सत्यमेव जयते

Government of India
Ministry of Environment, Forest and Climate Change
IA Division
(River Valley and Hydroelectric Projects)
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Minutes of 38TH MEETING OF EXPERT APPRAISAL COMMITTEE meeting River Valley and Hydroelectric Projects held from 29/08/2025 to 29/08/2025

Date: 11/09/2025

MoM ID: EC/MOM/EAC/150605/8/2025

Agenda ID: EC/AGENDA/EAC/150605/8/2025

Meeting Venue: MoEF&CC

Meeting Mode: Physical

Date & Time:

29/08/2025	10:30 AM	05:30 PM

1. Opening remarks

The 38th 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 29th August, 2025 through physical mode, under the Chairmanship of Prof. G. J. Chakrapani.

2. Confirmation of the minutes of previous meeting

The Minutes of the 37th EAC meeting held on 14th August, 2025 were confirmed.

3. Details of proposals considered by the committee

Day 1 -29/08/2025

3.1. Agenda Item No 1:

3.1.1. Details of the proposal

Kamalapadu Closed Loop Pumped Storage Hydro Project by **Andhra Pradesh Power Generation Corporation Limited** located at **ANANTAPUR,ANDHRA PRADESH**			
Proposal For		Fresh EC	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**

IA/AP/RIV/547838/2025	J-12011/22/2023-IA.I(R)	19/08/2025	River Valley/Irrigation projects (1(c))

3.1.2. Project Salient Features

38.1.1: The proposal is for grant of Environmental Clearance (EC) to the project for Kamalapadu Closed Loop Pumped Storage Project (950 MW) in an area of 359.61 ha located at Village Attiraladinne, Kamalapadu & Kundanakota etc., Sub-district Peddapappur & Yadiki, District Anantpur, Andhra Pradesh by M/s Andhra Pradesh Power Generation Corporation Limited.

38.1.2: 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. The Kamalapadu Pumped Storage Hydro Project (Kamalapadu PSHP) of capacity 950 MW is proposed at village Boyareddypalli in the Yadiki Mandal of Ananthapuramu district in Andhra Pradesh by M/s Andhra Pradesh Power Generation Corporation Limited (APGENCO). The project comes under the Rayalaseema region of Andhra Pradesh.

ii. The Kamalapdu PSH Project is envisaged with a installed capacity of 950 MW (3 x 238 + 2 x 118 MW) located in the Ananthapuramu district of Andhra Pradesh. It is a standalone scheme with two new off stream reservoirs and drawl of water from existing Chagallu Barrage for initial filling into the proposed lower reservoir through a pipeline arrangement. Both the reservoirs are planned to be interconnected through water conductor system and the reversible generator pump turbine would be installed in the surface/ pit powerhouse. The scheme is envisaged to meet the peak demand of about 9 hours with an estimated annual energy generation of 2958.42 MU.

iii. The project is located close to Boyareddypalli (Kamalapadu) Village in the Yadiki Mandal of Ananthapuramu district in Andhra Pradesh. The project site is easily accessible by Yadiki – Tadipatri Road. The project's upper reservoir is at geographical co-ordinate 15°06'13.99"N and 77°56'10.56"E and lower reservoir at geographical co-ordinate 15°05'0.74"N and 77°56'43.39"E.

iv. The Terms of Reference was granted by Ministry of Environment, Forest & Climate Change (MoEF&CC) vide letter no. F No J-12011/22/2023-IA. I(R) dated 7th August 2023 in the name of M/s New and Renewable Energy Development Corporation of Andhra Pradesh Ltd. (NREDCAP). Subsequently, MoEF&CC vide letter no. J-12011/22/2023-IA-I(R) dated 02.06.2025 has granted approval for transfer of Terms of Reference (ToR) for the Kamalapadu Closed Loop PSP (950 MW) from 'M/s New and Renewable Energy Development Corporation of Andhra Pradesh Ltd. (NREDCAP)' to 'M/s Andhra Pradesh Power Generation Corporation Limited (APGENCO)'.

v. **Land requirement:**

Non-forest Land :359.61 ha (257.38 Ha of private land & 102.23 Ha of Govt. land)

Total Land :359.61 ha

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

The study area falls under Ananthapuramu and Nandyal districts of Andhra Pradesh. A total of 46 inhabited villages fell within the study area. Out of 46 villages, 42 are in Ananthapuramu district (15 villages of Pedda Pappuru Mandal, 4 villages of Peddavaduguru Mandal, 9 villages of Tadpatri Mandal, and 14 villages of Yadiki Mandal), and 4 villages are in Nandyal district (1 village of Kolimigundla Mandal, 3 villages of Owk Mandal and no habitation/ village lies in Pyapalli Mandal).

The total population of the study area is 130528, with 50.82% males and 49.17%females. The number of households is 32240, with an average occupancy of 4–5 persons per household. The child population below 6 years old was found to be 14406, which is 11.03% of the total population. The sex ratio was found to be 967 females per 1000 males.59.89% of the population ((above the 6-

year-old population)) in the study are is literate. The rates for males and females are 71.10% and 48.39%, respectively, resulting in a 22.71% gender difference.

In the study area, 15.99% and 2.43 percent of the population are members of Scheduled Castes and Scheduled Tribes, respectively.

Total population of workers in the study area is 73189 (56.07%).66.18% of the working population are engaged in agriculture and allied services, out of which 19.50% are cultivators and 46.68% are agricultural laborers. 11.04% of the population engaged in household industry worker, and 22.75% of the population engaged in other services.

vii. **Water requirement**: Approximately 22.45 MCM will be required to meet generation of 950 MW for 9.02 hours. Annual losses due to the evaporation from the lower reservoir work out to 0.43 MCM. It will be recouped periodically from Chagallu Barrage reservoir.

viii. **Project Cost:** The estimated project cost is Rs 4676.50 crore. Total capital cost earmarked towards Environment Management Plan/environmental pollution control measures is Rs. 1966.11 lakh and the Recurring cost (operation and maintenance) will be about Rs. 2797.61 lakh about i.e. Rs 699.4 lakh per annum.

ix. **Project Benefit:** Total Employment will be 700 persons during construction phase and 200 during operational phase of the project. Rs. 733.50 lakh has been allocated under CER and Local Area Development Plan for strengthening and development of basic infrastructural facilities with a view to improve the quality of life of residents in the project vicinity.

x. **Environmental Sensitive area:** Nearest protected area to the project components is Rajiv Gandhi National Park, All the project components are way outside the notified ESZ,which is at a distance of 72 km.

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

a) MOU: File No.ENE01-APRE/17/2020-MLO-ENE-Part(3) Dated 22/09/2023

b) Water Allocation: G.O.Ms no.10.dt.11.03.2025 of GoAP.

xii. **Resettlement and rehabilitation:** For the development of Kamalapadu Closed Loop PSHP, the total land requirement for the project is 359.61 ha, out of which 257.38 ha is private land and 102.23 ha is government land.The entire private land identified for the project falls in two revenue villages namely Kamalapadu and Kundanakota under Tehsil/Mandal-Yadiki in Ananthapuramu District of Andhra Pradesh. The private land identified for the projects belongs to 174 land owner families. All the 174 land owners will be losing their partial agricultural land holding and none of the families will be losing any house or any other assets. None of them is getting displaced due to the project from the above land procurement.

xiii. **Schedule – I species:** According to WPAA, 2022, 13 species of mammals, one species of bird (Small Minivet), 06 species of herpetofauna (Python, Bengal Monitor Lizard, Indian rat Snake, Indian Cobra, Russel's Viper and Indian Flap-shell Turtle) are listed under Schedule- I. Rest of the faunal species are listed under Schedule- II category of WPAA, 2022.

As per the IUCN Red List of Threatened Species, Version 2022-2, Wild Dog is listed under Endangered (EN) category, Common Leopard, Sloth Bear, Four-horned Antelope, Sambar Deer, Bonnet Macaque and Flap-shell Turtle are under Vulnerable (VU) category, Striped Hyaena, Python, Bengal Monitor Lizard and Anamalai Hill Gecko are listed under Near Threatened (NT) category. As per the IUCN Red List of Threatened Species version 2023-1, all birds have been listed under Least Concern (LC) category.

xiv. **Alternative Studies:**5 alternatives have been studied for KamalapaduPumped storage Hydro Project.

- Alternative-1 (1400 MW)-Independent PSP
- Alternative-2 (1200 MW)-Independent PSP

- Alternative-3 (1370 MW)- Independent PSP
- Alternative 4 (1120 MW)- (Independent PSP).
- Alternative 5 (950 MW)- (Independent PSP).

After carefully considering the merits and drawbacks of all the alternatives, Alternative 5 has been selected as the final layout.

xv. **Baseline Environmental Scenario:**

Period — **From April/May 2023 to December 2023**

AAQ parameters at 10 locations (min. & Max.)

Unit in microgram/m^3

Core	Min	Max	Average	Standards
PM 2.5	18.60	42.20	30.40	60
PM 10	43.10	73.20	58.15	100
SO2	6.50	12.60	9.55	80
NO2	7.00	13.50	10.25	80
Buffer	Min	Max	Average	Standards
PM 2.5	19.60	44.90	32.25	60
PM 10	45.40	77.80	61.60	100
SO2	6.90	13.40	10.15	80
NO2	8.30	14.40	11.35	80

Incremental GLC Level

Criteria Pollutant (PM10, PM2.5, SO2, NOx, Other parameters specific to the sector	Unit (microgram/m^3)	Baseline Concentration (A)	Predicted incremental value considering worst case stability class (B)	Total GLC (A + B)
PM10	microgram/m^3	73.20	20	93.20
PM2.5	microgram/m^3	42.20	10	52.20
SO2	microgram/m^3	12.60	10	22.60
NOx	microgram/m^3	13.50	12	25.50

River water samples (2 samples)

	Core Zone			
S. No	Parameters	Min	Max	
1	pH	7.9	7.9	A
2	Total Dissolved Solids, mg/L	625	625	A
3	Dissolved Oxygen (mg/l)	7.7	7.7	B
4	Chloride (as Cl), mg/L	101	101	NA
5	Total Hardness (as CaCO3), mg/L	233	233	A
6	Biological Oxygen Demand (mg/l)	2.8	2.8	A
7	Chemical Oxygen Demand (mg/l)	9	9	B
8	Total Coliform (MPN/100 ml)	295	295	A
	Buffer Zone			
S. No	Parameters	Min	Max	
1	pH	8.3	8.3	A
2	Total Dissolved Solids, mg/L	286	286	A
3	Dissolved Oxygen (mg/l)	5.5	5.5	B
4	Chloride (as Cl), mg/L	110	110	NA
5	Total Hardness (as CaCO3), mg/L	431	431	A
6	Biological Oxygen Demand (mg/l)	6	6	A

7	Chemical Oxygen Demand (mg/l)	15.4	15.4	B
8	Total Coliform (MPN/100 ml)	430	430	A

Ground water samples (10 samples)

	Core Zone				
S. No.	**Parameters**	**Min**	**Max**		
1	pH	6.99	7.4	7.2	8.5
2	Total Dissolved Solids (mg/l)	433	1594	1013.5	2000
3	Chloride (as Cl) (mg/l)	65	229	147.0	1000
4	Total Hardness (as $CaCO_3$) (mg/l)	129	474	301.5	600
5	Fluoride (mg/l)	0.16	0.57	0.4	1.5
	Buffer Zone				
S. No.	**Parameters**	**Min**	**Max**		
1	pH	7.01	7.4	7.2	8.5
2	Total Dissolved Solids (mg/l)	377	943	660.0	2000
3	Chloride (as Cl) (mg/l)	57	141	99.0	1000
4	Total Hardness (as $CaCO_3$) (mg/l)	112	280	196.0	600
5	Fluoride (mg/l)	0.14	0.34	0.2	1.5

Noise levels Leq (Day & Night) at 10 locations

Noise Level	**Zone**	**Leq Day dB(A)**		**Leq Night dB(A)**		
		From	To	From	To	
Core	Residential	44.9	45.9	34.6	35.4	55
Buffer	Commercial	46.8	58.5	36.1	45.2	55

Soil Quality at 10 Locations

Monitoring Location (Core /Buffer)	**Criteria Parameter [Calcium, Carbon, Nitrogen, Phosphorus, Potassium, Magnesium, Sodium Absorption Ratio, Salinity]**	**Unit [gm/ mg/ Other (please specify)]**	**Observed Value**		**Permissible standard**
			From	To	
Core Zone	Calcium	(mg/kg)	140	165	500
	Magnesium	(mg/kg)	54	64	500
	Available Nitrogen	(kg/ha)	232	244	500
	Available Phosphorus	(kg/ha)	27	30	50
	Available Potassium	(kg/ha)	267	310	500
	Organic carbon	(%)	0.32	0.37	1
	Sodium Adsorption Ratio		2.3	2.5	10
	Salinity	(ppt)	0	0	0.01
Buffer Zone	Calcium	(mg/kg)	140	250	500
	Magnesium	(mg/kg)	54	96	500
	Available Nitrogen	(kg/ha)	167	296	500
	Available Phosphorus	(kg/ha)	25	28	50
	Available Potassium	(kg/ha)	223	323	500
	Organic carbon	(%)	0.3	0.	1

								6	45	
	Sodium Adsorption Ratio							2.3	3.1	10
	Salinity						(ppt)	0	0	0.01

	Particle Size Distribution						Water Holding Capacity (%)		Porosity (%)	
	Sand (%)		Silt (%)		Clay (%)					
	From	To	From	To	From	To	From	To	From	To
Core	62	69	8	10	21	29	34	40	38	48
Buffer	60	71	7	9	21	31	29	42	33	49

Flora & Fauna	According to WPAA, 2022, 13 species of mammals, one species of bird (Small Minivet), 06 species of herpetofauna (Python, Bengal Monitor Lizard, Indian rat Snake, Indian Cobra, Russel's Viper and Indian Flap-shell Turtle) are listed under Schedule I. Rest of the faunal species are listed under Schedule II category of WPAA, 2022. As per the IUCN Red List of Threatened Species, Version 2022-2, Wild Dog is listed under Endangered (EN) category, Common Leopard, Sloth Bear, Four-horned Antelope, Sambar Deer, Bonnet Macaque and Flap-shell Turtle are under Vulnerable (VU) category, Striped Hyaena, Python, Bengal Monitor Lizard and Anamalai Hill Gecko are listed under Near Threatened (NT) category. As per the IUCN Red List of Threatened Species version 2023-1, all birds have been listed under Least Concern (LC) category.

xvi. **Details of Solid waste/ Hazardous waste generation/ Muck and its management:** Generation of Municipal Solid Waste- Bio degradable (575.0 Tons in four years),
Generation of Non degradable (197.02 Tons in four years)
Solid waste management shall involve Reuse/Recycling, Storage/Segregation, Collection and Transportation and Disposal of Degradable component, non-degradable component& bio-medical waste.

Total quantity of Muck to be dumped: 12.87lakh cum.

The entire excavated material is proposed to be dumped at two dumping sites identified over a combined area of 81.91 ha. Dumping site no. 1 has been identified covering an area of 51.91 ha area, while dumping site no. 2 covering 30 ha is formed by filling up the quarry area after obtaining the rock for construction. The toes of the disposal piles would be retained and protected by providing suitably designed gabion walls erected over concrete bases. Biological measures have also been suggested.

xvii. Public Hearing for the proposed project has been conducted by the State Pollution Control Board on 22nd, December 2023, at Kamalapadu (V), Yadiki (M), Ananthapuram District, Andhra Pradesh. The main issues raised during the public hearing are:

Summary of Issues

Issues/Comments/Observations	Reply by the User Agency
To provide employment opportunities to the local youth based on their s	During construction a large number of skilled and unskilled workers shall be engaged in project activities, majori

kills and qualifications. Project authorities should hire local vehicles during construction.	ty of them will be from the local population/surrounding villages. Employment opportunities shall be provided in the comp any or through the construction company as per eligibilit y during the construction phase of the project. For development of required basic infrastructure facility during construction and maintenance, contract will be a warded to local villagers through the construction compa ny and priority has been given to locals during hiring of vehicles.
Clarify the basis of compensation for the land acquired for the projec t.	Land Compensation shall be as per Provisions of “The R ight to Fair Compensation and Transparency in Land Ac quisition, Rehabilitation and Resettlement Act” (RFCTL ARR) 2013 involving direct negotiations with the lando wners under monitoring of district administration. (Rule s issued through the Andhra Pradesh G.O.MS. No. 389 d ated 20-11-2014)
No basic infrastructure facilities in the villages	For infrastructure development in the villages surroundi ng to the project, Local Area Development Fund of Rs 7.335 Crore has been allocated and will be spent during construction phase of the project.
Need to address the land ownershi p issues. Some of the villagers hav e not Patta passbook for the land. Fair compensation for the land to b e acquired.	District administration assured to resolve the issues rega rding land ownership and issuing a Patta passbook. Accordingly fair compensation will be provided.
Provide alternate sources of livelih ood for the land losers.	Skill development training will be imparted to local yout h to improve their employment opportunities in the proje ct under local area development plan.
Support for the development of ba sic infrastructure facilities at Kam alapadu Boyareddypalli, Chintalay apalli and other surrounding villag es.	Provision of development and strengthening of basic infr astructural facilities in project affected village panchayat s and surrounding villages shall be taken up under Local Area Development Plan after consultation with the conc erned Gram Panchayats and District Administration.
Provision of free electricity to the surrounding villages.	APGENCO is committed to following the provisions an d guidelines issued by the State and Central Government s regarding free or subsidized power to the project area a s well as to the state.
Support for the construction of Ka lyan Mandapam in Chinthalayapal li village.	Provision for the upgradation of religious places has bee n kept under Local Area Development Plan after consult ation with the concerned Gram Panchayats and District

Laying of BT road to the temple. Construction of toilets to the femal e near the temple. Make donation to the Chariot Kot ha Ranganatha Swamy temple at Chinthalayapalli village	Administration. Development of basic amenities including community to ilets has been considered and shall be taken up under the provisions made under Local Area Development Plan aft er consultation with the concerned Gram Panchayats and District Administration.
Provide free technical education f or the higher education students.	Skill development and training to interested local youth shall be taken up under the provisions provided in the se ction for Local Area Development Plan in consultation with the concerned Gram Panchayats and District Admi nistration.
Provide free primary education in the area for the poor people in the area.	Provision of scholarships for poor and meritorious stude nts from the schools adjacent to project area have been made under Local Area Development Plan
Requested to construct school fro m the area under CSR fund	Financial provision of Rs 1.30 Crore has been kept for in frastructure development and quality education for existi ng government schools in the area. Construction of new school shall be explored to be taken up under CSR by APGENCO.
Approach roads in Kamalapadu vi llage are in bad condition and requ ested the management to maintain and upgrade the village road in the area.	Development of basic amenities including village appro ach roads has been considered and shall be taken up und er the provisions made under Local Area Development P lan after consultation with the concerned Gram Panchay ats and District Administration.
Kundanakota village also comes u nder the purposed project and requ ested the authorities to include thei r village name in the project title o f the proposed project.	Inclusion of a village name in the project title is a decisi on that rests with the State Government. It was suggeste d to submit request or representation to state authorities f or their consideration.
Provide basic infrastructure to the villages, schools and temples in th e area.	Development of basic amenities including development of infrastructure in schools and beautification of temples in the area has been considered and shall be taken up un der the provisions made under Local Area Development Plan after consultation with the concerned Gram Pancha yats and District Administration.
Authorities should develop green belt in the project	Development of green belt around the project componen ts, road site planation and plantation over proposed muc k dumping sites after restoration have been proposed - u nder Environmental Management Plan.

Provide RO Plant to the surroundi ng villages	Facility of safe drinking water shall be taken up under th e provisions made under Local Area Development Plan after consultation with the concerned Gram Panchayats a nd District Administration.
Adopt hospital in area and provide free medical camps, for regular m edical checkups for the villagers.	Under the Local Area Development Plan, provisions has been kept for upgradation of infrastructural facilities of e xisting medical institutes and medical camps. These initi atives will be undertaken in consultation with the Distric t Administration to ensure that the upgrades meet the spe cific needs of the communities. Furthermore, our Environmental Management Plan inclu des provisions for establishing a First Aid posts at all co nstruction sites within the project area. This will be com plemented by an ambulance facility to ensure prompt me dical assistance in case of emergencies. Also provision h as been kept for organize medical camps in the neighbor ing villages in collaboration with the district health depa rtment.
Administration utilize District Min eral Fund (DMF) collected by dist rict administration for the develop ment of surrounding villages.	District Administration assured that District Mineral Fun d available with district administration will be utilized d evelopment of surrounding villages
There is no availability of water in the Pendekallu Reservoir, how the management of the project will get the water from the reservoir	Project management informed that the total quantum of water required for initial filling of both reservoirs togeth er is worked out to 22.32 MCM. Source of water has bee n changed from Pendekallu Reservoir to Chagallu barrag e reservoir as explained in Chapter 1 of EIA report.
Provisions to avoid obstruction of the natural water flow due to the p roposed establishment.	Both the reservoirs are proposed to be constructed on m ultiple streams which further downstream merges and is known as Pedda Vanka, a left tributary of Penneru Rive r. The catchment area of these streams at the dam of bot h the reservoirs is 6.05 sq km. As per CEA guidelines, al l the water intercepted from catchment of new reservoirs has to be discharged downstream through appropriate pr ovisions like spillways or interception drains etc. to be p rovided in the project design.
Provide water supply for about 80 00 acres by constructing reservoir.	Drinking water supply provisions have been kept under I nfrastructure development in local area development pla n for all the hamlets of Kamalapadu, Kundanakota, Gudi padu villages. Also, provisions have been kept for repair/ renovation of the existing drinking water resources (Overhead tanks, wells, distribution points, pipelines etc.) in same area. A total cost provision of Rs 20.50 lakh has been kept for p

	urpose.
Management shall provide mini li brary in their area for the educated youth.	Provision of Mini Library has been made under Local A rea Development Activities under upgradation of Educat ion Facilities head.

xviii. Status of Litigation Pending against the proposal, if any: Not Applicable

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

•Project details:

Name of the Proposal	Kamalapadu Pumped Storage Hydro Project (950 MW)
Proposal No.	IA/AP/RIV/547838/2025
Location (Including Coordinates)	Near Kamalapadu village, Ananthapur amu district of Andhra Pradesh State Lower Reservoir- Lat: 15° 5' 0.74" N Long: 77°56' 43.39" E Upper Reservoir- Lat: 15°6' 13.99" N Lo ng: 77°56' 10.56" E
Company's Name	Andhra Pradesh Power Generation Corporation Limited
CIN no. of Company/user agency	U40109AP 1998SGC 109187
Accredited Consultant and certificate no.	R S Envirolink Technologies Pvt Ltd; N ABET/EIA/25-28/RA 0415
Project location (Coordinates /River/ Res ervoir)	Near Boyareddypalli (Kamalapadu) Village in the Yadiki Manda I of Ananthapuramu district in Andhra Pradesh
Inter- state issue involved	No
Proposed on River/ Reservoir	Chagallu reservoir
Type of Hydro-electric project	Pumped Storage Project
Seismic zone	Seismic Zone II

•Category details:

Category of the project	A
Capacity *I* Cultural command area (CC A)	950 MW

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

•TOR/EC details:

ToR Proposal No.	IA/AP/RIV/429576/2023
EAC meeting date	02.06.2023
ToR Letter No.	J- 12011/22/2023 -IA.I (R)
ToR grant Date	07.08.2023
Cost of project	Rs 4676.50 crore
Total area of Project	359.61 ha
Height of Dam from River Bed (EL)	Upper Dam-36.50 m Lower Dam-34.70 m
Details of submergence area	247.11 ha
District to provide irrigation facility (if applicable)	NA
Details of tunnels on upper level.& lower level and length of canal (if applicable)	
No. of affected Village	Two revenue villages namely Kamalapadu and Kundanakota under Tehsil/Mandal-Yadiki in Ananthapuramu District of Andhra Pradesh
No. of Affected Families	The private land identified for the projects belongs to 174 land owner families.
Project Benefits	The levelized cost of generation of the project has been found to be Rs 6.50/kWh considering cost of pumping @ Rs 3.00/kWh. Kamalapadu pumped storage hydro project is a technically feasible project and will be beneficial in meeting the peaking requirement of energy during evening/night in the beneficiary state i.e., Andhra Pradesh. For construction of Kamalapadu PSH Project, no forest land shall be diverted, and the proposed project is off-stream pumped Storage project and have not any impact on natural water bodies. To develop Greenbelt in the surrounding o

	f project area, plantation over 82 ha is propose d over restored muck dumping other construct ion sites.
	The entire private land identified for the project falls In two revenue villages namely K amalapadu and Kundanakota under Tehsil/Ma ndal-Yadiki in Ananthapuramu District of And hra Pradesh. The private land identified for the projects belongs to 174 land owner families. A ll the 174 land owners will be losing their parti al agricultural land holding and none of the fa milies will be losing any house or any other as sets. None of them is getting displaced due to t he project **A. Purchase of Private Land** The private lan d required for the project is proposed to be pur chased through a voluntary sale with a willing seller and willing buyer basis. The process is u ndertaken through direct negotiations between landowners and Project Proponent. The lando wners are informed in advance , and each land owner negotiates on the price of land as part of land take. **B. Govt. Land:** For the Government land requ ired for Project, APGENCO has submitted lan d acquisition proposal to the District Collector, Ananthapuramu. Allotment is under process. T he District Collector, Ananthapuramu has issu ed orders for Advance Possession of Govt lan d.
ToR Proposal No.	IA/AP/RIV/429576/2023
EAC meeting date	02.06.2023
ToR Letter No	J-12011/22/2023-IA.I (R)
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Cost of project	Rs 4676.50 crore
Total area of Project	359.61 ha
Height of Dam from River Bed (EL)	Upper Dam-36.50 m Lower Dam-34.70 m
Details of submergence area provide irrigatio n facility (if applicable)	247.11 ha District to
Details of tunnels on upper level.& lower lev	NA

el and length of canal (if applicable)	
No. of affected Village	Two revenue villages namely **Kamalapadu** and **Kundanakota** under Tehsil/Mandal-Yadiki in Ananthapuramu District of Andhra Pradesh
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Project Benefits	The levelized cost of generation of the project has been found to be Rs 6.50/kWh considering cost of pumping @ Rs 3.00/kWh. Kamalapadu pumped storage hydro project is a technically feasible project and will be beneficial in meeting the peaking requirement of energy during evening/night in the beneficiary state i.e., Andhra Pradesh. For construction of Kamalapadu PSH Project, no forest land shall be diverted, and the proposed project is off-stream pumped Storage project and have not any impact on natural water bodies. To develop Greenbelt in the surrounding of project area, plantation over 82 ha is proposed over restored muck dumping other construction sites.
R&R details	The entire private land identified for the project falls. In two revenue villages namely Kamalapadu and Kundanakota under Tehsil/Mandal-Yadiki in Ananthapuramu District of Andhra Pradesh. The private land identified for the projects belongs to 174 land owner families. All the 174 land owners will be losing their partial agricultural land holding and none of the families will be losing any house or any other assets. None of them is getting displaced due to the project **B.** Govt. Land: For the Government land required for Project, APGENCO has submitted land acquisition proposal to the District Collector, Ananthapuramu. Allotment is under process. The District Collector, Ananthapuramu has issued orders for Advance Possession of Govt land.
Catchment area/ Command area	Both Upper and Lower reservoirs are proposed to be constructed on multiple streams which further downstream merges and is known as Pedda Vanka, a left tributary of Penneru River. The catchment area of these streams at the dam of both the reservoirs is 6.05

	sq km.
Types of Waste and quantity of generation during construction/Operation	Municipal Solid Waste- Bio degradable (575.0 Tons in four years), Non degradable (197.02 Tons in four years)
Material used for blasting and its composition as per DGMS standards.	It has been assessed that one magazine of 20 MT capacities would be sufficient to meet the requirements of the project. A mobile explosive van shall be deployed to carry explosives at the site of use at upper and lower dam area. Movement of the vans hould be done with armed guards and proper documentation recommended by PESO.
E-Flows for the Project	Proposed project is standalone Closed loop pumped storage scheme and provision of E- flow is not required for the scheme. However to maintain the inflow run-off from the catchment through the spillway designed for both upper and lower reservoir.
d) If not the E-Flows maintain criteria for sustaining river ecosystem. Details on provision of fish pass	No
Project benefit including employment details (no of employee)	The proposed project is Off-stream Closed Loop project. It is proposed to utilize the water from existing Chagallu barrage for initial filling of the Kamalapadu PSH reservoir. Both the proposed upper and lower reservoirs are artificial reservoirs and are not located on any active streams. Kamalapadu PSH Project is planned to be completed in 42Calendar months (excluding pre-construction activities), at the time of peak construction work in the project, around 700 persons may be engaged. Out of 700 nos., about 70% will be from the local population/surrounding Villages and balance persons will be skilled/semiskilled from other area. In addition, the project would lead to creation of direct and indirect employment opportunities as new factories would come up. 1n and around the project due to reliable power supply/availability, contract works for the locals during construction and operation phase, etc. Since there is no requirement of any forest land diversion for construction of various components, therefore requirement of preparation of Compensatory Afforestation Plan is not applicable in the present case.

Area of Compensatory Afforestation (CA) with tentative no of plantation.	500
Previous EC details	
EC Compliance Report by R.O, MOEF&CC	
No. of trees/saplings proposed in the view of 'Ek Ped Maa Ke Naam' campaign	

- **Electricity generation capacity:**

Powerhouse Installed Capacity	950 MW
Generation of Electricity Annually	2958.42 MU
No. of Units	5; 950 MW [3 x 238 + 2 x 118]

- **Muck Management Details:**

No. of proposed disposal area/ (type of land- Forest/Pvt land)	Net Quantity of Muck to be rehabilitated/disposed of is estimated as 12,873,413 cum. Keeping the above requirement and topography of the area , dumping site no. 1 has been identified covering an area of 51.91 ha area with a total capacity of 8,283,413 cum muck . The dumping site no. 2 covering 30 ha is formed by filling up the quarry area after obtaining the rock for construction. This site is proposed to hold 4,950,000 cum.
Distance of muck disposal area(location), from muck generation sources (project area)/River, HFL of proposed muck disposal area	500 m
Total Muck Disposal Area	81.91 ha
Estimate Muck to be generated	1,18,32,187.99 cum
Transportation	The generated muck will be carried 1n dumper trucks tightly covered in line with international best practices. All precautionary measures will be followed during the dumping of muck. All dumpers will be well maintained to avoid any chances of loose soil from being falling during transportation . All unpaved routes will be periodically wetted with the help of sprinklers prior to the movement of dump trucks.
Monitoring mechanism for Muck Disposal Transportation	The provisions of Monitoring have been kept under proposed Environmental Mon

	itoring Plan.

- **Land Area Breakup:**

Private land	257.38 ha Private land
Government land	102.23 ha Govt. land
Forest land	0.00
Total land	359.61 ha
Submergence area/reservoir area	247.11 ha
Additional information (if any)	

- **Presence of Environmentally Sensitive areas in the study area**

Forest Land/Protected Area/Environmental Sensitivity Zo	Yes/No	Details of Certificate/ letter/ Remarks

ne		
Reserve Forest/ Protected Forest Land	**No**	No project component falls in any notified protected area. The nearest protected area to the project components is R
National Park	**No**	
Wildlife Sanctuary	**No**	

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(if any)		
Availability of Schedule-I species in Study area		***Conservation Status of Fauna*** According to WPA, 2022, 13 species of mammals, one species of bird (Small Minivet), 06 species of herp

		etofauna (Python, Bengal Monitor Lizard, Indian rat Snake, Indian Cobra, Russel's Viper and Indian Flap-shell Turtle) are listed under Schedule I. Rest

		of the faunal species are listed under Schedule II category of WPA, 2022. As per the IUCN Red List of Threatened Species, Version 2022-2, Wild Dog i

		s listed under Endangered (EN) category, Common Leopard, Sloth Bear, Fourhorned Antelope, Sambar Deer, Bonnet Macaque and Flap-shell T

		urtle are under Vulnerable(VU) category, Striped Hyaena, Python, Bengal Monitor Lizard and Anamalai Hill Gecko are listed under Near Threatened

		(NT) category. As per the IUCN Red List of Threatened Species version 2023-1, all birds have been listed under Least Concern (LC) category.

- **Public Hearing (PH) Details**

Advertisement for PH with date	Publications of notice for public hearing were given in state/national level Telugu newspaper "Sakshi" and English newspaper "The New Indian Express" dated 21.

	11.2023.
Date of PH	22nd December 2023
Venue	22nd, December 2023, at Kamalapadu (V), Yadiki (M), Anantha pur am District, Andhra Pradesh.
Chaired by	Meeting was c

	haired by District Revenue Divisional Officer/ Sub-Divisional Magistrate, Guntakal, District Anantapuram.
Main issues raised during PH	
No of peop	151

le att en de d	

Brief of base line Environment:

Particulars	Details		
Period of baseline data collection/Sampling pe riod.	Parameters	Summer/ Pre - Monsoo n	
(Air, noise, water, land)	Soil	June 2023	
flora and fauna of the pr oject area,	Air Environment	May-June 2023	
	Noise & Traffic	June 2023	
aquatic eco logy, etc.	Water Quality	June 2023	
	Vegetation	June 2023	
	Fauna surveys	June 2023	
	Socio-economic surv ey	June 2023	
Brief description on hydrolog y and water assessment as pe r the approved Pre-DPR:	The Project is a standalone scheme with two new greenfi eld reservoirs and initial filling proposed from existing P endekallu Balancing reservoir through a pipeline. While approving the water availability, Wate r Resources Department (WRD), Govt of Andhra Pradesh has change d the water source from Pendekallu Balancing reservoir to Chagallu Barrage, where additional flood water IS av ailable. The Pendekallu Balancing Reservoir and the Cha gallu Barrage are integral components of the Penna Ahobi lam Balancing Reservoir (PABR) Stage-II irrigation initi ative in Anantapur district, A ndhra Pradesh. Chagallu Barrage, has a capacity of 1.50 TMC.WRD, And hra Pradesh allotted 0.800 TMC (0.720 TMC +0.080 TM C) in two fillings at the rate of 0.400 TMC (including lo sses) or inmore no.of fillings based on the actual availab ility of water from Chagallu Barrage in Anathapuram Dist rict.		

Additional detail (If any)	-	

- **Court cases: Nil**

- **Status of other statutory clearances**

Particulars	**Letter no. and date**
Status of Stage-I FC	Diversion of forest land is not required for the proposed project
Approval of Central Water Commission	The Layout Map, hydrology and Power Potential Studies have been examined by CWC/ CEA and necessary clearances/observations have been issued: i. CWC vide
Approval of	

Central Electricity Authority	letter no. T-16012/12/2023/HCD (NWS) dated 16.11.2023 for layout of the project and letter no. T-11012/9/2023-HYD (S) DTE dated 15.07.2025 for hydrology aspect.

	ii. The CEA has issued observation regarding layout vide letter no. 10/440/HETD&RM/2025 dated 3.07.2025.
Additional detail (If any)	
Is FRA (200	NA

6) done for FC-1	

13. Details of the EMP

S. No.	Components of EMP	Capital Cost (Rs. in lakh)	Recurring Cost (Rs. in lakh)						Total Cost (Rs. in lakh
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	
1	Catchment Area Treatment Plan	3.36	00.00	00.00	00.00	00.00	00.00	00.00	00.00	3.36
2	Compensatory Afforestation and NPV*	0.00	00.00	00.00	00.00	00.00_0	00.00	00.00	00.00	0.00
3	Biodiversity Conservation & Wildlife Conservation Plan	160.00	00.00	00.00	00.00	00.00	00.00	00.00	00.00	160.00
4	Fisheries Development Plan	89.00	00.00	00.00	00.00	00.00	00.00	00.00	00.00	89.00
5	Muck Dumping and Management Plan	70.00	255.45	225.40	523.90	342.00	155.20	53.75	3.00	1628.70
6	Landscaping, Restora	18.00	78.00	70.25	80.00	42.75	0.00	0.00	0.00	289.00

	tion of Construction Sites									
7	Sanitation and Solid Waste Management Plan	173.00	33.96	33.96	33.96	33.96	5.00	0.00	0.00	313.84
8	Public Health Delivery System	60.00	52.50	52.50	47.50	47.50	0.00	0.00	0.00	260.00
9	Energy Conservation Measures	32.00	53.00	53.00	53.00	53.00	0.00	0.00	0.00	244.00
10	Labour Management Plan	25.00	7.00	2.00	12.00	7.00	0.00	0.00	0.00	63.00
11	Green Belt Development Plan	2.25	0.50	5.45	13.40	8.00	3.00	3.00	0.00	35.60
12	Pollution Mitigation Measures	0.00	16.00	16.00	16.00	16.00	0.00	0.00	0.00	64.00
13	Environmental Monitoring Program	0.00	23.68	38.68	38.68	38.68	15.00	0.00	0.00	154.72
14	Rehabilitation and Resettlement Pla	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	n**									
15	Local Area Development Plan	733.50	00.00	00.00	00.00	00.00	00.00	00.00	0.00	733.50
16	Disaster Management Plan ;I;	275.00	25.00	25.00	25.00	25.00	25.00	00.00	0.00	400.00
17	Watershed Development Plan	325.00	00.00	00.00	00.00	00.00	00.00	00.00	00.00	325.00
	Total	1966.11	545.09	532.24	843.44	613.89	203.20	56.75	3.00	4763.72

* Diversion of Forest land is not involved in proposed project
* * Cost of private land acquisition (R&R) will be part of DPR cost.

3.1.3. Deliberations by the committee in previous meetings

N/A

3.1.4. Deliberations by the EAC in current meetings

The EAC during deliberations noted the following:

- The EAC deliberated on the information submitted and presented during the meeting, observing that the proposal is for the grant of Environmental Clearance (EC) to the project for Kamalapadu Closed Loop Pumped Storage Project (950 MW) in an area of 359.61 ha located at Village Attiraladinne, Kamalapadu & Kundanakota etc., Sub-district Peddapappur & Yadiki, District Anantpur, Andhra Pradesh by M/s Andhra Pradesh Power Generation Corporation Limited.

- The project is listed under S.N.1(c) of the Schedule to the Environmental Impact Assessment (EIA) Notification as a Category 'A' project, which requires appraisal at the Central level by the Expert Appraisal Committee (EAC).
- The EAC, constituted under the provisions of the EIA Notification, 2006, and comprising expert members/domain experts in various fields, examined the proposal submitted by the Project Proponent, including the EIA/EMP reports prepared and submitted by the Consultant accredited by QCI/NABET on behalf of the Project Proponent.
- The EAC noted that the Project Proponent has provided an undertaking affirming that the data and information provided in the application and enclosures are accurate to the best of their knowledge, with no suppression of information in the EIA/EMP reports. The proponent also acknowledged that if any part of the data/information submitted is found to be false or misleading at any stage, the project

will be rejected, and any Environmental Clearance granted will be revoked at the risk and cost of the Project Proponent.

- The Terms of Reference issued by MoEF&CC, New Delhi vide letter no. F No J-12011/22/2023-IA. I(R) dated 7th August 2023 in the name of M/s New and Renewable Energy Development Corporation of Andhra Pradesh Ltd. (NREDCAP). Subsequently, MoEF&CC vide letter no. J-12011/22/2023-IA-I(R) dated 02.06.2025 has granted approval for transfer of Terms of Reference (ToR) for the Kamalapadu Closed Loop PSP (950 MW) from 'M/s New and Renewable Energy Development Corporation of Andhra Pradesh Ltd. (NREDCAP)' to 'M/s Andhra Pradesh Power Generation Corporation Limited (APGENCO).
- The EAC observed that the total land required for the project is 359.61 ha (257.38 Ha of private land & 102.23 Ha of Govt. land) and there is no forest land involve in the project area.
- The EAC noted that the Public hearing was conducted on 22.12.2023, chaired by District Revenue Divisional Officer/ Sub-Divisional Magistrate, Guntakal, District Ananthapuram at Kamalapadu (V), Yadiki (M), Ananthapuram District, Andhra Pradesh. Publications of notice for public hearing were given in state/national level Telugu newspaper "Sakshi" and English newspaper "The New Indian Express" dated 21.11.2023. 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 stakeholder's concerns.
- The EAC noted that at the time of grant of ToR, it was submitted that the initial reservoir filling of the Lower/Upper Reservoir of the proposed Kamalapadu PSH would be carried out by pumping water from the existing Pendekallu Balancing Reservoir through a pipeline. However, while approving the water availability, the Water Resources Department (WRD), Government of Andhra Pradesh has revised the source of water from Pendekallu Balancing Reservoir to Chagallu Barrage. In the current proposal, the Committee observed that the total storage requirement of 20.59 MCM (comprising 18.48 MCM gross storage of the Lower Reservoir and 2.11 MCM dead storage of the Upper Reservoir) is now proposed to be met through pumping arrangements from the existing Chagallu Barrage.
- A water allocation of 0.8 TMC, allowing for two or more fillings during the monsoon season, has been granted to the Kamalapadu PSP for this purpose. This allocation was approved by the Andhra Pradesh Water Resources (Reform) Department on 11th March 2025.
- The PP has informed that the Layout Map, hydrology and Power Potential Studies have been examined by CWC/CEA and necessary clearances/observations have been issued:

  i. CWC vide letter no. T-16012/12/2023/HCD (NWS) dated 16.11.2023 for layout of the project and letter no. T-11012/9/2023-HYD (S) DTE dated 15.07.2025 for hydrology aspect.

  ii. The CEA has issued observation regarding layout vide letter no. 10/440/HETD&RM/2025 dated 3.07.2025.

- Further, during deliberations on the watershed development plan, the EAC observed that only limited activities had been proposed by the PP. Accordingly, the Committee advised submission of a revised and detailed plan. In compliance, the PP, vide email dated 29.08.2025, submitted the revised watershed development plan wherein the project cost has been enhanced from Rs. 325.00 lakh to Rs. 618.03 lakh.

The EAC after examining the information submitted and detailed deliberations recommended the proposal for grant of prior Environmental Clearance by the Ministry to Kamalapadu Closed Loop Pumped Storage Project (950 MW) in an area of 359.61 ha located at Village Attiraladinne, Kamalapadu & Kundanakota etc., Sub-district Peddapappur & Yadiki, District Anantpur, Andhra Pradesh by M/s Andhra Pradesh Power Generation Corporation Limited, under the provisions of EIA Notification, 2006 and as amended with subject to compliance of applicable Standard EC conditions with the specific environmental safeguard conditions:

3.1.5. Recommendation of EAC

Recommended

3.1.6. Details of Environment Conditions

3.1.6.1. Specific

Disaster Management	
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.
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.	Technical appraisal of project shall be obtained from CEA in terms of Office Memorandum no. 15-23/3/2021-Hydel-II dated 29.08.2025 issued by the Ministry of Power, before start of construction activities of the project.
Environmental management and Biodiversity conservation	
1.	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.
2.	The contract clause limiting the No. of vehicles used during excavation and transportation shall followed scrupulously and the same shall informed to the ministry.
3.	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.
4.	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.
5.	10000 plants shall be planted around the muck disposal area and the survival of plants shall be submitted with the 6 monthly compliance report.

6.	Plantation of saplings 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).
7.	Watershed development plan prepared shall be implemented within 10 km radius of the project. Implementation status be submitted in the 6 monthly compliance report to the concerned regional office of the Ministry.
8.	PP shall obtain necessary permission from the Tungabhadra Board to use water from the Tungabhadra Dam.
9.	The water of rainfall yield of self-catchment of the reservoir shall be released to downstream through body of dam/ barrage/ embankment etc.
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 12th 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.	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.
6.	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.
7.	Bio-Gas plant shall be installed in the Project affected area for Utilizing Cattle waste (Cow Dung) into renewable source of fuel.
8.	Preference in employment opportunities and admission to ITI institutions shall be given to Project Affected Families (PAFs).
9.	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.
10.	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.
Miscellaneous:	
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.	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.
3.	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.

3.1.6.2. Standard

1(c)	**River Valley/Irrigation projects**
Statutory compliance	
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.
Air quality monitoring and preservation	
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. bet 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).
Noise monitoring and prevention	
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.
Catchment Area Treatment Plan	
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.
Waste management	
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.
Green Belt and Wildlife Management	
1.	Based on the recommendation of Cummulative 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.
Public hearing and Human health issues	
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.
Risk Mitigation and Disaster Management	
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.
Corporate Environment Responsibility	
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
Miscellaneous	
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

Jankhai Pumped Storage Project by **GSC PSP MADHYA PRIVATE LIMITED** located at **REWA,MADHYA PR ADESH**			
Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/MP/RIV/548555/2025	J-12011/28/2025-IA.I(R)	20/08/2025	River Valley/Irrigation projects (1(c))

3.2.2. Project Salient Features

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

i. The proposed Jankhai Pumped Storage Project (1500 MW) is envisioned as an Off-stream Closed Loop Pumped Storage Project in Rewa District of Madhya Pradesh. The project is planned with two artificial reservoirs: an upper reservoir near Tedun village and a lower reservoir near Jankhai Kalan & Ragunathpur villages, Rewa District.

ii. The proposed upper reservoir is situated on a plateau surface at geographical coordinates

24°54'54.33"N latitude and 81°33'39.52"E longitude. The upper reservoir is configured with a Full Reservoir Level (FRL) of EL. 338.00 m and a Minimum Drawdown Level (MDDL) of EL. 313.45 m, offering a live storage capacity of 18.65 MCM and a dead storage capacity of 2.18 MCM.

iii. The proposed lower reservoir is situated in close proximity to Jankhai Kalan and Raghunathpur villages, at geographical coordinates 24°55'1.48"N latitude and 81°32'19.69"E longitude. The lower reservoir is configured with a Full Reservoir Level (FRL) of EL. 130.50 m and a Minimum Drawdown Level (MDDL) of EL. 108.00 m, offering a live storage capacity of 21.75 MCM and a dead storage capacity of 2.38 MCM.

iv. The initial filling of the proposed reservoirs is planned to be sourced from the Tons or Tamasa River. The project will require a one-time filling volume of 30.10 MCM, along with an annual replenishment of 3.10 MCM to compensate for evaporation losses.

v. Jankhai Pumped Storage Project envisages construction of two artificial reservoirs - Upper reservoir is proposed to be located near village Tedun and Baghabil and Lower reservoir is proposed to be located near village Jankhai Kalan & Ragunathpur, Sub-district Jawa. District Rewa, Madhya Pradesh.

vi. **Land requirement:**

x. Project Cost: The estimated project cost is Rs 6313.63 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).

xi. Project Benefit: Total Employment will be 1000 nos during construction & 55 nos during O&M persons as direct & indirect.

xii. Environmental Sensitive area: There is no Protected Area in the vicinity of the proposed project. Ranipur WLS is 30.50 km far from the proposed project area. River/ water body, Water will be pumped from Tons/Tamasa River.

xiii. In principal approval of Initial Allotment of Pumped Hydro Storage by Office of the Commissioner, New and Renewable Energy, Bhopal vide letter no. F/NRE/2025-26/PHS-12/452 dated August 19, 2025.

xiv. Alternative Studies: Six (6) potential reservoir sites have been identified within the study area.

- A total of four layout alternatives has been examined, all incorporating a surface pit-type powerhouse, while considering the topographical constraints of the project area.
- The upper and lower reservoir sites have been explored in three distinct locations in the study region.

S. NO	Description	Alternative -1	Alternative -2	Alternative -3
1	Upper Reservoir	Artificial Pond	Artificial Pond	Artificial Pond
	Type of Dam	CFRD	CFRD	CFRD
	Max. Dam Height (m)	33	28.5	25

S. NO	Description	Alternative -1	Alternative -2	Alternative -3
	Length of Dam (Km)	3.86	3.86	3.18
	Excavated Bed Level (m)	310	310	285
	FRL (m)	338	333.5	305
	MDDL (m)	313.45	313	287.3
	Live storage capacity (MCM)	18.65	15.25	10.10
	Dead storage capacity (MCM)	2.18	1.89	1.20
	Evaporation Loss (MCM)	1.36	1.34	1.06
2	Lower Reservoir	Artificial Pond	Artificial Pond	Artificial Pond
	Type of Dam	CFRD	CFRD	CFRD
	Max.Dam Height (m)	30.50	25.50	23.50
	Length of Dam (Km)	3.83	2.5	2.5
	Excavated/Nat. Min. Bed Level (m)	105	110	115
	FRL (m)	130.50	130.50	133.50
	MDDL (m)	108	112.75	117
	Live storage capacity (MCM)	21.75	18.44	12.50
	Dead storage capacity (MCM)	2.38	2.05	1.14
	Evaporation Loss (MCM)	1.72	1.79	1.29
3	Water Conductor System, Power House & Adit/MAT			
	Total Generation Discharge (m^3/s)	838.47	706.04	467.71
	Unit Discharge (m^3/s)	167.61	141.21	116.93
	Dia Of Penstock/Pressure Shaft (m)	6.75	6	5.5
	Velocity through Pressure Shaft (m/s)	4.69	4.99	4.92
	Length Of Penstock/Pressure shaft (m) (avg)	1113.00	1092.00	957.00
	Type of Power House	Pit Type Surfa	Pit Type Surfa	Pit Type Surfa

S. NO	Description	Alternative -1	Alternative -2	Alternative -3
		ce Power House	ce Power House	ce Power House
	Maximum pit depth (m)	75	67.67	67.5
	Upstream L/H Ratio	6.21	6.15	6.39
	Upstream Surge Shaft	Not Required	Not Required	Not Required
	Dia of Main TRT (m)	7.7	6.75	6.25
	Length Of TRT (m) (avg)	109.00	102	102
	Downstream Surge Gallery	Not Required	Not Required	Not Required
	Length of MAT/Approach Road (m)	545	783	703
	Length of Construction Adit (m)	330	257	310
4	Power Potential			
	Peaking Hours	6	6	6
	Max Net Head (m)	226.18	215.75	184.00
	Min Net Head (m)	179.13	177.50	149.80
	Combined Efficiency	90%	90%	90%
	Max Min Head Ratio	1.26	1.22	1.23
	IC (MW)	1500	1200	680
	No of Units	6	5	4
	Annual Energy (MU)	3184	2497	1415
6	Muck Quantity/Dam Rockfill/Useable Material			
	Construction Material Required (MCM)	10.00	7.50	7.00
	Excavation Quantity (MCM)	19.30	15.85	12.75
	Useable Material (MCM)	10.01	7.88	7.34
	Muck Quantity (MCM)	11.60	10.40	5.93
	Material to be Procuired fromQuarry (MCM)	-	-	-

S. NO	Description	Alternative -1	Alternative -2	Alternative -3
	Muck Dumping Area (Ha)	100.00	90.00	47.50
7	Land Requirement (Ha)	427	418	315
8	Construction Time (Months)	36	36	36
9	Hard Cost Per MW (Crores)	3.67	3.96	4.49

After reviewing the four alternatives from techno-economic and geological perspectives, it was observed

Alternative 1 is technically superior and environmentally better because:

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	Jankhai Pumped Storage Project
Location (Including coordinates)	Lower Reservoir : Latitude: 24° 55' 1.48" N Longitude: 81° 32' 19.69" E; Upper Reservoir : Latitude: 24° 54' 54.33" N Longitude: 81° 33' 39.52" E;
Inter- state issue involved	No
Seismic zone	Zone-III

- **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	3183.60 MU
No. of Units	6 nos. (4 x 300 MW + 2 x 150 MW)
Additional information (if any)	Nil

- **ToR/EC Details:**

Cost of project	6313.63 Cr.
Total area of Project	427.0 ha
Height of Dam from River Bed (EL)	Lower Dam – 30.50 m Upper Dam –33.0 m
Length of Tunnel/Channel	1113.0 m
Details of Submergence area	Being a pump storage project, there is no submergence area, however, land area of upper and lower reservoirs is 125 Ha and 145 Ha i.e. a total of 270 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 P umped Storage Project (PSP)
Is Projects earlier studies in Cumulative Impact asse ssment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then a) E-flow with TOR /Recommendation by EAC a s per CIA&CC study of River Basin. b) If not the E-Flows maintain criteria for sustaini ng river ecosystem.	No

- **Muck Management Details:**

No. of proposed disposal area/ (type of land- Forest/Pvt. land)	100 ha (Non-Forest Land)
Muck Management Plan	Will be Provided in EIA/EMP repor t
Monitoring mechanism for Muck Disposal	Will be Provided in EIA/EMP repor t

Land Area Breakup:

Private Land	210.0 ha
Government land	-
Forest Land	217.0 ha
Total Land	427.0 ha
Submergence area/Reservoir area	270.0 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	--	There is no Protected Are

Forest Land		a in the vicinity of the proposed project. Ranipur WLS is appr ox. 30.50 km far from the proposed project
National Park	----	
Wildlife Sanctuary	----	

		ar e a.

- **Court case details: Nil**
- **Miscellaneous**

Particulars	Details
Details of consultant	M/s. R S Envirolink Technologies Pvt. Ltd. (RSET) (*NABET* Accredited *Consultant Orga nization*) Certificate No : NABET/EIA/25-28/RA0415 Validity : August 15, 2028 Contact Person : Mr. Ravinder Bhatia Name of Sector : River Valley and Hydroelec tric Projects Category : A MoEF Schedule : I(C) Address : 403, Bestech Chambers, Block-B, Sushant Lok Phase I, Sector 43, Gurugram, H aryana - 122009 E-mail : ravi@rstechnologies.co.in Land Line : (0124) 4295383 Cellular : (+91) 9810136853
Project Benefits	o Least expensive source of electricity, not requiring fossil fuel for genera tion o An emission-free renewable source o Balancing grid for demand driven va riations o Balancing generation driven variatio ns o Voltage support and grid stability Apart from this, proposed PSP will also benefi t the local community by creating employment opportunities and will result in upliftment of li velihood and socio-economic conditions.
Status of other statutory clearances	Forest Clearance - Online application seeking forest diversion for around 217.0 Ha after rec eipt of ToR Approval. Alongside, other statut ory clearances (as applicable) from State as w ell as Central government will be obtained po st completion of Detailed Project Report.
R&R details	Details shall be evaluated during EIA/EMP S tudies
Additional detail (If any)	Nil

3.2.3. Deliberations by the committee in previous meetings

N/A

3.2.4. Deliberations by the EAC in current meetings

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 Jankhai Closed Loop Pumped Storage Project (1500 MW) in an area of 427 Ha located at Village Kathmana, Janakhai etc, Sub-district Sirmour and Jawa. District Rewa, Madhya Pradesh by M/s GSC PSP Madhya 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 noted that the total land required for the construction of various components and related works for Jankhai PSP is estimated to be around 427.0 ha, out of which 210.0 ha is non-forest land and 217.0 ha is forest land. The submergence or reservoir area within this total is 270.0 ha hectares. Diversion of forest land for non-forest purpose will be involved for construction of Jankhai Closed Loop Pumped Storage 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 Proponent indicated that there is no Protected Area within 10 km of the proposed project; the nearest eco-sensitive zone, Ranipur Wildlife Sanctuary, lies at a distance of 30.5 km.

It was informed that the Jankhai Pumped Storage Project will require 30.10 MCM of water for one-time filling, and thereafter about 3.10 MCM annually for operation. The project cost is estimated at ₹6313.63 crore, with specific allocations for environmental protection measures to be finalized during the EIA study.

EAC noted that in the course of project planning, six potential reservoir sites were initially identified, and four layout alternatives were developed, each considering surface pit-type powerhouse arrangements suited to the site's topography. These alternatives were analyzed across parameters such as dam height and length, reservoir storage, penstock design, generation discharge, powerhouse specifications, installed capacity, muck management, land requirement, and construction duration.

Among the four, Alternative-1 emerged as the most favorable as it requires minimum forest land, and allows for efficient water conductor system design. The pit depth for the surface powerhouse is shallower compared to other options, reducing excavation impacts.

The project proposes to source water from the Tons/Tamasa River.

It has been observed that Office of the Commissioner, New and Renewable Energy vide letter dated 19.08.2025 has initially allotted the Pumped Hydro Storage (PHS) Project proposed to be developed by M/s GSC PSP Madhya Pvt Ltd for the capacity of 1500 MW at District-Rewa MP.

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 Jankhai Closed Loop Pumped Storage Project (1500 MW) in an area of 427 Ha located at Village Kathmana, Janakhai etc, Sub-district Sirmour and Jawa. District Rewa, Madhya Pradesh by M/s GSC PSP Madhya Private Limited, under the provisions of EIA Notification, 2006, as amended along with the following additional/specific ToR:

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.	Undertaking need to be submitted on affidavit stating that no activities has been started on the project site.
6.	Detailed plan to restore wider roads and convert them into narrow up to 10m after construction of the project.
7.	Specific Terms of Reference (ToRs) issued by the Ministry vide Office Memorandum No. F. No. IA3-22/33/2022-IA.III dated 14.08.2023 for Pumped storage projects shall be used for preparation of EIA/ EMP reports.
8.	As per Ministry's OM dated 1st August, 2013, PP shall submit application to obtain prior approval of Central Government under the Forest Conservation Act, 1980 for diversion of forest land required for such projects will be submitted as soon as the actual extent of forest land required for the project is known to the project proponent, and in 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.
Muck Management:	
1.	Details of quantity of muck generation component wise, types of muck (Excavation in tunnels, pressure shaft and powerhouse etc.) and disposal site/ transportation to be provided.
2.	Details of muck management such as dumping sites and its locations, transportation plan along with monitoring mechanism for muck transportation, detailing the road map of project construction site/ indicating the distances from HFL, river, project construction site along with types of road etc.
3.	Safety measures for avoiding spill over muck into the riverbed/streams and its flow into the river

	during the high discharge/ flood or monsoon period. Prepare plan for stabilization of muck disposal sites using biological and engineering measures to ensure that muck does not roll down the slopes and shall be disposed safely and that it does not pollute the natural streams and water bodies in surrounding area.
4.	Restoration plan for construction area including dumping site of excavated materials by levelling, filling up of burrow pits, landscaping etc.
Socio-economic Study:	
1.	Declaration by the project proponent by way of affidavit that "No" Inter-state issue/ policy issue is involved with any State in the project.
2.	All the tasks including conducting public hearing shall be done as per the provisions of EIA Notification, 2006 and as amended from time to time. 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.	PP shall submit the credible documents to show the status of land acquisition w.r.t project site from/through the concerned State Government as required under Ministry's OM dated 7th October, 2014 for the project land to be acquired.
4.	Land acquired for the project shall be suitably compensated in accordance with the law of the land with the prevailing guidelines. Private land (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.
Environmental Management and Biodiversity Conservation:	
1.	PP shall submit the Water Utilization Mapping within a 10 km radius of the project for examining the impacts on sustainability of ecosystem of the region after withdrawal of water for proposed project.
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.
3.	Explore the possibilities for reducing the Forest land requirement. The application for obtaining Stage I FC for 217 ha of forest land involved in the project shall be submitted within stipulated time.
4.	A detailed assessment shall be carried out to optimize and possibly reduce the land area earmarked for quarrying area.
5.	Muck disposal site and other components such as Township, site office, Stacking area and batching plant shall be located outside the forest area.
6.	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.
7.	PP shall submit the detailed plan for filling the reservoir from the Tons or Tamasa River along with necessary approval form water resource department.

8.	Transportation Plan for transporting construction materials shall be submitted.
9.	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.
10.	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.
11.	Calculation and values of GHGs (CO2, CH4 etc.) emissions during construction and during operation till the life of the project shall be estimated and submitted.
12.	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.
13.	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.
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.	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.
17.	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.
18.	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.
19.	Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP.
20.	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.
21.	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)	**River Valley/Irrigation projects**
Scope of EIA Study	
1.	The EIA Report should identify the relevant environmental concerns and focus on potential impacts that may change due to the construction of proposed project. Based on the baseline data collected for three (3) seasons (Pre-monsoon, Monsoon and Winter seasons), the status of the existing environment in the area and capacity to bear the impact on this should be analysed. Based on this analysis, the mitigation measures for minimizing the impact shall be suggested in the EIA/EMP study.
Details of the Project and Site	
1.	General introduction about the proposed project.
2.	Details of Project and site giving L-Sections of all U/S and D/S Projects with all relevant maps and figures. Connect such information as to establish the total length of interference of Natural River and the committed unrestricted release from the site of Dam/Barrage into the main river.
3.	A map of boundary of the project site giving details of protected areas in the vicinity of 25 km of project location.
4.	Location details on a map of the project area with contours indicating main project features. The project layout shall be superimposed on a contour map of ground elevation showing main project features (viz. location of dam, Head works, main canal, branch canals, quarrying etc.) shall be depicted in a scaled map.
5.	Layout details and map of the project along with contours with project components clearly marked with proper scale maps of at least 1:50,000 scale and printed at least on A3 scale for clarity.
6.	Existence of National Park, Sanctuary, Biosphere Reserve etc. in the study area, if any, should be detailed and presented on a map with distinct distances from the project components.
7.	Drainage pattern and map of the river catchment up to the proposed project site.
8.	Delineation of critically degraded areas in the directly draining catchment on the basis of Silt Yield Index as per the methodology of Soil and Land use Survey of India.
9.	Soil characteristics and map of the project area.
10.	Geological and Seismo-tectonic details and maps of the area surrounding the proposed project site showing location of dam site and canal sites.
11.	Remote Sensing studies, interpretation of satellite imagery, topographic sheets along with ground verification shall be used to develop the land use/land cover pattern of the study using overlaying mapping techniques viz. Geographic Information System (GIS), False Color Composite (FCC) generated from satellite data of project area.
12.	Land details including forests, private and other land.
13.	Demarcation of snow fed and rain fed areas for a realistic estimate of the water availability.
14.	Different riverine habitats like rapids, pools, side pools and variations in the river substratum bedrocks, rocks, boulders, sand/silt or clay etc. need to be covered under the study

Description of Environment and Baseline Data	
1.	To know the present status of environment in the area, baseline data with respect to environmental components air, water, noise, soil, land and biology & biodiversity (flora & fauna), wildlife, socioeconomic status etc. should be collected within 10 km radius of the main components of the project/site i.e. dam site and power house site. The air quality and noise are to be monitored at such locations which are environmentally & ecologically more sensitive in the study area. The baseline studies should be collected for 1 season (Preferably Monsoon season). Flora-Fauna in the catchment and command area should be documented. The study area should comprise of the following:
2.	(i) Catchment area up to the dam/barrage site.
3.	(ii) Submergence Area.
4.	(iii) Project area or the direct impact area should comprise of area within 10 km radius of the main project components like dam, canals etc.
5.	(iv) Downstream upto 10 km from the tip of the reservoir.
Details of the Methology	
1.	The methodology followed for collection of base line data along with details of number of samples and their locations in the map should be included. Study area should be demarcated properly on the appropriate scale map. Sampling sites should be depicted on map for each parameter with proper legends. For Forest Classification, Champion and Seth (1968) methodology should be followed.
Methodology for Collection of Biodiversity Data	
1.	The number of sampling locations should be adequate to get a reasonable idea of the diversity and other attributes of flora and fauna. The guiding principles should be the size of the study area (larger area should have larger number of sampling locations) and inherent diversity at the location, as known from secondary sources (e.g. eastern Himalayan and low altitude sites should have a larger number of sampling locations owing to higher diversity).
2.	The entire area should be divided in grids of 5kmX5km preferably on a GIS domain. There after 25% of the grids should be randomly selected for sampling of which half should be in the directly affected area (grids including project components such as reservoir, dam, powerhouse, tunnel, canal etc.) and the remaining in the rest of the area (areas of influence in 10 km radius form project components). At such chosen location, the size and number of sampling units (e.g. quadrates in case of flora/transects in case of fauna) must be decided by species area curves and the details of the same (graphs and cumulative number of species in a tabulated form) should be provided in the EIA report. Some of the grids on the edges may not be completely overlapping with the study area boundaries. However, these should be counted and considered for selecting 25% of the grids. The number of grids to be surveyed may come out as a decimal number (i.e. it has an integral and a fractional part) which should be rounded to the next whole number.
3.	The conventional sampling is likely to miss the presence of rare, endangered and threatened (r.e.t.) species since they often occur in low densities and in case of faunal species are usually secretive in behaviour. Reaching the conclusion about the absence of such species in the study area based on such methodology is misleading. It is very important to document the status of such species owing to their high conservation value. Hence likely presence of such species should be ascertained from secondary sources by a proper literature survey for the said area including referring to field guides which are now available for many taxonomic groups in India. Even literature from studies/surveys in the larger landscapes which include the study area for the concerned project must be referred to, since most species from adjoining catchments is likely to be present in the catchments in question. In fact such literature form the entire state can be referred to. Once a listing of possible r.e.t. species form the said area is developed, species specific methodologies should be adopted to ascertain their presence in the study area which would be far more conclusive as compared to the conventional sampling. If the need be, modern methods like camera trapping can be resorted to, particularly for areas in the eastern Himalayas and for secretive/nocturnal species. A detailed listing of the literature referred to, for developing lists of r.e.t. species should be provided in the EIA reports.The conventional sampling is likely to miss the presence of rare, endangered and threatened

	(r.e.t.) species since they often occur in low densities and in case of faunal species are usually secretive in behaviour. Reaching the conclusion about the absence of such species in the study area based on such methodology is misleading. It is very important to document the status of such species owing to their high conservation value. Hence likely presence of such species should be ascertained from secondary sources by a proper literature survey for the said area including referring to field guides which are now available for many taxonomic groups in India. Even literature from studies/surveys in the larger landscapes which include the study area for the concerned project must be referred to, since most species from adjoining catchments is likely to be present in the catchments in question. In fact such literature form the entire state can be referred to. Once a listing of possible r.e.t. species form the said area is developed, species specific methodologies should be adopted to ascertain their presence in the study area which would be far more conclusive as compared to the conventional sampling. If the need be, modern methods like camera trapping can be resorted to, particularly for areas in the eastern Himalayas and for secretive/nocturnal species. A detailed listing of the literature referred to, for developing lists of r.e.t. species should be provided in the EIA reports.
4.	The R.E.T. species referred to in this point should include species listed in Schedule I and II of Wildlife (Protection) Act, 1972 and those listed in the red data books (BSI, ZSI and IUCN).
Components of the EIA Study: Various aspects to be studied and provided in the EIA/EMP report are as follow s:	
1.	null
2.	null
3.	Physical geography, Topography, Regional Geological aspects and structure of the Catchment.
4.	Tectonics, seismicity and history of past earthquakes in the area. A site specific study of the earthquake parameters will be done. The results of the site specific earthquake design shall be sent for approval of the NCSDP (National Committee of Seismic Design Parameters, Central water Commission, New Delhi for large dams.
5.	Landslide zone or area prone to landslide existing in the study area should be examined.
6.	Presence of important economic mineral deposit, if any.
7.	Justification for location & execution of the project in relation to structural components (dam /barrage height).
8.	Impact of project on geological environment.
9.	null
10.	Meteorology (viz. Temperature, Relative humidity, wind speed/direction etc.) to be collected from nearest IMD station.
11.	Ambient Air Quality with parameters viz. Suspended Particulate Matter (SPM), Respirable Suspended Particulate Matter (RSPM) i.e. suspended particulate materials < 10 microns, Sulphur dioxide (SO2) and Oxides of Nitrogen (NOX) in the study area at 5-6 Locations.
12.	Existing Noise Levels and traffic density in the study area at 5-6 Locations.
13.	null
14.	Soil classification, physical parameters (viz., texture, Porosity, Bulk Density and water holding capacity) and chemical parameters (viz. pH, electrical conductivity, magnesium, calcium, total alkalinity, chlorides, sodium, potassium, organic carbon, available potassium, available phosphorus, SAR, nitrogen and salinity, etc.) at @ one

	sample/ha of command area.
15.	null
16.	(i) Generation of thematic maps viz, slope map, drainage map, soil map, land use and land cover map, etc. Based on these, thematic maps, an erosion intensity map should be prepared.
17.	null
18.	History of the ground water table fluctuation in the study area.
19.	Water quality for both surface water and ground water for (i) Physical parameters (pH, temperature, electrical conductivity, TSS); (ii) Chemical parameters (Alkalinity, Hardness, BOD, COD, NO2, PO4, CI, SO4, Na, K, Ca, Mg, Silica, Oil & Grease, phenolic compounds, residual sodium carbonate); (iii) Bacteriological parameter (MPN, Total coliform) and (iv) Heavy Metals (Pb, As, Hg, Cd, Cr-6, total Cr, Cu, Zn, Fe) (6 locations).
20.	Delineation of sub and micro-watersheds, their locations and extent based on the All India Soil and Land Use Survey of India (AISLUS), Department of Agriculture, Government of India. Erosion levels in each micro-watershed and prioritization of micro-watershed through silt yield index (SYI) method of AISLUS
21.	Hydro-Meteorology of the project viz. precipitation (snowfall, rainfall), temperature, relative humidity, etc. Hydro-meteorological studies in the catchment area should be established along-with real time telemetry and data acquisition system for inflows monitoring.
22.	Run off, discharge, water availability for the project, sedimentation rate, etc.
23.	Basin characteristics
24.	Catastrophic events like cloud bursts and flash floods, if any, should be documented.
25.	For estimation of Sedimentation Rate, direct sampling of river flow is to be done during the EIA study. The study should be conducted for minimum one year. Actual silt flow rate to be expressed in ha-m km2 year-1.
26.	Set up a G&D monitoring station and a few rain gauge stations in the catchment area for collecting data during the investigation.
27.	Flow series, 10 daily with 90%, 75% and 50% dependable years discharges.
28.	Information on the 10-daily flow basis for the 90 per cent dependable year the flow intercepted at the dam, the flow diverted to the power house and the spill comprising the environmental flow and additional flow towards downstream of the dam for the project may be given.
29.	The minimum environmental flow shall be 20% of the flow of four consecutive lean months of 90% dependable year, 30% of the average monsoon flow. The flow for remaining months shall be in between 20-30%, depending on the site specific requirements. A site specific study shall be carried out by an expert organization.
30.	Sedimentation data available with CWC may be used to find out the loss in storage over the years.
3	Hydrological studies/data as approved by CWC shall be utilized in the preparation of EIA/EMP report. Actual

1.	hydrological annual yield may also be given in the report. Sedimentation data available with CWC may be used to find out the loss in storage over the years.
32.	A minimum of 1 km distance from the tip of the reservoir to the tail race tunnel should be maintained between upstream and downstream projects.
33.	Besides primary studies, review of secondary data/literature published for project area on flora & fauna including RET species shall be reported in EIA/EMP report.
34.	null
35.	Characterization of forest types (as per Champion and Seth method) in the study area and extent of each forest type as per the Forest Working Plan.
36.	Documentation of all plant species i.e. Angiosperm, Gymnosperm, Pteriodophytes, Bryophytes (all groups).
37.	General vegetation profile and floral diversity covering all groups of flora including lichens and orchids. A species wise list may be provided.
38.	Assessment of plant species with respect to dominance, density, frequency, abundance, diversity index, similarity index, importance value index (IVI) , Shannon Weiner index etc. of the species to be provided. Methodology used for calculating various diversity indices along with details of locations of quadrates, size of quadrates etc. to be reported within the study area in different ecosystems.
39.	Existence of National park, Sanctuary, Biosphere Reserve etc in the study area, if any, should be detailed.
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
45.	Fauna study and inventorisation should be carried out for all groups of animals in the study area. Their present status alongwith Schedule of the species.
46.	Documentation of fauna plankton (phyto and zooplankton), periphyton, benthos and fish should be done and analysed.
47.	Information (authenticated) on Avi-fauna and wildlife in the study area.
48.	Status of avifauna their resident/ migratory/ passage migrants etc.

49.	Documentation of butterflies, if any, found in the area.
50.	Details of endemic species found in the project area.
51.	RET species-voucher specimens should be collected along-with GPS readings to facilitate rehabilitation. RET faunal species to be classified as per IUCN Red Data list and as per different schedule of Indian Wildlife (Protection) Act, 1972.
52.	Existence of barriers and corridors, if any, for wild animals.
53.	Compensatory afforestation to compensate the green belt area that will be removed, if any, as part of the proposed project development and loss of biodiversity.
54.	Collection of primary data on agricultural activity, crop and their productivity and irrigation facilities components.
55.	For categorization of sub-catchment into various erosion classes and for the consequent CAT plan, the entire catchment (Indian Portion) is to be considered and not only the directly the draining catchment.
56.	Documentation of aquatic fauna like macro-invertebrates, zooplankton, phytoplantktons, benthos etc.
57.	Fish and fisheries, their migration and breeding grounds.
58.	Fish diversity composition and maximum length & weight of the measured populations to be studies for estimation of environmental flow.
59.	Conservation status of aquatic fauna.
60.	Sampling for aquatic ecology and fisheries and fisheries must be conducted during three seasons Pre-monsoon (summer), monsoon and winter. Sizes (length & weight) of important fish species need to be collected and breeding and feeding grounds should also be identified along the project site or in vicinity.
61.	Collection of baseline data on human settlements, health status of the community and existing infrastructure facilities for social welfare including sources of livelihood, job opportunities and safety and security of workers and surroundings population.
62.	Collection of information with respect to social awareness about the developmental activity in the area and social welfare measures existing and proposed by project proponent.
63.	Collection of information on sensitive habitat of historical, cultural and religious and ecological importance.
64.	The socio-economic survey/ profile within 10 km of the study area for demographic profile; Economic Structure; Developmental Profile; Agricultural Practices; Infrastructure, education facilities; health and sanitation facilities; available communication network etc.
65.	Documentation of demographic, Ethnographic, Economic Structure and development profile of the area.
66.	Information on Agricultural Practices, Cultural and aesthetic sites, Infrastructure facilities etc.

67.	Information on the dependence of the local people on minor forest produce and their cattle grazing rights in the forest land.
68.	List of all the Project Affected Families with their name, age, educational qualification, family size, sex, religion, caste, sources of income, land & house holdings, other properties, occupation, source of income, house/land to be acquired for the project and house/land left with the family, any other property, possession of cattle, type of house etc.
69.	Special attention has to be given to vulnerable groups like women, aged persons etc. and to any ethnic/indigenous groups that are getting affected by the project.
Impact Prediction and Mitigation Measures	
1.	The adverse impact due to the proposed project should be assessed and effective mitigation steps to abate these impacts should be described.
2.	Changes in ambient and ground level concentrations due to total emissions from point, line and area sources.
3.	Effect on soil, material, vegetation and human health.
4.	Impact of emissions from DG set used for power during the construction, if any, on air environment.
5.	Pollution due to fuel combustion in equipments and vehicles
6.	Fugitive emissions from various sources
7.	Changes in surface and ground water quality
8.	Steps to develop pisci-culture and recreational facilities
9.	Changes in hydraulic regime and downstream flow.
10.	Water pollution due to disposal of sewage
11.	Water pollution from labour colonies/ camps and washing equipment.
12.	Adverse impact on land stability, catchment of soil erosion, reservoir sedimentation and spring flow (if any) (a) due to considerable road construction / widening activity (b) interference of reservoir with the inflowing stream (c) blasting for commissioning of HRT, TRT and some other structures.
13.	Changes in land use / land cover and drainage pattern
14.	Immigration of labour population
15.	Quarrying operation and muck disposal
16.	Changes in land quality including effects of waste disposal
17.	River bank and their stability

18.	Impact due to submergence.
19.	Impact on forests, flora, fauna including wildlife, migratory avi-fauna, rare and endangered species, medicinal plants etc.
20.	Pressure on existing natural resources
21.	Deforestation and disturbance to wildlife, habitat fragmentation and wild animal's migratory corridors
22.	Compensatory afforestation-identification of suitable native tree species for compensatory afforestation and green belt.
23.	Impact on fish migration and habitat degradation due to decreased flow of water
24.	Impact on breeding and nesting grounds of animals and fish.
25.	Impact on local community including demographic profile.
26.	Impact on socio-economic status
27.	Impact on economic status.
28.	Impact on human health due to water / vector borne disease
29.	Impact on increase traffic
30.	Impact on Holy Places and Tourism
31.	Impacts of blasting activity during project construction which generally destabilize the land mass and leads to landslides, damage to properties and drying up of natural springs and cause noise population will be studies. Proper record shall be maintained of the baseline information in the post project period.
32.	Positive and negative impacts likely to be accrued due to the project are listed.
Environmental Management Plan	
1.	null
2.	Biodiversity and Wildlife Conservation and Management Plan for the conservation and preservation of rare, endangered or endemic floral/faunal species or some National Park/Sanctuary/ Biosphere Reserve or other protected area is going to get affected directly or indirectly by construction of the project, then suitable conservation measures should be prepared in consultation with the State Forest Department and with the physical and financial details. Suitable conservation techniques (in-situ/ ex-situ) will be proposed under the plan and the areas where such conservation is proposed will be marked on a project layout map.

3.	Compensatory Afforestation shall be prepared by the State Forest Department in lieu of the forest land proposed to be diverted for construction of the project as per the Forest (Conservation) Act, 1980. Choice of plants for afforestation should include native and RET species, if any. This will be a part of the forest clearance proposal.
4.	Fisheries Conservation and Management Plan - a specific fisheries management measures should be prepared for river and reservoir. If the construction of fish ladder/ fish-way etc. is not feasible then measures for reservoir fisheries will be proposed. The plan will detail out the number of hatcheries, nurseries, rearing ponds etc. proposed under the plan with proper drawings. If any migratory fish species is getting affected then the migratory routes, time/season of upstream and downstream migration, spawning grounds etc will be discussed in details.
5.	Green Belt Development Plan along the periphery of the reservoir, approach roads around the colonies and other project components, local plant species must be suggested with physical and financial details. A layout map showing the proposed sites for developing the green belt should be prepared.
6.	Environmental Monitoring Programme to monitor the mitigatory measures implemented at the project site is required will be prepared. Provision for Environment Management Cell should be made. The plan will spell out the aspects required to be monitored, monitoring indicators/parameters with respect to each aspect and the agency responsible for the monitoring of that particular aspect throughout the project implementation.
7.	Catchment Area Treatment (CAT) Plan should be prepared micro-watershed wise. Identification of free draining/ directly draining catchment based upon Remote Sensing and Geographical Information System (GIS) methodology and Sediment Yield Index (SYI) method of AISLUS, Deptt. of Agriculture, Govt. of India coupled with ground survey. Areas or watersheds falling under 'very severe' and 'severe' erosion categories should be provided and required to be treated. Both biological as well as engineering measures should be proposed in consultation with State Forest Department for areas requiring treatment. Year-wise schedule of work and monetary allocation should be provided. Mitigation measures to check shifting cultivation in the catchment area with provision for alternative and better agricultural practices should be included.
8.	Study of Design Earthquake Parameters: A site specific study of earthquake parameters should be done. Results of the site specific earthquake design parameters should be approved by National Committee of Seismic Design Parameters, Central Water Commission (NCSDP), New Delhi.
9.	Dam Break Analysis and Disaster Management Plan The outputs of dam break model should be illustrated with appropriate graphs and maps clearly bringing out the impact of Dam Break scenario. To identify inundation areas, population and structures likely to be affected due to catastrophic floods in the event of dam failure. DMP will be prepared with the help of Dam Break Analysis. Maximum water level that would be attained at various points on the downstream in case of dam break will be marked on a detailed contour map of the downstream area, to show the extent of inundation. The action plan will include Emergency Action and Management plan including measures like preventive action notification, warning procedure and action plan for co-ordination with various authorities.
10.	Reservoir Rim Treatment Plan for stabilization of land slide / land slip zones, if any, around the reservoir periphery is to be prepared based on detailed survey of geology of the reservoir rim area. Suitable engineering and biological measures for treatment of identified slip zones to be suggested with physical and financial schedule. Layout map showing the landslide/landslip zones shall be prepared and appended in the chapter.
11.	Muck Disposal Plan- suitable sites for dumping of excavated material should be identified in consultation with the State Pollution Control Board and Forest Department. All Muck disposal sites should be minimum 30 m away from the HFL of river. Plan for rehabilitation of muck disposal sites should also be given. The L- section/ cross section of muck disposal sites and approach roads to be given. Financial out lay for this may be given separately. Deatailed muck transportation plan delinating the path ways, number of trucks, quantity of muck to be transportated along with monitoring mechanism using latest technology, shall be prepared.
12.	Restoration Plan for Quarry Sites and landscaping of colony areas, working areas, roads etc. Details of the coarse/fine aggregate/clay etc. required for construction of the project and the rock/clay quarries/river shoal sites identified for the project should be discussed along-with the Engineering and Biological measures proposed for their restoration with physical and financial details. Layout map showing quarry sites vis-à-vis other project components, should be prepared.

13.	Resettlement and Rehabilitation Plan needed to be prepared on the basis of findings of the socio- economic survey coupled with the outcome of public consultation held. The R&R package shall be prepared after consultation with the representatives of the project affected families and the State Government. Detailed budgetary estimates are to be provided. Resettlements site should be identified. The plan will also incorporate community development strategies.
14.	Public Health Delivery Plan including the provisions of drinking water supply for local population shall be in the EIA/EMP Report. Status of the existing medical facilities in the project area shall be discussed. Possibilities of strengthening of existing medical facilities, construction of new medical infrastructure etc. will be explored after assessing the need of the labour force and local populace.
15.	Local Area Development Plan to be formulated in consultation with the Revenue Officials and Village Pancahayats. Appropriate schemes shall be prepared under EMP for the Local Area Development Plan with sufficient financial provisions.
16.	Labour Management Plan for their Health and Safety.
17.	Sanitation and Solid waste management plan for domestic waste from colonies and labour camps etc.
18.	Energy Conservation Measures for the work force during construction with physical and financial details. Alternatives will be proposed for the labour force so that the exploitation of the natural resource (wood) for the domestic and commercial use is curbed.
19.	Environmental safeguards during construction activities including Road Construction.
20.	A summary of Cost Estimates for all the plans, cost for implementing all the Environmental Management Plans.
21.	Water, Air and Noise Management Plans to be implemented during construction and post-construction periods.

3.3. Agenda Item No 3:

3.3.1. Details of the proposal

Proposed Koppolu Pumped Storage Project, at Rayalaseema region Kondapuram Mandal, District-YSR, Andhr a Pradesh by **chinta green energy private limited** located at **Y.S.R.,ANDHRA PRADESH**			
Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/AP/RIV/548574/2025	J-12011/30/2025-IA.I(R)	19/08/2025	River Valley/Irrigation project s (1(c))

3.3.2. Project Salient Features

38.3.1 The proposal is for grant of Terms of References (ToR) to the project for Koppolu Open loop Pumped Storage Project (2400 MW) in an area of 332.73 Ha located at Village Koppolu, Sub-district Kondapuram, District Y.S.R., Andhra Pradesh by M/s Chinta Green Energy Private Limited.

38.3.2 The Project Proponent and the accredited Consultant M/s Enviro Infra Solutions Pvt Ltd, made a detailed presentation on the salient features of the project and informed that:

i. The project is envisaged to be an Off-stream Open loop Pumped Storage Project consisting of two reservoirs: one reservoir proposed at upper elevation and other already existing at lower elevation, to provide the effective “head” for power generation. The water conductor system will connect the two reservoirs through an underground powerhouse.

ii. The project is located in the Rayalaseema region of Andhra Pradesh, in Kondapuram Mandal, near Koppolu village in YSR district of Andhra Pradesh. The project is in the vicinity of the Gandikota Reservoir, which will be used as lower reservoir for the proposed project. The project lies between longitude 78°10'34.29"E and latitude 14°52'39.00"N covered under SOI toposheet No. 57 -J/1. The upper dam is located at longitude 78°10'40.88"E and latitude is 14°52'44.78"N.

iii. In view of the regional geology and the topography of the project area, one new reservoir has been proposed. The existing Gandikota reservoir will act as the lower reservoir. The new upper reservoir will be formed by constructing a concrete gravity dam. The FRL and MDDL of the upper reservoir is kept at EL 446.00 m and EL 412.00 m respectively with a gross storage of 37.67MCM and live storage of 36.78MCM. Similarly, the FRL and MDDL of the lower Gandikota reservoir is considered to be at EL 212.00 m & EL 199.00m respectively with a natural gross storage of 750.88 MCM and live storage of 736.68 MCM. The amount of live storage required in the upper reservoir to operate 2400MW with 8 hours of generation is around 35.34 MCM. The amount of live storage available is around 32.07MCM and the required remaining storage will be adjusted by creating the excavation in the bank of the reservoir to keep the live storage 36.78 MCM.

iv. **Land requirement:** The total land requirement for the project is 332.73 hectares, all of which is non-forest land.

v. Water requirement: The quantity of water required during construction is estimated as 500 KLD which shall be drawn from the river water can be pumped and stored in a tank at higher elevation. The domestic requirement shall be 300 KLD which shall be met from the ground water resource. Post construction the domestic requirement shall be 65 KLD only.

vi. Project Cost: The total project cost including Civil & Hydro-Mechanical Works, Electro-Mechanical works, Transmission, Escalation and IDC is Rs. 11024.63 Crore.

vii. Project Benefit: Pumped storage offers multiple benefits to a power system. In addition to providing energy storage, pumped storage can provide power immediately and can be rapidly adjusted to respond to changes in energy demands. These benefits are part of a large group of benefits, known as ancillary services

viii. Environmental Sensitive area: There is no Protected Area in the vicinity of the proposed project

ix. Resettlement and rehabilitation: The compensation for acquisition land would be paid to the respective land owners/ land titleholders as per the provisions of "Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013".

x. Alternative Studies: The following aspects have been considered for formulation of alternative layouts:
   a. Topography of the area and other factors like location, length of water conductor System.
   b. Utilization of available head at project site and to the maximum extent feasible.
   c. Development of economical and optimized layout
   d. Ease of Construction and access to shafts, powerhouse, and related structures.
   e. Minimal area of land acquisition to accommodate various project components.

   Three alternatives have been considered and best suitable site has been selected. Further details have been provided in PFR.

   • Solid waste -. About 584 MT/year solid municipal wastes is likely to be generated from labour colony. Municipal Solid waste would be disposed as per MSW Rules 2016

   • Muck generated from dam's foundation after assuming swell factor of 25% has been estimated as

69,19,000 m3 which shall be utilized for earthen dam, producing coarse and fine aggregate for concrete production and in fillings for developing areas for construction facilities.

xii. Status of Litigation Pending against the proposal, if any.

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

1. EAC Meeting Details:	
EAC meeting/s	38th Meeting of The Expert Appraisal Committee
Date of Meeting/s	29th AUGUST, 2025
Date of earlier EAC meetings	Nil
2. Project Details:	
Name of the Proposal	Project is an Off-stream Open loop Pumped Storage Na med Koppolu Pumped Storage Project (2400 MW), Dis trict-YSR, Andhra Pradesh **Proposal No**: IA/AP/RIV/548574/2025 **File No**: J-12011/30/2025-IA.I(R)
Location (Including Coordinates)	The project is located in the Rayalaseema region of An dhra Pradesh, in Kondapuram Mandal, near Koppolu vi llage in YSR district of Andhra Pradesh, The project is in the vicinity of the Gandikota Reservoi r **Coordinates**: Upper Reservoir Latitude: 14° 52' 24.75”N Longitude: 78° 10' 51.62"E Lower Reservoir Latitude : 14° 50' 38.18"N Longitude: 78° 11' 29.37"E.
Inter- state issue involved	Not Applicable
Seismic zone	Zone-II
3. Category Details:	
Category of the project	Category 'A'
Provisions	Pumped Storage Project
Capacity / Cultural command area (CCA)	2400 MW / 19200 MWH
Attracts the General Conditions (Yes/No)	No

Additional information (if any)	Nil
4. Electricity Generation Capacity	
Powerhouse Installed Capacity	2400 MW/19200 MWH
Generation of Electricity Annually	6657.60 MU annually
No. of Units	8 units of 300 MW
Additional information (if any)	Nil
5. ToR/ EC Details:	
Cost of project	11024.63 Cr
Total area of Project	332.73 ha
Height of Dam from River Bed (EL)	43.00m
Length of Tunnel/Channel	3 numbers of main TRT, Average Length of 2868m each; and 4 numbers of main Pressure shaft having average length of 511m each
Details of submergence area	--
Types of Waste and quantity of generation during construction / Operation	About 584 MT/year solid municipal wastes is likely to be generated from labour colony in the construction phase.
E-Flows for the Project	--
Is Projects earlier studied 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.	NA
6. Muck Management Details:	Muck generated from dam's foundation after assuming swell factor of 25% has been estimated as 69,19,000 m3 which shall be utilized for Concrete Dam and other structures, producing coarse and fine aggregate for concrete production and in fillings for developing areas for construction facilities

No. of proposed disposal area / (type o f land- Forest / Pvt land)	50 ha (Non Forest Land)	
Muck management plan	Will be provided in EIA report.	
Monitoring mechanism for Muck Disp osal Transportation	Project Proponent	
7. Land Area Breakup:		
Project Appurtenance	**Area (ha)**	
Private land (Submergence)	332.73 (Total Land required)	
Barrage construction land	-	
Forest land	Nil	
Proposed Rabi & Kharif irrigation Area	NA	
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	
National Park	No	
Wildlife Sanctuary	No	
9. Court Cases Details:		
Court Case	Nil	
Additional information (if any)	Nil	
10. Affidavit / Undertaking details:		
Affidavit/Undertaking		
Additional information (if any)	Nil	
11. Previous EC compliance and necessary approvals:		
Particulars	Letter No. and Date	
Certified EC compliance report (if applicable)	NA	

Status of Stage- I FC	NA
Additional detail (If any)	Nil
Is FRA (2006) done for FC-I	NA
12. Miscellaneous :	
Particulars	**Details**
Details of consultant	Enviro Infra Solutions Pvt.Ltd. Address: - 301, 302 & 305, SRBC, Sec.-9, Vasundhara, GZB-201012 Ph.: 0120-4151183 Email: eis@enviroinfrasolution.com
Project benefit	Pumped storage offers multiple benefits to a power system. In addition to providing energy storage, pumped storage can provide power immediately and can be rapidly adjusted to respond to changes in energy demands. These benefits are part of a large group of benefits, known as ancillary services
Status of other statutory clearance	NA
R&R details	The compensation for acquisition land would be paid to the respective land owners/ land titleholders as per the provisions of "Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013".

3.3.3. Deliberations by the committee in previous meetings

N/A

3.3.4. Deliberations by the EAC in current meetings

38.3.3 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 Koppolu Open loop Pumped Storage Project (2400 MW) in an area of 332.73 Ha located at Village Koppolu, Sub-district Kondapuram, District Y.S.R., Andhra Pradesh by M/s Chinta Green 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 proposed project is an open loop project as Gandikota reservoir as the lower reservoir and a newly proposed upper reservoir to be created by constructing a concrete gravity dam. The EAC also observed that the upper reservoir has FRL at EL 446.00 m and MDDL at EL 412.00 m with a

gross storage of 37.67 MCM and live storage of 36.78 MCM. The Gandikota reservoir, with FRL 212.00 m and MDDL 199.00 m, provides a live storage of 736.68 MCM. The live storage requirement for 2400 MW with 8 hours of generation is about 35.34 MCM.

The EAC noted that the total land requirement for the project is 332.73 ha, all of which is non-forest land. Water requirement during construction is 500 KLD (to be met from the river) and 300 KLD for domestic use (from ground water), reducing to 65 KLD in post-construction phase. The project cost is estimated at Rs. 11,024.63 crore. The powerhouse capacity is 2400 MW (8 units of 300 MW each) with an annual generation potential of 6657.60 MU.

The EAC noted that the total land required for the construction of various components and related works for Koppolu PSP is estimated to be around 332.73 hectares, all of which is non-forest land. The Project Proponent indicated that there is no Protected Area within 10 km of the proposed project.

The EAC observed that multiple projects are already under construction or have been commissioned in and around the proposed Gandikota Reservoir site. Accordingly, it is essential to conduct a cumulative impact assessment of the area, with particular emphasis on evaluating the impacts on sustainability of the reservoir and aquatic flora and fauna.

It has been observed that the Government of Andhra Pradesh, vide its order dated 30.06.2025, has allotted the project at Koppolu in Kondapuram Mandal, YSR Kadapa District to M/s Chinta Green Energy Pvt. Ltd. under the provisions of the AP Integrated Clean Energy Policy, 2024. The EAC noted that the capacity allotted by the Government of Andhra Pradesh is 360 MW, whereas the proposal submitted by the Project Proponent (PP) is for 2400 MW. The Committee opined that the PP shall obtain an amendment to the Government Order so as to reflect the project capacity as proposed in their application.

38.3.4 The EAC based on the information submitted and as presented during the meeting, recommended the proposal for grant of Specific ToR issued by the Ministry for Open Loop Pumped Storage Projects vide OM dated 14.08.2023 for conducting EIA study for proposed construction of the project for Koppolu Open loop Pumped Storage Project (2400 MW) in an area of 332.73 Ha located at Village Koppolu, Sub-district Kondapuram, District Y.S.R., Andhra Pradesh by M/s Chinta Green Energy Private Limited, under the provisions of EIA Notification, 2006, as amended along with the additional/specific ToR:

3.3.5. Recommendation of EAC

Recommended

3.3.6. Details of Terms of Reference

3.3.6.1. Specific

Miscellaneous:	
1.	Both capital and recurring expenditure under EMP shall be submitted.
2.	Approved Layout as per pre-DPR chapter duly approved by CEA/CWC 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.	Undertaking need to be submitted on affidavit stating that no activities has been started on the

	project site.
6.	Detailed plan to restore wider roads and convert them into narrow up to 10m after construction of the project.
7.	Specific Terms of Reference (ToRs) issued by the Ministry vide Office Memorandum No. F. No. IA3-22/33/2022-IA.III dated 14.08.2023 for Pumped storage projects shall be used for preparation of EIA/ EMP reports.
8.	As per Ministry's OM dated 1st August, 2013, PP shall submit application to obtain prior approval of Central Government under the Forest Conservation Act, 1980 for diversion of forest land required for such projects will be submitted as soon as the actual extent of forest land required for the project is known to the project proponent, and in 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.
Muck Management:	
1.	Details of quantity of muck generation component wise, types of muck (Excavation in tunnels, pressure shaft and powerhouse etc.) and disposal site/ transportation to be provided.
2.	Details of muck management such as dumping sites and its locations, transportation plan along with monitoring mechanism for muck transportation, detailing the road map of project construction site/ indicating the distances from HFL, river, project construction site along with types of road etc.
3.	Safety measures for avoiding spill over muck into the riverbed/streams and its flow into the river during the high discharge/ flood or monsoon period. Prepare plan for stabilization of muck disposal sites using biological and engineering measures to ensure that muck does not roll down the slopes and shall be disposed safely and that it does not pollute the natural streams and water bodies in surrounding area.
4.	Restoration plan for construction area including dumping site of excavated materials by levelling, filling up of burrow pits, landscaping etc.
Socio-economic Study:	
1.	Declaration by the project proponent by way of affidavit that "No" Inter-state issue/ policy issue is involved with any State in the project.
2.	All the tasks including conducting public hearing shall be done as per the provisions of EIA Notification, 2006 and as amended from time to time. 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.	PP shall submit the credible documents to show the status of land acquisition w.r.t project site from/through the concerned State Government as required under Ministry's OM dated 7th October, 2014 for the project land to be acquired.
4.	Land acquired for the project shall be suitably compensated in accordance with the law of the land with the prevailing guidelines. Private land (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.
Environmental Management and Biodiversity Conservation:	
1.	A detailed water balance chart shall be submitted indicating amount of water reservoir receive annually and the water be used for PSP operation along with loss of water through evaporation, so as to facilitate the discussion on sustainability of the reservoir.
2.	PP shall submit a detailed action plan for the survival or diversion of any rivulets or streams that may be impacted by the project, particularly those that flow into or join Gandikota reservoir. The action plan should include measures to ensure that these water bodies are adequately protected or diverted in a manner that does not negatively affect the overall hydrology of the area. The PP should also provide an assessment of potential environmental impacts on these streams and propose mitigation measures to minimize any adverse effects.
3.	PP shall submit the Water Utilization Mapping within a 10 km radius of the project for examining the impacts on sustainability of ecosystem of the region after withdrawal of water for proposed project.
4.	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.
5.	A detailed assessment shall be carried out to optimize and possibly reduce the land area earmarked for quarrying area.
6.	vi. Muck disposal site and other components such as Township, site office, Stacking area and batching plant shall be located outside the forest area.
7.	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.
8.	Transportation Plan for transporting construction materials shall be submitted.
9.	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.
10.	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.
11.	Calculation and values of GHGs (CO2, CH4 etc.) emissions during construction and during operation till the life of the project shall be estimated and submitted.
12.	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.

13.	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.
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.	Cumulative Impact of projects in the basin on carrying capacity and sustainability of Reservoir/ River /nala of catchment area shall be studied.
17.	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.
18.	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.
19.	Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP.
20.	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.
21.	Any archaeological sites in the vicinity of the project, if any, then it shall be certified by ASI.

3.3.6.2. Standard

1(c)	**River Valley/Irrigation projects**
Scope of EIA Study	
1.	The EIA Report should identify the relevant environmental concerns and focus on potential impacts that may change due to the construction of proposed project. Based on the baseline data collected for three (3) seasons (Pre-monsoon, Monsoon and Winter seasons), the status of the existing environment in the area and capacity to bear the impact on this should be analysed. Based on this analysis, the mitigation measures for minimizing the impact shall be suggested in the EIA/EMP study.
Details of the Project and Site	
1.	General introduction about the proposed project.

2.	Details of Project and site giving L-Sections of all U/S and D/S Projects with all relevant maps and figures. Connect such information as to establish the total length of interference of Natural River and the committed unrestricted release from the site of Dam/Barrage into the main river.
3.	A map of boundary of the project site giving details of protected areas in the vicinity of 25 km of project location.
4.	Location details on a map of the project area with contours indicating main project features. The project layout shall be superimposed on a contour map of ground elevation showing main project features (viz. location of dam, Head works, main canal, branch canals, quarrying etc.) shall be depicted in a scaled map.
5.	Layout details and map of the project along with contours with project components clearly marked with proper scale maps of at least 1:50,000 scale and printed at least on A3 scale for clarity.
6.	Existence of National Park, Sanctuary, Biosphere Reserve etc. in the study area, if any, should be detailed and presented on a map with distinct distances from the project components.
7.	Drainage pattern and map of the river catchment up to the proposed project site.
8.	Delineation of critically degraded areas in the directly draining catchment on the basis of Silt Yield Index as per the methodology of Soil and Land use Survey of India.
9.	Soil characteristics and map of the project area.
10.	Geological and Seismo-tectonic details and maps of the area surrounding the proposed project site showing location of dam site and canal sites.
11.	Remote Sensing studies, interpretation of satellite imagery, topographic sheets along with ground verification shall be used to develop the land use/land cover pattern of the study using overlaying mapping techniques viz. Geographic Information System (GIS), False Color Composite (FCC) generated from satellite data of project area.
12.	Land details including forests, private and other land.
13.	Demarcation of snow fed and rain fed areas for a realistic estimate of the water availability.
14.	Different riverine habitats like rapids, pools, side pools and variations in the river substratum bedrocks, rocks, boulders, sand/silt or clay etc. need to be covered under the study
Description of Environment and Baseline Data	
1.	To know the present status of environment in the area, baseline data with respect to environmental components air, water, noise, soil, land and biology & biodiversity (flora & fauna), wildlife, socioeconomic status etc. should be collected within 10 km radius of the main components of the project/site i.e. dam site and power house site. The air quality and noise are to be monitored at such locations which are environmentally & ecologically more sensitive in the study area. The baseline studies should be collected for 1 season (Preferably Monsoon season). Flora-Fauna in the catchment and command area should be documented. The study area should comprise of the following:
2.	(i) Catchment area up to the dam/barrage site.
3.	(ii) Submergence Area.
4.	(iii) Project area or the direct impact area should comprise of area within 10 km radius of the main project components like dam, canals etc.

5.	(iv) Downstream upto 10 km from the tip of the reservoir.
Details of the Methology	
1.	The methodology followed for collection of base line data along with details of number of samples and their locations in the map should be included. Study area should be demarcated properly on the appropriate scale map. Sampling sites should be depicted on map for each parameter with proper legends. For Forest Classification, Champion and Seth (1968) methodology should be followed.
Methodology for Collection of Biodiversity Data	
1.	The number of sampling locations should be adequate to get a reasonable idea of the diversity and other attributes of flora and fauna. The guiding principles should be the size of the study area (larger area should have larger number of sampling locations) and inherent diversity at the location, as known from secondary sources (e.g. eastern Himalayan and low altitude sites should have a larger number of sampling locations owing to higher diversity).
2.	The entire area should be divided in grids of 5kmX5km preferably on a GIS domain. There after 25% of the grids should be randomly selected for sampling of which half should be in the directly affected area (grids including project components such as reservoir, dam, powerhouse, tunnel, canal etc.) and the remaining in the rest of the area (areas of influence in 10 km radius form project components). At such chosen location, the size and number of sampling units (e.g. quadrates in case of flora/transects in case of fauna) must be decided by species area curves and the details of the same (graphs and cumulative number of species in a tabulated form) should be provided in the EIA report. Some of the grids on the edges may not be completely overlapping with the study area boundaries. However, these should be counted and considered for selecting 25% of the grids. The number of grids to be surveyed may come out as a decimal number (i.e. it has an integral and a fractional part) which should be rounded to the next whole number.
3.	The conventional sampling is likely to miss the presence of rare, endangered and threatened (r.e.t.) species since they often occur in low densities and in case of faunal species are usually secretive in behaviour. Reaching the conclusion about the absence of such species in the study area based on such methodology is misleading. It is very important to document the status of such species owing to their high conservation value. Hence likely presence of such species should be ascertained from secondary sources by a proper literature survey for the said area including referring to field guides which are now available for many taxonomic groups in India. Even literature from studies/surveys in the larger landscapes which include the study area for the concerned project must be referred to, since most species from adjoining catchments is likely to be present in the catchments in question. In fact such literature form the entire state can be referred to. Once a listing of possible r.e.t. species form the said area is developed, species specific methodologies should be adopted to ascertain their presence in the study area which would be far more conclusive as compared to the conventional sampling. If the need be, modern methods like camera trapping can be resorted to, particularly for areas in the eastern Himalayas and for secretive/nocturnal species. A detailed listing of the literature referred to, for developing lists of r.e.t. species should be provided in the EIA reports.The conventional sampling is likely to miss the presence of rare, endangered and threatened (r.e.t.) species since they often occur in low densities and in case of faunal species are usually secretive in behaviour. Reaching the conclusion about the absence of such species in the study area based on such methodology is misleading. It is very important to document the status of such species owing to their high conservation value. Hence likely presence of such species should be ascertained from secondary sources by a proper literature survey for the said area including referring to field guides which are now available for many taxonomic groups in India. Even literature from studies/surveys in the larger landscapes which include the study area for the concerned project must be referred to, since most species from adjoining catchments is likely to be present in the catchments in question. In fact such literature form the entire state can be referred to. Once a listing of possible r.e.t. species form the said area is developed, species specific methodologies should be adopted to ascertain their presence in the study area which would be far more conclusive as compared to the conventional sampling. If the need be, modern methods like camera trapping can be resorted to, particularly for areas in the eastern Himalayas and for secretive/nocturnal species. A detailed listing of the literature referred to, for developing lists of r.e.t. species should be provided in the EIA reports.
4.	The R.E.T. species referred to in this point should include species listed in Schedule I and II of Wildlife (Protection) Act, 1972 and those listed in the red data books (BSI, ZSI and IUCN).
Components of the EIA Study: Various aspects to be studied and provided in the EIA/EMP report are as follow	

s:	
1.	null
2.	null
3.	Physical geography, Topography, Regional Geological aspects and structure of the Catchment.
4.	Tectonics, seismicity and history of past earthquakes in the area. A site specific study of the earthquake parameters will be done. The results of the site specific earthquake design shall be sent for approval of the NCSDP (National Committee of Seismic Design Parameters, Central water Commission, New Delhi for large dams.
5.	Landslide zone or area prone to landslide existing in the study area should be examined.
6.	Presence of important economic mineral deposit, if any.
7.	Justification for location & execution of the project in relation to structural components (dam /barrage height).
8.	Impact of project on geological environment.
9.	null
10.	Meteorology (viz. Temperature, Relative humidity, wind speed/direction etc.) to be collected from nearest IMD station.
11.	Ambient Air Quality with parameters viz. Suspended Particulate Matter (SPM), Respirable Suspended Particulate Matter (RSPM) i.e. suspended particulate materials < 10 microns, Sulphur dioxide (SO2) and Oxides of Nitrogen (NOX) in the study area at 5-6 Locations.
12.	Existing Noise Levels and traffic density in the study area at 5-6 Locations.
13.	null
14.	Soil classification, physical parameters (viz., texture, Porosity, Bulk Density and water holding capacity) and chemical parameters (viz. pH, electrical conductivity, magnesium, calcium, total alkalinity, chlorides, sodium, potassium, organic carbon, available potassium, available phosphorus, SAR, nitrogen and salinity, etc.) at @ one sample/ha of command area.
15.	null
16.	(i) Generation of thematic maps viz, slope map, drainage map, soil map, land use and land cover map, etc. Based on these, thematic maps, an erosion intensity map should be prepared.
17.	null
18.	History of the ground water table fluctuation in the study area.
19.	Water quality for both surface water and ground water for (i) Physical parameters (pH, temperature, electrical conductivity, TSS); (ii) Chemical parameters (Alkalinity, Hardness, BOD, COD, NO2, PO4, CI, SO4, Na, K, Ca, Mg, Silica, Oil & Grease, phenolic compounds, residual sodium carbonate); (iii) Bacteriological parameter (MPN,

	Total coliform) and (iv) Heavy Metals (Pb, As, Hg, Cd, Cr-6, total Cr, Cu, Zn, Fe) (6 locations).
20.	Delineation of sub and micro-watersheds, their locations and extent based on the All India Soil and Land Use Survey of India (AISLUS), Department of Agriculture, Government of India. Erosion levels in each micro-watershed and prioritization of micro-watershed through silt yield index (SYI) method of AISLUS
21.	Hydro-Meteorology of the project viz. precipitation (snowfall, rainfall), temperature, relative humidity, etc. Hydro-meteorological studies in the catchment area should be established along-with real time telemetry and data acquisition system for inflows monitoring.
22.	Run off, discharge, water availability for the project, sedimentation rate, etc.
23.	Basin characteristics
24.	Catastrophic events like cloud bursts and flash floods, if any, should be documented.
25.	For estimation of Sedimentation Rate, direct sampling of river flow is to be done during the EIA study. The study should be conducted for minimum one year. Actual silt flow rate to be expressed in ha-m km2 year-1.
26.	Set up a G&D monitoring station and a few rain gauge stations in the catchment area for collecting data during the investigation.
27.	Flow series, 10 daily with 90%, 75% and 50% dependable years discharges.
28.	Information on the 10-daily flow basis for the 90 per cent dependable year the flow intercepted at the dam, the flow diverted to the power house and the spill comprising the environmental flow and additional flow towards downstream of the dam for the project may be given.
29.	The minimum environmental flow shall be 20% of the flow of four consecutive lean months of 90% dependable year, 30% of the average monsoon flow. The flow for remaining months shall be in between 20-30%, depending on the site specific requirements. A site specific study shall be carried out by an expert organization.
30.	Sedimentation data available with CWC may be used to find out the loss in storage over the years.
31.	Hydrological studies/data as approved by CWC shall be utilized in the preparation of EIA/EMP report. Actual hydrological annual yield may also be given in the report. Sedimentation data available with CWC may be used to find out the loss in storage over the years.
32.	A minimum of 1 km distance from the tip of the reservoir to the tail race tunnel should be maintained between upstream and downstream projects.
33.	Besides primary studies, review of secondary data/literature published for project area on flora & fauna including RET species shall be reported in EIA/EMP report.
34.	null
35.	Characterization of forest types (as per Champion and Seth method) in the study area and extent of each forest type as per the Forest Working Plan.
36.	Documentation of all plant species i.e. Angiosperm, Gymnosperm, Pteriodophytes, Bryophytes (all groups).

37.	General vegetation profile and floral diversity covering all groups of flora including lichens and orchids. A species wise list may be provided.
38.	Assessment of plant species with respect to dominance, density, frequency, abundance, diversity index, similarity index, importance value index (IVI) , Shannon Weiner index etc. of the species to be provided. Methodology used for calculating various diversity indices along with details of locations of quadrates, size of quadrates etc. to be reported within the study area in different ecosystems.
39.	Existence of National park, Sanctuary, Biosphere Reserve etc in the study area, if any, should be detailed.
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
45.	Fauna study and inventorisation should be carried out for all groups of animals in the study area. Their present status alongwith Schedule of the species.
46.	Documentation of fauna plankton (phyto and zooplankton), periphyton, benthos and fish should be done and analysed.
47.	Information (authenticated) on Avi-fauna and wildlife in the study area.
48.	Status of avifauna their resident/ migratory/ passage migrants etc.
49.	Documentation of butterflies, if any, found in the area.
50.	Details of endemic species found in the project area.
51.	RET species-voucher specimens should be collected along-with GPS readings to facilitate rehabilitation. RET faunal species to be classified as per IUCN Red Data list and as per different schedule of Indian Wildlife (Protection) Act, 1972.
52.	Existence of barriers and corridors, if any, for wild animals.
53.	Compensatory afforestation to compensate the green belt area that will be removed, if any, as part of the proposed project development and loss of biodiversity.
54.	Collection of primary data on agricultural activity, crop and their productivity and irrigation facilities components.

55.	For categorization of sub-catchment into various erosion classes and for the consequent CAT plan, the entire catchment (Indian Portion) is to be considered and not only the directly the draining catchment.
56.	Documentation of aquatic fauna like macro-invertebrates, zooplankton, phytoplantktons, benthos etc.
57.	Fish and fisheries, their migration and breeding grounds.
58.	Fish diversity composition and maximum length & weight of the measured populations to be studies for estimation of environmental flow.
59.	Conservation status of aquatic fauna.
60.	Sampling for aquatic ecology and fisheries and fisheries must be conducted during three seasons Pre-monsoon (summer), monsoon and winter. Sizes (length & weight) of important fish species need to be collected and breeding and feeding grounds should also be identified along the project site or in vicinity.
61.	Collection of baseline data on human settlements, health status of the community and existing infrastructure facilities for social welfare including sources of livelihood, job opportunities and safety and security of workers and surroundings population.
62.	Collection of information with respect to social awareness about the developmental activity in the area and social welfare measures existing and proposed by project proponent.
63.	Collection of information on sensitive habitat of historical, cultural and religious and ecological importance.
64.	The socio-economic survey/ profile within 10 km of the study area for demographic profile; Economic Structure; Developmental Profile; Agricultural Practices; Infrastructure, education facilities; health and sanitation facilities; available communication network etc.
65.	Documentation of demographic, Ethnographic, Economic Structure and development profile of the area.
66.	Information on Agricultural Practices, Cultural and aesthetic sites, Infrastructure facilities etc.
67.	Information on the dependence of the local people on minor forest produce and their cattle grazing rights in the forest land.
68.	List of all the Project Affected Families with their name, age, educational qualification, family size, sex, religion, caste, sources of income, land & house holdings, other properties, occupation, source of income, house/land to be acquired for the project and house/land left with the family, any other property, possession of cattle, type of house etc.
69.	Special attention has to be given to vulnerable groups like women, aged persons etc. and to any ethnic/indigenous groups that are getting affected by the project.
Impact Prediction and Mitigation Measures	
1.	The adverse impact due to the proposed project should be assessed and effective mitigation steps to abate these impacts should be described.
2.	Changes in ambient and ground level concentrations due to total emissions from point, line and area sources.

3.	Effect on soil, material, vegetation and human health.
4.	Impact of emissions from DG set used for power during the construction, if any, on air environment.
5.	Pollution due to fuel combustion in equipments and vehicles
6.	Fugitive emissions from various sources
7.	Changes in surface and ground water quality
8.	Steps to develop pisci-culture and recreational facilities
9.	Changes in hydraulic regime and downstream flow.
10.	Water pollution due to disposal of sewage
11.	Water pollution from labour colonies/ camps and washing equipment.
12.	Adverse impact on land stability, catchment of soil erosion, reservoir sedimentation and spring flow (if any) (a) due to considerable road construction / widening activity (b) interference of reservoir with the inflowing stream (c) blasting for commissioning of HRT, TRT and some other structures.
13.	Changes in land use / land cover and drainage pattern
14.	Immigration of labour population
15.	Quarrying operation and muck disposal
16.	Changes in land quality including effects of waste disposal
17.	River bank and their stability
18.	Impact due to submergence.
19.	Impact on forests, flora, fauna including wildlife, migratory avi-fauna, rare and endangered species, medicinal plants etc.
20.	Pressure on existing natural resources
21.	Deforestation and disturbance to wildlife, habitat fragmentation and wild animal's migratory corridors
22.	Compensatory afforestation-identification of suitable native tree species for compensatory afforestation and green belt.
23.	Impact on fish migration and habitat degradation due to decreased flow of water

24.	Impact on breeding and nesting grounds of animals and fish.
25.	Impact on local community including demographic profile.
26.	Impact on socio-economic status
27.	Impact on economic status.
28.	Impact on human health due to water / vector borne disease
29.	Impact on increase traffic
30.	Impact on Holy Places and Tourism
31.	Impacts of blasting activity during project construction which generally destabilize the land mass and leads to landslides, damage to properties and drying up of natural springs and cause noise population will be studies. Proper record shall be maintained of the baseline information in the post project period.
32.	Positive and negative impacts likely to be accrued due to the project are listed.
Environmental Management Plan	
1.	null
2.	Biodiversity and Wildlife Conservation and Management Plan for the conservation and preservation of rare, endangered or endemic floral/faunal species or some National Park/Sanctuary/ Biosphere Reserve or other protected area is going to get affected directly or indirectly by construction of the project, then suitable conservation measures should be prepared in consultation with the State Forest Department and with the physical and financial details. Suitable conservation techniques (in-situ/ ex-situ) will be proposed under the plan and the areas where such conservation is proposed will be marked on a project layout map.
3.	Compensatory Afforestation shall be prepared by the State Forest Department in lieu of the forest land proposed to be diverted for construction of the project as per the Forest (Conservation) Act, 1980. Choice of plants for afforestation should include native and RET species, if any. This will be a part of the forest clearance proposal.
4.	Fisheries Conservation and Management Plan - a specific fisheries management measures should be prepared for river and reservoir. If the construction of fish ladder/ fish-way etc. is not feasible then measures for reservoir fisheries will be proposed. The plan will detail out the number of hatcheries, nurseries, rearing ponds etc. proposed under the plan with proper drawings. If any migratory fish species is getting affected then the migratory routes, time/season of upstream and downstream migration, spawning grounds etc will be discussed in details.
5.	Green Belt Development Plan along the periphery of the reservoir, approach roads around the colonies and other project components, local plant species must be suggested with physical and financial details. A layout map showing the proposed sites for developing the green belt should be prepared.
6.	Environmental Monitoring Programme to monitor the mitigatory measures implemented at the project site is required will be prepared. Provision for Environment Management Cell should be made. The plan will spell out the aspects required to be monitored, monitoring indicators/parameters with respect to each aspect and the agency responsible for the monitoring of that particular aspect throughout the project implementation.

7.	Catchment Area Treatment (CAT) Plan should be prepared micro-watershed wise. Identification of free draining/ directly draining catchment based upon Remote Sensing and Geographical Information System (GIS) methodology and Sediment Yield Index (SYI) method of AISLUS, Deptt. of Agriculture, Govt. of India coupled with ground survey. Areas or watersheds falling under 'very severe' and 'severe' erosion categories should be provided and required to be treated. Both biological as well as engineering measures should be proposed in consultation with State Forest Department for areas requiring treatment. Year-wise schedule of work and monetary allocation should be provided. Mitigation measures to check shifting cultivation in the catchment area with provision for alternative and better agricultural practices should be included.
8.	Study of Design Earthquake Parameters: A site specific study of earthquake parameters should be done. Results of the site specific earthquake design parameters should be approved by National Committee of Seismic Design Parameters, Central Water Commission (NCSDP), New Delhi.
9.	Dam Break Analysis and Disaster Management Plan The outputs of dam break model should be illustrated with appropriate graphs and maps clearly bringing out the impact of Dam Break scenario. To identify inundation areas, population and structures likely to be affected due to catastrophic floods in the event of dam failure. DMP will be prepared with the help of Dam Break Analysis. Maximum water level that would be attained at various points on the downstream in case of dam break will be marked on a detailed contour map of the downstream area, to show the extent of inundation. The action plan will include Emergency Action and Management plan including measures like preventive action notification, warning procedure and action plan for co-ordination with various authorities.
10.	Reservoir Rim Treatment Plan for stabilization of land slide / land slip zones, if any, around the reservoir periphery is to be prepared based on detailed survey of geology of the reservoir rim area. Suitable engineering and biological measures for treatment of identified slip zones to be suggested with physical and financial schedule. Layout map showing the landslide/landslip zones shall be prepared and appended in the chapter.
11.	Muck Disposal Plan- suitable sites for dumping of excavated material should be identified in consultation with the State Pollution Control Board and Forest Department. All Muck disposal sites should be minimum 30 m away from the HFL of river. Plan for rehabilitation of muck disposal sites should also be given. The L- section/ cross section of muck disposal sites and approach roads to be given. Financial out lay for this may be given separately. Deatailed muck transportation plan delinating the path ways, number of trucks, quantity of muck to be transportated along with monitoring mechanism using latest technology, shall be prepared.
12.	Restoration Plan for Quarry Sites and landscaping of colony areas, working areas, roads etc. Details of the coarse/fine aggregate/clay etc. required for construction of the project and the rock/clay quarries/river shoal sites identified for the project should be discussed along-with the Engineering and Biological measures proposed for their restoration with physical and financial details. Layout map showing quarry sites vis-à-vis other project components, should be prepared.
13.	Resettlement and Rehabilitation Plan needed to be prepared on the basis of findings of the socio- economic survey coupled with the outcome of public consultation held. The R&R package shall be prepared after consultation with the representatives of the project affected families and the State Government. Detailed budgetary estimates are to be provided. Resettlements site should be identified. The plan will also incorporate community development strategies.
14.	Public Health Delivery Plan including the provisions of drinking water supply for local population shall be in the EIA/EMP Report. Status of the existing medical facilities in the project area shall be discussed. Possibilities of strengthening of existing medical facilities, construction of new medical infrastructure etc. will be explored after assessing the need of the labour force and local populace.
15.	Local Area Development Plan to be formulated in consultation with the Revenue Officials and Village Pancahayats. Appropriate schemes shall be prepared under EMP for the Local Area Development Plan with sufficient financial provisions.
16.	Labour Management Plan for their Health and Safety.
1	Sanitation and Solid waste management plan for domestic waste from colonies and labour camps etc.

7.	
18.	Energy Conservation Measures for the work force during construction with physical and financial details. Alternatives will be proposed for the labour force so that the exploitation of the natural resource (wood) for the domestic and commercial use is curbed.
19.	Environmental safeguards during construction activities including Road Construction.
20.	A summary of Cost Estimates for all the plans, cost for implementing all the Environmental Management Plans.
21.	Water, Air and Noise Management Plans to be implemented during construction and post-construction periods.

3.4. Agenda Item No 4:

3.4.1. Details of the proposal

REWA OFF-STREAM CLOSED LOOP PUMPED STORAGE PROJECT by **DHAKARA ENERGY PSP PRIV ATE LIMITED** located at **REWA,MADHYA PRADESH**			
Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/MP/RIV/546804/2025	J-12011/35/2025-IA.I(R)	18/08/2025	River Valley/Irrigation project s (1(c))

3.4.2. Project Salient Features

null

3.4.3. Deliberations by the committee in previous meetings

N/A

3.4.4. Deliberations by the EAC in current meetings

The PP vide email dated 25.08.2025 informed that due to the non-availability of Senior Management, they will be unable to attend the scheduled meeting on 29th August 2025, therefore requested to deferred the proposal.

3.4.5. Recommendation of EAC

Deferred for PP not attending the meeting

3.5. Agenda Item No 5:

3.5.1. Details of the proposal

Sonpura Major Micro Irrigation Project by **PROJECT MANAGER (Executive Engineer)** located at **SHIVPURI, MADHYA PRADESH**			
Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/MP/RIV/548026/2025	J-12011/33/2025-IA.I(R)	19/08/2025	River Valley/Irrigation projects (1(c))

3.5.2. Project Salient Features

38.5.1 The proposal is for grant of Terms of References (ToR) to the project for Sonpura Major Micro Irrigation Project (CCA: 19410 Ha) in an area of 1042.9Ha Village Akhai Mahadev, Panwari, Parnakheri & Garkatu etc., Sub-district Badarwas, Kolaras & Guna, District Shivpuria and Guna, Madhya Pradesh by M/s Water Resources Department, Government of Madhya Pradesh.

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

i. Sonpura Major Micro Irrigation Project is proposed on river Karai, a tributary of Kuno river near village Sonpura, tehsil Kolaras, district Shivpuri at just upstream of Rajasthan state boundary.

ii. The dam is located at 25°06’24” Latitude and 77°24’10” Longitude. The catchment area up to the dam location is 378.37 sq km. As per Rainfall Runoff relationship of Kuno river basin the 75% dependable yield at the dam site is 72.27 MCM.

iii. The proposed top level of dam is 384.00 m with a maximum height of 31.0 m. The project will provide irrigation in 19410 ha of CCA on U/S of proposed dam on left and right flank of Karari river. The irrigation benefits will include Rabi irrigation in 19410 ha. Total 92 villages of Kolaras and Badarwas tehsil of Shivpuri District and Guna tehsil of Guna district shall be benefitted due to this project.

iv. The project comprises of four main components namely Head works (Dam with Central spillway & appurtenant works), Pump House Distribution chamber and Pressurized Canal works. The project constitutes of 1910 m long dam with a maximum height of 31 m with 1748 m long earthen section on either side of the dam portion; 99 m long central spillway & 62 m NOF including key wall (on both side) with 06 Nos radial gates of size 13.00 m * 12.00 m with a maximum discharging capacity of 6632.03 Cumec; pressurized pipe system of approx.. 104.16 km (Only Rising Mains & Gravity Mains) with micro network system.

v. Sonpura Major Micro Irrigation Project proposed by the Water Resources Department, Govt. of M.P. is a part of Modified Parbati-Kalisindh-Chambal (MKPC) Link Project. The project is part of the National Perspective Plan (NPP) of interlinking of rivers in the country, as approved by Special Committee of Interlinking of Rivers (SCILR) in its 20th meeting held on 13th December, 2022. Govt. of India and the States of Madhya Pradesh and Rajasthan have agreed for interlinking the rivers of Chambal basin for optimum utilization of water resources in the basin. Memorandum of Agreement (MoA) amongst the State of Rajasthan, the State of Madhya Pradesh and the Union Government on the MKPC Link Project has been signed on 05th December 2024.

vi. National Water Development Agency (NWDA) in consultation with both the States, Task Force of ILR and Central Water Commission (CWC) have evolved a Comprehensive Plan for the optimum utilization of water resources in the Chambal basin for the benefits of both the States.

vii. **Land requirement:** The estimated land required is 1042.90 ha. of the total land required, 615.14 ha is forest land, 179.23 ha is private land and the rest 248.53 ha is Govt. land.

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

- The proposed dam site is across the Karai river near Sonpura village, Tehsil Kolaras, District Shivpuri, Madhya Pradesh. The surrounding villages of the project such as Kotari, Basai, Rasoi, Haryal, Sewan, Damua, Madanpur, Badera, Jabargarh and Sonpura are mostly small rural settlements. Damua and Jabargarh villages are un-inhabited villages.
- Tribal habitation is present in limited proportion, with the majority of the population belonging to Scheduled Castes, Other Backward Classes (OBCs), and general communities. The main tribal group in the area is the Sahariya tribe, which is found in Sonpura, Badera, and other surrounding villages within the project area.
- The primary occupations in the area are agriculture, animal husbandry, and daily wage labor, with farming mainly dependent on rainfall. The tribal communities in the project area also depend on forests for their livelihood.
- Overall socio-economic conditions are modest, with limited infrastructure, and people depend mainly on natural resources for their livelihood.

Village	Households	Total Population	Male	Female	Scheduled Caste	Scheduled Tribe
Basai	158	742	387	355	18	527
Sonpura	211	854	482	372	249	345
Kotri	22	8	5	3	0	0
Rasoi	50	225	128	97	0	0
Haryal	16	71	39	32	0	0
Sewan	98	434	236	198	1	0
Badera	84	412	203	209	55	168
Madanpur	140	609	331	278	0	430

ix. **Water requirement:** 69.29 MCM

x. **Project Cost:** The estimated project cost is **Rs. 855.30 Crore**.

xi. **Project Benefit:** On completion of the Project, irrigation facility will be provided in 19410 ha of CCA in 92 villages of Kolaras and Badarwas tehsil of district Shivpuri and Guna tehsil of district Guna by laying underground pipeline. Other incidental benefits includes recharge of ground water in command area, development of agro based industries/food processing units, marginal activities and jobs to the locals during the construction phase, local area development, facilities in education, medical, transportation, road network and other infrastructure.

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. River Karai is flowing at a distance of 0 km in western direction.

xiii. **MoU / any other clearance/ permission signed with State government:** Administrative Approval by Govt. of Madhya Pradesh vide Letter No. F 22 (A) 198/2024/MPS/31/1488 dated 31/12/2024.

xiv. **Alternative Studies:**

Three different alternatives were studied for the finalization of alignment of dam site.

PROPOSED SITE

The proposed dam alignment is estimated to have a submergence area of 1023.65 hectares and a catchment area of 378.37 square kilometers, with a total water storage capacity of 70.0 million cubic meters. The available water storage capacity would enable irrigation in an area of 19,410 hectares. Owing to the optimal utilization of available water resources and the relatively lower ratio of submergence area to irrigable area, this proposed dam alignment is deemed technically and financially feasible, making it a more viable option compared to the alternative alignments.

ALTERNATE DAM LINE NO 1

The Alternative Dam Alignment 1 is located 2.81 kilometers upstream of the finally selected dam alignment. The proposed Alternative dam would have a catchment area of 355.15 square kilometers. The total water storage capacity at this alternative dam site would be 28.70 MCM (Million Cubic Meters). However, due to the non-utilization of the total available water quantity of 67.83 MCM at the dam site, irrigation would only be possible in an area of 7,650 hectares. Given the non-utilization of available water and the higher ratio of submergence area to irrigable area compared to the finally selected dam alignment, this alternative is not technically and financially viable.

ALTERNATE DAM LINE NO 2

The Alternative Dam Alignment 2 is located 1.42 kilometers upstream of the finally selected dam alignment. The proposed Alternative dam would have a catchment area of 359.07 square kilometers. The total water storage capacity at this alternative dam site would be 32.27 MCM (Million Cubic Meters). However, due to the non-utilization of the total available water quantity of 68.58 MCM at the dam site, irrigation would only be possible in an area of 8,860 hectares. Given the non-utilization of available water and the higher ratio of submergence area to irrigable area compared to the finally selected dam alignment, this alternative is not technically and financially viable.

As per above, proposed site is best suitable, economical / feasible as per department norms. A map showing the location of different alternatives considered is given below. Table showing the analysis of alternatives considered is also given below.

S. No.	Particular	Proposed Site	Alternate-1(A)	Alternate-2(B)
1	**General**			
	Type of Project	Irrigation	Irrigation	Irrigation
	Latitude	$25^0$06’24”	$25^0$05’39.37”	$25^0$06’4.40”
	Longitude	$77^0$24’10”	$77^0$25’37.70”	$77^0$24’59.34”
	Location	Near Village Sonpura	Near Village Sonpura	Near Village Sonpura
	River Basin	Chambal river Basin	Chambal river Basin	Chambal river Basin
	Located on river	Karai	Karai	Karai
	Tehsil	Kolaras	Kolaras	Kolaras
	District	Shivpuri	Shivpuri	Shivpuri
	State	Madhya Pradesh	Madhya Pradesh	Madhya Pradesh
2	**Hydrology**			

	Catchment Area (Sq.Km.)	378.37	355.15	359.07
	Intercepted Catchment Area (Sq.Km.)	0.0	0.0	0.0
	Net Catchment Area (Sq.Km.)	378.37	355.15	359.07
	Available Annual Yield at Da m Site (Mcum/Sq.KM)	0.191	0.191	0.191
	Storage Capacity (Mcum)	70.00	28.70	32.27
3	**Design Irrigation (ha)**	19410	7650	8860
4	**Submergence Ratio**	5.27	6.41	6.05
	Techno Economical Feasibili ty	Economical / feasible with minimum sub mergence rati o and fully uti lization of av ailable yield.	Not feasible d ue to higher s ubmergence r atio and non utilization of available yiel d.	Not feasible d ue to higher s ubmergence r atio and non utilization of available yiel d.

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

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

Name of the Proposal	Sonpura Major Micro Irrigation Project (CCA: 19410 Ha)
Location (Including Coordinates)	Dam site is proposed on river Karai, a tributary of Kuno rive r near village Sonpura, tehsil Kolaras, district Shivpuri, Mad hya Pradesh at Latitude 25˚06’24” N, Longitude 77˚24’10” E
Inter- state issue involved	Yes (Rajasthan border is just 0.36 km downstream of dam si te)
Seismic zone	II
Category of the project	A
Provisions	General condition apply
Capacity / Cultural command area (CCA)	19410 ha
Attracts the General Conditions (Yes/No)	Yes
Additional information (if any)	-
Cost of project	Rs. 855.30 Cr.

Total area of Project	1042.90 ha
Height of Dam from River Bed (EL)	31.0 m
Length of Tunnel/Channel	104.16 km (Only Rising Mains & Gravity Mains)
Details of Submergence area	1023.65 ha. (595.89 ha is Forest Land, 248.53 ha i s Govt. Land and 179.23 ha is Private Land)
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	E-Flow will be released as per NGT order dated 9t h August 2017 (Original Application No. 498 of 2 015 [M.A. No. 628/2016])
Is Projects earlier studies in Cumulative Impa ct assessment & Carrying Capacity studies (C IA&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 B asin. b) If not the E-Flows maintain criteria for s ustaining river ecosystem.	No E-Flow will be released as per NGT order dated 9t h August 2017 (Original Application No. 498 of 2 015 [M.A. No. 628/2016])

Private land	179.23 ha
Government land	248.53 ha
Forest Land	615.14 ha
Total Land	1042.90 ha
Submergence area/Reservoir area	1023.65 ha.
Additional information (if any)	-

Forest Land/ Protected Area/ Envir onmental Sensitivity Zone	**Yes/ No**	**Details of Certificate/ letter/ Remarks**
Reserve Forest/ Protected Forest Land	No	Yet to be obtained
National Park	No	
Wildlife Sanctuary	No	

Court Case	No
Additional information (if any)	-

Particulars	Letter no. and date
Certified EC compliance report (if applicable)	Not Applicable
Status of Stage- I FC	Yet to Apply
Additional detail (If any)	Nil
Is FRA (2006) done for FC-I	Yet to Apply

Particulars	Details
Details of consultant	M/s. R S Envirolink Technologies Pvt. Ltd. (RSET) (NABET Accredited Consultant Organization) Certificate No : NABET/EIA/25-28/RA 0415 Validity : August 15, 2028 Contact Person : Mr. Ravinder Bhatia Name of Sector : River Valley Projects Category : A MoEF&CC Schedule : 1(c) Address : 403, Bestech Chambers, Block-B, Sushant Lok Phase I, Sector 43, Gurugram, Haryana - 122009 E-mail : ravi@rstechnologies.co.in Land Line : (0124) 4295383 Cellular : (+91) 9810136853
Project Benefits	On completion of the Project the following benefits can be derived: • Irrigation facility will be provided in 19410 ha of CCA in 92 villages of Kolaras and Badarwas tehsil of district Shivpuri and Guna tehsil of district Guna by laying underground pipeline. • Recharge of ground water in command area. • Development of agro based industries/food processing units. • 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.
Status of other statutory clearances	Under process
R&R details	The process of R&R is yet to be initiated. Detailed R&R plan will be Provided in EIA/EMP report
Additional detail (If any)	Nil

3.5.3. Deliberations by the committee in previous meetings

N/A

3.5.4. Deliberations by the EAC in current meetings

The EAC during deliberations noted the following:

The EAC deliberated on the information submitted (Form 1, PFR, kml file, etc.) and as presented in the meeting and observed that the proposal is for grant of TOR for conducting EIA study for Sonpura Major Micro Irrigation Project (CCA: 19410 Ha) in an area of 1042.9Ha Village Akhai Mahadev, Panwari, Parnakheri & Garkatu etc., Sub-district Badarwas, Kolaras & Guna, District Shivpuria and Guna, Madhya Pradesh by M/s Water Resources Department, Government of Madhya 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: 19410 Ha). However, the location of the project is 0.36 km away from Rajasthan State Boundary, hence, it requires appraisal at the Central level by the Expert Appraisal Committee (EAC).
The EAC observed that the proposed Sonpura Major Micro Irrigation Project by the Water Resources Department, Government of Madhya Pradesh is a part of the Modified Parbati-Kalisindh-Chambal (MKPC) Link Project. The project forms part of the National Perspective Plan (NPP) on interlinking of rivers, as approved by the Special Committee of Interlinking of Rivers (SCILR) during its 20th meeting held on 13th December, 2022.The Government of India, along with the States of Madhya Pradesh and Rajasthan, has agreed to interlink the rivers of the Chambal basin to ensure optimum utilization of water resources within the basin. Further, a Memorandum of Agreement (MoA) on the MKPC Link Project was signed between the State of Rajasthan, the State of Madhya Pradesh, and the Union Government on 05th December, 2024.

The Committee observed that in the PFR submitted to the Ministry on the PARIVESH portal, the total land requirement for the project was stated as 1042.90 ha, consisting of 615.14 ha of Forest Land, 248.53 ha of Government Land, and 179.23 ha of Private Land. the total submergence area was indicated as 1023.65 ha (Forest land 595.89 ha., Government land 248.53 ha and Private land 179.23 ha. Diversion of forest land for non-forest purpose will be involved for construction of proposed project. However, it was further 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 Proponent indicated that there is no Protected Area within 10 km of the proposed project.

The EAC noted that the Detailed Project Report (DPR) of the Parbati-Kalisindh-Chambal (MKPC) Link Project has been approved by the Central Water Commission (CWC); however, the Techno-Economic Clearance (TEC) of the proposed project is still pending with the Central Water Commission (CWC).

The EAC noted that the Parbati-Kalisindh-Chambal (MKPC) Link Project includes the Eastern Rajasthan Canal Project (ERCP), under which certain litigation is pending. Accordingly, the EAC advised the Project Proponent (PP) to submit an undertaking confirming that no court case is pending in respect of the proposed project. In compliance, the PP, vide email dated 29.08.2025, submitted an affidavit dated 29.08.2025 certifying that no court case is pending against the Sonpura Major Micro Irrigation Project. It was further certified that no matter related to this project is sub-judice before any court of law.

38.5.4 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 Sonpura Major Micro Irrigation Project (CCA: 19410 Ha) in an area of 1042.9Ha Village Akhai Mahadev, Panwari, Parnakheri & Garkatu etc., Sub-district Badarwas, Kolaras & Guna, District Shivpuria and Guna, Madhya Pradesh by M/s Water Resources Department, Government of Madhya Pradesh, under the provisions of EIA Notification, 2006, as amended along with the additional/specific ToR.

3.5.5. Recommendation of EAC

Recommended

3.5.6. Details of Terms of Reference

3.5.6.1. 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.
Muck Management:	
1.	Details of quantity of muck generation component wise and disposal site along with transportation plan and its monitoring to be provided.
2.	Details of Muck Management plan prepared along with estimated cost incorporated in EIA/EMP report.
3.	Techno-economic viability of the project must be recommended from CWC.
Socio-economic Study:	
1.	Public Health Delivery Plan including the provisions of drinking water supply for local population shall be in the EIA/EMP Report. Status of the existing medical facilities in the project area shall be discussed. Possibilities of strengthening of existing medical facilities, construction of new medical infrastructure etc. will be explored after assessing the need of the labour force and local population.
2.	Declaration by the Project Proponent by way of affidavit that "No" Inter-state issue/ policy issue is involved with any State in the project.
3.	All the tasks including conducting public hearing shall be done as per the provisions of EIA Notification, 2006 and as amended from time to time. Public hearing issues raised and compliance of

	the same shall be incorporated in the EIA/ EMP report in the relevant chapter.
4.	Statement on the commitments (activity-wise) made during public hearing to facilitate the discussion on the CER in compliance of the Ministry's OM F. No. 22- 65/2017- IA.III dated 30th September, 2020 shall be submitted.
5.	Tentative no. of project affected families shall be identified and accordingly appropriate Rehabilitation & Resettlement plan shall be prepared.
6.	Details of settlement in 10 km area shall be submitted.
Environmental Management and Biodiversity Conservation:	
1.	PP shall submit comments of Cheetah Steering committee regarding the project.
2.	Prepare Wildlife conservation plan with mitigation measures for minimizing the human–animal conflict and be suitably incorporated in the wildlife conservation plan in consultation with reputed government expert institute and State Forest Department.
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 generation of hydro power 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.	A detailed wildlife conservation plan for Schedule –I species, duly approved by the Chief Wildlife Warden, be submitted.
8.	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.
9.	Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP.
10.	Explore the possibilities for reducing the Forest land requirement. The application for obtaining Stage I FC for 615.14 ha of forest land involved in the project shall be submitted within stipulated time.
11.	Muck disposal site and other components such as Township, site office, Stacking area and batching plant shall be located outside the forest area.

12.	PP shall prepare detailed plan for Plantation of saplings under the tree plantation campaign "Ek Ped Ma Ke Naam".

3.5.6.2. Standard

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

Description of Environment and Baseline Data	
1.	To know the present status of environment in the area, baseline data with respect to environmental components air, water, noise, soil, land and biology & biodiversity (flora & fauna), wildlife, socioeconomic status etc. should be collected within 10 km radius of the main components of the project/site i.e. dam site and power house site. The air quality and noise are to be monitored at such locations which are environmentally & ecologically more sensitive in the study area. The baseline studies should be collected for 1 season (Preferably Monsoon season). Flora-Fauna in the catchment and command area should be documented. The study area should comprise of the following:
2.	(i) Catchment area up to the dam/barrage site.
3.	(ii) Submergence Area.
4.	(iii) Project area or the direct impact area should comprise of area within 10 km radius of the main project components like dam, canals etc.
5.	(iv) Downstream upto 10 km from the tip of the reservoir.
Details of the Methology	
1.	The methodology followed for collection of base line data along with details of number of samples and their locations in the map should be included. Study area should be demarcated properly on the appropriate scale map. Sampling sites should be depicted on map for each parameter with proper legends. For Forest Classification, Champion and Seth (1968) methodology should be followed.
Methodology for Collection of Biodiversity Data	
1.	The number of sampling locations should be adequate to get a reasonable idea of the diversity and other attributes of flora and fauna. The guiding principles should be the size of the study area (larger area should have larger number of sampling locations) and inherent diversity at the location, as known from secondary sources (e.g. eastern Himalayan and low altitude sites should have a larger number of sampling locations owing to higher diversity).
2.	The entire area should be divided in grids of 5kmX5km preferably on a GIS domain. There after 25% of the grids should be randomly selected for sampling of which half should be in the directly affected area (grids including project components such as reservoir, dam, powerhouse, tunnel, canal etc.) and the remaining in the rest of the area (areas of influence in 10 km radius form project components). At such chosen location, the size and number of sampling units (e.g. quadrates in case of flora/transects in case of fauna) must be decided by species area curves and the details of the same (graphs and cumulative number of species in a tabulated form) should be provided in the EIA report. Some of the grids on the edges may not be completely overlapping with the study area boundaries. However, these should be counted and considered for selecting 25% of the grids. The number of grids to be surveyed may come out as a decimal number (i.e. it has an integral and a fractional part) which should be rounded to the next whole number.
3.	The conventional sampling is likely to miss the presence of rare, endangered and threatened (r.e.t.) species since they often occur in low densities and in case of faunal species are usually secretive in behaviour. Reaching the conclusion about the absence of such species in the study area based on such methodology is misleading. It is very important to document the status of such species owing to their high conservation value. Hence likely presence of such species should be ascertained from secondary sources by a proper literature survey for the said area including referring to field guides which are now available for many taxonomic groups in India. Even literature from studies/surveys in the larger landscapes which include the study area for the concerned project must be referred to, since most species from adjoining catchments is likely to be present in the catchments in question. In fact such literature form the entire state can be referred to. Once a listing of possible r.e.t. species form the said area is developed, species specific methodologies should be adopted to ascertain their presence in the study area which would be far more conclusive as compared to the conventional sampling. If the need be, modern methods like camera trapping can be resorted to, particularly for areas in the eastern Himalayas and for secretive/nocturnal species. A detailed listing of the literature referred to, for developing lists of r.e.t. species should be provided in the EIA reports.The conventional sampling is likely to miss the presence of rare, endangered and threatened

	(r.e.t.) species since they often occur in low densities and in case of faunal species are usually secretive in behaviour. Reaching the conclusion about the absence of such species in the study area based on such methodology is misleading. It is very important to document the status of such species owing to their high conservation value. Hence likely presence of such species should be ascertained from secondary sources by a proper literature survey for the said area including referring to field guides which are now available for many taxonomic groups in India. Even literature from studies/surveys in the larger landscapes which include the study area for the concerned project must be referred to, since most species from adjoining catchments is likely to be present in the catchments in question. In fact such literature form the entire state can be referred to. Once a listing of possible r.e.t. species form the said area is developed, species specific methodologies should be adopted to ascertain their presence in the study area which would be far more conclusive as compared to the conventional sampling. If the need be, modern methods like camera trapping can be resorted to, particularly for areas in the eastern Himalayas and for secretive/nocturnal species. A detailed listing of the literature referred to, for developing lists of r.e.t. species should be provided in the EIA reports.
4.	The R.E.T. species referred to in this point should include species listed in Schedule I and II of Wildlife (Protection) Act, 1972 and those listed in the red data books (BSI, ZSI and IUCN).
Components of the EIA Study: Various aspects to be studied and provided in the EIA/EMP report are as follow s:	
1.	null
2.	null
3.	null
4.	Physical geography, Topography, Regional Geological aspects and structure of the Catchment.
5.	Tectonics, seismicity and history of past earthquakes in the area. A site specific study of the earthquake parameters will be done. The results of the site specific earthquake design shall be sent for approval of the NCSDP (National Committee of Seismic Design Parameters, Central water Commission, New Delhi for large dams.
6.	Landslide zone or area prone to landslide existing in the study area should be examined.
7.	Presence of important economic mineral deposit, if any.
8.	Justification for location & execution of the project in relation to structural components (dam /barrage height).
9.	Impact of project on geological environment.
10.	null
11.	Meteorology (viz. Temperature, Relative humidity, wind speed/direction etc.) to be collected from nearest IMD station.
12.	Ambient Air Quality with parameters viz. Suspended Particulate Matter (SPM), Respirable Suspended Particulate Matter (RSPM) i.e. suspended particulate materials < 10 microns, Sulphur dioxide (SO2) and Oxides of Nitrogen (NOX) in the study area at 5-6 Locations.
13.	Existing Noise Levels and traffic density in the study area at 5-6 Locations.
14.	null

15.	Soil classification, physical parameters (viz., texture, Porosity, Bulk Density and water holding capacity) and chemical parameters (viz. pH, electrical conductivity, magnesium, calcium, total alkalinity, chlorides, sodium, potassium, organic carbon, available potassium, available phosphorus, SAR, nitrogen and salinity, etc.) at @ one sample/ha of command area.
16.	null
17.	Generation of thematic maps viz, slope map, drainage map, soil map, land use and land cover map, etc. Based on these, thematic maps, an erosion intensity map should be prepared.
18.	New configuration map to be given in the EIA Report
19.	null
20.	History of the ground water table fluctuation in the study area.
21.	Water Quality for both surface water and ground water for [i] Physical parameters (pH, Temperature, Electrical Conductivity, TSS); [ii] Chemical parameters (Alkalinity, Hardness, BOD, COD, NO3, PO4, Cl, So4, Na, K, Ca, Mg, Silica, Oil & grease, phenolic compounds, residual sodium carbonate);[iii] Bacteriological parameter (MPN, Total coliform); and [iv] Heavy Metals (Pb, As, Hg, Cd, Cr6,Total Cr, Cu, Zn, Fe) at minimum10 Locations, however, the sampling numbers should be increased depending on the command area.
22.	Delineation of sub and micro watersheds, their locations and extent based on the Soil and Land Use Survey of India (SLUSOI), Department of Agriculture, Government of India. Erosion levels in each micro-watershed and prioritization of micro-watershed through Silt Yield Index (SYI) method of SLUSOI.
23.	Hydro-Meteorology of the project viz. precipitation (snowfall, rainfall), temperature, relative humidity, etc. Hydro-meteorological studies in the catchment area should be established along-with real time telemetry and data acquisition system for inflows monitoring.
24.	Run off, discharge, water availability for the project, sedimentation rate, etc.
25.	Basin characteristics
26.	Catastrophic events like cloud bursts and flash floods, if any, should be documented.
27.	For estimation of Sedimentation Rate, direct sampling of river flow is to be done during the EIA study. The study should be conducted for minimum one year. Actual silt flow rate to be expressed in ha-m km2 year-1.
28.	Set up a G&D monitoring station and a few rain gauge stations in the catchment area for collecting data during the investigation.
29.	Flow series, 10 daily with 90%, 75% and 50% dependable years discharges.
30.	Environmental flow release should be 20% of the average of the 4 lean months of 90% dependable year during the lean season and 30% of Monsoon flow during monsoon season. For remaining months, the flow shall be decided by the Committee based on the hydrology and available discharge.
3	A site specific study on minimum environment flow should be carried

1.	
32.	null
33.	null
34.	Characterization of forest types (as per Champion and Seth method) in the study area and extent of each forest type as per the Forest Working Plan.
35.	General vegetation profile and floral diversity covering all groups of flora including Bryophytes, Pteridophytes, Lichens and Orchids. A species wise list may be provided.
36.	Assessment of plant species with respect to dominance, density, frequency, abundance, diversity index, similarity index, importance value index [IVI], Shannon Weiner Index etc. of the species to be provided. Methodology used for calculating various diversity indices along with details of locations of quadrats, size of quadrats etc. to be reported within the study area in different ecosystems.
37.	Existence of National Park, Sanctuary, Biosphere Reserve etc in the study area, if any, should be detailed.
38.	Economically important species like medicinal plants, timber, fuel wood etc.
39.	Details of endemic species found in the project area.
40.	Flora under RET categories should be documented using International Union for the Conservation of Nature and Natural Resources (IUCN) criteria and Botanical Survey of India's Red Data list along with economic significance. Species diversity curve for RET species should be given.
41.	Fauna study and inventorisation should be carried out for all groups of animals including reptiles and nocturnal animals in the study area. Their present status along with Schedule of the species.
42.	Information (authenticated) on Avi-fauna and wild life in the study area.
43.	Status of avifauna their resident/migratory/ passage migrants etc.
44.	Documentation of butterflies, if any, found in the area.
45.	Details of endemic species found in the project area.
46.	RET species- voucher specimens should be collected along with GPS readings to facilitate rehabilitation. RET faunal species to be classified as per IUCN Red Data list and as per different schedule of Indian Wildlife (Protection) Act, 1972.
47.	Existence of barriers and corridors, if any, for wild animals.
48.	Compensatory afforestation to compensate the green belt area that will be removed, if any, as part of the proposed project development and loss of biodiversity.

49.	For categorization of sub-catchments into various erosion classes and for the consequent CAT plan, the entire catchment (Indian Portion) is to be considered and not only the directly the draining catc
50.	Documentation of aquatic fauna like macro-invertebrates, zooplankton, phytoplanktons, benthos etc.
51.	Fish and fisheries, their migration and breeding grounds.
52.	Fish diversity, composition and maximum length & weight of the measured populations to be studied for estimation of environmental flow.
53.	Conservation status of aquatic fauna.
54.	Cropping pattern and Horticultural practices in the study area.
55.	Collection of primary data on agricultural activity, crop and their productivity and irrigation facilities component.
56.	Component of pressurized/drip irrigation and micro irrigation.
57.	Details of Conjunctive use of water for irrigation
58.	Collection of Baseline data on human settlements, health status of the community and existing infrastructure facilities for social welfare including sources of livelihood, job opportunities and safety and security of workers and surrounding population.
59.	Collection of information with respect to social awareness about the developmental activity in the area and social welfare measures existing and proposed by project proponent.
60.	Collection of information on sensitive habitat of historical, cultural and religious and ecological importance.
61.	The Socio-economic survey/profile within 10 Km of the study area for Demographic profile; Economic Structure; Development Profile; Agricultural Practices; Infrastructure, education facilities; health and sanitation facilities; available communication network etc.
62.	Documentation of Demographic, Ethnographic, Economic structure and development profile of the area
63.	Information on Agricultural practices, Cultural and aesthetic sites, Infrastructure facilities etc
64.	Information on the dependence of the local people on minor forest produce and their cattle grazing rights in the forest land.
65.	List of all the Project Affected Families with their names, education, land holdings, other properties, occupation, source of income, land and other properties to be acquired, etc.
66.	In addition to Socio-economic aspects of the study area, a separate chapter on socio-cultural aspects based upon study on Ethnography of the area should be provided.

Impact Prediction and Mitigation Measures	
1.	The adverse impact due to the proposed project should be assessed and effective mitigation steps to abate these impacts should be described.
2.	Changes in ambient and ground level concentrations due to total emissions from point, line and area sources
3.	Effect on soils, material, vegetation and human health
4.	Impact of emissions from DG sets used for power during the construction, if any, on air environment.
5.	Pollution due to fuel combustions in equipments & vehicles
6.	Fugitive emissions from various sources.
7.	Impact on micro climate
8.	Changes in surface & ground water quality. Steps to develop pisci-culture and recreational facilities.
9.	Changes in hydraulic regime and down stream flow.
10.	Water pollution due to disposal of sewage.
11.	Water pollution from labour colony/camps and washing equipment.
12.	Adverse impact on land stability, catchment of soil erosion, reservoir sedimentation and spring flow (if any) [a] due to considerable road construction/widening activity [b] interference of reservoir with the inflowing streams [c] blasting for excavation of canals and some other structures
13.	Changes in land use/land cover and drainage pattern.
14.	Immigration of labour population.
15.	Quarrying operation and muck disposal.
16.	Changes in land quality including effects of waste disposal
17.	River bank and their stability
18.	Impact due to submergence
19.	Impact on forests, flora, fauna including wildlife, migratory avi-fauna, rare and endangered species, medicinal plants etc.
20.	Pressure on existing natural resources
2	Deforestation and disturbance to wildlife, habitat fragmentation and wild animal's migratory corridors

1.	
22.	Compensatory afforestation-Identification of suitable native tree species for compensatory afforestation & green belt.
23.	Impact on fish migration and habitat degradation due to decreased flow of water
24.	Impact on breeding and nesting grounds of animal
25.	Impact on local community including demographic profile.
26.	Impact on socio-economic status.
27.	Impact on economic status.
28.	Impact on human health due to water / vector borne disease.
29.	Impact on increases traffic.
30.	Impact on Holy Places and Tourism.
31.	Impacts of blasting activity during project construction which generally destabilize the land mass and lead to landslides, damage to properties and drying up of natural springs and cause noise pollution, will be studied. Proper record shall be maintained of the base line information in the post project period.
32.	Positive as well as negative impacts likely to be accrued due to the project are to be listed.
Environment Impact Analysis	
1.	Environmental Impact Analysis due to the project on the above mentioned components should be carried out for construction and operation phases using qualitative or quantitative methods.
Environmental Management Plan	
1.	Environmental Management Plan aimed at minimizing the negative impacts of the project should be given in detail. The mitigation measures are to be presented for all the likely adverse impacts on the environment. The following suggestive mitigating plans should be included
2.	Biodiversity and Wild Life Conservation & Management Plan for conservation and preservation of endemic, rare and endangered species of flora and fauna to be prepared in consultation with State Forest Department.
3.	Compensatory Afforestation in lieu of the forest land required for the project needs to be proposed.Choice of plants should be made in consultation with State Forest Department including native and RET species, if any.
4.	Fisheries Conservation & Management Plan-Fish fauna inhabiting the affected stretch of river, a specific fisheries management plan should be prepared for river and reservoir.

5.	Plan for Green Belt Development along the periphery of reservoir, colonies, approach road, canals etc. to be prepared in consultation with the State Forest Department. Local plant species suitable for greenbelt development should be selected.
6.	Environmental Monitoring Programme with physical & financial details covering all the aspects of EMP. A summary of cost estimate for all the plans, cost for implementing all Environmental Management Plans including the cost for implementing environmental monitoring programme should be given. Provision for an Environmental Management Cell should be made.
7.	Catchment Area Treatment (CAT) Plan should be prepared micro-watershed wise. Identification of area for treatment based upon Remote Sensing & GIS methodology and Silt Yield Index (SYI) method of SLUSOI coupled with ground survey. Areas/watersheds falling under 'very severe' and `severe' erosion categories are required to be treated. Both biological and engineering measures should be proposed in consultation with State Forest Department. Year-wise schedule of work and monetary allocation should be provided. CAT plan is to be completed prior to reservoir impoundment. Mitigations measures to check shifting cultivation in the catchment area with provision for alternative and better agricultural practices should be include.
8.	Study of Design Earthquake Parameters: A site specific study of earthquake parameters should be done. The results of the site specific earth quake design parameters should be approval by National Committee of Seismic Design Parameters, Central Water Commission (NCSDP), New Delhi.
9.	Dam Break Analysis and Disaster Management Plan: The outputs of Dam Break Model should be illustrated with appropriate graphs and maps clearly bringing out the impact of Dam break scenario. Provision for early warning systems should be provided.
10.	Reservoir Rim Treatment Plan for stabilization of land slide/land slip zones if any, around the reservoir periphery to be prepared. Suitable engineering and biological measures for treatment of the identified slip zones to be provided with physical and financial schedule.
11.	Muck Disposal Plan- suitable sites for dumping of excavated material should be identified in consultation with the State Pollution Control Board and Forest Department. All Muck disposal sites should be minimum 30 m away from the HFL of river. Plan for rehabilitation of muck disposal sites should also be given. The L- section/ cross section of muck disposal sites and approach roads to be given. Financial out lay for this may be given separately. Deatailed muck transportation plan delinating the path ways, number of trucks, quantity of muck to be transportated along with monitoring mechanism using latest technology, shall be prepared.
12.	Plan for Restoration of quarry sites and landscaping of colony areas, working areas, roads, etc.
13.	Command Area Development (CAD) Plan giving details of implementation schedule with a sample CAD plan.
14.	In the EMP, also include a sample CAD plan for a distributary outlet command. Such a plan is to show the alignment of irrigation and drainage channels. The components of the OFD works to be undertaken may be clearly mentioned along with a time schedule for their completion vis-à-vis the progress of irrigation development.
15.	Mitigating measures for impacts due to Blasting on the structures in the vicinity.
16.	Resettlement and Rehabilitation (R&R) Plan need to be prepared with due consultation with Project Affected Families (PAFs). The provision of the d R&R plan should be according to the National Resettlement and Rehabilitation Policy (NRRP-2007) as well as State Resettlement and Rehabilitation Policy. Detailed budgetary estimates are to be provided. Resettlements sites should be identified.
17.	Public Health Delivery Plan including the provisions for drinking water facility for the local community.
1	Local Area Development Plan to be formulated in consultation with the Revenue Officials and Village

8.	Panchayats. Local skill development schemes should be given. Details of various activities to be undertaken along with its financial out lay should be provided.
19.	Labour Management Plan for their Health and Safety.
20.	Sanitation and Solid Waste Management Plan for domestic waste from colonies and labour camps etc.
21.	Plan for Land Restoration and Landscaping of project sites.
22.	Energy Conservation Measures.
23.	Environmental safeguards during construction activities including Road Construction.
24.	Ground Water Management Plan.
25.	Water and Air Quality & Noise Management Plans to be implemented during construction and post-construction periods.

3.6. Agenda Item No 6:

3.6.1. Details of the proposal

Integrated Anandapur Barrage Project by **Department of Irrigation** located at **KENDUJHAR,ODISHA**			
Proposal For		Amendment in EC	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/OR/RIV/548392/2025	J-12011/22/2002-IA-I	18/08/2025	River Valley/Irrigation projects (1(c))

3.6.2. Project Salient Features

38.6.1: The proposal is for grant of amendment in Environmental Clearances Integrated Anandapur Barrage Project (CCA: 60,000 Ha) in Keonjhar district, Odisha by M/s Department of irrigation, Govt. of Odisha.

38.6.2: The Project Proponent made a detailed presentation on the salient features of the project and informed that:

i. The proposal is for amendment in the Environmental Clearance granted by the Ministry vide dated 04.11.2003 for the project Integrated Anandapur Barrage Project located at Anandapur in district of Keonjhar, Odisha in Favour of M/s Integrated Anandapur Barrage Project.

ii. The project proponents has requested for amendment in the EC with the details are as under.

Sl N	**Para of**	**Detai**	**To b**	**Just**

o.	EC issued by MoEF&CC	ls as per the EC	ere vised/ read as	ific ation/ reas on
1	Para-2	Total project area required for the project is 1141.916 Ha. with n	Total project area required for the project is 126.203 Ha. with 86.54	EC was granted with a total project area of 1141.916 Ha. with no fore

		o involvement of forest land.	1 Ha of forest land.	st land involved, subsequent detailed survey sand revised interpretation of forest land def

				initiations have brought the total area under the project to 2126.203 Ha, which now includ

				es 86.541 Ha. (83.838 + 2.703 Ha) forest land
2	Para-2	482.26 Cras 04.11.2003	2990.05 Crat 2016 Price Level	Due to Price Escalation.

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

- **Project details:**

Name of the Proposal	Integrated Anandapur Barrage Project (CCA-60000Ha.) in Keonjhar District, Odisha by m/s Department of Irrigation, Govt. of Odisha, Amendment in Environmental Clearance-Reg.
	IA/OR/RIV/548392/2025
	N/A
	CCE, ABP, Salapada
	N/A
	At-Anandapur, Dist- Keonjhar, State-Odisha, (Lat. - 21˚ 13N Long - 86˚8E).
	No

- **Category details:**

Category of the Project	River Valley/Irrigation Projects
Capacity/Cultural command area (CCA)	60000Ha.
Attracts the General Conditions (Yes/No)	Yes
Additional information (if any)	N/A

- **ToR/EC Details:**

Earlier EC Proposal No.	J-12011/22/2002-IA-I
Earlier EAC meeting date	20.05.2003
EC Letter No.	J-12011/22/2002-IA-I
EC grant Date	04.11.2003
Cost of project	2990.05 crores (@2016 Price Level)
Total area of Project	2126.203 Ha
Date of online application for amendment in ToR/EC was	18.08.2025
Details of CTE/CTO	Govt. Irrigation Project. Not required
No. of trees/sapling proposed in view of “Ek Ped Maa Ke Naam’ campaign	No measures in this regard has been taken

- **Detail reason for amendment in ToR/EC:**

Subsequent upon detailed survey and revised interpretation of Forest Land definitions total area under the project comes out to be 2126. 203Ha. which includes 86.541Ha of Forest Land out of which Stage-II approval for diversion of 83.838Ha of forest land has been accorded vide Proposal No. FP/OR/HYD/IRRIG/418839/2023 dated.28.05.2025 and for balance 2.703Ha. has been diverted by Letter No. 08 (22) 12/2004 FCE, dtd. 21.05.2008 and also Wildlife Clearance has been accorded vide File NO. CWLW-FDWC-FD-0016-2024/8020 dated. 24.07.2025.

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

Sl No.	Details	Original	Revised
1	Total area required for the project with no involvement of Forest land	Total project area required for the project is 1141.916 Ha. with no involvement of forest land.	Total project area required for the project is 2126.203 Ha. with 86.541Ha of forest land.
2	Total Cost of the Projects	482.26Cr as 04.11.2003	2990.05Cr at 2016 Price Level

- Court case details: Nil

3.6.3. Deliberations by the committee in previous meetings

N/A

3.6.4. Deliberations by the EAC in current meetings

The EAC during deliberations noted the following:

The Expert Appraisal Committee (EAC) deliberated on the information submitted, as well as the presentation made during the meeting. It was observed that the proposal pertains to the request for an amendment to the Environmental Clearance for the Integrated Anandapur Barrage Project (CCA: 60,000 Ha) in Keonjhar district, Odisha by M/s Department of irrigation, Govt. of Odisha.

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: 60,000 Ha). However, the location of the project is Within default 10km Eco- Sensitive Zone of Kuldiha Sanctuary, hence, it requires appraisal at the Central level by the Expert Appraisal Committee (EAC).

The EAC observed that the proposal submitted by the PP is for amendment in Environmental Clearance granted by the Ministry to Anandapur Barrage Project vide Letter No. J-12011/22/2002-IA-I dated 04.11.2003 under the provisions of the Environmental Impact Assessment (EIA) Notification, 1994.

The committee observed that the Ministry vide letter dated 18.07.2025 informed that as informed by the PP, the project construction work has been commenced within 5 years from the date of grant of EC and the same is now renamed as Integrated Anandapur Barrage Project (IABP), with no change in its originally approved scope. Hence it was clarified that the EC revalidation is not required in terms of the provisions of the EIA Notification, 1994. However, due to change project land area which includes forest land, it was requested to submit the proposal for amendment of the Environmental Clearance.

The EAC noted that Department of Forest, Environment & Climate Change, Government of Odisha vide letter dated 24.07.2025 informed that Standing committee of the National Board of Wild Life in its 84th meeting held on 26/06/2025 recommended/approved Construction of canals for Anandapur Barrage on Baitarani river at villages in Baleshwar and Keonjhar Districts in favour of Department of irrigation. Additionally it was noted by the committee that Stage-II forest clearance has been accorded by the Ministry vide letter dated 28.05.2025 for for diversion of 83.838 ha Revenue Forest Land for construction of Integrated Anandpur Barrage Project in Keonjhar (WL), Karanjia and Balasore (WL)

Division in the district of Keonjhar, Mayurbhanj and Balasore of Odisha .
During the deliberations, the EAC noted that certain project components may have been changed or modified from the original proposal, such as the pipeline network, resulting in an increase in the project coverage area from 1141.916 ha to 2126.203 ha, which includes 86.541 ha of forest land. Accordingly, the Committee requested the Project Proponent to verify the details with the EIA/EMP report submitted at the time of grant of Environmental Clearance in 2003 and to prepare a comparison chart highlighting the differences between the current proposal and the earlier approved scenario.
The EAC also suggested that the PP shall provide a written clarification explaining the reasons for the change in the project name from “Anandapur Barrage Project” to “Integrated Anandapur Barrage Project (IABP)”.

3.6.5. Recommendation of EAC

Deferred for ADS

4. Any Other Item(s)

N/A

5. List of Attendees

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

MINUTES OF THE 38TH MEETING OF THE EXPERT APPRAISAL COMMITTEE FOR RIVER VALLEY AND HYDROELECTRIC PROJECTS HELD ON 29TH AUGUST 2025 THROUGH PHYSICAL MODE

The 38th 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 29th August, 2025 through physical 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 37th EAC meeting:

The Minutes of the 37th EAC meeting held on 14th August, 2025 were confirmed.

Agenda Item No. 38.1

Kamalapadu Closed Loop Pumped Storage Project (950 MW) in an area of 359.61 ha located at Village Attiraladinne, Kamalapadu & Kundanakota etc., Sub-district Peddapappur & Yadiki, District Anantpur, Andhra Pradesh by M/s Andhra Pradesh Power Generation Corporation Limited - Environmental Clearance - reg.

[Proposal No. IA/AP/RIV/547838/2025; F. No. J-12011/22/2023-IA.I (R)]

38.1.1: The proposal is for grant of Environmental Clearance (EC) to the project for Kamalapadu Closed Loop Pumped Storage Project (950 MW) in an area of 359.61 ha located at Village Attiraladinne, Kamalapadu & Kundanakota etc., Sub-district Peddapappur & Yadiki, District Anantpur, Andhra Pradesh by M/s Andhra Pradesh Power Generation Corporation Limited.

38.1.2: 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. The Kamalapadu Pumped Storage Hydro Project (Kamalapadu PSHP) of capacity 950 MW is proposed at village Boyareddypalli in the Yadiki Mandal of Ananthapuramu district in Andhra Pradesh by M/s Andhra Pradesh Power Generation Corporation Limited (APGENCO). The project comes under the Rayalaseema region of Andhra Pradesh.

ii. The Kamalapdu PSH Project is envisaged with a installed capacity of 950 MW (3 x 238 + 2 x 118 MW) located in the Ananthapuramu district of Andhra Pradesh. It is a standalone scheme with two new off stream reservoirs and drawl of water from existing Chagallu Barrage for initial filling into the proposed lower reservoir through a pipeline arrangement. Both the reservoirs are planned to be interconnected through water

conductor system and the reversible generator pump turbine would be installed in the surface/ pit powerhouse. The scheme is envisaged to meet the peak demand of about 9 hours with an estimated annual energy generation of 2958.42 MU.

iii. The project is located close to Boyareddypalli (Kamalapadu) Village in the Yadiki Mandal of Ananthapuramu district in Andhra Pradesh. The project site is easily accessible by Yadiki – Tadipatri Road. The project's upper reservoir is at geographical co-ordinate 15°06'13.99"N and 77°56'10.56"E and lower reservoir at geographical co-ordinate 15°05'0.74"N and 77°56'43.39"E.

iv. The Terms of Reference was granted by Ministry of Environment, Forest & Climate Change (MoEF&CC) vide letter no. F No J-12011/22/2023-IA. I(R) dated 7th August 2023 in the name of M/s New and Renewable Energy Development Corporation of Andhra Pradesh Ltd. (NREDCAP). Subsequently, MoEF&CC vide letter no. J-12011/22/2023-IA-I(R) dated 02.06.2025 has granted approval for transfer of Terms of Reference (ToR) for the Kamalapadu Closed Loop PSP (950 MW) from 'M/s New and Renewable Energy Development Corporation of Andhra Pradesh Ltd. (NREDCAP)' to 'M/s Andhra Pradesh Power Generation Corporation Limited (APGENCO)'.

v. **Land requirement:**

Forest Land :0.00 ha
Non-forest Land :359.61 ha (257.38 Ha of private land & 102.23 Ha of Govt. land)
Total Land :359.61 ha

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

The study area falls under Ananthapuramu and Nandyal districts of Andhra Pradesh. A total of 46 inhabited villages fell within the study area. Out of 46 villages, 42 are in Ananthapuramu district (15 villages of Pedda Pappuru Mandal, 4 villages of Peddavaduguru Mandal, 9 villages of Tadpatri Mandal, and 14 villages of Yadiki Mandal), and 4 villages are in Nandyal district (1 village of Kolimigundla Mandal, 3 villages of Owk Mandal and no habitation/ village lies in Pyapalli Mandal).

The total population of the study area is 130528, with 50.82% males and 49.17%females. The number of households is 32240, with an average occupancy of 4–5 persons per household. The child population below 6 years old was found to be 14406, which is 11.03% of the total population. The sex ratio was found to be 967 females per 1000 males.59.89% of the population ((above the 6-year-old population)) in the study are is literate. The rates for males and females are 71.10% and 48.39%, respectively, resulting in a 22.71% gender difference.

In the study area, 15.99% and 2.43 percent of the population are members of Scheduled Castes and Scheduled Tribes, respectively.

Total population of workers in the study area is 73189 (56.07%).66.18% of the working population are engaged in agriculture and allied services, out of which 19.50% are

cultivators and 46.68% are agricultural laborers. 11.04% of the population engaged in household industry worker, and 22.75% of the population engaged in other services.

vii. **Water requirement**: Approximately 22.45 MCM will be required to meet generation of 950 MW for 9.02 hours. Annual losses due to the evaporation from the lower reservoir work out to 0.43 MCM. It will be recouped periodically from Chagallu Barrage reservoir.

viii. **Project Cost:** The estimated project cost is Rs 4676.50 crore. Total capital cost earmarked towards Environment Management Plan/environmental pollution control measures is Rs. 1966.11 lakh and the Recurring cost (operation and maintenance) will be about Rs. 2797.61 lakh about i.e. Rs 699.4 lakh per annum.

ix. **Project Benefit:** Total Employment will be 700 persons during construction phase and 200 during operational phase of the project. Rs. 733.50 lakh has been allocated under CER and Local Area Development Plan for strengthening and development of basic infrastructural facilities with a view to improve the quality of life of residents in the project vicinity.

x. **Environmental Sensitive area:** Nearest protected area to the project components is Rajiv Gandhi National Park, All the project components are way outside the notified ESZ,which is at a distance of 72 km.

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

a) MOU: File No.ENE01-APRE/17/2020-MLO-ENE-Part(3) Dated 22/09/2023
b) Water Allocation: G.O.Ms no.10.dt.11.03.2025 of GoAP.

xii. **Resettlement and rehabilitation:** For the development of Kamalapadu Closed Loop PSHP, the total land requirement for the project is 359.61 ha, out of which 257.38 ha is private land and 102.23 ha is government land.The entire private land identified for the project falls in two revenue villages namely Kamalapadu and Kundanakota under Tehsil/Mandal-Yadiki in Ananthapuramu District of Andhra Pradesh. The private land identified for the projects belongs to 174 land owner families. All the 174 land owners will be losing their partial agricultural land holding and none of the families will be losing any house or any other assets. None of them is getting displaced due to the project from the above land procurement.

xiii. **Schedule – I species:** According to WPAA, 2022, 13 species of mammals, one species of bird (Small Minivet), 06 species of herpetofauna (Python, Bengal Monitor Lizard, Indian rat Snake, Indian Cobra, Russel's Viper and Indian Flap-shell Turtle) are listed under Schedule- I. Rest of the faunal species are listed under Schedule- II category of WPAA, 2022.

As per the IUCN Red List of Threatened Species, Version 2022-2, Wild Dog is listed under Endangered (EN) category, Common Leopard, Sloth Bear, Four-horned Antelope, Sambar Deer, Bonnet Macaque and Flap-shell Turtle are under Vulnerable (VU) category, Striped Hyaena, Python, Bengal Monitor Lizard and Anamalai Hill Gecko are listed under Near Threatened (NT) category. As per the IUCN Red List of Threatened Species version 2023-1, all birds have been listed under Least Concern (LC) category.

xiv. **Alternative Studies:**5 alternatives have been studied for KamalapaduPumped storage Hydro Project.

- Alternative-1 (1400 MW)-Independent PSP
- Alternative-2 (1200 MW)-Independent PSP
- Alternative-3 (1370 MW)- Independent PSP
- Alternative 4 (1120 MW)- (Independent PSP).
- Alternative 5 (950 MW)- (Independent PSP).

After carefully considering the merits and drawbacks of all the alternatives, Alternative 5 has been selected as the final layout.

xv. **Baseline Environmental Scenario:**

Period — **From April/May 2023 to December 2023**

AAQ parameters at 10 locations (min. & Max.)

Unit in microgram/m^3

Core	Min	Max	Average	Standards
PM 2.5	18.60	42.20	30.40	60
PM 10	43.10	73.20	58.15	100
SO2	6.50	12.60	9.55	80
NO2	7.00	13.50	10.25	80
Buffer	Min	Max	Average	Standards
PM 2.5	19.60	44.90	32.25	60
PM 10	45.40	77.80	61.60	100
SO2	6.90	13.40	10.15	80
NO2	8.30	14.40	11.35	80

Incremental GLC Level

Criteria Pollutant (PM10, PM2.5, SO2, NOx, Other parameters specific to the sector	Unit (microgram/m^3)	Baseline Concentration (A)	Predicted incremental value considering worst case stability class (B)	Total GLC (A + B)
PM10	microgram/m^3	73.20	20	93.20
PM2.5	microgram/m^3	42.20	10	52.20
SO2	microgram/m^3	12.60	10	22.60

	NOx	microgram/m^3	13.50	12	25.50

River water samples (2 samples)

	Core Zone			
S. No	Parameters	Min	Max	
1	pH	7.9	7.9	A
2	Total Dissolved Solids, mg/L	625	625	A
3	Dissolved Oxygen (mg/l)	7.7	7.7	B
4	Chloride (as Cl), mg/L	101	101	NA
5	Total Hardness (as CaCO3), mg/L	233	233	A
6	Biological Oxygen Demand (mg/l)	2.8	2.8	A
7	Chemical Oxygen Demand (mg/l)	9	9	B
8	Total Coliform (MPN/100 ml)	295	295	A
	Buffer Zone			
S. No	Parameters	Min	Max	
1	pH	8.3	8.3	A
2	Total Dissolved Solids, mg/L	286	286	A
3	Dissolved Oxygen (mg/l)	5.5	5.5	B
4	Chloride (as Cl), mg/L	110	110	NA
5	Total Hardness (as CaCO3), mg/L	431	431	A
6	Biological Oxygen Demand (mg/l)	6	6	A
7	Chemical Oxygen Demand (mg/l)	15.4	15.4	B
8	Total Coliform (MPN/100 ml)	430	430	A

Ground water samples (10 samples)

	Core Zone				
S. No.	**Parameters**	**Min**	**Max**		
1	pH	6.99	7.4	7.2	8.5
2	Total Dissolved Solids (mg/l)	433	1594	1013.5	2000
3	Chloride (as Cl) (mg/l)	65	229	147.0	1000
4	Total Hardness (as $CaCO_3$) (mg/l)	129	474	301.5	600
5	Fluoride (mg/l)	0.16	0.57	0.4	1.5
	Buffer Zone				
S. No.	**Parameters**	**Min**	**Max**		
1	pH	7.01	7.4	7.2	8.5
2	Total Dissolved Solids (mg/l)	377	943	660.0	2000
3	Chloride (as Cl) (mg/l)	57	141	99.0	1000
4	Total Hardness (as $CaCO_3$) (mg/l)	112	280	196.0	600
5	Fluoride (mg/l)	0.14	0.34	0.2	1.5

Noise levels Leq (Day & Night) at 10

	Zone	**Leq Day dB(A)**	**Leq Night dB(A)**	

locations

Noise Level		From	To	From	To	
Core	Residential	44.9	45.9	34.6	35.4	55
Buffer	Commercial	46.8	58.5	36.1	45.2	55

Soil Quality at 10 Locations

Monitoring Location (Core /Buffer)	Criteria Parameter [Calcium, Carbon, Nitrogen, Phosphorus, Potassium, Magnesium, Sodium Absorption Ratio, Salinity]	Unit [gm/mg/ Other (please specify)]	Observed Value		Permissible standard
			From	To	
Core Zone	Calcium	(mg/kg)	140	165	500
	Magnesium	(mg/kg)	54	64	500
	Available Nitrogen	(kg/ha)	232	244	500
	Available Phosphorus	(kg/ha)	27	30	50
	Available Potassium	(kg/ha)	267	310	500
	Organic carbon	(%)	0.32	0.37	1
	Sodium Adsorption Ratio		2.3	2.5	10
	Salinity	(ppt)	0	0	0.01
Buffer Zone	Calcium	(mg/kg)	140	250	500
	Magnesium	(mg/kg)	54	96	500
	Available Nitrogen	(kg/ha)	167	296	500
	Available Phosphorus	(kg/ha)	25	28	50
	Available Potassium	(kg/ha)	223	323	500
	Organic carbon	(%)	0.36	0.45	1
	Sodium Adsorption Ratio		2.3	3.1	10
	Salinity	(ppt)	0	0	0.01

	Particle Size Distribution						Water Holding Capacity (%)		Porosity (%)	
	Sand (%)		Silt (%)		Clay (%)					
	From	To	From	To	From	To	From	To	From	To
Core	62	69	8	10	21	29	34	40	38	48
Buffer	60	71	7	9	21	31	29	42	33	49

Flora & Fauna	According to WPAA, 2022, 13 species of mammals, one species of bird (Small Minivet), 06 species of herpetofauna (Python, Bengal Monitor Lizard, Indian rat Snake, Indian Cobra, Russel's Viper and Indian Flap-shell Turtle) are listed under Schedule I. Rest of the faunal species are listed under Schedule II category of WPAA, 2022. As per the IUCN Red List of Threatened Species, Version 2022-2, Wild Dog is listed under Endangered (EN) category, Common Leopard, Sloth Bear, Four-horned Antelope, Sambar Deer, Bonnet Macaque and Flap-shell Turtle are under Vulnerable (VU) category, Striped Hyaena, Python, Bengal Monitor Lizard and Anamalai Hill Gecko are listed under Near Threatened (NT) category. As per the IUCN Red List of Threatened Species version 2023-1, all birds have been listed under Least Concern (LC) category.

xvi. **Details of Solid waste/ Hazardous waste generation/ Muck and its management:**
Generation of Municipal Solid Waste- Bio degradable (575.0 Tons in four years),
Generation of Non degradable (197.02 Tons in four years)
Solid waste management shall involve Reuse/Recycling, Storage/Segregation, Collection and Transportation and Disposal of Degradable component, non-degradable component& bio-medical waste.

Total quantity of Muck to be dumped: 12.87lakh cum.
The entire excavated material is proposed to be dumped at two dumping sites identified over a combined area of 81.91 ha. Dumping site no. 1 has been identified covering an area of 51.91 ha area, while dumping site no. 2 covering 30 ha is formed by filling up the quarry area after obtaining the rock for construction. The toes of the disposal piles would be retained and protected by providing suitably designed gabion walls erected over concrete bases. Biological measures have also been suggested.

xvii. Public Hearing for the proposed project has been conducted by the State Pollution Control Board on 22nd, December 2023, at Kamalapadu (V), Yadiki (M), Ananthapuram District, Andhra Pradesh. The main issues raised during the public hearing are:

Summary of Issues

Issues/Comments/Observations	Reply by the User Agency
To provide employment opportunities to the local youth based on their skills and qualifications.	During construction a large number of skilled and unskilled workers shall be engaged in project activities, majority of them will be from the local population/surrounding villages.

Project authorities should hire local vehicles during construction.	Employment opportunities shall be provided in the company or through the construction company as per eligibility during the construction phase of the project. For development of required basic infrastructure facility during construction and maintenance, contract will be awarded to local villagers through the construction company and priority has been given to locals during hiring of vehicles.
Clarify the basis of compensation for the land acquired for the project.	Land Compensation shall be as per Provisions of "The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act" (RFCTLARR) 2013 involving direct negotiations with the landowners under monitoring of district administration. (Rules issued through the Andhra Pradesh G.O.MS. No. 389 dated 20-11-2014)
No basic infrastructure facilities in the villages	For infrastructure development in the villages surrounding to the project, Local Area Development Fund of Rs 7.335 Crore has been allocated and will be spent during construction phase of the project.
Need to address the land ownership issues. Some of the villagers have not Patta passbook for the land. Fair compensation for the land to be acquired.	District administration assured to resolve the issues regarding land ownership and issuing a Patta passbook. Accordingly fair compensation will be provided.
Provide alternate sources of livelihood for the land losers.	Skill development training will be imparted to local youth to improve their employment opportunities in the project under local area development plan.
Support for the development of basic infrastructure facilities at Kamalapadu Boyareddypalli, Chintalayapalli and other surrounding villages.	Provision of development and strengthening of basic infrastructural facilities in project affected village panchayats and surrounding villages shall be taken up under Local Area Development Plan after consultation with the concerned Gram Panchayats and District Administration.

Provision of free electricity to the surrounding villages.	APGENCO is committed to following the provisions and guidelines issued by the State and Central Governments regarding free or subsidized power to the project area as well as to the state.
Support for the construction of Kalyan Mandapam in Chinthalayapalli village. Laying of BT road to the temple. Construction of toilets to the female near the temple. Make donation to the Chariot Kotha Ranganatha Swamy temple at Chinthalayapalli village	Provision for the upgradation of religious places has been kept under Local Area Development Plan after consultation with the concerned Gram Panchayats and District Administration. Development of basic amenities including community toilets has been considered and shall be taken up under the provisions made under Local Area Development Plan after consultation with the concerned Gram Panchayats and District Administration.
Provide free technical education for the higher education students.	Skill development and training to interested local youth shall be taken up under the provisions provided in the section for Local Area Development Plan in consultation with the concerned Gram Panchayats and District Administration.
Provide free primary education in the area for the poor people in the area.	Provision of scholarships for poor and meritorious students from the schools adjacent to project area have been made under Local Area Development Plan
Requested to construct school from the area under CSR fund	Financial provision of Rs 1.30 Crore has been kept for infrastructure development and quality education for existing government schools in the area. Construction of new school shall be explored to be taken up under CSR by APGENCO.
Approach roads in Kamalapadu village are in bad condition and requested the	Development of basic amenities including village approach roads has been considered and shall be taken up under the provisions made under Local Area

management to maintain and upgrade the village road in the area.	Development Plan after consultation with the concerned Gram Panchayats and District Administration.
Kundanakota village also comes under the purposed project and requested the authorities to include their village name in the project title of the proposed project.	Inclusion of a village name in the project title is a decision that rests with the State Government. It was suggested to submit request or representation to state authorities for their consideration.
Provide basic infrastructure to the villages, schools and temples in the area.	Development of basic amenities including development of infrastructure in schools and beautification of temples in the area has been considered and shall be taken up under the provisions made under Local Area Development Plan after consultation with the concerned Gram Panchayats and District Administration.
Authorities should develop green belt in the project	Development of green belt around the project components, road site planation and plantation over proposed muck dumping sites after restoration have been proposed - under Environmental Management Plan.
Provide RO Plant to the surrounding villages	Facility of safe drinking water shall be taken up under the provisions made under Local Area Development Plan after consultation with the concerned Gram Panchayats and District Administration.
Adopt hospital in area and provide free medical camps, for regular medical checkups for the villagers.	Under the Local Area Development Plan, provisions has been kept for upgradation of infrastructural facilities of existing medical institutes and medical camps. These initiatives will be undertaken in consultation with the District Administration to ensure that the upgrades meet the specific needs of the communities. Furthermore, our Environmental Management Plan includes provisions for establishing a First Aid posts at all construction sites within the project area. This will be complemented by an ambulance facility to ensure prompt medical assistance in case of emergencies. Also provision has been kept for organize medical camps in

	the neighboring villages in collaboration with the district health department.
Administration utilize District Mineral Fund (DMF) collected by district administration for the development of surrounding villages.	District Administration assured that District Mineral Fund available with district administration will be utilized development of surrounding villages
There is no availability of water in the Pendekallu Reservoir, how the management of the project will get the water from the reservoir	Project management informed that the total quantum of water required for initial filling of both reservoirs together is worked out to 22.32 MCM. Source of water has been changed from Pendekallu Reservoir to Chagallu barrage reservoir as explained in Chapter 1 of EIA report.
Provisions to avoid obstruction of the natural water flow due to the proposed establishment.	Both the reservoirs are proposed to be constructed on multiple streams which further downstream merges and is known as Pedda Vanka, a left tributary of Penneru River. The catchment area of these streams at the dam of both the reservoirs is 6.05 sq km. As per CEA guidelines, all the water intercepted from catchment of new reservoirs has to be discharged downstream through appropriate provisions like spillways or interception drains etc. to be provided in the project design.
Provide water supply for about 8000 acres by constructing reservoir.	Drinking water supply provisions have been kept under Infrastructure development in local area development plan for all the hamlets of Kamalapadu, Kundanakota, Gudipadu villages. Also, provisions have been kept for repair/ renovation of the existing drinking water resources (Overhead tanks, wells, distribution points, pipelines etc.) in same area. A total cost provision of Rs 20.50 lakh has been kept for purpose.
Management shall provide mini library in their area for the educated youth.	Provision of Mini Library has been made under Local Area Development Activities under upgradation of Education Facilities head.

xviii. Status of Litigation Pending against the proposal, if any: Not Applicable

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

- **Project details:**

Name of the Proposal	Kamalapadu Pumped Storage Hydro Project (950 MW)
Proposal No.	IA/AP/RIV/547838/2025
Location (Including Coordinates)	Near Kamalapadu village, Ananthapuramu district of Andhra Pradesh State Lower Reservoir- Lat: 15° 5' 0.74" N Long: 77°56' 43.39" E Upper Reservoir- Lat: 15°6' 13.99" N Long: 77°56' 10.56" E
Company's Name	Andhra Pradesh Power Generation Corporation Limited
CIN no. of Company/user agency	U40109AP 1998SGC 109187
Accredited Consultant and certificate no.	R S Envirolink Technologies Pvt Ltd; NABET/EIA/25-28/RA 0415
Project location (Coordinates /River/ Reservoir)	Near Boyareddypalli (Kamalapadu) Village in the Yadiki Manda I of Ananthapuramu district in Andhra Pradesh
Inter- state issue involved	No
Proposed on River/ Reservoir	Chagallu reservoir
Type of Hydro-electric project	Pumped Storage Project
Seismic zone	Seismic Zone II

- **Category details:**

Category of the project	A
Capacity *I* Cultural command area (CCA)	950 MW
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	-

- **TOR/EC details:**

ToR Proposal No.	IA/AP/RIV/429576/2023

EAC meeting date	02.06.2023
ToR Letter No.	J- 12011/22/2023 -IA.I (R)
ToR grant Date	07.08.2023
Cost of project	Rs 4676.50 crore
Total area of Project	359.61 ha
Height of Dam from River Bed (EL)	Upper Dam-36.50 m Lower Dam-34.70 m
Details of submergence area	247.11 ha
District to provide irrigation facility (if applicable)	NA
Details of tunnels on upper level.& lower level and length of canal (if applicable)	
No. of affected Village	Two revenue villages namely Kamalapadu and Kundanakota under Tehsil/Mandal-Yadiki in Ananthapuramu District of Andhra Pradesh
No. of Affected Families	The private land identified for the projects belongs to 174 land owner families.
Project Benefits	The levelized cost of generation of the project has been found to be Rs 6.50/kWh considering cost of pumping @ Rs 3.00/kWh. Kamalapadu pumped storage hydro project is a technically feasible project and will be beneficial in meeting the peaking requirement of energy during evening/night in the beneficiary state i.e., Andhra Pradesh. For construction of Kamalapadu PSH Project, no forest land shall be diverted, and the proposed project is off-stream pumped Storage project and have not any impact on natural water bodies. To develop Greenbelt in the surrounding of project area, plantation over 82 ha is proposed over restored muck dumping other construct ion sites.
	The entire private land identified for the project falls In two revenue villages namely Kamalapadu and Kundanakota under Tehsil/Mandal-Yadiki in Ananthapuramu District of Andhra Pradesh. The private land

	identified for the projects belongs to 174 land owner families. All the 174 land owners will be losing their partial agricultural land holding and none of the families will be losing any house or any other assets. None of them is getting displaced due to the project **A. Purchase of Private Land** The private land required for the project is proposed to be purchased through a voluntary sale with a willing seller and willing buyer basis. The process is undertaken through direct negotiations between landowners and Project Proponent. The landowners are informed in advance , and each landowner negotiates on the price of land as part of land take. **B. Govt. Land:** For the Government land required for Project, APGENCO has submitted land acquisition proposal to the District Collector, Ananthapuramu. Allotment is under process. The District Collector, Ananthapuramu has issued orders for Advance Possession of Govt land.
ToR Proposal No.	IA/AP/RIV/429576/2023
EAC meeting date	02.06.2023
ToR Letter No	J-12011/22/2023-IA.I (R)
ToR grant Date	07.08.2023
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Details of submergence area provide irrigation facility (if applicable)	247.11 ha District to
Details of tunnels on upper level.& lower level and length of canal (if applicable)	NA
No. of affected Village	Two revenue villages namely

	Kamalapadu and **Kundanakota** under Tehsil/Mandal-Yadiki in Ananthapuramu District of Andhra Pradesh
No. of Affected Families	The private land identified for the projects belongs to 174 land owner families.
Project Benefits	The levelized cost of generation of the project has been found to be Rs 6.50/kWh considering cost of pumping @ Rs 3.00/kWh. Kamalapadu pumped storage hydro project is a technically feasible project and will be beneficial in meeting the peaking requirement of energy during evening/night in the beneficiary state i.e., Andhra Pradesh. For construction of Kamalapadu PSH Project, no forest land shall be diverted, and the proposed project is off-stream pumped Storage project and have not any impact on natural water bodies. To develop Greenbelt in the surrounding of project area, plantation over 82 ha is proposed over restored muck dumping other construction sites.
R&R details	The entire private land identified for the project falls. In two revenue villages namely Kamalapadu and Kundanakota under Tehsil/Mandal-Yadiki in Ananthapuramu District of Andhra Pradesh. The private land identified for the projects belongs to 174 land owner families. All the 174 land owners will be losing their partial agricultural land holding and none of the families will be losing any house or any other assets. None of them is getting displaced due to the project **A.** Purchase of Private Land The private land required for the project is proposed to be purchased through a voluntary sale with a willing seller and willing buyer basis. The process isundertaken through

	direct negotiations between landowners and Project Proponent. The landowners are informed in advance, and each landowner negotiates on the price of land as part of land take. **B.** Govt. Land: For the Government land required for Project, APGENCO has submitted land acquisition proposal to the District Collector, Ananthapuramu. Allotment is under process. The District Collector, Ananthapuramu has issued orders for Advance Possession o f Govt land.
Catchment area/ Command area	Both Upper and Lower reservoirs are proposed to be constructed on multiple streams which further downstream merges and is known as Pedda Vanka, a left tributary of Penneru River. The catchment area of these streams at the dam of both the reservoirs is 6.05 sq km.
Types of Waste and quantity of generation during construction/Operation	Municipal Solid Waste- Bio degradable (575.0 Tons in four years), Non degradable (197.02 Tons in four years)
Material used for blasting and its composition as per DGMS standards.	It has been assessed that one magazine of 20 MT capacit ies would be sufficient to meet the requirements of the project. A mobile explosive van sha ll be deployed to carry explosives at the site of use at upper and lower dam area. Movement of the vans hould be done with armed guards and proper documentation recommended by PESO.
E-Flows for the Project	Proposed project is standalone Closed loop pumped storage scheme and provision of E-flow is not required for the scheme. However to maintain the inflow run-off from the catchment through the spillway designed for both upper and lower reservoir.
Is Projects earlier studied in Cumulative Impact assessment & Carrying Capacity Studies(CIA&CC) for River in which	No

project located. If yes then c) E-flow with TOR/Recommendation by EAC as per CIA&CC study of River Basin. d) If not the E-Flows maintain criteria for sustaining river ecosystem. Details on provision of fish pass	
Project benefit including employment details (no of employee)	The proposed project is Off-stream Closed Loop project. It is proposed to utilize the water from existing Chagallu barrage for initial filling of the Kamalapadu PSH reservoir. Both the proposed upper and lower reservoirs are artificial reservoirs and are not located on any active streams. Kamalapadu PSH Project is planned to be completed in 42Calendar months (excluding pre-construction activities), at the time of peak construction work in the project, around 700 persons may be engaged. Out of 700 nos., about 70% will be from the local population/surrounding Villages and balance persons will be skilled/semiskilled from other area. In addition, the project would lead to creation of direct and indirect employment opportunities as new factories would come up. 1n and around the project due to reliable power supply/availability, contract works for the locals during construction and operation phase, etc. Since there is no requirement of any forest land diversion for construction of various components, therefore requirement of preparation of Compensatory Afforestation Plan is not applicable in the present case.
Area of Compensatory Afforestation (CA) with tentative no of plantation.	500
Previous EC details	
EC Compliance Report by R.O, MOEF&CC	

No. of trees/saplings proposed in the view of 'Ek Ped Maa Ke Naam' campaign	

- **Electricity generation capacity:**

Powerhouse Installed Capacity	950 MW
Generation of Electricity Annually	2958.42 MU
No. of Units	5; 950 MW [3 x 238 + 2 x 118]

- **Muck Management Details:**

No. of proposed disposal area/ (type of land- Forest/Pvt land)	Net Quantity of Muck to be rehabilitated/disposed of is estimated as 12,873,413 cum. Keeping the above requirement and topography of the area , dumping site no. 1 has been identified covering an area of 51.91 ha area with a total capacity of 8,283,413 cum muck . The dumping site no. 2 covering 30 ha is formed by filling up the quarry
Distance of muck disposal area(location), from muck generation sources (project area)/River, HFL of proposed muck disposal area	500 m
Total Muck Disposal Area	81.91 ha
Estimate Muck to be generated	1,18,32,187.99 cum
Transportation	The generated muck will be carried 1n dumper trucks tightly covered in line with international best practices. All precautionary measures will be followed during the dumping of muck. All dumpers will be well maintained to avoid any chances of loose soil from being falling during transportation . All unpaved routes will be periodically wetted with the help of sprinklers prior to the movement of dump trucks.

Monitoring mechanism for Muck Disposal Transportation	The provisions of Monitoring have been kept under proposed Environmental Monitoring Plan.

- **Land Area Breakup:**

Private land	257.38 ha Private land
Government land	102.23 ha Govt. land
Forest land	0.00
Total land	359.61 ha
Submergence area/reservoir area	247.11 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**	No project component falls in any notified protected area. The nearest protected area to the project components is Rajiv Gandhi National Park, which is at a distance of 72.0 km. All the project components are outside the notified ESZs of Rajiv Gandhi National Park.
National Park	**No**	
Wildlife Sanctuary	**No**	
monuments/historical temples Archaeological sites etc	**No**	No places of historical, religious or archaeological importance were reported from the study area. Each village in the study area has some cultural sites or sites of religious significance like temples, mosques, Church, graveyards etc.
Additional information (if any)	-	
Availability of Schedule-I species in Study area		***Conservation Status of Fauna*** According to WPAA, 2022 , 13 species of mammals, one species of bird (Small Minivet), 06 species of herpetofauna (Python, Bengal Monitor Lizard, Indian rat Snake,

		Indian Cobra, Russel's Viper and Indian Flap-shell Turtle) are listed under Schedule I. Rest of the faunal species are listed under Schedule II category of WPAA, 2022. As per the IUCN Red List of Threatened Species, Version 2022-2, Wild Dog is listed under Endangered (EN) category, Common Leopard, Sloth Bear, Four-horned Antelope, Sambar Deer, Bonnet Macaque and Flap-shell Turtle are under Vulnerable(VU) category, Striped Hyaena, Python, Bengal Monitor Lizard and Anamalai Hill Gecko are listed under Near Threatened (NT) category. As per the IUCN Red List of Threatened Species version 2023-1, all birds have been listed under Least Concern (LC) category.

- **Public Hearing (PH) Details**

Advertisement for PH with date	Publications of notice for public hearing were given in state/national level Telugu newspaper "Sakshi" and English newspaper "The New Indian Express" dated 21.11.2023.
Date of PH	22nd December 2023
Venue	22nd, December 2023, at Kamalapadu (V), Yadiki (M), Ananthapu ram District, Andhra Pradesh.
Chaired by	Meeting was chaired by District Revenue Divisional Officer/ Sub-Divisional Magistrate, Guntakal, District Ananthapuram.
Main issues raised during PH	- Provision of Employment of local Youth. - Fair compensation for the pattaland

	to be acquired - Provide free technical education for the higher education students Support for the development of basic infrastructure facilities
No of people attended	151

- **Brief of base line Environment:**

Particulars	Details		
Period of baseline data collection/Sampling period. (Air, noise, water, land) flora and fauna of the project area, aquatic ecology, etc.	Parameters	Summer/ Pre-Monsoon	
	Soil	June 2023	
	Air Environment	May-June 2023	
	Noise & Traffic	June 2023	
	Water Quality	June 2023	
	Vegetation	June 2023	
	Fauna surveys	June 2023	
	Socio-economic survey	June 2023	
Brief description on hydrology and water assessment as per the approved Pre-DPR:	The Project is a standalone scheme with two new greenfield reservoirs and initial filling proposed from existing Pendekallu Balancing reservoir through a pipeline. While approving the water availability, Water Resources Department (WRD), Govt of Andhra Pradesh has changed the water source from Pendekallu Balancing reservoir to Chagallu Barrage, where additional flood water IS available. The Pendekallu Balancing Reservoir and the Chagallu Barrage are integral components of the Penna Ahobilam Balancing Reservoir (PABR) Stage-II irrigation initiative in Anantapur district, Andhra Pradesh. Chagallu Barrage, has a capacity of 1.50 TMC .WRD, Andhra Pradesh allotted 0.800 TMC (0.720 TMC +0.080 TMC) in two fillings at the rate of 0.400 TMC (including losses) or inmore no.of fillings based on the actual availability of water from Chagallu Barrage in Anathapuram District.		
Additional detail (If any)	-		

- **Court cases: Nil**

- **Status of other statutory clearances**

Particulars	**Letter no. and date**
Status of Stage- I FC	Diversion of forest land is not required for the proposed project
Approval of Central Water Commission	The Layout Map, hydrology and Power Potential Studies have been examined by CWC/CEA and necessary clearances/observations have been issued: i. CWC vide letter no. T-16012/12/2023/HCD (NWS) dated 16.11.2023 for layout of the project and letter no. T-11012/9/2023-HYD (S) DTE dated 15.07.2025 for hydrology aspect. ii. The CEA has issued observation regarding layout vide letter no. 10/440/HETD&RM/2025 dated 3.07.2025.
Approval of Central Electricity Authority	
Additional detail (If any)	
Is FRA (2006) done for FC-1	NA

13. Details of the EMP

S. No.	**Components of EMP**	**Capital Cost (Rs. in lakh)**	**Recurring Cost (Rs. in lakh)**							**Total Cost (Rs. in lakh**
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	
1	Catchment Area Treatment Plan	3.36	00.00	00.00	00.00	00.00	00.00	00.00	00.00	3.36
2	Compensatory Afforestation and NPV*	0.00	00.00	00.00	00.00	00.0_0	00.00	00.00	00.00	0.00

3	Biodiversity Conservation & Wildlife Conservation	160.00	00.00	00.00	00.00	00.00	00.00	00.00	00.00	160.00
4	Fisheries Development Plan	89.00	00.00	00.00	00.00	00.00	00.00	00.00	00.00	89.00
5	Muck Dumping and Management Plan	70.00	255.45	225.40	523.90	342.00	155.20	53.75	3.00	1628.70
6	Landscaping, Restoration of	18.00	78.00	70.25	80.00	42.75	0.00	0.00	0.00	289.00
7	Sanitation and Solid Waste Management	173.00	33.96	33.96	33.96	33.96	5.00	0.00	0.00	313.84
8	Public Health Delivery System	60.00	52.50	52.50	47.50	47.50	0.00	0.00	0.00	260.00
9	Energy Conservation Measures	32.00	53.00	53.00	53.00	53.00	0.00	0.00	0.00	244.00
10	Labour Management	25.00	7.00	2.00	12.00	7.00	0.00	0.00	0.00	63.00
11	Green Belt Development Plan	2.25	0.50	5.45	13.40	8.00	3.00	3.00	0.00	35.60
12	Pollution Mitigation Measures	0.00	16.00	16.00	16.00	16.00	0.00	0.00	0.00	64.00
13	Environmental Monitoring Program	0.00	23.68	38.68	38.68	38.68	15.00	0.00	0.00	154.72
14	Rehabilitation and Resettlement Plan**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Local Area Development Plan	733.50	00.00	00.00	00.00	00.00	00.00	00.00	0.00	733.50
16	Disaster Management Plan	275.00	25.00	25.00	25.00	25.00	25.00	00.00	0.00	400.00
17	Watershed Development Plan	325.00	00.00	00.00	00.00	00.00	00.00	00.00	00.00	325.00
	Total	1966.11	545.09	532.24	843.44	613.89	203.20	56.75	3.00	4763.72

* Diversion of Forest land is not involved in proposed project

* * Cost of private land acquisition (R&R) will be part of DPR cost.

38.4.3 The EAC during deliberations noted the following:

- The EAC deliberated on the information submitted and presented during the meeting, observing that the proposal is for the grant of Environmental Clearance (EC) to the project for Kamalapadu Closed Loop Pumped Storage Project (950 MW) in an area of 359.61 ha located at Village Attiraladinne, Kamalapadu & Kundanakota etc., Sub-district Peddapappur & Yadiki, District Anantpur, Andhra Pradesh by M/s Andhra

Pradesh Power Generation Corporation Limited.

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

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

- The EAC noted that the Project Proponent has provided an undertaking affirming that the data and information provided in the application and enclosures are accurate to the best of their knowledge, with no suppression of information in the EIA/EMP reports. The proponent also acknowledged that if any part of the data/information submitted is found to be false or misleading at any stage, the project will be rejected, and any Environmental Clearance granted will be revoked at the risk and cost of the Project Proponent.

- The Terms of Reference issued by MoEF&CC, New Delhi vide letter no. F No J-12011/22/2023-IA. I(R) dated 7th August 2023 in the name of M/s New and Renewable Energy Development Corporation of Andhra Pradesh Ltd. (NREDCAP). Subsequently, MoEF&CC vide letter no. J-12011/22/2023-IA-I(R) dated 02.06.2025 has granted approval for transfer of Terms of Reference (ToR) for the Kamalapadu Closed Loop PSP (950 MW) from 'M/s New and Renewable Energy Development Corporation of Andhra Pradesh Ltd. (NREDCAP)' to 'M/s Andhra Pradesh Power Generation Corporation Limited (APGENCO).

- The EAC observed that the total land required for the project is 359.61 ha (257.38 Ha of private land & 102.23 Ha of Govt. land) and there is no forest land involve in the project area.

- The EAC noted that the Public hearing was conducted on 22.12.2023, chaired by District Revenue Divisional Officer/ Sub-Divisional Magistrate, Guntakal, District Ananthapuram at Kamalapadu (V), Yadiki (M), Ananthapuram District, Andhra Pradesh. Publications of notice for public hearing were given in state/national level Telugu newspaper "Sakshi" and English newspaper "The New Indian Express" dated 21.11.2023. 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 stakeholder's concerns.

- The EAC noted that at the time of grant of ToR, it was submitted that the initial reservoir

filling of the Lower/Upper Reservoir of the proposed Kamalapadu PSH would be carried out by pumping water from the existing Pendekallu Balancing Reservoir through a pipeline. However, while approving the water availability, the Water Resources Department (WRD), Government of Andhra Pradesh has revised the source of water from Pendekallu Balancing Reservoir to Chagallu Barrage. In the current proposal, the Committee observed that the total storage requirement of 20.59 MCM (comprising 18.48 MCM gross storage of the Lower Reservoir and 2.11 MCM dead storage of the Upper Reservoir) is now proposed to be met through pumping arrangements from the existing Chagallu Barrage.

- A water allocation of 0.8 TMC, allowing for two or more fillings during the monsoon season, has been granted to the Kamalapadu PSP for this purpose. This allocation was approved by the Andhra Pradesh Water Resources (Reform) Department on 11th March 2025.

- The PP has informed that the Layout Map, hydrology and Power Potential Studies have been examined by CWC/CEA and necessary clearances/observations have been issued:

  iii. CWC vide letter no. T-16012/12/2023/HCD (NWS) dated 16.11.2023 for layout of the project and letter no. T-11012/9/2023-HYD (S) DTE dated 15.07.2025 for hydrology aspect.
  iv. The CEA has issued observation regarding layout vide letter no. 10/440/HETD&RM/2025 dated 3.07.2025.

- The EAC noted that Kamalapadu Closed Loop Pumped Storage Project, both the reservoirs (Pendekallu and Chagallu barrage) are proposed to be filled by water from the Tungabhadra Dam. Hence, permission should also be taken from the Tungabhadra Board to use water in this project.

- Further, during deliberations on the watershed development plan, the EAC observed that only limited activities had been proposed by the PP. Accordingly, the Committee advised submission of a revised and detailed plan. In compliance, the PP, vide email dated 29.08.2025, submitted the revised watershed development plan wherein the project cost has been enhanced from Rs. 325.00 lakh to Rs. 618.03 lakh.

38.4.4 The EAC after examining the information submitted and detailed deliberations recommended the proposal for grant of prior Environmental Clearance by the Ministry to Kamalapadu Closed Loop Pumped Storage Project (950 MW) in an area of 359.61 ha located at Village Attiraladinne, Kamalapadu & Kundanakota etc., Sub-district Peddapappur & Yadiki, District Anantpur, Andhra Pradesh by M/s Andhra Pradesh Power Generation Corporation Limited, under the provisions of EIA Notification, 2006 and as amended with subject to compliance of applicable Standard EC conditions with the following specific environmental

safeguard conditions:

[A] Environmental management and Biodiversity conservation:

i. The water of rainfall yield of self-catchment of the reservoir shall be released to downstream through body of dam/ barrage/ embankment etc.
ii. 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.
iii. The contract clause limiting the No. of vehicles used during excavation and transportation shall followed scrupulously and the same shall informed to the ministry.
iv. 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.
v. 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.
vi. 10000 plants shall be planted around the muck disposal area and the survival of plants shall be submitted with the 6 monthly compliance report.
vii. Plantation of saplings 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).
viii. Watershed development plan prepared shall be implemented within 10 km radius of the project. Implementation status be submitted in the 6 monthly compliance report to the concerned regional office of the Ministry.
ix. PP shall obtain necessary permission from the Tungabhadra Board to use water from the Tungabhadra Dam.

[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.

v. Technical appraisal of project shall be obtained from CEA in terms of Office Memorandum no. 15-23/3/2021-Hydel-II dated 29.08.2025 issued by the Ministry of Power, before start of construction activities of the 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 12th 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. 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.

vi. 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.

vii. Bio-Gas plant shall be installed in the Project affected area for Utilizing Cattle waste (Cow Dung) into renewable source of fuel.

viii. Preference in employment opportunities and admission to ITI institutions shall be given to Project Affected Families (PAFs).

ix. 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.

x. 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. 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.

iii. 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. 38.2

Jankhai Closed Loop Pumped Storage Project (1500 MW) in an area of 427 Ha located at Village Kathmana, Janakhai etc, Sub-district Sirmour and Jawa. District Rewa, Madhya Pradesh by M/s GSC PSP Madhya Private Limited – Terms of References (TOR) - reg.

[Proposal No. IA/MP/RIV/548555/2025; F. No. J-12011/28/2025-IA.I(R)]

38.2.1 The proposal is for grant of Terms of References (ToR) to the project for Jankhai Closed Loop Pumped Storage Project (1500 MW) in an area of 427 Ha located at Village Kathmana, Janakhai etc, Sub-district Sirmour and Jawa. District Rewa, Madhya Pradesh by M/s GSC PSP Madhya Private Limited.

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

i. The proposed Jankhai Pumped Storage Project (1500 MW) is envisioned as an Off-stream Closed Loop Pumped Storage Project in Rewa District of Madhya Pradesh. The project is planned with two artificial reservoirs: an upper reservoir near Tedun village and a lower reservoir near Jankhai Kalan & Ragunathpur villages, Rewa District.

ii. The proposed upper reservoir is situated on a plateau surface at geographical coordinates 24°54'54.33"N latitude and 81°33'39.52"E longitude. The upper reservoir is configured with a Full Reservoir Level (FRL) of EL. 338.00 m and a Minimum Drawdown Level (MDDL) of EL. 313.45 m, offering a live storage capacity of 18.65 MCM and a dead storage capacity of 2.18 MCM.

iii. The proposed lower reservoir is situated in close proximity to Jankhai Kalan and Raghunathpur villages, at geographical coordinates 24°55'1.48"N latitude and 81°32'19.69"E longitude. The lower reservoir is configured with a Full Reservoir Level

(FRL) of EL. 130.50 m and a Minimum Drawdown Level (MDDL) of EL. 108.00 m, offering a live storage capacity of 21.75 MCM and a dead storage capacity of 2.38 MCM.

iv. The initial filling of the proposed reservoirs is planned to be sourced from the Tons or Tamasa River. The project will require a one-time filling volume of 30.10 MCM, along with an annual replenishment of 3.10 MCM to compensate for evaporation losses.

v. Jankhai Pumped Storage Project envisages construction of two artificial reservoirs - Upper reservoir is proposed to be located near village Tedun and Baghabil and Lower reservoir is proposed to be located near village Jankhai Kalan & Ragunathpur, Sub-district Jawa. District Rewa, Madhya Pradesh.

vi. **Land requirement:**

Forest Land : 217.0 ha
Non-forest Land : 210.0 ha
Total Land : 427.0 ha

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

- The proposed lower reservoir site is located near the villages of Jankhai Kalan and Raghunathpur and the upper reservoir is located near the Tedun and Baghabil villages in Rewa District. Tedun and Baghabil are the un-inhabited village.
- The region is predominantly rural and agricultural, with most families dependent on farming and agricultural labour for a living.
- These villages have a mixed population of Other Backward Classes, Scheduled Castes and Scheduled Tribe communities.
- As per secondary source, drinking water supply and sanitation facilities are inadequate in most of the villages in the project area.
- The people of this area are highly dependent on land and forests for their livelihood.

Parameter	Raghunathpur Village	Janakhai Kalan Village
Total Population	700	3,469
Male Population	322	1,867
Female Population	378	1,602
Households	195	736

Scheduled Tribe (ST) Population	268	718

viii. The demographic profile of the project surrounding villages shows that Jankhai Kalan is the largest village with a population of 3,469 and a significant Scheduled Tribe population of 718, while Raghunathpur has 700 people of which 268 belong to the Scheduled Tribes.

ix. Water requirement: Jankhai Pumped Storage Project will require 30.10 MCM for one time filling and thereafter ~ 3.10 MCM per year will be required.

x. Project Cost: The estimated project cost is Rs 6313.63 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).

xi. Project Benefit: Total Employment will be 1000 nos during construction & 55 nos during O&M persons as direct & indirect.

xii. Environmental Sensitive area: There is no Protected Area in the vicinity of the proposed project. Ranipur WLS is 30.50 km far from the proposed project area. River/ water body, Water will be pumped from Tons/Tamasa River.

xiii. In principal approval of Initial Allotment of Pumped Hydro Storage by Office of the Commissioner, New and Renewable Energy, Bhopal vide letter no. F/NRE/2025-26/PHS-12/452 dated August 19, 2025.

xiv. Alternative Studies: Six (6) potential reservoir sites have been identified within the study area.

- A total of four layout alternatives has been examined, all incorporating a surface pit-type powerhouse, while considering the topographical constraints of the project area.

- The upper and lower reservoir sites have been explored in three distinct locations in the study region.

S. NO	Description	Alternative -1	Alternative -2	Alternative -3	Alternative -4
1	Upper Reservoir	Artificial Pond	Artificial Pond	Artificial Pond	Artificial Pond
	Type of Dam	CFRD	CFRD	CFRD	CFRD
	Max. Dam Height (m)	33	28.5	25	25

	Length of Dam (Km)	3.86	3.86	3.18	2.70
	Excavated Bed Level (m)	310	310	285	305
	FRL (m)	338	333.5	305	325
	MDDL (m)	313.45	313	287.3	311
	Live storage capacity (MCM)	18.65	15.25	10.10	11.12
	Dead storage capacity (MCM)	2.18	1.89	1.20	1.53
	Evaporation Loss (MCM)	1.36	1.34	1.06	1.39
2	Lower Reservoir	Artificial Pond	Artificial Pond	Artificial Pond	Artificial Pond
	Type of Dam	CFRD	CFRD	CFRD	CFRD
	Max.Dam Height (m)	30.50	25.50	23.50	25.00
	Length of Dam (Km)	3.83	2.5	2.5	3.96
	Excavated/Nat. Min. Bed Level (m)	105	110	115	115
	FRL (m)	130.50	130.50	133.50	135.00
	MDDL (m)	108	112.75	117	121.5
	Live storage capacity (MCM)	21.75	18.44	12.50	14.32
	Dead storage capacity (MCM)	2.38	2.05	1.14	2.17
	Evaporation Loss (MCM)	1.72	1.79	1.29	1.69
3	Water Conductor System, Power House & Adit/MAT				
	Total Generation Discharge (m^3/s)	838.47	706.04	467.71	514.82
	Unit Discharge (m^3/s)	167.61	141.21	116.93	128.70
	Dia Of Penstock/Pressure Shaft (m)	6.75	6	5.5	5.75
	Velocity through Pressure Shaft (m/s)	4.69	4.99	4.92	4.96
	Length Of Penstock/Pressure shaft (m) (avg)	1113.00	1092.00	957.00	905.00
	Type of Power House	Pit Type Surface Power House	Pit Type Surface Power House	Pit Type Surface Power House	Pit Type Surface Power House
	Maximum pit depth (m)	75	67.67	67.5	84
	Upstream L/H Ratio	6.21	6.15	6.39	5.29
	Upstream Surge Shaft	Not Required	Not Required	Not Required	Not Required
	Dia of Main TRT (m)	7.7	6.75	6.25	6.5

	Length Of TRT (m) (avg)	109.00	102	102	102
	Downstream Surge Gallery	Not Required	Not Required	Not Required	Not Required
	Length of MAT/Approach Road (m)	545	783	703	722
	Length of Construction Adit (m)	330	257	310	338
4	Power Potential				
	Peaking Hours	6	6	6	6
	Max Net Head (m)	226.18	215.75	184.00	198.50
	Min Net Head (m)	179.13	177.50	149.80	171.00
	Combined Efficiency	90%	90%	90%	90%
	Max Min Head Ratio	1.26	1.22	1.23	1.16
	IC (MW)	1500	1200	680	800
	No of Units	6	5	4	4
	Annual Energy (MU)	3184	2497	1415	1664
6	Muck Quantity/Dam Rockfill/Useable Material				
	Construction Material Required (MCM)	10.00	7.50	7.00	7.80
	Excavation Quantity (MCM)	19.30	15.85	12.75	12.80
	Useable Material (MCM)	10.01	7.88	7.34	6.20
	Muck Quantity (MCM)	11.60	10.40	5.93	5.91
	Material to be Procuired fromQuarry (MCM)	-	-	-	1.60
	Muck Dumping Area (Ha)	100.00	90.00	47.50	47.50
7	Land Requirement (Ha)	427	418	315	380
8	Construction Time (Months)	36	36	36	36
9	Hard Cost Per MW (Crores)	3.67	3.96	4.49	3.95

After reviewing the four alternatives from techno-economic and geological perspectives, it was observed

Alternative 1 is technically superior and environmentally better because:

- Minimum forest land and minimum forest land/MW
- Minimum total land/MW
- The length of the water conducting system is optimal for a pit-type surface

powerhouse.

- There is sufficient availability of excavated raw materials in both upper and lower reservoirs for constructing the CFRD.
- The surface powerhouse has a shallower pit depth compared with other alternatives.
- The installed capacity of this scheme is higher compared to other alternatives, making it techno-economically viable.

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	Jankhai Pumped Storage Project
Location (Including coordinates)	Lower Reservoir : Latitude: 24° 55' 1.48" N Longitude: 81° 32' 19.69" E; Upper Reservoir : Latitude: 24° 54' 54.33" N Longitude: 81° 33' 39.52" E;
Inter- state issue involved	No
Seismic zone	Zone-III

- **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	3183.60 MU
No. of Units	6 nos. (4 x 300 MW + 2 x 150 MW)
Additional information (if any)	Nil

- **ToR/EC Details:**

Cost of project	6313.63 Cr.
Total area of Project	427.0 ha
Height of Dam from River Bed (EL)	Lower Dam – 30.50 m Upper Dam –33.0 m
Length of Tunnel/Channel	1113.0 m
Details of Submergence area	Being a pump storage project, there is no submergence area, however, land area of upper and lower reservoirs is 125 Ha and 145 Ha i.e. a total of 270 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

- **Muck Management Details:**

No. of proposed disposal area/ (type of land- Forest/Pvt. land)	100 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	210.0 ha

Government land	-
Forest Land	217.0 ha
Total Land	427.0 ha
Submergence area/Reservoir area	270.0 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	--	There is no Protected Area in the vicinity of the proposed project. Ranipur WLS is approx. 30.50 km far from the proposed project area.
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 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 : ravi@rstechnologies.co.in Land Line : (0124) 4295383

	Cellular : (+91) 9810136853
Project Benefits	• 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. • Further, pumped storage projects are critical to the national economy and overall energy reliability because it's: o Least expensive source of electricity, not requiring fossil fuel for generation o An emission-free renewable source o Balancing grid for demand driven variations o Balancing generation driven variations

	○ Voltage support and grid stability 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 217.0 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

38.2.3 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 Jankhai Closed Loop Pumped Storage Project (1500 MW) in an area of 427 Ha located at Village Kathmana, Janakhai etc, Sub-district Sirmour and Jawa. District Rewa, Madhya Pradesh by M/s GSC PSP Madhya 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 noted that the total land required for the construction of various components and related works for Jankhai PSP is estimated to be around 427.0 ha, out of which 210.0 ha is non-forest land and 217.0 ha is forest land. The submergence or reservoir area within this total is 270.0 ha hectares. Diversion of forest land for non-forest purpose will be involved for construction of Jankhai Closed Loop Pumped Storage 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 Proponent indicated that there is no Protected Area within 10 km of the proposed project; the nearest eco-sensitive zone, Ranipur Wildlife Sanctuary, lies at a distance of 30.5 km.

It was informed that the Jankhai Pumped Storage Project will require 30.10 MCM of water for one-time filling, and thereafter about 3.10 MCM annually for operation. The project cost is

estimated at ₹6313.63 crore, with specific allocations for environmental protection measures to be finalized during the EIA study.

EAC noted that in the course of project planning, six potential reservoir sites were initially identified, and four layout alternatives were developed, each considering surface pit-type powerhouse arrangements suited to the site's topography. These alternatives were analyzed across parameters such as dam height and length, reservoir storage, penstock design, generation discharge, powerhouse specifications, installed capacity, muck management, land requirement, and construction duration.

Among the four, Alternative-1 emerged as the most favorable as it requires minimum forest land, and allows for efficient water conductor system design. The pit depth for the surface powerhouse is shallower compared to other options, reducing excavation impacts.

The project proposes to source water from the Tons/Tamasa River.

It has been observed that Office of the Commissioner, New and Renewable Energy vide letter dated 19.08.2025 has initially allotted the Pumped Hydro Storage (PHS) Project proposed to be developed by M/s GSC PSP Madhya Pvt Ltd for the capacity of 1500 MW at District-Rewa MP.

38.2.4 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 Jankhai Closed Loop Pumped Storage Project (1500 MW) in an area of 427 Ha located at Village Kathmana, Janakhai etc, Sub-district Sirmour and Jawa. District Rewa, Madhya Pradesh by M/s GSC PSP Madhya 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. PP shall submit the Water Utilization Mapping within a 10 km radius of the project for examining the impacts on sustainability of ecosystem of the region after withdrawal of water for proposed project.

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.

iii. Explore the possibilities for reducing the Forest land requirement. The application for obtaining Stage I FC for 217 ha of forest land involved in the project shall be submitted within stipulated time.

iv. A detailed assessment shall be carried out to optimize and possibly reduce the land area earmarked for quarrying area.

v. Muck disposal site and other components such as Township, site office, Stacking area and batching plant shall be located outside the forest area.

vi. 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.

vii. PP shall submit the detailed plan for filling the reservoir from the Tons or Tamasa River along with necessary approval form water resource department.

viii. Transportation Plan for transporting construction materials shall be submitted.

ix. 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.

x. 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.

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

xii. 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.

xiii. 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.

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. 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. 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.

xviii. 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.

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

xx. 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.

xxi. 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. PP shall submit the credible documents to show the status of land acquisition w.r.t project site from/through the concerned State Government as required under Ministry's OM dated 7th October, 2014 for the project land to be acquired.

iv. 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. Undertaking need to be submitted on affidavit stating that no activities has been started on the project site.

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

vii. 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.

viii. 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. 38.3

Koppolu Open loop Pumped Storage Project (2400 MW) in an area of 332.73 Ha located at Village Koppolu, Sub-district Kondapuram, District Y.S.R., Andhra Pradesh by M/s Chinta Green Energy Private Limited - Terms of References (TOR) – reg.

[Proposal No. IA/AP/RIV/548574/2025; F. No. J-12011/30/2025-IA.I(R)]

38.3.1 The proposal is for grant of Terms of References (ToR) to the project for Koppolu Open loop Pumped Storage Project (2400 MW) in an area of 332.73 Ha located at Village Koppolu, Sub-district Kondapuram, District Y.S.R., Andhra Pradesh by M/s Chinta Green Energy Private Limited.

38.3.2 The Project Proponent and the accredited Consultant M/s Enviro Infra Solutions Pvt Ltd, made a detailed presentation on the salient features of the project and informed that:

i. The project is envisaged to be an Off-stream Open loop Pumped Storage Project consisting of two reservoirs: one reservoir proposed at upper elevation and other already existing at lower elevation, to provide the effective "head" for power generation. The

water conductor system will connect the two reservoirs through an underground powerhouse.

ii. The project is located in the Rayalaseema region of Andhra Pradesh, in Kondapuram Mandal, near Koppolu village in YSR district of Andhra Pradesh. The project is in the vicinity of the Gandikota Reservoir, which will be used as lower reservoir for the proposed project. The project lies between longitude 78°10'34.29"E and latitude 14°52'39.00"N covered under SOI toposheet No. 57 -J/1. The upper dam is located at longitude 78°10'40.88"E and latitude is 14°52'44.78"N.

iii. In view of the regional geology and the topography of the project area, one new reservoir has been proposed. The existing Gandikota reservoir will act as the lower reservoir. The new upper reservoir will be formed by constructing a concrete gravity dam. The FRL and MDDL of the upper reservoir is kept at EL 446.00 m and EL 412.00 m respectively with a gross storage of 37.67MCM and live storage of 36.78MCM. Similarly, the FRL and MDDL of the lower Gandikota reservoir is considered to be at EL 212.00 m & EL 199.00m respectively with a natural gross storage of 750.88 MCM and live storage of 736.68 MCM. The amount of live storage required in the upper reservoir to operate 2400MW with 8 hours of generation is around 35.34 MCM. The amount of live storage available is around 32.07MCM and the required remaining storage will be adjusted by creating the excavation in the bank of the reservoir to keep the live storage 36.78 MCM.

iv. **Land requirement:** The total land requirement for the project is 332.73 hectares, all of which is non-forest land.

v. **Water requirement:** The quantity of water required during construction is estimated as 500 KLD which shall be drawn from the river water can be pumped and stored in a tank at higher elevation. The domestic requirement shall be 300 KLD which shall be met from the ground water resource. Post construction the domestic requirement shall be 65 KLD only.

vi. **Project Cost:** The total project cost including Civil & Hydro-Mechanical Works, Electro-Mechanical works, Transmission, Escalation and IDC is Rs. 11024.63 Crore.

vii. **Project Benefit:** Pumped storage offers multiple benefits to a power system. In addition to providing energy storage, pumped storage can provide power immediately and can be rapidly adjusted to respond to changes in energy demands. These benefits are part of a large group of benefits, known as ancillary services

viii. **Environmental Sensitive area:** There is no Protected Area in the vicinity of the proposed project

ix. **Resettlement and rehabilitation**: The compensation for acquisition land would be paid to the respective land owners/ land titleholders as per the provisions of "Right

to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013".

x. **Alternative Studies:** The following aspects have been considered for formulation of alternative layouts:

a. Topography of the area and other factors like location, length of water conductor System.
b. Utilization of available head at project site and to the maximum extent feasible.
c. Development of economical and optimized layout
d. Ease of Construction and access to shafts, powerhouse, and related structures.
e. Minimal area of land acquisition to accommodate various project components.

Three alternatives have been considered and best suitable site has been selected. Further details have been provided in PFR.

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

- Solid waste -. About 584 MT/year solid municipal wastes is likely to be generated from labour colony. Municipal Solid waste would be disposed as per MSW Rules 2016

- Muck generated from dam's foundation after assuming swell factor of 25% has been estimated as 69,19,000 m3 which shall be utilized for earthen dam, producing coarse and fine aggregate for concrete production and in fillings for developing areas for construction facilities.

xii. Status of Litigation Pending against the proposal, if any.

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

1. EAC Meeting Details:	
EAC meeting/s	38th Meeting of The Expert Appraisal Committee
Date of Meeting/s	29th AUGUST, 2025
Date of earlier EAC meetings	Nil
2. Project Details:	
Name of the Proposal	Project is an Off-stream Open loop Pumped Storage Named Koppolu Pumped Storage Project (2400 MW), District-YSR, Andhra Pradesh **Proposal No**: IA/AP/RIV/548574/2025 **File No**: J-12011/30/2025-IA.I(R)

Location (Including Coordinates)	The project is located in the Rayalaseema region of Andhra Pradesh, in Kondapuram Mandal, near Koppolu village in YSR district of Andhra Pradesh, The project is in the vicinity of the Gandikota Reservoir **Coordinates**: Upper Reservoir Latitude: 14° 52' 24.75”N Longitude: 78° 10' 51.62"E Lower Reservoir Latitude : 14° 50' 38.18"N
Inter- state issue involved	Not Applicable
Seismic zone	Zone-II
3. Category Details:	
Category of the project	Category 'A'
Provisions	Pumped Storage Project
Capacity / Cultural command area (CCA)	2400 MW / 19200 MWH
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	Nil
4. Electricity Generation Capacity	
Powerhouse Installed Capacity	2400 MW/19200 MWH
Generation of Electricity Annually	6657.60 MU annually
No. of Units	8 units of 300 MW
Additional information (if any)	Nil
5. ToR/ EC Details:	
Cost of project	11024.63 Cr
Total area of Project	332.73 ha
Height of Dam from River Bed (EL)	43.00m
Length of Tunnel/Channel	3 numbers of main TRT, Average Length of 2868m each; and 4 numbers of main Pressure shaft having average length of 511m each
Details of submergence area	--
Types of Waste and quantity of generation during construction / Operation	About 584 MT/year solid municipal wastes is likely to be generated from labour colony in the construction phase.
E-Flows for the Project	--

Is Projects earlier studied 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.	NA	
6. Muck Management Details:	Muck generated from dam's foundation after assuming swell factor of 25% has been estimated as 69,19,000 m3 which shall be utilized for Concrete Dam and other structures, producing coarse and fine aggregate for concrete production and in fillings for developing areas for construction facilities	
No. of proposed disposal area / (type of land- Forest / Pvt land)	50 ha (Non Forest Land)	
Muck management plan	Will be provided in EIA report.	
Monitoring mechanism for Muck Disposal Transportation	Project Proponent	
7. Land Area Breakup:		
Project Appurtenance	**Area (ha)**	
Private land (Submergence)	332.73 (Total Land required)	
Barrage construction land	-	
Forest land	Nil	
Proposed Rabi & Kharif irrigation Area	NA	
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	
National Park	No	
Wildlife Sanctuary	No	
9. Court Cases Details:		
Court Case	Nil	
Additional information (if any)	Nil	
10. Affidavit / Undertaking details:		
Affidavit/Undertaking		
Additional information (if any)	Nil	

11. Previous EC compliance and necessary approvals:	
Particulars	Letter No. and Date
Certified EC compliance report (if applicable)	NA
Status of Stage- I FC	NA
Additional detail (If any)	Nil
Is FRA (2006) done for FC-I	NA
12. Miscellaneous :	
Particulars	**Details**
Details of consultant	Enviro Infra Solutions Pvt.Ltd. Address: - 301, 302 & 305, SRBC, Sec.-9, Vasundhara, GZB-201012 Ph.: 0120-4151183 Email: eis@enviroinfrasolution.com
Project benefit	Pumped storage offers multiple benefits to a power system. In addition to providing energy storage, pumped storage can provide power immediately and can be rapidly adjusted to respond to changes in energy demands. These benefits are part of a large group of benefits, known as ancillary services
Status of other statutory clearance	NA
R&R details	The compensation for acquisition land would be paid to the respective land owners/ land titleholders as per the provisions of "Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013".

38.3.3 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 Koppolu Open loop Pumped Storage Project (2400 MW) in an area of 332.73 Ha located at Village Koppolu, Sub-district Kondapuram, District Y.S.R., Andhra Pradesh by M/s Chinta Green 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 proposed project is an open loop project as Gandikota reservoir as the lower reservoir and a newly proposed upper reservoir to be created by constructing a concrete gravity dam. The EAC also observed that the upper reservoir has FRL at EL 446.00 m and MDDL at EL 412.00 m with a gross storage of 37.67 MCM and live storage of 36.78 MCM. The Gandikota reservoir, with FRL 212.00 m and MDDL 199.00 m, provides a live storage of 736.68 MCM. The live storage requirement for 2400 MW with 8 hours of generation is about 35.34 MCM.

The EAC noted that the total land requirement for the project is 332.73 ha, all of which is non-forest land. Water requirement during construction is 500 KLD (to be met from the river) and 300 KLD for domestic use (from ground water), reducing to 65 KLD in post-construction phase. The project cost is estimated at Rs. 11,024.63 crore. The powerhouse capacity is 2400 MW (8 units of 300 MW each) with an annual generation potential of 6657.60 MU.

The EAC noted that the total land required for the construction of various components and related works for Koppolu PSP is estimated to be around 332.73 hectares, all of which is non-forest land. The Project Proponent indicated that there is no Protected Area within 10 km of the proposed project.

The EAC observed that multiple projects are already under construction or have been commissioned in and around the proposed Gandikota Reservoir site. Accordingly, it is essential to conduct a cumulative impact assessment of the area, with particular emphasis on evaluating the impacts on sustainability of the reservoir and aquatic flora and fauna.

It has been observed that the Government of Andhra Pradesh, vide its order dated 30.06.2025, has allotted the project at Koppolu in Kondapuram Mandal, YSR Kadapa District to M/s Chinta Green Energy Pvt. Ltd. under the provisions of the AP Integrated Clean Energy Policy, 2024. The EAC noted that the capacity allotted by the Government of Andhra Pradesh is 360 MW, whereas the proposal submitted by the Project Proponent (PP) is for 2400 MW. The Committee opined that the PP shall obtain an amendment to the Government Order so as to reflect the project capacity as proposed in their application.

38.3.4 The EAC based on the information submitted and as presented during the meeting, recommended the proposal for grant of Specific ToR issued by the Ministry for Open Loop Pumped Storage Projects vide OM dated 14.08.2023 for conducting EIA study for proposed construction of the project for Koppolu Open loop Pumped Storage Project (2400 MW) in an area of 332.73 Ha located at Village Koppolu, Sub-district Kondapuram, District Y.S.R., Andhra Pradesh by M/s Chinta Green 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. A detailed water balance chart shall be submitted indicating amount of water reservoir

receive annually and the water be used for PSP operation along with loss of water through evaporation, so as to facilitate the discussion on sustainability of the reservoir.

ii. PP shall submit a detailed action plan for the survival or diversion of any rivulets or streams that may be impacted by the project, particularly those that flow into or join Gandikota reservoir. The action plan should include measures to ensure that these water bodies are adequately protected or diverted in a manner that does not negatively affect the overall hydrology of the area. The PP should also provide an assessment of potential environmental impacts on these streams and propose mitigation measures to minimize any adverse effects.

iii. PP shall submit the Water Utilization Mapping within a 10 km radius of the project for examining the impacts on sustainability of ecosystem of the region after withdrawal of water for proposed project.

iv. 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.

v. A detailed assessment shall be carried out to optimize and possibly reduce the land area earmarked for quarrying area.

vi. Muck disposal site and other components such as Township, site office, Stacking area and batching plant shall be located outside the forest area.

vii. 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.

viii. Transportation Plan for transporting construction materials shall be submitted.

ix. 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.

x. 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.

xi. Calculation and values of GHGs (CO_2, CH_4 etc.) emissions during construction and during operation till the life of the project shall be estimated and submitted.

xii. 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.

xiii. 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.

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. Cumulative Impact of projects in the basin on carrying capacity and sustainability of Reservoir/ River /nala of catchment area shall be studied.

xvii. 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.

xviii. 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.

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

xx. 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.

xxi. 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. PP shall submit the credible documents to show the status of land acquisition w.r.t project site from/through the concerned State Government as required under Ministry's OM dated 7th October, 2014 for the project land to be acquired.

iv. 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. Approved Layout as per pre-DPR chapter duly approved by CEA/CWC 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. Undertaking need to be submitted on affidavit stating that no activities has been started on the project site.

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

vii. 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.

viii. 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. 38.4

Rewa Closed Loop Pumped Storage Project (600 MW) in an area of 449.47Ha Village Nevrhiya, Uprohit Pura, Bajara, Chaura & Chhataini etc., Sub-district Teonthar & Hanumana, District Rewa, Madhya Pradesh by M/s Dhakara Energy Psp Private Limited – Terms of References (TOR) – reg.

[Proposal No. IA/MP/RIV/546804/2025; F. No. J-12011/35/2025-IA.I(R)]

38.4.1 The PP vide email dated 25.08.2025 informed that due to the non-availability of Senior Management, they will be unable to attend the scheduled meeting on 29th August 2025, therefore requested to deferred the proposal.

Agenda Item No. 38.5

Sonpura Major Micro Irrigation Project (CCA: 19410 Ha) in an area of 1042.9Ha Village Akhai Mahadev, Panwari, Parnakheri & Garkatu etc., Sub-district Badarwas, Kolaras & Guna, District Shivpuria and Guna, Madhya Pradesh by M/s Water Resources Department, Government of Madhya Pradesh– Terms of References (TOR) – reg.

[Proposal No. IA/MP/RIV/548026/2025; F. No. J-12011/33/2025-IA.I(R)]

38.5.1 The proposal is for grant of Terms of References (ToR) to the project for Sonpura Major Micro Irrigation Project (CCA: 19410 Ha) in an area of 1042.9Ha Village Akhai Mahadev, Panwari, Parnakheri & Garkatu etc., Sub-district Badarwas, Kolaras & Guna, District Shivpuria and Guna, Madhya Pradesh by M/s Water Resources Department, Government of Madhya Pradesh.

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

i. Sonpura Major Micro Irrigation Project is proposed on river Karai, a tributary of Kuno river near village Sonpura, tehsil Kolaras, district Shivpuri at just upstream of Rajasthan state boundary.

ii. The dam is located at 25°06’24” Latitude and 77°24’10” Longitude. The catchment area up to the dam location is 378.37 sq km. As per Rainfall Runoff relationship of Kuno river basin the 75% dependable yield at the dam site is 72.27 MCM.

iii. The proposed top level of dam is 384.00 m with a maximum height of 31.0 m. The project will provide irrigation in 19410 ha of CCA on U/S of proposed dam on left and right flank of Karari river. The irrigation benefits will include Rabi irrigation in 19410 ha. Total 92 villages of Kolaras and Badarwas tehsil of Shivpuri District and Guna tehsil of Guna district shall be benefitted due to this project.

iv. The project comprises of four main components namely Head works (Dam with Central spillway & appurtenant works), Pump House Distribution chamber and Pressurized Canal

works. The project constitutes of 1910 m long dam with a maximum height of 31 m with 1748 m long earthen section on either side of the dam portion; 99 m long central spillway & 62 m NOF including key wall (on both side) with 06 Nos radial gates of size 13.00 m * 12.00 m with a maximum discharging capacity of 6632.03 Cumec; pressurized pipe system of approx.. 104.16 km (Only Rising Mains & Gravity Mains) with micro network system.

v. Sonpura Major Micro Irrigation Project proposed by the Water Resources Department, Govt. of M.P. is a part of Modified Parbati-Kalisindh-Chambal (MKPC) Link Project. The project is part of the National Perspective Plan (NPP) of interlinking of rivers in the country, as approved by Special Committee of Interlinking of Rivers (SCILR) in its 20th meeting held on 13th December, 2022. Govt. of India and the States of Madhya Pradesh and Rajasthan have agreed for interlinking the rivers of Chambal basin for optimum utilization of water resources in the basin. Memorandum of Agreement (MoA) amongst the State of Rajasthan, the State of Madhya Pradesh and the Union Government on the MKPC Link Project has been signed on 05th December 2024.

vi. National Water Development Agency (NWDA) in consultation with both the States, Task Force of ILR and Central Water Commission (CWC) have evolved a Comprehensive Plan for the optimum utilization of water resources in the Chambal basin for the benefits of both the States.

vii. **Land requirement:** The estimated land required is 1042.90 ha. of the total land required, 615.14 ha is forest land, 179.23 ha is private land and the rest 248.53 ha is Govt. land.

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

- The proposed dam site is across the Karai river near Sonpura village, Tehsil Kolaras, District Shivpuri, Madhya Pradesh. The surrounding villages of the project such as Kotari, Basai, Rasoi, Haryal, Sewan, Damua, Madanpur, Badera, Jabargarh and Sonpura are mostly small rural settlements. Damua and Jabargarh villages are un-inhabited villages.
- Tribal habitation is present in limited proportion, with the majority of the population belonging to Scheduled Castes, Other Backward Classes (OBCs), and general communities. The main tribal group in the area is the Sahariya tribe, which is found in Sonpura, Badera, and other surrounding villages within the project area.
- The primary occupations in the area are agriculture, animal husbandry, and daily wage labor, with farming mainly dependent on rainfall. The tribal communities in the project area also depend on forests for their livelihood.
- Overall socio-economic conditions are modest, with limited infrastructure, and people depend mainly on natural resources for their livelihood.

Village	Households	Total Population	Male	Female	Scheduled Caste	Scheduled Tribe
Basai	158	742	387	355	18	527
Sonpura	211	854	482	372	249	345
Kotri	22	8	5	3	0	0
Rasoi	50	225	128	97	0	0
Haryal	16	71	39	32	0	0
Sewan	98	434	236	198	1	0
Badera	84	412	203	209	55	168
Madanpur	140	609	331	278	0	430

ix. **Water requirement:** 69.29 MCM

x. **Project Cost:** The estimated project cost is **Rs. 855.30 Crore**.

xi. **Project Benefit:** On completion of the Project, irrigation facility will be provided in 19410 ha of CCA in 92 villages of Kolaras and Badarwas tehsil of district Shivpuri and Guna tehsil of district Guna by laying underground pipeline. Other incidental benefits includes recharge of ground water in command area, development of agro based industries/food processing units, marginal activities and jobs to the locals during the construction phase, local area development, facilities in education, medical, transportation, road network and other infrastructure.

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. River Karai is flowing at a distance of 0 km in western direction.

xiii. **MoU / any other clearance/ permission signed with State government:** Administrative Approval by Govt. of Madhya Pradesh vide Letter No. F 22 (A) 198/2024/MPS/31/1488 dated 31/12/2024.

xiv. **Alternative Studies:**

Three different alternatives were studied for the finalization of alignment of dam site.

PROPOSED SITE

The proposed dam alignment is estimated to have a submergence area of 1023.65 hectares and a catchment area of 378.37 square kilometers, with a total water storage capacity of 70.0 million cubic meters. The available water storage capacity would enable irrigation in an area of 19,410 hectares. Owing to the optimal utilization of available water resources and the relatively lower ratio of submergence area to irrigable area, this proposed dam

alignment is deemed technically and financially feasible, making it a more viable option compared to the alternative alignments.

ALTERNATE DAM LINE NO 1

The Alternative Dam Alignment 1 is located 2.81 kilometers upstream of the finally selected dam alignment. The proposed Alternative dam would have a catchment area of 355.15 square kilometers. The total water storage capacity at this alternative dam site would be 28.70 MCM (Million Cubic Meters). However, due to the non-utilization of the total available water quantity of 67.83 MCM at the dam site, irrigation would only be possible in an area of 7,650 hectares. Given the non-utilization of available water and the higher ratio of submergence area to irrigable area compared to the finally selected dam alignment, this alternative is not technically and financially viable.

ALTERNATE DAM LINE NO 2

The Alternative Dam Alignment 2 is located 1.42 kilometers upstream of the finally selected dam alignment. The proposed Alternative dam would have a catchment area of 359.07 square kilometers. The total water storage capacity at this alternative dam site would be 32.27 MCM (Million Cubic Meters). However, due to the non-utilization of the total available water quantity of 68.58 MCM at the dam site, irrigation would only be possible in an area of 8,860 hectares. Given the non-utilization of available water and the higher ratio of submergence area to irrigable area compared to the finally selected dam alignment, this alternative is not technically and financially viable.

As per above, proposed site is best suitable, economical / feasible as per department norms. A map showing the location of different alternatives considered is given below. Table showing the analysis of alternatives considered is also given below.

S. No.	Particular	Proposed Site	Alternate-1(A)	Alternate-2(B)
1	**General**			
	Type of Project	Irrigation	Irrigation	Irrigation
	Latitude	$25^0$06’24”	$25^0$05’39.37”	$25^0$06’4.40”
	Longitude	$77^0$24’10”	$77^0$25’37.70”	$77^0$24’59.34”
	Location	Near Village Sonpura	Near Village Sonpura	Near Village Sonpura
	River Basin	Chambal river Basin	Chambal river Basin	Chambal river Basin
	Located on river	Karai	Karai	Karai
	Tehsil	Kolaras	Kolaras	Kolaras
	District	Shivpuri	Shivpuri	Shivpuri
	State	Madhya Pradesh	Madhya Pradesh	Madhya Pradesh
2	**Hydrology**			

	Catchment Area (Sq.Km.)	378.37	355.15	359.07
	Intercepted Catchment Area (Sq.Km.)	0.0	0.0	0.0
	Net Catchment Area (Sq.Km.)	378.37	355.15	359.07
	Available Annual Yield at Dam Site (Mcum/Sq.KM)	0.191	0.191	0.191
	Storage Capacity (Mcum)	70.00	28.70	32.27
3	**Design Irrigation (ha)**	19410	7650	8860
4	**Submergence Ratio**	5.27	6.41	6.05
	Techno Economical Feasibility	Economical / feasible with minimum submergence ratio and fully utilization of available yield.	Not feasible due to higher submergence ratio and non utilization of available yield.	Not feasible due to higher submergence ratio and non utilization of available yield.

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	Sonpura Major Micro Irrigation Project (CCA: 19410 Ha)
Location (Including Coordinates)	Dam site is proposed on river Karai, a tributary of Kuno river near village Sonpura, tehsil Kolaras, district Shivpuri, Madhya Pradesh at Latitude 25°06'24" N, Longitude 77°24'10" E
Inter- state issue involved	Yes (Rajasthan border is just 0.36 km downstream of dam site)
Seismic zone	II

- **Category details:**

Category of the project	A
Provisions	General condition apply
Capacity / Cultural command area (CCA)	19410 ha
Attracts the General Conditions (Yes/No)	Yes
Additional information (if any)	-

- **ToR/EC Details:**

Cost of project	Rs. 855.30 Cr.
Total area of Project	1042.90 ha
Height of Dam from River Bed (EL)	31.0 m
Length of Tunnel/Channel	104.16 km (Only Rising Mains & Gravity Mains)
Details of Submergence area	1023.65 ha. (595.89 ha is Forest Land, 248.53 ha is Govt. Land and 179.23 ha is Private Land)
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	E-Flow will be released as per NGT order dated 9th August 2017 (Original Application No. 498 of 2015 [M.A. No. 628/2016])
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 E-Flow will be released as per NGT order dated 9th August 2017 (Original Application No. 498 of 2015 [M.A. No. 628/2016])

- **Land Area Breakup:**

Private land	179.23 ha
Government land	248.53 ha
Forest Land	615.14 ha
Total Land	1042.90 ha
Submergence area/Reservoir area	1023.65 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	Yet to be obtained
National Park	No	
Wildlife Sanctuary	No	

- **Court case details:**

Court Case	No
Additional information (if any)	-

- **Previous EC compliance and necessary approvals:**

Particulars	**Letter no. and date**
Certified EC compliance report (if applicable)	Not Applicable
Status of Stage- I FC	Yet to Apply
Additional detail (If any)	Nil
Is FRA (2006) done for FC-I	Yet to Apply

- **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/RA 0415 Validity : August 15, 2028 Contact Person : Mr. Ravinder Bhatia Name of Sector : River Valley Projects Category : A MoEF&CC Schedule : 1(c) Address : 403, Bestech Chambers, Block-B, Sushant Lok Phase I, Sector 43, Gurugram, Haryana - 122009 E-mail : ravi@rstechnologies.co.in Land Line : (0124) 4295383 Cellular : (+91) 9810136853
Project Benefits	On completion of the Project the following benefits can be derived: • Irrigation facility will be provided in 19410 ha of CCA in 92 villages of Kolaras and Badarwas tehsil of district Shivpuri and Guna tehsil of district Guna by laying underground pipeline. • Recharge of ground water in command area. • Development of agro based industries/food processing units. • 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.
Status of other statutory clearances	Under process

Particulars	Details
R&R details	The process of R&R is yet to be initiated. Detailed R&R plan will be Provided in EIA/EMP report
Additional detail (If any)	Nil

38.5.3 The EAC during deliberations noted the following:

The EAC deliberated on the information submitted (Form 1, PFR, kml file, etc.) and as presented in the meeting and observed that the proposal is for grant of TOR for conducting EIA study for Sonpura Major Micro Irrigation Project (CCA: 19410 Ha) in an area of 1042.9Ha Village Akhai Mahadev, Panwari, Parnakheri & Garkatu etc., Sub-district Badarwas, Kolaras & Guna, District Shivpuria and Guna, Madhya Pradesh by M/s Water Resources Department, Government of Madhya 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: 19410 Ha). However, the location of the project is 0.36 km away from Rajasthan State Boundary, hence, it requires appraisal at the Central level by the Expert Appraisal Committee (EAC).

The EAC observed that the proposed Sonpura Major Micro Irrigation Project by the Water Resources Department, Government of Madhya Pradesh is a part of the Modified Parbati-Kalisindh-Chambal (MKPC) Link Project. The project forms part of the National Perspective Plan (NPP) on interlinking of rivers, as approved by the Special Committee of Interlinking of Rivers (SCILR) during its 20th meeting held on 13th December, 2022.The Government of India, along with the States of Madhya Pradesh and Rajasthan, has agreed to interlink the rivers of the Chambal basin to ensure optimum utilization of water resources within the basin. Further, a Memorandum of Agreement (MoA) on the MKPC Link Project was signed between the State of Rajasthan, the State of Madhya Pradesh, and the Union Government on 05th December, 2024.

The Committee observed that in the PFR submitted to the Ministry on the PARIVESH portal, the total land requirement for the project was stated as 1042.90 ha, consisting of 615.14 ha of Forest Land, 248.53 ha of Government Land, and 179.23 ha of Private Land. the total submergence area was indicated as 1023.65 ha (Forest land 595.89 ha., Government land 248.53 ha and Private land 179.23 ha. Diversion of forest land for non-forest purpose will be involved for construction of proposed project. However, it was further 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 Proponent indicated that there is no Protected Area within 10 km of the proposed project.

The EAC noted that the Detailed Project Report (DPR) of the Parbati-Kalisindh-Chambal (MKPC) Link Project has been approved by the Central Water Commission (CWC); however, the Techno-Economic Clearance (TEC) of the proposed project is still pending with the Central Water Commission (CWC).

The EAC noted that the Parbati-Kalisindh-Chambal (MKPC) Link Project includes the Eastern Rajasthan Canal Project (ERCP), under which certain litigation is pending. Accordingly, the EAC advised the Project Proponent (PP) to submit an undertaking confirming that no court case is pending in respect of the proposed project. In compliance, the PP, vide email dated 29.08.2025, submitted an affidavit dated 29.08.2025 certifying that no court case is pending against the Sonpura Major Micro Irrigation Project. It was further certified that no matter related to this project is sub-judice before any court of law.

38.5.4 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 Sonpura Major Micro Irrigation Project (CCA: 19410 Ha) in an area of 1042.9Ha Village Akhai Mahadev, Panwari, Parnakheri & Garkatu etc., Sub-district Badarwas, Kolaras & Guna, District Shivpuria and Guna, Madhya Pradesh by M/s Water Resources Department, Government of Madhya Pradesh, 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 submit comments of Cheetah Steering committee regarding the project.

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

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

viii. 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.

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

x. Explore the possibilities for reducing the Forest land requirement. The application for obtaining Stage I FC for 615.14 ha of forest land involved in the project shall be submitted within stipulated time.

xi. Muck disposal site and other components such as Township, site office, Stacking area and batching plant shall be located outside the forest area.

xii. 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 30th 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.

[C] Muck Management:

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

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

iii. Techno-economic viability of the project must be recommended from CWC.

[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. 38.6

Integrated Anandapur Barrage Project (CCA: 60,000 Ha) in Keonjhar district, Odisha by M/s Department of irrigation, Govt. of Odisha - Amendment in Environmental Clearance - Reg.

[Proposal No. IA/OR/RIV/548392/2025; F. No. J-12011/22/2002-IA-I]

38.6.1: The proposal is for grant of amendment in Environmental Clearances Integrated Anandapur Barrage Project (CCA: 60,000 Ha) in Keonjhar district, Odisha by M/s Department of irrigation, Govt. of Odisha.

38.6.2: The Project Proponent made a detailed presentation on the salient features of the project and informed that:

i. The proposal is for amendment in the Environmental Clearance granted by the Ministry vide dated 04.11.2003 for the project Integrated Anandapur Barrage Project located at Anandapur in district of Keonjhar, Odisha in Favour of M/s Integrated Anandapur Barrage Project.

ii. The project proponents has requested for amendment in the EC with the details are as under.

Sl No.	Para of EC issued by MoEF&CC	Details as per the EC	To be revised/ read as	Justification/reason
1	Para-2	Total project area required for the project is 1141.916 Ha. with no involvement of forest land.	Total project area required for the project is 2126.203 Ha. with 86.541Ha of forest land.	EC was granted with a total project area of 1141.916Ha. with no forest land involved, subsequent detailed surveys and revised interpretation of forest land definitions have brought the total area under the project to 2126.203Ha, which now includes 86.541Ha. (83.838 +2.703Ha) forest land
2	Para-2	482.26Cr as 04.11.2003	2990.05Cr at 2016 Price Level	Due to Price Escalation.

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

- **Project details:**

Name of the Proposal	Integrated Anandapur Barrage Project (CCA-60000Ha.) in Keonjhar District, Odisha by m/s Department of Irrigation, Govt. of Odisha, Amendment in Environmental Clearance-Reg.
Proposal No.	IA/OR/RIV/548392/2025
Company's Name	N/A
CIN no. of Company/user agency	CCE, ABP, Salapada
Accredited Consultant, Validity and certificate no.	N/A
Location (including coordinates)	At-Anandapur, Dist- Keonjhar, State-Odisha, (Lat. - 21˚ 13N Long - 86˚8E).
Inter-state issue involved	No

- **Category details:**

Category of the Project	River Valley/Irrigation Projects
Capacity/Cultural command area (CCA)	60000Ha.
Attracts the General Conditions (Yes/No)	Yes
Additional information (if any)	N/A

- **ToR/EC Details:**

Earlier EC Proposal No.	J-12011/22/2002-IA-I
Earlier EAC meeting date	20.05.2003
EC Letter No.	J-12011/22/2002-IA-I
EC grant Date	04.11.2003
Cost of project	2990.05 crores (@2016 Price Level)
Total area of Project	2126.203 Ha
Date of online application for amendment in ToR/EC was	18.08.2025
Details of CTE/CTO	Govt. Irrigation Project. Not required
No. of trees/sapling proposed in view of "Ek Ped Maa Ke Naam' campaign	No measures in this regard has been taken

- **Detail reason for amendment in ToR/EC:**

Subsequent upon detailed survey and revised interpretation of Forest Land definitions total area under the project comes out to be 2126. 203Ha. which includes 86.541Ha of Forest Land out of which Stage-II approval for diversion of 83.838Ha of forest land has been accorded vide Proposal No. FP/OR/HYD/IRRIG/418839/2023 dated.28.05.2025 and for balance 2.703Ha. has been diverted by Letter No. 08 (22) 12/2004 FCE, dtd. 21.05.2008 and also Wildlife Clearance has been accorded vide File NO. CWLW-FDWC-FD-0016-2024/8020 dated. 24.07.2025.

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

Sl No.	Details	Original	Revised
1	Total area required for the project with no involvement of Forest land	Total project area required for the project is 1141.916 Ha. with no involvement of forest land.	Total project area required for the project is 2126.203 Ha. with 86.541Ha of forest land.
2	Total Cost of the Projects	482.26Cr as 04.11.2003	2990.05Cr at 2016 Price Level

- Court case details: Nil

38.6.3: The EAC during deliberations noted the following:

The Expert Appraisal Committee (EAC) deliberated on the information submitted, as well as the presentation made during the meeting. It was observed that the proposal pertains to the request for an amendment to the Environmental Clearance for the Integrated Anandapur Barrage Project (CCA: 60,000 Ha) in Keonjhar district, Odisha by M/s Department of irrigation, Govt. of Odisha.

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: 60,000 Ha). However, the location of the project is Within default 10km Eco- Sensitive Zone of Kuldiha Sanctuary, hence, it requires appraisal at the Central level by the Expert Appraisal Committee (EAC).

The EAC observed that the proposal submitted by the PP is for amendment in Environmental Clearance granted by the Ministry to Anandapur Barrage Project vide Letter No. J-12011/22/2002-IA-I dated 04.11.2003 under the provisions of the Environmental Impact Assessment (EIA) Notification, 1994.

The committee observed that the Ministry vide letter dated 18.07.2025 informed that as

informed by the PP, the project construction work has been commenced within 5 years from the date of grant of EC and the same is now renamed as Integrated Anandapur Barrage Project (IABP), with no change in its originally approved scope. Hence it was clarified that the EC revalidation is not required in terms of the provisions of the EIA Notification, 1994. However, due to change project land area which includes forest land, it was requested to submit the proposal for amendment of the Environmental Clearance.

The EAC noted that Department of Forest, Environment & Climate Change, Government of Odisha vide letter dated 24.07.2025 informed that Standing committee of the National Board of Wild Life in its 84th meeting held on 26/06/2025 recommended/approved Construction of canals for Anandapur Barrage on Baitarani river at villages in Baleshwar and Keonjhar Districts in favour of Department of irrigation. Additionally it was noted by the committee that Stage-II forest clearance has been accorded by the Ministry vide letter dated 28.05.2025 for for diversion of 83.838 ha Revenue Forest Land for construction of Integrated Anandpur Barrage Project in Keonjhar (WL), Karanjia and Balasore (WL) Division in the district of Keonjhar, Mayurbhanj and Balasore of Odisha .

During the deliberations, the EAC noted that certain project components may have been changed or modified from the original proposal, such as the pipeline network, resulting in an increase in the project coverage area from 1141.916 ha to 2126.203 ha, which includes 86.541 ha of forest land. Accordingly, the Committee requested the Project Proponent to verify the details with the EIA/EMP report submitted at the time of grant of Environmental Clearance in 2003 and to prepare a comparison chart highlighting the differences between the current proposal and the earlier approved scenario.

The EAC also suggested that the PP shall provide a written clarification explaining the reasons for the change in the project name from “Anandapur Barrage Project” to “Integrated Anandapur Barrage Project (IABP)”.

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

i. PP shall submit a comparison chart highlighting the differences between the current proposal and the earlier approved scenario in 2003.

ii. PP shall provide a written clarification explaining the reasons for the change in the project name from “Anandapur Barrage Project” to “Integrated Anandapur Barrage Project (IABP)”.

iii. PP shall submit the component-wise construction status of the project, clearly indicating the progress made on each major component.

iv. A certified compliance report shall be obtained from the Regional Office, MoEF&CC

on the status of compliance with the Environmental Clearance conditions dated 04.11.2003.

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

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ANNEXURE I

ATTENDANCE

ATTENDANCE

38th MEETING OF EXPERT APPRAISAL COMMITTEE (EAC)

(RIVER VALLEY & HYDRO-ELECTRIC PROJECTS)

DATE : 29.08.2025

TIME : 10.30 AM onwards

VENUE : ~~Sutlej~~ Indus Hall, Indira Paryavaran Bhawan, New Delhi.

Sl.No.	Name of Member	Role	Signature
1.	Prof. G. J. Chakrapani	Chairman	
2.	Dr. Udaykumar R. Y.	Member	
3.	Dr. Mukesh Sharma	Member	
4.	Dr. J V Tyagi	Member	
5.	Shri Kartik Sapre	Member	
6.	Shri Ajay Kumar Lal	Member	
7.	Shri ~~Rajeev Varshney~~ RAKESH GOYAL	Member	
8.	Shri Balram Kumar	Member	
9.	Dr. J.A. Johnson, Scientist - F	Member	
10.	Dr B. K. Das, Director Dr. A. K. Sahoo, Senior Scientist	Member	
11.	Shri Yogendra Pal Singh	Member Scretary	
12.	Dr. Krishnendu Mondal	Scientist 'D'	

***

APPROVAL OF THE CHAIRMAN

========== Forwarded message ==========
From: Chakrapani GovindaJoseph <govind.chakrapani@es.iitr.ac.in>
To: "Yogendra Pal Singh"<yogendra78@nic.in>
Date: Thu, 11 Sep 2025 11:20:53 +0530
Subject: Re: Draft MOM of the 38TH EAC (RVHEP) MEETING HELD ON 29.08.2025-REG.
========== Forwarded message ==========

Approved.
Chakrapani

From: "Yogendra Pal Singh" <yogendra78@nic.in>
To: "Chakrapani GovindaJoseph" <govind.chakrapani@es.iitr.ac.in>
Sent: Thursday, September 11, 2025 11:19:39 AM
Subject: Fwd: Re: Draft MOM of the 38TH EAC (RVHEP) MEETING HELD ON 29.08.2025-REG.

Dear Sir,

The draft MOM of the EAC was circulated to all EAC members. Comments from Shri Balaram Kumar, CWC and Shri Rakesh Goyal, CEA have been incorporated in the draft minutes and highlighted as green color. No other comments have been received till date.

In view of the above, the corrected draft MOM is submitted for approval please.

With Regards,

Yogendra Pal Singh
Scientist 'F'

Government of India
M/o Environment, Forest and Climate Change
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