सत्यमेव जयते

Government of India
Ministry of Environment, Forest and Climate Change
IA Division
(River Valley and Hydroelectric Projects)
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Minutes of 35TH EXPERT APPRAISAL COMMITTEE meeting River Valley and Hydroelectric Projects held from 11/07/2025 to 11/07/2025

Date: 25/07/2025

MoM ID: EC/MOM/EAC/329622/7/2025

Agenda ID: EC/AGENDA/EAC/329622/7/2025

Meeting Venue: N/A

Meeting Mode: Virtual

Date & Time:

11/07/2025	10:30 AM	05:30 PM

1. Opening remarks

The 35th 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 11th July, 2025 on Virtual mode, under the Chairmanship of Prof. G. J. Chakrapani.

2. Confirmation of the minutes of previous meeting

The Minutes of the Meeting held on 34th EAC meeting on 30th June, 2025 were confirmed.

3. Details of proposals considered by the committee

Day 1 -11/07/2025

3.1. Agenda Item No 1:

3.1.1. Details of the proposal

Kadambari Pumped Storage Project by **Avaada Aqua Batteries Private Limited** located at **SIROHI,RAJASTHAN**			
Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/RJ/RIV/543570/2025	J-12011/24/2025-IA.I (R)	04/07/2025	River Valley/Irrigation projects (1(c))

3.1.2. Project Salient Features

35.1.1 The proposal is for grant of Terms of References (ToR) to the project for Kadambari PSP closed-loop pumped storage project (1560 MW) in an area of 286.1 ha at Village Kakdara & Kothar etc., Sub-district –Bali & Pindwara District Pali & Sirohi, Rajasthan by M/s Avaada Aqua Batteries Private Limited

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

Following aspects were kept in mind while selection of alternative layouts has been done:

Based on the above, three alternatives locations for upper reservoir (UR1, UR2 & UR3) and lower reservoir (LR1, LR2 & LR3) were identified.

Reservoir Name	**FRL (m)**	**Gross Storage (MCM)**	**Dam Length (m)**	**Dam Height (m)**	**Remarks**	**Approach**
UR1	874	12.31	2808.14	38	Total submergence corr	New approachr

					esponding to dam top = 81.72 Ha (Forest land = 81.72 Ha)	oad of 5 Km length needs to be constructed
LR1	479	13.95	1935.61	38	Total submergence corresponding to	Approach Road is already exi

					damtop = 70.69 Ha (Forest land = 10.69 Ha)	sting
UR2	690	16.77	949	113	Total submergence corresponding to damtop = 40.4	Approach Road is already existing

					7 Ha (Forest land = 40.47 Ha)	
LR 2	480	19.73	1024	63	Total submergence corresponding to dam top = 74.12 Ha (Forest A	Approach Road is already existing

					rea, inside Kumbhalgarh Wildlife Sanctuary = 74.12 Ha	
UR3	890	9.98	1429.67	93	Total submergence corresponding to dam	New approach Road of 10 kmn

					top=24.05Ha (Forest Land, inside Mount Abu Wildlife Sanctuary=24.05Ha	eeds to be built.
LR3	510	11.65	995.69	73	Total submergenc	Approach R

					e corresponding to dam top = 42.53 Ha (Forest Land inside Mount Abu Wildlife Sanctuary = 42.5	o a dis already existing

					3 Ha	

Alt. No.	Upper Res.	Lower Res.	Gross Head (m)	L / H Ratio	Gross Storage-Upper (MCM)	Gross Storage-Lower (MCM)	Capacity (MW)	Forest Land
1	UR1	LR1	386	3.68	12.31	13.95	1560	137
2	UR2	LR2	199	9.3	16.77	16.77	1100	159.59 (Includes Forest Area Inside Kumbhalgarh Tiger Reserve)
3	UR3	LR3	365	13	9.98	9.98	1000	111.59 (Includes Forest Area Inside Abu WLS)

Alternative 1 option has been selected due to the following reasons:

Name of the Proposal	Kadambari Pumped Storage Project (1560 MW)
Location (Including coordinates)	Lower Reservoir : 73°6'57.72"E; 24°45'32.89"N Upper Reservoir : 73°8'12.72”E; 24°45'12.41"N
Inter- state issue involved	No
Seismic zone	Zone-III

Category of the project	A
Provisions	
Capacity / Cultural command area (CCA)	1560 MW
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	Nil

Powerhouse Installed Capacity	1560 MW
Generation of Electricity Annually	3245.58 MU
No. of Units	6 nos. (5X260 MW)

Additional information (if any)	Nil
Cost of project	7239.21 Cr.
Total area of Project	286.1 ha
Height of Dam from River Bed (EL)	Lower Dam – 38.0 m Upper Dam – 38.0 m
Length of Tunnel/Channel	2789.0 m
Details of Submergence area	162.0 ha
Types of Waste and quantity of generation during construction/ Operation	Muck from excavation, solid waste from labour colony and construction waste
E-Flows for the Project	Not Applicable, as this is Off-Stream Clo sed Loop Pumped Storage Project (PSP)
Is Projects earlier studies in Cumulative Impact assess ment & Carrying Capacity studies (CIA&CC) for Riv er in which project located. If yes, then a) E-flow with TOR /Recommendation by EAC as per CI A&CC study of River Basin. b) If not the E-Flows maintain criteria for sustaining river ecosystem.	No

No. of proposed disposal area/ (type of land- Forest/Pvt. land)	12.0 Ha (Non-Forest Land)
Muck Management Plan	Will be Provided in EIA/EMP report
Monitoring mechanism for Muck Disposal	Will be Provided in EIA/EMP report

Private Land	149.1 ha
Government land	0
Forest Land	137.00 ha
Total Land	286.1
Submergence area/Reservoir area	162.0 ha
Additional information (if any)	Nil

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

Reserve Forest/Protected Forest Land	--	The project lies outside the boundaries of Wild Life/ Eco Sensitive zones.
National Park	---	
Wildlife Sanctuary	---	

Details of consultant	M/s. R S Envirolink Technologies Pvt. Ltd. (RSET) (*NABET* Accredited *Consultant Organization*) Certificate No : NABET/EIA/2225/RA0274 Validity : August 15, 2025 Contact Person : Mr. Ravinder Bhatia Name of Sector : River Valley and Hydroelectric Projects Category : A MoEF Schedule : I(C) Address : 403, Bestech Chambers, Block-B, Sushant Lok Phase I, Sector 43, Gurugram, Haryana - 122009 E-mail : ravi@rstechnologies.co.in Land Line : (0124) 4295383 Cellular : (+91) 9810136853
Project Benefits	o Least expensive source of electricity, not requiring fossil fuel for generation o An emission-free renewable source o Balancing grid for demand driven variations o Balancing generation driven variations o Voltage support and grid stability Apart from this, proposed PSP will also benefit the local community by creating employment opportunities and will result in upliftment of livelihood and socio-economic conditions.
Status of other statutory clearances	Post ToR approval, the activities will be taken up for preparation of DPR alongwith TEC from CEA, GoI and obtaining forest diversion for around 137.0 ha alongwith forest clearance from MOEF by submission of online application on Parivesh portal.
Additional detail (If any)	Nil

3.1.3. Deliberations by the committee in previous meetings

N/A

3.1.4. Deliberations by the EAC in current meetings

35.1.3 The EAC during deliberations noted the following:

The Expert Appraisal Committee (EAC) deliberated on the information submitted (Form 1, PFR, kml file, etc.) and as presented in the meeting and observed that the proposal is for grant of TOR for conducting EIA/EMP and Public hearing for Kadambari PSP closed-loop pumped storage project (1560 MW) in an area of 286.1 ha at Village Kakdara & Kothar etc., Sub-district –Bali & Pindwara District Pali & Sirohi, Rajasthan by M/s Avaada Aqua Batteries Private Limited.

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

The EAC noted that the total land required for the construction of various components and related works for Kadambari PSP is estimated to be around 286.1 ha, out of which 149.1 ha is non-forest land and 137.0 ha is forest land. The submergence or reservoir area within this total is 162.0 hectares. Diversion of forest land for non-forest purpose will be involved for construction of Kadambari project components. However, it was observed that the application for Stage-I Forest Clearance (FC) has not yet been submitted, which necessitates further action from the Project Proponent. The Project Proponent indicated that there is no Protected Area within 10 km of the proposed project.

The Committee deliberated on the critical issue of water availability in the region, particularly concerning the proposal to draw an initial volume of 14.79 million cubic meters (MCM) of water from the Jawai Dam for the project. It was noted with concern that the Jawai Dam primarily serves as a source of irrigation water, and in recent years, water levels in the dam had dropped to such an extent that water had to be transported by train to meet irrigation demands. In light of such past occurrences, the Committee emphasized the importance of ensuring that sufficient water will be available in the Jawai Dam for the proposed project without compromising existing irrigation needs. Accordingly, the PP was advised to obtain the necessary clearances and approvals from the Central Water Commission / Central Electricity Authority (CEA) to confirm the feasibility and sustainability of the proposed water withdrawal.

Based on the analysis of the KML file, the Committee observed that the proposed project site is predominantly a rocky terrain. Despite this, the proposal includes a requirement of 33.60 Ha of land exclusively for quarrying activities, which appears to be on the higher side. The Committee noted that a significant quantity of construction materials such as stone, rock, aggregates, sand, gravel, slate, etc can potentially be sourced from excavation activities associated with the development of both reservoirs. In view of this, it was advised that the PP shall carry out a detailed assessment to optimize and possibly reduce the land area earmarked for quarrying, ensuring more efficient and judicious use of land resources.

It has been observed that Memorandum of Understanding has been signed between Government of Rajasthan and M/s Avaada Aqua Batteries Pvt. Ltd. vide Ref. No. MoU2024-25/8961 dated 19/11/2024. The Project has been approved by High level Screening Committee (HLSC) of Government of Rajasthan in its meeting held on 12/05/2025 same has been informed through letter dated on 15.05.2025.

3.1.5. Recommendation of EAC

Recommended

3.1.6. Details of Terms of Reference

3.1.6.1. Specific

Miscellaneous	
1.	Both capital and recurring expenditure under EMP shall be submitted.

2.	Approved Layout as per pre-DPR chapter duly approved by CEA/CWC shall be submitted.
3.	The PP should submit the photograph of monitoring stations & sampling locations. The photograph should bear the date, time, latitude & longitude of the monitoring station/sampling location. In addition to this PP should submit the original test reports and certificates of the labs which will analyze the samples.
4.	Drone video of project site shall be recorded and to be submitted.
5.	Undertaking need to be submitted on affidavit stating that no activities has been started on the project site.
6.	Detailed plan to restore wider roads and convert them into narrow up to 10m after construction of the project.
7.	Specific Terms of Reference (ToRs) issued by the Ministry vide Office Memorandum No. F. No. IA3-22/33/2022-IA.III dated 14.08.2023 for Pumped storage projects shall be used for preparation of EIA/ EMP reports.
8.	As per Ministry's OM dated 1st August, 2013, PP shall submit application to obtain prior approval of Central Government under the Forest Conservation Act, 1980 for diversion of forest land required for such projects will be submitted as soon as the actual extent of forest land required for the project is known to the project proponent, and in any case, within 6 months of issuance of ToR. However, no proposal will be put up before EAC without submission of application for forest clearance, wherever applicable.
Disaster Management	
1.	Impact of Project activities (specially blasting and drilling) on the aquatic and terrestrial ecosystem, within study area to be studied and be incorporated in EIA/EMP report.
2.	The muck dumping sites shall be located with a distance of 100 mts from HFL. The PP shall submit the detailed action plan for transportation of muck along with monitoring mechanism of movement of muck carrying trucks.
Muck Management	
1.	Details of quantity of muck generation component wise, types of muck (Excavation in tunnels, pressure shaft and powerhouse etc.) and disposal site/ transportation to be provided.
2.	Details of muck management such as dumping sites and its locations, transportation plan along with monitoring mechanism for muck transportation, detailing the road map of project construction site/ indicating the distances from HFL, river, project construction site along with types of road etc.
3.	Safety measures for avoiding spill over muck into the riverbed/streams and its flow into the river during the high discharge/ flood or monsoon period. Prepare plan for stabilization of muck disposal sites using biological and engineering measures to ensure that muck does not roll down the slopes and shall be disposed safely and that it does not pollute the natural streams and water bodies in surrounding area.
4.	Restoration plan for construction area including dumping site of excavated materials by levelling, filling up of burrow pits, landscaping etc.

Socio-economic Study	
1.	Declaration by the project proponent by way of affidavit that "No" Inter-state issue/ policy issue is involved with any State in the project.
2.	All the tasks including conducting public hearing shall be done as per the provisions of EIA Notification, 2006 and as amended from time to time. A comparative chart of issues raised by General Public during Public Hearing and commitments made by the Project Proponent will be prepared and submitted in the relevant chapter of EIA/EMP report.
3.	PP shall submit the credible documents to show the status of land acquisition w.r.t project site from/through the concerned State Government as required under Ministry's OM dated 7th October, 2014 for the project land to be acquired.
4.	Land acquired for the project shall be suitably compensated in accordance with the law of the land with the prevailing guidelines. Private land (if any) shall be acquired as per provisions of Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013. Budget earmarked for R&R, CSR shall not be included in the cost of EMP.
Environmental Management and Biodiversity Conservation	
1.	PP shall submit the Water Utilization Mapping within a 10 km radius of the project for examining the impacts on sustainability of ecosystem of the region after withdrawal of water for proposed project. The EAC shall conduct site visit before considering the proposal for grant of Environmental Clearance.
2.	Detailed action plan for large scale plantation of native species of plant sapling within 10 km radius of the project shall be prepared in consultation with State Forest Department.
3.	Explore the possibilities for reducing the Forest land requirement. The application for obtaining Stage I FC for 137 ha of forest land involved in the project shall be submitted within stipulated time.
4.	A detailed assessment shall be carried out to optimize and possibly reduce the land area earmarked for quarrying area.
5.	Muck disposal site and other components such as Township, site office, Stacking area and batching plant shall be located outside the forest area.
6.	Certificate and certified map from Chief Wildlife Warden shall be submitted mentioning that project boundary is not falling in any Ecological Sensitive Area, Wildlife Sanctuary/Tiger/elephant corridor/Critically polluted area within 10 km of Project site.
7.	PP shall submit the detailed plan for filling the reservoir from the Jawai Dam along with necessary approval form water resource department.
8.	Transportation Plan for transporting construction materials shall be submitted.
9.	Environmental Cost Benefit Analysis shall be done in terms of loss of Forest ecosystem due to diversion of Forest land/loss of biodiversity, water availability, water uses for generation of hydro power and Ecological flows.

10.	The baseline data collection will cover the changes in biological and ecological profile of the region after monsoon with worst-case scenario study and critical mineral assessment.
11.	Calculation and values of GHGs (CO2, CH4 etc.) emissions during construction and during operation till the life of the project shall be estimated and submitted.
12.	The longitudinal connectivity/Free flowing sketch be provided in the EIA/EMP report. Presence of any critical mineral zone in the proposed area be clarified from GSI.
13.	Details of mineral zone, if any, in the study area, certified by Geological Survey of India or any other concerned Government Organization shall be submitted. The project area should not come up on any critical mineral zone, the same shall to be verified by GSI/NMDC.
14.	Quantitative values of Impact modelling of environmental parameters shall be submitted for during construction and operation. Also, mitigation measures shall be submitted in terms of construction and operation phase.
15.	Conducting site-specific ecological study emphasizing on riverine ecology viz. fishes diversity, fish migration, habitat and aquatic biota due to construction PSP. Impact assessment on the fish diversity based on the hydrological alteration at the water drawing sources shall be studied.
16.	Cumulative Impact of projects in the basin on carrying capacity and sustainability of Reservoir/ River /nala of catchment area due to tapping of water for filling reservoir shall be studied.
17.	Impact zone decided prior to base line data generation and accordingly, sampling location shall be finalized. Baseline data as mentioned in Specific ToR shall be collected for preparation of EIA/ EMP report along with soil characteristics which shall be studied at minimum 10 locations. The ground water level at 10 locations shall be measured in project area in all three seasons.
18.	A study shall be carried out on impact of project activity on the aquatic and terrestrial ecosystem, within project area classifying the impact zones (highly impact/low impact zone) based on seasonal variations and covering the aspects related to impacts on aquatic ecosystem/ primary productivity due to quantity of water to be lifted for power generation and thermal stratification. Accordingly, Environment Management plan shall be prepared.
19.	Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP.
20.	Scope of watershed development in the 10 km radius of the project shall be studied in consultation with Indian Council of Agriculture Research (ICAR) Institutes/ Expert Govt. institutions and accordingly a detailed Water Shed Development Plan shall be prepared and incorporated in EIA/ EMP report.
21.	Any archaeological sites in the vicinity of the project, if any, then it shall be certified by ASI.

3.1.6.2. Standard

1(c)	**River Valley/Irrigation projects**
Scope of EIA Study	

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

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

	of possible r.e.t. species form the said area is developed, species specific methodologies should be adopted to ascertain their presence in the study area which would be far more conclusive as compared to the conventional sampling. If the need be, modern methods like camera trapping can be resorted to, particularly for areas in the eastern Himalayas and for secretive/nocturnal species. A detailed listing of the literature referred to, for developing lists of r.e.t. species should be provided in the EIA reports.
4.	The R.E.T. species referred to in this point should include species listed in Schedule I and II of Wildlife (Protection) Act, 1972 and those listed in the red data books (BSI, ZSI and IUCN).
Components of the EIA Study: Various aspects to be studied and provided in the EIA/EMP report are as follow s:	
1.	null
2.	null
3.	Physical geography, Topography, Regional Geological aspects and structure of the Catchment.
4.	Tectonics, seismicity and history of past earthquakes in the area. A site specific study of the earthquake parameters will be done. The results of the site specific earthquake design shall be sent for approval of the NCSDP (National Committee of Seismic Design Parameters, Central water Commission, New Delhi for large dams.
5.	Landslide zone or area prone to landslide existing in the study area should be examined.
6.	Presence of important economic mineral deposit, if any.
7.	Justification for location & execution of the project in relation to structural components (dam /barrage height).
8.	Impact of project on geological environment.
9.	null
10.	Meteorology (viz. Temperature, Relative humidity, wind speed/direction etc.) to be collected from nearest IMD station.
11.	Ambient Air Quality with parameters viz. Suspended Particulate Matter (SPM), Respirable Suspended Particulate Matter (RSPM) i.e. suspended particulate materials < 10 microns, Sulphur dioxide (SO2) and Oxides of Nitrogen (NOX) in the study area at 5-6 Locations.
12.	Existing Noise Levels and traffic density in the study area at 5-6 Locations.
13.	null
14.	Soil classification, physical parameters (viz., texture, Porosity, Bulk Density and water holding capacity) and chemical parameters (viz. pH, electrical conductivity, magnesium, calcium, total alkalinity, chlorides, sodium, potassium, organic carbon, available potassium, available phosphorus, SAR, nitrogen and salinity, etc.) at @ one sample/ha of command area.
15.	null
16.	(i) Generation of thematic maps viz, slope map, drainage map, soil map, land use and land cover map, etc. Based on these, thematic maps, an erosion intensity map should be prepared.

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

34.	null
35.	Characterization of forest types (as per Champion and Seth method) in the study area and extent of each forest type as per the Forest Working Plan.
36.	Documentation of all plant species i.e. Angiosperm, Gymnosperm, Pteriodophytes, Bryophytes (all groups).
37.	General vegetation profile and floral diversity covering all groups of flora including lichens and orchids. A species wise list may be provided.
38.	Assessment of plant species with respect to dominance, density, frequency, abundance, diversity index, similarity index, importance value index (IVI) , Shannon Weiner index etc. of the species to be provided. Methodology used for calculating various diversity indices along with details of locations of quadrates, size of quadrates etc. to be reported within the study area in different ecosystems.
39.	Existence of National park, Sanctuary, Biosphere Reserve etc in the study area, if any, should be detailed.
40.	Economically important species like medicinal plants, timber, fuel wood etc.
41.	Details of endemic species found in the project area.
42.	Flora under RET categories should be documented using International Union for the Conservation of Nature and Natural Resources (IUCN) criteria and Botanical Survey of India's Red Data list along-with economic significance. Species diversity curve for RET species should be given.
43.	Cropping pattern and Horticultural Practices in the study area.
44.	null
45.	Fauna study and inventorisation should be carried out for all groups of animals in the study area. Their present status alongwith Schedule of the species.
46.	Documentation of fauna plankton (phyto and zooplankton), periphyton, benthos and fish should be done and analysed.
47.	Information (authenticated) on Avi-fauna and wildlife in the study area.
48.	Status of avifauna their resident/ migratory/ passage migrants etc.
49.	Documentation of butterflies, if any, found in the area.
50.	Details of endemic species found in the project area.
51.	RET species-voucher specimens should be collected along-with GPS readings to facilitate rehabilitation. RET faunal species to be classified as per IUCN Red Data list and as per different schedule of Indian Wildlife (Protection) Act, 1972.

52.	Existence of barriers and corridors, if any, for wild animals.
53.	Compensatory afforestation to compensate the green belt area that will be removed, if any, as part of the proposed project development and loss of biodiversity.
54.	Collection of primary data on agricultural activity, crop and their productivity and irrigation facilities components.
55.	For categorization of sub-catchment into various erosion classes and for the consequent CAT plan, the entire catchment (Indian Portion) is to be considered and not only the directly the draining catchment.
56.	Documentation of aquatic fauna like macro-invertebrates, zooplankton, phytoplantktons, benthos etc.
57.	Fish and fisheries, their migration and breeding grounds.
58.	Fish diversity composition and maximum length & weight of the measured populations to be studies for estimation of environmental flow.
59.	Conservation status of aquatic fauna.
60.	Sampling for aquatic ecology and fisheries and fisheries must be conducted during three seasons Pre-monsoon (summer), monsoon and winter. Sizes (length & weight) of important fish species need to be collected and breeding and feeding grounds should also be identified along the project site or in vicinity.
61.	Collection of baseline data on human settlements, health status of the community and existing infrastructure facilities for social welfare including sources of livelihood, job opportunities and safety and security of workers and surroundings population.
62.	Collection of information with respect to social awareness about the developmental activity in the area and social welfare measures existing and proposed by project proponent.
63.	Collection of information on sensitive habitat of historical, cultural and religious and ecological importance.
64.	The socio-economic survey/ profile within 10 km of the study area for demographic profile; Economic Structure; Developmental Profile; Agricultural Practices; Infrastructure, education facilities; health and sanitation facilities; available communication network etc.
65.	Documentation of demographic, Ethnographic, Economic Structure and development profile of the area.
66.	Information on Agricultural Practices, Cultural and aesthetic sites, Infrastructure facilities etc.
67.	Information on the dependence of the local people on minor forest produce and their cattle grazing rights in the forest land.
68.	List of all the Project Affected Families with their name, age, educational qualification, family size, sex, religion, caste, sources of income, land & house holdings, other properties, occupation, source of income, house/land to be acquired for the project and house/land left with the family, any other property, possession of cattle, type of house etc.
6	Special attention has to be given to vulnerable groups like women, aged persons etc. and to any ethnic/indigenous

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

21.	Deforestation and disturbance to wildlife, habitat fragmentation and wild animal's migratory corridors
22.	Compensatory afforestation-identification of suitable native tree species for compensatory afforestation and green belt.
23.	Impact on fish migration and habitat degradation due to decreased flow of water
24.	Impact on breeding and nesting grounds of animals and fish.
25.	Impact on local community including demographic profile.
26.	Impact on socio-economic status
27.	Impact on economic status.
28.	Impact on human health due to water / vector borne disease
29.	Impact on increase traffic
30.	Impact on Holy Places and Tourism
31.	Impacts of blasting activity during project construction which generally destabilize the land mass and leads to landslides, damage to properties and drying up of natural springs and cause noise population will be studies. Proper record shall be maintained of the baseline information in the post project period.
32.	Positive and negative impacts likely to be accrued due to the project are listed.
Environmental Management Plan	
1.	null
2.	Biodiversity and Wildlife Conservation and Management Plan for the conservation and preservation of rare, endangered or endemic floral/faunal species or some National Park/Sanctuary/ Biosphere Reserve or other protected area is going to get affected directly or indirectly by construction of the project, then suitable conservation measures should be prepared in consultation with the State Forest Department and with the physical and financial details. Suitable conservation techniques (in-situ/ ex-situ) will be proposed under the plan and the areas where such conservation is proposed will be marked on a project layout map.
3.	Compensatory Afforestation shall be prepared by the State Forest Department in lieu of the forest land proposed to be diverted for construction of the project as per the Forest (Conservation) Act, 1980. Choice of plants for afforestation should include native and RET species, if any. This will be a part of the forest clearance proposal.
4.	Fisheries Conservation and Management Plan - a specific fisheries management measures should be prepared for river and reservoir. If the construction of fish ladder/ fish-way etc. is not feasible then measures for reservoir fisheries will be proposed. The plan will detail out the number of hatcheries, nurseries, rearing ponds etc. proposed under the plan with proper drawings. If any migratory fish species is getting affected then the migratory routes, time/season of upstream and downstream migration, spawning grounds etc will be discussed in details.

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

15.	Local Area Development Plan to be formulated in consultation with the Revenue Officials and Village Pancahayats. Appropriate schemes shall be prepared under EMP for the Local Area Development Plan with sufficient financial provisions.
16.	Labour Management Plan for their Health and Safety.
17.	Sanitation and Solid waste management plan for domestic waste from colonies and labour camps etc.
18.	Energy Conservation Measures for the work force during construction with physical and financial details. Alternatives will be proposed for the labour force so that the exploitation of the natural resource (wood) for the domestic and commercial use is curbed.
19.	Environmental safeguards during construction activities including Road Construction.
20.	A summary of Cost Estimates for all the plans, cost for implementing all the Environmental Management Plans.
21.	Water, Air and Noise Management Plans to be implemented during construction and post-construction periods.

3.2. Agenda Item No 2:

3.2.1. Details of the proposal

Proposed "Khadkhai Medium Irrigation Project (Phase – II)" on Khadkhai river with Culturable Command Area of 5,394 ha and Submergence Area of 77.50 ha located in village Murgaghutu, block Rairangpur, district Mayurbhanj, Odisha by **SE, MAYURBHANJ INVESTIGATION DIVISION** located at **MAYURBHANJ,ODISHA**

Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/OR/RIV/540525/2025	J-12011/25/2025-IA.I (R)	04/07/2025	River Valley/Irrigation projects (1(c))

3.2.2. Project Salient Features

35.2.1 The proposal is for grant of Terms of References (ToR) to the project for Khadkhai Medium Irrigation Project (Phase – II) on Khadkhai river with Culturable Command Area of 5,394 ha and Submergence Area of 77.50 ha located in Village Murgaghutu, Block Rairangpur, District Mayurbhanj, Odisha by Department of Water Resources, Government of Odisha .

35.2.2 While considering the proposal, the EAC observed that despite being given sufficient time to present and explain the details of the project, the Project Proponent, along with their accredited consultant, M/s Visiontek Consultancy Services Pvt. Ltd., was unable to adequately respond to several critical queries raised by the Committee members regarding key components of the project. In view of this, the EAC advised that the proponent and their consultant must ensure the presence of technically qualified and well-informed representatives during future meetings, who are fully prepared to address all project-related questions and provide clarifications as required.

The EAC decided to ***defer*** the proposal on the above lines.

3.2.3. Deliberations by the committee in previous meetings

N/A

3.2.4. Deliberations by the EAC in current meetings

defer

3.2.5. Recommendation of EAC

Deferred for ADS

3.3. Agenda Item No 3:

3.3.1. Details of the proposal

Koyna-Nivakane Pumped Storage Project (2450 MW) by **ADANI GREEN ENERGY LIMITED** located at **SATARA,MAHARASHTRA**			
Proposal For		Application for amendment in ToR (for categories A & B1)/Amendment in EC (for category B2)- Form-3	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/MH/RIV/543425/2025	J-12011/28/2023-IA.I (R)	04/07/2025	River Valley/Irrigation projects (1(c))

3.3.2. Project Salient Features

35.3.1 The proposal is for grant of Amendment in Terms of Reference (ToR) to the project for Koyna-Nivakane (Closed loop) Pumped Storage Project (2450 MW) in an area of 312.84 ha at Village Marathwadi, Tehsil Patan, District Satara, Maharashtra by M/s Adani Green Energy Limited.

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

S. No.	Para of ToR issued by MoEF&CC	Details as per the ToR	To be revised/ read as	Justification/ reasons
1.	**Subject**	Koyna-Nivakane (Closed loop) Pumped Storage Project (2450 MW)	Nivakane (Closed loop) Pumped Storage Project (2700MW)	Name of the project changed from Koyna-Nivakane (Closed Loop) Pumped Storage Project (2450 MW) to Nivakane (Closed Loop) Pumped Storage Project (2700 MW) as per revised MOU signed with Government of

S. No.	Para of ToR is sued by MoE F&CC	Details as per the ToR	To be revised/ read as	Justification/ reasons
				Maharashtra dated 03. 09.2024
2.	**Subject**	Koyna-Nivakane (Close d loop) Pumped Storage Project (2450 MW) in a n area of 312.84ha at Vi llage Marathwadi, Tehsi l Patan, District Satara, Maharashtra by M/s Ad ani Green Energy Limit ed.	Nivakane (Closed loo p) Pumped Storage Pr oject (2700MW) in an area of 361.82ha at vil lage Marathwadi, Bha rsakle, Nivade and M harvand Tehsil Patan, District Satara, Mahar ashtra by M/s Adani Green Energy Limite d.	The increase in projec t capacity from 2450 MW (7 x 350MW) to 2700 MW (8x300MW + 2x150MW) is based on the output of topog raphical survey, the ch ange in the location of the lower dam and the maintenance of standa rd unit sizes of 300M W and 150MW to ach ieve operational flexib ility. From the increased st orage of lower reservo ir, 7.62MCM of water will be allocated for ir rigation purposes. The land area has incr eased from 312.84 hec tares to 361.82 hectare s, mainly of reservoirs area, water pipeline, WCS, powerhouse an d approach road. Thes e changes are based o n detailed surveys and investigations, wherea s the earlier land detai ls were based on preli minary feasibility stud ies.
3.	**Para 1**	This is in reference to y our application for Gran t of Terms of Reference under the provision of th e EIA Notification 2006-regar ding in respect of projec t Koyna-Nivakane Pum ped Storage Project (24 50 MW)	This is in reference to your application for G rant of Terms of Refer ence under the provisi on of the EIA Notifica tion 2006-regarding in respect of project Niv akane Pumped Storag e Project (2700MW)	The increase in projec t capacity from 2450 MW (7 x 350 MW) to 2700 MW (8 x 300 M W + 2 x 150 MW) is based on the output of topographical survey, the change in the locat ion of the lower dam a nd the maintenance of standard unit sizes of

S. No.	Para of ToR issued by MoEF&CC	Details as per the ToR	To be revised/ read as	Justification/ reasons
				300 MW and 150 MW to achieve operational flexibility. From the increased storage of lower reservoir, 7.62 MCM of water will be allocated for irrigation purposes.
4.	**Para 2 (vii) Name of the project**	Koyna-Nivakane Pumped Storage Project (2450 MW)	Nivakane Pumped Storage Project (2700MW)	The increase in project capacity from 2450 MW (7 x 350 MW) to 2700 MW (8 x 300 MW + 2 x 150 MW) is based on the output of topographical survey, the change in the location of the lower dam and the maintenance of standard unit sizes of 300 MW and 150 MW to achieve operational flexibility.
5.	**Para 7**	The MoEF&CC has examined the proposal in accordance with the Environment Impact Assessment (EIA) Notification, 2006, as amended and after accepting the recommendations of the Expert Appraisal Committee hereby decided to grant Terms of Reference for instant proposal of Koyna-Nivakane (Closed loop) Pumped Storage Project (2450 MW) in an area of 312.84 ha at Village Marathwadi, Tehsil Patan, District Satara, Maharashtra by M/s Adani Green Energy Limited, under the provisions of EIA Notification, 2006, as amended.	The MoEF&CC has examined the proposal in accordance with the Environment Impact Assessment (EIA) Notification, 2006, as amended and after accepting the recommendations of the Expert Appraisal Committee hereby decided to grant Terms of Reference for instant proposal of Nivakane (Closed loop) Pumped Storage Project (2700MW) in an area of 361.82ha at village Marathwadi, Bharsakhale, Nivakane and Mharvand tehsil Patan, district Satara, Maharashtra by M/s Adani Green Energy Limited, under the provision	The increase in project capacity from 2450 MW (7 x 350 MW) to 2700 MW (8 x 300 MW + 2 x 150 MW) is based on the output of topographical survey, the change in the location of the lower dam and the maintenance of standard unit sizes of 300 MW and 150 MW to achieve operational flexibility. From the increased storage of lower reservoir, 7.62 MCM of water will be allocated for irrigation purposes. The land area has increased from 312.84 hectares to 361.82 hectares, mainly of reservoirs area, water pipeline,

S. No.	Para of ToR issued by MoE F&CC	Details as per the ToR	To be revised/ read as	Justification/ reasons
			s of EIA Notification, 2006, as amended.	WCS, powerhouse and approach road. These changes are based on detailed surveys and investigations, whereas the earlier land details were based on preliminary feasibility studies.
Annexure-III				
6.	**Point Number -III**	The estimated project cost is Rs. 8615.28 crore. Total capital cost earmarked towards environmental pollution control measures will be worked out during EIA study as well as the Recurring cost (operation and maintenance).	The estimated project cost is Rs. 14952 crore. Total capital cost earmarked towards environmental pollution control measures will be worked out during EIA study as well as the Recurring cost (operation and maintenance).	Due to an increase in installed capacity and land area, the project cost has risen from Rs 8615.28 crores to Rs. 14952 crores.
7.	**Point Number - IV**	Sahyadri Tiger Reserve Boundary is at 0.5 km distance from the project site. River/ water body, Koyna Reservoir is at a distance of 3 Km in west direction.	Sahyadri Tiger Reserve Boundary is at 0.150 km distance from the project site. River/ water body, Koyna Reservoir is at a distance of 3 Km in west direction.	Due to the change in operating levels of the upper reservoir from FRL 1063m to FRL 1068m.
8.	**Point Number - VI**	Various technically feasible alternative layouts have been identified along the Western Ghats mountain ranges near the project site. Based on review of available data, maps, it is found that the area is a home of one tiger Reserve i.e Sahyadri Tiger Reserve and “Koyna Wildlife Santuary”. However, keeping all these eco sensitivity in mind, the 2450 MW Koyna-Nivakane PSP has been pr	Various technically feasible alternative layouts have been identified along the Western Ghats Mountain ranges near the project site. Based on review of available data, maps, it is found that the area is a home of one tiger Reserve i.e., Sahyadri Tiger Reserve and “Koyna Wildlife Sanctuary”. However, keeping all these eco sensitivity in mind, the 2700MW	Due to the shifting of lower dam axis by 500m downstream relative to the earlier proposal and changes in the operating levels of the lower reservoir from FRL 744m to FRL 751m.

S. No.	Para of ToR is sued by MoE F&CC	Details as per the ToR	To be revised/ read as	Justification/ reasons
		oposed completely outside the Tiger Reserve and Koyna Sanctuary. The identified project has been designed such a way, so that it can well utilize the head available between the upper reservoir, which is a natural basin, located at Kera River basin and lower reservoir proposed, which also a natural valley situated at Nivakane Accordingly, a layout has been identified with an installed capacity of 2450 MW. The project does not affect any settlement. The project does not affect any settlement.	Nivakane PSP has been proposed completely outside the Tiger Reserve and Koyna Sanctuary. The identified project has been designed such a way, so that it can well utilize the head available between the upper reservoir, which is a natural basin, located at Kera River basin and lower reservoir proposed, which also a natural valley situated at Nivakane. Accordingly, a layout has been identified with an installed capacity of 2700 MW. Aral village is coming under the submergence of Lower Reservoir.	
9.	**Point Number - VII**	By studying all three alternatives, keeping in view of Accessibility, Dam height, Socio economic and Environmental impact, alternative 3 has been emerged as economically the most viable and most feasible to be constructed among these three sites. However, to keep the Hmax/Hmin within permissible limits (1.3), the identified reservoirs need to be excavated to minimize the gap between Full Reservoir Level (FRL) and Minimum Drawdown Level (MDDL). Upper Reservoir (FRL-El.1063, MDDL – EL. 1026) and Lower Reserv	By studying all six schemes, keeping in view of Accessibility, Dam height, Socio economic and Environmental impact, Scheme-3 with Alternative-1 has emerged as economically the most viable and most feasible to be constructed among these 06 schemes. However, to keep the Hmax/Hmin within permissible limits (1.3), the identified reservoirs need to be excavated to minimize the gap between Full Reservoir Level (FRL) and Minimum Drawdown Level (MDDL). Upper Reservoir (FRL- El.1068,	As per FR requirements, various schemes were studied. The operating levels were adjusted based on the topographical survey to maintain the Hmax/Hmin ratio at 1.3.

S. No.	Para of ToR is sued by MoE F&CC	Details as per the ToR	To be revised/ read a s	Justification/ reasons
		oir (FRL- El.744, MDD L – EL. 694). Conclusiv ely it is advisable not to do further study on Alte rnative 1 & 2 and it is st rongly recommended to do further study for the alternative 3 site named as Koyna- Nivakane PS P.	MDDL – EL. 1030) a nd Lower Reservoir (FRL- El.751, MDDL – EL. 713). Conclusiv ely it is advisable not t o do further study on other schemes and it i s strongly recommend ed to do further study for the Scheme-3 with Alternative-1 site nam ed as Nivakane PSP.	
1 0.	**Point Number - IX**	Project Excavation is 30 00000 Cum out of whic h 15 lakh Cum shall be utilized in construction and 15 lakh Cum shall b e disposed in muck disp osal site.	Project Excavation is 124.83 lakh Cum out of which 116.74 lakh Cum shall be utilized in construction and 08 lakh Cum shall be dis posed in muck dispos al site.	Excavation has been i ncreased to optimize t he storage capacity of both reservoirs, and th e utilization of muck h as also been enhance d. Consequently, only 8 lakh cubic meters of muck need to be dispo sed of, instead of the p reviously estimated 15 lakh cubic meters.
	Point Number – X **The silent features of the project are as under: -**			
	Project details:			
1 1.	**Capacity / Cult ural command area (CCA)**	2450 MW	2700 MW	The increase in projec t capacity from 2450 MW (7 x 350MW) to 2700 MW (8x300MW + 2x150MW) is based on the output of topog raphical survey, the ch ange in the location of the lower dam and the maintenance of standa rd unit sizes of 300M W and 150MW to ach ieve operational flexib ility.
	Electricity generation capacity:			

S. No.	Para of ToR issued by MoEF&CC	Details as per the ToR	To be revised/ read as	Justification/ reasons
12.	**Powerhouse Installed Capacity**	2450 MW	2700 MW	The increase in project capacity from 2450 MW (7 x 350MW) to 2700 MW (8x300MW + 2x150MW) is based on the output of topographical survey, the change in the location of the lower dam and the maintenance of standard unit sizes of 300MW and 150MW to achieve operational flexibility.
13.	**Generation of Electricity Annually**	5091 MU	5724.79 MU	Due to the change in installed capacity, there has been an increase in annual generation.
14.	**No. of Units**	7 nos. (7 X 350 MW)	10 Units (8 x 300 MW + 2 X 150 MW)	To maintain the standard unit sizes of 300 MW and 150 MW, ensuring operational flexibility.
	ToR Details:			
15.	**Cost of project**	8615.28 Cr.	14952 Cr.	Due to an increase in installed capacity and land area, the project cost has risen from Rs 8615.28 crores to Rs. 14952 crores.
16.	**Total area of Project**	312.84 ha	361.82 ha	The land area has increased from 312.84 hectares to 361.82 hectares, mainly of reservoirs area, water pipeline, WCS, powerhouse and approach road. These changes are based on detailed surveys and investigations, whereas the earlier land details were based on preli

S. No.	Para of ToR is sued by MoE F&CC	Details as per the ToR	To be revised/ read a s	Justification/ reasons
				minary feasibility stud ies.
17.	**Height of Dam from River Be d (EL)**	Lower Dam – 69 m Upper Dam – 53.8 m	Lower Dam – 78.5 m Upper Dam – 64.5 m	The dam size has been increased to optimize the storage capacity of both reservoirs.
18.	**Length of Tun nel/Channel**	109	Total Length of WCS: For 300 MW Unit is 1 519.37 m. For 150 MW Unit is 1 528.77 m.	Due to change in WC S alignment and the lo cation of the powerho use.
19.	**Details of Sub mergence area**	146.84 ha	215.48 ha	The area has increase d due to the shifting o f the lower dam axis a nd changes in the FRL of both reservoirs.
	Muck Management Details:			
20.	**No. of propose d disposal are a/ (type of Lan d Forest/Pvt. l and)**	130.84 ha Private Land	82.02 ha Private Land	The increased utilizati on of generated muck has significantly reduc ed the disposal require ments. Initially, it was estimated that 15 lakh cubic meters of muck would need to be disp osed of, but this has n ow been reduced to 8 lakh Cum.
	Land Area Breakup:			
21.	**Submergence area/Reservoir area**	146.84 ha	215.48 ha	The area has increase d due to the shifting o f the lower dam axis a nd changes in the FRL of both the reservoirs
22.	**Land required for project co mponents**	166 ha	146.34 ha	Due to the increased u tilization of muck, the disposal area has been reduced. Consequentl y, only 8 lakh cubic m

S. No.	Para of ToR is sued by MoE F&CC	Details as per the ToR	To be revised/ read a s	Justification/ reasons
				eters of muck need to be disposed of, instea d of the previously est imated 15 lakh Cum.
	Forest Land/ Protected Area/Environmental Sensitivity Zone			
	Details of Certificate / letter/ Remarks			
2 3.	**Reserve Fores t/ Protected Fo rest Land National Park Wildlife Sanctuary**	Project has been kept outside the Koyna WLS and is at a distance of 500m from t he boundary of Koyna WLS • Wildlife Clearance wil l be applicable	Project has been kept outside the Koyna W LS and is at a distance of 150 m from the bou ndary of Koyna WLS. • Wildlife Clearance will be applicable	Due to the change in o perating levels of the upper reservoir from FRL 1063m to FRL 1 068m.

Sr. No	Parameters	Unit	As Per ToR	Revised	Deviation
1	Project Capacit y	MW	2450	2700	Change (+250)
2	Unit Size	-	7 X 350	8x300MW+2x150MW	Change
3	Storage Capacit y	MWH	14700	16200	Change (+1500)
4	Total Land Are a	ha	312.84	361.82	Change (+48.98)
4 a.	Forest Area	ha	-	-	No Change
4 b.	Non-Forest Are a	ha	312.84	361.82	Change (+48.98)
5	**Upper Dam**				
i	Gross Storage	MCM	22.39	24.007	Change (+1.617)
ii	Live Storage	MCM	19.7	22.57	Change (+2.87)

Sr. No	Parameters	Unit	As Per ToR	Revised	Deviation
iii	Dead Storage	MCM	2.69	1.435	Change (-1.255)
iv	Type of Dam		RCC	GFRD	Change
v	Height of Dam	m	53.8	64.5	Change (+10.7)
vi	Length of Dam	m	671	859.74	Change (+188.74)
6	**Lower Dam**				
i	Gross Storage	MCM	21.77	36.093	Change (+14.323)
ii	Live Storage	MCM	21.48	30.542	Change (+9.062)
iii	Dead Storage	MCM	0.29	5.552	Change (+5.262)
iv	Type of Dam		RCC	GFRD	Change
v	Height of Dam	m	69	78.5	Change (+9.5)
vi	Length of Dam	m	791	714.29	Change (-76.71)
7	**Upper Intake/Outlet**				
i	Type		Diffuser	Diffuser	No Change
ii	Quantity	Nos.	4	5	Change (+1)
iii	Size		3nos., 40.0m (W) x 18.0m (H) 1nos., 20.0m (W) x 18.0 m (H)	4 No., 33.30 m (W) x 13.00 m (H) 1 No., 24.60 m (W) x 9.00 m (H)	Change
8	**Lower Intake/Outlet**				
i	Type		Diffuser	Diffuser	No Change
ii	Quantity	Nos.	4	5	Change (+1)
iii	Size		3nos., 40.0 m (	4 Nos., 25.30 m (W) x	Change

Sr. No	Parameters	Unit	As Per ToR	Revised	Deviation
			W) x 18.0m (H) 1nos., 20.0m (W) x 18.0m (H)	15.25 m (H) 1 No., 18.30 m (W) x 1 0.60 m (H)	
9	**Pressure Shaft**				
i	Quantity	Nos.	4	5	Change (+1)
ii	Length	m	1338	Larger Units: 1088.31 Smaller Units: 1094.00	Change
iii	Diameter	m	3no. 7.0m & 1n o. 5.0m	4 Nos. of 7m dia. & 1 N o. of 5.3m dia. Unit PS: 8 Nos. of 5m d ia. & 2 No. of 3.75m di a.	Change
iv	Type		Steel lined	Steel lined	No Change
10	**Powerhouse**				
i	Type	-	Underground	Underground	No Change
ii	Installed Capac ity	MW	7 X 350	8 x 300 MW + 2 x 150 MW	Change
iii	Size		270m (L) x 25 m (W)x 55m (H)	235.0 (L) x 25.0 (W) x 56.0 (H)	Change
11	**Tail Race Tunnel**				
i	Quantity	Nos.	4	5	Change (+1)
ii	Length	m	109	Larger Units: 477.22 Smaller Units: 481.07	Change
iii	Diameter	m	3no. 9.0 m + 1n o. 6.3 m	4 Nos of 9.5m dia. & 1 No of 6.4m dia.	Change
iv	Type		Circular Shape d Concrete Lin ed	Circular Shaped Concre te Lined	No Change

Sr. No	Parameters	Unit	As Per ToR	Revised	Deviation
12	**Approach Road**				
i	Strengthening of existing roads	km	0.5	0	Change (-0.5)
ii	Construction of new road	Km	2	5.04	Change (+3.04)
13	**Adit Tunnel**				
i	Mat (Size & Type)	m	1085(L) x 6.0(W) x 6.0(H)	982m(L) x 8.5m(W) x 8.5m(H)	Change
14	**Annual Power**				
i	Annual Generation	MU	5091	5724.79	Change (+633.79)
ii	Annual Pumping	MU	6468.62	7301.07	Change (+832.45)
iii	Cycle Efficiency	%	78.7	78.41	Change (-0.29)

3.3.3. Deliberations by the committee in previous meetings

N/A

3.3.4. Deliberations by the EAC in current meetings

35.4.3 The EAC during deliberations noted the following:

The proposal is for grant of amendment in Terms of References (TOR) to the project for Koyna-Nivakane (Closed loop) Pumped Storage Project (2450 MW) in an area of 312.84 ha at Village Marathwadi, Tehsil Patan, District Satara, Maharashtra by M/s Adani Green Energy Limited.

The project is listed at S.N.1(c) of the Schedule to the Environment Impact Assessment (EIA) Notification under category 'A' and are appraised at Central Level by Expert Appraisal Committee (EAC).

The Terms of Reference granted by the Ministry vide letter dated 07/08/2023 for the Koyna-Nivakane (Closed loop) Pumped Storage Project (2450 MW) in an area of 312.84 ha at Village Marathwadi, Tehsil Patan, District Satara, Maharashtra by M/s Adani Green Energy Limited.

The EAC noted that in earlier proposal lower dam was falling within the submergence area of Nivakane Minor Irrigation Project (MIP) of Satara Irrigation Department. PP informed that the Nivakane MIP is located across the Kera River (a left bank tributary of the Koyna River) near the village of Nivakane in the Patan taluka of Satara district. Nivakane Minor Irrigation project is designed to store 7.62 MCM of water for local irrigation use and is partially complete.

It has been noted the Lower reservoir of Koyna Nivakane PSP will make the minor irrigation project defunct, thereafter after detailed discussion and deliberation with Government of Maharashtra, it was decided to shift the lower dam of PSP further downstream at a location where irrigation project's dam is located and create additional storage of 7.62 MCM for local use. Accordingly, the project is re-designed to build the additional storage capacity of 7.62 MCM for local use in the lower reservoir of Nivakane PSP.

The EAC observed that the project has been changed from Koyna-Nivakane (Closed loop) Pumped Storage Project to Nivakane Pumped Storage Project with change in capacity as well. The increase in project capacity from 2450MW (7 x 350MW) to 2700 MW (8x300MW + 2x150MW) is based on the output of topographical survey, the change in the location of the lower dam.

The Committee further observed that the dam structure of the partially constructed Nivakane Minor Irrigation Project (MIP) will be submerged due to the implementation of the proposed project. As a result, the project is now to be treated as an integrated scheme. One of the major modifications noted by the EAC in the revised proposal is the change in land requirement for the project component from 312.84 hectares to 361.82 hectares all of which area falls under non-forest land. This increase in land area is attributed to the realignment of the lower dam axis and modifications in the Full Reservoir Level (FRL) of both reservoirs.

The EAC also noted that the one-time initial filling requirement for the project has been calculated at 37.19 million cubic meters (MCM), comprising 29.57 MCM for the Pumped Storage Project (PSP) and 7.62 MCM for Water Resources Department (WRD)/irrigation purposes. Additionally, the estimated annual evaporation losses for the PSP have been worked out to be 1.60 MCM. The initial filling requirement of 29.57 MCM for the PSP is now proposed to be sourced from the Sakhari–Chiteghar Dam, instead of the Tarali Reservoir as originally planned. The Sakhari–Chiteghar Dam has a catchment area of 67 km^2, with a 90% dependable annual yield of 24.17 MCM and an average annual yield of 66.68 MCM.

Furthermore, from the increased storage capacity of the lower reservoir, a volume of 7.62 MCM will be allocated for irrigation purposes. This quantity is proposed to be sourced from the monsoon-season catchment yield and will be stored in the newly proposed lower reservoir for subsequent use.

The Committee took cognizance of the fact that, in the earlier proposal, the boundary of the Sahyadri Tiger Reserve was located at a distance of 0.5 km from the project site. However, as per the revised layout, this distance has now been reduced to approximately 0.150 km. In light of the project's increased proximity to the protected area, it is imperative that the PP shall obtain prior clearance from the National Board for Wildlife (NBWL) in accordance with the provisions of the Wildlife (Protection) Act, 1972 as amended in 2022.

Further, EAC noted that the sub-committee of EAC made a site visit on 26/11/2024 and made following observations:

1. It is observed that the upper reservoir site is a part of catchment of Kera River basin and similarly the proposed lower reservoir also a natural valley situated at Nivakane. Thus, construction of these reservoirs will obstruct natural water flow in the Kera and Nivakane Rivers. Thus, it is recommended to calculate the amount of annual discharge flowing through the streams (including monsoon and spring-fed discharges) and the same water discharge shall be maintained in the downstream of river channel throughout the year for supporting livelihood of lower riparian community.
2. The proposed upper reservoir's western boundary is located about 500 m from the buffer zone of Sahayari Tiger Reserve and lies within the Eco-sensitive Zone of Koyna Wildlife Sanctuary, it is necessary to get clearance from NBWL as per the Wildlife Protection Act 1972.
3. Since the proposed project involves excavation of tunnels and power house in the mountain, it is recommended to use non-explosive blasting methods for cracking rocks. This will avoid blasting induced landslides around the area.
4. Further, it is observed that the condition of the approach road to the project area, passing through the villages are not in good condition and it may become worse during the construction phase. Thus, it is recommended that the PP has to repair maintain the existing road during the construction and operational phase.

The EAC opined that the as project will be treated as integrated scheme due to involvement of pumped storage scheme and irrigation component as well, therefore standard Terms of Reference for River

Valley projects shall be applicable to the project and the name of the project shall be read as follows: **“Nivakane (Integrated) Pumped Storage Project (2700MW) in an area of 361.82ha at village Marathwadi, Bharsakhale, Nivakane and Mharvand tehsil Patan, district Satara, Maharashtra by M/s Adani Green Energy Limited”**

3.3.5. Recommendation of EAC

Recommended

3.3.6. Details of Terms of Reference

3.3.6.1. Specific

Additional Conditions	
1.	The EIA/EMP shall be prepared as per Standard Terms of Reference applicable for River Valley & Hydro-electric projects as the modified proposal comprise irrigation component as well. The State Government consent for irrigation component shall be obtained and submitted along with EIA/EMP report.
2.	PP shall prepare detailed plan for Plantation of saplings under the tree plantation campaign **"Ek Ped Ma Ke Naam"**.
3.	EIA/EMP, collection of baseline data, other statuary clearance and the public hearing shall be carried out as per revised layout.
4.	NBWL clearance shall be obtained in view of the Sahyadri Tiger Reserve was located at a distance of 0.150 km from the project site.
5.	Observations/suggestions made by the sub-committee of EAC shall be adhered.

3.4. Agenda Item No 4:

3.4.1. Details of the proposal

Renukaji Dam Project by **hIMACHAL pradesh power corporation** located at **SIRMAUR,HIMACHAL PRADESH**			
Proposal For		Application for Validity Extension of EC- Form-6	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/HP/RIV/542156/2025	J-12011/53/2008-IA-I	21/06/2025	River Valley/Irrigation projects (1(c))

3.4.2. Project Salient Features

35.4.1 The proposal is for grant of validity extension of environmental clearance (EC) of Renukaji Dam Project (40 MW) in an area of 1988.27 ha at Village Dadahu, District Nahan, Himachal Pradesh by M/s Himachal Pradesh Power Corporation Limited.

35.4.2: The details of the project submitted by project proponent and ascertained from the document submitted are mentioned below:

ii. The Environment clearance has been accorded by Ministry of Environment & Forests (MoEF), Govt. of India vide No. J-12011/53/2008.IA.I dated 23-10-2009. Expert Appraisal Committee (EAC) for River valley & Hydroelectric projects (MoEF&CC, New Delhi) held on dated 27-09-2018, has recommended the amendments in EC based on Land requirement i.e. to 1988.27 ha.

iii. The Environment Clearance was valid upto 23-10-2019. Therefore an online application for extension of validity of Environmental Clearance was submitted on 09-08-2019 & extension has been recommended during the 26th meeting of Expert Appraisal Committee upto a period of 3 years i.e. upto 22.10.2022.Thereafter, the proposal was considered during the 26th & 31st meeting of the Expert Appraisal Committee (EAC) on River Valley Projects. During the meeting it was noted that EC of RDP is valid upto 22-10-2023, in accordance with a MoEF & CC notification of 18-01-2021. The proposal was also considered during the 49th meeting of the Expert Appraisal Committee (EAC) on River Valley Projects on 18.07.2023. As per the Minutes of meeting the EC dated 23.10.2009 is valid till 22.10.2025 in accordance with the Ministry's OM vide dated 11.04.2022.

iv. Forest Clearance:

- Stage-I:- The In-Principle' approval for diversion of Forest land has been accorded for Renukaji Dam Project vide Additional Inspector General of Forests MoEF & CC, Gol letter F. No 8-41/2009-FC dated 20-02-2015.

Stage-II : The amount of compensatory levies was deposited in State CAMPA during May, 2022. Also, additional information regarding revised list of enumeration of trees of 909ha, and newly identified CA sites with revised Compensatory Afforestation Scheme for 1818ha land was submitted along with the Compliance of Stage-I Forest Clearance during February, 2024. Thereafter all observation raised by MoEF&CC has been attended and submitted. The case for stage-II Forest Clearance was reviewed in the FAC meeting held on 16.04.2025. The stage-II Forest Clearance has been granted by MoEF&CC vide letter dated 04.06.2025.

3.4.3. Deliberations by the committee in previous meetings

N/A

3.4.4. Deliberations by the EAC in current meetings

35.4.3 The EAC during deliberations noted the following:

The proposal is for validity extension of Environmental Clearance of Renukaji Dam Project (40 MW) in an area of 1988.27 ha at Village Dadahu, District Nahan, Himachal Pradesh by M/s Himachal Pradesh Power Corporation Limited.

The project is listed at S.N.1(c) of the Schedule to the Environment Impact Assessment (EIA) Notification under category ‘A’ and are appraised at Central Level by Expert Appraisal Committee (EAC).

The EAC noted that the Environmental Clearance was granted by the Ministry vide letter dated 23.10.2009. The validity of said EC was extended by the Ministry vide letter dated 6.11.2019 till 22.10.2022. However, as per MoEF&CC notification S.O. 221(E) dated 18.01.2021 the period from the 1st April, 2020 to the 31st March, 2021 shall not be considered for the purpose of calculation of the period of validity of Prior Environmental Clearances granted under the provisions of this notification in view of outbreak of Corona Virus (COVID-19). Accordingly, the EC dated 23.10.2009 shall be considered as valid till 22.10.2025.

Currently, PP informed that they submitted an application for seeking the extension of validity of EC so as to continue on the project activities for the implementation. The delay in project execution is due to the following reasons:

i. Several petitions were filed by PAFs against the Environmental Clearance (EC) in the Hon'ble High Court, which were later transferred to the National Green Tribunal (NGT). The NGT dismissed the petitions in **February 2016**.
ii. An eight-member committee reviewed compliance and recommendations. Based on its report, MoEF&CC granted a **revised EC on 15.01.2019**, delaying further progress.
iii. The Interstate Agreement between the six beneficiary states (Delhi, Haryana, Uttar Pradesh, Uttarakhand, Rajasthan, and Himachal Pradesh) was signed only on 11.01.2019, which was critical for fund mobilization and project execution.
iv. Though the diversion proposal was submitted in 2008, Stage-I forest clearance was granted only in February 2015 due to multiple inspections and revisions. Funds for Stage-II clearance were delayed until the Interstate Agreement and CCEA approval, which in turn delayed Stage-II clearance.
v. The Investment Clearance was accorded only in August 2020, and CCEA approval was received in December 2021. Without these, critical project funds (including for clearances) could not be released.

The EAC noted that the construction of the project is yet to commence and PP informed that construction is expected to begin by December 2025 and is likely to be completed by 2031, subject to unforeseen hindrances or delays. The EAC further observed that as per the Ministry's Notification S.O. 1807(E) dated 12.04.2022, the environmental clearance granted to River Valley project shall be valid for a period of thirteen years and may be extended in respect of valid Environmental Clearance, by the regulatory authority concerned by a maximum period of two years.

35.4.4 The EAC based on the information submitted and as presented during the meeting, recommended the proposal for grant of the extension of validity of EC dated 23.10.2009 for 2 years i.e. up to 22.10.2027 for Renukaji Dam Project (40 MW) in an area of 1988.27 ha at Village Dadahu, District Nahan, Himachal Pradesh by M/s Himachal Pradesh Power Corporation Limited, under the provisions of EIA Notification, 2006, as amended. After the extended period of EC validity PP shall obtain fresh environmental clearance as per EIA Notification, 2006 as amended.

3.4.5. Recommendation of EAC

Recommended

3.4.6. Details of Environment Conditions

3.4.6.1. Specific

Additional Condition	
1.	After the extended period of EC validity PP shall obtain fresh environmental clearance as per EIA Notification, 2006 as amended.

4. Any Other Item(s)

N/A

5. List of Attendees

Sr. No.	Name	Designation	Email ID	Remarks
1	Prof G J Chakrapani	Chairman, EAC	cha**********@gmail.com	

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

MINUTES OF THE 35TH MEETING OF THE EXPERT APPRAISAL COMMITTEE FOR RIVER VALLEY AND HYDROELECTRIC PROJECTS HELD ON 11TH JULY 2025 THROUGH VIDEO CONFERENCE

The 35th 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 11th July, 2025 on Virtual mode, under the Chairmanship of Prof. G. J. Chakrapani. The list of Members present in the meeting is at **Annexure**.

Confirmation of the Minutes of the 34th EAC meeting:

The Minutes of the Meeting held on 34th EAC meeting on 30th June, 2025 were confirmed.

Agenda Item No. 35.1

Kadambari PSP closed-loop pumped storage project (1560 MW) in an area of 286.1 ha at Village Kakdara & Kothar etc., Sub-district –Bali & Pindwara District Pali & Sirohi, Rajasthan by M/s Avaada Aqua Batteries Private Limited – Terms of References (TOR) – reg.

[Proposal No. IA/RJ/RIV/543570/2025; F. No. J-12011/24/2025-IA.I (R)]

35.1.1 The proposal is for grant of Terms of References (ToR) to the project for Kadambari PSP closed-loop pumped storage project (1560 MW) in an area of 286.1 ha at Village Kakdara & Kothar etc., Sub-district –Bali & Pindwara District Pali & Sirohi, Rajasthan by M/s Avaada Aqua Batteries Private Limited

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

i. Kadambari Pumped Storage Project (PSP) is proposed 1560 MW Off Stream Closed Loop Scheme which envisages the utilization of available net head of 386m between upper reservoir with gross volume of 12.31MCM at El. 874m and a lower reservoir with a gross volume of 13.95MCM at El. 479m for the storage of energy. Both reservoirs are planned to be constructed. The Proposed PSP would comprise of a pit-type powerhouse with an installed capacity of 1560 MW having 5 units of 260MW each and 2 units of 130MW each. 6 hours of daily generation has been envisaged for the project.
ii. The Geographical coordinates of the proposed Kadambari pumped storage Project's upper reservoir (located near Village Vagdari, Pindwara Tehsil, District Sirohi) are Latitude of 24°45'12.41"N and Longitude of 73° 8'12.72"E. The coordinates for the lower reservoir (located at the same Village/Tehsil/District) are Latitude 24°45'32.89"N and Longitude of 73° 6'57.72"E.
iii. The initial filling (Lower Reservoir) i.e. 14.79 MCM is proposed to be done from the nearest point of Jawai Dam which is about 37 km away. The upper reservoir is proposed to be filled up by using the reversible pump turbine which is employed for the generation of the required power. The initial filling of reservoirs is envisaged across 2 seasons.
iv. The Kadambari Pumped Storage Project envisages construction of two artificial reservoirs near Vagdari village in Sirohi district of Rajasthan.

v. **Land requirement:**

Forest Land : 137.0 Ha
Non Forest land : 149.1Ha
Total : 286.1 Ha

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

- The proposed project area is located near Vagdari village, which fall under Pindwara Tehsil of Sirohi district.
- The surrounding area of the project includes five villages: Vagdari, Pahar Kalan, Kalumbari, Varli and Sabela, all of which falls under Pindwara Tehsil of Sirohi district.
- In the surrounding project villages, almost entire population belongs to Scheduled Tribes, which primarily include the Bhil community.
- Agriculture is the main livelihood in the project area, with maize being the primary (first) crop, wheat being the second crop, and barley, mustard, pearl millet and grams being the third crop.
- According to Mission Antyodaya 2020, the total population of the villages in the project surrounding area is 5351, comprising 2682 males (50.12%) and 2669 females (49.88%).
- There are 1355 households in total, with an average household size of around 4 members. The sex ratio is 995 females per 1,000 males.
- The Scheduled Caste (SC) population constitutes only 0.56% of the total population, whereas almost entire population i.e. 98.56% constitutes of the Scheduled Tribe (ST) population.

Demographic Profile of the Project Proximity area Villages

Village Name	No_ T.P	TOT_M	TOT_F	TOT_HH	P_SC%	P_ST%
Kalumbari	725	360	365	289	0.26	98.34
Pahadkala	256	127	129	50	0.00	95.97
Sabela	1330	715	615	510	0.00	99.86
Vagdari	470	240	230	86	0.00	100.00
Varli	2570	1240	1330	420	1.37	97.53
Total	**5351**	**2682**	**2669**	**1355**	**0.56**	**98.56**

(Source Mission Antyodaya 2020)
(*No_HH-Total House Hold, TOP_P-Total Population, TOT_M-Total Male, TOT_F-Total Female, P_SC-Scheduled Caste population, P_ST-Scheduled Tribe Population)*

vii. **Water requirement:**

Water required for filling gross storage of lower reservoir (inclusive of losses)	13.95 MCM
Water required for filling gross storage of upper reservoir (inclusive of losses)	12.31 MCM
Dead storage of upper reservoir	0.69 MCM
One-time filling requirement for reservoirs	14.64 MCM
Water required for WCS	0.15 MCM
Total requirement (across 2 season)	14.79 MCM

Total requirement for each season	**7.39 MCM**
Annual Recouping due to evaporation and transit loss	**2.0 MCM**

viii. **Project Cost**: The estimated project cost is Rs 7239.21 Cr. Total capital cost earmarked towards environmental pollution control measures will be worked out during EIA studies as well as Recurring cost (operation and maintenance).

ix. **Project Benefit**: Total employment will be 1875 including direct and indirect.

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

xi. MoU has been signed between Government of Rajasthan and M/s Avaada Aqua Batteries Pvt. Ltd. vide Ref. No. MoU2024-25/8961 dated 19/11/2024.
Project has been approved by High level Screening Committee (HLSC) of Government of Rajasthan in its meeting held on 12/05/2025. Accordingly, Allocation letter received on 15.05.2025 .

xii. **Alternative Studies:** 3 alternative layouts have been prepared and compared for development of PSP.

Following aspects were kept in mind while selection of alternative layouts has been done:

- Topography of the area and other factors like location, length of water conductor System etc.
- Utilization of available head at project site.
- Accessibility to various project components and feasibility of construction.
- Requirement of minimal area of land acquisition to accommodate various project components.
- Minimum forest land requirement
- Avoid R&R Issues
- Avoid sensitive areas

Based on the above, three alternatives locations for upper reservoir (UR1, UR2 & UR3) and lower reservoir (LR1, LR2 & LR3) were identified.

Reservoir Name	FRL (m)	Gross Storage (MCM)	Dam Length (m)	Dam Height (m)	Remarks	Approach
UR1	874	12.31	2808.14	38	Total submergence corresponding to dam top = 81.72 Ha (Forest land = 81.72 Ha)	New approach road of 5 Km length needs to be constructed
LR1	479	13.95	1935.61	38	Total submergence corresponding to	Approach Road is

					dam top = 70.69 Ha (Forest land = 10.69 Ha)	already existing
UR2	690	16.77	949	113	Total submergence corresponding to dam top = 40.47 Ha (Forest land = 40.47 Ha)	Approach Road is already existing
LR2	480	19.73	1024	63	Total submergence corresponding to dam top = 74.12 Ha (Forest Area, inside Kumbhalgarh Wildlife Sanctuary = 74.12 Ha	Approach Road is already existing
UR3	890	9.98	1429.67	93	Total submergence corresponding to dam top = 24.05 Ha (Forest Land, inside Mount Abu Wildlife Sanctuary = 24.05 Ha	New approach Road of 10 km needs to be built.
LR3	510	11.65	995.69	73	Total submergence corresponding to dam top = 42.53 Ha (Forest Land inside Mount Abu Wildlife Sanctuary = 42.53 Ha	Approach Road is already existing

Alt. No.	Upper Res.	Lower Res.	Gross Head (m)	L / H Ratio	Gross Storage-Upper (MCM)	Gross Storage-Lower (MCM)	Capacity (MW)	Forest Land
1	UR1	LR1	386	3.68	12.31	13.95	1560	137
2	UR2	LR2	199	9.3	16.77	16.77	1100	159.59 (Includes Forest Area Inside Kumbhalgarh Tiger Reserve)
3	UR3	LR3	365	13	9.98	9.98	1000	111.59 (Includes Forest Area

								Inside Abu WLS)

Alternative 1 option has been selected due to the following reasons:

- Lowest L/H ratio
- Highest installed capacity
- Lowest Forest Area/MW
- Alternatives 2 and 3 are falling in protected areas

xiii. Status of Litigation Pending against the proposal, if any : NIL

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

- **Project details:**

Name of the Proposal	Kadambari Pumped Storage Project (1560 MW)
Location (Including coordinates)	Lower Reservoir : 73°6'57.72"E; 24°45'32.89"N Upper Reservoir : 73°8'12.72”E; 24°45'12.41"N
Inter- state issue involved	No
Seismic zone	Zone-III

- **Category details:**

Category of the project	A
Provisions	
Capacity / Cultural command area (CCA)	1560 MW
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	Nil

- **Electricity generation capacity:**

Powerhouse Installed Capacity	1560 MW
Generation of Electricity Annually	3245.58 MU
No. of Units	6 nos. (5X260 MW)
Additional information (if any)	Nil

- **ToR/EC Details:**

Cost of project	7239.21 Cr.
Total area of Project	286.1 ha
Height of Dam from River Bed (EL)	Lower Dam – 38.0 m

	Upper Dam – 38.0 m
Length of Tunnel/Channel	2789.0 m
Details of Submergence area	162.0 ha
Types of Waste and quantity of generation during construction/ Operation	Muck from excavation, solid waste from labour colony and construction waste
E-Flows for the Project	Not Applicable, as this is Off-Stream Closed Loop Pumped Storage Project (PSP)
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then E-flow with TOR /Recommendation by EAC as per CIA&CC study of River Basin. If not the E-Flows maintain criteria for sustaining river ecosystem.	No

- **Muck Management Details:**

No. of proposed disposal area/ (type of land-Forest/Pvt. land)	12.0 Ha (Non-Forest Land)
Muck Management Plan	Will be Provided in EIA/EMP report
Monitoring mechanism for Muck Disposal	Will be Provided in EIA/EMP report

- **Land Area Breakup:**

Private Land	149.1 ha
Government land	0
Forest Land	137.00 ha
Total Land	286.1
Submergence area/Reservoir area	162.0 ha
Additional information (if any)	Nil

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

Forest Land/ Protected Area/ Environmental Sensitivity Zone	**Yes/No**	**Details of Certificate / letter/ Remarks**
Reserve Forest/Protected Forest Land	--	The project lies outside the boundaries of Wild Life/ Eco Sensitive zones.
National Park	---	
Wildlife Sanctuary	---	

- **Miscellaneous**

Particulars	**Details**
Details of consultant	M/s. R S Envirolink Technologies Pvt. Ltd. (RSET) (*NABET* Accredited *Consultant Organization*) Certificate No : NABET/EIA/2225/RA0274 Validity : August 15, 2025 Contact Person : Mr. Ravinder Bhatia Name of Sector : River Valley and Hydroelectric Projects Category : A MoEF Schedule : I(C) Address : 403, Bestech Chambers, Block-B, Sushant Lok Phase I, Sector 43, Gurugram, Haryana - 122009 E-mail : ravi@rstechnologies.co.in Land Line : (0124) 4295383 Cellular : (+91) 9810136853
Project Benefits	• Pumped storage hydropower is a modified

	use of conventional hydropower technology to store and manage energy or electricity by moving water between an upper and lower reservoir. Currently, pumped storage round-trip or cycle energy efficiencies exceed 80%, comparing favorably to other energy storage technologies and thermal technologies. This effectively shifts, stores, and reuses energy generated until there is corresponding demand for system reserves and variable energy integration. This shifting can also occur to avoid transmission congestion periods, to help more efficiently manage transmission grid, and to avoid potential interruptions to energy supply. This is important because many of the renewable energy resources being developed (e.g., wind and solar) are generated at times of low demand and off-peak energy demand periods are still being met with fossil fuel resources, often at inefficient performance levels that increase the release of greenhouse gas emissions. • Further, pumped storage projects are critical to the national economy and overall energy reliability because it's: o Least expensive source of electricity, not requiring fossil fuel for generation o An emission-free renewable source o Balancing grid for demand driven variations o Balancing generation driven variations o Voltage support and grid stability Apart from this, proposed PSP will also benefit the local community by creating employment opportunities and will result in upliftment of livelihood and socio-economic conditions.
Status of other statutory clearances	Post ToR approval, the activities will be taken up for preparation of DPR alongwith TEC from CEA, GoI and obtaining forest diversion for around 137.0 ha alongwith forest clearance from MOEF by submission of online application on Parivesh portal.

Additional detail (If any)	Nil

35.1.3 The EAC during deliberations noted the following:

The Expert Appraisal Committee (EAC) deliberated on the information submitted (Form 1, PFR, kml file, etc.) and as presented in the meeting and observed that the proposal is for grant of TOR for conducting EIA/EMP and Public hearing for Kadambari PSP closed-loop pumped storage project (1560 MW) in an area of 286.1 ha at Village Kakdara & Kothar etc., Sub-district –Bali & Pindwara District Pali & Sirohi, Rajasthan by M/s Avaada Aqua Batteries Private Limited.

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

The EAC noted that the total land required for the construction of various components and related works for Kadambari PSP is estimated to be around 286.1 ha, out of which 149.1 ha is non-forest land and 137.0 ha is forest land. The submergence or reservoir area within this total is 162.0 hectares. Diversion of forest land for non-forest purpose will be involved for construction of Kadambari project components. However, it was observed that the application for Stage-I Forest Clearance (FC) has not yet been submitted, which necessitates further action from the Project Proponent. The Project Proponent indicated that there is no Protected Area within 10 km of the proposed project.

The Committee deliberated on the critical issue of water availability in the region, particularly concerning the proposal to draw an initial volume of 14.79 million cubic meters (MCM) of water from the Jawai Dam for the project. It was noted with concern that the Jawai Dam primarily serves as a source of irrigation water, and in recent years, water levels in the dam had dropped to such an extent that water had to be transported by train to meet irrigation demands. In light of such past occurrences, the Committee emphasized the importance of ensuring that sufficient water will be available in the Jawai Dam for the proposed project without compromising existing irrigation needs. Accordingly, the PP was advised to obtain the necessary clearances and approvals from the Central Water Commission / Central Electricity Authority (CEA) to confirm the feasibility and sustainability of the proposed water withdrawal.

Based on the analysis of the KML file, the Committee observed that the proposed project site is predominantly a rocky terrain. Despite this, the proposal includes a requirement of 33.60 Ha of land exclusively for quarrying activities, which appears to be on the higher side. The Committee noted that a significant quantity of construction materials such as stone, rock, aggregates, sand, gravel, slate, etc can potentially be sourced from excavation activities associated with the development of both reservoirs. In view of this, it was advised that the PP shall carry out a detailed assessment to optimize and possibly reduce the land area earmarked for quarrying, ensuring more efficient and judicious use of land resources.

It has been observed that Memorandum of Understanding has been signed between Government of Rajasthan and M/s Avaada Aqua Batteries Pvt. Ltd. vide Ref. No. MoU2024-25/8961 dated 19/11/2024. The Project has been approved by High level Screening Committee

(HLSC) of Government of Rajasthan in its meeting held on 12/05/2025 same has been informed through letter dated on 15.05.2025.

35.1.4 The EAC based on the information submitted and as presented during the meeting, recommended the proposal for grant of Specific ToR issued by the Ministry for Close Loop Pumped Storage Projects vide OM dated 14.08.2023 for conducting EIA study for proposed construction of the project for Kadambari PSP closed-loop pumped storage project (1560 MW) in an area of 286.1 ha at Village Kakdara & Kothar etc., Sub-district –Bali & Pindwara District Pali & Sirohi, Rajasthan by M/s Avaada Aqua Batteries Private Limited, under the provisions of EIA Notification, 2006, as amended along with the following additional/specific ToR:

[A] Environmental Management and Biodiversity Conservation:

i. PP shall submit the Water Utilization Mapping within a 10 km radius of the project for examining the impacts on sustainability of ecosystem of the region after withdrawal of water for proposed project. The EAC shall conduct site visit before considering the proposal for grant of Environmental Clearance.

ii. Detailed action plan for large scale plantation of native species of plant sapling within 10 km radius of the project shall be prepared in consultation with State Forest Department.

iii. Explore the possibilities for reducing the Forest land requirement. The application for obtaining Stage I FC for 137 ha of forest land involved in the project shall be submitted within stipulated time.

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

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

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

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

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

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

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

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

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

xiii. Details of mineral zone, if any, in the study area, certified by Geological Survey of India or any other concerned Government Organization shall be submitted. The project area should not come up on any critical mineral zone, the same shall to be verified by GSI/NMDC.

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

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

xvi. Cumulative Impact of projects in the basin on carrying capacity and sustainability of Reservoir/ River /nala of catchment area due to tapping of water for filling reservoir shall be studied.

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

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

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

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

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

[B] Socio-economic Study

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

ii. All the tasks including conducting public hearing shall be done as per the provisions of EIA Notification, 2006 and as amended from time to time. A comparative chart of issues raised by General Public during Public Hearing and commitments made by the Project Proponent will be prepared and submitted in the relevant chapter of EIA/EMP report.

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

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

[C] Muck Management

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

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

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

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

[D] Disaster Management

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

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

[E] Miscellaneous

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

ii. Approved Layout as per pre-DPR chapter duly approved by CEA/CWC shall be submitted.

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

iv. Drone video of project site shall be recorded and to be submitted.

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

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

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

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

Agenda Item No. 35.2

Khadkhai Medium Irrigation Project (Phase – II) on Khadkhai river with Culturable Command Area of 5,394 ha and Submergence Area of 77.50 ha located in Village Murgaghutu, Block Rairangpur, District Mayurbhanj, Odisha by Department of Water Resources, Government of Odisha - Terms of References (TOR) – reg.

[Proposal No. IA/OR/RIV/540525/2025; F. No. J-12011/25/2025-IA.I (R)]34.2.1

35.2.1 The proposal is for grant of Terms of References (ToR) to the project for Khadkhai Medium Irrigation Project (Phase – II) on Khadkhai river with Culturable Command Area of 5,394 ha and Submergence Area of 77.50 ha located in Village Murgaghutu, Block Rairangpur, District Mayurbhanj, Odisha by Department of Water Resources, Government of Odisha .

35.2.2 While considering the proposal, the EAC observed that despite being given sufficient time to present and explain the details of the project, the Project Proponent, along with their

accredited consultant, M/s Visiontek Consultancy Services Pvt. Ltd., was unable to adequately respond to several critical queries raised by the Committee members regarding key components of the project. In view of this, the EAC advised that the proponent and their consultant must ensure the presence of technically qualified and well-informed representatives during future meetings, who are fully prepared to address all project-related questions and provide clarifications as required.

The EAC decided to ***defer*** the proposal on the above lines.

Agenda Item No. 35.3

Koyna-Nivakane (Closed loop) Pumped Storage Project (2450 MW) in an area of 312.84 ha at Village Marathwadi, Tehsil Patan, District Satara, Maharashtra by M/s Adani Green Energy Limited - Amendment in Terms of Reference (TOR) - reg.

[Proposal No. IA/MH/RIV/543425/2025; F. No. J-12011/28/2023-IA.I (R)]

35.3.1 The proposal is for grant of Amendment in Terms of Reference (ToR) to the project for Koyna-Nivakane (Closed loop) Pumped Storage Project (2450 MW) in an area of 312.84 ha at Village Marathwadi, Tehsil Patan, District Satara, Maharashtra by M/s Adani Green Energy Limited.

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

i. Adani Green Energy Limited has proposed to set up 2450 MW Koyna-Nivakane Pumped Storage Project (PSP) on an Off-Stream Closed Loop Pumped Storage Scheme in Marathwadi & Nivakane Village of Patan Taluka of Satara District.

ii. The proposal is for amendment in the Terms of Reference granted by the Ministry vide letter dated 07/08/2023 for the project Koyna-Nivakane (Closed loop) Pumped Storage Project (2450 MW) in an area of 312.84 ha at village Marathwadi, Tehsil Patan, District Satara, Maharashtra by M/s Adani Green Energy Limited.

iii. The project proponent has requested for amendment in the ToR with the details are as under:

S. No.	Para of ToR issued by MoEF&CC	Details as per the ToR	To be revised/ read as	Justification/ reasons
1.	**Subject**	Koyna-Nivakane (Closed loop) Pumped Storage Project (2450 MW)	Nivakane (Closed loop) Pumped Storage Project (2700MW)	Name of the project changed from Koyna-Nivakane (Closed Loop) Pumped Storage Project (2450 MW) to Nivakane (Closed

S. No.	Para of ToR issued by MoEF&CC	Details as per the ToR	To be revised/ read as	Justification/ reasons
				Loop) Pumped Storage Project (2700 MW) as per revised MOU signed with Government of Maharashtra dated 03.09.2024
2.	**Subject**	Koyna-Nivakane (Closed loop) Pumped Storage Project (2450 MW) in an area of 312.84ha at Village Marathwadi, Tehsil Patan, District Satara, Maharashtra by M/s Adani Green Energy Limited.	Nivakane (Closed loop) Pumped Storage Project (2700MW) in an area of 361.82ha at village Marathwadi, Bharsakle, Nivade and Mharvand Tehsil Patan, District Satara, Maharashtra by M/s Adani Green Energy Limited.	The increase in project capacity from 2450MW (7 x 350MW) to 2700 MW (8x300MW + 2x150MW) is based on the output of topographical survey, the change in the location of the lower dam and the maintenance of standard unit sizes of 300MW and 150MW to achieve operational flexibility. From the increased storage of lower reservoir, 7.62MCM of water will be allocated for irrigation purposes. The land area has increased from 312.84 hectares to 361.82 hectares, mainly of reservoirs area, water pipeline, WCS, powerhouse and approach road. These changes are based on detailed surveys and investigations,

S. No.	Para of ToR issued by MoEF&CC	Details as per the ToR	To be revised/ read as	Justification/ reasons
				whereas the earlier land details were based on preliminary feasibility studies.
3.	**Para 1**	This is in reference to your application for Grant of Terms of Reference under the provision of the EIA Notification 2006- regarding in respect of project Koyna-Nivakane Pumped Storage Project (2450 MW)	This is in reference to your application for Grant of Terms of Reference under the provision of the EIA Notification 2006- regarding in respect of project Nivakane Pumped Storage Project (2700MW)	The increase in project capacity from 2450 MW (7 x 350 MW) to 2700 MW (8 x 300 MW + 2 x 150 MW) is based on the output of topographical survey, the change in the location of the lower dam and the maintenance of standard unit sizes of 300 MW and 150 MW to achieve operational flexibility. From the increased storage of lower reservoir, 7.62 MCM of water will be allocated for irrigation purposes.
4.	**Para 2 (vii) Name of the project**	Koyna-Nivakane Pumped Storage Project (2450MW)	Nivakane Pumped Storage Project (2700MW)	The increase in project capacity from 2450 MW (7 x 350 MW) to 2700 MW (8 x 300 MW + 2 x 150 MW) is based on the output of topographical survey, the change in the location of the lower dam and the maintenance of standard unit sizes of 300 MW and 150 MW to achieve

S. No.	Para of ToR issued by MoEF&CC	Details as per the ToR	To be revised/ read as	Justification/ reasons
				operational flexibility.
5.	**Para 7**	The MoEF&CC has examined the proposal in accordance with the Environment Impact Assessment (EIA) Notification, 2006, as amended and after accepting the recommendations of the Expert Appraisal Committee hereby decided to grant Terms of Reference for instant proposal of Koyna-Nivakane (Closed loop) Pumped Storage Project (2450 MW) in an area of 312.84 ha at Village Marathwadi, Tehsil Patan, District Satara, Maharashtra by M/s Adani Green Energy Limited, under the provisions of EIA Notification, 2006, as amended.	The MoEF&CC has examined the proposal in accordance with the Environment Impact Assessment (EIA) Notification, 2006, as amended and after accepting the recommendations of the Expert Appraisal Committee hereby decided to grant Terms of Reference for instant proposal of Nivakane (Closed loop) Pumped Storage Project (2700MW) in an area of 361.82ha at village Marathwadi, Bharsakhale, Nivakane and Mharvand tehsil Patan, district Satara, Maharashtra by M/s Adani Green Energy Limited, under the provisions of EIA Notification, 2006, as amended.	The increase in project capacity from 2450 MW (7 x 350 MW) to 2700 MW (8 x 300 MW + 2 x 150 MW) is based on the output of topographical survey, the change in the location of the lower dam and the maintenance of standard unit sizes of 300 MW and 150 MW to achieve operational flexibility. From the increased storage of lower reservoir, 7.62 MCM of water will be allocated for irrigation purposes. The land area has increased from 312.84 hectares to 361.82 hectares, mainly of reservoirs area, water pipeline, WCS, powerhouse and approach road. These changes are based on detailed surveys and investigations, whereas the earlier land details were based on preliminary feasibility studies.

S. No.	Para of ToR issued by MoEF&CC	Details as per the ToR	To be revised/ read as	Justification/ reasons
Annexure-III				
6.	**Point Number -III**	The estimated project cost is Rs. 8615.28 crore. Total capital cost earmarked towards environmental pollution control measures will be worked out during EIA study as well as the Recurring cost (operation and maintenance).	The estimated project cost is Rs. 14952 crore. Total capital cost earmarked towards environmental pollution control measures will be worked out during EIA study as well as the Recurring cost (operation and maintenance).	Due to an increase in installed capacity and land area, the project cost has risen from Rs 8615.28 crores to Rs. 14952 crores.
7.	**Point Number - IV**	Sahyadri Tiger Reserve Boundary is at 0.5 km distance from the project site. River/ water body, Koyna Reservoir is at a distance of 3 Km in west direction.	Sahyadri Tiger Reserve Boundary is at 0.150 km distance from the project site. River/ water body, Koyna Reservoir is at a distance of 3 Km in west direction.	Due to the change in operating levels of the upper reservoir from FRL 1063m to FRL 1068m.
8.	**Point Number - VI**	Various technically feasible alternative layouts have been identified along the Western Ghats mountain ranges near the project site. Based on review of available data, maps, it is found that the area is a home of one tiger Reserve i.e Sahyadri Tiger Reserve and "Koyna Wildlife Santuary". However, keeping all these eco sensitivity in mind, the 2450 MW Koyna-Nivakane PSP has been proposed completely outside the	Various technically feasible alternative layouts have been identified along the Western Ghats Mountain ranges near the project site. Based on review of available data, maps, it is found that the area is a home of one tiger Reserve i.e., Sahyadri Tiger Reserve and "Koyna Wildlife Sanctuary". However, keeping all these eco sensitivity in mind, the 2700MW Nivakane PSP has been proposed completely outside the Tiger	Due to the shifting of lower dam axis by 500m downstream relative to the earlier proposal and changes in the operating levels of the lower reservoir from FRL 744m to FRL 751m.

S. No.	Para of ToR issued by MoEF&CC	Details as per the ToR	To be revised/ read as	Justification/ reasons
		Tiger Reserve and Koyna Sanctuary. The identified project has been designed such a way, so that it can well utilize the head available between the upper reservoir, which is a natural basin, located at Kera River basin and lower reservoir proposed, which also a natural valley situated at Nivakane Accordingly, a layout has been identified with an installed capacity of 2450 MW. The project does not affect any settlement. The project does not affect any settlement.	Reserve and Koyna Sanctuary. The identified project has been designed such a way, so that it can well utilize the head available between the upper reservoir, which is a natural basin, located at Kera River basin and lower reservoir proposed, which also a natural valley situated at Nivakane. Accordingly, a layout has been identified with an installed capacity of 2700 MW. Aral village is coming under the submergence of Lower Reservoir.	
9.	**Point Number - VII**	By studying all three alternatives, keeping in view of Accessibility, Dam height, Socio economic and Environmental impact, alternative 3 has been emerged as economically the most viable and most feasible to be constructed among these three sites. However, to keep the Hmax/Hmin within permissible limits (1.3), the identified	By studying all six schemes, keeping in view of Accessibility, Dam height, Socio economic and Environmental impact, Scheme-3 with Alternative-1 has emerged as economically the most viable and most feasible to be constructed among these 06 schemes. However, to keep the Hmax/Hmin within permissible limits (1.3), the identified	As per FR requirements, various schemes were studied. The operating levels were adjusted based on the topographical survey to maintain the Hmax/Hmin ratio at 1.3.

S. No.	Para of ToR issued by MoEF&CC	Details as per the ToR	To be revised/ read as	Justification/ reasons
		reservoirs need to be excavated to minimize the gap between Full Reservoir Level (FRL) and Minimum Drawdown Level (MDDL). Upper Reservoir (FRL- El.1063, MDDL – EL. 1026) and Lower Reservoir (FRL- El.744, MDDL – EL. 694). Conclusively it is advisable not to do further study on Alternative 1 & 2 and it is strongly recommended to do further study for the alternative 3 site named as Koyna-Nivakane PSP.	reservoirs need to be excavated to minimize the gap between Full Reservoir Level (FRL) and Minimum Drawdown Level (MDDL). Upper Reservoir (FRL-El.1068, MDDL – EL. 1030) and Lower Reservoir (FRL-El.751, MDDL – EL. 713). Conclusively it is advisable not to do further study on other schemes and it is strongly recommended to do further study for the Scheme-3 with Alternative-1 site named as Nivakane PSP.	
10.	**Point Number - IX**	Project Excavation is 3000000 Cum out of which 15 lakh Cum shall be utilized in construction and 15 lakh Cum shall be disposed in muck disposal site.	Project Excavation is 124.83 lakh Cum out of which 116.74 lakh Cum shall be utilized in construction and 08 lakh Cum shall be disposed in muck disposal site.	Excavation has been increased to optimize the storage capacity of both reservoirs, and the utilization of muck has also been enhanced. Consequently, only 8 lakh cubic meters of muck need to be disposed of, instead of the previously estimated 15 lakh cubic meters.
	Point Number – X **The silent features of the project are as under: -**			
	Project details:			

S. No.	Para of ToR issued by MoEF&CC	Details as per the ToR	To be revised/ read as	Justification/ reasons
11.	**Capacity / Cultural command area (CCA)**	2450 MW	2700 MW	The increase in project capacity from 2450MW (7 x 350MW) to 2700 MW (8x300MW + 2x150MW) is based on the output of topographical survey, the change in the location of the lower dam and the maintenance of standard unit sizes of 300MW and 150MW to achieve operational flexibility.
	Electricity generation capacity:			
12.	**Powerhouse Installed Capacity**	2450 MW	2700 MW	The increase in project capacity from 2450MW (7 x 350MW) to 2700 MW (8x300MW + 2x150MW) is based on the output of topographical survey, the change in the location of the lower dam and the maintenance of standard unit sizes of 300MW and 150MW to achieve operational flexibility.
13.	**Generation of Electricity Annually**	5091 MU	5724.79 MU	Due to the change in installed capacity, there has been an increase in annual generation.
14.	**No. of Units**	7 nos. (7 X 350 MW)	10 Units (8 x 300 MW + 2 X 150 MW)	To maintain the standard unit sizes of 300 MW and 150

S. No.	Para of ToR issued by MoEF&CC	Details as per the ToR	To be revised/ read as	Justification/ reasons
				MW, ensuring operational flexibility.
	ToR Details:			
15.	**Cost of project**	8615.28 Cr.	14952 Cr.	Due to an increase in installed capacity and land area, the project cost has risen from Rs 8615.28 crores to Rs. 14952 crores.
16.	**Total area of Project**	312.84 ha	361.82 ha	The land area has increased from 312.84 hectares to 361.82 hectares, mainly of reservoirs area, water pipeline, WCS, powerhouse and approach road. These changes are based on detailed surveys and investigations, whereas the earlier land details were based on preliminary feasibility studies.
17.	**Height of Dam from River Bed (EL)**	Lower Dam – 69 m Upper Dam – 53.8 m	Lower Dam – 78.5 m Upper Dam – 64.5 m	The dam size has been increased to optimize the storage capacity of both reservoirs.
18.	**Length of Tunnel/Channel**	109	Total Length of WCS: For 300 MW Unit is 1519.37 m. For 150 MW Unit is 1528.77 m.	Due to change in WCS alignment and the location of the powerhouse.

S. No.	Para of ToR issued by MoEF&CC	Details as per the ToR	To be revised/ read as	Justification/ reasons
19.	**Details of Submergence area**	146.84 ha	215.48 ha	The area has increased due to the shifting of the lower dam axis and changes in the FRL of both reservoirs.
	Muck Management Details:			
20.	**No. of proposed disposal area/ (type of Land Forest/Pvt. land)**	130.84 ha Private Land	82.02 ha Private Land	The increased utilization of generated muck has significantly reduced the disposal requirements. Initially, it was estimated that 15 lakh cubic meters of muck would need to be disposed of, but this has now been reduced to 8 lakh Cum.
	Land Area Breakup:			
21.	**Submergence area/Reservoir area**	146.84 ha	215.48 ha	The area has increased due to the shifting of the lower dam axis and changes in the FRL of both the reservoirs
22.	**Land required for project components**	166 ha	146.34 ha	Due to the increased utilization of muck, the disposal area has been reduced. Consequently, only 8 lakh cubic meters of muck need to be disposed of, instead of the previously estimated 15 lakh Cum.
	Forest Land/ Protected Area/Environmental Sensitivity Zone			

S. No.	Para of ToR issued by MoEF&CC	Details as per the ToR	To be revised/ read as	Justification/ reasons
	Details of Certificate / letter/ Remarks			
23.	**Reserve Forest/ Protected Forest** **Land National Park Wildlife Sanctuary**	Project has been kept outside the Koyna WLS and is at a distance of 500m from the boundary of Koyna WLS • Wildlife Clearance will be applicable	Project has been kept outside the Koyna WLS and is at a distance of 150 m from the boundary of Koyna WLS. • Wildlife Clearance will be applicable	Due to the change in operating levels of the upper reservoir from FRL 1063m to FRL 1068m.

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

Sr. No	Parameters	Unit	As Per ToR	Revised	Deviation
1	Project Capacity	MW	2450	2700	Change (+250)
2	Unit Size	-	7 X 350	8x300MW+2x150MW	Change
3	Storage Capacity	MWH	14700	16200	Change (+1500)
4	Total Land Area	ha	312.84	361.82	Change (+48.98)
4a.	Forest Area	ha	-	-	No Change
4b.	Non-Forest Area	ha	312.84	361.82	Change (+48.98)
5	**Upper Dam**				
i	Gross Storage	MCM	22.39	24.007	Change (+1.617)
ii	Live Storage	MCM	19.7	22.57	Change (+2.87)
iii	Dead Storage	MCM	2.69	1.435	Change (-1.255)
iv	Type of Dam		RCC	GFRD	Change
v	Height of Dam	m	53.8	64.5	Change (+10.7)
vi	Length of Dam	m	671	859.74	Change (+188.74)
6	**Lower Dam**				
i	Gross Storage	MCM	21.77	36.093	Change (+14.323)
ii	Live Storage	MCM	21.48	30.542	Change (+9.062)

Sr. No	Parameters	Unit	As Per ToR	Revised	Deviation
iii	Dead Storage	MCM	0.29	5.552	Change (+5.262)
iv	Type of Dam		RCC	GFRD	Change
v	Height of Dam	m	69	78.5	Change (+9.5)
vi	Length of Dam	m	791	714.29	Change (-76.71)
7	**Upper Intake/Outlet**				
i	Type		Diffuser	Diffuser	No Change
ii	Quantity	Nos.	4	5	Change (+1)
iii	Size		3nos., 40.0m (W) x 18.0m (H) 1nos., 20.0m (W) x 18.0 m (H)	4 No., 33.30 m (W) x 13.00 m (H) 1 No., 24.60 m (W) x 9.00 m (H)	Change
8	**Lower Intake/Outlet**				
i	Type		Diffuser	Diffuser	No Change
ii	Quantity	Nos.	4	5	Change (+1)
iii	Size		3nos., 40.0 m (W) x 18.0m (H) 1nos., 20.0m (W) x 18.0m (H)	4 Nos., 25.30 m (W) x 15.25 m (H) 1 No., 18.30 m (W) x 10.60 m (H)	Change
9	**Pressure Shaft**				
i	Quantity	Nos.	4	5	Change (+1)
ii	Length	m	1338	Larger Units: 1088.31 Smaller Units: 1094.00	Change
iii	Diameter	m	3no. 7.0m & 1no. 5.0m	4 Nos. of 7m dia. & 1 No. of 5.3m dia. Unit PS: 8 Nos. of 5m dia. & 2 No. of 3.75m dia.	Change
iv	Type		Steel lined	Steel lined	No Change
10	**Powerhouse**				
i	Type	-	Underground	Underground	No Change
ii	Installed Capacity	MW	7 X 350	8 x 300 MW + 2 x 150 MW	Change
iii	Size		270m (L) x 25m (W)x 55m (H)	235.0 (L) x 25.0 (W) x 56.0 (H)	Change

Sr. No	Parameters	Unit	As Per ToR	Revised	Deviation
11	**Tail Race Tunnel**				
i	Quantity	Nos.	4	5	Change (+1)
ii	Length	m	109	Larger Units: 477.22 Smaller Units: 481.07	Change
iii	Diameter	m	3no. 9.0 m + 1no. 6.3 m	4 Nos of 9.5m dia. & 1 No of 6.4m dia.	Change
iv	Type		Circular Shaped Concrete Lined	Circular Shaped Concrete Lined	No Change
12	**Approach Road**				
i	Strengthening of existing roads	km	0.5	0	Change (-0.5)
ii	Construction of new road	Km	2	5.04	Change (+3.04)
13	**Adit Tunnel**				
i	Mat (Size & Type)	m	1085(L) x 6.0(W) x 6.0(H)	982m(L) x 8.5m(W) x 8.5m(H)	Change
14	**Annual Power**				
i	Annual Generation	MU	5091	5724.79	Change (+633.79)
ii	Annual Pumping	MU	6468.62	7301.07	Change (+832.45)
iii	Cycle Efficiency	%	78.7	78.41	Change (-0.29)

35.4.3 The EAC during deliberations noted the following:

The proposal is for grant of amendment in Terms of References (TOR) to the project for Koyna-Nivakane (Closed loop) Pumped Storage Project (2450 MW) in an area of 312.84 ha at Village Marathwadi, Tehsil Patan, District Satara, Maharashtra by M/s Adani Green Energy Limited.

The project is listed at S.N.1(c) of the Schedule to the Environment Impact Assessment (EIA) Notification under category 'A' and are appraised at Central Level by Expert Appraisal Committee (EAC).

The Terms of Reference granted by the Ministry vide letter dated 07/08/2023 for the Koyna-Nivakane (Closed loop) Pumped Storage Project (2450 MW) in an area of 312.84 ha at Village Marathwadi, Tehsil Patan, District Satara, Maharashtra by M/s Adani Green Energy Limited.

The EAC noted that in earlier proposal lower dam was falling within the submergence area of Nivakane Minor Irrigation Project (MIP) of Satara Irrigation Department. PP informed that the

Nivakane MIP is located across the Kera River (a left bank tributary of the Koyna River) near the village of Nivakane in the Patan taluka of Satara district. Nivakane Minor Irrigation project is designed to store 7.62 MCM of water for local irrigation use and is partially complete.

It has been noted the Lower reservoir of Koyna Nivakane PSP will make the minor irrigation project defunct, thereafter after detailed discussion and deliberation with Government of Maharashtra, it was decided to shift the lower dam of PSP further downstream at a location where irrigation project's dam is located and create additional storage of 7.62 MCM for local use. Accordingly, the project is re-designed to build the additional storage capacity of 7.62 MCM for local use in the lower reservoir of Nivakane PSP.

The EAC observed that the project has been changed from Koyna-Nivakane (Closed loop) Pumped Storage Project to Nivakane Pumped Storage Project with change in capacity as well. The increase in project capacity from 2450MW (7 x 350MW) to 2700 MW (8x300MW + 2x150MW) is based on the output of topographical survey, the change in the location of the lower dam.

The Committee further observed that the dam structure of the partially constructed Nivakane Minor Irrigation Project (MIP) will be submerged due to the implementation of the proposed project. As a result, the project is now to be treated as an integrated scheme. One of the major modifications noted by the EAC in the revised proposal is the change in land requirement for the project component from 312.84 hectares to 361.82 hectares all of which area falls under non-forest land. This increase in land area is attributed to the realignment of the lower dam axis and modifications in the Full Reservoir Level (FRL) of both reservoirs.

The EAC also noted that the one-time initial filling requirement for the project has been calculated at 37.19 million cubic meters (MCM), comprising 29.57 MCM for the Pumped Storage Project (PSP) and 7.62 MCM for Water Resources Department (WRD)/irrigation purposes. Additionally, the estimated annual evaporation losses for the PSP have been worked out to be 1.60 MCM. The initial filling requirement of 29.57 MCM for the PSP is now proposed to be sourced from the Sakhari–Chiteghar Dam, instead of the Tarali Reservoir as originally planned. The Sakhari–Chiteghar Dam has a catchment area of 67 km², with a 90% dependable annual yield of 24.17 MCM and an average annual yield of 66.68 MCM.

Furthermore, from the increased storage capacity of the lower reservoir, a volume of 7.62 MCM will be allocated for irrigation purposes. This quantity is proposed to be sourced from the monsoon-season catchment yield and will be stored in the newly proposed lower reservoir for subsequent use.

The Committee took cognizance of the fact that, in the earlier proposal, the boundary of the Sahyadri Tiger Reserve was located at a distance of 0.5 km from the project site. However, as per the revised layout, this distance has now been reduced to approximately 0.150 km. In light of the project's increased proximity to the protected area, it is imperative that the PP shall obtain prior clearance from the National Board for Wildlife (NBWL) in accordance with the provisions of the Wildlife (Protection) Act, 1972 as amended in 2022.

Further, EAC noted that the sub-committee of EAC made a site visit on 26/11/2024 and made following observations:

1. It is observed that the upper reservoir site is a part of catchment of Kera River basin and similarly the proposed lower reservoir also a natural valley situated at Nivakane. Thus, construction of these reservoirs will obstruct natural water flow in the Kera and Nivakane Rivers. Thus, it is recommended to calculate the amount of annual discharge flowing through the streams (including monsoon and spring-fed discharges) and the same water discharge shall be maintained in the downstream of river channel throughout the year for supporting livelihood of lower riparian community.

2. The proposed upper reservoir's western boundary is located about 500 m from the buffer zone of Sahayari Tiger Reserve and lies within the Eco-sensitive Zone of Koyna Wildlife Sanctuary, it is necessary to get clearance from NBWL as per the Wildlife Protection Act 1972.

3. Since the proposed project involves excavation of tunnels and power house in the mountain, it is recommended to use non-explosive blasting methods for cracking rocks. This will avoid blasting induced landslides around the area.

4. Further, it is observed that the condition of the approach road to the project area, passing through the villages are not in good condition and it may become worse during the construction phase. Thus, it is recommended that the PP has to repair maintain the existing road during the construction and operational phase.

The EAC opined that the as project will be treated as integrated scheme due to involvement of pumped storage scheme and irrigation component as well, therefore standard Terms of Reference for River Valley projects shall be applicable to the project and the name of the project shall be read as follows:

"Nivakane (Integrated) Pumped Storage Project (2700MW) in an area of 361.82ha at village Marathwadi, Bharsakhale, Nivakane and Mharvand tehsil Patan, district Satara, Maharashtra by M/s Adani Green Energy Limited"

34.1.4 The EAC after examining the information submitted and detailed deliberations recommended the proposal grant of amendment in Terms of References as proposed by the PP to Nivakane (Integrated) Pumped Storage Project (2700MW) in an area of 361.82ha at village Marathwadi, Bharsakhale, Nivakane and Mharvand tehsil Patan, district Satara, Maharashtra by M/s Adani Green Energy Limited, under the provisions of EIA Notification, 2006 and as amended with subject to the following additional conditions:

i. The EIA/EMP shall be prepared as per Standard Terms of Reference applicable for River Valley & Hydro-electric projects as the modified proposal comprise irrigation component as well. The State Government consent for irrigation component shall be obtained and submitted along with EIA/EMP report.
ii. PP shall prepare detailed plan for Plantation of saplings under the tree plantation campaign **"Ek Ped Ma Ke Naam"**.
iii. EIA/EMP, collection of baseline data, other statuary clearance and the public hearing shall be carried out as per revised layout.
iv. NBWL clearance shall be obtained in view of the Sahyadri Tiger Reserve was located at a distance of 0.150 km from the project site.
v. Observations/suggestions made by the sub-committee of EAC shall be adhered.

Agenda Item No. 35.4

Renukaji Dam Project (40 MW) in an area of 1988.27 ha at Village Dadahu, District Nahan, Himachal Pradesh by M/s Himachal Pradesh Power Corporation Limited – Validity Extension of Environmental Clearance (EC) – reg.

[Proposal No. IA/HP/RIV/542156/2025; F. No. J-12011/53/2008-IA-I (R)]

35.4.1 The proposal is for grant of validity extension of environmental clearance (EC) of Renukaji Dam Project (40 MW) in an area of 1988.27 ha at Village Dadahu, District Nahan, Himachal Pradesh by M/s Himachal Pradesh Power Corporation Limited.

35.4.2: The details of the project submitted by project proponent and ascertained from the document submitted are mentioned below:

i. Renukaji Dam Project has been planned to supply drinking water to NCT of Delhi. The Project has been conceived as a storage scheme on Girl River, a tributary of Yamuna in district Sirmaur of Himachal Pradesh. The Project envisages construction of 148 m high Rock Fill Dam across River Giri near Dadahu in Sirmaur District and a Powerhouse at the toe of Dam to generate 40MW of incidental power. The project will provide 49800 ha m (0.498 BCM) of live water storage in its reservoir and a firm water supply to the tune of 23 cumecs to Delhi. The project has been declared as "National Project" in February, 2009, as such the cost (excluding power component) shall be borne by Govt. of India (Gal) and other beneficiary states in the ratio of 90: 10.

ii. The Environment clearance has been accorded by Ministry of Environment & Forests (MoEF), Govt. of India vide No. J-12011/53/2008.IA.I dated 23-10-2009. Expert Appraisal Committee (EAC) for River valley & Hydroelectric projects (MoEF&CC, New Delhi) held on dated 27-09-2018, has recommended the amendments in EC based on Land requirement i.e. to 1988.27 ha.

iii. The Environment Clearance was valid upto 23-10-2019. Therefore an online application for extension of validity of Environmental Clearance was submitted on 09-08-2019 & extension has been recommended during the 26th meeting of Expert Appraisal Committee upto a period of 3 years i.e. upto 22.10.2022.Thereafter, the proposal was considered during the 26th & 31st meeting of the Expert Appraisal Committee (EAC) on River Valley Projects. During the meeting it was noted that EC of RDP is valid upto 22-10-2023, in accordance with a MoEF & CC notification of 18-01-2021. The proposal was also considered during the 49th meeting of the Expert Appraisal Committee (EAC) on River Valley Projects on 18.07.2023. As per the Minutes of meeting the EC dated 23.10.2009 is valid till 22.10.2025 in accordance with the Ministry's OM vide dated 11.04.2022.

iv. <u>Forest Clearance</u>:

- Stage-I:- The In-Principle' approval for diversion of Forest land has been accorded for Renukaji Dam Project vide Additional Inspector General of Forests MoEF & CC, Gol letter F. No 8-41/2009-FC dated 20-02-2015.

- Stage-II : The amount of compensatory levies was deposited in State CAMPA during May, 2022. Also, additional information regarding revised list of enumeration of trees of 909ha, and newly identified CA sites with revised Compensatory Afforestation Scheme for 1818ha land was submitted along with the Compliance of Stage-I Forest Clearance during February, 2024. Thereafter all observation raised by MoEF&CC has been attended and submitted. The case for stage-II Forest Clearance was reviewed in the FAC meeting held on 16.04.2025. The stage-II Forest Clearance has been granted by MoEF&CC vide letter dated 04.06.2025.

35.4.3 The EAC during deliberations noted the following:

The proposal is for validity extension of Environmental Clearance of Renukaji Dam Project (40 MW) in an area of 1988.27 ha at Village Dadahu, District Nahan, Himachal Pradesh by M/s Himachal Pradesh Power Corporation Limited.

The project is listed at S.N.1(c) of the Schedule to the Environment Impact Assessment (EIA) Notification under category 'A' and are appraised at Central Level by Expert Appraisal Committee (EAC).

The EAC noted that the Environmental Clearance was granted by the Ministry vide letter dated 23.10.2009. The validity of said EC was extended by the Ministry vide letter dated 6.11.2019 till 22.10.2022. However, as per MoEF&CC notification S.O. 221(E) dated 18.01.2021 the period from the 1st April, 2020 to the 31st March, 2021 shall not be considered for the purpose of calculation of the period of validity of Prior Environmental Clearances granted under the provisions of this notification in view of outbreak of Corona Virus (COVID-19). Accordingly, the EC dated 23.10.2009 shall be considered as valid till 22.10.2025.

Currently, PP informed that they submitted an application for seeking the extension of validity of EC so as to continue on the project activities for the implementation. The delay in project execution is due to the following reasons:

i. Several petitions were filed by PAFs against the Environmental Clearance (EC) in the Hon'ble High Court, which were later transferred to the National Green Tribunal (NGT). The NGT dismissed the petitions in **February 2016**.
ii. An eight-member committee reviewed compliance and recommendations. Based on its report, MoEF&CC granted a **revised EC on 15.01.2019**, delaying further progress.
iii. The Interstate Agreement between the six beneficiary states (Delhi, Haryana, Uttar Pradesh, Uttarakhand, Rajasthan, and Himachal Pradesh) was signed only on 11.01.2019, which was critical for fund mobilization and project execution.
iv. Though the diversion proposal was submitted in 2008, Stage-I forest clearance was granted only in February 2015 due to multiple inspections and revisions. Funds for

Stage-II clearance were delayed until the Interstate Agreement and CCEA approval, which in turn delayed Stage-II clearance.

v. The Investment Clearance was accorded only in August 2020, and CCEA approval was received in December 2021. Without these, critical project funds (including for clearances) could not be released.

The EAC noted that the construction of the project is yet to commence and PP informed that construction is expected to begin by December 2025 and is likely to be completed by 2031, subject to unforeseen hindrances or delays. The EAC further observed that as per the Ministry's Notification S.O. 1807(E) dated 12.04.2022, the environmental clearance granted to River Valley project shall be valid for a period of thirteen years and may be extended in respect of valid Environmental Clearance, by the regulatory authority concerned by a maximum period of two years.

35.4.4 The EAC based on the information submitted and as presented during the meeting, recommended the proposal for grant of the extension of validity of EC dated 23.10.2009 for 2 years i.e. up to 22.10.2027 for Renukaji Dam Project (40 MW) in an area of 1988.27 ha at Village Dadahu, District Nahan, Himachal Pradesh by M/s Himachal Pradesh Power Corporation Limited, under the provisions of EIA Notification, 2006, as amended. After the extended period of EC validity PP shall obtain fresh environmental clearance as per EIA Notification, 2006 as amended.

ANNEXURE I

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.	Dr. J. A. Johnson	Member Representative of Wildlife Institute of India (WII)
9.	Dr. A.K. Sahoo	Member Representative of CIFRI
10.	Shri Yogendra Pal Singh	Member Secretary

APPROVAL OF THE CHAIRMAN

Re: Draft MOM of the EAC (RVHEP) meeting held on 11.07.2025-reg.

Chakrapani GovindaJoseph < govind.chakrapani@es.iitr.ac.in >
Fri, 25 Jul 2025 4:00:54 PM +0530

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