanka, Dist: Dima Hasao.	
Sample Description	Type: RO Water	Source: PMC Camp
Sample collected by	M/s. Lower Kopili Project .	

Sl No.	Parameters	Unit	Result	Reference Method	IS 10500: 2012
					Acceptable limit
1	p <sup>H</sup>	---	7.91	APHA 23 <sup>rd</sup> Edition, 4500 H <sup>+</sup> , Page: 4-95	6.5-8.5
2	Turbidity	NTU	<0.2	APHA 23 <sup>rd</sup> Edition, 2130, Page: 2-13	1.0
3	Total hardness	mg/L	31.5	APHA 23 <sup>rd</sup> Edition, 2340 B, Page: 2-48	200
4	Total Alkalinity	mg/L	58.7	APHA 23 <sup>rd</sup> Edition, 2320 B, Page: 2-37	200
5	Residual Chlorine	mg/L	<0.01	APHA 23 <sup>rd</sup> Edition, 4500-Cl B, Page: 4-63	0.2
6	Fluoride	mg/L	0.26	APHA 23 <sup>rd</sup> Edition, 4500-F D, Page: 4-90	1.0
7	Chloride	mg/L	16.7	APHA 23 <sup>rd</sup> Edition, 4500-Cl B, Page: 4-75	250
8	Iron(as Fe)	mg/L	0.13	APHA 23 <sup>rd</sup> Edition, 3500-Fe B, Page: 3-80	0.3
9	Total coliform	MPN/100 mL	Nil	APHA 23 <sup>rd</sup> Edition, 9222B, Page: 9-81	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.  
 ii) The test report shall not be reproduced except in full, without written approval of laboratory  
 iii) Parameter no.4 to 9 are analyzed by Department of Chemistry, B. Borooah College as per our MOU.  
 End of report



TC-7669

Recognized by Pollution Control Board, Assam

**TEST REPORT:**

Report No: 230206\_1503163\_0  
Sample ID No: EETNE/Jan/07/23/D  
Test Starting Date: 24/01/23

Date of Report: 06/02/23  
Date of sample receipt: 24/01/23  
Test completion Date: 06/02/23

Name & Address of Client	M/s. Lower Kopill Project. Near Lanka, Dist: Dima Hasao.	
Sample Description	Type: Surface Water	Source: RO Water
Sample collected by	M/s. Lower Kopill Project	

Sl No.	Parameters	Unit	Result	Reference Method	IS 10500:2012
					Acceptable Limit
1	p <sup>H</sup>	---	7.22	APHA 23 <sup>rd</sup> Edition, 4500 H <sup>+</sup> , Page: 4-95	6.5-8.5
2	Turbidity	NTU	4.0	APHA 23 <sup>rd</sup> Edition, 2130, Page: 2-13	1
3	TDS	mg/L	42	APHA 23 <sup>rd</sup> Edition, 2540 C, Page: 2-69	500
4	TSS	mg/L	18.3	APHA 23 <sup>rd</sup> Edition, 2540, Page: 2-70	----
5	Oil and Grease	mg/L	<2	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	45.8	APHA 23 <sup>rd</sup> Edition, 2340 B, Page: 2-48	200
8	Calcium	mg/L	23.1	APHA 23 <sup>rd</sup> Edition, 3500-Ca B, Page: 3-69	75
9	Magnesium	mg/L	11.4	APHA 23 <sup>rd</sup> Edition, 3500-Mg B, Page: 3-86	30
10	Total Alkalinity	mg/L	91	APHA 23 <sup>rd</sup> Edition, 2320, Page: 2-37	600
11	Chloride	mg/L	14.3	APHA 23 <sup>rd</sup> Edition, 4500-Cl <sup>-</sup> B, Page: 4-75	250
12	Sulphate	mg/L	11.7	APHA 23 <sup>rd</sup> Edition, 4500-SO <sub>4</sub> <sup>2-</sup> E, Page: 4-199	200
13	Nitrates	mg/L	3.1	APHA 23 <sup>rd</sup> Edition, 4500-NO <sub>3</sub> <sup>-</sup> B, Page: 4-127	45
14	Phosphate	mg/L	<0.02	APHA 23 <sup>rd</sup> Edition, 4500-P, Page: 4-163	No Relaxation
15	Salinity	%	0.3	APHA 23 <sup>rd</sup> Edition, 2520B, Page: 2-60	----
16	conductivity	µS/cm	120	APHA 23 <sup>rd</sup> Edition, 2520B, Page: 2-60	No Relaxation

Page 1 of 2



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

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Recognized by Pollution Control Board, Assam


Sample ID No: EETNE/Jan/07/23/D  
Test Starting Date: 24/01/23

Date of sample receipt: 24/01/23  
Test completion Date: 06/02/23

Sl No.	Parameters	Unit	Result	Reference Method	IS 10500:2012
					Acceptable Limit
17	Arsenic	mg/L	BDL	APHA 23 <sup>rd</sup> Edition, 3114A, Page: 3-36	0.01
18	Iron (as Fe)	mg/L	0.176	APHA 23 <sup>rd</sup> Edition, 3500-Fe B, Page: 3-80	0.3
19	Total Coliform	MPN/100	Nil	APHA 23 <sup>rd</sup> Edition, 9222B, Page: 9-81	Shall not be detectable in any 100 ml Sample
20	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
21	BOD	mg/L	<2	APHA 23 <sup>rd</sup> Edition, 5210B, Page: 5-6	----
22	COD	mg/L	<5	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/Reviewed By

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



TC-7669

**TEST REPORT:**

Report No: 230314\_1503163\_0  
ULR NO-TC766923000000009F  
Sample ID No: EETNE/March/03\_A/23  
Test Starting Date: 28/02/23

Date of Report: 14/03/23  
Date of sample receipt: 01/03/23  
Test completion Date: 14/03/23

Name & Address of Client	M/s. Lower Kopili Project. Near Lanka, Dist: Dima Hasao.				
Sample Description	Type: Waste water	Source: Workman Colony	Latitude:25.681362	Longitude:92.803844	
Sample collected by	M/s. En-vision Enviro Technologies North East				
Sample Collection Particulars	Date 01/03/23	Time 01:49 P.M	Temperature 26°C	Quantity Drawn:2L	Sampling Method: EETNE/SOP/02

SN	Parameter	Unit	Result	Method Followed by	Permissible Limit (CPCB)
1	pH	---	7.00	APHA 23 <sup>rd</sup> Edition,4500 H*,Page:4-95	6.5-9.0
2	TSS	mg/L	81.3	APHA 23 <sup>rd</sup> Edition,2540,Page:2-70	100
3	BOD	mg/L	27	APHA 23 <sup>rd</sup> Edition,5210B,Page:5-6	30
4	COD	mg/L	82	APHA 23 <sup>rd</sup> Edition,5220 b,Page:5-18	250
5	OIL & GREASE	mg/L	3.5	APHA 23 <sup>rd</sup> Edition,5520 B,Page:5-42	10

Note : (TSS) Total Suspended Solids, (BOD) Biochemical Oxygen Demand, (COD) Chemical Oxygen Demand.

For Envision Enviro Technologies North East



  
Rimpi Sarma  
Environmental Chemist  
Test Done By

Dr. Pranita Chakraborty  
Quality Manager  
Authorized Signatory/Reviewed By

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

End of Report

Page 1 of 1

OFFICE OF THE  
UMRONGSO MUNICIPAL BOARD  
UMRONGSO, DIMA HASAO, ASSAM. PIN-788931

No.UMB/VII-1/2022-23/ 326

Date:- 23/03/2023

To,

Santanu Majumdar  
Project Manager  
120 MW-Lower Kopili HEP

Sub:- Disposal of Solid Waste.

Ref:- LKHEP-PKG2/LNT/153/GL/264 Dated:-13rd Feb. 2023

Sir,

In inviting reference to the subject and reference No. cited above, I am to inform you that our department has Landfill site/Dumping Ground at Umrongdisa (Kamla Bagan). Hence, you can proceed for Shifting of Solid Waste at the above mentioned Landfill Site.

This is for kind information.

Your's faithfully

*DSC*  
Chairman  
Umrongso Municipal Board  
Umrongso, Dima Hasao

Chairman  
Umrongso Municipal Board  
Umrongso, Assam

Memo No.UMB/VII-1/2022-23/

Date:- 23/03/2023

Copy to:-

1. The City Project Manager, Swachh Bharat Mission, Umrongso Municipal Board for information.
2. Concern File.

Chairman  
Umrongso Municipal Board  
Umrongso, Dima Hasao

Chairman  
Umrongso Municipal Board  
Umrongso, Assam



**CONSERVATION PLAN FOR FLORA AND FAUNA  
(BIODIVERSITY)**

For Lower Kopili Hydroelectric Project (120 MW)



**Assam Power Generation Corporation Limited**

## **CONSERVATION PLAN FOR FLORA AND FAUNA (BIODIVERSITY)**

### **1 BIODIVERSITY CONSERVATION**

#### **INTRODUCTION**

Conservation is the sustainable use of natural resources, so that it is preserved for future generation as well. Natural conservation involves proper management of natural wealth, places that sustain these resources besides the human pressure that affect the resources. The need for conservation, preservation and management of biological diversity arises because of threats to natural ecosystems by anthropogenic activities. In view of the foreseen disturbance and degradation of natural ecosystems, a compensatory afforestation plan and biodiversity conservation and management plan has been proposed for Lower Kopili hydroelectric project.

#### **1.1 COMPENSATORY AFFORESTATION**

The Indian Forest Conservation Act (1980) stipulates:

- If non-forest land is not available, compensatory plantation is to be established on degraded forest lands, which must be twice the forest area affected or lost.
- If non- forest land is available, compensatory forest are to be raised over an area equivalent to the forest area affected or lost.

The total land requirement of the project is 1577 ha. The private land to be acquired for the project is 1054 ha. The forest land to be acquired for the project is 523 ha. Therefore compensatory afforestation required for equivalent area is about 523 ha of land needs to be afforested. The afforestation work is to be done by the Forest Department. Local species shall be preferred for plantation under compensatory afforestation under CAMPA. For this APGCL has already received demand note from concerned Divisions of Forest for deposition of the amount to CAMPA fund amounting to Rs. 23,91,35,775.00.

	Compensatory afforestation	Overhead
Karbi Anglong	14584098	7292049
Dima Hasao	144839752	72419876

#### **1.2 CAT Plan**

Accelerated soil erosion in the catchment area of the reservoirs and transport of detached material through the drainage network gives rise to a series of problems, notably depletion of flow capacity, steady loss of storage capacity, consistent drop in hydro-electric power generation and frequent floods. The loss of dead and live storage leads to heavy economic losses due to reduced life span of reservoirs. Therefore, extensive soil conservation and watershed management programmes are needed to minimize the damage to the catchment and mitigation of soil erosion problems. As a

part of the CEIA study, a Catchment Area Treatment Plan has been prepared. Silt Yield Index (SYI) method has been used to prioritize sub-watershed into various erosion categories.

The CAT Plan has been formulated for intervening draining catchment i.e. up to the proposed diversion structure of Lower Kopili H. E. Project on Kopili river. The total catchment area at proposed Lower Kopili HEP site is 2076.62 sq km while at proposed Kopili Dam HEP is 1256 sq km. Thus, the free draining catchment area proposed to be treated in the present study is 820.62 sq.km (82062 ha).

CAT Plan amounting Rs. 2829.67 Lakhs has been approved by the PCCF&HOFF, Govt. of Assam. Accordingly the amount will be deposited by APGCL in the CAMPA fund.

### **1.3. Soil and Moisture Conservation Plan**

The main objective of soil moisture conservation is to minimize the amount of water lost from the soils through evaporation (water loss directly from the soil) and transpiration (water loss occurring through the plants) – or combined, the evapotranspiration. Forest is the origin for the streams and rivers, therefore it is very important to conserve soil and moisture in its catchment area. The Department has started soil and moisture conservation works such as check-dams, gully plugging, and forest tanks. Soil and moisture Conservation works have become integral part of the Forest Development.

Soil Moisture Conservation works in the forest area marked for the plantation activity are carried on watershed basis. This approach is aimed at enhancing land productivity and to increase the soil moisture availability for a longer period.

#### **Nature of SMC Works**

Emphasis is given to the drainage line treatment. The above described SMC works are indicative and general. SMC works on the site are carried out as per the site specific approved treatment plan.

#### **SMC works**

There is a variety of methods that can be used to conserve soil moisture. Most of these are relatively low cost and complexity approaches, primarily relying on the presence of required materials and technical capacity locally. Many of the methods rely on providing some kind of cover for the soil to minimize evapotranspiration and direct soil exposure to heat and sun. Generally, most methods used for soil quality improvement and conservation, will also yield benefits to soil moisture conservation.

#### **Examples of methods for reducing excess soil moisture loss include following:**

- **Spreading manure or compost over the soil** – this minimizes evapotranspiration and also provides valuable nutrients to the soil through processes of decomposition.

- **Mulching** – mulch is a layer of organic (or inorganic) material that is placed on the root zone of the plants. Examples of mulch materials include straw, wood chips, peat. Inorganic mulch in form of plastic sheeting is also used. Mulching is most suited for low to medium rainfall areas, and less suited for areas with very wet conditions.
- **Conservation tillage** – reducing or, in extreme cases, completely eliminating the tillage to maintain healthy soil organic levels which increases the soils capacity to absorb and retain water. Conservation tillage is a specific type of such approach where crop residue is left on the soil to reduce evapotranspiration, and protect soil surface from wind, sun and heavy rain impacts.
- **Crop rotation** – growing different types of crops every season helps improve soil structure and thus water holding capacity. Examples include rotating deep-rooted and shallow rooted crops that make use of previously unused soil moisture, as plants draw water from different depth levels within the soil. Crop rotation may also improve soil fertility and help control pests and diseases.
- **Green manuring** – growing of plant materials with the sole purpose of adding to the soil for improved organic matter and nutrients. The improved soil quality then also improves water retention capacity.
- **Deep tillage** – suited for some areas and soils, deep tillage can help increase porosity and permeability of the soil to increase its water absorption capacity.
- **Mixed cropping and interplanting** - cultivating a combination of crops with different planting times and different length of growth periods.
- **Contour ploughing** – by ploughing the soil along the contour instead of up- and downward slopes, the velocity of runoff is reduced, creating even barriers, and more water is retained in the soils and distributed more equally across the cropland.
- **Strip cropping** - growing erosion permitting crops and erosion resisting crops in alternate strips.
- Other soil moisture conservation techniques may include rainwater harvesting to minimize runoff and collect water for use on site.
- Contour dykes, Van-talav, Small earthen Check dams are prepared depending on site conditions. Emphasis is given to contour line treatment with small and medium SMC works.

So far as the SMC and area development works are concerned, entire coupe would be treated as an unit. In area prone to soil erosion, pukka nala-bunds or check dam are constructed. Ring bunds at the heads of the nala and gullies are also prepared. Seed sowing of appropriate species such as bamboo or khair, Broom grass are sown on the outer side of stonewall, internal plantation demarcation line or on other soil based SMC works. An amount of Rs 3,98,55,963.00 has been proposed by concerned DFOs for payment in CAMPA Fund by APGCL.

Dima Hasao	36209938.00
Karbi Anglong	3646025.00

#### 1.4 Habitat Improvement Programme

Habitat improvement programme is an integral part of biodiversity management. This programme consists of bringing into useful association of those condition needed by a species to reproduce and survive.

The proposed project will not impinge on any Protected Area / Biological Corridors or corresponding buffer zones.

The proposed project does not affect important species and biodiversity areas (both upstream and downstream of project area).

The following activities have been proposed for habitat improvement programme:

**Afforestation:** Area under forest and tree cover will be expanded through systematic planning and implementation of afforestation and rehabilitation programme in degraded and open forests and available non forest lands.

Regeneration of felled areas will be ensured in a time bound manner and productivity of plantations will be increased through use of improved seeds and planting stock. The indigenous fruit bearing plants, vital from wildlife point of view are proposed to be planted so as to enrich the habitat & ensure the sufficient availability of food. Monoculture will be discouraged and mixed plantations of broad-leaved fodder, fuel wood and wild fruit species will be promoted. This activity will increase forest cover and will provide habitat to the animals. Afforestation programme in the degraded Forest Compartments is proposed to be carried out with species suitable for the area and shall be finalized and executed by the Forest Department. An amount of Rs.20.0 lakhs is proposed to be earmarked for this purpose.

**Avi-fauna :** Forests are vital for the survival, foraging, breeding and nesting of avifauna. Natural forests provide a variety of food materials to the birds not only in the form of nectar of flowers, fruits, seeds etc. in the trees, shrubs, herbs and grasses but they also contain a large number of insects eaten by birds. In the forests, food is always available for the faunal component. Although most floral species flower during spring through summer but fruit maturation and seed ripening takes place in them throughout the year. Therefore, first strategy of improvement of habitat for birds is avoiding nest predation or brood parasitism through maintenance of large contiguous forest tract. These areas have the ability to support the largest number of forest interior birds and will also be



more likely to provide habitat for area sensitive species. It is more practicable to protect the existing forest area rather than creating new forest area.

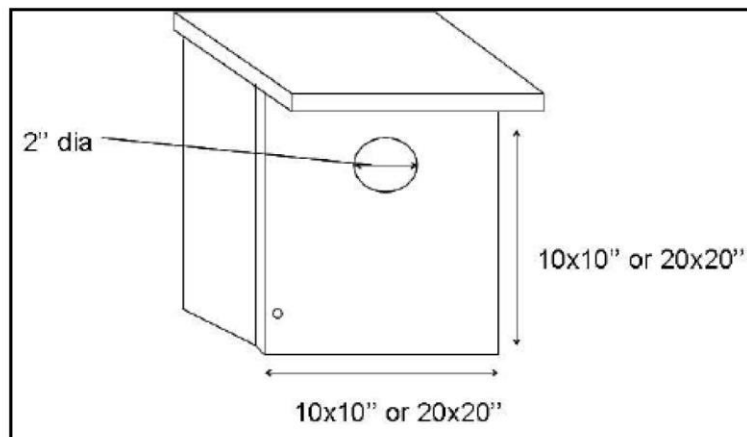
Another measure for habitat improvement for avifauna is to be installation of artificial nest boxes in the influence zone and catchment area of the project after consultation with the forest department as well as local NGOs. These nest boxes have been found to be quite beneficial for attracting hole nester birds. The size and capacity of boxes vary from one species to another. Provision for providing the same is given in Table-1.1 along with overall budget estimates.

**Features of a Nest Box:**

The characteristic features of nest box are listed below and shown in Figure-1.1.

- Untreated wood (Jamun, mango, pine, cedar or fir)
- Thick walls (at least ¾ inches)
- Extended, sloped roof
- Rough or grooved interior walls
- Recessed floor, coated with primer and paint
- Drainage holes
- Ventilation holes
- Easy access for monitoring and cleaning
- Sturdy construction
- No outside perches

The entrance hole should have a 2 inch diameter and 6 inch depth from entrance hole. Nest boxes are placed on trees at height from 10-12 ft. Such nest boxes designs have been used with success. The nest boxes shall be located in vicinity to reservoir and other water bodies in the study Area.



**Figure 1.1: Nest Box**

It is proposed that one qualified person be hired for a period of five years.

### Other Measures

With the change in nature of landscape, its aquatic and terrestrial vegetation will change the habits of the aquatic birds. The aquatic culture i.e. both floral and faunal environments will change to the large extent e.g. in the initial years of the reservoir water storage. The other measures recommended for improvement of habitats are:

- Fodder and wild fruit plantation for wild animals and for roosting, breeding and hiding cover for migratory birds etc.
- Annual bird count of migratory birds by involving locals and bird experts.
- Removal of weeds and rehabilitation with local fruit bearing species in gaps.
- Anti-grazing drive in draw down area to protect the bird breeding areas in proximity to reservoir during breeding season.
- Construction of watch towers

An amount of Rs. 106.2 lakh shall be earmarked for habitat improvement of avi-fauna in the study area. The details are given in Table-1.1.

**Table-1.1: Cost of habitat improvement for avi-fauna in the Study Area**

S. No.	Particulars	Amount (Rs. lakh)
<b>A</b>	<b>Non-recurring Cost</b>	
1	Cost of nests of different sizes (10"x10" to 20"x20"; average cost Rs. 1500 per wooden box) and installation in the area along the green belt (1000 Nos)	15
2	Repair and maintenance of the nests	4.5
3	Fodder and wild fruit plantation for wild animals and for roosting, breeding and hiding cover for migratory birds etc.	15
4	Annual bird count of migratory birds by involving locals and bird experts.	10.0
5	Removal of weeds and rehabilitation with local fruit bearing species in gaps.	20
6	Anti-grazing drive in draw down area to protect the bird breeding areas in	10
7	Construction of watch towers	10.0
	<b>Sub-Total (A)</b>	<b>84.5</b>
<b>B</b>	<b>Recurring Cost (for 4 years)</b>	
1	Salary for one qualified person @ Rs. 30,000 per month for implementation and data collection including 10% escalation	16.7
2	Contingencies (including avifaunal biodiversity awareness programme for the local inhabitants)	5.0
	<b>Sub-Total (A)</b>	<b>21.7</b>
	<b>Total (A+B)</b>	<b>106.2</b>

### 1.1 Awareness for Use of Non-Conventional Energy Sources

Awareness initiatives to promote use of non-conventional energy devices like Solar Cookers, Solar water heaters, Solar lamps, LPG, Bio Gas Plants etc. will be conducted in the villages to reduce the requirement of fuel-wood and minimize over dependency of villagers on wood.

To promote the use of such devices an allocation of Rs. 30.0 lakh is proposed for installation of solar powered equipments. A total amount of Rs. 43.2 lakh shall be earmarked for this activity. The details are given in Table-1,2.

**Table-1.2: Budget earmarked for creation of awareness for use of non-conventional Energy sources**

S. No.	Particulars	Qty	Rate (Rs. lakh)	Amount (Rs. lakh)
1	Awareness Programmes – 4 nos. per year for 4 years	16	0.2	3.2
2	Installation of solar powered equipment	Lump sum		30.0
3	Recognition and Rewards	100	0.1	10.0
	<b>Total</b>			<b>43.2</b>

### 1.2 Anti-poaching Measures

Hunting and poaching is a possibility due to the presence of construction workers. The possibility of hunting and trapping by workers during construction period will be site-specific and will decrease once the work is completed. The overall magnitude of impact is considered to be low, extent is site specific and duration is short period.

**Awareness Raising Programs:** With the construction of the access roads, the accessibility of humans to the LKHEP project area will increase, which may increase the risk of poaching. Raising awareness will be an important means to mitigate this risk. Awareness will be raised among workers and contractors regarding illegal poaching and copies of the Indian Wildlife Act, Biodiversity Act, Prevention of Cruelty to Animals Act (1986), other relevant Rules and Regulations as well as Biodiversity Mitigation and Monitoring tables (see section 2.4 and 2.5) will be made available in the local language. Copies will be made available at the project site and forest ranger stations of the vicinity. Workers must be made aware of the fines and penalties for poaching, as well as the risk of job loss, if caught in these illegal activities. This will be done during the pre-construction phase, but after the Contractor has been selected and continue intermittently through the construction phase.

**Strengthen Patrolling:** To minimize the risks of poaching, awareness raising programs will be combined with an increase in patrolling by local forest rangers (in coordination with forest department) and construction of check posts and watch towers at key locations. The choices of location of check posts and watch towers will be guided by consultations with forest rangers in the area. To support enhanced patrolling, the project will provide assistance through purchase of equipment such as GPS, binoculars cameras, bikes, camera traps, etc.

**Community Watch Program:** The project will also discuss possibilities for funding a community watch program, through hire of village guards to alert forest rangers officials of any illegal activities in the worker camps or at project sites.

For the improvement of vigilance and measures to check poaching number of measures described below would be undertaken.

During construction phase in and around the main construction areas, i.e. the dam site, powerhouse site, etc. where construction workers congregate, some disturbance to the wildlife population may occur. The terrain is hilly & difficult, therefore, the wildlife protection force adequately equipped with watch towers, wildlife personnel and other necessary equipment be deployed to prevent poaching in the area. The measures proposed for wildlife protection are outlined in the following paragraphs.

**Purchase of anti-poaching kits:** To capture and translocate wild animals out of human habitations or agricultural lands, various trapping equipments pertaining to anti-poaching activities are needed. For this an amount of Rs. 20 lakh has been earmarked. The anti-poaching kits will include equipments for self defense of the staff as well.

**Infrastructure Development:** This includes anti-poaching huts, rock shelters development and residential quarters for forest guards. For effective monitoring, one

watch tower is also proposed to be established at an identified place having high pressure of biotic interference.

The basic amenities for the field staff shall be provided to enable them to do effective patrolling in the areas. For watch tower and accommodation an amount of Rs. 50 lakh has been earmarked.

**Purchase of Survey equipment and Vehicles:** In order to improve network and vigilance it is required to procure communication equipment like walkie talkie, IT infrastructure to document and develop a database, altimeters, G.P.S., spotoscope, binoculars, video as well as digital still cameras are essential. Purchase of field vehicle will help in increased vigilance.

For better communication and purchase of survey equipment an amount of Rs. 40 lakh has been earmarked.

**Construction of Check posts:** To improve vigilance for anti-poaching, better protection, enforcement for control grazing practices, control-grazing-cum-anti poaching check post shall be constructed. An amount of Rs.25 lakh has been earmarked for this purpose.

The details are given as below:

#### Salary

- Guards (6 nos.) @ Rs.8000 per month Rs. 5,76,000
  - One range officer @ Rs.20000 per month Rs. 2,40,000
  - Total cost for one year Rs. 8,16,000
- Cost for 4 years Rs. 37.86 lakh  
(Assuming 10% increase per year)

An amount of Rs. 172.86 lakh has been earmarked for implementation of various measures as a part of Wildlife Protection Plan. The details are given in Table-1.3.

**Table-1.3 : Measures for implementation of Wildlife Protection Plan**

S. No.	Particulars	Amount (Rs. lakh)
	<b>Non-recurring</b>	
1	Anti Poaching Kits	20.00
2	Infrastructure	50.00
3	Survey equipment & vehicle	40.00
4	Check posts	25.00
5	Salary for wildlife protection force	37.86
	<b>Total</b>	<b>172.86</b>

### 1.3 Training & Publicity Programmes

Under this programme, the following activities are proposed:

- Training shall be imparted to the school teachers in the project area for introduction of environmental education among the school children and exchange of knowledge on environment and ecology between the monastic and village schools.
  - Publishing of research documents, pamphlets, brochures, hoardings
  - Advertisement of hazardous effect of fire through press, sign boards and public meetings will form the important activities under this component.
- An amount of Rs. 10 lakh has been earmarked for this purpose.

### 1.4 BUDGET

A total provision of Rs. 352.26 lakh has been earmarked for biodiversity conservation. The details are given in Table-1.4.

**Table-1.4: Estimated cost of Biodiversity Conservation and Management Plan implementation**

S.No.	Particulars	Cost (Rs. Lakhs)
<b>(A)</b>	Biodiversity Conservation & Management Plan	
<b>1</b>	Afforestation	20.00
<b>2</b>	Habitat improvement for avi-fauna	106.20
<b>3</b>	Use of Non-Conventional Energy Sources	43.20
<b>4</b>	Forest & Wildlife protection	172.86
<b>5</b>	Training & publicity	10.00
	<b>Sub-total (A)</b>	<b>352.26</b>

Annexure 16 : Office order for the formation of the 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.

  
Project Director (PMU)

APGCL

Dated: 12.10.2022

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



**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 Divison	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.

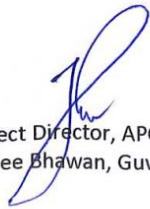
A brief presentation was given on this aspect by PMC and APGCL covering all the measures to be taken and highlighted the prioritization of the action as per the need in a phase manner. APGCL emphasised that both the measures and recommendations of MoEF&CC and ADB to be considered during implementation 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 moths 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 18 : Project Layout

