



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



Minutes of 48TH MEETING OF THE EXPERT APPRAISAL COMMITTEE meeting
g River Valley and Hydroelectric Projects held from 12/02/2026 to 12/02/2026 Date: 25/02/2026
026

MoM ID: EC/MOM/EAC/109724/2/2026
Agenda ID: EC/AGENDA/EAC/109724/2/2026
Meeting Venue: N/A
Meeting Mode: Virtual
Date & Time:

12/02/2026	10:30 AM	05:30 PM
------------	----------	----------

1. Opening remarks

The 48th 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 12th February, 2026 through virtual mode, under the Chairmanship of Prof. G. J. Chakrapani.

2. Confirmation of the minutes of previous meeting

The Minutes of the 47th EAC meeting held on 28th and 30th January, 2026 were confirmed with correction in the following agenda items:
It was noted that the recommendations of the EAC under sub-para 42.4.4 were made for Gosaintari Close loop Pumped Storage Project (920 MW); however, due to typographical error the project name got mentioned as Rajupalem PSP.
The sub point 47.3.3 shall be read as follows: "...The EAC noted that the total land requirement for the Gosaintari PSP is estimated to be around 283.03 ha, out of which 54.61 ha is non-forest land and 228.42 ha is forest land. Diversion of forest land for non-forest purpose will be involved for construction of project components. However, it was observed that the application for Stage-I Forest Clearance (FC) has not yet been submitted, which necessitates further action from the Project Proponent. The project is located at a distance of approximately 3.8 km from Rajauli (Nawada) Wildlife Sanctuary, and the Eco-Sensitive Zone (ESZ) boundary, as per the draft ESZ

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

Further, the EAC while recommending additional/specific ToR in sub para of [A] Environmental Management and Biodiversity Conservation: at S.No vii the forest land got mentioned as 73.30 ha instead of 228.42 ha.

The additional/specific ToR at S.No. vii shall be read as “...Explore the possibilities for reducing the Forest land requirement. The application for obtaining Stage I FC for 228.42 ha of forest land involved in the project shall be submitted within stipulated time..”

-

-

It was noted that the recommendations of the EAC under sub-para 47.2.3, the EMP cost is mentioned as Rs 16,372 Lakhs instead of Rs. 15943.98. Now, the 12th para of the EAC recommendations may be read as under:

“...The EAC opined that the EMP cost i.e. Rs 15943.98 Lakhs (excluding Resettlement & rehabilitation plan and Compensatory Afforestation plan) and recurring cost of Rs. 418 Lakhs may be implemented in a time bound manner with following components:...”

-

3. Details of proposals considered by the committee

Day 1 -12/02/2026

3.1. Agenda Item No 1:

3.1.1. Details of the proposal

Velimalai Pumped Storage Hydro Electric Project (1100 MW) by Tamil Nadu Green Energy Corporation Limited located at KANNIYAKUMARI, TAMIL NADU			
Proposal For		Fresh ToR	
Proposal No	File No	Submission Date	Activity Sub-Activity (Schedule Item)
IA/TN/RIV/556996/2026	J-12011/06/2026-IA.I(R)	04/02/2026	River Valley/Irrigation projects RVHEPs with Pump Storage Projects (1(c))

3.1.2. Project Salient Features

The proposal is for grant of Terms of Reference (ToR) to the project Velimalai Pumped Storage Hydro Electric Project (1000 MW) in an area of 159.25 Ha located at Village Alur and Velimalai, Sub District Kalkulam, District Kanniyakumari, Tamil Nadu by M/s Tamil Nadu Green Energy Corporation Limited.

48.1.2 The Project Proponent and the accredited Consultant M/s. Aadhi Boomi Mining and Enviro Tech (P) Ltd., No. 3/216, K.S.V Nagar, Narasothipatti, Salem-636004, Tamil Nadu made a detailed presentation on the salient features of the project and informed that:

- i. Velimalai Hydro Electric Project has been envisaged as a pumped storage project. The proposed site of the project is located in Kanniyakumari district of Tamil Nadu.
- ii. The proposed Velimalai PSP is an off-stream closed loop pumped hydro scheme. It comprises an underground powerhouse with an installed capacity of 1100 MW having 4 units of 275 MW,

envisages utilization of available head of upper and lower reservoir at an elevation of El 856.00 m (at FRL) and El 158.00 m (at FRL) respectively.

iii. The Project comprises of development of upper reservoir with a gross storage capacity of about 4.4 MCM. Upper reservoir to be constructed with maximum dam height of ≈ 53 m (from riverbed level) to create the desired storage. The lower reservoir is with a gross storage capacity of about 4.91 MCM. Lower reservoir to be constructed with maximum dam height of ≈ 51 m (from riverbed level) to create the desired storage. The scheme of operation for the project is with 6.00 hr of peak hour generation per day and 6.94 hr for pumping back the water to the upper reservoir. Water will be used cyclically for energy storage and discharge. Evaporation losses and re-circulation losses if any shall be recouped periodically from a source other than the rainfall yield of catchment of non-perennial streams/nallahs.

iv. The Geographical co-ordinate of the proposed upper dam is located near Maruvattar Kannu Village of Kanyakumari district with latitude of $8^{\circ}15'18.66''N$ & Longitude of $77^{\circ}23'21.97''E$ and the lower dam is at Madatattuvilai village of Kanyakumari district with latitude $8^{\circ}13'50.17''N$, longitude $77^{\circ}23'12.69''E$ in Tamil Nadu.

Non-Forest Land [A]	95.18 Ha
Forest Land [B]	64.07 Ha
Total Land [A+B]	159.25 Ha

Table: Land Requirement for Various Alternative Layouts (Ha)

S. No	Project Component	Alternative 1	Alternative 2	Alternative 3
1	Site Office	0.52	0.50	0.50
2	Concrete Batching Plan, Crusher, Cement at Upper Reservoir	0.00 (Inside Upper Reservoir)	0.00 (Inside Upper Reservoir)	0.00 (Inside Upper Reservoir)
3	Concrete Batching Plan, Crusher, Cement at Lower Reservoir	0.00 (Inside Lower Reservoir)	0.00 (Inside Lower Reservoir)	0.00 (Inside Lower Reservoir)
4	Stacking Area	0.00 (Inside Upper Reservoir)	0.00 (Inside Upper Reservoir)	0.00 (Inside Upper Reservoir)
5	Magazine Area	0.51	0.50	0.50
6	Labour Camp	1.63	2.30	2.30
7	Colony Area	3.53	3.70	3.70
8	Muck Disposal Area near Upper Reservoir	14.14	13.0	14.0
9	Muck Disposal Area near Lower Reservoir	29.10	22.0	24.0
10	Upper Reservoir	27.88	29.0	29.0

11	Lower Reservoir	26.98	47.0	26.0
12	Approach Road	27.78	27.0	32.0
13	Water Conductor System, PH, Adit	26.44	14.0	25.0
14	Water filling Arrangement infrastructure	0.73	-	-
Total		159.25 Ha	159.0 Ha	157.0 Ha
Name of the Proposal		Velimalai Pumped Storage Hydro-Electric Project (1000 MW) in Kanyakumari District, Tamil Nadu		
Location (Including coordinates)		Alur and Velimalai Village, Kalkulam Taluk, Kanyakumari District, Tamil Nadu Coordinates: Upper Reservoir: 8°15'19.28"N & 77°22'31.14"E Lower Reservoir: 8°13'50.17"N & 77° 23' 12.69"E		
Inter- state issue involved		NO		
Seismic zone		Zone -III: Moderate Damage Risk Zone as per BMT PC, Vulnerability atlas Seismic zone of India IS: 18 93-2002.		
Category of the project		A		
Provisions		Sector 1(c) River Valley - Hydro Electric		
Capacity / Cultural command area (CCA)		175 Ha		
Attracts the General Conditions (Yes/No)		Yes		
Additional information (if any)		-		
Powerhouse Installed Capacity				
Generation of Electricity Annually				
No. of Units				
Additional information (if any)				
Cost of project		562400/- lakhs		

Total area of Project	159.25 Ha
Height of Dam from River Bed (EL)	Upper Reservoir – 56.0 m Lower Reservoir – 62.50 m
Length of Tunnel/Channel	10.5 km
Details of Submergence area	Forest Land -25.90 Ha Non-Forest Land – 28.96 Ha
Types of Waste and quantity of generation during construction/ Operation	Shall be carried out during EIA/EMP studies
E-Flows for the Project	The classification of the project as an Off stream Closed Loop PSP aligns with the understanding that no water from the catchment will be consumed or diverted for storage in the proposed reservoirs, thus minimizing the potential for disruption to the natural flow regime of the catchment. Hence, there will be no impact on the E-flow of the upper and lower reservoir catchment
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then a) E-flow with TOR /Recommendation by EAC as per CIA&CC study of River Basin. b) If not the E-Flows maintain criteria for sustaining river ecosystem.	No
No. of trees/saplings proposed in view of 'Ek Ped Maa Ke Naam' campaign	
No. of proposed disposal area/ (type of land-Forest/Pvt. land)	Shall be carried out during EIA/EMP studies
Muck Management Plan	Muck management plan will be incorporated in EIA/EMP report.
Monitoring mechanism for Muck Disposal	Shall be carried out during EIA/EMP studies
Private Land	37.90 Ha
Government land/Forest Land	51.47 Ha/64.07 Ha
Patta Land	5.80 Ha

Total Land	159.25 Ha	
Submergence area/Reservoir area	54.86 Ha	
Additional information (if any)	-	
Forest Land/ Protected Area/ Environmental Sensitivity Zone	Yes/No	Details of Certificate / letter/Remarks
Reserve Forest/Protected Forest Land	Yes	Application under process
National Park	No	
Wildlife Sanctuary	No	
Particulars	Letter no. and date	
Certified EC compliance report (if applicable)	It's newly proposed PSP	
Status of Stage-I FC		
Additional detail (If any)		
Is FRA (2006) done for FC-I		
Particulars	Details	
Details of consultant	Dr.S.Suriyakumar Aadhi Boomi Mining and Enviro Tech (P) Ltd., No. 3/216, K.S.V. Nagar, Narasothipatti, Salem-636004, Tamil Nadu. Mobile No: +91-9842729655 Mail id: suriyakumarsemban@gmail.com abmenvirotech@gmail.com NABET Certif. No: NABET/EIA/24-27/0365 Validity up to 23.10.2027	
Project Benefits	Provides Employment, power for industrial growth and domestic supply, and also balancing the power grid. Velimalai pumped storage project is a technically feasible project and will be beneficial in meeting the peaking requirement of energy during evening/night in the beneficiary state i.e., Tamil Nadu.	
Status of other statutory clearances	Application under process.	
R&R details	Rehabilitation and Resettlement (R&R) applicable for 21.85 ha of land which is proposed to be acquired un	

	der Tamil Nadu Acquisition of Land for Industrial Purp oses Act, 1997 (TN Act, 1997)
Additional detail (If any)	A non-perennial stream originating near the Upper Re servoir joins another non-perennial stream near the P erunchilambu village. It further passes through a tunn el and eventually joins the Paralayar River. The Mambazhathuraiyar reservoir scheme is located i n the immediate downstream of the project site.

3.1.3. Deliberations by the committee in previous meetings

N/A

3.1.4. Deliberations by the EAC in current meetings

<p>The EAC during deliberations noted the following:</p> <ul style="list-style-type: none"> · 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 Velimalai Pumped Storage Hydro Electric Project (1000 MW) in an area of 159.25 Ha located at Village Alur and Velimalai, Sub District Kalkulam, District Kanniyakumari, Tamil Nadu by M/s Tamil Nadu Green Energy Corporation Limited. · The project/activity falls under Category A of item 1(c), 'River Valley Projects,' as per the Schedule of the Environmental Impact Assessment Notification, 2006, and requires appraisal at the Central level by the sectoral EAC in the Ministry. · During the deliberations the committee noted that Lower Reservoir is located on non-perennial natural small stream/nallah. Since the reservoir is located on non-perennial natural small stream/nallah, the committee opined that the project shall be categorized as an open-loop project rather than a closed-loop PSP. The EAC was of the view that the non-perennial small streams/nallahs play an important role in ecosystem stability through supporting unique, adapted communities and provide critical habitat, especially during dry periods. They are hotspots for biodiversity and vital for maintaining ecosystem services. · Based on the KML file and the submission made by the PP, the EAC observed that the nallah/small stream contribute water to the dam located downstream of the proposed lower reservoir, which in turn supplies water to the reservoir system. In view of the above, it was opined that the PP shall ensure uninterrupted release of catchment runoff to the downstream of the lower reservoir so as to maintain the natural flow regime and safeguard downstream water availability. Accordingly, the EAC advised to prepare suitable action plan for sustenance of the natural nallahs/streams after having detailed analysis of catchment yield, requirement of water for maintaining ecosystem services and availability of water to the downstream dam. · The EAC noted that the total land requirement for the proposed PSP is estimated to be around 159.25 ha, out of which 95.18 ha is non-forest land and 64.07 ha is forest land. Diversion of forest land for non-forest purpose will be involved for construction of project components. However, it was observed that the application for Stage-I Forest Clearance (FC) has not yet been submitted, which necessitates further action from the Project Proponent. Water requirement for initial filling of two newly proposed reservoirs works to be about 5.6 MCM with annual recouplement of reservoirs due to evaporation works out to about 0.5 MCM. The

state government vide letter dated 16.06.2025 approved water filling requirement from Paraliyar river.

- The EAC during the meeting observed that the proposed project is located at a distance of approximately 1.63 Km from ESZ boundary of Kanyakumari Wildlife Sanctuary Boundary. Declaration of Kanyakumari Wildlife Sanctuary was notified under section 18(1) of Wildlife (Protection) Act, 1972 vide G.O. No. 128 (E&F) Dept. Dated: 20.11.2007.

The EAC based on the information submitted and as presented during the meeting, recommended the proposal for grant of Specific ToR issued by the Ministry for open Loop Pumped Storage Projects vide OM dated 14.08.2023 for conducting EIA study for proposed construction of the project for Velimalai Pumped Storage Hydro Electric Project (1000 MW) in an area of 159.25 Ha located at Village Alur and Velimalai, Sub District Kalkulam, District Kanniyakumari, Tamil Nadu by M/s Tamil Nadu Green Energy Corporation Limited, under the provisions of EIA Notification, 2006, as amended along with the additional/specific ToR.

3.1.5. Recommendation of EAC

Recommended

3.1.6. Details of Terms of Reference

3.1.6.1. Specific

Miscellaneous:	
1.	Both capital and recurring expenditure under EMP shall be submitted.
2.	Pre-DPR Chapters viz., Hydrology, Layout Map and Power Potential Studies duly appraised by CWC/CEA shall be submitted.
3.	The PP should submit the photograph of monitoring stations & sampling locations. The photograph should bear the date, time, latitude & longitude of the monitoring station/sampling location. In addition to this PP should submit the original test reports and certificates of the labs which will analyze the samples.
4.	Drone video of project site shall be recorded and to be submitted.
5.	Detailed plan to restore wider roads and convert them into narrow up to 10m after construction of the project.
6.	Specific Terms of Reference (ToRs) issued by the Ministry vide Office Memorandum No. F. No. IA3-22/33/2022-IA.III dated 14.08.2023 for Pumped storage projects shall be used for preparation of EIA/ EMP reports.
7.	As per Ministry's OM dated 1 st 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.	The EIA/EMP shall include a detailed socio-economic assessment of the tribal population in the project-affected area based on primary data and community consultations. A Tribal Development Plan, prepared in consultation with the District Administration and Tribal Welfare Department, shall be submitted along with the EIA report.
4.	PP shall submit the credible documents to show the status of land acquisition w.r.t project site from/through the concerned State Government as required under Ministry's OM dated 7 th October, 2014 for the project land to be acquired.
5.	Land acquired for the project shall be suitably compensated in accordance with the law of

	the land with the prevailing guidelines. Private land (if any) shall be acquired as per provisions of Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013. Budget earmarked for R&R, CSR shall not be included in the cost of EMP.
Environmental Management and Biodiversity Conservation:	
1.	PP shall obtain MoU signed between from the State Government and PP in view of proposed PSP in District Kanniyakumari.
2.	A detailed action plan for large scale plantation of native species of plant sapling within 10 km radius of the project shall be prepared in consultation with State Forest Department. The monitoring mechanism to ensure the survival of saplings shall be finalized in consultation with ICFRE.
3.	The PP will submit 10 years water availability data certified by the CWC/State Water Resource Department for quantity of water that is received annually by the small stream on which lower reservoir is proposed to be constructed.
4.	The PP will submit a detailed plan and monitoring mechanism for releasing the self - catchment water of small stream draining in to river along with action plan for conservation and protection of other streams/rivulets draining in to upper and lower reservoirs.
5.	Explore the possibilities for reducing the Forest land requirement. The application for obtaining Stage I FC for 64.07 ha of forest land involved in the project shall be submitted within stipulated time.
6.	Muck disposal site and other components such as Township, site office, Stacking area and batching plant shall be located outside the forest area.
7.	Certificate and certified map from Chief Wildlife Warden shall be submitted mentioning that project boundary is not falling in any Ecological Sensitive Area, Wildlife Sanctuary/Tiger/elephant corridor/Critically polluted area within 10 km of Project site.
8.	Transportation Plan for transporting construction materials shall be submitted. Separate chapter for risk assessment of such transportation through/within proposed the Wildlife Sanctuary shall be included in the EIA report, if any.
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 (CO ₂ , CH ₄ 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.
1	Quantitative values of Impact modelling of environmental parameters shall be submitted for

3.	during construction and operation. Also, mitigation measures shall be submitted in terms of construction and operation phase.
1 4.	Conducting site-specific ecological study emphasizing on riverine ecology viz. fishes diversity, fish migration, habitat and aquatic biota due to construction PSP. Impact assessment on the fish diversity based on the hydrological alteration at the water drawing sources shall be studied.
1 5.	Action plan for survival or diversion of the rivulets/stream, if any, leading to join river shall be submitted.
1 6.	Impact zone decided prior to base line data generation and accordingly, sampling location shall be finalized. Baseline data as mentioned in Specific ToR shall be collected for preparation of EIA/ EMP report along with soil characteristics which shall be studied at minimum 10 locations. The ground water level at 10 locations shall be measured in project area in all three seasons.
1 7.	A study shall be carried out on impact of project activity on the aquatic and terrestrial ecosystem, within project area classifying the impact zones (highly impact/low impact zone) based on seasonal variations and covering the aspects related to impacts on aquatic ecosystem/ primary productivity due to quantity of water to be lifted for power generation and thermal stratification. Accordingly, Environment Management plan shall be prepared.
1 8.	Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP.
1 9.	Scope of watershed development in the 10 km radius of the project shall be studied in consultation with Indian Council of Agriculture Research (ICAR) Institutes/ Expert Govt. institutions and accordingly a detailed Water Shed Development Plan shall be prepared and incorporated in EIA/ EMP report.
2 0.	Details of mineral zone, if any, in the study area, certified by Geological Survey of India or any other concerned Government Organization shall be submitted. The project area should not come up on any critical mineral zone, the same shall to be verified by GSI/NMDC.
2 1.	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

	<p>presence of such species should be ascertained from secondary sources by a proper literature survey for the said area including referring to field guides which are now available for many taxonomic groups in India. Even literature from studies/surveys in the larger landscapes which include the study area for the concerned project must be referred to, since most species from adjoining catchments is likely to be present in the catchments in question. In fact such literature from the entire state can be referred to. Once a listing of possible r.e.t. species from the said area is developed, species specific methodologies should be adopted to ascertain their presence in the study area which would be far more conclusive as compared to the conventional sampling. If the need be, modern methods like camera trapping can be resorted to, particularly for areas in the eastern Himalayas and for secretive/nocturnal species. A detailed listing of the literature referred to, for developing lists of r.e.t. species should be provided in the EIA reports.</p>
4.	<p>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).</p>
<p>Components of the EIA Study: Various aspects to be studied and provided in the EIA/EMP report are as follows:</p>	
1.	<p>null</p>
2.	<p>null</p>
3.	<p>Physical geography, Topography, Regional Geological aspects and structure of the Catchment.</p>
4.	<p>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.</p>
5.	<p>Landslide zone or area prone to landslide existing in the study area should be examined.</p>
6.	<p>Presence of important economic mineral deposit, if any.</p>
7.	<p>Justification for location & execution of the project in relation to structural components (dam /barrage height).</p>
8.	<p>Impact of project on geological environment.</p>
9.	<p>null</p>
10.	<p>Meteorology (viz. Temperature, Relative humidity, wind speed/direction etc.) to be collected from nearest IMD station.</p>
11.	<p>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 (NO_x) in the study area at 5-6 Locations.</p>
12.	<p>Existing Noise Levels and traffic density in the study area at 5-6 Locations.</p>
13.	<p>null</p>

1 4.	Soil classification, physical parameters (viz., texture, Porosity, Bulk Density and water holding capacity) and chemical parameters (viz. pH, electrical conductivity, magnesium, calcium, total alkalinity, chlorides, sodium, potassium, organic carbon, available potassium, available phosphorus, SAR, nitrogen and salinity, etc.) at @ one sample/ha of command area.
1 5.	null
1 6.	(i) Generation of thematic maps viz, slope map, drainage map, soil map, land use and land cover map, etc. Based on these, thematic maps, an erosion intensity map should be prepared.
1 7.	null
1 8.	History of the ground water table fluctuation in the study area.
1 9.	Water quality for both surface water and ground water for (i) Physical parameters (pH, temperature, electrical conductivity, TSS); (ii) Chemical parameters (Alkalinity, Hardness, BOD, COD, NO ₂ , PO ₄ , Cl, SO ₄ , Na, K, Ca, Mg, Silica, Oil & Grease, phenolic compounds, residual sodium carbonate); (iii) Bacteriological parameter (MPN, Total coliform) and (iv) Heavy Metals (Pb, As, Hg, Cd, Cr-6, total Cr, Cu, Zn, Fe) (6 locations).
2 0.	Delineation of sub and micro-watersheds, their locations and extent based on the All India Soil and Land Use Survey of India (AISLUS), Department of Agriculture, Government of India. Erosion levels in each micro-watershed and prioritization of micro-watershed through silt yield index (SYI) method of AISLUS
2 1.	Hydro-Meteorology of the project viz. precipitation (snowfall, rainfall), temperature, relative humidity, etc. Hydro-meteorological studies in the catchment area should be established along-with real time telemetry and data acquisition system for inflows monitoring.
2 2.	Run off, discharge, water availability for the project, sedimentation rate, etc.
2 3.	Basin characteristics
2 4.	Catastrophic events like cloud bursts and flash floods, if any, should be documented.
2 5.	For estimation of Sedimentation Rate, direct sampling of river flow is to be done during the EIA study. The study should be conducted for minimum one year. Actual silt flow rate to be expressed in ha-m km ² year ⁻¹ .
2 6.	Set up a G&D monitoring station and a few rain gauge stations in the catchment area for collecting data during the investigation.
2 7.	Flow series, 10 daily with 90%, 75% and 50% dependable years discharges.
2 8.	Information on the 10-daily flow basis for the 90 per cent dependable year the flow intercepted at the dam, the flow diverted to the power house and the spill comprising the environmental flow and additional flow towards downstream of the dam for the project may be given.

2 9.	The minimum environmental flow shall be 20% of the flow of four consecutive lean months of 90% dependable year, 30% of the average monsoon flow. The flow for remaining months shall be in between 20-30%, depending on the site specific requirements. A site specific study shall be carried out by an expert organization.
3 0.	Sedimentation data available with CWC may be used to find out the loss in storage over the years.
3 1.	Hydrological studies/data as approved by CWC shall be utilized in the preparation of EIA/EMP report. Actual hydrological annual yield may also be given in the report. Sedimentation data available with CWC may be used to find out the loss in storage over the years.
3 2.	A minimum of 1 km distance from the tip of the reservoir to the tail race tunnel should be maintained between upstream and downstream projects.
3 3.	Besides primary studies, review of secondary data/literature published for project area on flora & fauna including RET species shall be reported in EIA/EMP report.
3 4.	null
3 5.	Characterization of forest types (as per Champion and Seth method) in the study area and extent of each forest type as per the Forest Working Plan.
3 6.	Documentation of all plant species i.e. Angiosperm, Gymnosperm, Pteridophytes, Bryophytes (all groups).
3 7.	General vegetation profile and floral diversity covering all groups of flora including lichens and orchids. A species wise list may be provided.
3 8.	Assessment of plant species with respect to dominance, density, frequency, abundance, diversity index, similarity index, importance value index (IVI) , Shannon Weiner index etc. of the species to be provided. Methodology used for calculating various diversity indices along with details of locations of quadrates, size of quadrates etc. to be reported within the study area in different ecosystems.
3 9.	Existence of National park, Sanctuary, Biosphere Reserve etc in the study area, if any, should be detailed.
4 0.	Economically important species like medicinal plants, timber, fuel wood etc.
4 1.	Details of endemic species found in the project area.
4 2.	Flora under RET categories should be documented using International Union for the Conservation of Nature and Natural Resources (IUCN) criteria and Botanical Survey of India's Red Data list along-with economic significance. Species diversity curve for RET species should be given.
4 3.	Cropping pattern and Horticultural Practices in the study area.
4 4.	null

4 5.	Fauna study and inventorisation should be carried out for all groups of animals in the study area. Their present status alongwith Schedule of the species.
4 6.	Documentation of fauna plankton (phyto and zooplankton), periphyton, benthos and fish should be done and analysed.
4 7.	Information (authenticated) on Avi-fauna and wildlife in the study area.
4 8.	Status of avifauna their resident/ migratory/ passage migrants etc.
4 9.	Documentation of butterflies, if any, found in the area.
5 0.	Details of endemic species found in the project area.
5 1.	RET species-voucher specimens should be collected along-with GPS readings to facilitate rehabilitation. RET faunal species to be classified as per IUCN Red Data list and as per different schedule of Indian Wildlife (Protection) Act, 1972.
5 2.	Existence of barriers and corridors, if any, for wild animals.
5 3.	Compensatory afforestation to compensate the green belt area that will be removed, if any, as part of the proposed project development and loss of biodiversity.
5 4.	Collection of primary data on agricultural activity, crop and their productivity and irrigation facilities components.
5 5.	For categorization of sub-catchment into various erosion classes and for the consequent CAT plan, the entire catchment (Indian Portion) is to be considered and not only the directly the draining catchment.
5 6.	Documentation of aquatic fauna like macro-invertebrates, zooplankton, phytoplanktons, benthos etc.
5 7.	Fish and fisheries, their migration and breeding grounds.
5 8.	Fish diversity composition and maximum length & weight of the measured populations to be studies for estimation of environmental flow.
5 9.	Conservation status of aquatic fauna.
6 0.	Sampling for aquatic ecology and fisheries and fisheries must be conducted during three seasons Pre-monsoon (summer), monsoon and winter. Sizes (length & weight) of important fish species need to be collected and breeding and feeding grounds should also be identified along the project site or in vicinity.
6 1.	Collection of baseline data on human settlements, health status of the community and existing infrastructure facilities for social welfare including sources of livelihood, job opportunities and safety and security of workers and surroundings population.

6 2.	Collection of information with respect to social awareness about the developmental activity in the area and social welfare measures existing and proposed by project proponent.
6 3.	Collection of information on sensitive habitat of historical, cultural and religious and ecological importance.
6 4.	The socio-economic survey/ profile within 10 km of the study area for demographic profile; Economic Structure; Developmental Profile; Agricultural Practices; Infrastructure, education facilities; health and sanitation facilities; available communication network etc.
6 5.	Documentation of demographic, Ethnographic, Economic Structure and development profile of the area.
6 6.	Information on Agricultural Practices, Cultural and aesthetic sites, Infrastructure facilities etc.
6 7.	Information on the dependence of the local people on minor forest produce and their cattle grazing rights in the forest land.
6 8.	List of all the Project Affected Families with their name, age, educational qualification, family size, sex, religion, caste, sources of income, land & house holdings, other properties, occupation, source of income, house/land to be acquired for the project and house/land left with the family, any other property, possession of cattle, type of house etc.
6 9.	Special attention has to be given to vulnerable groups like women, aged persons etc. and to any ethnic/indigenous groups that are getting affected by the project.
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.
1 0.	Water pollution due to disposal of sewage
1	Water pollution from labour colonies/ camps and washing equipment.

1.	
1 2.	Adverse impact on land stability, catchment of soil erosion, reservoir sedimentation and spring flow (if any) (a) due to considerable road construction / widening activity (b) interference of reservoir with the inflowing stream (c) blasting for commissioning of HRT, TRT and some other structures.
1 3.	Changes in land use / land cover and drainage pattern
1 4.	Immigration of labour population
1 5.	Quarrying operation and muck disposal
1 6.	Changes in land quality including effects of waste disposal
1 7.	River bank and their stability
1 8.	Impact due to submergence.
1 9.	Impact on forests, flora, fauna including wildlife, migratory avi-fauna, rare and endangered species, medicinal plants etc.
2 0.	Pressure on existing natural resources
2 1.	Deforestation and disturbance to wildlife, habitat fragmentation and wild animal's migratory corridors
2 2.	Compensatory afforestation-identification of suitable native tree species for compensatory afforestation and green belt.
2 3.	Impact on fish migration and habitat degradation due to decreased flow of water
2 4.	Impact on breeding and nesting grounds of animals and fish.
2 5.	Impact on local community including demographic profile.
2 6.	Impact on socio-economic status
2 7.	Impact on economic status.
2 8.	Impact on human health due to water / vector borne disease

29.	Impact on increase traffic
30.	Impact on Holy Places and Tourism
31.	Impacts of blasting activity during project construction which generally destabilize the land mass and leads to landslides, damage to properties and drying up of natural springs and cause noise population will be studied. 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. Detailed muck transportation plan delineating the path ways, number of trucks, quantity of muck to be transported along with monitoring mechanism using latest technology, shall be prepared.
12.	Restoration Plan for Quarry Sites and landscaping of colony areas, working areas, roads etc. Details of the coarse/fine aggregate/clay etc. required for construction of the project and the rock/clay quarries/river shoal sites identified for the project should be discussed along-with the Engineering and Biological measures proposed for their restoration with physical and financial details. Layout map showing quarry sites vis-à-vis other project components, should be prepared.
13.	Resettlement and Rehabilitation Plan needed to be prepared on the basis of findings of the socio-economic survey coupled with the outcome of public consultation held. The R&R package shall be prepared after consultation with the representatives of the project affected families and the State Government. Detailed budgetary estimates are to be provided. Resettlements site should be identified. The plan will also incorporate community development strategies.
14.	Public Health Delivery Plan including the provisions of drinking water supply for local population shall be in the EIA/EMP Report. Status of the existing medical facilities in the project area shall be discussed. Possibilities of strengthening of existing medical facilities, construction of new medical infrastructure etc. will be explored after assessing the need of the labour force and local populace.
15.	Local Area Development Plan to be formulated in consultation with the Revenue Officials and Village Panchayats. Appropriate schemes shall be prepared under EMP for the Local Area Development Plan with sufficient financial provisions.
16.	Labour Management Plan for their Health and Safety.
1	Sanitation and Solid waste management plan for domestic waste from colonies and labour camps etc.

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

3.2. Agenda Item No 2:

3.2.1. Details of the proposal

Chitawad Barrage Major Irrigation Project by Mayank Singh located at UJJAIN, MADHYA PRADESH			
Proposal For		Fresh ToR	
Proposal No	File No	Submission Date	Activity Sub-Activity (Schedule Item)
IA/MP/RIV/567218/2026	J-12011/07/2026-IA.I(R)	04/02/2026	River Valley/Irrigation projects Irrigation Projects (1(c))

3.2.2. Project Salient Features

null

3.2.3. Deliberations by the committee in previous meetings

N/A

3.2.4. Deliberations by the EAC in current meetings

<p>The Member Secretary informed that, the representative of the PP vide email/letter dated 10.02.2026 expressed its inability to attend the EAC meeting due to unavoidable circumstances, and requested for deferment. Accordingly, the EAC decided to defer the proposal with advisory to PP to avoid such deferment.</p> <p>The proposal was deferred on the above lines.</p>

3.2.5. Recommendation of EAC

Deferred for ADS

3.3. Agenda Item No 3:

3.3.1. Details of the proposal

Savitri Pumped Storage Project (2400 MW) by NHPC LIMITED located at SATARA, MAHARASHTRA			
Proposal For		Fresh ToR	
Proposal No	File No	Submission Date	Activity Sub-Activity (Schedule Item)
IA/MH/RIV/551075/2025	J-12011/43/2025-IA.I(R)	21/11/2025	River Valley/Irrigation projects Standalone Pump Storage Projects (1(c))

3.3.2. Project Salient Features

The proposal is for grant of Terms of Reference (TOR) to the project Savitri Open Loop Pumped Storage Project (2400 MW) in an area of 310.76 Ha located at Village Javali, Dare, Haroshi, Karanje etc, Sub-district Poladpur and Mahabaleshwar, District Satara and Raigarh, Maharashtra by M/s NHPC limited.

48.3.2 The Project Proponent and the accredited Consultant M/s. EQMS Global Pvt. Ltd made a detailed presentation on the salient features of the project and informed that:

- i. The proposed Savitri Pumped Storage Project (2400MW), a self-identified off stream open loop project, is being developed by the NHPC around two adjacent valleys drained by the Koyna River and Savitri River in District Satara, and Raigad, Maharashtra.
- ii. The project, conceived as an open loop project of installed capacity 2400 MW/15072MWH pumped storage component with 6.28 hours storage capacity for peak power generation shall be located in District Satara and Raigad, Maharashtra. The project is being developed by the NHPC around two adjacent valleys drained by the Koyna River and Savitri River in District Satara, and Raigad, Maharashtra.
- iii. The upper and lower dams for the PSP are proposed to be newly constructed. The proposed upper dam (embankment/GFRD) is located across Koyna River, which is a tributary of Krishna River, in Jaoli village near Mahabaleshwar, Satara district. The proposed lower dam (concrete gravity) is located across Savitri River near Lahulase village, Tehsil Poladpur, Raigad district.
- iv. The project will generate 2400 MW (8x300MW) by utilizing a design discharge of 60.74 cumec/turbine with rated head of 561.67m. The PSP will utilize 2560 MW(8x320MW) to pump 51.33 cumec/pump from lower reservoir to the upper reservoir. The scheme of operation for the project is 6.28 hours of peak power per day and 7.43 hours for pumping back the water through TRT-reversible turbines-pressure shaft-HRT to the upper reservoir.
- v. Water will be used cyclically for energy storage and discharge. For reservoir operation the project contemplates non-consumptive re-utilization of 11.23 MCM of water for recirculation among two proposed reservoirs. The one-time filling requirement of 19.58 MCM and periodical recoupment for losses(1.47MCM) will be met from yield generated within lower dam catchment area (18.94 sq.km) and used cyclically for energy storage and discharge.
- vi. The geographical co-ordinates of the project are:

Upper Reservoir Coordinates: 17° 56' 47.04" N & 73° 37' 13.73" E
 Lower Reservoir Coordinates: 17° 57' 56.59" N & 73° 35' 11.10" E

vii. **Land requirement:** Total land requirement of the project is 310.76 ha (Forest: 55.64 ha; Government: 170.12 ha; Private 85.00 ha). The private land shall be acquired as per provisions of RFCTLARR Act, 2013.

viii. **Demographic details in 10 km radius of project area:** As per the Census of India 2011, the total population 72 villages of study area comprising of total 9799 households are 42889 composed of 21428 males and 21461 females with sex ratio of 1002. The cast wise composition of the total population of the project affected villages is made up of scheduled cast population of 2808 (6.55%) and Scheduled Tribe population of 3412 (7.96%). The literate population is 30658(80.06%) of which the male and female population is 16881(88.20%) and 13777 (71.92%) respectively. The gender gap for literacy rate is 16.28 %. The total working population is 17756 (41.40%) which comprises of main workers 15107(35.22%) and marginal workers 2649(6.18%).

(a) Municipal Solid Waste (MSW) likely to be generated during construction and operation shall be 38.7 Ton/annum and 25.5 ton/annum respectively which shall be managed as per Solid Wastes Management Rules, 2016.

(b) Hazardous waste: It inter alia includes burnt mobile oil and greases (10 ton/annum) from vehicles and construction machinery and equipment which shall be handled and disposed of through authorized dealer as per Hazardous and other Wastes (Management & Transboundary Movement) Rules, 2016.

(c) The total quantity of muck / debris, to be generated due to the project, shall be 41.56 lakh cum, of which 33.84 lakh cum shall be consumed on project work and balance 7.42 lakh cum (10.25cum with 38% swell factor) shall be dumped at designated muck sites. Muck piles shall be well supported at base by retaining walls and multi-storied plantation will be developed using grasses, shrubs, bushes, and trees in a site-specific manner.

Project details:

Name of the Project	Savitri PSP (2400 MW), Districts: Satara & Raigad Maharashtra Proposal
---------------------	--



No.: I
A/
M
H/
RI
V/5
51
07
5/2
02
5
File
No.
J-1
20
11/
43/
20
25-
IA.
I(R)

Location (including coordinates)
Upper Dam: Village Jao li, Tehsil- Mahaleshwar, District Satara, Maharashtra Lower Dam:



Village
Lahulase,
Tehsil
Poladpur,
District
Raigad,
Maharashtra
Upper
Reservoir:
17° 56' 47.04"
to
17° 37' 13.73"
Lower
Reservoir:
17° 57' 56.49"
to
17° 35' 11.1"

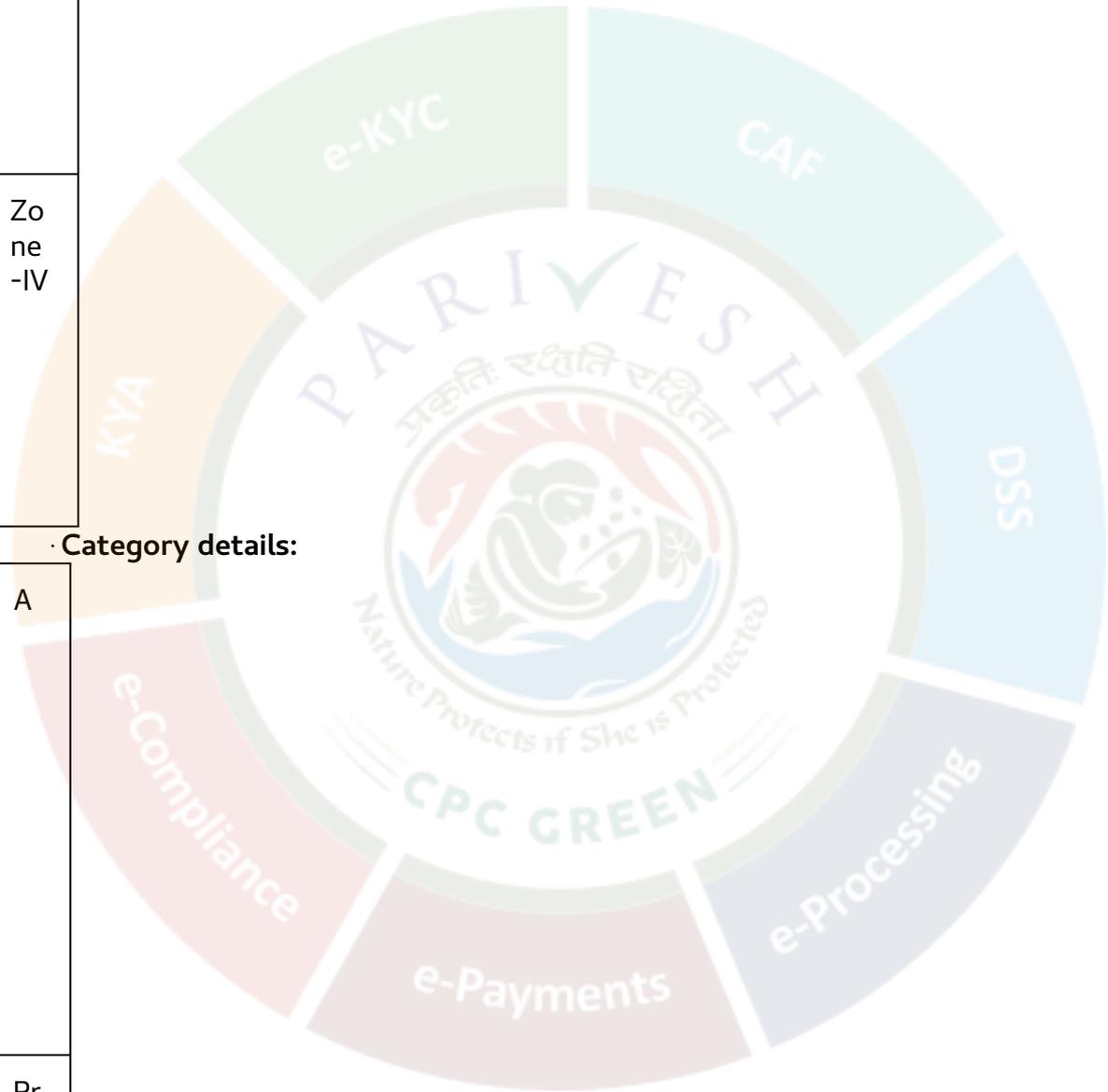


Note

No

r-
st
a
t
e
i
s
s
u
e
i
n
v
o
l
v
e
d

S
e
i
s
m
i
c
z
o
n
e



C
a
t
e
g
o
r
y
o
f
t
h
e
p
r
o
j
e
c
t

A

Pr
o
v
i
s
i
o
n
s

Pr
o
j
e
c
t
a
c
t
i
v
i
t
y
c
o
v
e
r
e
d

at S. N. 1(c)(i) Standard one Pumped Storage Project

Capacity / Cultural component with 6.28 hours storage ca (CCA)



capacity for peak power generation and 7.43 hours pumping operation for backfilling of upper reservoir of PSP.



Attract s	Yes. Part of
-----------	--------------

the General Conditions (Yes/No)

water conductor systems, power house and access roads, fall within the Rigid Conserve Reserve.

Additional info

The upper dam/ reservoir



Information (if any)

Environment, Submergence area, upper intake and part of water conductor systems are in Mahabalnagar-Panchgani ES



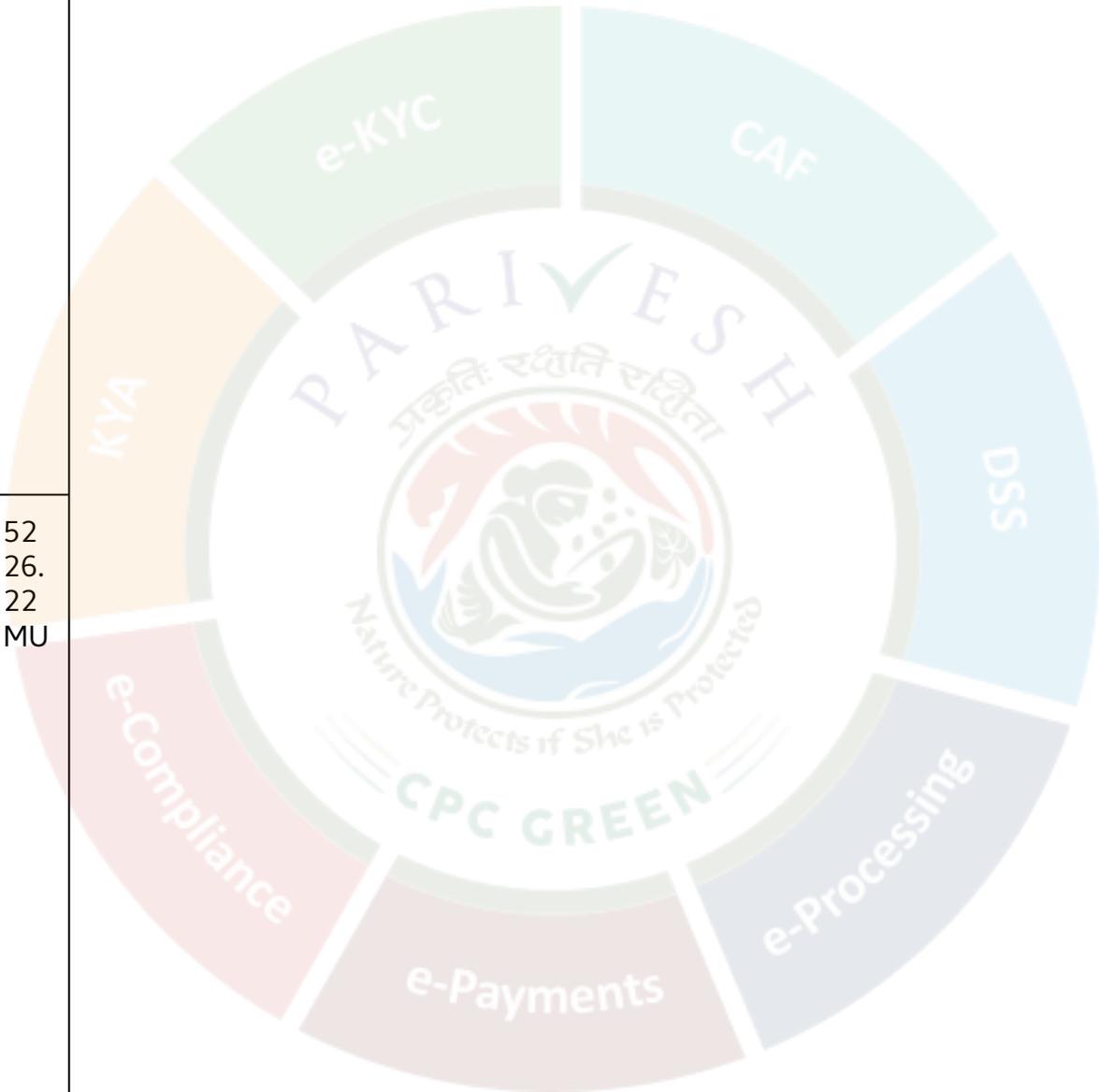
	Z.
--	----

Electricity generation capacity:

Powerhouse Installed Capacity	2400 MW
-------------------------------	---------

Generation of Electricity Annually	5226.22 MU
------------------------------------	------------

No.	8X300M
-----	--------



f U n i t s	W
A d d i t i o n a l i n f o r m a t i o n (i f a n y	Th e p r o j e c t w i t h i n s t a l l e d c a p



8-hour daily peaking cycle will annually generate 5226.22 MU at 95% plant availability. The PSP will utilize 2560 MW to pump 410.64 cumec from lower reservoir



ir t
o t
he
up
per
res
erv
oir
in
7.4
3 h
our
s.
Th
e a
nn
ual
pu
mp
ing
en
erg
y r
eq
uir
ed
sha
ll b
e 6
59
3.7
5
M
U.
Th
e c
ycl
e e
ffic
ien
cy
of
the
PS
P
wo
rks
out
to
be
ab
out



79.
2
6%.

ToR/EC Details:

Cost of project	Rs 11826 Crores.
Total area of Project	310.76 ha
Height of Dam from River Bed (EL)	Upper Dam-59.00 m; Lower Dam-63.50 m
Length of Tunnel/Channel	Length: 13483 m comprising of following components: (i) Main HRT: 1239m; Unit HRT: 640 m (ii) Main Pressure shaft: 5564m; Unit: 3136m (iii) Main TRT: 1376m; Intermediate & Branch TRT: 1528m
Details of Submergence area	Total Submergence area-144ha Upper Reservoir-79.76 ha (Forest land: 7.15ha, Non-Forest land : 72.61ha) Lower Reservoir-64.24 ha (Forest land: 0.00ha, Non-Forest land : 64.24ha)

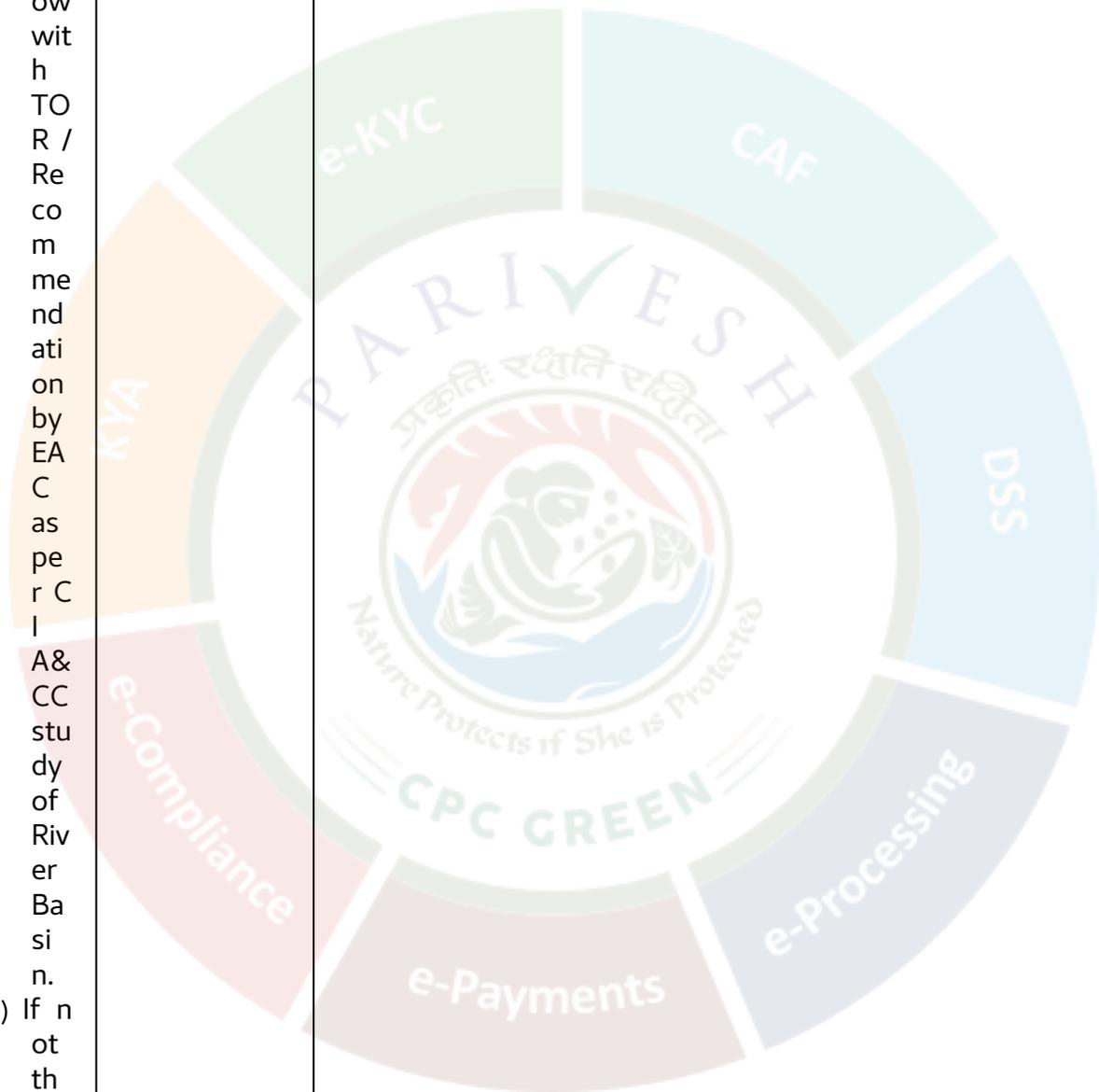


Types of Waste and quantity of generation during construction/ Operation	Waste Type	Construction (TPA)	Operation (TPA)
	MSSW	38.7	25.5
	Plastic	5.0	0.50
	E-waste	0.5	0.1
	Burnt oil	1.0	1.0
	Batteries	2.0	0.50
	Biomedical	0.5	0.0
	E-Flows for the Project		
Is Projects earlier studies in Cumulative Impact assessment & Carryin	No Not applicable Not applicable in case of P SP		



g Capacity studies (CIA&CC) for River in which project located. If yes, then

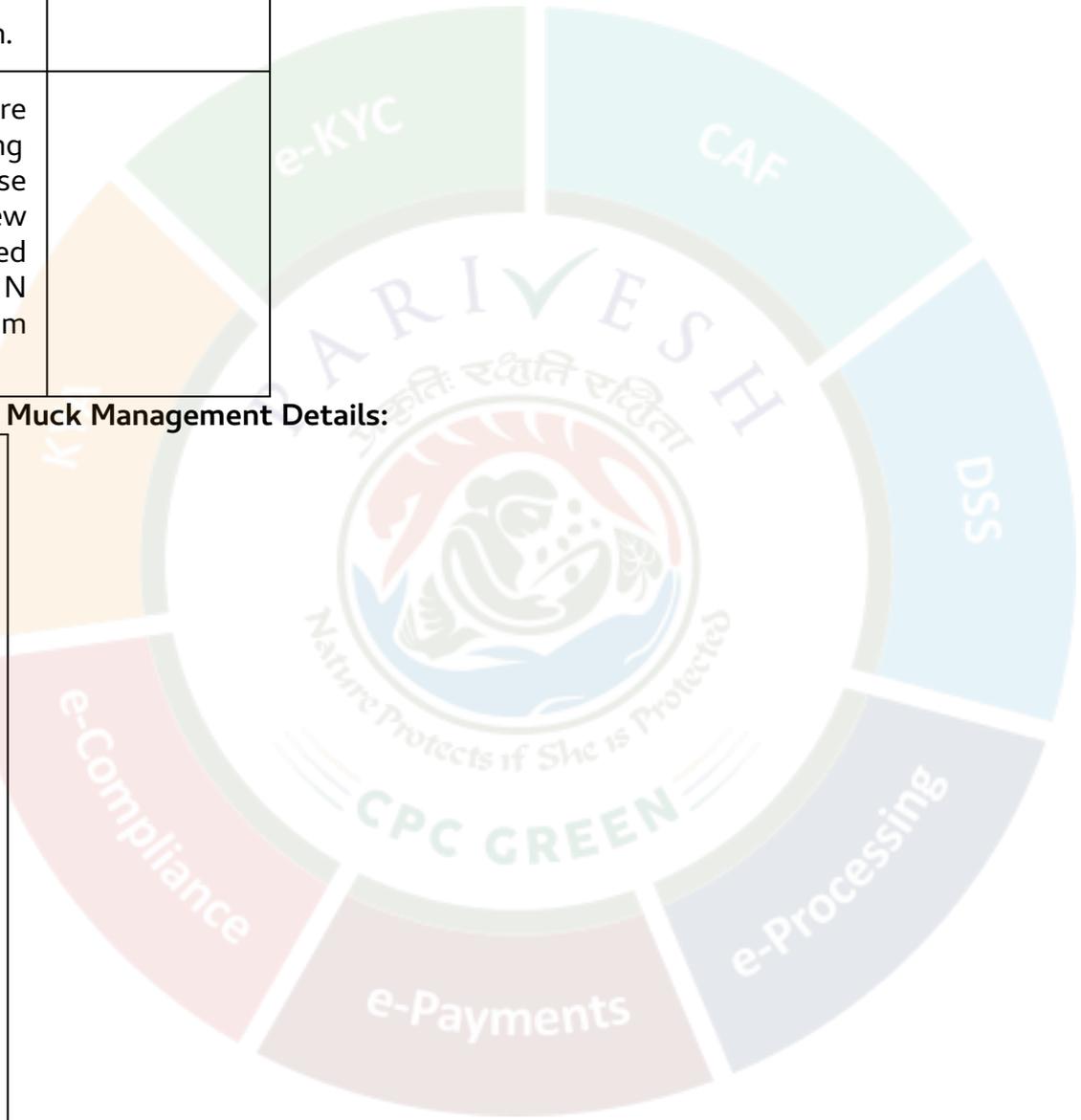
- a) E-flows with TOR / Recommendation by EA/C as per CIA&CC study of River Basin.
- b) If not the E-Flows maintain criteria f



or su sta ini ng riv er ec os yst e m.	
No. of trees/saplings proposed in view of 'Ek Ped Maa Ke Naam' campaign	

Muck Management Details:

N o. of pr o p o s e d di s p o s al ar e a/ (t y p e of la n d- F or	M u c k Di s p o s al Si te s- 4 No s Ar e a a n d T y p e of la
---	---



est/
Pvt. land)

nd - 15 ha; non-forest

Muck Management Plan

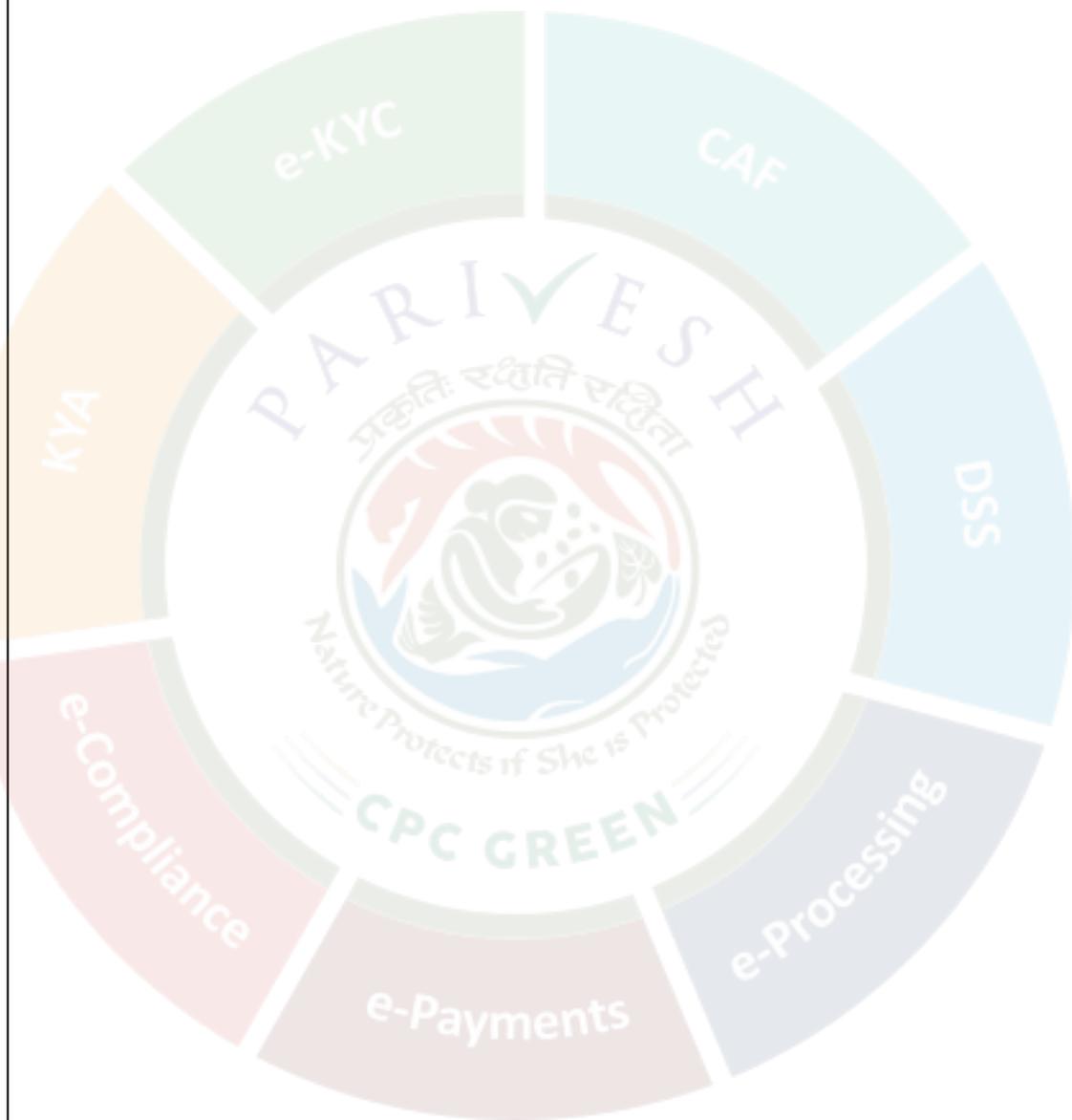
The muck shall be laid with vertical angle not exceeding 28



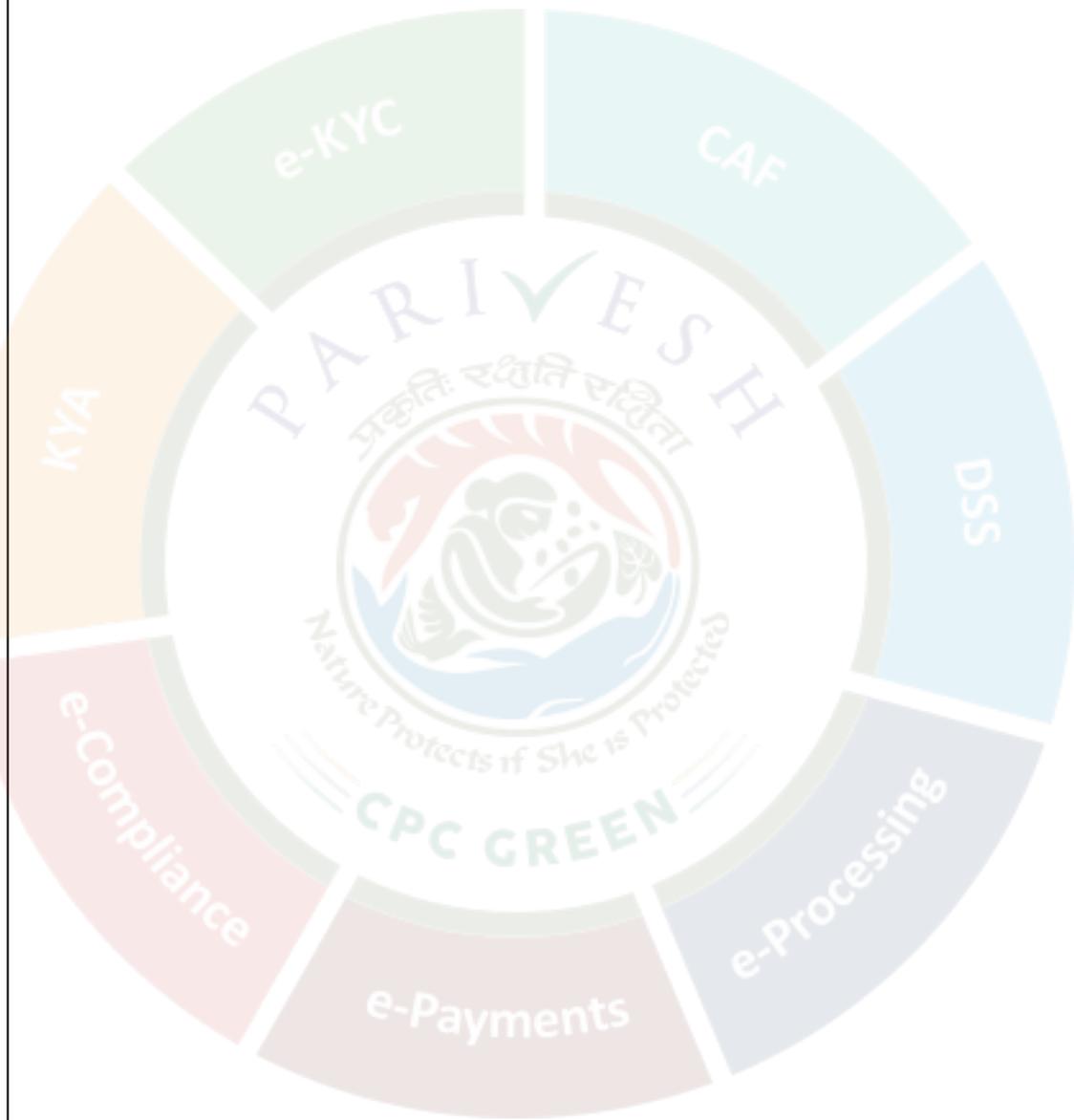
o in s u c h a m a n n e r t h a t r o c k m a s s i s p r o p e r l y s t a c k e d b e h i n d t h e g a b i o n w a l l / r e v e t m e n t



w
i
t
h
m
i
n
i
m
u
m
o
f
v
o
i
d
s.
T
h
e
m
u
c
k
p
i
l
e
s
h
a
l
l
b
e
l
a
t
e
r
c
o
v
e
r
e
d
w
i
t
h
g
e
o-
G
e
o-
c
o
i
r
t
e
x
t



il e a n d r e h a b i l i t a t e d b y a f f o r e s t a t i o n o f h e r b s a n d s h r u b s . D e t a i l e d M u c k M a n a g e m e



nt
Pl
a
n
s
h
a
l
l
b
e
f
o
r
m
u
l
a
t
e
d
d
u
r
i
n
g
E
I
A
s
t
u
d
y.

M
o
n
i
t
o
r
i
n
g
m
e
c
h
a
n
i
s
m
f
o
r
M
u
c
k
D
i
s
p
a
r



o
sa
l

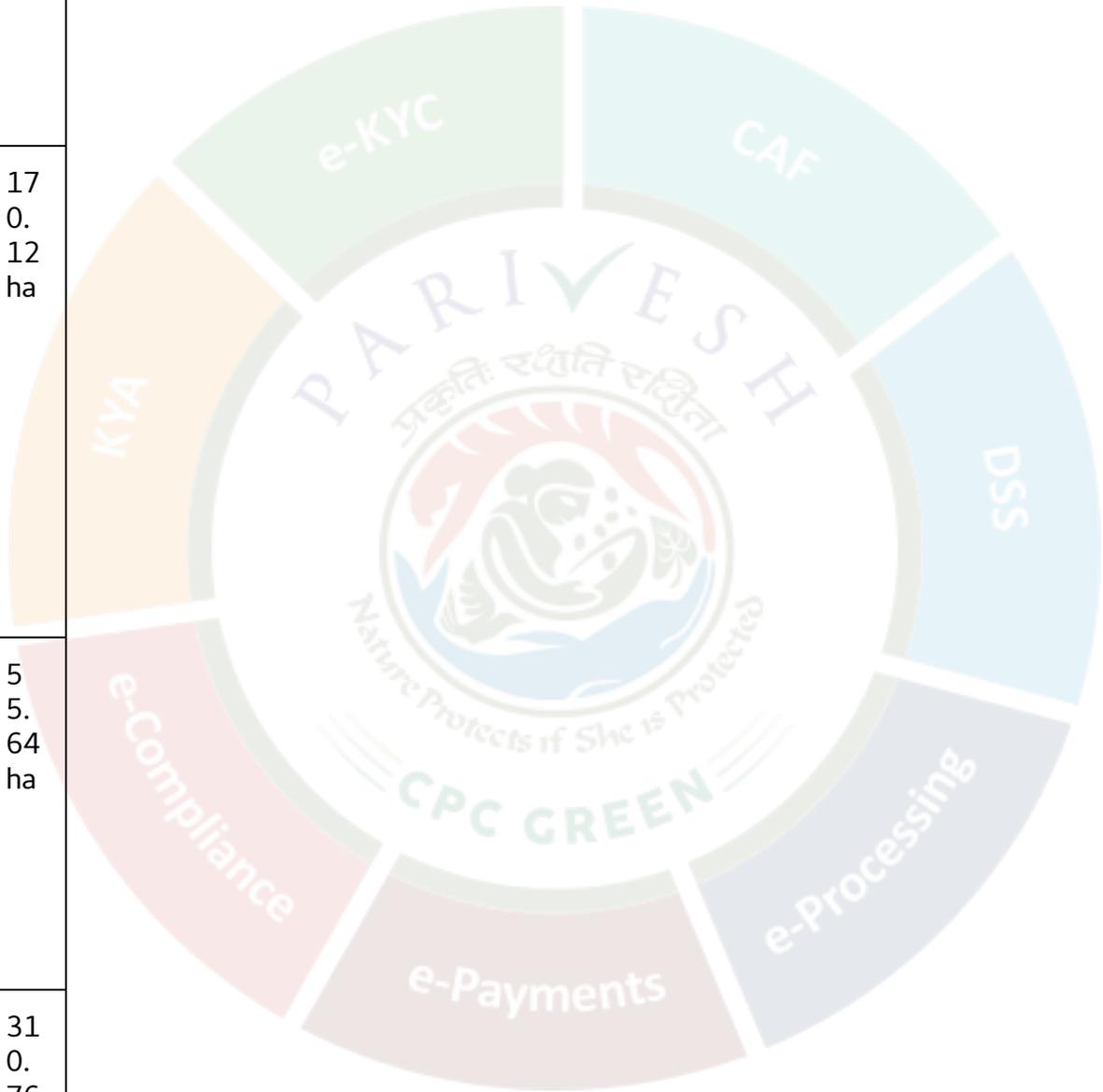
ri
er
to
re
g
ul
at
e
th
e
tr
af
fi
c
fl
ow
to
a
n
d
fr
o
th
e
m
u
c
k
pi
le
s
si
t
e.
Pr
o
p
er
e-
c
h
al
la
n
s
h
al
l
b
e
is



s
u
e
d.

Land Area Breakup:

P r i v a t e l a n d	8 5. 00 ha
G o v e r n m e n t l a n d	17 0. 12 ha
F o r e s t L a n d	5 5. 64 ha
T o t a l L a n d	31 0. 76
S u b	14 4. 00

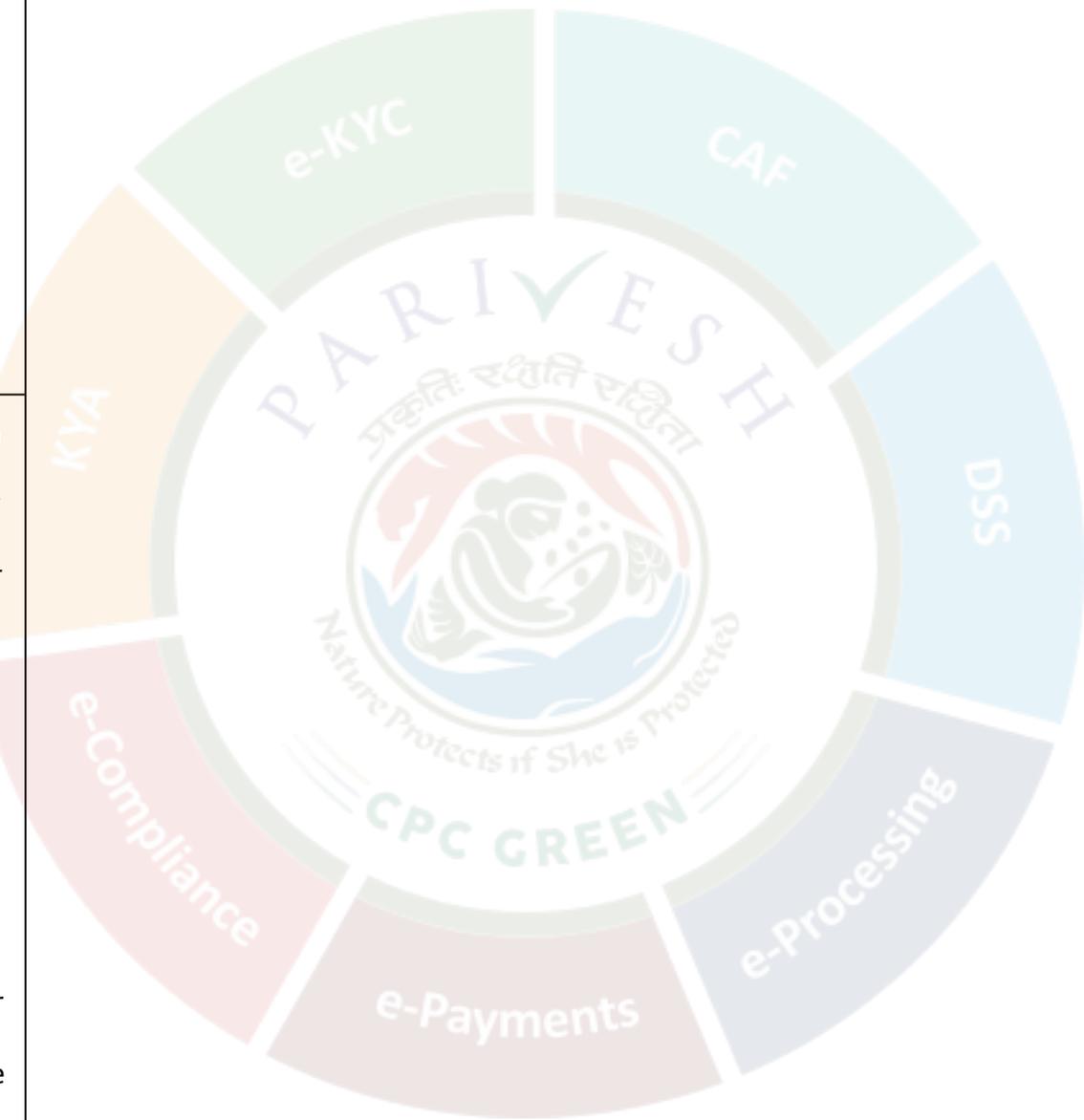


m
e
r
g
e
n
c
e
a
r
e
a/
R
e
s
e
r
v
o
i
r
a
r
e
a

ha

A
d
d
i
t
i
o
n
a
l
i
n
f
o
r
m
a
t
i
o
n
(
i
f
a
n
y)

Da
m
s
t
r
u
c
t
u
r
e
s:
3
7.
87
ha
W
a
t
e
r
c
o
n
d
u
c
t
o
r
S
y
s
t
e
m:
3
8.
39
ha
P
r
o
j
e
c
t
&
l
a
b
o
u

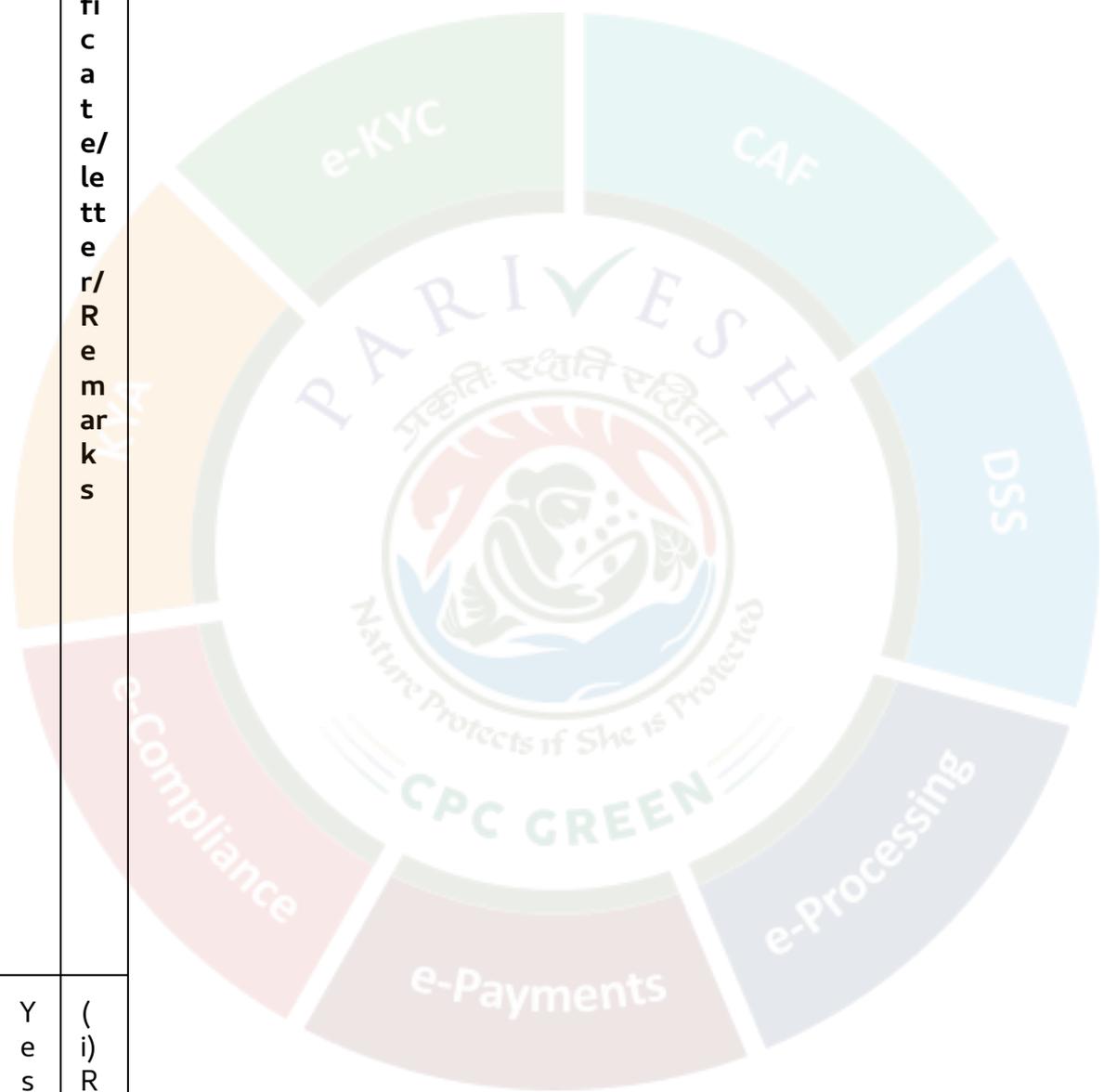


r c
ol
on
y:2
0.
00
ha
Ro
ad
s;5
5.
00
ha.
M
uc
k d
isp
os
al:
1
5.
00
ha
La
nd
for
tra
ns
mi
ssi
on
lin
e f
or
po
we
r e
va
cu
ati
on
(R
o
W)
is
no
t i
ncl
ud
ed.



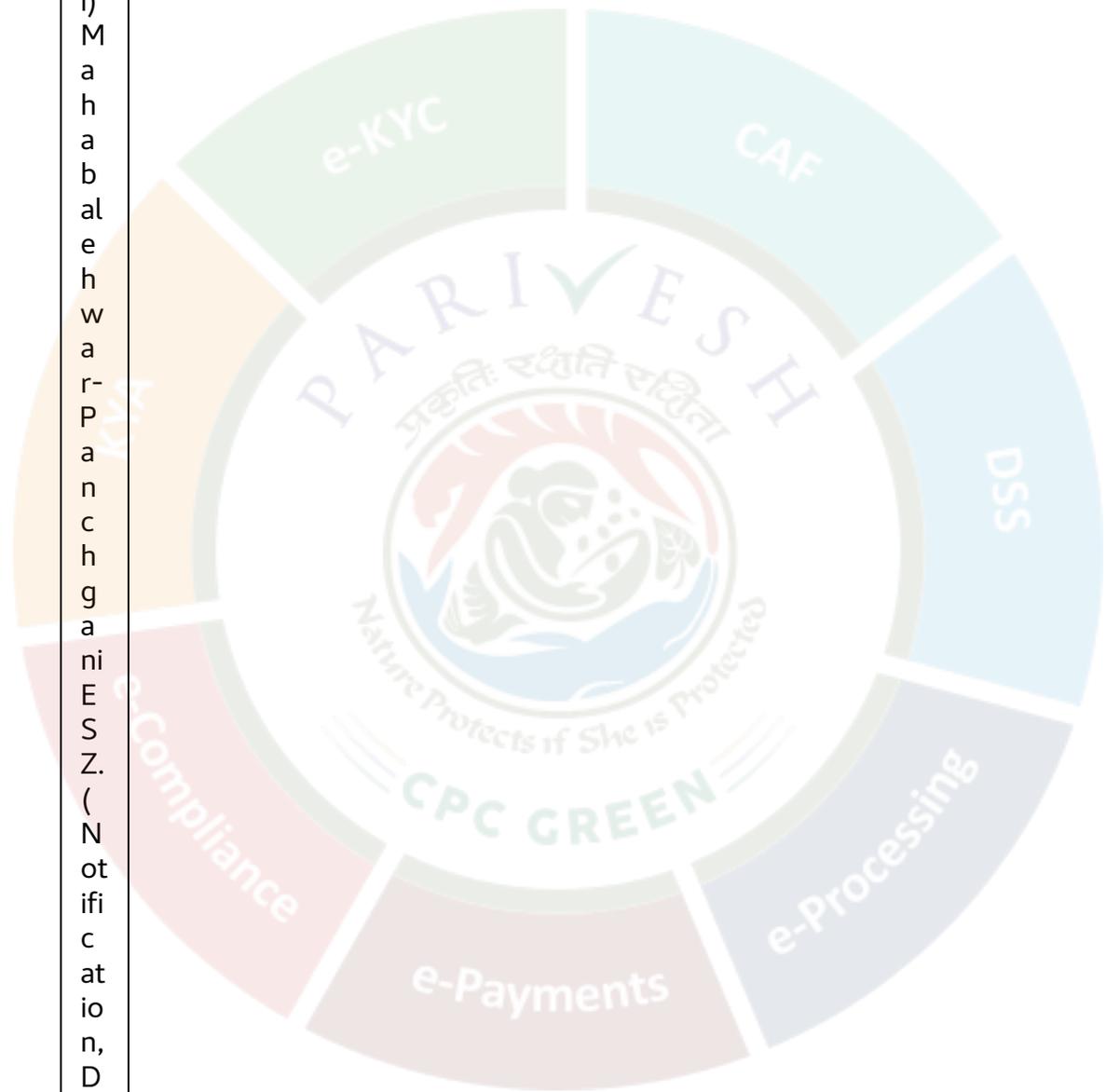
· Presence of Environmentally Sensitive areas in the study area

Forest Land/ Protected Area/ Environmental Sensitivity Zone	Yes/ No	Details of Certificate/ letter/ Remarks
Reserve Forest/ Protecte	Yes	(i) Raigad Conserv



d
F
o
r
e
s
t
L
a
n
d

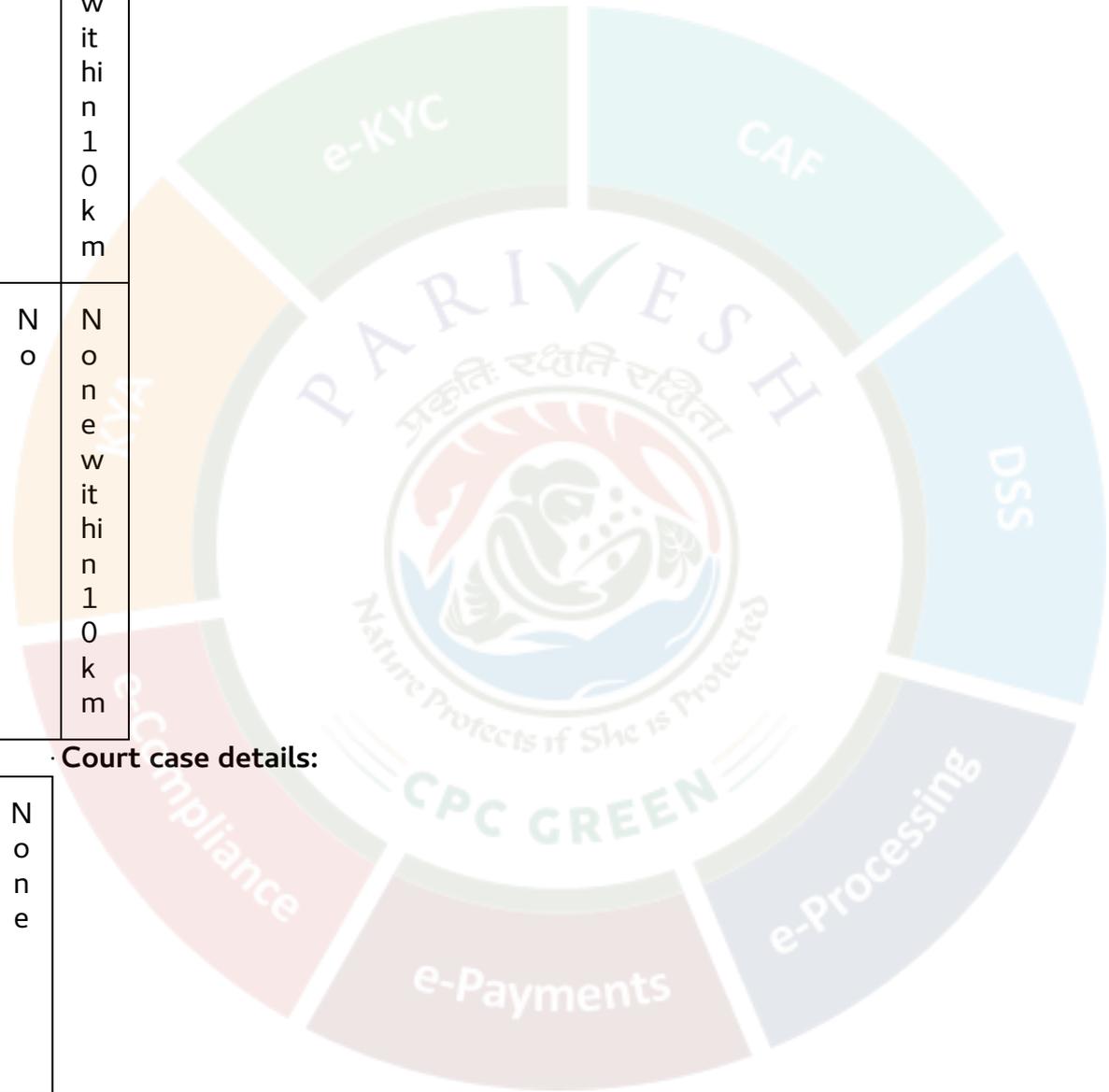
at
io
n
R
e
s
e
r
v
e
(i
i)
M
a
h
a
b
a
l
e
h
w
a
r
-
P
a
n
c
h
g
a
n
i
E
S
Z.
(
N
o
t
i
f
i
c
a
t
i
o
n,
D
a
t
e
d
1
7
t
h
J
a
n
u
a
r



		y 2 0 0 1)
N a t i o n a l P a r k	N o	N o n e w i t h i n 1 0 k m
W i l d l i f e S a n c t u a r y	N o	N o n e w i t h i n 1 0 k m

Court case details:

C o u r t C a s e	N o n e
A d d i t i o n a l i n f	N o n e



o
r
m
a
t
i
o
n
(
i
f
a
n
y

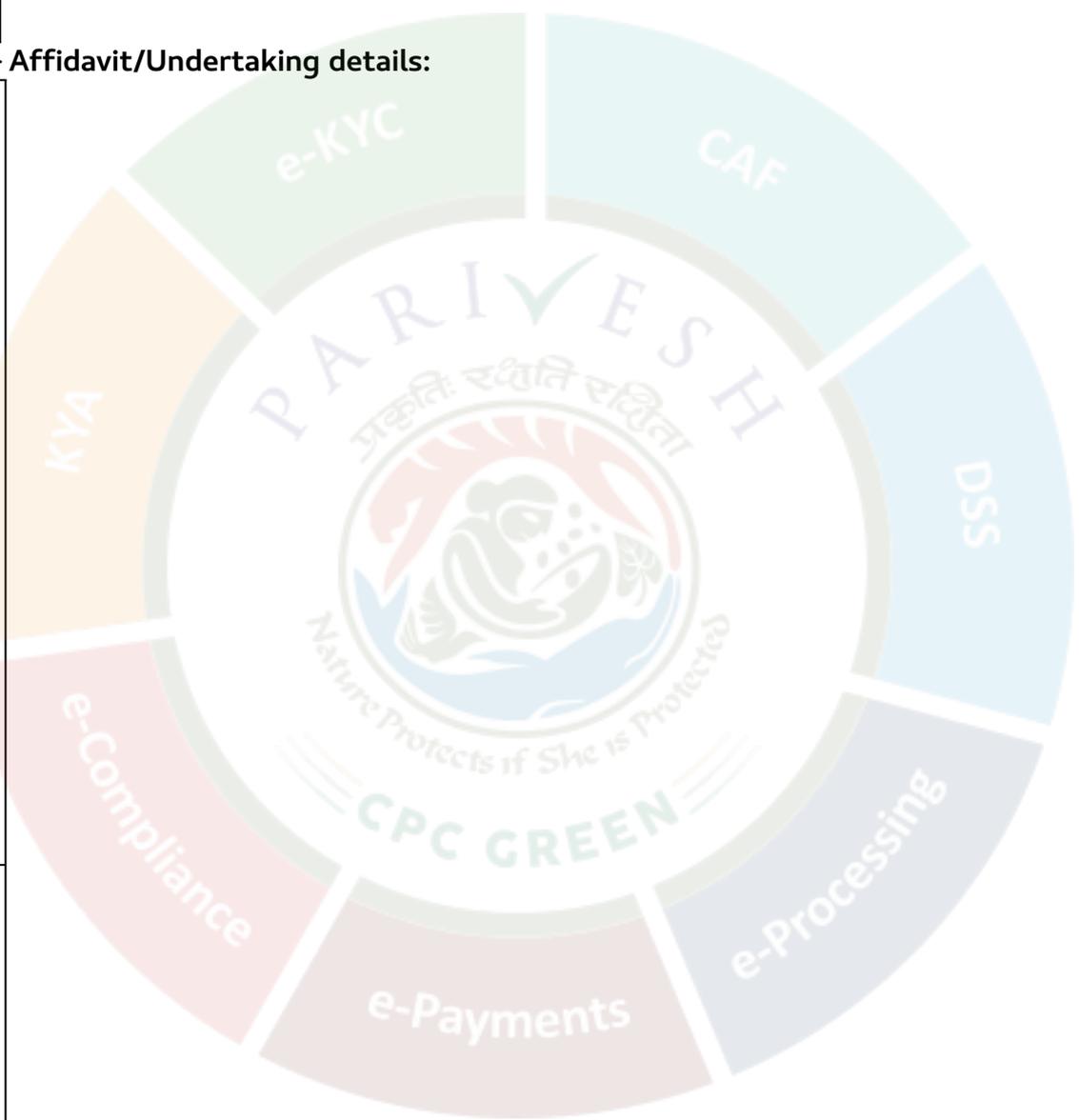
Affidavit/Undertaking details:

A
f
f
i
d
a
v
i
t/
U
n
d
e
r
t
a
k
i
n
g

A
n
n
e
x
u
r
e
-
I
V
o
f
A
g
e
n
d
a
o
f
m
e
e
t
i
n
g

A
d
d
i
t
i
o
n
a
l
i
n
f
o
r
m
a
t
i
o
n
(
i
f

N
o
n
e



a n y)	
--------------	--

Previous EC compliance and necessary approvals:

P a r t i c u l a r s	L e t t e r n o. a n d d a t e
--	---

C e r t i f i e d E C c o m p l i a n c e r e p o r t (i f a p p l i c a b l e)	N o t a p p l i c a b l e
---	---

S t a t u s o f S t a g e - I F	N o t y e t
--	----------------------------



<p>C</p> <p>A d d i t i o n a l d e t a i l (I f a n y)</p>	<p>A p p l i c a t i o n f o r d i v e r s i o n o f f o r e s t l a n d s h a l l b e m o v e d</p>
<p>I s F R A (2 0 0 6) d o n e</p>	<p>N o t y e t</p>



fo r F C- I	
-------------------------	--

Miscellaneous

Pa rti cul ar s	De tai ls
-----------------------------	-----------------

De tail s o f c o n s ul ta nt	EQ M S GL O BA L P RI VA TE LI MI TE D 30 5, 3rd F lo or, Plo t N o. 1 6, Ris ha bh Co rp o ra te To we r, Co m mu
---	--



nit
y
Ce
ntr
e,
Ka
rka
rd
oo
m
a,
De
lhi
- 1
10
09
2
Ph
on
e:
01
1-
43
06
27
5
7;
NA
BE
T/
El
A/
2
5-
2
8/
RA
04
6
5,
val
id
up
to
2
3.
1
1.
20
2
8)



Project Benefits

The benefits inter alia shall include the benefits like (i) Average annual generation of 5226.22 MU of energy with 95% plant availability;



(ii) Increase vegetable cover due to implementing of CAT Plan and Green Belt Development Plans (ii) Employment Potential during construction



uction (1000 labour); (iv) Overall development of area by implementing CSR initiatives and Watershed Development Plans.



Stat	Th
at	e
us	ma
of	nd
ot	at
he	or

res
tat
ut
or
yc
lea
ra
nc
es

ys
tat
ut
or
yc
lea
ra
nc
e
li
ke
ap
pr
ov
al
of
po
we
rp
ot
en
tia
l
stu
die
s
f
ro
m
CE
A,
sit
es
pe
cifi
c
e
art
h
ua
ke
de
sig
n
p
ara
me
ter
s
t
o
be
ap
pr
ov
ed
by
NC



SD P, Ge ol ogi cal re po rt ap pr ov al f ro m GS I, DP R a pp ro val f ro m C W C a n d CE A; Fo res t c lea ra n c e f or di ve rs ion of fo re st la nd, a re ye t to be so



	ug ht.
R&R details	There shall be displacement of families. R&R details shall be finalized later.
Additional detail (If any)	None

3.3.3. Deliberations by the committee in previous meetings

Date of EAC 1 :10/12/2025

Deliberations of EAC 1 :

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 Savitri Open Loop Pumped Storage Project (2400 MW) in an area of 310.76 Ha located at Village Javali, Dare, Haroshi, Karanje etc, Sub-district Poladpur and Mahabaleshwar, District Satara and Raigarh, Maharashtra by M/s NHPC limited.
- The project/activity falls under Category A of item 1(c), 'River Valley Projects,' as per the Schedule of the Environmental Impact Assessment Notification, 2006, and requires appraisal at the Central level by the sectoral EAC in the Ministry.
- The EAC observed that the proposed project is an open loop project of installed capacity 2400 MW/15072MWH pumped storage component with 6.28 hours storage capacity for peak power generation. The upper dam is located across Koyna River, which is a tributary of Krishna River and lower dam is located across Savitri River near Lahulase. For reservoir operation the project contemplates non-consumptive re-utilization of 11.23 MCM of water for recirculation among two proposed reservoirs. The one-time filling requirement of 19.58 MCM and periodical recoupment for losses(1.47MCM) will be met from yield generated within lower dam catchment area (18.94 sq.km) and used cyclically for energy storage and discharge.
- The EAC noted that total land required for the construction of various components and related works for project is 310.76 ha out of which Forest area is 55.64 ha, Government land is 170.12 ha and Private land is 85.00 ha. Diversion of forest land for non-forest purpose will be involved for construction of project components. However, it was observed that the application for Stage-I Forest Clearance (FC) has not yet been submitted, which necessitates further action from the Project Proponent.
- The committee noted that part of water conductor system, powerhouse and access roads, fall within the Raigad Conservation Reserve, Additionally, upper dam/reservoir, submergence area, upper intake and part of water conductor system fall within Mahabalehwar-Panchgani ESZ. The EAC further noted that all the project components are located within the proposed Western Ghats ESA, Maharashtra as per MOEF&CC draft notification S.O.30609(E) dated 31.07.2024.
- It has been observed that Memorandum of Understanding has been signed between NHPC and Deptt. of Energy, Govt. of Maharashtra on 06.06.2023 for establishment of 4 nos. PSPs including Savitri PSP. Subsequently, another MoU was signed between NHPC & Govt. of Maharashtra on 03.09.2024 for development of the PSPs with an objective to prepare the DPR & submit to CEA/GoMWRD for its approval.
- The EAC noted that, as per the notification of the Mahabaleshwar-Panchgani Eco-Sensitive Zone issued vide S.O. 52(E) dated 17.01.2001, only non-polluting non-hazardous service industries, units making footwear from processed and ready-made leather, floriculture, horticulture based or agro based industries producing products from indigenous goods from the Eco Sensitive Zone shall be permitted in this zone, providing the project/ activity does not result in polluting effluent, emission or impacts.
- The Committee further observed that, as per the classification of industries provided by the Central Pollution Control Board (CPCB) on date 12.02.2025, the hydel power plants (Capacity > 50 MW) fall under the Red category. Accordingly, the EAC noted that the Savitri PSP being a sub category of Hydel Power Plant projects, falls under red category and therefore was not a fit case to be taken up for grant of Terms of Reference (ToR) unless the Project Proponent (PP) obtained requisite No Objection Certificates / clearances from the competent Authority(ies).
- In view of the above mentioned provisions and regulatory restrictions, the EAC decided to defer the proposal and suggested the Project Proponent to obtain the requisite No Objection Certificate/Clearance from the competent authority in accordance with the provisions of the

Mahabaleshwar-Panchgani Eco-Sensitive Zone Notification, S.O. 52(E) dated 17.01.2001, for further consideration of the proposal.

44.2.4 The EAC based on the information submitted and as presented during the meeting, and in view of the above provisions and regulatory restrictions, decided to **defer the proposal** for grant of Terms of Reference for conducting EIA study for proposed construction of Savitri Open Loop Pumped Storage Project (2400 MW) in an area of 310.76 Ha located at Village Javali, Dare, Haroshi, Karanje etc, Sub-district Poladpur and Mahabaleshwar, District Satara and Raigarh, Maharashtra by M/s NHPC limited and directed the Project Proponent to obtain the requisite No Objection Certificate/Clearance from the competent authority in accordance with the provisions of the Mahabaleshwar-Panchgani Eco-Sensitive Zone Notification, S.O. 52(E) dated 17.01.2001, for further consideration of the proposal.

3.3.4. Deliberations by the EAC in current meetings

The considered the proposal in its 44th meeting held on 10.12.2025 wherein deferred the proposal and directed the PP to obtain the requisite No Objection Certificate/Clearance from the competent authority in accordance with the provisions of the Mahabaleshwar-Panchgani Eco-Sensitive Zone Notification, S.O. 52(E) dated 17.01.2001, for further consideration of the proposal. Accordingly, PP submitted desired information sought by the EAC on 22/01/2026 on Parivesh Portal.

48.3.4 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 Savitri Open Loop Pumped Storage Project (2400 MW) in an area of 310.76 Ha located at Village Javali, Dare, Haroshi, Karanje etc, Sub-district Poladpur and Mahabaleshwar, District Satara and Raigarh, Maharashtra by M/s NHPC 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.

Observation of the EAC in its 44th meeting held on 10.12.2025

- The EAC observed that the proposed project is an open loop project of installed capacity 2400 MW/15072MWH pumped storage component with 6.28 hours storage capacity for peak power generation. The upper dam is located across Koyna River, which is a tributary of Krishna River and lower dam is located across Savitri River near Lahulase. For reservoir operation the project contemplates non-consumptive re-utilization of 11.23 MCM of water for recirculation among two proposed reservoirs. The one-time filling requirement of 19.58 MCM and periodical recoupment for losses(1.47MCM) will be met from yield generated within lower dam catchment area (18.94 sq.km) and used cyclically for energy storage and discharge.
- The EAC noted that total land required for the construction of various components and related works for project is 310.76 ha out of which Forest area is 55.64 ha, Government land is 170.12 ha and Private land is 85.00 ha. Diversion of forest land for non-forest purpose will be involved for construction of project components. However, it was observed that the application for Stage-I Forest Clearance (FC) has not yet been submitted, which necessitates further action from the Project Proponent.
- The committee noted that part of water conductor system, powerhouse and access roads, fall within the Raigad Conservation Reserve, Additionally, upper dam/reservoir, submergence area, upper intake and part of water conductor system fall within Mahabaleshwar-Panchgani ESZ. The EAC further noted that all the project components are located within the proposed Western Ghats ESA, Maharashtra as per MOEF&CC draft notification S.O.30609(E) dated

31.07.2024.

- It has been observed that Memorandum of Understanding has been signed between NHPC and Deptt. of Energy, Govt. of Maharashtra on 06.06.2023 for establishment of 4 nos. PSPs including Savitri PSP. Subsequently, another MoU was signed between NHPC & Govt. of Maharashtra on 03.09.2024 for development of the PSPs with an objective to prepare the DPR & submit to CEA/GoMWRD for its approval.
- The EAC noted that, as per the notification of the Mahabaleshwar-Panchgani Eco-Sensitive Zone issued vide S.O. 52(E) dated 17.01.2001, only non-polluting non-hazardous service industries, units making footwear from processed and ready-made leather, floriculture, horticulture based or agro based industries producing products from indigenous goods from the Eco Sensitive Zone shall be permitted in this zone, providing the project/ activity does not result in polluting effluent, emission or impacts.
- The Committee further observed that, as per the classification of industries provided by the Central Pollution Control Board (CPCB) on date 12.02.2025, the hydel power plants (Capacity > 50 MW) fall under the Red category. Accordingly, the EAC noted that the Savitri PSP being a sub category of Hydel Power Plant projects, falls under red category and therefore was not a fit case to be taken up for grant of Terms of Reference (ToR) unless the Project Proponent (PP) obtained requisite No Objection Certificates / clearances from the competent Authority(ies).
- In view of the above mentioned provisions and regulatory restrictions, the EAC decided to defer the proposal and suggested the Project Proponent to obtain the requisite No Objection Certificate/Clearance from the competent authority in accordance with the provisions of the Mahabaleshwar-Panchgani Eco-Sensitive Zone Notification, S.O. 52(E) dated 17.01.2001, for further consideration of the proposal.

Observation of the EAC in the current meeting:

The EAC observed that the document submitted by the PP on the Parivesh Portal is not an NOC from the competent authority as required under the Mahabaleshwar-Panchgani Eco-Sensitive Zone Notification, S.O. 52(E) dated 17.01.2001. Instead, the PP submitted a letter dated 20.01.2026 from the Member Secretary, Mahabaleshwar-Panchgani Eco-Sensitive Zone Monitoring Committee, enclosing the minutes of the meeting held on 16.01.2026. The Committee noted that the said Monitoring Committee had limited its consideration to obtaining Terms of Reference (ToR) only for the proposed Savitri PSP within the ESZ subject to detailed study of following technical matter:

- 1) Seismic Study for Mahabaleshwar Panchgani Area
- 2) Geohydrological & Geological Study
- 3) Rehabilitation & Relief (R&R) Impact
- 4) Baseline Ecological Study
- 5) Feasibility Study for Additional Storage Capacity for additional drinking water for Mahabaleshwar city.

The EAC was of the view that the PP shall obtain a separate and explicit NOC from the Mahabaleshwar-Panchgani Eco-Sensitive Zone Monitoring Committee specifically for seeking Terms of Reference from this Ministry.

Accordingly, PP vide email dated 13.02.2026 enclosing a letter of the same date, submitted a clarification from the Member Secretary, Mahabaleshwar-Panchgani Eco-Sensitive Zone Monitoring Committee stating that a No Objection Certificate (NOC) had been issued for obtaining the Terms of Reference (ToR) from MoEF&CC for undertaking the requisite studies for the Savitri PSP. The clarification further indicated that the NOC was issued pursuant to the decision taken in the review meeting of the Monitoring Committee held on 16.01.2026. It was also mentioned that the study reports, upon completion, may be submitted to the Mahabaleshwar-Panchgani ESZ Monitoring Committee for its perusal.

3.3.5. Recommendation of EAC

Recommended

3.3.6. Details of Terms of Reference

3.3.6.1. Specific

Miscellaneous:	
1.	Both capital and recurring expenditure under EMP shall be submitted.
2.	Pre-DPR Chapters viz., Hydrology, Layout Map and Power Potential Studies duly appraised by CWC/CEA shall be submitted.
3.	The PP should submit the photograph of monitoring stations & sampling locations. The photograph should bear the date, time, latitude & longitude of the monitoring station/sampling location. In addition to this PP should submit the original test reports and certificates of the labs which will analyze the samples.
4.	Drone video of project site shall be recorded and to be submitted.
5.	Detailed plan to restore wider roads and convert them into narrow up to 10m after construction of the project.
6.	Specific Terms of Reference (ToRs) issued by the Ministry vide Office Memorandum No. F. No. IA3-22/33/2022-IA.III dated 14.08.2023 for Pumped storage projects shall be used for preparation of EIA/ EMP reports.
7.	As per Ministry's OM dated 1 st 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.	The EIA/EMP shall include a detailed socio-economic assessment of the tribal population in the project-affected area based on primary data and community consultations. A Tribal Development Plan, prepared in consultation with the District Administration and Tribal Welfare Department, shall be submitted along with the EIA report.
4.	PP shall submit the credible documents to show the status of land acquisition w.r.t project site from/through the concerned State Government as required under Ministry's OM dated 7 th October, 2014 for the project land to be acquired.
5.	Land acquired for the project shall be suitably compensated in accordance with the law of the land with the prevailing guidelines. Private land (if any) shall be acquired as per provisions of Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013. Budget earmarked for R&R, CSR shall not be included in the cost of EMP.
Environmental Management and Biodiversity Conservation:	
1.	Final clearance/ approval shall be obtained before submission of the proposal for grant of Environmental Clearance from Mahabaleshwar-Panchgani Eco-Sensitive Zone Monitoring Committee.
2.	The PP will submit an inventory of all natural small streams/nalah within 10 km radius of the project. A detailed plan and monitoring mechanism for releasing the self-catchment water of small stream draining in to river along with action plan for conservation and protection of other streams/rivulets draining in to upper and lower reservoirs shall be submitted.
3.	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.
4.	A detailed action plan for large scale plantation of native species of plant sapling within 10 km radius of the project shall be prepared in consultation with State Forest Department. The monitoring mechanism to ensure the survival of saplings shall be finalized in consultation with ICFRE.
5.	The PP will submit 10 years water availability data certified by the CWC/State Water Resource Department for quantity of water that is received annually by the stream\river on which reservoirs are proposed to be constructed.
6.	Explore the possibilities for reducing the Forest land requirement. The application for obtaining Stage I FC for 55.64 ha of forest land involved in the project shall be submitted within stipulated time.
7.	Muck disposal site and other components such as Township, site office, Stacking area and batching plant shall be located outside the forest area.
8.	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.
9.	Transportation Plan for transporting construction materials shall be submitted. Separate chapter for risk assessment of such transportation through/within proposed the Wildlife Sanctuary shall be included in the EIA report, if any.
10.	Environmental Cost Benefit Analysis shall be done in terms of loss of Forest ecosystem due to diversion of Forest land/loss of biodiversity, water availability, water uses for generation of hydro power and Ecological flows.
11.	The baseline data collection will cover the changes in biological and ecological profile of the region after monsoon with worst-case scenario study and critical mineral assessment.
12.	Calculation and values of GHGs (CO ₂ , CH ₄ etc.) emissions during construction and during operation till the life of the project shall be estimated and submitted.
13.	The longitudinal connectivity/Free flowing sketch be provided in the EIA/EMP report.
14.	Quantitative values of Impact modelling of environmental parameters shall be submitted for during construction and operation. Also, mitigation measures shall be submitted in terms of construction and operation phase.
15.	Conducting site-specific ecological study emphasizing on riverine ecology viz. fishes diversity, fish migration, habitat and aquatic biota due to construction PSP. Impact assessment on the fish diversity based on the hydrological alteration at the water drawing sources shall be studied.
16.	Action plan for survival or diversion of the rivulets/stream, if any, leading to join river shall be submitted.

17.	Impact zone decided prior to base line data generation and accordingly, sampling location shall be finalized. Baseline data as mentioned in Specific ToR shall be collected for preparation of EIA/ EMP report along with soil characteristics which shall be studied at minimum 10 locations. The ground water level at 10 locations shall be measured in project area in all three seasons.
18.	A study shall be carried out on impact of project activity on the aquatic and terrestrial ecosystem, within project area classifying the impact zones (highly impact/low impact zone) based on seasonal variations and covering the aspects related to impacts on aquatic ecosystem/ primary productivity due to quantity of water to be lifted for power generation and thermal stratification. Accordingly, Environment Management plan shall be prepared.
19.	Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP.
20.	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.
21.	Any archaeological sites in the vicinity of the project, if any, then it shall be certified by ASI.

3.3.6.2. Standard

1(c)	River Valley/Irrigation projects
Scope of EIA Study	
1.	The EIA Report should identify the relevant environmental concerns and focus on potential impacts that may change due to the construction of proposed project. Based on the baseline data collected for three (3) seasons (Pre-monsoon, Monsoon and Winter seasons), the status of the existing environment in the area and capacity to bear the impact on this should be analysed. Based on this analysis, the mitigation measures for minimizing the impact shall be suggested in the EIA/EMP study.
Details of the Project and Site	
1.	General introduction about the proposed project.
2.	Details of Project and site giving L-Sections of all U/S and D/S Projects with all relevant maps and figures. Connect such information as to establish the total length of interference of Natural River and the committed unrestricted release from the site of Dam/Barrage into the main river.
3.	A map of boundary of the project site giving details of protected areas in the vicinity of 25 km of project location.
4.	Location details on a map of the project area with contours indicating main project features. The project layout shall be superimposed on a contour map of ground elevation showing main project features (viz. location of dam, Head works, main canal, branch canals, quarrying etc.) shall be depicted in a scaled map.
5.	Layout details and map of the project along with contours with project components clearly marked with

	proper scale maps of at least 1:50,000 scale and printed at least on A3 scale for clarity.
6.	Existence of National Park, Sanctuary, Biosphere Reserve etc. in the study area, if any, should be detailed and presented on a map with distinct distances from the project components.
7.	Drainage pattern and map of the river catchment up to the proposed project site.
8.	Delineation of critically degraded areas in the directly draining catchment on the basis of Silt Yield Index as per the methodology of Soil and Land use Survey of India.
9.	Soil characteristics and map of the project area.
10.	Geological and Seismo-tectonic details and maps of the area surrounding the proposed project site showing location of dam site and canal sites.
11.	Remote Sensing studies, interpretation of satellite imagery, topographic sheets along with ground verification shall be used to develop the land use/land cover pattern of the study using overlaying mapping techniques viz. Geographic Information System (GIS), False Color Composite (FCC) generated from satellite data of project area.
12.	Land details including forests, private and other land.
13.	Demarcation of snow fed and rain fed areas for a realistic estimate of the water availability.
14.	Different riverine habitats like rapids, pools, side pools and variations in the river substratum bedrocks, rocks, boulders, sand/silt or clay etc. need to be covered under the study
Description of Environment and Baseline Data	
1.	To know the present status of environment in the area, baseline data with respect to environmental components air, water, noise, soil, land and biology & biodiversity (flora & fauna), wildlife, socioeconomic status etc. should be collected within 10 km radius of the main components of the project/site i.e. dam site and power house site. The air quality and noise are to be monitored at such locations which are environmentally & ecologically more sensitive in the study area. The baseline studies should be collected for 1 season (Preferably Monsoon season). Flora-Fauna in the catchment and command area should be documented. The study area should comprise of the following:
2.	(i) Catchment area up to the dam/barrage site.
3.	(ii) Submergence Area.
4.	(iii) Project area or the direct impact area should comprise of area within 10 km radius of the main project components like dam, canals etc.
5.	(iv) Downstream upto 10 km from the tip of the reservoir.
Details of the Methodology	
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 follows:	
1.	null
2.	null
3.	Physical geography, Topography, Regional Geological aspects and structure of the Catchment.
4.	Tectonics, seismicity and history of past earthquakes in the area. A site specific study of the earthquake parameters will be done. The results of the site specific earthquake design shall be sent for approval of the NCSDP (National Committee of Seismic Design Parameters, Central water Commission, New Delhi for large dams.
5.	Landslide zone or area prone to landslide existing in the study area should be examined.
6.	Presence of important economic mineral deposit, if any.
7.	Justification for location & execution of the project in relation to structural components (dam /barrage height).
8.	Impact of project on geological environment.
9.	null
10.	Meteorology (viz. Temperature, Relative humidity, wind speed/direction etc.) to be collected from nearest IMD station.
11.	Ambient Air Quality with parameters viz. Suspended Particulate Matter (SPM), Respirable Suspended Particulate Matter (RSPM) i.e. suspended particulate materials < 10 microns, Sulphur dioxide (SO ₂) and Oxides of Nitrogen (NO _x) 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.

8.	
1 9.	Water quality for both surface water and ground water for (i) Physical parameters (pH, temperature, electrical conductivity, TSS); (ii) Chemical parameters (Alkalinity, Hardness, BOD, COD, NO ₂ , PO ₄ , Cl, SO ₄ , Na, K, Ca, Mg, Silica, Oil & Grease, phenolic compounds, residual sodium carbonate); (iii) Bacteriological parameter (MPN, Total coliform) and (iv) Heavy Metals (Pb, As, Hg, Cd, Cr-6, total Cr, Cu, Zn, Fe) (6 locations).
2 0.	Delineation of sub and micro-watersheds, their locations and extent based on the All India Soil and Land Use Survey of India (AISLUS), Department of Agriculture, Government of India. Erosion levels in each micro-watershed and prioritization of micro-watershed through silt yield index (SYI) method of AISLUS
2 1.	Hydro-Meteorology of the project viz. precipitation (snowfall, rainfall), temperature, relative humidity, etc. Hydro-meteorological studies in the catchment area should be established along-with real time telemetry and data acquisition system for inflows monitoring.
2 2.	Run off, discharge, water availability for the project, sedimentation rate, etc.
2 3.	Basin characteristics
2 4.	Catastrophic events like cloud bursts and flash floods, if any, should be documented.
2 5.	For estimation of Sedimentation Rate, direct sampling of river flow is to be done during the EIA study. The study should be conducted for minimum one year. Actual silt flow rate to be expressed in ha-m km ² year ⁻¹ .
2 6.	Set up a G&D monitoring station and a few rain gauge stations in the catchment area for collecting data during the investigation.
2 7.	Flow series, 10 daily with 90%, 75% and 50% dependable years discharges.
2 8.	Information on the 10-daily flow basis for the 90 per cent dependable year the flow intercepted at the dam, the flow diverted to the power house and the spill comprising the environmental flow and additional flow towards downstream of the dam for the project may be given.
2 9.	The minimum environmental flow shall be 20% of the flow of four consecutive lean months of 90% dependable year, 30% of the average monsoon flow. The flow for remaining months shall be in between 20-30%, depending on the site specific requirements. A site specific study shall be carried out by an expert organization.
3 0.	Sedimentation data available with CWC may be used to find out the loss in storage over the years.
3 1.	Hydrological studies/data as approved by CWC shall be utilized in the preparation of EIA/EMP report. Actual hydrological annual yield may also be given in the report. Sedimentation data available with CWC may be used to find out the loss in storage over the years.
3 2.	A minimum of 1 km distance from the tip of the reservoir to the tail race tunnel should be maintained between upstream and downstream projects.

3 3.	Besides primary studies, review of secondary data/literature published for project area on flora & fauna including RET species shall be reported in EIA/EMP report.
3 4.	null
3 5.	Characterization of forest types (as per Champion and Seth method) in the study area and extent of each forest type as per the Forest Working Plan.
3 6.	Documentation of all plant species i.e. Angiosperm, Gymnosperm, Pteridophytes, Bryophytes (all groups).
3 7.	General vegetation profile and floral diversity covering all groups of flora including lichens and orchids. A species wise list may be provided.
3 8.	Assessment of plant species with respect to dominance, density, frequency, abundance, diversity index, similarity index, importance value index (IVI) , Shannon Weiner index etc. of the species to be provided. Methodology used for calculating various diversity indices along with details of locations of quadrates, size of quadrates etc. to be reported within the study area in different ecosystems.
3 9.	Existence of National park, Sanctuary, Biosphere Reserve etc in the study area, if any, should be detailed.
4 0.	Economically important species like medicinal plants, timber, fuel wood etc.
4 1.	Details of endemic species found in the project area.
4 2.	Flora under RET categories should be documented using International Union for the Conservation of Nature and Natural Resources (IUCN) criteria and Botanical Survey of India's Red Data list along-with economic significance. Species diversity curve for RET species should be given.
4 3.	Cropping pattern and Horticultural Practices in the study area.
4 4.	null
4 5.	Fauna study and inventorisation should be carried out for all groups of animals in the study area. Their present status alongwith Schedule of the species.
4 6.	Documentation of fauna plankton (phyto and zooplankton), periphyton, benthos and fish should be done and analysed.
4 7.	Information (authenticated) on Avi-fauna and wildlife in the study area.
4 8.	Status of avifauna their resident/ migratory/ passage migrants etc.
4 9.	Documentation of butterflies, if any, found in the area.

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, phytoplanktons, 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.

6.	
6 7.	Information on the dependence of the local people on minor forest produce and their cattle grazing rights in the forest land.
6 8.	List of all the Project Affected Families with their name, age, educational qualification, family size, sex, religion, caste, sources of income, land & house holdings, other properties, occupation, source of income, house/land to be acquired for the project and house/land left with the family, any other property, possession of cattle, type of house etc.
6 9.	Special attention has to be given to vulnerable groups like women, aged persons etc. and to any ethnic/indigenous groups that are getting affected by the project.
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.
1 0.	Water pollution due to disposal of sewage
1 1.	Water pollution from labour colonies/ camps and washing equipment.
1 2.	Adverse impact on land stability, catchment of soil erosion, reservoir sedimentation and spring flow (if any) (a) due to considerable road construction / widening activity (b) interference of reservoir with the inflowing stream (c) blasting for commissioning of HRT, TRT and some other structures.
1 3.	Changes in land use / land cover and drainage pattern
1 4.	Immigration of labour population
1 5.	Quarrying operation and muck disposal

1 6.	Changes in land quality including effects of waste disposal
1 7.	River bank and their stability
1 8.	Impact due to submergence.
1 9.	Impact on forests, flora, fauna including wildlife, migratory avi-fauna, rare and endangered species, medicinal plants etc.
2 0.	Pressure on existing natural resources
2 1.	Deforestation and disturbance to wildlife, habitat fragmentation and wild animal's migratory corridors
2 2.	Compensatory afforestation-identification of suitable native tree species for compensatory afforestation and green belt.
2 3.	Impact on fish migration and habitat degradation due to decreased flow of water
2 4.	Impact on breeding and nesting grounds of animals and fish.
2 5.	Impact on local community including demographic profile.
2 6.	Impact on socio-economic status
2 7.	Impact on economic status.
2 8.	Impact on human health due to water / vector borne disease
2 9.	Impact on increase traffic
3 0.	Impact on Holy Places and Tourism
3 1.	Impacts of blasting activity during project construction which generally destabilize the land mass and leads to landslides, damage to properties and drying up of natural springs and cause noise population will be studies. Proper record shall be maintained of the baseline information in the post project period.
3 2.	Positive and negative impacts likely to be accrued due to the project are listed.
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. Detailed muck transportation plan delineating the path ways, number of trucks, quantity of muck to be transported along with monitoring mechanism using latest technology, shall be prepared.
12.	Restoration Plan for Quarry Sites and landscaping of colony areas, working areas, roads etc. Details of the coarse/fine aggregate/clay etc. required for construction of the project and the rock/clay quarries/river shoal sites identified for the project should be discussed along-with the Engineering and Biological measures proposed for their restoration with physical and financial details. Layout map showing quarry sites vis-à-vis other project components, should be prepared.
13.	Resettlement and Rehabilitation Plan needed to be prepared on the basis of findings of the socio-economic survey coupled with the outcome of public consultation held. The R&R package shall be prepared after consultation with the representatives of the project affected families and the State Government. Detailed budgetary estimates are to be provided. Resettlements site should be identified. The plan will also incorporate community development strategies.
14.	Public Health Delivery Plan including the provisions of drinking water supply for local population shall be in the EIA/EMP Report. Status of the existing medical facilities in the project area shall be discussed. Possibilities of strengthening of existing medical facilities, construction of new medical infrastructure etc. will be explored after assessing the need of the labour force and local populace.
15.	Local Area Development Plan to be formulated in consultation with the Revenue Officials and Village Panchayats. Appropriate schemes shall be prepared under EMP for the Local Area Development Plan with sufficient financial provisions.
16.	Labour Management Plan for their Health and Safety.
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.

4. Any Other Item(s)

N/A

5. List of Attendees

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

MINUTES OF THE 48TH MEETING OF THE EXPERT APPRAISAL COMMITTEE FOR RIVER VALLEY AND HYDROELECTRIC PROJECTS HELD ON 12TH FEBRUARY, 2026 THROUGH VIDEO CONFERENCE

The 48th 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 12th February, 2026 through virtual mode, under the Chairmanship of Prof. G. J. Chakrapani. The list of Members present in the meeting is at **Annexure**.

Confirmation of the Minutes of the 47th EAC meeting:

The Minutes of the 47th EAC meeting held on 28th and 30th January, 2026 were confirmed with correction in the following agenda items:

I. **Agenda Item No. 47.3** of Gosaintari Close loop Pumped Storage Project (920 MW) in an area of 283.03 Ha located at Adwaria, Amghati, and Charbigha etc., Sub-District Rajauli & Gobindpur, District Nawada, Bihar by M/s Sun Hydro Energy Private Limited – Terms of References (TOR) – reg. [Proposal No. IA/BR/RIV/564878/2026; F. No. J-12011/01/2026-IA.I (R)]

It was noted that the recommendations of the EAC under sub-para 42.4.4 were made for Gosaintari Close loop Pumped Storage Project (920 MW); however, due to typographical error the project name got mentioned as Rajupalem PSP.

The sub point 47.3.3 shall be read as follows: “...*The EAC noted that the total land requirement for the Gosaintari PSP is estimated to be around 283.03 ha, out of which 54.61 ha is non-forest land and 228.42 ha is forest land. Diversion of forest land for non-forest purpose will be involved for construction of project components. However, it was observed that the application for Stage-I Forest Clearance (FC) has not yet been submitted, which necessitates further action from the Project Proponent. The project is located at a distance of approximately 3.8 km from Rajauli (Nawada) Wildlife Sanctuary, and the Eco-Sensitive Zone (ESZ) boundary, as per the draft ESZ notification, is at a distance of 0.2 km from the project site. Therefore, obtaining wildlife clearance from the National Board for Wildlife (NBWL) is mandatory for the project...*”

Further, the EAC while recommending additional/specific ToR in sub para of [A] Environmental Management and Biodiversity Conservation: at S.No vii the forest land got mentioned as 73.30 ha instead of 228.42 ha.

The additional/specific ToR at S.No. vii shall be read as “...*Explore the possibilities for reducing the Forest land requirement. The application for obtaining Stage I FC for 228.42 ha of forest land involved in the project shall be submitted within stipulated time..*”.

II. Agenda Item No. 47.2 Morand-Ganjal Irrigation Project in Hosangabad district of Madhya Pradesh by M/s Narmada Valley Development Authority, Madhya Pradesh-Environmental Clearance reg [Proposal No. IA/MP/RIV/25213/2011; F. No. J-12011/43/2011-IA.I]

It was noted that the recommendations of the EAC under sub-para 47.2.3, the EMP cost is mentioned as Rs 16,372 Lakhs instead of Rs. 15943.98. Now, the 12th para of the EAC recommendations may be read as under:

“...The EAC opined that the EMP cost i.e. Rs 15943.98 Lakhs (excluding Resettlement & rehabilitation plan and Compensatory Afforestation plan) and recurring cost of Rs. 418 Lakhs may be implemented in a time bound manner with following components: ...”

Agenda Item No. 48.1

Velimalai Pumped Storage Hydro Electric Project (1000 MW) in an area of 159.25 Ha located at Village Alur and Velimalai, Sub District Kalkulam, District Kanniyakumari, Tamil Nadu by M/s Tamil Nadu Green Energy Corporation Limited - Terms of References (TOR) – reg.

[Proposal No. IA/TN/RIV/556996/2026; F. No. J-12011/06/2026-IA.I(R)]

48.1.1 The proposal is for grant of Terms of Reference (ToR) to the project Velimalai Pumped Storage Hydro Electric Project (1000 MW) in an area of 159.25 Ha located at Village Alur and Velimalai, Sub District Kalkulam, District Kanniyakumari, Tamil Nadu by M/s Tamil Nadu Green Energy Corporation Limited.

48.1.2 The Project Proponent and the accredited Consultant M/s. Aadhi Boomi Mining and Enviro Tech (P) Ltd., No. 3/216, K.S.V Nagar, Narasothipatti, Salem-636004, Tamil Nadu made a detailed presentation on the salient features of the project and informed that:

- i. Velimalai Hydro Electric Project has been envisaged as a pumped storage project. The proposed site of the project is located in Kanniyakumari district of Tamil Nadu.
- ii. The proposed Velimalai PSP is an off-stream closed loop pumped hydro scheme. It comprises an underground powerhouse with an installed capacity of 1100 MW having 4 units of 275 MW, envisages utilization of available head of upper and lower reservoir at an elevation of El 856.00 m (at FRL) and El 158.00 m (at FRL) respectively.
- iii. The Project comprises of development of upper reservoir with a gross storage capacity of about 4.4 MCM. Upper reservoir to be constructed with maximum dam height of \approx 53 m (from riverbed level) to create the desired storage. The lower reservoir is with a gross storage capacity of about 4.91 MCM. Lower reservoir to be constructed with maximum dam height of \approx 51 m (from riverbed level) to create the desired storage. The scheme of operation for the project is with 6.00 hr of peak hour generation per day and

6.94 hr for pumping back the water to the upper reservoir. Water will be used cyclically for energy storage and discharge. Evaporation losses and re-circulation losses if any shall be recouped periodically from a source other than the rainfall yield of catchment of non-perennial streams/nallahs.

iv. The Geographical co-ordinate of the proposed upper dam is located near Maruvattar Kannu Village of Kanyakumari district with latitude of 8°15'18.66''N & Longitude of 77°23'21.97''E and the lower dam is at Madatattuvilai village of Kanyakumari district with latitude 8°13'50.17''N, longitude 77° 23' 12.69''E in Tamil Nadu.

v. **Land requirement:**

Non-Forest Land [A]	95.18 Ha
Forest Land [B]	64.07 Ha
Total Land [A+B]	159.25 Ha

vi. **Water requirement:** Water requirement for initial filling of two newly proposed reservoirs and filling of water conductor system works to be about 5.6 MCM. Whereas water requirement for subsequent annual recoupment of reservoirs due to evaporation works out to about 0.5 MCM. In case, the proposal of existing PFR is not feasible, alternate water source needs to be identified near the project area.

vii. **Project Cost:** The estimated project cost is Rs. 562400/- lakhs.

viii. **Project Benefit:**

- Provides Employment, power for industrial growth and domestic supply, and also balancing the power grid.
- Velimalai pumped storage project is a technically feasible project and will be beneficial in meeting the peaking requirement of energy during evening/night in the beneficiary state i.e., Tamil Nadu.

ix. **Environmental Sensitive area:** There are Kanyakumari Wildlife National Parks, wildlife sanctuaries etc. within 10 km distance from the project site. River/ water body Mambazhathurayar Reservoir is flowing at a distance of 0.90 km in West direction.

x. **Resettlement and rehabilitation:** Rehabilitation and Resettlement (R&R) applicable for 21.85 ha of land which is proposed to be acquired under Tamil Nadu Acquisition of Land for Industrial Purposes Act, 1997 (TN Act, 1997).

xi. **Alternative Studies:** The Topography of the proposed area for the project is showing possibility of creation of upper reservoir & lower reservoir at two locations. The following aspects have been considered for formulation of alternative layouts.

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

Based on the above considerations, three alternative layouts namely (i) Alternative-1, (ii) Alternative-2 & (iii) Alternative-3 for two Upper Reservoirs & two Lower reservoirs are studied.

Table: Land Requirement for Various Alternative Layouts (Ha)

S. No	Project Component	Alternative 1	Alternative 2	Alternative 3
1	Site Office	0.52	0.50	0.50
2	Concrete Batching Plan, Crusher, Cement at Upper Reservoir	0.00 (Inside Upper Reservoir)	0.00 (Inside Upper Reservoir)	0.00 (Inside Upper Reservoir)
3	Concrete Batching Plan, Crusher, Cement at Lower Reservoir	0.00 (Inside Lower Reservoir)	0.00 (Inside Lower Reservoir)	0.00 (Inside Lower Reservoir)
4	Stacking Area	0.00 (Inside Upper Reservoir)	0.00 (Inside Upper Reservoir)	0.00 (Inside Upper Reservoir)
5	Magazine Area	0.51	0.50	0.50
6	Labour Camp	1.63	2.30	2.30
7	Colony Area	3.53	3.70	3.70
8	Muck Disposal Area near Upper Reservoir	14.14	13.0	14.0
9	Muck Disposal Area near Lower Reservoir	29.10	22.0	24.0
10	Upper Reservoir	27.88	29.0	29.0
11	Lower Reservoir	26.98	47.0	26.0
12	Approach Road	27.78	27.0	32.0
13	Water Conductor System, PH, Adit	26.44	14.0	25.0

14	Water filling Arrangement infrastructure	0.73	-	-
Total		159.25 Ha	159.0 Ha	157.0 Ha

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

- Project details:**

Name of the Proposal	Velimalai Pumped Storage Hydro-Electric Project (1000 MW) in Kanyakumari District, Tamil Nadu
Location (Including coordinates)	Alur and Velimalai Village, Kalkulam Taluk, Kanyakumari District, Tamil Nadu Coordinates: Upper Reservoir: 8°15'19.28''N & 77°22'31.14''E Lower Reservoir: 8°13'50.17''N & 77° 23' 12.69''E
Inter- state issue involved	NO
Seismic zone	Zone -III: Moderate Damage Risk Zone as per BMTPC, Vulnerability atlas Seismic zone of India IS: 1893-2002.

- Category details:**

Category of the project	A
Provisions	Sector 1(c) River Valley – Hydro Electric
Capacity / Cultural command area (CCA)	175 Ha
Attracts the General Conditions (Yes/No)	Yes
Additional information (if any)	-

- Electricity generation capacity:**

Powerhouse Installed Capacity	1000 MW
Generation of Electricity Annually	2080.55 GWh (MU) peak annum energy

No. of Units	1
Additional information (if any)	-

● **ToR/EC Details:**

Cost of project	562400/- lakhs
Total area of Project	159.25 Ha
Height of Dam from River Bed (EL)	Upper Reservoir – 56.0 m Lower Reservoir – 62.50 m
Length of Tunnel/Channel	10.5 km
Details of Submergence area	Forest Land -25.90 Ha Non-Forest Land – 28.96 Ha
Types of Waste and quantity of generation during construction/ Operation	Shall be carried out during EIA/EMP studies
E-Flows for the Project	The classification of the project as an Off stream Closed Loop PSP aligns with the understanding that no water from the catchment will be consumed or diverted for storage in the proposed reservoirs, thus minimizing the potential for disruption to the natural flow regime of the catchment. Hence, there will be no impact on the E-flow of the upper and lower reservoir catchment
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then a) E-flow with TOR /Recommendation by EAC as per CIA&CC study of River Basin. b) If not the E-Flows maintain criteria for sustaining river ecosystem.	No
No. of trees/saplings proposed in view of 'Ek Ped Maa Ke Naam' campaign	Compensatory Afforestation as required would be undertaken and number of trees would be studied in DPR Stage. INR 1,281 lakhs are allocated for compensatory afforestation and soil & moisture conservation

- **Muck Management Details:**

No. of proposed disposal area/ (type of land-Forest/Pvt. land)	Shall be carried out during EIA/EMP studies
Muck Management Plan	Muck management plan will be incorporated in EIA/EMP report.
Monitoring mechanism for Muck Disposal	Shall be carried out during EIA/EMP studies

- **Land Area Breakup:**

Private Land	37.90 Ha
Government land/Forest Land	51.47 Ha/64.07 Ha
Patta Land	5.80 Ha
Total Land	159.25 Ha
Submergence area/Reservoir area	54.86 Ha
Additional information (if any)	-

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

Forest Land/ Protected Area/ Environmental Sensitivity Zone	Yes/No	Details of Certificate / letter/Remarks
Reserve Forest/Protected Forest Land	Yes	Application under process
National Park	No	
Wildlife Sanctuary	No	

- **Court case details:** Nil

- **Status of other statutory clearances:**

Particulars	Letter no. and date
Certified EC compliance report (if applicable)	It's newly proposed PSP
Status of Stage-I FC	
Additional detail (If any)	
Is FRA (2006) done for FC-I	

- **Miscellaneous:**

Particulars	Details
Details of consultant	Dr.S.Suriyakumar Aadhi Boomi Mining and Enviro Tech (P) Ltd., No. 3/216, K.S.V. Nagar, Narasothipatti, Salem-636004, Tamil Nadu. Mobile No: +91-9842729655 Mail id: suriyakumarsemban@gmail.com abmenvirotech@gmail.com NABET Certif. No: NABET/EIA/24-27/0365 Validity up to 23.10.2027
Project Benefits	Provides Employment, power for industrial growth and domestic supply, and also balancing the power grid. Velimalai pumped storage project is a technically feasible project and will be beneficial in meeting the peaking requirement of energy during evening/night in the beneficiary state i.e., Tamil Nadu.
Status of other statutory clearances	Application under process.
R&R details	Rehabilitation and Resettlement (R&R) applicable for 21.85 ha of land which is proposed to be acquired under Tamil Nadu Acquisition of Land for Industrial Purposes Act, 1997 (TN Act, 1997)
Additional detail (If any)	A non-perennial stream originating near the Upper Reservoir joins another non-perennial stream near the Perunchilambu village. It further passes through a tunnel and eventually joins the Paralayar River. The Mambazhathuraiyar reservoir scheme is located in the immediate downstream of the project site.

48.1.3 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 Velimalai Pumped Storage Hydro Electric Project (1000 MW) in an area of 159.25 Ha located at Village Alur and Velimalai, Sub District Kalkulam, District Kanniyakumari, Tamil Nadu by M/s Tamil Nadu Green Energy Corporation Limited.
- The project/activity falls under Category A of item 1(c), 'River Valley Projects,' as per the Schedule of the Environmental Impact Assessment Notification, 2006, and requires appraisal at the Central level by the sectoral EAC in the Ministry.

- During the deliberations the committee noted that Lower Reservoir is located on non-perennial natural small stream/nallah. Since the reservoir is located on non-perennial natural small stream/nallah, the committee opined that the project shall be categorized as an open-loop project rather than a closed-loop PSP. The EAC was of the view that the non-perennial small streams/nallahs play an important role in ecosystem stability through supporting unique, adapted communities and provide critical habitat, especially during dry periods. They are hotspots for biodiversity and vital for maintaining ecosystem services.
- Based on the KML file and the submission made by the PP, the EAC observed that the nallah/small stream contribute water to the dam located downstream of the proposed lower reservoir, which in turn supplies water to the reservoir system. In view of the above, it was opined that the PP shall ensure uninterrupted release of catchment runoff to the downstream of the lower reservoir so as to maintain the natural flow regime and safeguard downstream water availability. Accordingly, the EAC advised to prepare suitable action plan for sustenance of the natural nallahs/streams after having detailed analysis of catchment yield, requirement of water for maintaining ecosystem services and availability of water to the downstream dam.
- The EAC noted that the total land requirement for the proposed PSP is estimated to be around 159.25 ha, out of which 95.18 ha is non-forest land and 64.07 ha is forest land. Diversion of forest land for non-forest purpose will be involved for construction of project components. However, it was observed that the application for Stage-I Forest Clearance (FC) has not yet been submitted, which necessitates further action from the Project Proponent. Water requirement for initial filling of two newly proposed reservoirs works to be about 5.6 MCM with annual recoupment of reservoirs due to evaporation works out to about 0.5 MCM. The state government vide letter dated 16.06.2025 approved water filling requirement from Paraliyar river.
- The EAC during the meeting observed that the proposed project is located at a distance of approximately 1.63 Km from ESZ boundary of Kanyakumari Wildlife Sanctuary Boundary. Declaration of Kanyakumari Wildlife Sanctuary was notified under section 18(1) of Wildlife (Protection) Act, 1972 vide G.O. No. 128 (E&F) Dept. Dated: 20.11.2007.

48.1.4 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 open Loop Pumped Storage Projects vide OM dated 14.08.2023 for conducting EIA study for proposed construction of the project for Velimalai Pumped Storage Hydro Electric Project (1000 MW) in an area of 159.25 Ha located at Village Alur and Velimalai, Sub District Kalkulam, District Kanniyakumari, Tamil Nadu by M/s Tamil Nadu Green Energy Corporation Limited, under the provisions of EIA Notification, 2006, as amended along with the following additional/specific ToR:

[A] Environmental Management and Biodiversity Conservation:

- i. PP shall obtain MoU signed between from the State Government and PP in view of proposed PSP in District Kanniyakumari.
- ii. A detailed action plan for large scale plantation of native species of plant sapling within 10 km radius of the project shall be prepared in consultation with State Forest Department. The monitoring mechanism to ensure the survival of saplings shall be finalized in consultation with ICFRE.
- iii. The PP will submit 10 years water availability data certified by the CWC/State Water Resource Department for quantity of water that is received annually by the small stream on which lower reservoir is proposed to be constructed.
- iv. The PP will submit a detailed plan and monitoring mechanism for releasing the self - catchment water of small stream draining in to river along with action plan for conservation and protection of other streams/rivulets draining in to upper and lower reservoirs.
- v. Explore the possibilities for reducing the Forest land requirement. The application for obtaining Stage I FC for 64.07 ha of forest land involved in the project shall be submitted within stipulated time.
- vi. Muck disposal site and other components such as Township, site office, Stacking area and batching plant shall be located outside the forest area.
- vii. Certificate and certified map from Chief Wildlife Warden shall be submitted mentioning that project boundary is not falling in any Ecological Sensitive Area, Wildlife Sanctuary/Tiger/elephant corridor/Critically polluted area within 10 km of Project site.
- viii. Transportation Plan for transporting construction materials shall be submitted. Separate chapter for risk assessment of such transportation through/within proposed the Wildlife Sanctuary shall be included in the EIA report, if any.
- ix. Environmental Cost Benefit Analysis shall be done in terms of loss of Forest ecosystem due to diversion of Forest land/loss of biodiversity, water availability, water uses for generation of hydro power and Ecological flows.
- x. The baseline data collection will cover the changes in biological and ecological profile of the region after monsoon with worst-case scenario study and critical mineral assessment.
- xi. Calculation and values of GHGs (CO₂, CH₄ etc.) emissions during construction and

during operation till the life of the project shall be estimated and submitted.

- xii. The longitudinal connectivity/Free flowing sketch be provided in the EIA/EMP report.
- xiii. Quantitative values of Impact modelling of environmental parameters shall be submitted for during construction and operation. Also, mitigation measures shall be submitted in terms of construction and operation phase.
- xiv. Conducting site-specific ecological study emphasizing on riverine ecology viz. fishes diversity, fish migration, habitat and aquatic biota due to construction PSP. Impact assessment on the fish diversity based on the hydrological alteration at the water drawing sources shall be studied.
- xv. Action plan for survival or diversion of the rivulets/stream, if any, leading to join river shall be submitted.
- xvi. 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.
- xvii. 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.
- xviii. Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP.
- xix. 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.
- xx. 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.
- 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. The EIA/EMP shall include a detailed socio-economic assessment of the tribal population in the project-affected area based on primary data and community consultations. A Tribal Development Plan, prepared in consultation with the District Administration and Tribal Welfare Department, shall be submitted along with the EIA report.
- iv. PP shall submit the credible documents to show the status of land acquisition w.r.t project site from/through the concerned State Government as required under Ministry's OM dated 7th October, 2014 for the project land to be acquired.
- v. Land acquired for the project shall be suitably compensated in accordance with the law of the land with the prevailing guidelines. Private land (if any) shall be acquired as per provisions of Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013. Budget earmarked for R&R, CSR shall not be included in the cost of EMP.

[C] Muck Management:

- i. Details of quantity of muck generation component wise, types of muck (Excavation in tunnels, pressure shaft and powerhouse etc.) and disposal site/ transportation to be provided.
- ii. Details of muck management such as dumping sites and its locations, transportation plan along with monitoring mechanism for muck transportation, detailing the road map of project construction site/ indicating the distances from HFL, river, project construction site along with types of road etc.
- iii. Safety measures for avoiding spill over muck into the riverbed/streams and its flow into the river during the high discharge/ flood or monsoon period. Prepare plan for stabilization of muck disposal sites using biological and engineering measures to ensure that muck does not roll down the slopes and shall be disposed safely and that it does not pollute the natural streams and water bodies in surrounding area.

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

[D] Disaster Management:

- i. Impact of Project activities (specially blasting and drilling) on the aquatic and terrestrial ecosystem, within study area to be studied and be incorporated in EIA/EMP report.
- ii. The muck dumping sites shall be located with a distance of 100 mts from HFL. The PP shall submit the detailed action plan for transportation of muck along with monitoring mechanism of movement of muck carrying trucks.

[E] Miscellaneous:

- i. Both capital and recurring expenditure under EMP shall be submitted.
- ii. Pre-DPR Chapters viz., Hydrology, Layout Map and Power Potential Studies duly appraised by CWC/CEA shall be submitted.
- iii. The PP should submit the photograph of monitoring stations & sampling locations. The photograph should bear the date, time, latitude & longitude of the monitoring station/sampling location. In addition to this PP should submit the original test reports and certificates of the labs which will analyze the samples.
- iv. Drone video of project site shall be recorded and to be submitted.
- v. Detailed plan to restore wider roads and convert them into narrow up to 10m after construction of the project.
- vi. Specific Terms of Reference (ToRs) issued by the Ministry vide Office Memorandum No. F. No. IA3-22/33/2022-IA.III dated 14.08.2023 for Pumped storage projects shall be used for preparation of EIA/ EMP reports.
- vii. As per Ministry's OM dated 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. 48.2

Chitawad Barrage Major Irrigation Project (CCA: 65000 Ha) in an area of 4120.67 Ha located at Village Thikriya, Alot, Amri, etc, Sub District Mahidpur, Nagda, Ghatiya and Tarana, District Ujjain, Madhya Pradesh by M/s Water Resources Division, Ujjain- Terms of References (TOR) – reg.

[Proposal No. IA/MP/RIV/567218/2026; F. No. J-12011/07/2026-IA.I(R)]

48.2.1 The Member Secretary informed that, the representative of the PP vide email/letter dated 10.02.2026 expressed its inability to attend the EAC meeting due to unavoidable circumstances, and requested for deferment. Accordingly, the EAC decided to defer the proposal with advisory to PP to avoid such deferment.

The proposal was *deferred* on the above lines.

Agenda Item No. 48.3

Savitri Open Loop Pumped Storage Project (2400 MW) in an area of 310.76 Ha located at Village Javali, Dare, Haroshi, Karanje etc, Sub-district Poladpur and Mahabaleshwar, District Satara and Raigarh, Maharashtra by M/s NHPC limited - Terms of References (TOR) – reg.

[Proposal No. IA/MH/RIV/551075/2025; F. No. J-12011/43/2025-IA.I (R)]

48.3.1 The proposal is for grant of Terms of Reference (TOR) to the project Savitri Open Loop Pumped Storage Project (2400 MW) in an area of 310.76 Ha located at Village Javali, Dare, Haroshi, Karanje etc, Sub-district Poladpur and Mahabaleshwar, District Satara and Raigarh, Maharashtra by M/s NHPC limited.

48.3.2 The Project Proponent and the accredited Consultant M/s. EQMS Global Pvt. Ltd made a detailed presentation on the salient features of the project and informed that:

- i. The proposed Savitri Pumped Storage Project (2400MW), a self-identified off stream open loop project, is being developed by the NHPC around two adjacent valleys drained by the Koyna River and Savitri River in District Satara, and Raigad, Maharashtra.
- ii. The project, conceived as an open loop project of installed capacity 2400 MW/15072MWH pumped storage component with 6.28 hours storage capacity for peak power generation shall be located in District Satara and Raigad, Maharashtra. The project is being developed by the NHPC around two adjacent valleys drained by the Koyna River and Savitri River in District Satara, and Raigad, Maharashtra.
- iii. The upper and lower dams for the PSP are proposed to be newly constructed. The proposed upper dam (embankment/GFRD) is located across Koyna River, which is a tributary of Krishna River, in Jaoli village near Mahabaleshwar, Satara district. The proposed lower

dam (concrete gravity) is located across Savitri River near Lahulase village, Tehsil Poladpur, Raigad district.

- iv. The project will generate 2400 MW (8x300MW) by utilizing a design discharge of 60.74 cumec/turbine with rated head of 561.67m. The PSP will utilize 2560 MW(8x320MW) to pump 51.33 cumec/pump from lower reservoir to the upper reservoir. The scheme of operation for the project is 6.28 hours of peak power per day and 7.43 hours for pumping back the water through TRT-reversible turbines-pressure shaft-HRT to the upper reservoir.
- v. Water will be used cyclically for energy storage and discharge. For reservoir operation the project contemplates non-consumptive re-utilization of 11.23 MCM of water for recirculation among two proposed reservoirs. The one-time filling requirement of 19.58 MCM and periodical recoupment for losses(1.47MCM) will be met from yield generated within lower dam catchment area (18.94 sq.km) and used cyclically for energy storage and discharge.
- vi. The geographical co-ordinates of the project are:
Upper Reservoir Coordinates: 17° 56' 47.04" N & 73° 37' 13.73" E
Lower Reservoir Coordinates: 17° 57' 56.59" N & 73° 35' 11.10" E
- vii. **Land requirement:** Total land requirement of the project is 310.76 ha (Forest: 55.64 ha; Government: 170.12 ha; Private 85.00 ha). The private land shall be acquired as per provisions of RFCTLARR Act, 2013.
- viii. **Demographic details in 10 km radius of project area:** As per the Census of India 2011, the total population 72 villages of study area comprising of total 9799 households are 42889 composed of 21428 males and 21461 females with sex ratio of 1002. The cast wise composition of the total population of the project affected villages is made up of scheduled cast population of 2808 (6.55%) and Scheduled Tribe population of 3412 (7.96%). The literate population is 30658(80.06%) of which the male and female population is 16881(88.20%) and 13777 (71.92%) respectively. The gender gap for literacy rate is 16.28 %. The total working population is 17756 (41.40%) which comprises of main workers 15107(35.22%) and marginal workers 2649(6.18%).
- ix. **Water requirement:** The quantity of water required during construction is estimated as 1200kld (Construction-1100 kld; Domestic-100kld) which shall be drawn from Savitri/Koyna River. Water can be pumped and stored in a tank at higher elevation.
- x. **Project Cost:** The estimated project cost is Rs 11826 crores (August 2023PL) including existing investment. Total capital cost and recurring annual cost (operation & maintenance) towards EMP shall be earmarked after evaluating cost of EMPs.

- xi. **Project Benefit:** The benefits inter alia shall include the benefits like (i) Average annual generation of 5226.22 MU of energy with 95% plant availability; (ii) Increased vegetal cover due to implementing of CAT Plan and Green Belt Development Plans (iii) Employment Potential during construction (1000 labour); (iv) Overall development of area by implementing CSR initiatives and Watershed Development Plans.
- xii. **Environmental Sensitive area:**
- (a) Raigad Conserve Reserve: Part of water conductor system, powerhouse and access roads, fall within the Raigad Conserve Reserve.
- (b) Mahabalehwar-Panchgani ESZ: Upper dam/reservoir, submergence area, upper intake and part of water conductor system are in Mahabalehwar-Panchgani ESZ.
- No archaeological monument of national importance lies either in the project area or in its submergence area. There is also no national heritage structure in the area.
- xiii. **MoU / any other clearance/ permission signed with State government:** A MoU has been signed between NHPC and Deptt. of Energy, Govt. of Maharashtra on 06th June'23 for establishment of 4 nos. PSPs including Savitri PSP. Subsequently, another MoU was signed between NHPC & Govt. of Maharashtra on 03rd Sep'24 for development of the PSPs with an objective to prepare the DPR & submit to CEA/GoMWRD for its approval.
- xiv. **Resettlement and rehabilitation:** There shall be displacement of families. R&R details shall be finalized later after grant of ToR.
- xv. **Alternative Studies:** With broad location of upper and lower dams defined as per MoU signed between Government of Maharashtra and NHPC, the dam axis for upper and lower dam fixed considering minimal R&R issues. Based on two water conductor alignments (WCS-1 and WCS-2), with no suitable site available for deep pit powerhouse, four alternative layouts have been studied and examined for various aspects and environmental perspectives.

Alternate-1: It comprises WCS-1 alignment (total length 3839.1m) consisting of partly surface and partly underground pressure shaft; underground TRT, without surge shaft option, and underground powerhouse. The L/H ratio would be 6.79. The tentative cost would be Rs 12770 crores, the highest of all alternatives. This alternate is riddled with the disadvantage of maximum WCS cost besides more forest land requirement due to partial surface penstock and the least cycle efficiency (78.96%).

Alternate-2: It comprises WCS-1 alignment (3696.4m), with surge shaft option, and underground powerhouse. The L/H ratio would be 6.53. The tentative cost would be Rs 12224 crores, the second highest of all alternatives. This alternate has the advantage of the least L/H ratio, second highest cycle efficiency (79.21%) besides second maximum WCS cost. It has the disadvantage of more forest land requirement due to partial surface

penstock, but lesser than Alternate-1.

Alternate-3: It comprises WCS-2 alignment (3812.7m), without surge shaft option, underground pressure shaft and underground powerhouse. The L/H ratio would be 6.72. The tentative cost would be Rs 12155 crores, the second lowest of all alternatives. This alternate has the advantage of the least L/H ratio, second highest cycle efficiency (79.21%) besides second maximum WCS cost. It has the disadvantage of the second highest WCS cost and second highest L/H ratio but has the advantage of lesser forest land requirement due to underground pressure shaft.

Alternate-4: It comprises WCS-2 alignment (3727.8m), with U/s surge shaft and D/s surge chamber option, underground pressure shaft and underground powerhouse. The L/H ratio would be 6.64. The tentative cost would be Rs 11826 crores, the least of all alternatives. This alternate has the advantage of the least WCS cost, highest cycle efficiency (79.37%) besides least forest land requirement due to underground pressure shaft.

It is brought out here that the forest land requirement shall be the least in Alternate-4 and it is best from environmental point of view. Apart from this it is the best from techno economics consideration, too. It is preferred and selected for further studies and development.

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

(a) Municipal Solid Waste (MSW) likely to be generated during construction and operation shall be 38.7 Ton/annum and 25.5 ton/annum respectively which shall be managed as per Solid Wastes Management Rules, 2016.

(b) Hazardous waste: It inter alia includes burnt mobile oil and greases (10 ton/annum) from vehicles and construction machinery and equipment which shall be handled and disposed of through authorized dealer as per Hazardous and other Wastes (Management & Transboundary Movement) Rules, 2016.

(c) The total quantity of muck / debris, to be generated due to the project, shall be 41.56 lakh cum, of which 33.84 lakh cum shall be consumed on project work and balance 7.42 lakh cum (10.25cum with 38% swell factor) shall be dumped at designated muck sites. Muck piles shall be well supported at base by retaining walls and multi-storied plantation will be developed using grasses, shrubs, bushes, and trees in a site-specific manner.

xvii. Status of Litigation Pending against the proposal, if any. None

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

- **Project details:**

Name of the Proposal	Savitri PSP (2400 MW), Districts: Satara & Raigad Maharashtra Proposal No.: IA/MH/RIV/551075/2025 File No. J-12011/43/2025-IA. I(R)
Location (Including coordinates)	Upper Dam: Village Jaoli, Tehsil- Mahabaleshwar, District Satara, Maharashtra Lower Dam: Village Lahulase, Tehsil Poladpur, District Raigad, Maharashtra Upper Reservoir: 17°56'47.04" to 17°37'13.73" Lower Reservoir: 17°57'56.49" to 17°35'11.1"
Inter- state issue involved	No
Seismic zone	Zone -IV

- **Category details:**

Category of the project	A
Provisions	Project activity covered at S.N.1(c)(i) Standalone Pumped Storage Project
Capacity / Cultural command area (CCA)	2400 MW pumped storage component with 6.28 hours storage capacity for peak power generation and 7.43 hours pumping operation for backfilling of upper reservoir of PSP.
Attracts the General Conditions (Yes/No)	Yes. Part of water conductor system, powerhouse and access roads, fall within the Raigad Conserve Reserve.
Additional information (if any)	The upper dam/ reservoir, submergence area, upper intake and part of water conductor system are in Mahabaleshwar-Panchgani ESZ.

- **Electricity generation capacity:**

Powerhouse Installed Capacity	2400 MW
Generation of Electricity Annually	5226.22 MU
No. of Units	8X300MW
Additional information (if any)	The project with installed capacity of 2400 MW(8x300MW) by utilizing a design discharge of 485.92 cumec rated net head of 561.670m for 6.28-hour daily peaking cycle will annually generate 5226.22 MU at 95% plant availability. The PSP will utilize 2560 MW to pump 410.64 cumec from

	lower reservoir to the upper reservoir in 7.43 hours. The annual pumping energy required shall be 6593.75 MU. The cycle efficiency of the PSP works out to be about 79.26%.
--	---

• **ToR/EC Details:**

Cost of project	Rs 11826 Crores.																					
Total area of Project	310.76 ha																					
Height of Dam from River Bed (EL)	Upper Dam-59.00 m; Lower Dam-63.50 m																					
Length of Tunnel/Channel	Length: 13483 m comprising of following components: (i)Main HRT: 1239m; Unit HRT: 640m (ii)Main Pressure shaft:5564m; Unit: 3136m (iii)Main TRT: 1376m; Intermediate &Branch TRT: 1528m																					
Details of Submergence area	Total Submergence area- 144ha Upper Reservoir-79.76 ha (Forest land: 7.15ha, Non-Forest land :72.61ha) Lower Reservoir-64.24 ha (Forest land: 0.00ha, Non-Forest land :64.24ha)																					
Types of Waste and quantity of generation during construction/ Operation	<table border="1"> <thead> <tr> <th>Waste Type</th> <th>Construction (TPA)</th> <th>Operation (TPA)</th> </tr> </thead> <tbody> <tr> <td>MSW</td> <td>38.7</td> <td>25.5</td> </tr> <tr> <td>Plastic</td> <td>5.0</td> <td>0.50</td> </tr> <tr> <td>E-waste</td> <td>0.5</td> <td>0.1</td> </tr> <tr> <td>Burnt oil</td> <td>10.0</td> <td>1.00</td> </tr> <tr> <td>Batteries</td> <td>2.0</td> <td>0.50</td> </tr> <tr> <td>Bio-medical</td> <td>0.5</td> <td>0.0</td> </tr> </tbody> </table>	Waste Type	Construction (TPA)	Operation (TPA)	MSW	38.7	25.5	Plastic	5.0	0.50	E-waste	0.5	0.1	Burnt oil	10.0	1.00	Batteries	2.0	0.50	Bio-medical	0.5	0.0
	Waste Type	Construction (TPA)	Operation (TPA)																			
	MSW	38.7	25.5																			
	Plastic	5.0	0.50																			
	E-waste	0.5	0.1																			
	Burnt oil	10.0	1.00																			
	Batteries	2.0	0.50																			
Bio-medical	0.5	0.0																				
E-Flows for the Project																						
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then a) E-flow with TOR /Recommendation by EAC as per CIA&CC study of River Basin.	No Not applicable Not applicable in case of PSP																					

b) If not the E-Flows maintain criteria for sustaining river ecosystem.	
No. of trees/saplings proposed in view of 'Ek Ped Maa Ke Naam' campaign	

- **Muck Management Details:**

No. of proposed disposal area/ (type of land- Forest/Pvt. land)	Muck Disposal Sites-4 Nos Area and Type of land -15 ha; non-forest
Muck Management Plan	The muck shall be laid with vertical angle not exceeding 28° in such a manner that rock mass is properly stacked behind the gabion wall/revetment with minimum of voids. The muck pile shall be later covered with geo-Geo-coir textile and rehabilitated by afforestation of herbs and shrubs. Detailed Muck Management Plan shall be formulated during EIA study.
Monitoring mechanism for Muck Disposal	The project authorities shall erect a barrier to regulate the traffic flow to and fro the muck piles site. Proper e-challan shall be issued.

- **Land Area Breakup:**

Private land	85.00 ha
Government land	170.12ha
Forest Land	55.64 ha
Total Land	310.76
Submergence area/Reservoir area	144.00 ha
Additional information (if any)	Dam structures: 37.87ha Water conductor System:38.39 ha Project & labour colony:20.00 ha Roads;55.00ha. Muck disposal: 15.00 ha Land for transmission line for power evacuation (RoW) is not included.

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

Forest Land/ Protected Area/ Environmental Sensitivity Zone	Yes/No	Details of Certificate/letter/Remarks
Reserve Forest/Protected Forest Land	Yes	(i)Raigad Conservation Reserve (ii)Mahabalehwar-Panchgani ESZ. (Notification, Dated 17 th January 2001)
National Park	No	None within 10km
Wildlife Sanctuary	No	None within 10km

- **Court case details:**

Court Case	None
Additional information (if any)	None

- **Affidavit/Undertaking details:**

Affidavit/Undertaking	Annexure-IV of Agenda of meeting
Additional information (if any)	None

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

Particulars	Letter no. and date
Certified EC compliance report (if applicable)	Not applicable
Status of Stage- I FC	Not yet
Additional detail (If any)	Application for diversion of forest land shall be moved
Is FRA (2006) done for FC-I	Not yet

- **Miscellaneous**

Particulars	Details
Details of consultant	EQMS GLOBAL PRIVATE LIMITED 305, 3rd Floor, Plot No. 16, Rishabh Corporate Tower, Community Centre, Karkardooma, Delhi – 110092

	Phone: 011-43062757; NABET/EIA/25-28/RA0465, valid up to 23.11.2028)
Project Benefits	The benefits inter alia shall include the benefits like (i) Average annual generation of 5226.22 MU of energy with 95% plant availability; (ii) Increased vegetal cover due to implementing of CAT Plan and Green Belt Development Plans (iii) Employment Potential during construction (1000 labour); (iv) Overall development of area by implementing CSR initiatives and Watershed Development Plans.
Status of other statutory clearances	The mandatory statutory clearance like approval of power potential studies from CEA, site specific earthquake design parameters to be approved by NCSDP, Geological report approval from GSI, DPR approval from CWC and CEA; Forest clearance for diversion of forest land, are yet to be sought.
R&R details	There shall be displacement of families. R&R details shall be finalised later.
Additional detail (If any)	None

48.3.3 The considered the proposal in its 44th meeting held on 10.12.2025 wherein deferred the proposal and directed the PP to obtain the requisite No Objection Certificate/Clearance from the competent authority in accordance with the provisions of the Mahabaleshwar–Panchgani Eco-Sensitive Zone Notification, S.O. 52(E) dated 17.01.2001, for further consideration of the proposal. Accordingly, PP submitted desired information sought by the EAC on 22/01/2026 on Parivesh Portal.

48.3.4 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 Savitri Open Loop Pumped Storage Project (2400 MW) in an area of 310.76 Ha located at Village Javali, Dare, Haroshi, Karanje etc, Sub-district Poladpur and Mahabaleshwar, District Satara and Raigarh, Maharashtra by M/s NHPC 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.

Observation of the EAC in its 44th meeting held on 10.12.2025

- The EAC observed that the proposed project is an open loop project of installed capacity 2400 MW/15072MWH pumped storage component with 6.28 hours storage capacity for peak power generation. The upper dam is located across Koyna River, which is a tributary of Krishna River and lower dam is located across Savitri River near Lahulase. For reservoir operation the project contemplates non-consumptive re-utilization of 11.23 MCM of water for recirculation among two proposed reservoirs. The one-time filling requirement of 19.58 MCM and periodical recoupment for losses(1.47MCM) will be met from yield generated within lower dam catchment area (18.94 sq.km) and used cyclically for energy storage and discharge.
- The EAC noted that total land required for the construction of various components and related works for project is 310.76 ha out of which Forest area is 55.64 ha, Government land is 170.12 ha and Private land is 85.00 ha. Diversion of forest land for non-forest purpose will be involved for construction of project components. However, it was observed that the application for Stage-I Forest Clearance (FC) has not yet been submitted, which necessitates further action from the Project Proponent.
- The committee noted that part of water conductor system, powerhouse and access roads, fall within the Raigad Conservation Reserve, Additionally, upper dam/reservoir, submergence area, upper intake and part of water conductor system fall within Mahabaleshwar-Panchgani ESZ. The EAC further noted that all the project components are located within the proposed Western Ghats ESA, Maharashtra as per MOEF&CC draft notification S.O.30609(E) dated 31.07.2024.
- It has been observed that Memorandum of Understanding has been signed between NHPC and Deptt. of Energy, Govt. of Maharashtra on 06.06.2023 for establishment of 4 nos. PSPs including Savitri PSP. Subsequently, another MoU was signed between NHPC & Govt. of Maharashtra on 03.09.2024 for development of the PSPs with an objective to prepare the DPR & submit to CEA/GoMWRD for its approval.
- The EAC noted that, as per the notification of the Mahabaleshwar–Panchgani Eco-Sensitive Zone issued vide S.O. 52(E) dated 17.01.2001, only non-polluting non-hazardous service industries, units making footwear from processed and ready-made leather, floriculture, horticulture based or agro based industries producing products from indigenous goods from the Eco Sensitive Zone shall be permitted in this zone, providing the project/ activity does not result in polluting effluent, emission or impacts.
- The Committee further observed that, as per the classification of industries provided by the Central Pollution Control Board (CPCB) on date 12.02.2025, the hydel power plants (Capacity > 50 MW) fall under the Red category. Accordingly, the EAC noted that the Savitri PSP being a sub category of Hydel Power Plant projects, falls under red category and therefore was not a fit case to be taken up for grant of Terms of Reference (ToR) unless

the Project Proponent (PP) obtained requisite No Objection Certificates / clearances from the competent Authority(ies).

- In view of the above mentioned provisions and regulatory restrictions, the EAC decided to defer the proposal and suggested the Project Proponent to obtain the requisite No Objection Certificate/Clearance from the competent authority in accordance with the provisions of the Mahabaleshwar–Panchgani Eco-Sensitive Zone Notification, S.O. 52(E) dated 17.01.2001, for further consideration of the proposal.

Observation of the EAC in the current meeting:

The EAC observed that the document submitted by the PP on the Parivesh Portal is not an NOC from the competent authority as required under the Mahabaleshwar–Panchgani Eco-Sensitive Zone Notification, S.O. 52(E) dated 17.01.2001. Instead, the PP submitted a letter dated 20.01.2026 from the Member Secretary, Mahabaleshwar–Panchgani Eco-Sensitive Zone Monitoring Committee, enclosing the minutes of the meeting held on 16.01.2026. The Committee noted that the said Monitoring Committee had limited its consideration to obtaining Terms of Reference (ToR) only for the proposed Savitri PSP within the ESZ subject to detailed study of following technical matter:

- 1) Seismic Study for Mahabaleshwar Panchgani Area
- 2) Geohydrological & Geological Study
- 3) Rehabilitation & Relief (R&R) Impact
- 4) Baseline Ecological Study
- 5) Feasibility Study for Additional Storage Capacity for additional drinking water for Mahabaleshwar city.

The EAC was of the view that the PP shall obtain a separate and explicit NOC from the Mahabaleshwar–Panchgani Eco-Sensitive Zone Monitoring Committee specifically for seeking Terms of Reference from this Ministry.

Accordingly, PP vide email dated 13.02.2026 enclosing a letter of the same date, submitted a clarification from the Member Secretary, Mahabaleshwar–Panchgani Eco-Sensitive Zone Monitoring Committee stating that a No Objection Certificate (NOC) had been issued for obtaining the Terms of Reference (ToR) from MoEF&CC for undertaking the requisite studies for the Savitri PSP. The clarification further indicated that the NOC was issued pursuant to the decision taken in the review meeting of the Monitoring Committee held on 16.01.2026. It was also mentioned that the study reports, upon completion, may be submitted to the Mahabaleshwar–Panchgani ESZ Monitoring Committee for its perusal.

48.1.4 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 Open Loop Pumped Storage Projects vide OM dated 14.08.2023 for conducting EIA study for proposed construction of the project for Savitri Open Loop Pumped Storage Project (2400 MW) in an area of 310.76 Ha located at Village Javali, Dare, Haroshi, Karanje etc, Sub-district Poladpur

and Mahabaleshwar, District Satara and Raigarh, Maharashtra by M/s NHPC limited, under the provisions of EIA Notification, 2006, as amended along with the following additional/specific ToR:

[A] Environmental Management and Biodiversity Conservation:

- i. Final clearance/ approval shall be obtained before submission of the proposal for grant of Environmental Clearance from Mahabaleshwar–Panchgani Eco-Sensitive Zone Monitoring Committee.
- ii. The PP will submit an inventory of all natural small streams/nalah within 10 km radius of the project. A detailed plan and monitoring mechanism for releasing the self - catchment water of small stream draining in to river along with action plan for conservation and protection of other streams/rivulets draining in to upper and lower reservoirs shall be submitted.
- iii. 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.
- iv. A detailed action plan for large scale plantation of native species of plant sapling within 10 km radius of the project shall be prepared in consultation with State Forest Department. The monitoring mechanism to ensure the survival of saplings shall be finalized in consultation with ICFRE.
- v. The PP will submit 10 years water availability data certified by the CWC/State Water Resource Department for quantity of water that is received annually by the stream\river on which reservoirs are proposed to be constructed.
- vi. Explore the possibilities for reducing the Forest land requirement. The application for obtaining Stage I FC for 55.64 ha of forest land involved in the project shall be submitted within stipulated time.
- vii. Muck disposal site and other components such as Township, site office, Stacking area and batching plant shall be located outside the forest area.
- viii. 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.
- ix. Transportation Plan for transporting construction materials shall be submitted. Separate chapter for risk assessment of such transportation through/within proposed the Wildlife

Sanctuary shall be included in the EIA report, if any.

- x. Environmental Cost Benefit Analysis shall be done in terms of loss of Forest ecosystem due to diversion of Forest land/loss of biodiversity, water availability, water uses for generation of hydro power and Ecological flows.
- xi. The baseline data collection will cover the changes in biological and ecological profile of the region after monsoon with worst-case scenario study and critical mineral assessment.
- xii. Calculation and values of GHGs (CO₂, CH₄ etc.) emissions during construction and during operation till the life of the project shall be estimated and submitted.
- xiii. The longitudinal connectivity/Free flowing sketch be provided in the EIA/EMP report.
- 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. Action plan for survival or diversion of the rivulets/stream, if any, leading to join river shall be submitted.
- xvii. Impact zone decided prior to base line data generation and accordingly, sampling location shall be finalized. Baseline data as mentioned in Specific ToR shall be collected for preparation of EIA/ EMP report along with soil characteristics which shall be studied at minimum 10 locations. The ground water level at 10 locations shall be measured in project area in all three seasons.
- xviii. A study shall be carried out on impact of project activity on the aquatic and terrestrial ecosystem, within project area classifying the impact zones (highly impact/low impact zone) based on seasonal variations and covering the aspects related to impacts on aquatic ecosystem/ primary productivity due to quantity of water to be lifted for power generation and thermal stratification. Accordingly, Environment Management plan shall be prepared.
- xix. Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP.

- xx. 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.
- 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. The EIA/EMP shall include a detailed socio-economic assessment of the tribal population in the project-affected area based on primary data and community consultations. A Tribal Development Plan, prepared in consultation with the District Administration and Tribal Welfare Department, shall be submitted along with the EIA report.
- iv. PP shall submit the credible documents to show the status of land acquisition w.r.t project site from/through the concerned State Government as required under Ministry's OM dated 7th October, 2014 for the project land to be acquired.
- v. Land acquired for the project shall be suitably compensated in accordance with the law of the land with the prevailing guidelines. Private land (if any) shall be acquired as per provisions of Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013. Budget earmarked for R&R, CSR shall not be included in the cost of EMP.

[C] Muck Management:

- i. Details of quantity of muck generation component wise, types of muck (Excavation in tunnels, pressure shaft and powerhouse etc.) and disposal site/ transportation to be provided.
- ii. Details of muck management such as dumping sites and its locations, transportation plan along with monitoring mechanism for muck transportation, detailing the road map of project construction site/ indicating the distances from HFL, river, project

construction site along with types of road etc.

- iii. Safety measures for avoiding spill over muck into the riverbed/streams and its flow into the river during the high discharge/ flood or monsoon period. Prepare plan for stabilization of muck disposal sites using biological and engineering measures to ensure that muck does not roll down the slopes and shall be disposed safely and that it does not pollute the natural streams and water bodies in surrounding area.
- iv. Restoration plan for construction area including dumping site of excavated materials by levelling, filling up of burrow pits, landscaping etc.

[D] Disaster Management:

- i. Impact of Project activities (specially blasting and drilling) on the aquatic and terrestrial ecosystem, within study area to be studied and be incorporated in EIA/EMP report.
- ii. The muck dumping sites shall be located with a distance of 100 mts from HFL. The PP shall submit the detailed action plan for transportation of muck along with monitoring mechanism of movement of muck carrying trucks.

[E] Miscellaneous:

- i. Both capital and recurring expenditure under EMP shall be submitted.
- ii. Pre-DPR Chapters viz., Hydrology, Layout Map and Power Potential Studies duly appraised by CWC/CEA shall be submitted.
- iii. The PP should submit the photograph of monitoring stations & sampling locations. The photograph should bear the date, time, latitude & longitude of the monitoring station/sampling location. In addition to this PP should submit the original test reports and certificates of the labs which will analyze the samples.
- iv. Drone video of project site shall be recorded and to be submitted.
- v. Detailed plan to restore wider roads and convert them into narrow up to 10m after construction of the project.
- vi. Specific Terms of Reference (ToRs) issued by the Ministry vide Office Memorandum No. F. No. IA3-22/33/2022-IA.III dated 14.08.2023 for Pumped storage projects shall be used for preparation of EIA/ EMP reports.
- vii. As per Ministry's OM dated 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

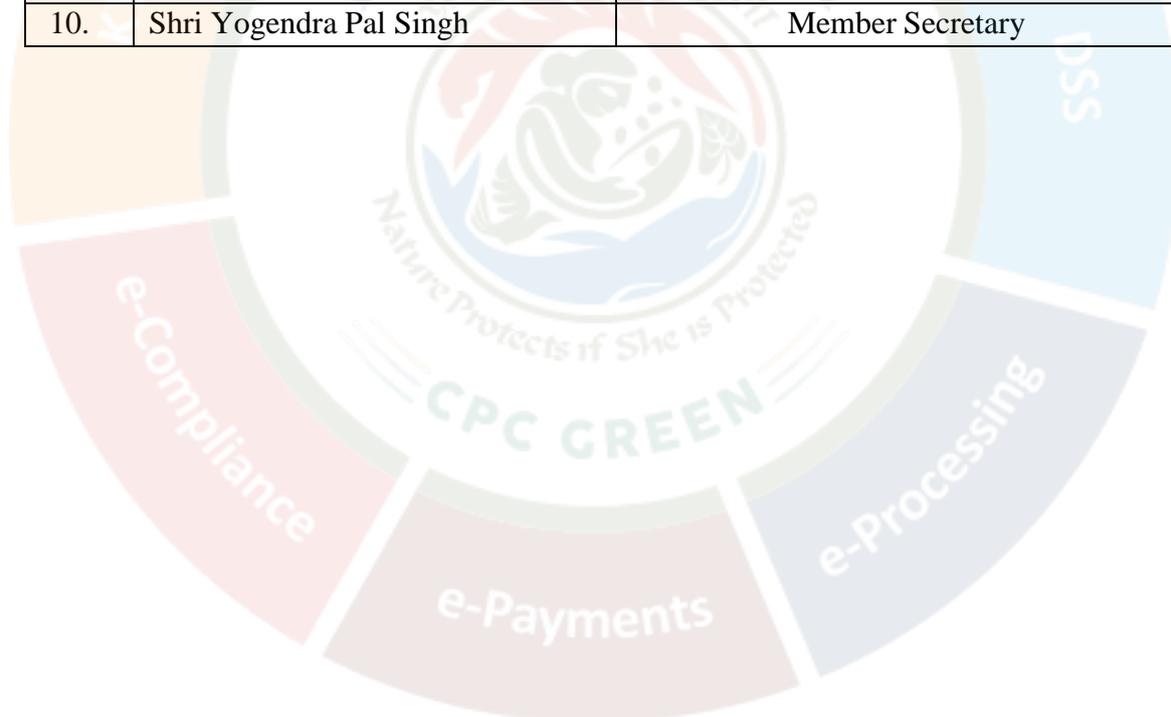
actual extent of forest land required for the project is known to the project proponent, and in any case, within 6 months of issuance of ToR. However, no proposal will be put up before EAC without submission of application for forest clearance, wherever applicable.

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



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
9.	Dr. A. K. Sahoo	Member
10.	Shri Yogendra Pal Singh	Member Secretary



APPROVAL OF THE CHAIRMAN

==== Forwarded message =====
From: chakrapani govind <chakrapani.govind@gmail.com>
To: "Yogendra Pal Singh" <yogendra78@nic.in>
Cc: "govind chakrapani" <govind.chakrapani@es.iitr.ac.in>
Date: Wed, 25 Feb 2026 10:51:25 +0530
Subject: Re: Draft MOM of the 48th EAC (RVHEP) meeting held on 12.02.2026-reg.
==== Forwarded message =====

Approved.
Chakrapani

On Wed, 25 Feb, 2026, 10:49 am Yogendra Pal Singh, <yogendra78@nic.in> wrote:

Dear Sir,

My earlier email today may be please be ignored.

The draft MOM of the 48TH meeting of the EAC (RVHEP) held on 12.02.2026 were circulated to all EAC members. The comments of Shri A.K. Lal Sir have been suitably incorporated in the Agenda item no. 48.2 (Page no. 13) of the draft MOM. One corrigendum has also been included in the draft MoM (Highlighted in yellow).

Accordingly, the draft MOM of the 48TH meeting of the EAC (RVHEP) held on 12.02.2026 is attached herewith for your approval please.

With Regards,

Yogendra Pal Singh
Scientist 'F'
Government of India
M/o Environment, Forest and Climate Change
Room No. 236, 2nd Floor, Vayu Wing
Indira Paryavaran Bhawan
Jor Bagh, New Delhi-110003
Tele-fax: 011-20819364

