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 39TH MEETING OF THE EXPERT APPRAISAL COMMITTEE meeting River Valley and Hydroelectric Projects held from 12/09/2025 to 12/09/2025 **Date:** 22/09/2025

MoM ID: EC/MOM/EAC/377460/9/2025

Agenda ID: EC/AGENDA/EAC/377460/9/2025

Meeting Venue: N/A

Meeting Mode: Virtual

Date & Time:

12/09/2025	10:30 AM	05:30 PM

1. Opening remarks

The 39th 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 13th September, 2025 through virtual mode, under the Chairmanship of Prof. G. J. Chakrapani.

2. Confirmation of the minutes of previous meeting

Confirmation of the Minutes of the 38th EAC meeting:

The Minutes of the Meeting held on 38th EAC meeting on 29th August, 2025 were confirmed.

3. Details of proposals considered by the committee

Day 1 -12/09/2025

3.1. Agenda Item No 1:

3.1.1. Details of the proposal

Oju HEP by **OJU SUBANSIRI HYDRO POWER CORPORATION PVT LTD** located at **UPPER SUBANSIRI,ARUNACHAL PRADESH**			
Proposal For		Fresh EC	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**

IA/AR/RIV/546767/2025	J-12011/10/2022-IA.I (R)	01/08/2025	River Valley/Irrigation projects (1(c))

3.1.2. Project Salient Features

39.1.1: The proposal is for grant of Environmental Clearance (EC) to the project for Oju Hydro-Electric Project (2220 MW) in an area of 750.06 Ha located at Village Reddi, Yaja, Gumsing etc, Sub District Taksing, Limeking Circle, District Upper Subansiri, Arunachal Pradesh by M/s Oju Subansiri Hydro Power Corporation Pvt Ltd.

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

i. Oju hydroelectric project is proposed on Subansiri river in Upper Subansiri district of Arunachal Pradesh. The project scheme entails a run-of-the-river development with peaking power capability. The project is one of the projects in a cascade development on Subansiri River. The project proposes to generate 2220 MW (2100 MW + 120 MW) auxiliary (dam toe powerhouse), with sufficient storage to meet daily peak hour energy generation requirements.

ii. The proposed Oju Hydro Electric Project is located in the remote area of Upper Subansiri district in the State of Arunachal Pradesh, India. The project envisages utilization of the flow of Subansiri River (known as Si Nigit River in the upper reaches of the basin) for generation of electrical power.

iii. Oju Hydroelectric Project has been conceived as a run-off-the river scheme with significant gross storage of 15.66MCM and live storage of 5.56MCM as diurnal storage or peaking purpose. The project proposes to optimally utilize the power potential of the river in a stretch of about 18.6 km.

iv. The Oju Hydroelectric project is being developed on BOOT basis by Oju Subansiri Hydro Power Corporation Pvt. Ltd., New Delhi is an SPV of Navayuga Engineering Company Ltd, Hyderabad. The project was originally identified by the Central Electricity Authority (CEA).

v. The Feasibility Report was prepared by HDPC in 2004, which was accepted by CEA. The development rights for this project have since been accorded to M/s Navayuga Engineering Company Ltd. (NECL), Hyderabad by the State Government of Arunachal Pradesh.

vi. The license was given to the Company to develop, harness power potential of river Subansiri between FRL 1950 m and TWL El. 1670 m for Oju-I (700 MW) and FRL 1650 m and TWL 1300 m for Oju-II (1000 MW). The total length of the river reach between allotted levels is about 10.6 km and 8 km, respectively. Subsequently, based on the technical report on the Oju-I and Oju-II HEPs and on further studies, it is proposed to be developed as a Single Composite Scheme called Oju Hydroelectric Project (2220 MW), within the allotted river reach and levels.

vii. The project is planned to generate 2220 MW (2100 MW + 120 MW auxiliary (dam toe)), with sufficient storage to meet daily peak hour energy generation requirements. Project components involve a concrete gravity dam and an underground powerhouse complex connected through a 14.12 km km long headrace tunnel. The diversion structure proposed to be used at the project would be a 100 m high (above riverbed level) concrete gravity dam. The project has a dam site and powerhouse is located at the right bank of Oju River. The Intake meets with circular Horse-Shoe shaped Head Race Tunnel (HRT) terminating into the Surge Shaft followed by a circular pressure shaft leading to the powerhouse. Water from surface powerhouse out falls in the Oju River through Tail Race Channel (TRC).

viii. **Project location:** The proposed dam site of Oju HEP is located on Lower Subansiri River between Redi and Oju village. The powerhouse is located upstream of the confluence of Tsari Chu nallah and Keru nallah with Si Nigit River. The coordinates of the Dam and Powerhouse sites are as under:

Coordinates	**Dam**	**Powerhouse**
Latitude	28°25′39.45″ N	28°21'56.01" N
Longitude	93°21′0.91″ E	93°28'3.88" E

ix. The TOR was accorded by the MoEF&CC vide letter no. J-12011/10/2022-IA-I (R) dated 12.09.2022. The amendment of TOR was approved by MOEF&CC due to change in capacity

vide letter dated 30/01/2024.

x. **Land requirement:** The total land requirement of Oju Hydro-Electric Project (2220 MW) is 750.06 ha. Project envisages construction of following components with land details are as follows:

Component	**Area (Ha)**
Submergence Area	33.66
River Bed Area	8.87
Area between submergence and Dam Top Elevation 1960 m	5.81
Muck Dumping Area (D-3)	2.50
Guest House	1.50
Helipad	0.85
Project Road (R-17)	3.57
Rock Quarry (RQ-1)	23.12
Aggregate Processing Plant (APP-1)	2.92
Project Road (R-5)	6.67
Batching and Mixing Plant (B&M-1)	0.82
Batching and Mixing Plant (B&M-2)	1.00
River Bed Area	2.52
Project Road (R-5,R-6, R-8,R-9 & R-10)	3.50
Dam Complex	22.53
Muck Dumping Area (D-1)	0.95
Muck Dumping Area (D-2)	0.99
Project Road (R-7)	6.86
Explosive Magazine (MZN-1)	3.12
Project Road (R-7)	7.08
Area for Misc. Work Facility-1	4.34
Security Camp-1	0.49

Component	Area (Ha)
Store-1	1.66
Workshop-1	2.11
HM Contractor Camp	4.00
Muck Dumping Area (D-4)	9.79
Permanent Colony (PC-1)	31.93
Rock Quarry (RQ-2)	1.63
Temporary Colony (TC-1)	4.01
Muck Dumping Area (D-5)	6.00
Project Road (R-1, R-4, R-5 & R-6)	19.53
Rock Quarry (R-3)	9.08
Muck Dumping Area (D-6)	13.13
Batching & Mixing Plant (B&M-3)	2.15
Adit portal (AD-2)	0.55
Project Road (R-1)	8.88
Permanent Colony (PC-2)	8.42
Muck Dumping Area (D-7)	11.32
Temporary Colony (TC-2)	2.30
Project Road (R-1)	10.80
Rock Quarry (RQ-4)	10.66
Adit portal (AD-3)	0.30
Project Road (R-1)	12.86
Aggregate Processing Plant(APP-2)	4.08
Permanent Colony (PC-3)	31.65
Batching and Mixing Plant (B&M-4)	2.14

Component	Area (Ha)
Temporary Colony (TC-3)	5.00
Aggregate Processing Plant(APP-3)	4.08
Project Road (R-1)	36.97
Rock Quarry (RQ-5)	17.52
Adit Portal (AD-4)	0.26
Batching and Mixing Plant (B&M-5)	2.15
Project Road (R-1 & R-16)	27.22
Temporary Colony (TC-4)	4.60
Temporary Colony (TC-5)	6.40
Explosive Magazine (MZN-2)	2.02
Aggregate Processing Plant(APP-4)	2.58
Muck Dumping Area (D-10)	6.24
Project Road (R-1, R-11, R-16)	47.62
Muck Dumping Area (D-9)	22.92
Penstock Febrication Yard (PFY)	2.84
Area for Misc. Work Facility-2	1.62
Store and Warehouse-2 (S&W-2)	1.00
Store and Warehouse-3 (S&W-3)	2.66
Workshop-2 (WS-2)	2.17
Working Area/Storage EM Contractors (EM)	2.80
Security Camp-2	0.50
Power House Complex	68.45
Project Road (R-1,R-2,R-11,R-13,R-14 & R-16)	55.52
Muck Dumping Area (D-11)	8.05

Component	Area (Ha)
Adit Portal (Adit 5 to HRT)	0.50
Project Road (R-12)	0.87
TRT Outlet	1.13
Total Area	**686.34**
Notional Area	
Dam Complex, Power House Complex,Adits,HRT,Road Tunnel etc.	**63.72**
Grand Total	**750.06**

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

The male and female population in study area villages comprises about 49.62% and 50.38% respectively of the total population. The population comprising of children below the age of 6 years accounts for about 15.04% of the total population in the study area villages. The Schedule Tribes is the dominant caste in the study area accounting for about 97.56% of the total population, none of the Schedule Caste families resides in the area. General Caste accounts for 2.44% of the total population in the study area villages. It is observed that about 28.95% of the total population in the study area villages is literate, while about 71.05% are illiterate. It is observed that 51.34% of the total population is engaged in some form of economically productive activity or vocational activity, and have been designated as Total Working population. On the other hand, Non-workers or persons who are dependent on the population, which is engaged in economically productive work accounts for about 48.66% of the total population. Among the population that is working about 37.46% has been designated as Main workers while the remaining 62.54% has been designated as Marginal workers.

xii. **Water requirement:** No ground water requirement. For surface water use, a MOA was signed on 21.06.2010.

xiii. **Project Cost:** The estimated project cost is Rs. 24942.01 crores including existing investment in DPR activities of Rs. 210.00 crores. Total capital cost earmarked towards environmental management plan is Rs. 26484.55 lakh. Recurring cost (operation and maintenance) will be about Rs. 675.00 cr. per annum with increase of 5.47% per year.

xiv. **Project Benefit:**

xv. **Environmental Sensitive area:** There are no National parks, wildlife sanctuaries, Biosphere Reserves, Tiger/ Elephant Reserves, and Wildlife Corridors etc. within 10 km distance from the project site. River/ water body is flowing at a distance of 25 km in upstream direction.

xvi. **Resettlement and rehabilitation:** The survey was conducted in the month of June, 2023 to identify the Project Affected Persons (PAPs) and inventory of the assets and structure to be impacted was prepared. As per the survey, number of project affected families is 09. The tentative budget for PAPs to be affected by proposed project has been estimated as Rs. 2.0 crore.

xvii. **Baseline Environmental Scenario:**

Period	3 seasons: • Post-Monsoon Season - October 2022 • Pre-monsoon Season - April 2023 • Monsoon Season - June 2023
AAQ par ameters a	**Post-monsoon season (Unit: µg/m^3)**

t 6 locations (min. & Max.)

Air Quality Monitoring Stations	Min.	Max.	Avg.	98 percentile
Particulate Matter$_{10}$ (PM_{10})				
AAQ1	48.7	60.4	54.9	60.2
AAQ2	50.4	65.7	58.5	65.2
AAQ3	50.4	65.7	58.5	65.2
AAQ4	55.1	64.9	60.9	64.7
AAQ5	57.5	64.0	61.1	64.0
AAQ6	52.9	64.1	59.7	64.0
Particulate Matter$_{2.5}$ ($PM_{2.5}$)				
AAQ1	21.6	32.4	27.3	32.4
AAQ2	25.4	33.9	30.2	33.7
AAQ3	29.8	35.7	33.0	35.6
AAQ4	28.1	34.9	31.5	34.6
AAQ5	27.2	34.6	31.5	34.5
AAQ6	32.5	35.6	34.1	35.5
Sulphur Dioxide (SO_2)				
AAQ1	<6.0	7.5	6.8	7.5
AAQ2	<6.0	8.4	7.1	8.3
AAQ3	<6.0	7.4	7.1	7.4
AAQ4	<6.0	7.2	7.0	7.2
AAQ5	<6.0	7.5	7.0	7.5
AAQ6	<6.0	7.1	6.7	7.1
Nitrogen Dioxide (NO_2)				
AAQ1	15.6	21.3	18.5	21.2
AAQ2	15.4	21.5	19.0	21.4
AAQ3	19.2	21.9	20.8	21.9
AAQ4	19.8	22.6	21.6	22.6
AAQ5	18.7	22.6	20.8	22.5
AAQ6	17.2	22.9	20.0	22.7

Pre-monsoon season (Unit: µg/m^3)

Station	Min.	Max.	Avg.	98 percentile
Particulate Matter$_{10}$ (PM_{10})				
AAQ1	49.2	64.2	57.5	64.1
AAQ2	48.5	62.7	56.4	62.4
AAQ3	50.9	65.2	58.3	65.1
AAQ4	49.5	63.1	56.8	63.0
AAQ5	49.3	64.2	58.0	64.1
AAQ6	49.7	65	58.0	64.9
Particulate Matter$_{2.5}$ ($PM_{2.5}$)				
AAQ1	26.1	35.4	31.7	35.3
AAQ2	26.0	34.8	31.1	34.7
AAQ3	26.1	36.2	32.1	36.1
AAQ4	25.0	35.1	31.3	35.0
AAQ5	26.2	35.7	32.0	35.6
AAQ6	26.1	36.1	32.0	36.1
Sulphur Dioxide (SO_2)				
AAQ1	<6.0	7.4	6.9	7.4

Station	Min.	Max.	Avg.	98 percentile
AAQ2	<6.0	7.1	6.8	7.1
AAQ3	<6.0	7.8	7.2	7.8
AAQ4	<6.0	7.4	6.9	7.4
AAQ5	<6.0	7.8	7.0	7.8
AAQ6	<6.0	7.3	6.9	7.3
Nitrogen Dioxide (NO_2)				
AAQ1	15.5	22.7	18.9	22.6
AAQ2	15.4	21.9	18.7	21.8
AAQ3	15.9	22.3	18.9	22.2
AAQ4	15.1	22.7	18.7	22.5
AAQ5	15.2	23.1	18.9	22.9
AAQ6	15.6	23.1	19.0	22.9

Monsoon season (Unit: µg/m^3)

Station	Min.	Max.	Avg.	98 percentile
Particulate Matter$_{10}$ (PM_{10})				
AAQ1	50.8	59.0	54.9	58.8
AAQ2	51.2	62.6	57.4	62.6
AAQ3	50.7	62.2	58.0	62.1
AAQ4	51.2	60.5	56.3	60.3
AAQ5	50.4	62.6	56.2	62.3
AAQ6	53.2	62.0	56.9	61.7
Particulate Matter$_{2.5}$ ($PM_{2.5}$)				
AAQ1	26.1	31.3	29.0	31.2
AAQ2	24.7	31.7	28.1	31.5
AAQ3	25.6	34.5	30.2	34.2
AAQ4	25.8	31.6	28.7	31.4
AAQ5	25.5	32.1	28.4	31.9
AAQ6	23.8	33.2	29.1	33.0
Sulphur Dioxide (SO_2)				
AAQ1	<6.0	7.0	6.4	7.0
AAQ2	<6.0	7.2	6.7	7.2
AAQ3	<6.0	7.0	6.5	7.0
AAQ4	<6.0	6.8	6.3	6.8
AAQ5	<6.0	6.8	6.4	6.8
AAQ6	<6.0	6.9	6.4	6.9
Nitrogen Dioxide (NO_2)				
AAQ1	15.4	20.4	17.7	20.1
AAQ2	17.1	20.9	18.9	20.8
AAQ3	16.2	21.1	18.4	20.9
AAQ4	13.2	18.3	15.7	18.2
AAQ5	15.1	20.5	17.9	20.4
AAQ6	17.6	20.4	19.2	20.4

Incremental GLC Level

Distance from the Road (m)	Incremental GLC PM10 (ug/m^3)	Incremental GLC NOx (µg/m^3)
25	8.6	0.12
50	5.4	0.11
100	3.2	0.10
150	2.4	0.10
200	1.9	0.10
300	1.4	0.10
400	1.1	0.10
500	1.0	0.10
750	0.8	0.10
1000	0.8	0.10

River water samples (7 samples)

Surface Water quality in the study area for Post-Monsoon season

S. No	Parameter	Unit	SW1	SW2	SW3	SW4	SW5	SW6	SW7
	pH	-	7.58	7.68	7.66	7.69	7.32	7.64	7.54
	Colour	Hazen	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	Electrical Conductivity	µS/cum	468	480	474	372	117.0	382	368
	Turbidity	NTU	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Total Hardness (as CaCO3)	mg/l	138	140	138	137	120	146	132
	Fluorides (as F)	mg/l	0.31	0.34	0.34	0.29	0.29	0.32	0.29
	Dissolved Oxygen	mg/l	6.5	6.5	6.5	6.5	6.5	6.5	6.5
	Chlorides (as Cl)	mg/l	56	60	58.0	56.0	42.0	54.0	54.0
	Calcium (as Ca)	mg/l	29	32	31.0	27.0	25.0	36.0	28.0
	BOD (3 days at 27^{0}C	mg/l	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	Nitrates (as NO_3)	mg/l	5.0	5.2	4.99	4.78	2.01	7.98	3.98
	Total Dissolved Solids	mg/l	304	312	306	242	76.0	248	238
	Sulphates (as SO4)	mg/l	8.0	9.0	8.94	4.0	1.0	4.0	3.0
	Magnesium (as Mg)	mg/l	15.92	14.58	14.70	16.88	13.97	13.60	15.06
	Phosphates (as P)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Sodium (as Na)	mg/l	4.0	5.0	4.89	3.0	2.0	3.0	3.02
	Potassium (a	mg/	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

S. No	Parameter	Unit	SW1	SW2	SW3	SW4	SW5	SW6	SW7
	s K)	I							
	COD (as O 2)	mg/ I	6.0	7.0	7.0	5.0	3.0	6.0	5.08
	Residual So dium Carbo nate	mg/ I	Nil	Nil	Nil	Nil	Nil	Nil	Nil
	Total Chrom ium (as Cr)	mg/ I	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Iron (as Fe)	mg/ I	0.10	0.12	0.11	0.08	0.03	0.11	0.07
	Manganese (as Mn)	mg/ I	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
	Copper (as Cu)	mg/ I	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Zinc (as Zn)	mg/ I	0.12	0.14	0.12	0.10	0.05	0.12	0.09
	Arsenic (as As)	mg/ I	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Cadmium (a s Cd)	mg/ I	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Cyanides (as CN)	mg/ I	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Lead (as Pb)	mg/ I	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Selenium (A s Se)	mg/ I	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Mercury (H g)	mg/ I	<0.00 1	<0.00 1	<0.00 1	<0.00 1	<0.00 1	<0.00 1	<0.00 1

Source: Primary survey

Surface Water quality in the study area for Pre-monsoon season

S. No	Parameter s	Units	SW1	SW2	SW3	SW4	SW 5	SW6	SW7
	pH	-	7.61	7.62	7.67	7.58	7.62	7.58	7.59
	Colour	Hazen	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	Electrical C onductivity	µS/cm	478	476	477	471	477	468	475
	Turbidity	NTU	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Total Hard ness (As Ca CO_3)	mg/l	140	141	136	144	142	138	133
	Fluoridesd (as F)	mg/l	0.35	0.36	0.31	0.32	0.33	0.31	0.32
	Dissolved Oxygen	mg/l	6.6	6.6	6.7	6.6	6.3	6.5	6.3
	Chlorides (as Cl)	mg/l	58	59	56	55	57	56	55
	Calcium (as Ca)	mg/l	28	29	29	24	26	29	23
	BOD (3 da	mg/l	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0

S. No	Parameters	Units	SW1	SW2	SW3	SW4	SW 5	SW6	SW7
	ys at 27^0C)								
	Nitrates (as NO_3)	mg/l	6.0	7.0	7.0	5.0	4.0	5.0	5.0
	Total Dissolved Solids	mg/l	310	311	309	313	312	304	311
	Sulphates (As SO_4)	mg/l	9.0	7.0	7.0	7.0	10.0	8.0	8.0
	Magnesium (as Mg)	mg/l	15.0	311	14.0	14.0	14.0	15.92	13.0
	Phosphates (as P)	mg/l	<0.05	7.0	<0.04	<0.05	<0.05	<0.05	<0.05
	Sodium (As Na)	mg/l	5.0	16.0	4.0	3.0	0.11	4.0	3.0
	Potassium (as K)	mg/l	<1.0	<0.05	<1.0	<1.0	<0.10	<1.0	<1.0
	COD (as O_2)	mg/l	5.0	5.0	4.0	4.0	6.0	6.0	3.0
	Residual Sodium Carbonate	mg/l	Nil	Nil	Nil	Nil	Nil	Nil	NIL
	Total Chromium (as Cr)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Iron (as Fe)	mg/l	0.12	0.13	0.11	0.10	0.11	0.10	0.12
	Manganese (as Mn)	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
	Copper (as Cu)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
	Zinc (as Zn)	mg/l	0.13	0.14	0.12	0.11	0.11	0.12	0.14
	Arsenic (As As)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Cadmium (As Cd)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Cyanides (as CN)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Lead (as Pb)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Selenium (As Se)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Mercury (Hg)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Source: Primary survey

Surface Water quality in the study area for Monsoon season

S. No	Parameters	Units	SW1	SW2	SW3	SW4	SW5	SW6	SW 7
	pH	-	7.61	7.62	7.11	7.20	7.25	7.69	7.75

S. No	Parameters	Units	SW1	SW2	SW3	SW4	SW5	SW6	SW 7
	Colour	Hazen	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	Electrical Conductivity	µS/cm	452	410	479	482	398	452	482
	Turbidity	NTU	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Total Hardness (As $CaCO_3$)	mg/l	135	131	130	149	110	130	130
	Fluorides (as F)	mg/l	0.32	0.21	0.35	0.21	0.12	0.33	0.39
	Dissolved Oxygen	mg/l	6.4	4.8	6.9	6.0	6.0	6.5	6.2
	Chlorides (as Cl)	mg/l	51	62	51	60	68	50	60
	Calcium (as Ca)	mg/l	20	29.9	22	24.9	20	28.9	21
	BOD (3 days at 27^0C)	mg/l	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	Nitrates (as NO_3)	mg/l	6.1	6.9	5.6	5.1	4.2	4.3	4.9
	Total Dissolved Solids	mg/l	309	365	316	348	302	310	328
	Sulphates (As SO_4)	mg/l	9.0	6.9	6.8	5.5	10.2	8.2	7.9
	Magnesium (as Mg)	mg/l	15.0	16.9	14.9	14.9	14.9	15.98	13.9
	Phosphates (as P)	mg/l	<0.05	<0.05	<0.04	<0.05	<0.05	<0.05	<0.05
	Sodium (As Na)	mg/l	5.2	5.2	5.9	3.2	4.4	4.1	3.2
	Potassium (as K)	mg/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	COD (as O_2)	mg/l	5.0	5.1	4.1	4.8	6.5	6.0	3.9
	Residual Sodium Carbonate	mg/l	Nil	Nil	Nil	Nil	Nil	Nil	Nil
	Total Chromium (as Cr)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Iron (as Fe)	mg/l	0.12	0.13	0.11	0.19	0.11	0.10	0.11
	Manganese (as Mn)	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
	Copper (as Cu)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
	Zinc (as Zn)	mg/l	0.13	0.14	0.11	0.11	0.10	0.12	0.1

S. No	Parameters	Units	SW1	SW2	SW3	SW4	SW5	SW6	SW 7
									1
	Arsenic (As As)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Cadmium (As Cd)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Cyanides (as CN)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Lead (as Pb)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Selenium (As Se)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Mercury (Hg)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Source: Primary survey

Noise levels Leq (Day & Night) at -7 - locations

	N1	N2	N3	N4	N5	N6	N7
	41	43	44	42	45	43	44
	43	45	46	44	46	45	44
	44	48	46	46	48	46	46
	46	50	49	47	50	48	48
	48	53	51	49	52	54	49
	51	55	54	52	55	57	52
	54	59	57	55	58	60	55
	57	56	59	58	60	62	58
	66	61	63	60	63	64	60
	62	63	66	63	64	66	63
	64	66	63	65	66	68	65
	59	64	60	61	62	64	61
	57	61	59	58	56	58	58
	53	57	56	54	52	53	52
	48	51	52	50	49	50	52
	52.8	**55.4**	**55.0**	**53.6**	**55.06**	**55.8**	**58.1**

Source: Primary survey

	N1	N2	N3	N4	N5	N6	N7
	39	40	40	38	39	38	39
	41	42	41	40	42	41	42
	42	43	42	42	42	41	43
	44	43	42	43	44	43	45
	45	44	45	43	46	43	45
	45	45	46	44	45	45	46
	46	47	46	44	47	45	46
	46	47	45	45	47	47	45
	45	46	45	45	45	46	45
	44	45	44	45	45	44	43
	44	45	43	44	44	44	43
	43	44	43	44	44	43	43
	42	43	42	43	43	41	42

	N1	N2	N3	N4	N5	N6	N7
	40	41	42	42	40	41	40
	38	39	38	39	39	38	38
	43.53	**44.16**	**43.45**	**43.17**	**44.12**	**43.37**	**43.58**

Source: Primary survey

Hourly day time Ambient noise levels monitored for monsoon season (Unit: dB(A))

	N1	N2	N3	N4	N5	N6	N7
	37	38	39	39	40	39	39
	39	40	41	41	42	40	41
	42	41	42	42	42	41	42
	44	43	43	42	43	44	44
	44	44	45	43	45	45	44
	45	44	45	43	44	45	45
	46	47	48	46	45	46	47
	48	49	48	47	47	46	48
	50	49	47	50	48	47	46
	48	48	45	49	47	44	45
	47	47	45	47	46	43	45
	47	47	42	45	44	42	44
	46	45	41	44	43	40	42
	44	45	39	42	41	40	42
	42	40	41	41	40	39	38
	45.7	**45.6**	**44.35**	**45.2**	**44.48**	**43.52**	**44.23**

Source: Primary survey

Soil Quality at 7 Locations

Results of soil sampling analysis of study area for Post-Monsoon season

S. No	Parameters	Units	S1	S2	S3	S4	S5	S6	S7
1	pH (1:5)	-	7.45	7.54	7.58	7.49	7.57	7.50	7.48
2	Electrical Conductivity	µS/cm	382	485	526	526	526	526	536
3	Exchangeable Calcium (as Ca)	mg/kg	1749	1963	2152	2152	2152	2152	2152
4	Exchangeable Magnesium (as Mg)	mg/kg	365	408	436	436	436	428	429
5	Exchangeable Sodium (as Na)	mg/kg	173	201	198	197	196	196	195
6	Available Potassium (as K)	mg/kg	208	284	227	228	235	228	235
7	Salinity @ 25^0 C (1:1 Suspension.)	µS/cm	245	311	369	369	369	372	372
8	Organic Matter	% by mass	1.46	1.46	1.12	1.12	1.12	1.12	1.12
9	Sodium Adsorption Ratio (SAR)	-	0.46	1.29	0.59	0.59	0.59	0.59	0.59
10	Available Nitrogen as N (%by mass)	% by mass	0.10	0.12	0.13	0.13	0.13	0.13	0.13
1	Available Phosphoro	mg/k	76.0	85	106	106	106	106	106

S. No	Parameters	Units	S1	S2	S3	S4	S5	S6	S7
1	us as P_2O_5	g							
12	Bulk Density	gm/cc	1.20	1.18	1.22	1.22	1.22	1.22	1.22
13	Organic Carbon	% by mass	0.85	0.75	0.65	0.65	0.65	0.65	0.65
14	i. Sand	% by mass	57.3	57.6	58.5	58.9	62.2	59.2	64.2
	ii. Clay	% by mass	20.3	19.2	18.5	19.8	20.2	23.2	21.2
	iii. Silt	% by mass	22.4	22.4	23.0	21.3	17.6	17.6	14.6
15	Exchangeable Sodium Percentage (ESP)	% by mass	4.96	5.28	5.27	4.89	5.31	4.88	5.61

Source: Primary survey

Results of soil sampling analysis of study area for Pre-Monsoon season

S. No	Parameters	Units	S1	S2	S3	S4	S5	S6	S7
1.	pH (1:5 suspension)	-	7.56	7.57	7.48	7.60	7.59	7.49	7.54
2.	Electrical Conductivity@25°C (1:1suspension)	µS/cm	486	525	527	529	527	537	523
3.	Calcium (as Ca)	mg/kg	1953	2151	2153	2153	2153	2154	2151
4.	Magnesium (as Mg)	mg/kg	407	437	437	438	427	430	435
5.	Sodium (as Na)	mg/kg	203	196	198	197	195	198	196
6.	Available Potassium (as K)	mg/kg	287	228	229	236	227	234	225
7.	Salinity @25°C (1:1 suspension)	µS/cm	316	365	370	370	376	378	366
8.	Organic Matter	% by mass	1.43	1.13	1.14	1.13	1.13	1.14	1.11
9.	Sodium Absorption Ratio	-	1.26	0.58	0.62	0.60	0.61	0.60	0.58
10.	Nitrogen	% by mass	0.14	0.12	0.18	0.14	0.14	0.14	0.14
11.	Available Phosphorus (as P_2O_5)	mg/kg	83	107	107	108	105	104	104
12.	Bulk Density	gm/cc	1.19	1.24	1.24	1.24	1.24	1.24	1.25
13.	Organic Carbon	% by mass	0.78	0.63	0.66	0.63	0.66	0.64	0.64
14.	Particle Size Distribution	% by mass	57.6	58.6	58.7	62.2	64.3	58.4	59.3
		% by mass	19.4	18.4	19.6	20.3	21.3	18.4	23.3
		% by mass	22.3	22.0	21.4	17.5	14.5	24.0	16.5

S. No	Parameters	Units	S1	S2	S3	S4	S5	S6	S7
15.	Exchangeable Sodium Percentage (ESP)	% by mass	5.26	5.26	4.87	5.34	4.87	5.64	5.26

Source: Primary survey

Table-3.9: Results of soil sampling analysis of study area for Monsoon season

S. No	Parameters	Units	S1	S2	S3	S4	S5	S6	S7
1.	pH (1:5 suspension)	-	7.23	7.49	7.52	7.69	7.69	7.32	7.18
2.	Electrical Conductivity@25^{o}C (1:1suspension)	µS/cm	478	538	542	548	549	522	498
3.	Calcium (as Ca)	mg/kg	1923	2141	2113	2162	2163	2114	2081
4.	Magnesium (as Mg)	mg/kg	358	431	410	448	429	410	398
5.	Sodium (as Na)	mg/kg	180	195	185	165	208	189	191
6.	Available Potassium (As K)	mg/kg	225	218	209	212	229	216	208
7.	Salinity @25^{o}C (1:1 suspension)	µS/cm	298	360	348	379	358	352	310
8.	Organic Matter	% by mass	1.53	1.11	1.11	1.16	1.16	1.19	1.19
9.	Sodium Absorption Ratio	-	1.29	0.52	0.54	0.69	0.59	0.69	0.62
10.	Nitrogen	% by mass	0.11	0.10	0.19	0.18	0.13	0.15	0.13
11.	Available Phosphorus (as P_2O_5)	mg/kg	83.9	118	125	132	118	118	126
12.	Bulk Density	gm/cc	1.11	1.24	1.20	1.21	1.19	1.26	1.23
13.	Organic Carbon	% by mass	0.73	0.61	0.61	0.69	0.62	0.69	0.61
14.	Particle Size Distribution	% by mass	58.2	55.6	56.9	61.5	60.1	67.2	57.2
		% by mass	18.9	21.4	20.9	20.3	22.9	22.9	19.9
		% by mass	22.9	23.0	22.2	18.2	17.0	9.9	22.9
15.	Exchangeable Sodium Percentage (ESP)	% by mass	4.98	5.10	4.61	5.39	4.72	5.14	5.08

Source: Primary survey

Flora & Fauna	Schedule-I species observed in the study area: No

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

- **Municipal Solid Waste**

The labour colonies will generate substantial amount of municipal wastes. In view of the condition that might exist in the labour camps, most likely the solid wastes will contain majority of vegetable matter followed by paper cans and glasses. About 3700 persons are likely to congregate during the construction phases resulting in generation of about 0.88 tonnes of solid waste/day. Adequate facilities for collection, conveyance and disposal of municipal waste generated from labour camps shall be developed. The degradable portion of the solid waste would be disposed off by vermin-composting. The non- degradable portion such as plastic bottles, cans, etc. shall be segregated and disposed of at separate sites identified by the district administration. A suitable landfill site can be identified and designed to contain the municipal waste from all the Project Township, labour colonies, etc.

- **Hazardous Waste**

  Hazardous waste like used/waste oil is generated from the DG sets and other construction machinery. In addition, waste paints, grease etc. is also generated during construction activities.

  Hazardous waste shall be sent or sold by the occupier to an authorized actual user or disposed in an authorized disposal facility only. Occupier shall transport wastes through an authorized or certified transporter to an authorized actual user or to an authorized disposal facility as per the provisions of these rules.

- **E- Waste Management**

  Under clause 9 (1) of E-Waste (Management) Rules, 2016, consumers or bulk consumers of electrical and electronic equipment listed in Schedule I shall ensure that e-waste generated by them is channelized through collection center or dealer of authorized producer or dismantler or recycler or through the designated take back service provider of the producer to authorized dismantler or recycler. The collection, storage, transportation, segregation, refurbishment, dismantling, recycling and disposal of e-waste shall be in accordance with the procedures prescribed in the guidelines published by the Central Pollution Control Board from time to time. Implementation of e-waste (Management and Handling) Amendment Rules, 2016 shall be in accordance with the guidelines prescribed by the Central Pollution Control Board from time to time.

xix. Public Hearing for the proposed project has been conducted by the State Pollution Control Board on 10.09.2024. The main issues raised during the public hearing are listed as below:

- Amount of Compensation to be given to PAFs
- CSR Fund should be properly implemented and improvement in Educational and Health Facilities

xx. Status of Litigation Pending against the proposal, if any. - No

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

Name of the Proposal	Oju Hydro-Electric Project (2220 MW) is located at Village Reddi, Yaja, Gumsing etc, Sub District Taksing, Limeking Circle, District Upper Subansir i, Arunachal Pradesh
Proposal No.	Proposal No. IA/AR/RIV/546767/2025; F. No. J-1 2011/10/2022-IA.I (R)
Location (Including Coordinates)	Dam: Latitude - 28^{0}25’39.45” N Longitude - 93^{0}21’0.91” E
Company’s Name	M/s Oju Subansiri Hydro Power Corporation Pvt. Ltd.

CIN no. of Company/ user agency	U40101TG2012PTC082052
Accredited Consultant and certificate no.	NABET/EIA/24-27/RA 0360
Project location (Coordinates/ River/ Reservoir)	Powerhouse: Latitude - 28°21'56.01" N Longitude - 93°28'3.88" E
Inter-state issue involved	-
Proposed on River/ Reservoir	Subansiri
Type of Hydro-electric project	Conventional
Seismic zone	V

Category of the project	A
Capacity/ Cultural command area (CCA)	2220 MW
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	-

ToR Proposal No.	J-12011/10/2022-IA-I (R)
EAC meeting date	12/09/2025
ToR Letter No.	ToR Identification No. TO23A0501A R5740251A
ToR grant Date	30/01/2024
Cost of project	Rs. 24942.01 crores
Total area of Project	750 ha
Height of Dam from River Bed (EL)	95 m
Details of submergence area	43.66 ha
District to provide irrigation facility (if applicable)	-
Details of tunnels on upper level & lower level and length of canal (if applicable)	-
No. of affected Village	01
No. of Affected Families	09

Project Benefits	
R&R details	9 families are likely to be affected under R&R. A Rehabilitation & Resettlement Plan has been formulated.
Catchment area/ Command area	9827 km2
Types of Waste and quantity of generation during construction/Operation	Sewage and effluent for batching plant, workshop, etc.
Material used for blasting and its composition as per DGMS standards.	Sewage for project complex from project colony, office complex, etc.
E-Flows for the Project	E-Flows have been estimated as per MoEF&CC norms
Is Projects earlier studied in Cumulative Impact assessment & Carrying Capacity studies(CIA&CC) for River in which project located. If yes then a) E-flow with TOR/ Recommendation by EAC as per CIA&CC study of River Basin. b) If not the E-Flows maintain criteria for sustaining river ecosystem.	E-flows higher than those recommendations in the CIA&CC study
Details on provision of fish pass	Not Applicable
Project benefit including employment details (no of employee)	Employment opportunities in the area are limited. Thus, during project construction phase, some of the locals may get employment. It is estimated that the increase in total population in the project area due to labour and technical staff is expected that approx. 1500 persons will be engaged (Permanent employment: 300 and Temporary employment: 1200) during construction phase. The construction activities and immigration of labour population will lead to development of various allied activities through direct and indirect employment, stimulate local businesses, and enhance trade opportunities
Area of Compensatory Afforestation (CA) with tentative no of plantation.	1500 ha
Previous EC details	Not Applicable
EC Compliance Report by R.O, MOEF&CC	Not Applicable

No. of trees/saplings proposed in view of ‘Ek Ped Maa Ke Naam’ campaign	80000

Powerhouse Installed Capacity	2100 MW (10 x 210 MW) + 120 MW (2 x 50 MW + 2 x 10 MW)
Generation of Electricity Annually	8402.15 MU
No. of Units	10 x 210 MW + 2 x 50 MW + 2 x 10 MW

No. of proposed disposal area/ (type of Land - Forest/ Pvt land)	10 Muck disposal sites with a total area of 93 ha have been selected for Muck Disposal
Cross section of proposed muck area, Height of muck with slope.	Muck disposal site shall be developed from below the ground level by providing 10 m high plum concrete retaining wall with a wire crate (1.25mx1.25mx1.25m) placed at top and 5 m high plum concrete retaining on side.
Distance of muck disposal area (location), from muck generation sources (project area)/ River, HFL of proposed muck disposal area.	Distance of muck disposal area- near to the project component area like Dam, Adits, Power House and far away from River 30m from HFL
Total Muck Disposal Area	93 ha
Estimate Muck to be generated	17.15 lakh m3
Transportation	By trucks and dumpers
Monitoring mechanism for Muck Disposal Transportation	Site team will monitor manually the muck disposal at the site

Private land	3.8447 ha
Government land	-
Forest Land	750.06 ha
Total Land	750.06 ha
Submergence area/Reservoir area	43.54 ha
Additional information (if any)	-

Forest Land/ Protected Area/ Environmental Sensitivity Zone	**Yes/No**	**Details of Certificate/ letter/Remarks**
Reserve Forest/Protected Forest Land	No	

National Park	No	
Wildlife Sanctuary	No	
Archaeological sites monuments/historical te mples etc	No	
Additional information (if any)	No	

Public Hearing (PH) Details

Advertisement for PH with date	Advertisements about the conduct of Environmenta l Public Hearing for the project were published in T he Times of India and The Arunachal Times on 10. 08.2024.
Date of PH	10.09.2024 from 10:30 hours
Venue	Reddi village under Taksing Circle, Upper Subansir i District Arunachal Pradesh.
Chaired by	**Chairman** Shri Tasso Gambo, APCS Deputy Commissioner, Daporijo Upper Subansiri District **Member** Smt. Koj Rinya, IFS Member Secretary Arunachal Pradesh State Pollution Control Board, N aharlagun
Main issues raised during PH	• Amount of Compensation to be given to PAFs • Impacts due to Water Pollution • Impact on Holy Places in the Area • Adverse impacts on Ecology including Fisheries • Proper Information about Public Hearing not share d • CSR Fund should be properly implemented and im provement in Educational and Health Facilities • Percentage of energy generated to be shared with t he public by the Company
No. of people attended	214

Particulars	Details
Period of baseline data collection/ Sampling pe riod. (Air, noise, water, land) flora and fauna of the project area, aquatic ecology, etc.	• Post-Monsoon Season - October 2022 • Pre-monsoon Season - April 2023 • Monsoon Season - June 2023

Brief description on hydrology and water assessment as per the approved Pre-DPR:	**90% and 50% dependable years:** The annual flow volumes for the 46 years period 1973-74 to 2020-21 (with gap year 1990-91 and 2002-03) have been considered to arrive at the 90% and 50% dependable hydrologic year for Oju at dam site based on Weibull Plotting position formula.

Particulars	**Letter no. and date**
Status of Stage- I FC	**Form-3 Uploaded, Site Visit for Form-IV done by Nodal Officer**
Approval of Central Water Commission	• Gates: Letter No. - File No. T-18013/3/2023-GATES(ENE), Date: 30 July 2024 • ROR Vs Storage. Letter No. – No. 4/1/2017-HEPR/266, Date: 14.07.2017 • Head Loss: Letter No. – File No. T-16013/4/2021-HCD(ENE) DTE, Date: 16.04.2024 • Layout plan (CMDD): Letter No. – File No. T-12013/3/2022-CMDD (E and NE), Date- 05-09-2023 • Layout plan (HCD): Letter No. - File No. T-16013/4/2021-HCD(ENE), DTE, Date: 14.12.2023 • Inter State: Letter No. – CWC U.O.No. No. 7/2/12 (NE)/2013-ISM/330-331, Date: 24-06-2014 • Approved Design Flood letter (2013): Letter No. - CWC U.O.No. 4/384/2012-Hyd (NE)/1, Date: 2/1/2013 • Approved Design Flood letter (2014): Letter No.-- CWC U.O.No. 4/384/2012-Hyd (NE)/227, Date-6/8/2012 • Hydrology: Letter No. - File No. T-11013/6/2023-HYD(NE) Dte, Date: 21.06.2023
Approval of Central Electricity Authority	• E&M: Letter No. - No. 10/209(11)/HE&TD&RM/2024/, Date: 03.05.2024 • Power Potential: Letter No. - File No.CEA-HY-12-32/4/2023-HPA Division, Date: 15.09.2023 • Transmission Plan: Letter No. - CEA-PS-12-16/1/2024-PSPA-II Division, Date: 04.09.2024
Additional detail (If any)	• The Preliminary Notification for the Oju-HEP was issued by the Secretary, Land Management on June 25, 2024 • The Joint Survey fee of ₹50,00,000 was deposited with the District Administration on February 3, 2024
Is FRA (2006) done for FC-I	Yes

Activities	**Budget (Rs. lakh)**
Environmental Management Plan	3089.8
Mitigation measures	10346.01

Measures outlined in Additional studies	12686.27
Environmental Monitoring Programme during constructio n phase	362.47
Total	**26484.55**

3.1.3. Deliberations by the committee in previous meetings

Date of EAC 1 :14/08/2025

Deliberations of EAC 1 :

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

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 Oju Hydro-Electric Project (2220 MW) in an area of 750.06 Ha located at Village Reddi, Yaja, Gumsing etc, Sub District Taksing, Limeking Circle, District Upper Subansiri, Arunachal Pradesh by M/s Oju Subansiri Hydro Power Corporation Pvt Ltd.
- 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. -12011/10/2022-IA-I (R) dated 12.09.2022 for for 1878 MW. Subsequently, amendment of TOR was approved by MOEF&CC due to change in capacity vide letter dated 30/01/2024 and capacity was amended from 1878 MW to 2220 MW.
- The EAC observed that the total land required for the project is 750.06 ha and entire area is forest land. PP submitted that the application for the diversion of 750.06 hectares of forest land has been uploaded on the PARIVESH portal vide proposal number FP/AR/HYD/IRRIG/454399/2023, dated 05/12/2023. The proposal is currently pending with the Conservator of Forests (CF).
- The EAC noted that the Public hearing was conducted on 10.09.2024, chaired by Shri Tasso Gambo, APCS, Deputy Commissioner, Daporijo Upper Subansiri District at at Reddi village under Taksing Circle, Upper Subansiri District Arunachal Pradesh. The advertisements about the conduct of Environmental Public Hearing for the project were published in The Times of India and The Arunachal Times on10.08.2024. The EAC discussed the concerns raised during the Public Hearing (PH) and reviewed the action plan submitted by the PP to address these issues. After detailed deliberation, the Committee found the action plan satisfactory, recognizing that the proposed

mitigation measures adequately respond to stakeholders' concerns.

- The EAC noted that in the Cumulative Impact Assessment and Carrying Capacity Study (CIA&CCS) of Subansiri river basin, two projects namely Oju–I and Oju–II were earlier proposed, which were subsequently merged as Oju HEP (1878 MW). Accordingly, the Ministry had granted ToR for 1878 MW capacity. The Committee further noted that, due to the availability of higher water flows, the Central Electricity Authority (CEA) has approved a revised Power Potential Study (PPS) for 2220 MW. The CEA while approving the Revised Power Potential Studies (PPS) observed that Installed Capacity (IC) of 2220 MW (2100 MW for Main Units + 120 MW for Auxiliary Units) for Oju HE Project seems technically suitable as per extant guidelines and the same may be considered for preparation of the Detailed Project Report (DPR). Accordingly, the MoEF&CC granted amendment in TOR vide letter dated 30.01.2024 for revised capacity from 1878 MW to 2220 MW. During the meeting PP submitted that the revision in capacity is mainly on account of optimization of design and addition of turbines, and that no additional environmental impacts are anticipated beyond those already assessed. The PP also committed to comply with all terms and conditions prescribed in the CIA&CCS of Subansiri basin, including those related to maintenance of Environmental Flows (E-flow). The Committee observed that the CIA&CCS of Subansiri basin was completed in 2014, and the data used therein is now more than 10 years old. The EAC after detailed deliberations on the hydrology and e-flow data accepted the submissions made by the PP in this regard.
- The EAC deliberated on the potential risks of Glacial Lake Outburst Floods (GLOF) in the project catchment. The EAC observed that earlier CWC vide their letter No. 6/11/2009/FE & SA/258-259 dated 01.05.2014 has approved tentative peak discharge estimated at dam site due to GLOF event as 2512 cumecs. However, it was further observed that as per CWC FE & SA Dte letter No. 6/11/ 2009/ FE&SA dated 22.04.2024, tentative peak discharge estimated at dam site, assuming that the breaching of identified Glacial Lakes (Lat 28.319 N long 93.047 E) situated at 44 km upstream of Oju HE Project (2220 MW) resulting into Glacial Lake Outburst Flood (GLOF) event, is reported as 3664 cumec. The PP submitted that a detailed GLOF risk assessment has been carried out covering identification of potentially dangerous glacial lakes, dam-break analysis, and flood modelling. The Committee emphasized that design flood estimation shall include GLOF scenarios and that the Disaster Management Plan (DMP) must specifically address GLOF and related flash flood risks. Further, the Committee advised that a real-time monitoring and early warning system (EWS) shall be established in coordination with State Disaster Management Authority (SDMA) and local administration, along with community awareness and mock drills for preparedness.

3.1.5. Recommendation of EAC

Recommended

3.1.6. Details of Environment Conditions

3.1.6.1. Specific

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.
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.	Solar panel be provided to the families living in rural areas within 10 km radius of project with annual maintenance.
3.	Bio-Gas plant shall be installed in the Project affected area for Utilizing Cattle waste (Cow Dung) into renewable source of fuel.
4.	School up to 12^{th} Standard with smart classes shall be established and managed to provide free quality education for children from project affected villages/Tribal villages.
5.	50 bed multi-speciality 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.	Preference in employment opportunities and admission to ITI institutions shall be given to Project Affected Families (PAFs).
8.	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.
9.	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.
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 shall be done as per instructions of the Forest Department.
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.	Sensor based/AI driven Early Warning System (EWS) shall be established.
6.	Disaster prone places/villages in 10 km upstream and downstream of the project shall be identified and proper disaster management practices shall be applied in such places to mitigate/minimize the impact of any unprecedented event.
7.	GLOF and related flash flood risk management plan shall be prepared and implemented under guidance of expert government research institute.
Environmental management and Biodiversity conservation:	
1.	Stage-I FC shall be obtained before grant of EC.
2.	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.
3.	The contract clause limiting the No. of vehicles used during excavation and transportation shall followed scrupulously and the same shall informed to the ministry.
4.	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.
5.	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.
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). 10000 plants shall be planted around the muck disposal area and the survival of plants shall be submitted with the 6 monthly compliance report.
7.	Biodiversity hotspots in the 10 km radius of the project site shall be identified and listed for their conservation and preservation through time bound action plan in consultation with WII/Expert Government Institute.
8.	E-flow shall be maintained as proposed in the EIA/EMP report. Realtime monitoring of e-flow shall be ensured with online display on company’s website.

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.
1	The Regional Office of this Ministry shall monitor compliance of the stipulated conditions. The project authorities

3.	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

Munjari Irrigation Project by **Madhya Pradesh Water Resources Department** located at **SHEOPUR,MADHYA PRADESH**			
Proposal For		Fresh EC	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/MP/RIV/525632/2025	J-12011/07/2019-IA.I(R)	22/08/2025	River Valley/Irrigation projects (1(c))

3.2.2. Project Salient Features

39.2.1: The proposal is for grant of Environmental Clearance (EC) to the project for Munjari Irrigation Project (CCA: 11575 Ha) in an area of 1043.089 Ha located at Village Rinjha, Baroda, Awda etc, Sub District Badoda and Karahal, Sheopur, Madhya Pradesh by M/s Madhya Pradesh Water Resources Department.

3.2.3. Deliberations by the committee in previous meetings

N/A

3.2.4. Deliberations by the EAC in current meetings

39.2.2 The EAC during deliberations noted the following:

The EAC noted that the Project Proponent (PP) had not shared complete and proper documents prior to the meeting, which constrained the Committee from adequately understanding key components of the proposal. While enquiring about the concurrence of CWC for the project, the Committee observed that no clear response was provided by the PP.

The Committee also noted with concern that no senior official from the Madhya Pradesh Water Resources Department was present during the deliberation, and instead, the PP had authorized the contractor to attend the meeting, which was not found acceptable by the Committee.

The EAC expressed displeasure over such negligence on the part of the Government of Madhya Pradesh, particularly considering that the proposal pertains to an irrigation project aimed at public welfare.

In view of the above, the EAC advised the PP to ensure proper preparedness and demonstrate seriousness while presenting the proposal in future meetings.

3.2.5. Recommendation of EAC

Deferred for ADS

3.3. Agenda Item No 3:

3.3.1. Details of the proposal

Kumbhe Pumped Storage Project (1100 MW) by **NTPC LIMITED** located at **RAIGAD,MAHARASHTRA**			
Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/MH/RIV/548498/2025	J-12011/31/2025-IA.I(R)	21/08/2025	River Valley/Irrigation projects (1(c))

3.3.2. Project Salient Features

39.3.1 The proposal is for grant of Terms of References (ToR) to the project for Kumbhe Open loop Pumped Storage Project (1100 MW) in an area of 151.06 Ha at Village Kelgan, Kumbhe, Manjurne & Chach, Sub- district Mangaon, District Raigarh, Maharashtra by M/s NTPC Limited.

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

i. Kumbhe Pumped Storage Project (4X275 MW) is proposed as an off-stream open loop pumped storage scheme. Kumbhe Pumped Storage Project, with an installed capacity of 1100 MW, is planned near Kumbhe Village of Mangaon Taluka in Raigad district of Maharashtra. The upper dam is envisaged across the Nirabai River, a tributary of the Savitri River and the lower dam is planned downstream of the Chach Waterfall in Mangaon taluk of Raigad district.

ii. The proposed project is Kumbhe Pumped Storage Project, with an installed capacity of 1100 MW, is located in Raigad district of Maharashtra. The upper reservoir is under construction by the Water Resources Department (WRD), Government of Maharashtra, on the Nirabai River, a tributary of the Savitri River. The lower reservoir is planned downstream of the Chach Waterfall. The two reservoirs will be interconnected by a water conductor system designed to utilize an available gross head of 437 meters. An underground powerhouse will be constructed to house four fixedspeed, reversible Francis turbine-generator units, along with associated equipment such as generator-motor assemblies, transformers, and other auxiliaries. The operational strategy for the project involves daily peaking generation for 6 hours to meet peak demand. Pumping operations will be carried out using off-peak grid power and surplus Variable Renewable Energy (VRE).

iii. **Project background:** The Kumbhe Pumped Storage Project (PSP) draws its origin from the strategic initiatives of the Government of Maharashtra to harness renewable energy and optimize water resources in the Konkan region. The proposal of construction of dam was developed based on the power potential of the region by utilizing the heavy & assured rainfall of the region. The Upper reservoir was planned to be created to feed water to a 10 MW power project which has now been abandoned. The upper reservoir is going to be utilized for the Kumbhe PSP (1100 MW). Considering the potential of the site for energy storage, the pumped storage scheme has been envisaged to meet peak power demands and improve grid stability, thus utilizing the under constructed Kumbhe Dam as an upper reservoir for Kumbhe PSP (1100 MW) scheme.

iv. The latitude & longitude of upper dam (existing/ partly constructed) is 18°18'53"N, 73°22'27"E. The latitude & longitude of lower dam (proposed) is 18°19’5.7” N & 73°21’25” E respectively.

v. **Land requirement:** The total land required for the project is approximately 151.06 Ha.

Land required for project components	65.65 Hectares
Land required for Infrastructure facilities	85.40 Hectares

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

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

- **Project Details:**

Name of the Proposal	Kumbhe Off Stream Open loop Pumped Stor age Project (1100 MW)-Terms of Reference (TOR)
Location (Including coordinates)	Village Kelgan, Kumbhe, Manjurne & Chach, Taluka-Mangaon, District-Raigad, Maharashtr a. **UPPER RESERVOIR** Lat: 18°18'53"N, Long: 73°22'27"E **LOWER RESERVOIR** Lat: 18°19’5.7” N, Long: 73°21’25” E
Inter- state issue involved	No
Seismic zone	IV

- **Category Details:**

Category of the project	A
Provisions	-
Capacity / Cultural command area (CCA)	1100 MW
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	No

- **Electricity generation capacity:**

Powerhouse Installed Capacity	1100 MW
Generation of Electricity Annually	2515.13 GWh
No. of Units	4 units of 275 MW each
Additional information (if any)	-

- **ToR/EC Details:**

Cost of project	Rs. 5199.70 Crores (Incl. IDC)

<table>
<tr><td>Total area of Project</td><td>151.05 Hectares</td></tr>
<tr><td>(Height of Dam from deepest Foundation level (EL))</td><td>Upper dam - 56m
Lower dam – 97m</td></tr>
<tr><td>Length of Tunnel/Channel</td><td>6950 m</td></tr>
<tr><td>Details of Submergence area</td><td>Upper reservoir: 123.96 Hectares
(Land has been acquired by WRD, Government of Mah arashtra)
Lower reservoir: 33.95 Hectares
(Non forest land)</td></tr>
<tr><td>Types of Waste and quantity of generatio n during construction/ Operation</td><td>
<table>
<tr><th>Name of w aste</th><th>Source</th><th>Qty (TPA)</th><th>Mode of D isposal</th><th>Mode of transpor t</th></tr>
<tr><td>Municipal solid Waste</td><td>Labour colon y</td><td>54</td><td>Landfilling</td><td>Road</td></tr>
<tr><td>Plastic was te</td><td>Packing mater ial</td><td>0.5</td><td>Authorized vendors</td><td>Road</td></tr>
<tr><td>E-waste</td><td>Laptop and co mputer device s</td><td>0.1</td><td>Authorized vendors</td><td>Road</td></tr>
<tr><td>Battery wa ste</td><td>DG set & vehi cles/ machiner ies</td><td>0.1</td><td>Authorized vendor</td><td>Road</td></tr>
<tr><td>Biomedical Waste</td><td>First aid & me dical facilities</td><td>0.2</td><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>E-Flows for the Project</td><td>• For Nirabai River at Upper Reservoir site, yield in a 9 0% dependable year is 4.85 MCM. Out of this, 30% has been considered as Environmental Flows.
• For the nallah feeding the Lower Reservoir, yield in a 90% dependable year is 1.52 MCM. Out of this, 3 0% has been considered as Environmental Flows.</td></tr>
<tr><td>Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which p roject located. If yes, then
a) E-flow with TOR /Recommendation b y EAC as per CIA&CC study of Riv er Basin.
b) If not the E-Flows maintain criteria fo r sustaining river ecosystem.</td><td>No</td></tr>
<tr><td>No. of trees/saplings proposed in view of ‘Ek Ped Maa Ke Naam’ campaign</td><td>Shall be proposed during EIA study</td></tr>
</table>

• **Muck Management Details:**

No. of proposed disposal area/ (type of land-Forest/ Pvt. land)	1 no of proposed disposal area/ Non Forest Land (Private Land)
Muck Management	Shall be covere

entPlan	dinEIAreport
Monitoringmechanismfor MuckDisposal	Shallbecoveredin EIAreport

- **Land Area Breakup: Based on present level of information from sources**

Private land	82.43 Hectares
Government land	59.03 Hectares
Forest Land	9.60 Hectares
Total Land	151.06 Hectares
Submergence area/Reservoir area	Upper reservoir: 123.96 Hectares (Land has been acquired by WRD, Government of Maharashtra) Lower reservoir: 33.95 Hectares (Non forest land)

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	(Yes)	**Total Forest Land – 9.60 Ha** *(Reserved Forest Land – **9.60 Ha**)*
National Park	No	
Wildlife Sanctuary	No	

- **Court Case Details: Nil**
- **Previous EC compliance and necessary approvals:**

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

- **Miscellaneous:**

Particulars	**Details**
Details of consultant	M/s WAPCOS Limited
Project Benefits	• Increased power availability will support agriculture, industries, and rural electrification, thereby improving the quality of life. • Construction of roads, bridges, and buildings during the project will improve regional connectivity and benefit local communities. • A healthcare unit will be established near the dam site. Improved road access will also enhance connectivity to medical facilities. • Construction phase will generate direct and indirect employment, stimulate local businesses, and enhance trade opportunities.
Status of other statutory clearances	FC Application in process

R&R details	As per the present investigations, R&R plan is not required

3.3.3. Deliberations by the committee in previous meetings

N/A

3.3.4. Deliberations by the EAC in current meetings

The EAC deliberated on the information submitted (Form 1, PFR, kml file, etc.) and as presented in the meeting and observed that the proposal is for grant of TOR to the project for conducting EIA/EMP and Public hearing for Kumbhe Open loop Pumped Storage Project (1100 MW) in an area of 151.06 Ha at Village Kelgan, Kumbhe, Manjurne & Chach, Sub- district Mangaon, District Raigarh, Maharashtra by M/s NTPC 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 requirement for the project is around 151.06 Ha , out of which 141.46 ha is non-forest land and 9.60 ha is forest land. Diversion of forest land for non-forest purpose will be involved for construction of Kumbhe Open 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.

It was noted by the EAC that all the components of Kumbhe Open loop Pumped Storage Project are located within the proposed Western Ghats ESA, Maharashtra as per MOEF&CC draft notification no. S.O.30609(E) dated July 31, 2024.

During the meeting as informed by the PP, EAC noted that the Water Resources Department (WRD), Government of Maharashtra had earlier initiated construction of a conventional hydroelectric project of 10 MW at a site identified as suitable for a reservoir. Although construction of the upper dam was subsequently halted, the partially built structure is now proposed to be utilized as the Upper Reservoir in the Pumped Storage Project (PSP) awarded to NTPC.

Additionally, the Project Proponent has submitted a Memorandum of Understanding (MoU) dated 03.09.2024, signed between the Department of Water Resources, Government of Maharashtra and M/s NTPC Limited, granting in-principle approval for the establishment of the Pumped Storage Project with a capacity of 1000 MW in District Raigad. The committee emphasized that the PP shall obtain an amendment to the MoU to reflect the revised capacity, increasing from 1,000 MW to 1,100 MW.

The Committee noted that the details presented by the PP during the meeting pertained to a revised Pre-Feasibility Report (PFR), which was different from the version earlier submitted on the Parivesh portal. Accordingly, the Committee advised the PP to formally submit the revised PFR on the Parivesh portal for consideration.

39.3.4 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 Kumbhe Open loop Pumped Storage Project (1100 MW) in an area of 151.06 Ha at Village Kelgan, Kumbhe, Manjurne & Chach, Sub- district Mangaon, District Raigarh, Maharashtra by M/s NTPC Limited, under the provisions of EIA Notification, 2006, as amended along with the following additional/specific ToR

3.3.5. Recommendation of EAC

Recommended

3.3.6. Details of Terms of Reference

3.3.6.1. Specific

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 after the abandonment of project by Water Resources Department (WRD), Government of Maharashtra.
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.
9.	The conditions mentioned in the Western Ghats notification (draft notification no. S.O.3060(E) dated 31.07.2024) for development of hydro-power projects issued by the MOEF&CC shall be complied with while preparing EIA/EMP report.
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/ Disaster Management:	
1.	Details of quantity of muck generation component wise, types of muck (Excavation in tunnels,

	pressure shaft and powerhouse etc.) and disposal site/ transportation to be provided.
2.	Details of muck management such as dumping sites and its locations, transportation plan along with monitoring mechanism for muck transportation, detailing the road map of project construction site/ indicating the distances from HFL, river, project construction site along with types of road etc.
3.	Safety measures for avoiding spill over muck into the riverbed/streams and its flow into the river during the high discharge/ flood or monsoon period. Prepare plan for stabilization of muck disposal sites using biological and engineering measures to ensure that muck does not roll down the slopes and shall be disposed safely and that it does not pollute the natural streams and water bodies in surrounding area.
4.	Restoration plan for construction area including dumping site of excavated materials by levelling, filling up of burrow pits, landscaping etc.
Socio-economic Study:	
1.	Declaration by the project proponent by way of affidavit that "No" Inter-state issue/ policy issue is involved with any State in the project.
2.	All the tasks including conducting public hearing shall be done as per the provisions of EIA Notification, 2006 and as amended from time to time. 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 obtain amendment in MoU in terms of the revised capacity from 1000 MW to 1100 MW.
2.	The PP will submit 10 years water availability data certified by the CWC/State Water Resource Department for quantity of water that is received annually by the small stream on which upper reservoir is proposed to be constructed.
3.	The PP will submit a monitoring mechanism for releasing the self -catchment water of small stream draining in to upper reservoir of the project along with action plan for conservation and protection of other streams/rivulets draining in to upper and lower reservoirs.
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. The monitoring mechanism to ensure the survival of saplings shall be finalised in consultation with ICFRE.
5.	The application for obtaining Stage I FC for 9.60 Ha of forest land involved in the project shall be submitted within stipulated time.

6.	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. Separate chapter for risk assessment of such transportation through/within proposed the Wildlife Sanctuary shall be included in the EIA report.
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.	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.
14.	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.
15.	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.
16.	Action plan for survival or diversion of the rivulets/stream, if any, leading to join river shall be submitted.
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.	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.
22.	Any archaeological sites in the vicinity of the project, if any, then it shall be certified by ASI.
23.	A Sub-committee comprising members from EAC shall visit the site before considering the proposal for EC in view of the location of project located in Western Ghats.

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.
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.

3.4. Agenda Item No 4:

3.4.1. Details of the proposal

Providing Medium Irrigation Project to Various Panchayats of Jawalamukhi Area in Distt. Kangra HP by **EXE**

CUTIVE ENGINEER located at **KANGRA,HIMACHAL PRADESH**			
Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/HP/RIV/544802/2025	J-12011/28/2025-IA.I (R)	26/07/2025	River Valley/Irrigation projects (1(c))

3.4.2. Project Salient Features

null

3.4.3. Deliberations by the committee in previous meetings

Date of EAC 1 :14/08/2025 **Deliberations of EAC 1 :** The proposal was ***deferred*** on the above lines.

3.4.4. Deliberations by the EAC in current meetings

39.4.1 PP vide email dated 10.09.2025 submitted that due to an inadvertent error while filling the proposal on the Parivesh Portal, the category of the project was mistakenly selected as Category B1 instead of Category B2. As per the EIA Notification, 2006 and subsequent amendments, it has come to notice that the said project falls under Category B2 (Schedule 1(c) – Irrigation Projects), for which ToR is not applicable. In view of this, they requested to withdraw ToR application and cancel the proposal from further processing on the PARIVESH portal.

3.4.5. Recommendation of EAC

Returned in present form

3.5. Agenda Item No 5:

3.5.1. Details of the proposal

Proposed Chittamvalasa Pumped Storage Project, at Kusumavalasa village Hukumpeta Mandal of Alluri Sitara ma Raju District, Andhra Pradesh. by **navauga enegineering company limited** located at **ALLURI SITHARAMA RAJU,ANDHRA PRADESH**			
Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/AP/RIV/548530/2025	J-12011/32/2025-IA.I(R)	30/08/2025	River Valley/Irrigation projects (1(c))

3.5.2. Project Salient Features

39.5.1 The proposal is for grant of Terms of References (ToR) to the project for Chittamvalasa Closed loop Pumped Storage Project (1800 MW) in an area of 318.6Ha Village Devarapalli, Diguvasobha, Dumbriguda, Majjivalasa & Vachanarangini, Sub-district Araku Valley, Ananthagiri & Hukumpeta, District Alluri Sitharama Raju, Andhra Pradesh by M/s Navayuga Enegineering Company Limited.

39.5.2 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:

- Solid waste -. About 456 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 69,35,650 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.

1. EAC Meeting Details:	
EAC meeting/s	39th Meeting of The Expert Appraisal Committee
Date of Meeting/s	12th September, 2025
Date of earlier EAC meetings	Nil
2. Project Details:	
Name of the Proposal	Project is an Off-stream Closed Loop Pumped Storag e Named Chittamvalasa Pumped Storage Project (180 0 MW), District- Alluri Sitharama Raju, Andhra Prad esh **Proposal No**: IA/AP/RIV/548530/2025 **File No**: J-12011/32/2025-IA.I(R)
Location (Including Coordinates)	The project is located near Kusumavalasa village in Hukumpeta Mandal of Alluri Sitharama Raju district of Andhra Pradesh. **Coordinates**: Upper Reservoir Latitude: 18°12'38.91"N Longitude: 82°53'11.09"E Lower Reservoir Latitude : 18°11'22.01"N Longitude: 82°54'23.11"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)	1800 MW / 14400 MWH
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	Nil
4. Electricity Generation Capacity	
Powerhouse Installed Capacity	1800 MW / 14400 MWH
Generation of Electricity Annually	4993.20 MU annually
No. of Units	6 units of 300 MW
Additional information (if any)	Nil
5. ToR/ EC Details:	
Cost of project	7972.44 Cr.
Total area of Project	318.6 ha
Height of Dam from River Bed (EL)	68.00m
Length of Tunnel/Channel	3 numbers of Main HRT of Circular shape of diamete r 7.2 m and length 375 m 6 numbers of Main TRT of circular shape of diameter 7.1 m and length 103 m.
Details of submergence area	--
Types of Waste and quantity of generation during construction / Operati on	About 456 MT/year solid municipal wastes is likely t o be generated from labour colony in the construction phase.
E-Flows for the Project	--
Is Projects earlier studied in Cumulative Impact assessment & Carrying Capacity	NA

studies(CIA&CC) for River in which pr oject located. If yes then E-flow with TO R / Recommendation by EAC as per CI A&CC study of River Basin. If not the E-Flows maintain criteria for sustaining river ecosystem.		
6. Muck Management Details:	Muck generated from dam's foundation after assumin g swell factor of 25% has been estimated as 69,35,65 0 m3 which shall be utilized for earthen dam, produci ng coarse and fine aggregate for concrete production and in fillings for developing areas for construction fa cilities.	
No. of proposed disposal area / (type of l and- Forest / Pvt land)	40 ha (Non Forest Land)	
Muck management plan	Will be provided in EIA report.	
Monitoring mechanism for Muck Dispos al Transportation	Project Proponent	
7. Land Area Breakup:		
Project Appurtenance	**Area (ha)**	
Private land (Submergence)	309.10	
Barrage construction land	-	
Forest land	9.50	
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/ Remark s**
Reserve Forest / Protected Forest Land	Yes	Taduru Reserve forest, Approximately 3. 0 Km
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: NIL

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	Forest Clearance is under process
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".

3.5.3. 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 Committee noted that the Ministry of Environment, Forest and Climate Change (MoEF&CC) had granted Terms of Reference (ToR) for the project “Chittamvalasa (Closed Loop) Pumped Storage Hydro Electric Project (800 MW)” to M/s New and Renewable Energy Development Corporation of Andhra Pradesh Ltd. (NREDCAP), vide File No. J-12011/37/2023-IA.I (R) dated 10.09.2023. The Committee further noted that the project was subsequently handed over to M/s Navayuga Engineering Company Limited by NREDCAP vide letter dated 19.05.2025, in accordance with the Government of Andhra Pradesh order GO MS. No. 13 dated 07.02.2025 of the Energy (Power-II)

Department. It was also noted that a capacity enhancement study was undertaken to upgrade the installed capacity from 800 MW to 1800 MW. Accordingly, the PP has applied for a fresh ToR with the revised capacity.

- The EAC noted that the total land required for the construction of various components and related works for Chittamvalasa Closed loop Pumped Storage Project is estimated to be around 318.6 ha, out of which 9.50 ha is forest Land and 309.10 ha is Non-Forest Land. Diversion of forest land for non-forest purpose will be involved for construction of Chittamvalasa 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.

39.5.4 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 Chittamvalasa Closed loop Pumped Storage Project (1800 MW) in an area of 318.6Ha Village Devarapalli, Diguvasobha, Dumbriguda, Majjivalasa & Vachanarangini, Sub-district Araku Valley, Ananthagiri & Hukumpeta, District Alluri Sitharama Raju, Andhra Pradesh by M/s Navayuga Enegineering Company Limited, 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.	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 obtained amendment in MoU in terms of the revised capacity from 800 MW to 1800 MW.
2.	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.
3.	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.
4.	The application for obtaining Stage I FC for 9.50 ha of forest land involved in the project shall be submitted within stipulated time.
5.	A detailed assessment shall be carried out to optimize and possibly reduce the land area earmarked for quarrying area.
6.	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.	PP shall submit the detailed plan for filling the reservoir from the Raiwada reservoir along with necessary approval form water resource department.
9.	Transportation Plan for transporting construction materials shall be submitted.
10.	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.
11.	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.
12.	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.
13.	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.
14.	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.
15.	Quantitative values of Impact modelling of environmental parameters shall be submitted for during construction and operation. Also, mitigation measures shall be submitted in terms of construction and operation phase.
16.	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.

17.	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.
18.	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.
19.	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.
20.	Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP.
21.	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
22.	Any archaeological sites in the vicinity of the project, if any, then it shall be certified by ASI.

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.
14.	Different riverine habitats like rapids, pools, side pools and variations in the river substratum bedrocks, rocks, boulders, sand/silt or clay etc. need to be covered under the study
Description of Environment and Baseline Data	
1.	To know the present status of environment in the area, baseline data with respect to environmental components air, water, noise, soil, land and biology & biodiversity (flora & fauna), wildlife, socioeconomic status etc. should be collected within 10 km radius of the main components of the project/site i.e. dam site and power house site. The air quality and noise are to be monitored at such locations which are environmentally & ecologically more sensitive in the study area. The baseline studies should be collected for 1 season (Preferably Monsoon season). Flora-Fauna in the catchment and command area should be documented. The study area should comprise of the following:
2.	(i) Catchment area up to the dam/barrage site.
3.	(ii) Submergence Area.
4.	(iii) Project area or the direct impact area should comprise of area within 10 km radius of the main project components like dam, canals etc.
5.	(iv) Downstream upto 10 km from the tip of the reservoir.
Details of the Methology	
1.	The methodology followed for collection of base line data along with details of number of samples and their locations in the map should be included. Study area should be demarcated properly on the appropriate scale map. Sampling sites should be depicted on map for each parameter with proper legends. For Forest Classification, Champion and Seth (1968) methodology should be followed.
Methodology for Collection of Biodiversity Data	
1.	The number of sampling locations should be adequate to get a reasonable idea of the diversity and other attributes of flora and fauna. The guiding principles should be the size of the study area (larger area should have larger

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

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

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

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

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

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

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

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

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

3.6. Agenda Item No 6:

3.6.1. Details of the proposal

Proposed Gujjili Pumped Storage Project, District-Alluri Sitharama Raju, Andhra Pradesh by **navauga eneginee ring company limited** located at **ALLURI SITHARAMA RAJU,ANDHRA PRADESH**			
Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/AP/RIV/547719/2025	J-12011/34/2025-IA.I(R)	30/08/2025	River Valley/Irrigation project s (1(c))

3.6.2. Project Salient Features

39.6.1 The proposal is for grant of Terms of References (ToR) to the project for Gujjili Closed loop Pumped Storage Project (2400 MW) in an area of 256.37 Ha Village Tangulaguda, Satapi, Tangalam, Bhimavaram & Chippapalli etc., Subdistrict Araku Valley, Pachipenta & Ananthagiri, District Alluri Sitharama Raju & Parvathipuram Manyam, Andhra Pradesh by M/s Navayuga Enegineering Company Limited.

39.6.2 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. Gujjili Pumped Storage Project (GPSP) is an Off-Stream Closed Loop Pumped Storage development, proposed with an installed capacity of 2400MW/19200 MWH.

ii. The Project comprises of development of upper & lower reservoirs with a gross storage capacity of 8.419 MCM (0.297TMC) & 7.693 MCM (0.272TMC) respectively, out of which upper reservoir to be constructed with maximum dam height of 72 m (from river bed) to create the desired storage capacity while the lower reservoir will have maximum height of 55m (from river bed) constructed at the downhill.

iii. The one-time filling of the PSP reservoir will be carried out from Champavathi River, which is about 6.0 km from the PSP lower reservoir. The scheme of operation for the project is with 8 hours of peak power per day and approx. 9.3 hours for pumping back the water to the upper reservoir. Water will be used cyclically for energy storage and discharge. Evaporation losses, if any will be recouped periodically.

iv. The project is located near Duddikonda & Bheemavaram village, Alluri Sitharama Raju district of Andhra Pradesh. The upper dam is located near Dudikonda village, Araku Valley Taluka, having a geographical of longitude 83° 4'7.14"E & latitude is 18°20'51.20"N. The lower dam is located near Bheemavaram village, Ananthagiri Taluka, with the geographical of longitude 83° 7'19.69"E and latitude 18°20'25.96"N.

v. The Ministry of Environment, Forest and Climate Change (MoEF & CC) had granted Terms of Reference (ToR) for the project “Gujjili (Closed loop) Pumped Storage Hydro Electric Project

(1500 MW)" to M/s New and Renewable Energy Development Corporation of Andhra Pradesh Ltd. (NREDCAP), vide File No: J-12011/32/2023-IA.I (R) dated 07/08/2023. The project was later handed over to M/s Navayuga Engineering Company Limited by M/s New and Renewable Energy Development Corporation of Andhra Pradesh Ltd. A capacity enhancement study was carried out to upgrade the installed capacity from 1500 MW to 2400 MW and applied for fresh ToR for upgraded capacity of 2400 MW.

vi. **Land requirement:** The total land requirement for the project is 256.37 ha, out of which 37.85 ha is Forest Land and 218.52 ha is Non-Forest Land.

vii. **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.

viii. **Project Cost:** A summary of the Capital cost estimate, including direct and indirect charges for the Civil & Electro-mechanical works has been worked out as given in below table:

Item	**Estimated Cost (Rs. Crores)**
Civil & Hydro-Mechanical Wor	5668.35

ks	
Electro-Mechanical works	3240.00
Escalation	1277.76
IDC	1536.57
Total	**11722.68**

* The above cost includes the cost of Transmission.

ix. **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

x. **Environmental Sensitive area:** There are no National parks, wildlife sanctuaries, Biosphere Reserves, Tiger/ Elephant Reserves, and Wildlife Corridors etc. within 10 km distance from the project site.

xi. **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".

xii. **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.

xiii. **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 4770000 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.

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

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

1. EAC Meeting Details:	
EAC meeting/s	39th Meeting of The Expert Appraisal Committee
Date of Meeting/s	12th September, 2025
Date of earlier EAC meetings	Nil
2. Project Details:	
Name of the Proposal	Project is an Off-stream Closed Loop Pumped Storage Na med Gujjili Pumped Storage Project (2400 MW), District-Alluri Sitharama Raju, Andhra Pradesh **Proposal No**: IA/AP/RIV/547719/2025 **File No**: J-12011/34/2025-IA.I(R)
Location (Including Coordinates)	The project is located near Duddikonda & Bheemavaram v illage, Alluri Sitharama Raju district of Andhra Pradesh. **Coordinates**: Upper Reservoir Latitude: 18°20'51.20"N Longitude: 83° 4'7.14"E Lower Reservoir Latitude : 18°20'25.96"N Longitude: 83° 7'19.69"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	11722.68 Cr
Total area of Project	256.37 ha
Height of Dam from River Bed (E L)	55.00m
Length of Tunnel/Channel	2 numbers of Branch HRT of Circular shape of diameter 9. 6 m and length 149.50 m 1 number of Main HRT of circul ar shape of diameter 13.5 m and length 2120 m.
Details of submergence area	--
Types of Waste and quantity of generation during construction / Op eration	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 Cumul ative Impact assessment & Carryin g Capacity studies(CIA&CC) for River in whi ch project located. If yes then E-flo w with TOR / Recommendation by EAC as per CIA&CC study of Riv	NA

er Basin. If not the E-Flows mainta in criteria for sustaining river ecosy stem.	
6. Muck Management Details:	Muck generated from dam's foundation after assuming swe ll factor of 25% has been estimated as 4770000 m3 which shall be utilized for earthen dam, producing coarse and fin e aggregate for concrete production and in fillings for deve loping areas for construction facilities.
No. of proposed disposal area / (typ e of land- Forest / Pvt land)	40 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)	218.52
Barrage construction land	-
Forest land	37.85
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 L and	Yes	
National Park	No	
Wildlife Sanctuary	No	

9. Court Cases Details: 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".

3.6.3. 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 (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 Gujjili Closed loop Pumped Storage Project (2400 MW) in an area of 256.37 Ha Village Tangulaguda, Satapi, Tangalam, Bhimavaram & Chippapalli

etc., Subdistrict Araku Valley, Pachipenta & Ananthagiri, District Alluri Sitharama Raju & Parvathipuram Manyam, Andhra Pradesh by M/s Navayuga Enegineering Company Limited.

- The project/activity falls under Category A of item 1(c), 'River Valley Projects,' as per the Schedule of the Environmental Impact Assessment Notification, 2006, and requires appraisal at the Central level by the sectoral EAC in the Ministry.
- The Committee noted that the Ministry of Environment, Forest and Climate Change (MoEF&CC) had granted Terms of Reference (ToR) for the project Gujjili (Closed loop) Pumped Storage Hydro Electric Project (1500 MW)" to M/s New and Renewable Energy Development Corporation of Andhra Pradesh Ltd. (NREDCAP), vide File No: J-12011/32/2023-IA.I (R) dated 07/08/2023. The Committee further noted that the project was subsequently handed over to M/s Navayuga Engineering Company Limited by NREDCAP vide letter dated 19.05.2025, in accordance with the Government of Andhra Pradesh order G.O. MS. No. 13 dated 07.02.2025 of the Energy (Power-II) Department. It was also noted that a capacity enhancement study was undertaken to upgrade the installed capacity from 1500 MW to 2400 MW. Accordingly, the PP has applied for a fresh ToR with the revised capacity.
- The EAC noted that the total land required for the construction of various components and related works for Gujjili Closed loop Pumped Storage Project is estimated to be around 256.37 ha, out of which 37.85 ha is Forest Land and 218.52 ha is Non-Forest Land. Diversion of forest land for non-forest purpose will be involved for construction of Chittamvalasa 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.

39.6.4 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 Gujjili Closed loop Pumped Storage Project (2400 MW) in an area of 256.37 Ha Village Tangulaguda, Satapi, Tangalam, Bhimavaram & Chippapalli etc., Subdistrict Araku Valley, Pachipenta & Ananthagiri, District Alluri Sitharama Raju & Parvathipuram Manyam, Andhra Pradesh by M/s Navayuga Enegineering Company Limited, under the provisions of EIA Notification, 2006, as amended along with the additional/specific ToR:

3.6.5. Recommendation of EAC

Recommended

3.6.6. Details of Terms of Reference

3.6.6.1. Specific

Miscellaneous:	
1.	Both capital and recurring expenditure under EMP shall be submitted.
2.	Pre-DPR Chapters viz., 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 obtained amendment in MoU in terms of the revised capacity from 1500 MW to 2400 MW.
2.	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.
3.	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.
4.	The application for obtaining Stage I FC for 37.85 ha of forest land involved in the project shall be submitted within stipulated time.
5.	A detailed assessment shall be carried out to optimize and possibly reduce the land area earmarked for quarrying area.
6.	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.	PP shall submit the detailed plan for filling the reservoir from the Champavathi River along with necessary approval form water resource department.
9.	Transportation Plan for transporting construction materials shall be submitted.
10.	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.
11.	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.
12.	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.
13.	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.
1	Details of mineral zone, if any, in the study area, certified by Geological Survey of India or any

4.	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.
15.	Quantitative values of Impact modelling of environmental parameters shall be submitted for during construction and operation. Also, mitigation measures shall be submitted in terms of construction and operation phase.
16.	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.
17.	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.
18.	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.
19.	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.
20.	Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP.
21.	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.
22.	Any archaeological sites in the vicinity of the project, if any, then it shall be certified by ASI.

3.6.6.2. Standard

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

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

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

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

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

37.	General vegetation profile and floral diversity covering all groups of flora including lichens and orchids. A species wise list may be provided.
38.	Assessment of plant species with respect to dominance, density, frequency, abundance, diversity index, similarity index, importance value index (IVI) , Shannon Weiner index etc. of the species to be provided. Methodology used for calculating various diversity indices along with details of locations of quadrates, size of quadrates etc. to be reported within the study area in different ecosystems.
39.	Existence of National park, Sanctuary, Biosphere Reserve etc in the study area, if any, should be detailed.
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.

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

MINUTES OF THE 39TH MEETING OF THE EXPERT APPRAISAL COMMITTEE FOR RIVER VALLEY AND HYDROELECTRIC PROJECTS HELD ON 12TH SEPTEMBER 2025 THROUGH VIDEO CONFERENCE

The 39th 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 13th September, 2025 through virtual mode, under the Chairmanship of Prof. G. J. Chakrapani. The list of Members present in the meeting is at **Annexure II**.

Confirmation of the Minutes of the 38th EAC meeting:

The Minutes of the Meeting held on 38th EAC meeting on 29th August, 2025 were confirmed.

Agenda Item No. 39.1

Oju Hydro-Electric Project (2220 MW) in an area of 750.06 Ha located at Village Reddi, Yaja, Gumsing etc, Sub District Taksing, Limeking Circle, District Upper Subansiri, Arunachal Pradesh by M/s Oju Subansiri Hydro Power Corporation Pvt Ltd - Environmental Clearance - reg.

[Proposal No. IA/AR/RIV/546767/2025; F. No. J-12011/10/2022-IA.I (R)]

39.1.1: The proposal is for grant of Environmental Clearance (EC) to the project for Oju Hydro-Electric Project (2220 MW) in an area of 750.06 Ha located at Village Reddi, Yaja, Gumsing etc, Sub District Taksing, Limeking Circle, District Upper Subansiri, Arunachal Pradesh by M/s Oju Subansiri Hydro Power Corporation Pvt Ltd.

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

i. Oju hydroelectric project is proposed on Subansiri river in Upper Subansiri district of Arunachal Pradesh. The project scheme entails a run-of-the-river development with peaking power capability. The project is one of the projects in a cascade development on Subansiri River. The project proposes to generate 2220 MW (2100 MW + 120 MW) auxiliary (dam toe powerhouse), with sufficient storage to meet daily peak hour energy generation requirements.

ii. The proposed Oju Hydro Electric Project is located in the remote area of Upper Subansiri district in the State of Arunachal Pradesh, India. The project envisages utilization of the flow of Subansiri River (known as Si Nigit River in the upper reaches of the basin) for generation of electrical power.

iii. Oju Hydroelectric Project has been conceived as a run-off-the river scheme with significant gross storage of 15.66MCM and live storage of 5.56MCM as diurnal storage or peaking purpose. The project proposes to optimally utilize the power potential of the river in a stretch of about 18.6 km.

iv. The Oju Hydroelectric project is being developed on BOOT basis by Oju Subansiri Hydro Power Corporation Pvt. Ltd., New Delhi is an SPV of Navayuga Engineering Company Ltd, Hyderabad. The project was originally identified by the Central Electricity Authority (CEA).

v. The Feasibility Report was prepared by HDPC in 2004, which was accepted by CEA. The development rights for this project have since been accorded to M/s Navayuga Engineering Company Ltd. (NECL), Hyderabad by the State Government of Arunachal Pradesh.

vi. The license was given to the Company to develop, harness power potential of river Subansiri between FRL 1950 m and TWL El. 1670 m for Oju-I (700 MW) and FRL 1650 m and TWL 1300 m for Oju-II (1000 MW). The total length of the river reach between allotted levels is about 10.6 km and 8 km, respectively. Subsequently, based on the technical report on the Oju-I and Oju-II HEPs and on further studies, it is proposed to be developed as a Single Composite Scheme called Oju Hydroelectric Project (2220 MW), within the allotted river reach and levels.

vii. The project is planned to generate 2220 MW (2100 MW + 120 MW auxiliary (dam toe)), with sufficient storage to meet daily peak hour energy generation requirements. Project components involve a concrete gravity dam and an underground powerhouse complex connected through a 14.12 km km long headrace tunnel. The diversion structure proposed to be used at the project would be a 100 m high (above riverbed level) concrete gravity dam. The project has a dam site and powerhouse is located at the right bank of Oju River. The Intake meets with circular Horse-Shoe shaped Head Race Tunnel (HRT) terminating into the Surge Shaft followed by a circular pressure shaft leading to the powerhouse. Water from surface powerhouse out falls in the Oju River through Tail Race Channel (TRC).

viii. **Project location:** The proposed dam site of Oju HEP is located on Lower Subansiri River between Redi and Oju village. The powerhouse is located upstream of the confluence of Tsari Chu nallah and Keru nallah with Si Nigit River. The coordinates of the Dam and Powerhouse sites are as under:

Coordinates	**Dam**	**Powerhouse**
Latitude	28º25’39.45” N	28º21'56.01" N
Longitude	93º21’0.91” E	93º28'3.88" E

ix. The TOR was accorded by the MoEF&CC vide letter no. J-12011/10/2022-IA-I (R) dated 12.09.2022. The amendment of TOR was approved by MOEF&CC due to change in capacity vide letter dated 30/01/2024.

x. **Land requirement:** The total land requirement of Oju Hydro-Electric Project (2220 MW) is 750.06 ha. Project envisages construction of following components with land details are as follows:

Component	**Area (Ha)**
Submergence Area	33.66
River Bed Area	8.87
Area between submergence and Dam Top Elevation 1960 m	5.81
Muck Dumping Area (D-3)	2.50
Guest House	1.50
Helipad	0.85
Project Road (R-17)	3.57
Rock Quarry (RQ-1)	23.12
Aggregate Processing Plant (APP-1)	2.92
Project Road (R-5)	6.67
Batching and Mixing Plant (B&M-1)	0.82
Batching and Mixing Plant (B&M-2)	1.00
River Bed Area	2.52
Project Road (R-5,R-6, R-8,R-9 & R-10)	3.50
Dam Complex	22.53
Muck Dumping Area (D-1)	0.95
Muck Dumping Area (D-2)	0.99
Project Road (R-7)	6.86
Explosive Magazine (MZN-1)	3.12
Project Road (R-7)	7.08
Area for Misc. Work Facility-1	4.34
Security Camp-1	0.49
Store-1	1.66
Workshop-1	2.11
HM Contractor Camp	4.00
Muck Dumping Area (D-4)	9.79
Permanent Colony (PC-1)	31.93
Rock Quarry (RQ-2)	1.63
Temporary Colony (TC-1)	4.01
Muck Dumping Area (D-5)	6.00
Project Road (R-1, R-4, R-5 & R-6)	19.53
Rock Quarry (R-3)	9.08
Muck Dumping Area (D-6)	13.13
Batching & Mixing Plant (B&M-3)	2.15
Adit portal (AD-2)	0.55
Project Road (R-1)	8.88

Component	Area (Ha)
Permanent Colony (PC-2)	8.42
Muck Dumping Area (D-7)	11.32
Temporary Colony (TC-2)	2.30
Project Road (R-1)	10.80
Rock Quarry (RQ-4)	10.66
Adit portal (AD-3)	0.30
Project Road (R-1)	12.86
Aggregate Processing Plant(APP-2)	4.08
Permanent Colony (PC-3)	31.65
Batching and Mixing Plant (B&M-4)	2.14
Temporary Colony (TC-3)	5.00
Aggregate Processing Plant(APP-3)	4.08
Project Road (R-1)	36.97
Rock Quarry (RQ-5)	17.52
Adit Portal (AD-4)	0.26
Batching and Mixing Plant (B&M-5)	2.15
Project Road (R-1 & R-16)	27.22
Temporary Colony (TC-4)	4.60
Temporary Colony (TC-5)	6.40
Explosive Magazine (MZN-2)	2.02
Aggregate Processing Plant(APP-4)	2.58
Muck Dumping Area (D-10)	6.24
Project Road (R-1, R-11, R-16)	47.62
Muck Dumping Area (D-9)	22.92
Penstock Febrication Yard (PFY)	2.84
Area for Misc. Work Facility-2	1.62
Store and Warehouse-2 (S&W-2)	1.00
Store and Warehouse-3 (S&W-3)	2.66
Workshop-2 (WS-2)	2.17
Working Area/Storage EM Contractors (EM)	2.80
Security Camp-2	0.50
Power House Complex	68.45
Project Road (R-1,R-2,R-11,R-13,R-14 & R-16)	55.52
Muck Dumping Area (D-11)	8.05
Adit Portal (Adit 5 to HRT)	0.50
Project Road (R-12)	0.87
TRT Outlet	1.13
Total Area	**686.34**
Notional Area	
Dam Complex, Power House Complex,Adits,HRT,Road Tunnel etc.	**63.72**

Component	Area (Ha)
Grand Total	**750.06**

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

The male and female population in study area villages comprises about 49.62% and 50.38% respectively of the total population. The population comprising of children below the age of 6 years accounts for about 15.04% of the total population in the study area villages. The Schedule Tribes is the dominant caste in the study area accounting for about 97.56% of the total population, none of the Schedule Caste families resides in the area. General Caste accounts for 2.44% of the total population in the study area villages. It is observed that about 28.95% of the total population in the study area villages is literate, while about 71.05% are illiterate. It is observed that 51.34% of the total population is engaged in some form of economically productive activity or vocational activity, and have been designated as Total Working population. On the other hand, Non-workers or persons who are dependent on the population, which is engaged in economically productive work accounts for about 48.66% of the total population. Among the population that is working about 37.46% has been designated as Main workers while the remaining 62.54% has been designated as Marginal workers.

xii. **Water requirement:** No ground water requirement. For surface water use, a MOA was signed on 21.06.2010.

xiii. **Project Cost:** The estimated project cost is Rs. 24942.01 crores including existing investment in DPR activities of Rs. 210.00 crores. Total capital cost earmarked towards environmental management plan is Rs. 26484.55 lakh. Recurring cost (operation and maintenance) will be about Rs. 675.00 cr. per annum with increase of 5.47% per year.

xiv. **Project Benefit:**

- Capacity of the project is 2,220 MW (Main Units: 2,100 MW; Auxiliary Units: 120 MW) with an annual design energy generation of 8,402.15 MU.
- Increased power availability will support agriculture, industries, and rural electrification, thereby improving the quality of life.
- Construction of roads, bridges, and buildings during the project will improve regional connectivity and benefit local communities.
- A healthcare unit will be established near the dam site. Improved road access will also enhance connectivity to medical facilities.
- Construction phase will generate direct and indirect employment, stimulate local businesses, and enhance trade opportunities.
- A Local Area Development Plan (0.5% of project cost) will further support education, healthcare, and infrastructure development in project-affected and adjoining villages.

xv. **Environmental Sensitive area:** There are no National parks, wildlife sanctuaries, Biosphere Reserves, Tiger/ Elephant Reserves, and Wildlife Corridors etc. within 10 km

distance from the project site. River/ water body is flowing at a distance of 25 km in upstream direction.

xvi. **Resettlement and rehabilitation:** The survey was conducted in the month of June, 2023 to identify the Project Affected Persons (PAPs) and inventory of the assets and structure to be impacted was prepared. As per the survey, number of project affected families is 09. The tentative budget for PAPs to be affected by proposed project has been estimated as Rs. 2.0 crore.

xvii. **Baseline Environmental Scenario:**

<table>
<tr><td>Period</td><td>3 seasons:
• Post-Monsoon Season - October 2022
• Pre-monsoon Season - April 2023
• Monsoon Season - June 2023</td></tr>
<tr><td>AAQ parameters at 6 locations (min. & Max.)</td><td>Post-monsoon season (Unit: µg/m^3)
<table>
<tr><th>Air Quality Monitoring Stations</th><th>Min.</th><th>Max.</th><th>Avg.</th><th>98 percentile</th></tr>
<tr><td colspan="5">Particulate Matter$_{10}$ (PM_{10})</td></tr>
<tr><td>AAQ1</td><td>48.7</td><td>60.4</td><td>54.9</td><td>60.2</td></tr>
<tr><td>AAQ2</td><td>50.4</td><td>65.7</td><td>58.5</td><td>65.2</td></tr>
<tr><td>AAQ3</td><td>50.4</td><td>65.7</td><td>58.5</td><td>65.2</td></tr>
<tr><td>AAQ4</td><td>55.1</td><td>64.9</td><td>60.9</td><td>64.7</td></tr>
<tr><td>AAQ5</td><td>57.5</td><td>64.0</td><td>61.1</td><td>64.0</td></tr>
<tr><td>AAQ6</td><td>52.9</td><td>64.1</td><td>59.7</td><td>64.0</td></tr>
<tr><td colspan="5">Particulate Matter$_{2.5}$ ($PM_{2.5}$)</td></tr>
<tr><td>AAQ1</td><td>21.6</td><td>32.4</td><td>27.3</td><td>32.4</td></tr>
<tr><td>AAQ2</td><td>25.4</td><td>33.9</td><td>30.2</td><td>33.7</td></tr>
<tr><td>AAQ3</td><td>29.8</td><td>35.7</td><td>33.0</td><td>35.6</td></tr>
<tr><td>AAQ4</td><td>28.1</td><td>34.9</td><td>31.5</td><td>34.6</td></tr>
<tr><td>AAQ5</td><td>27.2</td><td>34.6</td><td>31.5</td><td>34.5</td></tr>
<tr><td>AAQ6</td><td>32.5</td><td>35.6</td><td>34.1</td><td>35.5</td></tr>
<tr><td colspan="5">Sulphur Dioxide (SO_2)</td></tr>
<tr><td>AAQ1</td><td><6.0</td><td>7.5</td><td>6.8</td><td>7.5</td></tr>
<tr><td>AAQ2</td><td><6.0</td><td>8.4</td><td>7.1</td><td>8.3</td></tr>
<tr><td>AAQ3</td><td><6.0</td><td>7.4</td><td>7.1</td><td>7.4</td></tr>
<tr><td>AAQ4</td><td><6.0</td><td>7.2</td><td>7.0</td><td>7.2</td></tr>
<tr><td>AAQ5</td><td><6.0</td><td>7.5</td><td>7.0</td><td>7.5</td></tr>
<tr><td>AAQ6</td><td><6.0</td><td>7.1</td><td>6.7</td><td>7.1</td></tr>
<tr><td colspan="5">Nitrogen Dioxide (NO_2)</td></tr>
<tr><td>AAQ1</td><td>15.6</td><td>21.3</td><td>18.5</td><td>21.2</td></tr>
</table></td></tr>
</table>

AAQ2	15.4	21.5	19.0	21.4
AAQ3	19.2	21.9	20.8	21.9
AAQ4	19.8	22.6	21.6	22.6
AAQ5	18.7	22.6	20.8	22.5
AAQ6	17.2	22.9	20.0	22.7

Pre-monsoon season (Unit: µg/m^3)

Station	Min.	Max.	Avg.	98 percentile
Particulate Matter$_{10}$ (PM_{10})				
AAQ1	49.2	64.2	57.5	64.1
AAQ2	48.5	62.7	56.4	62.4
AAQ3	50.9	65.2	58.3	65.1
AAQ4	49.5	63.1	56.8	63.0
AAQ5	49.3	64.2	58.0	64.1
AAQ6	49.7	65	58.0	64.9
Particulate Matter$_{2.5}$ ($PM_{2.5}$)				
AAQ1	26.1	35.4	31.7	35.3
AAQ2	26.0	34.8	31.1	34.7
AAQ3	26.1	36.2	32.1	36.1
AAQ4	25.0	35.1	31.3	35.0
AAQ5	26.2	35.7	32.0	35.6
AAQ6	26.1	36.1	32.0	36.1
Sulphur Dioxide (SO_2)				
AAQ1	<6.0	7.4	6.9	7.4
AAQ2	<6.0	7.1	6.8	7.1
AAQ3	<6.0	7.8	7.2	7.8
AAQ4	<6.0	7.4	6.9	7.4
AAQ5	<6.0	7.8	7.0	7.8
AAQ6	<6.0	7.3	6.9	7.3
Nitrogen Dioxide (NO_2)				
AAQ1	15.5	22.7	18.9	22.6
AAQ2	15.4	21.9	18.7	21.8
AAQ3	15.9	22.3	18.9	22.2
AAQ4	15.1	22.7	18.7	22.5
AAQ5	15.2	23.1	18.9	22.9
AAQ6	15.6	23.1	19.0	22.9

Monsoon season (Unit: µg/m^3)

Station	Min.	Max.	Avg.	98 percentile
Particulate Matter$_{10}$ (PM_{10})				

	AAQ1	50.8	59.0	54.9	58.8
	AAQ2	51.2	62.6	57.4	62.6
	AAQ3	50.7	62.2	58.0	62.1
	AAQ4	51.2	60.5	56.3	60.3
	AAQ5	50.4	62.6	56.2	62.3
	AAQ6	53.2	62.0	56.9	61.7
	Particulate Matter$_{2.5}$ ($PM_{2.5}$)				
	AAQ1	26.1	31.3	29.0	31.2
	AAQ2	24.7	31.7	28.1	31.5
	AAQ3	25.6	34.5	30.2	34.2
	AAQ4	25.8	31.6	28.7	31.4
	AAQ5	25.5	32.1	28.4	31.9
	AAQ6	23.8	33.2	29.1	33.0
	Sulphur Dioxide (SO_2)				
	AAQ1	<6.0	7.0	6.4	7.0
	AAQ2	<6.0	7.2	6.7	7.2
	AAQ3	<6.0	7.0	6.5	7.0
	AAQ4	<6.0	6.8	6.3	6.8
	AAQ5	<6.0	6.8	6.4	6.8
	AAQ6	<6.0	6.9	6.4	6.9
	Nitrogen Dioxide (NO_2)				
	AAQ1	15.4	20.4	17.7	20.1
	AAQ2	17.1	20.9	18.9	20.8
	AAQ3	16.2	21.1	18.4	20.9
	AAQ4	13.2	18.3	15.7	18.2
	AAQ5	15.1	20.5	17.9	20.4
	AAQ6	17.6	20.4	19.2	20.4

Incremental GLC Level	**Distance from the Road (m)**	**Incremental GLC PM10 (ug/m^3)**	**Incremental GLC NO_X ($\mu g/m^3$)**
	25	8.6	0.12
	50	5.4	0.11
	100	3.2	0.10
	150	2.4	0.10
	200	1.9	0.10
	300	1.4	0.10
	400	1.1	0.10
	500	1.0	0.10
	750	0.8	0.10
	1000	0.8	0.10

River water samples (7	**Surface Water quality in the study area for Post-Monsoon season**

samples)

S. No	Parameter	Unit	SW1	SW2	SW3	SW4	SW5	SW6	SW7
1.	pH	-	7.58	7.68	7.66	7.69	7.32	7.64	7.54
2.	Colour	Hazen	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
3.	Electrical Conductivity	µS/cum	468	480	474	372	117.0	382	368
4.	Turbidity	NTU	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
5.	Total Hardness (as CaCO3)	mg/I	138	140	138	137	120	146	132
6.	Fluorides (as F)	mg/I	0.31	0.34	0.34	0.29	0.29	0.32	0.29
7.	Dissolved Oxygen	mg/I	6.5	6.5	6.5	6.5	6.5	6.5	6.5
8.	Chlorides (as Cl)	mg/I	56	60	58.0	56.0	42.0	54.0	54.0
9.	Calcium (as Ca)	mg/I	29	32	31.0	27.0	25.0	36.0	28.0
10.	BOD (3 days at 27^0C	mg/I	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
11.	Nitrates (as NO_3)	mg/I	5.0	5.2	4.99	4.78	2.01	7.98	3.98
12.	Total Dissolved Solids	mg/I	304	312	306	242	76.0	248	238
13.	Sulphates (as SO4)	mg/I	8.0	9.0	8.94	4.0	1.0	4.0	3.0
14.	Magnesium (as Mg)	mg/I	15.92	14.58	14.70	16.88	13.97	13.60	15.06
15.	Phosphates (as P)	mg/I	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
16.	Sodium (as Na)	mg/I	4.0	5.0	4.89	3.0	2.0	3.0	3.02
17.	Potassium (as K)	mg/I	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
18.	COD (as O2)	mg/I	6.0	7.0	7.0	5.0	3.0	6.0	5.08
19.	Residual Sodium Carbonate	mg/I	Nil	Nil	Nil	Nil	Nil	Nil	Nil

20.	Total Chromium (as Cr)	mg/I	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21.	Iron (as Fe)	mg/I	0.10	0.12	0.11	0.08	0.03	0.11	0.07
22.	Manganese (as Mn)	mg/I	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
23.	Copper (as Cu)	mg/I	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
24.	Zinc (as Zn)	mg/I	0.12	0.14	0.12	0.10	0.05	0.12	0.09
25.	Arsenic (as As)	mg/I	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
26.	Cadmium (as Cd)	mg/I	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
27.	Cyanides (as CN)	mg/I	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
28.	Lead (as Pb)	mg/I	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
29.	Selenium (As Se)	mg/I	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
30.	Mercury (Hg)	mg/I	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Source: Primary survey

Surface Water quality in the study area for Pre-monsoon season

S. No	Parameters	Units	SW1	SW2	SW3	SW4	SW5	SW6	SW7
1.	pH	-	7.61	7.62	7.67	7.58	7.62	7.58	7.59
2.	Colour	Hazen	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
3.	Electrical Conductivity	µS/cm	478	476	477	471	477	468	475
4.	Turbidity	NTU	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
5.	Total Hardness (As $CaCO_3$)	mg/l	140	141	136	144	142	138	133
6.	Fluoridesd (as F)	mg/l	0.35	0.36	0.31	0.32	0.33	0.31	0.32
7.	Dissolved Oxygen	mg/l	6.6	6.6	6.7	6.6	6.3	6.5	6.3

	8.	Chlorides (as Cl)	mg/l	58	59	56	55	57	56	55
	9.	Calcium (as Ca)	mg/l	28	29	29	24	26	29	23
	10.	BOD (3 days at 27^0C)	mg/l	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	11.	Nitrates (as NO_3)	mg/l	6.0	7.0	7.0	5.0	4.0	5.0	5.0
	12.	Total Dissolved Solids	mg/l	310	311	309	313	312	304	311
	13.	Sulphates (As SO_4)	mg/l	9.0	7.0	7.0	7.0	10.0	8.0	8.0
	14.	Magnesium (as Mg)	mg/l	15.0	311	14.0	14.0	14.0	15.92	13.0
	15.	Phosphates (as P)	mg/l	<0.05	7.0	<0.04	<0.05	<0.05	<0.05	<0.05
	16.	Sodium (As Na)	mg/l	5.0	16.0	4.0	3.0	0.11	4.0	3.0
	17.	Potassium (as K)	mg/l	<1.0	<0.05	<1.0	<1.0	<0.10	<1.0	<1.0
	18.	COD (as O_2)	mg/l	5.0	5.0	4.0	4.0	6.0	6.0	3.0
	19.	Residual Sodium Carbonate	mg/l	Nil	Nil	Nil	Nil	Nil	Nil	NIL
	20.	Total Chromium (as Cr)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	21.	Iron (as Fe)	mg/l	0.12	0.13	0.11	0.10	0.11	0.10	0.12
	22.	Manganese (as Mn)	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
	23.	Copper (as Cu)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
	24.	Zinc (as Zn)	mg/l	0.13	0.14	0.12	0.11	0.11	0.12	0.14
	25.	Arsenic (As As)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	26.	Cadmium (As Cd)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	27.	Cyanides (as CN)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

28.	Lead (as Pb)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
29.	Selenium (As Se)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
30.	Mercury (Hg)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Source: Primary survey

Surface Water quality in the study area for Monsoon season

S. No	**Parameters**	**Units**	**SW1**	**SW2**	**SW3**	**SW4**	**SW5**	**SW6**	**SW7**
1.	pH	-	7.61	7.62	7.11	7.20	7.25	7.69	7.75
2.	Colour	Hazen	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
3.	Electrical Conductivity	µS/cm	452	410	479	482	398	452	482
4.	Turbidity	NTU	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
5.	Total Hardness (As $CaCO_3$)	mg/l	135	131	130	149	110	130	130
6.	Fluorides (as F)	mg/l	0.32	0.21	0.35	0.21	0.12	0.33	0.39
7.	Dissolved Oxygen	mg/l	6.4	4.8	6.9	6.0	6.0	6.5	6.2
8.	Chlorides (as Cl)	mg/l	51	62	51	60	68	50	60
9.	Calcium (as Ca)	mg/l	20	29.9	22	24.9	20	28.9	21
10.	BOD (3 days at 27^0C)	mg/l	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
11.	Nitrates (as NO_3)	mg/l	6.1	6.9	5.6	5.1	4.2	4.3	4.9
12.	Total Dissolved Solids	mg/l	309	365	316	348	302	310	328
13.	Sulphates (As SO_4)	mg/l	9.0	6.9	6.8	5.5	10.2	8.2	7.9
14.	Magnesium (as Mg)	mg/l	15.0	16.9	14.9	14.9	14.9	15.98	13.9

	15.	Phosphates (as P)	mg/l	<0.05	<0.05	<0.04	<0.05	<0.05	<0.05	<0.05
	16.	Sodium (As Na)	mg/l	5.2	5.2	5.9	3.2	4.4	4.1	3.2
	17.	Potassium (as K)	mg/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	18.	COD (as O_2)	mg/l	5.0	5.1	4.1	4.8	6.5	6.0	3.9
	19.	Residual Sodium Carbonate	mg/l	Nil	Nil	Nil	Nil	Nil	Nil	Nil
	20.	Total Chromium (as Cr)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	21.	Iron (as Fe)	mg/l	0.12	0.13	0.11	0.19	0.11	0.10	0.11
	22.	Manganese (as Mn)	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
	23.	Copper (as Cu)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
	24.	Zinc (as Zn)	mg/l	0.13	0.14	0.11	0.11	0.10	0.12	0.11
	25.	Arsenic (As As)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	26.	Cadmium (As Cd)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	27.	Cyanides (as CN)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	28.	Lead (as Pb)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	29.	Selenium (As Se)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	30.	Mercury (Hg)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Source: Primary survey									

Noise levels Leq (Day & Night) at -7 - locations

Hourly day time Ambient noise levels monitored in post-monsoon season (Unit: dB(A))

Location	**N1**	**N2**	**N3**	**N4**	**N5**	**N6**	**N7**
6-7 AM	41	43	44	42	45	43	44
7-8 AM	43	45	46	44	46	45	44
8-9 AM	44	48	46	46	48	46	46
9-10 AM	46	50	49	47	50	48	48
10-11 AM	48	53	51	49	52	54	49

11-12 Noon	51	55	54	52	55	57	52
12 Noon-1 PM	54	59	57	55	58	60	55
1-2 PM	57	56	59	58	60	62	58
2-3 PM	66	61	63	60	63	64	60
3-4 PM	62	63	66	63	64	66	63
4-5 PM	64	66	63	65	66	68	65
5-6 PM	59	64	60	61	62	64	61
6-7 PM	57	61	59	58	56	58	58
7-8 PM	53	57	56	54	52	53	52
8-9 PM	48	51	52	50	49	50	52
Leq (Day)	**52.8**	**55.4**	**55.0**	**53.6**	**55.06**	**55.8**	**58.1**

Source: Primary survey

Hourly day time Ambient noise levels monitored for Pre-monsoon season (Unit: dB(A))

Location	**N1**	**N2**	**N3**	**N4**	**N5**	**N6**	**N7**
6-7 AM	39	40	40	38	39	38	39
7-8 AM	41	42	41	40	42	41	42
8-9 AM	42	43	42	42	42	41	43
9-10 AM	44	43	42	43	44	43	45
10-11 AM	45	44	45	43	46	43	45
11-12 Noon	45	45	46	44	45	45	46
12 Noon-1 PM	46	47	46	44	47	45	46
1-2 PM	46	47	45	45	47	47	45
2-3 PM	45	46	45	45	45	46	45
3-4 PM	44	45	44	45	45	44	43
4-5 PM	44	45	43	44	44	44	43
5-6 PM	43	44	43	44	44	43	43
6-7 PM	42	43	42	43	43	41	42
7-8 PM	40	41	42	42	40	41	40
8-9 PM	38	39	38	39	39	38	38
Leq (Day)	**43.53**	**44.16**	**43.45**	**43.17**	**44.12**	**43.37**	**43.58**

Source: Primary survey

Hourly day time Ambient noise levels monitored for monsoon season (Unit: dB(A))

Location	**N1**	**N2**	**N3**	**N4**	**N5**	**N6**	**N7**
6-7 AM	37	38	39	39	40	39	39
7-8 AM	39	40	41	41	42	40	41

8-9 AM	42	41	42	42	42	41	42
9-10 AM	44	43	43	42	43	44	44
10-11 AM	44	44	45	43	45	45	44
11-12 Noon	45	44	45	43	44	45	45
12 Noon-1 PM	46	47	48	46	45	46	47
1-2 PM	48	49	48	47	47	46	48
2-3 PM	50	49	47	50	48	47	46
3-4 PM	48	48	45	49	47	44	45
4-5 PM	47	47	45	47	46	43	45
5-6 PM	47	47	42	45	44	42	44
6-7 PM	46	45	41	44	43	40	42
7-8 PM	44	45	39	42	41	40	42
8-9 PM	42	40	41	41	40	39	38
Leq (Day)	**45.7**	**45.6**	**44.35**	**45.2**	**44.48**	**43.52**	**44.23**

Source: Primary survey

Soil Quality at 7 Locations

Results of soil sampling analysis of study area for Post-Monsoon season

S. No	**Parameters**	**Units**	**S1**	**S2**	**S3**	**S4**	**S5**	**S6**	**S7**
1	pH (1:5)	-	7.45	7.54	7.58	7.49	7.57	7.50	7.48
2	Electrical Conductivity	µS/cm	382	485	526	526	526	526	536
3	Exchangeable Calcium (as Ca)	mg/kg	1749	1963	2152	2152	2152	2152	2152
4	Exchangeable Magnesium (as Mg)	mg/kg	365	408	436	436	436	428	429
5	Exchangeable Sodium (as Na)	mg/kg	173	201	198	197	196	196	195
6	Available Potassium (as K)	mg/kg	208	284	227	228	235	228	235
7	Salinity @ 25^0 C (1:1 Suspension.)	µS/cm	245	311	369	369	369	372	372
8	Organic Matter	% by mass	1.46	1.46	1.12	1.12	1.12	1.12	1.12
9	Sodium Adsorption Ratio (SAR)	-	0.46	1.29	0.59	0.59	0.59	0.59	0.59
10	Available Nitrogen as N (%by mass)	% by mass	0.10	0.12	0.13	0.13	0.13	0.13	0.13
11	Available Phosphorous as P_2O_5	mg/kg	76.0	85	106	106	106	106	106

12	Bulk Density	gm/cc	1.20	1.18	1.22	1.22	1.22	1.22	1.22
13	Organic Carbon	% by mass	0.85	0.75	0.65	0.65	0.65	0.65	0.65
14	i. Sand	% by mass	57.3	57.6	58.5	58.9	62.2	59.2	64.2
	ii. Clay	% by mass	20.3	19.2	18.5	19.8	20.2	23.2	21.2
	iii. Silt	% by mass	22.4	22.4	23.0	21.3	17.6	17.6	14.6
15	Exchangeable Sodium Percentage (ESP)	% by mass	4.96	5.28	5.27	4.89	5.31	4.88	5.61

Source: Primary survey

Results of soil sampling analysis of study area for Pre-Monsoon season

S. No	**Parameters**	**Units**	**S1**	**S2**	**S3**	**S4**	**S5**	**S6**	**S7**
1.	pH (1:5 suspension)	-	7.56	7.57	7.48	7.60	7.59	7.49	7.54
2.	Electrical Conductivity@25°C (1:1suspension)	µS/cm	486	525	527	529	527	537	523
3.	Calcium (as Ca)	mg/kg	1953	2151	2153	2153	2153	2154	2151
4.	Magnesium (as Mg)	mg/kg	407	437	437	438	427	430	435
5.	Sodium (as Na)	mg/kg	203	196	198	197	195	198	196
6.	Available Potassium (as K)	mg/kg	287	228	229	236	227	234	225
7.	Salinity @25°C (1:1 suspension)	µS/cm	316	365	370	370	376	378	366
8.	Organic Matter	% by mass	1.43	1.13	1.14	1.13	1.13	1.14	1.11
9.	Sodium Absorption Ratio	-	1.26	0.58	0.62	0.60	0.61	0.60	0.58
10.	Nitrogen	% by mass	0.14	0.12	0.18	0.14	0.14	0.14	0.14
11.	Available Phosphorus (as P_2O_5)	mg/kg	83	107	107	108	105	104	104
12.	Bulk Density	gm/cc	1.19	1.24	1.24	1.24	1.24	1.24	1.25

13.	Organic Carbon		% by mass	0.78	0.63	0.66	0.63	0.66	0.64	0.64
14.	Particle Size Distribution	a. Sand	% by mass	57.6	58.6	58.7	62.2	64.3	58.4	59.3
		b. Clay	% by mass	19.4	18.4	19.6	20.3	21.3	18.4	23.3
		c. Silt	% by mass	22.3	22.0	21.4	17.5	14.5	24.0	16.5
15.	Exchangeable Sodium Percentage (ESP)		% by mass	5.26	5.26	4.87	5.34	4.87	5.64	5.26

Source: Primary survey

Table-3.9: Results of soil sampling analysis of study area for Monsoon season

S. No	Parameters	Units	S1	S2	S3	S4	S5	S6	S7
1.	pH (1:5 suspension)	-	7.23	7.49	7.52	7.69	7.69	7.32	7.18
2.	Electrical Conductivity@25°C (1:1suspension)	µS/cm	478	538	542	548	549	522	498
3.	Calcium (as Ca)	mg/kg	1923	2141	2113	2162	2163	2114	2081
4.	Magnesium (as Mg)	mg/kg	358	431	410	448	429	410	398
5.	Sodium (as Na)	mg/kg	180	195	185	165	208	189	191
6.	Available Potassium (As K)	mg/kg	225	218	209	212	229	216	208
7.	Salinity @25°C (1:1 suspension)	µS/cm	298	360	348	379	358	352	310
8.	Organic Matter	% by mass	1.53	1.11	1.11	1.16	1.16	1.19	1.19
9.	Sodium Absorption Ratio	-	1.29	0.52	0.54	0.69	0.59	0.69	0.62
10.	Nitrogen	% by mass	0.11	0.10	0.19	0.18	0.13	0.15	0.13
11.	Available Phosphorus (as P_2O_5)	mg/kg	83.9	118	125	132	118	118	126
12.	Bulk Density	gm/cc	1.11	1.24	1.20	1.21	1.19	1.26	1.23

	13.	Organic Carbon		% by mass	0.73	0.61	0.61	0.69	0.62	0.69	0.61
	14.	Particle Size Distribution	a. Sand	% by mass	58.2	55.6	56.9	61.5	60.1	67.2	57.2
			b. Clay	% by mass	18.9	21.4	20.9	20.3	22.9	22.9	19.9
			c. Silt	% by mass	22.9	23.0	22.2	18.2	17.0	9.9	22.9
	15.	Exchangeable Sodium Percentage (ESP)		% by mass	4.98	5.10	4.61	5.39	4.72	5.14	5.08
	Source: Primary survey										
Flora & Fauna	Schedule-I species observed in the study area: No										

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

- **Municipal Solid Waste**

  The labour colonies will generate substantial amount of municipal wastes. In view of the condition that might exist in the labour camps, most likely the solid wastes will contain majority of vegetable matter followed by paper cans and glasses. About 3700 persons are likely to congregate during the construction phases resulting in generation of about 0.88 tonnes of solid waste/day. Adequate facilities for collection, conveyance and disposal of municipal waste generated from labour camps shall be developed. The degradable portion of the solid waste would be disposed off by vermin-composting. The non- degradable portion such as plastic bottles, cans, etc. shall be segregated and disposed of at separate sites identified by the district administration. A suitable landfill site can be identified and designed to contain the municipal waste from all the Project Township, labour colonies, etc.

- **Hazardous Waste**

  Hazardous waste like used/waste oil is generated from the DG sets and other construction machinery. In addition, waste paints, grease etc. is also generated during construction activities.

  Hazardous waste shall be sent or sold by the occupier to an authorized actual user or disposed in an authorized disposal facility only. Occupier shall transport wastes through an authorized or certified transporter to an authorized actual user or to an authorized disposal facility as per the provisions of these rules.

- **E- Waste Management**

  Under clause 9 (1) of E-Waste (Management) Rules, 2016, consumers or bulk consumers of electrical and electronic equipment listed in Schedule I shall ensure that e-waste generated by them is channelized through collection center or dealer of authorized producer or dismantler or recycler or through the designated take back service provider of the producer to authorized dismantler or recycler. The

collection, storage, transportation, segregation, refurbishment, dismantling, recycling and disposal of e-waste shall be in accordance with the procedures prescribed in the guidelines published by the Central Pollution Control Board from time to time. Implementation of e-waste (Management and Handling) Amendment Rules, 2016 shall be in accordance with the guidelines prescribed by the Central Pollution Control Board from time to time.

xix. Public Hearing for the proposed project has been conducted by the State Pollution Control Board on 10.09.2024. The main issues raised during the public hearing are listed as below:

- Amount of Compensation to be given to PAFs
- Impacts due to Water Pollution
- Impact on Holy Places in the Area
- Adverse impacts on Ecology including Fisheries
- Proper Information about Public Hearing not shared
- CSR Fund should be properly implemented and improvement in Educational and Health Facilities

xx. Status of Litigation Pending against the proposal, if any. - No

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

- **Project Details:**

Name of the Proposal	Oju Hydro-Electric Project (2220 MW) is located at Village Reddi, Yaja, Gumsing etc, Sub District Taksing, Limeking Circle, District Upper Subansiri, Arunachal Pradesh
Proposal No.	Proposal No. IA/AR/RIV/546767/2025; F. No. J-12011/10/2022-IA.I (R)
Location (Including Coordinates)	Dam: Latitude - 28º25’39.45” N Longitude - 93º21’0.91” E
Company’s Name	M/s Oju Subansiri Hydro Power Corporation Pvt. Ltd.
CIN no. of Company/ user agency	U40101TG2012PTC082052
Accredited Consultant and certificate no.	NABET/EIA/24-27/RA 0360
Project location (Coordinates/ River/ Reservoir)	Powerhouse: Latitude - 28º21'56.01" N Longitude - 93º28'3.88" E
Inter-state issue involved	-

Proposed on River/ Reservoir	Subansiri
Type of Hydro-electric project	Conventional
Seismic zone	V

- **Category Details:**

Category of the project	A
Capacity/ Cultural command area (CCA)	2220 MW
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	-

- **ToR/ EC Details:**

ToR Proposal No.	J-12011/10/2022-IA-I (R)
EAC meeting date	12/09/2025
ToR Letter No.	ToR Identification No. TO23A0501AR5740251A
ToR grant Date	30/01/2024
Cost of project	Rs. 24942.01 crores
Total area of Project	750 ha
Height of Dam from River Bed (EL)	95 m
Details of submergence area	43.66 ha
District to provide irrigation facility (if applicable)	-
Details of tunnels on upper level & lower level and length of canal (if applicable)	-
No. of affected Village	01
No. of Affected Families	09
Project Benefits	Capacity of the project is 2,220 MW (Main Units: 2,100 MW; Auxiliary Units: 120 MW) with an annual design energy generation of 8,402.15 MU. Increased power availability will support agriculture, industries, and rural electrification, thereby improving the quality of life. Construction of roads, bridges, and buildings during the project will improve regional connectivity and benefit local communities. A healthcare unit will be

	established near the dam site. Improved road access will also enhance connectivity to medical facilities. Construction phase will generate direct and indirect employment, stimulate local businesses, and enhance trade opportunities. A Local Area Development Plan (0.5% of project cost) will further support education, healthcare, and infrastructure development in project-affected and adjoining villages.
R&R details	9 families are likely to be affected under R&R. A Rehabilitation & Resettlement Plan has been formulated.
Catchment area/ Command area	9827 km2
Types of Waste and quantity of generation during construction/Operation	Sewage and effluent for batching plant, workshop, etc.
Material used for blasting and its composition as per DGMS standards.	Sewage for project complex from project colony, office complex, etc.
E-Flows for the Project	E-Flows have been estimated as per MoEF&CC norms
Is Projects earlier studied in Cumulative Impact assessment & Carrying Capacity studies(CIA&CC) for River in which project located. If yes then a) E-flow with TOR/ Recommendation by EAC as per CIA&CC study of River Basin. b) If not the E-Flows maintain criteria for sustaining river ecosystem.	E-flows higher than those recommendations in the CIA&CC study
Details on provision of fish pass	Not Applicable
Project benefit including employment details (no of employee)	Employment opportunities in the area are limited. Thus, during project construction phase, some of the locals may get employment. It is estimated that the increase in total population in the project area due to labour and technical staff is expected that approx. 1500

	persons will be engaged (Permanent employment: 300 and Temporary employment: 1200) during construction phase. The construction activities and immigration of labour population will lead to development of various allied activities through direct and indirect employment, stimulate local businesses, and enhance trade opportunities
Area of Compensatory Afforestation (CA) with tentative no of plantation.	1500 ha
Previous EC details	Not Applicable
EC Compliance Report by R.O, MOEF&CC	Not Applicable
No. of trees/saplings proposed in view of 'Ek Ped Maa Ke Naam' campaign	80000

- **Electricity generation capacity:**

Powerhouse Installed Capacity	2100 MW (10 x 210 MW) + 120 MW (2 x 50 MW + 2 x 10 MW)
Generation of Electricity Annually	8402.15 MU
No. of Units	10 x 210 MW + 2 x 50 MW + 2 x 10 MW

- **Muck Management Details:**

No. of proposed disposal area/ (type of Land - Forest/ Pvt land)	10 Muck disposal sites with a total area of 93 ha have been selected for Muck Disposal
Cross section of proposed muck area, Height of muck with slope.	Muck disposal site shall be developed from below the ground level by providing 10 m high plum concrete retaining wall with a wire crate (1.25mx1.25mx1.25m) placed at top and 5 m high plum concrete retaining on side.
Distance of muck disposal area (location), from muck generation sources (project area)/ River, HFL of proposed muck disposal area.	Distance of muck disposal area- near to the project component area like Dam, Adits, Power House and far away from River 30m from HFL
Total Muck Disposal Area	93 ha
Estimate Muck to be generated	17.15 lakh m3
Transportation	By trucks and dumpers

Monitoring mechanism for Muck Disposal Transportation	Site team will monitor manually the muck disposal at the site

- **Land Area Breakup:**

Private land	3.8447 ha
Government land	-
Forest Land	750.06 ha
Total Land	750.06 ha
Submergence area/Reservoir area	43.54 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	
National Park	No	
Wildlife Sanctuary	No	
Archaeological sites monuments/historical temples etc	No	
Additional information (if any)	No	

- **Public Hearing (PH) Details**

Advertisement for PH with date	Advertisements about the conduct of Environmental Public Hearing for the project were published in The Times of India and The Arunachal Times on 10.08.2024.
Date of PH	10.09.2024 from 10:30 hours
Venue	Reddi village under Taksing Circle, Upper Subansiri District Arunachal Pradesh.
Chaired by	**Chairman** Shri Tasso Gambo, APCS Deputy Commissioner, Daporijo Upper Subansiri District **Member** Smt. Koj Rinya, IFS Member Secretary Arunachal Pradesh State Pollution Control Board, Naharlagun
Main issues raised during PH	• Amount of Compensation to be given to

	PAFs • Impacts due to Water Pollution • Impact on Holy Places in the Area • Adverse impacts on Ecology including Fisheries • Proper Information about Public Hearing not shared • CSR Fund should be properly implemented and improvement in Educational and Health Facilities • Percentage of energy generated to be shared with the public by the Company
No. of people attended	214

- **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.	• Post-Monsoon Season - October 2022 • Pre-monsoon Season - April 2023 • Monsoon Season - June 2023
Brief description on hydrology and water assessment as per the approved Pre-DPR:	**90% and 50% dependable years:** The annual flow volumes for the 46 years period 1973-74 to 2020-21 (with gap year 1990-91 and 2002-03) have been considered to arrive at the 90% and 50% dependable hydrologic year for Oju at dam site based on Weibull Plotting position formula.

- **Status of other statutory clearances**

Particulars	Letter no. and date
Status of Stage- I FC	**Form-3 Uploaded, Site Visit for Form-IV done by Nodal Officer**
Approval of Central Water Commission	• Gates: Letter No. - File No. T-18013/3/2023-GATES(ENE), Date: 30 July 2024 • ROR Vs Storage. Letter No. – No. 4/1/2017-HEPR/266, Date: 14.07.2017 • Head Loss: Letter No. – File No. T-16013/4/2021-HCD(ENE) DTE, Date: 16.04.2024 • Layout plan (CMDD): Letter No. – File No. T-12013/3/2022-CMDD (E and NE), Date- 05-09-2023

	• Layout plan (HCD): Letter No. - File No. T-16013/4/2021-HCD(ENE), DTE, Date: 14.12.2023 • Inter State: Letter No. – CWC U.O.No. No. 7/2/12 (NE)/2013-ISM/330-331, Date: 24-06-2014 • Approved Design Flood letter (2013): Letter No. - CWC U.O.No.4/384/2012-Hyd (NE)/1, Date: 2/1/2013 • Approved Design Flood letter (2014): Letter No.-- CWC U.O.No.4/384/2012-Hyd (NE)/227, Date-6/8/2012 • Hydrology: Letter No. - File No. T-11013/6/2023-HYD(NE) Dte, Date: 21.06.2023
Approval of Central Electricity Authority	• E&M: Letter No. - No. 10/209(11)/HE&TD&RM/2024/, Date: 03.05.2024 • Power Potential: Letter No. - File No.CEA-HY-12-32/4/2023-HPA Division, Date: 15.09.2023 • Transmission Plan: Letter No. - CEA-PS-12-16/1/2024-PSPA-II Division, Date: 04.09.2024
Additional detail (If any)	• The Preliminary Notification for the Oju-HEP was issued by the Secretary, Land Management on June 25, 2024 • The Joint Survey fee of ₹50,00,000 was deposited with the District Administration on February 3, 2024
Is FRA (2006) done for FC-I	Yes

- **Details of the EMP**

Activities	Budget (Rs. lakh)
Environmental Management Plan	3089.8
Mitigation measures	10346.01
Measures outlined in Additional studies	12686.27
Environmental Monitoring Programme during construction phase	362.47
Total	**26484.55**

39.1.3 The EAC during deliberations noted the following:

- The EAC deliberated on the information submitted and presented during the meeting, observing that the proposal is for the grant of Environmental Clearance (EC) to the project for Oju Hydro-Electric Project (2220 MW) in an area of 750.06 Ha located at Village Reddi, Yaja, Gumsing etc, Sub District Taksing, Limeking Circle, District Upper Subansiri, Arunachal Pradesh by M/s Oju Subansiri Hydro Power Corporation Pvt Ltd.

- 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. -12011/10/2022-IA-I (R) dated 12.09.2022 for for 1878 MW. Subsequently, amendment of TOR was approved by MOEF&CC due to change in capacity vide letter dated 30/01/2024 and capacity was amended from 1878 MW to 2220 MW.

- The EAC observed that the total land required for the project is 750.06 ha and entire area is forest land. PP submitted that the application for the diversion of 750.06 hectares of forest land has been uploaded on the PARIVESH portal vide proposal number FP/AR/HYD/IRRIG/454399/2023, dated 05/12/2023. The proposal is currently pending with the Conservator of Forests (CF).

- The EAC noted that the Public hearing was conducted on 10.09.2024, chaired by Shri Tasso Gambo, APCS, Deputy Commissioner, Daporijo Upper Subansiri District at at Reddi village under Taksing Circle, Upper Subansiri District Arunachal Pradesh. The advertisements about the conduct of Environmental Public Hearing for the project were published in The Times of India and The Arunachal Times on10.08.2024. The EAC discussed the concerns raised during the Public Hearing (PH) and reviewed the action plan submitted by the PP to address these issues. After detailed deliberation, the Committee found the action plan satisfactory, recognizing that the proposed mitigation measures adequately respond to stakeholders' concerns.

- The EAC noted that in the Cumulative Impact Assessment and Carrying Capacity Study (CIA&CCS) of Subansiri river basin, two projects namely Oju–I and Oju–II were earlier proposed, which were subsequently merged as Oju HEP (1878 MW). Accordingly, the Ministry had granted ToR for 1878 MW capacity. The Committee further noted that, due to the availability of higher water flows, the Central Electricity Authority (CEA) has approved a revised Power Potential Study (PPS) for 2220 MW. The CEA while approving

the Revised Power Potential Studies (PPS) observed that Installed Capacity (IC) of 2220 MW (2100 MW for Main Units + 120 MW for Auxiliary Units) for Oju HE Project seems technically suitable as per extant guidelines and the same may be considered for preparation of the Detailed Project Report (DPR). Accordingly, the MoEF&CC granted amendment in TOR vide letter dated 30.01.2024 for revised capacity from 1878 MW to 2220 MW. During the meeting PP submitted that the revision in capacity is mainly on account of optimization of design and addition of turbines, and that no additional environmental impacts are anticipated beyond those already assessed. The PP also committed to comply with all terms and conditions prescribed in the CIA&CCS of Subansiri basin, including those related to maintenance of Environmental Flows (E-flow). The Committee observed that the CIA&CCS of Subansiri basin was completed in 2014, and the data used therein is now more than 10 years old. The EAC after detailed deliberations on the hydrology and e-flow data accepted the submissions made by the PP in this regard.

- The EAC deliberated on the potential risks of Glacial Lake Outburst Floods (GLOF) in the project catchment. The EAC observed that earlier CWC vide their letter No. 6/11/2009/FE & SA/258-259 dated 01.05.2014 has approved tentative peak discharge estimated at dam site due to GLOF event as 2512 cumecs. However, it was further observed that as per CWC FE & SA Dte letter No. 6/11/ 2009/ FE&SA dated 22.04.2024, tentative peak discharge estimated at dam site, assuming that the breaching of identified Glacial Lakes (Lat 28.319 N long 93.047 E) situated at 44 km upstream of Oju HE Project (2220 MW) resulting into Glacial Lake Outburst Flood (GLOF) event, is reported as 3664 cumec. The PP submitted that a detailed GLOF risk assessment has been carried out covering identification of potentially dangerous glacial lakes, dam-break analysis, and flood modelling. The Committee emphasized that design flood estimation shall include GLOF scenarios and that the Disaster Management Plan (DMP) must specifically address GLOF and related flash flood risks. Further, the Committee advised that a real-time monitoring and early warning system (EWS) shall be established in coordination with State Disaster Management Authority (SDMA) and local administration, along with community awareness and mock drills for preparedness.

39.1.4 The EAC after examining the information submitted and detailed deliberations recommended the proposal for grant of prior Environmental Clearance by the Ministry to Oju Hydro-Electric Project (2220 MW) in an area of 750.06 Ha located at Village Reddi, Yaja, Gumsing etc, Sub District Taksing, Limeking Circle, District Upper Subansiri, Arunachal Pradesh by M/s Oju Subansiri Hydro Power Corporation Pvt Ltd, 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. Stage-I FC shall be obtained before grant of EC.

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. 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). 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. Biodiversity hotspots in the 10 km radius of the project site shall be identified and listed for their conservation and preservation through time bound action plan in consultation with WII/Expert Government Institute.

viii. E-flow shall be maintained as proposed in the EIA/EMP report. Realtime monitoring of e-flow shall be ensured with online display on company's website.

[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 shall be done as per instructions of the Forest Department.

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. Sensor based/AI driven Early Warning System (EWS) shall be established.

vi. Disaster prone places/villages in 10 km upstream and downstream of the project shall be identified and proper disaster management practices shall be applied in such places

to mitigate/minimize the impact of any unprecedented event.

vii. GLOF and related flash flood risk management plan shall be prepared and implemented under guidance of expert government research institute.

[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. Solar panel be provided to the families living in rural areas within 10 km radius of project with annual maintenance.

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

iv. School up to 12^{th} Standard with smart classes shall be established and managed to provide free quality education for children from project affected villages/Tribal villages.

v. 50 bed multi-speciality 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. Preference in employment opportunities and admission to ITI institutions shall be given to Project Affected Families (PAFs).

viii. 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.

ix. 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

Agenda Item No. 39.2

Munjari Irrigation Project (CCA: 11575 Ha) in an area of 1043.089 Ha located at Village Rinjha, Baroda, Awda etc, Sub District Badoda and Karahal, Sheopur, Madhya Pradesh by M/s Madhya Pradesh Water Resources Department - Environmental Clearance - reg.

[Proposal No. IA/MP/RIV/525632/2025; F. No. J-12011/07/2019-IA.I(R)]

39.2.1: The proposal is for grant of Environmental Clearance (EC) to the project for Munjari Irrigation Project (CCA: 11575 Ha) in an area of 1043.089 Ha located at Village Rinjha, Baroda, Awda etc, Sub District Badoda and Karahal, Sheopur, Madhya Pradesh by M/s Madhya Pradesh Water Resources Department.

39.2.2 The EAC during deliberations noted the following:

The EAC noted that the Project Proponent (PP) had not shared complete and proper documents prior to the meeting, which constrained the Committee from adequately understanding key components of the proposal. While enquiring about the concurrence of CWC for the project, the Committee observed that no clear response was provided by the PP.

The Committee also noted with concern that no senior official from the Madhya Pradesh Water Resources Department was present during the deliberation, and instead, the PP had authorized the contractor to attend the meeting, which was not found acceptable by the Committee.

The EAC expressed displeasure over such negligence on the part of the Government of Madhya Pradesh, particularly considering that the proposal pertains to an irrigation project aimed at public welfare.

In view of the above, the EAC advised the PP to ensure proper preparedness and demonstrate seriousness while presenting the proposal in future meetings.

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

Agenda Item No. 39.3

Kumbhe Open loop Pumped Storage Project (1100 MW) in an area of 151.06 Ha at Village Kelgan, Kumbhe, Manjurne & Chach, Sub- district Mangaon, District Raigarh, Maharashtra by M/s NTPC Limited – Terms of References (TOR) - reg.

[Proposal No. IA/MH/RIV/548498/2025; F. No. J-12011/31/2025-IA.I(R)]

39.3.1 The proposal is for grant of Terms of References (ToR) to the project for Kumbhe Open loop Pumped Storage Project (1100 MW) in an area of 151.06 Ha at Village Kelgan, Kumbhe, Manjurne & Chach, Sub- district Mangaon, District Raigarh, Maharashtra by M/s NTPC Limited.

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

i. Kumbhe Pumped Storage Project (4X275 MW) is proposed as an off-stream open loop pumped storage scheme. Kumbhe Pumped Storage Project, with an installed capacity of 1100 MW, is planned near Kumbhe Village of Mangaon Taluka in Raigad district of Maharashtra. The upper dam is envisaged across the Nirabai River, a tributary of the Savitri River and the lower dam is planned downstream of the Chach Waterfall in Mangaon taluk of Raigad district.

ii. The proposed project is Kumbhe Pumped Storage Project, with an installed capacity of 1100 MW, is located in Raigad district of Maharashtra. The upper reservoir is under construction by the Water Resources Department (WRD), Government of Maharashtra, on the Nirabai River, a tributary of the Savitri River. The lower reservoir is planned downstream of the Chach Waterfall. The two reservoirs will be interconnected by a water conductor system designed to utilize an available gross head of 437 meters. An underground powerhouse will be constructed to house four fixedspeed, reversible Francis turbine-generator units, along with associated equipment such as generator-motor assemblies, transformers, and other auxiliaries. The operational strategy for the project involves daily peaking generation for 6 hours to meet peak demand. Pumping operations will be carried out using off-peak grid power and surplus Variable Renewable Energy (VRE).

iii. **Project background:** The Kumbhe Pumped Storage Project (PSP) draws its origin from the strategic initiatives of the Government of Maharashtra to harness renewable energy and optimize water resources in the Konkan region. The proposal of construction of dam was developed based on the power potential of the region by utilizing the heavy & assured rainfall of the region. The Upper reservoir was planned to be created to feed water to a 10 MW power project which has now been abandoned. The upper reservoir is going to be utilized for the Kumbhe PSP (1100 MW). Considering the potential of the site for energy storage, the pumped storage scheme has been envisaged to meet peak power

demands and improve grid stability, thus utilizing the under constructed Kumbhe Dam as an upper reservoir for Kumbhe PSP (1100 MW) scheme.

iv. The latitude & longitude of upper dam (existing/ partly constructed) is 18°18'53"N, 73°22'27"E. The latitude & longitude of lower dam (proposed) is 18°19’5.7” N & 73°21’25” E respectively.

v. **Land requirement:** The total land required for the project is approximately 151.06 Ha.

Land required for project components	65.65 Hectares
Land required for Infrastructure facilities	85.40 Hectares

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

- Population: As of 2011, the population of Raigad district was 26,34,200, the population density is 368 people per square Kilometre.
- Sex ratio: The sex ratio in Raigad was 959.
- Literacy rate: The literacy rate in Raigad is 83.14%.
- Urban vs rural: 36.83% of the population lives in urban areas, and 63.17% live in rural areas.
- Scheduled Castes and Scheduled Tribes: Scheduled Castes make up 5.12% of the population, and Scheduled Tribes make up 11.58%.

vii. **Water requirement:**

Approx. 200 KLD during construction stage Approx. 200 KLD during Operational stage

viii. **Project Cost:** The cost of Project is Rs. 5199.70 Crores (Incl. IDC) at PFR Stage.

ix. **Project Benefit:**

- Capacity of the project is (4*275) 1100 MW, with an annual design energy generation of 2515.13 GWh.
- Increased power availability will support agriculture, industries, and rural electrification, thereby improving the quality of life.
- Construction of roads, bridges, and buildings during the project will improve regional connectivity and benefit local communities.
- A healthcare unit will be established near the dam site. Improved road access will also enhance connectivity to medical facilities.

- Total Employment during construction phase shall alos be 1200 and around 100 during operation phase.
- Construction phase will generate direct and indirect employment, stimulate local businesses, and enhance trade opportunities.
- A Local Area Development Plan (0.5% of project cost) will further support education, healthcare, and infrastructure development in project-affected and adjoining villages.

x. **Environmental Sensitive area:** There are NO national parks, Wildlife Sanctuary, Biosphere Reserves, Tiger/Elephant Reserves, Wildlife Corridors etc. within 10 km distance from the project site. River/ water body Nirabai River is flowing at a distance of approx. 4 kms. in downward direction.

xi. **MoU / any other clearance/ permission signed with State government:** MoU is signed by M/s NTPC Limited with Water Resources Department, Government of Maharashtra on 03.09.2024.

xii. **Resettlement and rehabilitation:**
In Kumbhe PSP site, the number of families likely to lose land will be finalized as a part of DPR preparation. In addition, information of any family losing homestead or other private properties shall also be ascertained.

xiii. **Alternative Studies**:

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

Alternative-1

In Alternative-1, the lower dam (Option-I) is located approximately 3.5 km downstream from upper dam, in the northwesterly direction at the foothills and is proposed as Concrete Gravity Dam with a height of 62.0 m and a length of 1100 m located on nala. The under-construction earth fill upper dam with a height of 56 m and a length of 610 m, located on Nirabai River proposed as upper reservoir for Kumbhe PSP. The proposed capacity in this alternate is 1200 MW estimated to be operated for 6.00 hours daily for peak generation, providing energy storage capacity for 7.2 MU daily.

Alternative-2

In Alternative-2, the lower dam (option-II) is located approximately 1.5 km downstream, in the North West direction at the foothills is proposed as Concrete Gravity Dam with a

height of 97.0 m and a length of 597 m located on nala. The partly constructed earth fill upper dam with a height of 56 m and a length of 610 m, located on Kumbhe nala is proposed as upper reservoir for Kumbhe PSP. The proposed capacity in this alternate is 1100 MW estimated to be operated for 6 hrs 15 mins daily for peak generation, providing energy storage capacity for 6.8 MU daily.

Alternative-3

In Alternative-3, the lower dam (option-III) is located approximately 2.0 km downstream, in the south-westerly direction at the foothills and is proposed as Concrete Gravity Dam with a height of 82.50 m and a length of 700 m located on nala. The under-construction earth fill upper dam with a height of 56 m and a length of 610 m, located on Nirabai River is proposed as upper reservoir for Kumbhe PSP. The proposed capacity in this alternate is 1100 MW estimated to be operated for 6.00 hours daily for peak generation, providing energy storage capacity for 6.6 MU daily.

Comparison of Alternates

Based on the analysis, all proposed alternatives demonstrate comparable outcomes in terms of tariff. However, Alternatives 1 and 3 offer some advantages, such as a marginally higher available head. In contrast, Alternative 2 stands out with a more compact layout, the best length-to-height (L/H) ratio, and an overall lower tariff compared to the other options. Following a detailed assessment, Alternative 2 has been identified as the most suitable configuration. With an installed capacity of 1100 MW and the ability to support six hours of continuous generation, this scheme is considered techno-economically viable and has been selected for further development.

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

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

- **Project Details:**

Name of the Proposal	Kumbhe Off Stream Open loop Pumped Storage Project (1100 MW)-Terms of Reference (TOR)
Location (Including coordinates)	Village Kelgan, Kumbhe, Manjurne & Chach, Taluka-Mangaon, District-Raigad, Maharashtra.

	UPPER RESERVOIR Lat: 18°18'53"N, Long: 73°22'27"E **LOWER RESERVOIR** Lat: 18°19'5.7" N, Long: 73°21'25" E
Inter- state issue involved	No
Seismic zone	IV

- **Category Details:**

Category of the project	A
Provisions	-
Capacity / Cultural command area (CCA)	1100 MW
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	No

- **Electricity generation capacity:**

Powerhouse Installed Capacity	1100 MW
Generation of Electricity Annually	2515.13 GWh
No. of Units	4 units of 275 MW each
Additional information (if any)	-

- **ToR/EC Details:**

Cost of project	Rs. 5199.70 Crores (Incl. IDC)
Total area of Project	151.05 Hectares
(Height of Dam from deepest Foundation level (EL))	Upper dam - 56m Lower dam – 97m
Length of Tunnel/Channel	6950 m
Details of Submergence area	Upper reservoir: 123.96 Hectares (Land has been acquired by WRD, Government of Maharashtra) Lower reservoir: 33.95 Hectares (Non forest land)
Types of Waste and quantity of generation	**Name of waste** | **Source** | **Qty (TPA)** | **Mode of Disposal** | **Mode of transport**

<table>
<tr><td>during construction/ Operation</td><td>
<table>
<tr><td>Municipal solid Waste</td><td>Labour colony</td><td>54</td><td>Landfilling</td><td>Road</td></tr>
<tr><td>Plastic waste</td><td>Packing material</td><td>0.5</td><td>Authorized vendors</td><td>Road</td></tr>
<tr><td>E-waste</td><td>Laptop and computer devices</td><td>0.1</td><td>Authorized vendors</td><td>Road</td></tr>
<tr><td>Battery waste</td><td>DG set & vehicles/ machineries</td><td>0.1</td><td>Authorized vendor</td><td>Road</td></tr>
<tr><td>Biomedical Waste</td><td>First aid & medical facilities</td><td>0.2</td><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>E-Flows for the Project</td><td>• For Nirabai River at Upper Reservoir site, yield in a 90% dependable year is 4.85 MCM. Out of this, 30% has been considered as Environmental Flows.

• For the nallah feeding the Lower Reservoir, yield in a 90% dependable year is 1.52 MCM. Out of this, 30% has been considered as Environmental Flows.</td></tr>
<tr><td>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.</td><td>No</td></tr>
<tr><td>No. of trees/saplings proposed in view of ‘Ek Ped Maa Ke Naam’ campaign</td><td>Shall be proposed during EIA study</td></tr>
</table>

- **Muck Management Details:**

No. of proposed disposal area/ (type of land- Forest/ Pvt. land)	1 no of proposed disposal area / Non Forest Land (Private Land)
Muck Management Plan	Shall be covered in EIA report
Monitoring mechanism for Muck Disposal	Shall be covered in EIA report

- **Land Area Breakup: Based on present level of information from sources**

Private land	82.43 Hectares
Government land	59.03 Hectares
Forest Land	9.60 Hectares
Total Land	151.06 Hectares
Submergence area/Reservoir area	Upper reservoir: 123.96 Hectares (Land has been acquired by WRD, Government of Maharashtra) Lower reservoir: 33.95 Hectares (Non forest land)
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	(Yes)	**Total Forest Land – 9.60 Ha** *(Reserved Forest Land – **9.60 Ha**)*
National Park	No	
Wildlife Sanctuary	No	

- **Court Case Details: Nil**

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

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

- **Miscellaneous:**

Particulars	**Details**
Details of consultant	M/s WAPCOS Limited
Project Benefits	• Increased power availability will support agriculture, industries, and rural electrification, thereby improving the quality of life.

	• Construction of roads, bridges, and buildings during the project will improve regional connectivity and benefit local communities. • A healthcare unit will be established near the dam site. Improved road access will also enhance connectivity to medical facilities. • Construction phase will generate direct and indirect employment, stimulate local businesses, and enhance trade opportunities.
Status of other statutory clearances	FC Application in process
R&R details	As per the present investigations, R&R plan is not required

39.3.3 The EAC during deliberations noted the following:

The EAC deliberated on the information submitted (Form 1, PFR, kml file, etc.) and as presented in the meeting and observed that the proposal is for grant of TOR to the project for conducting EIA/EMP and Public hearing for Kumbhe Open loop Pumped Storage Project (1100 MW) in an area of 151.06 Ha at Village Kelgan, Kumbhe, Manjurne & Chach, Sub-district Mangaon, District Raigarh, Maharashtra by M/s NTPC 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 requirement for the project is around 151.06 Ha , out of which 141.46 ha is non-forest land and 9.60 ha is forest land. Diversion of forest land for non-forest purpose will be involved for construction of Kumbhe Open 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.

It was noted by the EAC that all the components of Kumbhe Open loop Pumped Storage Project are located within the proposed Western Ghats ESA, Maharashtra as per MOEF&CC draft notification no. S.O.30609(E) dated July 31, 2024.

During the meeting as informed by the PP, EAC noted that the Water Resources Department (WRD), Government of Maharashtra had earlier initiated construction of a conventional hydroelectric project of 10 MW at a site identified as suitable for a reservoir. Although construction of the upper dam was subsequently halted, the partially built structure is now

proposed to be utilized as the Upper Reservoir in the Pumped Storage Project (PSP) awarded to NTPC.

Additionally, the Project Proponent has submitted a Memorandum of Understanding (MoU) dated 03.09.2024, signed between the Department of Water Resources, Government of Maharashtra and M/s NTPC Limited, granting in-principle approval for the establishment of the Pumped Storage Project with a capacity of 1000 MW in District Raigad. The committee emphasized that the PP shall obtain an amendment to the MoU to reflect the revised capacity, increasing from 1,000 MW to 1,100 MW.

The Committee noted that the details presented by the PP during the meeting pertained to a revised Pre-Feasibility Report (PFR), which was different from the version earlier submitted on the Parivesh portal. Accordingly, the Committee advised the PP to formally submit the revised PFR on the Parivesh portal for consideration.

39.3.4 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 Kumbhe Open loop Pumped Storage Project (1100 MW) in an area of 151.06 Ha at Village Kelgan, Kumbhe, Manjurne & Chach, Sub- district Mangaon, District Raigarh, Maharashtra by M/s NTPC 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 obtain amendment in MoU in terms of the revised capacity from 1000 MW to 1100 MW.
ii. The PP will submit 10 years water availability data certified by the CWC/State Water Resource Department for quantity of water that is received annually by the small stream on which upper reservoir is proposed to be constructed.
iii. The PP will submit a monitoring mechanism for releasing the self -catchment water of small stream draining in to upper reservoir of the project along with action plan for conservation and protection of other streams/rivulets draining in to upper and lower reservoirs.
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. The monitoring mechanism to ensure the survival of saplings shall be finalised in consultation with ICFRE.
v. The application for obtaining Stage I FC for 9.60 Ha of forest land involved in the project shall be submitted within stipulated time.
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. Separate chapter for risk assessment of such transportation through/within proposed the Wildlife Sanctuary shall be included in the EIA report.

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. 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.

xiv. 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.

xv. 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.

xvi. Action plan for survival or diversion of the rivulets/stream, if any, leading to join river shall be submitted.

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. 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.

xxii. Any archaeological sites in the vicinity of the project, if any, then it shall be certified by ASI.

xxiii. A Sub-committee comprising members from EAC shall visit the site before considering the proposal for EC in view of the location of project located in Western Ghats.

[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/ Disaster 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 after the abandonment of project by Water Resources Department (WRD), Government of Maharashtra.

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.

ix. The conditions mentioned in the Western Ghats notification (draft notification no. S.O.3060(E) dated 31.07.2024) for development of hydro-power projects issued by the MOEF&CC shall be complied with while preparing EIA/EMP report.

Agenda Item No. 39.4

Medium Irrigation Project to Various Panchayats of Jawalamukhi (CCA: 2590 Ha) in an area of 17.89 Ha Village Salasi, Kotla, Kotu Dhorian (869) and etc., Sub-district Nadaun, Jawalamukhi, Khundian & Dera Gopipur etc., District Hamirpur & Kangra, Himachal Pradesh By Executive Engineer, Jal Shakti Vibhag Division – Terms of References (TOR) (TOR) – Reg.

[Proposal No. IA/HP/RIV/544802/2025; F. No. J-12011/28/2025-IA.I(R)]

39.4.1 PP vide email dated 10.09.2025 submitted that due to an inadvertent error while filling the proposal on the Parivesh Portal, the category of the project was mistakenly selected as

Category B1 instead of Category B2. As per the EIA Notification, 2006 and subsequent amendments, it has come to notice that the said project falls under Category B2 (Schedule 1(c) – Irrigation Projects), for which ToR is not applicable. In view of this, they requested to withdraw ToR application and cancel the proposal from further processing on the PARIVESH portal.

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

Agenda Item No. 39.5

Chittamvalasa Closed loop Pumped Storage Project (1800 MW) in an area of 318.6Ha Village Devarapalli, Diguvasobha, Dumbriguda, Majjivalasa & Vachanarangini, Sub-district Araku Valley, Ananthagiri & Hukumpeta, District Alluri Sitharama Raju, Andhra Pradesh by M/s Navayuga Enegineering Company Limited – Terms of References (TOR) – reg.

[Proposal No. IA/AP/RIV/548530/2025; F. No. J-12011/32/2025-IA.I(R)]

39.5.1 The proposal is for grant of Terms of References (ToR) to the project for Chittamvalasa Closed loop Pumped Storage Project (1800 MW) in an area of 318.6Ha Village Devarapalli, Diguvasobha, Dumbriguda, Majjivalasa & Vachanarangini, Sub-district Araku Valley, Ananthagiri & Hukumpeta, District Alluri Sitharama Raju, Andhra Pradesh by M/s Navayuga Enegineering Company Limited.

39.5.2 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 Chittamvalasa Pumped Storage Project (GPSP) is an Off-Stream Closed Loop Pumped Storage development, proposed with an installed capacity of 1800MW/14400 MWH.
ii. The Project comprises of upper & lower reservoirs with a gross storage capacity of 22.39 MCM (0.7907 TMC) & 24.47 MCM (0.8642 TMC) respectively, out of which upper reservoir to be constructed with maximum dam height of 68 m (from river bed) to create the desired storage capacity while the lower reservoir will have maximum height of 101 m (from river bed) constructed at the downhill.

iii. The PSP reservoir will be filled initially onetime from Raiwada reservoir, which is about 20.0 km from the proposed lower reservoir. The scheme will generate peak power for continuous 8 hours per day while it will take 9.2 hours pumping to fill the upper reservoir at its desired capacity. Water will be used cyclically for energy storage and discharge. Evaporation losses, if any will be recouped periodically.

iv. The project is located near Kusumavalasa village in Hukumpeta Mandal of Alluri Sitharama Raju district of Andhra Pradesh. The geographical coordinate of upper

reservoir is at latitude 18°12'38.91"N and longitude 82°53'11.09"E. Similarly, the geographical coordinate of lower reservoir is at latitude 18°11'22.01"N and longitude 82°54'23.11"E. The proposed site is located in Survey of India Toposheet No. 65-J/16.

v. The Ministry of Environment, Forest and Climate Change (MoEF & CC) had granted Terms of Reference (ToR) for the project "Chittamvalasa (Closed loop) Pumped Storage Hydro Electric Project (800 MW)" to M/s New and Renewable Energy Development Corporation of Andhra Pradesh Ltd. (NREDCAP), vide File No: J-12011/37/2023-IA.I (R) dated 10/09/2023. The project was later handed over to M/s Navayuga Engineering Company Limited by M/s New and Renewable Energy Development Corporation of Andhra Pradesh Ltd. A capacity enhancement study was carried out to upgrade the installed capacity of 800MW.

vi. **Land requirement:** The total land requirement for the project is 318.6 ha, out of which 9.50 ha is forest Land and 309.10 ha is Non-Forest Land.

vii. **Water requirement:** The quantity of water required during construction is estimated as 400 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 210 KLD which shall be met from the ground water resource. Post construction the domestic requirement shall be 65 KLD only.

viii. **Project Cost:** A summary of the Capital cost estimate, including direct and indirect charges for the Civil & Electro-mechanical works **has been worked out as given in below table:**

Item	Estimated Cost (Rs. Crores)
Civil & Hydro-Mechanical Works	3834.41
Electro-Mechanical works	2420.00
Escalation	691.47
IDC	1026.56
Total	**7972.44**

* The above cost includes the cost of Transmission.

ix. **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

x. **Environmental Sensitive area:** There are no National parks, wildlife sanctuaries, Biosphere Reserves, Tiger/ Elephant Reserves, and Wildlife Corridors etc. within 10 km distance from the project site.

xi. **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".

xii. **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.

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

- Solid waste -. About 456 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 69,35,650 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.

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

xv. The salient of the project are as under:-

1. EAC Meeting Details:	
EAC meeting/s	39th Meeting of The Expert Appraisal Committee
Date of Meeting/s	12th September, 2025
Date of earlier EAC meetings	Nil
2. Project Details:	
Name of the Proposal	Project is an Off-stream Closed Loop Pumped Storage Named Chittamvalasa Pumped Storage Project (1800 MW), District- Alluri Sitharama Raju, Andhra Pradesh **Proposal No**: IA/AP/RIV/548530/2025 **File No**: J-12011/32/2025-IA.I(R)

Location (Including Coordinates)	The project is located near Kusumavalasa village in Hukumpeta Mandal of Alluri Sitharama Raju district of Andhra Pradesh. **Coordinates**: Upper Reservoir Latitude: 18°12'38.91"N Longitude: 82°53'11.09"E Lower Reservoir Latitude : 18°11'22.01"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)	1800 MW / 14400 MWH
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	Nil
4. Electricity Generation Capacity	
Powerhouse Installed Capacity	1800 MW / 14400 MWH
Generation of Electricity Annually	4993.20 MU annually
No. of Units	6 units of 300 MW
Additional information (if any)	Nil
5. ToR/ EC Details:	
Cost of project	7972.44 Cr.
Total area of Project	318.6 ha
Height of Dam from River Bed (EL)	68.00m
Length of Tunnel/Channel	3 numbers of Main HRT of Circular shape of diameter 7.2 m and length 375 m 6 numbers of Main TRT of circular shape of diameter 7.1 m and length 103 m.
Details of submergence area	--
Types of Waste and quantity of generation during construction / Operation	About 456 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 69,35,650 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	
No. of proposed disposal area / (type of land- Forest / Pvt land)	40 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)	309.10	
Barrage construction land	-	
Forest land	9.50	
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	Yes	Taduru Reserve forest, Approximately 3.0 Km
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: NIL	
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	Forest Clearance is under process
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".

39.5.3 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 Chittamvalasa Closed loop Pumped Storage Project (1800 MW) in an area of 318.6Ha Village Devarapalli, Diguvasobha, Dumbriguda, Majjivalasa & Vachanarangini, Sub-district Araku Valley, Ananthagiri & Hukumpeta, District Alluri Sitharama Raju, Andhra Pradesh by M/s Navayuga Enegineering Company Limited.

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

- The Committee noted that the Ministry of Environment, Forest and Climate Change (MoEF&CC) had granted Terms of Reference (ToR) for the project "Chittamvalasa (Closed Loop) Pumped Storage Hydro Electric Project (800 MW)" to M/s New and

Renewable Energy Development Corporation of Andhra Pradesh Ltd. (NREDCAP), vide File No. J-12011/37/2023-IA.I (R) dated 10.09.2023. The Committee further noted that the project was subsequently handed over to M/s Navayuga Engineering Company Limited by NREDCAP vide letter dated 19.05.2025, in accordance with the Government of Andhra Pradesh order GO MS. No. 13 dated 07.02.2025 of the Energy (Power-II) Department. It was also noted that a capacity enhancement study was undertaken to upgrade the installed capacity from 800 MW to 1800 MW. Accordingly, the PP has applied for a fresh ToR with the revised capacity.

- The EAC noted that the total land required for the construction of various components and related works for Chittamvalasa Closed loop Pumped Storage Project is estimated to be around 318.6 ha, out of which 9.50 ha is forest Land and 309.10 ha is Non-Forest Land. Diversion of forest land for non-forest purpose will be involved for construction of Chittamvalasa 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.

39.5.4 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 Chittamvalasa Closed loop Pumped Storage Project (1800 MW) in an area of 318.6Ha Village Devarapalli, Diguvasobha, Dumbriguda, Majjivalasa & Vachanarangini, Sub-district Araku Valley, Ananthagiri & Hukumpeta, District Alluri Sitharama Raju, Andhra Pradesh by M/s Navayuga Enegineering Company Limited, under the provisions of EIA Notification, 2006, as amended along with the following additional/specific ToR:

[A] Environmental Management and Biodiversity Conservation:

i. PP shall obtained amendment in MoU in terms of the revised capacity from 800 MW to 1800 MW.

ii. 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.

iii. 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.

iv. The application for obtaining Stage I FC for 9.50 ha of forest land involved in the project shall be submitted within stipulated time.

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. PP shall submit the detailed plan for filling the reservoir from the Raiwada reservoir along with necessary approval form water resource department.

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

x. 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.

xi. 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.

xii. 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.

xiii. 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.

xiv. 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.

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

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

xvii. 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.

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

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

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

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

xxii. 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. 39.6

Gujjili Closed loop Pumped Storage Project (2400 MW) in an area of 256.37 Ha Village Tangulaguda, Satapi, Tangalam, Bhimavaram & Chippapalli etc., Sub district Araku Valley, Pachipenta & Ananthagiri, District Alluri Sitharama Raju & Parvathipuram Manyam, Andhra Pradesh by M/s Navayuga Enegineering Company Limited – Terms of References (TOR) – reg.

[Proposal No. IA/AP/RIV/547719/2025; F. No. J-12011/34/2025-IA.I(R)]

39.6.1 The proposal is for grant of Terms of References (ToR) to the project for Gujjili Closed loop Pumped Storage Project (2400 MW) in an area of 256.37 Ha Village Tangulaguda, Satapi, Tangalam, Bhimavaram & Chippapalli etc., Subdistrict Araku Valley, Pachipenta & Ananthagiri, District Alluri Sitharama Raju & Parvathipuram Manyam, Andhra Pradesh by M/s Navayuga Enegineering Company Limited.

39.6.2 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. Gujjili Pumped Storage Project (GPSP) is an Off-Stream Closed Loop Pumped Storage development, proposed with an installed capacity of 2400MW/19200 MWH.

ii. The Project comprises of development of upper & lower reservoirs with a gross storage capacity of 8.419 MCM (0.297TMC) & 7.693 MCM (0.272TMC) respectively, out of which upper reservoir to be constructed with maximum dam height of 72 m (from river bed) to create the desired storage capacity while the lower reservoir will have maximum height of 55m (from river bed) constructed at the downhill.

iii. The one-time filling of the PSP reservoir will be carried out from Champavathi River, which is about 6.0 km from the PSP lower reservoir. The scheme of operation for the project is with 8 hours of peak power per day and approx. 9.3 hours for pumping back the water to the upper reservoir. Water will be used cyclically for energy storage and discharge. Evaporation losses, if any will be recouped periodically.

iv. The project is located near Duddikonda & Bheemavaram village, Alluri Sitharama Raju district of Andhra Pradesh. The upper dam is located near Dudikonda village, Araku Valley Taluka, having a geographical of longitude 83° 4'7.14"E & latitude is 18°20'51.20"N. The lower dam is located near Bheemavaram village, Ananthagiri Taluka, with the geographical of longitude 83° 7'19.69"E and latitude 18°20'25.96"N.

v. The Ministry of Environment, Forest and Climate Change (MoEF & CC) had granted Terms of Reference (ToR) for the project "Gujjili (Closed loop) Pumped Storage Hydro Electric Project (1500 MW)" to M/s New and Renewable Energy Development Corporation of Andhra Pradesh Ltd. (NREDCAP), vide File No: J-12011/32/2023-IA.I (R) dated 07/08/2023. The project was later handed over to M/s Navayuga Engineering Company Limited by M/s New and Renewable Energy Development Corporation of Andhra Pradesh Ltd. A capacity enhancement study was carried out to upgrade the installed capacity from 1500 MW to 2400 MW and applied for fresh ToR for upgraded capacity of 2400 MW.

vi. **Land requirement:** The total land requirement for the project is 256.37 ha, out of which 37.85 ha is Forest Land and 218.52 ha is Non-Forest Land.

vii. **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.

viii. **Project Cost:** A summary of the Capital cost estimate, including direct and indirect charges for the Civil & Electro-mechanical works has been worked out as given in below table:

Item	Estimated Cost (Rs. Crores)
Civil & Hydro-Mechanical Works	5668.35
Electro-Mechanical works	3240.00
Escalation	1277.76
IDC	1536.57
Total	**11722.68**

* The above cost includes the cost of Transmission.

ix. **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

x. **Environmental Sensitive area:** There are no National parks, wildlife sanctuaries, Biosphere Reserves, Tiger/ Elephant Reserves, and Wildlife Corridors etc. within 10 km distance from the project site.

xi. **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".

xii. **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.

xiii. **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 4770000 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.

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

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

1. EAC Meeting Details:	
EAC meeting/s	39th Meeting of The Expert Appraisal Committee

Date of Meeting/s	12th September, 2025
Date of earlier EAC meetings	Nil
2. Project Details:	
Name of the Proposal	Project is an Off-stream Closed Loop Pumped Storage Named Gujjili Pumped Storage Project (2400 MW), District- Alluri Sitharama Raju, Andhra Pradesh **Proposal No**: IA/AP/RIV/547719/2025 **File No**: J-12011/34/2025-IA.I(R)
Location (Including Coordinates)	The project is located near Duddikonda & Bheemavaram village, Alluri Sitharama Raju district of Andhra Pradesh. **Coordinates**: Upper Reservoir Latitude: 18°20'51.20"N Longitude: 83° 4'7.14"E Lower Reservoir Latitude : 18°20'25.96"N Longitude: 83° 7'19.69"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	11722.68 Cr
Total area of Project	256.37 ha
Height of Dam from River Bed (EL)	55.00m
Length of Tunnel/Channel	2 numbers of Branch HRT of Circular shape of diameter 9.6 m and length 149.50 m 1 number of Main HRT of circular shape of diameter 13.5 m and length 2120 m.

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 4770000 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.	
No. of proposed disposal area / (type of land- Forest / Pvt land)	40 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)	218.52	
Barrage construction land	-	
Forest land	37.85	
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	Yes	
National Park	No	
Wildlife Sanctuary	No	
9. Court Cases Details: 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".

39.6.3 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 Gujjili Closed loop Pumped Storage Project (2400 MW) in an area of 256.37 Ha Village Tangulaguda, Satapi, Tangalam, Bhimavaram & Chippapalli etc., Subdistrict Araku Valley, Pachipenta & Ananthagiri, District Alluri Sitharama Raju & Parvathipuram Manyam, Andhra Pradesh by M/s Navayuga Enegineering Company Limited.

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

- The Committee noted that the Ministry of Environment, Forest and Climate Change (MoEF&CC) had granted Terms of Reference (ToR) for the project Gujjili (Closed loop) Pumped Storage Hydro Electric Project (1500 MW)" to M/s New and Renewable Energy Development Corporation of Andhra Pradesh Ltd. (NREDCAP), vide File No: J-12011/32/2023-IA.I (R) dated 07/08/2023. The Committee further noted that the project was subsequently handed over to M/s Navayuga Engineering Company Limited by NREDCAP vide letter dated 19.05.2025, in accordance with the Government of Andhra Pradesh order G.O. MS. No. 13 dated 07.02.2025 of the Energy (Power-II) Department. It was also noted that a capacity enhancement study was undertaken to upgrade the installed capacity from 1500 MW to 2400 MW. Accordingly, the PP has applied for a fresh ToR with the revised capacity.

- The EAC noted that the total land required for the construction of various components and related works for Gujjili Closed loop Pumped Storage Project is estimated to be around 256.37 ha, out of which 37.85 ha is Forest Land and 218.52 ha is Non-Forest Land. Diversion of forest land for non-forest purpose will be involved for construction of Chittamvalasa 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.

39.6.4 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 Gujjili Closed loop Pumped Storage Project (2400 MW) in an area of 256.37 Ha Village Tangulaguda, Satapi, Tangalam, Bhimavaram & Chippapalli etc., Subdistrict Araku Valley, Pachipenta & Ananthagiri, District Alluri Sitharama Raju & Parvathipuram Manyam, Andhra Pradesh by M/s Navayuga Enegineering Company Limited, under the provisions of EIA Notification, 2006, as amended along with the following additional/specific ToR:

[A] Environmental Management and Biodiversity Conservation:

i. PP shall obtained amendment in MoU in terms of the revised capacity from 1500 MW to 2400 MW.

ii. 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.

iii. 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.

iv. The application for obtaining Stage I FC for 37.85 ha of forest land involved in the project shall be submitted within stipulated time.

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

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

x. 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.

xi. 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.

xii. 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.

xiii. 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.

xiv. 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.

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

submitted in terms of construction and operation phase.

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

xvii. 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.

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

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

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

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

xxii. 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.

Additional Agenda Item

Consideration of EAC Sub-Committee Site Visit Report of Proposed Pane Pumped Storage Project (l500MW) located at Villages Pane & Vagheri, Tehsil Mahad, District Raigad and Village Khanu, Tehsil Velhe, District Pune conducted on on 27th & 28th June, 2025

The Member Secretary, EAC informed the committee that the Ministry of Environment, Forest and Climate Change (MoEF&CC) granted Terms of Reference (ToR) to Pane Open Loop Pumped Storage Project of capacity 1500 MW in an area of 293.50 Ha at Villages Khanu, Pane and Vagheri, Taluka Mahad and Velhe, District Raigad and Pune

Maharashtra by M/s JSW Energy PSP Seven Limited. Subsequently, amendment in ToR was accorded by the MoEF&CC vide letter dated 03/12/2024 due to Change in Project area.

2. In accordance with the Ministry's Office Order no. J-12011/16/2024-IA-I (R) dated 23rd June 2025, the Sub-Committee comprising Shri Ajay Kumar Lal, Member, EAC; Shri Balram Kumar, Member, EAC; and Dr. P. R. Sakhare, Representative from MoEF&CC visited the Proposed Pane Pumped Storage Project site on 27th & 28th June, 2025.

3. The EAC Sub-Committee has made following observations/recommendations:

i. The selected location is tropically stable and non-prone to landslides as such, hence, the site appears to be a fit case for establishment of Proposed Pumped Storage Project from land stability angle.

ii. Onetime water requirement of the project is 14.184 MCM and l.0l MCM annual water for operation of project will be sourced from self-catchment of lower reservoir.

iii. The lower reservoir has a non-perineal Nalla which is being charged during the monsoon season only. However, provision of ungated spillway has been proposed to maintain the natural flow of Non-perineal nalla.

iv. Out of total forest area of 66.91 ha, 63.94 ha is Reserve forest and 2.97 ha is Protected forest. The Project area doesn't fall in any Eco-Sensitive Zone. Top soil being thin layered, the growing stock of the area and the tree growth were found to be below par in spite of being located heavy precipitation zone. The vegetative cover has average productivity.

v. Most of the projects components including muck disposal areas, job facilities etc. falls in Non-Forest land.

vi. As per information provided by the PP representatives present there, PP has initiated CER/CSR activities in the affected villages, focused on Education, Community development, Sanitation, and Water-related infrastructure etc.

vii. As per discussion with the locals especially with the 'Sarpanch' of Village Pane, the Villagers are also in support of this Proposed Project as it is going to create many direct as well as indirect employment opportunities.

viii. There was a genuine demand from local people to establish medical store with ample medicines so as to benefit the locals. Also to strengthen the existing middle school.

The site visit report is annexed at **Annexure –I**

The EAC deliberated on the site visit report and recommended that observations raised by the EAC Sub-Committee may be suitably addressed while preparing EIA/EMP report so as to assess the environmental and social concerns comprehensively.

ANNEXURE

ATTENDANCE

S. No.	Name of Member	Role
1.	Prof. Govind Chakrapani	Chairman
2.	Dr. Uday Kumar R Y	Member
3.	DR. J. V. Tyagi	Member
4.	Shri Kartik Sapre	Member
5.	Shri Ajay Kumar Lal	Member
6.	Shri Rakesh Goyal	Member Representative of Central Electricity Authority (CEA)
7.	Shri Balram Kumar	Member Representative of Central Water Commission (CWC)
8.	Shri Yogendra Pal Singh	Member Secretary

ANNEXURE- I

Site visit Report of Sub-Committee of the EAC (River Valley & Hydroelectric Project) on 27th & 28th June, 2025 for Proposed Pane Pumped Storage Project (1500MW) located at Villages Pane & Vagheri, Tehsil Mahad, District Raigad and Village Khanu, Tehsil Velhe, District Pune Maharashtra

In compliance to the MoEF&CC Office Order no. J-12011/16/2024-IA-I(R) dated 23rd June 2025, the Sub-Committee comprising Mr. Ajay Kumar Lal, Member, EAC; Mr. Balram Kumar, Member, EAC; and Dr. P. R. Sakhare Member & Representative from MoEF&CC visited the Proposed Pane Pumped Storage Project site on27th& 28th June, 2025. The sub-committee visited the Lower dam, Lower reservoir, Muck disposal areas, Upper dam and Upper reservoir of Pane PSP. The attendees of the site visit included the designated member by MoEF&CC, Authorized members of Project proponent, their EIA Consultant and a few local villagers.

2. Desk Review

2.1 The proposed Pane Pumped Storage Project (1500 MW) is a self-identified, green field project by the M/s JSW Energy PSP Seven Ltd, a subsidiary of M/s JSW Energy Limited. The need for Pane PSP in Raigad and Pune district, Maharashtra, has been considered in context of the focus of State Government to stabilize the grid by installation of Pumped Storage Projects which leads to increase the share of renewable energy which is available in plenty within the state in general and in the country as whole. This is an Off-stream open loop project, where water will be recycled between the proposed upper and lower reservoir in one daily cycle of peaking (6.32 hour) and one daily pumping cycle (6.95 hour).

2.2 The total land requirement for the project has been assessed as 293.50 ha of which 8.74 ha is Govt. land, 66.91 ha is Forest land and 217.85 ha land is Private land. Forest land diversion case has been submitted vide Proposal no: FP/MH/HYD/IRRIG/454907/2023, dated 22nd Dec., 2023 on PARIVESH 2.0 Portal and the proposal has been accepted in PSC-1 on 23rd Feb. 2024.

2.3 Terms of Reference (TOR) was issued by the MoEF&CC, New Delhi, vide letter no. J-12011/63/2023-IA.I(R), dated 31stJan., 2024 which got further amended on 3rdDec., 2024 due to Change in Project area. Public hearing (s) on the basis of revised layout and land details for the said Project were conducted on 18thOct., 2024 for Pune District and on 5thNov., 2024 for Raigad District, Maharashtra. Now, the final EIA/ EMP report is under preparation.

3. General Observations:

3.1 Topography: The site is located in Western Ghat and Deccan Plateau. The physiography of the area has given rise to four major characteristics land forms namely - The Hills and Ghats, The foothills, The Plateau and The Plains. The topographic set up of the area is very uneven and rugged. The coast line is characterized by alternative bluffs and curved bays having narrow hinterlands. The Eastern part of the area is much rugged merging with the Sahyadris which are running North South direction.

3.2 Vegetative Cover: The Proposed Project area lies in the Western Ghats (Sahyadri Hills) region, known for its rich biodiversity and varied vegetation types. However, the project area was found to have a few patches containing good forest cover while others contains mixed species of bushes and trees. The density of area lies between 0.4-0.6. Common tree species in this region include Amla, Imli, White Teak, Mango, Indian Rosewood, and Various Terminalia species, with understory of grasses and shrubs. First hand assessment of faunal diversity was not possible in a day visit. However, at a glance, no evidence of big mammals or cats could be traced or found.

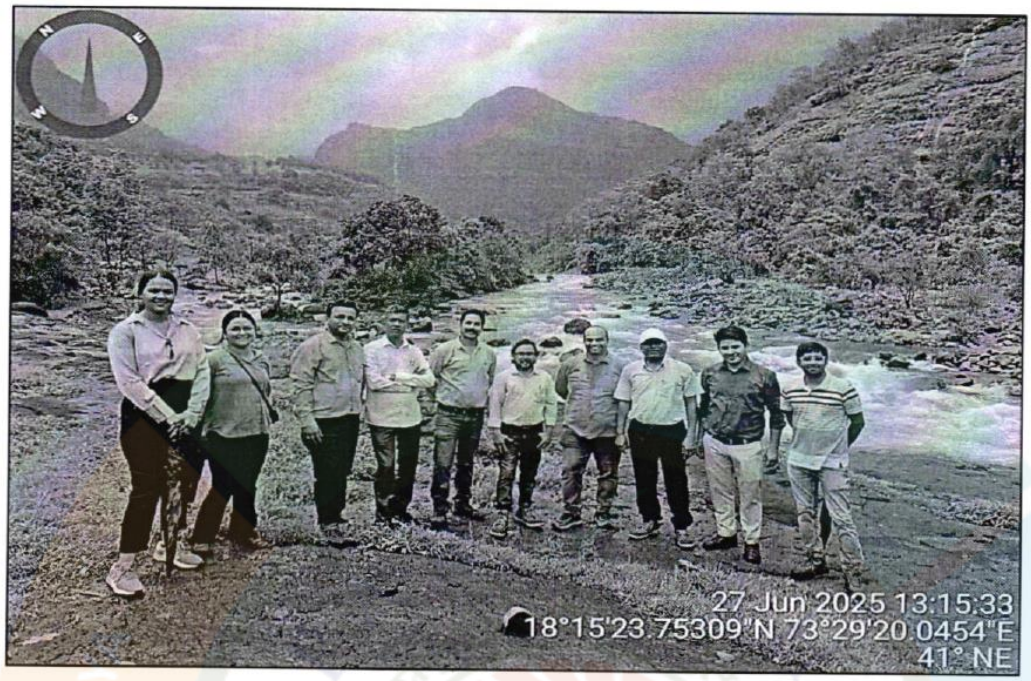
3.3 Water availability and impact on flow of water: The area receives an average annual rainfall of approximately 3,775 mm, which is significantly higher than normal. However, due to the impervious rocky land surface, the infiltration and water-holding capacity are limited. Despite this, water scarcity is not an issue as the overall water requirement is low. Additionally, there is a non-perennial nalla that passing through the lower reservoir, which is generally charged only during the monsoon season.

3.4 Human Settlements and Habitation: The area is primarily reserved and protected forest land, located deep within the tehsil. Few scattered houses were noticed in the fringe connecting areas. Furthermore, agriculture or cultivated lands were found to be nominal. No displacement of any family/house in the project area is envisaged.

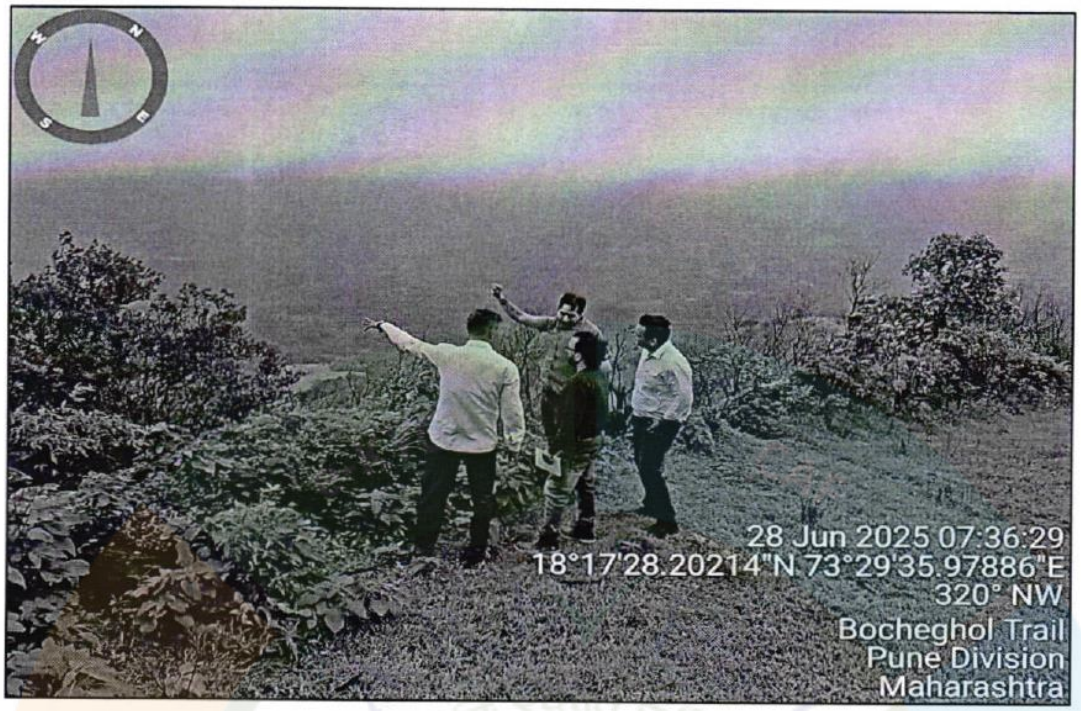
4. Specific Recommendations/Oobservations:

1. The selected location is tropically stable and non-prone to landslides as such, hence, the site appears to be a fit case for establishment of Proposed Pumped Storage Project from land stability angle.
2. Onetime water requirement of the project is 14.184 MCM and 1.01 MCM annual water for operation of project will be sourced from self-catchment of lower reservoir.
3. The lower reservoir has a non-perineal Nalla which is being charged during the monsoon season only. However, provision of ungated spillway has been proposed to maintain the natural flow of Non-perineal nalla.
4. Out of total forest area of 66.91 ha, 63.94 ha is Reserve forest and 2.97 ha is Protected forest. The Project area doesn't fall in any Eco-Sensitive Zone. Top soil being thin layered, the growing stock of the area and the tree growth were found to be below par in spite of being located heavy precipitation zone. The vegetative cover has average productivity.
5. Most of the projects components including muck disposal areas, job facilities etc. falls in Non-Forest land.
6. As per information provided by the PP representatives present there, PP has initiated CER/CSR activities in the affected villages, focused on Education, Community development, Sanitation, and Water-related infrastructure etc.
7. As per discussion with the locals especially with the 'Sarpanch' of Village Pane, the Villagers are also in support of this Proposed Project as it is going to create many direct as well as indirect employment opportunities.
8. There was a genuine demand from local people to establish medical store with ample medicines so as to benefit the locals. Also to strengthen the existing middle school. The Sub Committee recommends for both

Photographs of the site visit: Lower Reservoir



Photographs of the site visit: Upper Reservoir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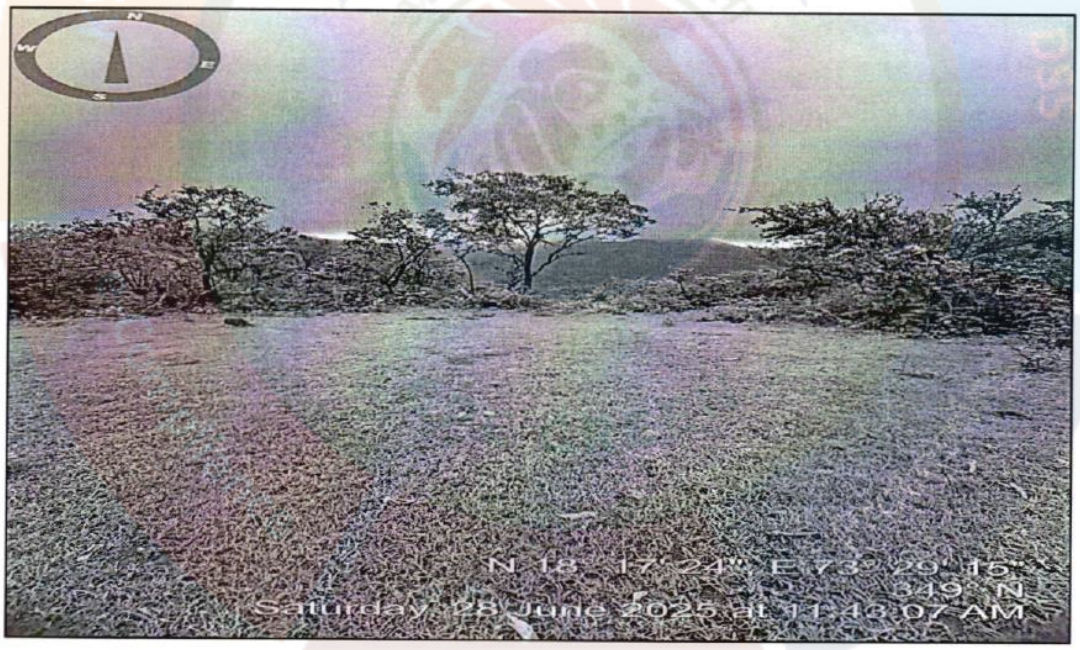
18°17'28.20214"N 73°29'35.97886"E
320° NW
Bocheghol Trail
Pune Division
Maharashtra


Saturday, 28 June 2025 at 11:43:07 AM


28 Jun 2025 07:24:19
18°17'31.21033"N 73°29'46.79102"E
210° SW


Pune, Maharashtra
N 18° 16' 36" E 73° 28' 44"
1Z6 S
Saturday, 28 June 2025 at 10:07:17 AM

Attendance:

Pane Open Loop Pumped Storage Project of capacity 1500 MW At Villages: Pane and Vagheri, Tehsil: Mahad, District: Raigad,and Village: Khanu, Tehsil: Velhe, District: Puna, Maharashtra Project Proponent: M/s. JSW Energy PSP Seven Limited	Date: 27th & 28th June 2025

ATTENDANCE SHEET

Pane Open Loop Pumped Storage Project (1500 MW) at Village: Pane & Vagheri, Tehsil: Mahad, District: Raigad and Village: Khanu, Tehsil: Velhe, District: Pune, Maharashtra by M/s. JSW Energy PSP Seven Limited. [MoEFCC File No: J-12011/63/2023-IA.I (R)]

S. No.	Name	Organization	Designation	Signature
1.	Dr. P R Sakhare	MoEF&CC RO Nagpur	Scientist E	Sakhare
2.	BALRAM KUMAR	CWC	DIRECTOR	
3.	Ajay Kumar Lal	MOEFCC GOI.	Expert Member EAC	
4.	Ashish Kumar	JSW Energy Ltd	Manager	
5.	Peeyush Saxena	JSW Energy Ltd	Manager	
6.	SMARTH SHARMA	JSW Energy Ltd	D.G.M	
7.	Prashant Dharmadar	JSW Energy Ltd.	Sr. Manager	
8.	AKANKSHA RANI	JSW Energy Ltd	Asst. Manager	
9.	Pankaj Singh	JSW Energy PSP Two Ltd.	Asst. Manager	
10.	KANISHIKA SREHLY	JSW ENERGY LTD	ASM Manager	
11.	Vinay Kumar	JSW Enabled Pvt Ltd	Vice President	
12.				
13.				
14.				

(Mr. Ajay Kumar Lal)
Signature of EAC member

(Mr. Balram Kumar)
Signature of EAC member

(Dr. P. R. Sakhare)
Signature of MoEFCC Representative

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APPROVAL OF THE CHAIRMAN