Government of India
Ministry of Environment, Forest and Climate Change
IA Division
(River Valley and Hydroelectric Projects)
***

Minutes of 19TH MEETING OF EXPERT APPRAISAL COMMITTEE meeting River Valley and Hydroelectric Projects held from 30/11/2024 to 30/11/2024

Date: 10/12/2024

MoM ID: EC/MOM/EAC/767599/11/2024

Agenda ID: EC/AGENDA/EAC/767599/11/2024

Meeting Venue: N/A

Meeting Mode: Virtual

Date & Time:

30/11/2024	10:30 AM	05:30 PM

1. Opening remarks

The 19th meeting (Virtual mode) of the EAC for River Valley & Hydroelectric Projects organized by the Ministry of Environment, Forest and Climate Change, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi, was held on 30.11.2024 under the Chairmanship of Prof. G. J. Chakrapani.

2. Confirmation of the minutes of previous meeting

N/A

3. Details of proposals considered by the committee

Day 1 -30/11/2024

3.1. Agenda Item No 1:

3.1.1. Details of the proposal

Myntdu Leshka Hydro Electric Project Stage-II (3X70)MW by **MEGHALAYA POWER GENERATION CORPORATION LIMITED** located at **WEST JAINTIA HILLS,MEGHALAYA**			
Proposal For		Fresh EC	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/ML/RIV/499490/2024	J-12011/13/2018-IA.I(R)	14/11/2024	River Valley/Irrigation projects (1(c))

3.1.2. Project Salient Features

19.1.1: The proposal is for grant of Environmental Clearance (EC) to the project for Myntdu Leshka Hydro Electric Project Stage-II (3X70) MW in an area of 85.229 Ha located at Village Bataw, Amtra, Satpator, Kharkhana and Tarangblang, Sub-district Khliehriat and Amlarem, District East Jaintia Hills and West Jaintia Hills, Meghalaya by M/s Meghalaya Power Generation Corporation Limited.

19.1.2: The Project Proponent and the accredited Consultant R. S. Envirolinks Technologies Pvt. Ltd., made a detailed presentation on the salient features of the project and informed that:

i. The Myntdu Leshka HEP Stage-II located in East Jaintia Hills District and West Jaintia Hills District of Meghalaya State is planned as a Run-of-the-river for hydropower development of the river Myntdu.

ii. The diversion site is located at Latitude 25◦13'17.45" N, Longitude 92◦13'35.96" E near Trangblang village at the right bank of Myntdu river in West Jaintia district and near Bataw village at the left bank of Myntdu river in East Jaintia district.

iii. The dam site is located at about 220 km from the nearest railhead at Guwahati in Assam and can be approached by NH-6 from Guwahati to Shillong followed by NH-40 from Shillong to Jowai, NH-40E from Jowai to Amlarem, State Road from Amlarem to Pdengshakap or Amtasam, Kutcha Road from Pdengshakap or Amtasam to Trangblang.

iv. The Terms of Reference of Myntdu Leshka HEP Stage-II (210 MW) project was accorded by Ministry of Environment, Forests & Climate Change (MoEF&CC), Government of India vide letter no. J-12011/13/2018-IA-I (R) dated 07.12.2018.

v. The project requires to divert 11.349 of forest area for non-forestry purposes i.e., for construction of various project components. Proposal for diversion of forest area is submitted on Parivesh portal vide Proposal No. FP/ML/HYD/IRRIG/406655/2022 dated 15/06/2023.

vi. The project scheme comprises a concrete gravity Dam that diverts the water into intake placed on the right bank of the river. The diverted water is planned to be passed through an underground water conductor system comprising the pressure shaft. A surface powerhouse is proposed on the right bank of the river. Tailwater from the powerhouse will be discharged back into the Myntdu river. The project would generate an annual energy generation of 605.64 MU in a 90% dependable year. The project envisages construction of:
    - A 46.0 m high concrete gravity dam across the River Myntdu to provide a Live Storage of 2.73 MCum with FRL at El. 270.0 m and MDDL at El. 254.50 m
    - A 6.175 km long and 6.0 m dia. headrace tunnel terminating in a surge shaft
    - A 69 m high, 21 m dia. surge shaft
    - A 835 m long, 4.8 m dia. pressure shaft
    - A Surface powerhouse having an installation of 3 Francis Turbine driven generating units of 70 MW each operating under a rated head of 228.38 m; and
    - The tail water level at an elevation of 13m to release water back to the river.

vii. The project envisages utilization of the available head between El. 270 m (FRL) and El. 13 m (TWL). The river water is proposed to be diverted by building a 46 m high concrete gravity dam on Myntdu River wherein the diverted water is planned to be passed through a 6.175 km long headrace tunnel of 6.0 m dia. terminating in a surge shaft. A surface powerhouse housing 3 Francis Turbines of 70 MW each with an operating rated head of 228.38 m is proposed on the right bank of the river. Tailwater from the powerhouse will be discharged back into the Myntdu river. The project would afford an annual energy generation of 605.64 MU in a 90% dependable year.

viii. **Land requirement**:

The proposed Myntdu Leshka HEP Stage-II Project is located in the East Jaintia Hills District and West Jaintia Hills District of Meghalaya. The project is a run-of-the-river scheme on Myntdu river comprised of a concrete gravity dam located near village Trangblang which diverts the water into intake placed on the right bank of the river. There is a total of 52 villages identified in the study area including five (05) Project Affected villages. Out of these total villages, 21 villages are in East Jaintia Hills district and the remaining 31 villages are in West Jaintia Hills district. Out of the five project-

affected villages, one affected village is falling in East Jaintia Hills district, while, the four affected villages are falling in West Jaintia Hills district.

The population of Scheduled Tribes (ST) is 94.12% whereas only 1.04% of the total population belongs to Scheduled Castes. The average household size in the study area is 5. About 23.52% of the total population is in the 0-6 year age group. The literacy rate in the study area is 59.11%, among males, it is 57.48% while among females is 60.76% creating a gender gap of (-) 3.28% in favor of women.

As per the Census 2011, about 43.50% of the population is engaged in different kinds of works. Of the total working population, 74.03% are Main Workers and the remaining 25.97% are Marginal Workers.

The majority of the working population (55.99%) is engaged in agricultural activities, out of which 35.34% are Cultivators and 20.65% are Agricultural Labours. An only a small percentage (0.67%) of the population is engaged as Household Industrial Workers and about 43.35% are in miscellaneous services. The gender gap in Cultivators is about 24.74% while the gap in population engaged as Agricultural Labours is 8.66%.

xii. **Project Cost**: The estimated project cost is Rs 3595.15 crore. Total capital cost earmarked towards Environment Management Plan/environmental pollution control measures is Rs. 21079 lakh and the Recurring cost (operation and maintenance) will be about Rs. 2909.16 lakh.

xiii. **Project Benefit**: Total Employment will be 2000 persons as direct & persons indirect after expansion. Industry proposes to allocate Rs. 1506.20 Lakh towards CER (as per Ministry's OM dated 30th Sep 2020).

xiv. **Environmental Sensitive area:** Narpuh Wildlife Sanctuary in East Jaintia Hills is the nearest Protected Areas in the vicinity of the proposed MLHEP Stage-II. As per the letter of the Principal Chief Conservator of Forests (Biodiversity & Wildlife) & Chief Wildlife Warden, Meghalaya, the proposed MLHEP Stage-II is outside the Eco-sensitive zone and also more than 10 kms (18.4 kms) from the boundary of Narpuh Wildlife Sanctuary.

xvi. **Resettlement and rehabilitation:** Total 5 villages shall be affected due to acquisition of land for various components of proposed project. Total 122 project affected families have been identified; all these 122 families will be losing land only. Further, all the land from Surge Shaft upto Power House Switch Yard, including proposed roads, are agricultural land where the main crops are Betel nut, betel leaf, broomstick, orange trees, etc. All these assets will have to be compensated for as well. The actual rate for crops will be assessed by the Agriculture and Horticulture Department, once commencement of works for the Project has started. A budgetary provision of Rs. 18614.32 lakh has been kept towards implementation of R&R plan and economic development. *Actual cost of land as per market value and assets will be assessed by Districts Deputy Commissioners and Districts Horticulture Officers during acquiring process.*

xvii. **Scheduled – I species**: As per Wildlife Protection Amendment Act, 2022, Indian Grey Mongoose, Golden Jackal, Wild dog, Jungle cat, Small Indian Civet, Barking Deer, Porcupine, Forest Wagtail , Red breasted parakeet, Spotted Owlet, Brown wood owl , Rat snake, Monocled cobra is listed as Schedule I species.

xviii. **Alternative Studies:** Three alternative dam sites were chosen on the basis of the site-specific topographical conditions. The proposed dam site is fixed at the location chosen as per the original proposal given by CWC. Three Alternative alignments have been examined, Alternative I and Alternative II taking different alignment of HRT with different intake location. Alternative III is as per GSI recommendation with different HRT alignment but with same intake location as in Alternative II. Two alternative sites for surge shaft have been identified. The location SS1 is as per the original location selected by CWC. SS2 is about 330 m downward from the original location and the penstocks alignment have been realigned accordingly. Three locations of the Power House sites have been examined, PP1 is as per the original location recommended by CWC and the location of PP2 has been shifted uphill by 20 m from PP1 and nearby P3.

xix. Baseline Environmental Scenario:

Period	**From March 2020 To May 2024**

AAQ parameters at 06 locations (min. & Max.)

Unit in µg/m^3

Core	Min	Max	Standards
$PM_{2.5}$	7.8	16.5	60
PM_{10}	16.7	28.6	100
SO_2	3.1	4.6	80
NO_2	4.5	6.8	80
Buffer	**Min**	**Max**	
$PM_{2.5}$	1.9	17.3	60
PM_{10}	0.7	29.0	100
SO_2	0.7	5.3	80
NO_2	0.6	7.2	80

Incremental GLC Level

Criteria Pollutant [PM_{10}, $PM_{2.5}$, SO_2, NO_x, Other parameters specific to the sector (Please specify)]	Unit [µg/m^3]	Baseline Concentration [A]	Predicted incremental value considering worst case stability class [B]	Total GLC [A]+[B]
PM10	µg/m^3	23.0	20	43.0
PM2.5	µg/m^3	58.4	10	68.4
SOx	µg/m^3	7.4	4	11.4
NOx	µg/m^3	10.3	5	15.3

River water samples (06 samples)

	Core Zone			
S. No	**Parameters**	**Min**	**Max**	**Standards**
1	pH	4.4	5.3	8.5
2	Total Dissolved Solids, mg/L	31.2	110.5	500
3	Dissolved Oxygen (mg/l)	7.1	9	6
4	Chloride (as Cl), mg/L	18.6	27.1	250
5	Total Hardness (as CaCO3), mg/L	61.1	81.52	300
6	Biological Oxygen Demand (mg/l)	1.93	2.5	0
7	Chemical Oxygen Demand (mg/l)	6.6	8.8	0
8	Total Coliform (MPN/100 ml)	21	36	50

Buffer Zone

S. No	**Parameters**	**Min**	**Max**	**Standards**
1	pH	4.2	5.1	8.5
2	Total Dissolved Solids, mg/L	26	8.5	500
3	Dissolved Oxygen (mg/l)	6.9	8.2	6
4	Chloride (as Cl), mg/L	14.95	26.6	250
5	Total Hardness (as CaCO3), mg/L	62.54	81.33	300
6	Biological Oxygen Demand (mg/l)	2	2.49	0

7	Chemical Oxygen Demand (mg/l)	2.46	8.2	0
8	Total Coliform (MPN/100 ml)	22	80	50

Pond water samples

-

Groundwater water samples quality at 0 location

-

Noise levels Leq (Day & Night) at 06 locations

Noise Level	Zone	Leq Day d B(A)		Leq Night d B(A)		Prescribed Limits	
		From	To	From	To	Day	Night
Core	Residential	47.3	53.8	35.32	40.5	55	45
Buffer	Commercial	48.3	58.5	36.32	44.2	65	55

Soil Quality at 6 Locations

Core Zone

S. No.	Parameters	Min	Max	Prescribed Limits
1	Calcium (mg/kg)	740	1520	500
2	Sodium Absorption Ratio	034	0.39	10
3	Phosphorus (kg/ha)	6.9	28.7	50
4	Carbon (%)	0.45	0.71	1
5	Salinity (ppt)	0	0	0.01
6	Magnesium (mg/kg)	440	1034	500
7	Nitrogen (kg/ha)	223	267	500
8	Potassium (kg/ha)	190	315	500
Buffer Zone				
1	Calcium (mg/kg)	890	1320	500
2	Sodium Absorption Ratio	0.24	0.41	10
3	Phosphorus (kg/ha)	7.6	26.7	50
4	Carbon (%)	0.55	1.24	1
5	Salinity (ppt)	0	0	0.01
6	Magnesium (mg/kg)	629	990	500
7	Nitrogen (kg/ha)	160	225	500
8	Potassium (kg/ha)	225	410	500

Flora & Fauna

Schedule-I species observed in the study area:
As per Wildlife Protection Amendment Act, 2022, Indian Grey Mongoose, Golden Jackal, Wild dog, Jungle cat, Small Indian Civet, Barking Deer, Porcupine, Forest Wagtail , Red breasted parakeet, Spotted Owlet, Brown wood owl , Rat snake, Monocled cobr is listed as Schedule I species.

- The solid waste will be transported for disposal at the designated landfill sites. The landfill shall have impervious clay at the bottom-most layers. The second layer shall be impervious liner (Geomembrane), the third layer will be of sand, after that well-compacted solid waste is to be put over the sand, then again, a layer of clay, finally a layer of soil. Vegetation shall be grown on the topmost layers. It will give a good aesthetic view of the landfill**.**
- Two muck disposal yards has been identified with a total area of 4.40 ha (site 1: 1.00 ha and site 2:

3.40 ha) and capacity has been worked as 4,07,228 cum which is more than the total quantity of muck to be disposed of.

- The muck dumping yards identified for disposal and rehabilitation is planned on the banks of the nearest drainage and away from river HFL.

Suggestions/ Comments Given by Stakeholders in East Jaintia Hills District

Issues/Comments/Observations	Reply by the User Agency
Sh. Deihok Sumer, Secretary Shnong, Batwa 1. Road construction to connect the vill ages. 2. Office in the village. 3. Construction of stadium 4. Electricity to the village 5. Special electricity allotment to BPL families. 6. Sub station in the village to supply e lectricity to all the surrounding vill ages 7. Employment to the local villagers an d not through tendering system. E mployment especially to the daily waged villagers residing at the pro posed compensated site of the prop osed project. 8. Compensation of land and all the ec onomical businesses before the pro ject starts.	1. Roads have been explored for connectivity between project affected villages in the DPR and schemes will be availed for the same. There is also a budge tary support towards cost of enabling infrastructur e i.e. roads/ bridges regarding vide No. 15/2/2016-H,I(Pt)(26064/0), Govt. of India Ministry of Powe r, Shram Shakti Bhawan, New Delhi dated the 15th February, 2023. 2. There will be an office related to dam construction and appurtenance works and is earmarked on left bank. 3. Bataw is a project affected village and would be inc luded in the Local Area Development Plan. 4. Bataw is a project affected village and would be inc luded in the Local Area Development Plan. 5. Any decision in this matter is at the discretion of Di stribution Company. 6. Any decision in this matter is at the discretion of Di stribution Company. 7. Employment will be given as per “The Right to Fair Compensation and Transparency in Land Acquisit ion, Rehabilitation and Resettlement Act, 2013 (R FCT_LARR)” and “Meghalaya Right to Fair Com pensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Rules, 2017”. 8. As per the laws of land acquisition and rehabilitatio n plan, no construction will commence until comp ensation is completed. Compensation and employ ment will be made as per “The Right to Fair Comp ensation and Transparency in Land Acquisition, R ehabilitation and Resettlement Act, 2013 (RFCT_ LARR)” and “Meghalaya Right to Fair Compensa tion and Transparency in Land Acquisition, Rehab ilitation and Resettlement Rules, 2017”.
Sh. Johmiki Arshnong, President (Bor ghat & Matkok Association) 1. Less flow of river water leading to d rought 2. Flood may happen on monsoon and on water discharge. The downstrea m bridge may be destroyed due to t he water discharge. 3. Breaking of Dam. Dust emission dur	1. Provision for following optimum environmental flo w releases has been kept as 30% during monsoon p eriod, 25% during non-monsoon & non-lean perio d and 20% during lean period of the 90% dependa ble year. In case the water is insufficient, water fro m the dam can be released on request from the vill agers hosting the festivals. Moreover, downstream areas of the river are mostly pondage formation wit h release of environmental flow and its tributaries downstream of Dam will suffice the requirement.

Issues/Comments/Observations	Reply by the User Agency
ing construction and etc. To protect the villagers from disasters. 4. Inclusion of Borghat & Natbor in the DPR as catchment areas. 5. To maintain river transportation. 6. Retaining wall to defend flood on vil lages and agricultural lands. 7. To cleanse the river.	2. Dam will reduce risk of flooding downstream by rel easing water in controlled amounts as Dam are wat er retaining structure. 3. Dam Break studies have been conducted and Emerg ency Action Plans are in place. Besides, as per Da m Safety Act, 2021 many safety measures are in pl ace such as Comprehensive Dam Safety Evaluatio n in 5 years, Rick assessment studies under EAP b esides many other safety measures to be taken up. 4. Borghat and Natbor villages fall within study area of the project and may be included in the Local Area Development Plan. 5. Measures like approach roads, channelizing, dredgin g etc. may be explored through CER and during co nstruction of Power House station and its appurten ant works. 6. River training works and stream stabilization measur es can be taken up during construction period. 7. A lumpsum budget of Rs. 60 lakh per annum has be en proposed for the mitigation measures for contro l of air, noise and water pollution during project co nstruction phase. During operation phase no polluti on is envisaged and dam will help control silt depo sit as dead storage.
Sh. Deimonmi Bareh, Executive Mem ber, Kharkhana Village The Kharkhana village is not against th e proposed project but regarding its pr oblems since the village is near Myntd u river of Leshka project Stage-I, durin g monsoon, flood caused damage to th e agricultural lands and also houses. T hey feared that the proposed project w ould bring two folded damage. Howev er, has proposed solutions as follows: 1. The power house to be shifted to a f urther area from the village. In doi ng so, has proposed Kharkhana vill age as model village, construction of a secondary school, stadium, foo tpath to the fields, construct hangin g bridge. 2. To sustain the economic boat activiti es on the river catering to the daily needs of the downstream villages. 3. To provide street lights and most im portantly health services.	1. As per geological investigations, a number of alterna tive sites have been identified. Hence after, the mos t suitable location has been chosen. Shifting of the site is not feasible as the site has been studied with the CEA and necessary approval obtained. 2. Kharkhana is a project affected village. Besides the p ower station and its appurtenant works will be locat ed here. Hence, development projects will be provi ded through Local Area Development Plan.

Issues/Comments/Observations	Reply by the User Agency
Sh. Frances Sytri, Kwator Village Kwator village is not against the projec t but brings the problem of the village t o notice. The village is left excluded fr om the DPR and Disaster Management Plan. The village is 0 kms away from Stage-II. Hence requested the MeECL to include the village in DPR and Disa ster Management Plan as per the MOU submitted.	Inclusion of Kwator in Disaster Management Plan will be re-examined.
Sh. Eshrom Mynthlu, Secretary, Elaka Lakadong 1. Villages on the bank will lose their li velihood from sand mining, fishing etc. 2. River bank festivals will be affected. 3. He questioned the government as to why these villages were not includ ed in the survey. 4. He informed that if they are not incl uded in the survey for Disaster Ma nagement Plan they will protest ag ainst the proposed project.	1. Silt will be flushed out periodically from the dam w hich would help sand mining. The Myntdu river is acidic and whatever fish found are migratory fish f rom Bangladesh in the summer season when pH is diluted. 2. Provision for following optimum environmental flo w releases has been kept as 30% during monsoon p eriod, 25% during non-monsoon & non-lean period and 20% during lean period of the 90% dependable year. In case the water is insufficient, water from t he dam can be released on request from the village rs hosting the festivals. Moreover, downstream are as of the river are mostly pondage formation with r elease of environmental flow and its tributaries do wnstream of Dam will suffice the requirement. 3. Borghat and Natbor villages of Elaka Lakadong hav e been identified in the inundation map of the Dam Break studies. Other adjoining villages to the proje ct will be re-examined.
Sh. Karly Mynthlu, Waheh Chong (De mlakang) 1. Drought is the main problem on the hills but on the river banks the soil is fertile and suitable for plantatio n. If drought struck the riverbank a s well then this will be a major pro blem as it is the source of livelihoo d. 2. The government to include Demlaka ng in the profitable schemes and to include them in the DMP.	1. Provision for following optimum environmental flo w releases has been kept as 30% during monsoon p eriod, 25% during non-monsoon & non-lean period and 20% during lean period of the 90% dependable year. In case the water is insufficient, water from t he dam can be released on request from the village rs. Moreover, downstream areas of the river are mo stly pondage formation with release of environmen tal flow and its tributaries downstream of Dam will suffice the requirement. 2. Demlakang village may be re-examined as affected village in Dam Break analysis and drought protecti on measures may be proposed through Local Area Development Plan.
Sh. Phermon Suchen, President, Borgh at – Jalaikhola Aquatic Association	The pH of the water of Myntdu river is highly acidic h ence is devoid of any kind of fish species. The same w

Issues/Comments/Observations	Reply by the User Agency
Jaliakhola Aquatic Association is conc erned with the environment of 10 villa ges (5 from East and 5 from West Jaint ia Hills District). That, as of date, there as still fishes in the river. But the river s will be small because of the proposed project and eventually there will be no more fish. Many of the villagers livelih ood are from fishery. They neither sup port nor protests against the project but request the government to sustain fishe ry.	as certified by the Fisheries Department in their Letter No. JHD/PISC/34/2009-10/315 dated 16/08/2018. Ho wever, in summer when the pH values rise and are dilu ted, migratory fishes can be found. Propose inclusion o f Fisheries development activities to enrich the migrato ry fish populations as well as those present in the tribut aries, with normal values of pH.
Sh. Lamdibok Sumer, Sanshong, Lesh ka Stage-II, Demand for afforestation on the barren hills of the village.	Afforestation of 741.50 ha of identified barren land fal ling within the catchment area of the dam will be carri ed out. In addition, as per Forest Conservation Act, Co mpensatory Afforestation of 11.349 ha will be carried out at Nongumiang village, Maweit, West Khasi Hill District, as per the instructions of the State Forest Dep artment.
• Construction of a new school buildin g for the Primary students in the v illage of Amtra in place of the old run down building. Community h all building for the community to hold gatherings and Dorbar meeti ngs. • To re-survey all along the site where t unnel will be located by the conce rned MeECL office along the with the representatives from the three villages as there is a threat of dest ruction to the water supply which is near Amtra.	• Amtra is a project affected village and construction of school building, community hall and upgradation of football ground may be considered in the local area development plan. • As per geological investigations, a number of alternat ive sites have been identified. Hence after, the mo st suitable location has been chosen. Shifting of th e site is not feasible as the site has been studied wi th the CEA and necessary approval obtained.

Suggestions/ Comments Given by Stakeholders in West Jaintia Hills District

Issues/Comments/Observations	Reply by the User Agency
Sh. Ridashisha Pohduyeng, Trangblang Waheh S hnong Trangblang village supports the proposed project as long as the village's MOU with the MeECL ar e unanimity of which is handed to the Chairperso n.	Representations from affected parties have been received but no MOUs have been sign ed till date.

Issues/Comments/Observations	Reply by the User Agency
Sh. Special Shylla, Kharkhana Village 1. The Power House should be named after the village name. 2. Employment of the villagers, priority should be given to local people for skilled or unskilled workers. 3. To relocate the Power House which is located less than 250 m away from the village else all the villagers should be fully taken care of by the MeECL.	1. Decision to be taken by the Management prior to inauguration. 2. Local employment, especially to those from project affected families, will be prioritized, as per Government policies and "The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (RFCT_LARR)" and "Meghalaya Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Rules, 2017". 3. As per geological investigations, a number of alternative sites have been identified. Hence after, the most suitable location has been chosen. Shifting of the site is not feasible as the site has been studied with the CEA and necessary approval obtained.
Sh. Bilang Swer, Arshnong, Borghat & Association 1. The villagers informed that water pollution occurred at Stage-I in the form of oil and cement into the river flowing towards their village. The water from the river is being used for daily needs. 2. Air pollution from the previous project affected their cultivation, which is mainly betel nuts. 3. Also, the river dried out when the river was dammed which hampered the ferry transportation services. 4. The river also cause flood during monsoon season resulting in submergence of the houses in the village. 5. The sand in the sand bank and gravel bar which is being used by the village is being washed out when the currents are fast. 6. The villagers have urged the government and all the concerned authorities to look into the problems and to include the village in the DPR.	1. A lumpsum budget of Rs.60 lakh per annum has been proposed for the mitigation measures for control of air, noise and water pollution during project construction phase. During operation phase no pollution is envisaged. 2. Provision for environmental flow releases has been mandated by the Nation Green Tribunal in 2017 and subsequently made a clause to be compiled with in the Environmental Clearance appraisal process. Provision for following optimum environmental flow release has been kept as 30% during monsoon period, 25% during non-monsoon & non-lean period and 20% during lean period of the 90% dependable year. Measures like approach roads, channelizing, dredging, etc. may be explored through CER. 3. The presence of the dam will act as a flood barrier whereby water will be released in a controlled way. The Highest Flood Level was in the year 1995 before the construction of Myntdu Leshka Stage-I. 4. Water from dam will be released in a controlled manner. 5. Borghat and Natbor villages have been included in the Disaster Management Plan and may be included in the Local Area Development Plan for flood protection an

Issues/Comments/Observations	Reply by the User Agency
	d maintaining daily commute.
Sh. Dapoi-Wanmi Laloo, President MPUF Central Governing Body 1. To implement the reservation policy and Rooster System in this project. 2. Compensatory afforestation Plan should be carried out in East Jaintia Hills District and West Jaintia Hills District itself and not in West Khasi Hills District.	1. Govt. policies will be followed. 2. As per Forest Conservation Act, Compensatory Afforestation of 11.349 ha will be carried out at Nongumiang village, Maweit, West Khasi Hill District adjacent to Nongumiang Reserve Forest, as per the instructions of the State Forest Department. However, afforestation of 741.50 ha of identified barren land falling within the catchment area of the dam will be carried out.
Sh. Joinriwell Pyrtuh, 5-Shnong Leshka Stage-II Area Association 1. The villagers have urged the concerned authorities to clarify on the Local Area Development Scheme. 2. There should not be any displacement of the houses where the powerhouse is proposed to be constructed.	1. Local Area Development Plan has been clarified to the affected villages and households. 2. No displacement of families is envisaged in any components of the Project.
Sh. Bor Amrynsong, Paswadwar (Kur Amrynsong) Land compensation should be as per the demands made by the villagers since the land are being used by the villagers for agricultural activities to support their families.	Affected families will be compensated for the land as per the “The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (RFCT_LARR)” and “Meghalaya Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Rules, 2017”.
Sh. Firstborn Pamblang, Waheh Shnong Pasadwar 1. Pasadwar villagers informed that it was not recognized in the DPR of the MeECL and it was not considered as an affected village. 2. Those agricultural activities, beetle nut farming, can be heavily affected. 3. That, with the presence of the dam at Stage-I, the villages and houses are being heavily affected by the currents from the dam especially during monsoon seasons. 4. That the concerned authorities have mercy on the village as well and to consider their memorandums along with their MOUs.	Pasadwar falls within the study area of the project and may be considered for CER. The presence of the dam will act as flood barrier whereby water will be released in a controlled way.

Issues/Comments/Observations	Reply by the User Agency
Sh. Siling Tariang, Bataw The Bataw villagers had opposed the previous pr oject at Stage-I, but now that they had connected the villages with roads and compiled with the pre vious MOUs, they now support the proposed proj ect. The villagers have also urged the concerned auth orities to set up proper hospital in the area.	Bataw already has a Primary Health Centre. Budget provisions have been made for stren gthening existing facilities in the project are a, along with health extension activities.
Sh. Deihok Sumer, Secretary Shnong Bataw 1. Demanded the concerned authorities to place a sub station in the village. 2. MeECL to recruit local villagers to be part of t he Environmental Monitoring Cell through th e village headmen. 3. That the Loal Area Development Plan should b e expanded as they are directly affected by thi s project. Hence, the local headmen should al so be included in this Local Area Developme nt Plan committee. That the MeECL to work together with the local authorities to bring ab out success not only till the project constructi on is completed but to sustain the MOU agree ments in the coming years as well.	1. Consideration for sub station in the villag e, the matter will be taken with the Distri bution Company. 2. As a part of participatory planning, village level committee will be included in the monitoring cell to track progress of impl ementation of environmental manageme nt plan till the completion of the project. 3. Bataw is a project affected village and alre ady included in the Local Area Develop ment Plan.
Sh. Jelin Amtra, Kur Amtra, Kharkhana 1. Agricultural cultivation from their village is ve ry productive. 2. Has requested the corporation to carefully look into the demand of the affected areas especial ly with their lands and cultivations. 3. That they will lose the land completely to this proposed project which was savored for the f uture generation. However, are willing to giv e away land with consideration of the MOUs between the two parties. And if their demand s are not met, the clan will agitate, protest an d will not give away their land.	Affected families will be compensated for th e land as well as employment as per the “Th e Right to Fair Compensation and Transpare ncy in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (RFCT_LARR)” an d “Meghalaya Right to Fair Compensation a nd Transparency in Land Acquisition, Reha bilitation and Resettlement Rules, 2017”. Opportunities for capacity building and train ing programs will be offered to the locals in the Local Area Development Plan.

xxii. The salient features of the project are as under: -

1. **Project details:**

Name of the Proposal	Myntdu Leshka Hydroelectric Project Stage-II (210 MW)
Proposal No.	IA/ML/RIV/499490/2024
Location	The diversion site is located at Latitude 25˚13’17.45” N, L

(Including Coordinates)	ongitude 92°13’35.96” E near Trangblang village at the right bank of Myntdu river in West Jaintia district and near Bataw village at the left bank of Myntdu river in East Jaintia district. Powerhouse – Latitude - $25^0$9’36.47” N Longitude - $92^0$12’55.46” E
Company’s Name	M/s Meghalaya Power Generation Corporation Limited
CIN no. of Company/user agency	U40101ML2009SGC008392
Accredited Consultant and certificate no.	NABET/EIA/2225/RA 0274
Project location (Coordinates /River/ Reservoir)	Near Village: Trangblang & Bataw, Myntdu River
Inter- state issue involved	No
Proposed on River/ Reservoir	Myntdu River
Type of Hydro-electric project	Run-of-river
Seismic zone	V

2. **Category details:**

Category of the project	A
Capacity / Cultural command area (CCA)	210 MW
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	-

3. **ToR/EC Details:**

ToR Proposal No.	IA/ML/RIV/74781/2018
EAC meeting date	26.06.2018 & 27.09.2018
ToR Letter No.	J-12011/13/2018-IA-I (R)
ToR grant Date	07.12.2018
Cost of project	3595.15 Cr
Total area of Project	85.229 Ha
Height of Dam from River Bed (EL)	27.40 m (above riverbed level up to crest level)

	46.0 m (above riverbed level up to FRL)
Details of submergence area	0.14 Sq Km
District to provide irrigation facility (if applicable)	NA
Details of tunnels on upper level & lower level and length of canal (if applicable)	
No. of affected Village	5
No. of Affected Families	122
Project Benefits R&R details	**Power Generation**: Myntdu Leshka HEP Stage-II will help in harnessing the potential of river Myntdu for generating electricity to the tune of 605.64 MU annually and bring benefits of renewable energy to state of Meghalaya and country. Apart from power generation benefits, such a large-scale investment in the region will bring about several positive changes in the region and expected to improve the quality of life of local population. The project will help improve local infrastructure and employment generation for local during construction and operation phase. In addition, there will be secondary employment opportunities for locals in terms of catering to the daily need of migratory labour and floating population of transporters and material suppliers to the site. Budget will be proposed towards Local Area Development (LAD) fund, which will be used for the benefits of the locals in project affected villages. In addition, budget will be utilized for skill development aimed at providing employment and for meeting other local needs as required by the locals. On commissioning of projects, a part of profit will go towards CSR fund and such activities can continue bringing benefits to local population for their growth and development. Total 5 villages shall be affected due to acquisition of land for various components of proposed project. Total 122 project affected families have been identified; all these 122 families will be losing land only. Further, all the land from Surge Shaft upto Power House Switch Yard, including proposed roads, are agricultural land where the main crops are Betel nut, betel leaf, broomstick, orange trees, etc. All these assets will have to be compensated for as well. The actual rate for crops will be assessed by the Agriculture and Horticulture Department, once commencement of works for the Project has started. A budgetary provision of Rs. 18614.32 lakh has been kept towards implementation of R&R plan and economic development.

	Actual cost of land as per market value and assets will be assessed by Districts Deputy Commissioners and District s Horticulture Officers during acquiring process.
Catchment area/ Command area	Catchment Area: 480 sq km
Types of Waste and quantity of generati on during construction/Operation	Municipal Solid Waste- Bio degradable (1095.00 Tons), Non degradable (1095 Tons)
Material used for blasting and its compo sition as per DGMS standards.	Explosive is mainly required for open and underground r ock excavation. Explosive magazines of 360 MT capacity shall be provided at a suitable location selected at the site keeping sufficiently away from the human habitat.
E-Flows for the Project	Provision for following optimum environmental flow rele ases has been kept as 30% during monsoon period, 25% d uring non-monsoon & non-lean period and 20% during le an period of 90% dependable year.
Is Projects earlier studied in Cumulative Impact assessment & Carrying Capacity studies(CIA&CC) for River in which pr oject located. If yes then a) E-flow with TOR/Recommendation b y EAC as per CIA&CC study of Rive r Basin. b) If not the E-Flows maintain criteria f or sustaining river ecosystem.	No
Details on provision of fish pass	No
Project benefit including employment d etails (no of employee)	During the construction phase, there will be a need to eng age about 1700 labourers and 300 technical manpower du ring the peak working period. The majority of this labour force will be from the adjacent localities. Some other uns killed and skilled labourers will be brought from outside. These labourers will be settled near the construction site i n the labour camps set up by the project authorities throu gh their labour contractors.
Area of Compensatory Afforestation (C A) with tentative no of plantation.	11.349 ha; tentative no. of plantation - 12484

4. **Electricity generation capacity:**

Powerhouse Installed Capacity	210 MW
Generation of Electricity Annually	605.64 MU
No. of Units	3 nos. (2 X 70 MW)

5. **Muck Management Details:**

No. of proposed disposal area/ (type of land- Forest/Pvt land)	2
Cross section of proposed muck area, Height of muck with slope.	Attached as Appendix I
Distance of muck disposal area (location), from muck generation sources (project area)/River, HFL of proposed muck disposal area.	About 600 m more than 30 m from HFL.
Total Muck Disposal Area	4.40 ha
Estimate Muck to be generated	815130 Cum
Transportation	The generated muck will be carried in dumper trucks covered with heavy-duty tarpaulin properly tied to the vehicle in line with international best practices. All precautionary measures will be followed during the dumping of muck. Based upon the varying cycle time of 20T Rear Dumpers at different excavation sites and their distance from the disposal site appropriate pollution management will be devised. The Standard practices of pollution abatement and control will be enforced through the contractor.
Monitoring mechanism for Muck Disposal Transportation	The provisions of Monitoring have been kept under proposed Environmental Monitoring Plan.

6. **Land Area Breakup:**

Private land	73.88
Forest Land	11.349
Submergence area/Reservoir area	14.0
Land required for project components	71.229

7. **Presence of Environmentally Sensitive areas in the study area**

Forest Land/ Protected Area/ Environmental Sensitivity Zone	**Yes/No**	**Details of Certificate/ letter/Remarks**
Reserve Forest/Protected Forest Land	No	Narpuh Wildlife Sanctuary in East Jaintia Hills is the nearest Protected Areas in the vicinity of the proposed MLHEP Stage-II. As per the letter of the Principal Chief Conservator of Forests (Biodiversity & Wildlife) & Chief Wildlife Warden, Meghalaya, the prop
National Park	No	
Wildlife Sanctuary	No	

		osed MLHEP Stage-II is outside the Eco-sensitive zone and also more than 10 kms (18.4 kms) fro m the boundary of Narpuh Wildl ife Sanctuary.
Archaeological sites monuments/histo rical temples etc	No	
Additional information (if any)	-	

8. **Availability of Schedule-I species in study area:** As per Wildlife Protection Amendment Act, 2022, Indian Grey Mongoose, Golden Jackal, Wild dog, Jungle cat, Small Indian Civet, Barking Deer, Porcupine, Forest Wagtail, Red breasted parakeet, Spotted Owlet, Brown wood owl, Rat snake, Monocled cobr is listed as Schedule I species.
9. **Public Hearing (PH) Details**

Advertisement for PH with date	"Shillong Times" and "Nongsain Hima" dated 06/04/ 2023 for East Jaintia Hills District and dated 11/04/2 023 for West Jaintia Hills District.
Date of PH	10.05.2023 (East Jaintia Hills) 12.05.2023 (West Jaintia Hills)
Venue	Lacheh Playground, Bataw Village (East Jaintia Hill s) Playground near Lower Primary School, Trangblang Village (West Jaintia Hills)
Chaired by	Additional Deputy Commissioner of East Jaintia Hil ls and West Jaintia Hills Districts
Main issues raised during PH	• The river also cause flood during monsoon season r esulting in submergence of the houses in the villag e. • The villagers informed that water pollution occurred at Stage-I in the form of oil and cement into the riv er flowing towards their village. The water from th e river is being used for daily needs. • Construction of stadium • Office in the village. • Electricity to the village • Road construction to connect the villages
No. of people attended	202 (East Jaintia Hills) 238 (West Jaintia Hills)

10. **Brief of base line Environment:**

Parameters	Summer/ Pre-Monsoon	Monsoon	Winter	Summer/ Pre-Monsoon
BY RSET Team				
Soil	March 2020	July-August 2020	November-December 2020	April-May 2024
Air Environment	March 2020	July-August 2020	November-December 2020	April-May 2024
Noise & Traffic	March 2020	July-August 2020	November-December 2020	April-May 2024
Water Quality	March 2020	July-August 2020	November-December 2020	April-May 2024
Vegetation	March 2020	July-August 2020	November-December 2020	April-May 2024
Faunal surveys	March 2020	July-August 2020	November-December 2020	April-May 2024
Socio-economic survey of Project affected and study area villages	August-December 2020			
By Meghalaya State Pollution Control Board				
Air Environment	August 2018			
Water Quality	August 2018			
Reconnaissance Soil Survey, District Local Research Station & Laboratories, West Jaintia Hills, Jowai, Department of Agriculture, Meghalaya				

Brief description on hydrology and water assessment as per the approved Pre-DPR:	The hydrological studies were carried out by MePGCL for the period 1982-2015 and subsequently submitted to CWC/CEA for approval. Accordingly, the Hydrology chapter of Myntdu Leshka HEP Stage-II has been approved by the CWC vide letter No. 2/MEG/CEA/99-PAC/481 dated 22.06.2017. In the study period of 11 years Average annual discharge varies from a minimum of 1609.49 cumec in the year 2013-14 to a maximum of 2810.98 cumec in the year 2010-2011. The average runoff during the period is 2290.90 MCM. The minimum monthly flow of 4.05 MCM was observed in Feb-2013 while the maximum monthly flow of 999.55 MCM was observed in June 2010. The average inflow during the lean period (Dec-Mar) is about 27.01 MCM which constitutes about 1.18% of the average annual inflow of 2290.90 MCM. The 90% and 50 % flow has been assesse

	d based on the hydrology study, the flow series of 90% dependab le year (2013-2014) has been considered in the studies.
Additional detail (If any)	

11. **Court case details: NIL**

12. **Status of other statutory clearances**

Particulars	**Letter no. and date**
Status of Stage- I FC	Under Process, Proposal for diversion of forest area is su bmitted on Parivesh portal vide Proposal No. FP/ML/H YD/IRRIG/406655/2022 dated 15/06/2023.
Approval of Central Water Commissio n	Hydrology chapter of Myntdu Leshka HEP Stage-II has been approved by the CWC vide letter No. 2/MEG/CE A/99-PAC/481 dated 22.06.2017
Approval of Central Electricity Author ity	9 chapters cleared by CWC and 5 Chapters is expected to obtain clearance by December 2024.DPR will be submitte d by 2024 and Techno-Economic Clearance expected by March 2025.
Additional detail (If any)	
Is FRA (2006) done for FC-I	

13. **Details of the EMP**

S. No.	**Component of EMP**	**Capital Cost (Rs. in lakh)**	**Recurring Cost (Rs. in lakh)**					
			Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
1	Catchment Area Treatment Plan	1426.46	0.00	0.00	0.00	0.00	0.00	0.00

2	Compensatory Afforestation*	457.29	0.00	0.00	0.00	0.00	0.00	0.00
3	Biodiversity and Wildlife Conservation & Management Plan	197.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Green Belt Development Plan	0.00	0.00	0.00	0.00	16.00	16.00	15.50
5	Muck Dumping and Management Plan	0.00	40.00	40.00	40.00	40.00	39.24	0.00
6	Landscaping, Restoration of Quarry and Construction Sites	0.00	50.00	50.00	34.26	34.26	38.00	0.00
7	Disaster Management Plan	135.00	4.00	4.00	4.00	4.00	4.00	4.00
8	Public Health Delivery System	50.00	20.35	20.33	20.33	20.33	20.33	20.33
9	Labour Management Plan	40.00	9.00	9.00	9.00	9.00	9.00	4.00
10	Sanitation and Solid Waste Management Plan	120.00	14.70	14.70	14.70	14.70	14.70	14.70

11	Energy Conservation Measures	39.00	24.00	24.00	24.00	24.00	24.00	24.00
12	Control of Air, Noise and Water Pollution	0.00	60.00	60.00	60.00	60.00	60.00	60.00
12	Environmental Monitoring Program	0.00	27.1	27.08	27.08	27.08	27.08	27.08
13	Rehabilitation and Resettlement Plan**	18614.32	0.00	0.00	0.00	0.00	0.00	0.00
14	Local Area Development Plan	0.00	376.55	376.55	376.55	376.55	0.00	0.00
Total		**21079.07**	**625.7**	**625.66**	**609.92**	**625.92**	**252.35**	**169.61**

* The actual cost will be as determined/assessed under the Forest Diversion proposal.
** Actual rate for land and asset will be assessed by the respective Districts Deputy Commissioners and District Horticulture officers, during acquiring process

3.1.3. Deliberations by the committee in previous meetings

N/A

3.1.4. Deliberations by the EAC in current meetings

19.1.3 The EAC during deliberations noted the following:

The EAC deliberated on the information submitted and presented during the meeting, observing that the proposal is for the grant of Environmental Clearance (EC) to the project for Myntdu Leshka Hydro Electric Project Stage-II (3X70) MW in an area of 85.229 Ha located at Village Bataw, Amtra, Satpator, Kharkhana and Tarangblang, Sub-district Khliehriat and Amlarem, District East Jaintia Hills and West Jaintia Hills, Meghalaya by M/s Meghalaya Power Generation Corporation Limited.

The project is listed under S.N.1(c) of the Schedule to the Environmental Impact Assessment (EIA) Notification as a Category 'A' project, which requires appraisal at the Central level by the Expert Appraisal Committee (EAC).

The EAC, constituted under the provisions of the EIA Notification, 2006, and comprising expert members/domain experts in various fields, examined the proposal submitted by the Project Proponent, including the EIA/EMP reports prepared and submitted by the Consultant accredited by QCI/NABET on behalf of the Project Proponent.

The EAC observed that the initial baseline data for the EIA/EMP studies was collected in March 2020, July-August 2020 and November-December 2020 with an additional season of data collected in April-May 2024 in accordance with the stipulated norms for the proposed project.

The EAC raised concerns about the acidic water quality of the region, which persists even during the rainy season, affecting aquatic life. Despite these harsh conditions, the migration of Hilsa fish occurs during the monsoon, a critical ecological process. The construction of the proposed dam could obstruct the migration of fishes, disrupting their spawning cycle and leading to population declines. Acidic water also poses risks by bioaccumulating toxic metals, further impacting aquatic health. The EAC noted that the Terms of Reference (ToRs) were issued by the Ministry via letter No. J-12011/13/2018-IA-I (R) dated 07.12.2018 with additional TOR to give special mention in the EIA/EMP report to study the aspect related to impacts of acidic nature of water in rivulets draining the coal mine area and measures to be taken for its treatment at source. It has been informed in the EIA/EMP that in order to find a solution to the problem of acidity, Meghalaya Basin Development Authority (MBDA) and Integrated Natural Resource Management (INRM) under 'The Meghalaya Livelihoods and Access to Markets Project (Megha-LAMP)', the state-wide project of the Government of Meghalaya supported by IFAD (International Fund for Agricultural Development) has undertaken a study to improve the water quality of Moolawar stream in Mukhaialong village, East Jaintia Hills District, Meghalaya. Under the study, as a pilot project, Open Limestone Channel (OLC) using locally available limestone rocks were used to reduce the acidity of stream water. The OLC was found cost effective and technically feasible in rural area to raise pH of stream water near to neutral, improve aquatic habitat and restore many aquatic flora and fauna in treated water. However, no concrete action plan for handling the situation has been submitted.

The EAC further noted that as per letter dated 30.10.2023 from Principal Chief Conservator of Forests (Biodiversity & Wildlife) & Chief Wildlife Warden, Meghalaya, the proposed MLHEP Stage-II is outside the Eco-sensitive zone and also more than 10 kms (18.4 kms) from the boundary of Narpuh Wildlife Sanctuary.

The total land required for the project is 85.229 Ha out of which 11.349 ha is a Forest Land and 73.88 ha is Non-forest Land. PP informed that Stage- I FC is under process and proposal for diversion of forest area is submitted on Parivesh portal vide Proposal No. FP/ML/HYD/IRRIG/406655/2022 dated 15/06/2023.

The EAC observed that Hydrology chapter of DPR for Myntdu Leshka HEP has been approved by the CWC vide letter No. 2/MEG/CEA/99-PAC/481 dated 22.06.2017. However, the ToR point regarding submission of *a copy of TEC of the DPR along with EIA/EMP report has not been complied with.* The PP in this regard informed that Techno-Economic Clearance expected by March 2025.

19.1.4 The EAC after detailed deliberations deferred the proposal for want of following information:

i. PP shall submit a copy of TEC of the DPR.

ii. PP shall submit detailed action plan on the source of acidity in water and to treat the acidic water in the rivulets along with plan to provide potable water to the community in nearby areas for drinking purposes. Adding lime may not solve the problem of large scale acidity of water. A detailed investigation on source and a comprehensive mitigation plan be devised.

iii. Incorporate all possible and potential impact of other projects in the basin to get a cumulative impact

assessment done.

iv. A study shall be conducted in consultation with CIFRI for Fish migratory pass with special focus on mapping of Hilsa migration habitat and the period with population/stock during the rainy season to protect these habitat zones.

v. PP shall prepare comparative chart of baseline data obtained in 2020 and 2024.

The proposal was ***deferred*** on the above lines.

3.1.5. Recommendation of EAC

Deferred for ADS

3.2. Agenda Item No 2:

3.2.1. Details of the proposal

CHENTIKHEDA MAJOR IRRIGATION PROJECT by **Dinesh kumar ratnakar** located at **SHEOPUR,MADHYA PRADESH**			
Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/MP/RIV/500241/2024	J-12011/28/2024-IA.I (R)	11/11/2024	River Valley/Irrigation projects (1(c))

3.2.2. Project Salient Features

The EAC noted that the Assistant Engineer who was the only personnel representing the PP was not able to explain the proposal before the EAC. The project documents as instructed in the agenda note were not provided by the PP to the EAC members to go through the proposal. The PP may take the EAC process seriously.

3.2.3. Deliberations by the committee in previous meetings

N/A

3.2.4. Deliberations by the EAC in current meetings

Therefore, EAC decided to ***defer*** the proposal.

3.2.5. Recommendation of EAC

Deferred for ADS

3.3. Agenda Item No 3:

3.3.1. Details of the proposal

HIDISING IRRIGATION PROJECT by **CHIEF ENGINEER PROJECT PLANNING FORMULATION AND I NVESTIGATION** located at **ANUGUL,ODISHA**			
Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/OR/RIV/492081/2024	J-12011/29/2024-IA.I (R)	11/11/2024	River Valley/Irrigation projects (1(c))

3.3.2. Project Salient Features

19.3.1 The proposal is for grant of Terms of References (ToR) to the project for Hidising Irrigation Project (CCA: 2958 ha) in an area of 386.91 Ha Village Kararasinga, Sub District Purunakot, District Anugul, Odisha by M/s Angul Investigation Division, Government of Odisha.

19.3.2: The Project Proponent and the accredited Consultant Centre for Envotech and Management Consultancy Private Limited, mad a detailed presentation on the salient features of the project and informed that:

i. Hidising Irrigation scheme is a medium irrigation project having a Dam and Reservoir proposed near village Karadasing in Angul block of Angul district. The geographical co-ordinate of the project are:

Latitude : 20^{o}43’00” N

Longitude : 84^{o}58’30” E

ii. **NEED OF THE PROJECT FOR THE REGION**:

- Near village Karadasing in Angul block of Angul district does not have any Irrigation Project till date. The Rainfed agriculture suffers from vagaries of monsoon with untimely & ill distributed rain fall.
- Due to frequent crop loss, the poverty level becomes predominant in the farming community. The State Govt. intends to implement the project to impart crop benefit, Drinking water supply and other development benefit to elevate the socio economic standards of the Region.

iii. The Canal system includes two main canal and minors / sub-minors to provide irrigation water supply to 2958 Ha. of CCA. (Command area).

iv. **Demographic details in 10 km radius of project area:**

Total number of villages & towns 63
Number of Households 8842
Total Population 38457
Total number of Males 19384
Total number of Females 19073
Male/ Female (Sex) ratio 1016.31
Percentage of S.C population 25.71
Percentage of S.T Population 11.04
Percentage of Literates 65.30

v. **Water requirement:**

Drinking water demand = 1.68 MCM annually

Irrigation requirement = 14.73 MCM annually
Industrial water demand = 0.96 MCM annually
Total = 17.37 MCM annually

vi. **Project Cost:** The estimated project cost is Rs. 332.26 crores. Total capital cost earmarked towards environmental pollution control measures is Rs.381.85 Lakhs and the Recurring cost (operation and

maintenance) will be about Rs.235.950 Lakhs with BC Ratio 1.83.

vii. **Project Benefit:** Total Employment will be 3300 persons during construction phase and 134 persons during operation phase.

viii. **Environmental Sensitive area**: There are Satkosia Wildlife Sanctuary (1.5 km).

ix. **Resettlement and rehabilitation:** The Ministry of Tribal Affairs (MoTA) has communicated for clearance of R&R plan vide Letter No. STSCD-TPR-PLAN2-0010-2019-10967/SSD Dated 24.06.2022.

x. **Scheduled–I species:**

*Melursus ursinus, Elephas maximus, Vulpes bengalensis, Python molurus, Varnus bengalensis, Gracula religiosa***.**

xi. **Alternative Studies:**

Bauli Nallah is a tributary of Lingara river in the Brahmani Basin. The proposed Dam site near village Karadasing is site specific and technically ideal. Due to suitability of location and other conceptual advantage, alternative sites have not been explored during the engineering survey and investigation.

xii. The salient features of the project are as follows"

1. **Project details:**

Name of the Proposal	Hidising Irrigation Project (CCA: 2958 ha)
Location (Including coordinates)	Village- Karadasinga, District- Angul, Odisha
Inter-state issue involved	NA
Seismic zone	II

2. **Category details:**

Category of the project	Category-A, as Satkosia wildlife sanctuary is loca ted at a distance of 1.5 km from the project site.
Provisions	Hidising irrigation project is contemplated across river Bauli Nallah. The Project is featured with co nstruction of one 933 m long earth Dam: 36 m lo ng concrete Spillway having 3 nos x10 m x 8 m o gee crest gates; two nos of Head regulators at eith er side of Dam to lead the reservoir water through two main canal systems (LMC & RMC) for cover ing a culturable command area (CCA) of 2958 h a. Provision for Drinking Water supply to 45000 po pulations belonging to needy villages in the com mand area.
Capacity/Cultural command area (CCA)	2958 ha
Attracts the General Conditions (Yes/No)	Yes. Satkosia wildlife sanctuary is located at a dis tance of 1.5 km from the project site.
Additional information (if any)	NA

3. **ToR/EC Details:**

Cost of project	Rs. 33226 Lakhs
Total area of Project	386.91 Ha
Height of Dam from River Bed (EL)	32.5 m
Length of Tunnel/Channel	36 m
Details of Submergence area	272.777 ha
Types of Waste and quantity of generation during c onstruction/ Operation	Spoils will be generated during construction o f dam and canals. Spoils from Base stripping, excavation of foundation etc. would account f or about 3000MT.
Is Projects earlier studies in Cumulative Impact ass essment & Carrying Capacity studies (CIA&CC) fo r River in which project located. If yes, then a) E-flow with TOR /Recommendation by EAC as per CIA&CC study of River Basin. b) If not the E-Flows maintain criteria for sustainin g river ecosystem.	30% in monsoon season, 20% in lean season a nd 25% in non-monsoon & non-lean season, t o be followed corresponding to flow of 90% d ependable year.

4. **Muck Management Details:**

No. of proposed disposal area/ (type of land-Fores t/Pvt. land)	Mostly, the wastes from excavation activities will be reutilized for land levelling & construct ion of embankment, approach road etc. The re maining less quantity of solid waste will be dis posed of at low lying area.
Muck Management Plan	• Precautionary measures such as covering of ve hicles will be taken to avoid spillage & dus t generation during transport of mucks. • To ensure that the spills, which might result fr om the transport of muck materials do not i mpact the environment, it will be ensured t hat the carrying of muck will be done durin g day time only. • Workers/labourers shall be provided with PP E. The use of PPE at all time during works will be ensured.
Monitoring mechanism for Muck Disposal	Muck disposal at designated place will be mon itored periodically by the project authority.

5. **Land Area Breakup:**

Private land	245.482 ha

Government land/Forest Land	53.908 ha/ 87.52 ha
Submergence area/Reservoir area	272.777 ha
Land required for project components	386.91 ha
Additional information (if any)	NA

6. **Presence of Environmentally Sensitive areas in the study area:**

Forest Land/Protected Area/ Environmental Sensitivity Zone	**Yes/No**	**Details of Certificate/ letter/ Remarks**
Reserve Forest/Protected Forest Land	Yes	Bhogapal RF-1.7 km Balanga RF-1.3 km Krishnachakra RF-0.7 km Madhapur RF-4.6 km
National Park	No	No National Park within 10 km radius of the project
Wildlife Sanctuary	Yes	Satkosia Wildlife Sanctuary (1.5 Km)

7. **Court case details: NIL**

8. Status of other statutory clearances:

Particulars	**Letter no. and date**
Certified EC compliance report (if applicable)	Not Applicable, Present proposal is Fresh
Status of Stage-I FC	Stage I approval for the diversion of 87.52 ha Forest land was submitted to MoE&FCC vide letter No. FE-DIV-FLD-0025-2024-11966/FE&CC, Date 05.07.2024
Additional detail (If any)	NA
Is FRA (2006) done for FC-I	No

9. Miscellaneous:

Particulars	**Details**
Details of consultant	M/s Centre for Envotech & Management Consultancy Pvt. Ltd. Certificate No. NABET/EIA/22-25/SA 0226, dated 29.08.2024 valid upto 03.03.2025
Project Benefits	The contemplated project benefits considered ar

	e • Enhanced crop produces from Pre–Irrigation Quantity 2768 M Ton to post- Irrigation Quantity 33752 M Ton measured with financial benefit of Rs 120.23 crores/Annum. • Drinking Water supply for 45000 populations. • Upstream Reservation of Water for Industries. • Employment Generation and socio-economic Benefits.
Status of other statutory clearances	Techno-Economic Clearances (TEC) has been Cleared (In-principle) by CWC vide Lr. No. M&A /AP-1/2012/13-15 on Dt.04.01.2013.
R&R details	161 families comprising of 63 no. SC families, 12 no. ST families and 86 no. General category families will be displaced / rehabilitated.
Additional detail (If any)	NA

3.3.3. Deliberations by the committee in previous meetings

N/A

3.3.4. Deliberations by the EAC in current meetings

19.3.3 The EAC during deliberations noted the following:

The EAC deliberated on the information submitted (Form 1, PFR, kml file, etc.) and as presented in the meeting and observed that the proposal is for grant of TOR for conducting EIA study for Hidising Irrigation Project (CCA: 2958 ha) in an area of 386.91 Ha Village Kararasinga, Sub District Purunakot, District Anugul, Odisha by M/s Angul Investigation Division, Government of Odisha.

The EAC noted that the present project proposal comes under "B2" category; hence, only EMP is required as per the provisions of the EIA Notification, 2006, as amended. However due to presence of Satkosia wildlife sanctuary at a distance of 1.5 km from the project boundary the project will be appraised at central level as Category 'A' project.

The total land requirement for the project is 386.91 Ha, out of which 87.52 ha is forest land, 245.482 ha is private land and 53.908 ha is a Private land. It was noted that the application for Stage-I Forest Clearance for the diversion of 87.52 ha Forest land was submitted to MoE&FCC vide letter No. FE-DIV-FLD-0025-2024-11966/FE&CC, Date 05.07.2024.

In view of the Satkosia wildlife sanctuary located at a distance of 1.5 km from the project boundary the EAC emphasis was on preparation of detailed wildlife conservation plan including a baseline assessment of biodiversity, habitat quality, and wildlife corridors, along with impact analysis of the project and mitigation measures, such as creation of green buffers, minimizing disturbances, and implementing biodiversity-friendly practices.

19.3.4 The EAC based on the information submitted and as presented during the meeting, **recommended** the proposal for grant of Standard ToR issued by the Ministry for conducting EIA/EMP and Public hearing for Hidising Irrigation Project (CCA: 2958 ha) in an area of 386.91 Ha Village Kararasinga, Sub District Purunakot, District Anugul, Odisha by M/s Angul Investigation Division, Government of Odisha, under the provisions of EIA Notification, 2006, as amended along with the following additional/specific ToR.

3.3.5. Recommendation of EAC

Recommended

3.3.6. Details of Terms of Reference

3.3.6.1. Specific

Environmental Management and Biodiversity Conservation:	
1.	The EAC subcommittee shall visit the site before consideration of EC proposal so as to stipulate more stringent environmental conditions
2.	PP shall obtain NBWL Clearance in view of Satkosia wildlife sanctuary located at a distance of 1.5 km from the project boundary
3.	Explore the possibilities for reducing the Forest land requirement
4.	Certificate and certified map from Chief Wildlife Warden shall be submitted mentioning that project boundary is not falling in any Ecological Sensitive Area, Wildlife Sanctuary/Tiger/elephant corridor/Critically polluted area within 10 km of Project site
5.	The water of rainfall yield of self-catchment of the reservoir shall be released to downstream through body of dam/ barrage/ embankment etc. Since this Bauli Nallah is one of the tributary of Mahanadhi river and provide connectivity for completing recruitment of fishes, especially Mahanadhi mahseer (*Tor mahanadhicus*), adequate e-flow provision should be maintained in the downstream of Bauli Nallah till it meets River Mahanadhi. This e-flow study should be based on the scientific study on the Mahaseer habitat protection
6.	As the Dam site falls in the transition zone between the upland and plain land, the detailed aquatic biodiversity and their period of migration needs to studied
7.	Prepare Wildlife conservation plan specifically for Tiger and co-predator with mitigation measures for minimizing the human–animal conflict and be suitably incorporated in the wildlife conservation plan in consultation with reputed government expert institute and State Forest Department
8.	Cumulative Impact of project on carrying capacity and sustainability of Reservoir/ nallahs of catchment area / due to lifting of water from river
9.	Prepare Environmental Cost Benefit Analysis in terms of ecological damage due to diversion of Forest land/ loss of biodiversity and its impacts on ecosystem, water availability, water uses for generation of hydro power in study area 10 km from periphery of Project components
10.	A study shall be carried out on impact of project activity on the aquatic and terrestrial ecosystem, within project area classifying the impact zones (highly impact/low impact zone) based on seasonal variations and covering the aspects related to impacts on aquatic ecosystem/ primary productivity due to quantity of water to be lifted and thermal stratification. Accordingly, Environment Management plan shall be prepared
11.	Sampling locations be located to cover villages situated near the reservoir and around boundary of forest area for collection of baseline data and data to be incorporated in EIA/EMP report
1	Source of construction material and its distance from the project site along with detailed

2.	transportation plan for construction material be elaborated in the EIA EMP report. A detailed reclamation/ restoration plan of quarrying site/sites be incorporated in the EIA/EMP report
13.	A detailed wildlife conservation plan for Schedule –I species, duly approved by the Chief Wildlife Warden, be submitted
14.	In case any wildlife corridor is located within 10 km radius of the project site a detailed study shall be conducted to assess the impact of project on safe movement of wild animals
15.	Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP
16.	Detail of rivulets around the project area and action plan for their survival shall be incorporated in EIA/EMP
Socio-economic Study	
1.	Public Health Delivery Plan including the provisions of drinking water supply for local population shall be in the EIA/EMP Report. Status of the existing medical facilities in the project area shall be discussed. Possibilities of strengthening of existing medical facilities, construction of new medical infrastructure etc. will be explored after assessing the need of the labour force and local population
2.	Declaration by the Project Proponent by way of affidavit that "No" Inter-state issue/ policy issue is involved with any State in the project
3.	All the tasks including conducting public hearing shall be done as per the provisions of EIA Notification, 2006 and as amended from time to time. Public hearing issues raised and compliance of the same shall be incorporated in the EIA/ EMP report in the relevant chapter
4.	Statement on the commitments (activity-wise) made during public hearing to facilitate the discussion on the CER in compliance of the Ministry's OM F. No. 22- 65/2017-IA.III dated 30th September, 2020 shall be submitted
5.	Tentative no. of project affected families shall be identified and accordingly appropriate Rehabilitation & Resettlement plan shall be prepared
6.	Details of settlement in 10 km area shall be submitted
7.	Statement on the commitments (activity-wise) made during public hearing to facilitate the discussion on the CER in compliance of the Ministry's OM F. No. 22- 65/2017- IA.III dated 30th September, 2020 shall be submitted
Muck Management/ Disaster Management	
1.	Details of quantity of muck generation component wise and disposal site along with transportation plan and its monitoring to be provided
2.	Details of Muck Management plan prepared along with estimated cost incorporated in EIA/EMP report
3.	Techno-economic viability of the project must be recommended from CEA/ CWC
Miscellaneous	

1.	Pre-DPR Chapters viz. Hydrology, Layout Map and Power Potential Studies duly approved by CWC/CEA shall be submitted
2.	Undertaking need to submitted on affidavit that regarding no activities has been yet started on the project site and water allocated to this scheme shall not be diverted to other purpose
3.	Both capital and recurring expenditure under EMP shall be submitted
4.	The photograph should bear the date, time, latitude & longitude of the monitoring station/sampling location. In addition to this PP should submit the original test reports and certificates of the labs which will analyse the samples
5.	Arial view video of project site shall be recorded and to be submitted

3.3.6.2. Standard

1(c)	**River Valley/Irrigation projects**
Scope of EIA Study	
1.	The EIA Report should identify the relevant environmental concerns and focus on potential impacts that may change due to the construction of proposed project. Based on the baseline data collected for three (3) seasons (Pre-monsoon, Monsoon and Winter seasons), the status of the existing environment in the area and capacity to bear the impact on this should be analysed. Based on this analysis, the mitigation measures for minimizing the impact shall be suggested in the EIA/EMP study.
Details of the Project and Site	
1.	General introduction about the proposed project.
2.	Details of Project and site giving L-Sections of all U/S and D/S Projects with all relevant maps and figures. Connect such information as to establish the total length of interference of Natural River and the committed unrestricted release from the site of Dam/Barrage into the main river.
3.	A map of boundary of the project site giving details of protected areas in the vicinity of 25 km of project location.
4.	Location details on a map of the project area with contours indicating main project features. The project layout shall be superimposed on a contour map of ground elevation showing main project features (viz. location of dam, Head works, main canal, branch canals, quarrying etc.) shall be depicted in a scaled map.
5.	Layout details and map of the project along with contours with project components clearly marked with proper scale maps of at least 1:50,000 scale and printed at least on A3 scale for clarity.
6.	Existence of National Park, Sanctuary, Biosphere Reserve etc. in the study area, if any, should be detailed and presented on a map with distinct distances from the project components.
7.	Drainage pattern and map of the river catchment up to the proposed project site.
8.	Delineation of critically degraded areas in the directly draining catchment on the basis of Silt Yield Index as per the methodology of Soil and Land use Survey of India.
9.	Soil characteristics and map of the project area.
1	Geological and Seismo-tectonic details and maps of the area surrounding the proposed project site showing

0.	location of dam site and canal sites.
11.	Remote Sensing studies, interpretation of satellite imagery, topographic sheets along with ground verification shall be used to develop the land use/land cover pattern of the study using overlaying mapping techniques viz. Geographic Information System (GIS), False Color Composite (FCC) generated from satellite data of project area.
12.	Land details including forests, private and other land.
13.	Demarcation of snow fed and rain fed areas for a realistic estimate of the water availability
Description of Environment and Baseline Data	
1.	To know the present status of environment in the area, baseline data with respect to environmental components air, water, noise, soil, land and biology & biodiversity (flora & fauna), wildlife, socioeconomic status etc. should be collected within 10 km radius of the main components of the project/site i.e. dam site and power house site. The air quality and noise are to be monitored at such locations which are environmentally & ecologically more sensitive in the study area. The baseline studies should be collected for 1 season (Preferably Monsoon season). Flora-Fauna in the catchment and command area should be documented. The study area should comprise of the following:
2.	(i) Catchment area up to the dam/barrage site.
3.	(ii) Submergence Area.
4.	(iii) Project area or the direct impact area should comprise of area within 10 km radius of the main project components like dam, canals etc.
5.	(iv) Downstream upto 10 km from the tip of the reservoir.
Details of the Methology	
1.	The methodology followed for collection of base line data along with details of number of samples and their locations in the map should be included. Study area should be demarcated properly on the appropriate scale map. Sampling sites should be depicted on map for each parameter with proper legends. For Forest Classification, Champion and Seth (1968) methodology should be followed.
Methodology for Collection of Biodiversity Data	
1.	The number of sampling locations should be adequate to get a reasonable idea of the diversity and other attributes of flora and fauna. The guiding principles should be the size of the study area (larger area should have larger number of sampling locations) and inherent diversity at the location, as known from secondary sources (e.g. eastern Himalayan and low altitude sites should have a larger number of sampling locations owing to higher diversity).
2.	The entire area should be divided in grids of 5kmX5km preferably on a GIS domain. There after 25% of the grids should be randomly selected for sampling of which half should be in the directly affected area (grids including project components such as reservoir, dam, powerhouse, tunnel, canal etc.) and the remaining in the rest of the area (areas of influence in 10 km radius form project components). At such chosen location, the size and number of sampling units (e.g. quadrates in case of flora/transects in case of fauna) must be decided by species area curves and the details of the same (graphs and cumulative number of species in a tabulated form) should be provided in the EIA report. Some of the grids on the edges may not be completely overlapping with the study area boundaries. However, these should be counted and considered for selecting 25% of the grids. The number of grids to be surveyed may come out as a decimal number (i.e. it has an integral and a fractional part) which should be rounded to the next whole number.

3.	The conventional sampling is likely to miss the presence of rare, endangered and threatened (r.e.t.) species since they often occur in low densities and in case of faunal species are usually secretive in behaviour. Reaching the conclusion about the absence of such species in the study area based on such methodology is misleading. It is very important to document the status of such species owing to their high conservation value. Hence likely presence of such species should be ascertained from secondary sources by a proper literature survey for the said area including referring to field guides which are now available for many taxonomic groups in India. Even literature from studies/surveys in the larger landscapes which include the study area for the concerned project must be referred to, since most species from adjoining catchments is likely to be present in the catchments in question. In fact such literature form the entire state can be referred to. Once a listing of possible r.e.t. species form the said area is developed, species specific methodologies should be adopted to ascertain their presence in the study area which would be far more conclusive as compared to the conventional sampling. If the need be, modern methods like camera trapping can be resorted to, particularly for areas in the eastern Himalayas and for secretive/nocturnal species. A detailed listing of the literature referred to, for developing lists of r.e.t. species should be provided in the EIA reports.The conventional sampling is likely to miss the presence of rare, endangered and threatened (r.e.t.) species since they often occur in low densities and in case of faunal species are usually secretive in behaviour. Reaching the conclusion about the absence of such species in the study area based on such methodology is misleading. It is very important to document the status of such species owing to their high conservation value. Hence likely presence of such species should be ascertained from secondary sources by a proper literature survey for the said area including referring to field guides which are now available for many taxonomic groups in India. Even literature from studies/surveys in the larger landscapes which include the study area for the concerned project must be referred to, since most species from adjoining catchments is likely to be present in the catchments in question. In fact such literature form the entire state can be referred to. Once a listing of possible r.e.t. species form the said area is developed, species specific methodologies should be adopted to ascertain their presence in the study area which would be far more conclusive as compared to the conventional sampling. If the need be, modern methods like camera trapping can be resorted to, particularly for areas in the eastern Himalayas and for secretive/nocturnal species. A detailed listing of the literature referred to, for developing lists of r.e.t. species should be provided in the EIA reports.
4.	The R.E.T. species referred to in this point should include species listed in Schedule I and II of Wildlife (Protection) Act, 1972 and those listed in the red data books (BSI, ZSI and IUCN).
Components of the EIA Study: Various aspects to be studied and provided in the EIA/EMP report are as follow s:	
1.	null
2.	null
3.	null
4.	Physical geography, Topography, Regional Geological aspects and structure of the Catchment.
5.	Tectonics, seismicity and history of past earthquakes in the area. A site specific study of the earthquake parameters will be done. The results of the site specific earthquake design shall be sent for approval of the NCSDP (National Committee of Seismic Design Parameters, Central water Commission, New Delhi for large dams.
6.	Landslide zone or area prone to landslide existing in the study area should be examined.
7.	Presence of important economic mineral deposit, if any.
8.	Justification for location & execution of the project in relation to structural components (dam /barrage height).
9.	Impact of project on geological environment.
10.	null

11.	Meteorology (viz. Temperature, Relative humidity, wind speed/direction etc.) to be collected from nearest IMD station.
12.	Ambient Air Quality with parameters viz. Suspended Particulate Matter (SPM), Respirable Suspended Particulate Matter (RSPM) i.e. suspended particulate materials < 10 microns, Sulphur dioxide (SO2) and Oxides of Nitrogen (NOX) in the study area at 5-6 Locations.
13.	Existing Noise Levels and traffic density in the study area at 5-6 Locations.
14.	null
15.	Soil classification, physical parameters (viz., texture, Porosity, Bulk Density and water holding capacity) and chemical parameters (viz. pH, electrical conductivity, magnesium, calcium, total alkalinity, chlorides, sodium, potassium, organic carbon, available potassium, available phosphorus, SAR, nitrogen and salinity, etc.) at @ one sample/ha of command area.
16.	null
17.	Generation of thematic maps viz, slope map, drainage map, soil map, land use and land cover map, etc. Based on these, thematic maps, an erosion intensity map should be prepared.
18.	New configuration map to be given in the EIA Report
19.	null
20.	History of the ground water table fluctuation in the study area.
21.	Water Quality for both surface water and ground water for [i] Physical parameters (pH, Temperature, Electrical Conductivity, TSS); [ii] Chemical parameters (Alkalinity, Hardness, BOD, COD, NO3, PO4, Cl, So4, Na, K, Ca, Mg, Silica, Oil & grease, phenolic compounds, residual sodium carbonate);[iii] Bacteriological parameter (MPN, Total coliform); and [iv] Heavy Metals (Pb, As, Hg, Cd, Cr6,Total Cr, Cu, Zn, Fe) at minimum10 Locations, however, the sampling numbers should be increased depending on the command area.
22.	Delineation of sub and micro watersheds, their locations and extent based on the Soil and Land Use Survey of India (SLUSOI), Department of Agriculture, Government of India. Erosion levels in each micro-watershed and prioritization of micro-watershed through Silt Yield Index (SYI) method of SLUSOI.
23.	Hydro-Meteorology of the project viz. precipitation (snowfall, rainfall), temperature, relative humidity, etc. Hydro-meteorological studies in the catchment area should be established along-with real time telemetry and data acquisition system for inflows monitoring.
24.	Run off, discharge, water availability for the project, sedimentation rate, etc.
25.	Basin characteristics
26.	Catastrophic events like cloud bursts and flash floods, if any, should be documented.
2	For estimation of Sedimentation Rate, direct sampling of river flow is to be done during the EIA study. The study

7.	should be conducted for minimum one year. Actual silt flow rate to be expressed in ha-m km2 year-1.
28.	Set up a G&D monitoring station and a few rain gauge stations in the catchment area for collecting data during the investigation.
29.	Flow series, 10 daily with 90%, 75% and 50% dependable years discharges.
30.	Environmental flow release should be 20% of the average of the 4 lean months of 90% dependable year during the lean season and 30% of Monsoon flow during monsoon season. For remaining months, the flow shall be decided by the Committee based on the hydrology and available discharge.
31.	A site specific study on minimum environment flow should be carried
32.	null
33.	null
34.	Characterization of forest types (as per Champion and Seth method) in the study area and extent of each forest type as per the Forest Working Plan.
35.	General vegetation profile and floral diversity covering all groups of flora including Bryophytes, Pteridophytes, Lichens and Orchids. A species wise list may be provided.
36.	Assessment of plant species with respect to dominance, density, frequency, abundance, diversity index, similarity index, importance value index [IVI], Shannon Weiner Index etc. of the species to be provided. Methodology used for calculating various diversity indices along with details of locations of quadrats, size of quadrats etc. to be reported within the study area in different ecosystems.
37.	Existence of National Park, Sanctuary, Biosphere Reserve etc in the study area, if any, should be detailed.
38.	Economically important species like medicinal plants, timber, fuel wood etc.
39.	Details of endemic species found in the project area.
40.	Flora under RET categories should be documented using International Union for the Conservation of Nature and Natural Resources (IUCN) criteria and Botanical Survey of India's Red Data list along with economic significance. Species diversity curve for RET species should be given.
41.	Fauna study and inventorisation should be carried out for all groups of animals including reptiles and nocturnal animals in the study area. Their present status along with Schedule of the species.
42.	Information (authenticated) on Avi-fauna and wild life in the study area.
43.	Status of avifauna their resident/migratory/ passage migrants etc.
44.	Documentation of butterflies, if any, found in the area.

45.	Details of endemic species found in the project area.
46.	RET species- voucher specimens should be collected along with GPS readings to facilitate rehabilitation. RET faunal species to be classified as per IUCN Red Data list and as per different schedule of Indian Wildlife (Protection) Act, 1972.
47.	Existence of barriers and corridors, if any, for wild animals.
48.	Compensatory afforestation to compensate the green belt area that will be removed, if any, as part of the proposed project development and loss of biodiversity.
49.	For categorization of sub-catchments into various erosion classes and for the consequent CAT plan, the entire catchment (Indian Portion) is to be considered and not only the directly the draining catc
50.	Documentation of aquatic fauna like macro-invertebrates, zooplankton, phytoplanktons, benthos etc.
51.	Fish and fisheries, their migration and breeding grounds.
52.	Fish diversity, composition and maximum length & weight of the measured populations to be studied for estimation of environmental flow.
53.	Conservation status of aquatic fauna.
54.	Cropping pattern and Horticultural practices in the study area.
55.	Collection of primary data on agricultural activity, crop and their productivity and irrigation facilities component.
56.	Component of pressurized/drip irrigation and micro irrigation.
57.	Details of Conjunctive use of water for irrigation
58.	Collection of Baseline data on human settlements, health status of the community and existing infrastructure facilities for social welfare including sources of livelihood, job opportunities and safety and security of workers and surrounding population.
59.	Collection of information with respect to social awareness about the developmental activity in the area and social welfare measures existing and proposed by project proponent.
60.	Collection of information on sensitive habitat of historical, cultural and religious and ecological importance.
61.	The Socio-economic survey/profile within 10 Km of the study area for Demographic profile; Economic Structure; Development Profile; Agricultural Practices; Infrastructure, education facilities; health and sanitation facilities; available communication network etc.
62.	Documentation of Demographic, Ethnographic, Economic structure and development profile of the area

63.	Information on Agricultural practices, Cultural and aesthetic sites, Infrastructure facilities etc
64.	Information on the dependence of the local people on minor forest produce and their cattle grazing rights in the forest land.
65.	List of all the Project Affected Families with their names, education, land holdings, other properties, occupation, source of income, land and other properties to be acquired, etc.
66.	In addition to Socio-economic aspects of the study area, a separate chapter on socio-cultural aspects based upon study on Ethnography of the area should be provided.
Impact Prediction and Mitigation Measures	
1.	The adverse impact due to the proposed project should be assessed and effective mitigation steps to abate these impacts should be described.
2.	Changes in ambient and ground level concentrations due to total emissions from point, line and area sources
3.	Effect on soils, material, vegetation and human health
4.	Impact of emissions from DG sets used for power during the construction, if any, on air environment.
5.	Pollution due to fuel combustions in equipments & vehicles
6.	Fugitive emissions from various sources.
7.	Impact on micro climate
8.	Changes in surface & ground water quality. Steps to develop pisci-culture and recreational facilities.
9.	Changes in hydraulic regime and down stream flow.
10.	Water pollution due to disposal of sewage.
11.	Water pollution from labour colony/camps and washing equipment.
12.	Adverse impact on land stability, catchment of soil erosion, reservoir sedimentation and spring flow (if any) [a] due to considerable road construction/widening activity [b] interference of reservoir with the inflowing streams [c] blasting for excavation of canals and some other structures
13.	Changes in land use/land cover and drainage pattern.
14.	Immigration of labour population.
15.	Quarrying operation and muck disposal.
16.	Changes in land quality including effects of waste disposal
1	River bank and their stability

7.	
18.	Impact due to submergence
19.	Impact on forests, flora, fauna including wildlife, migratory avi-fauna, rare and endangered species, medicinal plants etc.
20.	Pressure on existing natural resources
21.	Deforestation and disturbance to wildlife, habitat fragmentation and wild animal's migratory corridors
22.	Compensatory afforestation-Identification of suitable native tree species for compensatory afforestation & green belt.
23.	Impact on fish migration and habitat degradation due to decreased flow of water
24.	Impact on breeding and nesting grounds of animal
25.	Impact on local community including demographic profile.
26.	Impact on socio-economic status.
27.	Impact on economic status.
28.	Impact on human health due to water / vector borne disease.
29.	Impact on increases traffic.
30.	Impact on Holy Places and Tourism.
31.	Impacts of blasting activity during project construction which generally destabilize the land mass and lead to landslides, damage to properties and drying up of natural springs and cause noise pollution, will be studied. Proper record shall be maintained of the base line information in the post project period.
32.	Positive as well as negative impacts likely to be accrued due to the project are to be listed.
Environment Impact Analysis	
1.	Environmental Impact Analysis due to the project on the above mentioned components should be carried out for construction and operation phases using qualitative or quantitative methods.
Environmental Management Plan	
1.	Environmental Management Plan aimed at minimizing the negative impacts of the project should be given in

	detail. The mitigation measures are to be presented for all the likely adverse impacts on the environment. The following suggestive mitigating plans should be included
2.	Biodiversity and Wild Life Conservation & Management Plan for conservation and preservation of endemic, rare and endangered species of flora and fauna to be prepared in consultation with State Forest Department.
3.	Compensatory Afforestation in lieu of the forest land required for the project needs to be proposed.Choice of plants should be made in consultation with State Forest Department including native and RET species, if any.
4.	Fisheries Conservation & Management Plan-Fish fauna inhabiting the affected stretch of river, a specific fisheries management plan should be prepared for river and reservoir.
5.	Plan for Green Belt Development along the periphery of reservoir, colonies, approach road, canals etc. to be prepared in consultation with the State Forest Department. Local plant species suitable for greenbelt development should be selected.
6.	Environmental Monitoring Programme with physical & financial details covering all the aspects of EMP. A summary of cost estimate for all the plans, cost for implementing all Environmental Management Plans including the cost for implementing environmental monitoring programme should be given. Provision for an Environmental Management Cell should be made.
7.	Catchment Area Treatment (CAT) Plan should be prepared micro-watershed wise. Identification of area for treatment based upon Remote Sensing & GIS methodology and Silt Yield Index (SYI) method of SLUSOI coupled with ground survey. Areas/watersheds falling under 'very severe' and `severe' erosion categories are required to be treated. Both biological and engineering measures should be proposed in consultation with State Forest Department. Year-wise schedule of work and monetary allocation should be provided. CAT plan is to be completed prior to reservoir impoundment. Mitigations measures to check shifting cultivation in the catchment area with provision for alternative and better agricultural practices should be include.
8.	Study of Design Earthquake Parameters: A site specific study of earthquake parameters should be done. The results of the site specific earth quake design parameters should be approval by National Committee of Seismic Design Parameters, Central Water Commission (NCSDP), New Delhi.
9.	Dam Break Analysis and Disaster Management Plan: The outputs of Dam Break Model should be illustrated with appropriate graphs and maps clearly bringing out the impact of Dam break scenario. Provision for early warning systems should be provided.
10.	Reservoir Rim Treatment Plan for stabilization of land slide/land slip zones if any, around the reservoir periphery to be prepared. Suitable engineering and biological measures for treatment of the identified slip zones to be provided with physical and financial schedule.
11.	Muck Disposal Plan- suitable sites for dumping of excavated material should be identified in consultation with the State Pollution Control Board and Forest Department. All Muck disposal sites should be minimum 30 m away from the HFL of river. Plan for rehabilitation of muck disposal sites should also be given. The L- section/ cross section of muck disposal sites and approach roads to be given. Financial out lay for this may be given separately. Deatailed muck transportation plan delinating the path ways, number of trucks, quantity of muck to be transportated along with monitoring mechanism using latest technology, shall be prepared.
12.	Plan for Restoration of quarry sites and landscaping of colony areas, working areas, roads, etc.
13.	Command Area Development (CAD) Plan giving details of implementation schedule with a sample CAD plan.
14.	In the EMP, also include a sample CAD plan for a distributary outlet command. Such a plan is to show the alignment of irrigation and drainage channels. The components of the OFD works to be undertaken may be clearly mentioned along with a time schedule for their completion vis-à-vis the progress of irrigation development.

15.	Mitigating measures for impacts due to Blasting on the structures in the vicinity.
16.	Resettlement and Rehabilitation (R&R) Plan need to be prepared with due consultation with Project Affected Families (PAFs). The provision of the d R&R plan should be according to the National Resettlement and Rehabilitation Policy (NRRP-2007) as well as State Resettlement and Rehabilitation Policy. Detailed budgetary estimates are to be provided. Resettlements sites should be identified.
17.	Public Health Delivery Plan including the provisions for drinking water facility for the local community.
18.	Local Area Development Plan to be formulated in consultation with the Revenue Officials and Village Panchayats. Local skill development schemes should be given. Details of various activities to be undertaken along with its financial out lay should be provided.
19.	Labour Management Plan for their Health and Safety.
20.	Sanitation and Solid Waste Management Plan for domestic waste from colonies and labour camps etc.
21.	Plan for Land Restoration and Landscaping of project sites.
22.	Energy Conservation Measures.
23.	Environmental safeguards during construction activities including Road Construction.
24.	Ground Water Management Plan.
25.	Water and Air Quality & Noise Management Plans to be implemented during construction and post-construction periods.

3.4. Agenda Item No 4:

3.4.1. Details of the proposal

Teesta Hydroelectric Project Stage-III (1200 MW) by **SIKKIM URJA LIMITED** located at **NORTH DISTRICT, SIKKIM**			
Proposal For		Amendment in EC	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/SK/RIV/499039/2024	J-12011/26/2006-IA.I	16/11/2024	River Valley/Irrigation projects (1(c))

3.4.2. Project Salient Features

19.1.2: The Project Proponent and the accredited Consultant R. S. Envirolinks Technologies Pvt. Ltd., made a detailed presentation on the salient features of the project and informed that:
i. The Teesta-III Hydro Electric Project (1200 MW) is a run-of-the-river scheme with diurnal storage to

generate a power of 1200 MW by utilizing the discharge of River Teesta with a gross head of 817.00m between EL.1585.0 m and EL.768.0 m.

ii. The project is located on the main Teesta River in the Mangan district, utilizing drop of about 800 m in the river between Chungthang and Sankalang villages. The project is about 90 km from district headquarters Gangtok via Mangan. Nearest railhead is (Jalpaiguri and Siliguri) and airport are located at Bagdogra respectively. The nearest village to the project is Sankalang about 0.8 Km, which comes under, Mangan District.

iii. The salient details of the proposal as follows:

EAC meeting/s	19th Meeting
Date of Meeting/s	30/11/2024
Date of earlier EAC meetings	28/06/2006 & 19/07/2006

Name of the Proposal	Teesta Hydroelectric Project Stage-III (1200 MW)
Proposal No.	IA/SK/RIV/499039/2024
Location (Including Coordinates)	Dam Site: 88° 39’ E, 27° 36’ N Powerhouse: 88° 32’ E, 27° 31’ N
Company’s Name	Sikkim Urja Limited (previously Teesta Urja Limited) (Govt of Sikkim Enterprise)
CIN no. of Company/user agency	U31200DL2005SGC133875
Accredited Consultant, Validity and certificate no.	R.S Envirolink Technologies Private Limited NABET/EIA/2225/RA 0274, valid till 15/08/2025
Project location (Coordinates /River/ Reservoir)	Dam Site: Chungthang Powerhouse: Sangkalang
Inter- state issue involved	No

3. Category details:

Category of the project	1 (c) – A
Capacity / Cultural command area (CCA)	1200 MW
Attracts the General Conditions (Yes/No)	Yes
Additional information (if any)	----

Earlier EC Proposal No.	IA/SK/RIV/9907/2006

Earlier EAC meeting date	28/06/2006 & 19/07/2006
EC Letter No.	F. No. J-12011/26/2006-IA.I (R)
EC grant Date	04/08/2006
Cost of project	Existing project cost was INR 13,965 Cr (COD-Mar 201 7) & the estimated cost for project restoration is INR 418 9.51 Cr (incl GST excluding IDC)
Total area of Project	213.8831 Ha
Date of online application for amendment in EC	04/10/2024
Details of CTE	Issued on: 04/10/2024; Valid till: 31/03/2025
Powerhouse Installed Capacity	1200 MW
Generation of Electricity Annually	5214 MU (design energy)
No. of Units	6x200MW

Govt of Sikkim has signed Implementation Agreement (IA) with M/s Teesta Urja Limited for development of Teesta-III hydroelectric project (1200 MW) located in Mangan district of Sikkim. MoEF & CC, New Delhi has granted Environmental Clearance on 04.08.2006 and vide letter dated 30.04.2010, MoEFCC has granted approval for Design Changes for execution of the Project. The management and Control of Teesta Urja Limited was transferred from private sector to Government sector w.e.f. 06.08.2015. Following the necessary approvals from the State Govt and as per the provisions of Section 4(2) and (3) of Companies Act 2013 & Rule 8A of the Companies (Incorporation) Rules, 2014, the company's name was changed from "Teesta Urja Limited' to "Sikkim Urja Limited'. As the project is now being implemented by "Sikkim Urja Limited', the transfer of Environment Clearance for the Teesta Hydroelectric project Stage-III (1200 MW) from "Teesta Urja Limited' to "Sikkim Urja Limited' was applied for by Project Proponent and the same has been granted by MOEF&CC vide letter no. J-12011/26/2006-IA-I dated 16.11.2024.

The Project was commissioned in February 2017 and was in successful operation till 03/04 October 2023 when the Project faced a flash flood which led to the washing away of the Dam and flooding of the underground Powerhouse leading to halting of Project operations. The underground Powerhouse and electro-mechanical equipment can be restored to its original condition in about 12 months. The water conductor system is mostly unaffected in the flash flood, hence, other than the Dam most of the components can be restored in a year's time.

As most of the components would be ready in a year, there is a case for restoring the Dam and bringing back the Project in operation at the earliest. The now proposed Dam is a concrete gravity dam in place of the earlier constructed Concrete Faced Rockfill Dam (CFRD). All the parameters of the earlier Dam like the location, the Dam top elevation, the Full reservoir level etc. are kept the same, all other components are kept unchanged, only change is the type of Dam to concrete-gravity from CFRD and much higher spillway capacity of 19,946 cumecs in comparison to earlier 7000 cumecs. The spillway capacity has been increased to cater to GLOF and PMF in place of earlier considered PMF only.

The above proposed restoration works are planned to be executed in two parts which are as under:

- **Stage/Part I –** To achieve partial generation by constructing a suitable upstream coffer dam and using the existing water conductor system and powerhouse. The proposal for restoration of the project with partial generation through coffer dam, wherein around 60% of designed energy can be harnessed.
- **Stage/Part II -** To achieve complete generation by constructing a concrete gravity dam which should be capable of passing revised design flood. Restoration of main Dam which will take around 36 months after start of partial generation i.e. around 48 months in total.

For dam site restoration, it has been ensured that the location and footprint of the proposed Coffer Dam and Main dam remains the same as earlier. All the project interventions like dam, coffer dam, new components as well as rehabilitation of affected components like, spillway, HRT, power house etc., will be undertaken on the land already available with project. **Hence, no additional land (Private/Govt/Forest) requirement is envisaged for proposed restoration works as mentioned above.**

As the reconstruction of dam and restoration of project involves change of scope from the time of EC, EC amendment is requested.

Description	Existing Salient Features	Now Proposed	
1. Location			
State, District.	Sikkim, North District	Sikkim, Mangan District	
Village.	Dam near Chungthang village and P owerhouse near Sankalang Village	**Unchanged**	
River.	Teesta		
Coordinates: Dam: Longitude & Lati tude Powerhouse: Longitud e & Latitude	88^{o} 39’ E, 27^{o} 36’ N 88^{o} 32’ E, 27^{o} 31’ N		
Dam Site	400m downstream of confluence of Lachen chu and Lachung chu near vi llage Chungthang		
Power House Site	800m upstream of confluence of rive r Teesta and Talung chu near village Sangkalang		
2. Access to the Proje ct:			
By Road	• From Siliguri (210/ 178 km) via Ran gpo/ Dikchu. • From Gangtok (130 km) via Manga n.		
Rail Head	• New Jalpaiguri (broad gauge) (220/1		

Description	Existing Salient Features	Now Proposed	
	88 km) via Rangpo/ Dikchu. • Siliguri (meter gauge) (210/178 km) via Rangpo/ Dikchu		
Airport	Bagdogra		
3. Hydrology, Seismology and Climate			
Catchment area	2786.7 km^2	**Unchanged**	
Probable maximum Flood	7000 m^3/s	**Unchanged**	
GLOF	-	19,946 m^3/s	
Seismic Zone	IV as per IS:1893-1 (2002)	**Unchanged**	
4. Reservoir			
Maximum Reservoir Level (M.R.L.) – PMF Case	EL.1588 m	**Unchanged**	
Full Reservoir Level (F.R.L.)	EL.1585 m		
Minimum Draw-down Level (M.D.D.L.)	EL.1565 m		
Gross Storage (EL.1530.0 to EL.1585.0 m)	5.08 MCM		
Live Storage (EL. 1565.0 to EL. 1585.0 m)	3.33 MCM		
5. Project Components:			
5.1 Dam			
Type of dam	Concrete Faced Rock-fill Dam (CFRD)	Concrete Gravity Dam	
Maximum Height above riverbed level	60 m from river bed level	118.64 from deepest foundation level	
Top width of dam	10 m	6 m	

Description	Existing Salient Features	Now Proposed	
Total length of dam at top	**298 m (includes chute spillway)**	**279.65 m (including sluice and overflow spillway)**	
Total length of CFRD at top	**229 m**	**N/A**	
5.2 Diversion Tunnel (DT)			
Location	On left bank	**Unchanged**	
Number	1		
Size and shape	10 m diameter horseshoe		
Length	995 m		
5.3 Spillways/Diversion Tunnel	**Spillways**	**Diversion Tunnel**	
Total number of Spillway arrangements	4 Nos.	-	
Type of Spillways/DT			
	1. **Diversion/Spillway Tunnel-1:** a) Size, Shape & Length: 10 m ϕHorseshoe shaped & 995 m b) Flow type, Discharge & Velocity: Free Flowing, 1028 m^3/s & 12 m/s in diversion mode and 1750 cumecs in spillway mode c) Crest Elevation: EL.1537 m for diversion mode & EL. 1555 m for Spillway mode.	**Orifice/Overflow spillway** 1. **7 Nos. of openings, Orifice type Spillway** a. 7 No, Radial gates each of size 10.00 m (W) x 14.00 m (H). b. Total discharging capacity is 20,012 m3/s at FRL 1585.0 m 2. **Overflow type spillway** a. One opening of size 08.00 m (W) x 06.00 m (H). b. Total discharging capacity is 250 m^3/s. at FRL 1585.0 m	
	2. **Spillway Tunnel-2:** a) Size, Shape & Length: 10 m ϕHorseshoe shaped &1181.35 m. b) Flow type, Discharge & Velocity: Free Flowing, 1400 m^3/s & 16.88 m/s, Crest Elevation: EL.1572 m		
	- **Chute Spillway:** a) Nos. of Bays & Gate Type: 2 Nos. of 11 m width Radial Gates. b) Discharge & Velocity: 3500 m^3/s and 24m/s respectively.		

Description	Existing Salient Features	Now Proposed	
	c) Crest Elevation: EL. 1565.5 m d) Energy dissipation: Flip bucket wi th plunge pool. **e)** Chute spillway length: 233.98m		
	Flushing cum Spillway Tunnel: a) Size, Shape & Length: 11 m ϕHors eshoe shaped & 1356.775 m. b) Flow type, Discharge & Velocity: Free Flowing, 1750 m3/s & 25 m/s c) Crest Elevation: EL.1540m		
5.4 Power Intake			
Number (Nos.) and Lo cation	1 no. on the right bank	**Unchanged**	
Sill level	EL. 1549 m		
Maximum Discharge th rough intake	202 cumec		
5.5 Desilting Chambe rs			
Number, Shape and Siz e	2 Nos. Oval Shaped, 320 m x 17 m x 23 m (LXBXH).	**Unchanged**	
5.6 Head Race Tunnel			
Number, Size and Shap e	One No. 7.5 m Diameter, Horseshoe Shaped	**Unchanged**	
Design discharge and v elocity	175 m^3/s & 3.75 m/s		
Length	13816 m (from D/s of De-silting Cha mber)		
Bed Slope	1 in 285 to 1 in 353		
5.8 Surge Shaft			
Type	Open to Sky, Circular Shaped Restri cted Orifice Surge Shaft	**Unchanged**	
Diameter& Height	13 m and 162.14m respectively		

Description	Existing Salient Features	Now Proposed	
5.8 Pressure Shaft			
Number and Type	2 Nos. Steel lined	**Unchanged**	
Alignment	Horizontal-vertical-inclined-horizontal		
Size	4 m /3.25 m/2.5 m ϕ		
Length	Right Pressure Shaft– 1428.317 m, Left Pressure Shaft– 1451.086 m		
Discharge and velocity through each shaft	87.5 m^3/s and 6.96 m/s		
5.9 Powerhouse			
Type and Installed Capacity	Underground, 1200 MW	**Unchanged**	
Machine Hall Dimensions (LXWXH)	214.5 m x 21.5m x 44.8 m		
Transformer Hall Dimensions (LXWXH)	187.88 m x 15.8 m x 16.4m		
Service bay Level	EL. 777.9 m		
Type of Turbine	Vertical Axis Pelton		
Type of Generator	Vertical Shaft of 200 MW, 0.9 power factor 3 phase, 11 KV at 50HZ.		
Capacity of Transformer & Nos.	82 MVA, Single phase, 3x6 + 1 spare = 19 Nos.	**Unchanged**	
Nos. of Units & Rated Capacity per Unit	6 Nos. and 200 MW each		
Head	Maximum Gross Head: 817 m Net Head: 786 m		
5.10 Main Tail Race Tunnel			
Type	Free Flowing.	**Unchanged**	
Number, Size and Shap	One, 8.2 m (W) X 8 m (H), D-Shape		

Description	Existing Salient Features	Now Proposed	
e	d		
Length	1213.96 m		
5.11 Pothead Yard			
Type, Area	Outdoor on Left Bank, 59.2 (L) x 31 (W) m	**Unchanged**	
6. Energy Generation			
Annual Energy 90% Dependable Year	5311 MU	**Unchanged**	
Design Energy	5214 MU		

Court Case	A Court case is pending before the Hon'ble National Green Tribunal, Eastern Zone Bench, Kolkata in O.A. 171/2023/EZ. The matter pertains to the breach of Teesta III Dam at Chungthang in Sikkim on Teesta River due to flash flood which struck on the intervening night of 3rd/4th October 2023. The Hon'ble National Green Tribunal Delhi took Suo Motu cognizance of the matter on 20.10.2023 and transferred the same to the Eastern Zone Bench in Kolkata on 22.11.2023. All the pleadings in the matters are complete and all Respondents have filed their respective Counter Affidavits. In the Last hearing held on 20.09.2024, the matter was adjourned at the request of State of Sikkim and is listed before the bench on 16.12.2024.
Additional information (if any)	Nil

3.4.3. Deliberations by the committee in previous meetings

N/A

3.4.4. Deliberations by the EAC in current meetings

19.4.3 The EAC during deliberations noted the following:

The EAC deliberated on the information submitted and as presented in the meeting and observed that the proposal is for grant of amendment in Environmental Clearance Teesta Hydroelectric Project Stage-III (1200 MW) in an area of 213.8831 ha located at Village Lingdong, Kazor, Barfok, Meyong etc Sub-district Mangan and Chungthang, North District, Sikkim by M/s Sikkim Urja Limited.

The project/activity is covered under Category A of item 1 (c) 'River Valley projects' of the Schedule to the Environmental Impact Assessment Notification, 2006 and requires appraisal at Central level by the sectoral EAC in the Ministry.

The EAC noted that the Environmental Clearance letter was issued by MoEF&CC vide letter dated 04.08.2006 and amendment in EC was granted on 30.04.2010 by MoEF&CC for design

changes for execution of the Project and subsequently, the transfer of Environment Clearance for the Teesta Hydroelectric project Stage-III (1200 MW) from “Teesta Urja Limited’ to “Sikkim Urja Limited’ has been granted by MOEF&CC vide letter no. J-12011/26/2006-IA-I dated 16.11.2024.

The EAC observed that the project, commissioned in February 2017, had been successfully operating until it faced a flash flood on 03/04 October 2023. The flood resulted in the washing away of the dam and severe flooding of the underground powerhouse, which led to a complete halt in project operations.

Now the PP proposed to redesign dam and replaces with the earlier Concrete Faced Rockfill Dam (CFRD) with a Concrete Gravity Dam, while maintaining the same parameters as the original, including location, dam top elevation, full reservoir level, and auxiliary components. PP submitted that a notable enhancement is the increase in spillway capacity from 7,000 cumecs to 19,946 cumecs, designed to accommodate both Glacial Lake Outburst Floods (GLOF) and Probable Maximum Flood (PMF), unlike the previous design, which accounted for PMF alone. This modification significantly enhances the dam's safety and resilience to extreme hydrological events. The PP assured that the other than the Dam most of the components can be restored in a year’s time.

The EAC expressed serious concerns regarding the dam's design and stability; its ability to withstand potential natural disasters in the future. The committee emphasized the need for a thorough review of the proposed modifications to ensure the structural resilience and safety of the dam, particularly given the region's susceptibility to extreme hydrological events. It was therefore recommended to get comments from the Central Electricity Authority (CEA) on the proposed modifications. The EAC further opined to conduct a site visit by a sub-committee of the EAC members before giving any recommendation on the proposal. The sub-committee will comprise following members:

1. Prof. Govind Chakrapani
2. Dr. A.K.Sahoo, Member of EAC
3. Representative of CEA
4. Representative of CWC
5. Representative of MoEF&CC

The proposal was ***deferred*** on the above lines.

3.4.5. Recommendation of EAC

Deferred for ADS

3.5. Agenda Item No 5:

3.5.1. Details of the proposal

Warasgaon Warangi Pumped Storage Project by **ADANI GREEN ENERGY LIMITED** located at **PUNE,MAHA RASHTRA**			
Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/MH/RIV/505573/2024	J-12011/19/2022-IA.I (R)	18/11/2024	River Valley/Irrigation projects (1(c))

3.5.2. Project Salient Features

The EAC noted that the PP vide email/letter dated 25.11.2024 has informed that due to their predetermined commitment in other projects, they could not attend the virtual meeting for the ToR on 30th November 2024. And asked for deferment of the proposal.

3.5.3. Deliberations by the committee in previous meetings

N/A

3.5.4. Deliberations by the EAC in current meetings

The proposal was ***deferred*** on the above lines.

3.5.5. Recommendation of EAC

Deferred for ADS

3.6. Agenda Item No 6:

3.6.1. Details of the proposal

Sikaser 1200 MW Pumped Storage Hydro-electric Project by **CHHATTISGARH STATE POWER GENERATI ON COMPANY LIMITED** located at **GARIYABAND,CHHATTISGARH**			
Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/CG/RIV/506269/2024	J-12011/30/2024-IA.I (R)	18/11/2024	River Valley/Irrigation projects (1(c))

3.6.2. Project Salient Features

19.6.1 The proposal is for grant of Terms of References (ToR) to the project for Sikaser Open loop Pumped Storage Hydro-electric Project (1200 MW) in an area of 160 Ha located at Village EAST RAIPUR PF, Sub-district Bindranavagarh , District Gariyaband, Chhattisgarh by M/s Chhattisgarh State Power Generation Company Limited .

19.6.2: The Project Proponent and the accredited Consultant M/s. WAPCOS Limited, made a detailed presentation on the salient features of the project and informed that:

i. The proposed Sikaser Pumped Storage Hydro-electric Project (1200 MW) envisages utilization of available head between proposed upper dam and existing Sikaser reservoir as lower pond. An Underground Power House (UGPH) will be located in between two reservoirs. Both the reservoirs will be interconnected through water conductor system and the generator and turbines installed at the power house.

ii. The proposed Sikaser Pumped Storage Project is located near Sikaser village/town of Gariaband district of Chhattisgarh. The project falls at 20°31'24.92"N and 82°20' 38.724"E. It is located 45 KM towards South East direction from Gariaband District headquarters.

iii. The location of Upper reservoir at present is not accessible but the Lower reservoir is existing Sikaser reservoir which is well connected to road network which is at about 16 km from NH-130. At the location of Upper dam, no habitation is observed. The existing Lower dam is presently utilized for Hydropower and Irrigation.

iv. The **Sikaser Pumped Storage Hydro-electric Project (1200 MW)** envisages construction of Upper Dam, Intake, Head race Tunnel, Pressure tunnel, Penstock, Powerhouse, Transformer Hall, Tail Race Tunnel and Outlet.

Forest Land	112 Hectares
Submergence area/Reservoir area	62 Hectares
Land required for project components	112 Hectares

- **Population:** As of 2011, the population of Gariyaband district was 5,97,653, The population density is 100 people per square Kilometer.
- Sex ratio: The sex ratio in Gariyaband was 1020.
- Literacy rate: The literacy rate in Gariyaband is 68.26%.
- Urban vs rural: 6.77% of the population lives in urban areas, and 96% live in rural areas.
- Scheduled Castes and Scheduled Tribes: Scheduled Castes make up 17.97% of the population, and Scheduled Tribes make up 36.14%.

Approx. 550 KLD During construction stage

Approx. 120 KLD During Operational stage

Total three (03) nos. Alternatives have been identified and studied.

ALTERNATE- I

- Ø Upper reservoir is proposed near Sikaser village on right bank of the proposed lower reservoir.
- Ø Pondage will be through composite bund and pit type by excavating upto El. 697m from hilltop El. 730m i.e., 33 m
- Ø Available Gross head 309.13 m
- Ø Required Live storage is 9.44 MCM
- Ø Proposed Installed capacity 1200MW

ALTERNATE- II

- Ø Upper reservoir is proposed near Sikaser village on left bank of the proposed lower reservoir.
- Ø Pondage will be through composite bund and pit type by excavating upto El. 717m from hilltop El. 740m i.e., 23 m
- Ø Available Gross head 329.47 m
- Ø Required Live storage is 8.37 MCM
- Ø Proposed Installed capacity 1200MW

ALTERNATE- III

- Ø Upper reservoir is proposed at geographical co-ordinate 20°26'11.50"N 82°20'38.45"E near Sikaser town/village.
- Ø Topography at this location is flat; hence dam is proposed to create pondage at elevation of El. 750 m. Highest elevation on one side of valley is El. 765 m.
- Ø Available Gross head 355.75 m
- Ø Required Live storage is 8.24 MCM
- Ø Proposed Installed capacity 1200 MW

COMPARATIVE TABLE : LAYOUT ALTERNATIVES

Lower Reservoir			
Description	**Alternate-I**	**Alternate-II**	**Alternate-III**
Reservoir Type	Existing Dam	Existing Dam	Existing Dam
Proposed FRL (EL in m)	406.30	406.30	406.30
Proposed MDDL (EL in m)	397	397	397

Proposed Live Storage (MCM)	161.96	161.96	161.96
Upper Reservoir			
Reservoir Type	Bund & Pit Combined	Bund & Pit Combined	Dam
Excavation Depth from top (m)	33	23	-
Proposed FRL (m)	718.50	738.50	761
Proposed MDDL (m)	700	721	750
Proposed Live Storage (MCM)	9.44	8.37	8.24
Gross Head (m)	309.13	329.47	355.75
Tentative WCS Length (m)	1475	1336	2412
L/H Ratio	4.77	4.06	6.81
Proposed Installed Capacity (MW)	1200	1200	1200
Tentative Cost (incl. E&M) (in Cr.)	5118.03	5222.18	5303.83
Per MW Cost (in Cr)	4.26	4.35	4.42

1. **Project Details:**

Name of the Proposal	Sikaser Open Loop Pumped Storage Hydro-electric Project (1200 MW)
Location (Including coordinates)	near village Sikaser, East Raipur PF, Sub-district Bindranavagarh, District Gariyaband, Chhattisgarh. The upper reservoir falls in 20°31'24.92"N, 82°20'38.724"E and Lower Reservoir falls in 20°31'6.78" N, 82°18'48.86"E respectively.
Inter- state issue involved	No
Seismic zone	Zone-II

2. **Category Details:**

Category of the project	A

Provisions	-
Capacity / Cultural command area (CCA)	1200 MW
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	-

3. **Electricity generation capacity:**

Powerhouse Installed Capacity	4 units of 300 MW each
Generation of Electricity Annually	2510.71 GWh
No. of Units	4
Additional information (if any)	-

4. **ToR/EC Details:**

Cost of project	Rs. 5118.03 Crores
Total area of Project	160 Hectares
(Height of Dam from deepest Foundation level (EL))	Upper dam - 20m
Length of Tunnel/Channel	1475 m
Details of Submergence area	Non-Forest Land - 48 Hectare Forest Land – 112 Hectare
Types of Waste and quantity of generation during construction/ Operation	Sewage generated from Labour camps 400 KLD per day.
E-Flows for the Project	It is a pumped storage project; E flows will be released from lower dam which is a main storage dam.
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then a) E-flow with TOR /Recommendation by EAC as per CIA&CC study of River Basin. b) If not the E-Flows maintain criteria for sustaining river ecosystem.	NA

5. **Muck Management Details:**

No. of proposed disposal area/ (type of land- Forest/ Pvt. land)	10 hectares (approx.) non-forest land

Muck Management Plan	Shall be taken up as part of DPR
Monitoring mechanism for Muck Disposal	Shall be taken up as part of DPR

6. **Land Area Breakup:**

Private land	48 Hectares (Non Forest land)
Government land/Forest Land	112 Hectares (Forest Land)
Submergence area/Reservoir area	62 Hectares
Land required for project components	112 Hectares
Additional information (if any)	-

7. **Presence of Environmentally Sensitive areas in the study area:**

Forest Land/ Protected Area/ Environmental Sensitivity Zone	Yes/No	Details of Certificate/letter/Remarks
Reserve Forest/Protected Forest Land	(Yes)	**Total Forest Land – 112 Ha** *(Protected Forest Land – **112 Ha**)*
National Park	No	
Wildlife Sanctuary	No	

8. **Court Case Details:** NIL
9. **Miscellaneous:**

Particulars	Details
Details of consultant	M/s WAPCOS Limited
Project Benefits	Hydro-electric power and Employment generation
Status of other statutory clearances	-
R&R details	No (Total NIL Households)
Additional detail (If any)	-

3.6.3. Deliberations by the committee in previous meetings

N/A

3.6.4. Deliberations by the EAC in current meetings

The EAC during deliberations noted the following:

The EAC deliberated on the information submitted (Form 1, PFR, kml file, etc.) and as presented in the meeting and observed that the proposal is for grant of TOR to the project for conducting EIA/EMP and Public hearing for Sikaser Open loop Pumped Storage Hydro-electric Project (1200 MW) in an area of 160 Ha located at Village East Raipur Pf, Sub-district Bindranavagarh, District Gariyaband, Chhattisgarh by M/s Chhattisgarh State Power Generation Company Limited.

The project/activity falls under Category A of item 1(c), 'River Valley Projects,' as per the Schedule of the Environmental Impact Assessment Notification, 2006, and requires appraisal at the central level by the sectoral EAC in the Ministry.

The total land requirement for the project is 160 hectares, out of which 112 Hectares are forest land and 48 Hectares are non-forest land. It was noted that the application for Stage-I Forest Clearance is yet to be submitted.

Additionally, the Project Proponent has provided a Memorandum of Understanding (MoU) dated 06.10.2023, signed between the Government of Chhattisgarh and M/s Chhattisgarh State Power Generation Company Limited., granting in-principle approval for the establishment of the Pumped Storage Project with a capacity of 1200 MW in District Gariyaband.

19.3.4 The EAC based on the information submitted and as presented during the meeting, recommended the proposal for grant of Specific ToR issued by the Ministry for Open Loop Pumped Storage Projects vide OM dated 14.08.2023 for conducting EIA study for proposed construction of the project for Sikaser Open loop Pumped Storage Hydro-electric Project (1200 MW) in an area of 160 Ha located at Village East Raipur Pf, Sub-district Bindranavagarh, District Gariyaband, Chhattisgarh by M/s Chhattisgarh State Power Generation Company Limited, under the provisions of EIA Notification, 2006, as amended along with the following additional/specific ToR

3.6.5. Recommendation of EAC

Recommended

3.6.6. Details of Terms of Reference

3.6.6.1. Specific

Miscellaneous	
1.	Both capital and recurring expenditure under EMP shall be submitted
2.	Pre-DPR Chapters viz. Layout Map and Power Potential Studies duly approved by CWC/CEA shall be submitted
3.	The PP should submit the photograph of monitoring stations & sampling locations. The photograph should bear the date, time, latitude & longitude of the monitoring station/sampling location. In addition to this PP should submit the original test reports and certificates of the labs which will analyze the samples
4.	Drone video of project site shall be recorded and to be submit
5.	Undertaking need to submitted on affidavit that regarding no activities has been yet started on the project site and water allocated to this scheme shall not be diverted to other purpose
6.	Detailed plan to restore wider roads and convert them into narrow upto 10m after construction of the project
7.	Specific Terms of Reference (ToRs) issued by the Ministry vide Office Memorandum No. F. No.

	IA3-22/33/2022-IA.III dated 14.08.2023 for Pumped storage projects shall be used for preparation of EIA/ EMP reports
8.	As per Ministry's OM dated 1st August, 2013, PP shall submit application to obtain prior approval of Central Government under the Forest Conservation Act, 1980 for diversion of forest land required for such projects will be submitted as soon as the actual extent of forest land required for the project is known to the project proponent, and in case, within 6 months of issuance of ToR. However, no proposal will be put up before EAC without submission of application for forest clearance, wherever applicable
9.	Detailed report on cumulative effect of multiple projects already proposed within the region on the same source
Disaster Management	
1.	Impact of Project activities (specially blasting and drilling) on the aquatic and terrestrial ecosystem, within study area to be studied and be incorporated in EIA/EMP report
2.	PP shall submit the proposal of EAC and seek approval of CEA/CWC for DPR, with a distance of 100 mts from HFL to avoid future damage due to flood. The data and distance of HFL shall be certified by concerned State Government and shall be submitting grant submitting the proposal of grant of EC
Muck Management/ Disaster Management	
1.	Details of quantity of muck generation component wise, types of muck (Excavation in tunnels, pressure shaft and powerhouse etc.) and disposal site/ transportation to be provided
2.	Details of muck management such as dumping sites and its locations, transportation plan along with monitoring mechanism for muck transportation, detailing the road map of project construction site/ indicating the distances from HFL, river, project construction site along with types of road etc
3.	Safety measures for avoiding spill over muck into the riverbed/streams and its flow into the river during the high discharge/ flood or monsoon period. Prepare plan for stabilization of muck disposal sites using biological and engineering measures to ensure that muck does not roll down the slopes and shall be disposed safely and that it does not pollute the natural streams and water bodies in surrounding area
4.	Restoration plan for construction area including dumping site of excavated materials by levelling, filling up of burrow pits, landscaping etc
Socio-economic Study	
1.	Declaration by the project proponent by way of affidavit that "No" Inter-state issue/ policy issue is involved with any State in the project
2.	All the tasks including conducting public hearing shall be done as per the provisions of EIA Notification, 2006 and as amended from time to time. Public hearing issues raised and compliance of the same shall be incorporated in the EIA/ EMP report in the relevant chapter
3.	PP shall submit the credible documents to show the status of land acquisition w.r.t project site from/through the concerned State Government as required under Ministry's OM dated 7th October, 2014 for the project land to be acquired

4.	Land acquired for the project shall be suitably compensated in accordance with the law of the land with the prevailing guidelines. Private land shall be acquired as per provisions of Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013
5.	Budget earmarked for R&R, CSR shall not include in the cost of EMP and compliance of issues raised during Public Hearing.
Environmental Management and Biodiversity Conservation	
1.	Explore the possibilities for reducing the Forest land requirement. The application for obtaining Stage I FC for 112 Ha of forest land involved in the project shall be submitted within stipulated time
2.	Certificate and certified map from Chief Wildlife Warden shall be submitted mentioning that project boundary is not falling in any Ecological Sensitive Area, Wildlife Sanctuary/Tiger/elephant corridor/Critically polluted area within 10 km of Project site
3.	PP shall submit the detailed plan for filling the reservoir for generating envisaged capacity with excess monsoon water only
4.	Transportation Plan for transporting construction materials shall be submitted. Separate chapter for risk assessment of such transportation through/within the Wildlife Sanctuary shall be included in the EIA report
5.	Environmental Cost Benefit Analysis shall be done in terms of loss of Forest ecosystem due to diversion of Forest land/loss of biodiversity, water availability, water uses for generation of hydro power and Ecological flows
6.	The baseline data collection will cover the changes in biological and ecological profile of the region after monsoon with worst case scenario study and critical mineral assessment
7.	Calculation and values of GHGs (CO_2, CH_4 etc.) emissions during construction and during operation till the life of the project shall be estimated and submitted
8.	The longitudinal connectivity/Free flowing sketch be provided in the EIA/EMP report. Presence of any critical mineral zone in the proposed area be clarified from GSI
9.	Quantitative values of Impact modelling of environmental parameters shall be submitted for during construction and operation. Also, mitigation measures shall be submitted in terms of construction and operation phase
10.	Conducting site specific ecological study with respect to riverine ecology focus on fishes diversity, fish migration, habitat and aquatic biota due to construction PSP. Impact assessment on the fish diversity based on the hydrological alteration at the water drawing sources shall be studied
11.	Cumulative Impact of projects on carrying capacity and sustainability of Reservoir/ River /nala of catchment area / due to tapping of water for filling reservoir
12.	Action plan for survival or diversion of the rivulets/stream leading to join river shall be submitted
13.	Impact zone decided prior to base line data generation and accordingly, sampling location shall be finalized. Baseline data as mentioned in Specific ToR shall be collected for preparation of EIA/ EMP report along with soil characteristics which shall be studied at minimum 10 locations. The ground water level at 10 locations shall be measured in project area in all three seasons

14.	A study shall be carried out on impact of project activity on the aquatic and terrestrial ecosystem, within project area classifying the impact zones (highly impact/low impact zone) based on seasonal variations and covering the aspects related to impacts on aquatic ecosystem/ primary productivity due to quantity of water to be lifted for power generation and thermal stratification. Accordingly, Environment Management plan shall be prepared
15.	Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP
16.	Scope of watershed development in the 10 km radius of the project shall be studied in consultation with Indian Council of Agriculture Research (ICAR) Institutes/ Expert Govt. institutions and accordingly a detailed Water Shed Development Plan shall be prepared and incorporated in EIA/ EMP report
17.	i. The project area should not come up on any critical mineral zone to be verified by GSI/NMDC.
18.	Any archaeological sites in the vicinity of the project, if any, then it shall be certified by ASI. No mineral zone on the proposed site be certified by Geological Survey of India or any other concerned Government Organization
19.	The Sub-committee shall conduct site visit before the grant of Environmental Clearance for stipulating specific environmental conditions

3.6.6.2. Standard

1(c)	**River Valley/Irrigation projects**
Scope of EIA Study	
1.	The EIA Report should identify the relevant environmental concerns and focus on potential impacts that may change due to the construction of proposed project. Based on the baseline data collected for three (3) seasons (Pre-monsoon, Monsoon and Winter seasons), the status of the existing environment in the area and capacity to bear the impact on this should be analysed. Based on this analysis, the mitigation measures for minimizing the impact shall be suggested in the EIA/EMP study.
Details of the Project and Site	
1.	General introduction about the proposed project.
2.	Details of Project and site giving L-Sections of all U/S and D/S Projects with all relevant maps and figures. Connect such information as to establish the total length of interference of Natural River and the committed unrestricted release from the site of Dam/Barrage into the main river.
3.	A map of boundary of the project site giving details of protected areas in the vicinity of 25 km of project location.
4.	Location details on a map of the project area with contours indicating main project features. The project layout shall be superimposed on a contour map of ground elevation showing main project features (viz. location of dam, Head works, main canal, branch canals, quarrying etc.) shall be depicted in a scaled map.
5.	Layout details and map of the project along with contours with project components clearly marked with proper scale maps of at least 1:50,000 scale and printed at least on A3 scale for clarity.

6.	Existence of National Park, Sanctuary, Biosphere Reserve etc. in the study area, if any, should be detailed and presented on a map with distinct distances from the project components.
7.	Drainage pattern and map of the river catchment up to the proposed project site.
8.	Delineation of critically degraded areas in the directly draining catchment on the basis of Silt Yield Index as per the methodology of Soil and Land use Survey of India.
9.	Soil characteristics and map of the project area.
10.	Geological and Seismo-tectonic details and maps of the area surrounding the proposed project site showing location of dam site and canal sites.
11.	Remote Sensing studies, interpretation of satellite imagery, topographic sheets along with ground verification shall be used to develop the land use/land cover pattern of the study using overlaying mapping techniques viz. Geographic Information System (GIS), False Color Composite (FCC) generated from satellite data of project area.
12.	Land details including forests, private and other land.
13.	Demarcation of snow fed and rain fed areas for a realistic estimate of the water availability.
14.	Different riverine habitats like rapids, pools, side pools and variations in the river substratum bedrocks, rocks, boulders, sand/silt or clay etc. need to be covered under the study
Description of Environment and Baseline Data	
1.	To know the present status of environment in the area, baseline data with respect to environmental components air, water, noise, soil, land and biology & biodiversity (flora & fauna), wildlife, socioeconomic status etc. should be collected within 10 km radius of the main components of the project/site i.e. dam site and power house site. The air quality and noise are to be monitored at such locations which are environmentally & ecologically more sensitive in the study area. The baseline studies should be collected for 1 season (Preferably Monsoon season). Flora-Fauna in the catchment and command area should be documented. The study area should comprise of the following:
2.	(i) Catchment area up to the dam/barrage site.
3.	(ii) Submergence Area.
4.	(iii) Project area or the direct impact area should comprise of area within 10 km radius of the main project components like dam, canals etc.
5.	(iv) Downstream upto 10 km from the tip of the reservoir.
Details of the Methology	
1.	The methodology followed for collection of base line data along with details of number of samples and their locations in the map should be included. Study area should be demarcated properly on the appropriate scale map. Sampling sites should be depicted on map for each parameter with proper legends. For Forest Classification, Champion and Seth (1968) methodology should be followed.
Methodology for Collection of Biodiversity Data	
1.	The number of sampling locations should be adequate to get a reasonable idea of the diversity and other attributes of flora and fauna. The guiding principles should be the size of the study area (larger area should have larger

	number of sampling locations) and inherent diversity at the location, as known from secondary sources (e.g. eastern Himalayan and low altitude sites should have a larger number of sampling locations owing to higher diversity).
2.	The entire area should be divided in grids of 5kmX5km preferably on a GIS domain. There after 25% of the grids should be randomly selected for sampling of which half should be in the directly affected area (grids including project components such as reservoir, dam, powerhouse, tunnel, canal etc.) and the remaining in the rest of the area (areas of influence in 10 km radius form project components). At such chosen location, the size and number of sampling units (e.g. quadrates in case of flora/transects in case of fauna) must be decided by species area curves and the details of the same (graphs and cumulative number of species in a tabulated form) should be provided in the EIA report. Some of the grids on the edges may not be completely overlapping with the study area boundaries. However, these should be counted and considered for selecting 25% of the grids. The number of grids to be surveyed may come out as a decimal number (i.e. it has an integral and a fractional part) which should be rounded to the next whole number.
3.	The conventional sampling is likely to miss the presence of rare, endangered and threatened (r.e.t.) species since they often occur in low densities and in case of faunal species are usually secretive in behaviour. Reaching the conclusion about the absence of such species in the study area based on such methodology is misleading. It is very important to document the status of such species owing to their high conservation value. Hence likely presence of such species should be ascertained from secondary sources by a proper literature survey for the said area including referring to field guides which are now available for many taxonomic groups in India. Even literature from studies/surveys in the larger landscapes which include the study area for the concerned project must be referred to, since most species from adjoining catchments is likely to be present in the catchments in question. In fact such literature form the entire state can be referred to. Once a listing of possible r.e.t. species form the said area is developed, species specific methodologies should be adopted to ascertain their presence in the study area which would be far more conclusive as compared to the conventional sampling. If the need be, modern methods like camera trapping can be resorted to, particularly for areas in the eastern Himalayas and for secretive/nocturnal species. A detailed listing of the literature referred to, for developing lists of r.e.t. species should be provided in the EIA reports.The conventional sampling is likely to miss the presence of rare, endangered and threatened (r.e.t.) species since they often occur in low densities and in case of faunal species are usually secretive in behaviour. Reaching the conclusion about the absence of such species in the study area based on such methodology is misleading. It is very important to document the status of such species owing to their high conservation value. Hence likely presence of such species should be ascertained from secondary sources by a proper literature survey for the said area including referring to field guides which are now available for many taxonomic groups in India. Even literature from studies/surveys in the larger landscapes which include the study area for the concerned project must be referred to, since most species from adjoining catchments is likely to be present in the catchments in question. In fact such literature form the entire state can be referred to. Once a listing of possible r.e.t. species form the said area is developed, species specific methodologies should be adopted to ascertain their presence in the study area which would be far more conclusive as compared to the conventional sampling. If the need be, modern methods like camera trapping can be resorted to, particularly for areas in the eastern Himalayas and for secretive/nocturnal species. A detailed listing of the literature referred to, for developing lists of r.e.t. species should be provided in the EIA reports.
4.	The R.E.T. species referred to in this point should include species listed in Schedule I and II of Wildlife (Protection) Act, 1972 and those listed in the red data books (BSI, ZSI and IUCN).
Components of the EIA Study: Various aspects to be studied and provided in the EIA/EMP report are as follow s:	
1.	null
2.	null
3.	Physical geography, Topography, Regional Geological aspects and structure of the Catchment.
4.	Tectonics, seismicity and history of past earthquakes in the area. A site specific study of the earthquake parameters will be done. The results of the site specific earthquake design shall be sent for approval of the NCSDP (National Committee of Seismic Design Parameters, Central water Commission, New Delhi for large dams.

5.	Landslide zone or area prone to landslide existing in the study area should be examined.
6.	Presence of important economic mineral deposit, if any.
7.	Justification for location & execution of the project in relation to structural components (dam /barrage height).
8.	Impact of project on geological environment.
9.	null
10.	Meteorology (viz. Temperature, Relative humidity, wind speed/direction etc.) to be collected from nearest IMD station.
11.	Ambient Air Quality with parameters viz. Suspended Particulate Matter (SPM), Respirable Suspended Particulate Matter (RSPM) i.e. suspended particulate materials < 10 microns, Sulphur dioxide (SO2) and Oxides of Nitrogen (NOX) in the study area at 5-6 Locations.
12.	Existing Noise Levels and traffic density in the study area at 5-6 Locations.
13.	null
14.	Soil classification, physical parameters (viz., texture, Porosity, Bulk Density and water holding capacity) and chemical parameters (viz. pH, electrical conductivity, magnesium, calcium, total alkalinity, chlorides, sodium, potassium, organic carbon, available potassium, available phosphorus, SAR, nitrogen and salinity, etc.) at @ one sample/ha of command area.
15.	null
16.	(i) Generation of thematic maps viz, slope map, drainage map, soil map, land use and land cover map, etc. Based on these, thematic maps, an erosion intensity map should be prepared.
17.	null
18.	History of the ground water table fluctuation in the study area.
19.	Water quality for both surface water and ground water for (i) Physical parameters (pH, temperature, electrical conductivity, TSS); (ii) Chemical parameters (Alkalinity, Hardness, BOD, COD, NO2, PO4, CI, SO4, Na, K, Ca, Mg, Silica, Oil & Grease, phenolic compounds, residual sodium carbonate); (iii) Bacteriological parameter (MPN, Total coliform) and (iv) Heavy Metals (Pb, As, Hg, Cd, Cr-6, total Cr, Cu, Zn, Fe) (6 locations).
20.	Delineation of sub and micro-watersheds, their locations and extent based on the All India Soil and Land Use Survey of India (AISLUS), Department of Agriculture, Government of India. Erosion levels in each micro-watershed and prioritization of micro-watershed through silt yield index (SYI) method of AISLUS
21.	Hydro-Meteorology of the project viz. precipitation (snowfall, rainfall), temperature, relative humidity, etc. Hydro-meteorological studies in the catchment area should be established along-with real time telemetry and data acquisition system for inflows monitoring.
22.	Run off, discharge, water availability for the project, sedimentation rate, etc.

23.	Basin characteristics
24.	Catastrophic events like cloud bursts and flash floods, if any, should be documented.
25.	For estimation of Sedimentation Rate, direct sampling of river flow is to be done during the EIA study. The study should be conducted for minimum one year. Actual silt flow rate to be expressed in ha-m km2 year-1.
26.	Set up a G&D monitoring station and a few rain gauge stations in the catchment area for collecting data during the investigation.
27.	Flow series, 10 daily with 90%, 75% and 50% dependable years discharges.
28.	Information on the 10-daily flow basis for the 90 per cent dependable year the flow intercepted at the dam, the flow diverted to the power house and the spill comprising the environmental flow and additional flow towards downstream of the dam for the project may be given.
29.	The minimum environmental flow shall be 20% of the flow of four consecutive lean months of 90% dependable year, 30% of the average monsoon flow. The flow for remaining months shall be in between 20-30%, depending on the site specific requirements. A site specific study shall be carried out by an expert organization.
30.	Sedimentation data available with CWC may be used to find out the loss in storage over the years.
31.	Hydrological studies/data as approved by CWC shall be utilized in the preparation of EIA/EMP report. Actual hydrological annual yield may also be given in the report. Sedimentation data available with CWC may be used to find out the loss in storage over the years.
32.	A minimum of 1 km distance from the tip of the reservoir to the tail race tunnel should be maintained between upstream and downstream projects.
33.	Besides primary studies, review of secondary data/literature published for project area on flora & fauna including RET species shall be reported in EIA/EMP report.
34.	null
35.	Characterization of forest types (as per Champion and Seth method) in the study area and extent of each forest type as per the Forest Working Plan.
36.	Documentation of all plant species i.e. Angiosperm, Gymnosperm, Pteriodophytes, Bryophytes (all groups).
37.	General vegetation profile and floral diversity covering all groups of flora including lichens and orchids. A species wise list may be provided.
38.	Assessment of plant species with respect to dominance, density, frequency, abundance, diversity index, similarity index, importance value index (IVI) , Shannon Weiner index etc. of the species to be provided. Methodology used for calculating various diversity indices along with details of locations of quadrates, size of quadrates etc. to be reported within the study area in different ecosystems.
39.	Existence of National park, Sanctuary, Biosphere Reserve etc in the study area, if any, should be detailed.
4	Economically important species like medicinal plants, timber, fuel wood etc.

0.	
41.	Details of endemic species found in the project area.
42.	Flora under RET categories should be documented using International Union for the Conservation of Nature and Natural Resources (IUCN) criteria and Botanical Survey of India's Red Data list along-with economic significance. Species diversity curve for RET species should be given.
43.	Cropping pattern and Horticultural Practices in the study area.
44.	null
45.	Fauna study and inventorisation should be carried out for all groups of animals in the study area. Their present status alongwith Schedule of the species.
46.	Documentation of fauna plankton (phyto and zooplankton), periphyton, benthos and fish should be done and analysed.
47.	Information (authenticated) on Avi-fauna and wildlife in the study area.
48.	Status of avifauna their resident/ migratory/ passage migrants etc.
49.	Documentation of butterflies, if any, found in the area.
50.	Details of endemic species found in the project area.
51.	RET species-voucher specimens should be collected along-with GPS readings to facilitate rehabilitation. RET faunal species to be classified as per IUCN Red Data list and as per different schedule of Indian Wildlife (Protection) Act, 1972.
52.	Existence of barriers and corridors, if any, for wild animals.
53.	Compensatory afforestation to compensate the green belt area that will be removed, if any, as part of the proposed project development and loss of biodiversity.
54.	Collection of primary data on agricultural activity, crop and their productivity and irrigation facilities components.
55.	For categorization of sub-catchment into various erosion classes and for the consequent CAT plan, the entire catchment (Indian Portion) is to be considered and not only the directly the draining catchment.
56.	Documentation of aquatic fauna like macro-invertebrates, zooplankton, phytoplantktons, benthos etc.
57.	Fish and fisheries, their migration and breeding grounds.
5	Fish diversity composition and maximum length & weight of the measured populations to be studies for

8.	estimation of environmental flow.
59.	Conservation status of aquatic fauna.
60.	Sampling for aquatic ecology and fisheries and fisheries must be conducted during three seasons Pre-monsoon (summer), monsoon and winter. Sizes (length & weight) of important fish species need to be collected and breeding and feeding grounds should also be identified along the project site or in vicinity.
61.	Collection of baseline data on human settlements, health status of the community and existing infrastructure facilities for social welfare including sources of livelihood, job opportunities and safety and security of workers and surroundings population.
62.	Collection of information with respect to social awareness about the developmental activity in the area and social welfare measures existing and proposed by project proponent.
63.	Collection of information on sensitive habitat of historical, cultural and religious and ecological importance.
64.	The socio-economic survey/ profile within 10 km of the study area for demographic profile; Economic Structure; Developmental Profile; Agricultural Practices; Infrastructure, education facilities; health and sanitation facilities; available communication network etc.
65.	Documentation of demographic, Ethnographic, Economic Structure and development profile of the area.
66.	Information on Agricultural Practices, Cultural and aesthetic sites, Infrastructure facilities etc.
67.	Information on the dependence of the local people on minor forest produce and their cattle grazing rights in the forest land.
68.	List of all the Project Affected Families with their name, age, educational qualification, family size, sex, religion, caste, sources of income, land & house holdings, other properties, occupation, source of income, house/land to be acquired for the project and house/land left with the family, any other property, possession of cattle, type of house etc.
69.	Special attention has to be given to vulnerable groups like women, aged persons etc. and to any ethnic/indigenous groups that are getting affected by the project.
Impact Prediction and Mitigation Measures	
1.	The adverse impact due to the proposed project should be assessed and effective mitigation steps to abate these impacts should be described.
2.	Changes in ambient and ground level concentrations due to total emissions from point, line and area sources.
3.	Effect on soil, material, vegetation and human health.
4.	Impact of emissions from DG set used for power during the construction, if any, on air environment.
5.	Pollution due to fuel combustion in equipments and vehicles
6.	Fugitive emissions from various sources
7.	Changes in surface and ground water quality

8.	Steps to develop pisci-culture and recreational facilities
9.	Changes in hydraulic regime and downstream flow.
10.	Water pollution due to disposal of sewage
11.	Water pollution from labour colonies/ camps and washing equipment.
12.	Adverse impact on land stability, catchment of soil erosion, reservoir sedimentation and spring flow (if any) (a) due to considerable road construction / widening activity (b) interference of reservoir with the inflowing stream (c) blasting for commissioning of HRT, TRT and some other structures.
13.	Changes in land use / land cover and drainage pattern
14.	Immigration of labour population
15.	Quarrying operation and muck disposal
16.	Changes in land quality including effects of waste disposal
17.	River bank and their stability
18.	Impact due to submergence.
19.	Impact on forests, flora, fauna including wildlife, migratory avi-fauna, rare and endangered species, medicinal plants etc.
20.	Pressure on existing natural resources
21.	Deforestation and disturbance to wildlife, habitat fragmentation and wild animal's migratory corridors
22.	Compensatory afforestation-identification of suitable native tree species for compensatory afforestation and green belt.
23.	Impact on fish migration and habitat degradation due to decreased flow of water
24.	Impact on breeding and nesting grounds of animals and fish.
25.	Impact on local community including demographic profile.
26.	Impact on socio-economic status

27.	Impact on economic status.
28.	Impact on human health due to water / vector borne disease
29.	Impact on increase traffic
30.	Impact on Holy Places and Tourism
31.	Impacts of blasting activity during project construction which generally destabilize the land mass and leads to landslides, damage to properties and drying up of natural springs and cause noise population will be studies. Proper record shall be maintained of the baseline information in the post project period.
32.	Positive and negative impacts likely to be accrued due to the project are listed.
Environmental Management Plan	
1.	null
2.	Biodiversity and Wildlife Conservation and Management Plan for the conservation and preservation of rare, endangered or endemic floral/faunal species or some National Park/Sanctuary/ Biosphere Reserve or other protected area is going to get affected directly or indirectly by construction of the project, then suitable conservation measures should be prepared in consultation with the State Forest Department and with the physical and financial details. Suitable conservation techniques (in-situ/ ex-situ) will be proposed under the plan and the areas where such conservation is proposed will be marked on a project layout map.
3.	Compensatory Afforestation shall be prepared by the State Forest Department in lieu of the forest land proposed to be diverted for construction of the project as per the Forest (Conservation) Act, 1980. Choice of plants for afforestation should include native and RET species, if any. This will be a part of the forest clearance proposal.
4.	Fisheries Conservation and Management Plan - a specific fisheries management measures should be prepared for river and reservoir. If the construction of fish ladder/ fish-way etc. is not feasible then measures for reservoir fisheries will be proposed. The plan will detail out the number of hatcheries, nurseries, rearing ponds etc. proposed under the plan with proper drawings. If any migratory fish species is getting affected then the migratory routes, time/season of upstream and downstream migration, spawning grounds etc will be discussed in details.
5.	Green Belt Development Plan along the periphery of the reservoir, approach roads around the colonies and other project components, local plant species must be suggested with physical and financial details. A layout map showing the proposed sites for developing the green belt should be prepared.
6.	Environmental Monitoring Programme to monitor the mitigatory measures implemented at the project site is required will be prepared. Provision for Environment Management Cell should be made. The plan will spell out the aspects required to be monitored, monitoring indicators/parameters with respect to each aspect and the agency responsible for the monitoring of that particular aspect throughout the project implementation.
7.	Catchment Area Treatment (CAT) Plan should be prepared micro-watershed wise. Identification of free draining/ directly draining catchment based upon Remote Sensing and Geographical Information System (GIS) methodology and Sediment Yield Index (SYI) method of AISLUS, Deptt. of Agriculture, Govt. of India coupled with ground survey. Areas or watersheds falling under 'very severe' and 'severe' erosion categories should be provided and required to be treated. Both biological as well as engineering measures should be proposed in consultation with State Forest Department for areas requiring treatment. Year-wise schedule of work and monetary allocation should be provided. Mitigation measures to check shifting cultivation in the catchment area with provision for alternative and better agricultural practices should be included.

8.	Study of Design Earthquake Parameters: A site specific study of earthquake parameters should be done. Results of the site specific earthquake design parameters should be approved by National Committee of Seismic Design Parameters, Central Water Commission (NCSDP), New Delhi.
9.	Dam Break Analysis and Disaster Management Plan The outputs of dam break model should be illustrated with appropriate graphs and maps clearly bringing out the impact of Dam Break scenario. To identify inundation areas, population and structures likely to be affected due to catastrophic floods in the event of dam failure. DMP will be prepared with the help of Dam Break Analysis. Maximum water level that would be attained at various points on the downstream in case of dam break will be marked on a detailed contour map of the downstream area, to show the extent of inundation. The action plan will include Emergency Action and Management plan including measures like preventive action notification, warning procedure and action plan for co-ordination with various authorities.
10.	Reservoir Rim Treatment Plan for stabilization of land slide / land slip zones, if any, around the reservoir periphery is to be prepared based on detailed survey of geology of the reservoir rim area. Suitable engineering and biological measures for treatment of identified slip zones to be suggested with physical and financial schedule. Layout map showing the landslide/landslip zones shall be prepared and appended in the chapter.
11.	Muck Disposal Plan- suitable sites for dumping of excavated material should be identified in consultation with the State Pollution Control Board and Forest Department. All Muck disposal sites should be minimum 30 m away from the HFL of river. Plan for rehabilitation of muck disposal sites should also be given. The L- section/ cross section of muck disposal sites and approach roads to be given. Financial out lay for this may be given separately. Deatailed muck transportation plan delinating the path ways, number of trucks, quantity of muck to be transportated along with monitoring mechanism using latest technology, shall be prepared.
12.	Restoration Plan for Quarry Sites and landscaping of colony areas, working areas, roads etc. Details of the coarse/fine aggregate/clay etc. required for construction of the project and the rock/clay quarries/river shoal sites identified for the project should be discussed along-with the Engineering and Biological measures proposed for their restoration with physical and financial details. Layout map showing quarry sites vis-à-vis other project components, should be prepared.
13.	Resettlement and Rehabilitation Plan needed to be prepared on the basis of findings of the socio- economic survey coupled with the outcome of public consultation held. The R&R package shall be prepared after consultation with the representatives of the project affected families and the State Government. Detailed budgetary estimates are to be provided. Resettlements site should be identified. The plan will also incorporate community development strategies.
14.	Public Health Delivery Plan including the provisions of drinking water supply for local population shall be in the EIA/EMP Report. Status of the existing medical facilities in the project area shall be discussed. Possibilities of strengthening of existing medical facilities, construction of new medical infrastructure etc. will be explored after assessing the need of the labour force and local populace.
15.	Local Area Development Plan to be formulated in consultation with the Revenue Officials and Village Pancahayats. Appropriate schemes shall be prepared under EMP for the Local Area Development Plan with sufficient financial provisions.
16.	Labour Management Plan for their Health and Safety.
17.	Sanitation and Solid waste management plan for domestic waste from colonies and labour camps etc.
18.	Energy Conservation Measures for the work force during construction with physical and financial details. Alternatives will be proposed for the labour force so that the exploitation of the natural resource (wood) for the domestic and commercial use is curbed.
19.	Environmental safeguards during construction activities including Road Construction.

20.	A summary of Cost Estimates for all the plans, cost for implementing all the Environmental Management Plans.
21.	Water, Air and Noise Management Plans to be implemented during construction and post-construction periods.

4. Any Other Item(s)

N/A

5. List of Attendees

Sr. No.	Name	Designation	Email ID	Remarks
1	Prof G J Chakrapani	Chairman, EAC	cha**********@gmail.com	
2	Dr Uday Kumar R Y	Member (EAC)	uda********@yahoo.com	
3	Dr Mukesh Sharma	Member (EAC)	muk***@iitk.ac.in	
4	Dr J V Tyagi	Member (EAC)	jvt******@gmail.com	
5	Shri Kartik Sapre	Member (EAC)	kar********@gmail.com	
6	Shri Ajay Kumar Lal	Member (EAC)	akl****@gmail.com	
7	Shri Rajeev Varshney	Member	rva**********@gov.in	Absent
8	Shri Piyush Ranjan	Member	emo***@nic.in	Absent
9	Dr J A Johnson	Member (EAC)	jaj@wii.gov.in	
10	Dr A K Sahoo	Member (EAC)	ami***@gmail.com	
11	Yogendra Pal Singh	Scientist E	yog*******@nic.in	

MINUTES OF THE 19TH MEETING OF THE EXPERT APPRAISAL COMMITTEE FOR RIVER VALLEY AND HYDROELECTRIC PROJECTS HELD ON 30TH NOVEMBER, 2024 THROUGH VIDEO CONFERENCE (ONLINE)

The 19th meeting (Virtual mode) of the EAC for River Valley & Hydroelectric Projects organized by the Ministry of Environment, Forest and Climate Change, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi, was held on 30.11.2024 under the Chairmanship of Prof. G. J. Chakrapani. The list of Members present in the meeting is at **Annexure I**.

Confirmation of the Minutes of the 18th EAC meeting:

The Minutes of the Meeting of the 18th EAC meeting held on 5th November, 2024 were confirmed.

Agenda Item No. 19.1

Myntdu Leshka Hydro Electric Project Stage-II (3X70) MW in an area of 85.229 Ha located at Village Bataw, Amtra, Satpator, Kharkhana and Tarangblang, Sub-district Khliehriat and Amlarem, District East Jaintia Hills and West Jaintia Hills, Meghalaya by M/s Meghalaya Power Generation Corporation Limited – Environmental Clearance (EC) - reg.

[Proposal No. IA/ML/RIV/499490/2024; F. No. J-12011/13/2018-IA.I(R)]

19.1.1: The proposal is for grant of Environmental Clearance (EC) to the project for Myntdu Leshka Hydro Electric Project Stage-II (3X70) MW in an area of 85.229 Ha located at Village Bataw, Amtra, Satpator, Kharkhana and Tarangblang, Sub-district Khliehriat and Amlarem, District East Jaintia Hills and West Jaintia Hills, Meghalaya by M/s Meghalaya Power Generation Corporation Limited.

19.1.2: The Project Proponent and the accredited Consultant R. S. Envirolinks Technologies Pvt. Ltd., made a detailed presentation on the salient features of the project and informed that:

i. The Myntdu Leshka HEP Stage-II located in East Jaintia Hills District and West Jaintia Hills District of Meghalaya State is planned as a Run-of-the-river for hydropower development of the river Myntdu.

ii. The diversion site is located at Latitude 25◦13’17.45” N, Longitude 92◦13’35.96” E near Trangblang village at the right bank of Myntdu river in West Jaintia district and near Bataw village at the left bank of Myntdu river in East Jaintia district.

iii. The dam site is located at about 220 km from the nearest railhead at Guwahati in Assam and can be approached by NH-6 from Guwahati to Shillong followed by NH-40 from

Shillong to Jowai, NH-40E from Jowai to Amlarem, State Road from Amlarem to Pdengshakap or Amtasam, Kutcha Road from Pdengshakap or Amtasam to Trangblang.

iv. The Terms of Reference of Myntdu Leshka HEP Stage-II (210 MW) project was accorded by Ministry of Environment, Forests & Climate Change (MoEF&CC), Government of India vide letter no. J-12011/13/2018-IA-I (R) dated 07.12.2018.

v. The project requires to divert 11.349 of forest area for non-forestry purposes i.e., for construction of various project components. Proposal for diversion of forest area is submitted on Parivesh portal vide Proposal No. FP/ML/HYD/IRRIG/406655/2022 dated 15/06/2023.

vi. The project scheme comprises a concrete gravity Dam that diverts the water into intake placed on the right bank of the river. The diverted water is planned to be passed through an underground water conductor system comprising the pressure shaft. A surface powerhouse is proposed on the right bank of the river. Tailwater from the powerhouse will be discharged back into the Myntdu river. The project would generate an annual energy generation of 605.64 MU in a 90% dependable year. The project envisages construction of:

- A 46.0 m high concrete gravity dam across the River Myntdu to provide a Live Storage of 2.73 MCum with FRL at El. 270.0 m and MDDL at El. 254.50 m
- A 6.175 km long and 6.0 m dia. headrace tunnel terminating in a surge shaft
- A 69 m high, 21 m dia. surge shaft
- A 835 m long, 4.8 m dia. pressure shaft
- A Surface powerhouse having an installation of 3 Francis Turbine driven generating units of 70 MW each operating under a rated head of 228.38 m; and
- The tail water level at an elevation of 13m to release water back to the river.

vii. The project envisages utilization of the available head between El. 270 m (FRL) and El. 13 m (TWL). The river water is proposed to be diverted by building a 46 m high concrete gravity dam on Myntdu River wherein the diverted water is planned to be passed through a 6.175 km long headrace tunnel of 6.0 m dia. terminating in a surge shaft. A surface powerhouse housing 3 Francis Turbines of 70 MW each with an operating rated head of 228.38 m is proposed on the right bank of the river. Tailwater from the powerhouse will be discharged back into the Myntdu river. The project would afford an annual energy generation of 605.64 MU in a 90% dependable year.

viii. **Land requirement**:

Forest Land	: 11.349 ha
Non-forest Land	: 73.88 ha
Total Land	: 85.229 Ha

ix. **Demographic details in 10 km radius of project area:**

The proposed Myntdu Leshka HEP Stage-II Project is located in the East Jaintia Hills District and West Jaintia Hills District of Meghalaya. The project is a run-of-the-river scheme on Myntdu river comprised of a concrete gravity dam located near village Trangblang which diverts the water into intake placed on the right bank of the river. There is a total of 52 villages identified in the study area including five (05) Project Affected villages. Out of these total villages, 21 villages are in East Jaintia Hills district and the remaining 31 villages are in West Jaintia Hills district. Out of the five project-affected villages, one affected village is falling in East Jaintia Hills district, while, the four affected villages are falling in West Jaintia Hills district.

x. The baseline socio-economic profile is based on the Census of India 2011.Total households in the villages are 4060 with a total population of 22,113 out of which 11,111 (50.25%) are males and 11002 (49.75%) are females. The sex ratio in these villages is 990 females per 1000 males.

The population of Scheduled Tribes (ST) is 94.12% whereas only 1.04% of the total population belongs to Scheduled Castes. The average household size in the study area is 5. About 23.52% of the total population is in the 0-6 year age group. The literacy rate in the study area is 59.11%, among males, it is 57.48% while among females is 60.76% creating a gender gap of (-) 3.28% in favor of women.

As per the Census 2011, about 43.50% of the population is engaged in different kinds of works. Of the total working population, 74.03% are Main Workers and the remaining 25.97% are Marginal Workers.
The majority of the working population (55.99%) is engaged in agricultural activities, out of which 35.34% are Cultivators and 20.65% are Agricultural Labours. An only a small percentage (0.67%) of the population is engaged as Household Industrial Workers and about 43.35% are in miscellaneous services. The gender gap in Cultivators is about 24.74% while the gap in population engaged as Agricultural Labours is 8.66%.

xi. **Water requirement:** 101.89 Cumec (design discharge)

xii. **Project Cost**: The estimated project cost is Rs 3595.15 crore. Total capital cost earmarked towards Environment Management Plan/environmental pollution control measures is Rs. 21079 lakh and the Recurring cost (operation and maintenance) will be about Rs. 2909.16 lakh.

xiii. **Project Benefit**: Total Employment will be 2000 persons as direct & persons indirect after expansion. Industry proposes to allocate Rs. 1506.20 Lakh towards CER (as per Ministry's OM dated 30th Sep 2020).

xiv. **Environmental Sensitive area:** Narpuh Wildlife Sanctuary in East Jaintia Hills is the nearest Protected Areas in the vicinity of the proposed MLHEP Stage-II. As per the letter of the Principal Chief Conservator of Forests (Biodiversity & Wildlife) & Chief Wildlife

Warden, Meghalaya, the proposed MLHEP Stage-II is outside the Eco-sensitive zone and also more than 10 kms (18.4 kms) from the boundary of Narpuh Wildlife Sanctuary.

xv. Government of Meghalaya vide letter no. POWER-4/2018/13 dated 31st Jan 2018 approved the allotment for implementation of Myntdu Leshka Stage II HEP.

xvi. **Resettlement and rehabilitation:** Total 5 villages shall be affected due to acquisition of land for various components of proposed project. Total 122 project affected families have been identified; all these 122 families will be losing land only. Further, all the land from Surge Shaft upto Power House Switch Yard, including proposed roads, are agricultural land where the main crops are Betel nut, betel leaf, broomstick, orange trees, etc. All these assets will have to be compensated for as well. The actual rate for crops will be assessed by the Agriculture and Horticulture Department, once commencement of works for the Project has started. A budgetary provision of Rs. 18614.32 lakh has been kept towards implementation of R&R plan and economic development. *Actual cost of land as per market value and assets will be assessed by Districts Deputy Commissioners and Districts Horticulture Officers during acquiring process.*

xvii. **Scheduled – I species**: As per Wildlife Protection Amendment Act, 2022, Indian Grey Mongoose, Golden Jackal, Wild dog, Jungle cat, Small Indian Civet, Barking Deer, Porcupine, Forest Wagtail , Red breasted parakeet, Spotted Owlet, Brown wood owl , Rat snake, Monocled cobra is listed as Schedule I species.

xviii. **Alternative Studies:** Three alternative dam sites were chosen on the basis of the site-specific topographical conditions. The proposed dam site is fixed at the location chosen as per the original proposal given by CWC. Three Alternative alignments have been examined, Alternative I and Alternative II taking different alignment of HRT with different intake location. Alternative III is as per GSI recommendation with different HRT alignment but with same intake location as in Alternative II. Two alternative sites for surge shaft have been identified. The location SS1 is as per the original location selected by CWC. SS2 is about 330 m downward from the original location and the penstocks alignment have been realigned accordingly. Three locations of the Power House sites have been examined, PP1 is as per the original location recommended by CWC and the location of PP2 has been shifted uphill by 20 m from PP1 and nearby P3.

xix. Baseline Environmental Scenario:

Period	**From March 2020 To May 2024**			
AAQ parameters at 06 locations (min. &	**Unit in** $\mu g/m^3$			
	Core	**Min**	**Max**	**Standards**
	PM 2.5	7.8	16.5	60
	PM 10	16.7	28.6	100

Max.)

SO_2	3.1	4.6	80
NO_2	4.5	6.8	80
Buffer	**Min**	**Max**	
PM 2.5	1.9	17.3	60
PM 10	0.7	29.0	100
SO_2	0.7	5.3	80
NO_2	0.6	7.2	80

Incremental GLC Level

Criteria Pollutant [PM_{10}, $PM_{2.5}$, SO_2, NO_x, Other parameters specific to the sector (Please specify)]	Unit [$\mu g/m^3$]	Baseline Concentration [A]	Predicted incremental value considering worst case stability class [B]	Total GLC [A]+[B]
PM10	$\mu g/m^3$	23.0	20	43.0
PM2.5	$\mu g/m^3$	58.4	10	68.4
SOx	$\mu g/m^3$	7.4	4	11.4
NOx	$\mu g/m^3$	10.3	5	15.3

River water samples (06 samples)

Core Zone

S. No	Parameters	Min	Max	Standards
1	pH	4.4	5.3	8.5
2	Total Dissolved Solids, mg/L	31.2	110.5	500
3	Dissolved Oxygen (mg/l)	7.1	9	6
4	Chloride (as Cl), mg/L	18.6	27.1	250
5	Total Hardness (as CaCO3), mg/L	61.1	81.52	300
6	Biological Oxygen Demand (mg/l)	1.93	2.5	0
7	Chemical Oxygen Demand (mg/l)	6.6	8.8	0
8	Total Coliform (MPN/100 ml)	21	36	50

Buffer Zone

S. No	Parameters	Min	Max	Standards
1	pH	4.2	5.1	8.5
2	Total Dissolved Solids, mg/L	26	8.5	500

3	Dissolved Oxygen (mg/l)	6.9	8.2	6	
4	Chloride (as Cl), mg/L	14.95	26.6	250	
5	Total Hardness (as CaCO3), mg/L	62.54	81.33	300	
6	Biological Oxygen Demand (mg/l)	2	2.49	0	
7	Chemical Oxygen Demand (mg/l)	2.46	8.2	0	
8	Total Coliform (MPN/100 ml)	22	80	50	

Pond water samples

-

Groundwater water samples quality at 0 location

-

Noise levels Leq (Day & Night) at 06 locations

Noise Level	Zone	**Leq Day dB(A)**		**Leq Night dB(A)**		**Prescribed Limits**	
		From	To	From	To	Day	Night
Core	Residential	47.3	53.8	35.32	40.5	55	45
Buffer	Commercial	48.3	58.5	36.32	44.2	65	55

Soil Quality at 6 Locations

Core Zone

S. No.	**Parameters**	**Min**	**Max**	**Prescribed Limits**
1	Calcium (mg/kg)	740	1520	500
2	Sodium Absorption Ratio	034	0.39	10
3	Phosphorus (kg/ha)	6.9	28.7	50
4	Carbon (%)	0.45	0.71	1
5	Salinity (ppt)	0	0	0.01
6	Magnesium (mg/kg)	440	1034	500
7	Nitrogen (kg/ha)	223	267	500
8	Potassium (kg/ha)	190	315	500
Buffer Zone				
1	Calcium (mg/kg)	890	1320	500
2	Sodium Absorption Ratio	0.24	0.41	10
3	Phosphorus (kg/ha)	7.6	26.7	50

	4	Carbon (%)	0.55	1.24	1	
	5	Salinity (ppt)	0	0	0.01	
	6	Magnesium (mg/kg)	629	990	500	
	7	Nitrogen (kg/ha)	160	225	500	
	8	Potassium (kg/ha)	225	410	500	
Flora & Fauna	Schedule-I species observed in the study area: As per Wildlife Protection Amendment Act, 2022, Indian Grey Mongoose, Golden Jackal, Wild dog, Jungle cat, Small Indian Civet, Barking Deer, Porcupine, Forest Wagtail , Red breasted parakeet, Spotted Owlet, Brown wood owl , Rat snake, Monocled cobr is listed as Schedule I species.					

xx. Details of Solid waste/ Hazardous waste generation/ Muck and its management:

- The solid waste will be transported for disposal at the designated landfill sites. The landfill shall have impervious clay at the bottom-most layers. The second layer shall be impervious liner (Geomembrane), the third layer will be of sand, after that well-compacted solid waste is to be put over the sand, then again, a layer of clay, finally a layer of soil. Vegetation shall be grown on the topmost layers. It will give a good aesthetic view of the landfill**.**
- Two muck disposal yards has been identified with a total area of 4.40 ha (site 1: 1.00 ha and site 2: 3.40 ha) and capacity has been worked as 4,07,228 cum which is more than the total quantity of muck to be disposed of.
- The muck dumping yards identified for disposal and rehabilitation is planned on the banks of the nearest drainage and away from river HFL.

xxi. Public Hearing for the proposed project has been conducted by the State Pollution Control Committee on 10.05.2023 at East Jaintia Hills district and on 12.05.2023 at West Jaintia Hills district, Meghalaya. The main issues raised and replies by the user agency during the public hearing are;

Suggestions/ Comments Given by Stakeholders in East Jaintia Hills District

Issues/Comments/Observations	Reply by the User Agency
Sh. Deihok Sumer, Secretary Shnong, Batwa 1. Road construction to connect the villages. 2. Office in the village. 3. Construction of stadium	1. Roads have been explored for connectivity between project affected villages in the DPR and schemes will be availed for the same. There is also a budgetary support towards cost of enabling infrastructure i.e. roads/ bridges regarding vide No. 15/2/2016-H,I(Pt)(26064/0), Govt. of India Ministry of Power, Shram Shakti

Issues/Comments/Observations	Reply by the User Agency
4. Electricity to the village 5. Special electricity allotment to BPL families. 6. Sub station in the village to supply electricity to all the surrounding villages 7. Employment to the local villagers and not through tendering system. Employment especially to the daily waged villagers residing at the proposed compensated site of the proposed project. 8. Compensation of land and all the economical businesses before the project starts.	Bhawan, New Delhi dated the 15th February, 2023. 2. There will be an office related to dam construction and appurtenance works and is earmarked on left bank. 3. Bataw is a project affected village and would be included in the Local Area Development Plan. 4. Bataw is a project affected village and would be included in the Local Area Development Plan. 5. Any decision in this matter is at the discretion of Distribution Company. 6. Any decision in this matter is at the discretion of Distribution Company. 7. Employment will be given as per "The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (RFCT_LARR)" and "Meghalaya Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Rules, 2017". 8. As per the laws of land acquisition and rehabilitation plan, no construction will commence until compensation is completed. Compensation and employment will be made as per "The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (RFCT_LARR)" and "Meghalaya Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Rules, 2017".
Sh. Johmiki Arshnong, President (Borghat & Matkok Association) 1. Less flow of river water leading to drought 2. Flood may happen on monsoon and on water discharge. The downstream bridge may be destroyed due to the water discharge. 3. Breaking of Dam. Dust emission	1. Provision for following optimum environmental flow releases has been kept as 30% during monsoon period, 25% during non-monsoon & non-lean period and 20% during lean period of the 90% dependable year. In case the water is insufficient, water from the dam can be released on request from the villagers hosting the festivals. Moreover, downstream areas of the river are mostly pondage formation with release of environmental flow and its tributaries downstream of Dam will suffice the requirement.

Issues/Comments/Observations	Reply by the User Agency
during construction and etc. To protect the villagers from disasters. 4. Inclusion of Borghat & Natbor in the DPR as catchment areas. 5. To maintain river transportation. 6. Retaining wall to defend flood on villages and agricultural lands. 7. To cleanse the river.	2. Dam will reduce risk of flooding downstream by releasing water in controlled amounts as Dam are water retaining structure. 3. Dam Break studies have been conducted and Emergency Action Plans are in place. Besides, as per Dam Safety Act, 2021 many safety measures are in place such as Comprehensive Dam Safety Evaluation in 5 years, Rick assessment studies under EAP besides many other safety measures to be taken up. 4. Borghat and Natbor villages fall within study area of the project and may be included in the Local Area Development Plan. 5. Measures like approach roads, channelizing, dredging etc. may be explored through CER and during construction of Power House station and its appurtenant works. 6. River training works and stream stabilization measures can be taken up during construction period. 7. A lumpsum budget of Rs. 60 lakh per annum has been proposed for the mitigation measures for control of air, noise and water pollution during project construction phase. During operation phase no pollution is envisaged and dam will help control silt deposit as dead storage.
Sh. Deimonmi Bareh, Executive Member, Kharkhana Village The Kharkhana village is not against the proposed project but regarding its problems since the village is near Myntdu river of Leshka project Stage-I, during monsoon, flood caused damage to the agricultural lands and also houses. They feared that the proposed project would bring two folded damage. However, has proposed solutions as follows: 1. The power house to be shifted to a further area from the village. In doing so, has proposed	1. As per geological investigations, a number of alternative sites have been identified. Hence after, the most suitable location has been chosen. Shifting of the site is not feasible as the site has been studied with the CEA and necessary approval obtained. 2. Kharkhana is a project affected village. Besides the power station and its appurtenant works will be located here. Hence, development projects will be provided through Local Area Development Plan.

Issues/Comments/Observations	Reply by the User Agency
Kharkhana village as model village, construction of a secondary school, stadium, footpath to the fields, construct hanging bridge. 2. To sustain the economic boat activities on the river catering to the daily needs of the downstream villages. 3. To provide street lights and most importantly health services.	
Sh. Frances Sytri, Kwator Village Kwator village is not against the project but brings the problem of the village to notice. The village is left excluded from the DPR and Disaster Management Plan. The village is 0 kms away from Stage-II. Hence requested the MeECL to include the village in DPR and Disaster Management Plan as per the MOU submitted.	Inclusion of Kwator in Disaster Management Plan will be re-examined.
Sh. Eshrom Mynthlu, Secretary, Elaka Lakadong 1. Villages on the bank will lose their livelihood from sand mining, fishing etc. 2. River bank festivals will be affected. 3. He questioned the government as to why these villages were not included in the survey. 4. He informed that if they are not included in the survey for Disaster Management Plan they will protest against the proposed project.	1. Silt will be flushed out periodically from the dam which would help sand mining. The Myntdu river is acidic and whatever fish found are migratory fish from Bangladesh in the summer season when pH is diluted. 2. Provision for following optimum environmental flow releases has been kept as 30% during monsoon period, 25% during non-monsoon & non-lean period and 20% during lean period of the 90% dependable year. In case the water is insufficient, water from the dam can be released on request from the villagers hosting the festivals. Moreover, downstream areas of the river are mostly pondage formation with release of environmental flow and its tributaries downstream of Dam will suffice the requirement. 3. Borghat and Natbor villages of Elaka Lakadong have been identified in the inundation map of the

Issues/Comments/Observations	Reply by the User Agency
	Dam Break studies. Other adjoining villages to the project will be re-examined.
Sh. Karly Mynthlu, Waheh Chong (Demlakang) 1. Drought is the main problem on the hills but on the river banks the soil is fertile and suitable for plantation. If drought struck the riverbank as well then this will be a major problem as it is the source of livelihood. 2. The government to include Demlakang in the profitable schemes and to include them in the DMP.	1. Provision for following optimum environmental flow releases has been kept as 30% during monsoon period, 25% during non-monsoon & non-lean period and 20% during lean period of the 90% dependable year. In case the water is insufficient, water from the dam can be released on request from the villagers. Moreover, downstream areas of the river are mostly pondage formation with release of environmental flow and its tributaries downstream of Dam will suffice the requirement. 2. Demlakang village may be re-examined as affected village in Dam Break analysis and drought protection measures may be proposed through Local Area Development Plan.
Sh. Phermon Suchen, President, Borghat – Jalaikhola Aquatic Association Jaliakhola Aquatic Association is concerned with the environment of 10 villages (5 from East and 5 from West Jaintia Hills District). That, as of date, there as still fishes in the river. But the rivers will be small because of the proposed project and eventually there will be no more fish. Many of the villagers livelihood are from fishery. They neither support nor protests against the project but request the government to sustain fishery.	The pH of the water of Myntdu river is highly acidic hence is devoid of any kind of fish species. The same was certified by the Fisheries Department in their Letter No. JHD/PISC/34/2009-10/315 dated 16/08/2018. However, in summer when the pH values rise and are diluted, migratory fishes can be found. Propose inclusion of Fisheries development activities to enrich the migratory fish populations as well as those present in the tributaries, with normal values of pH.
Sh. Lamdibok Sumer, Sanshong, Leshka Stage-II, Demand for afforestation on the barren hills of the village.	Afforestation of 741.50 ha of identified barren land falling within the catchment area of the dam will be carried out. In addition, as per Forest Conservation Act, Compensatory Afforestation of 11.349 ha will be carried out at Nongumiang village, Maweit, West Khasi Hill District, as per the instructions of the State Forest Department.

Issues/Comments/Observations	Reply by the User Agency
• Construction of a new school building for the Primary students in the village of Amtra in place of the old run down building. Community hall building for the community to hold gatherings and Dorbar meetings. • To re-survey all along the site where tunnel will be located by the concerned MeECL office along the with the representatives from the three villages as there is a threat of destruction to the water supply which is near Amtra.	• Amtra is a project affected village and construction of school building, community hall and upgradation of football ground may be considered in the local area development plan. • As per geological investigations, a number of alternative sites have been identified. Hence after, the most suitable location has been chosen. Shifting of the site is not feasible as the site has been studied with the CEA and necessary approval obtained.

Suggestions/ Comments Given by Stakeholders in West Jaintia Hills District

Issues/Comments/Observations	Reply by the User Agency
Sh. Ridashisha Pohduyeng, Trangblang Waheh Shnong Trangblang village supports the proposed project as long as the village's MOU with the MeECL are unanimity of which is handed to the Chairperson.	Representations from affected parties have been received but no MOUs have been signed till date.
Sh. Special Shylla, Kharkhana Village 1. The Power House should be named after the village name. 2. Employment of the villagers, priority should be given to local people for skilled or unskilled workers. 3. To relocate the Power House which is located less than 250 m away from the village else all the villagers should be fully taken care of by the MeECL.	1. Decision to be taken by the Management prior to inauguration. 2. Local employment, especially to those from project affected families, will be prioritized, as per Government policies and "The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (RFCT_LARR)" and "Meghalaya Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Rules, 2017". 3. As per geological investigations, a number of alternative sites have been

Issues/Comments/Observations	Reply by the User Agency
	identified. Hence after, the most suitable location has been chosen. Shifting of the site is not feasible as the site has been studied with the CEA and necessary approval obtained.
Sh. Bilang Swer, Arshnong, Borghat & Association 1. The villagers informed that water pollution occurred at Stage-I in the form of oil and cement into the river flowing towards their village. The water from the river is being used for daily needs. 2. Air pollution from the previous project affected their cultivation, which is mainly betel nuts. 3. Also, the river dried out when the river was dammed which hampered the ferry transportation services. 4. The river also cause flood during monsoon season resulting in submergence of the houses in the village. 5. The sand in the sand bank and gravel bar which is being used by the village is being washed out when the currents are fast. 6. The villagers have urged the government and all the concerned authorities to look into the problems and to include the village in the DPR.	1. A lumpsum budget of Rs.60 lakh per annum has been proposed for the mitigation measures for control of air, noise and water pollution during project construction phase. During operation phase no pollution is envisaged. 2. Provision for environmental flow releases has been mandated by the Nation Green Tribunal in 2017 and subsequently made a clause to be compiled with in the Environmental Clearance appraisal process. Provision for following optimum environmental flow release has been kept as 30% during monsoon period, 25% during non-monsoon & non-lean period and 20% during lean period of the 90% dependable year. Measures like approach roads, channelizing, dredging, etc. may be explored through CER. 3. The presence of the dam will act as a flood barrier whereby water will be released in a controlled way. The Highest Flood Level was in the year 1995 before the construction of Myntdu Leshka Stage-I. 4. Water from dam will be released in a controlled manner. 5. Borghat and Natbor villages have been included in the Disaster Management Plan and may be included in the Local Area Development Plan for flood protection and maintaining daily commute.

Issues/Comments/Observations	Reply by the User Agency
Sh. Dapoi-Wanmi Laloo, President MPUF Central Governing Body 1. To implement the reservation policy and Rooster System in this project. 2. Compensatory afforestation Plan should be carried out in East Jaintia Hills District and West Jaintia Hills District itself and not in West Khasi Hills District.	1. Govt. policies will be followed. 2. As per Forest Conservation Act, Compensatory Afforestation of 11.349 ha will be carried out at Nongumiang village, Maweit, West Khasi Hill District adjacent to Nongumiang Reserve Forest, as per the instructions of the State Forest Department. However, afforestation of 741.50 ha of identified barren land falling within the catchment area of the dam will be carried out.
Sh. Joinriwell Pyrtuh, 5-Shnong Leshka Stage-II Area Association 1. The villagers have urged the concerned authorities to clarify on the Local Area Development Scheme. 2. There should not be any displacement of the houses where the powerhouse is proposed to be constructed.	1. Local Area Development Plan has been clarified to the affected villages and households. 2. No displacement of families is envisaged in any components of the Project.
Sh. Bor Amrynsong, Paswadwar (Kur Amrynsong) Land compensation should be as per the demands made by the villagers since the land are being used by the villagers for agricultural activities to support their families.	Affected families will be compensated for the land as per the "The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (RFCT_LARR)" and "Meghalaya Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Rules, 2017".
Sh. Firstborn Pamblang, Waheh Shnong Pasadwar 1. Pasadwar villagers informed that it was not recognized in the DPR of the MeECL and it was not considered as an affected village. 2. Those agricultural activities, beetle nut farming, can be heavily affected. 3. That, with the presence of the dam at Stage-I, the villages and houses are being heavily affected by the currents from the dam especially during monsoon seasons.	Pasadwar falls within the study area of the project and may be considered for CER. The presence of the dam will act as flood barrier whereby water will be released in a controlled way.

Issues/Comments/Observations	Reply by the User Agency
4. That the concerned authorities have mercy on the village as well and to consider their memorandums along with their MOUs.	
Sh. Siling Tariang, Bataw The Bataw villagers had opposed the previous project at Stage-I, but now that they had connected the villages with roads and compiled with the previous MOUs, they now support the proposed project. The villagers have also urged the concerned authorities to set up proper hospital in the area.	Bataw already has a Primary Health Centre. Budget provisions have been made for strengthening existing facilities in the project area, along with health extension activities.
Sh. Deihok Sumer, Secretary Shnong Bataw 1. Demanded the concerned authorities to place a sub station in the village. 2. MeECL to recruit local villagers to be part of the Environmental Monitoring Cell through the village headmen. 3. That the Loal Area Development Plan should be expanded as they are directly affected by this project. Hence, the local headmen should also be included in this Local Area Development Plan committee. That the MeECL to work together with the local authorities to bring about success not only till the project construction is completed but to sustain the MOU agreements in the coming years as well.	1. Consideration for sub station in the village, the matter will be taken with the Distribution Company. 2. As a part of participatory planning, village level committee will be included in the monitoring cell to track progress of implementation of environmental management plan till the completion of the project. 3. Bataw is a project affected village and already included in the Local Area Development Plan.
Sh. Jelin Amtra, Kur Amtra, Kharkhana 1. Agricultural cultivation from their village is very productive. 2. Has requested the corporation to carefully look into the demand of the affected areas especially with their lands and cultivations. 3. That they will lose the land completely to this proposed project which was savored for the future generation. However, are willing to give away land with consideration of the MOUs between the two parties. And if their	Affected families will be compensated for the land as well as employment as per the "The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (RFCT_LARR)" and "Meghalaya Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Rules, 2017".

Issues/Comments/Observations	Reply by the User Agency
demands are not met, the clan will agitate, protest and will not give away their land.	Opportunities for capacity building and training programs will be offered to the locals in the Local Area Development Plan.

xxii. The salient features of the project are as under: -

1. **Project details:**

Name of the Proposal	Myntdu Leshka Hydroelectric Project Stage-II (210 MW)
Proposal No.	IA/ML/RIV/499490/2024
Location (Including Coordinates)	The diversion site is located at Latitude 25°13'17.45" N, Longitude 92°13'35.96" E near Trangblang village at the right bank of Myntdu river in West Jaintia district and near Bataw village at the left bank of Myntdu river in East Jaintia district. Powerhouse – Latitude - $25^0$9'36.47" N Longitude - $92^0$12'55.46" E
Company's Name	M/s Meghalaya Power Generation Corporation Limited
CIN no. of Company/user agency	U40101ML2009SGC008392
Accredited Consultant and certificate no.	NABET/EIA/2225/RA 0274
Project location (Coordinates /River/ Reservoir)	Near Village: Trangblang & Bataw, Myntdu River
Inter- state issue involved	No
Proposed on River/ Reservoir	Myntdu River
Type of Hydro-electric project	Run-of-river
Seismic zone	V

2. **Category details:**

Category of the project	A
Capacity / Cultural command area	210 MW
Attracts the General Conditions	No
Additional information (if any)	-

3. **ToR/EC Details:**

ToR Proposal No.	IA/ML/RIV/74781/2018
EAC meeting date	26.06.2018 & 27.09.2018

ToR Letter No.	J-12011/13/2018-IA-I (R)
ToR grant Date	07.12.2018
Cost of project	3595.15 Cr
Total area of Project	85.229 Ha
Height of Dam from River Bed (EL)	27.40 m (above riverbed level up to crest level) 46.0 m (above riverbed level up to FRL)
Details of submergence area	0.14 Sq Km
District to provide irrigation facility (if applicable)	NA
Details of tunnels on upper level & lower level and length of canal (if applicable)	
No. of affected Village	5
No. of Affected Families	122
Project Benefits R&R details	**Power Generation**: Myntdu Leshka HEP Stage-II will help in harnessing the potential of river Myntdu for generating electricity to the tune of 605.64 MU annually and bring benefits of renewable energy to state of Meghalaya and country. Apart from power generation benefits, such a large-scale investment in the region will bring about several positive changes in the region and expected to improve the quality of life of local population. The project will help improve local infrastructure and employment generation for local during construction and operation phase. In addition, there will be secondary employment opportunities for locals in terms of catering to the daily need of migratory labour and floating population of transporters and material suppliers to the site. Budget will be proposed towards Local Area Development (LAD) fund, which will be used for the benefits of the locals in project affected villages. In addition, budget will be utilized for skill development aimed at providing employment and for meeting other local needs as required by the locals. On commissioning of projects, a part of profit will go towards CSR fund and such activities can continue bringing benefits to local population for their growth and development. Total 5 villages shall be affected due to acquisition of land for various components of proposed project. Total 122 project affected families have been identified; all these 122 families will be losing land only. Further,

	all the land from Surge Shaft upto Power House Switch Yard, including proposed roads, are agricultural land where the main crops are Betel nut, betel leaf, broomstick, orange trees, etc. All these assets will have to be compensated for as well. The actual rate for crops will be assessed by the Agriculture and Horticulture Department, once commencement of works for the Project has started. A budgetary provision of Rs. 18614.32 lakh has been kept towards implementation of R&R plan and economic development. *Actual cost of land as per market value and assets will be assessed by Districts Deputy Commissioners and Districts Horticulture Officers during acquiring process.*
Catchment area/ Command area	Catchment Area: 480 sq km
Types of Waste and quantity of generation during construction/Operation	Municipal Solid Waste- Bio degradable (1095.00 Tons), Non degradable (1095 Tons)
Material used for blasting and its composition as per DGMS standards.	Explosive is mainly required for open and underground rock excavation. Explosive magazines of 360 MT capacity shall be provided at a suitable location selected at the site keeping sufficiently away from the human habitat.
E-Flows for the Project	Provision for following optimum environmental flow releases has been kept as 30% during monsoon period, 25% during non-monsoon & non-lean period and 20% during lean period of 90% dependable year.
Is Projects earlier studied in Cumulative Impact assessment & Carrying Capacity studies(CIA&CC) for River in which project located. If yes then a) E-flow with TOR/Recommendation by EAC as per CIA&CC study of River Basin.	No

b) If not the E-Flows maintain criteria for sustaining river ecosystem.	
Details on provision of fish pass	No
Project benefit including employment details (no of employee)	During the construction phase, there will be a need to engage about 1700 labourers and 300 technical manpower during the peak working period. The majority of this labour force will be from the adjacent localities. Some other unskilled and skilled labourers will be brought from outside. These labourers will be settled near the construction site in the labour camps set up by the project authorities through their labour contractors.
Area of Compensatory Afforestation (CA) with tentative no of plantation.	11.349 ha; tentative no. of plantation - 12484

4. **Electricity generation capacity:**

Powerhouse Installed Capacity	210 MW
Generation of Electricity Annually	605.64 MU
No. of Units	3 nos. (2 X 70 MW)

5. **Muck Management Details:**

No. of proposed disposal area/ (type of land- Forest/Pvt land)	2
Cross section of proposed muck area, Height of muck with slope.	Attached as Appendix I
Distance of muck disposal area (location), from muck generation sources (project area)/River, HFL of proposed muck disposal area.	About 600 m more than 30 m from HFL.
Total Muck Disposal Area	4.40 ha
Estimate Muck to be generated	815130 Cum

Transportation	The generated muck will be carried in dumper trucks covered with heavy-duty tarpaulin properly tied to the vehicle in line with international best practices. All precautionary measures will be followed during the dumping of muck. Based upon the varying cycle time of 20T Rear Dumpers at different excavation sites and their distance from the disposal site appropriate pollution management will be devised. The Standard practices of pollution abatement and
Monitoring mechanism for Muck Disposal Transportation	The provisions of Monitoring have been kept under proposed Environmental Monitoring Plan.

6. **Land Area Breakup:**

Private land	73.88
Forest Land	11.349
Submergence area/Reservoir area	14.0
Land required for project components	71.229

7. **Presence of Environmentally Sensitive areas in the study area**

Forest Land/ Protected Area/ Environmental Sensitivity Zone	**Yes/No**	**Details of Certificate/ letter/Remarks**
Reserve Forest/Protected Forest Land	No	Narpuh Wildlife Sanctuary in East Jaintia Hills is the nearest Protected Areas in the vicinity of the proposed MLHEP Stage-II. As per the letter of the Principal Chief Conservator of Forests (Biodiversity & Wildlife) & Chief Wildlife Warden, Meghalaya, the proposed MLHEP Stage-II is outside the Eco-sensitive zone and also more than 10 kms (18.4 kms) from the boundary of
National Park	No	
Wildlife Sanctuary	No	
Archaeological sites monuments/historical temples etc	No	
Additional information (if any)	-	

8. **Availability of Schedule-I species in study area:** As per Wildlife Protection Amendment Act, 2022, Indian Grey Mongoose, Golden Jackal, Wild dog, Jungle cat, Small Indian Civet, Barking Deer, Porcupine, Forest Wagtail, Red breasted parakeet, Spotted Owlet, Brown

wood owl, Rat snake, Monocled cobr is listed as Schedule I species.

9. **Public Hearing (PH) Details**

Advertisement for PH with date	"Shillong Times" and "Nongsain Hima" dated 06/04/2023 for East Jaintia Hills District and dated 11/04/2023 for West Jaintia Hills District.
Date of PH	10.05.2023 (East Jaintia Hills) 12.05.2023 (West Jaintia Hills)
Venue	Lacheh Playground, Bataw Village (East Jaintia Hills) Playground near Lower Primary School,
Chaired by	Additional Deputy Commissioner of East Jaintia Hills and West Jaintia Hills Districts
Main issues raised during PH	• The river also cause flood during monsoon season resulting in submergence of the houses in the village. • The villagers informed that water pollution occurred at Stage-I in the form of oil and cement into the river flowing towards their village. The water from the river is being used for daily needs. • Construction of stadium • Office in the village. • Electricity to the village • Road construction to connect the villages
No. of people attended	202 (East Jaintia Hills) 238 (West Jaintia Hills)

10. Brief of base line Environment:

Parameters	**Summer/ Pre-Monsoon**	**Monsoon**	**Winter**	**Summer/ Pre-Monsoon**
BY RSET Team				
Soil	March 2020	July-August 2020	November-December 2020	April-May 2024
Air Environment	March 2020	July-August 2020	November-December 2020	April-May 2024
Noise & Traffic	March 2020	July-August 2020	November-December 2020	April-May 2024
Water Quality	March 2020	July-August 2020	November-December 2020	April-May 2024
Vegetation	March 2020	July-August 2020	November-December 2020	April-May 2024

Parameters	Summer/ Pre-Monsoon	Monsoon	Winter	Summer/ Pre-Monsoon
Faunal surveys	March 2020	July-August 2020	November-December 2020	April-May 2024
Socio-economic survey of Project affected and study area villages	August-December 2020			
By Meghalaya State Pollution Control Board				
Air Environment	August 2018			
Water Quality	August 2018			
Reconnaissance Soil Survey, District Local Research Station & Laboratories, West Jaintia Hills, Jowai, Department of Agriculture, Meghalaya				

Brief description on hydrology and water assessment as per the approved Pre-DPR:	The hydrological studies were carried out by MePGCL for the period 1982-2015 and subsequently submitted to CWC/CEA for approval. Accordingly, the Hydrology chapter of Myntdu Leshka HEP Stage-II has been approved by the CWC vide letter No. 2/MEG/CEA/99-PAC/481 dated 22.06.2017. In the study period of 11 years Average annual discharge varies from a minimum of 1609.49 cumec in the year 2013-14 to a maximum of 2810.98 cumec in the year 2010-2011. The average runoff during the period is 2290.90 MCM. The minimum monthly flow of 4.05 MCM was observed in Feb-2013 while the maximum monthly flow of 999.55 MCM was observed in June 2010. The average inflow during the lean period (Dec-Mar) is about 27.01 MCM which constitutes about 1.18% of the average annual
Additional detail (If any)	

11. **Court case details: NIL**

12. **Status of other statutory clearances**

Particulars	Letter no. and date
Status of Stage- I FC	Under Process, Proposal for diversion of forest area is submitted on Parivesh portal vide Proposal No. FP/ML/HYD/IRRIG/406655/2022 dated 15/06/2023.

Approval of Central Water Commission	Hydrology chapter of Myntdu Leshka HEP Stage-II has been approved by the CWC vide letter No. 2/MEC/CEA/99-PAC/481 dated 22.06.2017
Approval of Central Electricity Authority	9 chapters cleared by CWC and 5 Chapters is expected to obtain clearance by December 2024.DPR will be submitted by 2024 and Techno-Economic Clearance expected by March 2025
Additional detail (If any)	
Is FRA (2006) done for FC-I	

13. **Details of the EMP**

S. No.	Component of EMP	Capital Cost (Rs. in lakh)	Recurring Cost (Rs. in lakh)						Total Cost (Rs. in lakh)
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	
1	Catchment Area Treatment Plan	1426.46	0.00	0.00	0.00	0.00	0.00	0.00	**1426.46**
2	Compensatory Afforestation*	457.29	0.00	0.00	0.00	0.00	0.00	0.00	**457.29**
3	Biodiversity and Wildlife Conservation & Management Plan	197.00	0.00	0.00	0.00	0.00	0.00	0.00	**197.00**
4	Green Belt Development Plan	0.00	0.00	0.00	0.00	16.00	16.00	15.50	**47.50**
5	Muck Dumping and Management Plan	0.00	40.00	40.00	40.00	40.00	39.24	0.00	**199.24**
6	Landscaping, Restoration of Quarry and Construction Sites	0.00	50.00	50.00	34.26	34.26	38.00	0.00	**206.52**
7	Disaster Management Plan	135.00	4.00	4.00	4.00	4.00	4.00	4.00	**159.00**
8	Public Health Delivery System	50.00	20.35	20.33	20.33	20.33	20.33	20.33	**172.00**
9	Labour Management Plan	40.00	9.00	9.00	9.00	9.00	9.00	4.00	**89.00**

10	Sanitation and Solid Waste Management Plan	120.00	14.70	14.70	14.70	14.70	14.70	14.70	**208.20**
11	Energy Conservation Measures	39.00	24.00	24.00	24.00	24.00	24.00	24.00	**183.00**
12	Control of Air, Noise and Water Pollution	0.00	60.00	60.00	60.00	60.00	60.00	60.00	**360.00**
12	Environmental Monitoring Program	0.00	27.1	27.08	27.08	27.08	27.08	27.08	**162.50**
13	Rehabilitation and Resettlement Plan**	18614.32	0.00	0.00	0.00	0.00	0.00	0.00	**18614.32**
14	Local Area Development Plan	0.00	376.55	376.55	376.55	376.55	0.00	0.00	**1506.20**
Total		**21079.07**	**625.7**	**625.66**	**609.92**	**625.92**	**252.35**	**169.61**	**23988.23**

* The actual cost will be as determined/assessed under the Forest Diversion proposal.

** Actual rate for land and asset will be assessed by the respective Districts Deputy Commissioners and District Horticulture officers, during acquiring process

19.1.3 The EAC during deliberations noted the following:

The EAC deliberated on the information submitted and presented during the meeting, observing that the proposal is for the grant of Environmental Clearance (EC) to the project for Myntdu Leshka Hydro Electric Project Stage-II (3X70) MW in an area of 85.229 Ha located at Village Bataw, Amtra, Satpator, Kharkhana and Tarangblang, Sub-district Khliehriat and Amlarem, District East Jaintia Hills and West Jaintia Hills, Meghalaya by M/s Meghalaya Power Generation Corporation Limited.

The project is listed under S.N.1(c) of the Schedule to the Environmental Impact Assessment (EIA) Notification as a Category 'A' project, which requires appraisal at the Central level by the Expert Appraisal Committee (EAC).

The EAC, constituted under the provisions of the EIA Notification, 2006, and comprising expert members/domain experts in various fields, examined the proposal submitted by the Project Proponent, including the EIA/EMP reports prepared and submitted by the Consultant accredited by QCI/NABET on behalf of the Project Proponent.

The EAC observed that the initial baseline data for the EIA/EMP studies was collected in March 2020, July-August 2020 and November-December 2020 with an additional season of data collected in April-May 2024 in accordance with the stipulated norms for the proposed project.

The EAC raised concerns about the acidic water quality of the region, which persists even during the rainy season, affecting aquatic life. Despite these harsh conditions, the migration of Hilsa fish occurs during the monsoon, a critical ecological process. The construction of the proposed dam could obstruct the migration of fishes, disrupting their spawning cycle and leading to population declines. Acidic water also poses risks by bioaccumulating toxic metals, further impacting aquatic health. The EAC noted that the Terms of Reference (ToRs) were issued by the Ministry via letter No. J-12011/13/2018-IA-I (R) dated 07.12.2018 with additional TOR to give special mention in the EIA/EMP report to study the aspect related to impacts of acidic nature of water in rivulets draining the coal mine area and measures to be taken for its treatment at source. It has been informed in the EIA/EMP that in order to find a solution to the problem of acidity, Meghalaya Basin Development Authority (MBDA) and Integrated Natural Resource Management (INRM) under 'The Meghalaya Livelihoods and Access to Markets Project (Megha-LAMP)', the state-wide project of the Government of Meghalaya supported by IFAD (International Fund for Agricultural Development) has undertaken a study to improve the water quality of Moolawar stream in Mukhaialong village, East Jaintia Hills District, Meghalaya. Under the study, as a pilot project, Open Limestone Channel (OLC) using locally available limestone rocks were used to reduce the acidity of stream water. The OLC was found cost effective and technically feasible in rural area to raise pH of stream water near to neutral, improve aquatic habitat and restore many aquatic flora and fauna in treated water. However, no concrete action plan for handling the situation has been submitted.

The EAC further noted that as per letter dated 30.10.2023 from Principal Chief Conservator of Forests (Biodiversity & Wildlife) & Chief Wildlife Warden, Meghalaya, the proposed MLHEP Stage-II is outside the Eco-sensitive zone and also more than 10 kms (18.4 kms) from the boundary of Narpuh Wildlife Sanctuary.

The total land required for the project is 85.229 Ha out of which 11.349 ha is a Forest Land and 73.88 ha is Non-forest Land. PP informed that Stage- I FC is under process and proposal for diversion of forest area is submitted on Parivesh portal vide Proposal No. FP/ML/HYD/IRRIG/406655/2022 dated 15/06/2023.

The EAC observed that Hydrology chapter of DPR for Myntdu Leshka HEP has been approved by the CWC vide letter No. 2/MEG/CEA/99-PAC/481 dated 22.06.2017. However, the ToR point regarding submission of *a copy of TEC of the DPR along with EIA/EMP report has not been complied with.* The PP in this regard informed that Techno-Economic Clearance expected by March 2025.

19.1.4 The EAC after detailed deliberations deferred the proposal for want of following information:

i. PP shall submit a copy of TEC of the DPR.
ii. PP shall submit detailed action plan on the source of acidity in water and to treat the acidic water in the rivulets along with plan to provide potable water to the community in nearby areas for drinking purposes. Adding lime may not solve the problem of large scale acidity of water. A detailed investigation on source and a comprehensive mitigation plan be devised.
iii. Incorporate all possible and potential impact of other projects in the basin to get a cumulative impact assessment done.
iv. A study shall be conducted in consultation with CIFRI for Fish migratory pass with special focus on mapping of Hilsa migration habitat and the period with population/stock during the rainy season to protect these habitat zones.
v. PP shall prepare comparative chart of baseline data obtained in 2020 and 2024.

The proposal was ***deferred*** on the above lines.

Agenda Item No. 19.2

Chentikheda Major Irrigation Project (CCA: 15300 ha) in an area of 1361.25 Ha Located at Villages Agra, Bijaipur, Devra, Garhi and etc., Sub-district Vijaypur and Sabalgarh, District Sheopur and Morena, Madhya Pradesh by M/s Water Resources Department, Government of Madhya Pradesh – Terms of References (TOR)

[Proposal No. IA/MP/RIV/500241/2024; F. No. J-12011/28/2024-IA.I (R)]

19.2.1: The EAC noted that the Assistant Engineer who was the only personnel representing the PP was not able to explain the proposal before the EAC. The project documents as instructed in the agenda note were not provided by the PP to the EAC members to go through the proposal. The PP may take the EAC process seriously.

Therefore, EAC decided to ***defer*** the proposal.

Agenda Item No. 19.3

Hidising Irrigation Project (CCA: 2958 ha) in an area of 386.91 Ha Village Kararasinga, Sub District Purunakot, District Anugul, Odisha by M/s Angul Investigation Division, Government of Odisha – Terms of References (TOR)

[Proposal No. IA/OR/RIV/492081/2024; F. No. J-12011/29/2024-IA.I (R)]

19.3.1 The proposal is for grant of Terms of References (ToR) to the project for Hidising Irrigation Project (CCA: 2958 ha) in an area of 386.91 Ha Village Kararasinga, Sub District Purunakot, District Anugul, Odisha by M/s Angul Investigation Division, Government of Odisha.

19.3.2: The Project Proponent and the accredited Consultant Centre for Envotech and Management Consultancy Private Limited, mad a detailed presentation on the salient features of the project and informed that:

i. Hidising Irrigation scheme is a medium irrigation project having a Dam and Reservoir proposed near village Karadasing in Angul block of Angul district. The geographical co-ordinate of the project are:

Latitude : 20°43'00" N
Longitude : 84°58'30" E

ii. **NEED OF THE PROJECT FOR THE REGION**:

- Near village Karadasing in Angul block of Angul district does not have any Irrigation Project till date. The Rainfed agriculture suffers from vagaries of monsoon with untimely & ill distributed rain fall.
- Due to frequent crop loss, the poverty level becomes predominant in the farming community. The State Govt. intends to implement the project to impart crop benefit, Drinking water supply and other development benefit to elevate the socio economic standards of the Region.

iii. The Canal system includes two main canal and minors / sub-minors to provide irrigation water supply to 2958 Ha. of CCA. (Command area).

iv. **Demographic details in 10 km radius of project area:**

Total number of villages & towns	63
Number of Households	8842
Total Population	38457
Total number of Males	19384
Total number of Females	19073
Male/ Female (Sex) ratio	1016.31
Percentage of S.C population	25.71
Percentage of S.T Population	11.04
Percentage of Literates	65.30

v. **Water requirement:**

Drinking water demand = 1.68 MCM annually
Irrigation requirement = 14.73 MCM annually

Industrial water demand = 0.96 MCM annually

Total = 17.37 MCM annually

vi. **Project Cost:** The estimated project cost is Rs. 332.26 crores. Total capital cost earmarked towards environmental pollution control measures is Rs.381.85 Lakhs and the Recurring cost (operation and maintenance) will be about Rs.235.950 Lakhs with BC Ratio 1.83.

vii. **Project Benefit:** Total Employment will be 3300 persons during construction phase and 134 persons during operation phase.

viii. **Environmental Sensitive area**: There are Satkosia Wildlife Sanctuary (1.5 km).

ix. **Resettlement and rehabilitation:** The Ministry of Tribal Affairs (MoTA) has communicated for clearance of R&R plan vide Letter No. STSCD-TPR-PLAN2-0010-2019-10967/SSD Dated 24.06.2022.

x. **Scheduled–I species:**

*Melursus ursinus, Elephas maximus, Vulpes bengalensis, Python molurus, Varnus bengalensis, Gracula religiosa***.**

xi. **Alternative Studies:**
Bauli Nallah is a tributary of Lingara river in the Brahmani Basin. The proposed Dam site near village Karadasing is site specific and technically ideal. Due to suitability of location and other conceptual advantage, alternative sites have not been explored during the engineering survey and investigation.

xii. The salient features of the project are as follows"

1. Project details:

Name of the Proposal	Hidising Irrigation Project (CCA: 2958 ha)
Location (Including coordinates)	Village- Karadasinga, District- Angul, Odisha
Inter-state issue involved	NA
Seismic zone	II

2. Category details:

Category of the project	Category-A, as Satkosia wildlife sanctuary is located at a distance of 1.5 km from the project site.
Provisions	Hidising irrigation project is contemplated across river Bauli Nallah. The Project is

	featured with construction of one 933 m long earth Dam: 36 m long concrete Spillway having 3 nos x10 m x 8 m ogee crest gates; two nos of Head regulators at either side of Dam to lead the reservoir water through two main canal systems (LMC & RMC) for covering a culturable command area (CCA) of 2958 ha. Provision for Drinking Water supply to 45000 populations belonging to needy villages in the command area.
Capacity/Cultural command area (CCA)	2958 ha
Attracts the General Conditions (Yes/No)	Yes. Satkosia wildlife sanctuary is located at a distance of 1.5 km from the project site.
Additional information (if any)	NA

3. ToR/EC Details:

Cost of project	Rs. 33226 Lakhs
Total area of Project	386.91 Ha
Height of Dam from River Bed (EL)	32.5 m
Length of Tunnel/Channel	36 m
Details of Submergence area	272.777 ha
Types of Waste and quantity of generation during construction/ Operation	Spoils will be generated during construction of dam and canals. Spoils from Base stripping, excavation of foundation etc. would account for about 3000MT.
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then a) E-flow with TOR /Recommendation by EAC as per CIA&CC study of River Basin. b) If not the E-Flows maintain criteria for sustaining river ecosystem.	30% in monsoon season, 20% in lean season and 25% in non-monsoon & non-lean season, to be followed corresponding to flow of 90% dependable year.

4. Muck Management Details:

No. of proposed disposal area/ (type of land-Forest/Pvt. land)	Mostly, the wastes from excavation activities will be reutilized for land levelling & construction of embankment, approach road etc. The remaining less

	quantity of solid waste will be disposed of at low lying area.
Muck Management Plan	• Precautionary measures such as covering of vehicles will be taken to avoid spillage & dust generation during transport of mucks. • To ensure that the spills, which might result from the transport of muck materials do not impact the environment, it will be ensured that the carrying of muck will be done during day time only. • Workers/labourers shall be provided with PPE. The use of PPE at all time during works will be ensured.
Monitoring mechanism for Muck Disposal	Muck disposal at designated place will be monitored periodically by the project authority.

5. Land Area Breakup:

Private land	245.482 ha
Government land/Forest Land	53.908 ha/ 87.52 ha
Submergence area/Reservoir area	272.777 ha
Land required for project components	386.91 ha
Additional information (if any)	NA

6. Presence of Environmentally Sensitive areas in the study area:

Forest Land/Protected Area/ Environmental Sensitivity Zone	**Yes/No**	**Details of Certificate/ letter/Remarks**
Reserve Forest/Protected Forest Land	Yes	Bhogapal RF-1.7 km Balanga RF-1.3 km Krishnachakra RF-0.7 km Madhapur RF-4.6 km
National Park	No	No National Park within 10 km radius of the project
Wildlife Sanctuary	Yes	Satkosia Wildlife Sanctuary (1.5 Km)

7. Court case details: NIL

8. Status of other statutory clearances:

Particulars	**Letter no. and date**

Certified EC compliance report (if applicable)	Not Applicable, Present proposal is Fresh
Status of Stage-I FC	Stage I approval for the diversion of 87.52 ha Forest land was submitted to MoE&FCC vide letter No. FE-DIV-FLD-0025-2024-11966/FE&CC, Date 05.07.2024
Additional detail (If any)	NA
Is FRA (2006) done for FC-I	No

9. Miscellaneous:

Particulars	**Details**
Details of consultant	M/s Centre for Envotech & Management Consultancy Pvt. Ltd. Certificate No. NABET/EIA/22-25/SA 0226, dated 29.08.2024 valid upto 03.03.2025
Project Benefits	The contemplated project benefits considered are • Enhanced crop produces from Pre–Irrigation Quantity 2768 M Ton to post-Irrigation Quantity 33752 M Ton measured with financial benefit of Rs 120.23 crores/Annum. • Drinking Water supply for 45000 populations. • Upstream Reservation of Water for Industries. • Employment Generation and socio-economic Benefits.
Status of other statutory clearances	Techno-Economic Clearances (TEC) has been Cleared (In-principle) by CWC vide Lr. No. M&A /AP-1/2012/13-15 on Dt.04.01.2013.
R&R details	161 families comprising of 63 no. SC families, 12 no. ST families and 86 no. General category families will be displaced / rehabilitated.
Additional detail (If any)	NA

19.3.3 The EAC during deliberations noted the following:

The EAC deliberated on the information submitted (Form 1, PFR, kml file, etc.) and as presented in the meeting and observed that the proposal is for grant of TOR for conducting EIA study for Hidising Irrigation Project (CCA: 2958 ha) in an area of 386.91 Ha Village Kararasinga, Sub District Purunakot, District Anugul, Odisha by M/s Angul Investigation Division, Government of Odisha.

The EAC noted that the present project proposal comes under "B2" category; hence, only EMP is required as per the provisions of the EIA Notification, 2006, as amended. However due to presence of Satkosia wildlife sanctuary at a distance of 1.5 km from the project boundary the project will be appraised at central level as Category 'A' project.

The total land requirement for the project is 386.91 Ha, out of which 87.52 ha is forest land, 245.482 ha is private land and 53.908 ha is a Private land. It was noted that the application for Stage-I Forest Clearance for the diversion of 87.52 ha Forest land was submitted to MoE&FCC vide letter No. FE-DIV-FLD-0025-2024-11966/FE&CC, Date 05.07.2024.

In view of the Satkosia wildlife sanctuary located at a distance of 1.5 km from the project boundary the EAC emphasis was on preparation of detailed wildlife conservation plan including a baseline assessment of biodiversity, habitat quality, and wildlife corridors, along with impact analysis of the project and mitigation measures, such as creation of green buffers, minimizing disturbances, and implementing biodiversity-friendly practices.

19.3.4 The EAC based on the information submitted and as presented during the meeting, **recommended** the proposal for grant of Standard ToR issued by the Ministry for conducting EIA/EMP and Public hearing for Hidising Irrigation Project (CCA: 2958 ha) in an area of 386.91 Ha Village Kararasinga, Sub District Purunakot, District Anugul, Odisha by M/s Angul Investigation Division, Government of Odisha, under the provisions of EIA Notification, 2006, as amended along with the following additional/specific ToR.

[A] Environmental Management and Biodiversity Conservation:

i. The EAC subcommittee shall visit the site before consideration of EC proposal so as to stipulate more stringent environmental conditions.
ii. PP shall obtain NBWL Clearance in view of Satkosia wildlife sanctuary located at a distance of 1.5 km from the project boundary.
iii. Explore the possibilities for reducing the Forest land requirement.
iv. Certificate and certified map from Chief Wildlife Warden shall be submitted mentioning that project boundary is not falling in any Ecological Sensitive Area, Wildlife Sanctuary/Tiger/elephant corridor/Critically polluted area within 10 km of Project site.

v. The water of rainfall yield of self-catchment of the reservoir shall be released to downstream through body of dam/ barrage/ embankment etc. Since this Bauli Nallah is one of the tributary of Mahanadhi river and provide connectivity for completing recruitment of fishes, especially Mahanadhi mahseer (*Tor mahanadhicus*), adequate e-flow provision should be maintained in the downstream of Bauli Nallah till it meets River Mahanadhi. This e-flow study should be based on the scientific study on the Mahaseer habitat protection.

vi. As the Dam site falls in the transition zone between the upland and plain land, the detailed aquatic biodiversity and their period of migration needs to studied.

vii. Prepare Wildlife conservation plan specifically for Tiger and co-predator with mitigation measures for minimizing the human–animal conflict and be suitably incorporated in the wildlife conservation plan in consultation with reputed government expert institute and State Forest Department.

viii. Cumulative Impact of project on carrying capacity and sustainability of Reservoir/ nallahs of catchment area / due to lifting of water from river.

ix. Prepare Environmental Cost Benefit Analysis in terms of ecological damage due to diversion of Forest land/ loss of biodiversity and its impacts on ecosystem, water availability, water uses for generation of hydro power in study area 10 km from periphery of Project components.

x. A study shall be carried out on impact of project activity on the aquatic and terrestrial ecosystem, within project area classifying the impact zones (highly impact/low impact zone) based on seasonal variations and covering the aspects related to impacts on aquatic ecosystem/ primary productivity due to quantity of water to be lifted and thermal stratification. Accordingly, Environment Management plan shall be prepared.

xi. Sampling locations be located to cover villages situated near the reservoir and around boundary of forest area for collection of baseline data and data to be incorporated in EIA/EMP report.

xii. Source of construction material and its distance from the project site along with detailed transportation plan for construction material be elaborated in the EIA EMP report. A detailed reclamation/ restoration plan of quarrying site/sites be incorporated in the EIA/EMP report.

xiii. A detailed wildlife conservation plan for Schedule –I species, duly approved by the Chief Wildlife Warden, be submitted.

xiv. In case any wildlife corridor is located within 10 km radius of the project site a detailed

study shall be conducted to assess the impact of project on safe movement of wild animals.

xv. Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP.

xvi. Detail of rivulets around the project area and action plan for their survival shall be incorporated in EIA/EMP.

[B] Socio-economic Study

xvii. Public Health Delivery Plan including the provisions of drinking water supply for local population shall be in the EIA/EMP Report. Status of the existing medical facilities in the project area shall be discussed. Possibilities of strengthening of existing medical facilities, construction of new medical infrastructure etc. will be explored after assessing the need of the labour force and local population.

xviii. Declaration by the Project Proponent by way of affidavit that "No" Inter-state issue/ policy issue is involved with any State in the project.

xix. All the tasks including conducting public hearing shall be done as per the provisions of EIA Notification, 2006 and as amended from time to time. Public hearing issues raised and compliance of the same shall be incorporated in the EIA/ EMP report in the relevant chapter.

xx. Statement on the commitments (activity-wise) made during public hearing to facilitate the discussion on the CER in compliance of the Ministry's OM F. No. 22- 65/2017-IA.III dated 30th September, 2020 shall be submitted.

xxi. Tentative no. of project affected families shall be identified and accordingly appropriate Rehabilitation & Resettlement plan shall be prepared.

xxii. Details of settlement in 10 km area shall be submitted.

xxiii. Statement on the commitments (activity-wise) made during public hearing to facilitate the discussion on the CER in compliance of the Ministry's OM F. No. 22- 65/2017-IA.III dated 30th September, 2020 shall be submitted.

[C] Muck Management/ Disaster Management

xxiv. Details of quantity of muck generation component wise and disposal site along with transportation plan and its monitoring to be provided.

xxv. Details of Muck Management plan prepared along with estimated cost incorporated in EIA/EMP report.

xxvi. Techno-economic viability of the project must be recommended from CEA/ CWC.

[D] Miscellaneous.

xxvii. Pre-DPR Chapters viz. Hydrology, Layout Map and Power Potential Studies duly approved by CWC/CEA shall be submitted.

xxviii. Undertaking need to submitted on affidavit that regarding no activities has been yet started on the project site and water allocated to this scheme shall not be diverted to other purpose.

xxix. Both capital and recurring expenditure under EMP shall be submitted.

xxx. The photograph should bear the date, time, latitude & longitude of the monitoring station/sampling location. In addition to this PP should submit the original test reports and certificates of the labs which will analyse the samples.

xxxi. Arial view video of project site shall be recorded and to be submitted.

Agenda Item No. 19.4

Teesta Hydroelectric Project Stage-III (1200 MW) in an area of 213.8831 ha located at Village Lingdong, Kazor, Barfok, Meyong etc Sub-district Mangan and Chungthang, North District, Sikkim by M/s Sikkim Urja Limited – Amendment in Environmental Clearance (EC)

[Proposal No. IA/SK/RIV/499039/2024; F. No. J-12011/26/2006-IA.I]

19.4.1 The proposal is for grant of amendment in Environmental Clearance) to the project for Teesta Hydroelectric Project Stage-III (1200 MW) in an area of 213.8831 ha located at Village Lingdong, Kazor, Barfok, Meyong etc Sub-district Mangan and Chungthang, North District, Sikkim by M/s Sikkim Urja Limited.

19.1.2: The Project Proponent and the accredited Consultant R. S. Envirolinks Technologies Pvt. Ltd., made a detailed presentation on the salient features of the project and informed that:

i. The Teesta-III Hydro Electric Project (1200 MW) is a run-of-the-river scheme with diurnal storage to generate a power of 1200 MW by utilizing the discharge of River Teesta with a gross head of 817.00m between EL.1585.0 m and EL.768.0 m.

ii. The project is located on the main Teesta River in the Mangan district, utilizing drop of about 800 m in the river between Chungthang and Sankalang villages. The project is about 90 km from district headquarters Gangtok via Mangan. Nearest railhead is (Jalpaiguri and Siliguri) and airport are located at Bagdogra respectively. The nearest village to the project is Sankalang about 0.8 Km, which comes under, Mangan District.

iii. The salient details of the proposal as follows:

1. EAC Meeting Details:

EAC meeting/s	19th Meeting
Date of Meeting/s	30/11/2024
Date of earlier EAC meetings	28/06/2006 & 19/07/2006

2. Project details:

Name of the Proposal	Teesta Hydroelectric Project Stage-III (1200 MW)
Proposal No.	IA/SK/RIV/499039/2024
Location (Including Coordinates)	Dam Site: 88° 39’ E, 27° 36’ N Powerhouse: 88° 32’ E, 27° 31’ N
Company’s Name	Sikkim Urja Limited (previously Teesta Urja Limited) (Govt of Sikkim Enterprise)
CIN no. of Company/user agency	U31200DL2005SGC133875
Accredited Consultant, Validity and certificate no.	R.S Envirolink Technologies Private Limited NABET/EIA/2225/RA 0274, valid till 15/08/2025
Project location (Coordinates /River/ Reservoir)	Dam Site: Chungthang Powerhouse: Sangkalang
Inter- state issue involved	No

3. Category details:

Category of the project	1 (c) – A
Capacity / Cultural command area (CCA)	1200 MW

Attracts the General Conditions (Yes/No)	Yes
Additional information (if any)	----

4. EC Details

Earlier EC Proposal No.	IA/SK/RIV/9907/2006
Earlier EAC meeting date	28/06/2006 & 19/07/2006
EC Letter No.	F. No. J-12011/26/2006-IA.I (R)
EC grant Date	04/08/2006
Cost of project	Existing project cost was INR 13,965 Cr (COD-Mar 2017) & the estimated cost for project restoration is INR 4189.51 Cr (incl GST excluding IDC)
Total area of Project	213.8831 Ha
Date of online application for amendment in EC	04/10/2024
Details of CTE	Issued on: 04/10/2024; Valid till: 31/03/2025

5. Electricity generation capacity:

Powerhouse Installed Capacity	1200 MW
Generation of Electricity Annually	5214 MU (design energy)
No. of Units	6x200MW

6. Detail reason for amendment in EC:

Govt of Sikkim has signed Implementation Agreement (IA) with M/s Teesta Urja Limited for development of Teesta-III hydroelectric project (1200 MW) located in Mangan district of Sikkim. MoEF & CC, New Delhi has granted Environmental Clearance on 04.08.2006 and vide letter dated 30.04.2010, MoEFCC has granted approval for Design Changes for execution of the Project. The management and Control of Teesta Urja Limited was transferred from private sector to Government sector w.e.f. 06.08.2015. Following the necessary approvals from the State Govt and as per the provisions of Section 4(2) and (3) of Companies Act 2013 & Rule 8A of the Companies (Incorporation) Rules, 2014, the company's name was changed from "Teesta Urja Limited' to "Sikkim Urja Limited'. As the project is now being implemented by "Sikkim Urja Limited', the transfer of Environment Clearance for the Teesta Hydroelectric project Stage-III (1200 MW) from "Teesta Urja Limited' to "Sikkim Urja

Limited' was applied for by Project Proponent and the same has been granted by MOEF&CC vide letter no. J-12011/26/2006-IA-I dated 16.11.2024.

The Project was commissioned in February 2017 and was in successful operation till 03/04 October 2023 when the Project faced a flash flood which led to the washing away of the Dam and flooding of the underground Powerhouse leading to halting of Project operations. The underground Powerhouse and electro-mechanical equipment can be restored to its original condition in about 12 months. The water conductor system is mostly unaffected in the flash flood, hence, other than the Dam most of the components can be restored in a year's time.

As most of the components would be ready in a year, there is a case for restoring the Dam and bringing back the Project in operation at the earliest. The now proposed Dam is a concrete gravity dam in place of the earlier constructed Concrete Faced Rockfill Dam (CFRD). All the parameters of the earlier Dam like the location, the Dam top elevation, the Full reservoir level etc. are kept the same, all other components are kept unchanged, only change is the type of Dam to concrete-gravity from CFRD and much higher spillway capacity of 19,946 cumecs in comparison to earlier 7000 cumecs. The spillway capacity has been increased to cater to GLOF and PMF in place of earlier considered PMF only.

The above proposed restoration works are planned to be executed in two parts which are as under:

- **Stage/Part I –** To achieve partial generation by constructing a suitable upstream coffer dam and using the existing water conductor system and powerhouse. The proposal for restoration of the project with partial generation through coffer dam, wherein around 60% of designed energy can be harnessed.

- **Stage/Part II** - To achieve complete generation by constructing a concrete gravity dam which should be capable of passing revised design flood. Restoration of main Dam which will take around 36 months after start of partial generation i.e. around 48 months in total.

For dam site restoration, it has been ensured that the location and footprint of the proposed Coffer Dam and Main dam remains the same as earlier. All the project interventions like dam, coffer dam, new components as well as rehabilitation of affected components like, spillway, HRT, power house etc., will be undertaken on the land already available with project. **Hence, no additional land (Private/Govt/Forest) requirement is envisaged for proposed restoration works as mentioned above.**

As the reconstruction of dam and restoration of project involves change of scope from the time of EC, EC amendment is requested.

7. The comparative statement with reference to earlier proposal and revised proposal is to be given in table format:

Description	**Existing Salient Features**	**Now Proposed**
1. Location		
State, District.	Sikkim, North District	Sikkim, Mangan District
Village.	Dam near Chungthang village and Powerhouse near Sankalang Village	**Unchanged**
River.	Teesta	
Coordinates: Dam: Longitude & Latitude Powerhouse: Longitude & Latitude	88° 39' E, 27° 36' N 88° 32' E, 27° 31' N	
Dam Site	400m downstream of confluence of Lachen chu and Lachung chu near village Chungthang	
Power House Site	800m upstream of confluence of river Teesta and Talung chu near village Sangkalang	
2. Access to the Project:		
By Road	• From Siliguri (210/ 178 km) via Rangpo/ Dikchu. • From Gangtok (130 km) via Mangan.	
Rail Head	• New Jalpaiguri (broad gauge) (220/188 km) via Rangpo/ Dikchu.	

Description	Existing Salient Features	Now Proposed
	• Siliguri (meter gauge) (210/178 km) via Rangpo/ Dikchu	
Airport	Bagdogra	
3. Hydrology, Seismology and Climate		
Catchment area	2786.7 km^2	**Unchanged**
Probable maximum Flood	7000 m^3/s	**Unchanged**
GLOF	-	19,946 m^3/s
Seismic Zone	IV as per IS:1893-1 (2002)	**Unchanged**
4. Reservoir		
Maximum Reservoir Level (M.R.L.) – PMF Case	EL.1588 m	**Unchanged**
Full Reservoir Level (F.R.L.)	EL.1585 m	
Minimum Draw-down Level (M.D.D.L.)	EL.1565 m	
Gross Storage (EL.1530.0 to EL.1585.0 m)	5.08 MCM	
Live Storage (EL. 1565.0 to EL. 1585.0 m)	3.33 MCM	
5. Project Components:		
5.1 Dam		
Type of dam	Concrete Faced Rock-fill Dam (CFRD)	Concrete Gravity Dam
Maximum Height above riverbed level	60 m from river bed level	118.64 from deepest foundation level

Description	Existing Salient Features	Now Proposed
Top width of dam	10 m	6 m
Total length of dam at top	**298 m (includes chute spillway)**	**279.65 m (including sluice and overflow spillway)**
Total length of CFRD at top	**229 m**	**N/A**
5.2 Diversion Tunnel (DT)		
Location	On left bank	**Unchanged**
Number	1	
Size and shape	10 m diameter horseshoe	
Length	995 m	
5.3 Spillways/Diversion Tunnel	**Spillways**	**Diversion Tunnel**
Total number of Spillway arrangements	4 Nos.	-
Type of Spillways/DT		
	Diversion/Spillway Tunnel-1: a) Size, Shape & Length: 10 m ϕ, Horseshoe shaped & 995 m b) Flow type, Discharge & Velocity: Free Flowing, 1028 m^3/s & 12 m/s in diversion mode and 1750 cumecs in spillway mode c) Crest Elevation: EL.1537 m for diversion mode & EL. 1555 m for Spillway mode.	**Orifice/Overflow spillway** 1. **7 Nos. of openings, Orifice type Spillway** a. 7 No, Radial gates each of size 10.00 m (W) x 14.00 m (H). b. Total discharging capacity is 20,012 m3/s at FRL 1585.0 m 2. **Overflow type spillway**
	Spillway Tunnel-2: a) Size, Shape & Length: 10 m ϕ, Horseshoe shaped &1181.35 m.	

Description	Existing Salient Features	Now Proposed
	b) Flow type, Discharge & Velocity: Free Flowing, 1400 m^3/s & 16.88 m/s, Crest Elevation: EL.1572 m	a. One opening of size 08.00 m (W) x 06.00 m (H). b. Total discharging capacity is 250 m^3/s. at FRL 1585.0 m
	Chute Spillway: a) Nos. of Bays & Gate Type: 2 Nos. of 11 m width Radial Gates. b) Discharge & Velocity: 3500 m^3/s and 24m/s respectively. c) Crest Elevation: EL. 1565.5 m d) Energy dissipation: Flip bucket with plunge pool. **e)** Chute spillway length: 233.98m	
	Flushing cum Spillway Tunnel: a) Size, Shape & Length: 11 m ϕ, Horseshoe shaped & 1356.775 m. b) Flow type, Discharge & Velocity: Free Flowing, 1750 m3/s & 25 m/s c) Crest Elevation: EL.1540m	
5.4 Power Intake		
Number (Nos.) and Location	1 no. on the right bank	**Unchanged**
Sill level	EL. 1549 m	
Maximum Discharge through intake	202 cumec	
5.5 Desilting Chambers		
Number, Shape and Size	2 Nos. Oval Shaped, 320 m x 17 m x 23 m (LXBXH).	**Unchanged**

Description	Existing Salient Features	Now Proposed
5.6 Head Race Tunnel		
Number, Size and Shape	One No. 7.5 m Diameter, Horseshoe Shaped	**Unchanged**
Design discharge and velocity	175 m^3/s & 3.75 m/s	
Length	13816 m (from D/s of De-silting Chamber)	
Bed Slope	1 in 285 to 1 in 353	
5.8 Surge Shaft		
Type	Open to Sky, Circular Shaped Restricted Orifice Surge Shaft	**Unchanged**
Diameter& Height	13 m and 162.14m respectively	
5.8 Pressure Shaft		
Number and Type	2 Nos. Steel lined	**Unchanged**
Alignment	Horizontal-vertical-inclined-horizontal	
Size	4 m /3.25 m/2.5 m ϕ	
Length	Right Pressure Shaft– 1428.317 m, Left Pressure Shaft– 1451.086 m	
Discharge and velocity through each shaft	87.5 m^3/s and 6.96 m/s	
5.9 Powerhouse		
Type and Installed Capacity	Underground, 1200 MW	**Unchanged**
Machine Hall Dimensions (LXWXH)	214.5 m x 21.5m x 44.8 m	

Description	Existing Salient Features	Now Proposed
Transformer Hall Dimensions (LXWXH)	187.88 m x 15.8 m x 16.4m	
Service bay Level	EL. 777.9 m	
Type of Turbine	Vertical Axis Pelton	
Type of Generator	Vertical Shaft of 200 MW, 0.9 power factor 3 phase, 11 KV at 50HZ.	
Capacity of Transformer & Nos.	82 MVA, Single phase, 3x6 + 1 spare = 19 Nos.	**Unchanged**
Nos. of Units & Rated Capacity per Unit	6 Nos. and 200 MW each	
Head	Maximum Gross Head: 817 m Net Head: 786 m	
5.10 Main Tail Race Tunnel		
Type	Free Flowing.	**Unchanged**
Number, Size and Shape	One, 8.2 m (W) X 8 m (H), D-Shaped	
Length	1213.96 m	
5.11 Pothead Yard		
Type, Area	Outdoor on Left Bank, 59.2 (L) x 31 (W) m	**Unchanged**
6. Energy Generation		
Annual Energy 90% Dependable Year	5311 MU	**Unchanged**
Design Energy	5214 MU	

8. Court case details:

Court Case	A Court case is pending before the Hon'ble National Green Tribunal, Eastern Zone Bench, Kolkata in O.A. 171/2023/EZ. The matter pertains to the breach of Teesta III Dam at Chungthang in Sikkim on Teesta River due to flash flood which struck on the intervening night of 3rd/4th October 2023. The Hon'ble National Green Tribunal Delhi took Suo Motu cognizance of the matter on 20.10.2023 and transferred the same to the Eastern Zone Bench in Kolkata on 22.11.2023. All the pleadings in the matters are complete and all Respondents have filed their respective Counter Affidavits. In the Last hearing held on 20.09.2024, the matter was adjourned at the request of State of Sikkim and is listed before the bench on 16.12.2024.
Additional information (if any)	Nil

19.4.3 The EAC during deliberations noted the following:

The EAC deliberated on the information submitted and as presented in the meeting and observed that the proposal is for grant of amendment in Environmental Clearance Teesta Hydroelectric Project Stage-III (1200 MW) in an area of 213.8831 ha located at Village Lingdong, Kazor, Barfok, Meyong etc Sub-district Mangan and Chungthang, North District, Sikkim by M/s Sikkim Urja Limited.

The project/activity is covered under Category A of item 1 (c) 'River Valley projects' of the Schedule to the Environmental Impact Assessment Notification, 2006 and requires appraisal at Central level by the sectoral EAC in the Ministry.

The EAC noted that the Environmental Clearance letter was issued by MoEF&CC vide letter dated 04.08.2006 and amendment in EC was granted on 30.04.2010 by MoEF&CC for design changes for execution of the Project and subsequently, the transfer of Environment Clearance for the Teesta Hydroelectric project Stage-III (1200 MW) from "Teesta Urja Limited' to "Sikkim Urja Limited' has been granted by MOEF&CC vide letter no. J-12011/26/2006-IA-I dated 16.11.2024.

The EAC observed that the project, commissioned in February 2017, had been successfully operating until it faced a flash flood on 03/04 October 2023. The flood resulted in the washing away of the dam and severe flooding of the underground powerhouse, which led to a complete halt in project operations.

Now the PP proposed to redesign dam and replaces with the earlier Concrete Faced Rockfill Dam (CFRD) with a Concrete Gravity Dam, while maintaining the same parameters as the original, including location, dam top elevation, full reservoir level, and auxiliary components. PP submitted that a notable enhancement is the increase in spillway capacity from 7,000 cumecs to 19,946 cumecs, designed to accommodate both Glacial Lake Outburst Floods (GLOF) and Probable Maximum Flood (PMF), unlike the previous design, which accounted for PMF alone. This modification significantly enhances the dam's safety and resilience to extreme hydrological events. The PP assured that the other than the Dam most of the components can be restored in a year's time.

The EAC expressed serious concerns regarding the dam's design and stability; its ability to withstand potential natural disasters in the future. The committee emphasized the need for a thorough review of the proposed modifications to ensure the structural resilience and safety of the dam, particularly given the region's susceptibility to extreme hydrological events. It was therefore recommended to get comments from the Central Electricity Authority (CEA) on the proposed modifications. The EAC further opined to conduct a site visit by a sub-committee of the EAC members before giving any recommendation on the proposal. The sub-committee will comprise following members:

1. Prof. Govind Chakrapani
2. Dr. A.K.Sahoo, Member of EAC
3. Representative of CEA
4. Representative of CWC
5. Representative of MoEF&CC

The proposal was ***deferred*** on the above lines.

Agenda Item No. 19.5

Warsgaon Warangi Pumped Storage Project (1500 MW) in an area of 226.16 Ha located at Village Khanu, Teckpole and Warangi, Sub District Velhe and Mahad, District Pune and Raigad, Maharashtra by M/s Adani Green Energy Limited – Terms of Reference (TOR) - reg.

[Proposal No. IA/MH/RIV/505573/2024; F. No. J-12011/19/2022-IA.I (R)]

The EAC noted that the PP vide email/letter dated 25.11.2024 has informed that due to their predetermined commitment in other projects, they could not attend the virtual meeting for the ToR on 30th November 2024. And asked for deferment of the proposal.

The proposal was ***deferred*** on the above lines.

Agenda Item No. 19.6

Sikaser Open loop Pumped Storage Hydro-electric Project (1200 MW) in an area of 160 Ha located at Village East Raipur PF, Sub-district Bindranavagarh , District Gariyaband, Chhattisgarh by M/s Chhattisgarh State Power Generation Company Limited - Terms of Reference (TOR) - reg.

[Proposal No. IA/CG/RIV/506269/2024; F. No. J-12011/30/2024-IA.I (R)]

19.6.1 The proposal is for grant of Terms of References (ToR) to the project for Sikaser Open loop Pumped Storage Hydro-electric Project (1200 MW) in an area of 160 Ha located at Village EAST RAIPUR PF, Sub-district Bindranavagarh , District Gariyaband, Chhattisgarh by M/s Chhattisgarh State Power Generation Company Limited .

19.6.2: The Project Proponent and the accredited Consultant M/s. WAPCOS Limited, made a detailed presentation on the salient features of the project and informed that:

i. The proposed Sikaser Pumped Storage Hydro-electric Project (1200 MW) envisages utilization of available head between proposed upper dam and existing Sikaser reservoir as lower pond. An Underground Power House (UGPH) will be located in between two reservoirs. Both the reservoirs will be interconnected through water conductor system and the generator and turbines installed at the power house.

ii. The proposed Sikaser Pumped Storage Project is located near Sikaser village/town of Gariaband district of Chhattisgarh. The project falls at 20°31'24.92"N and 82°20' 38.724"E. It is located 45 KM towards South East direction from Gariaband District headquarters.

iii. The location of Upper reservoir at present is not accessible but the Lower reservoir is existing Sikaser reservoir which is well connected to road network which is at about 16 km from NH-130. At the location of Upper dam, no habitation is observed. The existing Lower dam is presently utilized for Hydropower and Irrigation.

iv. The **Sikaser Pumped Storage Hydro-electric Project (1200 MW)** envisages construction of Upper Dam, Intake, Head race Tunnel, Pressure tunnel, Penstock, Powerhouse, Transformer Hall, Tail Race Tunnel and Outlet.

v. **Land requirement:**

Forest Land	112 Hectares
Submergence area/Reservoir area	62 Hectares
Land required for project components	112 Hectares

vi. **Demographic details in 10 km radius of project area:**

- **Population:** As of 2011, the population of Gariyaband district was 5,97,653, The population density is 100 people per square Kilometer.
- Sex ratio: The sex ratio in Gariyaband was 1020.
- Literacy rate: The literacy rate in Gariyaband is 68.26%.
- Urban vs rural: 6.77% of the population lives in urban areas, and 96% live in rural areas.
- Scheduled Castes and Scheduled Tribes: Scheduled Castes make up 17.97% of the population, and Scheduled Tribes make up 36.14%.

vii. **Water requirement:**

Approx. 550 KLD During construction stage
Approx. 120 KLD During Operational stage

viii. **Project Cost:** The cost of Project is Rs. 5118.03 Crores at PFR Stage.

ix. **Environmental Sensitive area:** There is a Wildlife Sanctuary namely **Udanti Sitanadi Tiger Reserve** is located outside the buffer zone/sanctuary boundary i.e., approx. 0.35 km distance away from the project site and "**NO"** national parks, Biosphere Reserves. River/ water body **Sikaser reservoir (Existing)** is flowing at a distance of approx. 4 kms. in downward direction.

x. **Resettlement and rehabilitation:** In Sikaser PSP site no households are affected in the project area as per the preliminary study.

xi. **Alternative Studies:**

Total three (03) nos. Alternatives have been identified and studied.

ALTERNATE- I

- Upper reservoir is proposed near Sikaser village on right bank of the proposed lower reservoir.
- Pondage will be through composite bund and pit type by excavating upto El. 697m from hilltop El. 730m i.e., 33 m
- Available Gross head 309.13 m
- Required Live storage is 9.44 MCM
- Proposed Installed capacity 1200MW

ALTERNATE- II

- Upper reservoir is proposed near Sikaser village on left bank of the proposed lower reservoir.
- Pondage will be through composite bund and pit type by excavating upto El. 717m from hilltop El. 740m i.e., 23 m
- Available Gross head 329.47 m
- Required Live storage is 8.37 MCM
- Proposed Installed capacity 1200MW

ALTERNATE- III

- Upper reservoir is proposed at geographical co-ordinate 20°26'11.50"N 82°20'38.45"E near Sikaser town/village.
- Topography at this location is flat; hence dam is proposed to create pondage at elevation of El. 750 m. Highest elevation on one side of valley is El. 765 m.
- Available Gross head 355.75 m
- Required Live storage is 8.24 MCM
- Proposed Installed capacity 1200 MW

COMPARATIVE TABLE : LAYOUT ALTERNATIVES

Lower Reservoir			
Description	**Alternate-I**	**Alternate-II**	**Alternate-III**
Reservoir Type	Existing Dam	Existing Dam	Existing Dam
Proposed FRL (EL in m)	406.30	406.30	406.30

Proposed MDDL (EL in m)	397	397	397
Proposed Live Storage (MCM)	161.96	161.96	161.96
Upper Reservoir			
Reservoir Type	Bund & Pit Combined	Bund & Pit Combined	Dam
Excavation Depth from top (m)	33	23	-
Proposed FRL (m)	718.50	738.50	761
Proposed MDDL (m)	700	721	750
Proposed Live Storage (MCM)	9.44	8.37	8.24
Gross Head (m)	309.13	329.47	355.75
Tentative WCS Length (m)	1475	1336	2412
L/H Ratio	4.77	4.06	6.81
Proposed Installed Capacity (MW)	1200	1200	1200
Tentative Cost (incl. E&M) (in Cr.)	5118.03	5222.18	5303.83
Per MW Cost (in Cr)	4.26	4.35	4.42

xii. Details of Solid waste/ Hazardous waste generation/ Muck and its management: Muck disposal areas have been identified outside the forest area.

xiii. The salient features of the project are as under:-

1. **Project Details:**

Name of the Proposal	Sikaser Open Loop Pumped Storage Hydro-electric Project (1200 MW)
Location (Including coordinates)	near village Sikaser, East Raipur PF, Sub-district Bindranavagarh, District Gariyaband, Chhattisgarh.

	The upper reservoir falls in 20°31'24.92"N, 82°20'38.724"E and Lower Reservoir falls in 20°31'6.78" N, 82°18'48.86"E respectively.
Inter- state issue involved	No
Seismic zone	Zone-II

2. **Category Details:**

Category of the project	A
Provisions	-
Capacity / Cultural command area (CCA)	1200 MW
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	-

3. **Electricity generation capacity:**

Powerhouse Installed Capacity	4 units of 300 MW each
Generation of Electricity Annually	2510.71 GWh
No. of Units	4
Additional information (if any)	-

4. **ToR/EC Details:**

Cost of project	Rs. 5118.03 Crores
Total area of Project	160 Hectares
(Height of Dam from deepest Foundation level (EL))	Upper dam - 20m
Length of Tunnel/Channel	1475 m
Details of Submergence area	Non-Forest Land - 48 Hectare Forest Land – 112 Hectare
Types of Waste and quantity of generation during construction/ Operation	Sewage generated from Labour camps 400 KLD per day.
E-Flows for the Project	It is a pumped storage project; E flows will be released from lower dam which is a main storage dam.
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity	NA

studies (CIA&CC) for River in which project located. If yes, then a) E-flow with TOR /Recommendation by EAC as per CIA&CC study of River Basin. b) If not the E-Flows maintain criteria for sustaining river ecosystem.	

5. **Muck Management Details:**

No. of proposed disposal area/ (type of land- Forest/ Pvt. land)	10 hectares (approx.) non-forest land
Muck Management Plan	Shall be taken up as part of DPR
Monitoring mechanism for Muck Disposal	Shall be taken up as part of DPR

6. **Land Area Breakup:**

Private land	48 Hectares (Non Forest land)
Government land/Forest Land	112 Hectares (Forest Land)
Submergence area/Reservoir area	62 Hectares
Land required for project components	112 Hectares
Additional information (if any)	-

7. **Presence of Environmentally Sensitive areas in the study area:**

Forest Land/ Protected Area/ Environmental Sensitivity Zone	Yes/No	Details of Certificate/letter/Remarks
Reserve Forest/Protected Forest Land	(Yes)	**Total Forest Land – 112 Ha** *(Protected Forest Land – **112 Ha**)*
National Park	No	
Wildlife Sanctuary	No	

8. **Court Case Details:** NIL

9. **Miscellaneous:**

Particulars	Details

Details of consultant	M/s WAPCOS Limited
Project Benefits	Hydro-electric power and Employment generation
Status of other statutory clearances	-
R&R details	No (Total NIL Households)
Additional detail (If any)	-

19.3.3 The EAC during deliberations noted the following:

The EAC deliberated on the information submitted (Form 1, PFR, kml file, etc.) and as presented in the meeting and observed that the proposal is for grant of TOR to the project for conducting EIA/EMP and Public hearing for Sikaser Open loop Pumped Storage Hydro-electric Project (1200 MW) in an area of 160 Ha located at Village East Raipur Pf, Sub-district Bindranavagarh, District Gariyaband, Chhattisgarh by M/s Chhattisgarh State Power Generation Company Limited.

The project/activity falls under Category A of item 1(c), 'River Valley Projects,' as per the Schedule of the Environmental Impact Assessment Notification, 2006, and requires appraisal at the central level by the sectoral EAC in the Ministry.

The total land requirement for the project is 160 hectares, out of which 112 Hectares are forest land and 48 Hectares are non-forest land. It was noted that the application for Stage-I Forest Clearance is yet to be submitted.

Additionally, the Project Proponent has provided a Memorandum of Understanding (MoU) dated 06.10.2023, signed between the Government of Chhattisgarh and M/s Chhattisgarh State Power Generation Company Limited., granting in-principle approval for the establishment of the Pumped Storage Project with a capacity of 1200 MW in District Gariyaband.

19.3.4 The EAC based on the information submitted and as presented during the meeting, recommended the proposal for grant of Specific ToR issued by the Ministry for Open Loop Pumped Storage Projects vide OM dated 14.08.2023 for conducting EIA study for proposed construction of the project for Sikaser Open loop Pumped Storage Hydro-electric Project (1200 MW) in an area of 160 Ha located at Village East Raipur Pf, Sub-district Bindranavagarh, District Gariyaband, Chhattisgarh by M/s Chhattisgarh State Power Generation Company Limited, under the provisions of EIA Notification, 2006, as amended along with the following additional/specific ToR

[A] Environmental Management and Biodiversity Conservation:

i. Explore the possibilities for reducing the Forest land requirement. The application for obtaining Stage I FC for 112 Ha of forest land involved in the project shall be submitted within stipulated time.

ii. Certificate and certified map from Chief Wildlife Warden shall be submitted mentioning that project boundary is not falling in any Ecological Sensitive Area, Wildlife Sanctuary/Tiger/elephant corridor/Critically polluted area within 10 km of Project site.

iii. PP shall submit the detailed plan for filling the reservoir for generating envisaged capacity with excess monsoon water only.

iv. Transportation Plan for transporting construction materials shall be submitted. Separate chapter for risk assessment of such transportation through/within the Wildlife Sanctuary shall be included in the EIA report.

v. Environmental Cost Benefit Analysis shall be done in terms of loss of Forest ecosystem due to diversion of Forest land/loss of biodiversity, water availability, water uses for generation of hydro power and Ecological flows.

vi. The baseline data collection will cover the changes in biological and ecological profile of the region after monsoon with worst case scenario study and critical mineral assessment.

vii. Calculation and values of GHGs (CO2, CH4 etc.) emissions during construction and during operation till the life of the project shall be estimated and submitted.

viii. The longitudinal connectivity/Free flowing sketch be provided in the EIA/EMP report. Presence of any critical mineral zone in the proposed area be clarified from GSI.

ix. Quantitative values of Impact modelling of environmental parameters shall be submitted for during construction and operation. Also, mitigation measures shall be submitted in terms of construction and operation phase.

x. Conducting site specific ecological study with respect to riverine ecology focus on fishes diversity, fish migration, habitat and aquatic biota due to construction PSP. Impact assessment on the fish diversity based on the hydrological alteration at the water drawing sources shall be studied.

xi. Cumulative Impact of projects on carrying capacity and sustainability of Reservoir/ River /nala of catchment area / due to tapping of water for filling reservoir.

xii. Action plan for survival or diversion of the rivulets/stream leading to join river shall be submitted.

xiii. Impact zone decided prior to base line data generation and accordingly, sampling location shall be finalized. Baseline data as mentioned in Specific ToR shall be collected for preparation of EIA/ EMP report along with soil characteristics which shall be studied at minimum 10 locations. The ground water level at 10 locations shall be measured in project area in all three seasons.

xiv. A study shall be carried out on impact of project activity on the aquatic and terrestrial ecosystem, within project area classifying the impact zones (highly impact/low impact zone) based on seasonal variations and covering the aspects related to impacts on aquatic ecosystem/ primary productivity due to quantity of water to be lifted for power generation and thermal stratification. Accordingly, Environment Management plan shall be prepared.

xv. Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP.

xvi. Scope of watershed development in the 10 km radius of the project shall be studied in consultation with Indian Council of Agriculture Research (ICAR) Institutes/ Expert Govt. institutions and accordingly a detailed Water Shed Development Plan shall be prepared and incorporated in EIA/ EMP report.

xvii. The project area should not come up on any critical mineral zone to be verified by GSI/NMDC.

xviii. Any archaeological sites in the vicinity of the project, if any, then it shall be certified by ASI. No mineral zone on the proposed site be certified by Geological Survey of India or any other concerned Government Organization.

xix. The Sub-committee shall conduct site visit before the grant of Environmental Clearance for stipulating specific environmental conditions.

[B] Socio-economic Study

xx. Declaration by the project proponent by way of affidavit that "No" Inter-state issue/ policy issue is involved with any State in the project.

xxi. All the tasks including conducting public hearing shall be done as per the provisions of EIA Notification, 2006 and as amended from time to time. Public hearing issues raised and compliance of the same shall be incorporated in the EIA/ EMP report in the relevant chapter.

xxii. PP shall submit the credible documents to show the status of land acquisition w.r.t

project site from/through the concerned State Government as required under Ministry's OM dated 7th October, 2014 for the project land to be acquired.

xxiii. Land acquired for the project shall be suitably compensated in accordance with the law of the land with the prevailing guidelines. Private land shall be acquired as per provisions of Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013.

xxiv. Budget earmarked for R&R, CSR shall not include in the cost of EMP and compliance of issues raised during Public Hearing.

[C] Muck Management/ Disaster Management

xxv. Details of quantity of muck generation component wise, types of muck (Excavation in tunnels, pressure shaft and powerhouse etc.) and disposal site/ transportation to be provided.

xxvi. Details of muck management such as dumping sites and its locations, transportation plan along with monitoring mechanism for muck transportation, detailing the road map of project construction site/ indicating the distances from HFL, river, project construction site along with types of road etc.

xxvii. Safety measures for avoiding spill over muck into the riverbed/streams and its flow into the river during the high discharge/ flood or monsoon period. Prepare plan for stabilization of muck disposal sites using biological and engineering measures to ensure that muck does not roll down the slopes and shall be disposed safely and that it does not pollute the natural streams and water bodies in surrounding area.

xxviii. Restoration plan for construction area including dumping site of excavated materials by levelling, filling up of burrow pits, landscaping etc.

[D] Disaster Management

xxix. Impact of Project activities (specially blasting and drilling) on the aquatic and terrestrial ecosystem, within study area to be studied and be incorporated in EIA/EMP report.

xxx. PP shall submit the proposal of EAC and seek approval of CEA/CWC for DPR, with a distance of 100 mts from HFL to avoid future damage due to flood. The data and distance of HFL shall be certified by concerned State Government and shall be submitting grant submitting the proposal of grant of EC.

[E] Miscellaneous

xxxi. Both capital and recurring expenditure under EMP shall be submitted.

xxxii. Pre-DPR Chapters viz. Layout Map and Power Potential Studies duly approved by CWC/CEA shall be submitted.

xxxiii. The PP should submit the photograph of monitoring stations & sampling locations. The photograph should bear the date, time, latitude & longitude of the monitoring station/sampling location. In addition to this PP should submit the original test reports and certificates of the labs which will analyze the samples.

xxxiv. Drone video of project site shall be recorded and to be submit.

xxxv. Undertaking need to submitted on affidavit that regarding no activities has been yet started on the project site and water allocated to this scheme shall not be diverted to other purpose.

xxxvi. Detailed plan to restore wider roads and convert them into narrow upto 10m after construction of the project.

xxxvii. Specific Terms of Reference (ToRs) issued by the Ministry vide Office Memorandum No. F. No. IA3-22/33/2022-IA.III dated 14.08.2023 for Pumped storage projects shall be used for preparation of EIA/ EMP reports.

xxxviii. As per Ministry's OM dated 1st August, 2013, PP shall submit application to obtain prior approval of Central Government under the Forest Conservation Act, 1980 for diversion of forest land required for such projects will be submitted as soon as the actual extent of forest land required for the project is known to the project proponent, and in case, within 6 months of issuance of ToR. However, no proposal will be put up before EAC without submission of application for forest clearance, wherever applicable.

xxxix. Detailed report on cumulative effect of multiple projects already proposed within the region on the same source.

The meeting ended with the vote of thanks to the Chair.

*****

ANNEXURE I

ATTENDANCE

S. No.	Name of Member	Role	Remarks
1.	Prof. Govind Chakrapani	Chairman	P
2.	Dr. Uday Kumar R Y	Member	P
3.	DR. J. V. Tyagi	Member	P
4.	Dr. Mukesh Sharma	Member	P
5.	Shri Kartik Sapre	Member	P
6.	Shri Ajay Kumar Lal	Member	P
7.	Shri Rajeev Varshney	Member Representative of Central Electricity Authority (CEA)	A
8.	Shri Piyush Ranjan	Member Representative of Central Water Commission (CWC)	A
9.	Dr. J. A. Johnson	Member Representative of Wildlife Institute of India (WII)	P
10.	Dr. A.K. Sahoo	Member Representative of CIFRI	P
11.	Shri Yogendra Pal Singh	Member Secretary	P
12.	Dr. Krishnendu Mondal	Scientist 'D'	P

Approval of the Chairman

---------- Forwarded message ----------
From: Chakrapani GovindaJoseph <govind.chakrapani@es.iitr.ac.in>
To: "Yogendra Pal Singh"<yogendra78@nic.in>
Cc: "Dr Krishnendu Mondal"<krishnendu.mondal@gov.in>
Date: Tue, 10 Dec 2024 16:41:36 +0530
Subject: Re: Draft MOM of the EAC (RVHEP) meeting held on 30.11.2024 - for approval-reg.
---------- Forwarded message ----------

Approved.
Chakrapani