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Government of India
Ministry of Environment, Forest and Climate Change
IA Division
(River Valley and Hydroelectric Projects)
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Minutes of 45TH MEETING OF THE EXPERT APPRAISAL COMMITTEE meetin g River Valley and Hydroelectric Projects held from 19/12/2025 to 19/12/2025 **Date:** 24/12/2025

MoM ID: EC/MOM/EAC/331615/12/2025

Agenda ID: EC/AGENDA/EAC/331615/12/2025

Meeting Venue: MoEFCC

Meeting Mode: Physical

Date & Time:

19/12/2025	10:30 AM	05:30 PM

1. Opening remarks

The 45th 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 19th December, 2025 through Physical mode, under the Chairmanship of Prof. G. J. Chakrapani.

2. Confirmation of the minutes of previous meeting

The Minutes of the 44th EAC meeting held on 10th December, 2025 were confirmed.

3. Details of proposals considered by the committee

Day 1 -19/12/2025

3.1. Agenda Item No 1:

3.1.1. Details of the proposal

Kalai II Hydro Electric Project by **THDC INDIA LIMITED** located at **ANJAW,ARUNACHAL PRADESH**

Proposal For		Fresh EC	
Proposal No	**File No**	**Submission Da te**	**Activity Sub-Activity (Schedule Item)**
IA/AR/RIV/557663/2025	J-12011/40/2009-IA-I(R)	28/11/2025	River Valley/Irrigation projects RVHEPs without Pump Storage Projects (1(c))

3.1.2. Project Salient Features

45.1.1: The proposal is for grant of Environmental Clearance (EC) to the project for Kalai II Hydro Electric Project (Run-of-the-River) of (1200 MW) in an area of 869.3503 Ha located at Village Kamdi, Tehsil Hawai Town, Anjaw District of Arunachal Pradesh by M/s THDC India Limited.

45.1.2: 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. The Kalai-II H.E. Project envisages run of the river scheme with pondage on Lohit river, a left bank tributary of Brahmaputra river. The objective is to utilize flows of Lohit river over large head available for hydro power generation. The Lohit river, a tributary of Brahmaputra river, rises at an EL 6190 m above MSL from the snow clad peaks in Eastern Tibet and enters India through Kibithoo area of the district.

ii. The Kalai-II HE Project envisages utilization of a gross head of about 125m for power generation with an installed capacity of 1200MW. The coordinates of Kalai-II HE Project are latitude 27o 54' 20" N and longitude 96o 48' 16" E. The catchment area intercepted up to the proposed dam site including Tibet region is estimated to be about 15,654 sq. km.

iii. The site location map of the project is as under:

iv. The full reservoir level kept as EL 904.80m. The project involves construction of a concrete gravity dam, upstream and downstream coffer dam, diversion tunnel, intake tunnel, pressure Shafts, underground Powerhouse complex, surge chamber and Tail Race Tunnel etc.

v. The Kalai-II HE project falls under category "A" listed for Environment Clearance by MoEF&CC. The TOR Clearance was accorded by MoEF&CC vide file no. File No: J-12011/40/2009-IA-I(R), dated 07.08.2024.

vi. **Land requirement:** The total land requirement of the Project is 869.3503 Ha. The proposal for diversion of 869.3503 Ha submitted on Parivesh portal on 19.01.2025. The proposal for diversion of 869.3503 Ha forest land recommended by GoAR to MoEF&CC after completion of due process. Proposal is under process on Parivesh portal.

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

The entire Project falls under Anjaw District of Arunachal Pradesh. The population in Anjaw district is largely rural, with a significant tribal and backward community presence. The Mishmi and Meyor are the main tribes inhabited in Anjaw district.

A total nos. of 392 households covered under the study area with total population of 1934 with male population comprising 950 and female population comprising 984.

The male and female population in study area comprises about 49.12% and 50.88% respectively of the total population. The population comprising of children below the age of 6 years accounts for about 19.75% of the total population in the study area.

Schedule Tribes (ST) are the dominant caste group, accounting for 98.65% of the total population. The General Caste comprise of only 1.35% % of the total population. There are

no Scheduled Caste household/ families in the Study Area villages.

It is observed that about 39.92% of the total population in the study area is literate, while about 60.08% are illiterate. The literacy rate among male and female population is 46.95% and 33.13% respectively.

It is observed that 40.12% 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 account for about 59.88% of the total population. Among the population that is working about 87.25% has been designated as Main workers while the remaining 12.75% has been designated as Marginal workers.

viii. **Water requirement:** A design power output of 1,200 megawatts (MW) has been envisaged for the project, with a total design discharge of approximately 1128.06 m3/s, developed with seven turbine generator units.

ix. **Project Cost:** The estimated project cost is Rs. 14,176.26 Cr Total capital cost earmarked towards environmental management plan is Rs. 67830.73 lakhs and the Recurring cost (operation and maintenance) will be about Rs. 61.16 lakhs per annum.

x. **Project Benefit:**

The total number of persons inhabiting the area including the service population will be about 3000. The construction of the proposed project would invariably create a number of direct employment opportunities. However, indirect employment opportunities would also be generated which would provide great impetus to the economy of the local area. Various types of businesses are also likely to concentrate here and likely to benefit immensely, as demand for almost all types of goods and services will increase significantly. The business community as a whole would be benefited. The locals would also avail these opportunities arising from the project and increase their income levels. Other benefits of Project would include:

- Compensation for loss of land, houses and all other immovable properties to the PAFs as per the Land Acquisition Act.
- Improvement in the quality of life: primary education, primary health care, women and child welfare, periodic medical camps.
- Development strategy to bring about a positive socio-economic transformation of the PAFs, so as to improve the quality of their life.
- Power from the project, shall bring overall improvement in quality of life and the economic growth of the local populace.
- Construction and operation of this Project would lead to overall sustainable development in the project region by making a direct as well as indirect contribution to the populace.

xi. **Environmental Sensitive area:** There are no national parks, wildlife sanctuaries, Biosphere Reserves, Tiger/Elephant Reserves, Wildlife Corridors etc. within 10 km distance from the project site. Lohit River flows through the project site.

xii. **MoU / any other clearance/ permission signed with State government:** Memorandum of Agreement (MOA) signed between Government of Arunachal Pradesh & THDC India Limited on 30.12.2023 for the development of Kalai-II HEP project.

xiii. **Resettlement and rehabilitation:** The land required for various project appurtenances is 869.3503 ha. A total 1521 PAFs have been identified in the 33 Project Affected Villages. Among them, 376 PAFs fall under the Full Submergence category, another 113 PAFs are

classified as Highly Impacted, and remaining 1032 PAFs are categorized as Impacted. A provision of Rs. 190.68 crore has been kept towards implementation of Resettlement and Rehabilitation Plan.

xiv. **Scheduled-I species:** In the study area Takin (Budorcas taxicolor) has been observed as Schedule-I species, which is Vulnerable A2cd in the IUCN Red List Category. A budget of Rs. 100 lakh has been proposed for implementation of Conservation Plan which includes Habitat Protection, Anti-Poaching and Law Enforcement, Community engagement, Monitoring & Research, Emergency Response Mechanism, Reducing man wildlife conflicts, Creation of drinking water facility, Training & Awareness, Forest Fires Protection measures, Procurement of Equipment etc.

xv. **Alternative Studies:**

The alternative locations for the project have been compared for dam axes mainly for 02 nos. alternatives for the final configuration of the project. The main characteristics of the principal project features as established for this comparative analysis are indicated below:

- Alternative I : Dam at Site 1 (Downstream axis) with underground powerhouse
- Alternative II : Dam at Site 2 (Upstream axis) with underground powerhouse

In view of the lower overall estimated project development cost, with further detailed field investigation, optimization and DPR level design of Alternative-I has been finally done. Other considerations favoring Alternative-I explicitly not included in the cost comparison are:

- Alternative-I would have lower head losses because of shorter length of tailrace tunnel.
- Alternative-I would require a smaller sized surge chamber because of shorter length of TRT.
- Alternative-I would have a larger reservoir compare to Alternative-II, thus having a larger retention volume for sediment.
- Alternative-II has not been penalized for the delay in the on-line date that would result with the construction of the longer tailrace tunnels and the resulting loss in revenue. This would further favor the selection of Alternative-I.

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

During the construction phase, the total municipal solid waste generation is estimated to be around 1.35 tons per day (t/day). Out of this, approximately 0.53 t/day will comprise biodegradable or degradable waste, such as food residues and organic matter, while about 0.82 t/day will consist of non-degradable waste, including plastics, packaging material, and other inert components.

Hazardous waste inter alia include burnt mobile oil from vehicles and construction machinery and equipment, batteries and like items specified in column (3) of Schedule-I of Hazardous and other Wastes (Management & Transboundary Movement) Rules, 2016. These will be disposed of by auctioning them to the recycling vendors approved by the CPCB or Arunachal Pradesh State Pollution Control Board in consonance with Hazardous and other Wastes (Management & Transboundary Movement) Rules, 2016. The project proponent shall earmark a suitable site for storage of hazardous waste, prior to collection by an authorized vendor for handling the hazardous work.

Muck is likely to be generated due to various project related activities is 154.598 lakh m^3. About 17.347 lakh m^3 of muck generated shall be utilized and about 137.251 lakh m^3 of muck shall be disposed off in 04 nos. Muck disposal sites of area 70.22 ha and capacity 139.029 lakh m^3. Engineering & biological measures are proposed for management of muck generated at site.

xvii. Public Hearing for the proposed project has been conducted by the State Pollution Control Board on 20.08.2025. The main issues raised during the public hearing are related to are as below:

S. No.	Name of Participant	Issues Raised	Response
1.	**Shri Behenso P**	There will be generati	A detailed plan for contr

S. No.	Name of Participant	Issues Raised	Response
	ul Chairman, Hydro Power Committee Kalai-ll for Project Affected Families	on of dust and noise pollution due to operation of heavy machineries and blasting which in turn will cause river pollution. What mitigation measures are planned to control the pollution.	ol of dust and noise pollution has been prepared. Detailed Mitigation measures have been suggested in Section 4.6 of CEIA Report for control of air pollution due to Fuel Combustion in Equipment and Vehicles. Operation of DG sets, Fugitive Emissions from Various Sources, Emissions from Crushers, Dust emissions from Muck Disposal, etc. Detailed Mitigation measures have been suggested in Section 4.5 of CEIA Report for control of noise pollution due to operation of construction equipment, drilling, blasting and increased vehicular movement.
		The operations of heavy machineries will have effect on aquatic & wildlife and the nearby villages.	Detailed Mitigation measures have been suggested in Section 4.5 of CEIA Report for control of noise pollution due to operation of construction equipment, drilling, blasting and increased vehicular movement to minimize impacts on wildlife. The operations of heavy machineries leads to generation of effluents with oil & grease. An Oil & Grease separator unit has been proposed to treat the effluents from Workshops, parking areas, etc. to treat the effluent before disposal, so that there is no impact on Aquatic Ecology. The det

S. No.	Name of Participant	Issues Raised	Response
			ails are given in Section-4.2.
		Solid waste generated from the project camp must not be disposed into the river or water bodies. For its proper management, a concrete plan must be in place.	A detailed Solid waste management plan covering following has been prepared: · Municipal Solid Waste · Hazardous Waste · E-Waste · Construction and Demolition Waste The details are given in Sections 4.7.1.8 to 4.7.1.11 of CEIA Report.
		The draft EIA report prepared by WAPCOS Limited is based on old data. The data must be corrected.	As a part of the CEIA Study, field studies for various aspects was conducted for three seasons as listed below: · Monsoon Season: August, September & October 2024 · Winter Season: December 2024 · Pre-monsoon Season: March 2025 Thus, CEIA Report has been prepared on new data, as per the ToR approved by MoEF&CC.
		The land rates must be enhanced.	This same shall be decided by State Govt. as per policy.
		The rates for construction of house under lndira Awas Yojana (lAY) as per draft EIA report will not be sufficient for construction of tribal house. ln this regard, the revised rate submitted to the Govt. of Arunachal Pradesh must be considered.	The rate shall be decided by State Govt as per RFCTLARR Act-2013 & Handbook for LA- Arunachal Pradesh-2022.

S. No.	Name of Participant	Issues Raised	Response
		The submerged villages must be migrated on community/group basis.	The location of Resettlement Sites shall be finalized by State Govt./ District Administration.
		The Local Area Development Fund (LADF) to must be utilized by the Project Affected Families (PAFs)/Project Affected Villages (PAVs).	Utilization of Local Area Development Fund (LADF) shall be finalized by State Govt./ District Administration in consultation with PAFs.
		The center for recruitment of staff for various grades as envisaged in the draft EIA report must be done at Hawai under the Deputy Commissioner, Anjaw district.	Recruitment center shall be opened at suitable location as per mutual consent of State Govt and THDCIL.
		The Skill Development Training Centre should be made functional at the earliest.	Matter under consideration. THDCIL has requested District Administration, Anjaw on 05.04.2025 and 20.09.2025 for allotment of Polytechnic Campus/Building to start Skill Development Training Centre at Hawai at the earliest.
		A Nursing college must be established at Anjaw district. Further, up-gradation of the existing health care establishment at Swami Camp should be done.	The same shall be decided by the State Govt/ District Administration, within the provisions of R&R / LADP.
		The LADF fund should be enhanced to a total of 2% (1% from the State Government and 1% from M/s THDC lndia Limited).	It is a Policy matter & applicable as per Govt of India guidelines, Electricity Act/CEA Guideline.

S. No.	Name of Participant	Issues Raised	Response
		Study on soil erosion around nearby villages should be carried out with its mitigation plans.	The same has been addressed under the CAT plan for the project in the catchment area, covering nearby villages, has been planned. The plan gives detailed biological and engineering measures for soil and water conservation.
		A bridge should be constructed at Samdul village to ease the transportation.	It will be decided by State Govt/ District Administration in consultation with THDCIL as per R&R provision.
		There should be reservations in business for local contractors as per Arunachal Pradesh District Based Entrepreneurs Act, 2015.	It shall be dealt as per Article 6, clause 6.8 of the MoA between Govt of AP and THDCIL. *The Corporation shall give preference to the local contractors fulfilling the eligibility criteria in the award of the work except for the specialized jobs.*
		The migrant labours should not be allowed to cast their votes in any kind of election.	The same shall be decided by State government of Arunachal Pradesh.
		The project affected villagers should be given right for fishing in the project site.	The same shall be decided by State government of Arunachal Pradesh.
		The cultural and spiritual significant places must be preserved.	The cultural and spiritually significant places which are likely to be affected by the projects shall be preserved in consultation with State Govt./ District Administration as per the provisions of R&R / LADP.

S. No.	Name of Participant	Issues Raised	Response
		Hospital with 50 bedded capacities should be established at Hawai.	The same shall be decided by the State Govt./ District Administration, within the provisions of R&R / LADP.
		A Drugs de-addiction center should be established at Hawai.	The same shall be decided by the State Govt./ District Administration, within the provisions of R&R / LADP.
2.	**Shri Birenso Pul** Secretary, Hydro Power Committee Kalai-ll for Project Affected Families	The PAFs are not happy because the draft EIA report hasn't included the latest amended Social Impact Assessment (SlA).	The latest amended Social Impact Assessment (SlA) being included in the CEIA Report.
		In the draft EIA report, the settlement and Horticulture & Agriculture area is shown very less, whereas, large area of land is shown as forest area.	The ownership status of land to be acquired for the project is being finalized by the district administration.
		During construction of the project, there will be generation of noise and water pollution which will cause difficulties to local people. The Control and mitigation measures supposed to be taken are indicative.	A detailed plan for control of dust and noise pollution has been prepared. Detailed Mitigation measures have been suggested in Section 4.6 of CEIA Report for control of air pollution due to Fuel Combustion in Equipment and Vehicles. Operation of DG sets, Fugitive Emissions from Various Sources, Emissions from Crushers, Dust emissions from Muck Disposal, etc. Detailed Mitigation measures have been suggested in Section 4.5 of CEIA Report for control of

S. No.	Name of Participant	Issues Raised	Response
			noise pollution due to operation of construction equipment, drilling, blasting and increased vehicular movement. Based on our past experience, the measures suggested are comprehensive and adequate to mitigate the air and noise pollution from various sources during project construction phase.
		The land rate must be enhanced.	This is a state policy matter and shall be decided by the State Govt.
3.	**Shri. Bramgrow Pul** Vice-Chairman, Hydro Power Committee Kalaill for Project Affected Families	There should be reservation for local contractors.	It shall be dealt as per Article 6, clause 6.8 of the MoA (Dec. 2023) between Govt of AP and THDCIL *The Corporation shall give preference to the local contractors fulfilling the eligibility criteria in the award of the work except for the specialized jobs.*
		The THDC lndia Limited is proposing project for 1200 MW and their power selling plan is more than 1200 MW. Clarification on this must be given by the company.	The PPA has been signed with 3 States and Indian Railways, and final allocation of Power will be done by MOP, GOI.
		A medicinal plant available locally namely "*Mishmi Teeta*" is to be included in the EIA report.	Complied and covered in Section 3.4.6.5.
		Priority must be given for up-gradation of Hawai Hospital.	The same shall be decided by the State Govt./ District Administration, wi

S. No.	Name of Participant	Issues Raised	Response
			thin the provisions of R&R / LADP.
4.	**Shri Omiso Pul, Kamdi village**	ln the draft EIA report, the names of some flora and fauna are missing. Therefore, reference must be taken from the latest RET data book and necessary inclusion must be made.	As part of EIA Study, latest RET data book has been used for compilation and the findings of field studies too have been suitably incorporated.
		The company must consult and engage local people for inclusion of local names of flora and fauna along with pictures that will help in easy understanding of all the PAFs.	The CEIA Report has been prepared in consultation with locals. Local names of flora and fauna to the extent possible have been included.
		There are many medicinal plants available in the area. So, what steps will be taken to preserve such medicinal plants.	Medical plants of various native species shall be planted during various plantation activities during the development of the project. A botanical garden for conservation of local plants including medicinal plants will also be developed. Community kitchens using LPG as fuel shall be run by the contractors to minimize impacts on trees including medicinal plants.
		Due to the upcoming project activities there will be increase in BOD and COD levels that will affect water bodies and aquatic life. What steps will be taken for its control and	Sewage from labour camps during construction phase and project colonies during operation phase, shall be treated in sewage treatment plants (STPs), prior to disposal. The details are given

S. No.	Name of Participant	Issues Raised	Response
		minimization?	in Section - 4.2.1.1. A detailed monitoring programme has been formulated for implementation during construction and operation phases to ensure that STPs operate at design efficiency levels. The details are given In Section-6.3.
		What mitigation measures will be taken for preservation of migratory fishes?	A detailed plan for mitigation of impacts on migratory species has been formulated, which includes, release of Environmental Flows, stocking of reservoirs and development of hatcheries. The same is covered in Sections4.12.2. 10.6 and 10.7.
		An awareness campaigns on mitigation plans must be held from village to village in affected area.	Awareness Programs on Environment Mitigation Plans shall be organized as a part of Environment Awareness Campaigns by THDCIL.
5.	**Shri Semsemlum Ngi** Chairman, Krosam Area Welfare Society	ln other cases, the villages within 10 kms radius of dam site are shifted to a new area but, in this case it is not so. Therefore, what steps will be taken in this regard?	R&R shall be carried out by the Govt of Arunachal Pradesh /District Administration as per RFCTLARR Act-2013 & Hand book for LA- Arunachal Pradesh-2022 .
		There will be blasting and mining activity during construction phase. What safety measures will be taken in this regard?	A detailed plan for ensuring safety during various project operations has been suggested in Sections 10.2 to 10.5 as part of the CEIA Report.
		Operation of large crushers will result in air	Crushers will be provided with cyclones to mini

S. No.	Name of Participant	Issues Raised	Response
		and noise pollution. What steps will be taken to control the pollution?	mize air pollution. Details are given in Section-4.6.1.4. Crushers will be located at a distant location from the local residents, so that they are not affected by the noise. Workers involved in operation of crushers shall be provided with personal protective equipment.
		Downstream villages will be affected by pollution caused by wastes. What steps will be taken by the company for management of wastes?	A detailed plan has been outlined in Section 4.2 and Sections 4.4 to 4.7 of Chapter-4 of CEIA Report to mitigate the impacts due to wastes generated from various sources during project construction phase. No impacts on downstream villages is expected due to wastes generated from various sources during project construction phase.
		Police out post must be established near the labour's camp to tackle law and order situation.	THDCIL will request District Administration for establishment of Police out post near Labour camp. However, it comes under the purview of District Administration to maintain the law and order.
		Local Area Development Fund(LADF) should be revised in the new SIA.	It is a Policy matter & applicable as per Govt of India guidelines, Electricity Act/CEA Guidelines
6.	**Shri Sosian Ngi, Krosam village**	The Ngi clan is not against development rather we welcome the project.	Welcomed the project.

S. No.	Name of Participant	Issues Raised	Response
		The grievances of the people of Krosam village must be addressed.	Grievances, if any due to the project shall be addressed during construction and operation phase. No specific grievance shared.
		The land rates must be satisfactory.	This is a state policy matter and shall be decided by the State Govt.
		The transportation charges for construction of new house for a family during resettlement must be enhanced.	The rate shall be decided by State Govt./ District administration as per RFCTLARR Act-2013 & Hand book for LA- Arunachal Pradesh-2022 .
		The concerns of the people of Krosam village must be included in the SIA.	SIA Report has already been prepared in consultation with the PAFs by the State Government.
7.	**Shri Roshman Tawsik** Representative of Nukung and Mla village.	No one from the two villages of Nukung and Mla were included for preparation of draft EIA report.	EIA report is prepared by the Experts mandated by National Accreditation Board for Education and Training (NABET). SIA Report has already been prepared in consultation with the PAFs by the State Government.
		Whole of Mla village will be affected and there is risk of submergence of this village. Therefore, Mla village must be included in the list of submergence village.	As per the SIA Report, Mla village has been categorized as a partly affected village. Any risk of submergence will be addressed in accordance with the provisions of the RFCTLARR Act, 2013 and the Handbook for Land Acquisition, Arunachal Pradesh, 2022.
		Cultural practice of natural indicators follow	Ethnographic Profile of local Tribes is included i

S. No.	Name of Participant	Issues Raised	Response
		ed by indigenous tribes of the area must be discussed, studied and included in the EIA Report.	n Section 3.5.2 of CEIA Report.
		Identification and preservation of cultural heritage and religious sites.	The cultural and spiritually significant places which are likely to be affected by the projects shall be preserved in consultation with State Govt./ District Administration as per the provisions of R&R / LADP.
		Many flora and fauna are not included in the draft EIA report.	A detailed flora and fauna study covering three seasons (pre-monsoon, monsoon and post-monsoon) has been conducted. No specific flora or fauna is missing in the CEIA Report which has been reported/suggested during the Public Hearing.
		The rate of construction of house under IAY@Rs.2 lakhs, as mentioned in the draft EIA report must be enhanced. Memorandum submitted is enclosed as Annexure-B.	The rate shall be decided by State Govt/ District Administration as per RFCTLARR Act-2013 & Hand book for LA- Arunachal Pradesh-2022.
8.	**Shri Lasum Pul** Ex-ZPM and Senior Public leader.	The villagers are in support of the such projects.	Welcomed the project.
		The rate of land must be enhanced and satisfactory which should be included in EIA report.	This is a state policy matter and shall be decided by the State Govt.

S. No.	Name of Participant	Issues Raised	Response
		The compensation rate for construction of new house as shown in the EIA report must be increased and not acceptable at all as per the rate of lndira Awas Yojana (lAY)	The rate shall be decided by State Govt./ District administration as per RFCTLARR Act-2013 & Hand book for LA- Arunachal Pradesh-2022.
		The loose soil will cause soil erosion. Hence, this aspect must be studied and included in the draft EIA report.	The same has been addressed under the CAT plan for the project wherein Watershed Management in the catchment area, covering nearby villages, has been planned. The plan gives detailed biological and engineering measures for soil and water conservation.
9.	**Shri Bajai Pul** Executive Engineer, Rural Work Department.	Projects like this are important in the national security point of view.	Welcomed the Project
		Every project like this has their pros and cons. Almost 90% people present here are in support of the project. Remaining 10% has their concern and the project proponent must resolve their concerns.	A detailed CEIA Report has been prepared as per the ToR Approved by MoEF&CC and addresses impacts likely to accrue during project construction and operation phases. Detailed measures have been suggested for their mitigation.
		My initial apprehensions about such projects have ceased after exposure trip to Tehri Dam, facilitated by THDC lndia Limited. Such projects will boost tourism of the area.	Welcomed the Project
10.	**Ms. Dasanglu Pul**	Late Shri Kalikho Pul, Ex Chief Minister, had	Welcomed the Project

S. No.	Name of Participant	Issues Raised	Response
	Hon'ble Minister for Women & Child Development, Science & Technology and Cultural Affairs (Hon'ble MLA for Hayuliang ST Constituency).	initiated this project way back in 2009. We must all be thankful to him to see this project at this stage in this present day.	
		Most of the speakers are positive about the project.	Welcomed the Project
		As per the MoU, 50% from Land Affected Villages be considered for employment as Staff as per eligibility.	For employment of Local tribal people, Article 6 of the MoA between Govt of AP and THDCIL (Dec. 2023) shall be complied.
		Revenue of 1% will be availed by the district.	It is a state matter and be dealt by Govt. of Arunachal Pradesh.
		Land rates were enhanced in 2022. The Government of Arunachal Pradesh is planning to further enhance this rate in the whole of the State.	This is a state policy matter and shall be decided by the State Govt.

xviii. Status of Litigation Pending against the proposal, if any. – No

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

· **Project Details:**

Name of the Proposal	Proposal for seeking Environmental Clearance for Kalai-II (1200 MW) Hydroelectric Project located in District Anjaw of Arunachal Pradesh by M/s THDC India Limited
Proposal No.	IA/AR/RIV/557663/2025 File No: J-12011/40/2009-IA-I(R)
Location (Including Coordinates)	Anjaw District, Arunachal Pradesh Lat: 27054’ 20” Long 96048’16”
Company’s Name	THDC India Limited
CIN no. of Company/ user agency	U45203UR1988GOI009822

Accredited Consultant and certificate no.	WAPCOS Limited, Gurugram NABET/EIA/24-27/RA 0360
Project location (Coordinates/ River/ Reservoir)	Anjaw District, Arunachal Pradesh Lat: 27054' 20" Long 96048'16
Inter-state issue involved	No
Proposed on River/ Reservoir	Lohit River
Type of Hydro-electric project	Run of river scheme
Seismic zone	Zone V

· **Category Details:**

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

· **ToR/ EC Details:**

ToR Proposal No.	ToR: IA/AR/RIV/466561/2024 ToR Amendment: IA/AR/RIV/539430/2025
EAC meeting date	ToR: 11th EAC meeting held on 27.06.2024 ToR Amendment: 33rd EAC meeting held on 17.06.2025
ToR Letter No.	J-12011/40/2009-IA-I(R)
ToR grant Date	ToR: 07.08.2024 ToR Amendment: 08.07.2025
Cost of project	14,176.26 Cr
Total area of Project	869.3503 ha
Height of Dam from River Bed (EL)	128.5 m
Details of submergence area	638.456 Ha
District to provide irrigation facility (if applicable)	Not applicable
Details of tunnels on upper level & lower	The total length of 05 nos. of 7.5 m dia HRTs is 534.7 m and for 8.5 m dia HRT is 63.3 m.

level and length of canal (if applicable)	Total length of 3 nos. TRT is 3939 m plus Length of 01 no. Auxiliary TRT is 333 m.
No. of affected Village	33
No. of Affected Families	1521
Project Benefits	● The Project will have an installation of 1200 MW. The design energy proposed to be generated from the HEP shall be 4852.95 MU. ● Infrastructure like roads, bridges, buildings etc. will be built at a large scale at the construction stage of the project which will benefit the local people also. ● The construction of various project roads will improve the accessibility to and around the project area. At the same time, project will establish health care units in the project area. With improvement in roads, in the project area, people will have easy access to the district hospital as well as project health care units. During project construction phase, the proponent will establish two health care with adequate number of medical staff including doctors, nurses, health workers and logistic support primarily to provide health support services to the workers and project staff. The health facility will also be made available to local people and visitors as well. ● The project will provide energy (with the implementation of rural electrification program) and will further enhance the facilities available at the centers. The electrification will provide an impetus to development in the area. ● The construction phase will last for about 78 months. The total number of persons inhabiting the area including the service population will be about 3000.
R&R details	The land required for various project appurtenances is 869.3503 ha. A total 1521 PAFs have been identified in the 33 Project Affected Villages. Among them, 376 PAFs fall under the Full Submergence category, another 113 PAFs are classified as Highly Impacted, and remaining 1032 PAFs are categorized as Impacted. A provision of Rs. 190.68 crore has been kept towards implementation of Resettlement and Rehabilitation Plan.
Catchment area/ Command area	The Catchment Area of the proposed project is 15654 km2
Types of Waste and quantity of generation during construction/Operation	During the construction phase, the total municipal solid waste generation is estimated to be around 1.35 tons per day (t/day). Out of this, approximately 0.53

<table>
<tr><td></td><td>t/day will comprise biodegradable or degradable was te, such as food residues and organic matter, while a bout 0.82 t/day will consist of non-degradable wast e, including plastics, packaging material, and other in ert components. Sewage and effluent for batching pl ant, workshop, etc.</td></tr>
<tr><td>Material used for blasting and its co mposition as per DGMS standards.</td><td>Explosive is mainly required for open and underground rock excavation. The main explosive magazine & porta ble magazines are proposed near project site with app ropriate safety & security arrangements. The explosiv e license for storage, handling and use shall be obtain ed in accordance with the statutory regulations and sp ecifications.</td></tr>
<tr><td>E-Flows for the Project</td><td>The E-flows for the Project is tabulated as below:
<table>
<tr><th>S. No.</th><th>Season</th><th>Percentag e of Envir onmental Flows</th><th>Average E nvironmen tal Flows (cumec)</th></tr>
<tr><td>1.</td><td>Monsoon (June to Septemb er)</td><td>20%</td><td>163.48</td></tr>
<tr><td>2.</td><td>Lean Season (December to Ma rch)</td><td>15%</td><td>39.71</td></tr>
<tr><td>3.</td><td>Non Monsoon No n Lean Season (O ctober and Novem ber)</td><td>20%</td><td>90.67</td></tr>
<tr><td>4.</td><td>Non Monsoon No n Lean Season (April and May)</td><td>20%</td><td>103.60</td></tr>
</table></td></tr>
<tr><td>Is Projects earlier studied in Cumul ative Impact assessment & Carryin g Capacity studies (CIA&CC) for Ri ver in which project located. If yes then
a) E-flow with TOR/ Recommend ation by EAC as per CIA&CC s tudy of River Basin.
b) If not the E-Flows maintain crit eria for sustaining river ecosy stem.</td><td>Yes. The CIA & CCS report of Lohit river basin, 2016 has covered Kalai-II HEP. The recommendations of E nvironmental Flows in the CIA & CCS Study of Lohit Basin for Kalai-II HEP is as below:
<table>
<tr><th>S. No.</th><th>Season</th><th>Percentage of Environm ental Flows</th><th>Average Envir onmental Flo ws (cumec)</th></tr>
<tr><td>1.</td><td>Monsoon (June to Sep tember)</td><td>20%</td><td>163.48</td></tr>
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<tr><td>3.</td><td>Non Monsoo n Non Lean S eason (Octo</td><td>20%</td><td>90.67</td></tr>
</table></td></tr>
</table>

		ber and Nove mber)		
	4.	Non Monsoo n Non Lean S eason (April and Ma y)	20%	103.60
Details on provision of fish pass	The height of dam from river bed level is 128.5 m an d the fish passage is not feasible in high dams.			
Project benefit including employm ent details (no of employee)	The project construction is likely to last for a period of 78 months. The total number of persons inhabitin g the area including the service population will be ab out 3000. The construction of the proposed project would invariably create a number of direct employme nt opportunities. However, indirect employment opp ortunities would also be generated which would prov ide great impetus to the economy of the local area. V arious types of businesses are also likely to concentr ate here and likely to benefit immensely, as demand f or almost all types of goods and services will increas e significantly. The business community as a whole w ould be benefited. The locals would also avail these o pportunities arising from the project and increase the ir income levels. Other benefits of Project would incl ude: · Compensation for loss of land, houses and all othe r immovable properties to the PAFs as per the Lan d Acquisition Act. · Improvement in the quality of life: primary educatio n, primary health care, women and child welfare, p eriodic medical camps. · Development strategy to bring about a positive soc io-economic transformation of the PAFs, so as to i mprove the quality of their life. · Power from the project, shall bring overall improve ment in quality of life and the economic growth of the local populace. · Construction and operation of this Project would le ad to overall sustainable development in the proje ct region by making a direct as well as indirect con tribution to the populace.			
Area of Compensatory Afforestati on (CA) with tentative no of planta tion.	The total forest land to be acquired for the project is 869.3503 ha. The area proposed for Compensatory Afforestation is double the area of degraded forest la nd i.e.1738.70 ha located in Madhya Pradesh. An am ount of Rs. 12170.90 lakh (@ Rs. 7.0 lakh/ha) has be en earmarked for afforestation. The tentative no. of p lantation proposed is approx. 17.40 lakhs.			

Previous EC details	NA
EC Compliance Report by R.O, MO EF&CC	NA
No. of trees/saplings proposed in view of 'Ek Ped Maa Ke Naam' cam paign	-

· **Electricity generation capacity:**

Powerhouse Installed Capacity	1200 MW
Generation of Electricity Annually	4852.95 GWh
No. of Units	6*190 MW + 1*60 MW (07 units)

· **Muck Management Details:**

No. of proposed disposal area/ (type of Land - Forest/ Pvt land)	The total quantity of muck expected to be genera ted has been estimated to be of the order of 104. 49 lac m^3. A total of 04 muck dumping sites shall be used fo r muck disposal, with a total area of 70.22 ha and capacity of 139.029 lakh m^3 and said sites are loc ated in Forest land.
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 con crete retaining wall with a wire crate (1.25mx1.2 5mx1.25m) placed at top and 5 m high plum conc rete retaining on side.
Distance of muck disposal area (locati on), from muck generation sources (p roject area)/ River, HFL of proposed muck disposal area.	Distance of muck disposal area- near to the proje ct component area like Dam, Adits, Powerhouse a nd are located at least 100 m away from the HFL.
Total Muck Disposal Area	70.22 ha
Estimate Muck to be generated	154.598 lakh m3 (incl. swell factor)
Transportation	The generated muck will be transported in dump er trucks to prevent spillage, with all necessary p recautions followed during handling and disposa l. Appropriate pollution-control measures will be applied based on-site conditions, and all standar d safety practices will be ensured at site.
Monitoring mechanism for Muck Disp osal Transportation	Site team will monitor manually the muck dispos al at the site. The provisions of Environmental M onitoring have been kept under proposed Enviro

	nmental Monitoring Plan.

· **Land Area Breakup:**

Private land	Nil
Government land	Nil
Forest Land	869.3503 ha
Total Land	869.3503 ha
Submergence area/Reservoir area	638.456 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	RF: 238.0763 Ha	Proposal for diversion of Forest Land is under process.
National Park	Nil	
Wildlife Sanctuary	Nil	
Archaeological sites monuments/historical temples etc	Nil	
Additional information (if any)	-	

· **Availability of Schedule-I species in study area:**

In the study area Takin (*Budorcas taxicolor*) has been observed as Schedule-I species, which is Vulnerable A2cd in the IUCN Red List Category. A budget of Rs. 100 lakh has been proposed for implementation of Conservation Plan which includes Habitat Protection, Anti-Poaching and Law Enforcement, Community engagement, Monitoring & Research, Emergency Response Mechanism, Reducing man wildlife conflicts, Creation of drinking water facility, Training & Awareness, Forest Fires Protection measures, Procurement of Equipment etc.

· **Public Hearing (PH) Details:**

Advertisement for PH with date	The Times of India, Echo of Arunachal, The Arunachal Front (local Mishmi dialect) dated 19.07.2025
Date of PH	20.08.2025
Venue	Tribal Cultural Centre, Hawai, District Anjaw

Chaired by	Deputy Commissioner, Anjaw
Main issues raised during PH	· Amount of Compensation to be given to P AFs · R&R shall be carried out by the Govt of Ar unachal Pradesh / District Administration as per RFCTLARR Act-2013 & Hand book for LA- Arunachal Pradesh-2022. · Impacts due to Water Pollution · Adverse impacts on Fisheries · Adverse Impacts on Flora and Fauna · EIA report is based on old data · Mitigation measures for Air Pollution · Mitigation measures for Noise Pollution
No. of people attended	314

· **Brief of base line Environment:**

Particulars	Details
Period of baseline data collection/Sampl ing period.	The baseline status of the environmental quali ty has been monitored with respect to air, wat er, soil and noise etc. in the study area. The m onitoring was carried out for three seasons' vi z. Pre-monsoon (March'2025), Monsoon (Aug ust-October'2024) and Winter season (Decem ber'2024).
(Air, noise, water, land)	
flora and fauna of the project area	
aquatic ecology, etc.	
Brief description on hydrology and wate r assessment as per the approved pre-D PR:	The proposed Kalai-II Hydro Electric Project is a run of the river scheme on river Lohit. The water will be stored on a diurnal basis fro m MDDL to FRL for peaking power generation. During peaking power operations there will be a rated discharge of 1128.06 cumec from the tail race tunnels. The water availability 10 day flow series (cume c) data at Kalai-II HEP using Hayuliang data ha s been worked out for period from 1985-86 t o 2003-04 with an average annual yield of 280 22 MCM. Design flood (PMF) estimated at pro ject site is 24268 m3/sec. The Gross and Live Storage of the Kalai-II rese rvoir are 318.88 M cum and 29.76 M cum with FRL at El 904.80 m and MDDL at El 900.00 m respectively.

· **Court case details: NIL**

· **Status of other statutory clearances**

Particulars	Letter no. and date

Status of Stage- I FC	The proposal for diversion of the said 869.3503 Ha. forest land was submitted on Parivesh portal on 20.01.2025. The proposal for diversion of 869.3503 Ha forest land has been recommended by GoAR to MoEF&CC after completion of due process. Proposal is under process for Stage-1 approval. FC Proposal No.: FP/AR/HYD/IRRIG/519205/2025
Approval of Central Water Commission	The TEC for the project was issued to M/s Kalai Power Private Limited by CEA on 27.03.2015. Subsequently, the project was indicated to THDCIL by MoP. The TEC was transferred to THDCIL on 23.02.2024, on the same terms and conditions as per earlier TEC approval.
Approval of Central Electricity Authority	The TEC for the project was issued to M/s Kalai Power Private Limited by CEA on 27.03.2015. Subsequently, the project was indicated to THDCIL by MoP. The TEC was transferred to THDCIL on 23.02.2024, on the same terms and conditions as per earlier TEC approval.
Additional detail (If any)	-
Is FRA (2006) done for FC-I	Yes. FRA letter issued by Deputy Commissioner, Anjaw vide letter no. ANJ/LM/52/2011-14(Pt) dated 22.02.2024.

· **Details of the EMP**

Environmental Management Plan (EMP) is a plan that seeks to achieve a required and state and describes how activities that have or could have an adverse impact on the environment, will be mitigated, controlled, and monitored. Environmental impacts arising due to development activities are the key aspects on EIA study. An equally essential element of this process is to develop measures to eliminate, offset, or reduce adverse impacts to acceptable levels and enhance the beneficial ones during implementation and operation of the projects. The integration of the project planning has been done by clearly defining the environment requirements within an EMP. The summary of budget earmarked for various mitigation measures are tabulated as below:

Activities	Budget (Rs. lakh)
Environmental Management Plan	1148.28
Mitigation measures	30232.53
Measures outlined in Additional studies	36257.70
Environmental Monitoring Programme during construction phase	192.22
Total	**67830.73**

3.1.3. Deliberations by the committee in previous meetings

N/A

3.1.4. Deliberations by the EAC in current meetings

The EAC during deliberations noted the following:

· The Expert Appraisal Committee (EAC) deliberated on the information submitted by the Project Proponent and the details presented during the meeting. The Committee observed that the proposal pertains to the grant of Environmental Clearance for the Kalai II Hydro Electric Project (Run-of-the-River) of (1200 MW) in an area of 869.3503 Ha located at Village Kamdi, Tehsil Hawai Town, Anjaw District of Arunachal Pradesh by M/s THDC India Limited.

· The project falls under Item 1(c) of the Schedule to the Environmental Impact Assessment (EIA) Notification, 2006, and is categorized as a Category 'A' project, which requires appraisal at the Central level by the Expert Appraisal Committee (EAC).

· The Terms of Reference (ToR) for conducting EIA/EMP study and public hearing of the Kalai II HEP was granted by the MoEF&CC vide letter no. File No: J-12011/40/2009-IA-I(R), dated 07.08.2024. Further, amendment in ToR was granted by MoEF&CC vide letter no. J-12011/40/2009-IA-I(R) dated 08.07.2025 for reduction in Land requirement from 1100 ha to 869.3503 ha.

· The EAC, constituted under the provisions of the EIA Notification, 2006, and comprising expert members/domain experts from various relevant fields, examined the proposal submitted by the Project Proponent. This examination included a review of the Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) reports, which were prepared and submitted by a QCI/NABET-accredited consultant on behalf of the Project Proponent.

· The EAC noted that the Project Proponent has given an undertaking that the data and information given in the application and enclosures are true to the best of his knowledge and belief and no information has been suppressed in the EIA/EMP reports. If any part of data/information submitted is found to be false/ misleading at any stage, the project will be rejected and Environmental Clearance given, if any, will be revoked at the risk and cost of the project proponent.

· It has been noted by the EAC that earlier Ministry has granted TOR vide letter dated 09.12.2009 to Kalai Power Private Limited (KPPL) (a subsidiary of Reliance Power Limited) for a period of 04 years, which was further extended for 01 year vide letter dated, 05.02.2014. In 2015, EC for Kalai-II HEP has been approved by the competent authority and shall be issued on producing Stage-1 Forest Clearance (FC). The case of grant of FC was not followed due to which EC could not be issued in absence of Stage-1 FC.

· The EAC noted that the total land required for the project is 869.3503 Ha and the entire land required for project activities is forest land. However, proposal for diversion of 869.3503 Ha has been submitted on Parivesh Portal and it is still pending. During the meeting the EAC enquired about the status of the Stage-I forest proposal to which PP explained that proposal has been recommended by GoAP to MoEF&CC after completion of due process, it is pending for the site visit which will done in the month December, 2025. There is no national park, wildlife sanctuary, Biosphere Reserve, Tiger/Elephant Reserve, Wildlife Corridor etc. within 10 km distance from the project site.

· The EAC noted that the estimated project cost is Rs. 14,176.26 Cr. Total capital cost earmarked towards environmental management plan is Rs. 67830.73 lakhs and the Recurring cost (operation and maintenance) will be about Rs. 61.16 lakhs per annum. However, the EAC

noted that total EMP budget is 36591 Lakhs excluding activities such as Compensatory afforestation and Resettlement and rehabilitation plan.

· The committee observed that the Public Hearing for the proposed project has been conducted by the State Pollution Control Committee on 20.08.2025 at Tribal Cultural Centre, Hawai, District Anjaw. Publications of notice for public hearing were given in state/national level in the Times of India, Echo of Arunachal, The Arunachal Front (local Mishmi dialect) dated 19.07.2025. The meeting was chaired by the Deputy Commissioner, Anjaw, ensuring due diligence in addressing public concerns and regulatory compliance. The EAC discussed the concerns raised during the Public Hearing (PH) and reviewed the action plan submitted by the PP to address these issues. After detailed deliberation, the Committee found the action plan satisfactory, recognizing that the proposed mitigation measures adequately respond to stakeholders' concerns.

· The EAC was also informed that the Cumulative Impact Assessment & Carrying Capacity Study(CIA&CCS) of Lohit river basin in Arunachal Pradesh have been completed and the report has been accepted by the Ministry. PP further informed that the outcome and recommendations of CIA&CCS been dully incorporated in the EIA/EMP.

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

1.	Land acquired for the project shall be suitably compensated in accordance with the prevailing guidelines of the state government and provisions under Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013.
2.	RO plant shall be installed in the nearby 5 villages and the maintenance shall be done by the project Authorities.
3.	Solar panel be provided to the families living in rural areas within 10 km radius of project.
4.	School up to 12^{th} Standard shall be established and managed to provide free quality education for children from project affected villages/Tribal villages. Adequate transportation facilities shall also be provided to students to ensure connectivity and ease of access.
5.	Scholarship programme shall be initiated for the youths in the project affected villages.
6.	50 bed multi-specialty hospital shall be established to cater the need of tribal population/locals. The tribal population within 10 km radius of the project shall be given free of cost medical facility.
7.	Skill development Centre shall be established within 10 km radius of the project and regular training programmes for development and promotion of traditional art/products of tribal/local population. The Skill Development Plan shall mandatorily include the following components: · Capacity building and skill enhancement programs aligned with local livelihood opportunities. · Establishment of linkages with Industrial Training Institutes (ITIs) and other recognized training centres for imparting technical skills. · Provision of free or subsidized access to healthcare facilities in project-supported hospitals and health centres. · Support to educational institutions in the study area through free services, scholarships, infrastructure strengthening, and vocational guidance programs. · Special outreach initiatives for women, youth, and vulnerable groups within the SC/ST communities to ensure inclusive participation and benefits. · The Plan shall be implemented in a time-bound manner with clearly earmarked budgetary provisions, which shall not be diverted for any other purpose.
8.	The PP shall submit annual progress reports on the implementation of the Skill Development Plan and associated community welfare measures to the Regional Office of the Ministry.
9.	Bio-Gas plant shall be installed in the Project affected area for Utilizing Cattle waste (Cow Dung) into renewable source of fuel.
10.	Preference in employment opportunities and admission to ITI institutions shall be given to Project Affected Families (PAFs).
11.	An institutional mechanism to be developed to ensure the preference of jobs to PAFs and SC/ST and also a policy for preferential treatment for award of sundry works to the PAFs and SC/ST and their dependents.

12.	The compliance of above conditions shall be monitored by IRO, MoEF&CC and regularly site visit once in year. The compliance report of IRO shall be regularly submitted to MoEF&CC.
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. A muck transportation plan shall be prepared and implemented. The movement of muck carrying vehicles shall be monitored through latest sensor-based technology to ensure the muck dumping at designated sites.
2.	Stabilization of muck disposal sites using biological and engineering measures shall be taken up immediately to ensure that muck does not roll down the slopes and does not pollute the natural streams and water bodies in surrounding area. The plantation on muck disposal site with local species for restoration of ecology and environment of the project site area.
3.	Necessary control measures such as water sprinkling arrangements, and construction of paved roads leading to muck disposal sites etc. shall be taken up on priority to arrest fugitive dust at all the construction sites.
4.	Solid waste generated, especially plastic waste, etc. should not be disposed of as landfill material. It should be treated with scientific approach and recycled. Use of single-use plastics may be discouraged.
5.	Landslide and other heavy rain related disasters shall be taken care of through appropriate preventive measures during construction and operation of project.
Environmental management and Biodiversity conservation:	
1.	Stage-I FC shall be obtained before grant of EC.
2.	Wildlife Conservation plan duly approved by the CWLW shall be implemented in time bound manner.
3.	Changes carried out in the project specifically technical aspects shall be discussed/informed with CEA and necessary clearance/noc shall be obtained.
4.	Necessary clearance shall be obtained from Brahmaputra Board before commencement of construction of the project.
5.	PP shall obtain separate EC for quarrying in the project area.
6.	On-line monitoring system for the e-flow releases to be installed.
7.	The plastic waste shall be disposed of by recycling and not by land filling.
8.	Local indigenous varieties of plants to be grown and maintained till their full growth including gap filling.
9.	Skill mapping be undertaken for the youths of the affected project area and based on the skill mapping, the trainings to the youths be incorporated for their appropriate engagements

	in the Project.
10.	Land acquired for the project shall be suitably compensated with the prevailing guidelines and all commitments made during the Public Hearing shall be fulfilled.
11.	The project-affected population should be resettled and rehabilitated as per the latest R & R Policy.
12.	Six monthly compliance reports shall be submitted by the PP to Regional Office, MoEF& CC, Shillong without fail.
13.	The outcome and recommendations of Lohit River Basin Study will have to be fully abided by the project proponent.
14.	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.
15.	The contract clause limiting the No. of vehicles used during excavation and transportation shall followed scrupulously and the same shall informed to the ministry.
16.	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.
17.	No vehicle purchase shall be allowed from funds earmarked for implementation of Wildlife Conservation plan.
18.	The Project Proponent shall explore the possibility to undertake tree transplantation, wherever feasible, in consultation with the State Forest Department. Survival of at least 80% of transplanted trees shall be ensured, with monitoring for a minimum period of five years.
19.	Plantation of saplings (10,000 nos.) shall be carried out around the muck disposal area in consultation with Forest Department as a part of the tree plantation campaign "Ek Ped Ma Ke Naam" and the details of the same shall be uploaded in the MeriLiFE Portal (https://merilife.nic.in). The survival of plants shall be reported in the 6 monthly compliance report.
20.	PP shall prepare time bound reclamation and restoration plan for restoration of batching plant in consultation with the Forest Department and same shall be submitted to IRO, MoEF&CC and shall be fully implemented within five years of commissioning of the project.

3.1.6.2. Standard

1(c)	**River Valley/Irrigation projects**
Statutory compliance	

1.	The project proponent shall obtain forest clearance under the provisions of Forest (Conservation) Act, 1986, in case of the diversion of forest land for non-forest purpose involved in the project.
2.	The project proponent shall obtain clearance from the National Board for Wildlife, if applicable.
3.	The project proponent shall prepare a Site-Specific Conservation Plan & Wildlife Management Plan and approved by the Chief Wildlife Warden. The recommendations of the approved Site-Specific Conservation Plan / Wildlife Management Plan shall be implemented in consultation with the State Forest Department. The implementation report shall be furnished along with the six-monthly compliance report. (in case of the presence of Schedule-I species in the study area).
4.	The project proponent shall obtain Consent to Establish / Operate under the provisions of Air (Prevention & Control of Pollution) Act, 1981 and the Water (Prevention & Control of Pollution) Act, 1974 from the concerned State Pollution Control Board/ Committee.
5.	NOC shall be obtained from National Commission of Seismic Design Parameters (NCSDS) of CWC.
6.	Necessary approval of CEA shall be obtained for those projects having the project cost more than Rs. 1,000 crores.
Air quality monitoring and preservation	
1.	Regular monitoring of various environmental parameters viz., Water Quality, Ambient Air Quality and Noise levels as per the CPCB guidelines at designated locations shall be carried out on monthly basis and a detailed database of the same shall be prepared and recorded. This shall be used as a baseline data for post construction EIA / Monitoring purposes.
2.	Appropriate Air Pollution Control (APC) system shall be provided for all the dust generating points including fugitive dust from all vulnerable sources, so as to comply prescribed standards.
3.	Necessary control measures such as water sprinkling arrangements, etc. bet taken up to arrest fugitive dust at all the construction sites.
4.	Conjunctive use of surface water to be planned in the project to check water logging as well as to increase crops productivity. The field drains shall be connected with natural drainage system (if applicable).
5.	Remodelling of existing natural drains (link drains) and connecting them with irrigated land through constructed field drains, collector drains, etc. are to be ensured on priority basis (if applicable).
6.	Before impounding of the water, Cofferdams for both at the upstream and downstream are to be decommissioned as per EIA/EMP report so that once the project is commissioned; cofferdam should not create any adverse impact on water environment including the rock mass and muck used for the Cofferdam.
7.	As the reservoir will be acting as balancing reservoir and there would be fluctuation of water level during peaking period, efforts be made to reduce impact on aquatic life including impacts during spawning period both at the upstream and downstream of the project.
8.	Water depth sensors shall be installed at suitable locations to monitor e-flow. Hourly data to be collected and converted to discharge data. The Gauge and Discharge data in the form of Excel Sheet be submitted to the Regional Office, MoEF & CC and to the CWC on weekly basis.
9.	Mixed irrigation shall be practised and necessary awareness be given to all the farmers and trained in the

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

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

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

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

3.2. Agenda Item No 2:

3.2.1. Details of the proposal

Dulhasti Stage-II Hydro Electric Project by **NHPC LIMITED** located at **KISHTWAR,JAMMU AND KASHMIR**			
Proposal For		Fresh EC	
Proposal No	**File No**	**Submission Date**	**Activity Sub-Activity (Schedule Item)**
IA/JK/RIV/555087/2025	J-12011/10/2021-IA.I (R)	27/11/2025	River Valley/Irrigation projects RVHEPs without Pump Storage Projects (1(c))

3.2.2. Project Salient Features

The proposal is for grant of Environmental Clearance (EC) to the project for Dulhasti Stage-II

Hydro Electric Project (Run-of-the-River) of (260 MW) in an area of 60.3 Ha located at Village Hariyal, Pakalan, Poochal, Seergwar etc, Subdistrict and District Kishtwar, Jammu & Kashmir by M/s NHPC limited.

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

i. The proposed Dulhasti Stage-II HE Project (260 MW) is the extension of 390 MW operational Dulhasti Stage-I HEP (Dulhasti Power Station). Dulhasti Stage-I Hydro Electric Project is a runof-river scheme, which was commissioned in 2007 by NHPC Ltd. and has been operating successfully since then.

ii. As per provision kept in DPR of Dulhasti HE Project, Stage-I, an identical Stage-II extension of the project was contemplated by adding 2 x 130 MW capacity after construction of 1000 MW Pakal Dul Hydro Electric Project on Marusudar river, a right bank tributary of the Chenab River, by diverting its water through Pakal Dul Powerhouse on right bank of Chenab River with design discharge of 277.0 cumec in reservoir of Dulhasti Power Station.

iii. The Dulhasti Stage-II HEP utilize existing structures like Dam, reservoir, Power intake structure of Dulhasti Power Station. Therefore, the proposed Dulhasti Stage-II HEP envisaged the construction of 3685 m long HRT with 8.50 m diameter, surge shaft, pressure shaft, an underground powerhouse complex and one 8.5 m dia. horseshoe shaped, 215 m long TRT.

iv. NHPC Limited signed a Memorandum of Understanding (MOU) with Govt. of Union Territory (UT) of Jammu and Kashmir (J&K) on January 03, 2021, for execution of Dulhasti Stage-II Hydro Electric Project (260 MW) on Build-own-Operate-Transfer (BOOT) basis for a period of 40 years on the River Chenab, in Kishtwar Tehsil of Kishtwar district in UT of J&K.

v. Scoping clearance for issuance of Terms of Reference (TOR) for proposed Dulhasti Stage-II HEP from MoEF&CC, Government of India under EIA Notification 2006 was sought vide Proposal No. IA/JK/RIV/214210/2021; F. No. J-12011/10/2021-IA-I (R) which was discussed by sectoral Expert Appraisal Committee (EAC) for river valley and hydro-electric projects in its 13th meeting held on 16th and 17th June, 2021 and TOR was recommended and letter was issued by MoEF&CC on 16th July 2021.

vi. Dulhasti Power Station is a run-of-the river with pondage scheme. The existing reservoir of Dulhasti Power Station have gross storage of 10.62 million cum with live storage of 9.15 million cum at FRL. For energy generation of 260 MW, a separate 3685 m long HRT of size 8.5m dia. Horseshoe shaped in left bank is proposed to be constructed for Dulhasti Stage-II HEP along with surge shaft, pressure shaft, underground power house with 2 units of 130 MW each having total installed capacity of 260 MW and annual Energy generation.

ix. Land requirement:

Non-forest Land : 19.37 ha (8.27 ha is private land 11.10 ha belongs to NHPC Dulhasti Power Station)

The workers coming under the main and marginal workers category are those involved in activities such as cultivation, agriculture, livestock, fishing, plantation, manufacturing, servicing, and repair in the household industry, construction, trade and commerce, transportation, and other services.

· According to the 2011 census total population of workers in the study area was 32310

(32.95%)

· Main and marginal workers were 17782 (55.03%) and 14528 (44.96%) respectively.

Basic Amenities and Available Infrastructure in the Study Area

EDUCATION		
Educational Institutions	**Type of Institute**	**No. of Villages/Towns**
	Primary School	34
	Middle School	29
	High School	16
	Higher Secondary School	06
	College	03
HEALTH		
Health Facilities	Community Health Centre	01
	Primary Health Sub-centre	09
	Primary Health Centre	06
	Veterinary Hospital	06
	Hospital (Allopathic & Others)	01 (Kishtwar Town)
	ASHA	36
WATER		
	Means of Drinking Water	**No. of Villages/Towns**
Drinking-Water	Tap Water	33
	Well (Covered/Un-covered)	02
	Hand Pump	07
	Tube wells/Borehole	No
	Spring	27
	River/Canal	18

	Tank/Pond/lake	04
ELECTRICITY		
Power Supply	Power for Domestic Uses	37
	Power Supply for Agriculture Uses	37
ROAD		
Approach Road	Village Internal Pucca Road (cc/brick road)	16
	Gravel (Mud/Kuccha) Road	20
	Footpath Road	36
BANKING & FINANCE		
Banking Institutions	Post/Sub post office	10
	Commercial Bank & Co-operative Bank	07
	Agricultural Credit Society	01
	Self-Help Groups	No

xi. **Project Cost:** The estimated project cost is Rs 3277.45 crore. Total capital cost earmarked towards Environment Management Plan/environmental pollution control measures is Rs. 4564.57 lakh and the Recurring cost (operation and maintenance) will be about Rs. 1146.41 lakh about i.e. Rs 286.60 lakh per annum.

xii. **Project Benefit:** Total Employment will be 500 persons as direct & persons indirect after expansion. Industry proposes to allocate Rs. 750.0 Lakh towards CER (as per Ministry's OM dated 30th Sep 2020).

xiii. **Environmental Sensitive area:** All the proposed project components of Dulhasti Stage-II HEP are well outside the boundary of the National Park as well from the Eco Sensitive Zone of Kishtwar High Altitude National Park. The nearest project component is about 9.8 km from the Eco Sensitive Zone boundary of the National Park.

The private land identified for the project falls in two villages namely Benzwar (Revenue Village Pochal) and Palmar of Kishtwar District. The private land identified for projects belongs to 62 nuclear families – 26 from Benzwar and 36 from Palmar. One pucca house and 5 cowsheds have been identified from the land coming under acquistion as per information provided by Patwari.

The present R&R plan has been prepared for the purpose of EIA study only. The plan is prepared based on the data related to private land and affected families; as provided by the project proponent and verified during field visits. The plan addresses the compensation package as per the provisions of RFCTLARR 2013 and The Jammu and Kashmir Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (Social Impact Assessment and Consent) Rules, 2023.

The financial requirement for implementation of the Rehabilitation and Resettlement plan and Economic Development Package is **Rs. 13007.83 lakh**.

The Dul dam and spillways are common for Stage-I & Stage-II. And the intake structure for Stage-II has already been constructed alongside Stage-I intake structure as such no changes in the existing intake structure is contemplated at this stage. Therefore, in order to find out the best optimal layout of the Stage-II Project, four alternative locations of powerhouse have been considered in this study and are as follows:

Alternative-1: The dam site is at Dul and powerhouse site is alongside the existing power house of Dulhasti Stage-I i.e at Hasti. The proposed HRT is aligned parallel to the existing HRT of Dulhasti Power Station on the left side of Kishtwar fault.

Alternative-2: The dam site is at Dul and powerhouse site is at Banjwar (approximately 12km upstream of Power house of Stage -1).

Alternative-3: The dam site is at Dul and powerhouse site is alongside the existing power house of Dulhasti Stage-I i.e at Hasti. The proposed HRT as envisaged in Alternative-2 has been extended on the right side of Kishtwar fault to existing powerhouse at Hasti.

Alternative-4: The dam site is at Dul and powerhouse about 150m (approx.) downstream of Dul dam axis (dam to toe). The proposed TRT outlet is about 1200m (approx.) downstream of Dul dam axis.

xviii. Baseline Environmental Scenario:

Period

From January 2022 to October-November 2025

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

Unit in mg/m^3

Core	Min	Max	Standards
$PM_{2.5}$	13.60	28.80	60
PM_{10}	27.80	55.00	100
SO_2	4.80	12.60	80
NO_2	5.50	14.70	80
Buffer	**Min**	**Max**	
$PM_{2.5}$	21.60	46.50	60
PM_{10}	41.40	89.40	100
SO_2	6.70	13.70	80
NO_2	8.30	19.70	80

Incremental GLC Level

Criteria Pollutant [PM_{10}, $PM_{2.5}$, SO_2, NO_x, Other parameters specific to the sector (Please specify)]	Unit [mg/m^3]	Baseline Concentration [A]	Predicted incremental value considering worst case stability class [B]	Total GLC [A]+[B]	
PM10	mg/m^3	49.0	12.25	61.25	

PM2.5	mg/m3	27.5	6.875	34.375	
SOx	mg/m3	11.7	14.04	25.74	
NOx	mg/m3	13.3	15.96	29.26	

River water samples (06 samples)

	Core Zone			
S. No	**Parameters**	**Min**	**Max**	**Standards**
1	pH	6.42	7.87	8.5
2	Total Dissolved Solids, mg/L	64	111	0
3	Dissolved Oxygen (mg/l)	7.9	10.2	6
4	Chloride (as Cl), mg/L	6.2	11.1	0
5	Total Hardness (as CaCO3), mg/L	35.17	48.3	0
6	Biological Oxygen Demand (mg/l)	0	0	2
7	Chemical Oxygen Demand (mg/l)	0	0	0
8	Total Coliform (MPN/100 ml)	0	0	50

Buffer Zone

S. No	Parameters	Min	Max	Standards
1	pH	6.4	7.5	8.5
2	Total Dissolved Solids, mg/L	73.33	127	0
3	Dissolved Oxygen (mg/l)	7.8	10.1	6
4	Chloride (as Cl), mg/L	6.2	12.1	0
5	Total Hardness (as CaCO3), mg/L	21.17	49.9	0
6	Biological Oxygen Demand (mg/l)	0	0	2
7	Chemical Oxygen Demand (mg/l)	0	0	0
8	Total Coliform (MPN/100 ml)	0	0	50

-

Ground water samples quality at 3 location

Core Zone

S. No.	Parameters	Min	Max	Prescribed Limits	
1	pH	7.1	7.8	6.5	8.5
2	Total Dissolved Solids (mg/l)	110.5	254.15	500	2000
3	Chloride (as Cl) (mg/l)	10	18	250	1000
4	Total Hardness (as $CaCO_3$) (mg/l)	86.5	202.2	200	600
5	Fluoride (mg/l)	0.4	0.71	1.0	1.5

Buffer Zone

S. No.	Parameters	Min	Max	Prescribed Limits	
1	pH	7.1	7.8	6.5	8.5
2	Total Dissolved Solids (mg/l)	110.5	254.15	500	2000
3	Chloride (as Cl) (mg/l)	10	18	250	1000
4	Total Hardness (as $CaCO_3$) (mg/l)	86.5	202.2	200	600
5	Fluoride (mg/l)	0.4	0.71	1.0	1.5

Nois

Noise Level	Zone	Leq Day dB(A)	Leq Night dB(A)	Prescribed Limits

e le vels Leq (Da y & Nig ht) at 0 6 loca tion s							
		From	To	From	To	Day	Night
Core	Residential	47.9	60.3	37.7	44.3	55	45
Buffer	Commercial	50	65.9	34.8	51.5	65	55

Core Zone

S. No.	Parameters	Min	Max	Prescribed Limits
1	Calcium (mg/kg)	120	440	500
2	Magnesium (mg/kg)	22	233	500
3	Nitrogen (kg/ha)	320	470	500
4	Phosphorus (kg/ha)	21.1	33.2	50
5	Potassium (kg/ha)	172	310	500
6	Carbon (%)	0.45	0.9	1
7	Sodium Absorption Ratio	2.9	5.9	10
8	Salinity (ppt)	0	0	0.01
Buffer Zone				
1	Calcium (mg/kg)	280	441	500
2	Magnesium (mg/kg)	59	158	500
3	Nitrogen (kg/ha)	320	512	500
4	Phosphorus (kg/ha)	12.3	24.3	50
5	Potassium (kg/ha)	134	220	500
6	Carbon (%)	0.39	0.66	1
7	Sodium Absorption Ratio	2.9	5.6	10
8	Salinity (ppt)	0	0	0.01

Schedule-I species observed in the study area:
Among herpetofauna Russell's Viper (*Daboia russelii) and* Bengal Monitor (*Varanus bengalensis)* are the species under Schedule-I of WPA 2022.

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

xx. Public Hearing for the proposed project has been conducted by the State Pollution Control Committee on 22.08.2025, The main issues raised and replies by the user agency during the public hearing are;

S. No.	Concern / Demand Raised	Response from Project Proponent (NHPC Ltd.)
1	Enquired about exact extent of private land acquisition and whether compensation will be given before commencement of the project.	Total land required: 60.3 ha 40.93 ha Govt. land, 8.27 ha private land, 11.10 ha NHPC Dulhasti Power Station (Village Dul).

		Compensation will be finalized by District Administration (Kishtwar) under RFCTLARR Act, 2013 and J&K Rules, 2023.
2	Demanded that one member from each project-affected family (PAF) and adjoining Panchayats be provided employment.	During construction, a large number of skilled and unskilled workers will be engaged as per requirements. Employment preference will be given to PAFs based on skills and eligibility.
3	Requested timely and appropriate compensation for private landowners whose land will be acquired.	Compensation will be finalized by District Administration (Kishtwar) under RFCTLARR Act, 2013 and J&K Rules, 2023.
4	Enquired about mitigation plans for environmental impacts (air pollution, water pollution, dust, waste generation).	Pollution control measures are included in EMP with financial provision of ₹60.0 lakh. Regular Environmental monitoring of air, water, and noise will be done during construction with a budget of ₹46.60 lakh.
5	Demanded water supply schemes for project-affected villages.	Provision for water supply schemes has been kept under CER Plan and will be initiated once project construction starts.
6	Demanded road connectivity of affected villages with the main road; highlighted hardship faced by students due to poor road access despite proximity (7 km) to district HQ.	Maintenance and improvement of road connectivity will be initiated under CER Plan with project construction activities.
7	Requested hospital facilities in project-affected areas and bus service for students.	Basic facilities like school bus services, water supply schemes, and road maintenance will be taken up during project construction phase.
8	Demanded organization of medical camps (4 times a year) for adjoining villages.	Provision for medical camps has been made under the Public Health Delivery System of the Environmental Management Plan (EMP). Additionally, to strengthen medical facilities in the area, provision has also been kept under the Corporate Environment Responsibility (CER) Plan,

		which will be implemented as per the directions of the District Administration (Kishtwar).
9	Raised concern about worker safety during project construction.	Worker safety will be ensured as per Labour Management Plan with a financial provision of ₹62.0 lakh.
10	Expressed concern about impacts on livestock and loss of grazing land, and asked about alternatives.	After consultation with Concerned Forest Divisions provision of development of pasture/ grazing land has been included under CAT Plan & Biodiversity Conservation Plan.
11	Demanded widening of village approach road and installation of crash barriers along the road.	Road widening and crash barrier installation will be covered under the budget allocated for Corporate Environment Responsibility (CER).
12	Requested free education facilities up to graduation level for residents of project-affected villages.	NHPC Ltd. is already providing quality education through Kendriya Vidyalaya under its aegis. The organization is committed to strengthening and improving education facilities for children of project-affected families and nearby areas.

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

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

· **Project details:**

Name of the Proposal	Dulhasti Stage-II Hydroelectric Project (260 MW)
Proposal No.	IA/JK/RIV/555087/2025
Location (Including Coordinates)	Kishtwar tehsil of Kishtwar district in Union Territory of Jammu & Kashmir Latitude - $33^0$22' North & Longitude - $75^0$40' East
Company's Name	NHPC Ltd.
CIN no. of Company/user agency	L40101HR1975GOI032564
Accredited Consultant and certificate no.	NABET/EIA/25-28/RA 0415
Project location (Coordinates /River/ Reservoir)	Dam - Near village Dul 450m D/S of confluence ofAmni Nallah with Chenab

	Power House - Located underground on the left bank of Chenab River near Benzwar village
Inter- state issue involved	No
Proposed on River/ Reservoir	Chenab River
Type of Hydro-electric project	Run-of-river
Seismic zone	IV

· **Category details:**

Category of the project	A
Capacity / Cultural command area (CCA)	260 MW
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	-

· **ToR/EC Details:**

ToR Proposal No.	IA/JK/RIV/214210/2021
EAC meeting date	05.06.2021
ToR Letter No.	J-12011/10/2021-IA.I (R)
ToR grant Date	16.07.2021
Cost of project	3277.45 Cr
Total area of Project	60.30 Ha
Height of Dam from River Bed (EL)	65.0 m (above deepest foundation level) (Existing)
Details of submergence area	-
District to provide irrigation facility (if applicable)	NA
Details of tunnels on upper level & lower level and length of canal (if applicable)	
No. of affected Village	2

No. of Affected Families	62
Project Benefits	**Power Generation**: Dulhasti Stage II HEP is likely to generate 1093.11 MU in a 90% dependable year **Environmental**: · Soil Conservation · Biodiversity Conservation · Conservation of Riverine Ecology · Green Energy (The project would replace the carbon emissions to the extent of power generation, which is equivalent to the estimated energy generation of 1093.11 MU in 90% dependable year.) **Social:** · Job Opportunities · Business Development · Infrastructure Development · Implementation of local area development activities under CER
R&R details	The total land requirement for the Dulhasti Stage-II HEP is estimated to be 60.3 ha. Of this, 8.27 ha is private land. The private land identified for the project falls in two villages namely Benzwar (Revenue Village Pochal) and Palmar of Kishtwar District. The private land identified for projects belongs to 62 nuclear families – 26 from Benzwar and 36 from Palmar. One pucca house and 5 cowsheds have been identified from the land coming under acquistion as per information provided by Patwari. The present R&R plan has been prepared for the purpose of EIA study only. The plan is prepared based on the data related to private land and affected families; as provided by the project proponent and verified during field visits. The plan addresses the compensation package as per the provisions of RFCTLARR 2013 and The Jammu and Kashmir Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (Social Impact Assessment and Consent) Rules, 2023. The estimated cost for the implementation of the Rehabilitation and Resettlement (R&R) Plan is Rs. 13,007.83. The actual budget prepared by the government will be adopted by the project proponent

	for implementing R&R Plan..
Catchment area/ Command area	Free-draining catchment between the diversion sites of the upstream Kwar HEP and Dulhasti Stage-II HEP: 119.86 km^2
Types of Waste and quantity of generation during construction/Operation	Municipal Solid Waste- Bio degradable (109.50 Tons), Non degradable (112.0 Tons)
Material used for blasting and its composition as per DGMS standards.	New Explosive magazines to be developed at Power House area, Benzwar for development of Dulhasti Stage-II H.E. Project, and it will be in scope of work of concerned Contractor. Benzwar is around 12 Km away from Chenab complex at Kishtwar. It is sufficiently away from the human habitat and working areas as per the explosive and other relevant laws of Indian Explosive Act and rules.
E-Flows for the Project	For Dulhasti stage-II HE Project, no separate dam is envisaged. The existing dam on Dulhasti (St-I) will be common for both the projects. However, in view of recent NGT order, provision of e-flow as 15% of average of inflow in the lean season, needs to be made in dam of existing power plant. Accordingly, 15% of average of all the water series in the lean season i.e., during Dec to March, of Chenab River has been calculated as e-flow which is calculated as 11.32 cumec. As such, provision of downstream discharge of 11.32 cumec as e-flow, has been kept from the dam of Dulhasti- I Power Station.
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.	No As per Scoping clearance issued by MoEF&CC release of 11.32 cumec discharge is recommended for E-flow. The existing dam on Dulhasti (St-I) will be common for both the projects. However, in view of recent NGT order, provision of e-flow as 15% of average of inflow in the lean season, needs to be made in dam of existing power plant. Accordingly, 15% of average of all the water series in the lean season i.e., during Dec to March, of Chenab River has been calculated as e-flow which is calculated as 11.32 cumec. To maintain this discharge continuously, one spillway gate remains partially opened at all times.
Details on provision of fish pass	No; proposed Dulhasti Stage-II HEP (Dulhasti Pow

	er Station) utilizes existing operational dam of Dul hasti Power Station (Dulhasti Stage-I HE Project).
Project benefit including employment d etails (no of employee)	About 500 workers (labour and staff) would be en gaged temporarily during the peak construction pe riod. It is expected that 20% of the total workforce shall be available from the UT of Jammu & Kashmi r. After completion of the project only a staff of ab out 120 persons shall be permanently required for the operation of the project.
Area of Compensatory Afforestation (C A) with tentative no of plantation.	Since, there is no requirement of any forest land di version for construction of project components, th erefore the preparation of Compensatory Afforest ation Plan is not applicable in the present case.
Previous EC details	The proposed Dulhasti Stage-II HE Project (260 M W) is the extension of 390 MW operational Dulhas ti Stage-I HEP (Dulhasti Power Station). Dulhasti S tage-I Hydro Electric Project is a runof-river scheme, which was commissioned in 2007 by NHPC Ltd. and has been operating successfully sin ce then. **Environmental Clearance for Dulhasti S tage-I HEP (390 MW) was accorded by Departm ent of Science and Technology (DST), Govt. of I ndia, in favour of Central Electricity Authority (CEA) on 01.01.1979.**
EC Compliance Report by R.O, MOEF& CC	Certified Compliance Report is enclosed as **Appen dix-I**

· **Electricity generation capacity:**

Powerhouse Installed Capacity	260 MW
Generation of Electricity Annually	1093.11 MWH
No. of Units	2 nos. (2 X 130 MW)

· **Muck Management Details:**

No. of proposed disposal area/ (t ype of land- Forest/Pvt land)	2 (Non-forest land)
Cross section of proposed muck area, Height of muck with slope.	Attached
Distance of muck disposal area (loc	About 500 m more than 30 m from HFL.

ation), from muck generation sources (project area)/River, HFL of proposed muck disposal area.	
Total Muck Disposal Area	11.20 ha
Estimate Muck to be generated	1440000 Cum
Transportation	Both pre identified muck disposal sites are adjacent to proposed construction sites (500m & 2000m). The generated muck will be carried in dumper trucks covered with heavy duty tarpaulin properly tied to the vehicle. All dumpers will be well maintained to avoid any chances of loose soil from being falling during transportation. All routes will be periodically wetted with the help of sprinklers prior to the movement of dumper trucks. Dumping would be avoided during the high-speed wind, so that suspended particulate matters (SPM) level could be maintained. Further, dumping will be avoided during heavy traffic. After the dumping the surface of dumps will be sprayed with water with the help of sprinklers and then compacted.
Monitoring mechanism for Muck Disposal Transportation	The provisions of Monitoring have been kept under proposed Environmental Monitoring Plan.

· **Land Area Breakup:**

Private Land	19.37 ha (11.10 ha already in NHPC possession)
Government Land	40.93
Forest Land	-
Total Land	60.30
Submergence area/Reservoir area	None
Land required for project components	60.30

· **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/ Pr	No	All the proposed project components of Dulhasti Stage-II HEP are well outside the boundary o

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

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

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

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

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

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

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

Forest Land/ Protected Area/ Environmental Sensitivity Zone	**Yes/ No**	**Details of Certificate/ letter/Remarks**
es etc.		
Additio	-	

Forest Land/ Protected Area/ Environmental Sensitivity Zone	**Yes/ No**	**Details of Certificate/ letter/Remarks**
nal info rmat io n		

Forest Land/ Protected Area/ Environmental Sensitivity Zone	**Yes/ No**	**Details of Certificate/ letter/Remarks**
(if any)		

· **Availability of Schedule-I species in study area:** Yes, As per Wildlife Protection Amendment Act, 2022, Common Leopard (*Panthera pardus*), Leopard Cat (*Prionailurus bengalensis*), Jungle Cat (*Felis chaus*), Indian Grey mongoose (*Herpestes edwardsii*), Small Indian mongoose (*Herpestes auropunctatus*), Golden Jackal (*Canis aureus*), Red Fox (*Vulpes vulpes*), Bengal Fox (*Vulpes bengalensis*), Asiatic Black Bear (*Ursus thibetanus*), Yellow-

throated marten (*Martes flavigula*), Himalayan Serow (*Capricornis sumatraensis*), Himalayan Goral (*Naemorhedus goral*), Wild Boar (*Sus scrofa*), and Indian Crested Porcupine (*Hystrix indica*) are the mammalian species.

Among herpetofauna Russell's Viper (*Daboia russelii) and* Bengal Monitor (*Varanus bengalensis)* are the species under Schedule-I of WPA 2022.

· **Public Hearing (PH) Details**

Advertisement for PH with date	State level newspaper "Daily Excelsior" and "Dai nk Jagean" dated 20.07.2025
Date of PH	22.08.2025
Venue	Village Banzwar, (Proposed Site for Powerhous e), District Kishtwar, Union Territory of Jammu & Kashmir
Chaired by	Additional Deputy Commissioner, District Kisht war
Main issues raised during PH	· Provision of Employment of local Youth · Provision of Medical Facilities · Financial assistance for strengthening of basic i nfrastructure in the area · Appropriate compensation for private landowne rs
No. of people attended	173

· **Brief of base line Environment:**

Particulars	**Details**
Period of baseline dat a collection/Sampling period. (Air, noise, water, land) flora and fauna of the p roject area, aquatic ecology, etc.	

Parameters	**Post-mo nsoon**	**Pre-Mo nsoon**	**Monso on**	**Post-Monsoon**
Soil	January 2 022	May 20 22	July 20 22	October-Nove mber 2025
Air Environm ent	January 2 022	May 20 22	July 20 22	October-Nove mber 2025
Noise & Tra ffic	January 2 022	May 20 22	July 20 22	October-Nove mber 2025
Water Quali ty	January 2 022	May 20 22	July 20 22	October-Nove mber 2025
Vegetation a nd Faunal su rvey	January 2 022	May 20 22	July 20 22	October-Nove mber 2025
Fauna surve ys	January 2 022	May 20 22	July 20 22	
Socio-econo	September-October 2022			

Particulars	Details
	<table><tr><th>Parameters</th><th>Post-monsoon</th><th>Pre-Monsoon</th><th>Monsoon</th><th>Post-Monsoon</th></tr><tr><td>mic survey of Project affected villages</td><td></td><td></td><td></td><td></td></tr></table>
Brief description on hydrology and water assessment as per the approved Pre-DPR:	CWC vide File No.T-11025/3/2021-HYD(N) DTE dated 15.03.2021 approved water availability series for the period 1975-76 to 2019-20 at Dul dam. The Benzwar discharge series (1975 to Jul 2003) has been transferred to Dul dam using catchment area proportion (direct) with proportion factor of 0.9825 (10500/10687). Discharge data from August 2003 to May-2020 has been taken as observed at Dul dam G&D site and Dul dam. The average annual runoff based on the long-term data base (Jun-1975 to May-2020) is 13242 MCM.

· **Court case details: Nil**

· **Status of other statutory clearances**

Particulars	Letter no. and date
Status of Stage- I FC	Not Applicable
Approval of Central Water Commission	CWC Hydrology (N) Directorate vide their file no. T-11025/3//2021-HYD(N) DTE, dated 22-01-2021.
Approval of Central Electricity Authority	CEA Letter no. File No.CEA-HY-12-20/2/2021-HPA Division dated 18.05.2021.
Additional detail (If any)	
Is FRA (2006) done for FC-I	Not Applicable

· **Details of the EMP**

S. No.	EMP COMPONENTS	Capital Cost (Rs. In lakh)	Recurring Cost (Rs. in lakh)			
			Year 1	Year 2	Year 3	Year 4
1	Catchment Area Treatment Plan	1171.92	0.00	0.00	0.00	0.00
2	Biodiversity Conservation & Wildlife Conservation Plan	1206.00	0.00	0.00	0.00	0.00
3	Fisheries Development Plan	15.00	13.25	13.25	13.25	13.25

S. No.	EMP COMPONENTS	Capital Cost (Rs. In lakh)	Recurring Cost (Rs. in lakh)			
			Year 1	Year 2	Year 3	Year 4
4	Muck Dumping and Management Plan	985.65	63.38	113.48	48.28	19.58
5	Landscaping, Restoration of Construction Sites	0.00	70.10	70.10	70.10	95.10
6	Reservoir Rim Treatment*	0.00	0.00	0.00	0.00	0.00
7	Green Belt Development Plan	3.00	15.25	25.50	20.50	8.24
8	Sanitation and Solid Waste Management Plan	130.00	21.30	21.30	21.30	21.30
9	Public Health Delivery System	70.00	25.00	25.00	25.00	25.00
10	Energy Conservation Measures	48.00	32.50	32.50	32.50	32.50
11	Labour Management Plan	35.00	6.75	6.75	6.75	6.75
12	Disaster Management Plan	150.00	6.25	6.25	6.25	6.25
13	Pollution Control and Mitigation Measures	0.00	15.00	15.00	15.00	15.00
14	Environmental Monitoring Program	0.00	11.65	11.65	11.65	11.65
15	Local Area Development Plan (CER)	750.00	0.00	0.00	0.00	0.00
		4564.57	**280.43**	**340.78**	**270.58**	**254.61**

** Reservoir Rim Management Plan is already implemented by Dulhasti Stage-I Power Station.*

Additionally, the estimated cost for the implementation of the Rehabilitation and Resettlement (R&R) Plan is Rs. 13,007.83. The actual budget prepared by the government will be adopted by the project proponent for implementing R&R Plan.

3.2.3. Deliberations by the committee in previous meetings

N/A

3.2.4. Deliberations by the EAC in current meetings

The EAC during deliberations noted the following:

· The Expert Appraisal Committee (EAC) deliberated on the information submitted by the Project Proponent and the details presented during the meeting. The Committee observed that the

proposal pertains to the grant of Environmental Clearance for the Dulhasti Stage-II Hydro Electric Project (Run-of-the-River) of (260 MW) in an area of 60.3 Ha located at Village Hariyal, Pakalan, Poochal, Seergwar etc, Subdistrict and District Kishtwar, Jammu & Kashmir by M/s NHPC limited.

· The project falls under Item 1(c) of the Schedule to the Environmental Impact Assessment (EIA) Notification, 2006, and is categorized as a Category 'A' project, which requires appraisal at the Central level by the Expert Appraisal Committee (EAC).

· The Terms of Reference (ToR) for conducting EIA/EMP study and public hearing of the Dulhasti Stage-II HEP was granted by the MoEF&CC vide letter no. F. No. J-12011/10/2021-IA-I (R) dated 16th July 2021.

· The EAC, constituted under the provisions of the EIA Notification, 2006, and comprising expert members/domain experts from various relevant fields, examined the proposal submitted by the Project Proponent. This examination included a review of the Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) reports, which were prepared and submitted by a QCI/NABET-accredited consultant on behalf of the Project Proponent.

· The EAC noted that the Project Proponent has given an undertaking that the data and information given in the application and enclosures are true to the best of his knowledge and belief and no information has been suppressed in the EIA/EMP reports. If any part of data/information submitted is found to be false/ misleading at any stage, the project will be rejected and Environmental Clearance given, if any, will be revoked at the risk and cost of the project proponent.

· It has been noted by the EAC that Environmental Clearance for Dulhasti Stage-I HEP (390 MW) was accorded by Department of Science and Technology (DST), Govt. of India, in favour of Central Electricity Authority (CEA) on 01.01.1979. Forest Clearance for diversion of 1.1 ha forest land was accorded by Ministry of Environment & Forest on 15.01.1986. Stage I was commissioned in 2007 by NHPC Ltd. which involved 65 m high dam (from deepest foundation level), 7874.0 m long HRT, an underground powerhouse 390 MW installed capacity, & 298 m long Tail Race Tunnel (TRT).

· The EAC further noted that the Dulhasti HEP was planned to be developed in two stages - Stage I commissioned in 2007 and Stage II is the present project. During the meeting, PP informed that Stage II was planned in sync with construction of Pakal Dul HEP (1000 MW), an under construction project of CVPPL on Marusudar river, a right bank tributary of Chenab river. Pakal Dul is designed to divert water of Marusudar river to Chenab river on right bank, upstream of Dul Hasti dam. Dulhasti Stage-II, is designed based on additional water, which will be available from Pakal Dul during operation.

· It was also noted that the Dulhasti Stage-II HEP is planned to utilise surplus water to be diverted from the Marusudar River through the Pakal-Dul Powerhouse into the Dulhasti reservoir. Downstream of diversion of Pakal Dul HEP, about 25 Km stretch of Marusudar river, will undergo significant hydrological alteration upon commissioning of the Pakal Dul Hydroelectric Project. A structured River Conservation Strategy covering aspects related to scientifically robust environmental flow regimes, restoration and maintenance of channel morphology and sediment processes, protection and conservation of aquatic and riparian biodiversity, livelihood and community concerns and integration of Marusudar river management within the Chenab basin cascade framework, to mitigate and manage these impacts in a sustainable manner should be a part of Dulhasti Stage II.

· The Committee took note of the upstream and downstream cascade scenario and available free flow stretch on the Chenab river, as depicted in the submitted layout including the under-construction Kwar HEP (540 MW) upstream and the operational Dulhasti Stage-I (390 MW)

and under-construction Ratle HEP (850 MW) downstream, along with their respective FRL and TWL levels. It was noted that the introduction of Dulhasti Stage-II tailrace releases into the intermediate river reach will represent a change in impact character rather than an increase in dewatered length. While the return of flows offers partial hydrological and ecological benefits, the hydro-peaking-driven variability introduces additional risks related to geomorphology, ecology, and public safety. These impacts can be effectively minimized through coordinated operations, engineered safeguards, adaptive environmental flow management, and a robust early warning system, supported by a focused, field-based study.

· The NHPC and CVPPL being a major stakeholder in the Chenab river basin should formulate a strategy for implementation of these conservation measures with monitoring indicators and third-party audits.

· The EAC noted that the total land required for the project is for the Dulhasti Stage-II HEP is estimated to be 60.3 ha. Of this, 8.27 ha is private land, 40.93 ha is State Government land, and 11.10 ha belongs to the operational Dulhasti Power Station (Dulhasti Stage-I HEP), which will be utilized for developing infrastructure facilities for the project. Therefore, the total land to be acquired for the project amounts to 49.2 ha, comprising 8.27 ha of private land and 40.93 ha of state government land. There is no involvement of forest land in the region. There is no national park, wildlife sanctuary, Biosphere Reserve, Tiger/Elephant Reserve, Wildlife Corridor etc. within 10 km distance from the project site. The nearest project component is about 9.8 km from the Eco Sensitive Zone boundary of the Kishtwar High Altitude National Park.

· The EAC noted that the estimated project cost is Rs 3277.45 crore. Total capital cost earmarked towards Environment Management Plan/environmental pollution control measures is Rs. 4564.57 lakh and the Recurring cost (operation and maintenance) will be about Rs. 1146.41 lakh about i.e. Rs 286.60 lakh per annum.

· The committee observed that the Public Hearing for the proposed project has been conducted by the State Pollution Control Committee on 22.08.2025 at Village Banzwar, (Proposed Site for Powerhouse), District Kishtwar, Union Territory of Jammu & Kashmir. Publications of notice for public hearing were given in state/national level in the State level newspaper “Daily Excelsior” and “Daink Jagean” dated 20.07.2025. The meeting was chaired by Additional Deputy Commissioner, District Kishtwar, ensuring due diligence in addressing public concerns and regulatory compliance. 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 the water of Chenab basin is shared between India and Pakistan in accordance with the provisions of “The Indus Water Treaty, 1960”. The parameters of the project have been planned in accordance with the provision of the Treaty. However, the Indus Waters Treaty stands suspended effective from 23rd April, 2025.

· The committee observed that Certified Compliance Report from IRO, Chandigarh signed on 06.11.2024 has been submitted by the PP for Environmental clearance on dated 01.01.1979 and the project got completed on 23.03.2007. It has been mentioned that PP has obtained Consent to Operate Consent No. PCC/digital/21063805013 of 2024 dated 13.09.2024 which is valid till June 2028. There were certain observations raised by the IRO, for which it was advised by the EAC to PP to get closure report on the observations raised.

· The EAC also noted that the Forest Department has approved the Biodiversity and Wildlife Conservation and Management Plan cost estimate of Rs. 1206.00 lakh, as communicated through Letter No. WLP/Tech/2025-26/1055-57 dated 25-11-2025.

3.2.5. Recommendation of EAC

Recommended

3.2.6. Details of Environment Conditions

3.2.6.1. 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.	PP should establish in house (at project site) environment laboratory for measurement of environment parameter with respect to air quality and water (surface and ground). A dedicated team to oversee environment management shall be setup which should comprise of Environment Engineers, Laboratory chemist and staff for monitoring of air, water quality parameters on routine basis.
3.	A dedicated team to oversee environmental management activities (at project site) shall be set up comprising Environment Manager having post graduate qualification in Environmental Sciences/ Environment Engineering along with other supporting staff. The Environment Manager Shall report to Project Head directly.
4.	PP shall procure construction material only from those Organizations having all valid legal/statutory clearances/permissions or necessary permission to be obtained for quarrying construction materials for the project as per the EIA Notification, 2006 and as amended thereof.
Socio-economic:	
1.	Land acquired for the project shall be suitably compensated in accordance with the prevailing guidelines of the state government and provisions under Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013.
2.	RO plant shall be installed in the nearby 5 villages and the maintenance shall be done by the project Authorities.
3.	Solar panel be provided to the families living in rural areas within 10 km radius of project.
4.	School up to 12^{th} Standard shall be established and managed to provide free quality education for children from project affected villages/Tribal villages. Adequate transportation facilities shall also be provided to students to ensure connectivity and ease of access.
5.	Scholarship programme shall be initiated for the youths in the project affected villages.
6.	50 bed multi-specialty hospital shall be established to cater the need of tribal population/locals. The tribal population within 10 km radius of the project shall be given

	free of cost medical facility.
7.	Skill development Centre shall be established within 10 km radius of the project and regular training programmes for development and promotion of traditional art/products of tribal/local population. The Skill Development Plan shall mandatorily include the following components: · Capacity building and skill enhancement programs aligned with local livelihood opportunities. · Establishment of linkages with Industrial Training Institutes (ITIs) and other recognized training centres for imparting technical skills. · Provision of free or subsidized access to healthcare facilities in project-supported hospitals and health centres. · Support to educational institutions in the study area through free services, scholarships, infrastructure strengthening, and vocational guidance programs. · Special outreach initiatives for women, youth, and vulnerable groups within the SC/ST communities to ensure inclusive participation and benefits. · The Plan shall be implemented in a time-bound manner with clearly earmarked budgetary provisions, which shall not be diverted for any other purpose.
8.	The PP shall submit annual progress reports on the implementation of the Skill Development Plan and associated community welfare measures to the Regional Office of the Ministry.
9.	Bio-Gas plant shall be installed in the Project affected area for Utilizing Cattle waste (Cow Dung) into renewable source of fuel.
10.	Preference in employment opportunities and admission to ITI institutions shall be given to Project Affected Families (PAFs).
11.	An institutional mechanism to be developed to ensure the preference of jobs to PAFs and SC/ST and also a policy for preferential treatment for award of sundry works to the PAFs and SC/ST and their dependents.
12.	The compliance of above conditions shall be monitored by IRO, MoEF&CC and regularly site visit once in year. The compliance report of IRO shall be regularly submitted to MoEF&CC.
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. A muck transportation plan shall be prepared and implemented. The movement of muck carrying vehicles shall be monitored through latest sensor-based technology to ensure the muck dumping at designated sites.
2.	Stabilization of muck disposal sites using biological and engineering measures shall be taken up immediately to ensure that muck does not roll down the slopes and does not pollute the natural streams and water bodies in surrounding area. The plantation on muck disposal site with local species for restoration of ecology and environment of the project site area.
3.	Necessary control measures such as water sprinkling arrangements, and construction of

	paved roads leading to muck disposal sites etc. shall be taken up on priority to arrest fugitive dust at all the construction sites.
4.	Solid waste generated, especially plastic waste, etc. should not be disposed of as landfill material. It should be treated with scientific approach and recycled. Use of single-use plastics may be discouraged.
5.	Landslide and other heavy rain related disasters shall be taken care of through appropriate preventive measures during construction and operation of project.
Environmental management and Biodiversity conservation:	
1.	PP shall obtain closure report on the observations raised by IRO, Chandigarh in Certified Compliance Report.
2.	On-line monitoring system for the e-flow releases in the upstream and downstream of the project to be installed.
3.	The plastic waste shall be disposed of by recycling and not by land filling.
4.	Local indigenous varieties of plants to be grown and maintained till their full growth including gap filling.
5.	Skill mapping be undertaken for the youths of the affected project area and based on the skill mapping, the trainings to the youths be provided for their appropriate engagements in the Project.
6.	Land acquired for the project shall be suitably compensated with the prevailing guidelines and all commitments made during the Public Hearing shall be fulfilled.
7.	The project-affected population should be resettled and rehabilitated as per the latest R & R Policy.
8.	Six monthly compliance reports shall be submitted by the PP to Regional Office, MoEF& CC, without fail.
9.	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.
10.	The contract clause limiting the No. of vehicles used during excavation and transportation shall followed scrupulously and the same shall informed to the ministry.
11.	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.
12.	No vehicle purchase shall be allowed from funds earmarked for implementation of Wildlife Conservation plan.

13.	The Project Proponent shall explore the possibility to undertake tree transplantation, wherever feasible, in consultation with the State Forest Department. Survival of at least 80% of transplanted trees shall be ensured, with monitoring for a minimum period of five years.
14.	Plantation of saplings (10,000 nos.) shall be carried out around the muck disposal area in consultation with Forest Department as a part of the tree plantation campaign "Ek Ped Ma Ke Naam" and the details of the same shall be uploaded in the MeriLiFE Portal (https://merilife.nic.in). The survival of plants shall be reported in the 6 monthly compliance report.
15.	PP shall prepare time bound reclamation and restoration plan for restoration of batching plant in consultation with the Forest Department and same shall be submitted to IRO, MoEF&CC and shall be fully implemented within five years of commissioning of the project.
16.	A study shall be undertaken by the NHPC and CVPPL through reputed expert Government Research institute to formulate the strategy for sustainable environmental management of Chenab River Basin covering aspects related to scientifically robust environmental flow regimes, restoration and maintenance of channel morphology and sediment processes, protection and conservation of aquatic and riparian biodiversity, livelihood and community concerns and integration of Marusudar river management within the Chenab basin cascade framework. The recommendations of the study shall be implemented in time bound manner. The status of implementation shall be reported in 6 monthly compliance report.

3.2.6.2. Standard

1(c)	**River Valley/Irrigation projects**
Statutory compliance	
1.	The project proponent shall obtain forest clearance under the provisions of Forest (Conservation) Act, 1986, in case of the diversion of forest land for non-forest purpose involved in the project.
2.	The project proponent shall obtain clearance from the National Board for Wildlife, if applicable.
3.	The project proponent shall prepare a Site-Specific Conservation Plan & Wildlife Management Plan and approved by the Chief Wildlife Warden. The recommendations of the approved Site-Specific Conservation Plan / Wildlife Management Plan shall be implemented in consultation with the State Forest Department. The implementation report shall be furnished along with the six-monthly compliance report. (in case of the presence of Schedule-I species in the study area).
4.	The project proponent shall obtain Consent to Establish / Operate under the provisions of Air (Prevention & Control of Pollution) Act, 1981 and the Water (Prevention & Control of Pollution) Act, 1974 from the concerned State Pollution Control Board/ Committee.
5.	NOC shall be obtained from National Commission of Seismic Design Parameters (NCSDS) of CWC.
6.	Necessary approval of CEA shall be obtained for those projects having the project cost more than Rs. 1,000 crores.
Air quality monitoring and preservation	

1.	Regular monitoring of various environmental parameters viz., Water Quality, Ambient Air Quality and Noise levels as per the CPCB guidelines at designated locations shall be carried out on monthly basis and a detailed database of the same shall be prepared and recorded. This shall be used as a baseline data for post construction EIA / Monitoring purposes.
2.	Appropriate Air Pollution Control (APC) system shall be provided for all the dust generating points including fugitive dust from all vulnerable sources, so as to comply prescribed standards.
3.	Necessary control measures such as water sprinkling arrangements, etc. bet taken up to arrest fugitive dust at all the construction sites.
4.	Conjunctive use of surface water to be planned in the project to check water logging as well as to increase crops productivity. The field drains shall be connected with natural drainage system (if applicable).
5.	Remodelling of existing natural drains (link drains) and connecting them with irrigated land through constructed field drains, collector drains, etc. are to be ensured on priority basis (if applicable).
6.	Before impounding of the water, Cofferdams for both at the upstream and downstream are to be decommissioned as per EIA/EMP report so that once the project is commissioned; cofferdam should not create any adverse impact on water environment including the rock mass and muck used for the Cofferdam.
7.	As the reservoir will be acting as balancing reservoir and there would be fluctuation of water level during peaking period, efforts be made to reduce impact on aquatic life including impacts during spawning period both at the upstream and downstream of the project.
8.	Water depth sensors shall be installed at suitable locations to monitor e-flow. Hourly data to be collected and converted to discharge data. The Gauge and Discharge data in the form of Excel Sheet be submitted to the Regional Office, MoEF & CC and to the CWC on weekly basis.
9.	Mixed irrigation shall be practised and necessary awareness be given to all the farmers and trained in the use of such systems. Proper crops selection shall be carried out for making irrigation facility more effective (if applicable).
10.	On Farm Development (OFD) works like landscaping, land levelling, drainage facilities, field irrigation channels and farm roads, etc. should be taken up in phased manner prior to the start of irrigation in the entire command area. The Command Area Development Plan should be strictly implemented as proposed in the EIA/EMP report (if applicable).
Noise monitoring and prevention	
1.	All the equipment likely to generate high noise shall be appropriately enclosed or inbuilt noise enclosures be provided so as to meet the ambient noise standards as notified under the Noise Pollution (Regulation and Control) Rules, 2000, as amended in 2010 under the Environment Protection Act (EPA), 1986.
2.	The ambient noise levels should conform to the standards prescribed under E(P)A Rules, 1986 viz. 75 dB(A) during day time and 70 dB(A) during night time.
Catchment Area Treatment Plan	
1.	Catchment Area Treatment (CAT) Plan as proposed in the EIA/EMP report shall be implemented in consultation with the State Forest Department and shall be implemented in synchronization with the construction of the project.

Waste management	
1.	Muck disposal be carried out only in the approved and earmarked sites. The dumping sites shall be located sufficiently away from the HFL of the river. Efforts be made to reuse the muck for construction and other filling purposes and balanced be disposed of at the designated disposal sites. Once the muck disposal sites are inactive, proper treatment measures like both engineering and biological measures be carried out so that sites are stabilized quickly.
2.	Solid waste management should be planned in details. Land filling of plastic waste shall be avoided and instead be used for various purposes as envisaged in the EIA/EMP reports. Efforts be made to avoid one time use of plastics.
Green Belt and Wildlife Management	
1.	Based on the recommendation of Cummulative Impact Assessment and Carrying capacity study of river basin or as per the ToR conditions or minimum 15% of the average flow of four consecutive leanest months, whichever value is higher, shall be released as environmental flow.
2.	Detailed information on species composition particular to fish species from previous study/literature be inventoried and proper management plan shall be prepared for insitu conservation in the streams, tributaries of river and the main river itself for which adequate budget provision be made and followed strictly.
3.	Wildlife Conservation Plan approved by the Chief Wildlife Warden shall be implemented in consultation with the local State Forest Department.
4.	To enrich the habitat of the project site, plantation shall be raised as envisaged in the EIA/EMP report. Plantation to be developed along the periphery of the reservoir in multi-layers with local indigenous species in consultation with the local State Forest Department.
5.	Compensatory afforestation programme shall be implemented as per the plan approved.
6.	Fish ladder/pass as envisaged in the EIA/EMP report shall be provided for migration of fishes. Regular monitoring of this facility be carried out to ensure it effectiveness.
Public hearing and Human health issues	
1.	Resettlement & Rehabilitation plan be implemented in consultation with the State Govt. as approved by the State Govt.
2.	Budget provisions made for the community and social development plan including community welfare schemes shall be implemented in toto.
3.	Preventive measures viz. fuming and spraying of mosquito control shall be done in and around the labour colonies, affected villages, stagnated pools, etc. Provisions be made to not to create any stagnated pools to avoid creation of breeding grounds of the vector borne diseases.
4.	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.
5.	Labour force to be engaged for construction works shall be examined thoroughly and adequately treated before issuing them work permit. Medical facilities shall be provided at the construction sites.

Risk Mitigation and Disaster Management	
1.	Early Warning Telemetric system shall be installed in the upper catchment area of the project for advance intimation of flood forecast.
2.	Drilling and blasting shall be done only either by licensed explosive agent or by the proponent after obtaining required approvals from Competent Authorities.
3.	Emergency preparedness plan be made for any eventuality of the dam failure and shall be implemented as per the Disaster Management Plan.
4.	Stabilization of muck disposal sites using biological and engineering measures shall be taken up to ensure that muck does not roll down the slopes and shall be disposed safely and that it does not pollute the natural streams and water bodies in surrounding area. The engineering measures for the muck disposal arrangements be evolved after carrying out required slope stability analysis.
5.	Catchment area treatment plan shall be prepared and sufficient fund shall be provided for afforestation, rim plantation, pasture development, nursery development.
Corporate Environment Responsibility	
1.	The project proponent shall comply with the provisions contained in this Ministry's OM vide F.No. 22-65/2017-IA.III dated 30th September, 2020, as applicable, regarding Corporate Environment Responsibility.
2.	Skill mapping be undertaken for the youths of the affected project area and based on the skill mapping, necessary trainings to the youths be provided for their long time livelihood generation
3.	The company shall have a well laid down environmental policy duly approve by the Board of Directors. The environmental policy should prescribe for standard operating procedures to have proper checks and balances and to bring into focus any infringements/deviation/violation of the environmental / forest / wildlife norms/ conditions. The company shall have defined system of reporting infringements / deviation/violation of the environmental / forest / wildlife norms/conditions and / or shareholders/ stake holders. The copy of the board resolution in this regard shall be submitted to the MoEF&CC as a part of six-monthly report.
4.	A separate Environmental Cell both at the project and company head quarter level, with qualified personnel shall be set up under the control of senior Executive, who will directly to the head of the organization.
5.	Action plan for implementing EMP and environmental conditions along with responsibility matrix of the company shall be prepared and shall be duly approved by competent authority. The year wise funds earmarked for environmental protection measures shall be kept in separate account and not to be diverted for any other purpose. Year wise progress of implementation of action plan shall be reported to the Ministry/Regional Office along with the Six Monthly Compliance Report.
6.	Post EIA and SIA be prepared for the project through a third party and evaluation report be submitted to the Ministry after five years of commissioning of the project.
7.	Multi Disciplinary Committee (MDC) be constituted with experts from Ecology. Forestry, Wildlife, Sociology. Soil Conservation, Fisheries, NGO, etc. to oversee implementation of various environmental safeguards proposed in EIA/EMP report during construction of the project. The monitoring report the Committee shall be uploaded in the website of the Company.

8.	Formation of Water User Association/Co-operative be made involment of the whole community be ensured for discipline use of available water for irrigation purposes
Miscellaneous	
1.	The project proponent shall make public the environmental clearance granted for their project along with the environmental conditions and safeguards at their cost by prominently advertising it at least in two local newspapers of the District or State, of which one shall be in the vernacular language within seven days and in addition this shall also be displayed in the project proponent's website permanently.
2.	The copies of the environmental clearance shall be submitted by the project proponents to the Heads of local bodies, Panchayats and Municipal Bodies in addition to the relevant offices of the Government who in turn has to display the same for 30 days from the date of receipt.
3.	The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and update the same on half-yearly basis.
4.	The project proponent shall submit six-monthly reports on the status of the compliance of the stipulated environmental conditions on the website of the ministry of Environment, Forest and Climate Change at environment clearance portal.
5.	The project proponent shall submit the environmental statement for each financial year in Form-V to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently and put on the website of the company.
6.	The project proponent shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities, commencing the land development work and start of production operation by the project.
7.	The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board and the State Government.
8.	The project proponent shall abide by all the commitments and recommendations made in the EIA/EMP report, commitment made during Public Hearing and also that during their presentation to the Expert Appraisal Committee.
9.	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment, Forests and Climate Change (MoEF&CC).
10.	Concealing factual data or submission of false/fabricated data may result in revocation of this environmental clearance and attract action under the provisions of Environment (Protection) Act, 1986.
11.	The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.
12.	The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.
13.	The Regional Office of this Ministry shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information/monitoring reports.
1	The above conditions shall be enforced, inter-alia under the provisions of the Water (Prevention &

4.	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.

3.3. Agenda Item No 3:

3.3.1. Details of the proposal

Proposed Pane Pumped Storage Project with the capacity of 1500 MW at Villages: Pane and Vagheri, Taluka: Mahad, District: Raigad, and Village: Khanu, Taluka: Velhe, District: Pune, Maharashtra by JSW Energy PSP Seven Limited. by **JSW ENERGY PSP SEVEN LIMITED** located at **RAIGAD,MAHARASHTRA**

Proposal For		Fresh EC	
Proposal No	**File No**	**Submission Date**	**Activity** **Sub-Activity** **(Schedule Item)**
IA/MH/RIV/556994/2025	J-12011/63/2023-IA.I (R)	21/11/2025	River Valley/Irrigation projects Standalone Pump Storage Projects (1(c))

3.3.2. Project Salient Features

The proposal is for grant of Environmental Clearance (EC) to the project for Pane Open Loop Pumped Storage Project (1500 MW) in an area of 293.5 Ha located at Village Khanu, Vagheri, & Pane, Sub-district Mahad and Velhe, District Pune and Raigarh, Maharashtra by M/s JSW Energy PSP Seven Limited.

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

i. M/s. JSW Energy PSP Seven Limited is proposing Pane Pumped Storage Project (1500 MW) at Villages: Pane and Vagheri, Taluka: Mahad, District: Raigad, and Village: Khanu, Taluka: Velhe, District: Pune, Maharashtra.

ii. The Project comprises of upper & lower reservoirs with a gross storage capacity of 8.22 MCM & 13.48 MCM respectively. The upper reservoir & lower reservoir will be formed by a Concrete Gravity Dam that is 536.26 m and 434.00m long at top respectively. The non-overflow section of the Upper reservoir & lower reservoir stands 94 m & 82 m high from the deepest foundation level respectively.

iii. The scheme of operation for the project is with 6.39 hours of peak hour generation per day and 7.03 Hours for pumping back the water to the upper reservoir. Being an off-stream open loop project, 14.184 MCM of water will be required for one time filling of the reservoir which will be carried out from the self catchment inflows of the Lower Reservoir, evaporation losses (1.014 MCM) will be recouped periodically from the catchment itself.

iv. The Project will generate 1500 MW (5 units of 250 MW and 2 units of 125 MW) of peak power for about 6.39 hours by utilizing a design discharge of 275 Cumec with a rated head

of 508.54 m and 55.06 Cumec with a rated head of 507.90 m respectively for larger and smaller unit. The Project will utilize 1685 MW to pump 7.52 MCM of water to the upper reservoir in 7.03 hours.

v. The project proposal was considered by the Expert Appraisal Committee (Hydro River Valley Sector) in its 5th meeting held on 20.12.2023 for ToR Appraisal and recommended for grant of Terms of References (ToRs) for the Project. The ToR has been issued by Ministry vide letter No. J-12011/63/2023-IA.I(R); dated 30.01.2024 which was further amended on 03.12.2024.

vi. **The geographical co-ordinate of the project are:**

Pillar No.	Direction	Latitude	Longitude
5	North	18°17'31.250"N	73°29'14.890"E
38	West	18°14'33.731"N	73°27'53.922"E
40	South	18°14'7.266"N	73°28'20.027"E
56	East	18°15'58.063"N	73°30'1.001"E

vii. The site location map of the project is as under:

viii. **Land requirement:** The total project area is 293.50 ha which spreads in three villages Pane, Khanu and Vagheri. Out of total project area, 8.74 ha is Govt land, 66.91 ha is forest land and 217.85 ha land is Private land. Application for forest clearance of 66.91 ha area has been submitted vide proposal no. FP/MH/HYD/IRRIG/454907/2023 dated 22.12.2023.

ix. **Demographic details in 10 km radius of project area:** The study area covers 65 villages with a combined population of 22,439 and 5,609 households. The Scheduled Caste (SC) population is 1,079, while the Scheduled Tribe (ST) population is 3,232. Within the 10 km radius, the total working population is 11,417, of which 10,422 are main workers and 995 are marginal workers. A total of 11,022 people are classified as non-workers. The overall literacy rate in the area is 68.47%, and the sex ratio is 1,070 females for every 1,000 males.

x. **Water requirement**: The water requirement for one-time filling of reservoirs of Pane PSP is 14.184 MCM which will be sourced from Self-catchment inflows of the lower reservoir. To recoup the evaporation losses, there will be recurring requirement of 1.014 MCM per annum water which will be met from catchment itself.

xi. **Project Cost:** The estimated project cost is Rs. 9446.15 Crores. Total capital cost earmarked towards Environmental Management Plan is Rs. 39.16 Crores and the Recurring cost (operation and maintenance) will be about Rs. 1.59 Crores per annum.

xii. **Project Benefit**:

Social benefit: Direct & Indirect employment opportunities during construction phase will significantly contribute in uplifting quality of life of people of the region. During operation phase also, local people will get preference for employment opportunity in operation, maintenance and auxiliary activities. The company will extend social benefits in the areas of education, socio-economic and infrastructure development, healthcare, and environmental improvement as part of its Socio-economic Development Plan. Additionally, under the Local Area Development Plan, it will undertake skill development and training initiatives, including the construction of a dedicated Skill Development Centre.

Financial benefits of project or activity: The project with a proposed peaking energy installation of 1680 MW would generate designed energy of 3324.47 MU. This will contribute in reduction in gap between demand and supply of peak power in the state and country. The Project activity will also mobilize financial resources in the form of small business/ Indirect employment opportunities in the area.

Environmental benefit: Out of total project area, 7.19 ha area will be developed under the greenbelt/ plantation. The company will carry out compensatory afforestation in consultation with the forest department. Avenue plantation @ 200 Nos/ village with 3 years maintenance and cost of tree guard for 5 villages.

xiii. **Environmental Sensitive area:**

There are no national parks, wildlife sanctuaries, Biosphere Reserves, Tiger/Elephant Reserves, Wildlife Corridors etc. within 10 km distance from the project site except 9 Reserved Forest and Protected Forest present. Kal Nadi is flowing at a distance of ~3.0 km in SSW direction from Upper reservoir and ~1.8 km in WSW direction from Lower reservoir, Mose Nala is flowing at a distance of ~6.0 km in North Direction from Upper Reservoir and ~7.5 km in NNW direction from Lower reservoir, Panshet dam is located at a distance of ~5.50 km in NNE direction from Upper reservoir and ~ 5.80 km in NNE direction from Lower reservoir, Koturde Dam is located at a distance of ~9.5 km in SW direction from Infrastructure, Gunjavani Dam is located at a distance of ~8.5 km in ENE direction from Lower Reservoir and ~10.0 km in ENE direction from Upper Reservoir and Mutha River is flowing at a distance of ~9.5 km in NNE direction from Upper Reservoir and ~10.0 km in NNE direction from Lower Reservoir. Apart from these, there are various seasonal nallas present in the study area, which remain active during rains.

Lingana fort is ~1.0 km in ESE direction, Raigad Fort is ~2.5 km in SW direction, Jijamata Wada is ~5.0 km in WSW direction and Konkan Diva Fort & Caves ~6.0 km in NW direction from the project site.

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

MOU has been signed between Department of Water Resources, Govt. of Maharashtra and M/s. JSW Energy Seven Limited, (SPV of JSW Neo Energy Limited) on 26.09.2024.

Water availability certificate has been received from Water Resource Department; Government of Maharashtra vide letter No WFR/Savitri/932 dated 16.10.2023.

xv. **Resettlement and Rehabilitation:** A total of 280 PAFs of 3 villages will be affected due to the proposed project, who will be fairly compensated in consonance with "The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013", (RFCTLARRA 2013). The budget allocated for R&R Plan is Rs. 53.51 Crores/-.

xvi. **Scheduled –I species:** As per The Wildlife (Protection) Amendment Act (W(P)AA), 2022, 31 schedule -I species i.e., *Bos gaurus* (Gaur), *Canis aureus* (Jackal), *Canis lupus* (Wolf), *Cuon alpinus* (Wild dog), *Felis chaus* (Jungle cat), *Herpestes edwardsii* (Common grey mongoose), *Hyaena hyaena* (Hyaena), *Hystrix indica* (Indian porcupine), *Loris lydekkerianus* (Slender loris), *Macaca radiata* (Bonnet macaque), *Manis crassicaudata* (Indian pangolin), *Melursus ursinus* (Sloth bear), *Panthera pardus* (Common leopard), *Prionailurus bengalensis* (Leopard cat), *Ratufa indica* (Giant Squirrel), *Tetracerus quadricornis* (Four-horned antelope), *Viverricula indica* (Small Indian civet), Vulpes vulpes (Common Fox), *Crocodylus palustris* (Marsh crocodile), *Daboia russelii* (Russell's viper), *Lissemys punctate* (Indian flapshell turtle), *Naja naja* (Cobra), *Ophiophagus hannah* (King cobra), *Ptyas mucosa* (Indian rat snake), *Python molurus* (Indian rock python),*Varanus bengalensis* (Common Indian monitor lizard), *Anthracoceros coronatus* (Malabar pied hornbill), *Bubo bubo* (Great horned owl), *Dendrocopos mahrattensis* (Yellow-crowned woodpecker), *Gallus sonneratii* (Grey jungle fowl) and *Pavo cristatus* (Peafowl) has been found in the study area.

xvii. **Alternative Studies:**

A detailed alternative study for selection of site for both upper and lower reservoir has been carried out. Three alternate sites for Upper and lower reservoirs have been selected. Alternative - 1 was found to be more feasible in techno-economical aspects. The details are as follows:

- Ø **Alternative-1:** Present at Villages: Pane and Vagheri, Taluka: Mahad, District: Raigad, and Village: Khanu, Taluka: Velhe, District: Pune, Maharashtra & feasible for 555.28 m Dam Length at Top and 7.57 MCM Live Storage with a capacity of 1500 MW. Nearest

Habitation is Pane and Khanu with a population of 322 and 104 respectively as per Census, 2011. Tamhini Wildlife sanctuary is outside the study area.

- Ø **Alternative-1A**: Present at Village: Panderi, Taluka: Mahad, District: Raigad, and Village: Bhordi, Gugulshi, Taluka: Velhe, District: Pune, Maharastra & feasible for 500 m Dam Length at Top and 7.50 MCM Live Storage with a capacity of 1500 MW. Nearest Habitation is Panderi and Bhordi with a population of 592 and 211 respectively as per Census, 2011. Tamhini Wildlife sanctuary is outside the study area.
- Ø **Alternative-1B:** Present at Village: Pane, Taluka: Mahad, Dist: Raigad, and Village: Mohari & Singapur, Taluka: Velhe, District: Pune, Maharastra & feasible for 637 m Dam Length at Top and 7.57 MCM Live Storage with a capacity of 1500 MW. Nearest Habitation is Pane, Mohari and Singapur with a population of 322, 26 and 101 respectively as per Census, 2011. Tamhini Wildlife sanctuary is outside the study area.

Conclusion:

- ü Alternative-1 has been selected on the account of involvement of less forest land as compare to Alternative-1A and 1B. Forest land involvement in Alternate 1 (66.91 ha) is less as compared to Alternate 1A (67.14 ha) and Alternate 1B (70.94 Ha).
- ü Cost of Alternative-1 (with two HRT Scheme) is also less as compared to other two alternatives. Also, the cost/MW of both scheme is nearly similar.
- ü However, all the three alternatives are located outside the ESZ of Tamhini Wildlife Sanctuary.

After the selection of Alternative - 1, two options of powerhouse at this site have been selected for further alternative study:

- · Alternative-1: With Underground Powerhouse at Alternative - 1.
- · Alternative-2: With Surface Powerhouse at Alternative - 1.

Considering the above aspects, the underground powerhouse is more suitable for Pane PSP. The underground power houses, on the other hand, is found to be more economical than an equivalent surface power station as only about half the amount of concrete is required compared to a surface power station.

xviii. **Baseline Environmental Scenario:**

Period	**Post Monsoon Season (October 2022 to December 2022) & Pre Monsoon Season (March to May 2023)**
AAQ parameters at 10 locations	<u>Post Monsoon Season (October 2022 to December 2022):</u> · PM 10= 51.8 to 67.9 mg/m^3 · PM 2.5= 20.8 to 38.2 mg/m^3 · SO2= 5.9 to 15.1 mg/m^3 · NO2= 19.9 to 27.8 mg/m^3 · CO= BDL to 0.59 mg/m^3 <u>Pre Monsoon Season (March to May 2023):</u> · PM 10= 49.7 to 68.0 mg/m^3 · PM 2.5= 21.3 to 37.5 mg/m^3 · SO2= 5.2 to 12.8 mg/m^3 · NO2= 12.7 to 22.5 mg/m^3 · CO= BDL to 0.69 mg/m^3
Incremental GLC Level	· PM 2.5= Max. GLC: 0.89 µg/m^3

	· PM 10= Max. GLC: 2.23 µg/m^3 · SO2= Max. GLC: 1.17 µg/m^3 · NOx= Max. GLC: 1.40 µg/m^3
Surface water quality samples at 04 locations	pH: 7.18 to 7.74; Dissolve Oxygen: 6.8 to 6.9 mg/l; Total Dissolved Solids: 98.0 to 148 mg/l; Total Hardness (as CaCO3): 68.4 to 120.4 mg/l; Total Alkalinity: 50.6 to 106 mg/l; Calcium: 14.6 to 23.2 mg/l; Magnesium: 7.8 to 15.2 mg/l; Sulphate: 4.4 to 9.52 mg/l, Nitrate: 1.06 to 1.8 mg/l; Chloride: 14.8 to 20.6 mg/l; Iron: 0.06 to 0.09 mg/l. *Heavy metals like Copper (as Cu), Lead (as Pb), Chromium (as Cr), Manganese (as Mn), Arsenic (as As) and Mercury (as Hg) were also analyzed in the surface water samples but not detected.* pH: 7.07 to 7.44; Dissolve Oxygen: 7.2 to 7.3 mg/l; Total Dissolved Solids: 75.0 to 121 mg/l; Total Hardness (as CaCO3): 35.02 to 83.45 mg/l; Total Alkalinity: 27.17 to 70.82 mg/l; Calcium: 6.01 to 20.04 mg/l; Magnesium: 4.85 to 9.27 mg/l; Sulphate: 1.09 to 2.4 mg/l, Nitrate: 0.45 to 1.38 mg/l; Chloride: 13.45 to 15.78; Iron: BDL to 0.04 mg/l. *Heavy metals like Copper (as Cu), Lead (as Pb), Chromium (as Cr), Manganese (as Mn), Arsenic (as As) and Mercury (as Hg) were also analyzed in the surface water samples but not detected.*
Ground Water samples at 10 locations	pH: 6.98 to 7.8; Total Dissolved Solids: 198 to 244 mg/l; Total Hardness (as CaCO3): 102 to 160 mg/l; Total Alkalinity: 87.2 to 125.8 mg/l; Calcium: 19.8 to 38.5 mg/l; Magnesium: 6.3 to 23 mg/l; Sulphate: 9.6 to 23.8 mg/l, Nitrate: 3.86 to 8.43 mg/l; Chloride: 24.5 to 45.6 mg/l; Iron: 0.10 to 0.36 mg/l. *Heavy metals like Copper (as Cu), Lead (as Pb), Chromium (as Cr), Manganese (as Mn), Arsenic (as As) and Mercury (as Hg) were also analyzed in the ground water samples but not detected.* pH: 7.1 to 7.88; Total Dissolved Solids: 219 to 260 mg/l; Total Hardness (as CaCO3): 112.62 to 166.21 mg/l; Total Alkalinity: 93.05 to 130.55 mg/l; Calcium: 22.98 to 41.23 mg/l; Magnesium: 8.91 to 23.88 mg/l; Sulphate: 11.56 to 25.67 mg/l, Nitrate: 4.1 to 8.73 mg/l; Chloride: 26.42 to 49.32 mg/l; Iron: 0.16 to 0.39 mg/l. *Heavy metals like Copper (as Cu), Lead (as Pb), Chromium (as Cr), Manganese (as Mn), Arsenic (as As) and Mercury (as Hg) were also analyzed in the ground water samples but not detected.*

Noise Level Leq (Day & Night) at 10 locations	The Leq values for day time was observed to be 50.5 to 54.0 Leq dB (A) in residential area, while during night time 41.9 to 44.0 Leq dB (A). The Leq values for day time was observed to be 50.8 to 53.6 Leq dB (A) in residential area, while during night time 39.7 to 43.3 Leq dB (A).
Soil Quality at 10 Locations	Bulk density: 1.50 to 1.54 gm/cm3; pH range 6.55 to 6.98; Electrical conductivity (EC); 0.27 to 0.38 µmhos/cm; Calcium content: 1782.5 to 2275.55 mg/kg; Sodium: 118.81 to 288.47 mg/kg; Potassium: 1220.65 to 376.85 kg/hectare; Nitrogen: 226.89 to 332.37 kg/hectare; Phosphorous: 26.97 to 35.12 kg/hectare; Magnesium: 328.22 to 409.78 mg/kg; Organic Carbon: 0.71 to 0.84 %. Bulk density: 1.50 to 1.55 gm/cm3; pH range 6.5 to 7.05; Electrical conductivity (EC); 0.25 to 0.39 µmhos/cm; Calcium content: 1682.2 to 2314.6 mg/kg; Sodium: 112.45 to 280.54 mg/kg; Potassium: 211.3 to 388.12 kg/hectare; Nitrogen: 220.57 to 341.77 kg/hectare; Phosphorous: 27.56 to 36.22 kg/hectare; Magnesium: 330.25 to 411.12 mg/kg; Organic Carbon: 0.7 to 0.85 %.
Flora & Fauna	As per The Wildlife (Protection) Amendment Act (W(P)AA), 2022, there are 31 schedule -I species i.e., *Bos gaurus* (Gaur), *Canis aureus* (Jackal), *Canis lupus* (Wolf), *Cuon alpinus* (Wild dog), *Felis chaus* (Jungle cat), *Herpestes edwardsii* (Common grey mongoose), *Hyaena hyaena* (Hyaena), *Hystrix indica* (Indian porcupine), *Loris lydekkerianus* (Slender loris), *Macaca radiata* (Bonnet macaque), *Manis crassicaudata* (Indian pangolin), *Melursus ursinus* (Sloth bear), *Panthera pardus* (Common leopard), *Prionailurus bengalensis* (Leopard cat), *Ratufa indica* (Giant Squirrel), *Tetracerus quadricornis* (Four-horned antelope), *Viverricula indica* (Small Indian civet), Vulpes vulpes (Common Fox), *Crocodylus palustris* (Marsh crocodile), *Daboia russelii* (Russell's viper), *Lissemys punctate* (Indian flapshell turtle), *Naja naja* (Cobra), *Ophiophagus hannah* (King cobra), *Ptyas mucosa* (Indian rat snake), *Python molurus* (Indian rock python),*Varanus bengalensis* (Common Indian monitor lizard), *Anthracoceros coronatus* (Malabar pied hornbill), *Bubo bubo* (Great horned owl), *Dendrocopos mahrattensis* (Yellow-crowned woodpecker), *Gallus sonneratii* (Grey jungle fowl) and *Pavo cristatus* (Peafowl) found in the study area.

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

S. No.	Name of the waste	Source	Qty	Mode of Disposal	Mode of Transport
1.	Muck	Quantity of muck / debris generated	2464514.56 cum	Reused in construction activities (1232257.28 cum) and disposed (1232257.28 cum) at muck dumping sites.	Road
2.	MSW	Project and labour camp	110 TPA	Waste will be segregated into Non-biodegradable and Bio-degradable waste. Biodegradable waste will be treated in Organic waste composter and manure obtained will be used in Greenbelt development. Non-biodegradable waste will be disposed through authorized recyclers.	Road
3.	Electronic equipment	Project and labour camp	0.28 TPA	As per CPCB Guidelines	Road
4.	Batteries	Project and labour camp	2.19 TPA	As per CPCB Guidelines	Road
5.	Biomedical	Dispensary	1.1 TPA	Through CBWTF	Road
6.	Burnt Mobil oil, grease	Construction equipment	5.6 TPA	Through authorized dealer	Road
7.	Plastic Waste	Labour camp	22 TPA	As per CPCB Guidelines	Road
8.	Construction and Demolition waste	Waste generated from construction activities	38700 TPA	Through authorized dealer	Road

xx. Public Hearing for the proposed project has been conducted by the State Pollution Control Board on 18.10.2024 and 05.11.2024 for Pune and Raigad district respectively. The main issues raised during the public hearing are related to Employment, Socio-Economic and Infrastructure Development, Education, Land, etc.

xxi. No litigation pending against the proposal.

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

· **Project details:**

<table>
<tr><td>Name of the Proposal</td><td>Proposed Pane Pumped Storage Project (1500 MW)</td></tr>
<tr><td>Proposal No.</td><td>IA/MH/RIV/556994/2025</td></tr>
<tr><td>Location (Including Coordinates)</td><td>Villages: Pane and Vagheri, Taluka: Mahad, District: Raigad, and Village: Khanu, Taluka: Velhe, District: Pune, Maharashtra.
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<tr><td>56</td><td>East</td><td>18°15'58.063"N</td><td>73°30'1.001"E</td></tr>
</table></td></tr>
<tr><td>Company's Name</td><td>M/s. JSW Energy PSP Seven Limited</td></tr>
<tr><td>CIN no. of Company/user agency</td><td>U35101MH2023PLC403854</td></tr>
<tr><td>Accredited Consultant, Validity and certificate no.</td><td>J.M. EnviroNet Pvt. Ltd.
Registered EIA Consultant by NABET (QCI)
(Certificate no.: - NABET/EIA/23-26/SA 0250, Valid till 07.08.2026)</td></tr>
<tr><td></td><td>
<table>
<tr><th>Pillar No.</th><th>Direction</th><th>Latitude</th><th>Longitude</th></tr>
<tr><td>5</td><td>North</td><td>18°17'31.250"N</td><td>73°29'14.890"E</td></tr>
<tr><td>38</td><td>West</td><td>18°14'33.731"N</td><td>73°27'53.922"E</td></tr>
<tr><td>40</td><td>South</td><td>18°14'7.266"N</td><td>73°28'20.027"E</td></tr>
<tr><td>56</td><td>East</td><td>18°15'58.063"N</td><td>73°30'1.001"E</td></tr>
</table></td></tr>
<tr><td>Inter- state issue involved</td><td>No</td></tr>
<tr><td>Proposed on River/ Reservoir</td><td>It is an Off stream Open loop Pumped Storage Project</td></tr>
<tr><td>Type of Hydro-electric project</td><td>Hydropower (Pumped Storage Project) - Off-Stream Open Loop</td></tr>
</table>

Seismic zone	The project area falls under Zone IV i.e., High Risk Zone as per IS-1893 (Part 1) 2002, Seismic Zoning Map of In dia

· **Category details:**

Category of the project	A
Capacity / Cultural command are a (CCA)	
Attracts the General Conditions (Yes/No)	
Additional information (if any)	NA

· **ToR/EC Details:**

ToR Proposal No.	IA/MH/RIV/453379/2023
EAC meeting date	20.12.2023
	J-12011/63/2023-IA.I (R)
	30.01.2024
	Rs. 9446.15 Crores
Total area of Project	293.50 ha
Height of Dam from River Bed (EL)	82.00 m (Lower Dam) and 94.00 m (Upper Dam)
	Total Submergence Area: 74.22 ha (Forest Land: 21.65 Ha, Private Land: 46.37 Ha an d Government Land: 6.20 Ha)
District to provide irrigation facil ity (if applicable)	NA
Details of tunnels on upper level & lower level and length of cana l (if applicable)	Length of tunnel is 10991.82 m which incl udes: 1087.80 m (HRT), 4250 m (PS), 134 7.98 m (TRT), 760.31 m (MAT) and 3544.9 0 m (Adit 1,2,3,4,5,6,7,8,9,10).
No. of affected Village	3 villages (Pane, Vagheri and Khanu)
No. of affected families	Approx. 280
Project Benefits	**Social benefit:**

	Ø Direct & indirect employment opportunities during construction phase will significantly contribute in uplifting quality of life of people of the region. During operation phase also, local people will get preference in employment opportunity for operation, maintenance and auxiliary activities. Ø The company will provide social benefit regarding Education, Socio-Economic & Infrastructure Development, Health care, Environment and improvement under Socio-economic development Plan & Skill Development and Training & Construction of Skill Development Centre under Local Area Development Plan. **Financial benefits of project or activity**: Ø The project with a proposed peaking energy installation of 1500 MW would generate designed energy of 3324.47 MU. This will contribute in reduction in gap between demand and supply of peak power in the state and country. Ø The Project activity will also mobilize financial resources in the form of small business/ Indirect employment opportunities in the area. **Environmental benefit:** Ø Out of total project area, 7.19 ha area will be developed under the greenbelt/ plantation. The company will carry out compensatory afforestation in consultation with the forest department. Ø Avenue plantation @ 200 Nos/ village with 3 years maintenance and cost of tree guard for 5 villages. Ø Apart from these, during operation phase of the Project, two new water bodies in the form of reservoir would be created.
R&R details	A total of 280 PAFs of 3 villages will be affected due to the proposed project. The PAFs will be fairly compensated in consonance with “The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013”, (RFCTLARRA 2013) and on the basis of mutual negotiations. The budget allocated for R&R Plan is Rs. 53.51 Crores/-.

<table>
<tr><td>Catchment area/ Command area</td><td></td></tr>
<tr><td>Types of Waste and quantity of generation during construction/ Operation</td><td>
<table>
<tr><th>Waste Generated</th><th>Source</th><th>Quantity</th></tr>
<tr><td>Muck</td><td>Quantity of muck / debris generated</td><td>2464514.56 cum</td></tr>
<tr><td>MSW</td><td>Project and labour camp</td><td>110 TPA</td></tr>
<tr><td>Electronic equipment</td><td>Project and labour camp</td><td>0.28 TPA</td></tr>
<tr><td>Batteries</td><td>Project and labour camp</td><td>2.19 TPA</td></tr>
<tr><td>Biomedical</td><td>Dispensary</td><td>1.1 TPA</td></tr>
<tr><td>Burnt Mobil oil, grease</td><td>Construction equipment</td><td>5.6 TPA</td></tr>
<tr><td>Plastic Waste</td><td>labour camp</td><td>22 TPA</td></tr>
<tr><td>Construction and Demolition waste</td><td>Waste generated from construction activities</td><td>38500 TPA</td></tr>
</table>
</td></tr>
<tr><td>Material used for blasting and its composition as per DGMS standards.</td><td></td></tr>
<tr><td>E-Flows for the Project</td><td></td></tr>
<tr><td>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.</td><td>No
Not applicable, in case of PSP
Not applicable, in case of PSP</td></tr>
<tr><td>Details on provision of fish pass</td><td>Being an off stream open-loop Pump storage project, no provision of fish pass has been proposed.</td></tr>
<tr><td>Project benefit including employment details (no of employee)</td><td>Direct and Indirect employment opportunities will be created as a result of the proposed project.
During the construction phase, a total of 125 permanent employees and 2100 temporary/contractual workers will be employe</td></tr>
</table>

	d for a period of 1460 days. **During the operation phase**, a total of 10 0 permanent employees and 70 temporar y/contractual workers will be employed for 365 days per year.
Area of Compensatory Afforesta tion (CA) with tentative no of pl antation.	The forest land proposed to be diverted is 66.91 ha. The compensatory afforestation shall be done on the same amount of land. An amount of Rs. 5.54 Crore has been ear marked for Compensatory Afforestation Sc heme. However, CA scheme duly approved by the Forest department will be complied by the Company.
Previous EC details	
EC Compliance Report by R.O, MOEF&CC	
No. of trees/saplings proposed i n view of 'Ek Ped Maa Ke Naam' campaign	
Powerhouse Installed Capacity	
Generation of Electricity Annually	
No. of Units	7 No's. (5 X 250 MW & 2 X 125 M W)
No. of proposed disposal area/ (type of land- Forest/Pvt land)	3 no. of muck disposal sites have been identified with total area of 26.82 Ha. Type of land: Entire land is Private land (26.82 ha)
Cross section of proposed muck are a, Height of muck with slope.	Cross section of proposed muck area has been incorporated in Chapter 10 o f the Final EIA/EMP Report. D-1(UR): Area= 5.97 ha, Height = 40 m D-1 (LR): Area= 11.80 ha, Height = 29 m D-2 (LR): Aera = 9.05 ha, Height = 29 m Slope of muck shall be lesser than 28 Degree
Distance of muck disposal area(locat ion), from muck generation sources	Distance of muck disposal area from muck generation sources:

(project area)/River, HFL of propose d muck disposal area.	· **Upper Reservoir:** The muck disposal area is located at a distance of appr oximately 1.0 km from the muck ge neration source near the upper reser voir site. · **Lower Reservoir:** The designated mu ck disposal site 1 is situated approxi mately 0.40 km and muck disposal s ite 2 is adjacent from the muck gene ration source near the lower reservo ir. Kal river HFL from muck disposal area: 1500 m
Total Muck Disposal Area	
Estimate Muck to be generated	
Transportation	
Monitoring mechanism for Muck Dis posal Transportation	Ø The Project authorities shall erect a barrier to regulate to and fro move ment of traffic from the excavation site. Ø Entry of all vehicles passing the barr ier and the information regarding q uantities of Earth material being tr ansported shall be properly arraye d in a register in a transparent man ner and shall be liable to be made public by the Project authorities as and when required. Ø Proper e-Challan shall be issued.
Private land	
Government land	
Forest Land	
Total Land	
Submergence area/Reservoir area	
Additional information (if any)	

Forest Land/ Protected Area/	**Yes/No**	**Details of Certificate/ lette r/Remarks**
Reserve Forest/Protected Forest	Yes	Out of 293.50 ha, total 66.91

Forest Land/ Protected Area/	Yes/No	Details of Certificate/ letter/Remarks
Land		ha forest land falls within the Reserve Forest Area.
National Park		No National Park, Wild Life Sanctuaries, Biosphere Reserves, Tiger Reserves, Wildlife Corridors, Protected Forests within 10 km radius study area. However, following sensitive areas are located beyond 10 km radius study area: Ø Tamhini Wildlife Sanctuary (~12.20 km in NW direction) Ø Eco Sensitive Zone from Tamhini Sanctuary (~11.95 km in NW direction) Ø Sudhagad Wildlife Sanctuary (~22.50 km in NW direction) Ø Raigad Conservation Reserve (~17.85 km in SE direction)
Wildlife Sanctuary	No	
Archaeological sites monuments/ historical temples etc.	Yes	Lingana fort is ~1.0 km in ESE direction, Raigad Fort is ~2.5 km in SW direction, Jijamata Wada is ~5.0 km in WSW direction and Konkan Diva Fort & Caves ~6.0 km in NW direction from the project site.
Additional information (if any)	None	

· **Availability of Schedule-I species in study area:**

There are 31 schedule -I species i.e., *Bos gaurus* (Gaur), *Canis aureus* (Jackal), *Canis lupus* (Wolf), *Cuon alpinus* (Wild dog), *Felis chaus* (Jungle cat), *Herpestes edwardsii* (Common grey mongoose), *Hyaena hyaena* (Hyaena), *Hystrix indica* (Indian porcupine), *Loris lydekkerianus* (Slender loris), *Macaca radiata* (Bonnet macaque), *Manis crassicaudata* (Indian pangolin), *Melursus ursinus* (Sloth bear), *Panthera pardus* (Common leopard), *Prionailurus bengalensis* (Leopard cat), *Ratufa indica* (Giant Squirrel), *Tetracerus quadricornis* (Four-horned antelope), *Viverricula indica* (Small Indian civet), Vulpes vulpes (Common Fox), *Crocodylus palustris* (Marsh crocodile), *Daboia russelii* (Russell's viper), *Lissemys punctate* (Indian flapshell turtle), *Naja naja* (Cobra), *Ophiophagus hannah* (King cobra), *Ptyas mucosa* (Indian rat snake), *Python molurus* (Indian rock python),*Varanus bengalensis* (Common Indian monitor lizard), *Anthracoceros coronatus* (Malabar pied hornbill), *Bubo bubo* (Great horned owl), *Dendrocopos mahrattensis* (Yellow-crowned woodpecker), *Gallus sonneratii* (Grey jungle fowl) and *Pavo cristatus* (Peafowl) found in the study area as per The Wildlife (Protection) Amendment Act., 2022.

· **Public Hearing (PH) Details:**

Advertisement for PH with date	District Pune - Advertisement given in newspaper "Loksatta" & "Indian Express" dated 14.09.2024. District Raigad - Advertisement given in newspaper "Dainik Sagar" dated 02.10.2024 & "Indian Express" dated 04.10.2024.
Date of PH	District Pune - 18.10.2024 District Raigad - 05.11.2024
Venue	District Pune - Mauje Digewasti, Group Gram Panchayat Khanu, Taluka - Velhe, District - Pune District Raigad - Hotel Fountain Inn. (Lawn), At Post - Nadgaon Tarfe Birwadi, Near Savitri Bridge, Mumbai - Goa Highway, Taluka - Mahad, District - Raigad
Chaired by	Additional District Magistrate, Pune and Raigad
Main issues raised during PH	Employment, Land, Socio-Economic, Health and Infrastructure Development, Education related.
No. of people attended	District Pune - 176 Persons District Raigad - 48 Persons

· **Brief of base line Environment:**

Particulars	Details
Period of baseline data collection/ Sampling period.	Post Monsoon Season (October 2022 to December 2022) & Pre Monsoon Season (March to May 2023)
(Air, noise, water, land)	**<u>Ambient Air Quality - Post Monsoon Season (October 2022 to December 2022):</u>** · PM 10= 51.8 to 67.9 mg/m^3 · PM 2.5= 20.8 to 38.2 mg/m^3 · SO2= 5.9 to 15.1 mg/m^3 · NO2= 19.9 to 27.8 mg/m^3 · CO= BDL to 0.59 mg/m^3 **<u>Ambient Air Quality - Pre Monsoon Season (March to May 2023):</u>** · PM 10= 49.7 to 68.0 mg/m^3 · PM 2.5= 21.3 to 37.5 mg/m^3 · SO2= 5.2 to 12.8 mg/m^3 · NO2= 12.7 to 22.5 mg/m^3 · CO= BDL to 0.69 mg/m^3 **Incremental GLC Level:** · PM 2.5= Max. GLC: 0.89 µg/m

Particulars	Details
	3 · PM 10= Max. GLC: 2.23 µg/m^3 · SO2= Max. GLC: 1.17 µg/m^3 · NOx= Max. GLC: 1.40 µg/m^3 **Noise Level - Post Monsoon Season (October 2022 to December 2022):** Day time [50.5 to 54.0 Leq dB (A)] Night time [41.9 to 44.0 Leq dB (A)] **Noise Level - Pre Monsoon Season (March to May 2023):** Day time [50.8 to 53.6 Leq dB (A)] Night time [39.7 to 43.3 Leq dB (A)] **Surface water quality - Post Monsoon Season (October 2022 to December 2022):** 1. Physical Parameters: 1. pH = 7.18 to 7.74 2. Electrical conductivity = 145 to 224 µs/cm 3. Total suspended Solids (TSS) = 2.2 to 3.6 mg/l 2. Chemical Parameters 1. Alkalinity = 50.6 to 106 mg/l 2. Total Hardness = 68.4 to 120.4 mg/l 3. BOD = 1.4 to 7.6 mg/l 4. COD = 6.8 to 27 mg/l 5. Nitrate = 1.06 to 1.8 mg/l 6. Phosphate = 0.10 to 0.15 mg/l 7. Chloride = 14.8 to 20.6 mg/l 8. Sulphate = 4.4 to 9.52 mg/l 9. Sodium = 6 to 10.2 mg/l 10. Potassium = 1.2 to 1.8 mg/l 11. Calcium = 14.6 to 23.2 mg/l 12. Magnesium = 7.8 to 15.2 mg/l **Surface water quality - Pre Monsoon Season (March to May 2023):** 1. Physical Parameters: 1. pH = 7.07 to 7.44 2. Electrical conductivity = 113 to 184 µs/cm 3. Total suspended Solids (TSS) = BDL (DL 1.0 mg/l) 2. Chemical Parameters 1. Alkalinity = 27.17 to 70.82 mg/l 2. Total Hardness = 35.02 to 83.45 mg/l 3. BOD = 3 to 6 mg/l 4. COD = 10 to 19 mg/l 5. Nitrate = 0.45 to 1.38 mg/l

Particulars	Details
	6. Phosphate = BDL (DL 0.02 mg/l) 7. Chloride = 13.45 to 15.78 mg/l 8. Sulphate = 1.09 to 2.4 mg/l 9. Sodium = 6 to 9 mg/l 10. Potassium = BDL(DL 1.0 mg/l) 11. Calcium = 6.01 to 20.04 mg/l 12. Magnesium = 4.85 to 9.27 mg/l **<u>Ground water quality - Post Monsoon Season (October 2022 to December 2022):</u>** · Physical Parameters: o pH = 6.98 to 7.8 o Electrical conductivity = 296.87 to 370 µs/cm o TDS = 198 to 244 mg/l · Chemical Parameters o Alkalinity = 87.2 to 125.8 mg/l o Total Hardness = 102 to 160 mg/l o Nitrate = 3.86 to 8.43 mg/l o Chloride = 24.5 to 45.6 mg/l o Sulphate = 9.6 to 23.8 mg/l o Sodium = 14.6 to 25.2 mg/l o Potassium =1.9 to 3.2 mg/l o Calcium = 19.8 to 38.5 mg/l o Magnesium = 6.3 to 23 mg/l o Fluoride = 0.28 to 0.42 mg/l **<u>Ground water quality - Pre Monsoon Season (March to May 2023):</u>** · Physical Parameters: o pH = 7.1 to 7.88 o Electrical conductivity = 328.8 to 382 µs/cm o TDS =219 to 260 mg/l · Chemical Parameters o Alkalinity = 93.05 to 130.55 mg/l o Total Hardness = 112.62 to 166.21 mg/l o Nitrate = 4.1 to 8.73 mg/l o Chloride = 26.42 to 49.32 mg/l o Sulphate = 11.56 to 25.67 mg/l o Sodium = 15 to 26 mg/l o Potassium = 2.1 to 3.2 mg/l o Calcium = 22.98 to 41.23 mg/l o Magnesium = 8.91 to 23.88 mg/l o Fluoride = 0.3 to 0.47 mg/l **<u>Soil Quality - Post Monsoon Season (October 2022 to December 2022):</u>** 1. Physical Parameters:

Particulars	Details
	1. Texture = Sandy Clay Loam 2. Porosity = 38.66 to 41.2 % 3. Bulk Density =1.5 to 1.54 g/cc 4. Water holding capacity = 33.96 to 38.08 % 2. Chemical Parameters 1. pH = 6.55 to 6.98 2. Magnesium = 328.22 to 409.78 mg/kg 3. Calcium = 1782.5 to 2275.55 mg/kg 4. Chloride = 198.68 to 297.7 mg/kg 5. Sodium = 118.81 to 288.47 mg/kg 6. Potassium = 220.65 to 376.85 mg/kg 7. Organic carbon = 0.71 to 0.84 % 8. Phosphorus = 26.97 to 35.12 kg/hec 9. Nitrogen = 226.89 to 332.37 kg/hec 10. Chromium = 6.89 to 8.89 mg/kg 11. Copper = 17.02 to 24.61 mg/kg 12. Zinc = 19.78 to 32.78 mg/kg 13. Salinity = 0.13 to 0.18 ppt 14. SAR = 0.64 to 1.47 **Soil Quality - Pre Monsoon Season (March to May 2023):** 1. Physical Parameters: 1. Texture = Sandy Clay Loam 2. Porosity = 37.2 to 41.88 % 3. Bulk Density = 1.5 to 1.55 g/cc 4. Water holding capacity = 33.71 to 36.53 % 2. Chemical Parameters 1. pH = 6.5 to 7.05 2. Magnesium = 330.25 to 411.12 mg/kg 3. Calcium =1682.2 to 2314.6 mg/kg 4. Chloride = 188.7 to 308.5 mg/kg 5. Sodium = 112.45 to 280.54 mg/kg 6. Potassium =211.3 to 388.12 mg/kg 7. Organic carbon = 0.7 to 0.85 % 8. Phosphorus =27.56 to 36.22 kg/hec 9. Nitrogen = 220.57 to 341.77 kg/hec 10. Chromium = 6.77 to 9.12 mg/kg 11. Copper = 15.77 to 23.56 mg/kg 12. Zinc = 19.66 to 32.78 mg/kg 13. Salinity = 0.12 to 0.19 ppt 14. SAR = 0.61 to 1.47
	Flora- 124 species of trees, 25 species of shrubs, 15 species of herbs, 19 species of grasses, 24 species of climbers, 3 species of Epiphytes & Parasitic, 4 species of Bamboo and 14 species of Orchids. Additionally, 45 s

Particulars	Details
	pecies of aquatic flora were documented thr ough both primary observations and second ary data sources. As per the field survey and List of Flora by ENVIS, MoEFCC; no endemi c, endangered and rare species of flora have been observed under threatened status in th e study area. **Fauna-** 24 species of mammals, 12 species of reptiles, 118 species of avi-fauna, 17 spe cies of fish, 8 species of arthopods, 8 specie s of butterflies, 16 species of amphibians an d 3 species of molluscs. Some migratory bird species have also been recorded, which includes *Clamator jacobinus* (Pied-crested Cuckoo), *Coracina novaehollan diae* (Large Cuckooshrike), *Gallinago gallinag o* (Common Snipe), *Jynx torquilla* (Eurasian Wryneck), *Melophus lathami* (Crested Buntin g) and *Terpsiphone paradise* (Paradise Flycat cher). As per WPA, 1972 and subsequent a mendments, there are 31 schedule - I speci es.
	Hydrology Chapter of the Detailed Project R eport for the proposed project has been app roved by Central Water Commission, Hydrol ogy (South) Directorate, New Delhi vide the ir File no. T-11031/4/2023-HYD(S) DTE dat ed 04.12.2023. As per the approved Hydrology Chapter of DPR, the water requirement for one time filli ng of reservoirs is about 14.184 MCM and a nnual top up requirement of about 1.014 M CM to compensate the loss due to evaporati on is approved by CWC. The one-time and a nnual top-up water requirement will be take n from Self-catchment inflows of the lower reservoir.

· **Court case details: Nil**

· **Status of other statutory clearances:**

Particulars	Letter no and date
	Application for forest clearance of 66.91 ha area has b een submitted vide proposal no. FP/MH/HYD/IRRIG/4 54907/2023 dated 22.12.2023.
	Hydrology Chapter of the Detailed Project Report for

	the proposed project has been approved by Central Water Commission, Hydrology (South) Directorate, New Delhi vide File no. T-11031/4/2023-HYD(S) DTE dated 04.12.2023.
	Power potential study has been approved by Central Electricity Authority, Hydro Project Appraisal Division, New Delhi vide File no. CER-HY-12-24/1/2023-HPA Division dated 27.08.2025
	Techno-economic viability of the project has been recommended by Central Electricity Authority (CEA), New Delhi vide their letter dated 09.10.2025
Is FRA (2006) done for FC-I	Under Process

S. No.	Item Description	Capital Cost (Crores)	Recurring Cost/ annum (Crores)
	Watershed Development Plan	6.87	-
	Catchment Area Treatment Plan	2.5	0.2
	Biodiversity and Wildlife Conservation and Management Plan	4.06	-
	Fisheries Management Plan	0.35	-
	Green Belt Development Plan	0.36	0.15
	Reservoir Rim Treatment Plan	0.54	-
	Muck Management Plan	18.4	0.1
	Disaster Management Plan	0.51	0.03
	Sanitation & Solid Waste Management Plan	1.14	0.2
	Energy Conservation Measures	3.42	0.15
	Occupational and Safety Hazards	0.31	0.16
	Water, Air and Noise Management Plan	0.5	0.3
	Environment Monitoring Plan	0.2	0.3
	Total	**39.16**	**1.59**

3.3.3. Deliberations by the committee in previous meetings

N/A

3.3.4. Deliberations by the EAC in current meetings

The EAC during deliberations noted the following:

· The Expert Appraisal Committee (EAC) deliberated on the information submitted by the Project Proponent and the details presented during the meeting. The Committee observed that the proposal pertains to the grant of Environmental Clearance for Pane Open Loop Pumped Storage Project (1500 MW) in an area of 293.5 Ha located at Village Khanu, Vagheri, & Pane, Sub-district Mahad and Velhe, District Pune and Raigarh, Maharashtra by M/s JSW Energy PSP Seven Limited.

· The project falls under Item 1(c) of the Schedule to the Environmental Impact Assessment (EIA) Notification, 2006, and is categorized as a Category 'A' project, which requires appraisal at the Central level by the Expert Appraisal Committee (EAC).

· The EAC, constituted under the provisions of the EIA Notification, 2006, and comprising expert members/domain experts from various relevant fields, examined the proposal submitted by the Project Proponent. This examination included a review of the Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) reports, which were prepared and submitted by a QCI/NABET-accredited consultant on behalf of the Project Proponent.

· The EAC noted that the Project Proponent has given an undertaking that the data and information given in the application and enclosures are true to the best of his knowledge and belief and no information has been suppressed in the EIA/EMP reports. If any part of data/information submitted is found to be false/ misleading at any stage, the project will be rejected and Environmental Clearance given, if any, will be revoked at the risk and cost of the project proponent.

· The Terms of Reference (ToR) for conducting EIA/EMP study and public hearing of the Dulhasti Stage-II HEP was granted by the MoEF&CC vide letter no. No. J-12011/63/2023-IA.I(R); dated 30.01.2024 which was further amended on 03.12.2024.

· The EAC noted that the upper and lower reservoirs will be formed by concrete gravity dams with crest lengths of 536.26 m and 434.00 m, respectively. Although both reservoirs are proposed to be constructed, the project is considered an open-loop system, as water is required only for the one-time initial filling of the reservoirs, which will be met from the self-catchment inflows of the lower reservoir.

· The committee observed that the total land required for the project is for the proposed Pane PSP is 293.50 ha. Out of total project area, 8.74 ha is Govt land, 66.91 ha is forest land and 217.85 ha land is Private land. Application for Stage -I forest clearance of 66.91 ha area has been submitted vide proposal no. FP/MH/HYD/IRRIG/454907/2023 dated 22.12.2023.

· The EAC noted that the estimated project cost is Rs. 9,446.15 crore. The initial Environmental Management Plan (EMP) provided a capital cost of Rs. 39.16 crore with a recurring operation and maintenance cost of about Rs. 1.59 crore per annum. During deliberations, the EAC found the proposed EMP activities to be inadequate and advised submission of a revised EMP with an appropriate budget. Accordingly, the Project Proponent, vide email dated 19.12.2025, submitted a revised EMP with an enhanced budget of Rs. 47.56 crore.

· The committee noted that the Public Hearing for the proposed project has been conducted by the State Pollution Control Committee in district Pune on 18.10.2024 at Mauje Digewasti, Group Gram Panchayat Khanu, Taluka - Velhe, and in Raigad district on 05.11.2024 at Hotel Fountain Inn. (Lawn), At Post - Nadgaon Tarfe Birwadi, Near Savitri Bridge, Mumbai - Goa Highway, Taluka - Mahad. Publications of notice for public hearing were given in district pune in newspaper “Loksatta” & “Indian Express” on 14.09.2024 and in district Raigad in newspaper “Dainik Sagar” dated 02.10.2024 & “Indian Express” dated 04.10.2024. The meeting was chaired by Additional District Magistrate, Pune and Raigad, ensuring due diligence in addressing public concerns and regulatory compliance. 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 the MOU has been signed between Department of Water Resources, Govt. of Maharashtra and M/s. JSW Energy Seven Limited, (SPV of JSW Neo Energy Limited) on 26.09.2024. Water availability certificate has been received from Water Resource Department; Government of Maharashtra vide letter No WFR/Savitri/932 dated 16.10.2023.

· The committee observed that the proposed area of Pane Pumped Storage Project (l500MW) falls in the Western Ghats, therefore, the EAC sub-committee had carried out a site visit to project site from 27.06.2025 to 28.06.2025. The sectoral EAC has discussed the site visit report in 39th EAC meeting held on 12.09.2025 and made specific observations/recommendations. It was noted that the PP has provided satisfactory information/response to the recommendations of the EAC (Sub -Committee).

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

· The EAC also noted that Biodiversity and Wildlife Conservation and Management Plan has been prepared for 31 Schedule-I species and submitted to the State Forest Department vide letter dated 03.05.2024 for authentication, with an estimated implementation cost of ₹4.06 Crores.

3.3.5. Recommendation of EAC

Recommended

3.3.6. Details of Environment Conditions

3.3.6.1. 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.	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.
3.	PP should establish in house (at project site) environment laboratory for measurement of

	environment parameter with respect to air quality and water (surface and ground). A dedicated team to oversee environment management shall be setup which should comprise of Environment Engineers, Laboratory chemist and staff for monitoring of air, water quality parameters on routine basis.
4.	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.
5.	PP shall procure construction material only from those Organizations having all valid legal/statutory clearances/permissions or necessary permission to be obtained for quarrying construction materials for the project as per the EIA Notification, 2006 and as amended thereof.
Socio-economic:	
1.	Land acquired for the project shall be suitably compensated in accordance with the prevailing guidelines of the state government and provisions under Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013.
2.	RO plant shall be installed in the nearby 5 villages and the maintenance shall be done by the project Authorities.
3.	Solar panel be provided to the families living in rural areas within 10 km radius of project.
4.	School up to 12^{th} Standard shall be established and managed to provide free quality education for children from project affected villages/Tribal villages. Adequate transportation facilities shall also be provided to students to ensure connectivity and ease of access.
5.	Scholarship programme shall be initiated for the youths in the project affected villages.
6.	50 bed multi-specialty hospital shall be established to cater the need of tribal population/locals. The tribal population within 10 km radius of the project shall be given free of cost medical facility.
7.	Skill development Centre shall be established within 10 km radius of the project and regular training programs for development and promotion of traditional art/products of tribal/local population. The Skill Development Plan shall mandatorily include the following components: · Capacity building and skill enhancement programs aligned with local livelihood opportunities. · Establishment of linkages with Industrial Training Institutes (ITIs) and other recognized training centres for imparting technical skills. · Provision of free or subsidized access to healthcare facilities in project-supported hospitals and health centres. · Support to educational institutions in the study area through free services, scholarships, infrastructure strengthening, and vocational guidance programs. · Special outreach initiatives for women, youth, and vulnerable groups within the SC/ST communities to ensure inclusive participation and benefits. · The Plan shall be implemented in a time-bound manner with clearly earmarked

	budgetary provisions, which shall not be diverted for any other purpose.
8.	The PP shall submit annual progress reports on the implementation of the Skill Development Plan and associated community welfare measures to the Regional Office of the Ministry.
9.	Bio-Gas plant shall be installed in the Project affected area for Utilizing Cattle waste (Cow Dung) into renewable source of fuel.
10.	Preference in employment opportunities and admission to ITI institutions shall be given to Project Affected Families (PAFs).
11.	An institutional mechanism to be developed to ensure the preference of jobs to PAFs and SC/ST and also a policy for preferential treatment for award of sundry works to the PAFs and SC/ST and their dependents.
12.	The compliance of above conditions shall be monitored by IRO, MoEF&CC and regularly site visit once in year. The compliance report of IRO shall be regularly submitted to MoEF&CC.
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.	Landslide and other heavy rain related disasters shall be taken care of through appropriate preventive measures during construction and operation of project.
Environmental management and Biodiversity conservation:	
1.	Stage-I FC shall be obtained before grant of EC.
2.	The Watershed Management Plan as submitted and appraised by the EAC shall be implemented in a time bound manner and the progress made shall be reported in six monthly compliance report. At least one existing water body in each village within the study area shall be conserved/rejuvenate/restore in consultation with the local authorities. Implementation status be submitted in the 6 monthly compliance report to the concerned regional office of the Ministry.

3.	PP shall obtain approval on Biodiversity and Wildlife Conservation and Management plan from the State Forest Department and activities and budget suggested shall be incorporated and accordingly, EMP budget shall be revised.
4.	On-line monitoring system for the e-flow releases in the upstream and downstream of the project to be installed.
5.	The plastic waste shall be disposed of by recycling and not by land filling.
6.	Local indigenous varieties of plants to be grown and maintained till their full growth including gap filling.
7.	Skill mapping be undertaken for the youths of the affected project area and based on the skill mapping, the trainings to the youths be incorporated for their appropriate engagements in the Project.
8.	Land acquired for the project shall be suitably compensated with the prevailing guidelines and all commitments made during the Public Hearing shall be fulfilled.
9.	The project-affected population should be resettled and rehabilitated as per the latest R & R Policy.
10.	Six monthly compliance reports shall be submitted by the PP to Regional Office, MoEF& CC, without fail.
11.	The Environmental Management Plan (EMP) shall be strictly adhered to as submitted. 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.
12.	The contract clause limiting the No. of vehicles used during excavation and transportation shall followed scrupulously and the same shall informed to the ministry.
13.	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.
14.	No vehicle purchase shall be allowed from funds earmarked for implementation of Wildlife Conservation plan.
15.	10000 Native plants shall be planted around the muck disposal area in consultation with Forest Department and the survival of plants shall be reported in the 6 monthly compliance report.
16.	The Project Proponent shall explore the possibility to undertake tree transplantation, wherever feasible, in consultation with the State Forest Department. Survival of at least 80% of transplanted trees shall be ensured, with monitoring for a minimum period of five years.
17.	Plantation of saplings (10000 nos.) shall be carried out as a part of the tree plantation campaign "Ek Ped Ma Ke Naam" and the details of the same shall be uploaded in the

	MeriLiFE Portal (https://merilife.nic.in).
18.	PP shall prepare time bound reclamation and restoration plan for restoration of batching plant in consultation with the Forest Department and same shall be submitted to IRO, MoEF&CC and shall be fully implemented within five years of commissioning of the project.
19.	PP shall optimize the road design by restricting the width to 7 meters along straight stretches and providing additional widening only at hairpin bends or U-turns, wherever essential, so as to minimize forest land diversion and reduce tree cutting to the extent possible.
20.	Piped water supply will be provided to the project affected villages.
21.	All ephemeral and seasonal rivulets and springs around the project area (within 10km radius) shall be preserved in their natural condition without obstruction or diversion. Necessary measures shall be undertaken for their conservation and rejuvenation to maintain natural drainage and ecological flow.

3.3.6.2. Standard

1(c)	**River Valley/Irrigation projects**
Statutory compliance	
1.	The project proponent shall obtain forest clearance under the provisions of Forest (Conservation) Act, 1986, in case of the diversion of forest land for non-forest purpose involved in the project.
2.	The project proponent shall obtain clearance from the National Board for Wildlife, if applicable.
3.	The project proponent shall prepare a Site-Specific Conservation Plan & Wildlife Management Plan and approved by the Chief Wildlife Warden. The recommendations of the approved Site-Specific Conservation Plan / Wildlife Management Plan shall be implemented in consultation with the State Forest Department. The implementation report shall be furnished along with the six-monthly compliance report. (in case of the presence of Schedule-I species in the study area).
4.	The project proponent shall obtain Consent to Establish / Operate under the provisions of Air (Prevention & Control of Pollution) Act, 1981 and the Water (Prevention & Control of Pollution) Act, 1974 from the concerned State Pollution Control Board/ Committee.
5.	NOC shall be obtained from National Commission of Seismic Design Parameters (NCSDS) of CWC.
6.	Necessary approval of CEA shall be obtained for those projects having the project cost more than Rs. 1,000 crores.
Air quality monitoring and preservation	
1.	Regular monitoring of various environmental parameters viz., Water Quality, Ambient Air Quality and Noise levels as per the CPCB guidelines at designated locations shall be carried out on monthly basis and a detailed database of the same shall be prepared and recorded. This shall be used as a baseline data for post construction EIA / Monitoring purposes.

2.	Appropriate Air Pollution Control (APC) system shall be provided for all the dust generating points including fugitive dust from all vulnerable sources, so as to comply prescribed standards.
3.	Necessary control measures such as water sprinkling arrangements, etc. bet taken up to arrest fugitive dust at all the construction sites.
4.	Conjunctive use of surface water to be planned in the project to check water logging as well as to increase crops productivity. The field drains shall be connected with natural drainage system (if applicable).
5.	Remodelling of existing natural drains (link drains) and connecting them with irrigated land through constructed field drains, collector drains, etc. are to be ensured on priority basis (if applicable).
6.	Before impounding of the water, Cofferdams for both at the upstream and downstream are to be decommissioned as per EIA/EMP report so that once the project is commissioned; cofferdam should not create any adverse impact on water environment including the rock mass and muck used for the Cofferdam.
7.	As the reservoir will be acting as balancing reservoir and there would be fluctuation of water level during peaking period, efforts be made to reduce impact on aquatic life including impacts during spawning period both at the upstream and downstream of the project.
8.	Water depth sensors shall be installed at suitable locations to monitor e-flow. Hourly data to be collected and converted to discharge data. The Gauge and Discharge data in the form of Excel Sheet be submitted to the Regional Office, MoEF & CC and to the CWC on weekly basis.
9.	Mixed irrigation shall be practised and necessary awareness be given to all the farmers and trained in the use of such systems. Proper crops selection shall be carried out for making irrigation facility more effective (if applicable).
10.	On Farm Development (OFD) works like landscaping, land levelling, drainage facilities, field irrigation channels and farm roads, etc. should be taken up in phased manner prior to the start of irrigation in the entire command area. The Command Area Development Plan should be strictly implemented as proposed in the EIA/EMP report (if applicable).
Noise monitoring and prevention	
1.	All the equipment likely to generate high noise shall be appropriately enclosed or inbuilt noise enclosures be provided so as to meet the ambient noise standards as notified under the Noise Pollution (Regulation and Control) Rules, 2000, as amended in 2010 under the Environment Protection Act (EPA), 1986.
2.	The ambient noise levels should conform to the standards prescribed under E(P)A Rules, 1986 viz. 75 dB(A) during day time and 70 dB(A) during night time.
Catchment Area Treatment Plan	
1.	Catchment Area Treatment (CAT) Plan as proposed in the EIA/EMP report shall be implemented in consultation with the State Forest Department and shall be implemented in synchronization with the construction of the project.
Waste management	
1.	Muck disposal be carried out only in the approved and earmarked sites. The dumping sites shall be located sufficiently away from the HFL of the river. Efforts be made to reuse the muck for construction

	and other filling purposes and balanced be disposed of at the designated disposal sites. Once the muck disposal sites are inactive, proper treatment measures like both engineering and biological measures be carried out so that sites are stabilized quickly.
2.	Solid waste management should be planned in details. Land filling of plastic waste shall be avoided and instead be used for various purposes as envisaged in the EIA/EMP reports. Efforts be made to avoid one time use of plastics.
Green Belt and Wildlife Management	
1.	Based on the recommendation of Cummulative Impact Assessment and Carrying capacity study of river basin or as per the ToR conditions or minimum 15% of the average flow of four consecutive leanest months, whichever value is higher, shall be released as environmental flow.
2.	Detailed information on species composition particular to fish species from previous study/literature be inventoried and proper management plan shall be prepared for insitu conservation in the streams, tributaries of river and the main river itself for which adequate budget provision be made and followed strictly.
3.	Wildlife Conservation Plan approved by the Chief Wildlife Warden shall be implemented in consultation with the local State Forest Department.
4.	To enrich the habitat of the project site, plantation shall be raised as envisaged in the EIA/EMP report. Plantation to be developed along the periphery of the reservoir in multi-layers with local indigenous species in consultation with the local State Forest Department.
5.	Compensatory afforestation programme shall be implemented as per the plan approved.
6.	Fish ladder/pass as envisaged in the EIA/EMP report shall be provided for migration of fishes. Regular monitoring of this facility be carried out to ensure it effectiveness.
Public hearing and Human health issues	
1.	Resettlement & Rehabilitation plan be implemented in consultation with the State Govt. as approved by the State Govt.
2.	Budget provisions made for the community and social development plan including community welfare schemes shall be implemented in toto.
3.	Preventive measures viz. fuming and spraying of mosquito control shall be done in and around the labour colonies, affected villages, stagnated pools, etc. Provisions be made to not to create any stagnated pools to avoid creation of breeding grounds of the vector borne diseases.
4.	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.
5.	Labour force to be engaged for construction works shall be examined thoroughly and adequately treated before issuing them work permit. Medical facilities shall be provided at the construction sites.
Risk Mitigation and Disaster Management	

1.	Early Warning Telemetric system shall be installed in the upper catchment area of the project for advance intimation of flood forecast.
2.	Drilling and blasting shall be done only either by licensed explosive agent or by the proponent after obtaining required approvals from Competent Authorities.
3.	Emergency preparedness plan be made for any eventuality of the dam failure and shall be implemented as per the Disaster Management Plan.
4.	Stabilization of muck disposal sites using biological and engineering measures shall be taken up to ensure that muck does not roll down the slopes and shall be disposed safely and that it does not pollute the natural streams and water bodies in surrounding area. The engineering measures for the muck disposal arrangements be evolved after carrying out required slope stability analysis.
5.	Catchment area treatment plan shall be prepared and sufficient fund shall be provided for afforestation, rim plantation, pasture development, nursery development.
Corporate Environment Responsibility	
1.	The project proponent shall comply with the provisions contained in this Ministry's OM vide F.No. 22-65/2017-IA.III dated 30th September, 2020, as applicable, regarding Corporate Environment Responsibility.
2.	Skill mapping be undertaken for the youths of the affected project area and based on the skill mapping, necessary trainings to the youths be provided for their long time livelihood generation
3.	The company shall have a well laid down environmental policy duly approve by the Board of Directors. The environmental policy should prescribe for standard operating procedures to have proper checks and balances and to bring into focus any infringements/deviation/violation of the environmental / forest / wildlife norms/ conditions. The company shall have defined system of reporting infringements / deviation/violation of the environmental / forest / wildlife norms/conditions and / or shareholders/ stake holders. The copy of the board resolution in this regard shall be submitted to the MoEF&CC as a part of six-monthly report.
4.	A separate Environmental Cell both at the project and company head quarter level, with qualified personnel shall be set up under the control of senior Executive, who will directly to the head of the organization.
5.	Action plan for implementing EMP and environmental conditions along with responsibility matrix of the company shall be prepared and shall be duly approved by competent authority. The year wise funds earmarked for environmental protection measures shall be kept in separate account and not to be diverted for any other purpose. Year wise progress of implementation of action plan shall be reported to the Ministry/Regional Office along with the Six Monthly Compliance Report.
6.	Post EIA and SIA be prepared for the project through a third party and evaluation report be submitted to the Ministry after five years of commissioning of the project.
7.	Multi Disciplinary Committee (MDC) be constituted with experts from Ecology. Forestry, Wildlife, Sociology. Soil Conservation, Fisheries, NGO, etc. to oversee implementation of various environmental safeguards proposed in EIA/EMP report during construction of the project. The monitoring report the Committee shall be uploaded in the website of the Company.
8.	Formation of Water User Association/Co-operative be made involment of the whole community be ensured for discipline use of available water for irrigation purposes

Miscellaneous	
1.	The project proponent shall make public the environmental clearance granted for their project along with the environmental conditions and safeguards at their cost by prominently advertising it at least in two local newspapers of the District or State, of which one shall be in the vernacular language within seven days and in addition this shall also be displayed in the project proponent's website permanently.
2.	The copies of the environmental clearance shall be submitted by the project proponents to the Heads of local bodies, Panchayats and Municipal Bodies in addition to the relevant offices of the Government who in turn has to display the same for 30 days from the date of receipt.
3.	The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and update the same on half-yearly basis.
4.	The project proponent shall submit six-monthly reports on the status of the compliance of the stipulated environmental conditions on the website of the ministry of Environment, Forest and Climate Change at environment clearance portal.
5.	The project proponent shall submit the environmental statement for each financial year in Form-V to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently and put on the website of the company.
6.	The project proponent shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities, commencing the land development work and start of production operation by the project.
7.	The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board and the State Government.
8.	The project proponent shall abide by all the commitments and recommendations made in the EIA/EMP report, commitment made during Public Hearing and also that during their presentation to the Expert Appraisal Committee.
9.	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment, Forests and Climate Change (MoEF&CC).
10.	Concealing factual data or submission of false/fabricated data may result in revocation of this environmental clearance and attract action under the provisions of Environment (Protection) Act, 1986.
11.	The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.
12.	The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.
13.	The Regional Office of this Ministry shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information/monitoring reports.
14.	The above conditions shall be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 and the Public Liability Insurance Act, 1991 along with their amendments and Rules and any

	other orders passed by the Hon'ble Supreme Court of India / High Courts and any other Court of Law relating to the subject matter.
15.	Any appeal against this EC shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.

3.4. Agenda Item No 4:

3.4.1. Details of the proposal

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

3.4.2. Project Salient Features

null

3.4.3. Deliberations by the committee in previous meetings

Date of EAC 1 :29/08/2025

Deliberations of EAC 1 :

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

3.4.4. Deliberations by the EAC in current meetings

The Member Secretary informed that, the representative of the PP vide email/letter dated 11.12.2025 expressed its inability to attend the EAC meeting due to unavoidable circumstances, and requested for deferment. Accordingly, the EAC agreed to consider the proposal in a later meeting.

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

3.4.5. Recommendation of EAC

Deferred for PP not attending the meeting

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 Balram Kumar	Member	emo***@nic.in	
10	Shri Rakesh Goyal	Member	goy*********@nic.in	
11	Yogendra Pal Singh	Scientist - F	yog*******@nic.in	

Minutes of the 45th meeting of the Expert Appraisal Committee (RV & HE projects) on 19TH December, 2025 at Ministry of Environment, Forest and Climate Change, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi

The 45th 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 19th December, 2025 through Physical mode, under the Chairmanship of Prof. G. J. Chakrapani. The list of members present in the meeting is at **Annexure**.

Confirmation of the Minutes of the 44th EAC meeting:

The Minutes of the 44th EAC meeting held on 10th December, 2025 were confirmed.

Agenda Item No. 45.1

Kalai II Hydro Electric Project (Run-of-the-River) of (1200 MW) in an area of 869.3503 Ha located at Village Kamdi, Tehsil Hawai Town, Anjaw District of Arunachal Pradesh by M/s THDC India Limited – Environmental Clearance (EC) – reg.

[Proposal No. IA/AR/RIV/557663/2025; F. No. J-12011/40/2009-IA-I(R)]

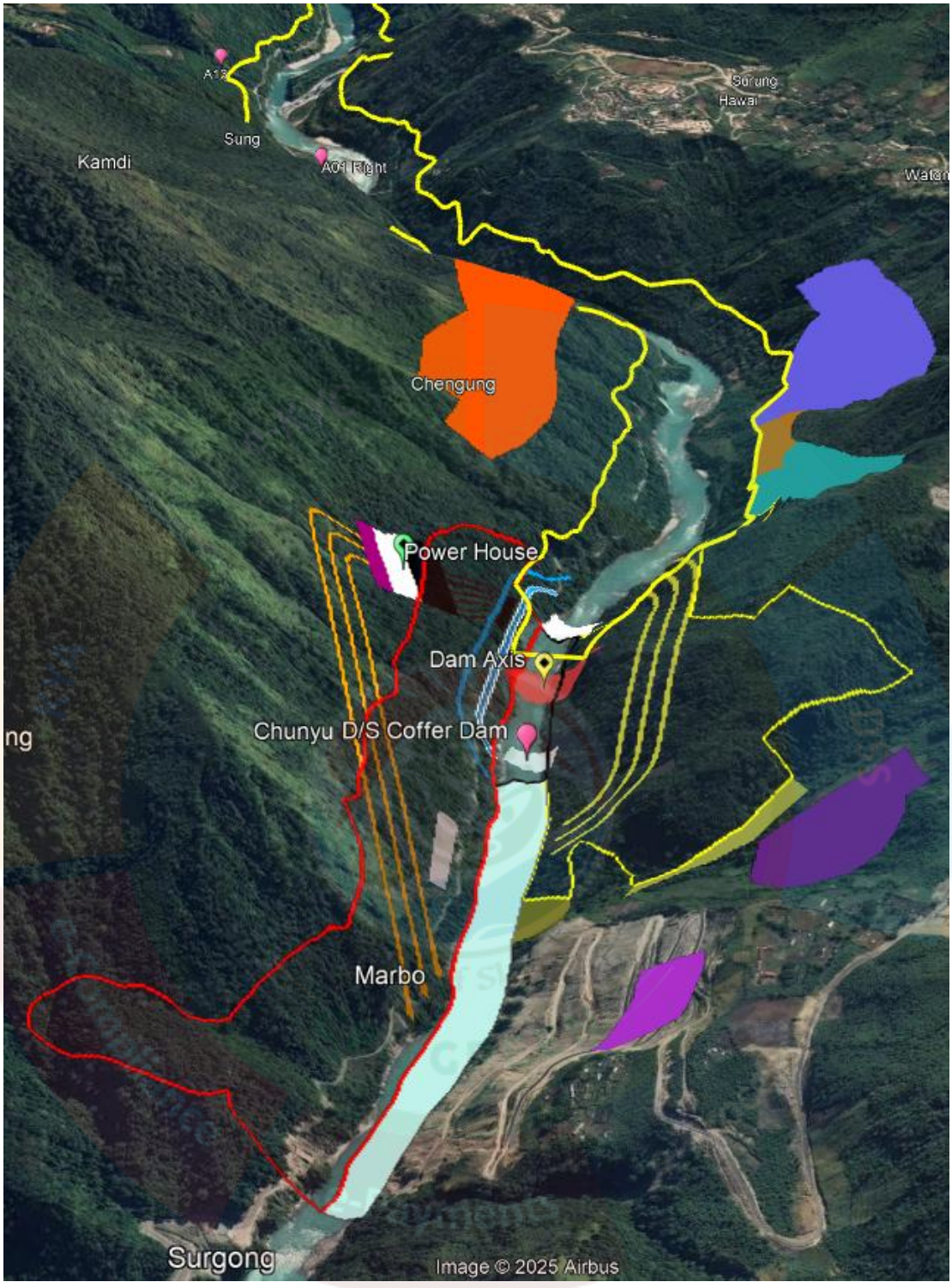
45.1.1: The proposal is for grant of Environmental Clearance (EC) to the project for Kalai II Hydro Electric Project (Run-of-the-River) of (1200 MW) in an area of 869.3503 Ha located at Village Kamdi, Tehsil Hawai Town, Anjaw District of Arunachal Pradesh by M/s THDC India Limited.

45.1.2: 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. The Kalai-II H.E. Project envisages run of the river scheme with pondage on Lohit river, a left bank tributary of Brahmaputra river. The objective is to utilize flows of Lohit river over large head available for hydro power generation. The Lohit river, a tributary of Brahmaputra river, rises at an EL 6190 m above MSL from the snow clad peaks in Eastern Tibet and enters India through Kibithoo area of the district.

ii. The Kalai-II HE Project envisages utilization of a gross head of about 125m for power generation with an installed capacity of 1200MW. The coordinates of Kalai-II HE Project are latitude 27o 54’ 20” N and longitude 96o 48’ 16” E. The catchment area intercepted up to the proposed dam site including Tibet region is estimated to be about 15,654 sq. km.

iii. The site location map of the project is as under:



iv. The full reservoir level kept as EL 904.80m. The project involves construction of a concrete gravity dam, upstream and downstream coffer dam, diversion tunnel, intake tunnel, pressure Shafts, underground Powerhouse complex, surge chamber and Tail Race Tunnel etc.

v. The Kalai-II HE project falls under category "A" listed for Environment Clearance by MoEF&CC. The TOR Clearance was accorded by MoEF&CC vide file no. File No: J-12011/40/2009-IA-I(R), dated 07.08.2024.

vi. **Land requirement:** The total land requirement of the Project is 869.3503 Ha. The proposal for diversion of 869.3503 Ha submitted on Parivesh portal on 19.01.2025. The proposal for diversion of 869.3503 Ha forest land recommended by GoAR to MoEF&CC after completion of due process. Proposal is under process on Parivesh portal.

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

The entire Project falls under Anjaw District of Arunachal Pradesh. The population in Anjaw district is largely rural, with a significant tribal and backward community presence. The Mishmi and Meyor are the main tribes inhabited in Anjaw district.

A total nos. of 392 households covered under the study area with total population of 1934 with male population comprising 950 and female population comprising 984.

The male and female population in study area comprises about 49.12% and 50.88% respectively of the total population. The population comprising of children below the age of 6 years accounts for about 19.75% of the total population in the study area.

Schedule Tribes (ST) are the dominant caste group, accounting for 98.65% of the total population. The General Caste comprise of only 1.35% % of the total population. There are no Scheduled Caste household/ families in the Study Area villages.

It is observed that about 39.92% of the total population in the study area is literate, while about 60.08% are illiterate. The literacy rate among male and female population is 46.95% and 33.13% respectively.

It is observed that 40.12% 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 account for about 59.88% of the total population. Among the population that is working about 87.25% has been designated as Main workers while the remaining 12.75% has been designated as Marginal workers.

viii. **Water requirement:** A design power output of 1,200 megawatts (MW) has been envisaged for the project, with a total design discharge of approximately 1128.06 m3/s, developed with seven turbine generator units.

ix. **Project Cost:** The estimated project cost is Rs. 14,176.26 Cr Total capital cost earmarked towards environmental management plan is Rs. 67830.73 lakhs and the Recurring cost (operation and maintenance) will be about Rs. 61.16 lakhs per annum.

x. **Project Benefit:**

The total number of persons inhabiting the area including the service population will be about 3000. The construction of the proposed project would invariably create a number of direct employment opportunities. However, indirect employment opportunities would also be generated which would provide great impetus to the economy of the local area. Various types of businesses are also likely to concentrate here and likely to benefit immensely, as demand for almost all types of goods and services will increase significantly. The business community as a whole would be benefited. The locals would also avail these opportunities arising from the project and increase their income levels. Other benefits of Project would include:

- Compensation for loss of land, houses and all other immovable properties to the PAFs as per the Land Acquisition Act.
- Improvement in the quality of life: primary education, primary health care, women and child welfare, periodic medical camps.
- Development strategy to bring about a positive socio-economic transformation of the PAFs, so as to improve the quality of their life.
- Power from the project, shall bring overall improvement in quality of life and the economic growth of the local populace.
- Construction and operation of this Project would lead to overall sustainable development in the project region by making a direct as well as indirect contribution to the populace.

xi. **Environmental Sensitive area:** There are no national parks, wildlife sanctuaries, Biosphere Reserves, Tiger/Elephant Reserves, Wildlife Corridors etc. within 10 km distance from the project site. Lohit River flows through the project site.

xii. **MoU / any other clearance/ permission signed with State government:** Memorandum of Agreement (MOA) signed between Government of Arunachal Pradesh & THDC India Limited on 30.12.2023 for the development of Kalai-II HEP project.

xiii. **Resettlement and rehabilitation:** The land required for various project appurtenances is 869.3503 ha. A total 1521 PAFs have been identified in the 33 Project Affected Villages. Among them, 376 PAFs fall under the Full Submergence category, another 113 PAFs are classified as Highly Impacted, and remaining 1032 PAFs are categorized as Impacted. A provision of Rs. 190.68 crore has been kept towards implementation of Resettlement and Rehabilitation Plan.

xiv. **Scheduled–I species:** In the study area Takin (Budorcas taxicolor) has been observed as Schedule-I species, which is Vulnerable A2cd in the IUCN Red List Category. A budget of Rs. 100 lakh has been proposed for implementation of Conservation Plan which

includes Habitat Protection, Anti-Poaching and Law Enforcement, Community engagement, Monitoring & Research, Emergency Response Mechanism, Reducing man wildlife conflicts, Creation of drinking water facility, Training & Awareness, Forest Fires Protection measures, Procurement of Equipment etc.

xv. **Alternative Studies:**

The alternative locations for the project have been compared for dam axes mainly for 02 nos. alternatives for the final configuration of the project. The main characteristics of the principal project features as established for this comparative analysis are indicated below:

- Alternative I : Dam at Site 1 (Downstream axis) with underground powerhouse
- Alternative II : Dam at Site 2 (Upstream axis) with underground powerhouse

In view of the lower overall estimated project development cost, with further detailed field investigation, optimization and DPR level design of Alternative-I has been finally done. Other considerations favoring Alternative-I explicitly not included in the cost comparison are:

- Alternative-I would have lower head losses because of shorter length of tailrace tunnel.
- Alternative-I would require a smaller sized surge chamber because of shorter length of TRT.
- Alternative-I would have a larger reservoir compare to Alternative-II, thus having a larger retention volume for sediment.
- Alternative-II has not been penalized for the delay in the on-line date that would result with the construction of the longer tailrace tunnels and the resulting loss in revenue. This would further favor the selection of Alternative-I.

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

During the construction phase, the total municipal solid waste generation is estimated to be around 1.35 tons per day (t/day). Out of this, approximately 0.53 t/day will comprise biodegradable or degradable waste, such as food residues and organic matter, while about 0.82 t/day will consist of non-degradable waste, including plastics, packaging material, and other inert components.

Hazardous waste inter alia include burnt mobile oil from vehicles and construction machinery and equipment, batteries and like items specified in column (3) of Schedule-I of Hazardous and other Wastes (Management & Transboundary Movement) Rules, 2016. These will be disposed of by auctioning them to the recycling vendors approved by the CPCB or Arunachal Pradesh State Pollution Control Board in consonance with Hazardous and other Wastes (Management & Transboundary Movement) Rules, 2016. The project proponent shall earmark a suitable site for storage of hazardous waste, prior to collection by an authorized vendor for handling the hazardous work.

Muck is likely to be generated due to various project related activities is 154.598 lakh m^3. About 17.347 lakh m^3 of muck generated shall be utilized and about 137.251 lakh m^3 of muck

shall be disposed off in 04 nos. Muck disposal sites of area 70.22 ha and capacity 139.029 lakh m^3. Engineering & biological measures are proposed for management of muck generated at site.

xvii. Public Hearing for the proposed project has been conducted by the State Pollution Control Board on 20.08.2025. The main issues raised during the public hearing are related to are as below:

S. No.	Name of Participant	Issues Raised	Response
1.	**Shri Behenso Pul** Chairman, Hydro Power Committee Kalai-ll for Project Affected Families	There will be generation of dust and noise pollution due to operation of heavy machineries and blasting which in turn will cause river pollution. What mitigation measures are planned to control the pollution.	A detailed plan for control of dust and noise pollution has been prepared. Detailed Mitigation measures have been suggested in Section 4.6 of CEIA Report for control of air pollution due to Fuel Combustion in Equipment and Vehicles. Operation of DG sets, Fugitive Emissions from Various Sources, Emissions from Crushers, Dust emissions from Muck Disposal, etc. Detailed Mitigation measures have been suggested in Section 4.5 of CEIA Report for control of noise pollution due to operation of construction equipment, drilling, blasting and increased vehicular movement.
		The operations of heavy machineries will have effect on aquatic & wildlife and the nearby villages.	Detailed Mitigation measures have been suggested in Section 4.5 of CEIA Report for control of noise pollution due to operation of construction equipment, drilling, blasting

S. No.	Name of Participant	Issues Raised	Response
			and increased vehicular movement to minimize impacts on wildlife. The operations of heavy machineries leads to generation of effluents with oil & grease. An Oil & Grease separator unit has been proposed to treat the effluents from Workshops, parking areas, etc. to treat the effluent before disposal, so that there is no impact on Aquatic Ecology. The details are given in Section-4.2.
		Solid waste generated from the project camp must not be disposed into the river or water bodies. For its proper management, a concrete plan must be in place.	A detailed Solid waste management plan covering following has been prepared: • Municipal Solid Waste • Hazardous Waste • E-Waste • Construction and Demolition Waste The details are given in Sections 4.7.1.8 to 4.7.1.11 of CEIA Report.
		The draft EIA report prepared by WAPCOS Limited is based on old data. The data must be corrected.	As a part of the CEIA Study, field studies for various aspects was conducted for three seasons as listed below: • Monsoon Season: August, September & October 2024

S. No.	Name of Participant	Issues Raised	Response
			• Winter Season: December 2024 • Pre-monsoon Season: March 2025 Thus, CEIA Report has been prepared on new data, as per the ToR approved by MoEF&CC.
		The land rates must be enhanced.	This same shall be decided by State Govt. as per policy.
		The rates for construction of house under lndira Awas Yojana (lAY) as per draft EIA report will not be sufficient for construction of tribal house. ln this regard, the revised rate submitted to the Govt. of Arunachal Pradesh must be considered.	The rate shall be decided by State Govt as per RFCTLARR Act-2013 & Handbook for LA-Arunachal Pradesh-2022.
		The submerged villages must be migrated on community/group basis.	The location of Resettlement Sites shall be finalized by State Govt./ District Administration.
		The Local Area Development Fund (LADF) to must be utilized by the Project Affected Families (PAFs)/Project Affected Villages (PAVs).	Utilization of Local Area Development Fund (LADF) shall be finalized by State Govt./ District Administration in consultation with PAFs.

S. No.	Name of Participant	Issues Raised	Response
		The center for recruitment of staff for various grades as envisaged in the draft EIA report must be done at Hawai under the Deputy Commissioner, Anjaw district.	Recruitment center shall be opened at suitable location as per mutual consent of State Govt and THDCIL.
		The Skill Development Training Centre should be made functional at the earliest.	Matter under consideration. THDCIL has requested District Administration, Anjaw on 05.04.2025 and 20.09.2025 for allotment of Polytechnic Campus/Building to start Skill Development Training Centre at Hawai at the earliest.
		A Nursing college must be established at Anjaw district. Further, up-gradation of the existing health care establishment at Swami Camp should be done.	The same shall be decided by the State Govt/ District Administration, within the provisions of R&R / LADP.
		The LADF fund should be enhanced to a total of 2% (1% from the State Government and 1% from M/s THDC lndia Limited).	It is a Policy matter & applicable as per Govt of India guidelines, Electricity Act/CEA Guideline.
		Study on soil erosion around nearby villages should be carried out with its mitigation plans.	The same has been addressed under the CAT plan for the project in the catchment area, covering nearby villages, has been planned. The plan gives detailed biological and

S. No.	Name of Participant	Issues Raised	Response
			engineering measures for soil and water conservation.
		A bridge should be constructed at Samdul village to ease the transportation.	It will be decided by State Govt/ District Administration in consultation with THDCIL as per R&R provision.
		There should be reservations in business for local contractors as per Arunachal Pradesh District Based Entrepreneurs Act, 2015.	It shall be dealt as per Article 6, clause 6.8 of the MoA between Govt of AP and THDCIL. *The Corporation shall give preference to the local contractors fulfilling the eligibility criteria in the award of the work except for the specialized jobs.*
		The migrant labours should not be allowed to cast their votes in any kind of election.	The same shall be decided by State government of Arunachal Pradesh.
		The project affected villagers should be given right for fishing in the project site.	The same shall be decided by State government of Arunachal Pradesh.
		The cultural and spiritual significant places must be preserved.	The cultural and spiritually significant places which are likely to be affected by the projects shall be preserved in consultation with State Govt./ District Administration as per the provisions of R&R / LADP.

S. No.	Name of Participant	Issues Raised	Response
		Hospital with 50 bedded capacities should be established at Hawai.	The same shall be decided by the State Govt./ District Administration, within the provisions of R&R / LADP.
		A Drugs de-addiction center should be established at Hawai.	The same shall be decided by the State Govt./ District Administration, within the provisions of R&R / LADP.
2.	**Shri Birenso Pul** Secretary, Hydro Power Committee Kalai-ll for Project Affected Families	The PAFs are not happy because the draft EIA report hasn't included the latest amended Social Impact Assessment (SlA).	The latest amended Social Impact Assessment (SlA) being included in the CEIA Report.
		In the draft EIA report, the settlement and Horticulture & Agriculture area is shown very less, whereas, large area of land is shown as forest area.	The ownership status of land to be acquired for the project is being finalized by the district administration.
		During construction of the project, there will be generation of noise and water pollution which will cause difficulties to local people. The Control and mitigation measures supposed to be taken are indicative.	A detailed plan for control of dust and noise pollution has been prepared. Detailed Mitigation measures have been suggested in Section 4.6 of CEIA Report for control of air pollution due to Fuel Combustion in Equipment and Vehicles. Operation of DG sets, Fugitive Emissions from Various Sources, Emissions from Crushers, Dust emissions from Muck Disposal, etc. Detailed Mitigation measures have been

S. No.	Name of Participant	Issues Raised	Response
			suggested in Section 4.5 of CEIA Report for control of noise pollution due to operation of construction equipment, drilling, blasting and increased vehicular movement. Based on our past experience, the measures suggested are comprehensive and adequate to mitigate the air and noise pollution from various sources during project construction phase.
		The land rate must be enhanced.	This is a state policy matter and shall be decided by the State Govt.
3.	**Shri. Bramgrow Pul** Vice-Chairman, Hydro Power Committee Kalai-ll for Project Affected Families	There should be reservation for local contractors.	It shall be dealt as per Article 6, clause 6.8 of the MoA (Dec. 2023) between Govt of AP and THDCIL *The Corporation shall give preference to the local contractors fulfilling the eligibility criteria in the award of the work except for the specialized jobs.*
		The THDC lndia Limited is proposing project for 1200 MW and their power selling plan is more than 1200 MW. Clarification on this must be given by the company.	The PPA has been signed with 3 States and Indian Railways, and final allocation of Power will be done by MOP, GOI.

S. No.	Name of Participant	Issues Raised	Response
		A medicinal plant available locally namely "*Mishmi Teeta*" is to be included in the EIA report.	Complied and covered in Section 3.4.6.5.
		Priority must be given for up-gradation of Hawai Hospital.	The same shall be decided by the State Govt./ District Administration, within the provisions of R&R / LADP.
4.	**Shri Omiso Pul, Kamdi village**	ln the draft EIA report, the names of some flora and fauna are missing. Therefore, reference must be taken from the latest RET data book and necessary inclusion must be made.	As part of EIA Study, latest RET data book has been used for compilation and the findings of field studies too have been suitably incorporated.
		The company must consult and engage local people for inclusion of local names of flora and fauna along with pictures that will help in easy understanding of all the PAFs.	The CEIA Report has been prepared in consultation with locals. Local names of flora and fauna to the extent possible have been included.
		There are many medicinal plants available in the area. So, what steps will be taken to preserve such medicinal plants.	Medical plants of various native species shall be planted during various plantation activities during the development of the project. A botanical garden for conservation of local plants including medicinal plants will also be developed. Community kitchens using LPG as fuel shall be run by the contractors to minimize

S. No.	Name of Participant	Issues Raised	Response
			impacts on trees including medicinal plants.
		Due to the upcoming project activities there will be increase in BOD and COD levels that will affect water bodies and aquatic life. What steps will be taken for its control and minimization?	Sewage from labour camps during construction phase and project colonies during operation phase, shall be treated in sewage treatment plants (STPs), prior to disposal. The details are given in Section - 4.2.1.1. A detailed monitoring programme has been formulated for implementation during construction and operation phases to ensure that STPs operate at design efficiency levels. The details are given In Section-6.3.
		What mitigation measures will be taken for preservation of migratory fishes?	A detailed plan for mitigation of impacts on migratory species has been formulated, which includes, release of Environmental Flows, stocking of reservoirs and development of hatcheries. The same is covered in Scetions4.12.2. 10.6 and 10.7.
		An awareness campaigns on mitigation plans must be held from village to village in affected area.	Awareness Programs on Environment Mitigation Plans shall be organized as a part of Environment Awareness Campaigns by THDCIL.
5.		ln other cases, the villages within 10 kms radius of	R&R shall be carried out by the Govt of Arunachal

S. No.	Name of Participant	Issues Raised	Response
	Shri Semsemlum Ngi Chairman, Krosam Area Welfare Society	dam site are shifted to a new area but, in this case it is not so. Therefore, what steps will be taken in this regard?	Pradesh /District Administration as per RFCTLARR Act-2013 & Hand book for LA-Arunachal Pradesh-2022 .
		There will be blasting and mining activity during construction phase. What safety measures will be taken in this regard?	A detailed plan for ensuring safety during various project operations has been suggested in Sections 10.2 to 10.5 as part of the CEIA Report.
		Operation of large crushers will result in air and noise pollution. What steps will be taken to control the pollution?	Crushers will be provided with cyclones to minimize air pollution. Details are given in Section- 4.6.1.4. Crushers will be located at a distant location from the local residents, so that they are not affected by the noise. Workers involved in operation of crushers shall be provided with personal protective equipment.
		Downstream villages will be affected by pollution caused by wastes. What steps will be taken by the company for management of wastes?	A detailed plan has been outlined in Section 4.2 and Sections 4.4 to 4.7 of Chapter-4 of CEIA Report to mitigate the impacts due to wastes generated from various sources during project construction phase. No impacts on downstream villages is expected due to wastes generated from various sources during project construction phase.

S. No.	Name of Participant	Issues Raised	Response
		Police out post must be established near the labour's camp to tackle law and order situation.	THDCIL will request District Administration for establishment of Police out post near Labour camp. However, it comes under the purview of District Administration to maintain the law and order.
		Local Area Development Fund(LADF) should be revised in the new SIA.	It is a Policy matter & applicable as per Govt of India guidelines, Electricity Act/CEA Guidelines
6.	**Shri Sosian Ngi, Krosam village**	The Ngi clan is not against development rather we welcome the project.	Welcomed the project.
		The grievances of the people of Krosam village must be addressed.	Grievances, if any due to the project shall be addressed during construction and operation phase. No specific grievance shared.
		The land rates must be satisfactory.	This is a state policy matter and shall be decided by the State Govt.
		The transportation charges for construction of new house for a family during resettlement must be enhanced.	The rate shall be decided by State Govt./ District administration as per RFCTLARR Act-2013 & Hand book for LA-Arunachal Pradesh-2022 .
		The concerns of the people of Krosam village must be included in the SIA.	SIA Report has already been prepared in consultation with the PAFs by the State Government.

S. No.	Name of Participant	Issues Raised	Response
7.	**Shri Roshman Tawsik** Representative of Nukung and Mla village.	No one from the two villages of Nukung and Mla were included for preparation of draft EIA report.	EIA report is prepared by the Experts mandated by National Accreditation Board for Education and Training (NABET). SIA Report has already been prepared in consultation with the PAFs by the State Government.
		Whole of Mla village will be affected and there is risk of submergence of this village. Therefore, Mla village must be included in the list of submergence village.	As per the SIA Report, Mla village has been categorized as a partly affected village. Any risk of submergence will be addressed in accordance with the provisions of the RFCTLARR Act, 2013 and the Handbook for Land Acquisition, Arunachal Pradesh, 2022.
		Cultural practice of natural indicators followed by indigenous tribes of the area must be discussed, studied and included in the EIA Report.	Ethnographic Profile of local Tribes is included in Section 3.5.2 of CEIA Report.
		Identification and preservation of cultural heritage and religious sites.	The cultural and spiritually significant places which are likely to be affected by the projects shall be preserved in consultation with State Govt./ District Administration as per the provisions of R&R / LADP.
		Many flora and fauna are not included in the draft EIA report.	A detailed flora and fauna study covering three seasons (pre-monsoon, monsoon and

S. No.	Name of Participant	Issues Raised	Response
			post-monsoon) has been conducted. No specific flora or fauna is missing in the CEIA Report which has been reported/suggested during the Public Hearing.
		The rate of construction of house under IAY@Rs.2 lakhs, as mentioned in the draft EIA report must be enhanced. Memorandum submitted is enclosed as Annexure-B.	The rate shall be decided by State Govt/ District Administration as per RFCTLARR Act-2013 & Hand book for LA-Arunachal Pradesh-2022.
8.	**Shri Lasum Pul** Ex-ZPM and Senior Public leader.	The villagers are in support of the such projects.	Welcomed the project.
		The rate of land must be enhanced and satisfactory which should be included in EIA report.	This is a state policy matter and shall be decided by the State Govt.
		The compensation rate for construction of new house as shown in the EIA report must be increased and not acceptable at all as per the rate of lndira Awas Yojana (lAY)	The rate shall be decided by State Govt./ District administration as per RFCTLARR Act-2013 & Hand book for LA-Arunachal Pradesh-2022.
		The loose soil will cause soil erosion. Hence, this aspect must be studied and	The same has been addressed under the CAT plan for the project wherein Watershed Management in the catchment area, covering

S. No.	Name of Participant	Issues Raised	Response
		included in the draft EIA report.	nearby villages, has been planned. The plan gives detailed biological and engineering measures for soil and water conservation.
9.	**Shri Bajai Pul** Executive Engineer, Rural Work Department.	Projects like this are important in the national security point of view.	Welcomed the Project
		Every project like this has their pros and cons. Almost 90% people present here are in support of the project. Remaining 10% has their concern and the project proponent must resolve their concerns.	A detailed CEIA Report has been prepared as per the ToR Approved by MoEF&CC and addresses impacts likely to accrue during project construction and operation phases. Detailed measures have been suggested for their mitigation.
		My initial apprehensions about such projects have ceased after exposure trip to Tehri Dam, facilitated by THDC lndia Limited. Such projects will boost tourism of the area.	Welcomed the Project
10.	**Ms. Dasanglu Pul** Hon'ble Minister for Women & Child Development, Science & Technology and Cultural Affairs (Hon'ble MLA for	Late Shri Kalikho Pul, Ex Chief Minister, had initiated this project way back in 2009. We must all be thankful to him to see this project at this stage in this present day.	Welcomed the Project
		Most of the speakers are positive about the project.	Welcomed the Project
		As per the MoU, 50% from Land Affected Villages be considered for	For employment of Local tribal people, Article 6 of the MoA between Govt of AP

S. No.	Name of Participant	Issues Raised	Response
	Hayuliang ST Constituency).	employment as Staff as per eligibility.	and THDCIL (Dec. 2023) shall be complied.
		Revenue of 1% will be availed by the district.	It is a state matter and be dealt by Govt. of Arunachal Pradesh.
		Land rates were enhanced in 2022. The Government of Arunachal Pradesh is planning to further enhance this rate in the whole of the State.	This is a state policy matter and shall be decided by the State Govt.

xviii. Status of Litigation Pending against the proposal, if any. – No

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

- **Project Details:**

Name of the Proposal	Proposal for seeking Environmental Clearance for Kalai-II (1200 MW) Hydroelectric Project located in District Anjaw of Arunachal Pradesh by M/s THDC India Limited
Proposal No.	IA/AR/RIV/557663/2025 File No: J-12011/40/2009-IA-I(R)
Location (Including Coordinates)	Anjaw District, Arunachal Pradesh Lat: 27054’ 20” Long 96048’16”
Company’s Name	THDC India Limited
CIN no. of Company/ user agency	U45203UR1988GOI009822
Accredited Consultant and certificate no.	WAPCOS Limited, Gurugram NABET/EIA/24-27/RA 0360
Project location (Coordinates/ River/ Reservoir)	Anjaw District, Arunachal Pradesh Lat: 27054’ 20” Long 96048’16
Inter-state issue involved	No
Proposed on River/ Reservoir	Lohit River
Type of Hydro-electric project	Run of river scheme
Seismic zone	Zone V

- **Category Details:**

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

- **ToR/ EC Details:**

ToR Proposal No.	ToR: IA/AR/RIV/466561/2024 ToR Amendment: IA/AR/RIV/539430/2025
EAC meeting date	ToR: 11th EAC meeting held on 27.06.2024 ToR Amendment: 33rd EAC meeting held on 17.06.2025
ToR Letter No.	J-12011/40/2009-IA-I(R)
ToR grant Date	ToR: 07.08.2024 ToR Amendment: 08.07.2025
Cost of project	14,176.26 Cr
Total area of Project	869.3503 ha
Height of Dam from River Bed (EL)	128.5 m
Details of submergence area	638.456 Ha
District to provide irrigation facility (if applicable)	Not applicable
Details of tunnels on upper level & lower level and length of canal (if applicable)	The total length of 05 nos. of 7.5 m dia HRTs is 534.7 m and for 8.5 m dia HRT is 63.3 m. Total length of 3 nos. TRT is 3939 m plus Length of 01 no. Auxiliary TRT is 333 m.
No. of affected Village	33
No. of Affected Families	1521
Project Benefits	• The Project will have an installation of 1200 MW. The design energy proposed to be generated from the HEP shall be 4852.95 MU. • Infrastructure like roads, bridges, buildings etc. will be built at a large scale at the construction stage of the project which will benefit the local people also. • The construction of various project roads will improve the accessibility to and around the project area. At the same time, project will establish health care units in the project area. With improvement in roads, in the project area, people will have easy access to the district hospital as well as project health

	care units. During project construction phase, the proponent will establish two health care with adequate number of medical staff including doctors, nurses, health workers and logistic support primarily to provide health support services to the workers and project staff. The health facility will also be made available to local people and visitors as well. • The project will provide energy (with the implementation of rural electrification program) and will further enhance the facilities available at the centers. The electrification will provide an impetus to development in the area. • The construction phase will last for about 78 months. The total number of persons inhabiting the area including the service population will be about 3000.
R&R details	The land required for various project appurtenances is 869.3503 ha. A total 1521 PAFs have been identified in the 33 Project Affected Villages. Among them, 376 PAFs fall under the Full Submergence category, another 113 PAFs are classified as Highly Impacted, and remaining 1032 PAFs are categorized as Impacted. A provision of Rs. 190.68 crore has been kept towards implementation of Resettlement and Rehabilitation Plan.
Catchment area/ Command area	The Catchment Area of the proposed project is 15654 km2
Types of Waste and quantity of generation during construction/Operation	During the construction phase, the total municipal solid waste generation is estimated to be around 1.35 tons per day (t/day). Out of this, approximately 0.53 t/day will comprise biodegradable or degradable waste, such as food residues and organic matter, while about 0.82 t/day will consist of non-degradable waste, including plastics, packaging material, and other inert components. Sewage and effluent for batching plant, workshop, etc.
Material used for blasting and its composition as per DGMS standards.	Explosive is mainly required for open and underground rock excavation. The main explosive magazine & portable magazines are proposed near project site with appropriate safety & security

<table>
<tr><td></td><td>arrangements. The explosive license for storage, handling and use shall be obtained in accordance with the statutory regulations and specifications.</td></tr>
<tr><td>E-Flows for the Project</td><td>The E-flows for the Project is tabulated as below:
<table>
<tr><th>S. No.</th><th>Season</th><th>Percentage of Environmental Flows</th><th>Average Environmental Flows (cumec)</th></tr>
<tr><td>1.</td><td>Monsoon (June to September)</td><td>20%</td><td>163.48</td></tr>
<tr><td>2.</td><td>Lean Season (December to March)</td><td>15%</td><td>39.71</td></tr>
<tr><td>3.</td><td>Non Monsoon Non Lean Season (October and November)</td><td>20%</td><td>90.67</td></tr>
<tr><td>4.</td><td>Non Monsoon Non Lean Season (April and May)</td><td>20%</td><td>103.60</td></tr>
</table></td></tr>
<tr><td>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.</td><td>Yes. The CIA & CCS report of Lohit river basin, 2016 has covered Kalai-II HEP. The recommendations of Environmental Flows in the CIA & CCS Study of Lohit Basin for Kalai-II HEP is as below:
<table>
<tr><th>S. No.</th><th>Season</th><th>Percentage of Environmental Flows</th><th>Average Environmental Flows (cumec)</th></tr>
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<tr><td>3.</td><td>Non Monsoon Non Lean</td><td>20%</td><td>90.67</td></tr>
</table></td></tr>
</table>

		Season (October and November)		
	4.	Non Monsoon Non Lean Season (April and May)	20%	103.60
Details on provision of fish pass	The height of dam from river bed level is 128.5 m and the fish passage is not feasible in high dams.			
Project benefit including employment details (no of employee)	The project construction is likely to last for a period of 78 months. The total number of persons inhabiting the area including the service population will be about 3000. The construction of the proposed project would invariably create a number of direct employment opportunities. However, indirect employment opportunities would also be generated which would provide great impetus to the economy of the local area. Various types of businesses are also likely to concentrate here and likely to benefit immensely, as demand for almost all types of goods and services will increase significantly. The business community as a whole would be benefited. The locals would also avail these opportunities arising from the project and increase their income levels. Other benefits of Project would include: • Compensation for loss of land, houses and all other immovable properties to the PAFs as per the Land Acquisition Act. • Improvement in the quality of life: primary education, primary health care, women and child welfare, periodic medical camps. • Development strategy to bring about a positive socio-economic transformation of the PAFs, so as to improve the quality of their life. • Power from the project, shall bring overall improvement in quality of life and the economic growth of the local populace. • Construction and operation of this Project would lead to overall sustainable development in the			

	project region by making a direct as well as indirect contribution to the populace.
Area of Compensatory Afforestation (CA) with tentative no of plantation.	The total forest land to be acquired for the project is 869.3503 ha. The area proposed for Compensatory Afforestation is double the area of degraded forest land i.e.1738.70 ha located in Madhya Pradesh. An amount of Rs. 12170.90 lakh (@ Rs. 7.0 lakh/ha) has been earmarked for afforestation. The tentative no. of plantation proposed is approx. 17.40 lakhs.
Previous EC details	NA
EC Compliance Report by R.O, MOEF&CC	NA
No. of trees/saplings proposed in view of 'Ek Ped Maa Ke Naam' campaign	-

- **Electricity generation capacity:**

Powerhouse Installed Capacity	1200 MW
Generation of Electricity Annually	4852.95 GWh
No. of Units	6*190 MW + 1*60 MW (07 units)

- **Muck Management Details:**

No. of proposed disposal area/ (type of Land - Forest/ Pvt land)	The total quantity of muck expected to be generated has been estimated to be of the order of 104.49 lac m^3. A total of 04 muck dumping sites shall be used for muck disposal, with a total area of 70.22 ha and capacity of 139.029 lakh m^3 and said sites are located in Forest land.
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, Powerhouse and are located at least 100 m away from the HFL.
Total Muck Disposal Area	70.22 ha
Estimate Muck to be generated	154.598 lakh m3 (incl. swell factor)
Transportation	The generated muck will be transported in dumper trucks to prevent spillage, with all necessary precautions followed during handling

	and disposal. Appropriate pollution-control measures will be applied based on-site conditions, and all standard safety practices will be ensured at site.
Monitoring mechanism for Muck Disposal Transportation	Site team will monitor manually the muck disposal at the site. The provisions of Environmental Monitoring have been kept under proposed Environmental Monitoring Plan.

- **Land Area Breakup:**

Private land	Nil
Government land	Nil
Forest Land	869.3503 ha
Total Land	869.3503 ha
Submergence area/Reservoir area	638.456 ha
Additional information (if any)	-

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

Forest Land/ Protected Area/ Environmental Sensitivity Zone	**Yes/No**	**Detailsof Certificate/ letter/Remarks**
Reserve Forest/Protected Forest Land	RF: 238.0763 Ha	Proposal for diversion of Forest Land is under process.
National Park	Nil	
Wildlife Sanctuary	Nil	
Archaeological sites monuments/historical temples etc	Nil	
Additional information (if any)	-	

- **Availability of Schedule-I species in study area:**

In the study area Takin (*Budorcas taxicolor*) has been observed as Schedule-I species, which is Vulnerable A2cd in the IUCN Red List Category. A budget of Rs. 100 lakh has been proposed for implementation of Conservation Plan which includes Habitat Protection, Anti-Poaching and Law Enforcement, Community engagement, Monitoring & Research, Emergency Response Mechanism, Reducing man wildlife conflicts, Creation of drinking water facility, Training & Awareness, Forest Fires Protection measures, Procurement of Equipment etc.

- **Public Hearing (PH) Details:**

Advertisement for PH with date	The Times of India, Echo of Arunachal, The Arunachal Front (local Mishmi dialect) dated 19.07.2025
Date of PH	20.08.2025
Venue	Tribal Cultural Centre, Hawai, District Anjaw
Chaired by	Deputy Commissioner, Anjaw
Main issues raised during PH	• Amount of Compensation to be given to PAFs • R&R shall be carried out by the Govt of Arunachal Pradesh / District Administration as per RFCTLARR Act-2013 & Hand book for LA- Arunachal Pradesh-2022. • Impacts due to Water Pollution • Adverse impacts on Fisheries • Adverse Impacts on Flora and Fauna • EIA report is based on old data • Mitigation measures for Air Pollution • Mitigation measures for Noise Pollution
No. of people attended	314

- **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.	The baseline status of the environmental quality has been monitored with respect to air, water, soil and noise etc. in the study area. The monitoring was carried out for three seasons' viz. Pre-monsoon (March'2025), Monsoon (August-October'2024) and Winter season (December'2024).
Brief description on hydrology and water assessment as per the approved pre-DPR:	The proposed Kalai-II Hydro Electric Project is a run of the river scheme on river Lohit. The water will be stored on a diurnal basis from MDDL to FRL for peaking power generation. During peaking power operations there will be a rated discharge of 1128.06 cumec from the tail race tunnels. The water availability 10 day flow series (cumec) data at Kalai-II HEP using

	Hayuliang data has been worked out for period from 1985-86 to 2003-04 with an average annual yield of 28022 MCM. Design flood (PMF) estimated at project site is 24268 m3/sec. The Gross and Live Storage of the Kalai-II reservoir are 318.88 M cum and 29.76 M cum with FRL at El 904.80 m and MDDL at El 900.00 m respectively.

- **Court case details: NIL**

- **Status of other statutory clearances**

Particulars	Letter no. and date
Status of Stage- I FC	The proposal for diversion of the said 869.3503 Ha. forest land was submitted on Parivesh portal on 20.01.2025. The proposal for diversion of 869.3503 Ha forest land has been recommended by GoAR to MoEF&CC after completion of due process. Proposal is under process for Stage-1 approval. FC Proposal No.: FP/AR/HYD/IRRIG/519205/2025
Approval of Central Water Commission	The TEC for the project was issued to M/s Kalai Power Private Limited by CEA on 27.03.2015. Subsequently, the project was indicated to THDCIL by MoP. The TEC was transferred to THDCIL on 23.02.2024, on the same terms and conditions as per earlier TEC approval.
Approval of Central Electricity Authority	The TEC for the project was issued to M/s Kalai Power Private Limited by CEA on 27.03.2015. Subsequently, the project was indicated to THDCIL by MoP. The TEC was transferred to THDCIL on 23.02.2024, on the same terms and conditions as per earlier TEC approval.
Additional detail (If any)	-
Is FRA (2006) done for FC-I	Yes. FRA letter issued by Deputy Commissioner, Anjaw vide letter no. ANJ/LM/52/2011-14(Pt) dated 22.02.2024.

- **Details of the EMP**

Environmental Management Plan (EMP) is a plan that seeks to achieve a required and state and describes how activities that have or could have an adverse impact on the environment, will be mitigated, controlled, and monitored. Environmental

impacts arising due to development activities are the key aspects on EIA study. An equally essential element of this process is to develop measures to eliminate, offset, or reduce adverse impacts to acceptable levels and enhance the beneficial ones during implementation and operation of the projects. The integration of the project planning has been done by clearly defining the environment requirements within an EMP. The summary of budget earmarked for various mitigation measures are tabulated as below:

Activities	Budget (Rs. lakh)
Environmental Management Plan	1148.28
Mitigation measures	30232.53
Measures outlined in Additional studies	36257.70
Environmental Monitoring Programme during construction phase	192.22
Total	**67830.73**

45.1.3 The EAC during deliberations noted the following:

- The Expert Appraisal Committee (EAC) deliberated on the information submitted by the Project Proponent and the details presented during the meeting. The Committee observed that the proposal pertains to the grant of Environmental Clearance for the Kalai II Hydro Electric Project (Run-of-the-River) of (1200 MW) in an area of 869.3503 Ha located at Village Kamdi, Tehsil Hawai Town, Anjaw District of Arunachal Pradesh by M/s THDC India Limited.

- The project falls under Item 1(c) of the Schedule to the Environmental Impact Assessment (EIA) Notification, 2006, and is categorized as a Category 'A' project, which requires appraisal at the Central level by the Expert Appraisal Committee (EAC).

- The Terms of Reference (ToR) for conducting EIA/EMP study and public hearing of the Kalai II HEP was granted by the MoEF&CC vide letter no. File No: J-12011/40/2009-IA-I(R), dated 07.08.2024. Further, amendment in ToR was granted by MoEF&CC vide letter no. J-12011/40/2009-IA-I(R) dated 08.07.2025 for reduction in Land requirement from 1100 ha to 869.3503 ha.

- The EAC, constituted under the provisions of the EIA Notification, 2006, and comprising expert members/domain experts from various relevant fields, examined the proposal submitted by the Project Proponent. This examination included a review of the Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) reports, which were prepared and submitted by a QCI/NABET-accredited consultant on behalf of the Project Proponent.

- The EAC noted that the Project Proponent has given an undertaking that the data and information given in the application and enclosures are true to the best of his knowledge and belief and no information has been suppressed in the EIA/EMP reports. If any part of data/information submitted is found to be false/ misleading at any stage, the project will be rejected and Environmental Clearance given, if any, will be revoked at the risk and cost of the project proponent.

- It has been noted by the EAC that earlier Ministry has granted TOR vide letter dated 09.12.2009 to Kalai Power Private Limited (KPPL) (a subsidiary of Reliance Power Limited) for a period of 04 years, which was further extended for 01 year vide letter dated, 05.02.2014. In 2015, EC for Kalai-II HEP has been approved by the competent authority and shall be issued on producing Stage-1 Forest Clearance (FC). The case of grant of FC was not followed due to which EC could not be issued in absence of Stage-1 FC.

- The EAC noted that the total land required for the project is 869.3503 Ha and the entire land required for project activities is forest land. However, proposal for diversion of 869.3503 Ha has been submitted on Parivesh Portal and it is still pending. During the meeting the EAC enquired about the status of the Stage-I forest proposal to which PP explained that proposal has been recommended by GoAP to MoEF&CC after completion of due process, it is pending for the site visit which will done in the month December, 2025. There is no national park, wildlife sanctuary, Biosphere Reserve, Tiger/Elephant Reserve, Wildlife Corridor etc. within 10 km distance from the project site.

- The EAC noted that the estimated project cost is Rs. 14,176.26 Cr. Total capital cost earmarked towards environmental management plan is Rs. 67830.73 lakhs and the Recurring cost (operation and maintenance) will be about Rs. 61.16 lakhs per annum. However, the EAC noted that total EMP budget is 36591 Lakhs excluding activities such as Compensatory afforestation and Resettlement and rehabilitation plan.

- The committee observed that the Public Hearing for the proposed project has been conducted by the State Pollution Control Committee on 20.08.2025 at Tribal Cultural Centre, Hawai, District Anjaw. Publications of notice for public hearing were given in state/national level in the Times of India, Echo of Arunachal, The Arunachal Front (local Mishmi dialect) dated 19.07.2025. The meeting was chaired by the Deputy Commissioner, Anjaw, ensuring due diligence in addressing public concerns and regulatory compliance. The EAC discussed the concerns raised during the Public Hearing (PH) and reviewed the action plan submitted by the PP to address these issues. After detailed deliberation, the Committee found the action plan satisfactory, recognizing that the proposed mitigation measures adequately respond to stakeholders' concerns.

- The EAC was also informed that the Cumulative Impact Assessment & Carrying Capacity Study(CIA&CCS) of Lohit river basin in Arunachal Pradesh have been completed and the

report has been accepted by the Ministry. PP further informed that the outcome and recommendations of CIA&CCS been dully incorporated in the EIA/EMP.

- During the meeting the EAC assessed the study carried out by PP for Glacial Lake Outburst Flood (GLOF). The Committee noted that the tentative peak discharge at dam site, due to GLOF event, is estimated as 2690 cumec for an assumed condition that lake burst and 100yr return period flood would occur simultaneously. The time of travel of flood wave from lake to dam site is approximately 4.6 hours. Hence, the Glacial Lake Outburst Flood (GLOF) for Kalai-II HE Project has been taken as 2690 cumec and the same has been approved by CWC.

45.1.4 The EAC after examining the information submitted and detailed deliberations reiterated its earlier recommendation on the project and **recommended** the proposal for grant of prior Environmental Clearance to Kalai II Hydro Electric Project (Run-of-the-River) of (1200 MW) in an area of 869.3503 Ha located at Village Kamdi, Tehsil Hawai Town, Anjaw District of Arunachal Pradesh by M/s THDC India Limited, under the provisions of EIA Notification, 2006 and as amended with subject to compliance of applicable Standard EC conditions with the following additional specific environmental safeguard conditions:

[A] Environmental management and Biodiversity conservation:

i. Stage-I FC shall be obtained before grant of EC.
ii. Wildlife Conservation plan duly approved by the CWLW shall be implemented in time bound manner.
iii. Changes carried out in the project specifically technical aspects shall be discussed/informed with CEA and necessary clearance/noc shall be obtained.
iv. Necessary clearance shall be obtained from Brahmaputra Board before commencement of construction of the project.
v. PP shall obtain separate EC for quarrying in the project area.
vi. On-line monitoring system for the e-flow releases to be installed.
vii. The plastic waste shall be disposed of by recycling and not by land filling.
viii. Local indigenous varieties of plants to be grown and maintained till their full growth including gap filling.
ix. Skill mapping be undertaken for the youths of the affected project area and based on the skill mapping, the trainings to the youths be incorporated for their appropriate engagements in the Project.
x. Land acquired for the project shall be suitably compensated with the prevailing guidelines and all commitments made during the Public Hearing shall be fulfilled.
xi. The project-affected population should be resettled and rehabilitated as per the latest R & R Policy.
xii. Six monthly compliance reports shall be submitted by the PP to Regional Office, MoEF& CC, Shillong without fail.
xiii. The outcome and recommendations of Lohit River Basin Study will have to be fully

abided by the project proponent.

xiv. 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.

xv. The contract clause limiting the No. of vehicles used during excavation and transportation shall followed scrupulously and the same shall informed to the ministry.

xvi. 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.

xvii. No vehicle purchase shall be allowed from funds earmarked for implementation of Wildlife Conservation plan.

xviii. The Project Proponent shall explore the possibility to undertake tree transplantation, wherever feasible, in consultation with the State Forest Department. Survival of at least 80% of transplanted trees shall be ensured, with monitoring for a minimum period of five years.

xix. Plantation of saplings (10,000 nos.) shall be carried out around the muck disposal area in consultation with Forest Department as a part of the tree plantation campaign "Ek Ped Ma Ke Naam" and the details of the same shall be uploaded in the MeriLiFE Portal (https://merilife.nic.in). The survival of plants shall be reported in the 6 monthly compliance report.

xx. PP shall prepare time bound reclamation and restoration plan for restoration of batching plant in consultation with the Forest Department and same shall be submitted to IRO, MoEF&CC and shall be fully implemented within five years of commissioning of the project.

[B] Disaster Management:

i. Disposal of the excavated muck and its filling on the low-lying area with proper measures for the stabilization and greenery to minimize the impacts of the generated construction muck shall be taken up pari passu with construction work. A muck transportation plan shall be prepared and implemented. The movement of muck carrying vehicles shall be monitored through latest sensor-based technology to ensure the muck dumping at designated sites.

ii. Stabilization of muck disposal sites using biological and engineering measures shall be taken up immediately to ensure that muck does not roll down the slopes and does not pollute the natural streams and water bodies in surrounding area. The plantation on muck disposal site with local species for restoration of ecology and environment of the project site area.

iii. Necessary control measures such as water sprinkling arrangements, and construction of paved roads leading to muck disposal sites etc. shall be taken up on priority to arrest

fugitive dust at all the construction sites.

iv. Solid waste generated, especially plastic waste, etc. should not be disposed of as landfill material. It should be treated with scientific approach and recycled. Use of single-use plastics may be discouraged.

v. Landslide and other heavy rain related disasters shall be taken care of through appropriate preventive measures during construction and operation of project.

[C] Socio-economic:

i. Land acquired for the project shall be suitably compensated in accordance with the prevailing guidelines of the state government and provisions under Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013.

ii. RO plant shall be installed in the nearby 5 villages and the maintenance shall be done by the project Authorities.

iii. Solar panel be provided to the families living in rural areas within 10 km radius of project.

iv. School up to 12^{th} Standard shall be established and managed to provide free quality education for children from project affected villages/Tribal villages. Adequate transportation facilities shall also be provided to students to ensure connectivity and ease of access.

v. Scholarship programme shall be initiated for the youths in the project affected villages.

vi. 50 bed multi-specialty hospital shall be established to cater the need of tribal population/locals. The tribal population within 10 km radius of the project shall be given free of cost medical facility.

vii. Skill development Centre shall be established within 10 km radius of the project and regular training programmes for development and promotion of traditional art/products of tribal/local population. The Skill Development Plan shall mandatorily include the following components:

- Capacity building and skill enhancement programs aligned with local livelihood opportunities.
- Establishment of linkages with Industrial Training Institutes (ITIs) and other recognized training centres for imparting technical skills.
- Provision of free or subsidized access to healthcare facilities in project-supported hospitals and health centres.
- Support to educational institutions in the study area through free services, scholarships, infrastructure strengthening, and vocational guidance programs.
- Special outreach initiatives for women, youth, and vulnerable groups within the SC/ST communities to ensure inclusive participation and benefits.
- The Plan shall be implemented in a time-bound manner with clearly earmarked budgetary provisions, which shall not be diverted for any other purpose.

viii. The PP shall submit annual progress reports on the implementation of the Skill Development Plan and associated community welfare measures to the Regional Office of the Ministry.

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

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

xi. An institutional mechanism to be developed to ensure the preference of jobs to PAFs and SC/ST and also a policy for preferential treatment for award of sundry works to the PAFs and SC/ST and their dependents.

xii. The compliance of above conditions shall be monitored by IRO, MoEF&CC and regularly site visit once in year. The compliance report of IRO shall be regularly submitted to MoEF&CC.

[D] Miscellaneous:

i. After 5 years of the commissioning of the project, a study shall be undertaken regarding impact of the project on the environment. The study shall be undertaken by an independent agency.

ii. PP should establish in house (at project site) environment laboratory for measurement of environment parameter with respect to air quality and water (surface and ground). A dedicated team to oversee environment management shall be setup which should comprise of Environment Engineers, Laboratory chemist and staff for monitoring of air, water quality parameters on routine basis.

iii. A dedicated team to oversee environmental management activities (at project site) shall be set up comprising Environment Manager having post graduate qualification in Environmental Sciences/ Environment Engineering along with other supporting staff. The Environment Manager shall report to Project Head directly.

iv. PP shall procure construction material only from those Organizations having all valid legal/statutory clearances/permissions or necessary permission to be obtained for quarrying construction materials for the project as per the EIA Notification, 2006 and as amended thereof.

<u>Agenda Item No. 45.2</u>

Dulhasti Stage-II Hydro Electric Project (Run-of-the-River) of (260 MW) in an area of 60.3 Ha located at Village Hariyal, Pakalan, Poochal, Seergwar etc, Sub-district and District Kishtwar, Jammu & Kashmir by M/s NHPC limited - Environmental Clearance (EC) – reg.

[Proposal No. IA/JK/RIV/555087/2025; F. No. J-12011/10/2021-IA.I (R)]

45.2.1: The proposal is for grant of Environmental Clearance (EC) to the project for Dulhasti Stage-II Hydro Electric Project (Run-of-the-River) of (260 MW) in an area of 60.3 Ha located at Village Hariyal, Pakalan, Poochal, Seergwar etc, Subdistrict and District Kishtwar, Jammu & Kashmir by M/s NHPC limited.

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

i. The proposed Dulhasti Stage-II HE Project (260 MW) is the extension of 390 MW operational Dulhasti Stage-I HEP (Dulhasti Power Station). Dulhasti Stage-I Hydro Electric Project is a runof-river scheme, which was commissioned in 2007 by NHPC Ltd. and has been operating successfully since then.

ii. As per provision kept in DPR of Dulhasti HE Project, Stage-I, an identical Stage-II extension of the project was contemplated by adding 2 x 130 MW capacity after construction of 1000 MW Pakal Dul Hydro Electric Project on Marusudar river, a right bank tributary of the Chenab River, by diverting its water through Pakal Dul Powerhouse on right bank of Chenab River with design discharge of 277.0 cumec in reservoir of Dulhasti Power Station.

iii. The Dulhasti Stage-II HEP utilize existing structures like Dam, reservoir, Power intake structure of Dulhasti Power Station. Therefore, the proposed Dulhasti Stage-II HEP envisaged the construction of 3685 m long HRT with 8.50 m diameter, surge shaft, pressure shaft, an underground powerhouse complex and one 8.5 m dia. horseshoe shaped, 215 m long TRT.

iv. NHPC Limited signed a Memorandum of Understanding (MOU) with Govt. of Union Territory (UT) of Jammu and Kashmir (J&K) on January 03, 2021, for execution of Dulhasti Stage-II Hydro Electric Project (260 MW) on Build-own-Operate-Transfer (BOOT) basis for a period of 40 years on the River Chenab, in Kishtwar Tehsil of Kishtwar district in UT of J&K.

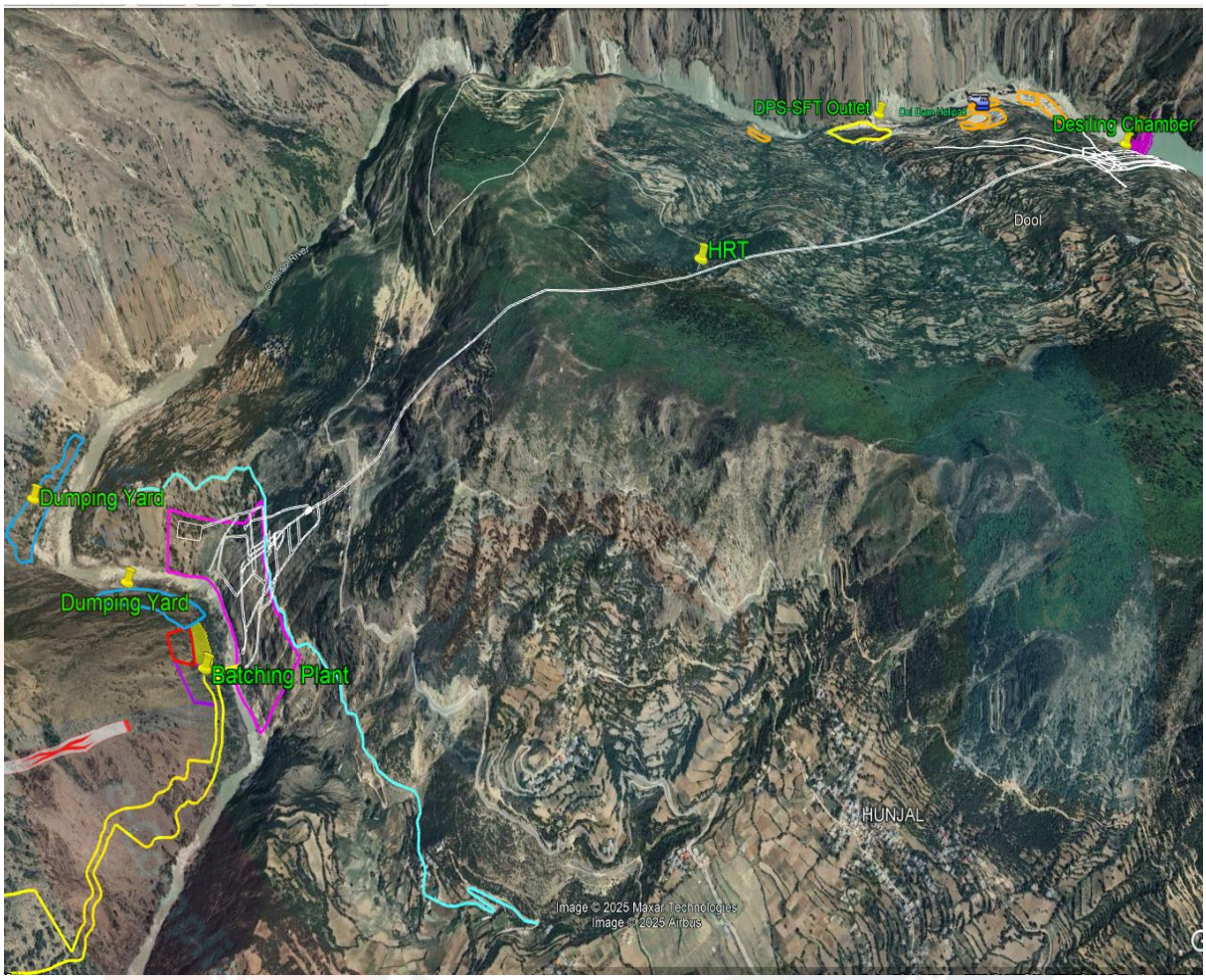
v. Scoping clearance for issuance of Terms of Reference (TOR) for proposed Dulhasti Stage-II HEP from MoEF&CC, Government of India under EIA Notification 2006 was sought vide Proposal No. IA/JK/RIV/214210/2021; F. No. J-12011/10/2021-IA-I (R) which was discussed by sectoral Expert Appraisal Committee (EAC) for river valley and hydro-electric projects in its 13th meeting held on 16th and 17th June, 2021 and TOR was recommended and letter was issued by MoEF&CC on 16th July 2021.

vi. Dulhasti Power Station is a run-of-the river with pondage scheme. The existing reservoir of Dulhasti Power Station have gross storage of 10.62 million cum with live storage of 9.15 million cum at FRL. For energy generation of 260 MW, a separate 3685 m long HRT of size 8.5m dia. Horseshoe shaped in left bank is proposed to be constructed for Dulhasti Stage-II HEP along with surge shaft, pressure shaft,

underground power house with 2 units of 130 MW each having total installed capacity of 260 MW and annual Energy generation.

vii. The geographical co-ordinate of the project are Dam Site: $75^0$40’ East; $33^0$22’ North.

viii. The site location map of the project is as under:



ix. Land requirement:

Govt. Land	: 40.93 ha
Non-forest Land	: 19.37 ha (8.27 ha is private land 11.10 ha belongs to NHPC Dulhasti Power Station)
Total Land	: 60.30 Ha

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

The proposed Dulhasti Stage-II Hydroelectric Project study area falls under Kishtwar, Nagseni, and Mughal Maidan tehsils in the Kishtwar district of the Union Territory of Jammu and Kashmir. Kishtwar District is a newly formed district in the union territory

of Jammu and Kashmir, India.

The total population of the study area is 98037, comprising 51497 (52.52%) males and 46540 (47.47%) females. There are total of 18877 households, with an average occupancy of 5 to 6 people per home. The population of children below 6 years old is 14953, accounting for 15.25% of the total population. The sex ratio was found to be 903 females per 1000 males.

There are 7256 scheduled castes population, accounting for 7.4% of the total population, with 3692 scheduled caste males and 3564 scheduled caste females. There are 12941 scheduled tribes in total, accounting for 13.2% of the total population, with 6754 scheduled tribe males and 19951 scheduled tribe females

The literacy rate in the study area is 64.21% (above the 6-year-old population), with males and females having rates of 76.65% and 50.61%, respectively, creating a gender gap of 26.04%.

The workers coming under the main and marginal workers category are those involved in activities such as cultivation, agriculture, livestock, fishing, plantation, manufacturing, servicing, and repair in the household industry, construction, trade and commerce, transportation, and other services.

- According to the 2011 census total population of workers in the study area was 32310 (32.95%)
- Main and marginal workers were 17782 (55.03%) and 14528 (44.96%) respectively.

As per Mission Antyodaya 2020, the basic amenities like education, health, drinking water, electricity, approach road, transportation, and other facilities available in the study area

Basic Amenities and Available Infrastructure in the Study Area

EDUCATION		
Educational Institutions	**Type of Institute**	**No. of Villages/Towns**
	Primary School	34
	Middle School	29
	High School	16
	Higher Secondary School	06
	College	03
HEALTH		
Health Facilities	Community Health Centre	01
	Primary Health Sub-centre	09
	Primary Health Centre	06
	Veterinary Hospital	06

	Hospital (Allopathic & Others)	01 (Kishtwar Town)
	ASHA	36
WATER		
	Means of Drinking Water	**No. of Villages/Towns**
Drinking-Water	Tap Water	33
	Well (Covered/Un-covered)	02
	Hand Pump	07
	Tube wells/Borehole	No
	Spring	27
	River/Canal	18
	Tank/Pond/lake	04
ELECTRICITY		
Power Supply	Power for Domestic Uses	37
	Power Supply for Agriculture Uses	37
ROAD		
Approach Road	Village Internal Pucca Road (cc/brick road)	16
	Gravel (Mud/Kuccha) Road	20
	Footpath Road	36
BANKING & FINANCE		
Banking Institutions	Post/Sub post office	10
	Commercial Bank & Co-operative Bank	07
	Agricultural Credit Society	01
	Self-Help Groups	No

xi. **Project Cost:** The estimated project cost is Rs 3277.45 crore. Total capital cost earmarked towards Environment Management Plan/environmental pollution control measures is Rs. 4564.57 lakh and the Recurring cost (operation and maintenance) will be about Rs. 1146.41 lakh about i.e. Rs 286.60 lakh per annum.

xii. **Project Benefit:** Total Employment will be 500 persons as direct & persons indirect after expansion. Industry proposes to allocate Rs. 750.0 Lakh towards CER (as per Ministry's OM dated 30th Sep 2020).

xiii. **Environmental Sensitive area:** All the proposed project components of Dulhasti Stage-II HEP are well outside the boundary of the National Park as well from the Eco Sensitive Zone of Kishtwar High Altitude National Park. The nearest project component is about 9.8 km from the Eco Sensitive Zone boundary of the National Park.

xiv. MoU signed with the State Government on 24-12-2020 MoU no. IN-JK00767002578097S.

xv. **Resettlement and rehabilitation:** The total land requirement for the Dulhasti Stage-II HEP is estimated to be 60.3 ha. Of this, 8.27 ha is private land, 40.93 ha is state government land, and 11.10 ha belongs to the operational Dulhasti Power Station (Dulhasti Stage-I HEP), which will be utilized for developing infrastructure facilities for the project.

The private land identified for the project falls in two villages namely Benzwar (Revenue Village Pochal) and Palmar of Kishtwar District. The private land identified for projects belongs to 62 nuclear families – 26 from Benzwar and 36 from Palmar. One pucca house and 5 cowsheds have been identified from the land coming under acquistion as per information provided by Patwari.

The present R&R plan has been prepared for the purpose of EIA study only. The plan is prepared based on the data related to private land and affected families; as provided by the project proponent and verified during field visits. The plan addresses the compensation package as per the provisions of RFCTLARR 2013 and The Jammu and Kashmir Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (Social Impact Assessment and Consent) Rules, 2023.

The financial requirement for implementation of the Rehabilitation and Resettlement plan and Economic Development Package is **Rs. 13007.83 lakh**.

xvi. **Scheduled – I species:** As per Wildlife Protection Amendment Act, 2022, Common Leopard (*Panthera pardus*), Leopard Cat (*Prionailurus bengalensis*), Jungle Cat (*Felis chaus*), Indian Grey mongoose (*Herpestes edwardsii*), Small Indian mongoose (*Herpestes auropunctatus*), Golden Jackal (*Canis aureus*), Red Fox (*Vulpes vulpes*), Bengal Fox (*Vulpes bengalensis*), Asiatic Black Bear (*Ursus thibetanus*), Yellow-throated marten (*Martes flavigula*), Himalayan Serow (*Capricornis sumatraensis*), Himalayan Goral (*Naemorhedus goral*), Wild Boar (*Sus scrofa*), and Indian Crested Porcupine (*Hystrix indica*) are the mammalian species.

Among herpetofauna Russell's Viper (*Daboia russelii) and* Bengal Monitor (*Varanus bengalensis)* are the species under Schedule-I of WPA 2022.

xvii. Alternative Studies:

The Dul dam and spillways are common for Stage-I & Stage-II. And the intake structure for Stage-II has already been constructed alongside Stage-I intake structure as such no changes in the existing intake structure is contemplated at this stage. Therefore, in order to find out the best optimal layout of the Stage-II Project, four alternative locations of powerhouse have been considered in this study and are as follows:

Alternative-1: The dam site is at Dul and powerhouse site is alongside the existing power house of Dulhasti Stage-I i.e at Hasti. The proposed HRT is aligned parallel to the existing HRT of Dulhasti Power Station on the left side of Kishtwar fault.

Alternative-2: The dam site is at Dul and powerhouse site is at Banjwar (approximately 12km upstream of Power house of Stage -1).

Alternative-3: The dam site is at Dul and powerhouse site is alongside the existing power house of Dulhasti Stage-I i.e at Hasti. The proposed HRT as envisaged in Alternative-2 has been extended on the right side of Kishtwar fault to existing powerhouse at Hasti.

Alternative-4: The dam site is at Dul and powerhouse about 150m (approx.) downstream of Dul dam axis (dam to toe). The proposed TRT outlet is about 1200m (approx.) downstream of Dul dam axis.

xviii. Baseline Environmental Scenario:

Period: **From January 2022 to October-November 2025**

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

Unit in $\mu g/m^3$

Core	Min	Max	Standards
$PM_{2.5}$	13.60	28.80	60
PM_{10}	27.80	55.00	100
SO_2	4.80	12.60	80
NO_2	5.50	14.70	80
Buffer	**Min**	**Max**	
$PM_{2.5}$	21.60	46.50	60
PM_{10}	41.40	89.40	100
SO_2	6.70	13.70	80
NO_2	8.30	19.70	80

Incremental GLC Level

Criteria Pollutant [PM_{10}, $PM_{2.5}$, SO_2, NO_x, Other parameters specific to the sector (Please specify)]	Unit [$\mu g/m^3$]	Baseline Concentration [A]	Predicted incremental value considering worst case stability class [B]	Total GLC [A]+[B]
PM10	$\mu g/m^3$	49.0	12.25	61.25
PM2.5	$\mu g/m^3$	27.5	6.875	34.375

	SOx	µg/ m^3	11.7	14.04	25.74
	NOx	µg/ m^3	13.3	15.96	29.26

River water samples (06 samples)

Core Zone

S. No	Parameters	Min	Max	Standards
1	pH	6.42	7.87	8.5
2	Total Dissolved Solids, mg/L	64	111	0
3	Dissolved Oxygen (mg/l)	7.9	10.2	6
4	Chloride (as Cl), mg/L	6.2	11.1	0
5	Total Hardness (as CaCO3), mg/L	35.17	48.3	0
6	Biological Oxygen Demand (mg/l)	0	0	2
7	Chemical Oxygen Demand (mg/l)	0	0	0
8	Total Coliform (MPN/100 ml)	0	0	50

Buffer Zone

S. No	Parameters	Min	Max	Standards
1	pH	6.4	7.5	8.5
2	Total Dissolved Solids, mg/L	73.33	127	0
3	Dissolved Oxygen (mg/l)	7.8	10.1	6
4	Chloride (as Cl), mg/L	6.2	12.1	0
5	Total Hardness (as CaCO3), mg/L	21.17	49.9	0
6	Biological Oxygen Demand (mg/l)	0	0	2
7	Chemical Oxygen Demand (mg/l)	0	0	0
8	Total Coliform (MPN/100 ml)	0	0	50

Pond water samples	-

Groundwater water samples quality at 3 location

Core Zone

S. No.	Parameters	Min	Max	Prescribed Limits	
1	pH	7.1	7.8	6.5	8.5
2	Total Dissolved Solids (mg/l)	110.5	254.15	500	2000
3	Chloride (as Cl) (mg/l)	10	18	250	1000
4	Total Hardness (as $CaCO_3$) (mg/l)	86.5	202.2	200	600
5	Fluoride (mg/l)	0.4	0.71	1.0	1.5

Buffer Zone

S. No.	Parameters	Min	Max	Prescribed Limits	
1	pH	7.1	7.8	6.5	8.5
2	Total Dissolved Solids (mg/l)	110.5	254.15	500	2000
3	Chloride (as Cl) (mg/l)	10	18	250	1000
4	Total Hardness (as $CaCO_3$) (mg/l)	86.5	202.2	200	600
5	Fluoride (mg/l)	0.4	0.71	1.0	1.5

Noise levels Leq (Day & Night) at 06 locations

Noise Level	Zone	Leq Day dB(A)		Leq Night dB(A)		Prescribed Limits	
		From	To	From	To	Day	Night
Core	Residential	47.9	60.3	37.7	44.3	55	45
Buffer	Commercial	50	65.9	34.8	51.5	65	55

<table>
<tr><td>Soil Quality at 6 Locations</td><td>Core Zone
<table>
<tr><th>S. No.</th><th>Parameters</th><th>Min</th><th>Max</th><th>Prescribed Limits</th></tr>
<tr><td>1</td><td>Calcium (mg/kg)</td><td>120</td><td>440</td><td>500</td></tr>
<tr><td>2</td><td>Magnesium (mg/kg)</td><td>22</td><td>233</td><td>500</td></tr>
<tr><td>3</td><td>Nitrogen (kg/ha)</td><td>320</td><td>470</td><td>500</td></tr>
<tr><td>4</td><td>Phosphorus (kg/ha)</td><td>21.1</td><td>33.2</td><td>50</td></tr>
<tr><td>5</td><td>Potassium (kg/ha)</td><td>172</td><td>310</td><td>500</td></tr>
<tr><td>6</td><td>Carbon (%)</td><td>0.45</td><td>0.9</td><td>1</td></tr>
<tr><td>7</td><td>Sodium Absorption Ratio</td><td>2.9</td><td>5.9</td><td>10</td></tr>
<tr><td>8</td><td>Salinity (ppt)</td><td>0</td><td>0</td><td>0.01</td></tr>
<tr><td colspan="5">Buffer Zone</td></tr>
<tr><td>1</td><td>Calcium (mg/kg)</td><td>280</td><td>441</td><td>500</td></tr>
<tr><td>2</td><td>Magnesium (mg/kg)</td><td>59</td><td>158</td><td>500</td></tr>
<tr><td>3</td><td>Nitrogen (kg/ha)</td><td>320</td><td>512</td><td>500</td></tr>
<tr><td>4</td><td>Phosphorus (kg/ha)</td><td>12.3</td><td>24.3</td><td>50</td></tr>
<tr><td>5</td><td>Potassium (kg/ha)</td><td>134</td><td>220</td><td>500</td></tr>
<tr><td>6</td><td>Carbon (%)</td><td>0.39</td><td>0.66</td><td>1</td></tr>
<tr><td>7</td><td>Sodium Absorption Ratio</td><td>2.9</td><td>5.6</td><td>10</td></tr>
<tr><td>8</td><td>Salinity (ppt)</td><td>0</td><td>0</td><td>0.01</td></tr>
</table></td></tr>
<tr><td>Flora & Fauna</td><td>Schedule-I species observed in the study area:

As per Wildlife Protection Amendment Act, 2022, Common Leopard (Panthera pardus), Leopard Cat (Prionailurus bengalensis), Jungle Cat (Felis chaus), Indian Grey mongoose (Herpestes edwardsii), Small Indian mongoose (Herpestes auropunctatus), Golden Jackal (Canis aureus), Red Fox (Vulpes vulpes), Bengal Fox (Vulpes bengalensis), Asiatic Black Bear (Ursus thibetanus), Yellow-throated marten (Martes flavigula), Himalayan Serow (Capricornis sumatraensis), Himalayan Goral (Naemorhedus goral), Wild Boar (Sus scrofa), and Indian Crested Porcupine (Hystrix indica) are the mammalian species.

Among herpetofauna Russell's Viper (Daboia russelii) and Bengal Monitor (Varanus bengalensis) are the species under Schedule-I of WPA 2022.</td></tr>
</table>

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

i. For disposal of Municipal Solid Waste generated during construction and operation phase of project Solid Waste Treatment Plant (including organic waste composter) has been proposed at project colony area.

ii. NHPC Ltd. signed MoU with MSTC Limited regarding collection and disposal of non-degradable waste including e-waste during construction and operational phase of project.

iii. For disposal of Bio-medical Waste generated from facilities at project site will

be included as part of upgrading existing medical facility at NHPC Dulhasti Power Station colony area.

iv. For Disposal of waste oil vendors authorized by State Pollution Control Committee shall be engaged.

v. The pre-identified 02 sites for disposal of muck are located in non-forest land about 500m and 200 m from source. Both sites are more than 30m away from HFL of Chenab river.

xx. Public Hearing for the proposed project has been conducted by the State Pollution Control Committee on 22.08.2025, The main issues raised and replies by the user agency during the public hearing are;

S. No.	Concern / Demand Raised	Response from Project Proponent (NHPC Ltd.)
1	Enquired about exact extent of private land acquisition and whether compensation will be given before commencement of the project.	Total land required: 60.3 ha 40.93 ha Govt. land, 8.27 ha private land, 11.10 ha NHPC Dulhasti Power Station (Village Dul). Compensation will be finalized by District Administration (Kishtwar) under RFCTLARR Act, 2013 and J&K Rules, 2023.
2	Demanded that one member from each project-affected family (PAF) and adjoining Panchayats be provided employment.	During construction, a large number of skilled and unskilled workers will be engaged as per requirements. Employment preference will be given to PAFs based on skills and eligibility.
3	Requested timely and appropriate compensation for private landowners whose land will be acquired.	Compensation will be finalized by District Administration (Kishtwar) under RFCTLARR Act, 2013 and J&K Rules, 2023.
4	Enquired about mitigation plans for environmental impacts (air pollution, water pollution, dust, waste generation).	Pollution control measures are included in EMP with financial provision of ₹60.0 lakh. Regular Environmental monitoring of air, water, and noise will be done during

		construction with a budget of ₹46.60 lakh.
5	Demanded water supply schemes for project-affected villages.	Provision for water supply schemes has been kept under CER Plan and will be initiated once project construction starts.
6	Demanded road connectivity of affected villages with the main road; highlighted hardship faced by students due to poor road access despite proximity (7 km) to district HQ.	Maintenance and improvement of road connectivity will be initiated under CER Plan with project construction activities.
7	Requested hospital facilities in project-affected areas and bus service for students.	Basic facilities like school bus services, water supply schemes, and road maintenance will be taken up during project construction phase.
8	Demanded organization of medical camps (4 times a year) for adjoining villages.	Provision for medical camps has been made under the Public Health Delivery System of the Environmental Management Plan (EMP). Additionally, to strengthen medical facilities in the area, provision has also been kept under the Corporate Environment Responsibility (CER) Plan, which will be implemented as per the directions of the District Administration (Kishtwar).
9	Raised concern about worker safety during project construction.	Worker safety will be ensured as per Labour Management Plan with a financial provision of ₹62.0 lakh.
10	Expressed concern about impacts on livestock and loss of grazing land, and asked about alternatives.	After consultation with Concerned Forest Divisions provision of development of pasture/ grazing land has been included under CAT Plan & Biodiversity Conservation Plan.
11	Demanded widening of village approach road and installation of crash barriers along the road.	Road widening and crash barrier installation will be covered under the budget allocated for Corporate Environment Responsibility (CER).

12	Requested free education facilities up to graduation level for residents of project-affected villages.	NHPC Ltd. is already providing quality education through Kendriya Vidyalaya under its aegis. The organization is committed to strengthening and improving education facilities for children of project-affected families and nearby areas.

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

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

- **Project details:**

Name of the Proposal	Dulhasti Stage-II Hydroelectric Project (260 MW)
Proposal No.	IA/JK/RIV/555087/2025
Location (Including Coordinates)	Kishtwar tehsil of Kishtwar district in Union Territory of Jammu & Kashmir Latitude - $33^0$22' North & Longitude - $75^0$40' East
Company's Name	NHPC Ltd.
CIN no. of Company/user agency	L40101HR1975GOI032564
Accredited Consultant and certificate no.	NABET/EIA/25-28/RA 0415
Project location (Coordinates /River/ Reservoir)	Dam - Near village Dul 450m D/S of confluence ofAmni Nallah with Chenab Power House - Located underground on the left bank of Chenab River near Benzwar village
Inter- state issue involved	No
Proposed on River/ Reservoir	Chenab River
Type of Hydro-electric project	Run-of-river
Seismic zone	IV

- **Category details:**

Category of the project	A
Capacity / Cultural command area	260 MW
Attracts the General Conditions	No
Additional information (if any)	-

- **ToR/EC Details:**

ToR Proposal No.	IA/JK/RIV/214210/2021
EAC meeting date	05.06.2021

ToR Letter No.	J-12011/10/2021-IA.I (R)
ToR grant Date	16.07.2021
Cost of project	3277.45 Cr
Total area of Project	60.30 Ha
Height of Dam from River Bed (EL)	65.0 m (above deepest foundation level)
Details of submergence area	-
District to provide irrigation facility (if applicable)	NA
Details of tunnels on upper level & lower level and length of canal (if applicable)	
No. of affected Village	2
No. of Affected Families	62
Project Benefits	**Power Generation**: Dulhasti Stage II HEP is likely to generate 1093.11 MU in a 90% dependable year **Environmental**: • Soil Conservation • Biodiversity Conservation • Conservation of Riverine Ecology • Green Energy (The project would replace the carbon emissions to the extent of power generation, which is equivalent to the estimated energy generation of 1093.11 MU in 90% dependable year.) **Social:** • Job Opportunities • Business Development • Infrastructure Development • Implementation of local area development activities under CER

R&R details	The total land requirement for the Dulhasti Stage-II HEP is estimated to be 60.3 ha. Of this, 8.27 ha is private land. The private land identified for the project falls in two villages namely Benzwar (Revenue Village Pochal) and Palmar of Kishtwar District. The private land identified for projects belongs to 62 nuclear families – 26 from Benzwar and 36 from Palmar. One pucca house and 5 cowsheds have been identified from the land coming under acquistion as per information provided by Patwari. The present R&R plan has been prepared for the purpose of EIA study only. The plan is prepared based on the data related to private land and affected families; as provided by the project proponent and verified during field visits. The plan addresses the compensation package as per the provisions of RFCTLARR 2013 and The Jammu and Kashmir Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (Social Impact Assessment and Consent) Rules, 2023.
Catchment area/ Command area	Free-draining catchment between the diversion sites of the upstream Kwar HEP and Dulhasti Stage-II HEP: 119.86 km^2
Types of Waste and quantity of generation during construction/Operation	Municipal Solid Waste- Bio degradable (109.50 Tons), Non degradable (112.0 Tons)
Material used for blasting and its composition as per DGMS standards.	New Explosive magazines to be developed at Power House area, Benzwar for development of Dulhasti Stage-II H.E. Project, and it will be in scope of work of concerned Contractor. Benzwar is around 12 Km away from Chenab complex at Kishtwar. It is sufficiently away from the human habitat and working areas as per the explosive and other relevant laws of Indian Explosive Act and rules.
E-Flows for the Project	For Dulhasti stage-II HE Project, no separate dam is envisaged. The existing dam on Dulhasti (St-I) will be common for both the projects. However, in view of recent NGT order, provision of e-flow as 15% of average of inflow in the lean season, needs to be made in dam of existing power plant. Accordingly, 15% of average of all the water series in the lean season

	i.e., during Dec to March, of Chenab River has been calculated as e-flow which is calculated as 11.32 cumec. As such, provision of downstream discharge of 11.32 cumec as e-flow, has been kept from the dam of Dulhasti- I Power Station.
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.	No As per Scoping clearance issued by MoEF&CC release of 11.32 cumec discharge is recommended for E-flow. The existing dam on Dulhasti (St-I) will be common for both the projects. However, in view of recent NGT order, provision of e-flow as 15% of average of inflow in the lean season, needs to be made in dam of existing power plant. Accordingly, 15% of average of all the water series in the lean season i.e., during Dec to March, of Chenab River has been calculated as e-flow which is calculated as 11.32 cumec. To maintain this discharge continuously, one spillway gate remains partially opened at all times.
Details on provision of fish pass	No; proposed Dulhasti Stage-II HEP (Dulhasti Power Station) utilizes existing operational dam of Dulhasti Power Station (Dulhasti Stage-I HE Project).
Project benefit including employment details (no of employee)	About 500 workers (labour and staff) would be engaged temporarily during the peak construction period. It is expected that 20% of the total workforce shall be available from the UT of Jammu & Kashmir. After completion of the project only a staff of about 120 persons shall
Area of Compensatory Afforestation (CA) with tentative no of plantation.	Since, there is no requirement of any forest land diversion for construction of project components, therefore the preparation of Compensatory Afforestation Plan is not
Previous EC details	The proposed Dulhasti Stage-II HE Project (260 MW) is the extension of 390 MW operational Dulhasti Stage-I HEP (Dulhasti Power Station). Dulhasti Stage-I Hydro Electric Project is a runof- river scheme, which was commissioned in 2007 by NHPC Ltd. and has been operating successfully since then. **Environmental**
EC Compliance Report by R.O,	Certified Compliance Report is enclosed as

- **Electricity generation capacity:**

Powerhouse Installed Capacity	260 MW
Generation of Electricity Annually	1093.11 MWH
No. of Units	2 nos. (2 X 130 MW)

- **Muck Management Details:**

No. of proposed disposal area/ (type of land- Forest/Pvt land)	2 (Non-forest land)
Cross section of proposed muck area, Height of muck with slope.	Attached
Distance of muck disposal area (location), from muck generation sources (project area)/River, HFL of proposed muck disposal area.	About 500 m more than 30 m from HFL.
Total Muck Disposal Area	11.20 ha
Estimate Muck to be generated	1440000 Cum
Transportation	Both pre identified muck disposal sites are adjacent to proposed construction sites (500m & 2000m). The generated muck will be carried in dumper trucks covered with heavy duty tarpaulin properly tied to the vehicle. All dumpers will be well maintained to avoid any chances of loose soil from being falling during transportation. All routes will be periodically wetted with the help of sprinklers prior to the movement of dumper trucks. Dumping would be avoided during the high-speed wind, so that suspended particulate matters (SPM) level
Monitoring mechanism for Muck Disposal Transportation	The provisions of Monitoring have been kept under proposed Environmental Monitoring

- **Land Area Breakup:**

Private Land	19.37 ha (11.10 ha already in NHPC possession)
Government Land	40.93
Forest Land	-
Total Land	60.30
Submergence area/Reservoir area	None
Land required for project components	60.30

- **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	All the proposed project components of Dulhasti Stage-II HEP are well outside the boundary of the National Park as well from the Eco Sensitive Zone of Kishtwar High Altitude National Park. The nearest project component is about 9.8 km from the Eco Sensitive Zone boundary of the National Park.
National Park	No	
Wildlife Sanctuary	No	
Archaeological sites monuments/historical temples etc.	No	
Additional information (if any)	-	

- **Availability of Schedule-I species in study area:** Yes, As per Wildlife Protection Amendment Act, 2022, Common Leopard (*Panthera pardus*), Leopard Cat (*Prionailurus bengalensis*), Jungle Cat (*Felis chaus*), Indian Grey mongoose (*Herpestes edwardsii*), Small Indian mongoose (*Herpestes auropunctatus*), Golden Jackal (*Canis aureus*), Red Fox (*Vulpes vulpes*), Bengal Fox (*Vulpes bengalensis*), Asiatic Black Bear (*Ursus thibetanus*), Yellow-throated marten (*Martes flavigula*), Himalayan Serow (*Capricornis sumatraensis*), Himalayan Goral (*Naemorhedus goral*), Wild Boar (*Sus scrofa*), and Indian Crested Porcupine (*Hystrix indica*) are the mammalian species.

  Among herpetofauna Russell's Viper (*Daboia russelii) and* Bengal Monitor (*Varanus bengalensis)* are the species under Schedule-I of WPA 2022.

- **Public Hearing (PH) Details**

Advertisement for PH with date	State level newspaper "Daily Excelsior" and "Daink Jagean" dated 20.07.2025
Date of PH	22.08.2025
Venue	Village Banzwar, (Proposed Site for Powerhouse), District Kishtwar, Union Territory of Jammu & Kashmir
Chaired by	Additional Deputy Commissioner, District Kishtwar
Main issues raised during PH	• Provision of Employment of local Youth • Provision of Medical Facilities • Financial assistance for strengthening of basic infrastructure in the area • Appropriate compensation for private landowners
No. of people attended	173

- **Brief of base line Environment:**

<table>
<tr><td>Particulars</td><td colspan="5">Details</td></tr>
<tr><td rowspan="9">Period of baseline data collection/Sampling period.

(Air, noise, water, land) flora and fauna of the aquatic ecology, etc.</td><td>Parameters</td><td>Post-monsoon</td><td>Pre-Monsoon</td><td>Monsoon</td><td>Post-Monsoon</td></tr>
<tr><td>Soil</td><td>January 2022</td><td>May 2022</td><td>July 2022</td><td>October-November 2025</td></tr>
<tr><td>Air Environment</td><td>January 2022</td><td>May 2022</td><td>July 2022</td><td>October-November 2025</td></tr>
<tr><td>Noise & Traffic</td><td>January 2022</td><td>May 2022</td><td>July 2022</td><td>October-November 2025</td></tr>
<tr><td>Water Quality</td><td>January 2022</td><td>May 2022</td><td>July 2022</td><td>October-November 2025</td></tr>
<tr><td>Vegetation and Faunal survey</td><td>January 2022</td><td>May 2022</td><td>July 2022</td><td>October-November 2025</td></tr>
<tr><td>Fauna surveys</td><td>January 2022</td><td>May 2022</td><td>July 2022</td><td></td></tr>
<tr><td>Socio-economic survey of Project affected villages</td><td colspan="4">September-October 2022</td></tr>
<tr><td colspan="5"></td></tr>
<tr><td>Brief description on hydrology and water assessment as per the approved Pre-DPR:</td><td colspan="5">CWC vide File No.T-11025/3/2021-HYD(N) DTE dated 15.03.2021 approved water availability series for the period 1975-76 to 2019-20 at Dul dam. The Benzwar discharge series (1975 to Jul 2003) has been transferred to Dul dam using catchment area proportion (direct) with proportion factor of 0.9825 (10500/10687). Discharge data from August 2003 to May-2020 has been taken as observed at Dul dam G&D site and Dul dam. The average annual runoff based on the long-term data base (Jun-1975 to May-2020) is 13242 MCM.</td></tr>
</table>

- **Court case details: Nil**

- **Status of other statutory clearances**

Particulars	**Letter no. and date**
Status of Stage- I FC	Not Applicable
Approval of Central Water Commission	CWC Hydrology (N) Directorate vide their file no. T-11025/3//2021-HYD(N) DTE, dated 22-01-2021.
Approval of Central Electricity Authority	CEA Letter no. File No.CEA-HY-12-20/2/2021-HPA Division dated 18.05.2021.
Additional detail (If any)	
Is FRA (2006) done for FC-I	Not Applicable

- **Details of the EMP**

S. No.	EMP COMPONENTS	Capital Cost (Rs. In lakh)	Recurring Cost (Rs. in lakh)				Total Cost (Rs. in lakh)
			Year 1	Year 2	Year 3	Year 4	
1	Catchment Area Treatment Plan	1171.92	0.00	0.00	0.00	0.00	1171.92
2	Biodiversity Conservation & Wildlife Conservation Plan	1206.00	0.00	0.00	0.00	0.00	1206.00
3	Fisheries Development Plan	15.00	13.25	13.25	13.25	13.25	68.00
4	Muck Dumping and Management Plan	985.65	63.38	113.48	48.28	19.58	1230.37
5	Landscaping, Restoration of Construction Sites	0.00	70.10	70.10	70.10	95.10	305.40
6	Reservoir Rim Treatment*	0.00	0.00	0.00	0.00	0.00	0.00
7	Green Belt Development Plan	3.00	15.25	25.50	20.50	8.24	72.49
8	Sanitation and Solid Waste Management Plan	130.00	21.30	21.30	21.30	21.30	215.20
9	Public Health Delivery System	70.00	25.00	25.00	25.00	25.00	170.00
10	Energy Conservation Measures	48.00	32.50	32.50	32.50	32.50	178.00
11	Labour Management Plan	35.00	6.75	6.75	6.75	6.75	62.00
12	Disaster Management Plan	150.00	6.25	6.25	6.25	6.25	175.00
13	Pollution Control and Mitigation Measures	0.00	15.00	15.00	15.00	15.00	60.00
14	Environmental Monitoring Program	0.00	11.65	11.65	11.65	11.65	46.60
15	Local Area Development Plan (CER)	750.00	0.00	0.00	0.00	0.00	750.00
		4564.57	**280.43**	**340.78**	**270.58**	**254.62**	**5710.98**

** Reservoir Rim Management Plan is already implemented by Dulhasti Stage-I Power Station. Additionally, the estimated cost for the implementation of the Rehabilitation and Resettlement (R&R) Plan is Rs. 13,007.83. The actual budget prepared by the government will be adopted by the project proponent for implementing R&R Plan.*

45.2.3 The EAC during deliberations noted the following:

- The Expert Appraisal Committee (EAC) deliberated on the information submitted by the Project Proponent and the details presented during the meeting. The Committee observed that the proposal pertains to the grant of Environmental Clearance for the Dulhasti Stage-II Hydro Electric Project (Run-of-the-River) of (260 MW) in an area of 60.3 Ha located at

Village Hariyal, Pakalan, Poochal, Seergwar etc, Subdistrict and District Kishtwar, Jammu & Kashmir by M/s NHPC limited.

- The project falls under Item 1(c) of the Schedule to the Environmental Impact Assessment (EIA) Notification, 2006, and is categorized as a Category 'A' project, which requires appraisal at the Central level by the Expert Appraisal Committee (EAC).

- The Terms of Reference (ToR) for conducting EIA/EMP study and public hearing of the Dulhasti Stage-II HEP was granted by the MoEF&CC vide letter no. F. No. J-12011/10/2021-IA-I (R) dated 16th July 2021.

- The EAC, constituted under the provisions of the EIA Notification, 2006, and comprising expert members/domain experts from various relevant fields, examined the proposal submitted by the Project Proponent. This examination included a review of the Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) reports, which were prepared and submitted by a QCI/NABET-accredited consultant on behalf of the Project Proponent.

- The EAC noted that the Project Proponent has given an undertaking that the data and information given in the application and enclosures are true to the best of his knowledge and belief and no information has been suppressed in the EIA/EMP reports. If any part of data/information submitted is found to be false/ misleading at any stage, the project will be rejected and Environmental Clearance given, if any, will be revoked at the risk and cost of the project proponent.

- It has been noted by the EAC that Environmental Clearance for Dulhasti Stage-I HEP (390 MW) was accorded by Department of Science and Technology (DST), Govt. of India, in favour of Central Electricity Authority (CEA) on 01.01.1979. Forest Clearance for diversion of 1.1 ha forest land was accorded by Ministry of Environment & Forest on 15.01.1986. Stage I was commissioned in 2007 by NHPC Ltd. which involved 65 m high dam (from deepest foundation level), 7874.0 m long HRT, an underground powerhouse 390 MW installed capacity, & 298 m long Tail Race Tunnel (TRT).

- The EAC further noted that the Dulhasti HEP was planned to be developed in two stages - Stage I commissioned in 2007 and Stage II is the present project. During the meeting, PP informed that Stage II was planned in sync with construction of Pakal Dul HEP (1000 MW), an under construction project of CVPPL on Marusudar river, a right bank tributary of Chenab river. Pakal Dul is designed to divert water of Marusudar river to Chenab river on right bank, upstream of Dul Hasti dam. Dulhasti Stage-II, is designed based on additional water, which will be available from Pakal Dul during operation.

- It was also noted that the Dulhasti Stage-II HEP is planned to utilise surplus water to be diverted from the Marusudar River through the Pakal-Dul Powerhouse into the Dulhasti

reservoir. Downstream of diversion of Pakal Dul HEP, about 25 Km stretch of Marusudar river, will undergo significant hydrological alteration upon commissioning of the Pakal Dul Hydroelectric Project. A structured River Conservation Strategy covering aspects related to scientifically robust environmental flow regimes, restoration and maintenance of channel morphology and sediment processes, protection and conservation of aquatic and riparian biodiversity, livelihood and community concerns and integration of Marusudar river management within the Chenab basin cascade framework, to mitigate and manage these impacts in a sustainable manner should be a part of Dulhasti Stage II.

- The Committee took note of the upstream and downstream cascade scenario and available free flow stretch on the Chenab river, as depicted in the submitted layout including the under-construction Kwar HEP (540 MW) upstream and the operational Dulhasti Stage-I (390 MW) and under-construction Ratle HEP (850 MW) downstream, along with their respective FRL and TWL levels. It was noted that the introduction of Dulhasti Stage-II tailrace releases into the intermediate river reach will represent a change in impact character rather than an increase in dewatered length. While the return of flows offers partial hydrological and ecological benefits, the hydro-peaking-driven variability introduces additional risks related to geomorphology, ecology, and public safety. These impacts can be effectively minimized through coordinated operations, engineered safeguards, adaptive environmental flow management, and a robust early warning system, supported by a focused, field-based study.

- The NHPC and CVPPL being a major stakeholder in the Chenab river basin should formulate a strategy for implementation of these conservation measures with monitoring indicators and third-party audits.

- The EAC noted that the total land required for the project is for the Dulhasti Stage-II HEP is estimated to be 60.3 ha. Of this, 8.27 ha is private land, 40.93 ha is State Government land, and 11.10 ha belongs to the operational Dulhasti Power Station (Dulhasti Stage-I HEP), which will be utilized for developing infrastructure facilities for the project. Therefore, the total land to be acquired for the project amounts to 49.2 ha, comprising 8.27 ha of private land and 40.93 ha of state government land. There is no involvement of forest land in the region. There is no national park, wildlife sanctuary, Biosphere Reserve, Tiger/Elephant Reserve, Wildlife Corridor etc. within 10 km distance from the project site. The nearest project component is about 9.8 km from the Eco Sensitive Zone boundary of the Kishtwar High Altitude National Park.

- The EAC noted that the estimated project cost is Rs 3277.45 crore. Total capital cost earmarked towards Environment Management Plan/environmental pollution control measures is Rs. 4564.57 lakh and the Recurring cost (operation and maintenance) will be about Rs. 1146.41 lakh about i.e. Rs 286.60 lakh per annum.

- The committee observed that the Public Hearing for the proposed project has been conducted by the State Pollution Control Committee on 22.08.2025 at Village Banzwar,

(Proposed Site for Powerhouse), District Kishtwar, Union Territory of Jammu & Kashmir. Publications of notice for public hearing were given in state/national level in the State level newspaper "Daily Excelsior" and "Daink Jagean" dated 20.07.2025. The meeting was chaired by Additional Deputy Commissioner, District Kishtwar, ensuring due diligence in addressing public concerns and regulatory compliance. 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 the water of Chenab basin is shared between India and Pakistan in accordance with the provisions of "The Indus Water Treaty, 1960". The parameters of the project have been planned in accordance with the provision of the Treaty. However, the Indus Waters Treaty stands suspended effective from 23rd April, 2025.

- The committee observed that Certified Compliance Report from IRO, Chandigarh signed on 06.11.2024 has been submitted by the PP for Environmental clearance on dated 01.01.1979 and the project got completed on 23.03.2007. It has been mentioned that PP has obtained Consent to Operate Consent No. PCC/digital/21063805013 of 2024 dated 13.09.2024 which is valid till June 2028. There were certain observations raised by the IRO, for which it was advised by the EAC to PP to get closure report on the observations raised.

- The EAC also noted that the Forest Department has approved the Biodiversity and Wildlife Conservation and Management Plan cost estimate of Rs. 1206.00 lakh, as communicated through Letter No. WLP/Tech/2025-26/1055-57 dated 25-11-2025.

45.2.4 The EAC after examining the information submitted and detailed deliberations on the project **recommended** the proposal for grant of prior Environmental Clearance to Dulhasti Stage-II Hydro Electric Project (Run-of-the-River) of (260 MW) in an area of 60.3 Ha located at Village Hariyal, Pakalan, Poochal, Seergwar etc, Sub-district and District Kishtwar, Jammu & Kashmir by M/s NHPC limited, under the provisions of EIA Notification, 2006 and as amended with subject to compliance of applicable Standard EC conditions with the following additional specific environmental safeguard conditions:

[A] Environmental management and Biodiversity conservation:

i. PP shall obtain closure report on the observations raised by IRO, Chandigarh in Certified Compliance Report.
ii. On-line monitoring system for the e-flow releases in the upstream and downstream of the project to be installed.
iii. The plastic waste shall be disposed of by recycling and not by land filling.
iv. Local indigenous varieties of plants to be grown and maintained till their full growth

including gap filling.

v. Skill mapping be undertaken for the youths of the affected project area and based on the skill mapping, the trainings to the youths be provided for their appropriate engagements in the Project.

vi. Land acquired for the project shall be suitably compensated with the prevailing guidelines and all commitments made during the Public Hearing shall be fulfilled.

vii. The project-affected population should be resettled and rehabilitated as per the latest R & R Policy.

viii. Six monthly compliance reports shall be submitted by the PP to Regional Office, MoEF& CC, without fail.

ix. 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.

x. The contract clause limiting the No. of vehicles used during excavation and transportation shall followed scrupulously and the same shall informed to the ministry.

xi. 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.

xii. No vehicle purchase shall be allowed from funds earmarked for implementation of Wildlife Conservation plan.

xiii. The Project Proponent shall explore the possibility to undertake tree transplantation, wherever feasible, in consultation with the State Forest Department. Survival of at least 80% of transplanted trees shall be ensured, with monitoring for a minimum period of five years.

xiv. Plantation of saplings (10,000 nos.) shall be carried out around the muck disposal area in consultation with Forest Department as a part of the tree plantation campaign "Ek Ped Ma Ke Naam" and the details of the same shall be uploaded in the MeriLiFE Portal (https://merilife.nic.in). The survival of plants shall be reported in the 6 monthly compliance report.

xv. PP shall prepare time bound reclamation and restoration plan for restoration of batching plant in consultation with the Forest Department and same shall be submitted to IRO, MoEF&CC and shall be fully implemented within five years of commissioning of the project.

xvi. A study shall be undertaken by the NHPC and CVPPL through reputed expert Government Research institute to formulate the strategy for sustainable environmental management of Chenab River Basin covering aspects related to scientifically robust environmental flow regimes, restoration and maintenance of channel morphology and sediment processes, protection and conservation of aquatic and riparian biodiversity, livelihood and community concerns and integration of Marusudar river management within the Chenab basin cascade framework. The recommendations of the study shall be implemented in time bound manner. The status of implementation shall be reported in 6 monthly compliance report.

[B] Disaster Management:

i. Disposal of the excavated muck and its filling on the low-lying area with proper measures for the stabilization and greenery to minimize the impacts of the generated construction muck shall be taken up pari passu with construction work. A muck transportation plan shall be prepared and implemented. The movement of muck carrying vehicles shall be monitored through latest sensor-based technology to ensure the muck dumping at designated sites.

ii. Stabilization of muck disposal sites using biological and engineering measures shall be taken up immediately to ensure that muck does not roll down the slopes and does not pollute the natural streams and water bodies in surrounding area. The plantation on muck disposal site with local species for restoration of ecology and environment of the project site area.

iii. Necessary control measures such as water sprinkling arrangements, and construction of paved roads leading to muck disposal sites etc. shall be taken up on priority to arrest fugitive dust at all the construction sites.

iv. Solid waste generated, especially plastic waste, etc. should not be disposed of as landfill material. It should be treated with scientific approach and recycled. Use of single-use plastics may be discouraged.

v. Landslide and other heavy rain related disasters shall be taken care of through appropriate preventive measures during construction and operation of project.

[C] Socio-economic:

i. Land acquired for the project shall be suitably compensated in accordance with the prevailing guidelines of the state government and provisions under Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013.

ii. RO plant shall be installed in the nearby 5 villages and the maintenance shall be done by the project Authorities.

iii. Solar panel be provided to the families living in rural areas within 10 km radius of project.

iv. School up to 12^{th} Standard shall be established and managed to provide free quality education for children from project affected villages/Tribal villages. Adequate transportation facilities shall also be provided to students to ensure connectivity and ease of access.

v. Scholarship programme shall be initiated for the youths in the project affected villages.

vi. 50 bed multi-specialty hospital shall be established to cater the need of tribal population/locals. The tribal population within 10 km radius of the project shall be given free of cost medical facility.

vii. Skill development Centre shall be established within 10 km radius of the project and regular training programmes for development and promotion of traditional art/products of tribal/local population. The Skill Development Plan shall mandatorily include the

following components:

- Capacity building and skill enhancement programs aligned with local livelihood opportunities.
- Establishment of linkages with Industrial Training Institutes (ITIs) and other recognized training centres for imparting technical skills.
- Provision of free or subsidized access to healthcare facilities in project-supported hospitals and health centres.
- Support to educational institutions in the study area through free services, scholarships, infrastructure strengthening, and vocational guidance programs.
- Special outreach initiatives for women, youth, and vulnerable groups within the SC/ST communities to ensure inclusive participation and benefits.
- The Plan shall be implemented in a time-bound manner with clearly earmarked budgetary provisions, which shall not be diverted for any other purpose.

viii. The PP shall submit annual progress reports on the implementation of the Skill Development Plan and associated community welfare measures to the Regional Office of the Ministry.

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

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

xi. An institutional mechanism to be developed to ensure the preference of jobs to PAFs and SC/ST and also a policy for preferential treatment for award of sundry works to the PAFs and SC/ST and their dependents.

xii. The compliance of above conditions shall be monitored by IRO, MoEF&CC and regularly site visit once in year. The compliance report of IRO shall be regularly submitted to MoEF&CC.

[D] Miscellaneous:

i. After 5 years of the commissioning of the project, a study shall be undertaken regarding impact of the project on the environment. The study shall be undertaken by an independent agency.

ii. PP should establish in house (at project site) environment laboratory for measurement of environment parameter with respect to air quality and water (surface and ground). A dedicated team to oversee environment management shall be setup which should comprise of Environment Engineers, Laboratory chemist and staff for monitoring of air, water quality parameters on routine basis.

iii. A dedicated team to oversee environmental management activities (at project site) shall be set up comprising Environment Manager having post graduate qualification in Environmental Sciences/ Environment Engineering along with other supporting staff. The Environment Manager Shall report to Project Head directly.

iv. PP shall procure construction material only from those Organizations having all valid legal/statutory clearances/permissions or necessary permission to be obtained for quarrying construction materials for the project as per the EIA Notification, 2006 and as amended thereof.

Agenda Item No. 45.3

Pane Open Loop Pumped Storage Project (1500 MW) in an area of 293.5 Ha located at Village Khanu, Vagheri, & Pane, Sub-district Mahad and Velhe, District Pune and Raigarh, Maharashtra by M/s JSW Energy PSP Seven Limited- Environmental Clearance (EC) – reg.

[Proposal No. IA/MH/RIV/556994/2025; F. No. J-12011/63/2023-IA.I (R)]

45.2.1: The proposal is for grant of Environmental Clearance (EC) to the project for Pane Open Loop Pumped Storage Project (1500 MW) in an area of 293.5 Ha located at Village Khanu, Vagheri, & Pane, Sub-district Mahad and Velhe, District Pune and Raigarh, Maharashtra by M/s JSW Energy PSP Seven Limited.

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

i. M/s. JSW Energy PSP Seven Limited is proposing Pane Pumped Storage Project (1500 MW) at Villages: Pane and Vagheri, Taluka: Mahad, District: Raigad, and Village: Khanu, Taluka: Velhe, District: Pune, Maharashtra.

ii. The Project comprises of upper & lower reservoirs with a gross storage capacity of 8.22 MCM & 13.48 MCM respectively. The upper reservoir & lower reservoir will be formed by a Concrete Gravity Dam that is 536.26 m and 434.00m long at top respectively. The non-overflow section of the Upper reservoir & lower reservoir stands 94 m & 82 m high from the deepest foundation level respectively.

iii. The scheme of operation for the project is with 6.39 hours of peak hour generation per day and 7.03 Hours for pumping back the water to the upper reservoir. Being an off-stream open loop project, 14.184 MCM of water will be required for one time filling of the reservoir which will be carried out from the self catchment inflows of the Lower Reservoir, evaporation losses (1.014 MCM) will be recouped periodically from the catchment itself.

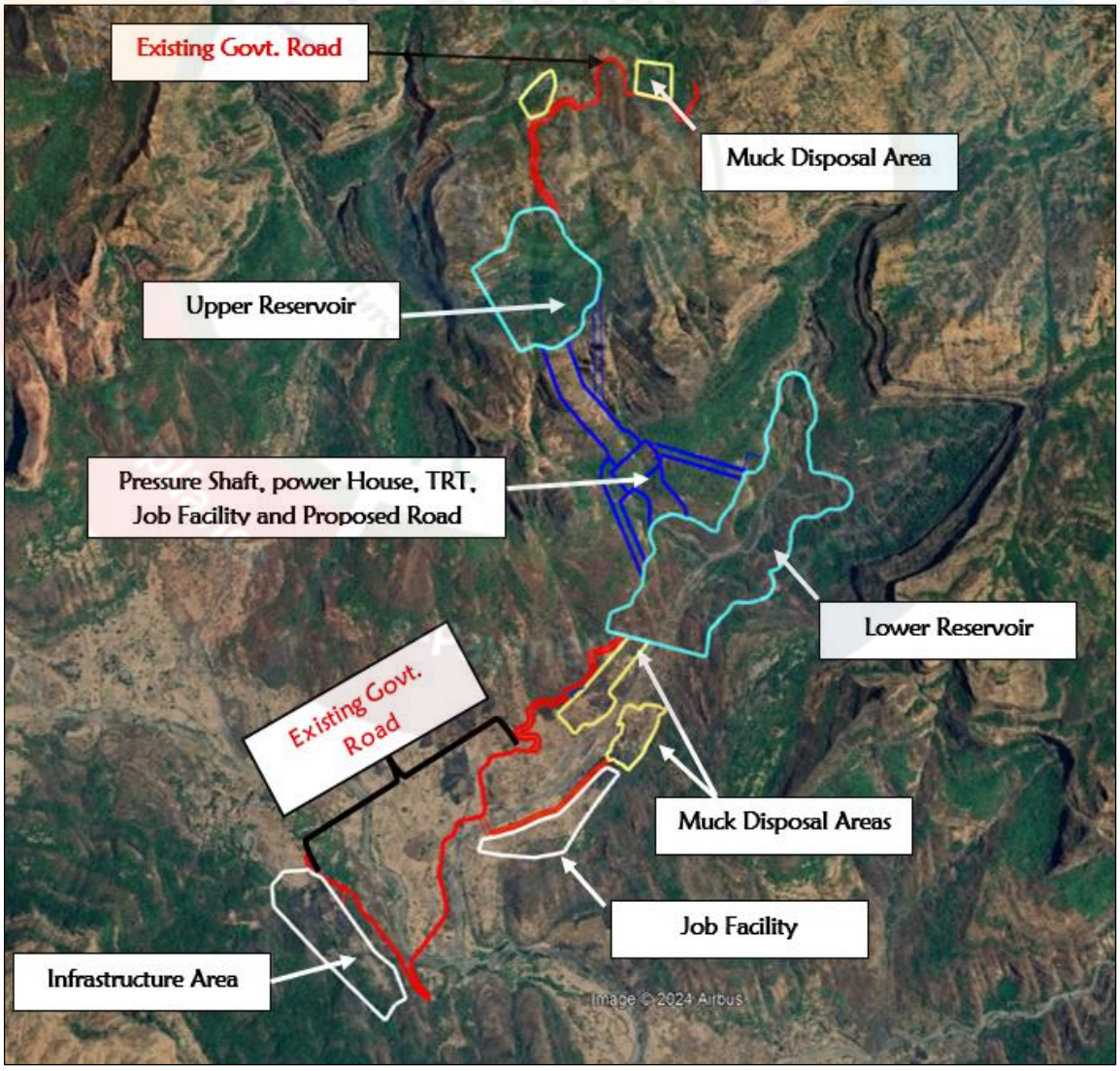
iv. The Project will generate 1500 MW (5 units of 250 MW and 2 units of 125 MW) of peak power for about 6.39 hours by utilizing a design discharge of 275 Cumec with a rated head of 508.54 m and 55.06 Cumec with a rated head of 507.90 m respectively for larger and smaller unit. The Project will utilize 1685 MW to pump 7.52 MCM of water to the upper reservoir in 7.03 hours.

v. The project proposal was considered by the Expert Appraisal Committee (Hydro River Valley Sector) in its 5th meeting held on 20.12.2023 for ToR Appraisal and recommended for grant of Terms of References (ToRs) for the Project. The ToR has been issued by Ministry vide letter No. J-12011/63/2023-IA.I(R); dated 30.01.2024 which was further amended on 03.12.2024.

vi. **The geographical co-ordinate of the project are:**

Pillar No.	Direction	Latitude	Longitude
5	North	18°17'31.250"N	73°29'14.890"E
38	West	18°14'33.731"N	73°27'53.922"E
40	South	18°14'7.266"N	73°28'20.027"E
56	East	18°15'58.063"N	73°30'1.001"E

vii. The site location map of the project is as under:



viii. **Land requirement:** The total project area is 293.50 ha which spreads in three villages Pane, Khanu and Vagheri. Out of total project area, 8.74 ha is Govt land, 66.91 ha is forest land and 217.85 ha land is Private land. Application for forest clearance of 66.91 ha area has been submitted vide proposal no. FP/MH/HYD/IRRIG/454907/2023 dated 22.12.2023.

ix. **Demographic details in 10 km radius of project area:** The study area covers 65 villages with a combined population of 22,439 and 5,609 households. The Scheduled Caste (SC) population is 1,079, while the Scheduled Tribe (ST) population is 3,232. Within the 10 km radius, the total working population is 11,417, of which 10,422 are main workers and 995 are marginal workers. A total of 11,022 people are classified as non-workers. The overall literacy rate in the area is 68.47%, and the sex ratio is 1,070 females for every 1,000 males.

x. **Water requirement**: The water requirement for one-time filling of reservoirs of Pane PSP is 14.184 MCM which will be sourced from Self-catchment inflows of the lower reservoir. To recoup the evaporation losses, there will be recurring requirement of 1.014 MCM per annum water which will be met from catchment itself.

xi. **Project Cost:** The estimated project cost is Rs. 9446.15 Crores. Total capital cost earmarked towards Environmental Management Plan is Rs. 39.16 Crores and the Recurring cost (operation and maintenance) will be about Rs. 1.59 Crores per annum.

xii. **Project Benefit**:

Social benefit: Direct & Indirect employment opportunities during construction phase will significantly contribute in uplifting quality of life of people of the region. During operation phase also, local people will get preference for employment opportunity in operation, maintenance and auxiliary activities. The company will extend social benefits in the areas of education, socio-economic and infrastructure development, healthcare, and environmental improvement as part of its Socio-economic Development Plan. Additionally, under the Local Area Development Plan, it will undertake skill development and training initiatives, including the construction of a dedicated Skill Development Centre.

Financial benefits of project or activity: The project with a proposed peaking energy installation of 1680 MW would generate designed energy of 3324.47 MU. This will contribute in reduction in gap between demand and supply of peak power in the state and country. The Project activity will also mobilize financial resources in the form of small business/ Indirect employment opportunities in the area.

Environmental benefit: Out of total project area, 7.19 ha area will be developed under the greenbelt/ plantation. The company will carry out compensatory afforestation in consultation with the forest department. Avenue plantation @ 200 Nos/ village with 3 years maintenance and cost of tree guard for 5 villages.

xiii. **Environmental Sensitive area:**

There are no national parks, wildlife sanctuaries, Biosphere Reserves, Tiger/Elephant Reserves, Wildlife Corridors etc. within 10 km distance from the project site except 9

Reserved Forest and Protected Forest present. Kal Nadi is flowing at a distance of ~3.0 km in SSW direction from Upper reservoir and ~1.8 km in WSW direction from Lower reservoir, Mose Nala is flowing at a distance of ~6.0 km in North Direction from Upper Reservoir and ~7.5 km in NNW direction from Lower reservoir, Panshet dam is located at a distance of ~5.50 km in NNE direction from Upper reservoir and ~ 5.80 km in NNE direction from Lower reservoir, Koturde Dam is located at a distance of ~9.5 km in SW direction from Infrastructure, Gunjavani Dam is located at a distance of ~8.5 km in ENE direction from Lower Reservoir and ~10.0 km in ENE direction from Upper Reservoir and Mutha River is flowing at a distance of ~9.5 km in NNE direction from Upper Reservoir and ~10.0 km in NNE direction from Lower Reservoir. Apart from these, there are various seasonal nallas present in the study area, which remain active during rains.

Lingana fort is ~1.0 km in ESE direction, Raigad Fort is ~2.5 km in SW direction, Jijamata Wada is ~5.0 km in WSW direction and Konkan Diva Fort & Caves ~6.0 km in NW direction from the project site.

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

MOU has been signed between Department of Water Resources, Govt. of Maharashtra and M/s. JSW Energy Seven Limited, (SPV of JSW Neo Energy Limited) on 26.09.2024. Water availability certificate has been received from Water Resource Department; Government of Maharashtra vide letter No WFR/Savitri/932 dated 16.10.2023.

xv. **Resettlement and Rehabilitation:** A total of 280 PAFs of 3 villages will be affected due to the proposed project, who will be fairly compensated in consonance with "The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013", (RFCTLARRA 2013). The budget allocated for R&R Plan is Rs. 53.51 Crores/-.

xvi. **Scheduled –I species:** As per The Wildlife (Protection) Amendment Act (W(P)AA), 2022, 31 schedule -I species i.e., *Bos gaurus* (Gaur), *Canis aureus* (Jackal), *Canis lupus* (Wolf), *Cuon alpinus* (Wild dog), *Felis chaus* (Jungle cat), *Herpestes edwardsii* (Common grey mongoose), *Hyaena hyaena* (Hyaena), *Hystrix indica* (Indian porcupine), *Loris lydekkerianus* (Slender loris), *Macaca radiata* (Bonnet macaque), *Manis crassicaudata* (Indian pangolin), *Melursus ursinus* (Sloth bear), *Panthera pardus* (Common leopard), *Prionailurus bengalensis* (Leopard cat), *Ratufa indica* (Giant Squirrel), *Tetracerus quadricornis* (Four-horned antelope), *Viverricula indica* (Small Indian civet), Vulpes vulpes (Common Fox), *Crocodylus palustris* (Marsh crocodile), *Daboia russelii* (Russell's viper), *Lissemys punctate* (Indian flapshell turtle), *Naja naja* (Cobra), *Ophiophagus hannah* (King cobra), *Ptyas mucosa* (Indian rat snake), *Python molurus* (Indian rock python),*Varanus bengalensis* (Common Indian monitor lizard), *Anthracoceros coronatus* (Malabar pied hornbill), *Bubo bubo* (Great horned owl), *Dendrocopos mahrattensis* (Yellow-crowned woodpecker), *Gallus sonneratii* (Grey jungle fowl) and *Pavo cristatus* (Peafowl) has been found in the study area.

xvii. **Alternative Studies:**

A detailed alternative study for selection of site for both upper and lower reservoir has been carried out. Three alternate sites for Upper and lower reservoirs have been selected. Alternative - 1 was found to be more feasible in techno-economical aspects. The details are as follows:

- **Alternative-1:** Present at Villages: Pane and Vagheri, Taluka: Mahad, District: Raigad, and Village: Khanu, Taluka: Velhe, District: Pune, Maharashtra & feasible for 555.28 m Dam Length at Top and 7.57 MCM Live Storage with a capacity of 1500 MW. Nearest Habitation is Pane and Khanu with a population of 322 and 104 respectively as per Census, 2011. Tamhini Wildlife sanctuary is outside the study area.
- **Alternative-1A**: Present at Village: Panderi, Taluka: Mahad, District: Raigad, and Village: Bhordi, Gugulshi, Taluka: Velhe, District: Pune, Maharastra & feasible for 500 m Dam Length at Top and 7.50 MCM Live Storage with a capacity of 1500 MW. Nearest Habitation is Panderi and Bhordi with a population of 592 and 211 respectively as per Census, 2011. Tamhini Wildlife sanctuary is outside the study area.
- **Alternative-1B:** Present at Village: Pane, Taluka: Mahad, Dist: Raigad, and Village: Mohari & Singapur, Taluka: Velhe, District: Pune, Maharastra & feasible for 637 m Dam Length at Top and 7.57 MCM Live Storage with a capacity of 1500 MW. Nearest Habitation is Pane, Mohari and Singapur with a population of 322, 26 and 101 respectively as per Census, 2011. Tamhini Wildlife sanctuary is outside the study area.

Conclusion:

- ✓ Alternative-1 has been selected on the account of involvement of less forest land as compare to Alternative-1A and 1B. Forest land involvement in Alternate 1 (66.91 ha) is less as compared to Alternate 1A (67.14 ha) and Alternate 1B (70.94 Ha).
- ✓ Cost of Alternative-1 (with two HRT Scheme) is also less as compared to other two alternatives. Also, the cost/MW of both scheme is nearly similar.
- ✓ However, all the three alternatives are located outside the ESZ of Tamhini Wildlife Sanctuary.

After the selection of Alternative - 1, two options of powerhouse at this site have been selected for further alternative study:

- Alternative-1: With Underground Powerhouse at Alternative - 1.
- Alternative-2: With Surface Powerhouse at Alternative - 1.

Considering the above aspects, the underground powerhouse is more suitable for Pane PSP. The underground power houses, on the other hand, is found to be more economical than an equivalent surface power station as only about half the amount of concrete is required compared to a surface power station.

xviii. **Baseline Environmental Scenario:**

Period	**Post Monsoon Season (October 2022 to December 2022) & Pre Monsoon Season (March to May 2023)**
AAQ parameters at 10 locations	<u>Post Monsoon Season (October 2022 to December 2022):</u> • PM 10= 51.8 to 67.9 µg/m^3 • PM 2.5= 20.8 to 38.2 µg/m^3 • SO2= 5.9 to 15.1 µg/m^3 • NO2= 19.9 to 27.8 µg/m^3 • CO= BDL to 0.59 mg/m^3 <u>Pre Monsoon Season (March to May 2023):</u> • PM 10= 49.7 to 68.0 µg/m^3 • PM 2.5= 21.3 to 37.5 µg/m^3 • SO2= 5.2 to 12.8 µg/m^3 • NO2= 12.7 to 22.5 µg/m^3 • CO= BDL to 0.69 mg/m^3
Incremental GLC Level	• PM 2.5= Max. GLC: 0.89 µg/m^3 • PM 10= Max. GLC: 2.23 µg/m^3 • SO2= Max. GLC: 1.17 µg/m^3 • NOx= Max. GLC: 1.40 µg/m^3
Surface water quality samples at 04 locations	<u>Post Monsoon Season (October 2022 to December 2022):</u> pH: 7.18 to 7.74; Dissolve Oxygen: 6.8 to 6.9 mg/l; Total Dissolved Solids: 98.0 to 148 mg/l; Total Hardness (as CaCO3): 68.4 to 120.4 mg/l; Total Alkalinity: 50.6 to 106 mg/l; Calcium: 14.6 to 23.2 mg/l; Magnesium: 7.8 to 15.2 mg/l; Sulphate: 4.4 to 9.52 mg/l, Nitrate: 1.06 to 1.8 mg/l; Chloride: 14.8 to 20.6 mg/l; Iron: 0.06 to 0.09 mg/l. *Heavy metals like Copper (as Cu), Lead (as Pb), Chromium (as Cr), Manganese (as Mn), Arsenic (as As) and Mercury (as Hg) were also analyzed in the surface water samples but not detected.* <u>Pre Monsoon Season (March to May 2023):</u> pH: 7.07 to 7.44; Dissolve Oxygen: 7.2 to 7.3 mg/l; Total Dissolved Solids: 75.0 to 121 mg/l; Total Hardness (as CaCO3): 35.02 to 83.45 mg/l; Total Alkalinity: 27.17 to 70.82 mg/l; Calcium: 6.01 to 20.04 mg/l; Magnesium: 4.85 to 9.27 mg/l; Sulphate: 1.09 to 2.4 mg/l, Nitrate: 0.45 to 1.38 mg/l; Chloride: 13.45 to 15.78; Iron: BDL to 0.04 mg/l.

	Heavy metals like Copper (as Cu), Lead (as Pb), Chromium (as Cr), Manganese (as Mn), Arsenic (as As) and Mercury (as Hg) were also analyzed in the surface water samples but not detected.
Ground Water samples at 10 locations	<u>Post Monsoon Season (October 2022 to December 2022):</u> pH: 6.98 to 7.8; Total Dissolved Solids: 198 to 244 mg/l; Total Hardness (as CaCO3): 102 to 160 mg/l; Total Alkalinity: 87.2 to 125.8 mg/l; Calcium: 19.8 to 38.5 mg/l; Magnesium: 6.3 to 23 mg/l; Sulphate: 9.6 to 23.8 mg/l, Nitrate: 3.86 to 8.43 mg/l; Chloride: 24.5 to 45.6 mg/l; Iron: 0.10 to 0.36 mg/l. *Heavy metals like Copper (as Cu), Lead (as Pb), Chromium (as Cr), Manganese (as Mn), Arsenic (as As) and Mercury (as Hg) were also analyzed in the ground water samples but not detected.* <u>Pre Monsoon Season (March to May 2023):</u> pH: 7.1 to 7.88; Total Dissolved Solids: 219 to 260 mg/l; Total Hardness (as CaCO3): 112.62 to 166.21 mg/l; Total Alkalinity: 93.05 to 130.55 mg/l; Calcium: 22.98 to 41.23 mg/l; Magnesium: 8.91 to 23.88 mg/l; Sulphate: 11.56 to 25.67 mg/l, Nitrate: 4.1 to 8.73 mg/l; Chloride: 26.42 to 49.32 mg/l; Iron: 0.16 to 0.39 mg/l. *Heavy metals like Copper (as Cu), Lead (as Pb), Chromium (as Cr), Manganese (as Mn), Arsenic (as As) and Mercury (as Hg) were also analyzed in the ground water samples but not detected.*
Noise Level Leq (Day & Night) at 10 locations	<u>Post Monsoon Season (October 2022 to December 2022):</u> The Leq values for day time was observed to be 50.5 to 54.0 Leq dB (A) in residential area, while during night time 41.9 to 44.0 Leq dB (A). <u>Pre Monsoon Season (March to May 2023):</u> The Leq values for day time was observed to be 50.8 to 53.6 Leq dB (A) in residential area, while during night time 39.7 to 43.3 Leq dB (A).
Soil Quality at 10 Locations	<u>Post Monsoon Season (October 2022 to December 2022):</u>

	Bulk density: 1.50 to 1.54 gm/cm3; pH range 6.55 to 6.98; Electrical conductivity (EC); 0.27 to 0.38 µmhos/cm; Calcium content: 1782.5 to 2275.55 mg/kg; Sodium: 118.81 to 288.47 mg/kg; Potassium: 1220.65 to 376.85 kg/hectare; Nitrogen: 226.89 to 332.37 kg/hectare; Phosphorous: 26.97 to 35.12 kg/hectare; Magnesium: 328.22 to 409.78 mg/kg; Organic Carbon: 0.71 to 0.84 %. <u>Pre Monsoon Season (March to May 2023):</u> Bulk density: 1.50 to 1.55 gm/cm3; pH range 6.5 to 7.05; Electrical conductivity (EC); 0.25 to 0.39 µmhos/cm; Calcium content: 1682.2 to 2314.6 mg/kg; Sodium: 112.45 to 280.54 mg/kg; Potassium: 211.3 to 388.12 kg/hectare; Nitrogen: 220.57 to 341.77 kg/hectare; Phosphorous: 27.56 to 36.22 kg/hectare; Magnesium: 330.25 to 411.12 mg/kg; Organic Carbon: 0.7 to 0.85 %.
Flora & Fauna	As per The Wildlife (Protection) Amendment Act (W(P)AA), 2022, there are 31 schedule -I species i.e., *Bos gaurus* (Gaur), *Canis aureus* (Jackal), *Canis lupus* (Wolf), *Cuon alpinus* (Wild dog), *Felis chaus* (Jungle cat), *Herpestes edwardsii* (Common grey mongoose), *Hyaena hyaena* (Hyaena), *Hystrix indica* (Indian porcupine), *Loris lydekkerianus* (Slender loris), *Macaca radiata* (Bonnet macaque), *Manis crassicaudata* (Indian pangolin), *Melursus ursinus* (Sloth bear), *Panthera pardus* (Common leopard), *Prionailurus bengalensis* (Leopard cat), *Ratufa indica* (Giant Squirrel), *Tetracerus quadricornis* (Four-horned antelope), *Viverricula indica* (Small Indian civet), Vulpes vulpes (Common Fox), *Crocodylus palustris* (Marsh crocodile), *Daboia russelii* (Russell's viper), *Lissemys punctate* (Indian flapshell turtle), *Naja naja* (Cobra), *Ophiophagus hannah* (King cobra), *Ptyas mucosa* (Indian rat snake), *Python molurus* (Indian rock python),*Varanus bengalensis* (Common Indian monitor lizard), *Anthracoceros coronatus* (Malabar pied hornbill), *Bubo bubo* (Great horned owl), *Dendrocopos mahrattensis* (Yellow-crowned woodpecker), *Gallus sonneratii* (Grey jungle fowl) and *Pavo cristatus* (Peafowl) found in the study area.

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

S. No.	Name of the waste	Source	Qty	Mode of Disposal	Mode of Transport
1.	Muck	Quantity of muck / debris generated	2464514.56 cum	Reused in construction activities (1232257.28 cum) and disposed (1232257.28 cum) at muck dumping sites.	Road
2.	MSW	Project and labour camp	110 TPA	Waste will be segregated into Non-biodegradable and Bio-degradable waste. Biodegradable waste will be treated in Organic waste composter and manure obtained will be used in Greenbelt development. Non-biodegradable waste will be disposed through authorized recyclers.	Road
3.	Electronic equipment	Project and labour camp	0.28 TPA	As per CPCB Guidelines	Road
4.	Batteries	Project and labour camp	2.19 TPA	As per CPCB Guidelines	Road
5.	Biomedical	Dispensary	1.1 TPA	Through CBWTF	Road
6.	Burnt Mobil oil, grease	Construction equipment	5.6 TPA	Through authorized dealer	Road
7.	Plastic Waste	Labour camp	22 TPA	As per CPCB Guidelines	Road
8.	Construction and Demolition waste	Waste generated from construction activities	38700 TPA	Through authorized dealer	Road

xx. Public Hearing for the proposed project has been conducted by the State Pollution Control Board on 18.10.2024 and 05.11.2024 for Pune and Raigad district respectively. The main

issues raised during the public hearing are related to Employment, Socio-Economic and Infrastructure Development, Education, Land, etc.

xxi. No litigation pending against the proposal.

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

- **Project details:**

<table>
<tr><td>Name of the Proposal</td><td>Proposed Pane Pumped Storage Project (1500 MW)</td></tr>
<tr><td>Proposal No.</td><td>IA/MH/RIV/556994/2025</td></tr>
<tr><td>Location (Including Coordinates)</td><td>Villages: Pane and Vagheri, Taluka: Mahad, District: Raigad, and Village: Khanu, Taluka: Velhe, District: Pune, Maharashtra.
<table>
<tr><th>Pillar No.</th><th>Direction</th><th>Latitude</th><th>Longitude</th></tr>
<tr><td>5</td><td>North</td><td>18°17'31.250"N</td><td>73°29'14.890"E</td></tr>
<tr><td>38</td><td>West</td><td>18°14'33.731"N</td><td>73°27'53.922"E</td></tr>
<tr><td>40</td><td>South</td><td>18°14'7.266"N</td><td>73°28'20.027"E</td></tr>
<tr><td>56</td><td>East</td><td>18°15'58.063"N</td><td>73°30'1.001"E</td></tr>
</table></td></tr>
<tr><td>Company’s Name</td><td>M/s. JSW Energy PSP Seven Limited</td></tr>
<tr><td>CIN no. of Company/user agency</td><td>U35101MH2023PLC403854</td></tr>
<tr><td>Accredited Consultant, Validity and certificate no.</td><td>J.M. EnviroNet Pvt. Ltd.
Registered EIA Consultant by NABET (QCI)
(Certificate no.: - NABET/EIA/23-26/SA 0250, Valid till 07.08.2026)</td></tr>
<tr><td>Project location (Coordinates /River/ Reservoir)</td><td>
<table>
<tr><th>Pillar No.</th><th>Direction</th><th>Latitude</th><th>Longitude</th></tr>
<tr><td>5</td><td>North</td><td>18°17'31.250"N</td><td>73°29'14.890"E</td></tr>
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</table></td></tr>
</table>

Inter- state issue involved	No
Proposed on River/ Reservoir	It is an Off stream Open loop Pumped Storage Project
Type of Hydro-electric project	Hydropower (Pumped Storage Project) - Off-Stream Open Loop
Seismic zone	The project area falls under Zone IV i.e., High Risk Zone as per IS-1893 (Part 1) 2002, Seismic Zoning Map of India

- **Category details:**

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

- **ToR/EC Details:**

ToR Proposal No.	IA/MH/RIV/453379/2023
EAC meeting date	20.12.2023
ToR Letter No.	J-12011/63/2023-IA.I (R)
ToR grant Date	30.01.2024
Cost of project	Rs. 9446.15 Crores
Total area of Project	293.50 ha
Height of Dam from River Bed (EL)	82.00 m (Lower Dam) and 94.00 m (Upper Dam)
Details of submergence area	Total Submergence Area: 74.22 ha (Forest Land: 21.65 Ha, Private Land: 46.37 Ha and Government Land: 6.20 Ha)
District to provide irrigation facility (if applicable)	NA

Details of tunnels on upper level & lower level and length of canal (if applicable)	Length of tunnel is 10991.82 m which includes: 1087.80 m (HRT), 4250 m (PS), 1347.98 m (TRT), 760.31 m (MAT) and 3544.90 m (Adit 1,2,3,4,5,6,7,8,9,10).
No. of affected Village	3 villages (Pane, Vagheri and Khanu)
No. of affected families	Approx. 280
Project Benefits	**Social benefit:** ➢ Direct & indirect employment opportunities during construction phase will significantly contribute in uplifting quality of life of people of the region. During operation phase also, local people will get preference in employment opportunity for operation, maintenance and auxiliary activities. ➢ The company will provide social benefit regarding Education, Socio-Economic & Infrastructure Development, Health care, Environment and improvement under Socio-economic development Plan & Skill Development and Training & Construction of Skill Development Centre under Local Area Development Plan. **Financial benefits of project or activity**: ➢ The project with a proposed peaking energy installation of 1500 MW would generate designed energy of 3324.47 MU. This will contribute in reduction in gap between demand and supply of peak power in the state and country. ➢ The Project activity will also mobilize financial resources in the form of small business/ Indirect employment opportunities in the area. **Environmental benefit:** ➢ Out of total project area, 7.19 ha area will be developed under the greenbelt/ plantation. The company will carry out compensatory afforestation in consultation with the forest department. ➢ Avenue plantation @ 200 Nos/ village with 3 years maintenance and cost of tree guard for 5 villages.

<table>
<tr><td></td><td>➢ Apart from these, during operation phase of the Project, two new water bodies in the form of reservoir would be created.</td></tr>
<tr><td>R&R details</td><td>A total of 280 PAFs of 3 villages will be affected due to the proposed project. The PAFs will be fairly compensated in consonance with “The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013”, (RFCTLARRA 2013) and on the basis of mutual negotiations. The budget allocated for R&R Plan is Rs. 53.51 Crores/-.</td></tr>
<tr><td>Catchment area/ Command area</td><td>Catchment area: 128171.8 ha</td></tr>
<tr><td>Types of Waste and quantity of generation during construction/Operation</td><td>
<table>
<tr><th>Waste Generated</th><th>Source</th><th>Quantity</th></tr>
<tr><td>Muck</td><td>Quantity of muck / debris generated</td><td>2464514.56 cum</td></tr>
<tr><td>MSW</td><td>Project and labour camp</td><td>110 TPA</td></tr>
<tr><td>Electronic equipment</td><td>Project and labour camp</td><td>0.28 TPA</td></tr>
<tr><td>Batteries</td><td>Project and labour camp</td><td>2.19 TPA</td></tr>
<tr><td>Biomedical</td><td>Dispensary</td><td>1.1 TPA</td></tr>
<tr><td>Burnt Mobil oil, grease</td><td>Construction equipment</td><td>5.6 TPA</td></tr>
<tr><td>Plastic Waste</td><td>labour camp</td><td>22 TPA</td></tr>
<tr><td>Construction and Demolition waste</td><td>Waste generated from construction activities</td><td>38500 TPA</td></tr>
</table>
</td></tr>
<tr><td>Material used for blasting and its composition as per DGMS standards.</td><td>Type of explosives: Ammonium Nitrate Fuel Oil (a mixture of Ammonium nitrate and fuel oil) with NONEL down-the-hole delay detonator.</td></tr>
<tr><td>E-Flows for the Project</td><td>Water will be sourced from Self-catchment inflows of the Lower reservoir.</td></tr>
</table>

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.	No Not applicable, in case of PSP Not applicable, in case of PSP
Details on provision of fish pass	Being an off stream open-loop Pump storage project, no provision of fish pass has been proposed.
Project benefit including employment details (no of employee)	Direct and Indirect employment opportunities will be created as a result of the proposed project. **During the construction phase**, a total of 125 permanent employees and 2100 temporary/contractual workers will be employed for a period of 1460 days. **During the operation phase**, a total of 100 permanent employees and 70 temporary/contractual workers will be employed for 365 days per year.
Area of Compensatory Afforestation (CA) with tentative no of plantation.	The forest land proposed to be diverted is 66.91 ha. The compensatory afforestation shall be done on the same amount of land. An amount of Rs. 5.54 Crore has been earmarked for Compensatory Afforestation Scheme. However, CA scheme duly approved by the Forest department will be complied by the Company.
Previous EC details	This is a Greenfield project
EC Compliance Report by R.O, MOEF&CC	This is a Greenfield project

No. of trees/saplings proposed in view of 'Ek Ped Maa Ke Naam' campaign	2500 Nos.

- **Electricity generation capacity:**

Powerhouse Installed Capacity	1500 MW
Generation of Electricity Annually	3324.47 MU
No. of Units	7 No's. (5 X 250 MW & 2 X 125 MW)

- **Muck Management Details:**

No. of proposed disposal area/ (type of land- Forest/Pvt land)	3 no. of muck disposal sites have been identified with total area of 26.82 Ha. Type of land: Entire land is Private land (26.82 ha)
Cross section of proposed muck area, Height of muck with slope.	Cross section of proposed muck area has been incorporated in Chapter 10 of the Final EIA/EMP Report. D-1(UR): Area= 5.97 ha, Height = 40 m D-1 (LR): Area= 11.80 ha, Height = 29 m D-2 (LR): Aera = 9.05 ha, Height = 29 m Slope of muck shall be lesser than 28 Degree
Distance of muck disposal area(location), from muck generation sources (project area)/River, HFL of proposed muck disposal area.	Distance of muck disposal area from muck generation sources: • **Upper Reservoir:** The muck disposal area is located at a distance of approximately 1.0 km from the muck generation source near the upper reservoir site. • **Lower Reservoir:** The designated muck disposal site 1 is situated approximately 0.40 km and muck disposal site 2 is adjacent from the muck generation source near the lower reservoir.

	Kal river HFL from muck disposal area: 1500 m
Total Muck Disposal Area	26.82 Ha
Estimate Muck to be generated	2.465 MCM
Transportation	By road
Monitoring mechanism for Muck Disposal Transportation	➢ The Project authorities shall erect a barrier to regulate to and fro movement of traffic from the excavation site. ➢ Entry of all vehicles passing the barrier and the information regarding quantities of Earth material being transported shall be properly arrayed in a register in a transparent manner and shall be liable to be made public by the Project authorities as and when required. ➢ Proper e-Challan shall be issued.

- **Land Area Breakup:**

Private land	217.85 Ha
Government land	8.74 Ha
Forest Land	66.91 Ha
Total Land	293.50 Ha
Submergence area/Reservoir area	Total Submergence Area: 74.22 ha (Forest Land: 21.65 Ha, Private Land: 46.37 Ha and Government Land: 6.20 Ha)
Additional information (if any)	None

- **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	Out of 293.50 ha, total 66.91 ha forest land falls within the Reserve Forest Area.
National Park	No	

Forest Land/ Protected Area/ Environmental Sensitivity Zone	Yes/No	Details of Certificate/ letter/Remarks
Wildlife Sanctuary	No	No National Park, Wild Life Sanctuaries, Biosphere Reserves, Tiger Reserves, Wildlife Corridors, Protected Forests within 10 km radius study area. However, following sensitive areas are located beyond 10 km radius study area: ➢ Tamhini Wildlife Sanctuary (~12.20 km in NW direction) ➢ Eco Sensitive Zone from Tamhini Sanctuary (~11.95 km in NW direction) ➢ Sudhagad Wildlife Sanctuary (~22.50 km in NW direction) ➢ Raigad Conservation Reserve (~17.85 km in SE direction)
Archaeological sites monuments/ historical temples etc.	Yes	Lingana fort is ~1.0 km in ESE direction, Raigad Fort is ~2.5 km in SW direction, Jijamata Wada is ~5.0 km in WSW direction and Konkan Diva Fort & Caves ~6.0 km in NW direction from the project site.
Additional information (if any)	None	

- **Availability of Schedule-I species in study area:**

There are 31 schedule -I species i.e., *Bos gaurus* (Gaur), *Canis aureus* (Jackal), *Canis lupus* (Wolf), *Cuon alpinus* (Wild dog), *Felis chaus* (Jungle cat), *Herpestes edwardsii* (Common grey mongoose), *Hyaena hyaena* (Hyaena), *Hystrix indica* (Indian porcupine), *Loris lydekkerianus* (Slender loris), *Macaca radiata* (Bonnet macaque), *Manis crassicaudata* (Indian pangolin), *Melursus ursinus* (Sloth bear), *Panthera pardus* (Common leopard), *Prionailurus bengalensis* (Leopard cat), *Ratufa indica* (Giant Squirrel), *Tetracerus quadricornis* (Four-horned antelope), *Viverricula indica* (Small Indian civet), Vulpes vulpes (Common Fox), *Crocodylus palustris* (Marsh crocodile), *Daboia russelii* (Russell's viper), *Lissemys punctate* (Indian flapshell turtle), *Naja naja* (Cobra), *Ophiophagus hannah* (King cobra), *Ptyas mucosa* (Indian rat snake), *Python molurus* (Indian rock python),*Varanus bengalensis* (Common Indian monitor lizard), *Anthracoceros coronatus* (Malabar pied hornbill), *Bubo bubo* (Great horned owl), *Dendrocopos mahrattensis*

(Yellow-crowned woodpecker), *Gallus sonneratii* (Grey jungle fowl) and *Pavo cristatus* (Peafowl) found in the study area as per The Wildlife (Protection) Amendment Act., 2022.

- **Public Hearing (PH) Details:**

Advertisement for PH with date	District Pune - Advertisement given in newspaper "Loksatta" & "Indian Express" dated 14.09.2024. District Raigad - Advertisement given in newspaper "Dainik Sagar" dated 02.10.2024 & "Indian Express" dated 04.10.2024.
Date of PH	District Pune - 18.10.2024 District Raigad - 05.11.2024
Venue	District Pune - Mauje Digewasti, Group Gram Panchayat Khanu, Taluka - Velhe, District - Pune District Raigad - Hotel Fountain Inn. (Lawn), At Post - Nadgaon Tarfe Birwadi, Near Savitri Bridge, Mumbai - Goa Highway, Taluka - Mahad, District - Raigad
Chaired by	Additional District Magistrate, Pune and Raigad
Main issues raised during PH	Employment, Land, Socio-Economic, Health and Infrastructure Development, Education related.
No. of people attended	District Pune - 176 Persons District Raigad - 48 Persons

- **Brief of base line Environment:**

Particulars	Details
Period of baseline data collection/ Sampling period.	Post Monsoon Season (October 2022 to December 2022) & Pre Monsoon Season (March to May 2023)
(Air, noise, water, land)	**<u>Ambient Air Quality - Post Monsoon Season (October 2022 to December 2022):</u>** • PM 10= 51.8 to 67.9 $\mu g/m^3$ • PM 2.5= 20.8 to 38.2 $\mu g/m^3$ • SO2= 5.9 to 15.1 $\mu g/m^3$ • NO2= 19.9 to 27.8 $\mu g/m^3$ • CO= BDL to 0.59 mg/m^3 **<u>Ambient Air Quality - Pre Monsoon Season (March to May 2023):</u>** • PM 10= 49.7 to 68.0 $\mu g/m^3$ • PM 2.5= 21.3 to 37.5 $\mu g/m^3$

Particulars	Details
	• SO2= 5.2 to 12.8 µg/m^3 • NO2= 12.7 to 22.5 µg/m^3 • CO= BDL to 0.69 mg/m^3 **Incremental GLC Level:** • PM 2.5= Max. GLC: 0.89 µg/m^3 • PM 10= Max. GLC: 2.23 µg/m^3 • SO2= Max. GLC: 1.17 µg/m^3 • NOx= Max. GLC: 1.40 µg/m^3 **Noise Level - Post Monsoon Season (October 2022 to December 2022):** Day time [50.5 to 54.0 Leq dB (A)] Night time [41.9 to 44.0 Leq dB (A)] **Noise Level - Pre Monsoon Season (March to May 2023):** Day time [50.8 to 53.6 Leq dB (A)] Night time [39.7 to 43.3 Leq dB (A)] **Surface water quality - Post Monsoon Season (October 2022 to December 2022):** 1. Physical Parameters: 1. pH = 7.18 to 7.74 2. Electrical conductivity = 145 to 224 µs/cm 3. Total suspended Solids (TSS) = 2.2 to 3.6 mg/l 2. Chemical Parameters Alkalinity = 50.6 to 106 mg/l Total Hardness = 68.4 to 120.4 mg/l BOD = 1.4 to 7.6 mg/l COD = 6.8 to 27 mg/l Nitrate = 1.06 to 1.8 mg/l Phosphate = 0.10 to 0.15 mg/l Chloride = 14.8 to 20.6 mg/l Sulphate = 4.4 to 9.52 mg/l Sodium = 6 to 10.2 mg/l Potassium = 1.2 to 1.8 mg/l

Particulars	Details
	Calcium = 14.6 to 23.2 mg/l Magnesium = 7.8 to 15.2 mg/l **<u>Surface water quality - Pre Monsoon Season (March to May 2023):</u>** Physical Parameters: 1. pH = 7.07 to 7.44 2. Electrical conductivity = 113 to 184 µs/cm 3. Total suspended Solids (TSS) = BDL (DL 1.0 mg/l) Chemical Parameters Alkalinity = 27.17 to 70.82 mg/l Total Hardness = 35.02 to 83.45 mg/l BOD = 3 to 6 mg/l COD = 10 to 19 mg/l Nitrate = 0.45 to 1.38 mg/l Phosphate = BDL (DL 0.02 mg/l) Chloride = 13.45 to 15.78 mg/l Sulphate = 1.09 to 2.4 mg/l Sodium = 6 to 9 mg/l Potassium = BDL(DL 1.0 mg/l) Calcium = 6.01 to 20.04 mg/l Magnesium = 4.85 to 9.27 mg/l **<u>Ground water quality - Post Monsoon Season (October 2022 to December 2022):</u>** • Physical Parameters: o pH = 6.98 to 7.8 o Electrical conductivity = 296.87 to 370 µs/cm o TDS = 198 to 244 mg/l • Chemical Parameters o Alkalinity = 87.2 to 125.8 mg/l o Total Hardness = 102 to 160 mg/l o Nitrate = 3.86 to 8.43 mg/l o Chloride = 24.5 to 45.6 mg/l o Sulphate = 9.6 to 23.8 mg/l o Sodium = 14.6 to 25.2 mg/l o Potassium =1.9 to 3.2 mg/l o Calcium = 19.8 to 38.5 mg/l

Particulars	Details
	○ Magnesium = 6.3 to 23 mg/l ○ Fluoride = 0.28 to 0.42 mg/l **<u>Ground water quality - Pre Monsoon Season (March to May 2023):</u>** • Physical Parameters: ○ pH = 7.1 to 7.88 ○ Electrical conductivity = 328.8 to 382 µs/cm ○ TDS =219 to 260 mg/l • Chemical Parameters ○ Alkalinity = 93.05 to 130.55 mg/l ○ Total Hardness = 112.62 to 166.21 mg/l ○ Nitrate = 4.1 to 8.73 mg/l ○ Chloride = 26.42 to 49.32 mg/l ○ Sulphate = 11.56 to 25.67 mg/l ○ Sodium = 15 to 26 mg/l ○ Potassium = 2.1 to 3.2 mg/l ○ Calcium = 22.98 to 41.23 mg/l ○ Magnesium = 8.91 to 23.88 mg/l ○ Fluoride = 0.3 to 0.47 mg/l **<u>Soil Quality - Post Monsoon Season (October 2022 to December 2022):</u>** Physical Parameters: 1. Texture = Sandy Clay Loam 2. Porosity = 38.66 to 41.2 % 3. Bulk Density =1.5 to 1.54 g/cc 4. Water holding capacity = 33.96 to 38.08 % Chemical Parameters pH = 6.55 to 6.98 Magnesium = 328.22 to 409.78 mg/kg Calcium = 1782.5 to 2275.55 mg/kg Chloride = 198.68 to 297.7 mg/kg Sodium = 118.81 to 288.47 mg/kg Potassium = 220.65 to 376.85 mg/kg Organic carbon = 0.71 to 0.84 % Phosphorus = 26.97 to 35.12 kg/hec Nitrogen = 226.89 to 332.37 kg/hec 10. Chromium = 6.89 to 8.89 mg/kg 11. Copper = 17.02 to 24.61 mg/kg

Particulars	Details
	12. Zinc = 19.78 to 32.78 mg/kg 13. Salinity = 0.13 to 0.18 ppt 14. SAR = 0.64 to 1.47 **<u>Soil Quality - Pre Monsoon Season (March to May 2023):</u>** 1. Physical Parameters: 1. Texture = Sandy Clay Loam 2. Porosity = 37.2 to 41.88 % 3. Bulk Density = 1.5 to 1.55 g/cc 4. Water holding capacity = 33.71 to 36.53 % 2. Chemical Parameters 1. pH = 6.5 to 7.05 2. Magnesium = 330.25 to 411.12 mg/kg 3. Calcium =1682.2 to 2314.6 mg/kg 4. Chloride = 188.7 to 308.5 mg/kg 5. Sodium = 112.45 to 280.54 mg/kg 6. Potassium =211.3 to 388.12 mg/kg 7. Organic carbon = 0.7 to 0.85 % 8. Phosphorus =27.56 to 36.22 kg/hec 9. Nitrogen = 220.57 to 341.77 kg/hec 10. Chromium = 6.77 to 9.12 mg/kg 11. Copper = 15.77 to 23.56 mg/kg 12. Zinc = 19.66 to 32.78 mg/kg 13. Salinity = 0.12 to 0.19 ppt 14. SAR = 0.61 to 1.47
flora and fauna of the project area, aquatic ecology, etc.	**Flora-** 124 species of trees, 25 species of shrubs, 15 species of herbs, 19 species of grasses, 24 species of climbers, 3 species of Epiphytes & Parasitic, 4 species of Bamboo and 14 species of Orchids. Additionally, 45 species of aquatic flora were documented through both primary observations and secondary data sources. As per the field survey and List of Flora by ENVIS, MoEFCC; no endemic, endangered and rare species of flora have been observed under threatened status in the study area. **Fauna-** 24 species of mammals, 12 species of reptiles, 118 species of avi-fauna, 17

Particulars	Details
	species of fish, 8 species of arthopods, 8 species of butterflies, 16 species of amphibians and 3 species of molluscs. Some migratory bird species have also been recorded, which includes *Clamator jacobinus* (Pied-crested Cuckoo), *Coracina novaehollandiae* (Large Cuckooshrike), *Gallinago gallinago* (Common Snipe), *Jynx torquilla* (Eurasian Wryneck), *Melophus lathami* (Crested Bunting) and *Terpsiphone paradise* (Paradise Flycatcher). As per WPA, 1972 and subsequent amendments, there are 31 schedule - I species.
Brief description on hydrology and water assessment as per the approved Pre-DPR:	Hydrology Chapter of the Detailed Project Report for the proposed project has been approved by Central Water Commission, Hydrology (South) Directorate, New Delhi vide their File no. T-11031/4/2023-HYD(S) DTE dated 04.12.2023. As per the approved Hydrology Chapter of DPR, the water requirement for one time filling of reservoirs is about 14.184 MCM and annual top up requirement of about 1.014 MCM to compensate the loss due to evaporation is approved by CWC. The one-time and annual top-up water requirement will be taken from Self-catchment inflows of the lower reservoir.

- **Court case details: Nil**

- **Status of other statutory clearances:**

Particulars	Letter no and date
Status of Stage- I FC	Application for forest clearance of 66.91 ha area has been submitted vide proposal no. FP/MH/HYD/IRRIG/454907/2023 dated 22.12.2023.

Approval of Central Water Commission	Hydrology Chapter of the Detailed Project Report for the proposed project has been approved by Central Water Commission, Hydrology (South) Directorate, New Delhi vide File no. T-11031/4/2023-HYD(S) DTE dated 04.12.2023.
Approval of Central Electricity Authority	Power potential study has been approved by Central Electricity Authority, Hydro Project Appraisal Division, New Delhi vide File no. CER-HY-12-24/1/2023-HPA Division dated 27.08.2025
Additional detail (If any)	Techno-economic viability of the project has been recommended by Central Electricity Authority (CEA), New Delhi vide their letter dated 09.10.2025
Is FRA (2006) done for FC-I	ıder Process

- **Details of the EMP:**

S. No.	Item Description	Capital Cost (Crores)	Recurring Cost/ annum (Crores)
1.	Watershed Development Plan	6.87	-
2.	Catchment Area Treatment Plan	2.5	0.2
3.	Biodiversity and Wildlife Conservation and Management Plan	4.06	-
4.	Fisheries Management Plan	0.35	-
5.	Green Belt Development Plan	0.36	0.15
6.	Reservoir Rim Treatment Plan	0.54	-
7.	Muck Management Plan	18.4	0.1
8.	Disaster Management Plan	0.51	0.03
9.	Sanitation & Solid Waste Management Plan	1.14	0.2
10.	Energy Conservation Measures	3.42	0.15
11.	Occupational and Safety Hazards	0.31	0.16
12.	Water, Air and Noise Management Plan	0.5	0.3
13.	Environment Monitoring Plan	0.2	0.3
	Total	**39.16**	**1.59**

45.3.3 The EAC during deliberations noted the following:

- The Expert Appraisal Committee (EAC) deliberated on the information submitted by the Project Proponent and the details presented during the meeting. The Committee observed that the proposal pertains to the grant of Environmental Clearance for Pane Open Loop Pumped Storage Project (1500 MW) in an area of 293.5 Ha located at Village Khanu, Vagheri, & Pane, Sub-district Mahad and Velhe, District Pune and Raigarh, Maharashtra by M/s JSW Energy PSP Seven Limited.

- The project falls under Item 1(c) of the Schedule to the Environmental Impact Assessment (EIA) Notification, 2006, and is categorized as a Category 'A' project, which requires appraisal at the Central level by the Expert Appraisal Committee (EAC).

- The EAC, constituted under the provisions of the EIA Notification, 2006, and comprising expert members/domain experts from various relevant fields, examined the proposal submitted by the Project Proponent. This examination included a review of the Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) reports, which were prepared and submitted by a QCI/NABET-accredited consultant on behalf of the Project Proponent.

- The EAC noted that the Project Proponent has given an undertaking that the data and information given in the application and enclosures are true to the best of his knowledge and belief and no information has been suppressed in the EIA/EMP reports. If any part of data/information submitted is found to be false/ misleading at any stage, the project will be rejected and Environmental Clearance given, if any, will be revoked at the risk and cost of the project proponent.

- The Terms of Reference (ToR) for conducting EIA/EMP study and public hearing of the Dulhasti Stage-II HEP was granted by the MoEF&CC vide letter no. No. J-12011/63/2023-IA.I(R); dated 30.01.2024 which was further amended on 03.12.2024.

- The EAC noted that the upper and lower reservoirs will be formed by concrete gravity dams with crest lengths of 536.26 m and 434.00 m, respectively. Although both reservoirs are proposed to be constructed, the project is considered an open-loop system, as water is required only for the one-time initial filling of the reservoirs, which will be met from the self-catchment inflows of the lower reservoir.

- The committee observed that the total land required for the project is for the proposed Pane PSP is 293.50 ha. Out of total project area, 8.74 ha is Govt land, 66.91 ha is forest land and 217.85 ha land is Private land. Application for Stage -I forest clearance of 66.91 ha area has been submitted vide proposal no. FP/MH/HYD/IRRIG/454907/2023 dated 22.12.2023.

- The EAC noted that the estimated project cost is Rs. 9,446.15 crore. The initial Environmental Management Plan (EMP) provided a capital cost of Rs. 39.16 crore with a recurring operation and maintenance cost of about Rs. 1.59 crore per annum. During

deliberations, the EAC found the proposed EMP activities to be inadequate and advised submission of a revised EMP with an appropriate budget. Accordingly, the Project Proponent, vide email dated 19.12.2025, submitted a revised EMP with an enhanced budget of Rs. 47.56 crore.

- The committee noted that the Public Hearing for the proposed project has been conducted by the State Pollution Control Committee in district Pune on 18.10.2024 at Mauje Digewasti, Group Gram Panchayat Khanu, Taluka - Velhe, and in Raigad district on 05.11.2024 at Hotel Fountain Inn. (Lawn), At Post - Nadgaon Tarfe Birwadi, Near Savitri Bridge, Mumbai - Goa Highway, Taluka - Mahad. Publications of notice for public hearing were given in district pune in newspaper "Loksatta" & "Indian Express" on 14.09.2024 and in district Raigad in newspaper "Dainik Sagar" dated 02.10.2024 & "Indian Express" dated 04.10.2024. The meeting was chaired by Additional District Magistrate, Pune and Raigad, ensuring due diligence in addressing public concerns and regulatory compliance. 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 the MOU has been signed between Department of Water Resources, Govt. of Maharashtra and M/s. JSW Energy Seven Limited, (SPV of JSW Neo Energy Limited) on 26.09.2024. Water availability certificate has been received from Water Resource Department; Government of Maharashtra vide letter No WFR/Savitri/932 dated 16.10.2023.

- The committee observed that the proposed area of Pane Pumped Storage Project (l500MW) falls in the Western Ghats, therefore, the EAC sub-committee had carried out a site visit to project site from 27.06.2025 to 28.06.2025. The sectoral EAC has discussed the site visit report in 39th EAC meeting held on 12.09.2025 and made specific observations/recommendations. It was noted that the PP has provided satisfactory information/response to the recommendations of the EAC (Sub -Committee).

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

- The EAC also noted that Biodiversity and Wildlife Conservation and Management Plan has been prepared for 31 Schedule-I species and submitted to the State Forest Department vide letter dated 03.05.2024 for authentication, with an estimated implementation cost of ₹4.06 Crores.

45.3.4 The EAC after examining the information submitted and detailed deliberations on the project and **recommended** the proposal for grant of prior Environmental Clearance to Pane

Open Loop Pumped Storage Project (1500 MW) in an area of 293.5 Ha located at Village Khanu, Vagheri, & Pane, Sub-district Mahad and Velhe, District Pune and Raigarh, Maharashtra by M/s JSW Energy PSP Seven Limited, under the provisions of EIA Notification, 2006 and as amended with subject to compliance of applicable Standard EC conditions with the following additional specific environmental safeguard conditions:

[A] Environmental management and Biodiversity conservation:

i. Stage-I FC shall be obtained before grant of EC.
ii. The Watershed Management Plan as submitted and appraised by the EAC shall be implemented in a time bound manner and the progress made shall be reported in six monthly compliance report. At least one existing water body in each village within the study area shall be conserved/rejuvenate/restore in consultation with the local authorities. Implementation status be submitted in the 6 monthly compliance report to the concerned regional office of the Ministry.
iii. PP shall obtain approval on Biodiversity and Wildlife Conservation and Management plan from the State Forest Department and activities and budget suggested shall be incorporated and accordingly, EMP budget shall be revised.
iv. On-line monitoring system for the e-flow releases in the upstream and downstream of the project to be installed.
v. The plastic waste shall be disposed of by recycling and not by land filling.
vi. Local indigenous varieties of plants to be grown and maintained till their full growth including gap filling.
vii. Skill mapping be undertaken for the youths of the affected project area and based on the skill mapping, the trainings to the youths be incorporated for their appropriate engagements in the Project.
viii. Land acquired for the project shall be suitably compensated with the prevailing guidelines and all commitments made during the Public Hearing shall be fulfilled.
ix. The project-affected population should be resettled and rehabilitated as per the latest R & R Policy.
x. Six monthly compliance reports shall be submitted by the PP to Regional Office, MoEF& CC, without fail.
xi. The Environmental Management Plan (EMP) shall be strictly adhered to as submitted. 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.
xii. The contract clause limiting the No. of vehicles used during excavation and transportation shall followed scrupulously and the same shall informed to the ministry.
xiii. 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.
xiv. No vehicle purchase shall be allowed from funds earmarked for implementation of Wildlife Conservation plan.

xv. 10000 Native plants shall be planted around the muck disposal area in consultation with Forest Department and the survival of plants shall be reported in the 6 monthly compliance report.

xvi. The Project Proponent shall explore the possibility to undertake tree transplantation, wherever feasible, in consultation with the State Forest Department. Survival of at least 80% of transplanted trees shall be ensured, with monitoring for a minimum period of five years.

xvii. Plantation of saplings (10000 nos.) shall be carried out as a part of the tree plantation campaign "Ek Ped Ma Ke Naam" and the details of the same shall be uploaded in the MeriLiFE Portal (https://merilife.nic.in).

xviii. PP shall prepare time bound reclamation and restoration plan for restoration of batching plant in consultation with the Forest Department and same shall be submitted to IRO, MoEF&CC and shall be fully implemented within five years of commissioning of the project.

xix. PP shall optimize the road design by restricting the width to 7 meters along straight stretches and providing additional widening only at hairpin bends or U-turns, wherever essential, so as to minimize forest land diversion and reduce tree cutting to the extent possible.

xx. Piped water supply will be provided to the project affected villages.

xxi. All ephemeral and seasonal rivulets and springs around the project area (within 10km radius) shall be preserved in their natural condition without obstruction or diversion. Necessary measures shall be undertaken for their conservation and rejuvenation to maintain natural drainage and ecological flow.

[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. Landslide and other heavy rain related disasters shall be taken care of through appropriate preventive measures during construction and operation of project.

[C] Socio-economic:

i. Land acquired for the project shall be suitably compensated in accordance with the prevailing guidelines of the state government and provisions under Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013.

ii. RO plant shall be installed in the nearby 5 villages and the maintenance shall be done by the project Authorities.

iii. Solar panel be provided to the families living in rural areas within 10 km radius of project.

iv. School up to 12th Standard shall be established and managed to provide free quality education for children from project affected villages/Tribal villages. Adequate transportation facilities shall also be provided to students to ensure connectivity and ease of access.

v. Scholarship programme shall be initiated for the youths in the project affected villages.

vi. 50 bed multi-specialty hospital shall be established to cater the need of tribal population/locals. The tribal population within 10 km radius of the project shall be given free of cost medical facility.

vii. Skill development Centre shall be established within 10 km radius of the project and regular training programs for development and promotion of traditional art/products of tribal/local population. The Skill Development Plan shall mandatorily include the following components:

- Capacity building and skill enhancement programs aligned with local livelihood opportunities.
- Establishment of linkages with Industrial Training Institutes (ITIs) and other recognized training centres for imparting technical skills.
- Provision of free or subsidized access to healthcare facilities in project-supported hospitals and health centres.
- Support to educational institutions in the study area through free services, scholarships, infrastructure strengthening, and vocational guidance programs.
- Special outreach initiatives for women, youth, and vulnerable groups within the SC/ST communities to ensure inclusive participation and benefits.
- The Plan shall be implemented in a time-bound manner with clearly earmarked budgetary provisions, which shall not be diverted for any other purpose.

viii. The PP shall submit annual progress reports on the implementation of the Skill Development Plan and associated community welfare measures to the Regional Office of the Ministry.

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

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

xi. An institutional mechanism to be developed to ensure the preference of jobs to PAFs

and SC/ST and also a policy for preferential treatment for award of sundry works to the PAFs and SC/ST and their dependents.

xii. The compliance of above conditions shall be monitored by IRO, MoEF&CC and regularly site visit once in year. The compliance report of IRO shall be regularly submitted to MoEF&CC.

[D] Miscellaneous:

i. After 5 years of the commissioning of the project, a study shall be undertaken regarding impact of the project on the environment. The study shall be undertaken by an independent agency.

ii. 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.

iii. PP should establish in house (at project site) environment laboratory for measurement of environment parameter with respect to air quality and water (surface and ground). A dedicated team to oversee environment management shall be setup which should comprise of Environment Engineers, Laboratory chemist and staff for monitoring of air, water quality parameters on routine basis.

iv. 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.

v. PP shall procure construction material only from those Organizations having all valid legal/statutory clearances/permissions or necessary permission to be obtained for quarrying construction materials for the project as per the EIA Notification, 2006 and as amended thereof.

Agenda Item No. 45.4

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

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

45.4.1: The Member Secretary informed that, the representative of the PP vide email/letter dated 11.12.2025 expressed its inability to attend the EAC meeting due to unavoidable circumstances, and requested for deferment. Accordingly, the EAC agreed to consider the proposal in a later meeting.

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

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

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

APPROVAL OF THE CHAIRMAN

Re: Draft MOM of 45th EAC (RVHEP) meeting held on 19.12.2025-reg. Print

chakrapani govind < chakrapani.govind@gmail.com >
Wed, 24 Dec 2025 3:11:46 PM +0530

To "Yogendra Pal Singh"<yogendra78@nic.in>

Approved.
Chakrapani

On Wed, 24 Dec, 2025, 3:10 pm Yogendra Pal Singh, <yogendra78@nic.in> wrote:

Dear Sir,

The comments suggested by you have been incorporated suitably in the MoM of the above mentioned EAC meeting. Accordingly, the updated draft MoM is attached herewith for approval please.

With Regards,

With Regards,

Yogendra Pal Singh
Scientist 'F'
Government of India
M/o Environment, Forest and Climate Change
Room No. 236, 2nd Floor, Vayu Wing
Indira Paryavaran Bhawan
Jor Bagh, New Delhi-110003
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