



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

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**Minutes of 47TH MEETING OF EXPERT APPRAISAL COMMITTEE meeting River Valley and Hydroelectric Projects held from 28/01/2026 to 30/01/2026 Date: 11/02/2026**

**MoM ID:** EC/MOM/EAC/674587/1/2026

**Agenda ID:** EC/AGENDA/EAC/674587/1/2026

**Meeting Venue:** N/A

**Meeting Mode:** Virtual

**Date & Time:**

28/01/2026	10:30 AM	05:30 PM
29/01/2026	No meeting scheduled	
30/01/2026	10:30 AM	05:30 PM

**1. Opening remarks**

The 47<sup>th</sup> meeting 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 28<sup>th</sup> and 30<sup>th</sup> January. 2026 through virtual mode, under the Chairmanship of Prof. G. J. Chakrapani.

**2. Confirmation of the minutes of previous meeting**

The Minutes of the 46<sup>th</sup> EAC meeting held on 09<sup>th</sup> January, 2026 were confirmed.

**3. Details of proposals considered by the committee**

**Day 1 -28/01/2026**

### 3.1. Agenda Item No 1:

#### 3.1.1. Details of the proposal

Kamala Hydro Electric Project by NHPC LIMITED located at KAMLE, ARUNACHAL PRADESH			
Proposal For		Fresh EC	
Proposal No	File No	Submission Date	Activity Sub-Activity (Schedule Item)
<a href="#">IA/AR/RIV/562202/2026</a>	J-12011/11/2024-IA-I(R)	06/01/2026	River Valley/Irrigation projects RVHEPs without Pump Storage Projects (1(c))

#### 3.1.2. Project Salient Features

**47.1.1:** The proposal is for grant of Environmental Clearance (EC) to the project for Kamala HE Project (1720MW) in an area of 3858.8904 Ha located at Village Pompulend, Boa Model, and Laa I etc., Sub-District Kamporijo Circle, Chambang Circle, Raga and Parsi-Parlo, District Kamle, Kra Daadi and Kurung Kumey, Arunachal Pradesh by M/s NHPC Limited.

**47.1.2:** The Project Proponent and the accredited Consultant M/s. R. S. Envirolink Technologies Pvt. Ltd., made a detailed presentation on the salient features of the project and informed that:

- Kamala Hydroelectric Project is a storage project with 1720 MW installed capacity envisages harnessing the waters of Kamla River, a right bank tributary of Subansiri River, which is further a major tributary of the Brahmaputra.
- The Project and the reservoir falls in Kamle and Kra Daadi districts and a small portion of land is required to be acquired for flood moderation purpose in Kurung Kumey District of Arunachal Pradesh and is being developed by NHPC Ltd.
- The project is conceived as a Storage scheme with approved Flood Moderation. The project envisages construction of 216 m high concrete gravity dam which is designed to provide storage that would ensure generation of daily peaking power for minimum 3 hours and is provided with a 15m exclusive cushion above the Full Reservoir Level (FRL) to facilitate moderation of floods.
- The project is located on Kamla River, a major right bank tributary of Subansiri River and falls in the Lower Himalayan region. Kamla river valley is almost entirely hilly and mostly covered by dense forests. Mainly, the Project components fall in Kamle district while major portion of the reservoir area is coming under in Kamle & Kra Daadi districts and a small portion of land required to be acquired due to flood moderation scheme falls in Kurung Kumey district of Arunachal Pradesh.
- Scoping clearance of Kamala HEP with installed capacity of 1720 MW was accorded by MoEF&CC, Government of India vide ToR Identification No.: TO24A0501AR5622743N dated 07/08/2024.
- The main aspects of the project are proposed as below:
  - To facilitate river diversion, upstream and downstream cofferdams have been located at about 250m u/s and 325m d/s of dam axis.
  - Three diversion tunnels with length of 915 m, 1100 m and 1315 m.
  - A concrete Gravity dam 216m high from its deepest foundation level and 628 m long at dam

top level EL 475 m. Reservoir levels are FRL- EL 455 m, MWL -EL 470 m and MDDL - EL 430 m.

- Spillway consisting of 7 bays of 6.0 m (width) x 10.5m (height) main spillway, an auxiliary spillway of opening 6.0 m (Width) X 13.0 m (Height) and 5 No. under sluice bays 4.0m (width) x 4.5 m (height)
- Power intake four numbers. Three Power Intake opening is 2 Nos x 5.1 m (Width) x 11.5 m (Height) and fourth one of opening 2 Nos x 5.5 m(Width) X 12.5 m (Height) at invert level EL 405 m.
- Four No HRT in which, HRT-1, HRT-2 & HRT-3 are Horse Shoe Shaped with 11.5 m diameter, while HRT-4, Horse Shoe Shape has a diameter of 12.5 m. Length of HRTs varies from 515 to 832 m.
- Eight nos. of Pressure shafts (PS), circular steel lined, Six nos. PS-1, PS-2, PS-5 to PS-8 are of size 7.1 m and two nos. PS-3 & PS-4 of size 6.5 m. Auxiliary unit penstock 2.5 m bifurcate from PS-1 at lower bottom portion.
- Underground power house cavern of size 380m (L) x 24m (W) x 59.4 m (H) housing 8 nos. of main units of 210 MW each and an auxiliary unit of 40 MW.
- Transformer cavern of size 375m (L) x 16.5m (W) x 27m (H) located d/s of power house cavern.
- Draft Tube Gate Operation Chamber of size 276m (L) x 7m (W) x 12 m (H).
- Eight nos. Unit TRT, each of size 7.5 m Horse shoe shape and 210 m to 240 m long
- D/s surge cavern of size 276m (L) x 12m (W) x 42.85m (H) further d/s of Draft Tube Gate Operation Chamber.
- Four nos. of main TRT of size 10.0 m, Horse shoe shape of length varying from 300m to 450m and auxiliary unit TRT of size 3.5 m, Horse shoe shape of length 333m.
- To facilitate the construction and operation of the project components, suitable Adits and Access tunnels have been proposed.

Notifications have been issued by the Government of Arunachal Pradesh for acquisition of 3858.8904 ha land for the project district wise. Out 3858.8904 ha of land, 116.00 ha is required for construction facilities and temporary roads and may be taken on lease.

For the acquisition of 3278.0904 ha of forest land, online application on PARIVESH portal has been submitted vide proposal no. FP/AR/HYD/IRRIG/469328/2024 dated 04-04-2024. Current status is "Pending at Nodal Officer due to EDS by State Secretary".

The study area comprises a total of 377 villages, distributed across four districts: 111 villages in Kamle district, 209 in Kra Daadi district, 46 in Kurung Kumey district, and 11 in Keyi Panyor district. The project will affect areas in three districts viz., Kamle, Kra Daadi and Kurung Kumey. A total of 126 villages will be affected – 33 in Kamle, 87 in Kra Daadi and 6 in Kurung Kumey. Total of 29932 people live in 126 project affected villages, with 48.51% males and 51.49% females. The sex ratio was found at 1061 females per 1000 males. The literacy rate is 66.74%. The majority of households depend on agriculture and allied activities as their primary occupation. A small portion of the population is employed in government services. Other occupations include business/trade, contract work, and non-agricultural labour. A small percentage perform the traditional role of Gao Burah (village headman).

During investigation phase of the project, following sequence of investigation was taken by different executing agencies for alternative dam axis since 1996. During course of those investigation the power house location & WCS were also shifted to different locations.

#### **ALTERNATIVES BY BRAHMAPUTRA BOARD**

Brahmaputra Board started investigating the project in 1996. Two alternative dam sites were identified on river Kamla, and were designated as Site-A and Site-B. The site A was located

3.5 km upstream of Tamen village while the site B was identified some 9.5 km further upstream. Brahmaputra Board in consultation with CWC and GSI considered Site-A as a better option from geological, topographical and construction material point of view and decided to focus further investigations at this site. Subsurface explorations were initiated; however, before any further progress could be made, the project was transferred to NHPC for preparation of Feasibility and DPR.

#### **ALTERNATIVES BY NHPC DURING FEASIBILITY STAGE**

NHPC started investigations by carrying out a feasibility level study of the project. After detailed inspection of the area, NHPC identified two axis, located about 450m and 500m upstream of the Site-A axis selected by Brahmaputra Board, and initiated detailed investigations at these axis. Narrower valley section and relatively better quality of rock exposures at road level were cited as positive features of the selected area. These axis were designated as A-5 (450m upstream of Site-A) and A-6 (500m upstream of Site-A). A concrete gravity dam was planned near A5/A6 Axis and the powerhouse was proposed underground at the left bank of Kamla river and comprised of 8 units of 200 MW each, totaling an installed capacity of 1600 MW. NHPC Submitted the feasibility report with dam axis at A-5/A-6. Approval of the feasibility report of the Project was accorded by CEA, vide its letter no. 18/13/2002-HPA-II/CEA/450 Dated 10.09.2002.

#### **ALTERNATIVES BY NHPC DURING DPR STAGE**

Detailed investigations and studies were initiated for preparation of the DPR with A-5/A-6 Axis. During these studies NHPC assessed that the selected dam site (near to A5-A6) would require extensive stripping of abutments for founding a concrete gravity dam. The dam type was then changed to CFRD and the dam axis was relocated about 250m upstream of the A-6 axis as the valley was wider there. This axis was designated as A-11. The underground powerhouse was kept at the same location on the left bank as in the Feasibility Report. The FRL for the project was kept at El 460m and an exclusive flood cushion of 15m was finalized through Integrated Flood Moderation Studies of the basin. Rule curve defined as part of the Integrated Flood Moderation Studies of the Subansiri basin projects was proposed to regulate reservoir level of the project during monsoons, thus ensuring the flood moderation objective of the project. Adequate spillway capacity was ensured by providing surface spillway bays and tunnel spillways, both located on the left bank. In the meanwhile, the GoAP transferred the project to Kamla Hydro Electric Power Company Ltd. (KHEPCL) in August 2010.

#### **ALTERNATIVES BY KHEPCL (Near A11 Axis)**

After transfer of the project to KHEPCL, Tojo-Vikas International Pvt. Ltd. (TVIPL) was engaged to undertake a review of the previous studies on the project and to prepare a Project Report that could be used as an updated project document for submission to MoEF&CC along with the application of ToR for the EIA studies. All three sites (Site-A by Brahmaputra Board and Axis A-5/A-6 and A-11 of NHPC) were examined by the TVIPL, who recommended that the dam axis should be located at NHPC DPR axis i.e. 20m downstream of the A-11 axis. It was also recommended that the dam type should be changed to a concrete gravity dam and provided with two levels of spillway. The powerhouse was however proposed to be maintained underground, at the same location as proposed by NHPC. The installed capacity was retained at 1600 MW (8 x 200 MW) commensurate with the hydrological assessment given in NHPC DPR.

#### **ALTERNATIVES BY KHEPCL (Near A5/A6 Axis)**

Further, KHEPCL commenced study with an independent review of all previous study reports and the investigation results. The project area was assessed thoroughly by KHEPCL through detailed reconnaissance and it was confirmed that the component of project should be developed on the left bank as proposed in the previous studies. Accessibility, relatively better geology and availability of substantial amount of investigation results clearly weigh in favour of a left bank development. Location of the dam axis was finalized after a detailed assessment of all the alternative axis and also considering the type of dam that suited to



given location. Dam types studied included CFRD and concrete gravity; with different configurations comprised of straight and curved axis (arch-gravity) as well as conventional concrete and RCC type dams. Finally, conventional concrete gravity dam was considered more suitable from flood management as well as other perspectives by KHEPCL. The selected axis is near Axis A-5/A-6 (with slight skew) and is considered suitable for founding a concrete gravity dam. During finalization of power house location, KHEPCL studied different option comprised of dam toe option and an underground power house arrangement. The underground location at the left bank just downstream of the dam was considered most suitable by KHEPCL. The powerhouse is proposed in an underground cavern on the left bank, nearly 500m downstream of the dam axis. Due to non-availability of suitable space for locating the powerhouse on the surface, same has been proposed to be located underground in the left abutment just near the dam toe as was envisaged by NHPC during the earlier phase of DPR formulation. However, the final location of the underground powerhouse and other related caverns was slightly readjusted (by shifting hill side) by KHEPCL in view of accommodating all the ancillary structures safely keeping in view the geological environment and topography.

#### SELECTION OF FINAL ALTERNATIVE

In the present proposal, NHPC, after detailed deliberations considered the final dam site as per KHEPCL proposal, i.e. as submitted in the DPR of August 2013 prepared by KHEPCL. Thus, dam axis located in between Axis A-5 and A-6 and oriented slightly askew to both the axis, was finalized for further studies. This identified Dam Axis is aligned in N41°E- S41°W direction. The power house is proposed at same location as submitted in the DPR by KHEPCL. However, the dimension of power house has been readjusted due to shifting of Auxiliary unit from dam toe to inside the hill & other design considerations.

Period	From December 2024 to July 2025				
AAQ parameters at 06 locations (Min. & Max.)	Core Zone				
	Parameter	Unit	Min	Max	Standards
	PM <sub>2.5</sub>	mg/m <sup>3</sup>	27.10	37.90	60
	PM <sub>10</sub>	mg/m <sup>3</sup>	7.60	14.80	100
	SO <sub>2</sub>	mg/m <sup>3</sup>	5.00	7.10	80
	NO <sub>2</sub>	mg/m <sup>3</sup>	6.20	8.30	80
	Buffer Zone				
	Parameter	Unit	Min	Max	Standards
	PM <sub>2.5</sub>	mg/m <sup>3</sup>	40.10	46.10	60
	PM <sub>10</sub>	mg/m <sup>3</sup>	17.20	19.90	100
	SO <sub>2</sub>	mg/m <sup>3</sup>	6.10	8.90	80
	NO <sub>2</sub>	mg/m <sup>3</sup>	7.70	11.10	80
Incremental GLC Level	Core Zone				
	Criteria Pollutant	Unit	Baseline Concentration [A]	Predicted incremental value considering worst case stability class [B]	Total GLC [A]+[B]
	PM <sub>10</sub>	mg/m <sup>3</sup>	37.9	9.48	47.375
	PM <sub>2.5</sub>	mg/m <sup>3</sup>	14.8	3.70	18.5

	SO <sub>2</sub>	mg/m <sup>3</sup>	6.7	8.04	14.74	
	NO <sub>2</sub>	mg/m <sup>3</sup>	8.3	9.96	18.26	
	<b>Buffer Zone</b>					
	<b>Criteria Pollutant</b>	<b>Unit</b>	<b>Baseline Concentration [A]</b>	<b>Predicted incremental value considering worst case stability class [B]</b>	<b>Total GLC [A]+[B]</b>	
	PM <sub>10</sub>	mg/m <sup>3</sup>	46.1	0	46.1	
	PM <sub>2.5</sub>	mg/m <sup>3</sup>	19.7	0	19.7	
	SO <sub>2</sub>	mg/m <sup>3</sup>	8.6	0	8.6	
	NO <sub>2</sub>	mg/m <sup>3</sup>	10.7	0	10.7	
<b>River water samples (8 samples)</b>	<b>Core Zone</b>					
	<b>S. No.</b>	<b>Parameters</b>	<b>Min</b>	<b>Max</b>	<b>Standards</b>	
	1	pH	7.15	8.17	8.5	
	2	Total Dissolved Solids, mg/L	37	72	500	
	3	Dissolved Oxygen (mg/l)	8.1	10.8	6	
	4	Chloride (as Cl), mg/L	10.4	14.2	250	
	5	Total Hardness (as CaCO <sub>3</sub> ), mg/L	61.9	90.8	300	
	6	Biological Oxygen Demand (mg/l)	0	0	2	
	7	Chemical Oxygen Demand (mg/l)	0	0	0	
	8	Total Coliform (MPN/100 ml)	0	0	50	
	<b>Buffer Zone</b>					
	<b>S. No.</b>	<b>Parameters</b>	<b>Min</b>	<b>Max</b>	<b>Standards</b>	
	1	pH	7.82	8.1	8.5	
	2	Total Dissolved Solids, mg/L	42	72	500	
	3	Dissolved Oxygen (mg/l)	7.8	10.3	6	
	4	Chloride (as Cl), mg/L	11.5	12.6	250	
	5	Total Hardness (as CaCO <sub>3</sub> ), mg/L	74.4	91.7	200	
	6	Biological Oxygen Demand (mg/l)	0	0	2	
	7	Chemical Oxygen Demand (mg/l)	0	0	0	
	8	Total Coliform (MPN/100 ml)	0	0	50	
<b>Pond water samples quality at locations</b>						

Ground Water samples at 6 locations

Core Zone					
S. No.	Parameters	Min	Max	Desired Limits	Permissible Limits
1	pH	7.51	7.68	6.5	8.5
2	Total Dissolved Solids, mg/L	37	43	500	2000
3	Chloride (as Cl), mg/L	42.46	46.04	250	1000
4	Total Hardness (as CaCO <sub>3</sub> ), mg/L	167.04	183.48	200	600
5	Fluoride (as F), mg/L	0.08	0.1	1	1.5
Buffer Zone					
S. No.	Parameters	Min	Max	Desired Limits	Permissible Limits
1	pH	7.35	7.94	6.5	8.5
2	Total Dissolved Solids, mg/L	35	49	500	2000
3	Chloride (as Cl), mg/L	40.96	48.78	250	1000

	<table><tr><td>4</td><td>Total Hardness (as CaCO3), mg/L</td><td>157.54</td><td>177.26</td><td>200</td><td>600</td></tr><tr><td>5</td><td>Fluoride (as F), mg/L</td><td>0.08</td><td>0.11</td><td>1</td><td>1.5</td></tr></table>	4	Total Hardness (as CaCO3), mg/L	157.54	177.26	200	600	5	Fluoride (as F), mg/L	0.08	0.11	1	1.5																																																																																								
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Noise levels Leq (Day & Night) at 8 locations	<table><tr><th rowspan="2">Zone</th><th rowspan="2">Category</th><th colspan="2">Leq Day dB(A)</th><th colspan="2">Leq Night dB(A)</th><th colspan="2">Prescribed Limits</th></tr><tr><th>From</th><th>To</th><th>From</th><th>To</th><th>Day</th><th>Night</th></tr><tr><td>Core</td><td>Residential</td><td>50.0</td><td>61.8</td><td>33.6</td><td>42.3</td><td>55</td><td>45</td></tr><tr><td>Buffer</td><td>Residential</td><td>50.4</td><td>62.0</td><td>29.5</td><td>39.4</td><td>55</td><td>45</td></tr></table>	Zone	Category	Leq Day dB(A)		Leq Night dB(A)		Prescribed Limits		From	To	From	To	Day	Night	Core	Residential	50.0	61.8	33.6	42.3	55	45	Buffer	Residential	50.4	62.0	29.5	39.4	55	45																																																																						
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Flora & Fauna	<p>Schedule-I species observed in the study area:</p> <p>As per Wildlife Protection Amendment Act, 2022, 29 mammals (Sambar, Northern Red Muntjac, Wolf, Wild Dog, Bengal Fox, Asiatic Golden Cat, Jungle Cat, Clouded Leopard, Common Leopard, Marbled Cat, Leopard Cat, Fishing Cat, Crab Eating Mongoose, Hog Badger, Common Otter, Yellow Throated Marten, Spotted Linsang, Black Bear, Bear Cat, Masked Palm Civet, Common Palm Civet, Indian Pangolin, Stump Tailed Macaque, Assam Macaque, Hoolock Gibbon, Slow Loris, Bush-Tailed Porcupine, Red Giant Flying Squirrel and Black Giant Squirrel); 1 bird (Great Hornbill); and 2 herpetofauna (Rat Snake and King Cobra) species are listed as Schedule I species.</p>																																																																																																				

Sanitation and Solid Waste Management Plan- The implementation of the Sanitation and Solid Waste Management Plan, including provision of infrastructure, training, and strict adherence to waste segregation, transportation, and disposal protocols, will be carried



out at regular intervals throughout the construction period. 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.

- For Disposal of hazardous waste vendors authorized by State Pollution Control Committee shall be engaged.
- 4 muck disposal yards has been identified with a total area of 63 ha and capacity has been worked as 198.93 lakh cum which is more than the total quantity of muck to be disposed i.e. 105.95 lakh cum. All the sites 30m away from HFL.

#### **Suggestions/ Comments Given by Stakeholders**

##### **KRA DAADI DISTRICT**

<b>S. No.</b>	<b>Key Issues/ Queries/ Suggestion s/ Views/ Concerns</b>	<b>Replies given by Project Proponent</b>
<b>1</b>	<b>Shri James Dado, Village Palin</b>	
a	Villages namely Restaring, Korapu, Tayo and Langdang are not covered extensively under geological studies. The terrain and soil condition of these villages are not viable for habitation if water level rises. There are hollow tunnels in Restaring and Korapu whereas, Tayo and Langdang are located at very steep areas. Hence, request that more detailed study must be carried in these villages.	Detailed geological investigations have been carried out for all major project components as well as the reservoir rim area. To address soil erosion and ensure slope stability in vulnerable zones, adequate provisions have been incorporated under the Catchment Area Treatment (CAT) Plan and Reservoir Rim Treatment Plan.
b	As per Land Acquisition, Rehabilitation and Resettlement Act, 2013 the Resettlement & Rehabilitation Plan (RR Plan) is to be prepared by the District Administration. So, how this RR Plan has been prepared without the involvement/consultation of the District Administration?	As mentioned in the draft EIA report and presented here, R&R Plan has been prepared for the purpose of EIA study only as per the data captured in the SIA Study. The SIA study has been carried out by District Administration. Hence, the R&R plan is based on the data captured in the SIA study carried out by District Administration. However, now Section-11 of RFCTLARR Act, 2013 has been notified by the State Govt. and property survey is being carried out. After completion of Property survey, the appropriate Authority shall prepare R&R plan in consultation with the public.
c	EIA report shows that under 430 PAFs that shall not lose homeland but only land, PAFs from only 3 villages namely Poku, Bam and Kamporijo have been included. It is r	As mentioned in the draft EIA report and presented here, these 430 PAFs (sourced from SIA study) belonging to 3 villages viz., Poku, Bam and Kamporijo in Kamle district will be involuntarily displaced as they are likely to lose bo

S. No.	Key Issues/ Queries/ Suggestions/ Views/ Concerns	Replies given by Project Proponent
	requested to include villages namely Korapu and Restaring in the list of affected villages.	th housing and land. Further, it may be noted that Korapu and Restaring are already included in the list of affected villages.
d	Villages under Tarak Langdi circle are comprised majorly of forest area and very less civil structures. However, its NPV calculated is very less as compared to other villages. Therefore, give clarity on the process of calculation of NPV.	In the draft EIA report, NPV has been calculated as per the per hectare rate given in the VAN (SANRAKSHAN EVAM SAMVARDHAN) ADHINIYAM, 1980 and VAN (SANRAKSHAN EVAM SAMVARDHAN) RULES, 2023 for the Eco Class and density of the forest area to be diverted for the project. Final price of NPV will be paid as per the calculation by the State Forest Department as a part of Forest Clearance Process.
e	Give examples of some success stories of such Hydro Power Projects where, PAFs/PAVs, apart from compensation benefits, have obtained significant and long-term socio-economic development.	NHPC Ltd. has carried out post construction EIA studies through independent QCI/ NABET accredited consultants for 4 of its under operation hydro power projects viz., Dhauliganga Power Station in Uttarakhand, Teesta V Power Station in Sikkim, Loktak Power Station in Manipur and Uri II Power Station in the UT of J&K. Studies reflects long term positive impact on the socio-economic development of the PAFs/ PAVs and adjoining areas after construction of such Hydro Power Projects.
2	<p style="text-align: center;"><b>Shri Gungli Chapo, village Bogu</b>  <b>[The speaker put forward the following points on behalf of the Land Affected Forum of 4 circles under Tali area]</b>  The villagers are dependent on nature for daily livelihood and survival since time immemorial. Nature provides vegetables, fish, and other natural resources like sand, boulder, gravels.</p>	
a	The breeding area of fish called <i>Ngohs</i> from where the villagers catch fish for livelihood since ages. In addition, there are different types of fish areas called <i>Ngocher</i> , <i>Ngopu</i> , <i>Ngoku</i> . There is threat of losing these areas forever due to submergence. How will the loss of this age-old practice be compensated?	Recognizing the ecological and livelihood importance of fisheries resources in the project area, a comprehensive Fisheries Management Plan with provisions such as stocking of reservoir and riverine stretches, maintenance of refills and pools, and promotion of aquafarming have been formulated which shall be implemented by the Fisheries Department and fund for which shall be provided by NHPC. In addition, provision for maintaining the environmental flow in the downstream of dam for sustaining aquatic life has been kept as per the recommendations of MoEF&CC.

S. No.	Key Issues/ Queries/ Suggestions/ Views/ Concerns	Replies given by Project Proponent
b	Since the time of our fore-fathers we have been enjoying our rights on rivers, lands and its resources. So, once the construction of this project starts, these natural resources will be destroyed. In this regard, how will these losses be compensated?	Comprehensive Environment Impact Assessment has been carried out based on which Environment Management Plan has prepared in order to mitigate the adverse impacts. The Environment Management Plan (EMP) will be implemented by project proponent diligently. The process of land acquisition has already commenced. The land compensation will be made as per the policy of the state Govt. and RFCTLARR, 2013.
c	Resources from rivers like sand, stones will be destroyed due to submergence. Company should make plans to compensate for the loss.	Government of Arunachal Pradesh holds the statutory rights over the collection of royalty on minor minerals. Hence, NHPC cannot directly pay compensation to local individuals in respect of quarry rights, as these rights are vested with the State Government.
3	Shri Taring Beki Bosco, village Restaring and Korapu	
a	There are 2 massive holes in Korapu and Restaring villages wherein, the lands near these villages have sunk in due to landslide over time. In the coming days there is danger to these villages.	Project has kept the provision of Catchment Area Treatment as well as Reservoir Rim Treatment. All the vulnerable areas shall be duly protected before submergence. However, area showing any distress in future which is in the periphery of submergence area shall also be duly attended. Regarding shifting of villages, people can take up the matter with the District Administration.
b	Therefore, we request the District Administration to give us permission and necessary facilities for shifting of these villages to a new safe location. We request NHPC Limited for help in this matter.	
4	<b>Shri Gichik Nikam, Tali-Pipsorang (Paye) Land Affected Forum of Kamala HEP [The speaker submitted a written letter on behalf of the Tali-Pipsorang (Paye) Land Affected Forum of Kamala HEP jointly signed by Shri Gichik Nikam, General Secretary, Tali circle; Shri Tame Tagru, Chairman; Shri Songio Taba Rughu, General Secretary, Paye circle and Shri Tagru Maring, Coordinator. The letter requests for facilitation of requisite benefits for PAFs of Tali-Pipsorang area.</b> The following points are mentioned in the letter: Altogether 30 villages will be affected in the area due to coming of this mega dam with heavy impact on its environment and forest eco system. Hence, it is requested for clarity on the benefits to be availed for the following points that are to be facilitated in practical as soon before the start of the construction process:	
a	Compensation amount for permanent damages of small stream fish	It was clarified that the traditional fishing rights shall be vested with the PAFs only. And fishi

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	h breeding area ( <i>Ngongh</i> ) which is personally owned for yearly fishing place.	ng rights shall be extended to the PAFs as per the RFCTLARR Act 2013 / State Govt. policy. For recognizing the ecological and livelihood importance of fisheries resources in the project area, a comprehensive Fisheries Management Plan has been formulated under EMP. However, any compensation by the Project shall be based on the policy of the State/ Central Govt. is a matter of policy and falls under the purview of State Govt.
b	Local fishing places like <i>Pettar</i> are a <i>slakh</i> area for fishing trap to be compensated.	
c	Rates of locally forest used plants and trees with its high medicinal and traditional values.	As a part of Forest Clearance, NPV calculated by the State Forest Dept. shall be paid for the USF land to be diverted. Further, loss of traditional rights and loss of Rights and Privileges shall also be compensated to PAFs as per the State Policy.
d	Hot springs and <i>Mithun</i> /animal/birds special water drinking area ( <i>seghs</i> ).	For the conservation and protection of ecologically and culturally significant sites, including the preservation of culturally important fauna which will also take into consideration regarding <i>Mithun (Bos frontalis)</i> , a detailed Biodiversity and Wildlife Conservation & Management Plan has been prepared and duly approved by the State Forest Department. Further, specific provisions for the development of grazing lands and creation of drinking water sources for wildlife and semi-domestic species have been incorporated under the plan.
e	Quarry place of minor minerals like sand, stones and boulders.	Government of Arunachal Pradesh holds the statutory rights over the collection of royalty on minor minerals. Hence, NHPC cannot directly pay compensation to local individuals in respect of quarry rights, as these rights are vested with the State Government.
f	Places of traditional importance.	Provisions for the preservation and protection of traditionally valued sites, rocks, trees, and heritage structures likely to be affected by the project will be incorporated under the Corporate Environment Responsibility (CER) Plan.
g	Community hall and panchayat ghars at various affected villages to be sanctioned under second schedule/third schedule of Act or any	Provisions for Community Hall and panchayat ghars at various affected villages will be covered under Corporate Environment Responsibility (CER) Plan.



S. No.	Key Issues/ Queries/ Suggestions/ Views/ Concerns	Replies given by Project Proponent
	other appropriate head for community development.	
h	We welcome the project as it will benefit not only Tali area but whole of Kra Daadi district.	NHPC Ltd. thanks for the support for the development of Kamala HEP.
i	There should be reservation at jobs for the PAFs.	Reservation of jobs for the PAFs shall be as per the policy of NHPC Ltd. governed under the rules of DPE, GoI as well as provisions kept under the MOA signed for the project.
<b>5</b>	<b>Shri Rei Yachmi, Chairman FRC, village Sangobao</b>	
a	The name of 'Kumey' river is not mentioned in the EIA report. Therefore, the nomenclature must be changed and 'Kumey' river must be added along with Kurung river in the report.	The name of river and various tributaries have been mentioned as given in the Survey of India Topographical Maps. However, considering the local name for the river, the stretch of Kamla River before its confluence with Kurung River shall be renamed as Kamla (Kumey) River.
b	There are different species of butterflies available in Kra Daadi district. Therefore, request NHPC to establish a butterfly park in Kra Daadi district.	In consultation with the State Forest Department, provisions for the establishment of a Butterfly Park and Orchidarium have been made in the Biodiversity and Wildlife Conservation & Management Plan. However, the exact locations for these facilities will be finalized by the State Forest Department while implementing the plan.
c	Fund for compensatory afforestation has been transferred to Madhya Pradesh. This fund must have been utilized within the State.	Funds for compensatory afforestation shall be transferred to Madhya Pradesh as there was no degraded forest in Arunachal Pradesh for carrying out compensatory afforestation. NOC for which has also been issued by the State Forest Department. NHPC Ltd. shall be depositing the funds as per the Forest Clearance accorded by MoEF&CC. Additionally, Shri Majit Talit, RFO, Department of Forest, Government of Arunachal Pradesh clarified that, Reserve Forest/Village Reserve Forest land was not available for compensatory afforestation within affected forest division under Kra Daadi district and the State of Arunachal Pradesh. Subsequently, on declaration of availability of land in Madhya Pradesh the advance amount for compensatory afforestation has been transferred to MP Government a

S. No.	Key Issues/ Queries/ Suggestions/ Views/ Concerns	Replies given by Project Proponent
		s per guidelines.
d	Sangoboa village is under threat of submergence from Kumey river. In this regard, provisions for its protection must be made as per guidelines.	Sangoboa village is already included in the list of affected villages and compensation for any losses shall be paid as per the SIA study/ property survey by District Administration.
<b>6</b>	<b>Shri Rei Tagam, village Gangte</b>	
a	Benefits like construction of Schools should be provided in Kra Daadi district.	Provisions for development of basic infrastructure like schools, roads, bridges, community buildings, etc. will be made under CER Plan.
b	Culturally significant places like fish breeding areas, mithun grazing areas like <i>Ngong/NGOI/Sobuk/Sebe Shee</i> to be preserved.	Recognizing the ecological and livelihood importance of fisheries resources in the project area, a comprehensive Fisheries Management Plan has been formulated. For the conservation and protection of ecologically and culturally significant sites, including the preservation of culturally important fauna which will also take into consideration regarding Mithun ( <i>Bos frontalis</i> ), a detailed Biodiversity and Wildlife Conservation & Management Plan has been prepared and duly approved by the State Forest Department. Further, specific provisions for the development of grazing lands and creation of drinking water sources for wildlife and semi-domestic species have been incorporated under the plan.
c	Request that developmental works should be given to project affected people of Kra-Daadi as the region covers larger part of this project. The project is to be specified as Kurung Unit and Kumey Unit.	Funds for various developmental activities have been proposed under various management plans such as R&R plan, CER plan etc., however, utilisation of the same across all the 3 districts shall be as per the policy of State Govt. and District Administration of respective districts.
d	The project must go ahead with proper planning in order to prevent any future legal complications.	NHPC Ltd. is committed to ensure proper planning in order to prevent any future legal complications.
e	Request that not all types of plans must be handed over to Forest Department. In this regard, the Plan may accordingly be modified.	All the plans pertaining to State Forest Department have been prepared in consultation with State Forest Department and were further approved by the State Forest Department. The

S. No.	Key Issues/ Queries/ Suggestions/ Views/ Concerns	Replies given by Project Proponent
	in consultation with concerned Divisional Forest Officer.	plans will be implemented in close coordination with the local communities to ensure effective and sustainable execution.
7	<b>Shri Balo Sopin, Chairman FRC, village Gadi</b> [The speaker submitted a written letter jointly signed by Shri Balo Sopin, Chairman FRC; Shri Balo Senar, Member FRC; Shri Balo Taki, Member BYA and Shri Balo Saktar, Member Balo land control committee.]	
a	Requests for inclusion of Gadi and Dayam Hapa villages under Rehabilitation & Resettlement Plan in SIA and EIA reports.	As per the SIA report, Gadi and Dayam Hapa villages have been categorised under the head "Impacted". Accordingly, adequate compensation as per the policy of State Govt. shall be given.
b	<i>Mithun</i> ( <i>Bos Frontalis</i> ) is very important as it holds significant role in tribal way of living. Due to coming up of this project, its rearing place will be submerged under water which would lead to their displacement and the animal holds cultural significance to the project affected people. Hence, provision for its compensation must be included.	Recognizing the ecological and livelihood importance of fisheries resources in the project area, a comprehensive Fisheries Management Plan has been formulated. For the conservation and protection of ecologically and culturally significant sites, including the preservation of culturally important fauna which will also take into consideration regarding <i>Mithun</i> ( <i>Bos frontalis</i> ), a detailed Biodiversity and Wildlife Conservation & Management Plan has been prepared and duly approved by the State Forest Department. Further, specific provisions for the development of grazing lands and creation of drinking water sources for wildlife and semi-domestic species have been incorporated under the plan.
8	<b>Shri Tayo Bath, Chairman FRC, village Tayo</b>	
a	The SIA is based on population. Some names of people from Tayo village are left out in the SIA list. Hence, request to make a new report of Tayo village addressing this point.	SIA report has been prepared by the District Administration and has been approved by the State Govt. Any addition/ deletion of population in the report is under the purview of District Administration. Accordingly, the State Govt. will take necessary action.
b	There are 3 <i>Ngongs</i> (fish rearing place in the river) at Tayo village. Villagers from 3 circles namely Palin, Chambang and Tarak Langdi catch fish from these <i>Ngongs</i> . Due to coming up of this project, these <i>Ngongs</i> will be destroyed forever.	Recognizing the ecological and livelihood importance of fisheries resources in the project area, a comprehensive Fisheries Management Plan has been formulated. Any further compensation, if any, shall be decided as per the policy of State Govt./ District Administration.

S. No.	Key Issues/ Queries/ Suggestion s/ Views/ Concerns	Replies given by Project Proponent
	er. Therefore, request the Government to compensate for this loss with Rs. 200 crore.	
9	<p><b>Shri Balo Taki, General Secretary, Aab Kamda Nature Conservation Society, Youth wing</b></p> <p><b>[The speaker submitted a Memorandum on behalf of the Aab Kamda Nature Conservation Society.</b></p> <p>The points of the Memorandum are as follows.</p>	
a	<ul style="list-style-type: none"> <li>· Aab Kamda Nature Conservation Society is a registered Non-Government Non-profit organization dedicated for protection of biodiversity, sustainable use of natural resources and committed to promoting sustainable social, economic and environmental development in marginalized community through conservation program, awareness campaign with local partnership.</li> <li>· The Society is currently working on orchid tissue culture project which focuses on the conservation, propagation and commercial cultivation of native and rare orchid species by adopting advance tissue culture technique.</li> <li>· The Society is also working on reptile research and conservation program through invited scholars from across the globe having domain expertise on the subject.</li> <li>· The Society was verified during the SIA exercise and mentioned in the SIA report.</li> <li>· Request to include Aab Kamda Nature Conservation Society in Biodiversity Plan and RR package.</li> </ul>	<p>All proposed mitigation and management measures outlined under the Environmental Management Plan (EMP) will be implemented in close coordination with the concerned government departments and local communities to ensure effective and sustainable execution.</p>
10	<p><b>Shri Miching Bharat, Circle Chambang, village Miching</b></p> <p>Starting point of the dam is at Miching village.</p>	



S. No.	Key Issues/ Queries/ Suggestions/ Views/ Concerns	Replies given by Project Proponent
a	The Land Affected Families of Chambang circle must receive equal benefits from the project.	Funds for various development activities for the benefits of affected villages have been proposed under various management plans such as R&R plan, CER plan etc., however, utilisation of the same across all the 3 districts shall be as per the policy of State Govt. and District Administration of respective districts.
b	Appeal for adequate compensation in case of land submergence in the future.	Adequate compensation as per the policy of State Govt. and as per the directions of District Administration shall be paid in case of land submergence in the future.
<b>11</b>	<b>Shri Bania Taba, President Bani Society, village Harak</b>	
a	Harak village is not included in the SIA. In addition, names of some people of Harak village are wrongly included under Rembang village. Therefore, request to do necessary rectification and include name of Harak village in the SIA report.	Harik (Harak) village is already included in the SIA study. Any rectification, if needed, in the SIA report is under the purview of District Administration. Accordingly, the State Govt. will take necessary action.
<b>12</b>	<b>Shri Pudom Taku, District Land Revenue and Settlement Officer, Kra Daadi</b>	
a	Steps should be taken to shift or preserve the traditionally valued places/sites/structures like rocks, culturally significant trees by way of building Heritage Centre Building and Statue. In case of submergence of these places appropriate compensation must be facilitated.	Provisions for the preservation and protection of traditionally valued sites, rocks, trees, and heritage structures likely to be affected by the project will be incorporated under the Corporate Environment Responsibility (CER) Plan in consultation with the District Administration and local communities.
b	There must be a Mitigation Plan for conservation and protection of traditionally and culturally significant plants, animals, places, sites, structures etc.	Additionally, the establishment of a Heritage Centre and commemorative structures/statues to honour submerged or culturally significant heritage sites will be undertaken in consultation with the District Administration and local communities under CER plan.
	<b>Other written memorandum/letters submitted</b>	
1	A written letter is received from Shri Miching Taying, Chairman FR C. The letter requests for inclusion of Pongmi Pongte village and	The matter pertains to District Administration/ State Govt. Accordingly, the State Govt. will take necessary action.

S. No.	Key Issues/ Queries/ Suggestions/ Views/ Concerns	Replies given by Project Proponent
	er Tebital Gram Panchayat segment in the project assessment list for the interest of public service of the respective village.	
2	A written letter is received from Shri Miching Taying, FRC. The letter submits the list of natural habitat of fish breeding areas and <i>Mithun</i> ( <i>Bos Frontalis</i> ) grazing area (locally known as <i>Sebe Shee</i> ) for consideration and necessary action. The list are: <i>Tajung stream, Bich stream, Tagung Tamu stream, Kedang stream, Loyle Sehe, Bichi Sehe</i> and <i>Hagar Sehe</i> .	Recognizing the ecological and livelihood importance of fisheries resources in the project area, a comprehensive Fisheries Management Plan has been formulated. For the conservation and protection of ecologically and culturally significant sites, including the preservation of culturally important fauna which will also take into consideration regarding Mithun ( <i>Bos frontalis</i> ), a detailed Biodiversity and Wildlife Conservation & Management Plan has been prepared and duly approved by the State Forest Department. Further, specific provisions for the development of grazing lands and creation of drinking water sources for wildlife and semi-domestic species have been incorporated under the plan.
3	A written letter is received from Shri Rei Roshan, Gram Chairperson, Raiga Panchayat, Gangte circle. The letter requests for kind consideration and necessary action for inclusion of Taya Rimpa village in the SIA report.	The matter pertains to District Administration/ State Govt. Accordingly, the State Govt. will take necessary action.
4	A written letter is received from Shri Rei Roshan, Gram Chairperson, Raiga Panchayat, Gangte circle. The letter informs that 2 villages namely Mugli and Ampritak will be submerged due to construction of the project. Therefore, it is requested to offer of another land for shifting of PAFs of these villages.	As per the DGPS survey carried out by NHPC Ltd. and list of villages falling under the submergence area provided by the District Administration Mugli and Ampritak are not likely to be submerged, hence, not included in the list of affected villages. However, any further decision in this regard is under the jurisdiction of State Govt./ District Administration.
5	A written letter is received from Shri Habu Tai, Chairman, All Habu Youth Wings. The letter informs about the welcome and support to such development activity in the area. It also mentions the enthusiasm of establishment of such project.	At the onset NHPC Ltd. thanks for the support for the development of Kamala HEP. List of villages falling under the submergence area is provided by the District Administration based on the DGPS survey carried out by NHPC Ltd. Any further decision in this regard is under the jurisdiction of State Govt./ District Administration.

S. No.	Key Issues/ Queries/ Suggestions/ Views/ Concerns	Replies given by Project Proponent
	<p>ct in the area and believes that it will boost the inhabitants of the area and the State as a whole in days to come. However, it mentions about the concerns of the likely impact on 46<sup>th</sup> Boma Kamrung Gram Panchayat Segment consisting of villages namely Chakbang, Boma Happa, Kamrung, Yorte, Lungchi and Dorduk due to submergence. Also, Pechi hanging bridge that is used to cross to the other bank of the river for daily activities will be damaged due to submergence leaving no alternative route to cross the river. Therefore, it is requested to initiate plan for relocation of these villages by sanction of requisite fund. Additionally, immediate arrangement may be made to cross to the other bank of the river.</p>	<p>ministration. Provisions for development of basic infrastructure like schools, roads, bridges, community buildings, etc will be made under CSR/CER Plan.</p>

#### KURUNG KUMEY DISTRICT

S. No.	Issues Raised by PAFs / Public	Clarification given by Project Proponent
1	Topography and Submergence Area	During the initial desk study using satellite imagery, 104 ha in Kurung Kumey District was assessed for acquisition. A detailed LIDAR/DGPS survey later found the area to be 32.8 ha, which is the final land acquisition area.
2	Sedimentation and Siltation in the Dam	NHPC will adopt sediment management and de-silting measures to maintain long-term efficiency and sustainability of the dam. The dam design includes a low crest level to enable seasonal silt flushing.
3	Catchment Area Treatment (CAT) Plan	The CAT Plan under the Environmental Management Plan (EMP) has been approved by the State Forest Department. Measures like slope stabilization, afforestation, and treatment of vulnerable areas will minimize erosion and landslides. Implementation will be done by the Forest Department to reduce sedimentation and protect reservoir health.
4	Extinction of Traditional Fishing Rights and Compensation	Traditional fishing rights will remain with the PAFs. The reservoir will not extend into Kurung Kumey District.

S. No.	Issues Raised by PAFs / Public	Clarification given by Project Proponent
		strict under normal operations. During rare flood events (once in 100 years), temporary impoundment may occur. Any loss of fishing rights will be compensated as per State policy.
5	Extinction of Quarry Rights	The Department of Geology and Mining, Government of Arunachal Pradesh, holds statutory rights over collection of royalty on minor minerals. Therefore, NHPC cannot directly compensate individuals for quarry rights, as these rights belong to the State Government.
6	Demarcation of Submergence Area	NHPC will physically demarcate the submergence area to ensure transparency and proper understanding among affected villages and stakeholders.
7	Submergence Impact at Parsi Parlo	Submergence at Parsi Parlo will occur only during exceptional flood conditions. The multipurpose Kamala Hydro-Electric Project includes a 15-metre flood cushion for flood moderation. Thus, frequent or permanent submergence in Kurung Kumey District is unlikely, except during rare extreme flood events.

#### KAMLE DISTRICT

S. No.	Key Issues/ Queries/ Suggestions/ Views/ Concerns	Replies given by Project Proponent
1	<b>Shri Rakhe Tud, GPC, Rakhe Village</b>	<p>The concerns of people regarding the environmental issues likely to arise in terms of noise, air and water pollution due to the project has been duly addressed in the EIA-EMP report and all necessary and adequate measures have been considered and budget for which has also been provisioned.</p> <p>Regarding the issue of hospital, school and open games stadium to be developed in the area, HoP stated that the demands of the people are very genuine and was hopeful that when the Project comes up the facilities shall be developed.</p> <p>In response to the concerns raised by locals about muck dump</p>
	<p>We welcome the project from the beginning, from the left and right bank.</p> <p>Regarding this project, discussion with the Project Affected Families had already been done nearly 13-14 times.</p> <p>We would like to know what will be benefits with the establishment of this project.</p> <p>If our demands are not fulfilled, then it will be not possible for us to accept the project.</p> <p>What are the mitigation measures that will be taken by the project proponents in order to combat the pollution that will arise during the construction of the project.</p>	
2	<b>Shri Yaker Takap, from Left Bank of Puku and Bam Village.</b>	
	I on behalf of the Kamporijo area welcome the pr	



	<p>object from the beginning without any controversy and hindrances.</p> <p>We support this project in the interest of the nation and for the sake of development of this area as well as the State.</p> <p>Fair compensation should be given to the project affected families as our land is going to be submerged fully.</p>	<p>ping near the Tamen area, the Head of Project (HoP) clarified that muck disposal will be carried out in a scientific manner, incorporating both engineering and biological measures as outlined in the EIA/EMP report. It was further informed that the proposed muck disposal plan has been approved by the Forest Department.</p>
<b>3</b>	<b>Shri Mili Matub, GOC, Mili Village</b>	
	<p>The powerpoint given was fast and we couldn't understand anything, rather print out of this should have been distributed to all of us prior to this meeting.</p> <p>During the construction of this project, there is every possibility of air and noise pollution; the company should clarify the plan for mitigation.</p> <p>Our grievances should be fulfilled failing it will be difficult for us to accept the project.</p> <p>Our safety is our concern as our land is going to be affected.</p> <p>Company should clarify which locations will be affected by pollution.</p>	
<b>4.</b>	<b>Dr. Kapu Soping, Chairman, Nyishi Elite Society, District Unit.</b>	
	<p>We welcome the project for the sake of development of the area.</p> <p>With the establishment of this project, the area will be affected, so the company should ensure that protection of Forest Diversity and maximum possible mitigation measures should be taken.</p> <p>Regarding funds allocation, the company should explain to the educated youths of this area.</p> <p>During construction of the project, various types of chemicals /explosives are expected to be used for blasting, resulting to rise in air and noise pollution in the area, the company should create awareness about this to know the extent of pollution.</p> <p>The Arunachal Pradesh falls in a seismically active region. As per the Seismic Zoning Map of India, Arunachal Pradesh is classified under Zone-V.</p> <p>With the establishment of this project, all the plants/ trees will be submerged, so area for afforestation be acknowledged to the people.</p> <p>If every such necessary issues are sorted out carefully with proper mitigation measures, then there is no problem in welcoming the project.</p> <p>We support this project for the sake of the nation.</p>	

5	<b>Shri Kabak Tani, Luba Village</b>	
	<p>The people of this area purely depend upon the flora and fauna of the region.</p> <p>When the land is submerged, then Project Affected People will suffer a lot.</p> <p>We are from the upper side of the project. Please let us know when the roads will be constructed.</p> <p>With the establishment of the project, there will be lots of immigrant labours resulting to solid waste generation in huge quantity. Company should clarify how the solid wastes management will be done.</p> <p>One Health Care Establishment with all kinds of facilities is required to be set up.</p>	
6	<b>Shri Pegmir Sagar, Project Affected Family</b>	
	<p>The people of this area should understand the benefits of this project. If project return, then people will suffer a lot.</p> <p>The project will definitely generate air and noise pollution to some extent which affect the people.</p> <p>We are welcoming the project from the beginning in the interest of the State and Nation as well as our economy will grow with time.</p> <p>There is a possibility of air/water pollution due to blasting and constructions activities.</p> <p>Flora and fauna will be affected. Deforestation will cause soil erosion and landslides.</p> <p>But in long term, socio economic benefits with a good connectivity will there.</p> <p>The company should establish one 150 bedded Health Care Facility with all kinds of modern equipments in this area.</p> <p>Company should bring change in education sector of this area by establishment of school like Kendriya Vidyalaya (KV) or Vivekananda Kendriya Vidyalaya (VKV)</p> <p>During visit of the Chief Managing Director, NHPCL Limited, we have submitted memorandum for establishment of stadium which should be considered and addressed.</p> <p>With this project establishment, road connectivity will be improved in 33 project affected villages.</p> <p>We want to grow with the project.</p> <p>Job reservation for the project affected families is not mentioned rather, it is mentioned for the people of Arunachal Pradesh. If it is so, then 75% job should be reserved for Project Affected Families.</p> <p>Protection/Retaining walls should be constructed</p>	

	<p>to check the soil erosion. Tale Wildlife Sanctuary should be protected. Lastly, property assesinent should he started at t he earliest posible</p>	
<b>7</b>	<b>Shri Yaker Toki, KHEPPLIC</b>	
	<p>General Manager, NHPC presented powerpoint in front of Hon'ble MLA and Projected Affected Families and all are convinced. Our tribal people are connected and attached with forests. With the project establishment, flora and fauna will be affected. Plan for rehabilitation is already explained. They (company) has enough experience for sorting out the issues. The site for muck dumping has been identified at Tamen village located opposite Khelo India which is not feasible. While carrying the blasting activities, proper care should be taken in order to check the health's of people living in the surrounding. Our educational sector is very poor, there is need of reform in this sector. One stadium is required to be constructed either in Raga or Boasimla. If quality of air and water is not good then people will be suffer, which needs to be taken care of. Air and water quality monitoring stations should be set up. Property assessment should be carried out at the earliest without any disturbance. Rights of Project Affected Families in job reservation should be intact. Establishment of colony should be made. If the Dollungmukh-Tamen Road is constricted, then cost of commodities will be very less.</p>	
<b>8</b>	<b>Shri Rakhe Taro, Zilla Parishad Member, Kamoriji-I.</b>	
	<p>We welcome the project from the day one. Bridge should be constructed on the Kurung-Kamala River. One Industrial Training Institute and Community Hall should be established. This project establishment should be successful and we do not have any objection.</p>	
<b>9</b>	<b>Shri RotomTebin, Hon'ble MLA, Raga Constituency, Arunachal Pradesh.</b>	

He appealed to the people that "we should stick to our points as per Environment Impact Assessment report and Environment Management Plan. Funds for compensatory afforestation will go to Hapoli Forest Division and Kraa Daadi district. Fishing development plan for resettlement of fishes of special breeds/species be taken care of. It is given that 26 lakhs cum of mucks will be deposited in designated muck dumping yard which should be explained by NHPC Limited. Muck dumping in deep slope will cause pollution which should be mitigated properly. Quarrying activities will surely generate air and water pollution. Public health sanitation system should be improvised. Circle Office Headquarter will be submerged and relocation will be decided by the Government of Arunachal Pradesh which should be reflected in the minutes. Resettlement and Rehabilitation is given in the Environment Impact Assessment Report. 80% of the dam construction activity will be on the left bank. One VKV or KV should be established for the Project Affected People. Skill Development Institute like Industrial Training Institute (ITI) should be established for the benefits of the people. While carrying out the property survey/assessment, the officers concerned should not be disturbed. GST of 9% should be exempted. Employment reservation for the project affected families should be there. Project construction should not be disturbed. Construction of Tamen - Dollungmukh road should be executed by the company at the earliest - I am very much concerned for the people. After 40 years of completion of project, the NHPC will hand over the project to State Government. He requested to project affected families not to carry any further illegal construction henceforth. Property assessment should be done at the earliest possible without any hindrances.

i. Status of Litigation Pending against the proposal, if any. **No**

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

**1. EAC Meeting Details:**

EAC meeting/s	11 <sup>th</sup> Meeting
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Date of Meeting/s	27.06.2024
Date of earlier EAC meetings	27.06.2024 (Scoping Clearance)

## 2. Project details:

Name of the Proposal	Kamala Hydro Electric Project (1720 MW)
Proposal No.	IA/AR/RIV/562202/2026
Location (Including Coordinates)	The proposed dam site is located around 4 km upstream of 70-R bridge on Kamla River at Tamen village in Kamle District of Arunachal Pradesh at Latitude 27°46'18" N, Longitude 93°59'19" E. Tamen is around 20 km from Raga, the District Head quarter of Kamle District and 55 km from Ziro, the District Headquarter of Lower Subansiri District.
Company's Name	M/s NHPC Limited
CIN no. of Company/user agency	L40101HR1975GOI032564
Accredited Consultant and certificate no.	Name: R S Envirolink Technologies Pvt. Ltd. Certificate No.: NABET/EIA/25-28/RA 0415
Project location (Coordinates / River/ Reservoir)	The proposed dam site is located around 4 km upstream of 70-R bridge on Kamla River at Tamen village in Kamle District of Arunachal Pradesh at Latitude 27°46'18" N, Longitude 93°59'19" E. Tamen is around 20 km from Raga, the District Head quarter of Kamle District and 55 km from Ziro, the District Headquarter of Lower Subansiri District.
Inter- state issue involved	No
Proposed on River/ Reservoir	Kamla
Type of Hydro-electric project	Storage scheme with twin objectives of power generation and flood moderation
Seismic zone	VI

## 3. Category details:

Category of the project	A
Capacity / Cultural command area (CCA)	1720 MW
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	-

## 4. ToR/EC Details:

ToR Proposal No.	IA/AR/RIV/465936/2024
EAC meeting date	27.06.2024 (Scoping Clearance)
ToR Letter No.	TOR Identification No.: TO24A0501AR5622743 N
ToR grant Date	07.08.2024
Cost of project	Rs. 23764.01 Crore
Total area of Project	3858.8904 Ha
Height of Dam from River Bed (EL)	216 m (from deepest foundation level)
Details of submergence area	2665 ha (below FRL at 455 m)
District to provide irrigation facility (if applicable)	NA
Details of tunnels on upper level & lower level and length of canal (if applicable)	4 nos. of Head Race Tunnel with length varying from 515 m to 832 m
No. of affected Village	126, of which, 33 are in Kamle district, 87 are in Kra Daadi district and 6 are in Kurung Kumey district
No. of Affected Families	5440, of which, 1391 belongs to Kamle district, 3954 belongs to Kra Daadi district and 95 belongs to Kurung Kumey district
Project Benefits	<p><b>Social Benefits</b> A number of marginal activities and jobs will be available to the locals during the construction phase. Local Area development facilities in education, medical, transportation, road network and other infrastructure. An opportunity for small-scale and cottage industries to develop in the area.</p> <p><b>Financial Benefits</b> Annual Energy Generation in 90% dependable year is 6869.92 MU with 95% Plant availability. An investment of Rs. 23764.01 Crore will be made for the project.</p>
R&R details	<p>Total 126 villages shall be affected due to acquisition of land for various components of proposed project. Of which, 33 are in Kamle district, 87 are in Kra Daadi district and 6 are in Kurung Kumey district.</p> <p>Total 5440 families have been identified as Project</p>

	<p>ct Affected Families (PAFs). Of which, 1391 belongs to Kamle district, 3954 belongs to Kra Daadi district and 95 belongs to Kurung Kumey district.</p> <p>The PAFs likely to lose both housing and land belong to 3 villages viz., Poku, Bam and Kamporijo in Kamle district with a total number of 430 PAFs. The remaining 5,010 PAFs will not lose homes but only land.</p> <p>A budgetary provision of Rs. 394.00 crore has been kept towards implementation of R&amp;R plan.</p>
Catchment area/ Command area	Catchment Area: 7213 sq km
Types of Waste and quantity of generation during construction/ Operation	<ul style="list-style-type: none"> <li>· Muck during construction - 105.95 lakh cum (to be disposed)</li> <li>· Municipal Solid Waste during construction - Degradable (450 Kg/day for 3000 persons), Non degradable (300 Kg/day for 3000 persons)</li> </ul>
Material used for blasting and its composition as per DGMS standards.	Explosive is mainly required for open and underground rock excavation. Explosive magazines of 4080 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	<p>Environment flow requirements during monsoon, pre &amp; post monsoon and lean seasons are met by operating units (main and auxiliary unit) 24 hours in full/part load throughout the seasons, which will provide the sufficient discharge downstream side. The auxiliary unit of 40 MW capacity shall cater to the continuous environment flow.</p> <p>E-flow of 28.45 cumec for lean months, 220.54 cumec for monsoon months and 93.14 cumec for the remaining months have been considered for the project.</p>
<p>Is Projects earlier studied in Cumulative Impact assessment &amp; Carrying Capacity studies(CIA&amp;CC) for River in which project located. If yes then</p> <p>c) E-flow with TOR/Recommendation by EAC as per CIA&amp;CC study of River Basin.</p> <p>d) If not the E-Flows maintain criteria for sustaining river ecosystem.</p>	<p>Yes</p> <p>E-Flow assessment has been carried out under Cumulative Impact and Carrying Capacity Study (CI&amp;CC) of Subansiri sub basin including downstream impacts study. Based on CI&amp;CC study, MoEF&amp;CC vide letter dt. 27.04.2016 has recommended E-Flow of Kamala (Subansiri Middle) HEP, as 20% of the average flow in monsoon, pre &amp; post monsoon and lean period of 90% dependable year respectively.</p>
Details on provision of fish pass	As the height of dam is 216 m (from deepest foundation level), construction of any fish passage is

	r fish ladders is not feasible.
Project benefit including employment details (no of employee)	About 250 permanent workers (NHPC Staff) and 3000 temporarily workers (contractor staff and labour) would be engaged during the peak construction period. It is expected that 70% of the total workforce shall be available from the State of Arunachal Pradesh. After completion of the project only a staff of about 100 persons shall be permanently required for the operation of the project
Area of Compensatory Afforestation (CA) with tentative no of plantation.	6556.18 ha; tentative no. of plantation - 6556180
Previous EC details	-
EC Compliance Report by R.O, MOEF&CC	-
No. of trees/saplings proposed in view of 'Ek Ped Maa Ke Naam' campaign	800
<b>5. Electricity generation capacity:</b>	
Powerhouse Installed Capacity	1720 MW
Generation of Electricity Annually	6869.92 MU
No. of Units	9 (8 X 210 MW Main Units and 1 x 40 MW Auxiliary Unit)
<b>6. Muck Management Details:</b>	
No. of proposed disposal area/ (type of land- Forest/Pvt land)	4 nos. (forest land)
Distance of muck disposal area (location), from muck generation sources (project area)/River, HFL of proposed muck disposal area.	30 m from HFL.
Total Muck Disposal Area	63.0 ha
Estimate Muck to be generated	8708800 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 25T Rear Dumpers at different excavation sites and their distance from the disposal site appropriate po



	llution 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.

#### 7. Land Area Breakup:

Private land	580.80 ha
Government land	0.00
Forest Land	3278.0904 ha
Total Land	3858.8904 ha
Submergence area/Reservoir area	2665 ha (below FRL at 455 m)
Additional information (if any)	-

#### 8. 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	No project component falls in any notified protected area. Nearest Protected Area to the Project Components is Tale Wildlife Sanctuary which is beyond 10 km from any project component.
National Park	No	
Wildlife Sanctuary	No	
Archaeological sites monuments/ historical temples etc.	No	
Additional information (if any)	-	

**Availability of Schedule-I species in study area:** As per Wildlife Protection Amendment Act, 2022, 29 mammals (Sambar, Northern Red Muntjac, Wolf, Wild Dog, Bengal Fox, Asiatic Golden Cat, Jungle Cat, Clouded Leopard, Common Leopard, Marbled Cat, Leopard Cat, Fishing Cat, Crab Eating Mongoose, Hog Badger, Common Otter, Yellow Throated Marten, Spotted Linsang, Black Bear, Bear Cat, Masked Palm Civet, Common Palm Civet, Indian Pangolin, Stump Tailed Macaque, Assam Macaque, Hoolock Gibbon, Slow Loris, Bush-Tailed Porcupine, Red Giant Flying Squirrel and Black Giant Squirrel); 1 bird (Great Hornbill); and 2 herpetofauna (Rat Snake and King Cobra) species are listed as Schedule I species.

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

Advertisement for PH with date	"The Dawnlit Post", "The Arunachal Age", "The Arunachal Pioneer", "The Arunachal Times" and "The Times of India", dated 27/09/2025
Date of PH	30/10/2025

Venue	<ul style="list-style-type: none"> <li>· Kamporijo Circle Office, Kamle District</li> <li>· Toti Lapang, Dui Village, Palin, Kra Daadi District</li> <li>· Community Hall, Pilop, Nyokoriang Village, Kurung Kumey District</li> </ul>
Chaired by	<ul style="list-style-type: none"> <li>· Deputy Commissioner, Kamle District</li> <li>· Deputy Commissioner, Kra Daadi District</li> <li>· Additional Deputy Commissioner, Kurung Kumey District</li> </ul>
Main issues raised during PH	<ol style="list-style-type: none"> <li>Villages may become unsafe due to landslides, tunnels, and rising water levels.</li> <li>How land acquisition, rehabilitation, and compensation will be done and whether all villages are included.</li> <li>Traditional fishing areas and river-based livelihoods may be lost.</li> <li>Loss of forests, medicinal plants, mithun grazing areas, and culturally important sites.</li> <li>Local people should get jobs and development benefits.</li> <li>Some villages may be affected later or were left out of surveys</li> <li>How much land will be affected in Kurung Kumey District</li> <li>Will silt affect the dam's efficiency</li> <li>How to prevent erosion and landslides</li> <li>Loss of minor mineral extraction rights</li> <li>How will affected villages know the boundaries</li> <li>Will Parsi Parlo be flooded</li> <li>Environmental Concerns: Air, noise, water pollution from construction and blasting.</li> <li>Health &amp; Education: Need for hospitals, schools, and skill development institutes</li> <li>Infrastructure &amp; Roads: Roads, bridges, and colony facilities required for PAFs.</li> <li>Job Reservation &amp; Socio-Economic Benefits: Employment for project-affected families.</li> <li>Flora, Fauna &amp; Wildlife Protection: Loss of forest, wildlife, and flora.</li> <li>Property Assessment &amp; Compensation: Early property surveys and fair compensation for land and fisheries.</li> <li>Community Development &amp; Recreation: Need for stadiums, open spaces, and cultural preservation.</li> </ol>
No. of people attended	<ul style="list-style-type: none"> <li>· 133 in Kamle District</li> <li>· 95 in Kra Daadi District</li> <li>· 50 in Kurung Kumey District</li> </ul>

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

Particulars	Details		
Period of baseline data collection/Sampling period.	Winter	Pre-Monsoon/ Summer	Monsoon
Soil	December, 2024	April, 2025	July, 2025
Air Environment	December 2024-January 2025	April-May 2025	June-July 2025
Noise & Traffic	December, 2024	April, 2025	July, 2025
Vegetation	December, 2024	April, 2025	July, 2025
Faunal	December, 2024	April, 2025	July, 2025
Water and Aquatic Ecology	December, 2024	April, 2025	July, 2025
Socio-economic survey of study area villages	December, 2024		
Brief description on hydrology and water assessments per the approved Pre-DPR:	<p>The project envisages construction of 216 m high dam from deepest foundation level on Kamla River with a gross storage capacity of 1927.6 MCM at FRL 455 m. The reservoir surface area at FRL is estimated as 26.65 Km<sup>2</sup> whereas the reservoir length is around 65 km along Kamla River and 17 Km along tributary Kurung River.</p> <p>The total catchment area upto the proposed diversion site of Kamala HEP is 7213 Km<sup>2</sup>. The total catchment area of 7213 Km<sup>2</sup> has been divided into two sub-catchments. The snowline elevation of 4500m has been taken to delineate the rain-fed area of the project catchment.</p> <p>In the year 2010/12, Kamala Hydro Electric Power Company Ltd. prepared and submitted the DPR for the project to CWC. Hydrological studies i.e. Average Water 10-daily availability series, design flood and diversion flood for the project for DPR stage has been cleared by CWC vide letter dated 14/03/2012. The methodology and philosophy of computation of flow series of the project was finalized based on the observations of CWC.</p> <p>CWC approved average 10-daily water availability series at project site for the period 1980-81 to 2009-10 is extended up to the year 2022-23 based on the observed discharge data at Tamen G&amp;D site on River Kamla &amp; observed discharge data of Gerukamukh G&amp;D site on River Subansiri.</p> <p>Design Flood: The Flood Hydrograph has been obtained by adding a uniform base flow, including snowmelt, to the ordinates of the surface flow hydrograph. The Probable Maximum Flood (PMF) hydrographs for Kamla and Kurung thus computed are added together to estimate the PMF hydrograph at Kamala HEP Dam site.</p>		

	<p>A design flood value (PMF) of 17416 m<sup>3</sup>/sec based on 2-day PMP and 24 hour temporal distribution has been approved by CWC vide their letter 14/03/2012. The Probable Maximum Flood (PMF) of 17416 m<sup>3</sup>/sec as computed and approved by CWC is adopted for the project. The same is approved again by CWC, Hydrology (NE) Directorate vide their file no. T-11013/10//2023-HYD(NE) Dte, dated 08-12-2023.</p> <p>At Chaoldhowa Ghat, annual sediment load of 2042 Ham including 15% bed load has been recommended in CWC report (1999). The rate of sedimentation thus worked out to be equal to 0.057 Ham/Sq.km/Year. However, as advised by CWC vide letter dated 14/03/2012 &amp; 06/07/2012 during the clearance of Kamala Hydro Electric Power Company Ltd. DPR, sediment studies of the projects in North-East region are carried out with sediment rate of 1 mm/ year (including bed load) and the same has been adopted for Kamala HEP.</p> <p>The reservoir elevation area capacity curve has been prepared based on the reservoir cross-sections available u/s of dam site up to reservoir rim at around 1 km interval.</p>
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	<p>Online Proposal No. FP/AR/HYD/IRRIG/469328/2024 submitted to MoEF&amp;CC with recommendation of State Govt.</p> <p>EDS raised by MoEF&amp;CC on 25.11.2025 (to be submitted by the State Govt./NHPC). Replies to queries pertaining to NHPC submitted on 06.01.2026. Reply of State Govt. is under process.</p>
Approval of Central Water Commission	<p>Hydrological studies i.e., Average Water 10-daily availability series, design flood, diversion flood and reservoir sedimentation for the project for DPR stage are cleared by CWC, Hydrology (NE) Directorate vide their file no. T-11013/10//2023-HYD(NE) Dte, dated 08-12-2023.</p>
Approval of Central Electricity Authority	<p>The Power Potential Studies of Kamala HE Project has been approved by HPA Division, CEA vide file no. CEA-HY-12-32/5/2019-HPA Division 12-02-2024.</p>
Additional detail (If any)	
Is FRA (2006) done for FC-I	<p>Yes</p> <p>FRA (2006) meeting has been done in Kamle and Kraa Dadi Districts and NOC has been submitted by the Sub-Divisional Magistrate to the District Level Committee (DLC) for further process. In respect of Kurung Kumey Distri</p>



ct, it is on the process of conducting Gram Sabha meeting very soon.

### 13. Details of the EMP

#### Cost for Implementing Environmental Management Plan

S. No.	EMP COMPONENTS	Capital Cost (Rs. in lakh)	Recurring Cost (Rs. in lakh)				
			Year 1	Year 2	Year 3	Year 4	Year 5
1	Catchment Area Treatment Plan	5726.05	0.00	0.00	0.00	0.00	0.00
2	Biodiversity Conservation & Wildlife Conservation Plan	3286.04	0.00	0.00	0.00	0.00	0.00
3	Fisheries Development Plan	405.44	0.00	0.00	0.00	0.00	0.00
4	Muck Dumping and Management Plan	423.00	1855.10	1639.60	927.75	245.83	21.00
5	Landscaping, Restoration of Construction Sites	15.00	99.12	99.12	297.38	396.50	594.00
6	Reservoir Rim Treatment Plan	514.50	0.00	0.00	0.00	0.00	0.00
7	Green Belt Development Plan	0.00	5.00	5.00	18.00	25.50	33.00
8	Sanitation and Solid Waste Management Plan	158.00	29.75	29.75	29.75	29.75	29.75
9	Public Health Delivery System	120.00	41.00	41.00	41.00	41.00	41.00
10	Energy Conservation Measures	81.00	49.63	49.63	49.63	49.63	49.63
11	Labour Management Plan	35.00	14.00	14.00	14.00	14.00	14.00
12	Disaster Management Plan	600.00	25.00	25.00	25.00	25.00	25.00
13	Pollution Control and Mitigation Measures	0.00	20.00	20.00	20.00	20.00	20.00
14	Environmental Monitoring Program	0.00	51.75	51.75	51.75	51.75	51.75
	<b>Total</b>	<b>11364.03</b>	<b>2190.35</b>	<b>1974.85</b>	<b>1474.26</b>	<b>898.96</b>	<b>1000.00</b>

#### Cost for R&R and CER

S. No	Components	Capital Cost (Rs. in lakh)
1	Rehabilitation and Resettlement Plan	39400.00

2	Corporate Environment Responsibility (CER)	11264.00
	<b>Total</b>	<b>50664.00</b>

**Cost for Compensatory Afforestation and Net Present Value**

S. No	Other Components	Capital Cost (Rs. in lakh)
1	Compensatory Afforestation	45893.00
2	Net Present Value (NPV)	47095.00
	<b>Total</b>	<b>92988.00</b>

**3.1.3. Deliberations by the committee in previous meetings**

N/A

**3.1.4. Deliberations by the EAC in current meetings**

**47.1.3 The EAC during deliberations noted the following:**

- The Expert Appraisal Committee (EAC) deliberated on the information submitted by the Project Proponent and the details presented during the meeting. The Committee observed that the proposal pertains to the grant of Environmental Clearance for the Kamala HE Project (1720MW) in an area of 3858.8904 Ha located at Village Pompulend, Boa Model, and Laa I etc., Sub-District Kampoijio Circle, Chambang Circle, Raga and Parsi-Parlo, District Kamle, Kra Daadi and Kurung Kumey, Arunachal Pradesh by M/s NHPC Limited.
- The project falls under Item 1(c) of the Schedule to the Environmental Impact Assessment (EIA) Notification, 2006, and is categorized as a Category 'A' project, which requires appraisal at the Central level by the Expert Appraisal Committee (EAC).
- The Terms of Reference (ToR) for conducting EIA/EMP study and public hearing of the Kamala HE Project (1720MW) was granted by the MoEF&CC vide letter dated 07.08.2024.
- The EAC, constituted under the provisions of the EIA Notification, 2006, and comprising expert members/domain experts from various relevant fields, examined the proposal submitted by the Project Proponent. This examination included a review of the Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) reports, which were prepared and submitted by a QCI/NABET-accredited consultant on behalf of the Project Proponent.
- The EAC noted that the Project Proponent has given an undertaking that the data and information given in the application and enclosures are true to the best of his knowledge and belief and no information has been suppressed in the EIA/EMP reports. If any part of data/information submitted is found to be false/ misleading at any stage, the project will be rejected and Environmental Clearance given, if any, will be revoked at the risk and cost of the project proponent.
- During the meeting the Committee was informed that the Kamala Hydroelectric Project (earlier Subansiri Middle Project) is proposed near Tamen village on the Kamala River, a right bank

tributary of the Subansiri River, and forms part of the cascade development envisaged by the Brahmaputra Board in July 1995. The first DPR was prepared by NHPC Ltd. in 2005, after which the project was allotted by the Government of Arunachal Pradesh to Kamala Hydro Electric Power Company Ltd. (KHEPCL). A revised DPR for 1800 MW was submitted by KHEPCL to CEA in 2013, and ToR was granted by MoEF&CC on 05.06.2014. However, in 2018, CEA returned the DPR and rescinded earlier clearances due to non-resolution of pending issues. A fresh ToR for 1800 MW was granted to KHEPCL on 25.09.2018, but no further progress was made. Further, the Ministry of Power indicated the project for probable allotment to NHPC Ltd. in 2021, which was approved by the Government of Arunachal Pradesh in 2023. NHPC subsequently updated the DPR with a revised installed capacity of 1720 MW, for which CEA concurrence was accorded in May 2025. Based on the revised configuration, fresh ToR for the 1720 MW Kamala HEP was granted by MoEF&CC on 07.08.2024.

- The EAC noted that the total land required for the project is 3858.8904 ha, out of which, 3278.0904 ha is forest land and remaining 580.80 ha is non-forest land. The submergence area below FRL 455 m will cover 2665.00 ha. However, proposal for diversion of 3278.0904 ha of forest land has been submitted and it is still pending.
- The EAC expressed concern regarding the proposed felling of trees, i.e. 2340213 nos as the project is located in a very dense forest area. The Committee emphasized the need for a precise and well-managed action plan for ecosystem restoration, including adequate mitigation and compensatory measures in consultation with State Forest & Wildlife Department, ecology and wildlife expert local public and, would be necessary for consideration prior to grant of Forest Clearance to the project.
- The EAC deliberated on the Biodiversity Management and Wildlife Conservation Plan, including conservation measures for Schedule-I species, which has been prepared and submitted to the State Forest Department for approval. The Committee noted that the proposed plan has been appraised by the State Forest Department and approved vide letter No. CWL/D/21/(549)/2025/4591-93 dated 28.03.2025. It was observed that the plan shall be implemented in letter and spirit, in coordination with local bodies/Panchayats and in consultation with reputed institutions. The Committee emphasized that the funds allocated for the plan shall not be diverted for any other purpose.
- The EAC noted that the estimated project cost is Rs 23764.01 Crore. Total capital cost earmarked towards Environment Management Plan is Rs. 11364.03 lakh and the Recurring cost (operation and maintenance) will be about Rs. 1190.94 lakh per annum (Rs. 9527.54 lakh for 8 years). Additionally, the EAC noted that an amount of ₹50,664.00 lakh has been earmarked towards Resettlement & Rehabilitation (R&R) and Corporate Environment Responsibility (CER), and ₹92,988.00 lakh has been earmarked towards Compensatory Afforestation and Net Present Value (NPV).
- The committee observed that the Public Hearing for the proposed project has been conducted by the State Pollution Control Committee on 30/10/2025 at Kamporijo Circle Office, Kamle District; Toti Lapang, Dui Village, Palin, Kra Daadi District; and Community Hall, Pilop, Nyokoriang Village, Kurung Kumey District. Publications of notice for public hearing were given in state/national level in the "The Dawnlit Post", "The Arunachal Age", "The Arunachal Pioneer", "The Arunachal Times" and "The Times of India", dated 27/09/2025. The meeting was chaired by the Deputy Commissioner, Kamle District; Deputy Commissioner, Kra Daadi District and Additional Deputy Commissioner, Kurung Kumey District. The EAC discussed the concerns raised during the Public Hearing (PH) and reviewed the action plan submitted by the PP to address these issues. After detailed deliberation, the Committee found the action plan satisfactory, recognizing that the proposed mitigation measures adequately respond to stakeholders' concerns.

- The EAC was also informed that the Cumulative Impact Assessment & Carrying Capacity Study(CIA&CCS) of Subansiri river basin in Arunachal Pradesh have been completed and the report has been accepted by the Ministry. PP further informed that the outcome and recommendations of CIA&CCS been dully incorporated in the EIA/EMP. E-flow of 28.45 cumec for lean months, 220.54 cumec for monsoon months and 93.14 cumec for the remaining months have been considered for the project.

During the meeting, the EAC assessed the dam break analysis study and Disaster Management Plan prepared by the Project Proponent, which consider both the Probable Maximum Flood (PMF) and PMF plus Glacial Lake Outburst Flood (GLOF) scenarios. The PMF and GLOF values have been assessed as 17,416 cumec and 1,663 cumec, respectively. The spillway has been designed to safely pass the design flood through seven gates, each of 6 m width and 10.5 m height. Accordingly, for dam break modelling, a conservative scenario of six gates fully open with one gate assumed inoperative at the time of PMF impingement has been considered.

### 3.1.5. Recommendation of EAC

Recommended

### 3.1.6. Details of Environment Conditions

#### 3.1.6.1. Specific

Socio-economic	
1.	Land acquired for the project shall be suitably compensated in accordance with the prevailing guidelines of the state government and provisions under Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013.
2.	RO plant shall be installed in the nearby 5 villages and the maintenance shall be done by the project Authorities.
3.	Solar panel be provided to the families living in rural areas within 10 km radius of project.
4.	School up to 12 <sup>th</sup> Standard shall be established and managed to provide free quality education for children from project affected villages/Tribal villages. Adequate transportation facilities shall also be provided to students to ensure connectivity and ease of access.
5.	Scholarship programme shall be initiated for the youths in the project affected villages.
6.	50 bed multi-specialty hospital shall be established to cater the need of tribal population/locals. The tribal population within 10 km radius of the project shall be given free of cost medical facility.
7.	Skill development Centre shall be established within 10 km radius of the project and regular training programmes for development and promotion of traditional art/products of tribal/local population. The Skill Development Plan shall mandatorily include the following components:



	<ul style="list-style-type: none"> <li>Capacity building and skill enhancement programs aligned with local livelihood opportunities.</li> <li>Establishment of linkages with Industrial Training Institutes (ITIs) and other recognized training centres for imparting technical skills.</li> <li>Provision of free or subsidized access to healthcare facilities in project-supported hospitals and health centres.</li> <li>Support to educational institutions in the study area through free services, scholarships, infrastructure strengthening, and vocational guidance programs.</li> <li>Special outreach initiatives for women, youth, and vulnerable groups within the SC/ST communities to ensure inclusive participation and benefits.</li> </ul> <p>The Plan shall be implemented in a time-bound manner with clearly earmarked budgetary provisions, which shall not be diverted for any other purpose.</p>
8.	The PP shall submit annual progress reports on the implementation of the Skill Development Plan and associated community welfare measures to the Regional Office of the Ministry.
9.	Bio-Gas plant shall be installed in the Project affected area for Utilizing Cattle waste (Cow Dung) into renewable source of fuel.
10.	Preference in employment opportunities and admission to ITI institutions shall be given to Project Affected Families (PAFs).
11.	An institutional mechanism to be developed to ensure the preference of jobs to PAFs and SC/ST and also a policy for preferential treatment for award of sundry works to the PAFs and SC/ST and their dependents.
12.	The compliance of above conditions shall be monitored by IRO, MoEF&CC and regularly site visit once in year. The compliance report of IRO shall be regularly submitted to MoEF&CC
<b>Miscellaneous:</b>	
1.	After 5 years of the commissioning of the project, a study shall be undertaken regarding impact of the project on the environment. The study shall be undertaken by an independent agency.
2.	PP should establish in house (at project site) environment laboratory for measurement of environment parameter with respect to air quality and water (surface and ground). A dedicated team to oversee environment management shall be setup which should comprise of Environment Engineers, Laboratory chemist and staff for monitoring of air, water quality parameters on routine basis.
3.	A dedicated team to oversee environmental management activities (at project site) shall be set up comprising Environment Manager having post graduate qualification in Environmental Sciences/ Environment Engineering along with other supporting staff. The Environment Manager shall report to Project Head directly.
4.	PP shall procure construction material only from those Organizations having all valid legal/statutory clearances/permissions or necessary permission to be obtained for quarrying construction materials for the project as per the EIA Notification, 2006 and as amended thereof.

<b>Disaster Management</b>	
1.	Disposal of the excavated muck and its filling on the low-lying area with proper measures for the stabilization and greenery to minimize the impacts of the generated construction muck shall be taken up pari passu with construction work. A muck transportation plan shall be prepared and implemented. The movement of muck carrying vehicles shall be monitored through latest sensor-based technology to ensure the muck dumping at designated sites.
2.	Stabilization of muck disposal sites using biological and engineering measures shall be taken up immediately to ensure that muck does not roll down the slopes and does not pollute the natural streams and water bodies in surrounding area. The plantation on muck disposal site with local species for restoration of ecology and environment of the project site area.
3.	Necessary control measures such as water sprinkling arrangements, and construction of paved roads leading to muck disposal sites etc. shall be taken up on priority to arrest fugitive dust at all the construction sites.
4.	Solid waste generated, especially plastic waste, etc. should not be disposed of as landfill material. It should be treated with scientific approach and recycled. Use of single-use plastics may be discouraged.
5.	Landslide and other heavy rain related disasters shall be taken care of through appropriate preventive measures during construction and operation of project.
<b>Environmental management and Biodiversity conservation</b>	
1.	Stage-I FC shall be obtained before grant of EC.
2.	Wildlife Conservation plan duly approved by the CWLW shall be implemented in time bound manner.
3.	To minimize the man-animal conflicts in forest areas, intensive mass awareness campaigns shall be organized in the study area. State Forest Departments shall constitute a Local Coordination Committees/ Primary Response Teams (PRTs) consisting head of village Panchayat (Gram Budha), Range officer (Forests), BDO (Block Development Officer) Local Government Wildlife Research Institute and NHPC representatives for effective implementation of Bio diversity & Wildlife Conservation Plan.
4.	Clearance shall be obtained from Brahmaputra Board before commencement of construction of the project, if required.
5.	PP shall obtain separate EC for quarrying in the project area, if required.
6.	On-line monitoring system for the e-flow releases to be installed.
7.	Skill mapping be undertaken for the youths of the affected project area and based on the skill mapping, the trainings to the youths be incorporated for their appropriate engagements in the Project.
8.	Land acquired for the project shall be suitably compensated with the prevailing guidelines and all commitments made during the Public Hearing shall be fulfilled.

9.	The project-affected population should be resettled and rehabilitated as per the latest R & R Policy.
10.	Six monthly compliance reports shall be submitted by the PP to Regional Office, MoEF& CC, Shillong without fail.
11.	The recommendations of Subansiri River Basin Study will have to be fully abided by the project proponent.
12.	The Environmental Management Plan (EMP) shall be strictly adhered to as submitted in the EIA/EMP reports. The budgetary provisions for implementation of EMP, shall be fully utilized and not to be diverted to any other purpose. In case of revision of the project cost or due to price level change, the cost of EMP shall also be updated proportionately.
13.	The contract clause limiting the No. of vehicles used during excavation and transportation shall followed scrupulously and the same shall informed to the ministry.
14.	Ambient Air Quality Monitoring Stations for real time data to be installed at project site before commencement of the construction, shall be displayed at project site and its report to be submitted to IRO, MoEF&CC.
15.	No vehicle purchase shall be allowed from funds earmarked for implementation of Wildlife Conservation plan.
16.	The Project Proponent shall explore the possibility to undertake tree transplantation, wherever feasible, in consultation with the State Forest Department. Survival of at least 80% of transplanted trees shall be ensured, with monitoring for a minimum period of five years.
17.	Plantation of saplings (10,000 nos.) shall be carried out around the muck disposal area in consultation with Forest Department as a part of the tree plantation campaign "Ek Ped Ma Ke Naam" and the details of the same shall be uploaded in the MeriLiFE Portal ( <a href="https://merilife.nic.in">https://merilife.nic.in</a> ). The survival of plants shall be reported in the 6 monthly compliance report.
18.	PP shall prepare time bound reclamation and restoration plan for restoration of batching plant in consultation with the Forest Department and same shall be submitted to IRO, MoEF&CC and shall be fully implemented within five years of commissioning of the project.

#### 3.1.6.2. Standard

1(c)	<b>River Valley/Irrigation projects</b>
<b>Statutory compliance</b>	
1.	The project proponent shall obtain forest clearance under the provisions of Forest (Conservation) Act, 1986, in case of the diversion of forest land for non-forest purpose involved in the project.
2.	The project proponent shall obtain clearance from the National Board for Wildlife, if applicable.

3.	The project proponent shall prepare a Site-Specific Conservation Plan & Wildlife Management Plan and approved by the Chief Wildlife Warden. The recommendations of the approved Site-Specific Conservation Plan / Wildlife Management Plan shall be implemented in consultation with the State Forest Department. The implementation report shall be furnished along with the six-monthly compliance report. (in case of the presence of Schedule-I species in the study area).
4.	The project proponent shall obtain Consent to Establish / Operate under the provisions of Air (Prevention & Control of Pollution) Act, 1981 and the Water (Prevention & Control of Pollution) Act, 1974 from the concerned State Pollution Control Board/ Committee.
5.	NOC shall be obtained from National Commission of Seismic Design Parameters (NCSDS) of CWC.
6.	Necessary approval of CEA shall be obtained for those projects having the project cost more than Rs. 1,000 crores.
<b>Air quality monitoring and preservation</b>	
1.	Regular monitoring of various environmental parameters viz., Water Quality, Ambient Air Quality and Noise levels as per the CPCB guidelines at designated locations shall be carried out on monthly basis and a detailed database of the same shall be prepared and recorded. This shall be used as a baseline data for post construction EIA / Monitoring purposes.
2.	Appropriate Air Pollution Control (APC) system shall be provided for all the dust generating points including fugitive dust from all vulnerable sources, so as to comply prescribed standards.
3.	Necessary control measures such as water sprinkling arrangements, etc. be taken up to arrest fugitive dust at all the construction sites.
4.	Conjunctive use of surface water to be planned in the project to check water logging as well as to increase crops productivity. The field drains shall be connected with natural drainage system (if applicable).
5.	Remodelling of existing natural drains (link drains) and connecting them with irrigated land through constructed field drains, collector drains, etc. are to be ensured on priority basis (if applicable).
6.	Before impounding of the water, Cofferdams for both at the upstream and downstream are to be decommissioned as per EIA/EMP report so that once the project is commissioned; cofferdam should not create any adverse impact on water environment including the rock mass and muck used for the Cofferdam.
7.	As the reservoir will be acting as balancing reservoir and there would be fluctuation of water level during peaking period, efforts be made to reduce impact on aquatic life including impacts during spawning period both at the upstream and downstream of the project.
8.	Water depth sensors shall be installed at suitable locations to monitor e-flow. Hourly data to be collected and converted to discharge data. The Gauge and Discharge data in the form of Excel Sheet be submitted to the Regional Office, MoEF & CC and to the CWC on weekly basis.
9.	Mixed irrigation shall be practised and necessary awareness be given to all the farmers and trained in the use of such systems. Proper crops selection shall be carried out for making irrigation facility more effective (if applicable).
10.	On Farm Development (OFD) works like landscaping, land levelling, drainage facilities, field irrigation channels and farm roads, etc. should be taken up in phased manner prior to the start of irrigation in the



	entire command area. The Command Area Development Plan should be strictly implemented as proposed in the EIA/EMP report (if applicable).
<b>Noise monitoring and prevention</b>	
1.	All the equipment likely to generate high noise shall be appropriately enclosed or inbuilt noise enclosures be provided so as to meet the ambient noise standards as notified under the Noise Pollution (Regulation and Control) Rules, 2000, as amended in 2010 under the Environment Protection Act (EPA), 1986.
2.	The ambient noise levels should conform to the standards prescribed under E(P)A Rules, 1986 viz. 75 dB(A) during day time and 70 dB(A) during night time.
<b>Catchment Area Treatment Plan</b>	
1.	Catchment Area Treatment (CAT) Plan as proposed in the EIA/EMP report shall be implemented in consultation with the State Forest Department and shall be implemented in synchronization with the construction of the project.
<b>Waste management</b>	
1.	Muck disposal be carried out only in the approved and earmarked sites. The dumping sites shall be located sufficiently away from the HFL of the river. Efforts be made to reuse the muck for construction and other filling purposes and balanced be disposed of at the designated disposal sites. Once the muck disposal sites are inactive, proper treatment measures like both engineering and biological measures be carried out so that sites are stabilized quickly.
2.	Solid waste management should be planned in details. Land filling of plastic waste shall be avoided and instead be used for various purposes as envisaged in the EIA/EMP reports. Efforts be made to avoid one time use of plastics.
<b>Green Belt and Wildlife Management</b>	
1.	Based on the recommendation of Cumulative Impact Assessment and Carrying capacity study of river basin or as per the ToR conditions or minimum 15% of the average flow of four consecutive leanest months, whichever value is higher, shall be released as environmental flow.
2.	Detailed information on species composition particular to fish species from previous study/literature be inventoried and proper management plan shall be prepared for insitu conservation in the streams, tributaries of river and the main river itself for which adequate budget provision be made and followed strictly.
3.	Wildlife Conservation Plan approved by the Chief Wildlife Warden shall be implemented in consultation with the local State Forest Department.
4.	To enrich the habitat of the project site, plantation shall be raised as envisaged in the EIA/EMP report. Plantation to be developed along the periphery of the reservoir in multi-layers with local indigenous species in consultation with the local State Forest Department.
5.	Compensatory afforestation programme shall be implemented as per the plan approved.
6.	Fish ladder/pass as envisaged in the EIA/EMP report shall be provided for migration of fishes. Regular monitoring of this facility be carried out to ensure it effectiveness.

<b>Public hearing and Human health issues</b>	
1.	Resettlement & Rehabilitation plan be implemented in consultation with the State Govt. as approved by the State Govt.
2.	Budget provisions made for the community and social development plan including community welfare schemes shall be implemented in toto.
3.	Preventive measures viz. fuming and spraying of mosquito control shall be done in and around the labour colonies, affected villages, stagnated pools, etc. Provisions be made to not to create any stagnated pools to avoid creation of breeding grounds of the vector borne diseases.
4.	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.
5.	Labour force to be engaged for construction works shall be examined thoroughly and adequately treated before issuing them work permit. Medical facilities shall be provided at the construction sites.
<b>Risk Mitigation and Disaster Management</b>	
1.	Early Warning Telemetric system shall be installed in the upper catchment area of the project for advance intimation of flood forecast.
2.	Drilling and blasting shall be done only either by licensed explosive agent or by the proponent after obtaining required approvals from Competent Authorities.
3.	Emergency preparedness plan be made for any eventuality of the dam failure and shall be implemented as per the Disaster Management Plan.
4.	Stabilization of muck disposal sites using biological and engineering measures shall be taken up 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. The engineering measures for the muck disposal arrangements be evolved after carrying out required slope stability analysis.
5.	Catchment area treatment plan shall be prepared and sufficient fund shall be provided for afforestation, rim plantation, pasture development, nursery development.
<b>Corporate Environment Responsibility</b>	
1.	The project proponent shall comply with the provisions contained in this Ministry's OM vide F.No. 22-65/2017-IA.III dated 30th September, 2020, as applicable, regarding Corporate Environment Responsibility.
2.	Skill mapping be undertaken for the youths of the affected project area and based on the skill mapping, necessary trainings to the youths be provided for their long time livelihood generation
3.	The company shall have a well laid down environmental policy duly approve by the Board of Directors. The environmental policy should prescribe for standard operating procedures to have proper checks and balances and to bring into focus any infringements/deviation/violation of the environmental / forest / wildlife norms/ conditions. The company shall have defined system of reporting infringements / deviation/violation of the environmental / forest / wildlife norms/conditions and / or shareholders/ stake holders. The copy of the board resolution in this regard shall be submitted to the MoEF&CC as a part of

	six-monthly report.
4.	A separate Environmental Cell both at the project and company head quarter level, with qualified personnel shall be set up under the control of senior Executive, who will directly to the head of the organization.
5.	Action plan for implementing EMP and environmental conditions along with responsibility matrix of the company shall be prepared and shall be duly approved by competent authority. The year wise funds earmarked for environmental protection measures shall be kept in separate account and not to be diverted for any other purpose. Year wise progress of implementation of action plan shall be reported to the Ministry/Regional Office along with the Six Monthly Compliance Report.
6.	Post EIA and SIA be prepared for the project through a third party and evaluation report be submitted to the Ministry after five years of commissioning of the project.
7.	Multi Disciplinary Committee (MDC) be constituted with experts from Ecology. Forestry, Wildlife, Sociology. Soil Conservation, Fisheries, NGO, etc. to oversee implementation of various environmental safeguards proposed in EIA/EMP report during construction of the project. The monitoring report the Committee shall be uploaded in the website of the Company.
8.	Formation of Water User Association/Co-operative be made involment of the whole community be ensured for discipline use of available water for irrigation purposes
<b>Miscellaneous</b>	
1.	The project proponent shall make public the environmental clearance granted for their project along with the environmental conditions and safeguards at their cost by prominently advertising it at least in two local newspapers of the District or State, of which one shall be in the vernacular language within seven days and in addition this shall also be displayed in the project proponent's website permanently.
2.	The copies of the environmental clearance shall be submitted by the project proponents to the Heads of local bodies, Panchayats and Municipal Bodies in addition to the relevant offices of the Government who in turn has to display the same for 30 days from the date of receipt.
3.	The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and update the same on half-yearly basis.
4.	The project proponent shall submit six-monthly reports on the status of the compliance of the stipulated environmental conditions on the website of the ministry of Environment, Forest and Climate Change at environment clearance portal.
5.	The project proponent shall submit the environmental statement for each financial year in Form-V to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently and put on the website of the company.
6.	The project proponent shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities, commencing the land development work and start of production operation by the project.
7.	The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board and the State Government.
8.	The project proponent shall abide by all the commitments and recommendations made in the EIA/EMP

	report, commitment made during Public Hearing and also that during their presentation to the Expert Appraisal Committee.
9.	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment, Forests and Climate Change (MoEF&CC).
10.	Concealing factual data or submission of false/fabricated data may result in revocation of this environmental clearance and attract action under the provisions of Environment (Protection) Act, 1986.
11.	The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.
12.	The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.
13.	The Regional Office of this Ministry shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information/monitoring reports.
14.	The above conditions shall be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 and the Public Liability Insurance Act, 1991 along with their amendments and Rules and any other orders passed by the Hon'ble Supreme Court of India / High Courts and any other Court of Law relating to the subject matter.
15.	Any appeal against this EC shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.

### 3.2. Agenda Item No 2:

#### 3.2.1. Details of the proposal

<b>Gosaintari Pumped Storage Project (920 MW) by SUn Hydro Energy Private LIMITED located at NAWADA, BIHAR</b>			
<b>Proposal For</b>		<b>Fresh ToR</b>	
<b>Proposal No</b>	<b>File No</b>	<b>Submission Date</b>	<b>Activity Sub-Activity (Schedule Item)</b>
<a href="#">IA/BR/RIV/564878/2026</a>	J-12011/01/2026-IA.I(R)	13/01/2026	River Valley/Irrigation projects Standalone Pump Storage Projects (1(c))

#### 3.2.2. Project Salient Features

**47.3.1** The proposal is for grant of Terms of Reference (ToR) to the project Gosaintari Close loop Pumped Storage Project (920 MW) in an area of 283.03 Ha located at Adwaria, Amghati, and Charbiga etc., Sub-District Rajauli & Gobindpur, District Nawada, Bihar by M/s Sun Hydro Energy Private Limited.



**47.3.2** The Project Proponent and the accredited Consultant M/s. R. S. Envirolink Technologies Pvt. Ltd., made a detailed presentation on the salient features of the project and informed that:

- i. The proposed Gosaintari Pumped Storage Project (920MW), a self-identified off stream Closed loop project, is being developed by the Sun Hydro Energy Pvt. Ltd. on the valley drained by the Job Nallah / Stream in District Nawada, Bihar.
- ii. The project, conceived as an off stream closed loop project of installed capacity 920 MW/ 7360 MWH pumped storage component with 8 hours storage capacity for peak power generation shall be located in Nawada District, Bihar.
- iii. The upper and lower dams for the PSP are proposed to be newly constructed. The Upper Dam is proposed as Rockfill ring bund with Concrete Spillway with 3300m length at top near Gosaintari Village of Rajauli Block in Nawada District, Bihar. The Lower Dam is proposed as Rockfill dam with Concrete Spillway with 352 m length at top.
- iv. The project will generate 920 MW by utilizing a design discharge of 275.4 cumec with rated head of 374.2m. The PSP will utilize 1012 MW to pump 241.28 cumec from lower reservoir to the upper reservoir. The scheme of operation for the project is 8 hours of peak power per day and 9.13 hours for pumping back the water through TRT-reversible turbines-pressure shaft-HRT to the upper reservoir. Water will be used cyclically for energy storage and generation.
- v. For reservoir operation the project contemplates non-consumptive re-utilization of 8.00 MCM of water for recirculation among two proposed reservoirs. The one-time filling requirement of 13 MCM (~12.54 MCM) and periodical recoupment for losses (1.16 MCM) will be met from the monsoon yield of catchment of Dhanarjay River near Baurahi Kalan village (catchment area of 169.05 sq. km), and used cyclically for energy storage and generation.
- vi. The geographical co-ordinate of the project are Lower Reservoir (left bank) : 358401.081 E; 2728920.325 N. Lower Reservoir (Right bank) : 358485.924 E; 2729261.051 N Upper Reservoir : 358915.25 E; 2731127.01 N.
- vii. Gosaintari Close Loop Pumped Storage Project envisages construction of two artificial reservoirs, water conductor system, Power House, Transformer hall, adits, switch yard alongwith infrastructural facilities at village Gosaintari, Sub-District Rajauli and Govindpur, District Nawada, Bihar.


The site selection process is based on following approaches:

- Utilization of available head at project site to the maximum extent feasible
- Development of economical and optimized layout
- Ease of construction
- Minimal area of land acquisition to accommodate various project components
- Avoid / minimize submergence of forest land
- Avoid interference with existing schemes
- Avoid location of project within Eco Sensitive Zones (ESZ) of existing Wild Life Sanctuaries



Annual average generation	2552 MU	2607 MU	1769 MU	2552 MU
Net Rated Head	371.4 m	405.7 m	152 m	374.2 m
Financial Aspect				
Total Hard Cost (in crore)	5374	6187	5679	5128
Cost per MW (in crore)	5.84	6.60	8.90	5.60

**Comparison of Forest Land Requirement:**

Name of the Proposal	Gosaintari Closed-Loop Pumped Storage Project (9 20 MW)			
Location (Including coordinates)	Gosaintari Village, District Nawada, Bihar Lower Reservoir (left bank): Latitude: 2728920.325 N, Longitude: 358401.081 E Lower Reservoir (right bank): Latitude: 2729261.051 N, Longitude: 358485.924 E Upper Reservoir: Latitude: 2731127.01 N, Longitude: 358915.25 E			
Inter- state issue involved	No			
Seismic zone	Zone-IV			
Category of the project	A			
Provisions	Project Activity covered at S.N.1(c)(i) of the EIA schedule standalone Pumped Storage Project			
Capacity / Cultural command area ( CCA)	920 MW/7360 MWH pumped storage component with 8 hours storage capacity for peak power generation and 9.13 hours pumping operation for backfilling of upper reservoir of PSP.			
Attracts the General Conditions (Yes)	Yes			

s/No)	
Additional information (if any)	Nil
Powerhouse Installed Capacity	920 MW
Generation of Electricity Annually	2552 MU
No. of Units	4 nos. (4 x 230 MW)
Additional information (if any)	Nil
Cost of project	5128.0 Cr. (Including IDC)
Total area of Project	283.03 ha
Height of Dam from River Bed (EL)	Lower Dam – 39.0 m Upper Dam –23.0 m
Length of Tunnel/Channel	5200 m
Details of Submergence area	Total area = 166.12 Ha, (114.55 Ha. of area in submergence + 51.57 Ha. of Dam area) [Upper Reservoir: 54.23 Ha. of area in submergence + 38.27 Ha. of Dam area, Lower Reservoir: 60.23 Ha. of area in submergence area + 13.39 Ha. of Dam area].
Types of Waste and quantity of generation during construction/ Operation	Muck from excavation, solid waste from labour colony and construction waste
E-Flows for the Project	Not Applicable, as this is Closed Loop Pumped Storage Project (PSP)
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then E-flow with TOR /Recommendation by EAC as per CIA&CC study of River Basin. If not the E-Flows maintain criteria for sustaining river ecosystem.	No
No. of trees/saplings proposed in view of 'Ek Ped Ma a Ke Naam' campaign	500



	Muck Disposal Sites-2 Nos, Area and Type of land -28.0 ha; Non-For est Land
Muck Management Plan	Will be Provided in EIA/EMP report
Monitoring mechanism for Muck Disposal	Will be Provided in EIA/EMP report
Private Land	54.61 ha (Non- Forest)
Government land	
Forest Land	228.42 ha
Total Land	283.03 ha
Submergence area/Reservoir area	Total Submergence area- 166. 12 Ha
Additional information (if any)	Nil

Particulars/ Protected Area/ Envi ronmental Sensitivity Zone	Yes/No	Details of Certificate / letter/ R emarks
Details of consultant Reserve Forest/Protected Forest Lan d	---	M/s. R S Envirolink Technologies Pvt. Ltd. (RSET) (NABET Accredited Consultant Organization) Certificate No : NABET/FA/2528/RA(04/15) Validity : August 15, 2028
National Park	---	Contact Person : Mr. Ravinder Sharma
Wildlife Sanctuary	---	Name of Sector : River Valley draft stage, wildlife cl ey and ecotour projects
	Category : A	MoEF Schedule : I(C) Address : 403, Bestech Chambers, Block-B, Sushant Lok Phase I, Sector 43, Gurugram, Haryana - 122009 E-mail : ravi@rstechologies.co.in Land Line : (0124) 4295383 Cellular : (+91) 9810136853
Project Benefits		<ul style="list-style-type: none"> <li>o Least expensive source of electricity, not requiring fossil fuel for generation</li> <li>o An emission-free renewable source</li> <li>o Balancing grid for demand driven variations</li> <li>o Balancing generation driven variations</li> <li>o Voltage support and grid stability</li> </ul> <p>Apart from this, proposed PSP will also benefit the local community by creating employment o</p>

	opportunities and will result in upliftment of livelihood and socio-economic conditions.
Status of other statutory clearances	Forest Clearance - Online application seeking for forest diversion for around 228.42 Ha after receipt of ToR Approval. Alongside, other statutory clearances (as applicable) from State as well as Central government will be obtained post completion of Detailed Project Report.
R&R details	Details shall be evaluated during EIA/EMP Studies
Additional detail (If any)	Nil

### 3.2.3. Deliberations by the committee in previous meetings

N/A
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### 3.2.4. Deliberations by the EAC in current meetings

#### 47.3.3.3 The EAC during deliberations noted the following:

- The Expert Appraisal Committee (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/EMP and Public hearing for Gosaintari Close loop Pumped Storage Project (920 MW) in an area of 283.03 Ha located at Adwaria, Amghati, and Charbigaha etc., Sub-District Rajauli & Gobindpur, District Nawada, Bihar by M/s Sun Hydro Energy Private 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 EAC observed that the Gosaintari PSP is proposed to generate 920 MW comprises of Upper and Lower reservoir located away from riverine system and therefore it is treated as a close loop PSP. The one-time filling requirement of 13 MCM (~12.54 MCM) and periodical recoupment for losses (1.16 MCM) will be met from the monsoon yield of catchment of Dhanarjay River near Baurahi Kalan village
- The EAC noted that the total land requirement for the Rajupalem PSP is estimated to be around 283.03 ha, out of which 54.61 ha is non-forest land and 228.42 ha is forest land. Diversion of forest land for non-forest purpose will be involved for construction of project components. However, it was observed that the application for Stage-I Forest Clearance (FC) has not yet been submitted, which necessitates further action from the Project Proponent. The project is located at a distance of approximately 3.8 km from Rajauli (Nawada) Wildlife Sanctuary, and the Eco-Sensitive Zone (ESZ) boundary, as per the draft ESZ notification, is at a distance of 0.2 km from the project site. Therefore, obtaining wildlife clearance from the National Board for Wildlife (NBWL) is mandatory for the project.
- The EAC further noted that the project site is located approximately 4 km from the Jharkhand

State boundary; therefore, the requisite clearance/approval/No Objection Certificate (NoC) shall be obtained from the Government of Jharkhand.

It has been observed that a Memorandum of Understanding (MoU) was signed between the Government of Bihar and M/s Sun Petrochemicals Private Limited on 19.12.2024 for development of the PSP. However, the project has been submitted by M/s Sun Hydro Energy Private Limited. Therefore, it is necessary for the project proponent to obtain an amendment to the MoU from the State Government.

### 3.2.5. Recommendation of EAC

Recommended

### 3.2.6. Details of Terms of Reference

#### 3.2.6.1. Specific

Miscellaneous:	
1.	Both capital and recurring expenditure under EMP shall be submitted.
2.	Pre-DPR Chapters viz., Hydrology, Layout Map and Power Potential Studies duly appraised 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 submitted.
5.	Detailed plan to restore wider roads and convert them into narrow up to 10m after construction of the project.
6.	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.
7.	As per Ministry's OM dated 1 <sup>st</sup> 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 any 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.
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.	The muck dumping sites shall be located with a distance of 100 mts from HFL. The PP shall

	submit the detailed action plan for transportation of muck along with monitoring mechanism of movement of muck carrying trucks.
<b>Muck Management:</b>	
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.
<b>Socio-economic Study:</b>	
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. A comparative chart of issues raised by General Public during Public Hearing and commitments made by the Project Proponent will be prepared and submitted in the relevant chapter of EIA/EMP report.
3.	The EIA/EMP shall include a detailed socio-economic assessment of the tribal population in the project-affected area based on primary data and community consultations. A Tribal Development Plan, prepared in consultation with the District Administration and Tribal Welfare Department, shall be submitted along with the EIA report.
4.	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 7 <sup>th</sup> October, 2014 for the project land to be acquired.
5.	Land acquired for the project shall be suitably compensated in accordance with the law of the land with the prevailing guidelines. Private land (if any) shall be acquired as per provisions of Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013. Budget earmarked for R&R, CSR shall not be included in the cost of EMP.
<b>Environmental Management and Biodiversity Conservation:</b>	
1.	NBWL clearance shall be obtained in view of location of the project which is 3.8 km from Rajauli (Nawada) Wildlife Sanctuary.



2.	PP shall obtain an amendment to the MoU from the State Government in view of change in name of the project proponent.
3.	A detailed action plan for large scale plantation of native species of plant sapling within 10 km radius of the project shall be prepared in consultation with State Forest Department. The monitoring mechanism to ensure the survival of saplings shall be finalized in consultation with ICFRE.
4.	The PP will submit 10 years water availability data certified by the CWC/State Water Resource Department for quantity of water that is received annually by the small stream on which lower reservoir is proposed to be constructed.
5.	Necessary interstate clearance/approval shall be obtained before submitting the application of Environmental Clearance in view of the project site being located approximately 4 km from the Jharkhand State boundary.
6.	The PP will submit a detailed plan and monitoring mechanism for releasing the self - catchment water of small stream draining in to river along with action plan for conservation and protection of other streams/rivulets draining in to upper and lower reservoirs.
7.	Explore the possibilities for reducing the Forest land requirement. The application for obtaining Stage I FC for 73.30 ha of forest land involved in the project shall be submitted within stipulated time.
8.	Muck disposal site and other components such as Township, site office, Stacking area and batching plant shall be located outside the forest area.
9.	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.
10.	Transportation Plan for transporting construction materials shall be submitted. Separate chapter for risk assessment of such transportation through/within proposed the Wildlife Sanctuary shall be included in the EIA report, if any.
11.	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.
12.	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.
13.	Calculation and values of GHGs (CO <sub>2</sub> , CH <sub>4</sub> etc.) emissions during construction and during operation till the life of the project shall be estimated and submitted.
14.	The longitudinal connectivity/Free flowing sketch be provided in the EIA/EMP report.
15.	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.

1 6.	Conducting site-specific ecological study emphasizing on riverine ecology viz. 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.
1 7.	Action plan for survival or diversion of the rivulets/stream, if any, leading to join river shall be submitted.
1 8.	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.
1 9.	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.
2 0.	Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP.
2 1.	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.
2 2.	Details of mineral zone, if any, in the study area, certified by Geological Survey of India or any other concerned Government Organization shall be submitted. The project area should not come up on any critical mineral zone, the same shall to be verified by GSI/NMDC.
2 3.	Any archaeological sites in the vicinity of the project, if any, then it shall be certified by ASI.

### 3.2.6.2. Standard

1( c)	<b>River Valley/Irrigation projects</b>
<b>Scope of EIA Study</b>	
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.
<b>Details of the Project and Site</b>	
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
<b>Description of Environment and Baseline Data</b>	
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.
<b>Details of the Methology</b>	
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.
<b>Methodology for Collection of Biodiversity Data</b>	
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 from the entire state can be referred to. Once a listing of possible r.e.t. species from 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).
<b>Components of the EIA Study: Various aspects to be studied and provided in the EIA/EMP report are as follows:</b>	
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 (SO <sub>2</sub> ) and Oxides of Nitrogen (NO <sub>x</sub> ) 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.
1 5.	null
1 6.	(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.
1 7.	null
1 8.	History of the ground water table fluctuation in the study area.
1 9.	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, NO <sub>2</sub> , PO <sub>4</sub> , Cl, SO <sub>4</sub> , 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).
2 0.	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
2 1.	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.
2 2.	Run off, discharge, water availability for the project, sedimentation rate, etc.
2 3.	Basin characteristics
2 4.	Catastrophic events like cloud bursts and flash floods, if any, should be documented.
2 5.	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 km <sup>2</sup> year <sup>-1</sup> .
2 6.	Set up a G&D monitoring station and a few rain gauge stations in the catchment area for collecting data during the investigation.
2 7.	Flow series, 10 daily with 90%, 75% and 50% dependable years discharges.
2 8.	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.
2 9.	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, Pteridophytes, 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.
40.	Economically important species like medicinal plants, timber, fuel wood etc.
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
4	Fauna study and inventorisatation should be carried out for all groups of animals in the study area. Their

5.	present status alongwith Schedule of the species.
4 6.	Documentation of fauna plankton (phyto and zooplankton), periphyton, benthos and fish should be done and analysed.
4 7.	Information (authenticated) on Avi-fauna and wildlife in the study area.
4 8.	Status of avifauna their resident/ migratory/ passage migrants etc.
4 9.	Documentation of butterflies, if any, found in the area.
5 0.	Details of endemic species found in the project area.
5 1.	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.
5 2.	Existence of barriers and corridors, if any, for wild animals.
5 3.	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.
5 4.	Collection of primary data on agricultural activity, crop and their productivity and irrigation facilities components.
5 5.	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.
5 6.	Documentation of aquatic fauna like macro-invertebrates, zooplankton, phytoplanktons, benthos etc.
5 7.	Fish and fisheries, their migration and breeding grounds.
5 8.	Fish diversity composition and maximum length & weight of the measured populations to be studies for estimation of environmental flow.
5 9.	Conservation status of aquatic fauna.
6 0.	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.
6 1.	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.



6 2.	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.
6 3.	Collection of information on sensitive habitat of historical, cultural and religious and ecological importance.
6 4.	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.
6 5.	Documentation of demographic, Ethnographic, Economic Structure and development profile of the area.
6 6.	Information on Agricultural Practices, Cultural and aesthetic sites, Infrastructure facilities etc.
6 7.	Information on the dependence of the local people on minor forest produce and their cattle grazing rights in the forest land.
6 8.	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.
6 9.	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.
<b>Impact Prediction and Mitigation Measures</b>	
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.
1 0.	Water pollution due to disposal of sewage
1	Water pollution from labour colonies/ camps and washing equipment.

1.	
1 2.	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.
1 3.	Changes in land use / land cover and drainage pattern
1 4.	Immigration of labour population
1 5.	Quarrying operation and muck disposal
1 6.	Changes in land quality including effects of waste disposal
1 7.	River bank and their stability
1 8.	Impact due to submergence.
1 9.	Impact on forests, flora, fauna including wildlife, migratory avi-fauna, rare and endangered species, medicinal plants etc.
2 0.	Pressure on existing natural resources
2 1.	Deforestation and disturbance to wildlife, habitat fragmentation and wild animal's migratory corridors
2 2.	Compensatory afforestation-identification of suitable native tree species for compensatory afforestation and green belt.
2 3.	Impact on fish migration and habitat degradation due to decreased flow of water
2 4.	Impact on breeding and nesting grounds of animals and fish.
2 5.	Impact on local community including demographic profile.
2 6.	Impact on socio-economic status
2 7.	Impact on economic status.
2 8.	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.
<b>Environmental Management Plan</b>	
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. Detailed muck transportation plan delineating the path ways, number of trucks, quantity of muck to be transported 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 Panchayats. 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.
1	Sanitation and Solid waste management plan for domestic waste from colonies and labour camps etc.



7.	
1 8.	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.
1 9.	Environmental safeguards during construction activities including Road Construction.
2 0.	A summary of Cost Estimates for all the plans, cost for implementing all the Environmental Management Plans.
2 1.	Water, Air and Noise Management Plans to be implemented during construction and post-construction periods.

### 3.3. Agenda Item No 3:

#### 3.3.1. Details of the proposal

<b>Jharia Pumped Storage Project by JHARIYA ANANTURJA PRIVATE LIMITED located at SONBHADRA,UTTAR PRADESH</b>			
<b>Proposal For</b>		Application for amendment in ToR (for categories A & B1)/Amendment in EC (for category B2)- Form-3	
<b>Proposal No</b>	<b>File No</b>	<b>Submission Date</b>	<b>Activity Sub-Activity (Schedule Item)</b>
<a href="#">IA/UP/RIV/564742/2026</a>	J-12011/13/2024-IA-1(R)	09/01/2026	River Valley/Irrigation projects Standalone Pump Storage Projects (1(c))

#### 3.3.2. Project Salient Features

**47.4.1** The proposal is for grant of amendment in terms of references for Jharia Close Pumped Storage Project (1620 MW) in an area of 310.115 Ha located at Village Barahmori, Chakaria, Sasnai etc, Sub-District Robertsganj, District Sonbhadra, Uttar Pradesh by M/s Jharia Ananturja Private Limited.

**47.4.2** The Project Proponent and the accredited Consultant M/s. R. S. Envirolink Technologies Pvt. Ltd., made a detailed presentation on the salient features of the project and informed that:

- Jharia Off-stream Closed Loop Pumped Storage Project is located in Sonbhadra District, Uttar Pradesh. The installed capacity of the project is estimated as 1620 MW (Generation mode)/1740 MW (Pumping mode).
- The project envisages creation of two artificial reservoirs interconnected with water conductor system, feeding the reversible pump-turbine units before draining into the lower reservoir through tailrace tunnel. Both the reservoirs are located away from all existing nearby rivers/streams/nallahs.
- Total water requirement for initial filling of both the reservoirs is worked out as 18.70 MCM. In order to meet this water requirement for initial filling of reservoirs, it has been planned to utilize the water of Son River. Annual evaporation loss is estimated as 2.5 MCM for both

- the reservoirs. Water pipeline of diameter 1.2 m and length 4.96 km shall be laid, to connect the delivery pipe of pumps installed in the pump sump to the lower reservoir.
- iv. The geographical coordinates of the proposed upper reservoir are at Latitude-24°31'18.33"N and Longitude-83°13'30.51"E and that of lower reservoir are at Latitude- 24°30'11.50"N and Longitude- 83°13'46.87"E.
- v. The proposal is for amendment in the Terms of Reference granted by the Ministry Vide letter dated 07.09.2024 for the project Jhariya Closed Loop Pumped Storage Project (1620 MW) located at Village Jhariya, Sasnai, Barahmori and Chakaria etc, Tehsil Obra, District Sonbhadra, Uttar Pradesh in favour of M/s Jhariya Ananturja Private Limited
- vi. The project proponent has requested for amendment in the ToR with the details are as under.

Description	Reference		
TOR Letter	Subject	Jhariya Pumped Storage Project (1620 MW), in an area of 333.97 ha. lo	
TOR Letter	Para 1	The application pertains to the Jhariya Pumped Storage Project (1620 M	
TOR Letter	Para 5	Jhariya Pumped Storage Project (1620 MW), in an area of 333.97 ha. lo The total land requirement for the project is 333.97 Ha out of which fo	
TOR Letter	Para 6	An area of 333.97 ha. located at Village Badarwa	
TOR Letter	Annexure I (1.2)	The application for obtaining Stage I FC for 180.92 Ha of forest land in	
TOR Letter	Annexure II	Jhariya Pumped Storage Project (1620 MW), in an area of 333.97 ha. lo	
TOR Letter	Annexure II (i)	The proposal is for ToR to the project for Jhariya Pumped Storage Proj mitted.	
TOR Letter	Annexure II (ii)	The Jhariya Pumped Storage Project envisages construction of two arti	
TOR Letter	Annexure II (iii)	The scheme is proposed with an installed capacity of 1620 MW located Tehsil of Sonbhadra district of Uttar Pradesh.	
TOR letter	Annexure II (iv)	Water requirement: Jhariya PSP (1620 MW) will require 17.96 MCM fo aporation.	
TOR letter	Annexure II (x) Electricity Gene ration Capacity	Generation of Electricity Annually – 3404.0 MU	
TOR Letter	Annexure II (x) TOR/EC details	Cost of project: 7374.57 Cr.	
TOR letter	Annexure II (x) TOR/EC details	Total area of project – 333.97 ha Height of Dam from River Bed (EL)- Lower dam-34 m Upper dam-33 m Length of Tunnel/Channel-1583.97 m	

Descriptio n	Reference		
		Details of Submergence area-194.78 ha	
TOR Letter	Annexure II (x) Muck Managem ent Details:	No. of proposed disposal area/ (type of land-Forest/Pvt. land) – 90 ha	
TOR Letter	Annexure II (x) Land Area Brea kup:	Private Land - 153.05 ha Government land/Forest Land - 180.92 ha Submergence area/Reservoir area - 194.78 ha Land required for project components - 139.19ha	
TOR Letter	Annexure II (x) Miscellaneous	Details of consultant Certificate No.: NABET/EIA/2225/RA0274 Validity: August 15, 2025	
TOR Letter	Annexure II (x) Miscellaneous	Status of other statutory clearances- forest land - 180.92 Ha	
Name of the Proposal		Jhariya Close Pumped Storage Project (1620 MW)	
Proposal No.		IA/UP/RIV/564742/2026	
Location (Including Coordinates)		Upper Reservoir Latitude (N) - 24°31'18.33"N Longitude (E) - 83°13'30.51"E Lower Reservoir Latitude (N) - 24°30'11.50"N Longitude (E) - 83°13'46.87"E	
Company's Name		M/s Jhariya Ananturja Private Limited	
CIN no. of Company/user agency		U35101DL2024PTC428128	
Accredited Consultant, Validity and certificate no.		R S Envirolink Technologies Private Limited NABET/EIA/25-28/RA 0415 Valid till 15/08/2028	
Project location (Coordinates /River/ Reservoir)		Jhariya Village, Obra sub-district of Sonbhadra district in Uttar Pradesh	

Inter- State Issue involved	No
Category of the project	1 (c)
Capacity / Cultural command area (CCA)	1620 MW
Attracts the General Conditions (Yes/No)	Yes
Additional information (if any)	
Earlier ToR Proposal No.	IA/UP/RIV/471860/2024
Earlier EAC meeting date	18/07/2024
ToR Letter No.	F. No. J-12011/13/2024-IA.I(R)
ToR grant Date	07/09/2024
Cost of project	7374.57 Crores
Total area of Project	310.115
Date of online application for amendment in TOR was	09/01/2025
Details of CTE	After Receipt of Environmental Clearance
No. of trees/saplings proposed in view of 'Ek Ped Maa Ke Naam' campaign	500
Powerhouse Installed Capacity	1620 MW
Generation of Electricity Annually	3458.8 MU
No. of Units	5 x 270 MW + 2 x 135MW

Based on detailed survey and geological investigation and engineering design there are certain changes in the features of project components necessitating changes in land requirement, and therefore TOR amendment is required. At the TOR stage, land categories were identified based on initial survey and information available with forest/revenue department. Subsequently, a joint inspection was carried out during May-November 2025 with officials from the Forest Department, and the Revenue Department to verify the land category and location. Based on the joint inspection, the extent of forest land has increased; however, the overall land requirement for the Project is reduced



S. N o.	Parameters	As Per ToR	Revised	Deviation
1	Location			
	State	Uttar Pradesh	Uttar Pradesh	NA
	District	Sonbhadra	Sonbhadra	NA
	Airport	Lal Bahadur Shastri International Airport Varanasi- 170 km	Lal Bahadur Shastri International Airport Varanasi- 170 km	NA
	Rail Head	Agori-khas - 36 km	Agori-khas - 35.9 km	NA
	Road Head	Dehri-Nauhath-Yadunathpur road NH-119	Dehri-Nauhath-Yadunathpur road NH-119/SH 5A	NA
	Map reference	Survey of India Toposheet No. 63P/2, 63P/3, 63P/6 & 63P/7	Survey of India Toposheet No. 63P/2, 63P/3, 63P/6 & 63P/7	NA
	Geographical co-ordinates	Upper Reservoir		
	Latitude (N)	24°31'18.33"N	24°31'18.33"N	NA
	Longitude (E)	83°13'30.51"E	83°13'30.51"E	NA
	Geographical co-ordinates	Lower Reservoir		
	Latitude (N)	24°30'11.50"N	24°30'11.50"N	NA
	Longitude (E)	83°13'46.87"E	83°13'46.87"E	NA
2	Hydrology			
	Tributary/River/Nala	Sone River	Sone River	NA
	Total Catchment Area of Sone River Basin	70055 Sq. km.	70055 Sq. km	
	Estimated catchment area at pumping lo	53430 Sq. km (Total C.A)	53430 Sq. km (Total C.A)	

S. N o.	Parameters	As Per ToR	Revised	Deviation
	cation	21964.7 Sq.km. (Total uncontrol C.A)	21964.7 Sq.km. (Total uncontrol C.A)	
	Average Annual Rain fall	858 mm	860.57 mm	2.57 mm
3	Water pipeline for filling Lower Reservoir			
	Total water requirement	17.96 MCM	18.70 MCM	0.74 MCM
	Elevation at Pumping source	168 m amsl	160 m amsl	(8) amsl
	Top of the lower reservoir	243 m amsl	237 m amsl	(6) amsl
	Head difference	75 m	77 m	2 m
	Head loss	13 m	8.2 m	4.8 m
	Length and diameter of pipeline	5.45 km long, 1.2 m diameter	4.96 km long, 1.2 m diameter	(0.49) km
	Pump Capacity	750 kW	750 kW	NA
	Number of pumps	4	4	NA
4	Upper Reservoir			
	Dam Top Level	El. 569.00 m	El. 567.00 m	(2) m
	Full Reservoir Level	El. 565.00 m	El. 562.00 m	(3) m
	Minimum Drawdown Level	El. 547.00 m	El. 543.00 m	(4) m
	Bed level of reservoir	El. 546.00 m	El. 541.00 m	(5) m
	Submergence Area at FRL	73.44 Ha	72.08 Ha	(1.36) Ha
	Storage at FRL	13.80 MCM	14.07 MCM	0.27 MCM

S. N o.	Parameters	As Per ToR	Revised	Deviation
	Storage at MDDL	1.39 MCM	1.40 MCM	0.01 MCM
	Live Storage Capacity	12.41 MCM	12.67 MCM	0.26 MCM
	Type	Concrete Faced Rockfill Dam	Concrete Faced Rockfill Dam	NA
	Maximum Height	33 m	35 m	2 m
	Weighted average height of dam	19.8 m	22.6 m	2.8 m
	Upstream and Downstream Slope	1V: 1.5H	1V: 1.6H	NA
	Length of CFRD at top (Peripheral)	2683.63 m	2510.00 m (including length of block 175.5m)	(173.63) m
4 a	Power Intake/Inlet at Upper Reservoir			
	Approach Channel Length and Width	160 m long and 150 m wide	160 m long and 150 m wide	NA
	Design discharge (Generation/Pumping)	571.8/493.2 cumecs	568.2/486.54 cumecs	(3.6)/(6.66) cumecs
	No. and Type of Intake	6 Nos, Diffuser Type Inlet Structure	6 Nos, Diffuser Type Inlet Structure	NA
	Invert Level of Intake	EL. 534.0 m	EL. 529.0 m	(5) m
	Top Level	EL. 569.0 m	EL. 567.0 m	(2) m
	Type and size of Gates	6 nos., Vertical lift gate with opening size of 6.2 m (W) x 6.2 m (H) for each Intake	6 nos., Vertical lift gate with opening size of 6.2 m (W) x 6.2 m (H) for each Intake	NA
5	Lower Reservoir			
	Dam top level	El. 243.00 m	El. 237.00 m	(6) m

S. No.	Parameters	As Per ToR	Revised	Deviation
	Full Reservoir Level	El. 239.00 m	El. 232.00 m	(7) m
	Minimum Drawdown Level	El. 220.00 m	El. 214.00 m	(6) m
	Bed Level of reservoir	El. 219.00 m	El. 212.00 m	(7) m
	Submergence Area at FRL	83.70 Hectare	88.68 Hectare	4.98 Ha
	Storage at FRL	16.45 MCM	17.015 MCM	0.565 MCM
	Storage at MDDL	1.50 MCM	1.935 MCM	0.435 MCM
	Live Storage Capacity	14.95 MCM	15.08 MCM	0.13 MCM
	Type	Concrete Faced Rockfill Dam	Concrete Faced Rockfill Dam	NA
	Maximum dam height	34.0 m	39 m	5 m
	Weighted average dam height	16.0 m	17.5 m	1.5 m
	Upstream and Downstream Slope	1V: 1.5H	Upstream (1V: 1.5 H) Downstream (1V:1.6H)	NA
	Length of CFRD at top (Peripheral)	3420 m	2554.68 m (including 175.5m) length of Intake block)	(865.32) m
5a	Power Intake/Outlet at Lower Reservoir			
	Approach Channel Length and Width	160 m long and 167 m wide	150 m long and 165 m wide	(10) m and (2) m
	Design discharge (Generation/Pumping)	571.8/493.2 cumecs	568.2/486.54 cumecs	(3.6)/ (6.6) Cumecs



S. No.	Parameters	As Per ToR	Revised	Deviation
	No and Type of Intake	7 Nos, Diffuser Type Outlet Structure	7 Nos, Diffuser Type Outlet Structure	NA
	Invert Level of Intake	EL. 207.0 m	EL. 201.0 m	(6) m
	Top Level	EL. 239.0 m	EL. 237.0 m	(2) m
	Type and size of Gates	7 nos., Vertical lift gate, 6.2 m (W) x 6.2 m (H) for 5 Nos. of Intake and 4.5 m (W) x 4.5 m (H) for 2 nos. of Intake	7 nos., Vertical lift gate, 6.0 m (W) x 6.0 m (H) for 5 Nos. of Intake and 4.5 m (W) x 4.5 m (H) for 2 nos. of Intake	(0.2) m (W) X (0.2) m (H)
6	Penstock / Pressure Shaft			
	Number of Pressure shafts/buried penstock	6 nos. 5.0 m diameter Circular Steel Lined Pressure Shaft having length 1410.0 m and 1 no. 5.0 m diameter Circular Steel Lined Pressure Shaft having length 1365.7 m further bifurcate into two smaller unit diameter 3.5 m	6 nos. of 5m Dia penstock, out of which 5 nos. of main pressure shaft for larger unit having average length of 1586.78m & 1 nos. of pressure shaft with length 1525.59m is bifurcated into 3.5m dia of unit pressure shaft that connects to the smaller units with average length 182.0m	
7	Powerhouse & Transformer Yard			
	Type	Surface Powerhouse	Semi Pit type Surface Powerhouse	NA
	Size of Powerhouse	185.15 m (L) x 24.5 m (W) x 46.2 m (H)	178.5 m (L) x 25.7 m (W) x 52.50 m (H)	(6.65) m x (1.2) m x (6.3) m
	Size of Service Bay	40 m (L) x 24.5 m (W) x 19.8 m (H)	37 m (L) x 27.7 m (W) x 45.5 m (H)	(3) m x 3.2 m x 25.7 m

S. No.	Parameters	As Per ToR	Revised	Deviation
	Centre Line of Turbine (Main Unit)	El. 177.0 m	EL. 171.0 m	(6) m
	Centre Line of Turbine (Small Unit)	El. 176.0 m	EL. 173.0 m	(3) m
	Service Bay Level	El. 191.0 m	EL. 185.5 m	(5.5) m
	Main Access Tunnel (MAT)	8.5 m diameter, D-shaped tunnel 736.0 m long	§ 8.5 m diameter, D-shaped tunnel 673.44 m long	(62) m
	Max. Net Head (T/P)	339.4 m / 348.8 m	341.33m /353.80m (In Large Unit)	1.93 m / 5 m
	Min. Net Head (T/P)	305.7 m / 316.3 m	304.33m /316.8m (In Large Unit)	(1.37) m / 0.5 m
	Size of Transformer yard	225.15m (L) x 18m (W)	208.2 m (L) x 16 m (W)	(16.95) m x (2) m
	Pothed Yard Size	73m (L) x 30m (W)	65 m (L) x 18 m (W)	(8) m x (12) m
	Downstream/ Upstream Surge Gallery	Not required	Not required	
8	Electro-Mechanical Equipment			
	Type of Turbine and no. of units	Vertical Reversible Francis, 4 Nos.	Vertical Reversible Francis, 7 Nos.	3 Nos.
	Turbine Centre line Elevation (Main Unit)	El. 177.0 m	EL. 171.0 m	(6) m
	Turbine Centre line Elevation (Small Unit)	El. 176.0 m	EL. 173.0 m	(3) m
	Head Loss (Generation mode)	5.78 m	6.67m (In Large Unit)	0.89 m
	Head Loss (Pumping mode)	4.4 m	5.8m (Large unit)	1.4 m

S. N o.	Parameters	As Per ToR	Revised	Deviation
	Rated net head (T/P)	320.75m (Generation Mode) 330.93 m (Pumping mode)	322.91m / 335.37 m (Large unit)	2.16 m / 4.44 m
	Unit Discharge, (Large Unit) Turbine/ Pump	95.3/ 82.2 Cumecs	94.70/81.09 cumecs	(0.6)/ (1.11) Cumecs
	Unit Discharge, (Small Unit) Turbine/Pump	47.6/ 41.0 Cumecs	47.59/40.40 cumecs	(0.01)/ (0.6) Cumecs
	Daily Hours of Generation	6 hours	6 hours	NA
	Daily Hours of Pumping	7 hours	7 hours	NA
	Installed Capacity (Generation)	5 x 270 MW & 2 x 135 MW	5 x 270 MW & 2 x 135 MW	NA
	Installed Capacity (Pumping)	5 x 290 MW & 2 x 145 MW	5 x 290 MW & 2 x 145 MW	NA
	Total Annual Energy (Generation)	3404.0 MU	3458.8 MU	54.8 MU
	Total Annual Energy (Pumping)	4239.0 MU	4347.6 MU	108.6 MU
9	Tailrace Tunnel			
	Main TRT			
	Nos. and Shape	5 Nos. Horseshoe Shaped Tunnel (excavation shape), Circular (finished shape)	5 Nos. Horseshoe Shaped Tunnel (excavation shape), Circular (finished shape)	NA
	Diameter and Length	5.5 m diameter, 173.97 m long each	5 Nos. of 6 m diameter of each main TRT Length of unit-1 TRT-174.41 m Length of unit-2 TRT-174.41 m	0.5 m in dia., 0.44 m in length

S. N o.	Parameters	As Per ToR	Revised	Deviation
			Length of unit-3 TR T-174.41 m Length of unit-4 TR T-174.41 m Length of unit-5 TR T-174.41 m	
10	Unit TRT			
	Nos. and Shape	2 Nos. Horseshoe Shaped Tunnel (excavation shape) Circular (finished shape)	2 Nos. Horseshoe Shaped Tunnel (excavation shape) Circular (finished shape)	NA
	Diameter and Length	3.8 m diameter, 178.67 m long each	4.3 m diameter, 181.95m length for unit-6 TRT and 182.17 m of Unit-7 TRT	0.5 m in dia., 3.28 m in length
11	Project Cost and Tariff			
	Total Project Cost	INR 7374.57 Crores	INR 7457.68 Crore	83.11 Cr
	Transmission line and R-communication cost	INR 32.87 Crores	INR 179.6 Crore	146.73 Cr
	IDC	INR 591.47 Crores	INR 792.00 Crores	201 Cr
	FC	INR 9.92 Crores	INR 141.00 Crore	131.08 Cr
	Hard Cost including escalation	INR 6773.18 Crores	INR 6524.68 Crores	(248.5 Cr)
	Levelized tariff ((Without transmission line and R-communication cost)	INR 7.5 /kWh (One cycle generation/ pumping (6hrs./7hrs))	INR 7.04 /kWh (One cycle generation/ pumping (6hrs./7hrs))	(0.46/ kWh)
	Levelized tariff Considering One and half cycle generation	INR 6.03 /kWh (One and half cycle generation/ pumping (6 hrs./7 hrs.))	INR 5.74 /kWh (One and half cycle generation/ pumping (6 hrs./7 hrs.))	(0.29/ kWh)



S. No.	Parameters	As Per ToR	Revised	Deviation
	Pumping energy cost	INR 3.0 /kWh	INR 2.50 /kWh	0.50 /kWh

**Comparative Statement of Land Requirement**

S. No.	Project Component	As per TOR (Land Area in Hectare)	As per Current Assessment (Land Area in Hectare)
1	Upper Reservoir	94.18	99.490
2	Lower Reservoir	100.60	121.090
3	WCS excluding Dam area	16.85	18.360
4	Power House Complex (includes TRT area in current layout)	4.26	9.540
5	Site Office UR	1.00	1
6	Site Office LR	1.00	-
7	Crushing & Batching Plant UR	1.75	-
8	Crushing & Batching Plant LR	1.75	-
9	Stacking Area and Workshop UR	1.00	-
10	Stacking Area and Workshop LR	1.00	-
11	Magazine Area UR	0.25	-
12	Magazine Area LR	0.25	-
13	Labour Camps UR	2	-
14	Labour Camps LR	2	-
15	Colony Area UR	2	-
16	Colony Area LR	2	2.5
17	Muck Disposal/ Green Belt	90	34

	(UR & LR)		
18	TRT excluding Dam area	1.08	-
19	MAT	2.93	1.957
20	Storm Water Channel (SW C)	-	3.078
21	Proposed Roads from LR to UR and Pothead Yard	8.07	14.200
22	Proposed Water Pipeline for Lower Reservoir Filling	-	4.900
Total Land Requirement		333.97	310.115

**Court case details: Nil**

### 3.3.3. Deliberations by the committee in previous meetings

N/A
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### 3.3.4. Deliberations by the EAC in current meetings

#### 47.4.3 The EAC during deliberations noted the following:

- The proposal is for grant of amendment in Terms of References (TOR) to the project for Jhariya Close Pumped Storage Project (1620 MW) in an area of 310.115 Ha located at Village Barahmori, Chakaria, Sasnai etc, Sub-District Robertsganj, District Sonbhadra, Uttar Pradesh by M/s Jhariya Ananturja Private Limited.
- The project is listed at S.N.1(c) of the Schedule to the Environment Impact Assessment (EIA) Notification under category 'A' and are appraised at Central Level by Expert Appraisal Committee (EAC).
- The Terms of Reference granted by the Ministry vide letter dated 07.09.2024 for the project Jhariya Closed Loop Pumped Storage Project (1620 MW) located at Village Jhariya, Sasnai, Barahmori and Chakaria etc, Tehsil Obra, District Sonbhadra, Uttar Pradesh in favour of M/s Jhariya Ananturja Private Limited.

The EAC noted that, based on detailed survey, geological investigations, and engineering design, certain changes have occurred in the configuration of project components, resulting in modifications to the land requirement. Accordingly, amendment of the Terms of Reference (ToR) has been requested. At the ToR stage, land categories were identified based on the preliminary survey and information available with the Forest and Revenue Departments. Subsequently, a joint inspection was conducted during May–November 2025 with officials of the Forest Department and the Revenue Department to verify the land category and location. Based on the findings of the joint inspection, the extent of forest land involved has increased; however, the overall land requirement for the project has been reduced.

### 3.3.5. Recommendation of EAC

Recommended
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### 3.3.6. Details of Terms of Reference

#### 3.3.6.1. Specific

Additional Terms of Reference	
1.	EIA/EMP, collection of baseline data, other statutory clearance and the public hearing shall be carried out as per revised layout.
2.	All other Terms of Reference mentioned letter no. J-12011/13/2024-IA-1(R) dated 07.09.2024 shall remain unchanged.

### 3.4. Agenda Item No 4:

#### 3.4.1. Details of the proposal

Carrying out Environmental impact assessment Studies, preparation of detailed and comprehensive Environmental Clearance for Kishau Multipurpose Project by KISHAU CORPORATION LIMITED located at DEHRADUN, UTTARAKHAND			
Proposal For		Fresh ToR	
Proposal No	File No	Submission Date	Activity Sub-Activity (Schedule Item)
<a href="#">IA/UK/RIV/562518/2026</a>	J-12011/02/2026-IA.I(R)	09/01/2026	River Valley/Irrigation projects Multi purpose project with Irrigation and Hydro Power Generation Component (1(c))

#### 3.4.2. Project Salient Features

**47.5.1** The proposal is for grant of Terms of Reference (ToR) to the project Kishau Multipurpose Project (CCA: 102,375.95 ha and 422 MW) in an area of 2,950 Ha located at Village Bagna, Bali Koti, Bela and Bobri (234) etc., Sub District Shalai, Kamrau and Chakrata, District Dehradun and Sirmaur, Himachal Pradesh & Uttarakhand by M/s Kishau Corporation Limited.

**47.5.2** The Project Proponent and the accredited Consultant M/s. Mantec Consultants Pvt. Ltd., made a detailed presentation on the salient features of the project and informed that:

- Kishau Dam Project would utilize the water of river Tons which is a major tributary of river Yamuna and forms boundary between Himachal Pradesh and Uttarakhand in most of its reaches in this region.
- The water stored in the Kishau reservoir shall be utilized primarily for irrigation & drinking water supply and as a consequence for power generation. The project site is near Samberkhera which is about 50 kms upstream of Dakpathar in Dehradun district Uttarakhand and about 10 km. upstream of existing Ichari Dam.

**iii. Background:**

The investigation of Kishau project was initiated in the year 1940 and was carried out till 1946-47. After some interruptions, the investigation was further carried out by UP Government in the year 1961 and was continued till the year 1967-68. The investigation

was further continued intermittently till the year 2010. Kishau project was declared Project of National importance by Ministry of Water Resources, Gol in the year 2008. For the development of project, a Special Purpose Vehicle named Kishau Corporation Ltd was framed on 20th June, 2015 with a joint venture of two states having submergence i.e. Uttarakhnad & Himachal Pradesh

iv. Kishau Dam Project envisaged the construction of a 232.6 m high concrete gravity dam along with a 422 MW capacity power house across the river Tons, a tributary to the river Yamuna, for harnessing the vast monsoon flow of river Tons by storing and utilizing the regulated release thereof, for irrigation, drinking water and power generation. Considering the latest developments in design and construction of roller compacted concrete dams, economy, volume of dam and to reduce the construction period, it is proposed to construct a roller compacted concrete gravity dam instead of conventional concrete dam.

v. The main features of the project are as follows:-

i. A 232.6 m high Roller Compacted Concrete gravity dam across river Tons in district Dehradun to provide a gross storage of 1824 MCM and live storage of 1561.91 MCM.

ii. A diversion tunnel on the upstream and downstream of dam section and ducts through the dam body are proposed to divert the river water during construction for diversion discharge of 710 cumec. These ducts shall be plugged by concrete before commissioning of the project.

iii. 6 Nos spillway of size 15 m (W) X 17.0 m (H) for discharging flood of 15648 cumec have been provided.

iv. A surface power house on the left bank of the river with installed capacity of 422 MW (4 x 105.5 MW) having rated gross head of 164.17 m.

v. Over ground 400 kV pothead yard on the left flank, near the toe of the dam.

vi. Water will be distributed between Uttar Pradesh and Haryana at Tajewala head works and between Uttar Pradesh, Haryana, Rajasthan and Delhi at Okhla head works as below:

1. Up to Tajewala Head Works :-

There are three canal systems up to Tajewala head works as given below:-

- Eastern Yamuna canal
- Western Yamuna canal
- Khara canal

2. From Tajewala to Okhla the water is supplied to

- Agra Canal
- Delhi Water Supply

viii. Demographic details in 10 km radius of project area:

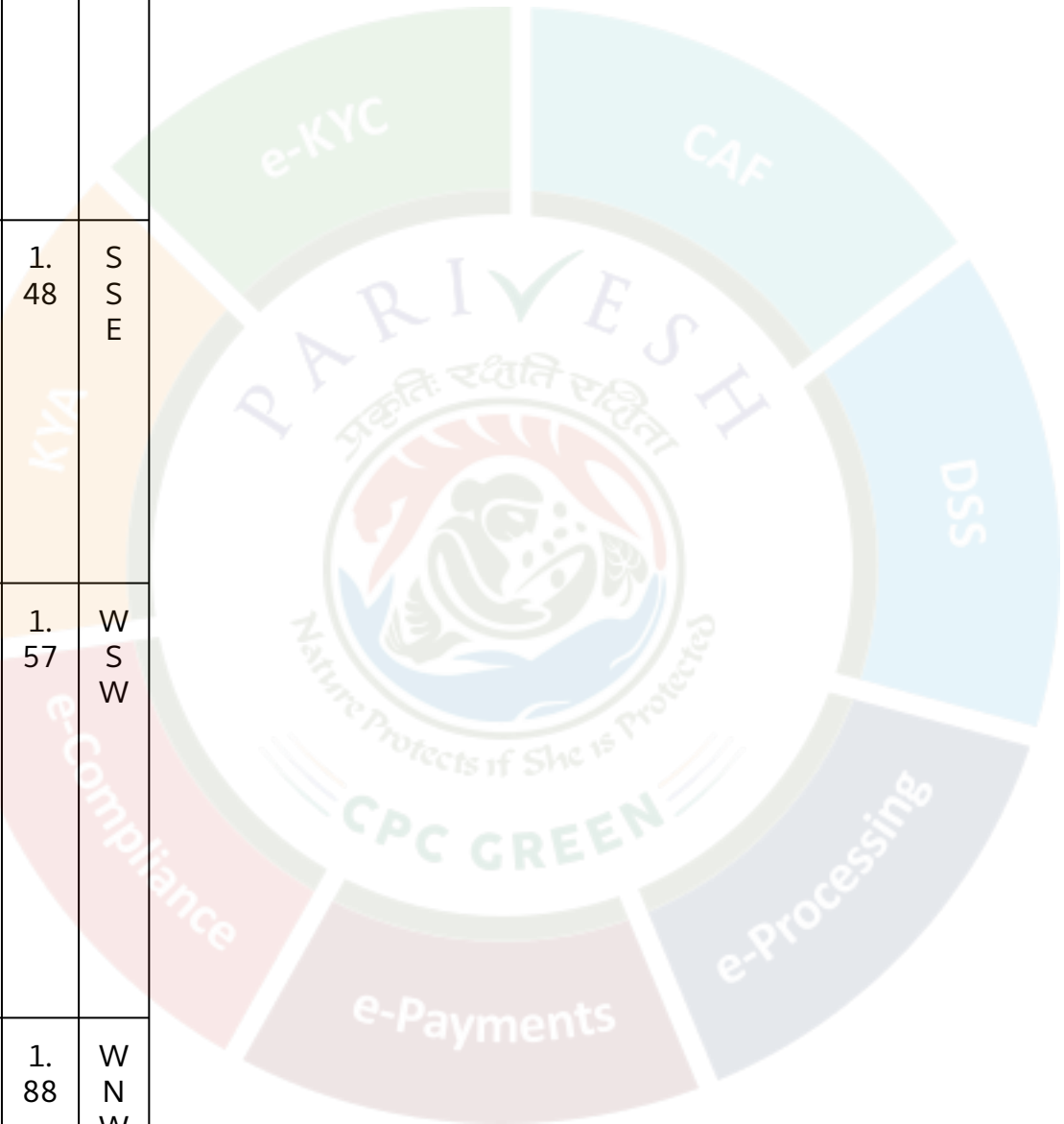
E n v i r o n m e n t s	N a m e	D i s t a n c e (f r o m P r o j	D i r e c t i o n
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e n s i t i v i t y T y p e		ec t Si te B ou nd ar y i n K m)	
S c h o o l / C o l l e g e	G o v t P r i m a r y S c h o o l	1. 99	N N E
	R a j k i y a U c h t a r M a d h y m i k V i d h y a l y a	2. 05	N N E
	G P S E l e m e n t a r y s c	1. 95	E N E



	ho ol		
	G ov er n m en t M i d d l e S c h o o l	2. 15	W N W
Pl ac e o f W o r s h i p	Th ar i M a t a T e m p l e	1. 48	S S E
	M a h a s u D e v t a M a n d i r	1. 57	W S W
	Th ar i m a t a m a n d i r	1. 88	W N W
R o	S H-	6. 05	E



a d s	0 1		
	N H- 7 0 7 A	9. 17	E
	N H- 7 0 7	7. 05	W
H o s p i t a l	A N M C e n t e r C h i l d r e n' s h o s p i t a l	2. 63	N W
	Pr i m a r y H e a l t h C e n t e r	3. 83	S S W
H a b i	Ti m a r a	1. 42	S S E

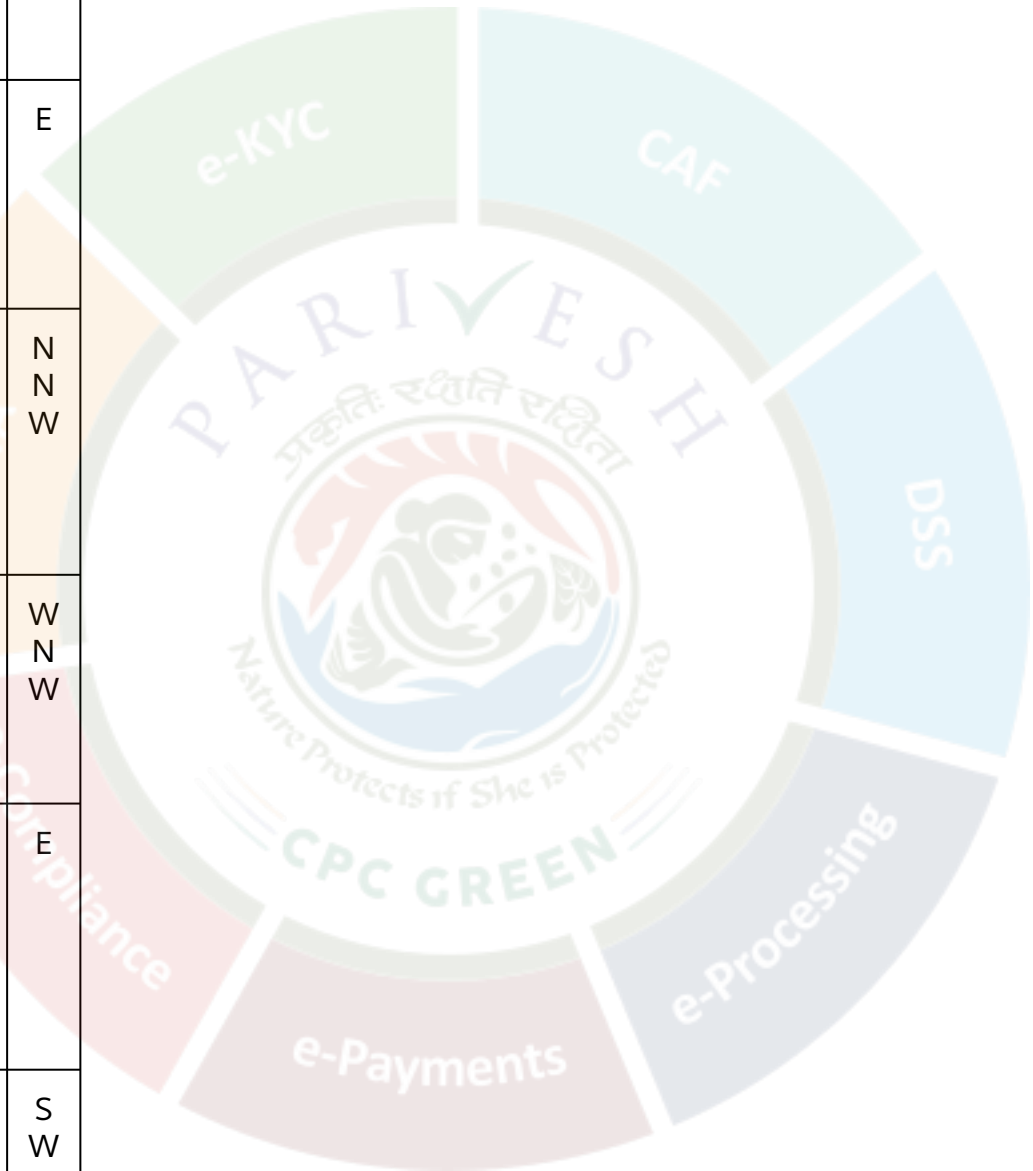


<b>ta ti o n</b>	C h a m r a M o r a r	1. 33	N W
	M a l a i t h a	1. 55	E N E
	D u n a w a	0. 92	N N E
	J a m u w a	1. 90	E
	S h a r l i M a n p u r	2. 20	S S W
<b>S t a t e B o u n d a r y</b>	H i m a c h a l P r a d e s h - U t t a r a k h a n d S t a t e	P r o j e c t S i t e	P r o j e c t S i t e





	B ou nd ar y		
R e s e r v e d F o r e s t/ P r o t e c t e d F o r e s t	Ba li K o t i R F	2. 75	W
	Ba no la R F	3. 26	E
	B ha tn au l R F	5. 19	N N W
	C hy ali R F	9. 78	W N W
	D eo ba n R F	6. 50	E
	Ja m na PF	4. 45	S W
	Ja m na R F	5. 80	S S W
	Ka	9.	N



	na sa r R F	58	
	K ha jur i R F	6. 55	W S W
	K or u w a R F	7. 10	E
	K ot ha R F	6. 45	S E
	Ni ga li R F	9. 35	S S W
	Ni ga li R F N o. 1	8. 42	S S W
<b>P a n c h a y a t</b>	Pa nc ha ya t G ha r G ud	3. 38	S W



	di M an pu r		
	Pa nc ha ya t gh ar du ga na	9. 34	W S W
W a t e r B o d y	T o n s Ri ve r	Pr o j e c t S i t e	Pr o j e c t S i t e
	N e r a N a l a	0. 42	S S W
	M a n p u r N a l a	2. 98	S S W
	G a l i y a r N a l a	3. 85	S S E
	D h a w a d	5. 27	S S E



	Ri ve r		
	M ai nd ar Ri ve r	2. 07	W N W
	A m tia r Ri ve r	6. 50	N W
	A mi a wa Ri ve r	5. 60	E N E
<b>N e a r e s t R a i l w a y S t a t i o n</b>	D eh ra du n Ra il w ay St ati on	4 4. 84	S E
<b>N e a r e s t</b>	H eli pa d Ka	8. 72	W S W





A i r p o r t	fo ta		
	Jo lly Gr an t A i r p o r t - D e h r a d u n	6 4. 33	S S E

### Benefits of Kishau Hydropower Multipurpose Project

#### Social Benefits

- Reliable supply of clean drinking water to nearby towns and villages
- Improved irrigation facilities, supporting farmers and enhancing agricultural productivity
- Reduction in flood risks downstream, ensuring safety of communities
- Employment generation during construction and operation phases
- Overall improvement in quality of life through better access to water, power, and services

#### Economic Benefits

- Generation of renewable hydropower, reducing dependence on fossil fuels
- Boost to local and regional economy through job creation and business opportunities
- Long-term revenue generation from power production
- Support to agriculture and allied activities through assured water availability
- Contribution to regional and national energy security

#### Infrastructure Benefits

- Development of roads, bridges, and access routes in remote areas
- Strengthening of power transmission and distribution networks
- Improvement in water management infrastructure such as dams, reservoirs, and canals
- Enhanced connectivity leading to better access to education, healthcare, and markets

#### xiv. Alternative Studies:

Several sites, for locating a dam on Tons river, were considered for providing storage reservoir for irrigation and power development. They are Kishau, Sambherkhera, Morar, Minas and Atal. Reconnaissance, geological surveys along with regional geology were carried out by the officers of the Geological Survey of India. Some topographical surveys were also conducted to assess the suitability of the site.

#### Kishau Site:

The river Tons passed through a very narrow U-shaped gorge. This is the narrowest of all the sites and therefore, the cost of the dam for storing a certain volume of water will be the lowest. The crest length of the dam for a gross storage of 2400 Mm<sup>3</sup> and height of 230 m above bed, comes to 360.0 m. The rocks explored at the site are inter-banded slates, massive (Bansa) limestone inter banded with minor quartzite rocks of the transitional zone of the siliceous limestone inter banded with calcareous slates. The bed rock units are sparsely jointed at the lower.

#### Morar Site:

The valley is much wider than that at Kishau and Sambherkhera. The crest length of the dam for the storage of 2400 Mm<sup>3</sup> and height of 274.0 m above river bed comes to 1280

m. The left abutment is comparatively steep while the right abutment is made up of a gently sloping ground. The site is made up of slates, grey shales and quartzites of the simla slate group. They have been folded into a possible minor anticlinorium at the dam site. Due to complex folding, the rocks have undergone the feasibility of the slate units. The rocks have become flaggy in nature and at places extensive shattering is also seen. The Shimla slates are exposed up to a height of 10–15 m, above the river bed. Above the slates the right abutment is made up of a gently sloping ground covered by terraces of river gravel and sand. The left abutment exposes talus and probably land slide material. The Tons thrust is expected to occur in the right abutment. Topographically, the river valley will require more than 1.8 times the volume of the fill in the dam of Kishau. The height of the dam will also be abnormally high and it will not be Desirable to construct such a structure at this site with such a complex geology.

#### **Minus Site:**

The gorge is quite narrow and V shaped. The length of crest of the dam for the storage of 2400 Mm<sup>3</sup> and height of 259 m above river bed comes to 457 m. The rock exposed at the site are limestone, having cavernous nature. The required height of the dam works out so high that practically it would not be feasible geologically and structurally. The cavernous nature of the rock rules out the site for a safe structure.

#### **Atal Site:**

The site is U-shaped and is narrow with steep abutments. The length of the crest of the dam of storage of 2400 Mm<sup>3</sup>, height of dam 267 m above river bed comes to 488m. The river has cut a gorge through massive pink and white dolomite band overlain by quartzite and slates. The rock formations are complexly folded into a major anticlinal fold. There is vertical fault on the left abutment which will intersect the dam axis. The bands show the weathering characteristics, however, no major solution cavities are found. Although the valley is narrower than Sambherkhera, but the height of the dam for the same storage is increased by 31 m than that at Sambherkhera.

#### **Sambherkhera**

The site is wider than that at Kishau. The crest length of a dam for the storage of 1824 Mm<sup>3</sup> and a height of 236 m above the river bed comes to be 680 m. The rocks at site mostly consist of Grey quartzite sand stone and shale (Unit-I) which will form the foundation of the dam structure in river bed. The overburden in the river bed is of the order of 10 to 12 m. The rocks are folded in to asymmetrical anticline. In the right abutment, rocks of pink quartzite and white quartzite Unit II and Unit III shall be encountered. Heavy shearing and shattering has been found along the contact surface of these two units. On the left abutment side purple quartzite is exposed up to the top of the dam. The power house and spillway shall be founded on rocks of Unit-II. Reconsideration of alternative sites for location of dam, brought emphasis on Samberkhera site, which appeared best out of the four sites i.e. Samberkhera, Atal, Kishau and Morar. A comparative study of costs of concrete gravity dam and earth and rock fill dam show that the construction of a concrete gravity dam is much cheaper than earth and rock fill dam in this area as construction material for rock fill dam such as impervious core etc., is not available in the nearby area whereas construction material for concrete dam is available within a submergence area. Further, the construction material for earth and rock fill dam needs longer diversion tunnels and this will increase the total construction period of the project. The concrete gravity dam was considered technically feasible and economically viable in addition to offering a shorter gestation period. Gravity dams built using the RCC construction method, afford economies over conventional concrete through rapid placement techniques. Construction cost histories of RCC and conventional concrete dams show the unit cost per cubic yard of RCC is considerably less. The rapid construction techniques and reduced concrete volume

account for the major cost savings in RCC dams. keeping in view the developments in the field of roller compacted concrete dams, economy, volume of the dam and to reduce the construction period it is now proposed to have a roller compacted concrete gravity dam instead of conventional concrete dam.

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

1. Municipal Waste: 65.25 TPA

2. Plastic Waste: 39.15 TPA

Muck and its Management:

Swelling Factor for Overburden	1.42				
Swelling Factor for Rock	1.6				
% of Useful Muck in rock	40%				
Estimated Muck dumping Area	10	Ha/MCM	For 10 meter height		
Estimated Muck dumping Area	1	Ha/Lakh m <sup>3</sup>	For 10 meter height		
EXCAVATION QUANTITY	Exca- vati- on (Lak- h m <sup>3</sup> )	Muck Gene- rated (Lakh m <sup>3</sup> ) includi- ng Swelling Factor	Useful Muck (Lak- h m <sup>3</sup> )	Wastefu- l Muck (Lak- h m <sup>3</sup> )	D u m p i n g a r e a r e q u i r e d (h a)
Open Excavation in Overburden	19.51	27.70	0.00	27.70	27.70
Open Excavation in Rock	41.14	65.83	<b>26.33</b>	39.50	39.50
Underground Excavation in Rock	0.71	1.14	<b>0.46</b>	0.69	0.69

<b>TOTAL</b>	<b>61.37</b>	<b>94.67</b>	<b>26.79</b>	<b>67.89</b>	<b>67.89</b>
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Total quantity of muck generated will be 94.67 lakh m3 out of which 40% will be used in Construction of Dam. Other 60% will be dumped away from the river bed. Muck disposal will be done only in the approved and earmarked sites located sufficiently away from the HFL of the river. Efforts shall made to reuse the muck for construction and other filling purposes. Proper treatment for quick stabilization of disposal sites will be carried out. For this, muck dumping site have been identified by the Project Authority during the pre-construction Stage for getting its necessary clearance

Name of the Proposal	Kishau Multipurpose Project				
Location (Including coordinates)	<p>KISHAU MULTIPURPOSE PROJECT Located at Village: Sambherkhera &amp; Mashwar, District: Dehradun &amp; Sirmour of Dehradun &amp; Himachal Pradesh</p> <table> <tr> <td>Latitudes</td><td>Longitudes</td></tr> <tr> <td>30°39'39.07"N</td><td>77°46'48.48"E</td></tr> </table>	Latitudes	Longitudes	30°39'39.07"N	77°46'48.48"E
Latitudes	Longitudes				
30°39'39.07"N	77°46'48.48"E				
Inter- state issue involved	Yes. Interstate boundary ( Uttarakhand and Himachal Pradesh)				
Seismic zone	IV				
Category of the project	'A'				
Provisions					
Capacity / Cultural command area (CCA)	102375.95 ha				
Attracts the General Conditions (Yes/No)	Yes. Interstate boundary ( Uttarakhand and Himachal Pradesh)				
Additional information (if any)					
Powerhouse Installed Capacity	422 MW(105.5 X4)				
Generation of Electricity Annually	1457.22 MU				
No. of Units	4				
Additional information (if any)	Nil				
Cost of project	14037.09 Crores				
Total area of Project	3000 Ha				

Height of Dam from River Bed (EL)	232.6 m
Length of Tunnel/Channel	4 penstocks of 3.8 m dia
Details of Submergence area	2950 Ha
Types of Waste and quantity of generation during construction/ Operation	3. Municipal Waste: 65.25 TPA 4. Plastic Waste: 39.15 TPA
E-Flows for the Project	36.5 cumec
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.	No river cross sections have been used for quantification of E-flow. E-flow study should be carried out by using data of river cross sections d/s of projects or other suitable locations and after carrying out simulation analysis. Further, depth requirement for umbrella fish species should be taken for lean, non-monsoon non lean & monsoon seasons separately. 25 cm is too less depth of water for E -flow estimation considering umbrella fish species viz., Trout and Mahseer. The recommended Environmental Flow Rate (EFR) is required to be relooked based on the actual river cross sections, water depth requirement specific to the umbrella fish species and other downstream uses. In addition, the lower stretch of the Yamuna River is having high fish abundance, catch and the river being flat compared to middle and upper stretch of Yamuna River, would require different EFR for hydroelectric projects falling in these stretches. EFR recommendations should be based on analysis of actual data
No. of trees/saplings proposed in view of 'Ek Ped Maa Ke Naam' campaign	10 trees will be planted in view of "Ek ped Maa k naam" in addition to 12500 trees.
No. of proposed disposal area/(type of land- Forest/Pvt. land)	67.89 Ha Identification of land (Forest/Private land) is under process.
Muck Management Plan	Total quantity of muck generated will be 94.67 lakh m <sup>3</sup> out of which 40% will be used in Construction of Dam. Other 60% will be dumped away from the river bed. Muck disposal will be done only in the approved and earmarked sites located sufficiently away from the HFL of the river. Efforts shall



	made to reuse the muck for construction and other filling purposes. Proper treatment for quick stabilization of disposal sites will be carried out. For this, muck dumping site have been identified by the Project Authority during the pre-construction Stage for getting its necessary clearance.	
Monitoring mechanism for Muck Disposal	The objective of the muck disposal monitoring mechanism is to ensure that excavation muck generated during construction of the multipurpose hydroelectric project is handled, transported, and disposed of in an environmentally safe manner, in compliance with approved muck disposal plans, statutory conditions, and best engineering practices, so as to prevent adverse impacts on land, water bodies, ecology, and nearby habitations	
Private land	Land detail is being collected.	
Government land		
Forest Land		
Total Land	50 Ha	
Submergence area/Reservoir area	2950 Ha	
Additional information (if any)	-	
Forest Land/ Protected Area/ Environmental Sensitivity Zone	Yes/No	Details of Certificate/letter/Remarks
Reserve Forest/Protected Forest Land	NO	Himachal Pradesh-No Reserve Forest/Protected Forest Land is involved. Uttarakhnad- Information awaited from Forest Department-
National Park	NO	
Wildlife Sanctuary	NO	
Particulars	Details	
Details of consultant	Mantec Consultants Pvt. Ltd.	
Project Benefits	Kishau Dam project is a major multipurpose project, which shall yield many indirect and non-quantifiable benefits. This project will generate approx. 400-500 skilled/unskilled labourers during constr	

	<p>uction phase and 90-100 during operation phase.</p> <p>The development of hydropower in Uttarakhand not only benefits the State but will meet the power requirements of the neighbouring states and northern region of the country.</p> <p>The Government of India declared “Kishau Multipurpose Project” as National Projects in February 2008.</p> <p>It would provide the much needed irrigation facility to 97076 hectares on the Eastern Yamuna Canal. The irrigation benefits would start coming in immediately after completion of the project as the irrigation system is already developed on the Yamuna Canal command and there is keen demand for additional supplies for intensification and extension.</p> <p>It would modulate the flood intensities of the river Yamuna.</p> <p>It would add an installed capacity of 422 MW in the Northern Grid and yield <math>1851.5 \times 10^6</math> KWH in 90% availability year, including additional power benefits from power houses of Yamuna Hydel Scheme Stage-I,II, IV and Khara Hydel Scheme generating <math>472.32 \times 10^6</math> KWH</p>
Status of other statutory clearances	Not Applicable.
R&R details	<p>The rehabilitation and resettlement plan will be prepared as per GoU and GoHP prevailing guidelines which shall not be inferior to prevailing National Policy for project affected families of Gol. In addition to R&amp;R, the KCL will also run community development schemes and CSR program for the villages within / around the project site for skill/capacity development of affected/nearby population</p>
Additional detail (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

##### 47.5.4 The EAC during deliberations noted the following:

- The project is listed at S.N.1(c) of the Schedule to the Environment Impact Assessment (EIA)

Notification under category 'A' as it involves power generated capacity is 422 MW and are appraised at Central Level by Expert Appraisal Committee (EAC).

- The EAC observed that the Kishau Dam Project would utilize the waters of the River Tons, a major tributary of the River Yamuna, which forms the boundary between Himachal Pradesh and Uttarakhand along most of its course in the region. The water stored in the Kishau Reservoir shall be utilized primarily for irrigation and drinking water supply and, consequentially, for power generation.
- The EAC further noted that the project site is located near Samberkhera, about 50 km upstream of Dakpathar in Dehradun District, Uttarakhand, and approximately 10 km upstream of the existing Ichari Dam, which is a purely hydropower project with an installed capacity of 240 MW. Water from the Kishau Reservoir will be distributed between Uttar Pradesh and Haryana at the Tajewala Head Works and among Uttar Pradesh, Haryana, Rajasthan, and Delhi at the Okhla Head Works through the Eastern Yamuna Canal, Western Yamuna Canal, and Khara Canal up to Tajewala, and through the Agra Canal and Delhi Water Supply from Tajewala to Okhla.
- The Committee observed that the Kishau Dam Project is proposed as a concrete gravity dam with a height of 232.6 m, having a culturable as well as irrigable command area of 102,375.95 ha. The project comprises four turbine generating units, each with an installed capacity of 105.5 MW. The Kishau Reservoir will provide a total water benefit of 1,324 MCM, distributed among the beneficiary states as follows: Haryana (633 MCM), Uttar Pradesh (411 MCM), Rajasthan (124 MCM), Delhi (80 MCM), Himachal Pradesh (42 MCM), and Uttarakhand (34 MCM).
- During the meeting, the EAC noted that the tentative total land requirement for the project is 2,950 ha, comprising 512 ha of cultivated land, 250 ha of reserve forest land, 439 ha of civil forest land, 317 ha of bunjar land and nalas, 33 ha of abadi land, and 1,399 ha of other land including river bed. Diversion of forest land for non-forest purpose will be involved for construction of project components. However, it was observed that the application for Stage-I Forest Clearance (FC) has not yet been submitted, which necessitates further action from the Project Proponent. Further, as informed by the PP, there are no national parks, wildlife sanctuaries, Biosphere Reserves, Tiger/Elephant Reserves, Wildlife Corridors etc. within 10 km distance from the project site.

The EAC also noted that the Detailed Project Report (DPR) for the irrigation component was prepared during 1992-93 by the Chief Engineer, Investigation & Planning (Projects), Bareilly. The distribution of water is tentative, and the final distribution of water among the beneficiary States shall be governed by the Memorandum of Understanding signed between the basin States on 12.05.1994 at New Delhi.

#### 3.4.5. Recommendation of EAC

Recommended

#### 3.4.6. Details of Terms of Reference

##### 3.4.6.1. Specific

###### Miscellaneous:

- |    |  |
|----|--|
| 1. | Pre-DPR Chapters viz. Hydrology, Layout Map Studies duly approved by CWC shall be submitted. |
| 2. | PP shall obtain clearance from the inter-State aspect from the designated authorities as per |

	the procedure.
3.	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.
4.	Both capital and recurring expenditure under EMP shall be submitted.
5.	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.
6.	Arial view video of project site shall be recorded and to be submitted.
7.	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 any 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.
<b>Muck Management:</b>	
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.
<b>Socio-economic Study:</b>	
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 30 <sup>th</sup> 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.	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 7 <sup>th</sup> October, 2014 for the project land to be acquired.
8.	Land acquired for the project shall be suitably compensated in accordance with the law of the land with the prevailing guidelines. Private land (if any) shall be acquired as per provisions of Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013. Budget earmarked for R&R, CSR shall not be included in the cost of EMP.
<b>Environmental Management and Biodiversity Conservation:</b>	
1.	A detailed wildlife conservation plan for Schedule -I species along with mitigation measures for minimizing the human-animal conflict, duly approved by the Chief Wildlife Warden, be submitted. NBWL recommendations shall be submitted along with EIA/EMP report.
2.	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 irrigation in study area (10 km from periphery of Project components).
3.	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.
4.	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.
5.	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.
6.	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.
7.	Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP.



8.	Muck disposal site and other components such as Township, site office, Stacking area and batching plant shall be located outside the forest area.
9.	A detailed action plan for large scale plantation of native species of plant sapling within 10 km radius of the project shall be prepared in consultation with State Forest Department. The monitoring mechanism to ensure the survival of saplings shall be finalized in consultation with ICFRE.
10.	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.
11.	Transportation Plan for transporting construction materials shall be submitted. Separate chapter for risk assessment of such transportation through/within proposed the Wildlife Sanctuary shall be included in the EIA report, if any.
12.	Calculation and values of GHGs (CO <sub>2</sub> , CH <sub>4</sub> etc.) emissions during construction and during operation till the life of the project shall be estimated and submitted.
13.	The longitudinal connectivity/Free flowing sketch be provided in the EIA/EMP report.
14.	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.
15.	Conducting site-specific ecological study emphasizing on riverine ecology viz. 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.
16.	Details of mineral zone, if any, in the study area, certified by Geological Survey of India or any other concerned Government Organization shall be submitted. The project area should not come up on any critical mineral zone, the same shall to be verified by GSI/NMDC.
17.	Any archaeological sites in the vicinity of the project, if any, then it shall be certified by ASI.
18.	PP shall prepare detailed plan for Plantation of saplings under the tree plantation campaign "Ek Ped Ma Ke Naam".

#### 3.4.6.2. Standard

1(c)	<b>River Valley/Irrigation projects</b>
<b>Scope of EIA Study</b>	
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.
<b>Details of the Project and Site</b>	
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
<b>Description of Environment and Baseline Data</b>	
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.
<b>Details of the Methology</b>	
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.
<b>Methodology for Collection of Biodiversity Data</b>	
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

	<p>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 from the entire state can be referred to. Once a listing of possible r.e.t. species from 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.</p>
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).
<b>Components of the EIA Study: Various aspects to be studied and provided in the EIA/EMP report are as follows:</b>	
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 (SO <sub>2</sub> ) 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.



1 3.	null
1 4.	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.
1 5.	null
1 6.	(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.
1 7.	null
1 8.	History of the ground water table fluctuation in the study area.
1 9.	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, NO <sub>2</sub> , PO <sub>4</sub> , Cl, SO <sub>4</sub> , 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).
2 0.	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
2 1.	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.
2 2.	Run off, discharge, water availability for the project, sedimentation rate, etc.
2 3.	Basin characteristics
2 4.	Catastrophic events like cloud bursts and flash floods, if any, should be documented.
2 5.	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 km <sup>2</sup> year <sup>-1</sup> .
2 6.	Set up a G&D monitoring station and a few rain gauge stations in the catchment area for collecting data during the investigation.
2 7.	Flow series, 10 daily with 90%, 75% and 50% dependable years discharges.
2	Information on the 10-daily flow basis for the 90 per cent dependable year the flow intercepted at the



8.	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.
2 9.	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.
3 0.	Sedimentation data available with CWC may be used to find out the loss in storage over the years.
3 1.	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.
3 2.	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.
3 3.	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.
3 4.	null
3 5.	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.
3 6.	Documentation of all plant species i.e. Angiosperm, Gymnosperm, Pteridophytes, Bryophytes (all groups).
3 7.	General vegetation profile and floral diversity covering all groups of flora including lichens and orchids. A species wise list may be provided.
3 8.	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.
3 9.	Existence of National park, Sanctuary, Biosphere Reserve etc in the study area, if any, should be detailed.
4 0.	Economically important species like medicinal plants, timber, fuel wood etc.
4 1.	Details of endemic species found in the project area.
4 2.	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.
4 3.	Cropping pattern and Horticultural Practices in the study area.

4 4.	null
4 5.	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.
4 6.	Documentation of fauna plankton (phyto and zooplankton), periphyton, benthos and fish should be done and analysed.
4 7.	Information (authenticated) on Avi-fauna and wildlife in the study area.
4 8.	Status of avifauna their resident/ migratory/ passage migrants etc.
4 9.	Documentation of butterflies, if any, found in the area.
5 0.	Details of endemic species found in the project area.
5 1.	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.
5 2.	Existence of barriers and corridors, if any, for wild animals.
5 3.	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.
5 4.	Collection of primary data on agricultural activity, crop and their productivity and irrigation facilities components.
5 5.	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.
5 6.	Documentation of aquatic fauna like macro-invertebrates, zooplankton, phytoplanktons, benthos etc.
5 7.	Fish and fisheries, their migration and breeding grounds.
5 8.	Fish diversity composition and maximum length & weight of the measured populations to be studies for estimation of environmental flow.
5 9.	Conservation status of aquatic fauna.
6 0.	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.

6 1.	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.
6 2.	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.
6 3.	Collection of information on sensitive habitat of historical, cultural and religious and ecological importance.
6 4.	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.
6 5.	Documentation of demographic, Ethnographic, Economic Structure and development profile of the area.
6 6.	Information on Agricultural Practices, Cultural and aesthetic sites, Infrastructure facilities etc.
6 7.	Information on the dependence of the local people on minor forest produce and their cattle grazing rights in the forest land.
6 8.	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.
6 9.	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.
<b>Impact Prediction and Mitigation Measures</b>	
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.

1 0.	Water pollution due to disposal of sewage
1 1.	Water pollution from labour colonies/ camps and washing equipment.
1 2.	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.
1 3.	Changes in land use / land cover and drainage pattern
1 4.	Immigration of labour population
1 5.	Quarrying operation and muck disposal
1 6.	Changes in land quality including effects of waste disposal
1 7.	River bank and their stability
1 8.	Impact due to submergence.
1 9.	Impact on forests, flora, fauna including wildlife, migratory avi-fauna, rare and endangered species, medicinal plants etc.
2 0.	Pressure on existing natural resources
2 1.	Deforestation and disturbance to wildlife, habitat fragmentation and wild animal's migratory corridors
2 2.	Compensatory afforestation-identification of suitable native tree species for compensatory afforestation and green belt.
2 3.	Impact on fish migration and habitat degradation due to decreased flow of water
2 4.	Impact on breeding and nesting grounds of animals and fish.
2 5.	Impact on local community including demographic profile.
2 6.	Impact on socio-economic status
2	Impact on economic status.

7.	
2 8.	Impact on human health due to water / vector borne disease
2 9.	Impact on increase traffic
3 0.	Impact on Holy Places and Tourism
3 1.	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.
3 2.	Positive and negative impacts likely to be accrued due to the project are listed.
<b>Environmental Management Plan</b>	
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. Detailed muck transportation plan delineating the path ways, number of trucks, quantity of muck to be transported 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 Panchayats. Appropriate schemes shall be prepared under EMP for the Local Area Development Plan with sufficient financial provisions.

1 6.	Labour Management Plan for their Health and Safety.
1 7.	Sanitation and Solid waste management plan for domestic waste from colonies and labour camps etc.
1 8.	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.
1 9.	Environmental safeguards during construction activities including Road Construction.
2 0.	A summary of Cost Estimates for all the plans, cost for implementing all the Environmental Management Plans.
2 1.	Water, Air and Noise Management Plans to be implemented during construction and post-construction periods.

### 3.5. Agenda Item No 5:

#### 3.5.1. Details of the proposal

<b>Project for Construction of Pailani Barrage on Ken River under Ken Betwa Link Project by Executive engineer ken betwa link canal construction division -1 mahoba located at BANDA,UTTAR PRADESH</b>			
<b>Proposal For</b>		Fresh ToR	
<b>Proposal No</b>	<b>File No</b>	<b>Submission Date</b>	<b>Activity Sub-Activity (Schedule Item)</b>
<a href="#">IA/UP/RIV/541503/2025</a>	J-12011/27/2025-IA.I(R)	26/07/2025	River Valley/Irrigation projects Irrigation Projects (1(c))

#### 3.5.2. Project Salient Features

**47.6.1** The Member Secretary informed the EAC that the proposal had been considered by the Committee in its meeting held on 14.08.2025. Subsequently, the PP, vide letter dated 07.01.2026, informed that the project parameters and the command area of the Pailani Barrage (with the right-side command area shifted to the left side of the Ken River) have been revised, and that a fresh proposal would be submitted in accordance with the provisions of the EIA Notification, 2006. In view of the above, current proposal is no longer required, and the PP requested withdrawal of the proposal. Accordingly, the EAC decided to return the proposal.

#### 3.5.3. Deliberations by the committee in previous meetings

**Date of EAC 1 :**14/08/2025

#### **Deliberations of EAC 1 :**

##### **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 Construction of Pailani Barrage on Ken River under Ken Betwa Link Project in an area 287 Ha at Village Achhraund, Laraka Purwa, Adari etc. Sub- district Banda, Maudaha & Hamirpur, District Banda & Hamirpur, Uttar Pradesh by M/s Ken Betwa Link Canal Construction Division-1, Mahoba Irrigation and Water Resources Department, Uttar Pradesh.

The EAC noted that the present project proposal comes under “B1” category; as per the provisions of the EIA Notification, 2006, as amended as Culturable Command Area (CCA: 25,500 ha). However, the project to be considered by the SEIAA but due to no existence of Uttar Pradesh SEIAA the project is being appraised at the Central level by the Expert Appraisal Committee (EAC).

The EAC noted that the Ken-Betwa Link Project Phase-I in Panna & Chhatarpur District of Madhya Pradesh by M/s Water Resources Department, Government of Madhya Pradesh and M/s National Water Development Agency has been granted Environmental Clearance (EC) by the MoEF&CC vide its letter J-12011/20/2013-IA-I dated 25.08.2017.

The Committee observed that the present proposal appears to be an expansion of the Ken-Betwa Link Project, whereas the PP has applied as a new project on the PARIVESH Portal. The Committee further enquired about the components which are covered in the earlier EC of Ken-Betwa Link Project Phase-I. However, the PP was unable to provide satisfactory information on this matter.

The EAC further sought clarification regarding the extent and network of the command area proposed to be irrigated under the project. The Committee observed that details regarding the distribution network, area coverage, and overlap (if any) with the previously granted Environmental Clearance were neither clearly presented in the documents submitted nor adequately explained during the meeting. The same was not replied satisfactorily by the PP.

Accordingly, the EAC sought a comprehensive clarification/justification, along with all relevant KML files and maps, clearly delineating the proposed project components, command area and its distinction from Ken-Betwa Link Project Phase-I that were granted EC earlier.

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

- i. PP shall clarify whether the proposal is an expansion or a new project, and justify filing as a new proposal.
- ii. PP shall provide a comparative list of earlier cleared and new components, and submit maps/KML files showing overlap and new additions.
- iii. PP shall Furnish district-wise breakup of the proposed command area, and clarify changes or overlaps (if any) with the earlier approved area.
- iv. Provide data on water availability and allocation for irrigation, and impact on design, storage, or reservoir operation of earlier approved ken betwa link and approval of the same that has been obtained earlier, if any.
- v. PP shall submit updated maps, satellite imagery, and KML files, and alternative sites analysis.

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

#### **3.5.4. Deliberations by the EAC in current meetings**

47.6.1 The Member Secretary informed the EAC that the proposal had been considered by the Committee in its meeting held on 14.08.2025. Subsequently, the PP, vide letter dated 07.01.2026, informed that the project parameters and the command area of the Pailani Barrage (with the right-side command area shifted to the left side of the Ken River) have been revised,

and that a fresh proposal would be submitted in accordance with the provisions of the EIA Notification, 2006. In view of the above, current proposal is no longer required, and the PP requested withdrawal of the proposal. Accordingly, the EAC decided to return the proposal.

The proposal was *returned* on above lines.

### 3.5.5. Recommendation of EAC

Returned in present form

Day 2 -30/01/2026

### 3.1. Agenda Item No 1:

#### 3.1.1. Details of the proposal

Assam/PSP-03 by ASSAM POWER DISTRIBUTION COMPANY LIMITED located at KARBI ANGLONG, ASSAM			
Proposal For		Fresh ToR	
Proposal No	File No	Submission Date	Activity Sub-Activity (Schedule Item)
<a href="#">IA/AS/RIV/564620/2026</a>	J-12011/03/2026-IA.(R)	07/01/2026	River Valley/Irrigation projects Standalone Pump Storage Projects (1(c))

#### 3.1.2. Project Salient Features

**47.7.1** The proposal is for grant of Terms of Reference (ToR) to the project Assam/PSP-03 Close loop pumped storage project (1500 MW) in an area of 484 Ha located at Village Lipgaon and Pankumar, Sub-District Diphu, District Karbi Anglong, Assam by M/s Assam Power Distribution Company Limited.

**47.7.2** The Project Proponent and the accredited Consultant M/s. R. S. Envirolink Technologies Pvt. Ltd., made a detailed presentation on the salient features of the project and informed that: Application for diversion of Forest Land has been submitted vide proposal No. FP/AS/HYD/IRRIG/556089/2025 which is already with MoEF&CC for appraisal and will be discussed in forthcoming FAC meeting on 22<sup>nd</sup> January 2026.

- TOR application was filed based on PFR prepared for the project showing 484 Ha of total land requirement – 431.25 Ha forest land, 52.75 Ha non-forest land.
- However, in the meantime, forest proposal was finalized with 484 ha of total land – 441.90 Ha forest land and 42.10 ha non forest land.

Parameters	Bajong Lekthe	Chapong Man Phangcho	Dharapur	Mizo Tero n	Tila Pa ra No. 1
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Households	61	23	56	44	24
Total Population	357	129	299	282	131
Male Population	186	68	157	140	71
Female Population	171	61	142	142	60
Scheduled Caste (SC) Pop.	1	0	0	0	0
Scheduled Tribe (ST) Pop.	356	129	0	282	0

(Source: Census 2011; Mission Antyodaya 2020)

The following criteria were used to evaluate and compare alternate schemes:

- Gross head & Dam length
- L/H ratio (length of water conductor to available head)
- Estimated submergence and forest impact
- Plant Capacity
- Wildlife aspect
- Proximity to water source for initial filling

Contour planning was undertaken using Infracore and potential combinations were simulated to identify:

- Ø Optimal reservoir surface areas and dam lengths
- Ø Reversible head availability (~220-225 m net head)
- Ø Storage volume suitable for 1500 MW x 6 hr generation

S. No.	Schemes Features	Scheme-1 (UR1+LR 1)	Scheme-2 (UR 2+LR2)	Scheme-3 (UR3+LR 3)
1.	Type of the project	Off Stream Closed Loop	Off Stream Closed Loop	Off Stream Closed Loop
2.	Nearest village	U/R - Bajong Lekhte Village, L/R - Chapong Man Phangcho Village	U/R - Longkham Bey Village, L/R - Longkham Bey Village	U/R - Phonglo Bathari Village L/R - Longkhor Village
3.	Upper Dam			
(a)	Type	GFRD	GFRD	GFRD
(b)	FRL (msl)	472 m	767 m	580 m
(c)	MDDL (msl)	447 m	744 m	530 m



(d)	Dam Top Length/height	763 m length	595 m length	3.29 km length
(e)	Dam Height	72 m	68 m	58 m
4.	Lower Dam			
(a)	FRL (msl)	240 m	518 m	375 m
(b)	MDDL (msl)	219 m	481 m	345 m
(d)	Dam Top Length	438 m	700 m	480 m
(e)	Dam Height	50 m	89m	45 m
5.	Gross Head	230.00	250.00	195.00
6.	Length of water Conductor System	1600 m	1450 m	1750 m
7.	L/H Ratio	L/H =6.90	L/H =5.80	L/H =8.97
8.	Wild Life Sanctuary	No wild life sanctuary in the vicinity.	Project boundary within the elephant reserve.	No wild life sanctuary in the vicinity.
9.	Project Capacity (MW)	~1500 MW	~1500 MW	~1200 MW
10.	Annual Energy Generation	3120.8	3120.8	2496.60
11.	Powerhouse Type	Underground	Underground	Underground
12.	Accessibility	Both upper and lower reservoir is approachable via foot tracks.	Both upper and lower reservoir is not approachable via village roads.	Both upper and lower reservoir is not approachable via village roads.
13.	Water Source	Jamuna River	Nearby Stream	Nearby Stream
14.	Forest land Requirement (Ha)	441.90 Ha	495 Ha	360 Ha
15.	Total Land Requirement (Ha)	484 Ha	495 Ha	360 Ha
16.	Conclusion	Low Dam height, outside elephant corridor	High Dam Height, within elephant corridor	Low Head, High L/H, requirement of surge

			orridor, higher land	e shaft, lesser capacity
Name of the Proposal		Assam/PSP-03 Closed loop Pumped Storage Project (1500 MW)		
Location (Including coordinates)		Lower Reservoir : Latitude: 26° 8'45.12"N Longitude: 93°12'3.83"E Upper Reservoir : Latitude: 26°10'8.93"N Longitude: 93°12'49.17"E		
Inter- state issue involved		No		
Seismic zone		Zone-V		
Category of the project			A	
Provisions				
Capacity / Cultural command area (CCA)			1500 MW	
Attracts the General Conditions (Yes/No)			No	
Additional information (if any)			Nil	
Powerhouse Installed Capacity		1500 MW		
Generation of Electricity Annually		3121 MU		
No. of Units		6 nos. (4 x 300 MW + 2 x 150)		
Additional information (if any)		Nil		
Cost of project		7273.23 Cr.		
Total area of Project		484.0 ha		
Height of Dam from River Bed (EL)		Lower Dam – 50.0 m Upper Dam –72.0 m		
Length of Tunnel/Channel		1600 m		
Details of Submergence area		352.0 ha		
Types of Waste and quantity of generation during construction/ Operation		Muck from excavation, solid waste from labour colony and construction waste		
E-Flows for the Project		Not Applicable, as this is Closed Loop Pu		

		mped Storage Project (PSP)	
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&C C) 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.		No	
No. of trees/saplings proposed in view of 'Ek Ped Maa Ke Naam' campaign		500	
No. of proposed disposal area/ (type of land- Forest/Pvt. land)		30 ha (Non-Forest Land)	
Muck Management Plan		Will be Provided in EIA/EMP report	
Monitoring mechanism for Muck Disposal		Will be Provided in EIA/EMP report	
Private Land		42.10 ha	
Government land		-	
Forest Land		441.90 ha Application for diversion of Forest Land has been submitted vide proposal No. FP/AS/HYD/IRRI G/556089/2025 which is already with MoEF&CC for appraisal and will be discussed in forthcoming FAC meeting on 22nd January 2026. • TOR application was filed based on PFR prepared for the project showing 484 Ha of total land requirement – 431.25 Ha forest land, 52.75 Ha non-forest land. • However, in the meantime, forest proposal was finalized with 484 ha of total land – 441.90 Ha forest land and 42.10 ha non forest land.	
Total Land		484.00 ha	
Submergence area/Reservoir area		352.00 ha	
Additional information (if any)		Nil	
Forest Land/ Protected Area/ Environmental Sensitivity Zone	Yes/No	Details of Certificate / letter/ Remarks	
Reserve Forest/Protected Forest Land	--		

nd		
National Park	----	
Wildlife Sanctuary	----	
Particulars	Details	
Details of consultant	<p>M/s. R S Envirolink Technologies Pvt. Ltd. (RS ET) (NABET Accredited Consultant Organization)</p> <p>Certificate No : NABET/EIA/25-28/RA0415</p> <p>Validity : August 15, 2028</p> <p>Contact Person : Mr. Ravinder Bhatia</p> <p>Name of Sector : River Valley and Hydroelectric Projects</p> <p>Category : A</p> <p>MoEF Schedule : I(C)</p> <p>Address : 403, Bestech Chambers, Block-B, Sushant Lok Phase I, Sector 43, Gurugram, Haryana - 122009</p> <p>E-mail : ravi@rstechnologies.co.in</p> <p>Land Line : (0124) 4295383</p> <p>Cellular : (+91) 9810136853</p>	
Project Benefits	<ul style="list-style-type: none"> <li>o Least expensive source of electricity, not requiring fossil fuel for generation</li> <li>o An emission-free renewable source</li> <li>o Balancing grid for demand driven variations</li> <li>o Balancing generation driven variations</li> <li>o Voltage support and grid stability</li> </ul> <p>Apart from this, proposed PSP will also benefit the local community by creating employment opportunities and will result in upliftment of livelihood and socio-economic conditions.</p>	
Status of other statutory clearances	<p>Forest Clearance - Online application seeking forest diversion for around 441.90 Ha after receipt of ToR Approval. Alongside, other statutory clearances (as applicable) from State as well as Central government will be obtained post completion of Detailed Project Report.</p>	

	Application for diversion of Forest Land has been submitted vide proposal No. FP/AS/HYD/IRRIG/556089/2025 which is already with MoEF&CC for appraisal and will be discussed in forthcoming FAC meeting on 22nd January 2026.
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### 3.1.3. Deliberations by the committee in previous meetings

N/A

### 3.1.4. Deliberations by the EAC in current meetings

#### 47.7.3 The EAC during deliberations noted the following:

- The Expert Appraisal Committee (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/EMP and Public hearing for Assam/PSP-03 Close loop pumped storage project (1500 MW) in an area of 484 Ha located at Village Lipgaon and Pankumar, Sub-District Diphu, District Karbi Anglong, Assam by M/s Assam Power Distribution 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.
- During the deliberations the committee noted that the Upper Reservoir and Lower Reservoir, both located on non-perennial nallah. Since both the reservoirs are located on non-perennial nallah, the committee opined that the project shall be categorized as an open-loop project rather than a closed-loop PSP.
- Further, it was observed that the lower dam lies on small stream with a catchment of 20.0sq.km is also rain fed having 6 months of dry period where rainfall is nil or very low. The EAC was of the view that the non-perennial small streams/nallahs play an important role in ecosystem stability through supporting unique, adapted communities and provide critical habitat, especially during dry periods. They are hotspots for biodiversity and vital for maintaining ecosystem services. Accordingly, the EAC advised to prepare suitable action plan for sustenance of the natural nallahs/streams after having detailed analysis of catchment yield and requirement of water for maintaining ecosystem services.
- The EAC noted that the total land requirement for the project is around 484.00 ha, out of which 42.10 ha is non-forest land and 441.90 ha is forest land. Diversion of forest land for non-forest purpose will be involved for construction of Project components. However, it was observed that the application for Stage-I Forest Clearance (FC) has been submitted vide proposal No. FP/AS/HYD/IRRIG/556089/2025 which is already with MoEF&CC for appraisal and will be discussed in forthcoming FAC meeting on 22nd January 2026.
- The EAC noted that the forest area falling within and around the project site comprises a very dense canopy, indicating a mature and ecologically sensitive forest ecosystem. Such dense canopy cover suggests the presence of significant biodiversity, including large trees, undergrowth, and potential habitats for wildlife species. The Committee emphasised the need for detailed survey of the study area to collect appropriate data on wild flora and fauna so that impact prediction can be done accurately considering the aspects like fragmentation of habitat, and disruption of ecological functions etc. Further, it was noted that the Marat Longri WLS is the nearest protected area and is about 10.5 Km from the project site. Kaziranga Karbi Anglong Elephant Reserve is at 1.4 Km from the project area. All the components are outside the



Elephant Reserve.

- The water requirement is for initial reservoir filling (~29.48 MCM) and annual evaporation makeup (~1.86 MCM). This water is proposed to be drawn from Jamuna River located about 12 Km from the lower reservoir, both of which lie entirely within Assam.

It has been observed that Memorandum of Understanding has been signed between Government of Assam and M/s Assam Power Distribution Company Limited for the development of Pumped Storage Power (PSP) projects on September 10, 2025.

### 3.1.5. Recommendation of EAC

Recommended

### 3.1.6. Details of Terms of Reference

#### 3.1.6.1. Specific

Miscellaneous:	
1.	Both capital and recurring expenditure under EMP shall be submitted.
2.	Pre-DPR Chapters viz., Hydrology, 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 submitted.
5.	Detailed plan to restore wider roads and convert them into narrow up to 10m after construction of the project.
6.	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.
7.	As per Ministry's OM dated 1 <sup>st</sup> 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 any 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.
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.	The muck dumping sites shall be located with a distance of 100 mts from HFL. The PP shall

	submit the detailed action plan for transportation of muck along with monitoring mechanism of movement of muck carrying trucks.
<b>Muck Management:</b>	
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.
<b>Socio-economic Study:</b>	
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. A comparative chart of issues raised by General Public during Public Hearing and commitments made by the Project Proponent will be prepared and submitted in the relevant chapter of EIA/EMP report.
3.	The EIA/EMP shall include a detailed socio-economic assessment of the tribal population in the project-affected area based on primary data and community consultations. A Tribal Development Plan, prepared in consultation with the District Administration and Tribal Welfare Department, shall be submitted along with the EIA report.
4.	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 O.M. dated 7 <sup>th</sup> October, 2014 for the project land to be acquired.
5.	Land acquired for the project shall be suitably compensated in accordance with the law of the land with the prevailing guidelines. Private land (if any) shall be acquired as per provisions of Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013. Budget earmarked for R&R, CSR shall not be included in the cost of EMP.
<b>Environmental Management and Biodiversity Conservation:</b>	
1.	The PP will submit 10 years water availability data certified by the CWC/State Water Resource Department for quantity of water that is received annually by the small stream on

	which upper and lower reservoir is proposed to be constructed.
2.	Detailed action plan for large scale plantation of native species of plant sapling within 10 km radius of the project shall be prepared in consultation with State Forest Department. The monitoring mechanism to ensure the survival of saplings shall be finalised in consultation with ICFRE.
3.	Explore the possibilities for reducing the Forest land requirement. The application for obtaining Stage I FC for 441.90 ha of forest land involved in the project shall be submitted within stipulated time.
4.	Muck disposal site and other components such as Township, site office, Stacking area and batching plant shall be located outside the forest area.
5.	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.
6.	Transportation Plan for transporting construction materials shall be submitted. Separate chapter for risk assessment of such transportation through/within proposed the Wildlife Sanctuary shall be included in the EIA report.
7.	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.
8.	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.
9.	Calculation and values of GHGs (CO <sub>2</sub> , CH <sub>4</sub> etc.) emissions during construction and during operation till the life of the project shall be estimated and submitted.
10.	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.
11.	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.
12.	Conducting site-specific ecological study emphasizing on riverine ecology viz. 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.
13.	Action plan for survival or diversion of the rivulets/stream, if any, leading to join river shall be submitted.
14.	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.

1 5.	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.
1 6.	Cumulative Impact of projects in the basin on carrying capacity and sustainability of Reservoir/ River /nala of catchment area due to tapping of water for filling reservoir shall be studied.
1 7.	Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP.
1 8.	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.
1 9.	Details of mineral zone, if any, in the study area, certified by Geological Survey of India or any other concerned Government Organization shall be submitted. The project area should not come up on any critical mineral zone, the same shall to be verified by GSI/NMDC.
2 0.	Any archaeological sites in the vicinity of the project, if any, then it shall be certified by ASI.

### 3.1.6.2. Standard

1( c)	<b>River Valley/Irrigation projects</b>
<b>Scope of EIA Study</b>	
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.
<b>Details of the Project and Site</b>	
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
<b>Description of Environment and Baseline Data</b>	
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.
<b>Details of the Methodology</b>	



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.
<b>Methodology for Collection of Biodiversity Data</b>	
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).
<b>Components of the EIA Study: Various aspects to be studied and provided in the EIA/EMP report are as follows:</b>	
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 (SO <sub>2</sub> ) and Oxides of Nitrogen (NO <sub>x</sub> ) 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

7.	
1 8.	History of the ground water table fluctuation in the study area.
1 9.	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, NO <sub>2</sub> , PO <sub>4</sub> , Cl, SO <sub>4</sub> , 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).
2 0.	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
2 1.	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.
2 2.	Run off, discharge, water availability for the project, sedimentation rate, etc.
2 3.	Basin characteristics
2 4.	Catastrophic events like cloud bursts and flash floods, if any, should be documented.
2 5.	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 km <sup>2</sup> year <sup>-1</sup> .
2 6.	Set up a G&D monitoring station and a few rain gauge stations in the catchment area for collecting data during the investigation.
2 7.	Flow series, 10 daily with 90%, 75% and 50% dependable years discharges.
2 8.	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.
2 9.	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.
3 0.	Sedimentation data available with CWC may be used to find out the loss in storage over the years.
3 1.	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.

3 2.	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.
3 3.	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.
3 4.	null
3 5.	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.
3 6.	Documentation of all plant species i.e. Angiosperm, Gymnosperm, Pteridophytes, Bryophytes (all groups).
3 7.	General vegetation profile and floral diversity covering all groups of flora including lichens and orchids. A species wise list may be provided.
3 8.	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.
3 9.	Existence of National park, Sanctuary, Biosphere Reserve etc in the study area, if any, should be detailed.
4 0.	Economically important species like medicinal plants, timber, fuel wood etc.
4 1.	Details of endemic species found in the project area.
4 2.	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.
4 3.	Cropping pattern and Horticultural Practices in the study area.
4 4.	null
4 5.	Fauna study and inventorisatation should be carried out for all groups of animals in the study area. Their present status alongwith Schedule of the species.
4 6.	Documentation of fauna plankton (phyto and zooplankton), periphyton, benthos and fish should be done and analysed.
4 7.	Information (authenticated) on Avi-fauna and wildlife in the study area.
4 8.	Status of avifauna their resident/ migratory/ passage migrants etc.



4 9.	Documentation of butterflies, if any, found in the area.
5 0.	Details of endemic species found in the project area.
5 1.	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.
5 2.	Existence of barriers and corridors, if any, for wild animals.
5 3.	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.
5 4.	Collection of primary data on agricultural activity, crop and their productivity and irrigation facilities components.
5 5.	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.
5 6.	Documentation of aquatic fauna like macro-invertebrates, zooplankton, phytoplanktons, benthos etc.
5 7.	Fish and fisheries, their migration and breeding grounds.
5 8.	Fish diversity composition and maximum length & weight of the measured populations to be studies for estimation of environmental flow.
5 9.	Conservation status of aquatic fauna.
6 0.	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.
6 1.	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.
6 2.	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.
6 3.	Collection of information on sensitive habitat of historical, cultural and religious and ecological importance.
6 4.	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.
6	Documentation of demographic, Ethnographic, Economic Structure and development profile of the area.



5.	
6 6.	Information on Agricultural Practices, Cultural and aesthetic sites, Infrastructure facilities etc.
6 7.	Information on the dependence of the local people on minor forest produce and their cattle grazing rights in the forest land.
6 8.	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.
6 9.	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.
<b>Impact Prediction and Mitigation Measures</b>	
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

1 5.	Quarrying operation and muck disposal
1 6.	Changes in land quality including effects of waste disposal
1 7.	River bank and their stability
1 8.	Impact due to submergence.
1 9.	Impact on forests, flora, fauna including wildlife, migratory avi-fauna, rare and endangered species, medicinal plants etc.
2 0.	Pressure on existing natural resources
2 1.	Deforestation and disturbance to wildlife, habitat fragmentation and wild animal's migratory corridors
2 2.	Compensatory afforestation-identification of suitable native tree species for compensatory afforestation and green belt.
2 3.	Impact on fish migration and habitat degradation due to decreased flow of water
2 4.	Impact on breeding and nesting grounds of animals and fish.
2 5.	Impact on local community including demographic profile.
2 6.	Impact on socio-economic status
2 7.	Impact on economic status.
2 8.	Impact on human health due to water / vector borne disease
2 9.	Impact on increase traffic
3 0.	Impact on Holy Places and Tourism
3 1.	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.
3	Positive and negative impacts likely to be accrued due to the project are listed.

2.	
<b>Environmental Management Plan</b>	
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

	<p>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.</p>
10.	<p>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.</p>
11.	<p>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. Detailed muck transportation plan delineating the path ways, number of trucks, quantity of muck to be transported along with monitoring mechanism using latest technology, shall be prepared.</p>
12.	<p>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.</p>
13.	<p>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&amp;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.</p>
14.	<p>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.</p>
15.	<p>Local Area Development Plan to be formulated in consultation with the Revenue Officials and Village Panchayats. Appropriate schemes shall be prepared under EMP for the Local Area Development Plan with sufficient financial provisions.</p>
16.	<p>Labour Management Plan for their Health and Safety.</p>
17.	<p>Sanitation and Solid waste management plan for domestic waste from colonies and labour camps etc.</p>
18.	<p>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.</p>
19.	<p>Environmental safeguards during construction activities including Road Construction.</p>
20.	<p>A summary of Cost Estimates for all the plans, cost for implementing all the Environmental Management Plans.</p>

2 1.	Water, Air and Noise Management Plans to be implemented during construction and post-construction periods.
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### 3.2. Agenda Item No 2:

#### 3.2.1. Details of the proposal

Assam/PSP04 by ASSAM POWER DISTRIBUTION COMPANY LIMITED located at DIMA HASAO, ASSAM			
Proposal For		Fresh ToR	
Proposal No	File No	Submission Date	Activity Sub-Activity (Schedule Item)
<a href="#">IA/AS/RIV/564308/2026</a>	J-12011/04/2026-IA.I(R)	06/01/2026	River Valley/Irrigation projects Standalone Pump Storage Projects (1(c))

#### 3.2.2. Project Salient Features

**47.8.1** The proposal is for grant of Terms of Reference (ToR) to the project Assam/PSP04 Close loop pumped storage project (1200 MW) in an area of 372 Ha located at Village Maibong, Sub-District Mahur and Umrangso, District Dima Hasao, Assam by M/s Assam Power Distribution Company Limited.

**47.8.2** The Project Proponent and the accredited Consultant M/s. R. S. Envirolink Technologies Pvt. Ltd., made a detailed presentation on the salient features of the project and informed that:

Parameters	Dijambra	Moti Hojai	Relai	Phonglo Bathari	Longkhor	Riam Bat hari
Households	32	30	8	17	25	17
Total Population	163	138	42	84	131	89
Male Population	70	65	22	39	65	47
Female Population	93	73	20	45	66	42
Scheduled Caste (SC)	0	1	0	0	2	5
Scheduled Tribe (ST)	163	137	42	84	129	84

(Source: Census 2011; Mission Antyodaya 2020)

The following criteria were used to evaluate and compare alternate schemes:

Contour planning was undertaken using Infracore and potential combinations were simulated to identify:

§ Optimal reservoir surface areas and dam lengths

§ Reversible head availability



§ Storage volume suitable for 1200 MW x 6 hr generation

The water conductor system has been aligned along the ridge/ least length in all schemes, optimizing tunnel and shaft lengths. Routing provides geological stability, avoids sharp bends, and ensures efficient hydraulic performance. Three alternative locations were identified for the study

S. No	Schemes Features	Scheme-1 (UR 1+LR1)	Scheme-2 (UR 1+LR2)	Scheme-3 (UR2+LR3)
1	Type of the project	Off Stream Closed Loop	Off Stream Closed Loop	Off Stream Closed Loop
2	Nearest village	U/R - Dijambra Village, L/R - Moti Hojai Village	U/R - Dijambra Village, L/R - Relai Village	U/R - Phonglo Bathari Village L/R - Longkhor Village
3	Upper Dam			
(a)	Type	GFRD	GFRD	GFRD
(b)	FRL (msl)	613 m	620 m	510 m
(c)	MDDL (msl)	586 m	580 m	405 m
(d)	Dam Top Length/height	333 m length	340 m length	500 m length
(e)	Dam Height	41m	48 m	100m
4	Lower Dam			
(a)	FRL (msl)	339 m	340 m	415 m
(b)	MDDL (msl)	316 m	324 m	370 m
(c)	Dam Top Length	696 m	715 m	450 m
(d)	Dam Height	52m	83m	80 m
(e)	Gross Head	300.00	300.00	95.00
5	Length of water Conductor System	1550 m	1800 m	1900 m
6	L/H Ratio	L/H =5.16	L/H =6.00	L/H =20
7	Wild Life Sanctua	No wild life sanc	No wild life sanctua	No wild life sanctua

	ry	tuary in the vicini ty.	ry in the vicinity.	ry in the vicinity.
8	Project Capacity (MW)	~1200 MW	~1200 MW	~600 MW
9	Annual Energy Generation (MU)	2496.6	2496.6	1248.3
10	Powerhouse Type	Surface (Pit type)	Underground	Underground
11	Accessibility	Both upper and lower reservoir is approachable via village roads.	Both upper and lower reservoir is approachable via village roads.	Both upper and lower reservoir is approachable via village roads
12	Water Source	Delen Nadi	Dijam Nadi	Mahur River
13	Forest land Requirement (Ha)	0 Ha	0 Ha	0 Ha
14	Total Land Requirement (Ha)	372 Ha	390 Ha	195 Ha
15	Conclusion	Low L/H, Optimum Plant capacity, Low Dam height, lesser construction period	High L/H, High Dam Height, Higher Land Requirement	Low Head, High L/H, High dam Height
16	Result	Selected	Rejected	Rejected
Name of the Proposal		Assam/PSP-03 Closed loop Pumped Storage Project (1200 MW)		
Location (Including coordinates)		Lower Reservoir : Latitude: 25°15'47.45"N Longitude: 93° 5'6.00"E Upper Reservoir : Latitude: 25°14'51.77"N Longitude: 93° 4'28.80"E		
Inter- state issue involved		No		
Seismic zone		Zone V		
Category of the project		A		
Provisions				

Capacity / Cultural command area (CC A)	1200 MW
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	Nil
Powerhouse Installed Capacity	1200 MW
Generation of Electricity Annually	2496.6 MU
No. of Units	5 nos. (3 x 300 MW + 2 x 150 MW))
Additional information (if any)	Nil
Cost of project	5649.51 Cr.
Total area of Project	372.0 ha
Height of Dam from River Bed (EL)	Lower Dam – 52.0 m Upper Dam – 41.0m
Length of Tunnel/Channel	1550 m
Details of Submergence area	264.20 ha
Types of Waste and quantity of generation during construction/ Operation	Muck from excavation, solid waste from labour colony and construction waste
E-Flows for the Project	Not Applicable, as this is Closed Loop Pumped Storage Project (PSP)
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.	No
No. of trees/saplings proposed in view of 'Ek Ped Maa Ke Naam' campaign	500
No. of proposed disposal area/ (type of)	30 ha (Non-Forest Land)

f land-Forest/Pvt. land)		
Muck Management Plan	Will be Provided in EIA/EMP report	
Monitoring mechanism for Muck Disposal	Will be Provided in EIA/EMP report	
Private Land	-	
Government land	372.0 ha	
Forest Land	0.0 ha	
Total Land	372.0 ha	
Submergence area/Reservoir area	264.20 ha	
Additional information (if any)	Nil	
Forest Land/ Protected Area/ Environmental Sensitivity Zone	Yes/No	Details of Certificate / letter/Remarks
Reserve Forest/Protected Forest Land	--	
National Park	--	
Wildlife Sanctuary	--	
Particulars	Details	
Details of consultant	M/s. R S Envirolink Technologies Pvt. Ltd. (RSET) (NABET Accredited Consultant Organization) Certificate No : NABET/EIA/25-28/RA0415 Validity : August 15, 2028 Contact Person : Mr. Ravinder Bhatia Name of Sector : River Valley and Hydroelectric Projects Category : A MoEF Schedule : I(C) Address : 403, Bestech Chambers, Block-B, Sushant Lok Phase I, Sector 43, Gurugram, Haryana - 122009 E-mail : <a href="mailto:ravi@rstechnologies.co.in">ravi@rstechnologies.co.in</a> Land Line : (0124) 4295383 Cellular : (+91) 9810136853	

Project Benefits	Apart from this, proposed PSP will also benefit the local community by creating employment opportunities and will result in upliftment of livelihood and socio-economic conditions.
Status of other statutory clearances	Statutory clearances (as applicable) from State as well as Central government will be obtained post completion of Detailed Project Report. No forest land will be diverted for the project.
R&R details	Details shall be evaluated during EIA/EMP Studies
Additional detail (If any)	Nil

### 3.2.3. Deliberations by the committee in previous meetings

N/A
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### 3.2.4. Deliberations by the EAC in current meetings

#### 47.8.3 The EAC during deliberations noted the following:

- The Expert Appraisal Committee (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/EMP and Public hearing for Assam/PSP04 Close loop pumped storage project (1200 MW) in an area of 372 Ha located at Village Maibong, Sub-District Mahur and Umrangso, District Dima Hasao, Assam by M/s Assam Power Distribution 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.
- During the deliberations the committee noted that the Upper Reservoir and Lower Reservoir, both located on non-perennial nallah. Since both the reservoirs are located on non-perennial nallah, the committee opined that the project shall be categorized as an open-loop project rather than a closed-loop PSP.
- The EAC was of the view that the non-perennial small streams/nallahs play an important role in ecosystem stability through supporting unique, adapted communities and provide critical habitat, especially during dry periods. They are hotspots for biodiversity and vital for maintaining ecosystem services. Accordingly, the EAC advised to prepare suitable action plan for sustenance of the natural nallahs/streams after having detailed analysis of catchment yield and requirement of water for maintaining ecosystem services.
- The EAC noted that the total land required for the construction of various components and related works for Assam-04 PSP is estimated to be around 372.0 ha revenue land with no forest land. To ascertain the status of land, site verification and tree enumeration was carried out. DFO Dima Hasao Forest Division has verified vide its letter dated 4/12/2025 that the land under consideration is Community Owned Council Khas Land as per revenue record, also verified by the Settlement & Revenue Department vide their letter dated 4/12/2025. The project is located around 28.0 km from Barail Wildlife Sanctuary.
- The EAC noted that although the land area required for the project is Community Owned, however, through .kml and video shown by the PP during the meeting. Seems as a deemed forest area which comprises of very dense canopy, indicating a mature and ecologically



sensitive forest ecosystem. Such dense canopy cover suggests the presence of significant biodiversity, including large trees, undergrowth, and potential habitats for wildlife species. The Committee emphasized the need for detailed survey of the study area to collect appropriate data on wild flora and fauna so that impact prediction can be done accurately considering the aspects like fragmentation of habitat, and disruption of ecological functions etc.

The water requirement is for initial reservoir filling (~13.32 MCM) and annual evaporation makeup (~0.82 MCM). This water is proposed to be drawn from the Delen Nadi located about 2.50 km from the upper reservoir.

It has been observed that Memorandum of Understanding has been signed between Government of Assam and M/s Assam Power Distribution Company Limited for the development of Pumped Storage Power (PSP) projects on September 10, 2025.

### 3.2.5. Recommendation of EAC

Recommended

### 3.2.6. Details of Terms of Reference

#### 3.2.6.1. Specific

Miscellaneous:	
1.	Both capital and recurring expenditure under EMP shall be submitted.
2.	Pre-DPR Chapters viz., Hydrology, 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 submitted.
5.	Detailed plan to restore wider roads and convert them into narrow up to 10m after construction of the project.
6.	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.
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.	The muck dumping sites shall be located with a distance of 100 mts from HFL. The PP shall submit the detailed action plan for transportation of muck along with monitoring mechanism of movement of muck carrying trucks.

<b>Muck Management:</b>	
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.
<b>Socio-economic Study:</b>	
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. A comparative chart of issues raised by General Public during Public Hearing and commitments made by the Project Proponent will be prepared and submitted in the relevant chapter of EIA/EMP report.
3.	The EIA/EMP shall include a detailed socio-economic assessment of the tribal population in the project-affected area based on primary data and community consultations. A Tribal Development Plan, prepared in consultation with the District Administration and Tribal Welfare Department, shall be submitted along with the EIA report.
4.	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 O.M. dated 7 <sup>th</sup> October, 2014 for the project land to be acquired.
5.	Land acquired for the project shall be suitably compensated in accordance with the law of the land with the prevailing guidelines. Private land (if any) shall be acquired as per provisions of Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013. Budget earmarked for R&R, CSR shall not be included in the cost of EMP.
<b>Environmental Management and Biodiversity Conservation:</b>	
1.	The PP will submit 10 years water availability data certified by the CWC/State Water Resource Department for quantity of water that is received annually by the small stream on which upper and lower reservoir is proposed to be constructed.
2.	Detailed action plan for large scale plantation of native species of plant sapling within 10 km

	radius of the project shall be prepared in consultation with State Forest Department. The monitoring mechanism to ensure the survival of saplings shall be finalised in consultation with ICFRE.
3.	Muck disposal site and other components such as Township, site office, Stacking area and batching plant shall be located outside the forest area.
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.	Transportation Plan for transporting construction materials shall be submitted. Separate chapter for risk assessment of such transportation through/within proposed the Wildlife Sanctuary shall be included in the EIA report.
6.	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.
7.	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.
8.	Calculation and values of GHGs (CO <sub>2</sub> , CH <sub>4</sub> etc.) emissions during construction and during operation till the life of the project shall be estimated and submitted.
9.	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.
10.	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.
11.	Conducting site-specific ecological study emphasizing on riverine ecology viz. 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.
12.	Cumulative Impact of projects in the basin on carrying capacity and sustainability of Reservoir/ River /nala of catchment area due to tapping of water for filling reservoir shall be studied
13.	Action plan for survival or diversion of the rivulets/stream, if any, leading to join river shall be submitted.
14.	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
15.	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.
1 6.	Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP.
1 7.	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.
1 8.	Details of mineral zone, if any, in the study area, certified by Geological Survey of India or any other concerned Government Organization shall be submitted. The project area should not come up on any critical mineral zone, the same shall to be verified by GSI/NMDC.
1 9.	Any archaeological sites in the vicinity of the project, if any, then it shall be certified by ASI.

### 3.2.6.2. Standard

1( c)	<b>River Valley/Irrigation projects</b>
<b>Scope of EIA Study</b>	
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.
<b>Details of the Project and Site</b>	
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
<b>Description of Environment and Baseline Data</b>	
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.
<b>Details of the Methodology</b>	
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.
<b>Methodology for Collection of Biodiversity Data</b>	



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.
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).
<b>Components of the EIA Study: Various aspects to be studied and provided in the EIA/EMP report are as follows:</b>	
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 (SO <sub>2</sub> ) and Oxides of Nitrogen (NO <sub>x</sub> ) 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, NO <sub>2</sub> , PO <sub>4</sub> , Cl, SO <sub>4</sub> , 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).
2 0.	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
2 1.	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.
2 2.	Run off, discharge, water availability for the project, sedimentation rate, etc.
2 3.	Basin characteristics
2 4.	Catastrophic events like cloud bursts and flash floods, if any, should be documented.
2 5.	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 km <sup>2</sup> year <sup>-1</sup> .
2 6.	Set up a G&D monitoring station and a few rain gauge stations in the catchment area for collecting data during the investigation.
2 7.	Flow series, 10 daily with 90%, 75% and 50% dependable years discharges.
2 8.	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.
2 9.	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.
3 0.	Sedimentation data available with CWC may be used to find out the loss in storage over the years.
3 1.	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.
3 2.	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.
3 3.	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.
3 4.	null

3 5.	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.
3 6.	Documentation of all plant species i.e. Angiosperm, Gymnosperm, Pteridophytes, Bryophytes (all groups).
3 7.	General vegetation profile and floral diversity covering all groups of flora including lichens and orchids. A species wise list may be provided.
3 8.	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.
3 9.	Existence of National park, Sanctuary, Biosphere Reserve etc in the study area, if any, should be detailed.
4 0.	Economically important species like medicinal plants, timber, fuel wood etc.
4 1.	Details of endemic species found in the project area.
4 2.	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.
4 3.	Cropping pattern and Horticultural Practices in the study area.
4 4.	null
4 5.	Fauna study and inventorisatation should be carried out for all groups of animals in the study area. Their present status alongwith Schedule of the species.
4 6.	Documentation of fauna plankton (phyto and zooplankton), periphyton, benthos and fish should be done and analysed.
4 7.	Information (authenticated) on Avi-fauna and wildlife in the study area.
4 8.	Status of avifauna their resident/ migratory/ passage migrants etc.
4 9.	Documentation of butterflies, if any, found in the area.
5 0.	Details of endemic species found in the project area.
5 1.	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.
5 2.	Existence of barriers and corridors, if any, for wild animals.
5 3.	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.
5 4.	Collection of primary data on agricultural activity, crop and their productivity and irrigation facilities components.
5 5.	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.
5 6.	Documentation of aquatic fauna like macro-invertebrates, zooplankton, phytoplanktons, benthos etc.
5 7.	Fish and fisheries, their migration and breeding grounds.
5 8.	Fish diversity composition and maximum length & weight of the measured populations to be studies for estimation of environmental flow.
5 9.	Conservation status of aquatic fauna.
6 0.	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.
6 1.	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.
6 2.	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.
6 3.	Collection of information on sensitive habitat of historical, cultural and religious and ecological importance.
6 4.	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.
6 5.	Documentation of demographic, Ethnographic, Economic Structure and development profile of the area.
6 6.	Information on Agricultural Practices, Cultural and aesthetic sites, Infrastructure facilities etc.
6 7.	Information on the dependence of the local people on minor forest produce and their cattle grazing rights in the forest land.



6 8.	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.
6 9.	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.
<b>Impact Prediction and Mitigation Measures</b>	
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.
1 0.	Water pollution due to disposal of sewage
1 1.	Water pollution from labour colonies/ camps and washing equipment.
1 2.	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.
1 3.	Changes in land use / land cover and drainage pattern
1 4.	Immigration of labour population
1 5.	Quarrying operation and muck disposal
1 6.	Changes in land quality including effects of waste disposal
1	River bank and their stability

7.	
1 8.	Impact due to submergence.
1 9.	Impact on forests, flora, fauna including wildlife, migratory avi-fauna, rare and endangered species, medicinal plants etc.
2 0.	Pressure on existing natural resources
2 1.	Deforestation and disturbance to wildlife, habitat fragmentation and wild animal's migratory corridors
2 2.	Compensatory afforestation-identification of suitable native tree species for compensatory afforestation and green belt.
2 3.	Impact on fish migration and habitat degradation due to decreased flow of water
2 4.	Impact on breeding and nesting grounds of animals and fish.
2 5.	Impact on local community including demographic profile.
2 6.	Impact on socio-economic status
2 7.	Impact on economic status.
2 8.	Impact on human health due to water / vector borne disease
2 9.	Impact on increase traffic
3 0.	Impact on Holy Places and Tourism
3 1.	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.
3 2.	Positive and negative impacts likely to be accrued due to the project are listed.
<b>Environmental Management Plan</b>	
1.	null
2.	Biodiversity and Wildlife Conservation and Management Plan for the conservation and preservation of

	<p>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.</p>
3.	<p>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.</p>
4.	<p>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.</p>
5.	<p>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.</p>
6.	<p>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.</p>
7.	<p>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.</p>
8.	<p>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.</p>
9.	<p>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.</p>
10.	<p>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</p>

	and financial schedule. Layout map showing the landslide/landslip zones shall be prepared and appended in the chapter.
1 1.	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. Detailed muck transportation plan delineating the path ways, number of trucks, quantity of muck to be transported along with monitoring mechanism using latest technology, shall be prepared.
1 2.	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.
1 3.	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.
1 4.	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.
1 5.	Local Area Development Plan to be formulated in consultation with the Revenue Officials and Village Panchayats. Appropriate schemes shall be prepared under EMP for the Local Area Development Plan with sufficient financial provisions.
1 6.	Labour Management Plan for their Health and Safety.
1 7.	Sanitation and Solid waste management plan for domestic waste from colonies and labour camps etc.
1 8.	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.
1 9.	Environmental safeguards during construction activities including Road Construction.
2 0.	A summary of Cost Estimates for all the plans, cost for implementing all the Environmental Management Plans.
2 1.	Water, Air and Noise Management Plans to be implemented during construction and post-construction periods.

### 3.3. Agenda Item No 3:

### 3.3.1. Details of the proposal

Kutulisinga Irrigation Project by CHIEF ENGINEER PROJECT PLANNING FORMULATION AND INVESTIGATION located at ANUGUL, ODISHA			
Proposal For		Fresh ToR	
Proposal No	File No	Submission Date	Activity Sub-Activity (Schedule Item)
<a href="#">IA/OR/RIV/505420/2025</a>	J-12011/05/2026-IA.I(R)	31/12/2025	River Valley/Irrigation projects Irrigation Projects (1(c))

### 3.3.2. Project Salient Features

**47.9.1** The proposal is for grant of Terms of Reference (ToR) to the project Kutulisinga Irrigation Project (CCA: 2540 ha) in an area of 179.554 Ha located at Village Kutulusinga, Sub-District Thakurgarh, District Anugul, Odisha by M/s Chief Engineer Project Planning Formulation And Investigation.

**47.9.2** The Project Proponent and the accredited Consultant M/s. R. S. Envirolink Technologies Pvt. Ltd., made a detailed presentation on the salient features of the project and informed that:

Total number of villages & towns			107	
Number of Households			10744	
Total Population			48687	
Total number of Males			24419	
Total number of Females			24268	
Male/ Female (Sex) ratio			1006.22	
Percentage of S.C population			12.18	
Percentage of S.T Population			38.11	
Percentage of Literates			62.40	
Drinking water demand		0.96 MCM annually		
Irrigation requirement		227.88 MCM annually		



Total		228.84 MCM annually
Name of the Proposal	Kutulisinga Irrigation Project (CCA: 2540 ha)	
Location (Including coordinates)	Village-Kutulisinga, Block-Athmallick, District- Angul, Odisha  <b>Coordinates:</b> Latitude: 20° 48' 20" N Longitude: 84° 41' 30" E	
Inter- state issue involved	NA	
Seismic zone	II	
Category of the project	A, as Satkosia wildlife sanctuary is located at a distance of 4.779 km from the project site.	
Provisions	<p>Kutulisinga irrigation project is a reservoir project proposed in Mahanadi basin on Badajora nallah (K utuli nallah) a tributary to river Sindhohijhar. The Project is featured with construction of 323 m long and 39.15 m height earth Dam. 33 m long concrete Spillway having 3 nos. of ogee crest gates, size: 11 m x 8 m; two nos of Head regulators at either side of Dam to lead the reservoir water through two main canal systems (LMC-11.344 km &amp; RMC-13.04 km) for covering a culturable command area (CCA) of 2540 ha.</p> <p>Provision for Drinking Water supply of 8 Ham per month for a population of 25874 in the ayacut.</p>	
Capacity / Cultural command area (CCA)	2540 ha	
Attracts the General Conditions (Yes/No)	Yes. Satkosia wildlife sanctuary is located at a distance of 4.779 km from the project site.	
Additional information (if any)	NA	
Cost of project	15487 Lakhs	
Total area of Project	179.554 Ha	
Height of Dam from River Bed (EL)	39.15 m	
Length of Tunnel/Channel	33 m	
Details of Submergence area	124.585 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 3000 MT.	
E-Flows for the Project		
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.	
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		
Monitoring mechanism for Muck Disposal	Muck disposal at designated place will be monitored periodically by the project authority.	
Private Land	11.104 ha	
Government land/Forest Land	14.512 ha/ 153.938 ha	
Submergence area/Reservoir area	124.585 ha	
Land required for project components	179.554 ha	
Additional information (if any)	NA	
<b>Forest Land/ Protected Area/ Environmental Sensitivity Zone</b>	<b>Yes/No</b>	<b>Details of Certificate / letter/Remarks</b>
Reserve Forest/Protected Forest Land	Yes	Dantarikhola RF-8.00 km Hatidhara RF-4.17 km
National Park	No	No National Park within 10 km radius of the project

Wildlife Sanctuary	Yes	Satkosia Wildlife Sanctuary (4.779 Km)
Particulars	Letter no. and date	
Certified EC compliance report (if applicable)	Not Applicable, Present proposal is Fresh application Status of Stage-I FC Stage I approval	
Status of Stage-I FC	<p>Stage I approval for the diversion of 153.938 ha Forest land was submitted to MoEF&amp;CC vide Proposal No. FP/OR/IRRIG/77864/2020, Date 14.08.2025.</p> <p>The MoEF has raised observations on Dated- 10/08/2025 addressed to the Addl. Chief Secretary (Forest) Govt. of Odisha. The Compliance of the observations raised by the MoEF &amp;CC are being prepared &amp; it is likely to be submitted to the DFO Athamallik by end of January 2026.</p>	
Additional detail (If any)	NA	
Is FRA (2006) done for FC-I	No	
Particulars	Details	
Details of consultant	M/s Centre for Envotech & Management Consultancy Pvt. Ltd. Certificate No. NABET/EIA/2528/RA 0392, dated 10.04.2025 valid up to 03.03.2028	
Project Benefits	The project benefits considered are	
Status of other statutory clearances	The Detailed Project Report has been accepted by CWC vide IR No 722 Dated-31/12/2012, with an instruction to re-submit the updated latest cost, BC Ratio, IRR and FRR of the project along with all statutory clearances to put up to TAC for approval.	
R&R details	No habitations are coming under submergence, therefore, there is no necessity for clearance of Resettlement and Rehabilitation.	
Additional detail (If any)	NA	

### 3.3.3. Deliberations by the committee in previous meetings

N/A
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### 3.3.4. Deliberations by the EAC in current meetings

#### 47.9.4 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 Kutulisinga Irrigation Project (CCA: 2540 ha) in an area of 179.554 Ha located at Village Kutulisinga, Sub-District Thakurgarh, District Anugul, Odisha by M/s Chief Engineer Project Planning Formulation And Investigation.
- The EAC noted that the present project proposal comes under “B1” category; as per the provisions of the EIA Notification, 2006, as amended as Culturable Command Area (CCA: 2540 ha. However, the project is falling within Eco sensitive boundary of Satkosia Wildlife Sanctuary and wildlife sanctuary is at a distance of 4.779 km from the project boundary.
- The EAC observed that the proposed Kutulisinga Irrigation Project is to be constructed across the Kutuli Nallah, a tributary of the River Sindhuli Jhar, near Village Kutulisinga in Athmallik Block of Angul District, Odisha. The project proposes irrigation for 3,790 ha of Gross Command Area (GCA) and 2,540 ha of Culturable Command Area (CCA), with an annual irrigation potential of 3,173 ha at 125% intensity. As per the cropping pattern prepared by the State Agriculture Department, the Kharif crop coverage will be 2,158 ha and the Rabi crop coverage will be 1,015 ha. The irrigation system comprises two main canals, namely the Left Main Canal and the Right Main Canal, with lengths of 11.344 km and 13.04 km respectively, off-taking from the head regulator located on the left and right sides of the dam axis. Further, the distribution system includes 33 minors and sub-minors, in addition to 14 direct outlets from the main canals.
- The Committee observed that in the total land required for the total land requirement for the project is 179.554 of which 153.938 is forest land while 11.104 ha is non-forest land. It was further observed that Stage- I Forest Clearance for 153.938 Ha has been submitted by the PP vide proposal no. FP/OR/IRRIG/77864/2020 dated 08/12/2020. Further it has been informed by the P during the meeting that the MoEF has raised observations on 10/08/2025 addressed to the Addl. Chief Secretary (Forest) Govt. of Odisha. The Compliance of the observations raised by the MoEF & CC are being prepared & it is likely to be submitted to the DFO Athamallik by end of January 2026.

The EAC also noted that the proposed project falls within the Eco-Sensitive Zone of the Satkosia Wildlife Sanctuary, and that the sanctuary is located at a distance of approximately 4.779 km from the project boundary. Therefore, it is necessary for the project to obtain wildlife clearance from the National Board for Wildlife (NBWL).

#### 3.3.5. Recommendation of EAC

Recommended

#### 3.3.6. Details of Terms of Reference

##### 3.3.6.1. Specific

Miscellaneous:	
1.	Pre-DPR Chapters viz. Hydrology, Layout Map Studies duly approved by CWC 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.
<b>Muck Management:</b>	
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.
<b>Socio-economic Study:</b>	
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 30 <sup>th</sup> 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.	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 7 <sup>th</sup> October, 2014 for the project land to be acquired.
8.	Land acquired for the project shall be suitably compensated in accordance with the law of the land with the prevailing guidelines. Private land (if any) shall be acquired as per provisions of Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013. Budget earmarked for R&R, CSR shall not be included in the cost of EMP.
<b>Environmental Management and Biodiversity Conservation:</b>	
1.	PP shall obtain NBWL clearance in view of project falls within the Eco-Sensitive Zone of the Satkosia Wildlife Sanctuary.
2.	A detailed wildlife conservation plan for Schedule –I species along with mitigation measures for minimizing the human–animal conflict, duly approved by the Chief Wildlife Warden, be submitted. NBWL recommendations shall be submitted along with EIA/EMP report.
3.	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 irrigation in study area (10 km from periphery of Project components).
4.	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.
5.	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.
6.	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.
7.	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.
8.	Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP.
9.	Muck disposal site and other components such as Township, site office, Stacking area and batching plant shall be located outside the forest area.
10.	A detailed action plan for large scale plantation of native species of plant sapling within 10 km radius of the project shall be prepared in consultation with State Forest Department. The monitoring mechanism to ensure the survival of saplings shall be finalized in consultation with ICFRE.
1	Certificate and certified map from Chief Wildlife Warden shall be submitted mentioning that

1.	project boundary is not falling in any Ecological Sensitive Area, Wildlife Sanctuary/Tiger/elephant corridor/Critically polluted area within 10 km of Project site.
1 2.	i. Transportation Plan for transporting construction materials shall be submitted. Separate chapter for risk assessment of such transportation through/within proposed the Wildlife Sanctuary shall be included in the EIA report, if any.
1 3.	Calculation and values of GHGs (CO <sub>2</sub> , CH <sub>4</sub> etc.) emissions during construction and during operation till the life of the project shall be estimated and submitted.
1 4.	The longitudinal connectivity/Free flowing sketch be provided in the EIA/EMP report.
1 5.	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.
1 6.	Conducting site-specific ecological study emphasizing on riverine ecology viz. 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.
1 7.	Details of mineral zone, if any, in the study area, certified by Geological Survey of India or any other concerned Government Organization shall be submitted. The project area should not come up on any critical mineral zone, the same shall to be verified by GSI/NMDC.
1 8.	Any archaeological sites in the vicinity of the project, if any, then it shall be certified by ASI.
1 9.	PP shall prepare detailed plan for Plantation of saplings under the tree plantation campaign "Ek Ped Ma Ke Naam".

### 3.3.6.2. Standard

1(c)	<b>River Valley/Irrigation projects</b>
<b>Scope of EIA Study</b>	
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.
<b>Details of the Project and Site</b>	
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
<b>Description of Environment and Baseline Data</b>	
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).
<b>Components of the EIA Study: Various aspects to be studied and provided in the EIA/EMP report are as follows:</b>	
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 (SO <sub>2</sub> ) and Oxides of Nitrogen (NO <sub>x</sub> ) 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



1 7.	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.
1 8.	New configuration map to be given in the EIA Report
1 9.	null
2 0.	History of the ground water table fluctuation in the study area.
2 1.	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, NO <sub>3</sub> , PO <sub>4</sub> , Cl, So <sub>4</sub> , 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 <sub>6</sub> , Total Cr, Cu, Zn, Fe) at minimum 10 Locations, however, the sampling numbers should be increased depending on the command area.
2 2.	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.
2 3.	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.
2 4.	Run off, discharge, water availability for the project, sedimentation rate, etc.
2 5.	Basin characteristics
2 6.	Catastrophic events like cloud bursts and flash floods, if any, should be documented.
2 7.	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 km <sup>2</sup> year <sup>-1</sup> .
2 8.	Set up a G&D monitoring station and a few rain gauge stations in the catchment area for collecting data during the investigation.
2 9.	Flow series, 10 daily with 90%, 75% and 50% dependable years discharges.
3 0.	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.
3 1.	A site specific study on minimum environment flow should be carried
3	null

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3 3.	null
3 4.	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.
3 5.	General vegetation profile and floral diversity covering all groups of flora including Bryophytes, Pteridophytes, Lichens and Orchids. A species wise list may be provided.
3 6.	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.
3 7.	Existence of National Park, Sanctuary, Biosphere Reserve etc in the study area, if any, should be detailed.
3 8.	Economically important species like medicinal plants, timber, fuel wood etc.
3 9.	Details of endemic species found in the project area.
4 0.	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.
4 1.	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.
4 2.	Information (authenticated) on Avi-fauna and wild life in the study area.
4 3.	Status of avifauna their resident/migratory/ passage migrants etc.
4 4.	Documentation of butterflies, if any, found in the area.
4 5.	Details of endemic species found in the project area.
4 6.	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.
4 7.	Existence of barriers and corridors, if any, for wild animals.
4 8.	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.

4 9.	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
5 0.	Documentation of aquatic fauna like macro-invertebrates, zooplankton, phytoplanktons, benthos etc.
5 1.	Fish and fisheries, their migration and breeding grounds.
5 2.	Fish diversity, composition and maximum length & weight of the measured populations to be studied for estimation of environmental flow.
5 3.	Conservation status of aquatic fauna.
5 4.	Cropping pattern and Horticultural practices in the study area.
5 5.	Collection of primary data on agricultural activity, crop and their productivity and irrigation facilities component.
5 6.	Component of pressurized/drip irrigation and micro irrigation.
5 7.	Details of Conjunctive use of water for irrigation
5 8.	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.
5 9.	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.
6 0.	Collection of information on sensitive habitat of historical, cultural and religious and ecological importance.
6 1.	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.
6 2.	Documentation of Demographic, Ethnographic, Economic structure and development profile of the area
6 3.	Information on Agricultural practices, Cultural and aesthetic sites, Infrastructure facilities etc
6 4.	Information on the dependence of the local people on minor forest produce and their cattle grazing rights in the forest land.
6 5.	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.

6 6.	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.
<b>Impact Prediction and Mitigation Measures</b>	
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
17.	River bank and their stability
18.	Impact due to submergence

1 9.	Impact on forests, flora, fauna including wildlife, migratory avi-fauna, rare and endangered species, medicinal plants etc.
2 0.	Pressure on existing natural resources
2 1.	Deforestation and disturbance to wildlife, habitat fragmentation and wild animal's migratory corridors
2 2.	Compensatory afforestation-Identification of suitable native tree species for compensatory afforestation & green belt.
2 3.	Impact on fish migration and habitat degradation due to decreased flow of water
2 4.	Impact on breeding and nesting grounds of animal
2 5.	Impact on local community including demographic profile.
2 6.	Impact on socio-economic status.
2 7.	Impact on economic status.
2 8.	Impact on human health due to water / vector borne disease.
2 9.	Impact on increases traffic.
3 0.	Impact on Holy Places and Tourism.
3 1.	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.
3 2.	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.
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#### 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
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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.

1 4.	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.
1 5.	Mitigating measures for impacts due to Blasting on the structures in the vicinity.
1 6.	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.
1 7.	Public Health Delivery Plan including the provisions for drinking water facility for the local community.
1 8.	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.
1 9.	Labour Management Plan for their Health and Safety.
2 0.	Sanitation and Solid Waste Management Plan for domestic waste from colonies and labour camps etc.
2 1.	Plan for Land Restoration and Landscaping of project sites.
2 2.	Energy Conservation Measures.
2 3.	Environmental safeguards during construction activities including Road Construction.
2 4.	Ground Water Management Plan.
2 5.	Water and Air Quality & Noise Management Plans to be implemented during construction and post-construction periods.

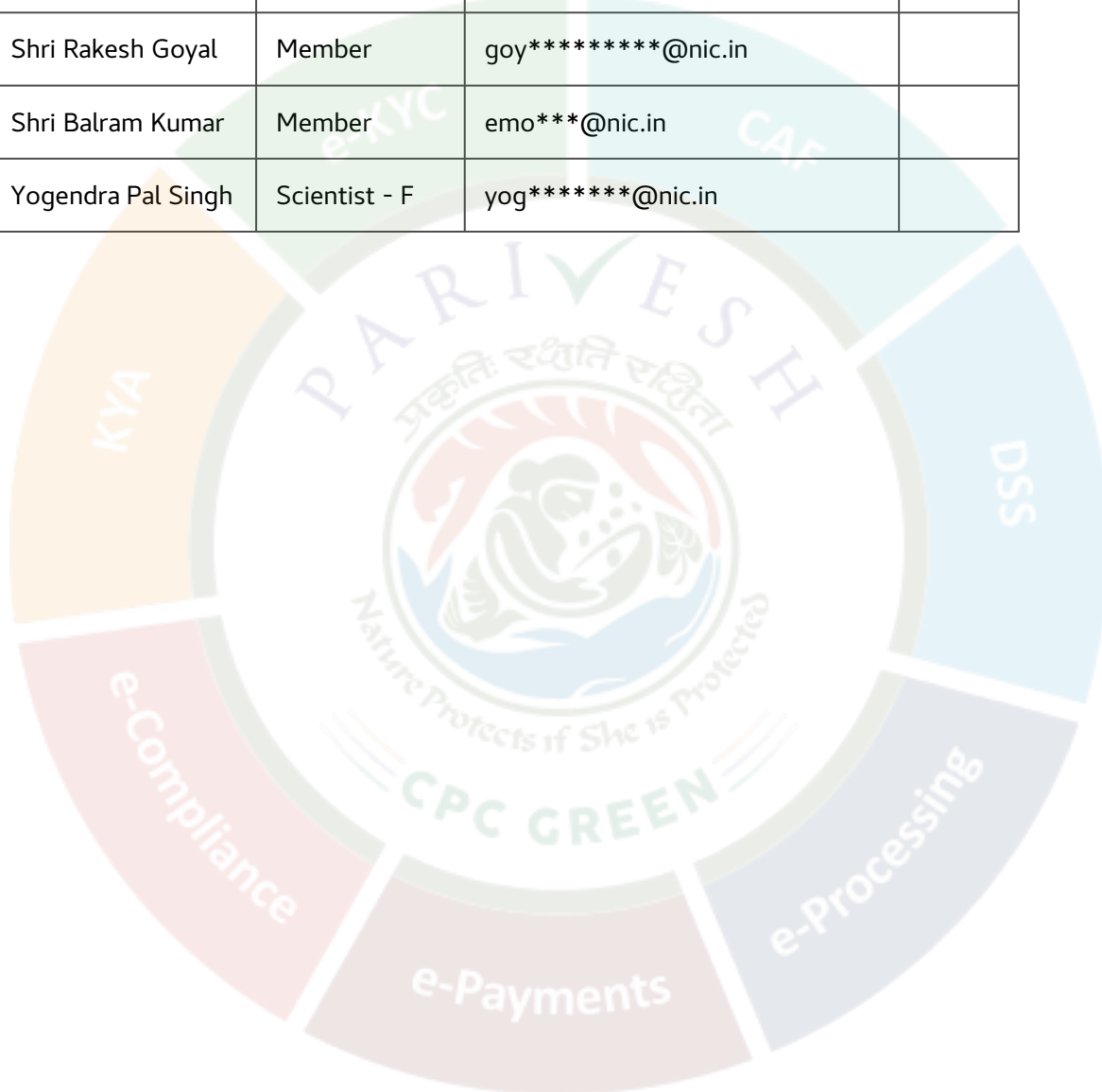
#### 4. Any Other Item(s)

N/A
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#### 5. List of Attendees

Sr. No.	Name	Designation	Email ID	Remarks
1	Prof G J Chakrapani	Chairman, EAC	cha*****@gmail.com	
2	Shri Ajay Kumar Lal	Member (EAC)	akl*****@gmail.com	

3	Dr J V Tyagi	Member (EAC)	jvt*****@gmail.com	
4	Dr Uday Kumar R Y	Member (EAC)	uda*****@yahoo.com	
5	Dr Mukesh Sharma	Member (EAC)	muk***@iitk.ac.in	Absent
6	Shri Kartik Sapre	Member (EAC)	kar*****@gmail.com	Absent
7	Dr J A Johnson	Member (EAC)	jaj@wii.gov.in	Absent
8	Dr A K Sahoo	Member (EAC)	ami***@gmail.com	Absent
9	Shri Rakesh Goyal	Member	goy*****@nic.in	
10	Shri Balram Kumar	Member	emo***@nic.in	
11	Yogendra Pal Singh	Scientist - F	yog*****@nic.in	



## **MINUTES OF THE 47<sup>TH</sup> MEETING OF THE EXPERT APPRAISAL COMMITTEE FOR RIVER VALLEY AND HYDROELECTRIC PROJECTS HELD ON 28<sup>TH</sup> and 30<sup>TH</sup> JANUARY, 2026 THROUGH VIDEO CONFERENCE**

The 47<sup>th</sup> meeting 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 28<sup>th</sup> and 30<sup>th</sup> January, 2026 through virtual mode, under the Chairmanship of Prof. G. J. Chakrapani. The list of Members present in the meeting is at Annexure.

### **Confirmation of the Minutes of the 46<sup>th</sup> EAC meeting:**

The Minutes of the 46<sup>th</sup> EAC meeting held on 09<sup>th</sup> January, 2026 were confirmed.

### **Agenda Item No. 47.1**

**Kamala HE Project (1720MW) in an area of 3858.8904 Ha located at Village Pompulend, Boa Model, and Laa I etc., Sub-District Kamporijo Circle, Chambang Circle, Raga and Parsi-Parlo, District Kamle, Kra Daadi and Kurung Kumey, Arunachal Pradesh by M/s NHPC Limited – Environmental Clearance (EC) – reg.**

**[Proposal No. IA/AR/RIV/562202/2026; F. No. J-12011/11/2024-IA-I(R)]**

**47.1.1:** The proposal is for grant of Environmental Clearance (EC) to the project for Kamala HE Project (1720MW) in an area of 3858.8904 Ha located at Village Pompulend, Boa Model, and Laa I etc., Sub-District Kamporijo Circle, Chambang Circle, Raga and Parsi-Parlo, District Kamle, Kra Daadi and Kurung Kumey, Arunachal Pradesh by M/s NHPC Limited.

**47.1.2:** The Project Proponent and the accredited Consultant M/s. R. S. Envirolink Technologies Pvt. Ltd., made a detailed presentation on the salient features of the project and informed that:

- i. Kamala Hydroelectric Project is a storage project with 1720 MW installed capacity envisages harnessing the waters of Kamla River, a right bank tributary of Subansiri River, which is further a major tributary of the Brahmaputra.
- ii. The Project and the reservoir falls in Kamle and Kra Daadi districts and a small portion of land is required to be acquired for flood moderation purpose in Kurung Kumey District of Arunachal Pradesh and is being developed by NHPC Ltd.
- iii. The project is conceived as a Storage scheme with approved Flood Moderation. The project envisages construction of 216 m high concrete gravity dam which is designed to provide storage that would ensure generation of daily peaking power for minimum 3 hours and is

provided with a 15m exclusive cushion above the Full Reservoir Level (FRL) to facilitate moderation of floods.

- iv. The project is located on Kamla River, a major right bank tributary of Subansiri River and falls in the Lower Himalayan region. Kamla river valley is almost entirely hilly and mostly covered by dense forests. Mainly, the Project components fall in Kamle district while major portion of the reservoir area is coming under in Kamle & Kra Daadi districts and a small portion of land required to be acquired due to flood moderation scheme falls in Kurung Kumey district of Arunachal Pradesh.
- v. Scoping clearance of Kamala HEP with installed capacity of 1720 MW was accorded by MoEF&CC, Government of India vide ToR Identification No.: TO24A0501AR5622743N dated 07/08/2024.
- vi. The main aspects of the project are proposed as below:
  - To facilitate river diversion, upstream and downstream cofferdams have been located at about 250m u/s and 325m d/s of dam axis.
  - Three diversion tunnels with length of 915 m, 1100 m and 1315 m.
  - A concrete Gravity dam 216m high from its deepest foundation level and 628 m long at dam top level EL 475 m. Reservoir levels are FRL- EL 455 m, MWL -EL 470 m and MDDL - EL 430 m.
  - Spillway consisting of 7 bays of 6.0 m (width) x 10.5m (height) main spillway, an auxiliary spillway of opening 6.0 m (Width) X 13.0 m (Height) and 5 No. under sluice bays 4.0m (width) x 4.5 m (height)
  - Power intake four numbers. Three Power Intake opening is 2 Nos x 5.1 m (Width) x 11.5 m (Height) and fourth one of opening 2 Nos x 5.5 m(Width) X 12.5 m (Height) at invert level EL 405 m.
  - Four No HRT in which, HRT-1, HRT-2 & HRT-3 are Horse Shoe Shaped with 11.5 m diameter, while HRT-4, Horse Shoe Shape has a diameter of 12.5 m. Length of HRTs varies from 515 to 832 m.
  - Eight nos. of Pressure shafts (PS), circular steel lined, Six nos. PS-1, PS-2, PS-5 to PS-8 are of size 7.1 m and two nos. PS-3 & PS-4 of size 6.5 m. Auxiliary unit penstock 2.5 m bifurcate from PS-1 at lower bottom portion.
  - Underground power house cavern of size 380m (L) x 24m (W) x 59.4 m (H) housing 8 nos. of main units of 210 MW each and an auxiliary unit of 40 MW.
  - Transformer cavern of size 375m (L) x 16.5m (W) x 27m (H) located d/s of power house cavern.
  - Draft Tube Gate Operation Chamber of size 276m (L) x 7m (W) x 12 m (H).
  - Eight nos. Unit TRT, each of size 7.5 m Horse shoe shape and 210 m to 240 m long
  - D/s surge cavern of size 276m (L) x 12m (W) x 42.85m (H) further d/s of Draft Tube Gate Operation Chamber.



- Four nos. of main TRT of size 10.0 m, Horse shoe shape of length varying from 300m to 450m and auxiliary unit TRT of size 3.5 m, Horse shoe shape of length 333m.
- To facilitate the construction and operation of the project components, suitable Adits and Access tunnels have been proposed.

- vii. **Land requirement:** The total land requirement for the various project activities is 3858.8904 ha, out of which, 3278.0904 ha is forest land and remaining 580.80 ha is non-forest land. The submergence area below FRL 455 m will cover 2665.00 ha.

Notifications have been issued by the Government of Arunachal Pradesh for acquisition of 3858.8904 ha land for the project district wise. Out 3858.8904 ha of land, 116.00 ha is required for construction facilities and temporary roads and may be taken on lease.

For the acquisition of 3278.0904 ha of forest land, online application on PARIVESH portal has been submitted vide proposal no. FP/AR/HYD/IRRIG/469328/2024 dated 04-04-2024. Current status is “Pending at Nodal Officer due to EDS by State Secretary”.

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

The study area comprises a total of 377 villages, distributed across four districts: 111 villages in Kamle district, 209 in Kra Daadi district, 46 in Kurung Kumey district, and 11 in Keyi Panyor district. The project will affect areas in three districts viz., Kamle, Kra Daadi and Kurung Kumey. A total of 126 villages will be affected – 33 in Kamle, 87 in Kra Daadi and 6 in Kurung Kumey. Total of 29932 people live in 126 project affected villages, with 48.51% males and 51.49% females. The sex ratio was found at 1061 females per 1000 males. The literacy rate is 66.74%. The majority of households depend on agriculture and allied activities as their primary occupation. A small portion of the population is employed in government services. Other occupations include business/trade, contract work, and non-agricultural labour. A small percentage perform the traditional role of Gao Burah (village headman).

- ix. **Water requirement:** This is run of the river hydropower project designed for 1310.47 cumec (design discharge).
- x. **Project Cost:** The estimated project cost is **Rs 23764.01 Crore**. Total capital cost earmarked towards Environment Management Plan is **Rs. 11364.03 lakh** and the Recurring cost (operation and maintenance) will be about **Rs. 1190.94 lakh** per annum (Rs. 9527.54 lakh for 8 years).
- xi. **Project Benefit:** Approx. 3000 persons will be engaged during construction phase. The project proposes to allocate Rs. 11264.00 Lakh towards CER (as per Ministry’s OM dated 30<sup>th</sup> Sep 2020).

- xii. **Environmental Sensitive area:** There are **no** national parks, wildlife sanctuaries, Biosphere Reserves, Tiger/Elephant Reserves, Wildlife Corridors etc. within 10 km distance from the project site.
- xiii. **MoU / any other clearance/ permission signed with State government:** Memorandum of Agreement (MOA) signed with the Government of Arunachal Pradesh on 12/08/2023 for the development of project.
- xiv. **Resettlement and rehabilitation:** Total 126 villages shall be affected due to acquisition of land for various components of proposed project. Of which, 33 are in Kamle district, 87 are in Kra Daadi district and 6 are in Kurung Kumey district. Total 5440 families have been identified as Project Affected Families (PAFs). Of which, 1391 belongs to Kamle district, 3954 belongs to Kra Daadi district and 95 belongs to Kurung Kumey district. The PAFs likely to lose both housing and land belong to 3 villages viz., Poku, Bam and Kamporijo in Kamle district with a total number of 430 PAFs. The remaining 5,010 PAFs will not lose homesteads but only land. A budgetary provision of Rs. 394.00 crore has been kept towards implementation of R&R plan.
- xv. **Environmental Flow** - Cumulative Impact and Carrying Capacity Study (CI&CC) of Subansiri Basin including downstream impacts carried out by CWC in 2015, minimum environmental flow has been considered as 20% of the average flow in monsoon, pre & post monsoon and lean period of 90% dependable year respectively. Accordingly, minimum environmental flow of 28.45 cumec for lean months, 220.54 cumec for monsoon months and 93.14 cumec for the remaining months have been considered in the studies.
- xvi. **Scheduled – I species:** As per Wildlife Protection Amendment Act, 2022, 29 mammals (Sambar, Northern Red Muntjac, Wolf, Wild Dog, Bengal Fox, Asiatic Golden Cat, Jungle Cat, Clouded Leopard, Common Leopard, Marbled Cat, Leopard Cat, Fishing Cat, Crab Eating Mongoose, Hog Badger, Common Otter, Yellow Throated Marten, Spotted Linsang, Black Bear, Bear Cat, Masked Palm Civet, Common Palm Civet, Indian Pangolin, Stump Tailed Macaque, Assam Macaque, Hoolock Gibbon, Slow Loris, Bush-Tailed Porcupine, Red Giant Flying Squirrel and Black Giant Squirrel); 1 bird (Great Hornbill); and 2 herpetofauna (Rat Snake and King Cobra) species are listed as Schedule I species.
- xvii. **Alternative Studies:**  
During investigation phase of the project, following sequence of investigation was taken by different executing agencies for alternative dam axis since 1996. During course of those investigation the power house location & WCS were also shifted to different locations.

#### **ALTERNATIVES BY BRAHMAPUTRA BOARD**

Brahmaputra Board started investigating the project in 1996. Two alternative dam sites were identified on river Kamla, and were designated as Site-A and Site-B. The site A was located 3.5 km upstream of Tamen village while the site B was identified some 9.5 km further upstream. Brahmaputra Board in consultation with CWC and GSI considered Site-A as a better option from geological, topographical and construction material point of view and decided to focus further investigations at this site. Subsurface explorations were initiated; however, before any further progress could be made, the project was transferred to NHPC for preparation of Feasibility and DPR.

#### **ALTERNATIVES BY NHPC DURING FEASIBILITY STAGE**

NHPC started investigations by carrying out a feasibility level study of the project. After detailed inspection of the area, NHPC identified two axis, located about 450m and 500m upstream of the Site-A axis selected by Brahmaputra Board, and initiated detailed investigations at these axis. Narrower valley section and relatively better quality of rock exposures at road level were cited as positive features of the selected area. These axis were designated as A-5 (450m upstream of Site-A) and A-6 (500m upstream of Site-A). A concrete gravity dam was planned near A5/A6 Axis and the powerhouse was proposed underground at the left bank of Kamla river and comprised of 8 units of 200 MW each, totaling an installed capacity of 1600 MW. NHPC Submitted the feasibility report with dam axis at A-5/A-6. Approval of the feasibility report of the Project was accorded by CEA, vide its letter no. 18/13/2002-HPA-II/CEA/450 Dated 10.09.2002.

#### **ALTERNATIVES BY NHPC DURING DPR STAGE**

Detailed investigations and studies were initiated for preparation of the DPR with A-5/A-6 Axis. During these studies NHPC assessed that the selected dam site (near to A5-A6) would require extensive stripping of abutments for founding a concrete gravity dam. The dam type was then changed to CFRD and the dam axis was relocated about 250m upstream of the A-6 axis as the valley was wider there. This axis was designated as A-11. The underground powerhouse was kept at the same location on the left bank as in the Feasibility Report. The FRL for the project was kept at El 460m and an exclusive flood cushion of 15m was finalized through Integrated Flood Moderation Studies of the basin. Rule curve defined as part of the Integrated Flood Moderation Studies of the Subansiri basin projects was proposed to regulate reservoir level of the project during monsoons, thus ensuring the flood moderation objective of the project. Adequate spillway capacity was ensured by providing surface spillway bays and tunnel spillways, both located on the left bank. In the meanwhile, the GoAP transferred the project to Kamla Hydro Electric Power Company Ltd. (KHEPCL) in August 2010.

#### **ALTERNATIVES BY KHEPCL (Near A11 Axis)**

After transfer of the project to KHEPCL, Tojo-Vikas International Pvt. Ltd. (TVIPL) was engaged to undertake a review of the previous studies on the project and to prepare a Project Report that could be used as an updated project document for submission to MoEF&CC along with the application of ToR for the EIA studies. All three sites (Site-A by Brahmaputra Board and Axis A-5/A-6 and A-11 of NHPC) were examined by the



TVIPL, who recommended that the dam axis should be located at NHPC DPR axis i.e. 20m downstream of the A-11 axis. It was also recommended that the dam type should be changed to a concrete gravity dam and provided with two levels of spillway. The powerhouse was however proposed to be maintained underground, at the same location as proposed by NHPC. The installed capacity was retained at 1600 MW (8 x 200 MW) commensurate with the hydrological assessment given in NHPC DPR.

#### **ALTERNATIVES BY KHEPCL (Near A5/A6 Axis)**

Further, KHEPCL commenced study with an independent review of all previous study reports and the investigation results. The project area was assessed thoroughly by KHEPCL through detailed reconnaissance and it was confirmed that the component of project should be developed on the left bank as proposed in the previous studies. Accessibility, relatively better geology and availability of substantial amount of investigation results clearly weigh in favour of a left bank development. Location of the dam axis was finalized after a detailed assessment of all the alternative axis and also considering the type of dam that suited to given location. Dam types studied included CFRD and concrete gravity; with different configurations comprised of straight and curved axis (arch-gravity) as well as conventional concrete and RCC type dams. Finally, conventional concrete gravity dam was considered more suitable from flood management as well as other perspectives by KHEPCL. The selected axis is near Axis A-5/A-6 (with slight skew) and is considered suitable for founding a concrete gravity dam. During finalization of power house location, KHEPCL studied different option comprised of dam toe option and an underground power house arrangement. The underground location at the left bank just downstream of the dam was considered most suitable by KHEPCL. The powerhouse is proposed in an underground cavern on the left bank, nearly 500m downstream of the dam axis. Due to non-availability of suitable space for locating the powerhouse on the surface, same has been proposed to be located underground in the left abutment just near the dam toe as was envisaged by NHPC during the earlier phase of DPR formulation. However, the final location of the underground powerhouse and other related caverns was slightly readjusted (by shifting hill side) by KHEPCL in view of accommodating all the ancillary structures safely keeping in view the geological environment and topography.

#### **SELECTION OF FINAL ALTERNATIVE**

In the present proposal, NHPC, after detailed deliberations considered the final dam site as per KHEPCL proposal, i.e. as submitted in the DPR of August 2013 prepared by KHEPCL. Thus, dam axis located in between Axis A-5 and A-6 and oriented slightly askew to both the axis, was finalized for further studies. This identified Dam Axis is aligned in N41°E- S41°W direction. The power house is proposed at same location as submitted in the DPR by KHEPCL. However, the dimension of power house has been readjusted due to shifting of Auxiliary unit from dam toe to inside the hill & other design considerations.

xviii. **Baseline Environmental Scenario:**

Period	From December 2024 to July 2025				
AAQ parameters at 06 locations (Min. & Max.)	<b>Core Zone</b>				
	<b>Parameter</b>	<b>Unit</b>	<b>Min</b>	<b>Max</b>	<b>Standards</b>
	PM <sub>2.5</sub>	µg/m <sup>3</sup>	27.10	37.90	60
	PM <sub>10</sub>	µg/m <sup>3</sup>	7.60	14.80	100
	SO <sub>2</sub>	µg/m <sup>3</sup>	5.00	7.10	80
	NO <sub>2</sub>	µg/m <sup>3</sup>	6.20	8.30	80
	<b>Buffer Zone</b>				
	<b>Parameter</b>	<b>Unit</b>	<b>Min</b>	<b>Max</b>	<b>Standards</b>
	PM <sub>2.5</sub>	µg/m <sup>3</sup>	40.10	46.10	60
	PM <sub>10</sub>	µg/m <sup>3</sup>	17.20	19.90	100
	SO <sub>2</sub>	µg/m <sup>3</sup>	6.10	8.90	80
	NO <sub>2</sub>	µg/m <sup>3</sup>	7.70	11.10	80
Incremental GLC Level	<b>Core Zone</b>				
	<b>Criteria Pollutant</b>	<b>Unit</b>	<b>Baseline Concentration [A]</b>	<b>Predicted incremental value considering worst case stability class [B]</b>	<b>Total GLC [A]+[B]</b>
	PM <sub>10</sub>	µg/m <sup>3</sup>	37.9	9.48	47.375
	PM <sub>2.5</sub>	µg/m <sup>3</sup>	14.8	3.70	18.5
	SO <sub>2</sub>	µg/m <sup>3</sup>	6.7	8.04	14.74
	NO <sub>2</sub>	µg/m <sup>3</sup>	8.3	9.96	18.26
	<b>Buffer Zone</b>				
	<b>Criteria Pollutant</b>	<b>Unit</b>	<b>Baseline Concentration [A]</b>	<b>Predicted incremental value considering worst case stability class [B]</b>	<b>Total GLC [A]+[B]</b>
	PM <sub>10</sub>	µg/m <sup>3</sup>	46.1	0	46.1
	PM <sub>2.5</sub>	µg/m <sup>3</sup>	19.7	0	19.7
	SO <sub>2</sub>	µg/m <sup>3</sup>	8.6	0	8.6
	NO <sub>2</sub>	µg/m <sup>3</sup>	10.7	0	10.7
River water samples	<b>Core Zone</b>				



(8 samples)	S. No.	Parameters	Min	Max	Standard	
	1	pH	7.15	8.17	8.5	
	2	Total Dissolved Solids, mg/L	37	72	500	
	3	Dissolved Oxygen (mg/l)	8.1	10.8	6	
	4	Chloride (as Cl), mg/L	10.4	14.2	250	
	5	Total Hardness (as CaCO3), mg/L	61.9	90.8	300	
	6	Biological Oxygen Demand (mg/l)	0	0	2	
	7	Chemical Oxygen Demand (mg/l)	0	0	0	
	8	Total Coliform (MPN/100 ml)	0	0	50	
Buffer Zone						
S. No.	Parameters	Min	Max	Standard		
1	pH	7.82	8.1	8.5		
2	Total Dissolved Solids, mg/L	42	72	500		
3	Dissolved Oxygen (mg/l)	7.8	10.3	6		
4	Chloride (as Cl), mg/L	11.5	12.6	250		
5	Total Hardness (as CaCO3), mg/L	74.4	91.7	200		
6	Biological Oxygen Demand (mg/l)	0	0	2		
7	Chemical Oxygen Demand (mg/l)	0	0	0		
8	Total Coliform (MPN/100 ml)	0	0	50		
Pond water samples quality at --locations	-					
Ground Water samples at 6 locations	Core Zone					
	S. No.	Parameters	Min	Max	Desired Limits	Permissible Limits
	1	pH	7.51	7.68	6.5	8.5
	2	Total Dissolved Solids, mg/L	37	43	500	2000
	3	Chloride (as Cl), mg/L	42.46	46.04	250	1000
	4	Total Hardness (as CaCO3), mg/L	167.04	183.48	200	600

	5	Fluoride (as F), mg/L	0.08	0.1	1	1.5		
	Buffer Zone							
	S. No.	Parameters	Min	Max	Desire d Limits	Perm issibl e Limit s		
	1	pH	7.35	7.94	6.5	8.5		
	2	Total Dissolved Solids, mg/L	35	49	500	2000		
	3	Chloride (as Cl), mg/L	40.96	48.78	250	1000		
	4	Total Hardness (as CaCO3), mg/L	157.54	177.26	200	600		
	5	Fluoride (as F), mg/L	0.08	0.11	1	1.5		
Noise levels Leq (Day & Night) at 8 locations	Zone	Category	Leq Day dB(A)		Leq Night dB(A)		Prescribed Limits	
			From	To	From	To	Day	Night
	Core	Residentia l	50.0	61.8	33.6	42.3	55	45
	Buffe r	Residentia l	50.4	62.0	29.5	39.4	55	45
Soil Quality at 8 Locations	Core Zone							
	S. No.	Parameters	Mi n	Ma x	Prescribed Limits			
	1	Calcium (mg/kg)	216	314	500			
	2	Magnesium (mg/kg)	98	120	500			
	3	Nitrogen (kg/ha)	372	420	500			
	4	Phosphorus (kg/ha)	13.4	16.5	50			
	5	Potassium (kg/ha)	94.3	115	500			
	6	Carbon (%)	0.92	1.22	4			
	7	Sodium Absorption Ratio	2.45	3.75	10			
	8	Salinity (ppt)	0	0	0			
	Buffer Zone							
	S. No.	Parameters	Mi n	Ma x	Prescribed Limits			
	1	Calcium (mg/kg)	244	311	500			
	2	Magnesium (mg/kg)	95	114	500			
3	Nitrogen (kg/ha)	368	423	500				
4	Phosphorus (kg/ha)	15	17.4	50				
5	Potassium (kg/ha)	100	116	500				

	6	Carbon (%)	0.97	1.23	4
	7	Sodium Absorption Ratio	2.53	3.24	10
	8	Salinity (ppt)	0	0	0
<b>Flora &amp; Fauna</b>	<p>Schedule-I species observed in the study area:</p> <p>As per Wildlife Protection Amendment Act, 2022, 29 mammals (Sambar, Northern Red Muntjac, Wolf, Wild Dog, Bengal Fox, Asiatic Golden Cat, Jungle Cat, Clouded Leopard, Common Leopard, Marbled Cat, Leopard Cat, Fishing Cat, Crab Eating Mongoose, Hog Badger, Common Otter, Yellow Throated Marten, Spotted Linsang, Black Bear, Bear Cat, Masked Palm Civet, Common Palm Civet, Indian Pangolin, Stump Tailed Macaque, Assam Macaque, Hoolock Gibbon, Slow Loris, Bush-Tailed Porcupine, Red Giant Flying Squirrel and Black Giant Squirrel); 1 bird (Great Hornbill); and 2 herpetofauna (Rat Snake and King Cobra) species are listed as Schedule I species.</p>				

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

- Sanitation and Solid Waste Management Plan– The implementation of the Sanitation and Solid Waste Management Plan, including provision of infrastructure, training, and strict adherence to waste segregation, transportation, and disposal protocols, will be carried out at regular intervals throughout the construction period. 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.
- For Disposal of hazardous waste vendors authorized by State Pollution Control Committee shall be engaged.
- 4 muck disposal yards has been identified with a total area of 63 ha and capacity has been worked as 198.93 lakh cum which is more than the total quantity of muck to be disposed i.e. 105.95 lakh cum. All the sites 30m away from HFL.

- xx. Public Hearing for the proposed project has been conducted by the State Pollution Control Committee on 30.10.2025 at Kamporijo Circle Office, Kamle District; Toti Lapang, Dui Village, Palin, Kra Daadi District and Community Hall, Pilop, Nyokoriang Village, Kurung Kumey District. The main issues raised and replies by the user agency during the public hearing are;

**Suggestions/ Comments Given by Stakeholders**

## KRA DAADI DISTRICT

S. No.	Key Issues/ Queries/ Suggestions/ Views/ Concerns	Replies given by Project Proponent
<b>1</b>	<b>Shri James Dado, Village Palin</b>	
a	Villages namely Restaring, Korapu, Tayo and Langdang are not covered extensively under geological studies. The terrain and soil condition of these villages are not viable for habitation if water level rises. There are hollow tunnels in Restaring and Korapu whereas, Tayo and Langdang are located at very steep areas. Hence, request that more detailed study must be carried in these villages.	Detailed geological investigations have been carried out for all major project components as well as the reservoir rim area. To address soil erosion and ensure slope stability in vulnerable zones, adequate provisions have been incorporated under the Catchment Area Treatment (CAT) Plan and Reservoir Rim Treatment Plan.
b	As per Land Acquisition, Rehabilitation and Resettlement Act, 2013 the Resettlement & Rehabilitation Plan (RR Plan) is to be prepared by the District Administration. So, how this RR Plan has been prepared without the involvement/consultation of the District Administration?	<p>As mentioned in the draft EIA report and presented here, R&amp;R Plan has been prepared for the purpose of EIA study only as per the data captured in the SIA Study. The SIA study has been carried out by District Administration. Hence, the R&amp;R plan is based on the data captured in the SIA study carried out by District Administration.</p> <p>However, now Section-11 of RFCTLARR Act, 2013 has been notified by the State Govt. and property survey is being carried out. After completion of Property survey, the appropriate Authority shall prepare R&amp;R plan in consultation with the public.</p>
c	EIA report shows that under 430 PAFs that shall not lose homeland but only land, PAFs from only 3 villages namely Poku, Bam and Kamporijo have been included. It is requested to include villages namely Korapu and Restaring in the list of affected villages.	As mentioned in the draft EIA report and presented here, these 430 PAFs (sourced from SIA study) belonging to 3 villages viz., Poku, Bam and Kamporijo in Kamle district will be involuntarily displaced as they are likely to lose both housing and land. Further, it may be noted that Korapu and Restaring are already included in the list of affected villages.
d	Villages under Tarak Langdi circle are comprised majorly of forest	In the draft EIA report, NPV has been calculated as per the per hectare rate given in

S. No.	Key Issues/ Queries/ Suggestions/ Views/ Concerns	Replies given by Project Proponent
	area and very less civil structures. However, its NPV calculated is very less as compared to other villages. Therefore, give clarity on the process of calculation of NPV.	the VAN (SANRAKSHAN EVAM SAMVARDHAN) ADHINIYAM, 1980 and VAN (SANRAKSHAN EVAM SAMVARDHAN) RULES, 2023 for the Eco Class and density of the forest area to be diverted for the project. Final price of NPV will be paid as per the calculation by the State Forest Department as a part of Forest Clearance Process.
e	Give examples of some success stories of such Hydro Power Projects where, PAFs/PAVs, apart from compensation benefits, have obtained significant and long-term socio-economic development.	NHPC Ltd. has carried out post construction EIA studies through independent QCI/ NABET accredited consultants for 4 of its under operation hydro power projects viz., Dhauliganga Power Station in Uttarakhand, Teesta V Power Station in Sikkim, Loktak Power Station in Manipur and Uri II Power Station in the UT of J&K. Studies reflects long term positive impact on the socio-economic development of the PAFs/ PAVs and adjoining areas after construction of such Hydro Power Projects.
2	<b>Shri Gunli Chapo, village Bogu</b> <b>[The speaker put forward the following points on behalf of the Land Affected Forum of 4 circles under Tali area]</b> The villagers are dependent on nature for daily livelihood and survival since time immemorial. Nature provides vegetables, fish, and other natural resources like sand, boulder, gravels.	
a	The breeding area of fish called <i>Ngohs</i> from where the villagers catch fish for livelihood since ages. In addition, there are different types of fish areas called <i>Ngocher</i> , <i>Ngopu</i> , <i>Ngoku</i> . There is threat of losing these areas forever due to submergence. How will the loss of this age-old practice be compensated?	Recognizing the ecological and livelihood importance of fisheries resources in the project area, a comprehensive Fisheries Management Plan with provisions such as stocking of reservoir and riverine stretches, maintenance of refills and pools, and promotion of aquafarming have been formulated which shall be implemented by the Fisheries Department and fund for which shall be provided by NHPC. In addition, provision for maintaining the environmental flow in the downstream of dam for sustaining aquatic life has been kept as per the recommendations of MoEF&CC.
b	Since the time of our fore-fathers	Comprehensive Environment Impact



S. No.	Key Issues/ Queries/ Suggestions/ Views/ Concerns	Replies given by Project Proponent
	we have been enjoying our rights on rivers, lands and its resources. So, once the construction of this project starts, these natural resources will be destroyed. In this regard, how will these losses be compensated?	Assessment has been carried out based on which Environment Management Plan has prepared in order to mitigate the adverse impacts. The Environment Management Plan (EMP) will be implemented by project proponent diligently. The process of land acquisition has already commenced. The land compensation will be made as per the policy of the state Govt. and RFCTLARR, 2013.
c	Resources from rivers like sand, stones will be destroyed due to submergence. Company should make plans to compensate for the loss.	Government of Arunachal Pradesh holds the statutory rights over the collection of royalty on minor minerals. Hence, NHPC cannot directly pay compensation to local individuals in respect of quarry rights, as these rights are vested with the State Government.
<b>3</b>	<b>Shri Taring Beki Bosco, village Restaring and Korapu</b>	
a	There are 2 massive holes in Korapu and Restaring villages wherein, the lands near these villages have sunk in due to landslide over time. In the coming days there is danger to these villages.	Project has kept the provision of Catchment Area Treatment as well as Reservoir Rim Treatment. All the vulnerable areas shall be duly protected before submergence. However, area showing any distress in future which is in the periphery of submergence area shall also be duly attended.
b	Therefore, we request the District Administration to give us permission and necessary facilities for shifting of these villages to a new safe location. We request NHPC Limited for help in this matter.	Regarding shifting of villages, people can take up the matter with the District Administration.
<b>4</b>	<p><b>Shri Gichik Nikam, Tali-Pipsorang (Paye) Land Affected Forum of Kamala HEP [The speaker submitted a written letter on behalf of the Tali-Pipsorang (Paye) Land Affected Forum of Kamala HEP jointly signed by Shri Gichik Nikam, General Secretary, Tali circle; Shri Tame Tagru, Chairman; Shri Songio Taba Rughu, General Secretary, Paye circle and Shri Tagru Maring, Coordinator. The letter requests for facilitation of requisite benefits for PAFs of Tali-Pipsorang area.</b></p> <p>The following points are mentioned in the letter:</p> <p>Altogether 30 villages will be affected in the area due to coming of this mega dam with heavy impact on its environment and forest eco system. Hence, it is requested for clarity on the benefits to be availed for the following points that are to be facilitated</p>	

S. No.	Key Issues/ Queries/ Suggestions/ Views/ Concerns	Replies given by Project Proponent
	in practical as soon before the start of the construction process:	
a	Compensation amount for permanent damages of small stream fish breeding area ( <i>Ngongh</i> ) which is personally owned for yearly fishing place.	It was clarified that the traditional fishing rights shall be vested with the PAFs only. And fishing rights shall be extended to the PAFs as per the RFCTLARR Act 2013 / State Govt. policy. For recognizing the ecological and livelihood importance of fisheries resources in the project area, a comprehensive Fisheries Management Plan has been formulated under EMP. However, any compensation by the Project shall be based on the policy of the State/ Central Govt. is a matter of policy and falls under the purview of State Govt.
b	Local fishing places like <i>Pettar</i> area <i>slakh</i> area for fishing trap to be compensated.	
c	Rates of locally forest used plants and trees with its high medicinal and traditional values.	As a part of Forest Clearance, NPV calculated by the State Forest Dept. shall be paid for the USF land to be diverted. Further, loss of traditional rights and loss of Rights and Privileges shall also be compensated to PAFs as per the State Policy.
d	Hot springs and <i>Mithun</i> /animal/birds special water drinking area ( <i>seghs</i> ).	For the conservation and protection of ecologically and culturally significant sites, including the preservation of culturally important fauna which will also take into consideration regarding <i>Mithun (Bos frontalis)</i> , a detailed Biodiversity and Wildlife Conservation & Management Plan has been prepared and duly approved by the State Forest Department. Further, specific provisions for the development of grazing lands and creation of drinking water sources for wildlife and semi-domestic species have been incorporated under the plan.
e	Quarry place of minor minerals like sand, stones and boulders.	Government of Arunachal Pradesh holds the statutory rights over the collection of royalty on minor minerals. Hence, NHPC cannot directly pay compensation to local individuals in respect of quarry rights, as these rights are vested with the State Government.
f	Places of traditional importance.	Provisions for the preservation and protection of traditionally valued sites, rocks, trees, and heritage structures likely to be affected by the

S. No.	Key Issues/ Queries/ Suggestions/ Views/ Concerns	Replies given by Project Proponent
		project will be incorporated under the Corporate Environment Responsibility (CER) Plan.
g	Community hall and panchayat ghars at various affected villages to be sanctioned under second schedule/third schedule of Act or any other appropriate head for community development.	Provisions for Community Hall and panchayat ghars at various affected villages will be covered under Corporate Environment Responsibility (CER) Plan.
h	We welcome the project as it will benefit not only Tali area but whole of Kra Daadi district.	NHPC Ltd. thanks for the support for the development of Kamala HEP.
i	There should be reservation at jobs for the PAFs.	Reservation of jobs for the PAFs shall be as per the policy of NHPC Ltd. governed under the rules of DPE, GoI as well as provisions kept under the MOA signed for the project.
<b>5</b>	<b>Shri Rei Yachmi, Chairman FRC, village Sangobao</b>	
a	The name of 'Kumey' river is not mentioned in the EIA report. Therefore, the nomenclature must be changed and 'Kumey' river must be added along with Kurung river in the report.	The name of river and various tributaries have been mentioned as given in the Survey of India Topographical Maps. However, considering the local name for the river, the stretch of Kamla River before its confluence with Kurung River shall be renamed as Kamla (Kumey) River.
b	There are different species of butterflies available in Kra Daadi district. Therefore, request NHPC to establish a butterfly park in Kra Daadi district.	In consultation with the State Forest Department, provisions for the establishment of a Butterfly Park and Orchidarium have been made in the Biodiversity and Wildlife Conservation & Management Plan. However, the exact locations for these facilities will be finalized by the State Forest Department while implementing the plan.
c	Fund for compensatory afforestation has been transferred to Madhya Pradesh. This fund must have been utilized within the State.	Funds for compensatory afforestation shall be transferred to Madhya Pradesh as there was no degraded forest in Arunachal Pradesh for carrying out compensatory afforestation. NOC for which has also been issued by the State Forest Department. NHPC Ltd. shall be depositing the funds as per the Forest Clearance accorded by MoEF&CC.

S. No.	Key Issues/ Queries/ Suggestions/ Views/ Concerns	Replies given by Project Proponent
		Additionally, Shri Majit Talit, RFO, Department of Forest, Government of Arunachal Pradesh clarified that, Reserve Forest/Village Reserve Forest land was not available for compensatory afforestation within affected forest division under Kra Daadi district and the State of Arunachal Pradesh. Subsequently, on declaration of availability of land in Madhya Pradesh the advance amount for compensatory afforestation has been transferred to MP Government as per guidelines.
d	Sangoboa village is under threat of submergence from Kumey river. In this regard, provisions for its protection must be made as per guidelines.	Sangoboa village is already included in the list of affected villages and compensation for any losses shall be paid as per the SIA study/ property survey by District Administration.
<b>6</b>	<b>Shri Rei Tagam, village Gangte</b>	
a	Benefits like construction of Schools should be provided in Kra Daadi district.	Provisions for development of basic infrastructure like schools, roads, bridges, community buildings, etc. will be made under CER Plan.
b	Culturally significant places like fish breeding areas, mithun grazing areas like Ngong/NGoi/Sobuk/Sebe Shee to be preserved.	Recognizing the ecological and livelihood importance of fisheries resources in the project area, a comprehensive Fisheries Management Plan has been formulated. For the conservation and protection of ecologically and culturally significant sites, including the preservation of culturally important fauna which will also take into consideration regarding Mithun ( <i>Bos frontalis</i> ), a detailed Biodiversity and Wildlife Conservation & Management Plan has been prepared and duly approved by the State Forest Department. Further, specific provisions for the development of grazing lands and creation of drinking water sources for wildlife and semi-domestic species have been incorporated under the plan.
c	Request that developmental works should be given to project affected	Funds for various developmental activities have been proposed under various management



S. No.	Key Issues/ Queries/ Suggestions/ Views/ Concerns	Replies given by Project Proponent
	people of Kra-Daadi as the region cover larger part of this project. The project is to be specified as Kurung Unit and Kumey Unit.	plans such as R&R plan, CER plan etc., however, utilisation of the same across all the 3 districts shall be as per the policy of State Govt. and District Administration of respective districts.
d	The project must go ahead with proper planning in order to prevent any future legal complicacies.	NHPC Ltd. is committed to ensure proper planning in order to prevent any future legal complicacies.
e	Request that not all types of plans must be handed over to Forest Department. In this regard, the Plan may accordingly be modified in consultation with concerned Divisional Forest Officer.	All the plans pertaining to State Forest Department have been prepared in consultation with State Forest Department and were further approved by the State Forest Department. The plans will be implemented in close coordination with the local communities to ensure effective and sustainable execution.
<b>7</b>	<b>Shri Balo Sopin, Chairman FRC, village Gadi</b> <b>[The speaker submitted a written letter jointly signed by Shri Balo Sopin, Chairman FRC; Shri Balo Senar, Member FRC; Shri Balo Taki, Member BYA and Shri Balo Saktar, Member Balo land control committee.</b>	
a	Requests for inclusion of Gadi and Dayam Hapa villages under Rehabilitation & Resettlement Plan in SIA and EIA reports.	As per the SIA report, Gadi and Dayam Hapa villages have been categorised under the head "Impacted". Accordingly, adequate compensation as per the policy of State Govt. shall be given.
b	<i>Mithun</i> ( <i>Bos Frontalis</i> ) is very important as it holds significant role in tribal way of living. Due to coming up of this project, its rearing place will be submerged under water which would lead to their displacement and the animal holds cultural significance to the project affected people. Hence, provision for its compensation must be included.	Recognizing the ecological and livelihood importance of fisheries resources in the project area, a comprehensive Fisheries Management Plan has been formulated. For the conservation and protection of ecologically and culturally significant sites, including the preservation of culturally important fauna which will also take into consideration regarding <i>Mithun (Bos frontalis)</i> , a detailed Biodiversity and Wildlife Conservation & Management Plan has been prepared and duly approved by the State Forest Department. Further, specific provisions for the development of grazing lands and creation of drinking water sources for wildlife and semi-domestic species have been incorporated under the plan.



S. No.	Key Issues/ Queries/ Suggestions/ Views/ Concerns	Replies given by Project Proponent
<b>8</b>	<b>Shri Tayo Bath, Chairman FRC, village Tayo</b>	
a	The SIA is based on population. Some names of people from Tayo village are left out in the SIA list. Hence, request to make a new report of Tayo village addressing this point.	SIA report has been prepared by the District Administration and has been approved by the State Govt. Any addition/ deletion of population in the report is under the purview of District Administration. Accordingly, the State Govt. will take necessary action.
b	There are 3 <i>Ngongs</i> (fish rearing place in the river) at Tayo village. Villagers from 3 circles namely Palin, Chambang and Tarak Langdi catch fish from these <i>Ngongs</i> . Due to coming up of this project, these <i>Ngongs</i> will be destroyed forever. Therefore, request the Government to compensate for this loss with Rs. 200 crore.	Recognizing the ecological and livelihood importance of fisheries resources in the project area, a comprehensive Fisheries Management Plan has been formulated. Any further compensation, if any, shall be decided as per the policy of State Govt./ District Administration.
<b>9</b>	<b>Shri Balo Taki, General Secretary, Aab Kamda Nature Conservation Society, Youth wing</b> [The speaker submitted a Memorandum on behalf of the Aab Kamda Nature Conservation Society. The points of the Memorandum are as follows.	
a	<ul style="list-style-type: none"> <li>Aab Kamda Nature Conservation Society is a registered Non-Government Non-profit organization dedicated for protection of biodiversity, sustainable use of natural resources and committed to promoting sustainable social, economic and environmental development in marginalized community through conservation program, awareness campaign with local partnership.</li> <li>The Society is currently</li> </ul>	All proposed mitigation and management measures outlined under the Environmental Management Plan (EMP) will be implemented in close coordination with the concerned government departments and local communities to ensure effective and sustainable execution.

S. No.	Key Issues/ Queries/ Suggestions/ Views/ Concerns	Replies given by Project Proponent
	<p>working on orchid tissue culture project which focuses on the conservation, propagation and commercial cultivation of native and rare orchid species by adopting advance tissue culture technique.</p> <ul style="list-style-type: none"> <li>• The Society is also working on reptile research and conservation program through invited scholars from across the globe having domain expertise on the subject.</li> <li>• The Society was verified during the SIA exercise and mentioned in the SIA report.</li> <li>• Request to include Aab Kamda Nature Conservation Society in Biodiversity Plan and RR package.</li> </ul>	
10	<b>Shri Miching Bharat, Circle Chambang, village Miching</b> Starting point of the dam is at Miching village.	
a	The Land Affected Families of Chambang circle must receive equal benefits from the project.	Funds for various development activities for the benefits of affected villages have been proposed under various management plans such as R&R plan, CER plan etc., however, utilisation of the same across all the 3 districts shall be as per the policy of State Govt. and District Administration of respective districts.
b	Appeal for adequate compensation in case of land submergence in the future.	Adequate compensation as per the policy of State Govt. and as per the directions of District Administration shall be paid in case of land submergence in the future.
11	<b>Shri Bania Taba, President Bani Society, village Harak</b>	
a	Harak village is not included in the SIA. In addition, names of some people of Harak village are wrongly included under Rembang	Harik (Harak) village is already included in the SIA study. Any rectification, if needed, in the SIA report is under the purview of District Administration. Accordingly, the State Govt.

S. No.	Key Issues/ Queries/ Suggestions/ Views/ Concerns	Replies given by Project Proponent
	village. Therefore, request to do necessary rectification and include name of Harak village in the SIA report.	will take necessary action.
<b>12</b>	<b>Shri Pudom Taku, District Land Revenue and Settlement Officer, Kra Daadi</b>	
a	Steps should be taken to shift or preserve the traditionally valued places/sites/structures like rocks, culturally significant trees by way of building Heritage Centre Building and Statue. In case of submergence of these places appropriate compensation must be facilitated.	Provisions for the preservation and protection of traditionally valued sites, rocks, trees, and heritage structures likely to be affected by the project will be incorporated under the Corporate Environment Responsibility (CER) Plan in consultation with the District Administration and local communities.
b	There must be a Mitigation Plan for conservation and protection of traditionally and culturally significant plants, animals, places, sites, structures etc.	Additionally, the establishment of a Heritage Centre and commemorative structures/statues to honour submerged or culturally significant heritage sites will be undertaken in consultation with the District Administration and local communities under CER plan.
<b>Other written memorandum/letters submitted</b>		
1	A written letter is received from Shri Miching Taying, Chairman FRC. The letter requests for inclusion of Pongmi Pongte village under Tebital Gram Panchayat segment in the project assessment list for the interest of public service of the respective village.	The matter pertains to District Administration/ State Govt. Accordingly, the State Govt. will take necessary action.
2	A written letter is received from Shri Miching Taying, FRC. The letter submits the list of natural habitat of fish breeding areas and <i>Mithun</i> ( <i>Bos Frontalis</i> ) grazing area (locally known as <i>Sebe Shee</i> ) for consideration and necessary action. The list are: <i>Tajung stream, Bich stream, Tagung Tamu stream, Kedang</i>	Recognizing the ecological and livelihood importance of fisheries resources in the project area, a comprehensive Fisheries Management Plan has been formulated. For the conservation and protection of ecologically and culturally significant sites, including the preservation of culturally important fauna which will also take into consideration regarding <i>Mithun (Bos frontalis)</i> , a detailed Biodiversity and Wildlife Conservation & Management Plan has been

S. No.	Key Issues/ Queries/ Suggestions/ Views/ Concerns	Replies given by Project Proponent
	<i>stream, Loyle Sehe, Bichi Sehe and Hagar Sehe.</i>	prepared and duly approved by the State Forest Department. Further, specific provisions for the development of grazing lands and creation of drinking water sources for wildlife and semi-domestic species have been incorporated under the plan.
3	A written letter is received from Shri Rei Roshan, Gram Chairperson, Raiga Panchayat, Gangte circle. The letter requests for kind consideration and necessary action for inclusion of Taya Rimpa village in the SIA report.	The matter pertains to District Administration/ State Govt. Accordingly, the State Govt. will take necessary action.
4	A written letter is received from Shri Rei Roshan, Gram Chairperson, Raiga Panchayat, Gangte circle. The letter informs that 2 villages namely Mugli and Ampritak will be submerged due to construction of the project. Therefore, it is requested to offer of another land for shifting of PAFs of these villages.	As per the DGPS survey carried out by NHPC Ltd. and list of villages falling under the submergence area provided by the District Administration Mugli and Ampritak are not likely to be submerged, hence, not included in the list of affected villages. However, any further decision in this regard is under the jurisdiction of State Govt./ District Administration.
5	A written letter is received from Shri Habu Tai, Chairman, All Habu Youth Wings. The letter informs about the welcome and support to such development activity in the area. It also mentions the enthusiasm of establishment of such project in the area and believes that it will boost the inhabitants of the area and the State as a whole in days to come. However, it mentions about the concerns of the likely impact on 46 <sup>th</sup> Boma Kamrung Gram Panchayat Segment consisting of villages namely Chakbang, Boma Happa, Kamrung, Yorte, Lungchi	At the onset NHPC Ltd. thanks for the support for the development of Kamala HEP. List of villages falling under the submergence area is provided by the District Administration based on the DGPS survey carried out by NHPC Ltd. Any further decision in this regard is under the jurisdiction of State Govt./ District Administration. Provisions for development of basic infrastructure like schools, roads, bridges, community buildings, etc will be made under CSR/CER Plan.



<b>S. No.</b>	<b>Key Issues/ Queries/ Suggestions/ Views/ Concerns</b>	<b>Replies given by Project Proponent</b>
	and Dorduk due to submergence. Also, Pechi hanging bridge that is used to cross to the other bank of the river for daily activities will be damaged due to submergence leaving no alternative route to cross the river. Therefore, it is requested to initiate plan for relocation of these villages by sanction of requisite fund. Additionally, immediate arrangement may be made to cross to the other bank of the river.	

### **KURUNG KUMEY DISTRICT**

<b>S. No.</b>	<b>Issues Raised by PAFs / Public</b>	<b>Clarification given by Project Proponent</b>
1	Topography and Submergence Area	During the initial desk study using satellite imagery, 104 ha in Kurung Kumey District was assessed for acquisition. A detailed LIDAR/DGPS survey later found the area to be 32.8 ha, which is the final land acquisition area.
2	Sedimentation and Siltation in the Dam	NHPC will adopt sediment management and desilting measures to maintain long-term efficiency and sustainability of the dam. The dam design includes a low crest level to enable seasonal silt flushing.
3	Catchment Area Treatment (CAT) Plan	The CAT Plan under the Environmental Management Plan (EMP) has been approved by the State Forest Department. Measures like slope stabilization, afforestation, and treatment of vulnerable areas will minimize erosion and landslides. Implementation will be done by the Forest Department to reduce sedimentation and protect reservoir health.
4	Extinction of Traditional Fishing Rights and Compensation	Traditional fishing rights will remain with the PAFs. The reservoir will not extend into Kurung Kumey District under normal operations. During rare flood events (once in 100 years), temporary impoundment



S. No.	Issues Raised by PAFs / Public	Clarification given by Project Proponent
		may occur. Any loss of fishing rights will be compensated as per State policy.
5	Extinction of Quarry Rights	The Department of Geology and Mining, Government of Arunachal Pradesh, holds statutory rights over collection of royalty on minor minerals. Therefore, NHPC cannot directly compensate individuals for quarry rights, as these rights belong to the State Government.
6	Demarcation of Submergence Area	NHPC will physically demarcate the submergence area to ensure transparency and proper understanding among affected villages and stakeholders.
7	Submergence Impact at Parsi Parlo	Submergence at Parsi Parlo will occur only during exceptional flood conditions. The multipurpose Kamala Hydro-Electric Project includes a 15-metre flood cushion for flood moderation. Thus, frequent or permanent submergence in Kurung Kumey District is unlikely, except during rare extreme flood events.

### KAMLE DISTRICT

S. No.	Key Issues/ Queries/ Suggestions/ Views/ Concerns	Replies given by Project Proponent
1	<b>Shri Rakhe Tud, GPC, Rakhe Village</b>  We welcome the project from the beginning, from the left and right bank. Regarding this project, discussion with the Project Affected Families had already been done nearly 13-14 times. We would like to know what will be benefits with the establishment of this project. If our demands are not fulfilled, then it will be not possible for us to accept the project. What are the mitigation measures that will be taken by the project proponents in order to combat the pollution that will arises during the construction of the project.	The concerns of people regarding the environmental issues likely to arise in terms of noise, air and water pollution due to the project has been duly addressed in the EIA-EMP report and all necessary and adequate measures have been considered and budget for which has also been provisioned. Regarding the issue of hospital, school and open games stadium to be developed in the area, HoP stated that the demands of the people are very genuine and
2	<b>Shri Yucker Takap, from Left Bank of Puku and Bam Village.</b>	

	<p>I on behalf of the Kamporijo area welcome the project from the beginning without any controversy and hindrances.</p> <p>We support this project in the interest of the nation and for the sake of development of this area as well as the State.</p> <p>Fair compensation should be given to the project affected families as our land is going to be submerged fully.</p>	<p>was hopeful that when the Project comes up the facilities shall be developed.</p> <p>In response to the concerns raised by locals about muck dumping near the Tamen area, the Head of Project (HoP) clarified that muck disposal will be carried out in a scientific manner, incorporating both engineering and biological measures as outlined in the EIA/EMP report. It was further informed that the proposed muck disposal plan has been approved by the Forest Department.</p>
<b>3</b>	<b>Shri Mili Matub, GOC, Mili Village</b>	
	<p>The powerpoint given was fast and we couldn't understand anything, rather print out of this should have been distributed to all of us prior to this meeting.</p> <p>During the construction of this project, there is every possibility of air and noise pollution; the company should clarify the plan for mitigation.</p> <p>Our grievances should be fulfilled failing it will be difficult for us to accept the project.</p> <p>Our safety is our concern as our land is going too affected.</p> <p>Company should clarify which locations will be affected by pollution.</p>	
<b>4.</b>	<b>Dr. Kapu Soping, Chairman, Nyishi Elite Society, District Unit.</b>	
	<p>We welcome the project for the sake of development of the area.</p> <p>With the establishment of this project, the area will be affected, so the company should ensure that protection of Forest Diversity and maximum possible mitigation measures should be taken.</p> <p>Regarding funds allocation, the company should explain to the educated youths of this area.</p> <p>During construction of the project, various types of chemicals /explosives are expected to be used for blasting, resulting to rise in air and noise pollution in the area, the company should create awareness about this to know the extent of pollution.</p> <p>The Arunachal Pradesh falls in a seismically active region. As per the Seismic Zoning Map of India, Arunachal Pradesh is classified under Zone-V.</p> <p>With the establishment of this project, all the plants/ trees will be submerged, so area for</p>	

	<p>afforestation be acknowledged to the people.</p> <p>If every such necessary issues are sorted out carefully with proper mitigation measures, then there is no problem in welcoming the project.</p> <p>We support this project for the sake of the nation.</p>	
<b>5</b>	<b>Shri Kabak Tani, Luba Village</b>	
	<p>The people of this area purely depend upon the flora and fauna of the region.</p> <p>When the land is submerged, then Project Affected People will suffer a lot.</p> <p>We are from the upper side of the project. Please let us know when the roads will be constructed.</p> <p>With the establishment of the project, there will be lots of immigrant labours resulting to solid waste generation in huge quantity. Company should clarify how the solid wastes management will be done.</p> <p>One Health Care Establishment with all kinds of facilities is required to be set up.</p>	
<b>6</b>	<b>Shri Pegmir Sagar, Project Affected Family</b>	
	<p>The people of this area should understand the benefits of this project. If project return, then people will suffer a lot.</p> <p>The project will definitely generate air and noise pollution to some extent which affect the people.</p> <p>We are welcoming the project from the beginning in the interest of the State and Nation as well as our economy will grow with time.</p> <p>There is a possibility of air/water pollution due to blasting and constructions activities.</p> <p>Flora and fauna will be affected. Deforestation will cause soil erosion and landslides.</p> <p>But in long term, socio economic benefits with ad connectivity will there.</p> <p>The company should establish one 150 bedded Health Care Facility with all kinds of modern equipment's in this area.</p> <p>Company should bring change in education sector of this area by establishment of school like Kendriya Vidyalaya (KV) or Vivekananda Kendriya Vidyalaya (VKV)</p> <p>During visit of the Chief Managing Director, NHPC Limited, we have submitted memorandum</p>	

	<p>for establishment of stadium which should be considered and addressed.</p> <p>With this project establishment, road connectivity will be improved in 33 project affected villages. We want to grow with the project.</p> <p>Job reservation for the project affected families is not mentioned rather, it is mentioned for the people of Arunachal Pradesh. If it is so, then 75% job should be reserved for Project Affected Families.</p> <p>Protection/Retaining walls should be constructed to check the soil erosion.</p> <p>Tale Wildlife Sanctuary should be protected.</p> <p>Lastly, property assesinent should he started at the earliest posible</p>	
<b>7</b>	<b>Shri Yaker Toki, KHEPPLIC</b>	
	<p>General Manager, NHPC presented powerpoint in front of Hon'ble MLA and Projected Affected Families and all are convinced.</p> <p>Our tribal people are connected and attached with forests. With the project establishment, flora and fauna will be affected. Plan for rehabilitation is already explained. They (company) has enough experience for sorting out the issues.</p> <p>The site for muck dumping has been identified at Tamen village located opposite Khelo India which is not feasible.</p> <p>While carrying the blasting activities, proper care should be taken in order to check the health's of people living in the surrounding.</p> <p>Our educational sector is very poor, there is need of reform in this sector.</p> <p>One stadium is required to be constructed either in Raga or Boasimla.</p> <p>If quality of air and water is not good then people will be suffer, which needs to be taken care of.</p> <p>Air and water quality monitoring stations should be set up.</p> <p>Property assessment should be carried out at the earliest without any disturbance.</p> <p>Rights of Project Affected Families in job reservation should be intact.</p> <p>Establishment of colony should be made.</p> <p>If the Dollungmukh-Tamen Road is constricted,</p>	

	then cost of commodities will be very less.	
<b>8</b>	<b>Shri Rakhe Taro, Zilla Parishad Member, Kamporiji-I.</b>	
	<p>We welcome the project from the day one.</p> <p>Bridge should be constructed on the Kurung-Kamala River.</p> <p>One Industrial Training Institute and Community Hall should be established.</p> <p>This project establishment should be successful and we do not have any objection.</p>	
<b>9</b>	<b>Shri RotomTebin, Hon'ble MLA, Raga Constituency, Arunachal Pradesh.</b>	
	<p>He appealed to the people that "we should stick to our points as per Environment Impact Assessment report and Environment Management Plan.</p> <p>Funds for compensatory afforestation will go to Hapoli Forest Division and Kraa Daadi district.</p> <p>Fishing development plan for resettlement of fishes of special breeds/species be taken care of.</p> <p>It is given that 26 lakhs cum of mucks will be deposited in designated muck dumping yard which should be explained by NHPC Limited.</p> <p>Muck dumping in deep slope will cause pollution which should be mitigated properly.</p> <p>Quarrying activities will surely generate air and water pollution.</p> <p>Public health sanitation system should be improvised.</p> <p>Circle Office Headquarter will be submerged and relocation will be decided by the Government of Arunachal Pradesh which should be reflected in the minutes.</p> <p>Resettlement and Rehabilitation is given in the Environment Impact Assessment Report.</p> <p>80% of the dam construction activity will be on the left bank.</p> <p>One VKV or KV should be established for the Project Affected People.</p> <p>Skill Development Institute like Industrial Training Institute (ITI) should be established for the benefits of the people.</p> <p>While carrying out the property survey/assessment, the officers concerned should not be disturbed.</p>	



	<p>GST of 9% should be exempted.</p> <p>Employment reservation for the project affected families should be there.</p> <p>Project construction should not be disturbed.</p> <p>Construction of Tamen - Dollungmukh road should be executed by the company at the earliest - I am very much concerned for the people.</p> <p>After 40 years of completion of project, the NHPC will hand over the project to State Government.</p> <p>He requested to project affected families not to carry any further illegal construction henceforth.</p> <p>Property assessment should be done at the earliest possible without any hindrances.</p>	
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- i. Status of Litigation Pending against the proposal, if any. **No**
- ii. The salient features of the project are as under: -

**1. EAC Meeting Details:**

EAC meeting/s	11 <sup>th</sup> Meeting
Date of Meeting/s	27.06.2024
Date of earlier EAC meetings	27.06.2024 (Scoping Clearance)

**2. Project details:**

Name of the Proposal	Kamala Hydro Electric Project (1720 MW)
Proposal No.	IA/AR/RIV/562202/2026
Location (Including Coordinates)	<p>The proposed dam site is located around 4 km upstream of 70-R bridge on Kamla River at Tamen village in Kamle District of Arunachal Pradesh at Latitude 27°46'18" N, Longitude 93°59'19" E.</p> <p>Tamen is around 20 km from Raga, the District Headquarter of Kamle District and 55 km from Ziro, the District Headquarter of Lower Subansiri District.</p>
Company's Name	M/s NHPC Limited
CIN no. of Company/user agency	L40101HR1975GOI032564
Accredited Consultant and certificate no.	<p>Name: R S Envirolink Technologies Pvt. Ltd.</p> <p>Certificate No.: NABET/EIA/25-28/RA 0415</p>

Project location (Coordinates /River/ Reservoir)	The proposed dam site is located around 4 km upstream of 70-R bridge on Kamla River at Tamen village in Kamle District of Arunachal Pradesh at Latitude 27°46'18" N, Longitude 93°59'19" E.  Tamen is around 20 km from Raga, the District Headquarter of Kamle District and 55 km from Ziro, the District Headquarter of Lower Subansiri District.
Inter- state issue involved	No
Proposed on River/ Reservoir	Kamla
Type of Hydro-electric project	Storage scheme with twin objectives of power generation and flood moderation
Seismic zone	VI

### 3. Category details:

Category of the project	A
Capacity / Cultural command area (CCA)	1720 MW
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	-

### 4. ToR/EC Details:

ToR Proposal No.	IA/AR/RIV/465936/2024
EAC meeting date	27.06.2024 (Scoping Clearance)
ToR Letter No.	TOR Identification No.: TO24A0501AR5622743N
ToR grant Date	07.08.2024
Cost of project	Rs. 23764.01 Crore
Total area of Project	3858.8904 Ha
Height of Dam from River Bed (EL)	216 m (from deepest foundation level)
Details of submergence area	2665 ha (below FRL at 455 m)
District to provide irrigation facility (if applicable)	NA
Details of tunnels on upper level & lower level and length of canal (if applicable)	4 nos. of Head Race Tunnel with length varying from 515 m to 832 m
No. of affected Village	126, of which, 33 are in Kamle district, 87 are in Kra Daadi district and 6 are in Kurung Kumey district

No. of Affected Families	5440, of which, 1391 belongs to Kamle district, 3954 belongs to Kra Daadi district and 95 belongs to Kurung Kumey district
Project Benefits	<p><b>Social Benefits</b> A number of marginal activities and jobs will be available to the locals during the construction phase. Local Area development facilities in education, medical, transportation, road network and other infrastructure. An opportunity for small-scale and cottage industries to develop in the area.</p> <p><b>Financial Benefits</b> Annual Energy Generation in 90% dependable year is 6869.92 MU with 95% Plant availability. An investment of Rs. 23764.01 Crore will be made for the project.</p>
R&R details	<p>Total 126 villages shall be affected due to acquisition of land for various components of proposed project. Of which, 33 are in Kamle district, 87 are in Kra Daadi district and 6 are in Kurung Kumey district.</p> <p>Total 5440 families have been identified as Project Affected Families (PAFs). Of which, 1391 belongs to Kamle district, 3954 belongs to Kra Daadi district and 95 belongs to Kurung Kumey district.</p> <p>The PAFs likely to lose both housing and land belong to 3 villages viz., Poku, Bam and Kamporijo in Kamle district with a total number of 430 PAFs. The remaining 5,010 PAFs will not lose homesteads but only land.</p> <p>A budgetary provision of Rs. 394.00 crore has been kept towards implementation of R&amp;R plan.</p>
Catchment area/ Command area	Catchment Area: 7213 sq km
Types of Waste and quantity of generation during construction/ Operation	<ul style="list-style-type: none"> <li>• Muck during construction – 105.95 lakh cum (to be disposed)</li> <li>• Municipal Solid Waste during construction - Degradable (450 Kg/day)</li> </ul>

	for 3000 persons), Non degradable (300 Kg/day for 3000 persons)
Material used for blasting and its composition as per DGMS standards.	Explosive is mainly required for open and underground rock excavation. Explosive magazines of 4080 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	<p>Environment flow requirements during monsoon, pre &amp; post monsoon and lean seasons are met by operating units (main and auxiliary unit) 24 hours in full/part load throughout the seasons, which will provide the sufficient discharge downstream side. The auxiliary unit of 40 MW capacity shall cater to the continuous environment flow.</p> <p>E-flow of 28.45 cumec for lean months, 220.54 cumec for monsoon months and 93.14 cumec for the remaining months have been considered for the project.</p>
<p>Is Projects earlier studied in Cumulative Impact assessment &amp; Carrying Capacity studies(CIA&amp;CC) for River in which project located. If yes then</p> <p>c) E-flow with TOR/Recommendation by EAC as per CIA&amp;CC study of River Basin.</p> <p>d) If not the E-Flows maintain criteria for sustaining river ecosystem.</p>	<p>Yes</p> <p>E-Flow assessment has been carried out under Cumulative Impact and Carrying Capacity Study (CI&amp;CC) of Subansiri sub basin including downstream impacts study. Based on CI&amp;CC study, MoEF&amp;CC vide letter dt. 27.04.2016 has recommended E-Flow of Kamala (Subansiri Middle) HEP, as 20% of the average flow in monsoon, pre &amp; post monsoon and lean period of 90% dependable year respectively.</p>
Details on provision of fish pass	As the height of dam is 216 m (from deepest foundation level), construction of any fish passage or fish ladders is not feasible.
Project benefit including employment details (no of employee)	About 250 permanent workers (NHPC Staff) and 3000 temporarily workers (contractor staff and labour) would be engaged during the

	peak construction period. It is expected that 70% of the total workforce shall be available from the State of Arunachal Pradesh. After completion of the project only a staff of about 100 persons shall be permanently required for the operation of the project
Area of Compensatory Afforestation (CA) with tentative no of plantation.	6556.18 ha; tentative no. of plantation - 6556180
Previous EC details	-
EC Compliance Report by R.O, MOEF&CC	-
No. of trees/saplings proposed in view of 'Ek Ped Maa Ke Naam' campaign	800

**5. Electricity generation capacity:**

Powerhouse Installed Capacity	1720 MW
Generation of Electricity Annually	6869.92 MU
No. of Units	9 (8 X 210 MW Main Units and 1 x 40 MW Auxiliary Unit)

**6. Muck Management Details:**

No. of proposed disposal area/ (type of land- Forest/Pvt land)	4 nos. (forest land)
Distance of muck disposal area (location), from muck generation sources (project area)/River, HFL of proposed muck disposal area.	30 m from HFL.
Total Muck Disposal Area	63.0 ha
Estimate Muck to be generated	8708800 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 25T 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.

## 7. Land Area Breakup:

Private land	580.80 ha
Government land	0.00
Forest Land	3278.0904 ha
Total Land	3858.8904 ha
Submergence area/Reservoir area	2665 ha (below FRL at 455 m)
Additional information (if any)	-

## 8. 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	No project component falls in any notified protected area. Nearest Protected Area to the Project Components is Tale Wildlife Sanctuary which is beyond 10 km from any project component.
National Park	No	
Wildlife Sanctuary	No	
Archaeological sites monuments/ historical temples etc.	No	
Additional information (if any)	-	

**Availability of Schedule-I species in study area:** As per Wildlife Protection Amendment Act, 2022, 29 mammals (Sambar, Northern Red Muntjac, Wolf, Wild Dog, Bengal Fox, Asiatic Golden Cat, Jungle Cat, Clouded Leopard, Common Leopard, Marbled Cat, Leopard Cat, Fishing Cat, Crab Eating Mongoose, Hog Badger, Common Otter, Yellow Throated Marten, Spotted Linsang, Black Bear, Bear Cat, Masked Palm Civet, Common Palm Civet, Indian Pangolin, Stump Tailed Macaque, Assam Macaque, Hoolock Gibbon, Slow Loris, Bush-Tailed Porcupine, Red Giant Flying Squirrel and Black Giant Squirrel); 1 bird (Great Hornbill); and 2 herpetofauna (Rat Snake and King Cobra) species are listed as Schedule I species.

## 9. Public Hearing (PH) Details

Advertisement for PH with date	“The Dawnlit Post”, “The Arunachal Age”, “The
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	Arunachal Pioneer”, “The Arunachal Times” and “The Times of India”, dated 27/09/2025
Date of PH	30/10/2025
Venue	<ul style="list-style-type: none"> <li>• Kamporijo Circle Office, Kamle District</li> <li>• Toti Lapang, Dui Village, Palin, Kra Daadi District</li> <li>• Community Hall, Pilop, Nyokoriang Village, Kurung Kumey District</li> </ul>
Chaired by	<ul style="list-style-type: none"> <li>• Deputy Commissioner, Kamle District</li> <li>• Deputy Commissioner, Kra Daadi District</li> <li>• Additional Deputy Commissioner, Kurung Kumey District</li> </ul>
Main issues raised during PH	<ol style="list-style-type: none"> <li>Villages may become unsafe due to landslides, tunnels, and rising water levels.</li> <li>How land acquisition, rehabilitation, and compensation will be done and whether all villages are included.</li> <li>Traditional fishing areas and river-based livelihoods may be lost.</li> <li>Loss of forests, medicinal plants, mithun grazing areas, and culturally important sites.</li> <li>Local people should get jobs and development benefits.</li> <li>Some villages may be affected later or were left out of surveys</li> <li>How much land will be affected in Kurung Kumey District</li> <li>Will silt affect the dam’s efficiency</li> <li>How to prevent erosion and landslides</li> <li>Loss of minor mineral extraction rights</li> <li>How will affected villages know the boundaries</li> <li>Will Parsi Parlo be flooded</li> <li>Environmental Concerns: Air, noise, water pollution from construction and blasting.</li> <li>Health &amp; Education: Need for hospitals, schools, and skill development institutes</li> <li>Infrastructure &amp; Roads: Roads, bridges, and colony facilities required for PAFs.</li> <li>Job Reservation &amp; Socio-Economic Benefits: Employment for project-affected families.</li> <li>Flora, Fauna &amp; Wildlife Protection: Loss of forest, wildlife, and flora.</li> </ol>

	<p>xviii. Property Assessment &amp; Compensation: Early property surveys and fair compensation for land and fisheries.</p> <p>xix. Community Development &amp; Recreation: Need for stadiums, open spaces, and cultural preservation.</p>
No. of people attended	<ul style="list-style-type: none"> <li>• 133 in Kamle District</li> <li>• 95 in Kra Daadi District</li> <li>• 50 in Kurung Kumei District</li> </ul>

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

Particulars	Details		
Period of baseline data collection/Sampling period.	Winter	Pre-Monsoon/ Summer	Monsoon
Soil	December, 2024	April, 2025	July, 2025
Air Environment	December 2024-January 2025	April-May 2025	June-July 2025
Noise & Traffic	December, 2024	April, 2025	July, 2025
Vegetation	December, 2024	April, 2025	July, 2025
Faunal	December, 2024	April, 2025	July, 2025
Water and Aquatic Ecology	December, 2024	April, 2025	July, 2025
Socio-economic survey of study area villages	December, 2024		
Brief description on hydrology and water assessment as per the approved Pre-DPR:	<p>The project envisages construction of 216 m high dam from deepest foundation level on Kamla River with a gross storage capacity of 1927.6 MCM at FRL 455 m. The reservoir surface area at FRL is estimated as 26.65 Km<sup>2</sup> whereas the reservoir length is around 65 km along Kamla River and 17 Km along tributary Kurung River.</p> <p>The total catchment area upto the proposed diversion site of Kamala HEP is 7213 Km<sup>2</sup>. The total catchment area of 7213 Km<sup>2</sup> has been divided into two sub-catchments. The snowline elevation of 4500m has been taken to delineate the rain-fed area of the project catchment.</p> <p>In the year 2010/12, Kamala Hydro Electric Power</p>		

	<p>Company Ltd. prepared and submitted the DPR for the project to CWC. Hydrological studies i.e. Average Water 10-daily availability series, design flood and diversion flood for the project for DPR stage has been cleared by CWC vide letter dated 14/03/2012. The methodology and philosophy of computation of flow series of the project was finalized based on the observations of CWC.</p> <p>CWC approved average 10-daily water availability series at project site for the period 1980- 81 to 2009-10 is extended up to the year 2022-23 based on the observed discharge data at Tamen G&amp;D site on River Kamla &amp; observed discharge data of Gerukamukh G&amp;D site on River Subansiri.</p> <p>Design Flood: The Flood Hydrograph has been obtained by adding a uniform base flow, including snowmelt, to the ordinates of the surface flow hydrograph. The Probable Maximum Flood (PMF) hydrographs for Kamla and Kurung thus computed are added together to estimate the PMF hydrograph at Kamala HEP Dam site.</p> <p>A design flood value (PMF) of 17416 m<sup>3</sup>/sec based on 2-day PMP and 24 hour temporal distribution has been approved by CWC vide their letter 14/03/2012. The Probable Maximum Flood (PMF) of 17416 m<sup>3</sup>/sec as computed and approved by CWC is adopted for the project. The same is approved again by CWC, Hydrology (NE) Directorate vide their file no. T-11013/10//2023-HYD(NE) Dte, dated 08-12-2023.</p> <p>At Chaoldhowa Ghat, annual sediment load of 2042 Ham including 15% bed load has been recommended in CWC report (1999). The rate of sedimentation thus worked out to be equal to 0.057 Ham/Sq.km/Year. However, as advised by CWC vide letter dated 14/03/2012 &amp; 06/07/2012 during the clearance of Kamala Hydro Electric Power Company Ltd. DPR, sediment studies of the</p>
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	<p>projects in North-East region are carried out with sediment rate of 1 mm/ year (including bed load) and the same has been adopted for Kamala HEP.</p> <p>The reservoir elevation area capacity curve has been prepared based on the reservoir cross-sections available u/s of dam site up to reservoir rim at around 1 km interval.</p>
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	Online Proposal No. FP/AR/HYD/IRRIG/469328/2024 submitted to MoEF&CC with recommendation of State Govt. EDS raised by MoEF&CC on 25.11.2025 (to be submitted by the State Govt./NHPC). Replies to queries pertaining to NHPC submitted on 06.01.2026. Reply of State Govt. is under process.
Approval of Central Water Commission	Hydrological studies i.e., Average Water 10-daily availability series, design flood, diversion flood and reservoir sedimentation for the project for DPR stage are cleared by CWC, Hydrology (NE) Directorate vide their file no. T-11013/10//2023-HYD(NE) Dte, dated 08-12-2023.
Approval of Central Electricity Authority	The Power Potential Studies of Kamala HE Project has been approved by HPA Division, CEA vide file no. CEA-HY-12-32/5/2019-HPA Division 12-02-2024.
Additional detail (If any)	
<b>Is FRA (2006) done for FC-I</b>	Yes FRA (2006) meeting has been done in Kamle and Kraa Daadi Districts and NOC has been submitted by the Sub-Divisional Magistrate to the District Level Committee (DLC) for further process. In respect of Kurung Kumey District, it is on the process of conducting Gram Sabha meeting very soon.

**13. Details of the EMP**

**Cost for Implementing Environmental Management Plan**



S. N o.	EMP COMPONENTS	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	Year 7	Year 8	
1	Catchment Area Treatment Plan	5726.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5726.05
2	Biodiversity Conservation & Wildlife Conservation Plan	3286.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3286.04
3	Fisheries Development Plan	405.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	405.44
4	Muck Dumping and Management Plan	423.00	1855.10	1639.60	927.75	245.83	221.10	222.61	201.60	200.15	5936.74
5	Landscaping, Restoration of Construction Sites	15.00	99.12	99.12	297.38	396.50	594.75	198.25	198.25	99.13	1997.50
6	Reservoir Rim Treatment Plan	514.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	514.50
7	Green Belt Development Plan	0.00	5.00	5.00	18.00	25.50	36.00	55.00	20.00	18.00	182.50
8	Sanitation and Solid Waste Management Plan	158.00	29.75	29.75	29.75	29.75	29.70	29.70	29.70	29.70	395.80
9	Public Health Delivery System	120.00	41.00	41.00	41.00	41.00	41.00	41.00	41.00	41.00	448.00
10	Energy Conservation Measures	81.00	49.63	49.63	49.63	49.63	49.62	49.62	49.62	49.62	478.00
11	Labour Management Plan	35.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00	147.00
12	Disaster Management Plan	600.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	800.00

1 3	Pollution Control and Mitigation Measures	0.00	20.0 0	20.0 0	20.0 0	20.0 0	20.0 0	20.0 0	20.0 0	20.0 0	160.00
1 4	Environmental Monitoring Program	0.00	51.7 5	51.7 5	51.7 5	51.7 5	51.7 5	51.7 5	51.7 5	51.7 5	414.00
	<b>Total</b>	<b>11364.0 3</b>	<b>2190 .35</b>	<b>1974 .85</b>	<b>1474 .26</b>	<b>898. 96</b>	<b>1082 .92</b>	<b>706. 93</b>	<b>650. 92</b>	<b>548. 35</b>	<b>20891.5 7</b>

#### Cost for R&R and CER

S. No	Components	Capital Cost (Rs. in lakh)
1	Rehabilitation and Resettlement Plan	39400.00
2	Corporate Environment Responsibility (CER)	11264.00
	<b>Total</b>	<b>50664.00</b>

#### Cost for Compensatory Afforestation and Net Present Value

S. No	Other Components	Capital Cost (Rs. in lakh)
1	Compensatory Afforestation	45893.00
2	Net Present Value (NPV)	47095.00
	<b>Total</b>	<b>92988.00</b>

#### 47.1.3 The EAC during deliberations noted the following:

- The Expert Appraisal Committee (EAC) deliberated on the information submitted by the Project Proponent and the details presented during the meeting. The Committee observed that the proposal pertains to the grant of Environmental Clearance for the Kamala HE Project (1720MW) in an area of 3858.8904 Ha located at Village Pompulend, Boa Model, and Laa I etc., Sub-District Kampoijio Circle, Chambang Circle, Raga and Parsi-Parlo, District Kamle, Kra Daadi and Kurung Kumey, Arunachal Pradesh by M/s NHPC Limited.
- The project falls under Item 1(c) of the Schedule to the Environmental Impact Assessment (EIA) Notification, 2006, and is categorized as a Category 'A' project, which requires appraisal at the Central level by the Expert Appraisal Committee (EAC).
- The Terms of Reference (ToR) for conducting EIA/EMP study and public hearing of the Kamala HE Project (1720MW) was granted by the MoEF&CC vide letter dated 07.08.2024.
- The EAC, constituted under the provisions of the EIA Notification, 2006, and comprising expert members/domain experts from various relevant fields, examined the proposal submitted by the Project Proponent. This examination included a review of the

Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) reports, which were prepared and submitted by a QCI/NABET-accredited consultant on behalf of the Project Proponent.

- The EAC noted that the Project Proponent has given an undertaking that the data and information given in the application and enclosures are true to the best of his knowledge and belief and no information has been suppressed in the EIA/EMP reports. If any part of data/information submitted is found to be false/ misleading at any stage, the project will be rejected and Environmental Clearance given, if any, will be revoked at the risk and cost of the project proponent.
- During the meeting the Committee was informed that the Kamala Hydroelectric Project (earlier Subansiri Middle Project) is proposed near Tamen village on the Kamala River, a right bank tributary of the Subansiri River, and forms part of the cascade development envisaged by the Brahmaputra Board in July 1995. The first DPR was prepared by NHPC Ltd. in 2005, after which the project was allotted by the Government of Arunachal Pradesh to Kamala Hydro Electric Power Company Ltd. (KHEPCL). A revised DPR for 1800 MW was submitted by KHEPCL to CEA in 2013, and ToR was granted by MoEF&CC on 05.06.2014. However, in 2018, CEA returned the DPR and rescinded earlier clearances due to non-resolution of pending issues. A fresh ToR for 1800 MW was granted to KHEPCL on 25.09.2018, but no further progress was made. Further, the Ministry of Power indicated the project for probable allotment to NHPC Ltd. in 2021, which was approved by the Government of Arunachal Pradesh in 2023. NHPC subsequently updated the DPR with a revised installed capacity of 1720 MW, for which CEA concurrence was accorded in May 2025. Based on the revised configuration, fresh ToR for the 1720 MW Kamala HEP was granted by MoEF&CC on 07.08.2024.
- The EAC noted that the total land required for the project is 3858.8904 ha, out of which, 3278.0904 ha is forest land and remaining 580.80 ha is non-forest land. The submergence area below FRL 455 m will cover 2665.00 ha. However, proposal for diversion of 3278.0904 ha of forest land has been submitted and it is still pending.
- The EAC expressed concern regarding the proposed felling of trees, i.e. 2340213 nos as the project is located in a very dense forest area. The Committee emphasized the need for a precise and well-managed action plan for ecosystem restoration, including adequate mitigation and compensatory measures in consultation with State Forest & Wildlife Department, ecology and wildlife expert local public and, would be necessary for consideration prior to grant of Forest Clearance to the project.
- The EAC deliberated on the Biodiversity Management and Wildlife Conservation Plan, including conservation measures for Schedule-I species, which has been prepared and submitted to the State Forest Department for approval. The Committee noted that the proposed plan has been appraised by the State Forest Department and approved vide letter

No. CWL/D/21/(549)/2025/4591-93 dated 28.03.2025. It was observed that the plan shall be implemented in letter and spirit, in coordination with local bodies/Panchayats and in consultation with reputed institutions. The Committee emphasized that the funds allocated for the plan shall not be diverted for any other purpose.

- The EAC noted that the estimated project cost is Rs 23764.01 Crore. Total capital cost earmarked towards Environment Management Plan is Rs. 11364.03 lakh and the Recurring cost (operation and maintenance) will be about Rs. 1190.94 lakh per annum (Rs. 9527.54 lakh for 8 years). Additionally, the EAC noted that an amount of ₹50,664.00 lakh has been earmarked towards Resettlement & Rehabilitation (R&R) and Corporate Environment Responsibility (CER), and ₹92,988.00 lakh has been earmarked towards Compensatory Afforestation and Net Present Value (NPV).
- The committee observed that the Public Hearing for the proposed project has been conducted by the State Pollution Control Committee on 30/10/2025 at Kamporijo Circle Office, Kamle District; Toti Lapang, Dui Village, Palin, Kra Daadi District; and Community Hall, Pilop, Nyokoriang Village, Kurung Kumey District. Publications of notice for public hearing were given in state/national level in the The Dawnlit Post, "The Arunachal Age", "The Arunachal Pioneer", "The Arunachal Times" and "The Times of India", dated 27/09/2025. The meeting was chaired by the Deputy Commissioner, Kamle District; Deputy Commissioner, Kra Daadi District and Additional Deputy Commissioner, Kurung Kumey District. The EAC discussed the concerns raised during the Public Hearing (PH) and reviewed the action plan submitted by the PP to address these issues. After detailed deliberation, the Committee found the action plan satisfactory, recognizing that the proposed mitigation measures adequately respond to stakeholders' concerns.
- The EAC was also informed that the Cumulative Impact Assessment & Carrying Capacity Study(CIA&CCS) of Subansiri river basin in Arunachal Pradesh have been completed and the report has been accepted by the Ministry. PP further informed that the outcome and recommendations of CIA&CCS been dully incorporated in the EIA/EMP. E-flow of 28.45 cumec for lean months, 220.54 cumec for monsoon months and 93.14 cumec for the remaining months have been considered for the project.
- During the meeting, the EAC assessed the dam break analysis study and Disaster Management Plan prepared by the Project Proponent, which consider both the Probable Maximum Flood (PMF) and PMF plus Glacial Lake Outburst Flood (GLOF) scenarios. The PMF and GLOF values have been assessed as 17,416 cumec and 1,663 cumec, respectively. The spillway has been designed to safely pass the design flood through seven gates, each of 6 m width and 10.5 m height. Accordingly, for dam break modelling, a conservative scenario of six gates fully open with one gate assumed inoperative at the time of PMF impingement has been considered.

**47.1.4** The EAC after examining the information submitted and detailed deliberations reiterated its earlier recommendation on the project and **recommended** the proposal for grant



of prior Environmental Clearance to Kamala HE Project (1720MW) in an area of 3858.8904 Ha located at Village Pompulend, Boa Model, and Laa I etc., Sub-District Kamporijo Circle, Chambang Circle, Raga and Parsi-Parlo, District Kamle, Kra Daadi and Kurung Kumey, Arunachal Pradesh by M/s NHPC Limited, under the provisions of EIA Notification, 2006 and as amended with subject to compliance of applicable Standard EC conditions with the following additional specific environmental safeguard conditions:

**[A] Environmental management and Biodiversity conservation:**

- i. Stage-I FC shall be obtained before grant of EC.
- ii. Wildlife Conservation plan duly approved by the CWLW shall be implemented in time bound manner.
- iii. To minimize the man-animal conflicts in forest areas, intensive mass awareness campaigns shall be organized in the study area. State Forest Departments shall constitute a Local Coordination Committees/ Primary Response Teams (PRTs) consisting head of village Panchayat (Gram Budha), Range officer (Forests), BDO (Block Development Officer) Local Government Wildlife Research Institute and NHPC representatives for effective implementation of Bio diversity & Wildlife Conservation Plan.
- iv. Clearance shall be obtained from Brahmaputra Board before commencement of construction of the project, if required.
- v. PP shall obtain separate EC for quarrying in the project area, if required.
- vi. On-line monitoring system for the e-flow releases to be installed.
- vii. Skill mapping be undertaken for the youths of the affected project area and based on the skill mapping, the trainings to the youths be incorporated for their appropriate engagements in the Project.
- viii. Land acquired for the project shall be suitably compensated with the prevailing guidelines and all commitments made during the Public Hearing shall be fulfilled.
- ix. The project-affected population should be resettled and rehabilitated as per the latest R & R Policy.
- x. Six monthly compliance reports shall be submitted by the PP to Regional Office, MoEF& CC, Shillong without fail.
- xi. The recommendations of Subansiri River Basin Study will have to be fully abided by the project proponent.
- xii. The Environmental Management Plan (EMP) shall be strictly adhered to as submitted in the EIA/EMP reports. The budgetary provisions for implementation of EMP, shall be fully utilized and not to be diverted to any other purpose. In case of revision of the project cost or due to price level change, the cost of EMP shall also be updated proportionately.
- xiii. The contract clause limiting the No. of vehicles used during excavation and transportation shall followed scrupulously and the same shall informed to the ministry.
- xiv. Ambient Air Quality Monitoring Stations for real time data to be installed at project site before commencement of the construction, shall be displayed at project site and its



report to be submitted to IRO, MoEF&CC.

- xv. No vehicle purchase shall be allowed from funds earmarked for implementation of Wildlife Conservation plan.
- xvi. The Project Proponent shall explore the possibility to undertake tree transplantation, wherever feasible, in consultation with the State Forest Department. Survival of at least 80% of transplanted trees shall be ensured, with monitoring for a minimum period of five years.
- xvii. Plantation of saplings (10,000 nos.) shall be carried out around the muck disposal area in consultation with Forest Department as a part of the tree plantation campaign "Ek Ped Ma Ke Naam" and the details of the same shall be uploaded in the MeriLiFE Portal (<https://merilife.nic.in>). The survival of plants shall be reported in the 6 monthly compliance report.
- xviii. PP shall prepare time bound reclamation and restoration plan for restoration of batching plant in consultation with the Forest Department and same shall be submitted to IRO, MoEF&CC and shall be fully implemented within five years of commissioning of the project.

**[B] Disaster Management:**

- i. Disposal of the excavated muck and its filling on the low-lying area with proper measures for the stabilization and greenery to minimize the impacts of the generated construction muck shall be taken up pari passu with construction work. A muck transportation plan shall be prepared and implemented. The movement of muck carrying vehicles shall be monitored through latest sensor-based technology to ensure the muck dumping at designated sites.
- ii. Stabilization of muck disposal sites using biological and engineering measures shall be taken up immediately to ensure that muck does not roll down the slopes and does not pollute the natural streams and water bodies in surrounding area. The plantation on muck disposal site with local species for restoration of ecology and environment of the project site area.
- iii. Necessary control measures such as water sprinkling arrangements, and construction of paved roads leading to muck disposal sites etc. shall be taken up on priority to arrest fugitive dust at all the construction sites.
- iv. Solid waste generated, especially plastic waste, etc. should not be disposed of as landfill material. It should be treated with scientific approach and recycled. Use of single-use plastics may be discouraged.
- v. Landslide and other heavy rain related disasters shall be taken care of through appropriate preventive measures during construction and operation of project.

**[C] Socio-economic:**

- i. Land acquired for the project shall be suitably compensated in accordance with the

prevailing guidelines of the state government and provisions under Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013.

- ii. RO plant shall be installed in the nearby 5 villages and the maintenance shall be done by the project Authorities.
- iii. Solar panel be provided to the families living in rural areas within 10 km radius of project.
- iv. School up to 12<sup>th</sup> Standard shall be established and managed to provide free quality education for children from project affected villages/Tribal villages. Adequate transportation facilities shall also be provided to students to ensure connectivity and ease of access.
- v. Scholarship programme shall be initiated for the youths in the project affected villages.
- vi. 50 bed multi-specialty hospital shall be established to cater the need of tribal population/locals. The tribal population within 10 km radius of the project shall be given free of cost medical facility.
- vii. Skill development Centre shall be established within 10 km radius of the project and regular training programmes for development and promotion of traditional art/products of tribal/local population. The Skill Development Plan shall mandatorily include the following components:
  - Capacity building and skill enhancement programs aligned with local livelihood opportunities.
  - Establishment of linkages with Industrial Training Institutes (ITIs) and other recognized training centres for imparting technical skills.
  - Provision of free or subsidized access to healthcare facilities in project-supported hospitals and health centres.
  - Support to educational institutions in the study area through free services, scholarships, infrastructure strengthening, and vocational guidance programs.
  - Special outreach initiatives for women, youth, and vulnerable groups within the SC/ST communities to ensure inclusive participation and benefits.
  - The Plan shall be implemented in a time-bound manner with clearly earmarked budgetary provisions, which shall not be diverted for any other purpose.
- viii. The PP shall submit annual progress reports on the implementation of the Skill Development Plan and associated community welfare measures to the Regional Office of the Ministry.
- ix. Bio-Gas plant shall be installed in the Project affected area for Utilizing Cattle waste (Cow Dung) into renewable source of fuel.
- x. Preference in employment opportunities and admission to ITI institutions shall be given to Project Affected Families (PAFs).
- xi. An institutional mechanism to be developed to ensure the preference of jobs to PAFs and SC/ST and also a policy for preferential treatment for award of sundry works to the PAFs and SC/ST and their dependents.
- xii. The compliance of above conditions shall be monitored by IRO, MoEF&CC and

regularly site visit once in year. The compliance report of IRO shall be regularly submitted to MoEF&CC

**[D] Miscellaneous:**

- i. After 5 years of the commissioning of the project, a study shall be undertaken regarding impact of the project on the environment. The study shall be undertaken by an independent agency.
- ii. PP should establish in house (at project site) environment laboratory for measurement of environment parameter with respect to air quality and water (surface and ground). A dedicated team to oversee environment management shall be setup which should comprise of Environment Engineers, Laboratory chemist and staff for monitoring of air, water quality parameters on routine basis.
- iii. A dedicated team to oversee environmental management activities (at project site) shall be set up comprising Environment Manager having post graduate qualification in Environmental Sciences/ Environment Engineering along with other supporting staff. The Environment Manager shall report to Project Head directly.
- iv. PP shall procure construction material only from those Organizations having all valid legal/statutory clearances/permissions or necessary permission to be obtained for quarrying construction materials for the project as per the EIA Notification, 2006 and as amended thereof.

**Agenda Item No. 47.2**

**Morand-Ganjal Irrigation Project in Hosangabad district of Madhya Pradesh by M/s Narmada Valley Development Authority, Madhya Pradesh-Environmental Clearance-reg**

**[Proposal No. IA/MP/RIV/25213/2011; F. No. J-12011/43/2011-IA.I ]**

**47.2.1** The proposal is for grant of Environmental Clearance (EC) to the project for Morand-Ganjal Irrigation Project in Hosangabad district of Madhya Pradesh by M/s Narmada Valley Development Authority, Madhya Pradesh.

**47.2.2:** The Project Proponent and the accredited Consultant M/s MITCON Consultancy & Engineering Services Ltd., Pune, Maharashtra, made a detailed presentation on the salient features of the project and informed that:

- i. Morand and Ganjal Complex project is a major irrigation project included in the Narmada Master plan. The proposed project envisages construction of two dams, one across Morand river and another across Ganjal river to provide irrigation facility to 52,205 ha in

Hoshangabad, Harda and Khandwa districts of Madhya Pradesh including drinking water supply for command villages and Seoni-Malwa Town. Morand Dam is proposed near Morghat village of Seoni Malwa Tehsil of Hoshangabad District while Ganjal Dam is proposed near Jawardha Village of Rehatgaon Tehsil of Harda District.

- ii. The co-ordinates of the proposed dam site are 220 19' 17.25" N & 770 28' 55.51" E and 220 13' 47.27"N & 770 19' 50.58" E, respectively. The Catchment area of the Morand dam is 1031.99 km<sup>2</sup> and that of Ganjal Dam is 413.49 km<sup>2</sup> .

iii. **Proposed Command Area and Canal Network**

Compendium planning of canal network under Morand and Ganjal Complex Project to cover ICA of 52,205 Ha is prepared with the main canals namely Morand Right Bank Canal, Morand Left Bank Canal, Ganjal Left Bank canal and Combined canal. Detailed planning of all the 4 main canals and their distribution network is planned on 1:4000 scale command area maps.

The proposed area for irrigation is divided into two parts viz; command area A and command area B. Command area B is on the banks of the rivers Morand and Ganjal and lies between the proposed Morand Right and Left Bank Canals and the existing Tawa Canal. Command Area A is under combined canal of Morand Left Bank Canal and Ganjal Left Bank Canal.

**Canal Details**

Main Canal	Irrigated Command (Ha)	Length (Km)
Morand RBC	3331	19.428
Morand LBC	4868	20.816
Ganjal LBC	-	4.095
Combined Canal	8918 up to Machak river and 35088 beyond	62.838
<b>Total</b>	<b>52205</b>	<b>107.177</b>

iv. **Existing Sources of Irrigation in Command Area**

The existing sources of irrigation in command is given in following categories.

**Command Area Details**

S. No.	Category	Area under Irrigation		Remarks
		Command A	Command B	
(i)	Existing Dams/Tanks	2090.00 Ha	Nil	Imlidhana Tank and



	etc			Damdama Tank
(ii)	Pressurized Systems	Nil	Nil	
	(a) Rivers/Nala etc			
	(b) Dug wells			
	<b>Total</b>	2090.00 Ha	Nil	
(iii)	Others Specify	Nil	Nil	

v. The project proposal will comprise of following main components: -

### **Morand Dam**

- The total length of dam is 1109.211 m. Out of this length, Earthen Dam is 886.961 m and balance 222.250 m is Spillway.
- Saddle exists on the left flank. The height of the dam in the main valley is 47.028 m and that in the saddle is 21.508 m.
- Ogee shaped spillway is proposed with upstream face to accommodate radial gates of size 15.00 m x 8.20 m with 3.25 m thick piers. T-Girder Bridge is proposed over the piers with elastomeric bearings. Twelve vents of size 15.00 m x 8.00m are proposed. With one as standby, eleven gates will function during floods.
- Three vents of size 3.00 m x 3.00 m for Irrigation sluice is proposed in the saddle portion for both Left and Right bank canal. This is provided below earth dam.
- R.C.C Bridge with deck slab supported on 3 T-Girders is proposed over the piers. The length of the bridge is 222.25 m comprising 12 clear spans of 15.00m with Eleven 3.25 m thickness. Elastomeric bearings of size 250 x 500 x 64 mm are proposed. Spillway Bridge is necessary for traffic movement as well as gantry movement. The road width is 7.50 m and designed for two-lane traffic.
- D/s energy dissipation arrangement in the form of stilling basin of length 69.00m at the end of chute is proposed.
- Construction of d/s training wall, guide wall, return wall and all other associated work.
- Construction of left & right bank canal system including main canals, distributaries, minors sub minors up to 40 Ha chak including construction of all the canal structure required therein.

### **Ganjal Dam**

- The total length of dam is 1144.934 m. Out of this length, Earthen Dam is 923.358 m and balance 221.576 m is Concrete structure.
- Ogee shaped spillway is proposed with upstream face to accommodate radial gates 12.50 m x 12.00 m are proposed beginning with four 3.50m thick piers. T-Girder Bridge is proposed over the piers with elastomeric bearings. Five vents of size 12.50 m x 12.00m are proposed. With one as standby, four gates will function during floods.



- Drainage gallery of size 1.60m x 2.40 m is proposed in Spillway and Non-overflow portion to minimize uplift
- Two vents of size 2.00 m x 2.20 m Irrigation sluice cum bypass arrangement are proposed on the left bank. Power components are proposed to utilize the available head.
- R.C.C Bridge with deck slab supported on 3 T-Girders is proposed over the piers. The length of the bridge is 83.500 m comprising 5 clear spans of 12.50 with four 3.50 m thick piers. Elastometric bearings of size 250 x 500 x 64 mm are proposed. Spillway Bridge is necessary for traffic movement as well as gantry movement. The road width is 7.50 m.
- D/s energy dissipation arrangement in the form of stilling basin of length 53.00 m is proposed.
- Fish Ladder of size 3.00 m x 2.75 m is proposed in the Non over flow section on the Right bank. The fish ladder is proposed with Sidewalls. Baffels are provided in fish ladder with staggered gaps of 3.00 m c/c to reduce the velocity. The velocity may be restricted to
- 2.50 m/s for easy movement of fishes.
- Construction of d/s training wall, guide wall, return wall and all other associated work.
- Construction of Left bank canal from take off, join Morand LBC forming a Combined Canal and its distributaries, minors, sub minors up to 40 Ha chak including construction of all the canal structure required therein.

#### vi. Command Area Details

The proposed command area is divided into two parts viz, command area A and command area B. The command area A is beyond the Machak River. The gross command area is 45269.08 Ha and the Irrigated Command Area (ICA) is 35088 Ha. Out of 35088 Ha area in command area A, 10,000 Ha has been planned by pressure irrigation.

Command area B is on the banks of the rivers Morand and Ganjal and lies between the proposed Morand Left and Right Bank Canal, Ganjal left bank canal and the existing Tawa canal. The gross command area is 21875.27 Ha and the Irrigated Command Area (ICA) is 17117 Ha. The command area details as follows.

Project	Canal length (Km)	Gross Command (in Ha)	Irrigated Command (in Ha)
Morand RBC	19.248	6874.19	4868.00
Morand LBC	20.816	4189.40	3331.00
Ganjal LBC	4.095	Ganjal LBC joins Morand LBC forming a combined canal	
Combined canal	62.838	56389.24	44006.14
By gravitational flow through canals		43027.96	34006.14
Pressure system		13361.28	10000.00

Thus the present total command area is 52,205 Ha from Morand and Ganjal dam sites, with the proposed cropping pattern and 135% intensity of irrigation.

- vii. Earlier, the Environment Appraisal Committee (EAC) for River Valley and Hydro Electric Power Projects appraised this project in its meetings held on 10-11 February, 2012; 1- 2 June, 2012 and 20-21 July, 2012. Committee has recommended the Terms of Reference (ToR) and Ministry of Environment, Forest and Climate Change (MoEFCC) has accorded the clearance for pre-construction activities at the proposed site as per provisions of EIA Notification, 2006 and its subsequent amendments along with ToR for preparation of EIA/EMP Report vide No. J-12011/43/2011-IA-I dated 17.10.2012. The validity period of the ToR was 2 years i.e. up to 16.10.2014.
- viii. The geographical co-ordinate of the project are

Name of the Proposal	Morand-Ganjal Irrigation Project in Hosangabad district of Madhya Pradesh by M/s Narmada Valley Development Authority, Madhya Pradesh
Location (Including coordinates)	Morand Dam - 22° 19' 17.25" N & 77° 28' 55.51" E Ganjal Dam - 22° 13' 47.27" N & 77° 19' 50.58" E
Inter- state issue involved	No
Seismic zone	III

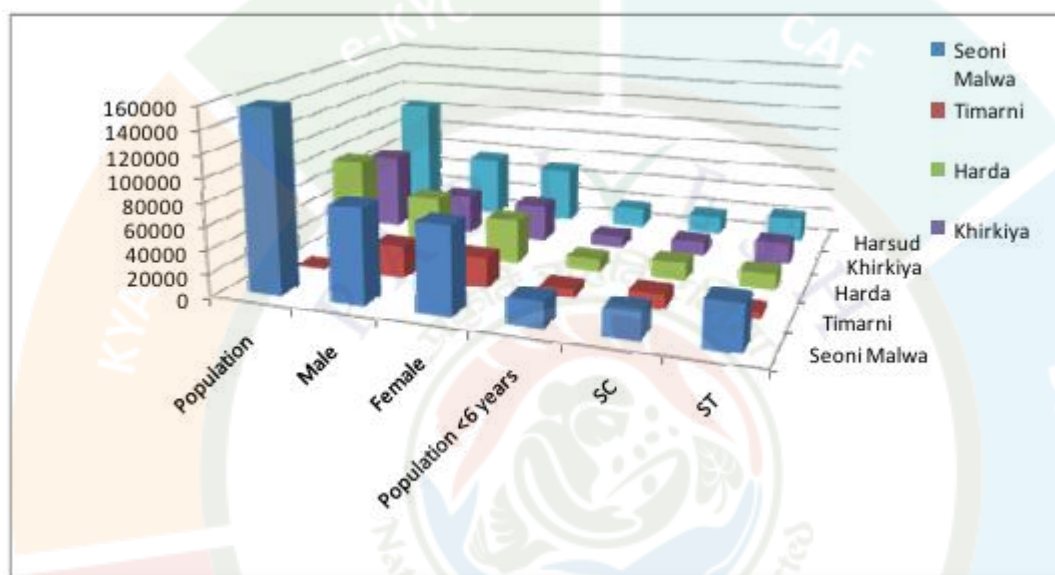
- ix. The Morand-Ganjal Irrigation Project in Hosangabad district of Madhya Pradesh by M/s Narmada Valley Development Authority, Madhya Pradesh project envisage construction of

Canal	Length (Km)
Morand Right Bank Canal	19.428
Morand Left Bank Canal	20.816
Ganjal Left Bank Canal	4.095
Combined Canal	62.838
Branch Canal-1	11.046
Branch Canal-2	22.361
Distributaries and Minors	499.493
<b>Total</b>	<b>640.077</b>

x. **Land requirement:**

Particular	Area (Ha)
Private land	643.03
Government land	262.90
Forest land	2250.06
<b>Total</b>	<b>3,155.99</b>

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



xii. **Water requirement:**

Water use allocated by NWDT for Morand-Ganjal Complex Project is 465.48 MCM (0.377MAF). 75% dependable yield approved by CWC for Morand and Ganjal Dam sites are 316.34 MCM & 126.75 MCM, respectively. Total yield of both the dams put together is 443.09 MCM against which, the proposed utilization is 404.605 MCM (0.328 MAF), 356.35 MCM of water for Irrigation, 15.18 MCM for drinking water, 27.055 MCM as average evaporation losses and rest of the water is released as e-flow along with spills. CWC Approval vide letter no. F.no. 14/3/2011/ND&HW/393 dated 21.01.2013

xiii. **Project Cost:** The estimated project cost is Rs 2585.76 crores. Total cost earmarked towards environmental pollution control measures is Rs. 742.00 crores.

xiv. **Project Benefit:** Total Employment will be 2700 persons out of that 500 nos are skilled & 2200 are semiskilled.

- xv. **Environmental Sensitive area:** There are no National Parks or Wildlife Sanctuaries or Biosphere Reserves or Important Bird Areas (IBA) or other protected or ecologically sensitive areas.

Sr. No.	Name of the Grove/Wildlife Sanctuary/ESA	Distance (Km)	Direction
1	Satpura Tiger Reserve	45	W
2	Ratapani Sanctuary	55	N
3	Melghat Tiger reserve	60	S

- xvi. **MoU / any other clearance/ permission signed with State government:**

Sr. No.	Approvals	Remarks
1	CWC	Dated 21.01.2013
2	R& R	Approved by Ministry of Tribal Affair dated 14.03.2017
3	Stage 1 Clearance	vide F. No. 8-16/2023-FC (E-209627) dated 24.11.2025

- xvii. **Resettlement and rehabilitation:**

- A total of 08 villages are affected by the project, out of which 06 villages are affected by the Morand Dam and 02 villages by the Ganjal Dam.
- Further, 472 families are affected due to the Morand Dam and 172 families due to the Ganjal Dam, resulting in a total of 644 affected families.
- The R&R plan is as per the provision of “The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act 2013”.
- The rehabilitation site for Project Affected Families of the Morand Dam is proposed at the nearby Lokhartalai village in Seoni Malwa Tehsil, Hoshangabad District.
- The rehabilitation site for Project Affected Families of the Ganjal Dam is proposed at the nearby Singanpur village in Harda District.

*Details of Land Acquisition*

Private land	643.03 Ha		
Government land/Forest Land	Government land – 262.90 Ha * Forest Land – 2250.06 Stage 1 Clearance granted vide F. No. 8-16/2023-EC (E-209627) dated 24.11.2025		
Submergence area/Reservoir area	<b>Particular</b>	<b>Total forest Area (Ha)</b>	<b>Forest area under submergence (Ha)</b>
	Morand	1438.77	1372.31
	Ganjal	811.29	761.47
	<b>Total</b>	<b>2,250.06</b>	<b>2,133.78</b>
Land required for project components	<b>Particular</b>		<b>Area (Ha)</b>
	Private land		643.03
	Government land		262.90
	Forest land		2250.06
	<b>Total</b>		<b>3,155.99</b>

xviii. **Scheduled –I species:**

Sr. No	Latin Name	Common Name	IUCN Status
1.	Crocodylus palustris	Crocodile	VU / I
2.	Python molurus	Indian python	NT / I
3.	Antilope cervicapra	Blackbuck	VU / I
4.	Bos gaurus	Indian Bison (Gaur)	VU / I
5.	Canis lupus	Indian Wolf	VU / I
6.	Cervus duvaucelii	Barasingha	VU / I
7.	Cuon alpinus	Wild Dog / Dhole	EN / I
8.	Gazella bennettii	Chinkara	LC / I
9.	Manis culionensis	Scaly Ant Eater (Pangolin)	NT / I
10.	Melivora capensis	Honey Badger / Indian Ratel	LC / I
11.	Melursus ursinus	Sloth Bear	VU / I
12.	Panthera pardus	Leopard	NT / I

*VU = Vulnerable; NT = Near Threatened, EN = Endangered*

xix. **Alternative Studies:**

**a) Morand dam Alternative Studies**



Morand dam and reservoir: Merits and demerits of the three alternative proposals and sites examined.			
Parameter	Alternative 1	Alternative 2 (Morghat village)	Proposed Dam Site (Morghat village)
	77° 28' 38.6" E 22° 19' 20.7" N	77° 28' 33.5" E 22° 20' 17.1" N	77° 28' 55.51" E 22° 19' 17.25" N
Length of the Dam (Km)	2.320	1.720	1.55
Live Storage (MCM)	226.00	266.00	226.124
F.R.L(m)	364.00	366.50	366.23
Catchment Area (sq.Km)	1030.98	1044.25	1031.99
75% dependable flow (MCM)	316.03	320.098	316.34
Forest Submergence (Ha)	1502.04	1368.92	1342.71
Non-forest submergence(Ha)	756.31	807.43	833.24
Total submergence (Ha)	2258.35	2176.35	2200.68
Accessibility Approachability	approachable from Seoni Malwa town on Hoshangabad - Khandwa Road at 45 Km from Hoshangabad through a cart track leading to village Morghat at a distance of 21 Kilometers		
Hard solid rock depth for dam seat	Deep	Deep	Not deep
Estimated cost of appurtanances in lakhs	14553.00	15650.00	14100.00

#### b) Morand dam Alternative Studies

Ganjal dam and reservoir: Merits and demerits of the three alternative proposals and sites examined.			
Parameter	Upstream Site	Downstream Site	Proposed Dam
	(Axis UU)	(Axis DD)	Site (Axis AA)
		Near Jawardha	Near Jawardha

		Village	Village
	77°20' 20.8" E 22°13' 8.7" N	77°19' 57.7" E 22°14' 7.4" N	77° 19' 50.58" E 22° 13' 47.27" N
Length of the Dam (m)	925.00	2526.00	1145.00
Catchment Area (sq.Km)	406.98	416.12	413.49
75% dependable flow (MCM)	133.52	136.52	126.75
Live Storage (MCM)	92.00	94.00	86.803
F.R.L(m)	379.002	377.036	376.07 m
Forest Submergence (Ha)	1007.34	836	833.24
Non- forest submergence (Ha)	-	-	-
Total submergence (Ha)	1007.34	836	833.24
Project affected people	172 Families	172 Families	172 Families
Cost of R.R in lakhs	788	1470	5356.00 (including LAQ)
Canal length	Increases by 35 Km	Less by 1.3 Km	GLBC-4.095 Km Combined Canal- 62.838 Km
Accessibility & Approachability	Tough	Ganjal Dam Site near village Jawardha is approachable from Timrani on Hoshangabad - Khandwa Road at 77.24 Km through a metal road to village Kapasi on Timrani - Kheri 21 Kilometers form Timrani followed by a cart track to village Jawardha	
Estimated cost of Dam appurtanances in lakhs	7740.00	13187.00	9580.00

xx. **Baseline Environmental Scenario:**

Particulars	Details																																																																																
Period of baseline data collection/Sampling period.	Baseline Study Period <ul style="list-style-type: none"><li>Monsoon Season: August 2012</li><li>Winter Season: December 2012</li><li>Pre-Monsoon Season: May 2013</li></ul>																																																																																
(Air, noise, water, land)	<p style="text-align: center;"><b>AAQ parameters at 20 locations (min. &amp; Max.)</b></p> <ul style="list-style-type: none"><li>PM10 = 45 to 56 µg/m3</li><li>PM2.5 = 10 to 18 µg/m3</li><li>SO2 = &lt; 6 to 6.3 µg/m3</li><li>NOx = 10.3 to 14.1 µg/m3.</li><li>CO = &lt;0.1 to 0.1 µg/m3</li></ul> <p style="text-align: center;">Surface water samples (Total 6 samples)</p> <table><tr><th colspan="4">Morand Dam</th></tr><tr><th>Parameters</th><th>Season 1</th><th>Season2</th><th>Season3</th></tr><tr><td>pH</td><td>7.17-7.4</td><td>7.03-7.3</td><td>7.14-7.24</td></tr><tr><td>Total Alkalinity (mg/l)</td><td>24.6-28.1</td><td>24-25.6</td><td>29.4-31.5</td></tr><tr><td>Total Dissolved Solids (mg/l)</td><td>250-288</td><td>224-260</td><td>241-268</td></tr><tr><td>Hardness (mg/l)</td><td>50.2-58.4</td><td>45.6-50.5</td><td>54.9-59.5</td></tr><tr><td>BOD (3 day @27°C) (mg/l)</td><td>1-1.1</td><td>1-1</td><td>1-1</td></tr><tr><td>COD (mg/l)</td><td>3.8-4.1</td><td>1.84-3.1</td><td>2.74-3.41</td></tr><tr><td>Sulphates (mg/l)</td><td>7.4-8.8</td><td>6.5-7.8</td><td>7.4-9.4</td></tr><tr><td>Chlorides (mg/l)</td><td>108-124</td><td>98-108</td><td>105-144</td></tr><tr><td>Calcium (mg/l)</td><td>14.8-16.4</td><td>10.4-12.1</td><td>14.8-16.4</td></tr><tr><td>Dissolved Oxygen (mg/l)</td><td>6-6.4</td><td>4.4-5</td><td>6.4-7.4</td></tr><tr><td>Total Coliform (MPN/100 ml)</td><td>&lt;1</td><td>&lt;1</td><td>&lt;1</td></tr><tr><td></td><td></td><td></td><td></td></tr></table> <table><tr><th colspan="4">Ganjal Dam</th></tr><tr><th>Parameter</th><th>Season 1</th><th>Season 2</th><th>Season 3</th></tr><tr><td>pH</td><td>7.4-7.5</td><td>7.02-7.1</td><td>7.08-7.22</td></tr><tr><td>Total Alkalinity (mg/l)</td><td>21.4-26.8</td><td>20.9-21.4</td><td>29.4-39.9</td></tr><tr><td>Total Dissolved Solids (mg/l)</td><td>208-221</td><td>197-209</td><td>221-234</td></tr><tr><td>Hardness (mg/l)</td><td>44.4-54.8</td><td>41-46.7</td><td>58.4-61.7</td></tr></table>	Morand Dam				Parameters	Season 1	Season2	Season3	pH	7.17-7.4	7.03-7.3	7.14-7.24	Total Alkalinity (mg/l)	24.6-28.1	24-25.6	29.4-31.5	Total Dissolved Solids (mg/l)	250-288	224-260	241-268	Hardness (mg/l)	50.2-58.4	45.6-50.5	54.9-59.5	BOD (3 day @27°C) (mg/l)	1-1.1	1-1	1-1	COD (mg/l)	3.8-4.1	1.84-3.1	2.74-3.41	Sulphates (mg/l)	7.4-8.8	6.5-7.8	7.4-9.4	Chlorides (mg/l)	108-124	98-108	105-144	Calcium (mg/l)	14.8-16.4	10.4-12.1	14.8-16.4	Dissolved Oxygen (mg/l)	6-6.4	4.4-5	6.4-7.4	Total Coliform (MPN/100 ml)	<1	<1	<1					Ganjal Dam				Parameter	Season 1	Season 2	Season 3	pH	7.4-7.5	7.02-7.1	7.08-7.22	Total Alkalinity (mg/l)	21.4-26.8	20.9-21.4	29.4-39.9	Total Dissolved Solids (mg/l)	208-221	197-209	221-234	Hardness (mg/l)	44.4-54.8	41-46.7	58.4-61.7
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	BOD @ 27°C (mg/l)	1-1	1-1	1-1
	COD (mg/l)	3-3.8	1.84-2.8	3.1-3.4
	Sulphates (mg/l)	9.6-11.5	7.8-9.7	8.8-9.1
	Chlorides (mg/l)	124-130	104-115	119-131
	Calcium (mg/l)	11.1-12.1	9.8-10.6	10.6-12.8
	Dissolved Oxygen (mg/l)	4.5-6.1	3.8-4.1	5.7-6.3
	Total Coliform (MPN/100 ml)	<1	<1	<1
<b>Ground Water samples at 30 locations</b>				
Parameter	Season 1	Season 2	Season 3	
pH	6.98-7.32	7-7.02	7-7.02	
Total Dissolved Solids (mg/l)	174-850	108-346	116-351	
Total Hardness (mg/l)	158-445	88-157	94-164	
Sulphates (mg/l)	12.5-30.44	10.5-14	10.74-17.1	
Chlorides (mg/l)	34.56-101.3	26.4-55.14	33.1-93.4	
Calcium (mg/l)	40.08-107.88	30.1-56.45	38.9-55.4	
Magnesium (mg/l)	21.4-28.4	11.4-16.74	14.6-21.4	
<b>Noise levels Leq (Day &amp; Night) at 20 locations:</b>				
Zone /Area	Day Time	Night Time		
Residential Zone	49.1 to 56.3 dB (A)	35.2 to 56.3 dB(A)		
<b>Soil Quality at 60 Locations</b>				
Parameters	Season 1	Season 2	Season 3	
pH	6.8-7.3	6.8-7.3	6.8-7.3	
Conductivity (mS/cm)	0.12-0.2	0.12-0.2	0.12-0.2	
Available Potassium (kg/ha)	25-60	25-60	25-60	
Available Nitrogen (kg/ha)	180-250	180-250	180-250	
Available Phosphorus (kg/ha)	8-18	8-18	8-18	
flora and fauna of the project	Total 302 floral species were recorded in and around the project area			

area,	<b>Fauna Diversity:</b> <ul style="list-style-type: none"> <li>• 11 mammal species,</li> <li>• 119 bird species,</li> <li>• 95 freshwater Fish species,</li> <li>• 20 reptile species</li> </ul>
aquatic ecology, etc.	
Brief description on hydrology and water assessment as per the approved Pre-DPR:	<p><b>Hydrology &amp; Water Requirement</b></p> <p>Ganjal river catchment is one of the major sub-basins of the Narmada River in its 'Middle Zone'. The Ganjal River joined by its major tributary Morand drains an area of 1930 Sq. Km of Hoshangabad district.</p> <p>The catchment area at Ganjal dam site is 413.49 Sq. Km and that at Morand dam site is 1031.99 Sq. Km. There are 3 rain gauge stations (IMD) influencing the inflow to Ganjal reservoir and 4 rain gauge stations influencing the inflow to Morand reservoir. There is a stream flow Gauging station maintained by Central Water Commission (CWC) at Chhidgaon, just downstream of the confluence of Ganjal and Morand rivers.</p> <p>The Average Annual Rainfall on the catchment varies from 1034.42 mm to 1084.56 mm The Ganjal River after the confluence of Morand tributary is gauged at a place called Chhidgaon by CWC. The daily discharge data is available for a period of 32 years from the year 1977-78 to 2008-09. The observed discharge data at Chhidgaon is used in deriving the monthly discharge data for each year at the two dam sites in proportion to catchment area. The two dam sites intercept a total catchment area of 1445.48 Sq. Km and receives an annual yield of 443.09 MCM of water at 75% dependability. There are 6 minor schemes in Morand catchment with a total catchment area of 53.45 Sq. Km with a proposed utilization of 6.732 MCM total.</p>
Additional detail (If any)	-

xxi. **Details of Solid waste/ Hazardous waste generation/ Muck and its management**

**Domestic Waste:**

Name of Waste	Source	Qty (TPA)
Dry Waste	Labour Colony	197.10
Wet Waste	Labour Colony	295.65



### Details of Excavation Waste (Muck)

The detail of the muck likely to be disposal at low lying area within 10 km of project site.

Name of Waste	Source	Qty (cu.m)	Method of Disposal
Muck	Excavation	<ul style="list-style-type: none"> <li>11.31 Lakh cum (Morand dam),</li> <li>0.46 Lakh cum (Ganjal Dam)</li> <li>25.97 Lakh cum (Canal network)</li> </ul>	The muck shall be graded and stores separately. Fertile top soil can be used for canal bank plantations and landscaping while the gravel mixed soils shall be used for canal bunds and the earthen dam. Rejects and surplus shall be used for back filling the quarry. Hard rock will be crushed and used for road and dam construction.

- xxii. **Public Hearing Details:** Public Hearing for the proposed project has been conducted by the State Pollution Control Board at three districts separately.

Advertisement for PH with date	Dainik Bhaskar dated 24/09/2015 Dainik Jagran, Bhopal dated 25/09/2015			
Date of PH	S. No.	Village	District	Dates
	1.	Bothi	Harda	3.11.2015
	2.	Jhriyadoh	Betul	5.11.2015
	3.	Morghat	Hoshangabad	18.11.2015
	4.	Dagarkhedi	Khandwa	27.11.2015
Venue	Bothi, Jhriyadoh, Morghat, Dagarkhedi			

Chaired by	Shri. Pavan Jain (Additional District Magistrate),			
Main issues raised during PH	The primary concern of the attendees was related to compensation for property and Rehabilitation & Resettlement (R&R) benefits for affected persons and families.			
No. of people attended	<b>S. No.</b>	<b>Village</b>	<b>District</b>	<b>Attendees</b>
	1.	Bothi	Harda	1000
	2.	Jhiriyaoh	Betul	600
	3.	Morghat	Hoshangabad	1000
	4.	Dagarkhedi	Khandwa	182

xxiii. Status of Litigation Pending against the proposal, if any. Nil

xxiv. The salient features of the project are as under:

#### 1. EAC Meeting Details:

EAC meeting/s	<b>Agenda ID:</b> EC/AGENDA/EAC/674587/1/2026 Agenda of 47 <sup>th</sup> Meeting Of The Expert Appraisal Committee
Date of Meeting/s	28/01/2026
Date of earlier EAC meetings	<ul style="list-style-type: none"> <li>i. 95th Meeting of EAC held during 11th and 12th July, 2016.</li> <li>ii. 96th Meeting of EAC held on 11th and 12th August, 2016</li> <li>iii. 2nd Meeting of EAC held during 30-31st January, 2017</li> <li>iv. 3rd Meeting of EAC held during 2-3rd March, 2017</li> <li>v. 18th Meeting of EAC held on 27.09.2018</li> </ul>

#### 2. Project details:

Name of the Proposal	Morand-Ganjal Irrigation Project in Hoshangabad district of Madhya Pradesh
Proposal No.	Proposal No. IA/MP/RIV/25213/2011,
Location (Including Coordinates)	Morand Dam - 22° 19' 17.25" N & 77° 28' 55.51" E  Ganjal Dam - 22° 13' 47.27"N & 77° 19' 50.58" E
Company's Name	M/s Narmada Valley Development Authority
CIN no. of Company/user agency	-
Accredited Consultant and certificate no.	MITCON Consultancy & Engineering Services Ltd., Pune, Maharashtra Certificate No. NABET/EIA/24-27/RA 0343
Project location (Coordinates /River/ Reservoir)	Morand Dam - 22° 19' 17.25" N & 77° 28' 55.51" E  Ganjal Dam - 22° 13' 47.27"N & 77° 19' 50.58" E
Inter- state issue involved	No
Proposed on River/ Reservoir	Morand river and Ganjal river
Type of Hydro-electric project	Not Applicable
Seismic zone	Zone III (i. e. Moderate Risk Zone)

### 3. Category details:

Category of the project	1 (c) Cat. 'A'
Capacity / Cultural command area (CCA)	52205 Ha
Attracts the General Conditions (Yes/ No)	Yes
Additional information (if any)	NA

### 4. ToR/EC Details:

ToR Proposal No.	W152012/2011/30 dated 24.05.2011
EAC meeting date	10-11 <sup>th</sup> February 2012; 1-2 <sup>nd</sup> June 2012; 20-21 <sup>st</sup> July 2012.
ToR Letter No.	No. J-12011/43/2011-IA-I

ToR grant Date		17/10/2012	
Cost of project		2585.76 Crores	
Total area of Project	Particular	Area (Ha)	
	Private land	643.03	
	Government land	262.90	
	Forest land	2250.06	
	Total	3,155.99	
Height of Dam from River Bed (EL)		Mornad Dam – 47.28 m Ganjal Dam – 38.43 m	
Details of submergence area	Particular	Total forest area Area (Ha)	Forest area under submergence
	Morand	1438.77	1372.31
	Ganjal	811.29	761.47
	Total	2,250.06	2,133.78
District to provide irrigation facility (if applicable)		Hoshangabad, Harda and Khandwa District	
Details of tunnels on upper level & lower level and length of canal (if applicable)		NA	
No. of affected Village.		Morand Dam -06 nos Ganjal Dam -02 nos. Total – 08 villages are affected.	
No. of Affected Families	Morand Dam - 472 nos Ganjal Dam -172 nos Total – 644 families are affected.		
Project Benefits	The project on completion will provide: <ul style="list-style-type: none"><li>❖ Irrigation over a ICA as 52,205 Ha in 211 villages.</li><li>❖ 15.18 MCM of water has been earmarked for meeting domestic &amp; industrial water requirements.</li><li>❖ Enable upliftment of urban population living in small to medium size town, clusters of Hoshangabad, Harda and Khandwa Districts.</li><li>❖ Generate employment to the large agricultural labors available in the area.</li><li>❖ Increased agricultural activities and production and will also generate multiple type of indirect employment facilities e.g. markets, workshops, food processing units, transportation etc.</li></ul>		
R&R details	<ul style="list-style-type: none"><li>• A total of 08 villages are affected by the project, out of which 06 villages are affected by the Morand Dam and 02 villages by the Ganjal Dam.</li></ul>		

	<ul style="list-style-type: none"><li>• Further, 472 families are affected due to the Morand Dam and 172 families due to the Ganjal Dam,resulting in a total of 644 affected families.</li><li>• The R&amp;R plan is as per the provision of “The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act 2013”.</li><li>• The rehabilitation site for Project Affected Families (PAFs) of the Morand Dam is proposed at the nearby Lokhartalai village in Seoni Malwa Tehsil, Hoshangabad District.</li><li>• The rehabilitation site for Project Affected Families (PAFs) of the Ganjal Dam is proposed at the nearby Singanpur village in Harda District.</li></ul>			
Command area	52205 Ha			
Types of Waste and quantity of generation during Construction/ Operation	Name of Waste		Source	Qty (TPA)
	Dry Waste		Labour Colony	197.10
	Wet Waste		Labour Colony	295.65
	Name of Waste	Source	Qty (cu.m)	Method of Disposal
Muck	Excavation	<ul style="list-style-type: none"><li>• 11.31 Lakh cum (Morand dam),</li><li>• 0.46 Lakh cum (Ganjal Dam)</li><li>• 25.97 Lakh cum (Canal network)</li></ul>	The muck shall be graded and stores separately. Fertile top soil can be used for canal bank plantations and landscaping while the gravel mixed soils shall be used for canal bunds and the earthen dam. Rejects and surplus shall be used for back filling the quarry. Hard rock will be crushed and used for road and dam construction.	
Material used for blasting and its composition as per	Controlled blasting activity is proposed during construction phase.			



DGMS standards.			
E-Flows for the Project	<b>Particular</b>	<b>Morand dam</b>	<b>Ganjal Dam</b>
	<b>Average discharge:</b>	~55.97 cumec	~22.42 cumec
	<b>River geometry:</b>	Width ~173.41 m; depth ~4.23 m	Width ~63 m; depth ~4.04 m
	<b>Peak flow</b>	Discharge of 8.39 cumec is adequate to meet environmental flow requirements.	Discharge of 3.6 cumec satisfies environmental flow needs.
	<b>Low flow</b>	0.3 cumec maintains adequate river depth (~1.51 m) and width (~59.90 m) and meets 30–50% depth reduction criteria.	0.15 cumec is recommended as adequate, maintaining acceptable depth and width while meeting flow reduction criteria.
Final Annual Environmental Flow Requirements – <ul style="list-style-type: none"> <li>• <b>Morand Dam: 52.58 MCM</b></li> <li>• <b>Ganjal Dam: 21.64 MCM</b></li> <li>• <b>Combined: 74.22 MCM</b></li> </ul>			
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.  b) If not the E-Flows maintain criteria for sustaining river	NA		

ecosystem.	
Details on provision of fish pass	<p>Ganjal Dam:</p> <p>Fish Ladder of size 3.00 m x 2.75 m is proposed in the Non over flow section on the Right bank. The fish ladder is proposed with Sidewalls. Baffels are provided in fish ladder with staggered gaps of 3.00 m c/c to reduce the velocity. The velocity may be restricted to 2.50 m/s for easy movement of fishes.</p>
Project benefit including employment details (no of employee)	<p>The project on completion will provide:</p> <ul style="list-style-type: none"> <li>❖ Irrigation over a ICA as 52,205 Ha in 211 villages.</li> <li>❖ 15.18 MCM of water has been earmarked for meeting domestic &amp; industrial water requirements.</li> <li>❖ Enable upliftment of urban population living in small to medium size town, clusters of Hoshangabad, Harda and Khandwa Districts.</li> <li>❖ Generate employment to the large agricultural labours available in the area.</li> <li>❖ Increased agricultural activities and production and will also generate multiple type of indirect employment facilities e.g. markets, workshops, food processing units, transportation etc.</li> <li>❖ <b>Employee Details</b> <ul style="list-style-type: none"> <li>❖ Skilled – 500 nos</li> <li>❖ Semiskilled - 2200 nos</li> </ul> </li> </ul>
Area of Compensatory Afforestation (CA) with tentative no of plantation.	2289.09 Ha, however 1000 trees per Ha. will be planted.
Previous EC details	Not applicable
EC Compliance Report by R.O, MOEF&CC	Not Applicable

#### 5. Electricity generation capacity:

Powerhouse Installed Capacity	Nil
Generation of Electricity Annually	1.55 MW at Ganjal Dam
No. of Units	Nil

#### 6. Muck Management Details:

No. of proposed disposal area/ (type of land- Forest/Pvt. land)	In the vicinity of the Project 10 km radius			
Cross section of proposed muck area, Height of muck with slope.	Utilization of 60 % of excavated material shall be used for backfilled of distributary networks, approach Roads & aggregates shall be utilized for construction. 40% shall be filled in low laying areas.			
Distance of muck disposal area (location), from muck generation sources (project area)/River, HFL of proposed muck disposal area.	Average 0 km to 5 km			
Total Muck Disposal Area	<b>Name of Waste</b>	<b>Source</b>	<b>Qty (cu.m)</b>	<b>Method of Disposal</b>
Estimate Muck to be generated	Muck	Excavation	<ul style="list-style-type: none"> <li>• 11.31 Lakh cum (Morand dam),</li> <li>• 0.46 Lakh cum (Ganjal Dam)</li> <li>• 25.97 Lakh cum (Canal network)</li> </ul>	The muck shall be graded and stores separately. Fertile top soil can be used for canal bank plantations and landscaping while the gravel mixed soils shall be used for canal bunds and the earthen dam. Rejects and surplus shall be used for back filling the quarry. Hard rock will be crushed and used for road and dam construction.
Transportation	By Road			

Monitoring mechanism for Muck Disposal Transportation	Environmental Management Cell (EMC) shall monitor mechanism of muck disposal.
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## 7. Land Area Breakup:

Private land	643.03 Ha		
Government land/Forest Land	Government land – 262.90 Ha * Forest Land – 2250.05 Stage 1 Clearance granted vide F. No. 8-16/2023-FC (E-209627) dated 24.11.2025		
Submergence area/Reservoir area	<b>Particular</b>	<b>Total forest Area (Ha)</b>	<b>Forest area under submergence (Ha)</b>
	Morand	1438.77	1372.31
	Ganjal	811.29	761.47
	<b>Total</b>	<b>2,250.06</b>	<b>2,133.78</b>
Land required for project components	<b>Particular</b>	<b>Area (Ha)</b>	
	Private land	643.03	
	Government land	262.90	
	Forest land	2250.05	
	<b>Total</b>	<b>3,155.98</b>	

## 8. 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	2250.05 Ha. within Project Site
National Park	No	No within 10 km Radius
Wildlife Sanctuary	No	No within 10 km Radius
Archaeological sites monuments/ historical temples etc.	No	No within 10 km Radius
Additional information (if any)	-	-

## 9. Availability of Schedule-I species in study area

Sr. No	Latin Name	Common Name	IUCN Status
1.	Crocodylus palustris	Crocodile	VU / I
2.	Python molurus	Indian python	NT / I
3.	Antilope cervicapra	Blackbuck	VU / I
4.	Bos gaurus	Indian Bison (Gaur)	VU / I
5.	Canis lupus	Indian Wolf	VU / I
6.	Cervus duvaucelii	Barasingha	VU / I
7.	Cuon alpinus	Wild Dog / Dhole	EN / I
8.	Gazella bennettii	Chinkara	LC / I
9.	Manis culionensis	Scaly Ant Eater (Pangolin)	NT / I
10.	Melivora capensis	Honey Badger / Indian Ratel	LC / I
11.	Melursus ursinus	Sloth Bear	VU / I
12.	Panthera pardus	Leopard	NT / I

VU = Vulnerable; NT = Near Threatened, EN = Endangered

#### 10. Public Hearing (PH) Details

Advertisement for PH with date	Dainik Bhaskar dated 24/09/2015 Dainik Jagran, Bhopal dated 25/09/2015			
Date of PH	S. No.	Village	District	Dates
	1.	Bothi	Harda	3.11.2015
	2.	Jhriyadoh	Betul	5.11.2015
	3.	Morghat	Hoshangabad	18.11.2015
	4.	Dagarkhedhi	Khandwa	27.11.2015
Venue	Bothi, Jhriyadoh, Morghat, Dagarkhedhi			
Chaired by	Shri. Pavan Jain (Additional District Magistrate),			
Main issues raised during PH	The primary concern of the attendees was related to compensation for property and Rehabilitation & Resettlement (R&R) benefits for affected persons and families.			
No. of people attended	S. No.	Village	District	Attendees



	1.	Bothi	Harda	1000
	2.	Jhriyadoh	Betul	600
	3.	Morghat	Hoshangabad	1000
	4.	Dagarkhedi	Khandwa	182

**11. Court case details: Nil**

**12. Status of other statutory clearances**

Particulars	Letter no. and date
Status of Stage- I FC ( Confirm forest land EIA & FC)	<ul style="list-style-type: none"> <li>❖ Stage 1 Clearance granted for 811.29 ha of forest land for construction of ganjal dam Out of 2250.05 ha vide online Proposal (Online No.</li> <li>❖ FP/MP/IRRIG/36231/2018) dated 31/10/2018</li> <li>❖ Stage 1 Clearance granted vide F. No. 8-16/2023-FC (E-209627) dated 24.11.2025</li> </ul>
Approval of Central Water Commission	Narmada Valley Development Authority (NVDA) Government of Madhya Pradesh vide resolution dated 21/01/2013
Approval of Central Electricity Authority	NA
Additional detail (If any)	NA
<b>Is FRA (2006) done for FC-I</b>	-

**13. Details of the EMP:**

Sr. no	Activities	Capital cost (Lakhs)
1.	Resettlement & rehabilitation plan	27827
2.	Local area Development plan	215
3.	Livelihood plan for project affected tribal families	1500
4.	Biodiversity plan	545
5.	Compensatory Afforestation	30001.02

6.	Catchment area Treatment plan	1944.26
7.	Fisheries management plan	428.99
8.	Public health & public awareness	360
9.	Energy conservation measures	50
10.	Command area development plan	10357.71
11.	Dam break analysis & disaster management plan	95
12.	Environment management construction site	370
13.	Pollution control (Air, Noise & water)	58
14.	Public awareness programme	30
15.	Environment Monitoring Programme	408.02
	<b>Total</b>	<b>74190</b>
		<b>742.00 Crores</b>

**14. ADS details :**

S. No	ADS Point	Reply
1	Stage-I Forest Clearance	Stage-I Forest Clearance granted vide F. No. 8-16/2023-FC (E-209627) dated 24.11.2025

**47.2.3 The EAC during deliberations noted the following:**

- The Expert Appraisal Committee (EAC) deliberated on the information submitted by the Project Proponent and the details presented during the meeting. The Committee observed that the proposal pertains to the grant of Environmental Clearance for the Morand-Ganjal Irrigation Project in Hosangabad district of Madhya Pradesh by M/s Narmada Valley Development Authority, Madhya Pradesh.
- The EAC noted that currently the project falls under item 1(c) of the Schedule to the Environmental Impact Assessment (EIA) Notification, 2006, as amended and is categorized as a Category 'B1' project, as Culturable Command Area (CCA) is 52,205 Ha. However, it was observed that the project has been under consideration in the Ministry since 2016, during which period it was categorized as a Category 'A' project and was appraised by the Expert Appraisal Committee (EAC). Accordingly, the project requires appraisal at the Central level by the EAC.
- The EAC, constituted under the provisions of the EIA Notification, 2006, and comprising expert members/domain experts from various relevant fields, examined the proposal submitted by the Project Proponent. This examination included a review of the Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP)

reports, which were prepared and submitted by a QCI/NABET-accredited consultant on behalf of the Project Proponent.

- The EAC noted that the Project Proponent has given an undertaking that the data and information given in the application and enclosures are true to the best of his knowledge and belief and no information has been suppressed in the EIA/EMP reports. If any part of data/information submitted is found to be false/ misleading at any stage, the project will be rejected and Environmental Clearance given, if any, will be revoked at the risk and cost of the project proponent.
- The EAC noted that the project has been considered by the EAC in several meetings, as under:
  - i. 95th Meeting of EAC held during 11th and 12th July, 2016.
  - ii. 96th Meeting of EAC held on 11th and 12th August, 2016
  - iii. 2nd Meeting of EAC held during 30-31st January, 2017
  - iv. 3rd Meeting of EAC held during 2-3rd March, 2017
  - v. 18th Meeting of EAC held on 27.09.2018
- The EAC noted that earlier the EAC in its meeting held during 2-3rd March, 2017 had recommended for grant of the Environmental Clearance (EC) for Morand-Ganjal Irrigation Project subject to submission Stage –I FC. Accordingly, the Ministry vide letter No. J-12011/43/2011-IA-I dated 10.04.2017, requested to submit a copy of Stage-I Forest Clearance at the earliest to enable to process the recommendations of EAC with respect to grant of EC. The FC Stage-I couldn't be submitted in time as per the prescribed timelines therefore six months more time were recommended by the EAC in its 18<sup>th</sup> Meeting of EAC held on 27.09.2018.
- The committee noted that the PP submitted the Stage-I Forest Clearance for the diversion of 811.29 Ha of forest land, granted by the MoEF&CC via letter dated 04.12.2025. This was uploaded on the Parivesh portal on 02.01.2026, nearly 105 months after the EAC's recommendation. Therefore, in accordance with the Office Memorandum dated 18.05.2012, read with the Office Memorandum dated 19.06.2014, the proposal is being considered by the sectoral EAC in the present meeting.
- The EAC noted that the total land requirement of the project is 3,155.99 ha, comprising 643.03 ha of private land, 262.90 ha of Government land, and 2,250.06 ha of forest land. The Committee observed that the PP) has obtained Stage-I Forest Clearance (FC) for diversion of only 811.29 ha of forest land for construction of the Ganjal Dam, out of the total 2,250.06 ha of forest land involved in the project.
- The EAC enquired as to why Stage-I FC for the entire forest land requirement has not been obtained. In response, the PP submitted that the Stage-I FC approval, at Sl. No. x, explicitly

states that “*The in-principle approval is for the construction of Ganjal dam Irrigation project only. The decision on construction of the Morand dam shall be taken only after the impacts of the first dam are studied in detail. This staggered approach will enable data driven, evidence-based decision making, ensuring ecological concerns are not compromised in pursuit of developmental objectives.*” PP further submitted that this staggered approach was intended to enable data-driven, evidence-based decision-making, ensuring that ecological concerns are not compromised in pursuit of developmental objectives. The PP also stated that detailed assessment of the evidence-based impacts of the first dam can be undertaken only during the construction phase of the project, which would commence after obtaining Environmental Clearance (EC) from the Ministry.

- The EAC inquired about various components of Morand Dam Irrigation Project and Ganjal dam Irrigation project along with common components. The PP presented the component-wise scenario for both the projects as under:

Sr. No.	Description	Complete Project Scenario	Morand Dam Scenario	Ganjal Dam Scenario
1	Project Land Required	3155.99 Ha	2081.8 Ha	1074.19 Ha
2	Component to be constructed	Dam, Canal Network & Distributaries and Minors	<ul style="list-style-type: none"> <li>• A dam across Morand River</li> <li>• Morand Right Bank Canal</li> <li>• Morand Left Bank Canal</li> </ul>	<ul style="list-style-type: none"> <li>• A dam across Ganjal River</li> <li>• Ganjal Left Bank Canal</li> </ul>
3	Submergence Area	2,133.78 Ha	1372.31 Ha	761.47 Ha
4	Command Area	42,205+ 10,000 =  <b>52,205 Ha</b>	20,798 Ha	21,407 Ha
			20798+21407= 42,205  10,000 Ha Command Area will be common by pressurized pipe.	

### 1. Common Component

- Integrated canal and distribution network serving a combined command area of **52,205 ha**
- Command Area Development (CAD) works including field channels and on-farm development
- Common pressure irrigation system for about **10,000 ha**
- Drinking water supply system for **211 villages and Seoni Malwa town**
- Shared power supply and electrical infrastructure

- vi. Centralized operation, control, and monitoring systems (SCADA)
- vii. Common ancillary infrastructure such as roads, buildings, and maintenance facilities
- viii. Project-wide environmental management, R&R, and monitoring measures

## 2. Details of Forest area & submergence area

Particular	Total forest area (Ha)	Forest area under submergence (Ha)
Morand	1438.77	1372.31
Ganjal	811.29	761.47
<b>Total</b>	<b>2,250.06</b>	<b>2,133.78</b>

## 3. R&R details:

- i. A total of 08 villages are affected by the project, out of which 06 villages are affected by the Morand Dam and 02 villages by the Ganjal Dam.
  - ii. Further, 472 families are affected due to the Morand Dam and 172 families due to the Ganjal Dam, resulting in a total of 644 affected families.
  - iii. The R&R plan is as per the provision of “The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act 2013”.
  - iv. The rehabilitation site for Project Affected Families (PAFs) of the Morand Dam is proposed at the nearby Lokhartalai village in Seoni Malwa Tehsil, Hoshangabad District.
  - v. The rehabilitation site for Project Affected Families (PAFs) of the Ganjal Dam is proposed at the nearby Singanpur village in Harda District.
- The EAC opined that the proposed project is an irrigation project of national importance, contributing to the food security of the country, but the project site is close to critical wildlife habitat so the project should be implemented with stringent environmental safeguards. Further, as there is no change in the project features, the Committee was of the view that additional baseline data may not be required and that EC may be granted only for the construction of the Ganjal Dam. It was further stipulated that no components of the Morand Dam project, including any common components with the Morand Dam, shall be taken up without obtaining the requisite statutory clearances, including FC and EC from the Ministry. Any construction activity related to the Morand Dam or its components undertaken without such clearances shall be treated as a violation.
  - The EAC opined that the EMP cost i.e. Rs 16,372 Lakhs (excluding Resettlement & rehabilitation plan and Compensatory Afforestation plan) and recurring cost of Rs. 418 Lakhs may be implemented in a time bound manner with following components:



<b>EMP Cost for Morand-Ganjal Irrigation Project in Hoshangabad district of Madhya Pradesh</b>			
<b>Sr. No</b>	<b>Pollution Control &amp; Other Environment Infrastructure</b>	<b>Capital (In Lakhs)</b>	<b>Recurring (In Lakhs)</b>
1.	Ambient Air Quality	-	15
2.	Noise Level	-	9
3.	Surface Water Quality	-	12
4.	Ground Water Quality	-	12
5.	Soil Quality	-	10
6.	Local area Development plan	215	-
7.	Livelihood plan for project affected tribal families	1500	-
8.	Biodiversity plan	545	-
9.	Catchment area Treatment plan	1944.26	-
10.	Fisheries management plan	428.99	-
11.	Public health & public awareness	-	360
12.	Energy conservation measures	50	-
13.	Dam break analysis & disaster management plan	95	-
14.	Environment management construction site	370	-
15.	Public awareness programme	30	-
16.	Environment Monitoring Programme	408.02	-
17.	Command area development plan	10357.71	-
	<b>Total</b>	<b>15943.98</b>	<b>418</b>
<b>Summary of Allocation of fund for EMP</b>			
1.	Capital EMPs (In Lakhs)	15943.98	

2.	Recurring Cost per annum (In Lakhs)	418
3.	Project Cost (Cr)	2585.76
4.	CER Cost (Cr)	12.92

- In view of the above, the EAC directed the PP to submit a declaration confirming that construction of the Morand Dam would be initiated only after obtaining the requisite statutory clearances. Accordingly, the PP, vide letter dated 03.02.2025, submitted that the construction of Morand Dam shall be initiated only after grant of working permission for Morand Dam by Forest Department.

**47.2.4** The EAC after examining the information submitted and detailed deliberations **recommended** for grant of Environmental Clearance by the Ministry for the construction of the Ganjal Dam in Hosangabad district of Madhya Pradesh by M/s Narmada Valley Development Authority, Madhya Pradesh, under the provisions of EIA Notification, 2006, as amended subject to compliance of applicable Standard EC conditions along with the following additional conditions:

**[A] Environmental management and Biodiversity conservation:**

- On-line monitoring system will be installed to measure and record the E-Flow releases.
- Stocking of fish in reservoir should be based on the area and size of fish. It should be implemented in consultation with the central /state department having expertise in reservoir fisheries.
- Skill mapping be undertaken for the youths of the affected project area and based on the skill mapping, the trainings to the youths be incorporated for their appropriate engagements in the Project.
- Land acquired for the project shall be suitably compensated in accordance with the law of the land with the prevailing guidelines and all commitments made during the Public Hearing shall be fulfilled
- Six monthly compliance reports shall be submitted by the project proponent to Regional Office, MoEF& CC, Bhopal without fail until completion of the works.
- The Environmental Management Plan (EMP) shall strictly adhere to as vetted by the EAC. The budgetary provisions for implementation of EMP, shall be fully utilized and

not to be diverted to any other purpose. In case of revision of the project cost or due to price level change, the cost of EMP shall also be updated proportionately.

- vii. The contract clause limiting the No. of vehicles used during excavation and transportation shall followed scrupulously and the same shall informed to the ministry.
- viii. Ambient Air Quality Monitoring Stations for real time data to be installed at project site before commencement of the construction, shall be displayed at project site and its report to be submitted to IRO, MoEF&CC.
- ix. Wildlife conservation plan for Schedule -I Species shall be prepared and implemented after approval of the Chief Wildlife Warden of the State. Safe pathways shall be created for free movement of wildlife after detailed study of pattern of movement of wildlife species in the project cover area.
- x. No vehicle purchase shall be allowed from funds earmarked for implementation of Wildlife Conservation plan. Measures for minimizing the human–animal conflict specially for black bear and leopard be suitably incorporated in the wildlife conservation plan in consultation with State Forest Department.
- xi. Watershed Management Plan be prepared in consultation with expert government research institute and be implemented in a time bound manner.
- xii. Native plants shall be planted around the muck disposal area in consultation with Forest Department and the survival of plants shall be reported in the 6 monthly compliance report.
- xiii. Plantation of saplings (10000 nos.) shall be carried out as a part of the tree plantation campaign "Ek Ped Ma Ke Naam" and the details of the same shall be uploaded in the MeriLiFE Portal (<https://merilife.nic.in>).

**[B] Disaster Management:**

- i. Disposal of the excavated muck and its filling on the low-lying area with proper measures for the stabilization and greenery to minimize the impacts of the generated construction muck shall be taken up pari passu with construction work.
- ii. Stabilization of muck disposal sites using biological and engineering measures shall be taken up immediately to ensure that muck does not roll down the slopes and does not pollute the natural streams and water bodies in surrounding area. The plantation on muck disposal site with local species for restoration of ecology and environment of the project site area.

- iii. Necessary control measures such as water sprinkling arrangements, and construction of paved roads leading to muck disposal sites etc. shall be taken up on priority to arrest fugitive dust at all the construction sites.
- iv. Solid waste generated, especially plastic waste, etc. should not be disposed of as landfill material. It should be treated with scientific approach and recycled. Use of single-use plastics may be discouraged.

**[C] Socio-economic:**

- i. Land acquired for the project shall be suitably compensated in accordance with the prevailing guidelines of the state government and provisions under Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013.
- ii. An institutional mechanism to be developed to ensure the preference of jobs to PAFs and also a policy for preferential treatment for award of sundry works to the PAFs and their dependents.
- iii. Solar panel be provided to the families living in rural areas within 10 km radius of project.
- iv. School up to 12<sup>th</sup> Standard with smart classrooms shall be established to provide quality education for children from project affected villages/Tribal villages.
- v. Skill Development Centre shall be established within 10 km radius of the project and regular training programmes for development and promotion of traditional art/products of tribal/local population.
- vi. The compliance of above conditions shall be monitored by IRO, MoEF&CC and regularly site visit once in year. The compliance report of IRO shall be regularly submitted to MoEF&CC.
- vii. Bio-Gas plant shall be installed in the Project affected villages @ per family for Utilizing Cattle waste (Cow Dung) into renewable source of fuel.

**[D] Miscellaneous:**

- i. After 5 years of the commissioning of the project, a study shall be undertaken regarding impact of the project on the environment. The study shall be undertaken by an independent agency.
- ii. PP should establish in house (at project site) environment laboratory for measurement of environment parameter with respect to air quality and water (surface and ground). A

dedicated team to oversee environment management shall be setup which should comprise of Environment Engineers, Laboratory chemist and staff for monitoring of air, water quality parameters on routine basis.

- iii. A dedicated team to oversee environmental management activities (at project site) shall be set up comprising Environment Manager having post graduate qualification in Environmental Sciences/ Environment Engineering along with other supporting staff. The Environment Manager Shall report to Project Head directly.
- iv. PP shall procure construction material only from those Organizations having all valid legal/statutory clearances/permissions or necessary permission to be obtained for quarrying construction materials for the project as per the EIA Notification, 2006 and as amended thereof.

### **Agenda Item No. 47.3**

**Gosaintari Close loop Pumped Storage Project (920 MW) in an area of 283.03 Ha located at Adwaria, Amghati, and Charbigha etc., Sub-District Rajauli & Gobindpur, District Nawada, Bihar by M/s Sun Hydro Energy Private Limited – Terms of References (TOR) – reg.**

**[Proposal No. IA/BR/RIV/564878/2026; F. No. J-12011/01/2026-IA.I (R)]**

**47.3.1** The proposal is for grant of Terms of Reference (ToR) to the project Gosaintari Close loop Pumped Storage Project (920 MW) in an area of 283.03 Ha located at Adwaria, Amghati, and Charbigha etc., Sub-District Rajauli & Gobindpur, District Nawada, Bihar by M/s Sun Hydro Energy Private Limited.

**47.3.2** The Project Proponent and the accredited Consultant M/s. R. S. Envirolink Technologies Pvt. Ltd., made a detailed presentation on the salient features of the project and informed that:

- i. The proposed Gosaintari Pumped Storage Project (920MW), a self-identified off stream Closed loop project, is being developed by the Sun Hydro Energy Pvt. Ltd. on the valley drained by the Job Nallah / Stream in District Nawada, Bihar.
- ii. The project, conceived as an off stream closed loop project of installed capacity 920 MW/ 7360 MWH pumped storage component with 8 hours storage capacity for peak power generation shall be located in Nawada District, Bihar.
- iii. The upper and lower dams for the PSP are proposed to be newly constructed. The Upper Dam is proposed as Rockfill ring bund with Concrete Spillway with 3300m length at top near Gosaintari Village of Rajauli Block in Nawada District, Bihar. The Lower Dam is proposed as Rockfill dam with Concrete Spillway with 352 m length at top.



- iv. The project will generate 920 MW by utilizing a design discharge of 275.4 cumec with rated head of 374.2m. The PSP will utilize 1012 MW to pump 241.28 cumec from lower reservoir to the upper reservoir. The scheme of operation for the project is 8 hours of peak power per day and 9.13 hours for pumping back the water through TRT-reversible turbines-pressure shaft-HRT to the upper reservoir. Water will be used cyclically for energy storage and generation.
- v. For reservoir operation the project contemplates non-consumptive re-utilization of 8.00 MCM of water for recirculation among two proposed reservoirs. The one-time filling requirement of 13 MCM (~12.54 MCM) and periodical recoupment for losses (1.16 MCM) will be met from the monsoon yield of catchment of Dhanarjay River near Baurahi Kalan village (catchment area of 169.05 sq. km), and used cyclically for energy storage and generation.
- vi. The geographical co-ordinate of the project are Lower Reservoir (left bank) : 358401.081 E; 2728920.325 N. Lower Reservoir (Right bank) : 358485.924 E; 2729261.051 N Upper Reservoir : 358915.25 E; 2731127.01 N.
- vii. Gosaintari Close Loop Pumped Storage Project envisages construction of two artificial reservoirs, water conductor system, Power House, Transformer hall, adits, switch yard alongwith infrastructural facilities at village Gosaintari, Sub-District Rajauli and Govindpur, District Nawada, Bihar.
- viii. **Land requirement:**

Forest Land	: 228.42 ha
Non-forest Land	: 54.61 ha
Total Land	: 283.03 ha
- ix. **Demographic details in 10 km radius of project area :**
  - The villages located around the project area are small, dispersed, and predominantly dependent on agriculture. Overall population density is lower than the state average.
  - Most residents rely on farming, livestock rearing and daily wage labour for their livelihood.
  - Although basic amenities such as schools, healthcare centres, and road connectivity are present, they are still not fully developed.
  - The proportion of Scheduled Tribe population in the project area is very low.
  - Major crops cultivated in the region include rice, wheat, pigeon pea, lentils, and other seasonal produce.
  - According to the Census of India (2011), most of the villages in the project area are uninhabited, including **Gosaintari, Manbhagwa, Amghati, Sarki, Nadgarha,**

**Jagduari, Jhirki, Adwaria, and others.**

Parameters	Baurhi Kalan	Dhamni	Mahkama	Chhatni	Chamar Bigha
Households	198	420	90	59	135
Total Population	1195	2815	550	456	1073
Male Population	600	1561	265	240	559
Female Population	595	1254	285	216	514
Scheduled Caste (SC) Pop.	383	746	71	82	408
Scheduled Tribe (ST) Pop.	0	1	0	0	1

(Source: Census 2011)

- Dhamni is the largest settlement with 420 households and a population of 2,815, followed by Baurhi Kalan with 1,195 people in 198 households.
  - Chamar Bigha has a moderate population of 1,073, while Mahkama and Chhatni are the smallest villages with 550 and 456 residents respectively.
  - Across all villages, the male and female populations are fairly balanced, with no major gender disparity.
  - The presence of Scheduled Caste (SC) communities is notable in all villages, particularly in Dhamni (746) and Chamar Bigha (408), indicating a substantial SC population share.
  - Scheduled Tribe (ST) populations are almost negligible.
- x. **Water requirement:** Gosaintari Pumped Storage Project will require 13.0 MCM for one time filling and thereafter ~ 1.16 MCM per year will be required.
- xi. **Project Cost:** The estimated project cost (Including IDC) is Rs 5128.0 crore. Total capital cost earmarked towards environmental pollution control measures will be worked out during EIA study as well as the Recurring cost (operation and maintenance).
- xii. **Project Benefit:** Total Employment will be 700 nos during construction & 135 nos during O&M persons as direct & indirect.
- xiii. **Environmental Sensitive area:** The project is located around 3.8 km from Rajauli (Nawada) Wildlife Sanctuary. Since the ESZ boundary notification is in draft stage, wildlife clearance is applicable. Water will be pumped from Dhanarjay River.

xiv. MOU has been signed between Government of Bihar and M/s Sun Petrochemicals Pvt. Ltd. on 19<sup>th</sup> December, 2024. Name of the company has been changed from M/s Sun Petrochemicals Pvt. Ltd. to M/s Sun Hydro Energy Pvt. Ltd. vide approval letter No. SIPB2410000744 SIPB/1907 dated 28/07/2025.

xv. **Alternative Studies:**

The site selection process is based on following approaches:

- Utilization of available head at project site to the maximum extent feasible
- Development of economical and optimized layout
- Ease of construction
- Minimal area of land acquisition to accommodate various project components
- Avoid / minimize submergence of forest land
- Avoid interference with existing schemes
- Avoid location of project within Eco Sensitive Zones (ESZ) of existing Wild Life Sanctuaries

<b>Alternative 1 (920 MW)</b>	<ul style="list-style-type: none"> <li>• Upper reservoir on the plateau on right bank of lower reservoir.</li> <li>• Lower reservoir is on non-perennial nalla</li> <li>• Underground Powerhouse</li> </ul>
<b>Alternative 2 (940 MW)</b>	<ul style="list-style-type: none"> <li>• Upper reservoir about 3 Km east of Alt 1 Upper reservoir on plateau</li> <li>• Lower reservoir same as Alt 1</li> <li>• Underground Powerhouse</li> </ul>
<b>Alternative 3 (640 MW)</b>	<ul style="list-style-type: none"> <li>• Upper reservoir on left bank of lower reservoir on flat plateau</li> <li>• Lower reservoir same as Alt 1 and 2</li> <li>• Underground Powerhouse</li> </ul>
<b>Alternative 4 (920 MW)</b>	<ul style="list-style-type: none"> <li>• Upper and Lower reservoir at same location as Alt 1, lower dam is shifted around 450 m upstream</li> <li>• Inclined Pressure shaft with vertical drop of more than 400m is changed to horizontal and vertical pressure Shaft with two vertical drops of less than 250m.</li> <li>• Underground Powerhouse</li> </ul>

**Summary of Alternatives**

Description	Alternative-1	Alternative-2	Alternative-3	Alternative-4
<b>UPPER RESERVOIR</b>				
FRL	574.75 m	610.75 m	357 m	574.75 m

MDDL	554 m	590 m	336.25 m	554.0 m
Gross Storage	10.28 MCM	7.82 MCM	14.46 MCM	10.28 MCM
Live Storage	10.17 MCM	7.59 MCM	14.45 MCM	10.17 MCM
Length of Dam	3300 m	4763 m	4824 m	3300 m
<b>LOWER RESERVOIR</b>				
FRL	191 m	191 m	191 m	191 m
MDDL	180 m	180 m	180 m	169 m
Gross Storage	16.23 MCM	14 MCM	24.06 MCM	9.27 MCM
Live Storage	7.98 MCM	7.6 MCM	14.6 MCM	8.29 MCM
Length of Dam	815 m	805 m	906 m	352 m
<b>WCS</b>				
Pressure Shaft (PS)	2 Nos. × 6.4 m dia × 777 m L	2 Nos. × 6.54 m dia × 810 m L	4 Nos. × 5.20 m dia × 488 m L	2 Nos. × 6.4 m dia × 688 m L
Unit PS	4 Nos. × 4.5 m dia × 100 m L	4 Nos. × 4.5 m dia × 60 m L	—	4 Nos. × 4.5 m dia × 360 m L
Draft Tube (DT)	4 Nos. × 6.0 m dia × 50 m L	2 Nos. × 6.0 m dia × 50 m L	4 Nos. × 5.20 m dia × 50 m L	4 Nos. × 6.0 m dia × 50 m L
Tail Race Tunnel (TRT)	2 Nos. × 7.80 m dia × 440 m L	2 Nos. × 7.8 m dia × 1440 m L	4 Nos. × 6.30 m dia × 406 m L	2 Nos. × 7.80 m dia × 493 m L
<b>L/H Ratio</b>	<b>3.68</b>	<b>5.81</b>	<b>6.21</b>	<b>5.05</b>
<b>POWERHOUSE and ELECTRO-MECHANICAL EQUIPMENT</b>				
Powerhouse Type	Underground	Underground	Underground	Underground
Installed Capacity (MW)	920	940	640	920
Generation Hours	8.00 hours	8.00 hours	8.00 hours	8.00 hours
Annual average generation	2552 MU	2607 MU	1769 MU	2552 MU
Net Rated Head	371.4 m	405.7 m	152 m	374.2 m

Financial Aspect				
Total Hard Cost (in crore)	5374	6187	5679	5128
Cost per MW (in crore)	5.84	6.60	8.90	5.60

#### Comparison of Forest Land Requirement:

PROJECT AREA (Ha)	Alt-1 (920 MW)	Alt-2 (940 MW)	Alt-3 (640 MW)	Alt-4 (920 MW)
Upper Reservoir	89.50	87.00	89.40	92.50
Lower Reservoir	134.30	124.00	197.60	73.62
WCS, PH, ADITS	29.17	38.50	30.76	29.17
Approach Roads	29.93	15.00	13.00	29.93
Water filling pipeline	3.20	3.20	3.20	3.20
<b>TOTAL</b>	<b>286.10</b>	<b>267.70</b>	<b>333.96</b>	<b>228.42</b>

#### Selection of Alternative:

Alternative 4 is selected for further investigation:

- Requires the least forest area and total project area among all alternatives.
- Cost per MW is the lowest.
- L/H ratio is well within the required range.

- xvi. Status of Litigation Pending against the proposal, if any. **No**
- xvii. The salient features of the project are as under: -

#### • Project details:

Name of the Proposal	Gosaintari Closed-Loop Pumped Storage Project (920 MW)
Location (Including coordinates)	Gosaintari Village, District Nawada, Bihar  Lower Reservoir (left bank): Latitude: 2728920.325 N, Longitude: 358401.081 E  Lower Reservoir (right bank): Latitude: 2729261.051 N,



	Longitude: 358485.924 E  Upper Reservoir: Latitude: 2731127.01 N, Longitude: 358915.25 E
Inter- state issue involved	No
Seismic zone	Zone-IV

• **Category details:**

Category of the project	A
Provisions	Project Activity covered at S.N.1(c)(i) of the EIA schedule standalone Pumped Storage Project
Capacity / Cultural command area (CCA)	920 MW/7360 MWH pumped storage component with 8 hours storage capacity for peak power generation and 9.13 hours pumping operation for backfilling of upper reservoir of PSP.
Attracts the General Conditions (Yes/No)	Yes
Additional information (if any)	Nil

• **Electricity generation capacity:**

Powerhouse Installed Capacity	920 MW
Generation of Electricity Annually	2552 MU
No. of Units	4 nos. (4 x 230 MW)
Additional information (if any)	Nil

• **ToR/EC Details:**

Cost of project	5128.0 Cr. (Including IDC)
Total area of Project	283.03 ha
Height of Dam from River Bed (EL)	Lower Dam – 39.0 m Upper Dam –23.0 m
Length of Tunnel/Channel	5200 m
Details of Submergence area	Total area = 166.12 Ha, (114.55 Ha. of area in

	submergence + 51.57 Ha. of Dam area)  [Upper Reservoir: 54.23 Ha. of area in submergence + 38.27 Ha. of Dam area, Lower Reservoir: 60.23 Ha. of area in submergence area + 13.39 Ha. of Dam area].
Types of Waste and quantity of generation during construction/ Operation	Muck from excavation, solid waste from labour colony and construction waste
E-Flows for the Project	Not Applicable, as this is Closed Loop Pumped Storage Project (PSP)
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then  E-flow with TOR /Recommendation by EAC as per CIA&CC study of River Basin.  If not the E-Flows maintain criteria for sustaining river ecosystem.	No
No. of trees/saplings proposed in view of 'Ek Ped Maa Ke Naam' campaign	500

- Muck Management Details:**

	Muck Disposal Sites-2 Nos, Area and Type of land -28.0 ha; Non-Forest Land
Muck Management Plan	Will be Provided in EIA/EMP report
Monitoring mechanism for Muck Disposal	Will be Provided in EIA/EMP report

- Land Area Breakup:**

Private Land	54.61 ha (Non- Forest)
Government land	
Forest Land	228.42 ha

Total Land	283.03 ha
Submergence area/Reservoir area	Total Submergence area- 166.12 Ha
Additional information (if any)	Nil

● **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	--	<ul style="list-style-type: none"> <li>The project is located around 3.8 km from Rajauli (Nawada) Wildlife Sanctuary.</li> <li>Since the ESZ boundary notification is in draft stage, wildlife clearance is applicable.</li> </ul>
National Park	--	
Wildlife Sanctuary	--	

● **Court case details:**

● **Miscellaneous**

Particulars	Details
Details of consultant	<p>M/s. R S Envirolink Technologies Pvt. Ltd. (RSET) (<i>NABET Accredited Consultant Organization</i>)</p> <p>Certificate No : NABET/EIA/25-28/RA0415</p> <p>Validity : August 15, 2028</p> <p>Contact Person : Mr. Ravinder Bhatia</p> <p>Name of Sector : River Valley and Hydroelectric Projects</p> <p>Category : A</p> <p>MoEF Schedule : I(C)</p>

	<p>Address : 403, Bestech Chambers, Block-B, Sushant Lok Phase I, Sector 43, Gurugram, Haryana - 122009</p> <p>E-mail : ravi@rstechnologies.co.in</p> <p>Land Line : (0124) 4295383</p> <p>Cellular : (+91) 9810136853</p>
Project Benefits	<ul style="list-style-type: none"> <li>• Pumped storage hydropower is a modified use of conventional hydropower technology to store and manage energy or electricity by moving water between an upper and lower reservoir. Currently, pumped storage round-trip or cycle energy efficiencies exceed 80%, comparing favorably to other energy storage technologies and thermal technologies. This effectively shifts, stores, and reuses energy generated until there is corresponding demand for system reserves and variable energy integration. This shifting can also occur to avoid transmission congestion periods, to help more efficiently manage transmission grid, and to avoid potential interruptions to energy supply. This is important because many of the renewable energy resources being developed (e.g., wind and solar) are generated at times of low demand and off-peak energy demand periods are still being met with fossil fuel resources, often at inefficient performance levels that increase the release of greenhouse gas emissions.</li> <li>• Further, pumped storage projects are critical to the national economy and overall energy reliability because it's: <ul style="list-style-type: none"> <li>○ Least expensive source of electricity, not requiring fossil fuel for generation</li> <li>○ An emission-free renewable source</li> <li>○ Balancing grid for demand driven variations</li> <li>○ Balancing generation driven variations</li> <li>○ Voltage support and grid stability</li> </ul> </li> </ul>

	Apart from this, proposed PSP will also benefit the local community by creating employment opportunities and will result in upliftment of livelihood and socio-economic conditions.
Status of other statutory clearances	Forest Clearance - Online application seeking forest diversion for around 228.42 Ha after receipt of ToR Approval. Alongside, other statutory clearances (as applicable) from State as well as Central government will be obtained post completion of Detailed Project Report.
R&R details	Details shall be evaluated during EIA/EMP Studies
Additional detail (If any)	Nil

#### 47.3.3.3 The EAC during deliberations noted the following:

- The Expert Appraisal Committee (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/EMP and Public hearing for Gosaintari Close loop Pumped Storage Project (920 MW) in an area of 283.03 Ha located at Adwaria, Amghati, and Charbiga etc., Sub-District Rajauli & Gobindpur, District Nawada, Bihar by M/s Sun Hydro Energy Private 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 EAC observed that the Gosaintari PSP is proposed to generate 920 MW comprises of Upper and Lower reservoir located away from riverine system and therefore it is treated as a close loop PSP. The one-time filling requirement of 13 MCM (~12.54 MCM) and periodical recoupment for losses (1.16 MCM) will be met from the monsoon yield of catchment of Dhanarjay River near Baurahi Kalan village
- The EAC noted that the total land requirement for the Rajupalem PSP is estimated to be around 283.03 ha, out of which 54.61 ha is non-forest land and 228.42 ha is forest land. Diversion of forest land for non-forest purpose will be involved for construction of project components. However, it was observed that the application for Stage-I Forest Clearance (FC) has not yet been submitted, which necessitates further action from the Project Proponent. The project is located at a distance of approximately 3.8 km from Rajauli (Nawada) Wildlife Sanctuary, and the Eco-Sensitive Zone (ESZ) boundary, as per the draft



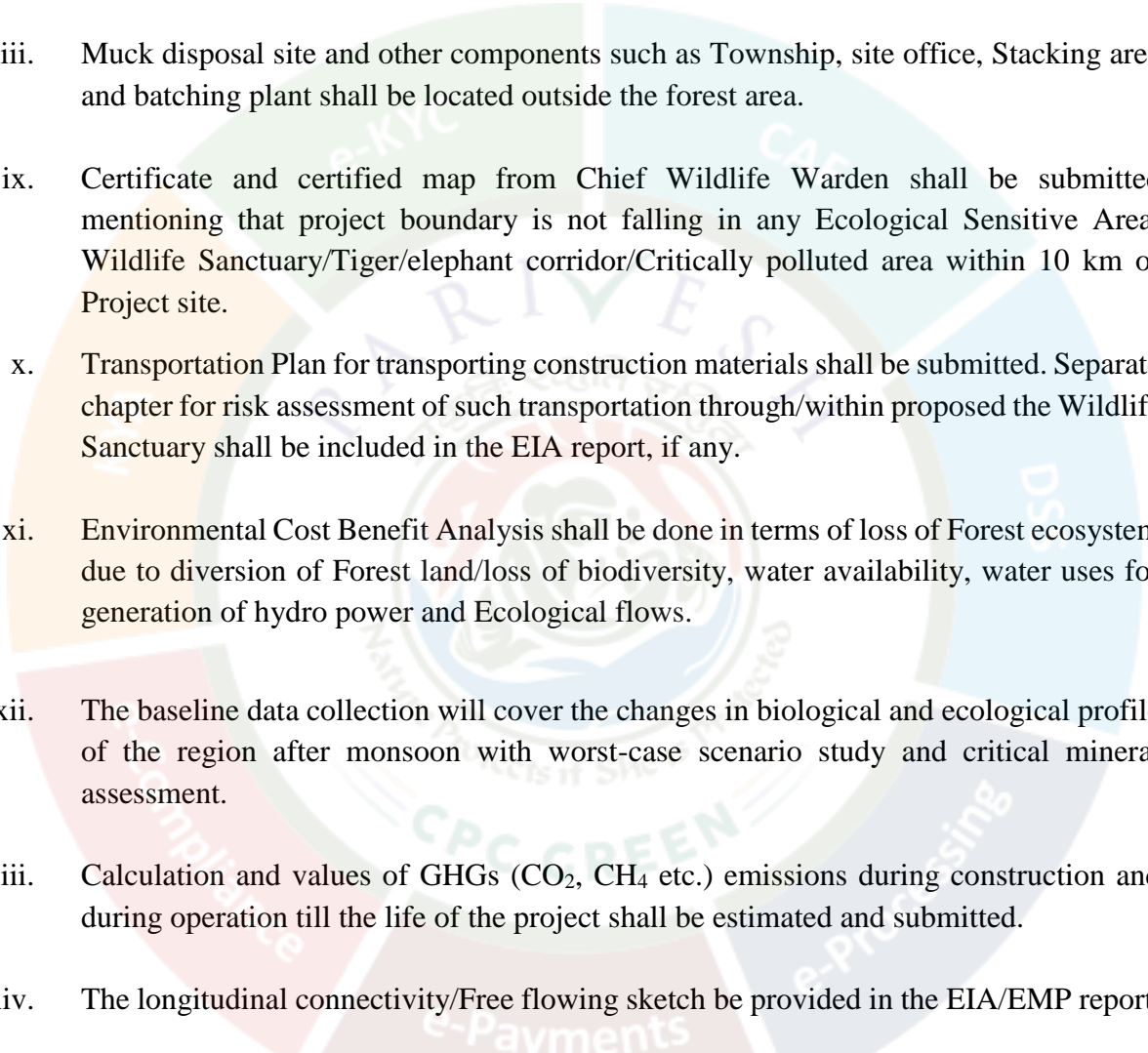
ESZ notification, is at a distance of 0.2 km from the project site. Therefore, obtaining wildlife clearance from the National Board for Wildlife (NBWL) is mandatory for the project.

- The EAC further noted that the project site is located approximately 4 km from the Jharkhand State boundary; therefore, the requisite clearance/approval/No Objection Certificate (NoC) shall be obtained from the Government of Jharkhand.
- It has been observed that a Memorandum of Understanding (MoU) was signed between the Government of Bihar and M/s Sun Petrochemicals Private Limited on 19.12.2024 for development of the PSP. However, the project has been submitted by M/s Sun Hydro Energy Private Limited. Therefore, it is necessary for the project proponent to obtain an amendment to the MoU from the State Government.

**46.7.4** 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 close Loop Pumped Storage Projects vide OM dated 14.08.2023 for conducting EIA study for proposed construction of the project for Gosaintari Close loop Pumped Storage Project (920 MW) in an area of 283.03 Ha located at Adwaria, Amghati, and Charbigha etc., Sub-District Rajauli & Gobindpur, District Nawada, Bihar by M/s Sun Hydro Energy Private Limited, under the provisions of EIA Notification, 2006, as amended along with the following additional/specific ToR:

**[A] Environmental Management and Biodiversity Conservation:**

- i. NBWL clearance shall be obtained in view of location of the project which is 3.8 km from Rajauli (Nawada) Wildlife Sanctuary.
- ii. PP shall obtain an amendment to the MoU from the State Government in view of change in name of the project proponent.
- iii. A detailed action plan for large scale plantation of native species of plant sapling within 10 km radius of the project shall be prepared in consultation with State Forest Department. The monitoring mechanism to ensure the survival of saplings shall be finalized in consultation with ICFRE.
- iv. The PP will submit 10 years water availability data certified by the CWC/State Water Resource Department for quantity of water that is received annually by the small stream on which lower reservoir is proposed to be constructed.
- v. Necessary interstate clearance/approval shall be obtained before submitting the application of Environmental Clearance in view of the project site being located approximately 4 km from the Jharkhand State boundary.

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- vi. The PP will submit a detailed plan and monitoring mechanism for releasing the self-catchment water of small stream draining in to river along with action plan for conservation and protection of other streams/rivulets draining in to upper and lower reservoirs.
- vii. Explore the possibilities for reducing the Forest land requirement. The application for obtaining Stage I FC for 73.30 ha of forest land involved in the project shall be submitted within stipulated time.
- viii. Muck disposal site and other components such as Township, site office, Stacking area and batching plant shall be located outside the forest area.
- ix. 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.
- x. Transportation Plan for transporting construction materials shall be submitted. Separate chapter for risk assessment of such transportation through/within proposed the Wildlife Sanctuary shall be included in the EIA report, if any.
- xi. 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.
- xii. 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.
- xiii. Calculation and values of GHGs (CO<sub>2</sub>, CH<sub>4</sub> etc.) emissions during construction and during operation till the life of the project shall be estimated and submitted.
- xiv. The longitudinal connectivity/Free flowing sketch be provided in the EIA/EMP report.
- xv. 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.
- xvi. Conducting site-specific ecological study emphasizing on riverine ecology viz. 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.
- xvii. Action plan for survival or diversion of the rivulets/stream, if any, leading to join river

shall be submitted.

- xviii. 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.
- xix. 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.
- xx. Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP.
- xxi. 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.
- xxii. Details of mineral zone, if any, in the study area, certified by Geological Survey of India or any other concerned Government Organization shall be submitted. The project area should not come up on any critical mineral zone, the same shall to be verified by GSI/NMDC.
- xxiii. Any archaeological sites in the vicinity of the project, if any, then it shall be certified by ASI.

**[B] Socio-economic Study:**

- i. Declaration by the project proponent by way of affidavit that "No" Inter-state issue/ policy issue is involved with any State in the project.
- ii. 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. A comparative chart of issues raised by General Public during Public Hearing and commitments made by the Project Proponent will be prepared and submitted in the relevant chapter of EIA/EMP report.
- iii. The EIA/EMP shall include a detailed socio-economic assessment of the tribal population in the project-affected area based on primary data and community

consultations. A Tribal Development Plan, prepared in consultation with the District Administration and Tribal Welfare Department, shall be submitted along with the EIA report.

- iv. 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 7<sup>th</sup> October, 2014 for the project land to be acquired.
- v. Land acquired for the project shall be suitably compensated in accordance with the law of the land with the prevailing guidelines. Private land (if any) shall be acquired as per provisions of Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013. Budget earmarked for R&R, CSR shall not be included in the cost of EMP.

**[C] Muck Management:**

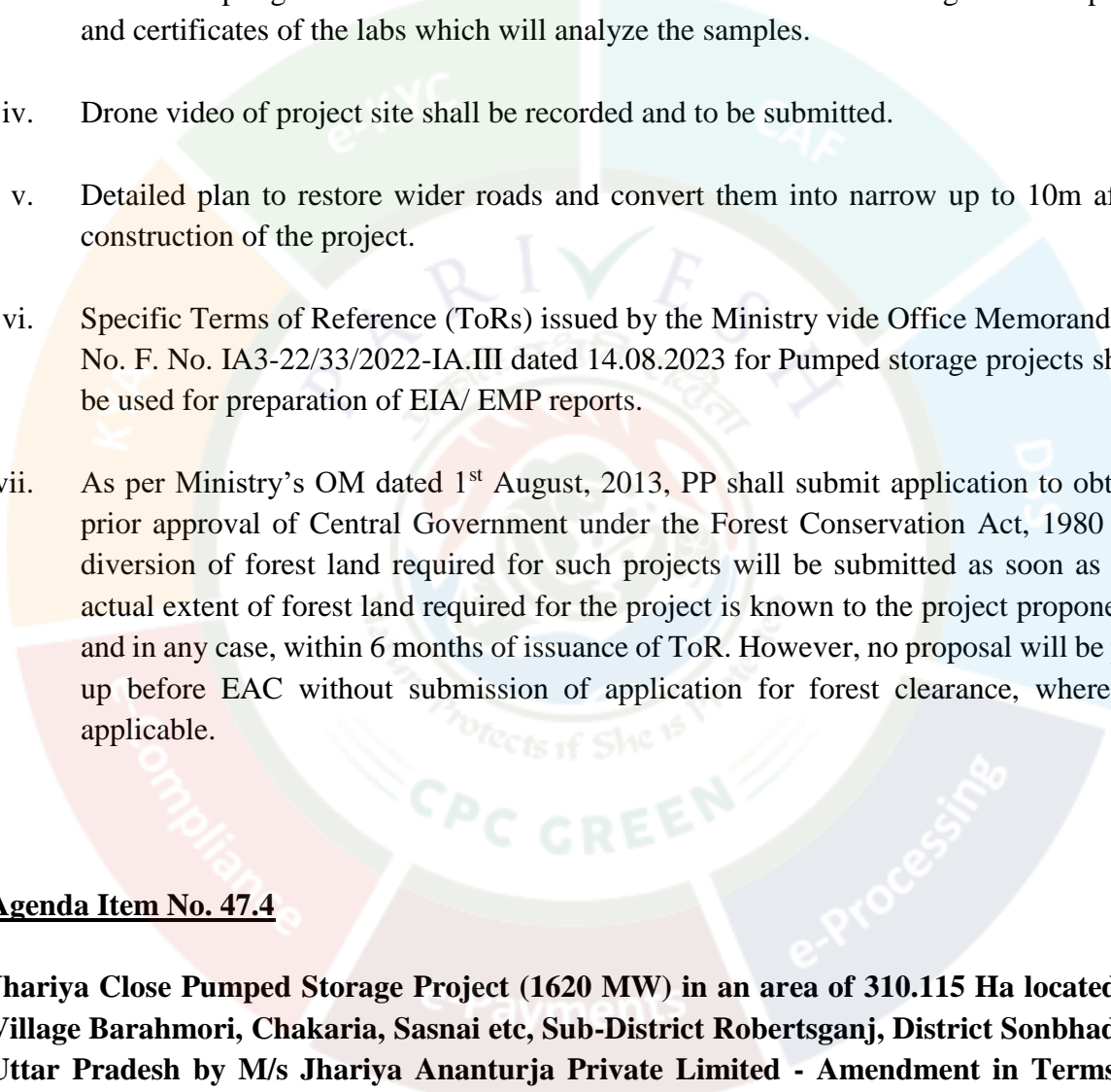
- i. Details of quantity of muck generation component wise, types of muck (Excavation in tunnels, pressure shaft and powerhouse etc.) and disposal site/ transportation to be provided.
- ii. Details of muck management such as dumping sites and its locations, transportation plan along with monitoring mechanism 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.
- iii. 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.
- iv. Restoration plan for construction area including dumping site of excavated materials by levelling, filling up of burrow pits, landscaping etc.

**[D] Disaster Management:**

- i. 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.
- ii. The muck dumping sites shall be located with a distance of 100 mts from HFL. The PP shall submit the detailed action plan for transportation of muck along with monitoring mechanism of movement of muck carrying trucks.

**[E] Miscellaneous:**



- 
- i. Both capital and recurring expenditure under EMP shall be submitted.
  - ii. Pre-DPR Chapters viz., Hydrology, Layout Map and Power Potential Studies duly appraised by CWC/CEA shall be submitted.
  - iii. 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.
  - iv. Drone video of project site shall be recorded and to be submitted.
  - v. Detailed plan to restore wider roads and convert them into narrow up to 10m after construction of the project.
  - vi. 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.
  - vii. As per Ministry's OM dated 1<sup>st</sup> 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 any 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.

#### **Agenda Item No. 47.4**

**Jhariya Close Pumped Storage Project (1620 MW) in an area of 310.115 Ha located at Village Barahmori, Chakaria, Sasnai etc, Sub-District Robertsganj, District Sonbhadra, Uttar Pradesh by M/s Jhariya Ananturja Private Limited - Amendment in Terms of References (TOR) – reg.**

**[Proposal No. IA/UP/RIV/564742/2026; F. No. J-12011/13/2024-IA.I (R)]**

**47.4.1** The proposal is for grant of amendment in terms of references for Jhariya Close Pumped Storage Project (1620 MW) in an area of 310.115 Ha located at Village Barahmori, Chakaria, Sasnai etc, Sub-District Robertsganj, District Sonbhadra, Uttar Pradesh by M/s Jhariya Ananturja Private Limited.



**47.4.2** The Project Proponent and the accredited Consultant M/s. R. S. Envirolink Technologies Pvt. Ltd., made a detailed presentation on the salient features of the project and informed that:

- i. Jhariya Off-stream Closed Loop Pumped Storage Project is located in Sonbhadra District, Uttar Pradesh. The installed capacity of the project is estimated as 1620 MW (Generation mode)/1740 MW (Pumping mode).
- ii. The project envisages creation of two artificial reservoirs interconnected with water conductor system, feeding the reversible pump-turbine units before draining into the lower reservoir through tailrace tunnel. Both the reservoirs are located away from all existing nearby rivers/streams/nallahs.
- iii. Total water requirement for initial filling of both the reservoirs is worked out as 18.70 MCM. In order to meet this water requirement for initial filling of reservoirs, it has been planned to utilize the water of Son River. Annual evaporation loss is estimated as 2.5 MCM for both the reservoirs. Water pipeline of diameter 1.2 m and length 4.96 km shall be laid, to connect the delivery pipe of pumps installed in the pump sump to the lower reservoir.
- iv. The geographical coordinates of the proposed upper reservoir are at Latitude-24°31'18.33"N and Longitude-83°13'30.51"E and that of lower reservoir are at Latitude-24°30'11.50"N and Longitude- 83°13'46.87"E.
- v. The proposal is for amendment in the Terms of Reference granted by the Ministry Vide letter dated 07.09.2024 for the project Jhariya Closed Loop Pumped Storage Project (1620 MW) located at Village Jhariya, Sasnai, Barahmori and Chakaria etc, Tehsil Obra, District Sonbhadra, Uttar Pradesh in favour of M/s Jhariya Ananturja Private Limited
- vi. The project proponent has requested for amendment in the ToR with the details are as under.

Descripti on	Reference	Existing	Proposed / Amendment	Reason/Justific ation
TOR Letter	Subject	Jhariya Pumped Storage Project (1620 MW), in an area of 333.97 ha. located at Village Badarwa, Tehsil Robertsganj, District Sonbhadra, Uttar	Jhariya Pumped Storage Project (1620 MW), in an area of 310.115 ha. located at Village Jhariya, Tehsil Obra, District Sonbhadra, Uttar Pradesh by M/s Jhariya Ananturja	The project area requirement has been reduced by the optimization of layout and work facilities. Initially, the project area falls in

Descripti on	Reference	Existing	Proposed / Amendment	Reason/Justific ation
		Pradesh by M/s Jhariya Ananturja Private Limited – Terms of References (TOR) - reg.	Private Limited – Terms of References (TOR) - reg.	Robertsganj as well as Obra tehsil, however after optimization the project area falls in Obra tehsil.
TOR Letter	Para 1	The application pertains to the Jhariya Pumped Storage Project (1620 MW), proposed to be developed in an area of 333.97 hectares, located at Village Badarwa, Tehsil Robertsganj, District Sonbhadra.	The application pertains to the Jhariya Pumped Storage Project (1620 MW), proposed to be developed in an area of 310.115 hectares, located at Village Jhariya, Tehsil Obra, District Sonbhadra.	The project area requirement has been reduced by the optimization of layout and work facilities
TOR Letter	Para 5	Jhariya Pumped Storage Project (1620 MW), in an area of 333.97 ha. located at Village Badarwa, Tehsil Robertsganj  The total land requirement for the project is 333.97 Ha out of which forest land is 180.92 ha and Non-forest land is 153.05ha.	Jhariya Pumped Storage Project (1620 MW), in an area of 310.115 ha. located at Village Jhariya, Tehsil Obra  The total land requirement for the project is 310.115 Ha out of which forest land is 250.519 ha and Non-forest land is 59.596 ha.	The project area requirement has been reduced by the optimization of layout and work facilities  The forest and non-forest land were identified based on joint inspection of forest & Revenue officials.

<b>Descripti on</b>	<b>Reference</b>	<b>Existing</b>	<b>Proposed / Amendment</b>	<b>Reason/Justific ation</b>
TOR Letter	Para 6	An area of 333.97 ha. located at Village Badarwa	An area of 310.115 ha. located at Village Jhariya	The project area requirement has been reduced by the optimization of layout and work facilities
TOR Letter	Annexure I (1.2)	The application for obtaining Stage I FC for 180.92 Ha of forest land involved in the project shall be submitted.	The application for obtaining Stage I FC for 250.519 Ha of forest land involved in the project has been submitted vide application No. FP/UP/HYD/IRRIG /561543/2025	The application has been submitted based on the joint inspection.
TOR Letter	Annexure II	Jhariya Pumped Storage Project (1620 MW), in an area of 333.97 ha. located at Village Badarwa, Tehsil Robertsganj, District Sonbhadra, Uttar Pradesh by M/s Jhariya Ananturja Private Limited.	Jhariya Pumped Storage Project (1620 MW), in an area of 310.115 ha. located at Village Jhariya, Tehsil Obra, District Sonbhadra, Uttar Pradesh by M/s Jhariya Ananturja Private Limited.	The project area requirement has been reduced by the optimization of layout and work facilities
TOR Letter	Annexure II (i)	The proposal is for ToR to the project for Jhariya Pumped Storage Project (1620 MW), in an area of 333.97 ha. located at Village Badarwa, Tehsil Robertsganj,	The proposal is for ToR to the project for Jhariya Pumped Storage Project (1620 MW), in an area of 310.115 ha. located at Village Jhariya, Tehsil Obra, District Sonbhadra, Uttar Pradesh by M/s	The project area requirement has been reduced by the optimization of layout and work facilities

<b>Descripti on</b>	<b>Reference</b>	<b>Existing</b>	<b>Proposed / Amendment</b>	<b>Reason/Justific ation</b>
		District Sonbhadra, Uttar Pradesh by M/s Jhariya Ananturja Private Limited.	Jhariya Ananturja Private Limited.	
TOR Letter	Annexure II (ii)	The Jhariya Pumped Storage Project envisages construction of two artificial reservoirs near Jhariya village in Robertsganj Tehsil of Sonbhadra District of UP.	The Jhariya Pumped Storage Project envisages construction of two artificial reservoirs near Jhariya village in Obra Tehsil of Sonbhadra District of UP.	Initially, the project area falls in Robertsganj as well as Obra tehsil, however after optimization the project area falls in Obra tehsil.
TOR Letter	Annexure II (iii)	The scheme is proposed with an installed capacity of 1620 MW located in the Robertsganj Tehsil of Sonbhadra district of Uttar Pradesh.	The scheme is proposed with an installed capacity of 1620 MW located in the Obra Tehsil of Sonbhadra district of Uttar Pradesh.	Initially, the project area falls in Robertsganj as well as Obra tehsil, however after optimization the project area falls in Obra tehsil.
TOR letter	Annexure II (iv)	Water requirement: Jhariya PSP (1620 MW) will require 17.96 MCM for initial reservoir filling and thereafter ~ 2.47 MCM per year will be required on annual basis from Sone River for	Water requirement: Jhariya PSP (1620 MW) will require 18.70 MCM for initial reservoir filling and thereafter ~ 2.5 MCM per year will be required on annual basis from Sone River for restoring the	As the Project component went for change based on detailed studies & Survey investigation, accordingly the water requirement and

Descripti on	Reference	Existing	Proposed / Amendment	Reason/Justific ation
		restoring the storage capacity lost due to evaporation.	storage capacity lost due to evaporation.	corresponding evaporation losses changed.
TOR letter	Annexure II (x)  Electricity Generation Capacity	Generation of Electricity Annually – 3404.0 MU	Generation of Electricity Annually – 3458.8 MU	The power generation has been revised based on power potential studies approved by CEA.
TOR Letter	Annexure II (x)  TOR/EC details	Cost of project: 7374.57 Cr.	Cost of project: 7457.68 Cr.	As per the revised parameters of the project, the project cost has been updated.
TOR letter	Annexure II (x)  TOR/EC details	Total area of project – 333.97 ha  Height of Dam from River Bed (EL)-  Lower dam-34 m  Upper dam-33 m  Length of Tunnel/Channel- 1583.97 m  Details of Submergence area-194.78 ha	Total area of project – 310.115 ha  Height of Dam from River Bed (EL)-  Lower dam-39 m  Upper dam-35 m  Length of Tunnel/Channel- 1581.31m  Details of Submergence area- 220.58 ha	The project area requirement has been reduced by the optimization of layout and work facilities. The project components have been revised based on detailed survey investigation and discussion with CWC & GSI.



<b>Descripti on</b>	<b>Reference</b>	<b>Existing</b>	<b>Proposed / Amendment</b>	<b>Reason/Justific ation</b>
TOR Letter	Annexure II (x)  Muck Manageme nt Details:	No. of proposed disposal area/ (type of land- Forest/Pvt. land) – 90 ha Non-Forest Land	No. of proposed disposal area/ (type of land-Forest/Pvt. land) – 34 ha Non-Forest Land	By optimization, Muck Disposal have been reduced.
TOR Letter	Annexure II (x)  Land Area Breakup:	Private Land - 153.05 ha  Government land/Forest Land - 180.92 ha  Submergence area/Reservoir area - 194.78 ha  Land required for project components - 139.19ha	Private Land – 57.560 ha  Government land – 2.036 ha  Forest Land – 250.519 ha  Submergence area/Reservoir area – 220.58 ha  Land required for project components - 89.535 ha	The project area requirement has been reduced by the optimization of layout and work facilities  The forest and non-forest land were identified based on joint inspection of forest & Revenue officials.
TOR Letter	Annexure II (x)  Miscellane ous	Details of consultant  Certificate No.: NABET/EIA/222 5/RA0274  Validity: August 15, 2025	Details of consultant  Certificate No.: NABET/EIA/25- 28/RA0415  Validity: August 15, 2028	Extension of validity
TOR Letter	Annexure II (x)  Miscellane ous	Status of other statutory clearances-  forest land - 180.92 Ha	Status of other statutory clearances-  forest land – 250.519 Ha	The forest and non-forest land were identified based on joint inspection of forest &

Descripti on	Reference	Existing	Proposed / Amendment	Reason/Justific ation
				Revenue officials.

vii. The salient features of the project:

• **Project details:**

Name of the Proposal	Jhariya Close Pumped Storage Project (1620 MW)
Proposal No.	IA/UP/RIV/564742/2026
Location (Including Coordinates)	Upper Reservoir Latitude (N) - 24°31'18.33"N Longitude (E) - 83°13'30.51"E Lower Reservoir Latitude (N) - 24°30'11.50"N Longitude (E) - 83°13'46.87"E
Company's Name	M/s Jhariya Ananturja Private Limited
CIN no. of Company/user agency	U35101DL2024PTC428128
Accredited Consultant, Validity and certificate no.	R S Envirolink Technologies Private Limited NABET/EIA/25-28/RA 0415 Valid till 15/08/2028
Project location (Coordinates /River/ Reservoir)	Jhariya Village, Obra sub-district of Sonbhadra district in Uttar Pradesh
Inter- State Issue involved	No

• **Category details:**

Category of the project	1 (c)
Capacity / Cultural command area (CCA)	1620 MW
Attracts the General Conditions	Yes

(Yes/No)	
Additional information (if any)	

• **ToR/EC Details:**

Earlier ToR Proposal No.	IA/UP/RIV/471860/2024
Earlier EAC meeting date	18/07/2024
ToR Letter No.	F. No. J-12011/13/2024-IA.I(R)
ToR grant Date	07/09/2024
Cost of project	7374.57 Crores
Total area of Project	310.115
Date of online application for amendment in TOR was	09/01/2025
Details of CTE	After Receipt of Environmental Clearance
No. of trees/saplings proposed in view of 'Ek Ped Maa Ke Naam' campaign	500

• **Electricity generation capacity:**

Powerhouse Installed Capacity	1620 MW
Generation of Electricity Annually	3458.8 MU
No. of Units	5 x 270 MW + 2 x 135MW

• **Detail reason for amendment in ToR:**

Based on detailed survey and geological investigation and engineering design there are certain changes in the features of project components necessitating changes in land requirement, and therefore TOR amendment is required. At the TOR stage, land categories were identified based on initial survey and information available with forest/revenue department. Subsequently, a joint inspection was carried out during May-November 2025 with officials from the Forest Department, and the Revenue Department to verify the land category and location. Based on the joint inspection, the extent of forest land has increased; however, the overall land requirement for the Project is reduced

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

S. No.	Parameters	As Per ToR	Revised	Deviation
1	Location			
	State	Uttar Pradesh	Uttar Pradesh	NA
	District	Sonbhadra	Sonbhadra	NA
	Airport	Lal Bahadur Shastri International Airport Varanasi– 170 km	Lal Bahadur Shastri International Airport Varanasi– 170 km	NA
	Rail Head	Agori-khas – 36 km	Agori-khas – 35.9 km	NA
	Road Head	Dehri-Nauhatt-Yadunathpur road NH-119	Dehri-Nauhatt-Yadunathpur road NH-119/SH 5A	NA
	Map reference	Survey of India Toposheet No. 63P/2, 63P/3, 63P/6 & 63P/7	Survey of India Toposheet No. 63P/2, 63P/3, 63P/6 & 63P/7	NA
	Geographical co-ordinates	Upper Reservoir		
	Latitude (N)	24°31'18.33"N	24°31'18.33"N	NA
	Longitude (E)	83°13'30.51"E	83°13'30.51"E	NA
	Geographical co-ordinates	Lower Reservoir		
	Latitude (N)	24°30'11.50"N	24°30'11.50"N	NA
	Longitude (E)	83°13'46.87"E	83°13'46.87"E	NA
2	Hydrology			
	Tributary/River/Nala	Sone River	Sone River	NA
	Total Catchment Area of Sone River Basin	70055 Sq. km.	70055 Sq. km	
	Estimated catchment area at pumping location	53430 Sq. km (Total C.A) 21964.7 Sq.km. (Total uncontrol C.A)	53430 Sq. km (Total C.A) 21964.7 Sq.km. (Total uncontrol C.A)	
	Average Annual Rainfall	858 mm	860.57 mm	2.57 mm
3	Water pipeline for filling Lower			

S. No.	Parameters	As Per ToR	Revised	Deviation
	Reservoir			
	Total water requirement	17.96 MCM	18.70 MCM	0.74 MCM
	Elevation at Pumping source	168 m amsl	160 m amsl	(8) amsl
	Top of the lower reservoir	243 m amsl	237 m amsl	(6) amsl
	Head difference	75 m	77 m	2 m
	Head loss	13 m	8.2 m	4.8 m
	Length and diameter of pipeline	5.45 km long, 1.2 m diameter	4.96 km long, 1.2 m diameter	(0.49) km
	Pump Capacity	750 kW	750 kW	NA
	Number of pumps	4	4	NA
4	Upper Reservoir			
	Dam Top Level	El. 569.00 m	El. 567.00 m	(2) m
	Full Reservoir Level	El. 565.00 m	El. 562.00 m	(3) m
	Minimum Drawdown Level	El. 547.00 m	El. 543.00 m	(4) m
	Bed level of reservoir	El. 546.00 m	El. 541.00 m	(5) m
	Submergence Area at FRL	73.44 Ha	72.08 Ha	(1.36) Ha
	Storage at FRL	13.80 MCM	14.07 MCM	0.27 MCM
	Storage at MDDL	1.39 MCM	1.40 MCM	0.01 MCM
	Live Storage Capacity	12.41 MCM	12.67 MCM	0.26 MCM
	Type	Concrete Faced Rockfill Dam	Concrete Faced Rockfill Dam	NA
	Maximum Height	33 m	35 m	2 m
	Weighted average height of dam	19.8 m	22.6 m	2.8 m
	Upstream and Downstream Slope	1V: 1.5H	1V: 1.6H	NA
	Length of CFRD at top (Peripheral)	2683.63 m	2510.00 m (including length of block 175.5m)	(173.63) m



S. No.	Parameters	As Per ToR	Revised	Deviation
4a	Power Intake/Inlet at Upper Reservoir			
	Approach Channel Length and Width	160 m long and 150 m wide	160 m long and 150 m wide	NA
	Design discharge (Generation/Pumping)	571.8/493.2 cumecs	568.2/486.54 cumecs	(3.6)/(6.6) cumecs
	No. and Type of Intake	6 Nos, Diffuser Type Inlet Structure	6 Nos, Diffuser Type Inlet Structure	NA
	Invert Level of Intake	EL. 534.0 m	EL. 529.0 m	(5) m
	Top Level	EL. 569.0 m	EL. 567.0 m	(2) m
	Type and size of Gates	6 nos., Vertical lift gate with opening size of 6.2 m (W) x 6.2 m (H) for each Intake	6 nos., Vertical lift gate with opening size of 6.2 m (W) x 6.2 m (H) for each Intake	NA
5	Lower Reservoir			
	Dam top level	El. 243.00 m	El. 237.00 m	(6) m
	Full Reservoir Level	El. 239.00 m	El. 232.00 m	(7) m
	Minimum Drawdown Level	El. 220.00 m	El. 214.00 m	(6) m
	Bed Level of reservoir	El. 219.00 m	El. 212.00 m	(7) m
	Submergence Area at FRL	83.70 Hectare	88.68 Hectare	4.98 Ha
	Storage at FRL	16.45 MCM	17.015 MCM	0.565 MCM
	Storage at MDDL	1.50 MCM	1.935 MCM	0.435 MCM
	Live Storage Capacity	14.95 MCM	15.08 MCM	0.13 MCM
	Type	Concrete Faced Rockfill Dam	Concrete Faced Rockfill Dam	NA
	Maximum dam height	34.0 m	39 m	5 m
	Weighted average dam height	16.0 m	17.5 m	1.5 m

S. No.	Parameters	As Per ToR	Revised	Deviation
	Upstream and Downstream Slope	1V: 1.5H	Upstream (1V: 1.5H) Downstream (1V:1.6H)	NA
	Length of CFRD at top (Peripheral)	3420 m	2554.68 m (including 175.5m length of Intake block)	(865.32) m
5a	Power Intake/Outlet at Lower Reservoir			
	Approach Channel Length and Width	160 m long and 167 m wide	150 m long and 165 m wide	(10) m and (2) m
	Design discharge (Generation/Pumping)	571.8/493.2 cumecs	568.2/486.54 cumecs	(3.6)/(6.6) Cumecs
	No and Type of Intake	7 Nos, Diffuser Type Outlet Structure	7 Nos, Diffuser Type Outlet Structure	NA
	Invert Level of Intake	EL. 207.0 m	EL. 201.0 m	(6) m
	Top Level	EL. 239.0 m	EL. 237.0 m	(2) m
	Type and size of Gates	7 nos., Vertical lift gate, 6.2 m (W) x 6.2 m (H) for 5 Nos. of Intake and 4.5 m (W) x 4.5 m (H) for 2 nos. of Intake	7 nos., Vertical lift gate, 6.0 m (W) x 6.0 m (H) for 5 Nos. of Intake and 4.5 m (W) x 4.5 m (H) for 2 nos. of Intake	(0.2) m (W) X (0.2) m (H)
6	Penstock / Pressure Shaft			
	Number of Pressure shafts/buried penstock	6 nos. 5.0 m diameter Circular Steel Lined Pressure Shaft having length 1410.0 m and 1 no. 5.0 m diameter Circular Steel Lined	6 nos. of 5m Dia penstock, out of which 5 nos. of main pressure shaft for larger unit having average length of 1586.78m & 1 nos. of pressure	

S. No.	Parameters	As Per ToR	Revised	Deviation
		Pressure Shaft having length 1365.7 m further bifurcate into two smaller unit diameter 3.5 m	shaft with length 1525.59m is bifurcated into 3.5m dia of unit pressure shaft that connects to the smaller units with average length 182.0m	
7	Powerhouse & Transformer Yard			
	Type	Surface Powerhouse	Semi Pit type Surface Powerhouse	NA
	Size of Powerhouse	185.15 m (L) x 24.5 m (w) x 46.2 m (H)	178.5 m (L) x 25.7 m (W) x 52.50 m (H)	(6.65) m x (1.2) m x (6.3) m
	Size of Service Bay	40 m (L) x 24.5 m (W) x 19.8 m (H)	37 m (L) x 27.7 m (W) x 45.5 m (H)	(3) m x 3.2 m x 25.7 m
	Centre Line of Turbine (Main Unit)	El. 177.0 m	EL. 171.0 m	(6) m
	Centre Line of Turbine (Small Unit)	El. 176.0 m	EL. 173.0 m	(3) m
	Service Bay Level	El. 191.0 m	EL. 185.5 m	(5.5) m
	Main Access Tunnel (MAT)	8.5 m diameter, D-shaped tunnel 736.0 m long	8.5 m diameter, D-shaped tunnel 673.44 m long	(62) m
	Max. Net Head (T/P)	339.4 m / 348.8 m	341.33m /353.80m (In Large Unit)	1.93 m / 5m
	Min. Net Head (T/P)	305.7 m / 316.3 m	304.33m /316.8m (In Large Unit)	(1.37) m / 0.5 m
	Size of Transformer yard	225.15m (L) x 18m (W)	208.2 m (L) x 16 m (W)	(16.95) m x (2) m
	Pothed Yard Size	73m (L) x 30m	65 m (L) x 18 m	(8) m x

S. No.	Parameters	As Per ToR	Revised	Deviation
		(W)	(W)	(12) m
	Downstream/ Upstream Surge Gallery	Not required	Not required	
8	Electro- Mechanical Equipment			
	Type of Turbine and no. of units	Vertical Reversible Francis, 4 Nos.	Vertical Reversible Francis, 7 Nos.	3 Nos.
	Turbine Centre line Elevation (Main Unit)	El. 177.0 m	EL. 171.0 m	(6) m
	Turbine Centre line Elevation (Small Unit)	El. 176.0 m	EL. 173.0 m	(3) m
	Head Loss (Generation mode)	5.78 m	6.67m (In Large Unit)	0.89 m
	Head Loss (Pumping mode)	4.4 m	5.8m (Large unit)	1.4 m
	Rated net head (T/P)	320.75m (Generation Mode) 330.93 m (Pumping mode)	322.91m / 335.37 m (Large unit)	2.16 m / 4.44 m
	Unit Discharge, (Large Unit) Turbine/ Pump	95.3/ 82.2 Cumecs	94.70/81.09 cumecs	(0.6)/ (1.11) Cumecs
	Unit Discharge, (Small Unit) Turbine/Pump	47.6/ 41.0 Cumecs	47.59/40.40 cumecs	(0.01)/ (0.6) Cumecs
	Daily Hours of Generation	6 hours	6 hours	NA
	Daily Hours of Pumping	7 hours	7 hours	NA
	Installed Capacity (Generation)	5 x 270 MW & 2 x 135 MW	5 x 270 MW & 2 x 135 MW	NA
	Installed Capacity (Pumping)	5 x 290 MW & 2 x 145 MW	5 x 290 MW & 2 x 145 MW	NA
	Total Annual Energy (Generation)	3404.0 MU	3458.8 MU	54.8 MU

S. No.	Parameters	As Per ToR	Revised	Deviation
	Total Annual Energy (Pumping)	4239.0 MU	4347.6 MU	108.6 MU
9	Tailrace Tunnel			
	Main TRT			
	Nos. and Shape	5 Nos. Horseshoe Shaped Tunnel (excavation shape), Circular (finished shape)	5 Nos. Horseshoe Shaped Tunnel (excavation shape), Circular (finished shape)	NA
	Diameter and Length	5.5 m diameter, 173.97 m long each	5 Nos. of 6 m diameter of each main TRT Length of unit-1 TRT-174.41 m Length of unit-2 TRT-174.41 m Length of unit-3 TRT-174.41 m Length of unit-4 TRT-174.41 m Length of unit-5 TRT-174.41 m	0.5 m in dia., 0.44 m in length
10	Unit TRT			
	Nos. and Shape	2 Nos. Horseshoe Shaped Tunnel (excavation shape) Circular (finished shape)	2 Nos. Horseshoe Shaped Tunnel (excavation shape) Circular (finished shape)	NA
	Diameter and Length	3.8 m diameter, 178.67 m long each	4.3 m diameter, 181.95m length for unit-6 TRT and 182.17 m of Unit-7 TRT	0.5 m in dia., 3.28 m in length
11	Project Cost and Tariff			
	Total Project Cost	INR 7374.57 Crores	INR 7457.68 Crore	83.11 Cr
	Transmission line and R-communication cost	INR 32.87 Crores	INR 179.6 Crore	146.73 Cr



S. No.	Parameters	As Per ToR	Revised	Deviation
	IDC	INR 591.47 Crores	INR 792.00 Crores	201 Cr
	FC	INR 9.92 Crores	INR 141.00 Crore	131.08 Cr
	Hard Cost including escalation	INR 6773.18 Crores	INR 6524.68 Crore	(248.5 Cr)
	Levelized tariff ((Without transmission line and R-communication cost)	INR 7.5 /kWh (One cycle generation/pumping (6hrs./7hrs))	INR 7.04 /kWh (One cycle generation/pumping (6hrs./7hrs))	(0.46/kWh)
	Levelized tariff Considering One and half cycle generation	INR 6.03 /kWh (One and half cycle generation/pumping (6 hrs./7 hrs.))	INR 5.74 /kWh (One and half cycle generation/pumping (6 hrs./7 hrs.))	(0.29/kWh)
	Pumping energy cost	INR 3.0 /kWh	INR 2.50 /kWh	0.50 /kWh

#### Comparative Statement of Land Requirement

S. No.	Project Component	As per TOR (Land Area in Hectare)	As per Current Assessment (Land Area in Hectare)
1	Upper Reservoir	94.18	99.490
2	Lower Reservoir	100.60	121.090
3	WCS excluding Dam area	16.85	18.360
4	Power House Complex (includes TRT area in current layout)	4.26	9.540

5	Site Office UR	1.00	1
6	Site Office LR	1.00	-
7	Crushing & Batching Plant UR	1.75	-
8	Crushing & Batching Plant LR	1.75	-
9	Stacking Area and Workshop UR	1.00	-
10	Stacking Area and Workshop LR	1.00	-
11	Magazine Area UR	0.25	-
12	Magazine Area LR	0.25	-
13	Labour Camps UR	2	-
14	Labour Camps LR	2	-
15	Colony Area UR	2	-
16	Colony Area LR	2	2.5
17	Muck Disposal/ Green Belt (UR & LR)	90	34
18	TRT excluding Dam area	1.08	-
19	MAT	2.93	1.957
20	Storm Water Channel (SWC)	-	3.078
21	Proposed Roads from LR to UR and Pothead Yard	8.07	14.200
22	Proposed Water Pipeline for Lower Reservoir Filling	-	4.900
Total Land Requirement		333.97	310.115

- **Court case details: Nil**

#### **47.4.3 The EAC during deliberations noted the following:**

- The proposal is for grant of amendment in Terms of References (TOR) to the project for Jhariya Close Pumped Storage Project (1620 MW) in an area of 310.115 Ha located at Village Barahmori, Chakaria, Sasnai etc, Sub-District Robertsganj, District Sonbhadra, Uttar Pradesh by M/s Jhariya Ananturja Private Limited.
- The project is listed at S.N.1(c) of the Schedule to the Environment Impact Assessment (EIA) Notification under category 'A' and are appraised at Central Level by Expert Appraisal Committee (EAC).
- The Terms of Reference granted by the Ministry vide letter dated 07.09.2024 for the project Jhariya Closed Loop Pumped Storage Project (1620 MW) located at Village Jhariya, Sasnai, Barahmori and Chakaria etc, Tehsil Obra, District Sonbhadra, Uttar Pradesh in favour of M/s Jhariya Ananturja Private Limited.
- The EAC noted that, based on detailed survey, geological investigations, and engineering design, certain changes have occurred in the configuration of project components, resulting in modifications to the land requirement. Accordingly, amendment of the Terms of Reference (ToR) has been requested. At the ToR stage, land categories were identified based on the preliminary survey and information available with the Forest and Revenue Departments. Subsequently, a joint inspection was conducted during May–November 2025 with officials of the Forest Department and the Revenue Department to verify the land category and location. Based on the findings of the joint inspection, the extent of forest land involved has increased; however, the overall land requirement for the project has been reduced.

**47.4.4** The EAC after examining the information submitted and detailed deliberations recommended the proposal grant of amendment in Terms of References as proposed by the PP to Jhariya Close Pumped Storage Project (1620 MW) in an area of 310.115 Ha located at Village Barahmori, Chakaria, Sasnai etc, Sub-District Robertsganj, District Sonbhadra, Uttar Pradesh by M/s Jhariya Ananturja Private Limited, under the provisions of EIA Notification, 2006 and as amended with subject to the following additional conditions:

- i. EIA/EMP, collection of baseline data, other statutory clearance and the public hearing shall be carried out as per revised layout.
- ii. All other Terms of Reference mentioned letter no. J-12011/13/2024-IA-1(R) dated 07.09.2024 shall remain unchanged.

### **Agenda Item No. 47.5**

**Kishau Multipurpose Project (CCA: 102,375.95 ha and 422 MW) in an area of 2,950 Ha located at Village Bagna, Bali Koti, Bela and Bobri (234) etc., Sub District Shalai, Kamrau and Chakrata, District Dehradun and Sirmaur, Himachal Pradesh & Uttarakhand by M/s Kishau Corporation Limited– Terms of References (TOR) – reg.**

**[Proposal No. IA/UK/RIV/562518/2026; F. No. J-12011/02/2026-IA.I (R)]**

**47.5.1** The proposal is for grant of Terms of Reference (ToR) to the project Kishau Multipurpose Project (CCA: 102,375.95 ha and 422 MW) in an area of 2,950 Ha located at Village Bagna, Bali Koti, Bela and Bobri (234) etc., Sub District Shalai, Kamrau and Chakrata, District Dehradun and Sirmaur, Himachal Pradesh & Uttarakhand by M/s Kishau Corporation Limited.

**47.5.2** The Project Proponent and the accredited Consultant M/s. Mantec Consultants Pvt. Ltd., made a detailed presentation on the salient features of the project and informed that:

- i. Kishau Dam Project would utilize the water of river Tons which is a major tributary of river Yamuna and forms boundary between Himachal Pradesh and Uttarakhand in most of its reaches in this region.
- ii. The water stored in the Kishau reservoir shall be utilized primarily for irrigation & drinking water supply and as a consequence for power generation. The project site is near Samberkhera which is about 50 kms upstream of Dakpathar in Dehradun district Uttarakhand and about 10 km. upstream of existing Ichari Dam.
- iii. **Background:**  
The investigation of Kishau project was initiated in the year 1940 and was carried out till 1946-47. After some interruptions, the investigation was further carried out by UP Government in the year 1961 and was continued till the year 1967-68. The investigation was further continued intermittently till the year 2010. Kishau project was declared Project of National importance by Ministry of Water Resources, GoI in the year 2008. For the development of project, a Special Purpose Vehicle named Kishau Corporation Ltd was framed on 20th June, 2015 with a joint venture of two states having submergence i.e Uttarakhnad & Himachal Pradesh
- iv. Kishau Dam Project envisaged the construction of a 232.6 m high concrete gravity dam along with a 422 MW capacity power house across the river Tons, a tributary to the river Yamuna, for harnessing the vast monsoon flow of river Tons by storing and utilizing the regulated release thereof, for irrigation, drinking water and power generation. Considering the latest developments in design and construction of roller compacted concrete dams, economy, volume of dam and to reduce the construction period, it is

proposed to construct a roller compacted concrete gravity dam instead of conventional concrete dam.

v. The main features of the project are as follows:-

- i. A 232.6 m high Roller Compacted Concrete gravity dam across river Tons in district Dehradun to provide a gross storage of 1824 MCM and live storage of 1561.91 MCM.
- ii. A diversion tunnel on the upstream and downstream of dam section and ducts through the dam body are proposed to divert the river water during construction for diversion discharge of 710 cumec. These ducts shall be plugged by concrete before commissioning of the project.
- iii. 6 Nos spillway of size 15 m (W) X 17.0 m (H) for discharging flood of 15648 cumec have been provided.
- iv. A surface power house on the left bank of the river with installed capacity of 422 MW (4 x105.5 MW) having rated gross head of 164.17 m.
- v. Over ground 400 kV pothead yard on the left flank, near the toe of the dam.

vi. Water will be distributed between Uttar Pradesh and Haryana at Tajewala head works and between Uttar Pradesh, Haryana, Rajasthan and Delhi at Okhla head works as below:

1. Up to Tajewala Head Works :-

There are three canal systems up to Tajewala head works as given below:-

- Eastern Yamuna canal
- Western Yamuna canal
- Khara canal

2. From Tajewala to Okhla the water is supplied to

- Agra Canal
- Delhi Water Supply

vii. **Land requirement:** 3000 ha( Submergence area- 2950 Ha, Dam, Power House, Spillway etc- 20 Ha, Colonies, School, Hospital, Shopping Centre colony area and approach roads to the work- 30 ha)

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

Environment Sensitivity Type	Name	Distance (from Project Site Boundary in Km)	Direction
	Govt Primary School	1.99	NNE



<b>School / College</b>	Rajkiya Uchtar Madhymik Vidhyalya	2.05	NNE
	GPS Elementary school	1.95	ENE
	Government Middle School	2.15	WNW
<b>Place of Worship</b>	Thari Mata Temple	1.48	SSE
	Mahasu Devta Mandir	1.57	WSW
	Thari mata mandir	1.88	WNW
<b>Roads</b>	SH-01	6.05	E
	NH-707A	9.17	E
	NH-707	7.05	W
<b>Hospital</b>	ANM Center Children's hospital	2.63	NW
	Primary Health Center	3.83	SSW
<b>Habitation</b>	Timara	1.42	SSE
	Chamra Morar	1.33	NW
	Malaitha	1.55	ENE
	Dunawa	0.92	NNE
	Jamuwa	1.90	E
	Sharli Manpur	2.20	SSW
<b>State Boundary</b>	Himachal Pradesh-Uttarakhand State Boundary	Project Site	Project Site
<b>Reserved Forest/Protected Forest</b>	Bali Koti RF	2.75	W
	Banola RF	3.26	E
	Bhatnaul RF	5.19	NNW
	Chyali RF	9.78	WNW
	Deoban RF	6.50	E
	Jamna PF	4.45	SW
	Jamna RF	5.80	SSW
	Kanasar RF	9.58	N
	Khajuri RF	6.55	WSW
	Koruwa RF	7.10	E
	Kotha RF	6.45	SE
	Nigali RF	9.35	SSW
	Nigali RF No.1	8.42	SSW
<b>Panchayat</b>	Panchayat Ghar Guddi Manpur	3.38	SW
	Panchayat ghar dugana	9.34	WSW
<b>Water Body</b>	Tons River	Project Site	Project Site
	Nera Nala	0.42	SSW

	Manpur Nala	2.98	SSW
	Galiyar Nala	3.85	SSE
	Dhawad River	5.27	SSE
	Maindar River	2.07	WNW
	Amtiar River	6.50	NW
	Amiawa River	5.60	ENE
<b>Nearest Railway Station</b>	Dehradun Railway Station	44.84	SE
<b>Nearest Airport</b>	Helipad Kafota	8.72	WSW
	Jolly Grant Airport - Dehradun	64.33	SSE

- ix. **Water requirement:** Average Daily Requirement = 1,944 m<sup>3</sup>/day during construction phase
- x. **Project Cost:** The estimated project cost is Rs 15624.00 Crores. Total capital cost earmarked towards environmental management plan is Rs 781.15 Cr and the Recurring cost (operation and maintenance) will be approximately Rs 70 Cr per annum.
- xi. **Project Benefit:**

#### **Benefits of Kishau Hydropower Multipurpose Project**

##### **Social Benefits**

- Reliable supply of clean drinking water to nearby towns and villages
- Improved irrigation facilities, supporting farmers and enhancing agricultural productivity
- Reduction in flood risks downstream, ensuring safety of communities
- Employment generation during construction and operation phases
- Overall improvement in quality of life through better access to water, power, and services

##### **Economic Benefits**

- Generation of renewable hydropower, reducing dependence on fossil fuels
- Boost to local and regional economy through job creation and business opportunities
- Long-term revenue generation from power production
- Support to agriculture and allied activities through assured water availability
- Contribution to regional and national energy security

### Infrastructure Benefits

- Development of roads, bridges, and access routes in remote areas
- Strengthening of power transmission and distribution networks
- Improvement in water management infrastructure such as dams, reservoirs, and canals
- Enhanced connectivity leading to better access to education, healthcare, and markets

xii. **Environmental Sensitive area:** There are no national parks, wildlife sanctuaries, Biosphere Reserves, Tiger/Elephant Reserves, Wildlife Corridors etc. within 10 km distance from the project site. Nera Nala is flowing at a distance of 0.42 km in SSW direction. Dhawad river is flowing at a distance of 5.27 km in SSE direction.

xiii. **Resettlement and rehabilitation:** The rehabilitation and resettlement plan will be prepared as per GoU and GoHP prevailing guidelines which shall not be inferior to prevailing National Policy for project affected families of GoI. In addition to R&R, the KCL will also run community development schemes and CSR program for the villages within / around the project site for skill/capacity development of affected/nearby population

xiv. **Alternative Studies:**

Several sites, for locating a dam on Tons river, were considered for providing storage reservoir for irrigation and power development. They are Kishau, Sambherkhera, Morar, Minas and Atal. Reconnaissance, geological surveys along with regional geology were carried out by the officers of the Geological Survey of India. Some topographical surveys were also conducted to assess the suitability of the site.

#### **Kishau Site:**

The river Tons passed through a very narrow U-shaped gorge. This is the narrowest of all the sites and therefore, the cost of the dam for storing a certain volume of water will be the lowest. The crest length of the dam for a gross storage of 2400 Mm<sup>3</sup> and height of 230 m above bed, comes to 360.0 m. The rocks explored at the site are inter-banded slates, massive (Bansa) limestone inter banded with minor quartzite rocks of the transitional zone of the siliceous limestone inter banded with calcareous slates. The bed rock units are sparsely jointed at the lower.

#### **Morar Site:**

The valley is much wider than that at Kishau and Sambherkhera. The crest length of the dam for the storage of 2400 Mm<sup>3</sup> and height of 274.0 m above river bed comes to 1280 m. The left abutment is comparatively steep while the right abutment is made up of a gently sloping ground. The site is made up of slates, grey shales and quartzites of the simla slate group. They have been folded into a possible minor anticlinorium at the dam site. Due to complex folding, the rocks have undergone the feasibility of the slate units.

The rocks have become flaggy in nature and at places extensive shattering is also seen. The Shimla slates are exposed up to a height of 10–15 m, above the river bed. Above the slates the right abutment is made up of a gently sloping ground covered by terraces of river gravel and sand. The left abutment exposes talus and probably land slide material. The Tons thrust is expected to occur in the right abutment. Topographically, the river valley will require more than 1.8 times the volume of the fill in the dam of Kishau. The height of the dam will also be abnormally high and it will not be Desirable to construct such a structure at this site with such a complex geology.

**Minus Site:**

The gorge is quite narrow and V shaped. The length of crest of the dam for the storage of 2400 Mm<sup>3</sup> and height of 259 m above river bed comes to 457 m. The rock exposed at the site are limestone, having cavernous nature. The required height of the dam works out so high that practically it would not be feasible geologically and structurally. The cavernous nature of the rock rules out the site for a safe structure.

**Atal Site:**

The site is U-shaped and is narrow with steep abutments. The length of the crest of the dam of storage of 2400 Mm<sup>3</sup>, height of dam 267 m above river bed comes to 488m. The river has cut a gorge through massive pink and white dolomite band overlain by quartzite and slates. The rock formations are complexly folded into a major anticlinal fold. There is vertical fault on the left abutment which will intersect the dam axis. The bands show the weathering characteristics, however, no major solution cavities are found. Although the valley is narrower than Sambherkhera, but the height of the dam for the same storage is increased by 31 m than that at Sambherkhera.

**Sambherkhera**

The site is wider than that at Kishau. The crest length of a dam for the storage of 1824 Mm<sup>3</sup> and a height of 236 m above the river bed comes to be 680 m. The rocks at site mostly consist of Grey quartzite sand stone and shale (Unit-I) which will form the foundation of the dam structure in river bed. The overburden in the river bed is of the order of 10 to 12 m. The rocks are folded in to asymmetrical anticline. In the right abutment, rocks of pink quartzite and white quartzite Unit II and Unit III shall be encountered. Heavy shearing and shattering has been found along the contact surface of these two units. On the left abutment side purple quartzite is exposed up to the top of the dam. The power house and spillway shall be founded on rocks of Unit-II Reconsideration of alternative sites for location of dam, brought emphasis on Samberkhera site, which appeared best out of the four sites i.e. Samberkhera, Atal, Kishau and Morar. A comparative study of costs of concrete gravity dam and earth and rock fill dam show that the construction of a concrete gravity dam is much cheaper than earth and rock fill dam in this area as construction material for rock fill dam such as impervious core etc., is not available in the nearby area whereas construction material for concrete dam is available within a submergence area. Further, the construction material for earth and rock fill dam needs longer diversion tunnels and this will increase the total construction period of the project. The concrete gravity dam was considered technically feasible and economically viable in addition to offering a shorter gestation period. Gravity dams built using the RCC construction method, afford economies over conventional concrete through rapid

placement techniques. Construction cost histories of RCC and conventional concrete dams show the unit cost per cubic yard of RCC is considerably less. The rapid construction techniques and reduced concrete volume account for the major cost savings in RCC dams. keeping in view the developments in the field of roller compacted concrete dams, economy, volume of the dam and to reduce the construction period it is now proposed to have a roller compacted concrete gravity dam instead of conventional concrete dam.

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

1. Municipal Waste: 65.25 TPA
2. Plastic Waste: 39.15 TPA

Muck and its Management:

Swelling Factor for Overburden	1.42				
Swelling Factor for Rock	1.6				
% of Useful Muck in rock	40%				
Estimated Muck dumping Area	10	Ha/MCM	For 10 meter height		
Estimated Muck dumping Area	1	Ha/Lakh m <sup>3</sup>	For 10 meter height		
<b>EXCAVATION QUANTITY</b>	Excavation (Lakh m <sup>3</sup> )	Muck Generated (Lakh m <sup>3</sup> ) including Swelling Factor	Useful Muck (Lakh m <sup>3</sup> )	Wasteful Muck (Lakh m <sup>3</sup> )	Dumping area required (ha)
Open Excavation in Overburden	19.51	27.70	0.00	27.70	27.70
Open Excavation in Rock	41.14	65.83	<b>26.33</b>	39.50	39.50
Underground Excavation in Rock	0.71	1.14	<b>0.46</b>	0.69	0.69
<b>TOTAL</b>	<b>61.37</b>	<b>94.67</b>	<b>26.79</b>	<b>67.89</b>	<b>67.89</b>

Total quantity of muck generated will be 94.67 lakh m<sup>3</sup> out of which 40% will be used in Construction of Dam. Other 60% will be dumped away from the river bed. Muck



disposal will be done only in the approved and earmarked sites located sufficiently away from the HFL of the river. Efforts shall made to reuse the muck for construction and other filling purposes. Proper treatment for quick stabilization of disposal sites will be carried out. For this, muck dumping site have been identified by the Project Authority during the pre-construction Stage for getting its necessary clearance

xvi. Status of Litigation Pending against the proposal, if any: Nil

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

- Project Details**

Name of the Proposal	Kishau Multipurpose Project						
Location (Including coordinates)	<div>KISHAU MULTIPURPOSE PROJECT</div> <div>Located at Village: Sambherkhera &amp; Mashwar, District: Dehradun &amp; Sirmour of Dehradun &amp; Himachal Pradesh</div> <table><tr><td>Latitudes</td><td>Longitudes</td></tr><tr><td>30°39'39.07"N</td><td>77°46'48.48"E</td></tr></table>			Latitudes	Longitudes	30°39'39.07"N	77°46'48.48"E
Latitudes	Longitudes						
30°39'39.07"N	77°46'48.48"E						
Inter- state issue involved	<div>Yes.</div> <div>Interstate boundary ( Uttarakhand and Himachal Pradesh)</div>						
Seismic zone	IV						

- Category Details**

Category of the project	'A'
Provisions	
Capacity / Cultural command area (CCA)	102375.95 ha
Attracts the General Conditions (Yes/No)	Yes. Interstate boundary ( Uttarakhand and Himachal Pradesh)
Additional information (if any)	

- Electricity Generation Capacity:**

Powerhouse Installed Capacity	422 MW(105.5 X4)
Generation of Electricity Annually	1457.22 MU
No. of Units	4

Additional information (if any)	Nil
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• **TOR/EC Details**

Cost of project	14037.09 Crores
Total area of Project	3000 Ha
Height of Dam from River Bed (EL)	232.6 m
Length of Tunnel/Channel	4 penstocks of 3.8 m dia
Details of Submergence area	2950 Ha
Types of Waste and quantity of generation during construction/ Operation	3. Municipal Waste: 65.25 TPA 4. Plastic Waste: 39.15 TPA
E-Flows for the Project	36.5 cumec
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.	No river cross sections have been used for quantification of E-flow. E-flow study should be carried out by using data of river cross sections d/s of projects or other suitable locations and after carrying out simulation analysis. Further, depth requirement for umbrella fish species should be taken for lean, non-monsoon non lean & monsoon seasons separately. 25 cm is too less depth of water for E –flow estimation considering umbrella fish species viz., Trout and Mahseer. The recommended Environmental Flow Rate (EFR) is required to be relooked based on the actual river cross sections, water depth requirement specific to the umbrella fish species and other downstream uses. In addition, the lower stretch of the Yamuna River is having high fish abundance, catch and the river being flat compared to middle and upper stretch of Yamuna River, would require different EFR for hydroelectric projects falling in these stretches. EFR recommendations should be based on analysis of actual data
No. of trees/saplings proposed in view of ‘Ek Ped Maa Ke Naam’ campaign	10 trees will be planted in view of “Ek ped Maa k naam” in addition to 12500 trees.

- Muck Management Details**

No. of proposed disposal area/(type of land- Forest/Pvt. land)	67.89 Ha Identification of land (Forest/Private land) is under process.
Muck Management Plan	Total quantity of muck generated will be 94.67 lakh m <sup>3</sup> out of which 40% will be used in Construction of Dam. Other 60% will be dumped away from the river bed. Muck disposal will be done only in the approved and earmarked sites located sufficiently away from the HFL of the river. Efforts shall made to reuse the muck for construction and other filling purposes. Proper treatment for quick stabilization of disposal sites will be carried out. For this, muck dumping site have been identified by the Project Authority during the pre-construction Stage for getting its necessary clearance.
Monitoring mechanism for Muck Disposal	The objective of the muck disposal monitoring mechanism is to ensure that excavation muck generated during construction of the multipurpose hydroelectric project is handled, transported, and disposed of in an environmentally safe manner, in compliance with approved muck disposal plans, statutory conditions, and best engineering practices, so as to prevent adverse impacts on land, water bodies, ecology, and nearby habitations

- Land Area Breakup:**

Private land	Land detail is being collected.
Government land	
Forest Land	
Total Land	50 Ha
Submergence area/Reservoir area	2950 Ha
Additional information (if any)	-

- **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	Himachal Pradesh-No Reserve Forest/Protected Forest Land is involved. Uttarakhnad- Information awaited from Forest Department-
National Park	NO	
Wildlife Sanctuary	NO	

- **Court Case details: Nil**

- **Miscellaneous**

Particulars	Details
Details of consultant	Mantec Consultants Pvt. Ltd.
Project Benefits	<ul style="list-style-type: none"> <li>• Kishau Dam project is a major multipurpose project, which shall yield many indirect and non-quantifiable benefits.</li> <li>• This project will generate approx. 400-500 skilled/unskilled labourers during construction phase and 90-100 during operation phase.</li> <li>• The development of hydropower in Uttarakhand not only benefits the State but will meet the power requirements of the neighbouring states and northern region of the country.</li> <li>• The Government of India declared “Kishau Multipurpose Project” as National Projects in February 2008.</li> <li>• It would provide the much needed irrigation facility to 97076 hectares on the Eastern Yamuna Canal. The irrigation benefits would start coming</li> </ul>

	<p>in immediately after completion of the project as the irrigation system is already developed on the Yamuna Canal command and there is keen demand for additional supplies for intensification and extension.</p> <ul style="list-style-type: none"> <li>• It would modulate the flood intensities of the river Yamuna.</li> <li>• It would add an installed capacity of 422 MW in the Northern Grid and yield <math>1851.51 \times 10^6</math> KWH in 90% availability year, including additional power benefits from power houses of Yamuna Hydel Scheme Stage-I,II, IV and Khara Hydel Scheme generating <math>472.32 \times 10^6</math> KWH</li> </ul>
Status of other statutory clearances	Not Applicable.
R&R details	The rehabilitation and resettlement plan will be prepared as per GoU and GoHP prevailing guidelines which shall not be inferior to prevailing National Policy for project affected families of GoI. In addition to R&R, the KCL will also run community development schemes and CSR program for the villages within / around the project site for skill/capacity development of affected/nearby population
Additional detail (If any)	Nil

#### 47.5.4 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 Kishau Multipurpose Project (CCA: 102,375.95 ha and 422 MW) in an area of 2,950 Ha located at Village Bagna, Bali Koti, Bela and Bobri (234) etc., Sub District Shalai, Kamrau and Chakrata, District Dehradun and Sirmaur, Himachal Pradesh & Uttarakhand by M/s Kishau Corporation Limited.
- The project is listed at S.N.1(c) of the Schedule to the Environment Impact Assessment (EIA) Notification under category 'A' as it involves power generated capacity is 422 MW and are appraised at Central Level by Expert Appraisal Committee (EAC).
- The EAC observed that the Kishau Dam Project would utilize the waters of the River Tons, a major tributary of the River Yamuna, which forms the boundary between



Himachal Pradesh and Uttarakhand along most of its course in the region. The water stored in the Kishau Reservoir shall be utilized primarily for irrigation and drinking water supply and, consequentially, for power generation.

- The EAC further noted that the project site is located near Samberkhera, about 50 km upstream of Dakpathar in Dehradun District, Uttarakhand, and approximately 10 km upstream of the existing Ichari Dam, which is a purely hydropower project with an installed capacity of 240 MW. Water from the Kishau Reservoir will be distributed between Uttar Pradesh and Haryana at the Tajewala Head Works and among Uttar Pradesh, Haryana, Rajasthan, and Delhi at the Okhla Head Works through the Eastern Yamuna Canal, Western Yamuna Canal, and Khara Canal up to Tajewala, and through the Agra Canal and Delhi Water Supply from Tajewala to Okhla.
- The Committee observed that the Kishau Dam Project is proposed as a concrete gravity dam with a height of 232.6 m, having a culturable as well as irrigable command area of 102,375.95 ha. The project comprises four turbine generating units, each with an installed capacity of 105.5 MW. The Kishau Reservoir will provide a total water benefit of 1,324 MCM, distributed among the beneficiary states as follows: Haryana (633 MCM), Uttar Pradesh (411 MCM), Rajasthan (124 MCM), Delhi (80 MCM), Himachal Pradesh (42 MCM), and Uttarakhand (34 MCM).
- During the meeting, the EAC noted that the tentative total land requirement for the project is 2,950 ha, comprising 512 ha of cultivated land, 250 ha of reserve forest land, 439 ha of civil forest land, 317 ha of bunjar land and nalas, 33 ha of abadi land, and 1,399 ha of other land including river bed. Diversion of forest land for non-forest purpose will be involved for construction of project components. However, it was observed that the application for Stage-I Forest Clearance (FC) has not yet been submitted, which necessitates further action from the Project Proponent. Further, as informed by the PP, there are no national parks, wildlife sanctuaries, Biosphere Reserves, Tiger/Elephant Reserves, Wildlife Corridors etc. within 10 km distance from the project site.
- The EAC also noted that the Detailed Project Report (DPR) for the irrigation component was prepared during 1992–93 by the Chief Engineer, Investigation & Planning (Projects), Bareilly. The distribution of water is tentative, and the final distribution of water among the beneficiary States shall be governed by the Memorandum of Understanding signed between the basin States on 12.05.1994 at New Delhi.

**47.5.4** 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 study with Public consultation for Kishau Multipurpose Project (CCA: 102,375.95 ha and 422 MW) in an area of 2,950 Ha located at Village Bagna, Bali Koti, Bela and Bobri (234) etc., Sub District Shalai, Kamrau and Chakrata, District Dehradun and Sirmaur,

Himachal Pradesh & Uttarakhand by M/s Kishau Corporation Limited, under the provisions of EIA Notification, 2006, as amended along with the following additional/specific ToR.

**[A] Environmental Management and Biodiversity Conservation:**

- i. A detailed wildlife conservation plan for Schedule –I species along with mitigation measures for minimizing the human–animal conflict, duly approved by the Chief Wildlife Warden, be submitted. NBWL recommendations shall be submitted along with EIA/EMP report.
- ii. 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 irrigation in study area (10 km from periphery of Project components).
- iii. 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.
- iv. 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.
- v. 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.
- vi. 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.
- vii. Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP.
- viii. Muck disposal site and other components such as Township, site office, Stacking area and batching plant shall be located outside the forest area.
- ix. A detailed action plan for large scale plantation of native species of plant sapling within 10 km radius of the project shall be prepared in consultation with State Forest Department. The monitoring mechanism to ensure the survival of saplings shall be

finalized in consultation with ICFRE.

- x. 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.
- xi. Transportation Plan for transporting construction materials shall be submitted. Separate chapter for risk assessment of such transportation through/within proposed the Wildlife Sanctuary shall be included in the EIA report, if any.
- xii. Calculation and values of GHGs (CO<sub>2</sub>, CH<sub>4</sub> etc.) emissions during construction and during operation till the life of the project shall be estimated and submitted.
- xiii. The longitudinal connectivity/Free flowing sketch be provided in the EIA/EMP report.
- xiv. 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.
- xv. Conducting site-specific ecological study emphasizing on riverine ecology viz. 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.
- xvi. Details of mineral zone, if any, in the study area, certified by Geological Survey of India or any other concerned Government Organization shall be submitted. The project area should not come up on any critical mineral zone, the same shall to be verified by GSI/NMDC.
- xvii. Any archaeological sites in the vicinity of the project, if any, then it shall be certified by ASI.
- xviii. PP shall prepare detailed plan for Plantation of saplings under the tree plantation campaign "Ek Ped Ma Ke Naam".

**[B] Socio-economic Study:**

- i. 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.

- ii. Declaration by the Project Proponent by way of affidavit that "No" Inter-state issue/ policy issue is involved with any State in the project.
- iii. 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.
- iv. 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 30<sup>th</sup> September, 2020 shall be submitted.
- v. Tentative no. of project affected families shall be identified and accordingly appropriate Rehabilitation & Resettlement plan shall be prepared.
- vi. Details of settlement in 10 km area shall be submitted.
- vii. 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 7<sup>th</sup> October, 2014 for the project land to be acquired.
- viii. Land acquired for the project shall be suitably compensated in accordance with the law of the land with the prevailing guidelines. Private land (if any) shall be acquired as per provisions of Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013. Budget earmarked for R&R, CSR shall not be included in the cost of EMP.

**[C] Muck Management:**

- v. 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.
- vi. 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.



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

**[D] Miscellaneous:**

- i. Pre-DPR Chapters viz. Hydrology, Layout Map Studies duly approved by CWC shall be submitted.
- ii. PP shall obtain clearance from the inter-State aspect from the designated authorities as per the procedure.
- iii. 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.
- iv. Both capital and recurring expenditure under EMP shall be submitted.
- v. 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.
- vi. Arial view video of project site shall be recorded and to be submitted.
- vii. 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 any 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.

**Agenda Item No. 47.6**

**Construction of Pailani Barrage on Ken River under Ken Betwa Link Project in an area of 287 Ha located at Village Achhraund, Amlor and Bagchha etc., SubDistrict Banda and Maudaha, District Banda and Hamirpur, Uttar Pradesh by M/s Executive Engineer Ken Betwa Link Canal Construction Division -1 Mahoba - Terms of References (TOR) – reg.**



**[Proposal No. IA/UP/RIV/541503/2025; F. No. J-12011/27/2025-IA.I (R)]**

**47.6.1** The Member Secretary informed the EAC that the proposal had been considered by the Committee in its meeting held on 14.08.2025. Subsequently, the PP, vide letter dated 07.01.2026, informed that the project parameters and the command area of the Pailani Barrage (with the right-side command area shifted to the left side of the Ken River) have been revised, and that a fresh proposal would be submitted in accordance with the provisions of the EIA Notification, 2006. In view of the above, current proposal is no longer required, and the PP requested withdrawal of the proposal. Accordingly, the EAC decided to return the proposal.

The proposal was *returned* on above lines.

**Agenda Item No. 47.7**

**Assam/PSP-03 Close loop pumped storage project (1500 MW) in an area of 484 Ha located at Village Lipgaon and Pankumar, Sub-District Diphu, District Karbi Anglong, Assam by M/s Assam Power Distribution Company Limited – Terms of References (TOR) – reg.**

**[Proposal No. IA/AS/RIV/564620/2026; F. No. J-12011/03/2026-IA.I (R)]**

**47.7.1** The proposal is for grant of Terms of Reference (ToR) to the project Assam/PSP-03 Close loop pumped storage project (1500 MW) in an area of 484 Ha located at Village Lipgaon and Pankumar, Sub-District Diphu, District Karbi Anglong, Assam by M/s Assam Power Distribution Company Limited.

**47.7.2** The Project Proponent and the accredited Consultant M/s. R. S. Envirolink Technologies Pvt. Ltd., made a detailed presentation on the salient features of the project and informed that:

- iii. The PSP-03 project, with a proposed capacity of 1500 MW (4×300MW+ 2×150MW) and storage of 9000 MWh, is conceptualized as an off-stream closed-loop pumped storage scheme located in Karbi Anglong District, Assam. The project is a self-identified initiative promoted by developer.
- iv. The proposed scheme involves two newly constructed reservoirs:
  - Upper Reservoir near Bajong Lekhte Village, located on a non-perennial nallah
  - Lower Reservoir near Chapong Man Phangcho Village, located on non-perennial nallah
- v. The PSP-03 project is situated near Bajong Lekhte & Chapong Man Phangcho villages in Karbi Anglong District, in the state of Assam. The project footprint lies

entirely within the state, ensuring no interstate implications.

- vi. The geographical co-ordinate of the project are Lower Reservoir: 93°12'3.83"E; 26°8'45.12"N Upper Reservoir : 93°12'49.17"E; 26°10'8.93"N.
- vii. The water required for initial filling and annual make-up will be sourced from Jamuna River located about 12 Km from the lower reservoir, through a dedicated pipeline or channel.
- viii. Assam/PSP-03 Close Loop Pumped Storage Project envisages construction of two artificial reservoirs at village Lipgaon and Pankumar, Sub-District Diphu, District Karbi Anglong, Assam

ix. **Land requirement:**

Forest Land : 441.90 ha  
Non-forest Land : 42.10 ha  
Total Land : 484.00 ha

Application for diversion of Forest Land has been submitted vide proposal No. FP/AS/HYD/IRRIG/556089/2025 which is already with MoEF&CC for appraisal and will be discussed in forthcoming FAC meeting on 22<sup>nd</sup> January 2026.

- TOR application was filed based on PFR prepared for the project showing 484 Ha of total land requirement – 431.25 Ha forest land, 52.75 Ha non-forest land.
- However, in the meantime, forest proposal was finalized with 484 ha of total land – 441.90 Ha forest land and 42.10 ha non forest land.

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

- Villages in the study area are small, dispersed, and largely dependent on agriculture. The population density is relatively low compared to the state average.
- The area is predominantly inhabited by Scheduled Tribe communities, mainly the **Karbi and Tiwa**. These communities maintain traditional lifestyles, customary festivals, and depend heavily on surrounding natural resources for their livelihoods.
- Social life in the villages is closely knit, centred around extended families, traditional festivals such as Rongkar and Chomkan, and rich cultural expressions including folk dances, music, and oral traditions. Local governance is guided by village councils and community elders.
- The main sources of livelihood include subsistence agriculture, horticulture, livestock rearing, and wage labour.
- Along with paddy and maize, villagers also cultivate several cash crops, mainly

Areca nut (Supari), Betel leaf (Paan), and Broom grass (Jhaadu), which are widely grown across the area.

Parameters	Bajong Lekthe	Chapong Man Phangcho	Dharapur	Mizo Teron	Tila Para No.1
Households	61	23	56	44	24
Total Population	357	129	299	282	131
Male Population	186	68	157	140	71
Female Population	171	61	142	142	60
Scheduled Caste (SC) Pop.	1	0	0	0	0
Scheduled Tribe (ST) Pop.	356	129	0	282	0

(Source: Census 2011; Mission Antyodaya 2020)

- The demographic profile of the villages surrounding the project area indicates that Bajong Lekthe has the highest population (357) with 61 households, followed by Dharapur (299; 56 households) and Mizo Teron (282; 44 households).
  - Chapong Man Phangcho and Tila Para No.1 are relatively smaller settlements
  - Male and female populations are nearly equal in all villages.
  - ST population is dominant in Bajong Lekthe, Chapong Man Phangcho, and Mizo Teron.
  - SC population is negligible, with only one person in Bajong Lekthe.
- xi. **Water requirement:** Assam-03 Pumped Storage Project will require 29.48 MCM for one time filling and thereafter ~ 1.86 MCM per year will be required.
- xii. **Project Cost:** The estimated project cost is Rs 7273.23 crore. Total capital cost earmarked towards environmental pollution control measures will be worked out during EIA study as well as the Recurring cost (operation and maintenance).
- xiii. **Project Benefit:** Total Employment will be 1000 nos during construction & 55 nos during O&M persons as direct & indirect.
- xiv. **Environmental Sensitive area:** Marat Longri WLS is the nearest protected area

and is about 10.5 Km from the project site. Kaziranga Karbi Anglong Elephant Reserve is at 1.4 Km from the project area. All the components are outside the Elephant Reserve. River/ water body, Water will be pumped from Jamuna River.

- xv. The MOU has been signed between Government of Assam and M/s Assam Power Distribution Company Limited to build PSP on September 10, 2025.

xvi. **Alternative Studies:**

The following criteria were used to evaluate and compare alternate schemes:

- Gross head & Dam length
- L/H ratio (length of water conductor to available head)
- Estimated submergence and forest impact
- Plant Capacity
- Wildlife aspect
- Proximity to water source for initial filling

Contour planning was undertaken using Infracore and potential combinations were simulated to identify:

- Optimal reservoir surface areas and dam lengths
- Reversible head availability (~220-225 m net head)
- Storage volume suitable for 1500 MW x 6 hr generation
- The water conductor system has been aligned along the ridge/ least length in all schemes, optimizing tunnel and shaft lengths.
- Routing provides geological stability, avoids sharp bends, and ensures efficient hydraulic performance.
- Three alternative locations were identified for the study

S. No.	Schemes Features	Scheme-1 (UR1+LR1)	Scheme-2 (UR2+LR2)	Scheme-3 (UR3+LR3)
1.	Type of the project	Off Stream Closed Loop	Off Stream Closed Loop	Off Stream Closed Loop
2.	Nearest village	U/R - Bajong Lekhte Village, L/R - Chapong Man Phangcho Village	U/R – Longkham Bey Village, L/R - Longkham Bey Village	U/R – Phonglo Bathari Village L/R - Longkhor Village
3.	Upper Dam			
(a)	Type	GFRD	GFRD	GFRD

(b)	FRL (msl)	472 m	767 m	580 m
(c)	MDDL (msl)	447 m	744 m	530 m
(d)	Dam Top Length/height	763 m length	595 m length	3.29 km length
(e)	Dam Height	72 m	68 m	58 m
4.	Lower Dam			
(a)	FRL (msl)	240 m	518 m	375 m
(b)	MDDL (msl)	219 m	481 m	345 m
(d)	Dam Top Length	438 m	700 m	480 m
(e)	Dam Height	50 m	89m	45 m
5.	Gross Head	230.00	250.00	195.00
6.	Length of water Conductor System	1600 m	1450 m	1750 m
7.	L/H Ratio	L/H =6.90	L/H =5.80	L/H =8.97
8.	Wild Life Sanctuary	No wild life sanctuary in the vicinity.	Project boundary within the elephant reserve.	No wild life sanctuary in the vicinity.
9.	Project Capacity (MW)	~1500 MW	~1500 MW	~1200 MW
10.	Annual Energy Generation	3120.8	3120.8	2496.60
11.	Powerhouse Type	Underground	Underground	Underground
12.	Accessibility	Both upper and lower reservoir is approachable via foot tracks.	Both upper and lower reservoir is not approachable via village roads.	Both upper and lower reservoir is not approachable via village roads.
13.	Water Source	Jamuna River	Nearby Stream	Nearby Stream
14.	Forest land Requirement (Ha)	441.90 Ha	495 Ha	360 Ha
15.	Total Land Requirement (Ha)	484 Ha	495 Ha	360 Ha
16.	Conclusion	Low Dam height, outside elephant corridor	High Dam Height, within elephant corridor, higher land	Low Head, High L/H, requirement of surge shaft, lesser capacity



xvii. Status of Litigation Pending against the proposal, if any. **No**

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

- **Project details:**

Name of the Proposal	Assam/PSP-03 Closed loop Pumped Storage Project (1500 MW)
Location (Including coordinates)	Lower Reservoir : Latitude: 26° 8'45.12"N Longitude: 93°12'3.83"E  Upper Reservoir : Latitude: 26°10'8.93"N Longitude: 93°12'49.17"E
Inter- state issue involved	No
Seismic zone	Zone-V

- **Category details:**

Category of the project	A
Provisions	
Capacity / Cultural command area (CCA)	1500 MW
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	Nil

- **Electricity generation capacity:**

Powerhouse Installed Capacity	1500 MW
Generation of Electricity Annually	3121 MU
No. of Units	6 nos. (4 x 300 MW + 2 x 150)
Additional information (if any)	Nil

- **ToR/EC Details:**

Cost of project	7273.23 Cr.
Total area of Project	484.0 ha
Height of Dam from River Bed (EL)	Lower Dam – 50.0 m Upper Dam –72.0 m
Length of Tunnel/Channel	1600 m

Details of Submergence area	352.0 ha
Types of Waste and quantity of generation during construction/ Operation	Muck from excavation, solid waste from labour colony and construction waste
E-Flows for the Project	Not Applicable, as this is Closed Loop Pumped Storage Project (PSP)
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.	No
No. of trees/saplings proposed in view of 'Ek Ped Maa Ke Naam' campaign	500

• **Muck Management Details:**

No. of proposed disposal area/ (type of land- Forest/Pvt. land)	30 ha (Non-Forest Land)
Muck Management Plan	Will be Provided in EIA/EMP report
Monitoring mechanism for Muck Disposal	Will be Provided in EIA/EMP report

• **Land Area Breakup:**

Private Land	42.10 ha
Government land	-
Forest Land	441.90 ha  Application for diversion of Forest Land has been submitted vide proposal No. FP/AS/HYD/IRRIG/556089/2025 which is already with MoEF&CC for appraisal and will be discussed in forthcoming FAC meeting on 22nd January 2026.

	<ul style="list-style-type: none"> <li>TOR application was filed based on PFR prepared for the project showing 484 Ha of total land requirement – 431.25 Ha forest land, 52.75 Ha non-forest land.</li> <li>However, in the meantime, forest proposal was finalized with 484 ha of total land – 441.90 Ha forest land and 42.10 ha non forest land.</li> </ul>
Total Land	484.00 ha
Submergence area/Reservoir area	352.00 ha
Additional information (if any)	Nil

• **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	--	<ul style="list-style-type: none"> <li>Marat Longri WLS is the nearest protected area and is about 10.5 Km from the project site.</li> <li>Kaziranga Karbi Anglong Elephant Reserve is at 1.4 Km from the project area. All the components are outside the Elephant Reserve</li> </ul>
National Park	--	
Wildlife Sanctuary	--	

• **Court case details: Nil**

• **Miscellaneous**

Particulars	Details
Details of consultant	M/s. R S Envirolink Technologies Pvt. Ltd. (RSET) (NABET Accredited Consultant Organization)  Certificate No : NABET/EIA/25-28/RA0415

	<p>Validity : August 15, 2028</p> <p>Contact Person : Mr. Ravinder Bhatia</p> <p>Name of Sector : River Valley and Hydroelectric Projects</p> <p>Category : A</p> <p>MoEF Schedule : I(C)</p> <p>Address : 403, Bestech Chambers, Block-B, Sushant Lok Phase I, Sector 43, Gurugram, Haryana - 122009</p> <p>E-mail : ravi@rstechnologies.co.in</p> <p>Land Line : (0124) 4295383</p> <p>Cellular : (+91) 9810136853</p>
Project Benefits	<ul style="list-style-type: none"> <li>Pumped storage hydropower is a modified use of conventional hydropower technology to store and manage energy or electricity by moving water between an upper and lower reservoir. Currently, pumped storage round-trip or cycle energy efficiencies exceed 80%, comparing favorably to other energy storage technologies and thermal technologies. This effectively shifts, stores, and reuses energy generated until there is corresponding demand for system reserves and variable energy integration. This shifting can also occur to avoid transmission congestion periods, to help more efficiently manage transmission grid, and to avoid potential interruptions to energy supply. This is important</li> </ul>

	<p>because many of the renewable energy resources being developed (e.g., wind and solar) are generated at times of low demand and off-peak energy demand periods are still being met with fossil fuel resources, often at inefficient performance levels that increase the release of greenhouse gas emissions.</p> <ul style="list-style-type: none"> <li>• Further, pumped storage projects are critical to the national economy and overall energy reliability because it's: <ul style="list-style-type: none"> <li>○ Least expensive source of electricity, not requiring fossil fuel for generation</li> <li>○ An emission-free renewable source</li> <li>○ Balancing grid for demand driven variations</li> <li>○ Balancing generation driven variations</li> <li>○ Voltage support and grid stability</li> </ul> </li> </ul> <p>Apart from this, proposed PSP will also benefit the local community by creating employment opportunities and will result in upliftment of livelihood and socio-economic conditions.</p>
Status of other statutory clearances	<p>Forest Clearance - Online application seeking forest diversion for around 441.90 Ha after receipt of ToR Approval. Alongside, other statutory clearances (as applicable) from State as well as Central government will be obtained post completion of Detailed Project Report.</p> <p>Application for diversion of Forest Land has been submitted vide proposal No. FP/AS/HYD/IRRIG/556089/2025 which is already with MoEF&amp;CC for appraisal and will be discussed in forthcoming FAC meeting on 22nd January 2026.</p>



#### 47.7.3 The EAC during deliberations noted the following:

- The Expert Appraisal Committee (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/EMP and Public hearing for Assam/PSP-03 Close loop pumped storage project (1500 MW) in an area of 484 Ha located at Village Lipgaon and Pankumar, Sub-District Diphu, District Karbi Anglong, Assam by M/s Assam Power Distribution 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.
- During the deliberations the committee noted that the Upper Reservoir and Lower Reservoir, both located on non-perennial nallah. Since both the reservoirs are located on non-perennial nallah, the committee opined that the project shall be categorized as an open-loop project rather than a closed-loop PSP.
- Further, it was observed that the lower dam lies on small stream with a catchment of 20.0sq.km is also rain fed having 6 months of dry period where rainfall is nil or very low. The EAC was of the view that the non-perennial small streams/nallahs play an important role in ecosystem stability through supporting unique, adapted communities and provide critical habitat, especially during dry periods. They are hotspots for biodiversity and vital for maintaining ecosystem services. Accordingly, the EAC advised to prepare suitable action plan for sustenance of the natural nallahs/streams after having detailed analysis of catchment yield and requirement of water for maintaining ecosystem services.
- The EAC noted that the total land requirement for the project is around 484.00 ha, out of which 42.10 ha is non-forest land and 441.90 ha is forest land. Diversion of forest land for non-forest purpose will be involved for construction of Project components. However, it was observed that the application for Stage-I Forest Clearance (FC) has been submitted vide proposal No. FP/AS/HYD/IRRIG/556089/2025 which is already with MoEF&CC for appraisal and will be discussed in forthcoming FAC meeting on 22nd January 2026.
- The EAC noted that the forest area falling within and around the project site comprises a very dense canopy, indicating a mature and ecologically sensitive forest ecosystem. Such dense canopy cover suggests the presence of significant biodiversity, including large trees, undergrowth, and potential habitats for wildlife species. The Committee emphasised the need for detailed survey of the study area to collect appropriate data on wild flora and fauna so that impact prediction can be done accurately considering the

aspects like fragmentation of habitat, and disruption of ecological functions etc. Further, it was noted that the Marat Longri WLS is the nearest protected area and is about 10.5 Km from the project site. Kaziranga Karbi Anglong Elephant Reserve is at 1.4 Km from the project area. All the components are outside the Elephant Reserve.

- The water requirement is for initial reservoir filling (~29.48 MCM) and annual evaporation makeup (~1.86 MCM). This water is proposed to be drawn from Jamuna River located about 12 Km from the lower reservoir, both of which lie entirely within Assam.
- It has been observed that Memorandum of Understanding has been signed between Government of Assam and M/s Assam Power Distribution Company Limited for the development of Pumped Storage Power (PSP) projects on September 10, 2025.

**47.7.4** 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 Assam/PSP-03 Open loop pumped storage project (1500 MW) in an area of 484 Ha located at Village Lipgaon and Pankumar, Sub-District Diphu, District Karbi Anglong, Assam by M/s Assam Power Distribution 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. The PP will submit 10 years water availability data certified by the CWC/State Water Resource Department for quantity of water that is received annually by the small stream on which upper and lower reservoir is proposed to be constructed.
- ii. Detailed action plan for large scale plantation of native species of plant sapling within 10 km radius of the project shall be prepared in consultation with State Forest Department. The monitoring mechanism to ensure the survival of saplings shall be finalised in consultation with ICFRE.
- iii. Explore the possibilities for reducing the Forest land requirement. The application for obtaining Stage I FC for 441.90 ha of forest land involved in the project shall be submitted within stipulated time.
- iv. Muck disposal site and other components such as Township, site office, Stacking area and batching plant shall be located outside the forest area.
- v. 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.

- vi. Transportation Plan for transporting construction materials shall be submitted. Separate chapter for risk assessment of such transportation through/within proposed the Wildlife Sanctuary shall be included in the EIA report.
- vii. 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.
- viii. 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.
- ix. Calculation and values of GHGs (CO<sub>2</sub>, CH<sub>4</sub> etc.) emissions during construction and during operation till the life of the project shall be estimated and submitted.
- x. 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.
- xi. 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.
- xii. Conducting site-specific ecological study emphasizing on riverine ecology viz. 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.
- xiii. Action plan for survival or diversion of the rivulets/stream, if any, leading to join river shall be submitted.
- xiv. 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.
- xv. 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.

- xvi. Cumulative Impact of projects in the basin on carrying capacity and sustainability of Reservoir/ River /nala of catchment area due to tapping of water for filling reservoir shall be studied.
- xvii. Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP.
- xviii. 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.
- xix. Details of mineral zone, if any, in the study area, certified by Geological Survey of India or any other concerned Government Organization shall be submitted. The project area should not come up on any critical mineral zone, the same shall to be verified by GSI/NMDC.
- xx. Any archaeological sites in the vicinity of the project, if any, then it shall be certified by ASI.

**[B] Socio-economic Study:**

- i. Declaration by the project proponent by way of affidavit that "No" Inter-state issue/ policy issue is involved with any State in the project.
- ii. 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. A comparative chart of issues raised by General Public during Public Hearing and commitments made by the Project Proponent will be prepared and submitted in the relevant chapter of EIA/EMP report.
- iii. The EIA/EMP shall include a detailed socio-economic assessment of the tribal population in the project-affected area based on primary data and community consultations. A Tribal Development Plan, prepared in consultation with the District Administration and Tribal Welfare Department, shall be submitted along with the EIA report.
- iv. 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



O.M. dated 7<sup>th</sup> October, 2014 for the project land to be acquired.

- v. Land acquired for the project shall be suitably compensated in accordance with the law of the land with the prevailing guidelines. Private land (if any) shall be acquired as per provisions of Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013. Budget earmarked for R&R, CSR shall not be included in the cost of EMP.

**[C] Muck Management:**

- i. 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.
- ii. 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.
- iii. 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.
- iv. Restoration plan for construction area including dumping site of excavated materials by levelling, filling up of burrow pits, landscaping etc.

**[D] Disaster Management:**

- i. 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.
- ii. The muck dumping sites shall be located with a distance of 100 mts from HFL. The PP shall submit the detailed action plan for transportation of muck along with monitoring mechanism of movement of muck carrying trucks.

**[E] Miscellaneous:**

- i. Both capital and recurring expenditure under EMP shall be submitted.
- ii. Pre-DPR Chapters viz., Hydrology, Layout Map and Power Potential Studies duly approved by CWC/CEA shall be submitted.



- iii. 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.
- iv. Drone video of project site shall be recorded and to be submitted.
- v. Detailed plan to restore wider roads and convert them into narrow up to 10m after construction of the project.
- vi. 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.
- vii. As per Ministry's OM dated 1<sup>st</sup> 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 any 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.

#### **Agenda Item No. 47.8**

**Assam/PSP04 Close loop pumped storage project (1200 MW) in an area of 372 Ha located at Village Maibong, Sub-District Mahur and Umrangso, District Dima Hasao, Assam by M/s Assam Power Distribution Company Limited – Terms of References (TOR) – reg.**

**[Proposal No. IA/AS/RIV/564308/2026; F. No. J-12011/04/2026-IA.I (R)]**

**47.8.1** The proposal is for grant of Terms of Reference (ToR) to the project Assam/PSP04 Close loop pumped storage project (1200 MW) in an area of 372 Ha located at Village Maibong, Sub-District Mahur and Umrangso, District Dima Hasao, Assam by M/s Assam Power Distribution Company Limited.

**47.8.2** The Project Proponent and the accredited Consultant M/s. R. S. Envirolink Technologies Pvt. Ltd., made a detailed presentation on the salient features of the project and informed that:

- i. The PSP-04 project, with a proposed capacity of 1200 MW (3×300MW+ 2×150MW) and storage of 7200 MWh, is conceptualized as an off-stream closed-loop pumped storage scheme located in in Dima Hasao District, Assam. The project is a self-identified initiative promoted by developer.

- ii. The proposed scheme involves two newly constructed reservoirs:
- Upper Reservoir near Dijambra Village, located on a non-perennial nallah
  - Lower Reservoir near Moti Hojai Village, located on non-perennial nallah
- iii. The geographical co-ordinate of the project are Lower Reservoir: 93° 5'6.00"E; 25°15'47.45"N Upper Reservoir : 93° 4'28.80"E; 25°14'51.77"N.
- iv. Both reservoirs have a minimal catchment area. Provision for controlled release of rainfall yield through the dam structure ensures proper drainage downstream. Thus, the project qualifies as offstream and, its initial filling and annual recouping of evaporation losses will be met from the Delen Nadi located about 2.50 km from the upper reservoir.
- v. Assam/PSP-04 Close Loop Pumped Storage Project envisages construction of two artificial reservoirs at village Dijambra and Moti Hojai, Sub District Maibong, District Dima Hasao, Assam.
- vi. **Land requirement:**
- |                 |                           |
|-----------------|---------------------------|
| Forest Land     | : 0.0 ha                  |
| Non-forest Land | : 372.0 ha (Revenue land) |
| Total Land      | : 372.0 ha                |
- *To ascertain the status of land, site verification and tree enumeration was carried out. DFO Dima Hasao Forest Division has verified vide its letter dated 4/12/2025 that the land under consideration is Community Owned Council Khas Land as per revenue record.*
  - *This is also verified by the Settlement & Revenue Department vide their letter dated 4/12/2025.*
- vii. **Demographic details in 10 km radius of project area :**
- Villages within the study area are small, scattered, and primarily agrarian. Population density is low compared to state averages.
  - Habitation in the area is mainly comprised of Scheduled Tribe population represented by Dimasa (Dimasa Kacharis) and other tribes such as Kuki, Zeme Naga, Karbi etc. Local communities follow traditional customs and festivals, with strong dependency on natural resources.
  - The village has a close-knit social life, including the extended family, traditional festivals such as Busu, Hangseu and Hacha Kekan, folk dances, music and oral stories. Village councils and elders guide local governance.
  - Subsistence farming, horticulture, livestock rearing, and wage labour constitute

the primary sources of income for the villagers.

- In addition to paddy and maize cultivation, cash crops such as Areca nut (Supari), Betel leaf (Paan), and Broom grass (Jhaadu), which are widely grown across the area.

Parameters	Dijambra	Moti Hojai	Relai	Phonglo Bathari	Longkhor	Riam Bathari
Households	32	30	8	17	25	17
Total Population	163	138	42	84	131	89
Male Population	70	65	22	39	65	47
Female Population	93	73	20	45	66	42
Scheduled Caste (SC)	0	1	0	0	2	5
Scheduled Tribe (ST)	163	137	42	84	129	84

(Source: Census 2011; Mission Antyodaya 2020)

- The demographic profile of the villages surrounding the project area indicates that Dijambra has the highest total population (163) with 32 households.
  - Tharve Relai village is the smallest settlement with a population of 42 and 8 households.
  - All villages show a higher numbers of females over male populations, with two location (Relai village & Riam Bathari village) having a slightly lower number of females as compared to males.
  - The demographic profile indicates a clear predominance of Scheduled Tribe (ST) populations across all villages, with Scheduled Caste (SC) communities representing a minor proportion within the area.
- viii. **Water requirement:** Assam-04 Pumped Storage Project will require 13.32 MCM for one time filling and thereafter ~ 0.82 MCM per year will be required.
- ix. **Project Cost:** The estimated project cost is Rs 5649.51 crore. Total capital cost earmarked towards environmental pollution control measures will be worked out during EIA study as well as the Recurring cost (operation and maintenance).
- x. **Project Benefit:** Total Employment will be 1000 nos during construction & 55 nos during O&M persons as direct & indirect.

- xi. **Environmental Sensitive area:** Barail WLS is about 28.0 km from project area. River/ water body, Water will be pumped from Delen River.
- xii. The MOU has been signed between Government of Assam and M/s Assam Power Distribution Company Limited to build PSP on September 10, 2025.
- xiii. **Resettlement and rehabilitation:** There is no R&R issue involved as entire land required for the project comprises revenue land.
- xiv. **Alternative Studies:**

The following criteria were used to evaluate and compare alternate schemes:

- Gross head & Dam length
- L/H ratio (length of water conductor to available head)
- Estimated submergence and forest impact
- Plant Capacity
- Wildlife aspect
- Proximity to water source for initial filling

Contour planning was undertaken using Infracore and potential combinations were simulated to identify:

- Optimal reservoir surface areas and dam lengths
- Reversible head availability
- Storage volume suitable for 1200 MW x 6 hr generation

The water conductor system has been aligned along the ridge/ least length in all schemes, optimizing tunnel and shaft lengths. Routing provides geological stability, avoids sharp bends, and ensures efficient hydraulic performance. Three alternative locations were identified for the study

S. No	Schemes Features	Scheme-1 (UR1+LR1)	Scheme-2 (UR1+LR2)	Scheme-3 (UR2+LR3)
1	Type of the project	Off Stream Closed Loop	Off Stream Closed Loop	Off Stream Closed Loop
2	Nearest village	U/R - Dijambra Village, L/R - Moti Hojai Village	U/R - Dijambra Village, L/R - Relai Village	U/R – Phonglo Bathari Village L/R - Longkhor Village
3	Upper Dam			
(a)	Type	GFRD	GFRD	GFRD

(b)	FRL (msl)	613 m	620 m	510 m
(c)	MDDL (msl)	586 m	580 m	405 m
(d)	Dam Top Length/height	333 m length	340 m length	500 m length
(e)	Dam Height	41m	48 m	100m
4	Lower Dam			
(a)	FRL (msl)	339 m	340 m	415 m
(b)	MDDL (msl)	316 m	324 m	370 m
(c)	Dam Top Length	696 m	715 m	450 m
(d)	Dam Height	52m	83m	80 m
(e)	Gross Head	300.00	300.00	95.00
5	Length of water Conductor System	1550 m	1800 m	1900 m
6	L/H Ratio	L/H =5.16	L/H =6.00	L/H =20
7	Wild Life Sanctuary	No wild life sanctuary in the vicinity.	No wild life sanctuary in the vicinity.	No wild life sanctuary in the vicinity.
8	Project Capacity (MW)	~1200 MW	~1200 MW	~600 MW
9	Annual Energy Generation (MU)	2496.6	2496.6	1248.3
10	Powerhouse Type	Surface (Pit type)	Underground	Underground
11	Accessibility	Both upper and lower reservoir is approachable via village roads.	Both upper and lower reservoir is approachable via village roads.	Both upper and lower reservoir is approachable via village roads
12	Water Source	Delen Nadi	Dijam Nadi	Mahur River
13	Forest land Requirement (Ha)	0 Ha	0 Ha	0 Ha
14	Total Land Requirement (Ha)	372 Ha	390 Ha	195 Ha
15	Conclusion	Low L/H, Optimum Plant capacity, Low Dam height, lesser construction period	High L/H, High Dam Height, Higher Land Requirement	Low Head, High L/H, High dam Height
16	Result	Selected	Rejected	Rejected



xv. Status of Litigation Pending against the proposal, if any. **No**

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

- **Project details:**

Name of the Proposal	Assam/PSP-03 Closed loop Pumped Storage Project (1200 MW)
Location (Including coordinates)	Lower Reservoir : Latitude: 25°15'47.45"N Longitude: 93° 5'6.00"E  Upper Reservoir : Latitude: 25°14'51.77"N Longitude: 93° 4'28.80"E
Inter- state issue involved	No
Seismic zone	Zone V

- **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)	Nil

- **Electricity generation capacity:**

Powerhouse Installed Capacity	1200 MW
Generation of Electricity Annually	2496.6 MU
No. of Units	5 nos. (3 x 300 MW + 2 x 150 MW))
Additional information (if any)	Nil

- **ToR/EC Details:**

Cost of project	5649.51 Cr.
Total area of Project	372.0 ha
Height of Dam from River Bed (EL)	Lower Dam – 52.0 m Upper Dam – 41.0m
Length of Tunnel/Channel	1550 m

Details of Submergence area	264.20 ha
Types of Waste and quantity of generation during construction/ Operation	Muck from excavation, solid waste from labour colony and construction waste
E-Flows for the Project	Not Applicable, as this is Closed Loop Pumped Storage Project (PSP)
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.	No
No. of trees/saplings proposed in view of 'Ek Ped Maa Ke Naam' campaign	500

• **Muck Management Details:**

No. of proposed disposal area/ (type of land-Forest/Pvt. land)	30 ha (Non-Forest Land)
Muck Management Plan	Will be Provided in EIA/EMP report
Monitoring mechanism for Muck Disposal	Will be Provided in EIA/EMP report

• **Land Area Breakup:**

Private Land	-
Government land	372.0 ha
Forest Land	0.0 ha
Total Land	372.0 ha
Submergence area/Reservoir area	264.20 ha
Additional information (if any)	Nil

• **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	--	• Barail WLS is about 28.0 km from project area.
National Park	--	

Wildlife Sanctuary	--	
--------------------	----	--

- **Court case details:** Nil

- **Miscellaneous:**

Particulars	Details
Details of consultant	<p>M/s. R S Envirolink Technologies Pvt. Ltd. (RSET) (NABET Accredited Consultant Organization) Certificate No : NABET/EIA/25-28/RA0415 Validity : August 15, 2028 Contact Person : Mr. Ravinder Bhatia Name of Sector : River Valley and Hydroelectric Projects</p> <p>Category : A MoEF Schedule : I(C) Address : 403, Bestech Chambers, Block-B, Sushant Lok Phase I, Sector 43, Gurugram, Haryana – 122009 E-mail : <a href="mailto:ravi@rstechnologies.co.in">ravi@rstechnologies.co.in</a> Land Line : (0124) 4295383 Cellular : (+91) 9810136853</p>
Project Benefits	<ul style="list-style-type: none"> <li>• Pumped storage hydropower is a modified use of conventional hydropower technology to store and manage energy or electricity by moving water between an upper and lower reservoir. Currently, pumped storage round-trip or cycle energy efficiencies exceed 80%, comparing favorably to other energy storage technologies and thermal technologies. This effectively shifts, stores, and reuses energy generated until there is corresponding demand for system reserves and variable energy integration. This shifting can also occur to avoid transmission congestion periods, to help more efficiently manage transmission grid, and to avoid potential interruptions to energy supply. This is important because many of the renewable energy resources being developed (e.g., wind and solar) are generated at times of low demand and off-peak energy demand periods are still being met with fossil fuel resources, often at inefficient performance</li> </ul>

	<p>levels that increase the release of greenhouse gas emissions.</p> <ul style="list-style-type: none"> <li>• Further, pumped storage projects are critical to the national economy and overall energy reliability because it's: <ul style="list-style-type: none"> <li>○ Least expensive source of electricity, not requiring fossil fuel for generation</li> <li>○ An emission-free renewable source</li> <li>○ Balancing grid for demand driven variations</li> <li>○ Balancing generation driven variations</li> <li>○ Voltage support and grid stability</li> </ul> </li> </ul> <p>Apart from this, proposed PSP will also benefit the local community by creating employment opportunities and will result in upliftment of livelihood and socio-economic conditions.</p>
Status of other statutory clearances	Statutory clearances (as applicable) from State as well as Central government will be obtained post completion of Detailed Project Report. No forest land will be diverted for the project.
R&R details	Details shall be evaluated during EIA/EMP Studies
Additional detail (If any)	Nil

#### 47.8.3 The EAC during deliberations noted the following:

- The Expert Appraisal Committee (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/EMP and Public hearing for Assam/PSP04 Close loop pumped storage project (1200 MW) in an area of 372 Ha located at Village Maibong, Sub-District Mahur and Umrangso, District Dima Hasao, Assam by M/s Assam Power Distribution 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.
- During the deliberations the committee noted that the Upper Reservoir and Lower Reservoir, both located on non-perennial nallah. Since both the reservoirs are located on non-perennial nallah, the committee opined that the project shall be categorized as an open-loop project rather than a closed-loop PSP.
- The EAC was of the view that the non-perennial small streams/nallahs play an important role in ecosystem stability through supporting unique, adapted communities and provide critical habitat, especially during dry periods. They are hotspots for biodiversity and vital for maintaining ecosystem services. Accordingly, the EAC advised to prepare suitable action plan for sustenance of the natural nallahs/streams

after having detailed analysis of catchment yield and requirement of water for maintaining ecosystem services.

- The EAC noted that the total land required for the construction of various components and related works for Assam-04 PSP is estimated to be around 372.0 ha revenue land with no forest land. To ascertain the status of land, site verification and tree enumeration was carried out. DFO Dima Hasao Forest Division has verified vide its letter dated 4/12/2025 that the land under consideration is Community Owned Council Khas Land as per revenue record, also verified by the Settlement & Revenue Department vide their letter dated 4/12/2025. The project is located around 28.0 km from Barail Wildlife Sanctuary.
- The EAC noted that although the land area required for the project is Community Owned, however, through .kml and video shown by the PP during the meeting. Seems as a deemed forest area which comprises of very dense canopy, indicating a mature and ecologically sensitive forest ecosystem. Such dense canopy cover suggests the presence of significant biodiversity, including large trees, undergrowth, and potential habitats for wildlife species. The Committee emphasized the need for detailed survey of the study area to collect appropriate data on wild flora and fauna so that impact prediction can be done accurately considering the aspects like fragmentation of habitat, and disruption of ecological functions etc.
- The water requirement is for initial reservoir filling (~13.32 MCM) and annual evaporation makeup (~0.82 MCM). This water is proposed to be drawn from the Delen Nadi located about 2.50 km from the upper reservoir.
- It has been observed that Memorandum of Understanding has been signed between Government of Assam and M/s Assam Power Distribution Company Limited for the development of Pumped Storage Power (PSP) projects on September 10, 2025.

**47.8.4** 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 Assam/PSP04 Open loop pumped storage project (1200 MW) in an area of 372 Ha located at Village Maibong, Sub-District Mahur and Umrangso, District Dima Hasao, Assam by M/s Assam Power Distribution Company Limited, as amended along with the following additional/specific ToR:

**[A] Environmental Management and Biodiversity Conservation:**



- i. The PP will submit 10 years water availability data certified by the CWC/State Water Resource Department for quantity of water that is received annually by the small stream on which upper and lower reservoir is proposed to be constructed.
- ii. Detailed action plan for large scale plantation of native species of plant sapling within 10 km radius of the project shall be prepared in consultation with State Forest Department. The monitoring mechanism to ensure the survival of saplings shall be finalised in consultation with ICFRE.
- iii. Muck disposal site and other components such as Township, site office, Stacking area and batching plant shall be located outside the forest area.
- 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. Transportation Plan for transporting construction materials shall be submitted. Separate chapter for risk assessment of such transportation through/within proposed the Wildlife Sanctuary shall be included in the EIA report.
- vi. 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.
- vii. 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.
- viii. Calculation and values of GHGs (CO<sub>2</sub>, CH<sub>4</sub> etc.) emissions during construction and during operation till the life of the project shall be estimated and submitted.
- ix. 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.
- x. 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.
- xi. Conducting site-specific ecological study emphasizing on riverine ecology viz. 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.

- xii. Cumulative Impact of projects in the basin on carrying capacity and sustainability of Reservoir/ River /nala of catchment area due to tapping of water for filling reservoir shall be studied.
- xiii. Action plan for survival or diversion of the rivulets/stream, if any, leading to join river shall be submitted.
- xiv. 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.
- xv. 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.
- xvi. Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP.
- xvii. 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.
- xviii. Details of mineral zone, if any, in the study area, certified by Geological Survey of India or any other concerned Government Organization shall be submitted. The project area should not come up on any critical mineral zone, the same shall to be verified by GSI/NMDC.
- xix. Any archaeological sites in the vicinity of the project, if any, then it shall be certified by ASI.

**[B] Socio-economic Study:**

- vi. Declaration by the project proponent by way of affidavit that "No" Inter-state issue/ policy issue is involved with any State in the project.
- vii. 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. A comparative chart of issues raised by General Public during Public Hearing and commitments made by the

Project Proponent will be prepared and submitted in the relevant chapter of EIA/EMP report.

- viii. The EIA/EMP shall include a detailed socio-economic assessment of the tribal population in the project-affected area based on primary data and community consultations. A Tribal Development Plan, prepared in consultation with the District Administration and Tribal Welfare Department, shall be submitted along with the EIA report.
- ix. 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 O.M. dated 7<sup>th</sup> October, 2014 for the project land to be acquired.
- x. Land acquired for the project shall be suitably compensated in accordance with the law of the land with the prevailing guidelines. Private land (if any) shall be acquired as per provisions of Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013. Budget earmarked for R&R, CSR shall not be included in the cost of EMP.

**[C] Muck Management:**

- v. 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.
- vi. 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.
- vii. 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.
- viii. Restoration plan for construction area including dumping site of excavated materials by levelling, filling up of burrow pits, landscaping etc.

**[D] Disaster Management:**

- iii. 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.

- iv. The muck dumping sites shall be located with a distance of 100 mts from HFL. The PP shall submit the detailed action plan for transportation of muck along with monitoring mechanism of movement of muck carrying trucks.

**[E] Miscellaneous:**

- viii. Both capital and recurring expenditure under EMP shall be submitted.
- ix. Pre-DPR Chapters viz., Hydrology, Layout Map and Power Potential Studies duly approved by CWC/CEA shall be submitted.
- x. 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.
- xi. Drone video of project site shall be recorded and to be submitted.
- xii. Detailed plan to restore wider roads and convert them into narrow up to 10m after construction of the project.
- xiii. 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.

**Agenda Item No. 47.9**

**Kutulisinga Irrigation Project (CCA: 2540 ha) in an area of 179.554 Ha located at Village Kutulisinga, Sub-District Thakurgarh, District Anugul, Odisha by M/s Chief Engineer Project Planning Formulation And Investigation – Terms of References (TOR) – reg.**

**[Proposal No. IA/OR/RIV/505420/2025; F. No. J-12011/05/2026-IA.I (R)]**

**47.9.1** The proposal is for grant of Terms of Reference (ToR) to the project Kutulisinga Irrigation Project (CCA: 2540 ha) in an area of 179.554 Ha located at Village Kutulisinga, Sub-District Thakurgarh, District Anugul, Odisha by M/s Chief Engineer Project Planning Formulation And Investigation.

**47.9.2** The Project Proponent and the accredited Consultant M/s. R. S. Envirolink Technologies Pvt. Ltd., made a detailed presentation on the salient features of the project and informed that:

- i. Kutulisinga Irrigation Project is proposed across Kutuli nallah, a tributary to river Sindholi jhar near village Kutulisinga in Athmallick block of Angul district in the state of Odisha.



- ii. The catchment area intercepted by the Kutulisinga Dam near village Kutulisinga accounts for 83.30 sq km and lies entirely within the state boundary of Odisha. No interstate issues are involved in the project planning.
- iii. Kutulisinga irrigation project is a reservoir project proposed in Mahanadi basin on Badajora nallah (Kutuli nallah) a tributary to river Sindholijhar near village Kutulisinga in Athmallick block of Angul district in the state of Odisha.

The head works comprise of:

- Earth dam of 323 m long and maximum height of 39.15 m.
  - A centrally located ogee crest type spillway, 33.0 m long, to be provided with 3 Nos 11 m x 8 m radial gates.
  - Two Head Regulators at both flank of the Dam for off taking of Left Main canal (11.344 km) and Right Main Canal (13.04 km).
  - Intake and water drawl arrangement is proposed for Drinking water supply of 8 Ham per month for a population of 25874 in the ayacut.
- iv. The geographical co-ordinate of the project are Latitude: 20°48'20"N; Longitude: 84°41'30"E.
  - v. **Land requirement:** Land Form, Land Use and Ownership Land is as under:

Land use	Forest Land (Ha.)	Private Land (Ha.)	Govt. Land (Ha.)	Total (Ha.)
Reservoir submergence and head works	124.585			124.585
Canal system	29.353	11.104	14.512	54.969
Total	153.938	11.104	14.512	179.554

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

Total number of villages & towns	107
Number of Households	10744
Total Population	48687
Total number of Males	24419
Total number of Females	24268
Male/ Female (Sex) ratio	1006.22
Percentage of S.C population	12.18
Percentage of S.T Population	38.11
Percentage of Literates	62.40



vii. **Water requirement:**

Drinking water demand	0.96 MCM annually
Irrigation requirement	227.88 MCM annually
Total	228.84 MCM annually

viii. **Project Cost:** The estimated project cost is Rs 154.87 crore. Total capital cost earmarked towards environmental pollution control measures is Rs. 232.3 Lakhs and the Recurring cost (operation and maintenance) will be about Rs. 24.6 Lakhs.

ix. **Project Benefit:** Total Employment will be 550 persons during construction & 60 persons during operation phase.

x. **Environmental Sensitive area:** There are Satkosia Wildlife Sanctuary (4.779km).

xi. **Resettlement and rehabilitation:** No habitations are coming under submergence, therefore, there is no necessity for clearance of Resettlement and Rehabilitation.

xii. **Scheduled – I species:** Melursus ursinus, Elephas maximus, Vulpes bengalensis, Python molurus, Varnus bengalensis, Gracula religiosa.

xiii. **Alternative Studies:**

- The location of the project is site specific.
- Site alternatives have not been explored at the project planning stage.
- The proposed site is considered technically ideal for construction of dam with competent foundation strata.
- The Reservoir submergence area is 124.585 ha at FRL 201.00m which is considered minimum for storage of 2000 ham of water.
- The Dam and Reservoir submergence include 124.585 ha of Forest land. Even though there may be significant environmental impact due to the existence of 124.585 ha Reserve Forest land under the submergence, it would be addressed effectively by a competent conservation/Management Plan while considering the Forest diversion proposal.
- For the sake of ultimate development benefits in the form of Food security and Drinking water facility, the proposed site finalized after ensuring environmental sustainability.

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

- **Project details:**

Name of the Proposal	Kutulisinga Irrigation Project (CCA: 2540 ha)
Location (Including coordinates)	Village-Kutulisinga, Block-Athmallick, District-Angul, Odisha  <b>Coordinates:</b> Latitude: 20° 48' 20" N Longitude: 84° 41' 30" E
Inter- state issue involved	NA
Seismic zone	II

- **Category details:**

Category of the project	A, as Satkosia wildlife sanctuary is located at a distance of 4.779 km from the project site.
Provisions	Kutulisinga irrigation project is a reservoir project proposed in Mahanadi basin on Badajora nallah (Kutuli nallah) a tributary to river Sindholijhar. The Project is featured with construction of 323 m long and 39.15 m height earth Dam. 33 m long concrete Spillway having 3 nos. of ogee crest gates, size: 11 m x 8 m; two nos of Head regulators at either side of Dam to lead the reservoir water through two main canal systems (LMC-11.344 km & RMC-13.04 km) for covering a culturable command area (CCA) of 2540 ha. Provision for Drinking Water supply of 8 Ham per month for a population of 25874 in the ayacut.
Capacity / Cultural command area (CCA)	2540 ha
Attracts the General Conditions (Yes/No)	Yes. Satkosia wildlife sanctuary is located at a distance of 4.779 km from the project site.
Additional information (if any)	NA

- **Electricity generation capacity: Not Applicable**

- **ToR/EC Details:**

Cost of project	15487 Lakhs
Total area of Project	179.554 Ha
Height of Dam from River Bed (EL)	39.15 m
Length of Tunnel/Channel	33 m
Details of Submergence area	124.585 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.
E-Flows for the Project	
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.

• **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	<ul style="list-style-type: none"> <li>• Precautionary measures such as covering of vehicles will be taken to avoid spillage &amp; dust generation during transport of mucks.</li> <li>• 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.</li> <li>• Workers/labourers shall be provided with PPE. The use of PPE at all time during works will be ensured.</li> </ul>
Monitoring mechanism for Muck Disposal	Muck disposal at designated place will be monitored periodically by the project authority.

• **Land Area Breakup:**

Private Land	11.104 ha
Government land/Forest Land	14.512 ha/ 153.938 ha
Submergence area/Reservoir area	124.585 ha
Land required for project components	179.554 ha
Additional information (if any)	NA

• **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	Dantarikhol RF-8.00 km Hatidhara RF-4.17 km
National Park	No	No National Park within 10 km radius of the project
Wildlife Sanctuary	Yes	Satkosia Wildlife Sanctuary (4.779 Km)

- **Court case details:** Nil
- **Status of other statutory clearances:**

Particulars	Letter no. and date
Certified EC compliance report (if applicable)	Not Applicable, Present proposal is Fresh application Status of Stage-I FC Stage I approval
Status of Stage-I FC	Stage I approval for the diversion of 153.938 ha Forest land was submitted to MoEF&CC vide Proposal No. FP/OR/IRRIG/77864/2020, Date 14.08.2025. The MoEF has raised observations on Dated-10/08/2025 addressed to the Addl. Chief Secretary (Forest) Govt. of Odisha. The Compliance of the observations raised by the MoEF &CC are being prepared & it is likely to be submitted to the DFO Athamallik by end of January 2026.
Additional detail (If any)	NA
<b>Is FRA (2006) done for FC-I</b>	No

- **Miscellaneous:**

Particulars	Details
Details of consultant	M/s Centre for Envotech & Management Consultancy Pvt. Ltd. Certificate No. NABET/EIA/2528/RA 0392, dated 10.04.2025 valid up to 03.03.2028
Project Benefits	The project benefits considered are <ul style="list-style-type: none"> <li>• Crop produces enhanced from 2130 Ton in Pre-Irrigation to 20068.8 Ton in Post- Irrigation with financial benefit of Rs 39.61 crores/Annum.</li> <li>• Drinking Water supply for 25874 populations.</li> <li>• 10% Upstream Reservation of Water for</li> </ul>

	Industries. • Employment Generation and socio-economic Benefits.
Status of other statutory clearances	The Detailed Project Report has been accepted by CWC vide IR No 722 Dated-31/12/2012, with an instruction to re-submit the updated latest cost, BC Ratio, IRR and FRR of the project along with all statutory clearances to put up to TAC for approval.
R&R details	No habitations are coming under submergence, therefore, there is no necessity for clearance of Resettlement and Rehabilitation.
Additional detail (If any)	NA

#### **47.9.4 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 Kutulisinga Irrigation Project (CCA: 2540 ha) in an area of 179.554 Ha located at Village Kutulusinga, Sub-District Thakurgarh, District Anugul, Odisha by M/s Chief Engineer Project Planning Formulation And Investigation.
- The EAC noted that the present project proposal comes under “B1” category; as per the provisions of the EIA Notification, 2006, as amended as Culturable Command Area (CCA: 2540 ha. However, the project is falling within Eco sensitive boundary of Satkosia Wildlife Sanctuary and wildlife sanctuary is at a distance of 4.779 km from the project boundary.
- The EAC observed that the proposed Kutulisinga Irrigation Project is to be constructed across the Kutuli Nallah, a tributary of the River Sindholi Jhar, near Village Kutulisinga in Athmallik Block of Angul District, Odisha. The project proposes irrigation for 3,790 ha of Gross Command Area (GCA) and 2,540 ha of Culturable Command Area (CCA), with an annual irrigation potential of 3,173 ha at 125% intensity. As per the cropping pattern prepared by the State Agriculture Department, the Kharif crop coverage will be 2,158 ha and the Rabi crop coverage will be 1,015 ha. The irrigation system comprises two main canals, namely the Left Main Canal and the Right Main Canal, with lengths of 11.344 km and 13.04 km respectively, off-taking from the head regulator located on the left and right sides of the dam axis. Further, the distribution system includes 33 minors and sub-minors, in addition to 14 direct outlets from the main canals.
- The Committee observed that in the total land required for the total land requirement for the project is 179.554 of which 153.938 is forest land while 11.104 ha is non-forest land. It was further observed that Stage- I Forest Clearance for 153.938 Ha has been submitted by the PP vide proposal no. FP/OR/IRRIG/77864/2020 dated 08/12/2020. Further it has been informed by the P during the meeting that the MoEF has raised observations on 10/08/2025 addressed to the Addl. Chief Secretary (Forest) Govt. of Odisha. The



Compliance of the observations raised by the MoEF &CC are being prepared & it is likely to be submitted to the DFO Athamallik by end of January 2026.

- The EAC also noted that the proposed project falls within the Eco-Sensitive Zone of the Satkosia Wildlife Sanctuary, and that the sanctuary is located at a distance of approximately 4.779 km from the project boundary. Therefore, it is necessary for the project to obtain wildlife clearance from the National Board for Wildlife (NBWL).

**47.9.4** 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 study with Public consultation for Kutulisinga Irrigation Project (CCA: 2540 ha) in an area of 179.554 Ha located at Village Kutulusinga, Sub-District Thakurgarh, District Anugul, Odisha by M/s Chief Engineer Project Planning Formulation And Investigation, under the provisions of EIA Notification, 2006, as amended along with the following additional/specific ToR.

**[A] Environmental Management and Biodiversity Conservation:**

- i. PP shall obtain NBWL clearance in view of project falls within the Eco-Sensitive Zone of the Satkosia Wildlife Sanctuary.
- ii. A detailed wildlife conservation plan for Schedule –I species along with mitigation measures for minimizing the human–animal conflict, duly approved by the Chief Wildlife Warden, be submitted. NBWL recommendations shall be submitted along with EIA/EMP report.
- iii. 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 irrigation in study area (10 km from periphery of Project components).
- iv. 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.
- v. 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.
- vi. 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.

- vii. 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.
- viii. Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP.
- ix. Muck disposal site and other components such as Township, site office, Stacking area and batching plant shall be located outside the forest area.
- x. A detailed action plan for large scale plantation of native species of plant sapling within 10 km radius of the project shall be prepared in consultation with State Forest Department. The monitoring mechanism to ensure the survival of saplings shall be finalized in consultation with ICFRE.
- xi. 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.
- xii. Transportation Plan for transporting construction materials shall be submitted. Separate chapter for risk assessment of such transportation through/within proposed the Wildlife Sanctuary shall be included in the EIA report, if any.
- xiii. Calculation and values of GHGs (CO<sub>2</sub>, CH<sub>4</sub> etc.) emissions during construction and during operation till the life of the project shall be estimated and submitted.
- xiv. The longitudinal connectivity/Free flowing sketch be provided in the EIA/EMP report.
- xv. 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.
- xvi. Conducting site-specific ecological study emphasizing on riverine ecology viz. 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.

- xvii. Details of mineral zone, if any, in the study area, certified by Geological Survey of India or any other concerned Government Organization shall be submitted. The project area should not come up on any critical mineral zone, the same shall 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.
- xix. PP shall prepare detailed plan for Plantation of saplings under the tree plantation campaign "Ek Ped Ma Ke Naam".

**[B] Socio-economic Study:**

- i. 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.
- ii. Declaration by the Project Proponent by way of affidavit that "No" Inter-state issue/ policy issue is involved with any State in the project.
- iii. 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.
- iv. 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 30<sup>th</sup> September, 2020 shall be submitted.
- v. Tentative no. of project affected families shall be identified and accordingly appropriate Rehabilitation & Resettlement plan shall be prepared.
- vi. Details of settlement in 10 km area shall be submitted.
- vii. 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 7<sup>th</sup> October, 2014 for the project land to be acquired.
- viii. Land acquired for the project shall be suitably compensated in accordance with the law of the land with the prevailing guidelines. Private land (if any) shall be acquired

as per provisions of Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013. Budget earmarked for R&R, CSR shall not be included in the cost of EMP.

**[C] Muck Management:**

- i. 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.
- ii. 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.
- iii. 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.
- iv. Restoration plan for construction area including dumping site of excavated materials by levelling, filling up of burrow pits, landscaping etc.

**[D] Miscellaneous:**

- i. Pre-DPR Chapters viz. Hydrology, Layout Map Studies duly approved by CWC shall be submitted.
- ii. 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.
- iii. Both capital and recurring expenditure under EMP shall be submitted.
- iv. 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.
- v. Arial view video of project site shall be recorded and to be submitted.

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

**ATTENDANCE**

S. No.	Name of Member	Role	28.01.2026	30.01.2026
1.	Prof. Govind Chakrapani	Chairman	P	P
2.	Dr. Uday Kumar R Y	Member	P	P
3.	DR. J. V. Tyagi	Member	P	p
4.	Shri Kartik Sapre	Member	A	A
5.	Shri Ajay Kumar Lal	Member	P	P
6.	Dr. Mukesh Sharma	Member	A	A
7.	Shri Rakesh Goyal	Member Representative of Central Electricity Authority (CEA)	P	P
8.	Shri Balram Kumar	Member Representative of Central Water Commission (CWC)	P	P
9.	Dr. J.A. Johnson,	Member	A	A
10.	Dr. A. K. Sahoo	Member	A	A
11.	Shri Yogendra Pal Singh	Member Secretary	P	P



## APPROVAL OF THE CHAIRMAN

===== Forwarded message =====

From: chakrapani govind <[chakrapani.govind@gmail.com](mailto:chakrapani.govind@gmail.com)>

To: "Yogendra Pal Singh" <[yogendra78@nic.in](mailto:yogendra78@nic.in)>

Cc: "Dr Krishnendu Mondal" <[krishnendu.mondal@gov.in](mailto:krishnendu.mondal@gov.in)>, "Sourabh Kumar" <[sourabh.9@govcontractor.in](mailto:sourabh.9@govcontractor.in)>

Date: Wed, 11 Feb 2026 16:50:15 +0530

Subject: Re: Draft MOM of the 47th EAC (RVHEP) meeting held on 28/01/2026 & 30/01/2026-reg.

===== Forwarded message =====

Approved.  
Chakrapani

On Wed, 11 Feb, 2026, 4:49 pm Yogendra Pal Singh, <[yogendra78@nic.in](mailto:yogendra78@nic.in)> wrote:

Dear Sir,

The draft MOM of the 47th EAC (RVHEP) meeting held on 28/01/2026 & 30/01/2026 were circulated to all EAC members. No comments received till date. Accordingly, draft MOM are attached herewith for your approval please.

With Regards,

Yogendra Pal Singh  
Scientist 'F'

**Government of India**

M/o Environment, Forest and Climate Change

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