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Government of India
Ministry of Environment, Forest and Climate Change
IA Division
(River Valley and Hydroelectric Projects)
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Minutes of AGENDA FOR 50TH MEETING OF EXPERT APPRAISAL COMMITTEE (RIVER VALLEY & HYDRO-ELECTRIC PROJECTS) TO BE HELD ON 11TH AUGUST, 2023 Expert Appraisal Committee meeting River Valley and Hydroelectric Projects held from 11/08/2023 to 11/08/2023

Date: 25/08/2023

MoM ID: EC/MOM/EAC/316811/8/2023

Agenda ID: EC/AGENDA/EAC/316811/8/2023

Meeting Venue: N/A

Meeting Mode: Virtual

Date & Time:

11/08/2023	10:30 AM	05:30 PM

1. Opening remarks

The 50th meeting of the re-constituted EAC for River Valley & Hydroelectric Projects organized by the Ministry of Environment, Forest and Climate Change, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi, was held on 11th August 2023 through virtual mode, under the Chairmanship of Dr. A. K. Malhotra.

2. Confirmation of the minutes of previous meeting

The EAC confirmed the minutes of 49th EAC meeting held on 24th July, 2023.

3. Details of proposals considered by the committee

Day 1 -11/08/2023

3.1. Agenda Item No 1:

3.1.1. Details of the proposal

Musakhand Pumped Storage Project (600 MW) by **ACME CLEANTECH SOLUTIONS PRIVATE LIMITED** located at **CHANDAULI,UTTAR PRADESH**			
Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/UP/RIV/438820/2023	J-12011/41/2023-IA.I (R)	01/08/2023	River Valley/Irrigation projects (1(c))

3.1.2. Project Salient Features

50.5.1: The proposal is for grant of **Terms of References (ToR)** to the project for Musakhand Close Loop Pumped Storage Project (600 MW) in an area of 313.70 ha at Village Mobarakpur and Jamsoti, Tehsil Chakia, District Chandauli, Uttar Pradesh by M/s Acme Cleantech Solutions Private Limited.

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

1. The proposal is for grant of ToR to the project for Musakhand Pumped Storage Project located (600 MW) at Village Mobarakpur and Jamsoti, Taluka Chakia, District Chandauli, Uttar Pradesh by M/s Acme Cleantech Solutions Private Limited.
2. The project is listed at S.N. 1 (c) of the Schedule to the Environment Impact Assessment (EIA) Notification under category 'A' and are appraised at Central Level by Expert Appraisal Committee (EAC).
3. Musakhand PSP is a closed-loop off-stream pumped storage scheme proposed by M/s ACME Cleantech Solutions Pvt. Ltd. The scheme is proposed with an installed capacity of 600 MW located in the Chakia Tehsil of Chandauli district of Uttar Pradesh.
4. Project envisaged construction of two artificial reservoirs; Upper reservoir near village Jamsoti and Lower reservoir near village Mobarakpur in the Chandauli district of Uttar Pradesh.
5. It is proposed to utilize the water from existing Musakhand Reservoir for initial filling of the Musakhand PSP reservoir. The Project is proposed with gross storage capacity of 11.78 MCM in the lower reservoir and 12.20 MCM in the upper reservoir.
6. **Land requirement**: A total of 313.70 ha of land will be required for the project. 293.70 ha is forest land and 20.0 ha is private land.
7. **Water Source and availability**: Proposed to pump water from the Musakhand reservoir into the lower reservoir during monsoon season for initial filling of reservoir (13 MCM) through an approx. 5 km long approach channel. The gross storage capacity of the Musakhand reservoir is 113.27 MCM. Out of which, 91.75 MCM is live storage. During operation of project, water required for recuperation of losses to the extent of 2.5 MCM will be pumped from Musakhand reservoir every year.
8. This Project envisages non-consumptive re-utilization of 11.68 MCM of water for recirculation among two proposed reservoirs for power generation.
9. Th**e estimated project cost is Rs 2671.75 c**rore. Total capital cost earmarked towards environmental pollution control measures will be worked out during EIA study as well as the Recurring cost (operation and maintenance).
10. **Environmental Sensitivity**: Chandraprabha and Kaimur (Bihar) Wildlife Sanctuaries are located about 3.20 Km & 6.70 km respectively. River/ water body, Karamnasa river is flowing at the aerial distance of 500 m in west to north direction.
11. **Alternative studies**: Total 4 alternative sites were studied. Out of these Alternative 1A is presently not a dense forest area. The area will be planted on completion of muck dumping in addition to other green belt areas, which will be proposed during EIA study. Therefore, alternative 1A site selected for further studies.
12. Details of Solid waste/ Hazardous waste generation/ Muck and its management will be covered in EIA report.
13. Status of Litigation Pending against the proposal, if any. No
14. The salient features of the project are as under: -

EAC Meeting Details:

EAC meeting/s	50th Meeting
Date of Meeting/s	11.08.2023
Date of earlier EAC meetings	Nil

Project details:

Name of the Proposal	Musakhand Pumped Storage Project

Location (Including coordinates)	Lower Reservoir: 83°14'24.95"E; 24°59'10.07"N Upper Reservoir: 83°13'19.30”E"; 24°58'57.63"N
Inter- state issue involved	No
Seismic zone	Zone-III

Category details:

Category of the project	A
Provisions	
Capacity / Cultural command area (CCA)	600 MW
Attracts the General Conditions (Yes/No)	Yes
Additional information (if any)	Nil

Electricity generation capacity:

Powerhouse Installed Capacity	600 MW
Generation of Electricity Annually	1821.5 MU
No. of Units	4 nos. (2X200 MW+2X100 MW)
Additional information (if any)	Nil

ToR Details:

Cost of project	2671.75 Cr.
Total area of Project	313.70 ha
Height of Dam from River Bed (EL)	Lower Dam – 24 m Upper Dam – 26.5 m
Length of Tunnel/Channel	1753 m
Details of Submergence area	214.0 ha
Types of Waste and quantity of generation during construction/ Operation	Muck from excavation, solid waste from labour colony and construction waste
E-Flows for the Project	Not Applicable, as this is Off-Stream Closed Loop Pumped Storage Project (PSP)
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then 1. E-flow with TOR /Recommendation by 2. EAC as per CIA&CC study of River Basin. If not the E-Flows maintain criteria for sustaining river ecosystem.	No

Muck Management Details:

No. of proposed disposal area/ (type of land- Forest/Pvt. land)	60 ha Forest Land
Muck Management Plan	Will be Provided in EIA/EMP report
Monitoring mechanism for Muck Disposal	Will be Provided in EIA/EMP report

Land Area Breakup:

Government land/Forest Land	293.70 ha
Submergence area/Reservoir area	214.0 ha
Land required forproject components	99.70 ha
Additional information (if any)	Nil

Presence of Environmentally Sensitive areas in the study area

Forest Land/ Protected Area/Environmental Sensitivity Zone	Yes/No	Details of Certificate / letter/ Remarks
Reserve Forest/Protected Forest Land	--	Chandraprabha and Kaimur (Bihar) Wildlife Sanctuaries are located about 3.20 Km & 6.70 km respectively.
National Park	--- --	
Wildlife Sanctuary	--- --	

Court case details: Nil

Affidavit/Undertaking details:

Affidavit/Undertaking	Enclosed
Additional information (if any)	Nil

Previous EC compliance and necessary approvals:

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

Miscellaneous

Particulars	Details
Details of consultant	M/s. R S Envirolink Technologies Pvt. Ltd. (RSET) (*NABET* Accredited *Consultant Organization*) Certificate No : NABET/EIA/2225/RA0274

3.1.3. Deliberations by the EAC in previous meetings

Project Benefits	Proposed PSP will also benefit the local community by creating employment opportunities and will result in upliftment of livelihood and socio-economic conditions.
Status of other statutory clearances	Forest Clearance - Online application seeking forest diversion for around 293.70 Ha after receipt of ToR Approval. Alongside, other statutory clearances (as applicable) from State as well as Central government will be obtained post completion of Detailed Project Report.
R&R details	Details shall be evaluated during EIA/EMP Studies

N/A

3.1.4. Deliberations by the EAC in current meetings

The EAC deliberated on the information submitted (Form 1, PFR, kml file, etc.) and as presented in the meeting and observed that the proposal is for grant of Terms of Reference to the project for Musakhand Close Loop Pumped Storage Project (600 MW) in an area of 313.70 ha at Village Mobarakpur and Jamsoti, Tehsil Chakia, District Chandauli, Uttar Pradesh by M/s Acme Clean Tech Solutions Private Limited.

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

3.1.5. Recommendation of EAC

Recommended

3.1.6. Details of Terms of Reference

3.1.6.1. Specific

Environmental Management and Biodiversity Conservation::	
1.	1. Explore the possibilities to reduce forest area for the construction of proposed project. 2. Prepare Environmental Cost Benefit Analysis in terms of loss of Forest ecosystem due to diversion of Forest land/ loss of biodiversity and its impacts on ecosystem, water availability, water uses for generation of hydro power in study area 10 km from periphery of Project components. 3. Cumulative Impact of project on carrying capacity and sustainability of Reservoir/ nalahs of catchment area, irrigation facilities due to tapping of water for filling reservoir. 4. Action plan for survival of rivulets in the study area. 5. Alternative sites for various components shall be identified in terms of loss of forest area and environmental aspects. 6. Impact zone decided prior to base line data generation and accordingly, sampling location shall be finalized. Baseline data as mentioned in Standard 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. 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. 8. Sampling locations be located to cover villages situated near the reservoir and around boundary of forest area for collection of baseline data and data to be incorporated in EIA/ EMP report. 9. Identify the sand mining/ quarrying sites in submergence area and downstream of reservoir. 10. Scope of watershed development in the 10 km radius of the project shall be studied in consultation with expert Govt. institutions/ Indian Council of Agriculture Research(ICAR)and accordingly a detailed Water Shed Development Plan shall be prepared and incorporated in EIA/ EMP report. 11. Source of construction material and its distance from the project site along with detailed transportation plan for construction material. 12. A detailed reclamation/ restoration plan of quarrying site/sites be incorporated in the EIA/EMP report. 13. Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP. 14. MoU for water uses for the project signed and approved by concerned authority shall be submitted. 15. Environmental matrix during construction and operational phase needs to be submitted. Matrix formulated on the basis of detailed study and field survey of flora and Fauna methodology used shall be mentioned in the EIA report. 16. Endemic plant and animal species found in the area concerned shall be provided instead listing entire endemic species found in the State. 17. Details of Flora and Fauna reported in submergence area, Nos. of tree along with their density and nomenclature of the tree species required to be felled for reservoir creation and other project component. 18. Impact assessment on the fish diversity based on the hydrological alteration at the water drawing sources shall be studied. 19. Stage-I Forest Clearance shall be obtained. 20. Muck disposal sites and approach roads should be outside the forest area.
Miscellaneous.	
1.	1. Pre-DPR Chapters viz. Layout Map and Power Potential Studies duly approved by CWC/CEA shall be submitted. 2. Undertaking need to submitted on affidavit that regarding no activities has been yet started on the project site and water allocated to this scheme shall not be diverted to other purpose. 3. Both capital and recurring expenditure under EMP shall be submitted. 4. The photograph should bear the date, time, latitude & longitude of the monitoring station/ sampling location. In addition to this PP should submit the original test reports and certificates of the labs which will analyse the samples. 5. Arial view video of project site shall be recorded and to be submitted. 6. Detailed plan to restore wider roads and convert them into narrow upto 10m after construction of the project.
Socio-economic Study	
1.	1. Declaration by the project proponent by way of affidavit that "No" Inter-state issue/ policy issueis involved with any State in theproject. 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. Public hearing issues raised and compliance of the same shall be incorporated in the EIA/ EMP report in the relevant chapter. 3. Statement on the commitments (activity-wise) made during public hearing to facilitate the discussion on the CER in compliance of the Ministry's OM F. No. 22-65/2017-IA.III dated 30th September, 2020 shall be submitted. 4. Tentative no. of project affected families shall be identified and accordingly appropriate Rehabilitation & Resettlement plan shall be prepared. 5. Details of settlement in 10 km area shall be submitted.

Muck Management/Disaster Management..	
1.	1. Details of quantity of muck generation component wise and disposal site along with transportation plan and its monitoring to be provided. 2. Details of Muck Management plan prepared along with estimated cost incorporated in EIA/ EMP report. 3. Techno-economic viability of the project must be recommended from CEA/ CWC.

3.1.6.2. Standard

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

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

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

12.	(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.
13.	History of the ground water table fluctuation in the study area.
14.	Water quality for both surface water and ground water for (i) Physical parameters (pH, temperature, electrical conductivity, TSS); (ii) Chemical parameters (Alkalinity, Hardness, BOD, COD, NO2, PO4, CI, SO4, Na, K, Ca, Mg, Silica, Oil & Grease, phenolic compounds, residual sodium carbonate); (iii) Bacteriological parameter (MPN, Total coliform) and (iv) Heavy Metals (Pb, As, Hg, Cd, Cr-6, total Cr, Cu, Zn, Fe) (6 locations).
15.	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
16.	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.
17.	Run off, discharge, water availability for the project, sedimentation rate, etc.
18.	Basin characteristics
19.	Catastrophic events like cloud bursts and flash floods, if any, should be documented.
20.	For estimation of Sedimentation Rate, direct sampling of river flow is to be done during the EIA study. The study should be conducted for minimum one year. Actual silt flow rate to be expressed in ha-m km2 year-1.
21.	Set up a G&D monitoring station and a few rain gauge stations in the catchment area for collecting data during the investigation.
22.	Flow series, 10 daily with 90%, 75% and 50% dependable years discharges.
23.	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.
24.	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.
25.	Sedimentation data available with CWC may be used to find out the loss in storage over the years.
26.	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.
27.	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.
28.	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.
29.	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.
30.	Documentation of all plant species i.e. Angiosperm, Gymnosperm, Pteriodophytes, Bryophytes (all groups).

31.	General vegetation profile and floral diversity covering all groups of flora including lichens and orchids. A species wise list may be provided.
32.	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.
33.	Existence of National park, Sanctuary, Biosphere Reserve etc in the study area, if any, should be detailed.
34.	Economically important species like medicinal plants, timber, fuel wood etc.
35.	Details of endemic species found in the project area.
36.	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.
37.	Cropping pattern and Horticultural Practices in the study area.
38.	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.
39.	Documentation of fauna plankton (phyto and zooplankton), periphyton, benthos and fish should be done and analysed.
40.	Information (authenticated) on Avi-fauna and wildlife in the study area.
41.	Status of avifauna their resident/ migratory/ passage migrants etc.
42.	Documentation of butterflies, if any, found in the area.
43.	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.
44.	Existence of barriers and corridors, if any, for wild animals.
45.	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.
46.	Collection of primary data on agricultural activity, crop and their productivity and irrigation facilities components.
47.	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.
48.	Documentation of aquatic fauna like macro-invertebrates, zooplankton, phytoplantktons, benthos etc.
49.	Fish and fisheries, their migration and breeding grounds.
50.	Fish diversity composition and maximum length & weight of the measured populations to be studies for estimation of environmental flow.
51.	Conservation status of aquatic fauna.

52.	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.
53.	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.
54.	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.
55.	Collection of information on sensitive habitat of historical, cultural and religious and ecological importance.
56.	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.
57.	Documentation of demographic, Ethnographic, Economic Structure and development profile of the area.
58.	Information on Agricultural Practices, Cultural and aesthetic sites, Infrastructure facilities etc.
59.	Information on the dependence of the local people on minor forest produce and their cattle grazing rights in the forest land.
60.	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.
61.	Special attention has to be given to vulnerable groups like women, aged persons etc. and to any ethnic/indigenous groups that are getting affected by the project.
Impact Prediction and Mitigation Measures	
1.	The adverse impact due to the proposed project should be assessed and effective mitigation steps to abate these impacts should be described.
2.	Changes in ambient and ground level concentrations due to total emissions from point, line and area sources.
3.	Effect on soil, material, vegetation and human health.
4.	Impact of emissions from DG set used for power during the construction, if any, on air environment.
5.	Pollution due to fuel combustion in equipments and vehicles
6.	Fugitive emissions from various sources
7.	Changes in surface and ground water quality
8.	Steps to develop pisci-culture and recreational facilities
9.	Changes in hydraulic regime and downstream flow.
10.	Water pollution due to disposal of sewage
11.	Water pollution from labour colonies/ camps and washing equipment.

12.	Adverse impact on land stability, catchment of soil erosion, reservoir sedimentation and spring flow (if any) (a) due to considerable road construction / widening activity (b) interference of reservoir with the inflowing stream (c) blasting for commissioning of HRT, TRT and some other structures.
13.	Changes in land use / land cover and drainage pattern
14.	Immigration of labour population
15.	Quarrying operation and muck disposal
16.	Changes in land quality including effects of waste disposal
17.	River bank and their stability
18.	Impact due to submergence.
19.	Impact on forests, flora, fauna including wildlife, migratory avi-fauna, rare and endangered species, medicinal plants etc.
20.	Pressure on existing natural resources
21.	Deforestation and disturbance to wildlife, habitat fragmentation and wild animal's migratory corridors
22.	Compensatory afforestation-identification of suitable native tree species for compensatory afforestation and green belt.
23.	Impact on fish migration and habitat degradation due to decreased flow of water
24.	Impact on breeding and nesting grounds of animals and fish.
25.	Impact on local community including demographic profile.
26.	Impact on socio-economic status
27.	Impact on economic status.
28.	Impact on human health due to water / vector borne disease
29.	Impact on increase traffic
30.	Impact on Holy Places and Tourism
31.	Impacts of blasting activity during project construction which generally destabilize the land mass and leads to landslides, damage to properties and drying up of natural springs and cause noise population will be studies. Proper record shall be maintained of the baseline information in the post project period.
32.	Positive and negative impacts likely to be accrued due to the project are listed.
Environmental Management Plan	
1.	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.
2.	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.
3.	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.
4.	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.
5.	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.
6.	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.
7.	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.
8.	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.
9.	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.
10.	Muck Disposal Plan- suitable sites for dumping of excavated material should be identified in consultation with the State Pollution Control Board and Forest Department. All Muck disposal sites should be minimum 30 m away from the HFL of river. Plan for rehabilitation of muck disposal sites should also be given. The L- section/ cross section of muck disposal sites and approach roads to be given. Financial out lay for this may be given separately. Deatailed muck transportation plan delinating the path ways, number of trucks, quantity of muck to be transportated along with monitoring mechanism using latest technology, shall be prepared.
11.	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.
12.	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.
13.	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.
14.	Local Area Development Plan to be formulated in consultation with the Revenue Officials and Village Pancahayats. Appropriate schemes shall be prepared under EMP for the Local Area Development Plan with sufficient financial provisions.
15.	Labour Management Plan for their Health and Safety.
16.	Sanitation and Solid waste management plan for domestic waste from colonies and labour camps etc.
17.	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.
18.	Environmental safeguards during construction activities including Road Construction.
19.	A summary of Cost Estimates for all the plans, cost for implementing all the Environmental Management Plans.
20.	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

Saidongar-2 Pumped Storage Project (1200 MW) by **TORRENT POWER LIMITED** located at **RAIGAD,MAHARASHTRA**			
Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/MH/RIV/438692/2023	J-12011/43/2023-IA.I (R)	03/08/2023	River Valley/Irrigation projects (1(c))

3.2.2. Project Salient Features

50.7.1: The proposal is for grant of Terms of References (ToR) to Saidongar-2 Closed Loop Pumped Storage Project (1200 MW) in an area of 132.59 ha at Village Saidongar, Kusur and Dhak, Tehsil Mawal and Karjat, District Pune and Raigarh (Maharashtra) by M/s Torrent Power Limited.

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

1. The proposal is for ToR to the project for Saidongar-1 Pumped Storage Project located (3000 MW) in an area of 279.69 ha at Village Dhak, Kusur Taluka Kajraj & Mawal, District Raigad & Pune, Maharashtra by M/s Torrent Power Limited.
2. The project is listed at S.N. **1 (c)** of the Schedule to the Environment Impact Assessment (EIA) Notification under category 'A' and are appraised at Central Level by Expert Appraisal Committee (EAC).
3. **Background:** Saidongar Pumped Storage Project was initially conceived with 4200 MW installed capacity having two upper reservoirs, two powerhouses with installed capacity of 3000 MW and 1200 MW each; and one common lower reservoir; all to be constructed new.
4. **Appraisal in Earlier EAC:** The project was considered by EAC for grant of TOR during its meeting held on **26th and 27th June 2023**. The EAC was of the view that as per the proposed project design the proposal may not be considered as single project. The PP should consult with Central Electricity Authority to look into the design aspect and submit the proposal accordingly.
5. Project proponent after meeting with CEA, has decided to split the project into two separate project without changing any of the project features and name them as Saidongar 1 (3000 MW) and Saidongar 2 (1200 MW).
6. Two separate PFRs have been prepared and two separate applications have been filed on Parivesh portal for grant of TOR to these two projects.
7. The estimated project cost is Rs. 7855.62 crore. Total capital cost earmarked towards environmental pollution control measures will be worked out during EIA study as well as the Recurring cost (operation and maintenance).
8. **Water source and availability:** The Project is a stand-alone scheme with upper reservoirs on high plateau terrains with no significant catchment area, while the lower reservoir will be on seasonal nala with a small catchment area of about 21.85 Sq.km. The **total planned storage capacity of upper reservoir is 16.28 MCM, where in live storage capacity is 15.23 MCM. Similarly, gross storage capacity & live storage capacity of lower reservoir (common for Saidongar 1 and 2) are 26.58 MCM & 20.18 MCM, respectively**. Therefore, One-time requirement has been worked out as 29.03 MCM for both projects together. The requirement of water for initial filling of the lower reservoir and that for the upper reservoir up to the dead storage level will be met by pumping water from the Thokarwadi reservoir. The evaporation losses are proposed to be compensated by pumping required water from the Thokarwadi reservoir.
9. **Environmental sensitivity**: There are no national parks, wildlife sanctuaries, Biosphere Reserves, Tiger/Elephant Reserves, Wildlife Corridors etc. within 10 km distance from the project site. River/ water body, Thokarwadi reservoir at the distance of 2 km in west direction.
10. Details of Solid waste/ Hazardous waste generation/ Muck and its management will be covered in EIA report.
11. Status of Litigation Pending against the proposal, if any. **No**
12. The salient features of the project are as under:-

Project details:

Name of the Proposal	Saidongar-2 Pumped Storage Project
Location (Including coordinates)	Upper Reservoir: 73°26'50"E; 18°53'60"N Lower Reservoir: 73°25'34"E; 18°54'37"N
Inter- state issue involved	No
Seismic zone	Zone-III

Category details:

Category of the project	A
Provisions	
Capacity / Cultural command area (CCA)	1200 MW
Attracts the General Conditions (Yes/No)	No

Additional information (if any)	Nil

Electricity generation capacity:

Powerhouse Installed Capacity	1200 MW
Generation of Electricity Annually	2628 MU
No. of Units	5 nos. (3X300+2X150)
Additional information (if any)	Nil

ToR Details:

Cost of project	4,450.28 Cr.
Total area of Project	132.59 ha
Height of Dam from River Bed (EL)	Lower Dam – 67 m Upper Dam – 31.10 m
Length of Tunnel/Channel	2425 m
Details of Submergence area	104.56 ha
Types of Waste and quantity of generation during construction/ Operation	Muck from excavation, solid waste from labour colony and construction waste
E-Flows for the Project	Not Applicable, as this is Off-Stream Closed Loop Pumped Storage Project (PSP)
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then 1. E-flow with TOR /Recommendation by 2. EAC as per CIA&CC study of RiverBasin. If not the E-Flows maintain criteria for sustaining river ecosystem.	No

Muck Management Details:

No. of proposed disposal area/ (type of land-Forest/Pvt. land)	9.0 ha Private Land
Muck Management Plan	Will be Provided in EIA/EMP report
Monitoring mechanism for Muck Disposal	Will be Provided in EIA/EMP report

Land Area Breakup:

Government land/Forest Land	73.33 ha
Submergence area/Reservoir area	104.56 ha
Land required forproject components	28.03 ha
Additional information (if any)	Nil

Presence of Environmentally Sensitive areas in the study area

Forest Land/ Protected Area/ Environmental Sensitivity Zone	Yes/No	Details of Certificate / letter/ Remarks
Reserve Forest/Protected Forest Land	--	There is no Protected Area in the vicinity of the proposed project. Bhimashankar WLS is about 15.0 Km from site, is the nearest protected area.
National Park	--- --	
Wildlife Sanctuary	--- --	

Court case details:

Court Case	Nil
Additional information (if any)	Nil

Affidavit/Undertaking details:

Affidavit/Undertaking	Enclosed
Additional information (if any)	Nil

Previous EC compliance and necessary approvals:

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

Miscellaneous

Particulars	**Details**
Project Benefits	• Pumped storage hydropower is a modified use of conventional hydropower technology to store and manage energy or electricity by moving water between an upper and lower reservoir. Currently, pumped storage round-trip or cycle energy efficiencies exceed 80%, comparing favorably to other energy storage technologies and thermal technologies. This effectively shifts, stores, and reuses energy generated until there is corresponding demand for system reserves and variable energy integration. This shifting can also occur to avoid transmission congestion periods, to help more efficiently manage transmission grid, and to avoid potential interruptions to energy

	supply. This is important because many of the renewable energy resources being developed (e.g., wind and solar) are generated at times of low demand and off-peak energy demand periods are still being met with fossil fuel resources, often at inefficient performance levels that increase the release of greenhouse gas emissions. • Further, pumped storage projects are critical to the national economy and overall energy reliability because it's: ◦ Least expensive source of electricity, not requiring fossil fuel for generation ◦ An emission-free renewable source ◦ Balancing grid for demand driven variations ◦ Balancing generation driven variations ◦ Voltage support and grid stability Apart from this, proposed PSP will also benefit the local community by creating employment opportunities and will result in upliftment of livelihood and socio-economic conditions.
Status of otherstatutory clearances	Forest Clearance - Online application seeking forest diversion for around 73.33 Ha after receipt of ToR Approval. Alongside, other statutory clearances (as applicable) from State as well as Central government will be obtained post completion of Detailed Project Report.
R&R details	Details shall be evaluated during EIA/EMP Studies
Additional detail (If any)	Nil

3.2.3. Deliberations by the EAC in previous meetings

N/A

3.2.4. Deliberations by the EAC in current meetings

The EAC deliberated on the information submitted (Form 1, PFR, kml file, etc.) and as presented in the meeting and observed that the proposal is for grant of terms of reference to the project Saidongar-2 Closed Loop Pumped Storage Project (1200 MW) in an area of 132.59 ha at Village Saidongar, Kusur and Dhak, Tehsil Mawal and Karjat, District Pune and Raigarh, Maharashtra by M/s Torrent Power Limited The project/activity is covered under Category A of item 1 (c) 'River Valley projects' of the Schedule to the Environmental Impact Assessment Notification, 2006 and requires appraisal at Central level by the sectoral EAC in the Ministry**.**

The project site is located in Western Ghats ESA, the EAC decided to conduct site visit before considering the proposal for grant environmental clearance to know the ground conditions.

3.2.5. Recommendation of EAC

Recommended

3.2.6. Details of Terms of Reference

3.2.6.1. Specific

Environmental Management and Biodiversity Conservation::	
1.	1. Conduct Environmental Cost Benefit Analysis in terms of loss of Forest ecosystem due to diversion of Forest land/ loss of biodiversity and its impacts on ecosystem, water availability, water uses for generation of hydro power in study area 10 km from periphery of Project components. Cumulative Impact of project on carrying capacity and sustainability of Reservoir/ nalahs of catchment area, irrigation facilities due to tapping of water for filling reservoir. 2. Alternative sites for various components shall be identified in terms of loss of forest area. 3. Action plan for survival of the rivulets located in the study area. 4. Impact zone decided prior to base line data generation and accordingly, sampling location shall be finalized. Baseline data as mentioned in Standard 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. 5. 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. 6. Sampling locations be located to cover villages situated near the reservoir and around boundary of forest area for collection of baseline data and data to be incorporated in EIA/ EMP report. 7. Scope of watershed development in the 10 km radius of the project shall be studied in consultation with expert Govt. institutions/ Indian Council of Agriculture Research (ICAR)and accordingly a detailed Water Shed Development Plan shall be prepared and incorporated in EIA/ EMP report. 8. A detailed wildlife conservation plan for Schedule –I species, duly approved by the Chief Wild Life Warden, be submitted. 9. In case any Wildlife corridor is located within 10 km radius of the project site a detailed study shall be conducted to assess the impact of project on safe movement of wild animals. 10. Source of construction material and its distance from the project site along with detailed transportation plan for construction material. 11. A detailed reclamation/ restoration plan of quarrying site/sites be incorporated in the EIA/EMP report. 12. Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP. 13. MoU for water uses for the project signed and approved by concerned authority shall be submitted. 14. Environmental matrix during construction and operational phase needs to be submitted. 15. Matrix formulated on the basis of detailed study and field survey of flora and Fauna methodology used shall be mentioned in the EIA report. 16. Endemic plant and animal species found in the area concerned shall be provided instead listing entire endemic species found in the State. 17. Details of Flora and Fauna reported in submergence area, Nos. of tree along with their density and nomenclature of the tree species required to be felled for reservoir creation and other project component. 18. Impact assessment on the fish diversity based on the hydrological alteration at the water drawing sources shall be studied. 19. Stage-I Forest Clearance shall be obtained. 20. Explore the possibilities to reduce Forest area for the construction of proposed project, Muck disposal sites should be outside the forest area.
Miscellaneous.	
1.	1. Pre-DPR Chapters viz. Layout Map and Power Potential Studies duly approved by CWC/CEA shall be submitted. 2. Undertaking need to submitted on affidavit that regarding no activities has been yet started on the project

	site and water allocated to this scheme shall not be diverted to other purpose. 3. Both capital and recurring expenditure under EMP shall be submitted. 4. The photograph should bear the date, time, latitude & longitude of the monitoring station/ sampling location. In addition to this PP should submit the original test reports and certificates of the labs which will analyse the samples. 5. Arial view video of project site shall be recorded and to be submitted. 6. Detailed plan to restore wider roads and convert them into narrow upto10m after construction of the project.
Socio-economic Study	
1.	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. Public hearing issues raised and compliance of the same shall be incorporated in the EIA/ EMP report in the relevant chapter. 3. Statement on the commitments (activity-wise) made during public hearing to facilitate the discussion on the CER in compliance of the Ministry's OM F. No. 22-65/2017-IA.III dated 30th September, 2020 shall be submitted. 4. Tentative no. of project affected families shall be identified and accordingly appropriate Rehabilitation & Resettlement plan shall be prepared. 5. Details of settlement in 10 km area shall be submitted.
Muck Management/Disaster Management..	
1.	1. Details of quantity of muck generation component wise and disposal site along with transportation plan and its monitoring to be provided. 2. Details of Muck Management plan prepared along with estimated cost incorporated in EIA/ EMPreport. 3. Techno-economic viability of the project must be recommended from CEA/ CWC.

3.2.6.2. Standard

1(c)	**River Valley/Irrigation projects**
Scope of EIA Study	
1.	The EIA Report should identify the relevant environmental concerns and focus on potential impacts that may change due to the construction of proposed project. Based on the baseline data collected for three (3) seasons (Pre-monsoon, Monsoon and Winter seasons), the status of the existing environment in the area and capacity to bear the impact on this should be analysed. Based on this analysis, the mitigation measures for minimizing the impact shall be suggested in the EIA/EMP study.
Details of the Project and Site	
1.	General introduction about the proposed project.
2.	Details of Project and site giving L-Sections of all U/S and D/S Projects with all relevant maps and figures. Connect such information as to establish the total length of interference of Natural River and the committed unrestricted release from the site of Dam/Barrage into the main river.
3.	A map of boundary of the project site giving details of protected areas in the vicinity of 25 km of project location.

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

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

3.	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.
4.	Landslide zone or area prone to landslide existing in the study area should be examined.
5.	Presence of important economic mineral deposit, if any.
6.	Justification for location & execution of the project in relation to structural components (dam /barrage height).
7.	Impact of project on geological environment.
8.	Meteorology (viz. Temperature, Relative humidity, wind speed/direction etc.) to be collected from nearest IMD station.
9.	Ambient Air Quality with parameters viz. Suspended Particulate Matter (SPM), Respirable Suspended Particulate Matter (RSPM) i.e. suspended particulate materials < 10 microns, Sulphur dioxide (SO2) and Oxides of Nitrogen (NOX) in the study area at 5-6 Locations.
10.	Existing Noise Levels and traffic density in the study area at 5-6 Locations.
11.	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.
12.	(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.
13.	History of the ground water table fluctuation in the study area.
14.	Water quality for both surface water and ground water for (i) Physical parameters (pH, temperature, electrical conductivity, TSS); (ii) Chemical parameters (Alkalinity, Hardness, BOD, COD, NO2, PO4, CI, SO4, Na, K, Ca, Mg, Silica, Oil & Grease, phenolic compounds, residual sodium carbonate); (iii) Bacteriological parameter (MPN, Total coliform) and (iv) Heavy Metals (Pb, As, Hg, Cd, Cr-6, total Cr, Cu, Zn, Fe) (6 locations).
15.	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
16.	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.
17.	Run off, discharge, water availability for the project, sedimentation rate, etc.
18.	Basin characteristics
19.	Catastrophic events like cloud bursts and flash floods, if any, should be documented.
20.	For estimation of Sedimentation Rate, direct sampling of river flow is to be done during the EIA study. The study should be conducted for minimum one year. Actual silt flow rate to be expressed in ha-m km2 year-1.
21.	Set up a G&D monitoring station and a few rain gauge stations in the catchment area for collecting data during the investigation.

22.	Flow series, 10 daily with 90%, 75% and 50% dependable years discharges.
23.	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.
24.	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.
25.	Sedimentation data available with CWC may be used to find out the loss in storage over the years.
26.	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.
27.	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.
28.	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.
29.	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.
30.	Documentation of all plant species i.e. Angiosperm, Gymnosperm, Pteriodophytes, Bryophytes (all groups).
31.	General vegetation profile and floral diversity covering all groups of flora including lichens and orchids. A species wise list may be provided.
32.	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.
33.	Existence of National park, Sanctuary, Biosphere Reserve etc in the study area, if any, should be detailed.
34.	Economically important species like medicinal plants, timber, fuel wood etc.
35.	Details of endemic species found in the project area.
36.	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.
37.	Cropping pattern and Horticultural Practices in the study area.
38.	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.
39.	Documentation of fauna plankton (phyto and zooplankton), periphyton, benthos and fish should be done and analysed.
40.	Information (authenticated) on Avi-fauna and wildlife in the study area.
41.	Status of avifauna their resident/ migratory/ passage migrants etc.

42.	Documentation of butterflies, if any, found in the area.
43.	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.
44.	Existence of barriers and corridors, if any, for wild animals.
45.	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.
46.	Collection of primary data on agricultural activity, crop and their productivity and irrigation facilities components.
47.	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.
48.	Documentation of aquatic fauna like macro-invertebrates, zooplankton, phytoplantktons, benthos etc.
49.	Fish and fisheries, their migration and breeding grounds.
50.	Fish diversity composition and maximum length & weight of the measured populations to be studies for estimation of environmental flow.
51.	Conservation status of aquatic fauna.
52.	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.
53.	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.
54.	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.
55.	Collection of information on sensitive habitat of historical, cultural and religious and ecological importance.
56.	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.
57.	Documentation of demographic, Ethnographic, Economic Structure and development profile of the area.
58.	Information on Agricultural Practices, Cultural and aesthetic sites, Infrastructure facilities etc.
59.	Information on the dependence of the local people on minor forest produce and their cattle grazing rights in the forest land.
60.	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.
61.	Special attention has to be given to vulnerable groups like women, aged persons etc. and to any

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

24.	Impact on breeding and nesting grounds of animals and fish.
25.	Impact on local community including demographic profile.
26.	Impact on socio-economic status
27.	Impact on economic status.
28.	Impact on human health due to water / vector borne disease
29.	Impact on increase traffic
30.	Impact on Holy Places and Tourism
31.	Impacts of blasting activity during project construction which generally destabilize the land mass and leads to landslides, damage to properties and drying up of natural springs and cause noise population will be studies. Proper record shall be maintained of the baseline information in the post project period.
32.	Positive and negative impacts likely to be accrued due to the project are listed.
Environmental Management Plan	
1.	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.
2.	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.
3.	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.
4.	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.
5.	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.
6.	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.

7.	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.
8.	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.
9.	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.
10.	Muck Disposal Plan- suitable sites for dumping of excavated material should be identified in consultation with the State Pollution Control Board and Forest Department. All Muck disposal sites should be minimum 30 m away from the HFL of river. Plan for rehabilitation of muck disposal sites should also be given. The L- section/ cross section of muck disposal sites and approach roads to be given. Financial out lay for this may be given separately. Deatailed muck transportation plan delinating the path ways, number of trucks, quantity of muck to be transportated along with monitoring mechanism using latest technology, shall be prepared.
11.	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.
12.	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.
13.	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.
14.	Local Area Development Plan to be formulated in consultation with the Revenue Officials and Village Pancahayats. Appropriate schemes shall be prepared under EMP for the Local Area Development Plan with sufficient financial provisions.
15.	Labour Management Plan for their Health and Safety.
16.	Sanitation and Solid waste management plan for domestic waste from colonies and labour camps etc.
17.	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.
18.	Environmental safeguards during construction activities including Road Construction.
19.	A summary of Cost Estimates for all the plans, cost for implementing all the Environmental Management Plans.

20.	Water, Air and Noise Management Plans to be implemented during construction and post-construction periods.

3.3. Agenda Item No 3:

3.3.1. Details of the proposal

Pindval Pumped Storage Project (1000 MW) by **TORRENT POWER LIMITED** located at **VALSAD,GUJARAT**			
Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/GJ/RIV/429647/2023	J-12011/26/2023-IA.I (R)	23/05/2023	River Valley/Irrigation projects (1(c))

3.3.2. Project Salient Features

50.9.1: The proposal is for grant of Terms of References (TOR) to Pindval Closed Loop Pumped Storage Project (1000 MW) in an area 165.88 ha at Village Pindval & Moti Kosbadi, Taluk Dharampur, District Valsad, Gujarat by M/s Torrent Power Limited

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

1. The proposal is for ToR to the project for Pindval Pumped Storage Project located at Village Pindval & Moti Kosbadi, Taluk Dharampur, District Valsad, Gujarat by M/s Torrent Power Limited.
2. The project is listed at S. N. **1 (c)** of the Schedule to the Environment Impact Assessment (EIA) Notification under category 'A' and are apprais edat Central Level by Expert Appraisal Committee (EAC).
3. Pindval PSP is a standalone pumped storage project proposed by M/s Torrent Power Limited, located in the Dharampur Taluka of Valsad district of Gujarat.
4. Project comprises of an underground powerhouse with an installed capacity of 1000 MW having 3 units of 250 MW & 2 units of 125 MW each.
5. **Background:** The project was earlier considered by EAC in its 47th meeting meeting held on 02/06/2023. EAC deferred the project as the project proposed to utilise the water from catchment of lower reservoir for initial filling as well as for recuperation of losses. EAC made the following observations:
6. The EAC noted that alternative site analysis was not done properly.
7. The committee suggested to exercise to reduce the forest area involved in the project.
8. The committee suggested to first identify the suitable site and revise project layout design accordingly keeping in view the aspects about sustainability of natural streams/rivulets/Nallah.
9. The committee also observed that the project site is also blocking the path of one tributary. The proposal submitted in present form is not allowed.
10. Consultant has carried out a fresh Alternative Site Analysis, keeping in view the observations made by EAC and submitted the report.
11. **Not blocking of Tributary Flow:** The proposed alternative is different from earlier alternative, which was deferred by EAC on the grounds that the project is blocking the path of the tributary. The present alternative is off-stream closed loop project, where lower reservoir is proposed across seasonal nalla, however, the project is designed to source water from Nar river for one time requirement and recuperation of losses. Lower level sluice is proposed to release water as well sediment contribution of the catchment of the lower reservoir**.**
12. **Land requirement**: The total land required for the construction of various components and related works for Pindval PSP is estimated around 152.05 ha, out of which 21.94 ha is non-forest land and 130.11 ha is forest land.
13. **Optimization of Land requirement**: Total land requirement has been reduced from earlier proposed 165.88 ha to 152.05 ha. Forest land could not be reduced further as the forest land is strictly kept for essential components – upper and lower reservoir, water conductor system and approach road.

Forest land requirement is only 130 ha for 1000 MW PSP i.e. about 0.13 ha/MW. Efforts will be made to further optimize the forest land requirement during detailed survey and investigation. Private land requirement has been

reduced to 21.94 ha from earlier estimation of 35.94 ha; no major R&R issues envisaged as no displacement involved

1. The estimated **project cost is Rs 4206.62 crore**. Total capital cost earmarked towards environmental pollution control measures will be worked out during EIA study as well as the Recurring cost (operation and maintenance).
2. **Environmental Sensitivity:** There are no national parks, wildlife sanctuaries, Biosphere Reserves, Tiger/Elephant Reserves, Wildlife Corridors etc. within 10 km distance from the project site. River/ water body, Nar River is flowing in southwest direction.
3. **Alternative Studies:** As a part of alternative studies, 4 Alternatives (earlier only 2 Alternatives were studied) have been identified and studied for development of PSP. **Alternative 1 is considered as the best alternative** and therefore selected.
4. Details of Solid waste/ Hazardous waste generation/ Muck and its management will be covered in EIA report.
5. Status of Litigation Pending againstttheproposal, if any. **No**
6. The saient features of the project are as under:-

EAC Meeting Details:

EAC meeting/s	50th Meeting
Date of Meeting/s	11.08.2023
Date of earlier EAC meetings	Nil

Project details:

Name of the Proposal	Pindval Pumped Storage Project
Location (Including coordinates)	The proposed project involves creation of upper reservoir are at longitude 73°20'23"E and latitude is 20°28'37"N and that of lower reservoir are at longitude 73°22'00"E and latitude 20°28'18"N
Inter- state issueinvolved	Nil
Seismic zone	Zone-III

Category details:

Category of the project	A
Provisions	
Capacity / Cultural command area (CCA)	1000 MW
Attracts the General Conditions (Yes/No)	Yes
Additional information (if any)	Nil

Electricity generation capacity:

Powerhouse Installed Capacity	1000 MW
Generation of Electricity Annually	2190 MU
No. of Units	5 nos. (3 X 250 MW + 2 X 125 MW)

Additional information (if any)	Nil

ToR/EC Details:

Cost of project	4206.62 Cr.
Total area of Project	165.88 ha
Height of Dam from River Bed (EL)	Lower Dam – 63.11 m Upper Dam – 64.65 m
Length of Tunnel/Channel	761.1 m
Details of Submergence area	119.18 ha
Types of Waste and quantity of generation during construction/ Operation	Muck from excavation, solid waste from labour colony and construction waste
E-Flows for the Project	Not Applicable, as this is Off-Stream Closed Loop Pumped Storage Project (PSP)
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then E-flow with TOR /Recommendation by EAC as per CIA&CC study of River Basin. If not the E-Flows maintain criteria for sustaining river ecosystem.	No

Muck Management Details:

No. of proposed disposal area/ (type of land- Forest/Pvt. land)	0
Muck Management Plan	Will be Provided in EIA/EMP report
Monitoring mechanism for Muck Disposal	Will be Provided in EIA/EMP report

Land Area Breakup:

Government land/Forest Land	130.11 ha
Submergence area/Reservoir area	119.18 ha
Land required forproject components	32.87 ha
Additional information (if any)	Nil

Presence of Environmentally Sensitive areas in the study area

Forest Land/ Protected Area/ Environmental Sensitivity Zone	**Yes/No**	**Details of Certificate/ letter/ Remarks**
Reserve Forest/Protected Forest Land	--	There is no Protected Area in

National Park	--- --	the vicinity of the proposed project Vasda NP is about 26.0 Km from site, is the nearest protected area
Wildlife Sanctuary	--- --	

Court case details:

Court Case	Nil
Additional information (if any)	Nil

Affidavit/Undertaking details:

Affidavit/Undertaking	Enclosed
Additional information (if any)	Nil

Previous EC compliance and necessary approvals:

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

Miscellaneous

Particulars	Details
Details of consultant	M/s. R S Envirolink Technologies Pvt. Ltd. (RSET) (NABET Accredited Consultant Organization) Certificate No : NABET/EIA/2225/RA0274
Project Benefits	Pumped storage hydropower is a modified use of conventional hydropower technology to store and manage energy or electricity by moving water between an upper and lower reservoir. Currently, pumped storage round-trip or cycle energy efficiencies exceed 80%, comparing favorably to other energy storage technologies and thermal technologies. This effectively shifts, stores, and reuses energy generated until there is corresponding demand for system reserves and variable energy integration. This shifting can also occur to avoid transmission congestion periods, to help more efficiently manage transmission grid, and to avoid potential interruptions to energy supply. This is important because many of the renewable energy resources being developed (e.g., wind and solar) are generated at times of low demand and off-peak energy demand periods are still being met with fossil fuel resources, often at inefficient

	performance levels that increase the release of greenhouse gas emissions. Further, pumped storage projects are critical to the national economy and overall energy reliability because it's: Least expensive source of electricity, not requiring fossil fuel for generation An emission-free renewable source Balancing grid for demand driven variations Balancing generation driven variations Voltage support and grid stability Apart from this, proposed PSP will also benefit the local community by creating employment opportunities and will result in upliftment of livelihood and socio-economic conditions.
Status of other statutory clearances	Forest Clearance - Online application seeking forest diversion for around 130.11 Ha after receipt of ToR Approval. Alongside, other statutory clearances (as applicable) from State as well as Central government will be obtained post completion of Detailed Project Report.
R&R details	Details shall be evaluated during EIA/EMP Studies
Additional detail (If any)	Nil

3.3.3. Deliberations by the EAC in previous meetings

Date of EAC 1 :02/06/2023

Deliberations of EAC 1 :

The EAC deliberated on the information submitted (Form 1, PFR, kml file, etc.) and as presented in the meeting andobserved that the proposal is for grant of terms of reference to the project for **Pindval Closed Loop Pumped Storage Project (1000 MW) in an area 165.88 ha at Village Pindval & Moti Kosbadi, Taluk Dharampur, District Valsad, Gujarat by M/s Torrent Power Limited.**

The project/activity is covered under Category A of item 1 (c) 'River Valley projects' of the Schedule to the Environmental Impact Assessment Notification, 2006 and requires appraisal at Central level bythe sectoral EAC in the Ministry.

The EAC noted that alternative site analysis was not done properly. the project proponent and their consultant was unable to explain the criterion/ justification for selecting the project site in view of environmental sensitivity of the area. The committee suggested to exercise to reduce the forest area involved in the project. The consultant was also not able to explain the water availability of tributaries of catchment area. The dam proposed on the tributary may pose detrimental effect on the survival of the tributary due to its low water availability. The tributaries/rivulets have vital role in survival of major river/reservoir and its ecosystem. The committee suggested to first identify the suitable site and revise project layout design accordingly keeping in view the aspects about sustainability of natural streams/rivulets/ Nallah.

The committee also observed that the project site is also blocking the path of one tributary. The proposal submitted in present form is not allowed. Alternative site analysis shall be carried out in terms of ecological aspects viz. loss of Forest ecosystem due to diversion of Forest land/loss of biodiversity and its impacts on productivity of the ecosystem, water availability, water uses for generation of hydro power and Ecological flows in the small stream/Nallah. The EAC therefore decided to defer the proposal for want of above mentioned additional information.

*The proposal was therefore **deferred.***

3.3.4. Deliberations by the EAC in current meetings

The EAC deliberated on the information submitted (Form 1, PFR, kml file, etc.) and as presented in the meeting and observed that the proposal is for grant of terms of reference to the project Pindval Closed Loop Pumped Storage Project (1000 MW) in an area 165.88 ha at Village Pindval & Moti Kosbadi, Taluk Dharampur, District Valsad, Gujarat by M/s Torrent Power Limited**.**

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

3.3.5. Recommendation of EAC

Recommended

3.3.6. Details of Terms of Reference

3.3.6.1. Specific

Environmental Management and Biodiversity Conservation::	
1.	1. Cumulative Impact of project on carrying capacity and sustainability of Reservoir/ nalahs of catchment area, irrigation facilities due to tapping of water for filling reservoir. 2. Action plan for survival of rivulets in the study area 3. Prepare Environmental Cost Benefit Analysis in terms of loss of Forest ecosystem due to diversion of Forest land/ loss of biodiversity and its impacts on ecosystem, water availability, water uses for generation of hydro power in study area 10 km from periphery of Project components. 4. Alternative sites for various components shall be identified in terms of loss of forest area. 5. Impact zone decided prior to base line data generation and accordingly, sampling location shall be finalized. Baseline data as mentioned in Standard 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. 6. 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. 7. Sampling locations be located to cover villages situated near the reservoir and around boundary of forest area for collection of baseline data and data to be incorporated in EIA/ EMP report. 8. Identify the sand mining/quarrying sites in submergence area and downstream of reservoir. 9. Scope of watershed development in the 10 km radius of the project shall be studied in consultation with expert Govt. institutions/ Indian Council of Agriculture Research (ICAR)and accordingly a detailed Water Shed Development Plan shall be prepared and incorporated in EIA/ EMP report. 10. Source of construction material and its distance from the project site along with detailed transportation plan for construction material. 11. A detailed reclamation/ restoration plan of quarrying site/sites be incorporated in the EIA/EMP report. 12. Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP. 13. Scope of watershed development in the 10 km radius of the project shall be studied in consultation with Govt. institutions/ Indian Council of Agriculture Research (ICAR)and accordingly a detailed Water Shed Development Plan shall be prepared and incorporated in EIA/ EMP report. 14. MoU for water uses for the project signed and approved by concerned authority shall be submitted. 15. Environmental matrix during construction and operational phase needs to be submitted. 16. Matrix formulated on the basis of detailed study and field survey of flora and Fauna methodology used

	shall be mentioned in the EIA report. 17. Endemic plant and animal species found in the area concerned shall be provided instead listing entire endemic species found in the State. 18. Details of Flora and Fauna reported in submergence area, Nos. of tree along with their density and nomenclature of the tree species required to be felled for reservoir creation and other project component. 19. Impact assessment on the fish diversity based on the hydrological alteration at the water drawing sources shall be studied. 20. Stage-I Forest Clearance shall be obtained. 21. Explore the possibilities to reduce Forest area for the construction of proposed project, Muck disposal sites and approach roads should be outside the forest area.
Muck Management/ Disaster Management	
1.	1. Details of quantity of muck generation component wise and disposal site along with transportation plan and its monitoring to be provided. 2. Details of Muck Management plan prepared along with estimated cost incorporated in EIA/ EMP report. 3. Techno-economic viability of the project must be recommended from CEA/ CWC.
Socio-economic Study	
1.	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. Public hearing issues raised and compliance of the same shall be incorporated in the EIA/ EMP report in the relevant chapter. 3. Statement on the commitments (activity-wise) made during public hearing to facilitate the discussion on the CER in compliance of the Ministry's OM F. No. 22-65/2017-IA.III dated 30th September, 2020 shall be submitted. 4. Tentative no. of project affected families shall be identified and accordingly appropriate Rehabilitation & Resettlement plan shall be prepared. 5. Details of settlement in 10 km area shall be submitted.
Environmental Management & Biodiversity Conservation	
1.	1. Cumulative Impact of project on carrying capacity and sustainability of Reservoir/ nallahs of catchment area, irrigation facilities due to tapping of water for filling reservoir. 2. Alternative sites for various components shall be identified in terms of loss of forest area. 3. Impact zone decided prior to base line data generation and accordingly, sampling location shall be finalized. Baseline data as mentioned in Standard 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. 4. A study shall be carried out on impact of project activity on the aquatic and terrestrial ecosystem, within project area classifying the impact zones (highly impact/low impact zone) based on seasonal variations and covering the aspects related to impacts on aquatic ecosystem/ primary productivity due to quantity of water to be lifted for power generation and thermal stratification. Accordingly, Environment Management plan shall be prepared. 5. Sampling locations be located to cover villages situated near the reservoir and around boundary of forest area for collection of baseline data and data to be incorporated in EIA/ EMPreport. 6. Identify the sand mining/ quarrying sites in submergence area and downstream of reservoir. 7. Scope of watershed development in the 10 km radius of the project shall be studied in consultation with expert Govt. institutions/ Indian Council of Agriculture Research (ICAR)and accordingly a detailed Water Shed Development Plan shall be prepared and incorporated in EIA/ EMP report.

	8. Source of construction material and its distance from the project site along with detailed transportation plan for construction material. 9. A detailed reclamation/ restoration plan of quarrying site/sites be incorporated in the EIA/EMP report. 10. Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP. 11. Scope of watershed development in the 10 km radius of the project shall be studied in consultation with Govt. institutions/ Indian Council of Agriculture Research (ICAR)and accordingly a detailedWater Shed Development Plan shall be prepared and incorporated in EIA/ EMP report. 12. MoU for water uses for the project signed and approved by concerned authority shall be submitted. 13. Environmental matrix during construction and operational phase needs to be submitted. 14. Matrix formulated on the basis of detailed study and field survey of flora and Fauna methodology used shall be mentioned in the EIA report. 15. Endemic plant and animal species found in the area concerned shall be provided instead listing entire endemic species found in the State. 16. Details of Flora and Fauna reported in submergence area, Nos. of tree along with their density and nomenclature of the tree species required to be felled for reservoir creation and other project component. 17. Impact assessment on the fish diversity based on the hydrological alteration at the water drawing sources shall be studied. 18. Stage-I Forest Clearance shall be obtained. 19. Explore the possibilities to reduce Forest area for the construction of proposed project, Muck disposal sites should be outside the forest area.
Miscellaneous**	
1.	1. Pre-DPR Chapters viz. Layout Map and Power Potential Studies duly approved by CWC/CEA shall be submitted. 2. Undertaking need to submitted on affidavit that regarding no activities has been yet started on the project site and water allocated to this scheme shall not be diverted to other purpose. 3. Both capital and recurring expenditure under EMP shall be submitted. 4. The photograph should bear the date, time, latitude & longitude of the monitoring station/ sampling location. In addition to this PP should submit the original test reports and certificates of the labs which will analyse the samples. 5. Arial view video of project site shall be recorded and to be submitted. 6. Detailed plan to restore wider roads and convert them into narrow upto 10m after construction of the project.

3.3.6.2. Standard

1(c)	**River Valley/Irrigation projects**
Scope of EIA Study	
1.	The EIA Report should identify the relevant environmental concerns and focus on potential impacts that may change due to the construction of proposed project. Based on the baseline data collected for three (3) seasons (Pre-monsoon, Monsoon and Winter seasons), the status of the existing environment in the area and capacity to bear the impact on this should be analysed. Based on this analysis, the mitigation measures for minimizing the impact shall be suggested in the EIA/EMP study.
Details of the Project and Site	
1.	General introduction about the proposed project.
2.	Details of Project and site giving L-Sections of all U/S and D/S Projects with all relevant maps and figures. Connect such information as to establish the total length of interference of Natural River and the committed

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

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

1.	null
2.	Physical geography, Topography, Regional Geological aspects and structure of the Catchment.
3.	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.
4.	Landslide zone or area prone to landslide existing in the study area should be examined.
5.	Presence of important economic mineral deposit, if any.
6.	Justification for location & execution of the project in relation to structural components (dam /barrage height).
7.	Impact of project on geological environment.
8.	Meteorology (viz. Temperature, Relative humidity, wind speed/direction etc.) to be collected from nearest IMD station.
9.	Ambient Air Quality with parameters viz. Suspended Particulate Matter (SPM), Respirable Suspended Particulate Matter (RSPM) i.e. suspended particulate materials < 10 microns, Sulphur dioxide (SO2) and Oxides of Nitrogen (NOX) in the study area at 5-6 Locations.
10.	Existing Noise Levels and traffic density in the study area at 5-6 Locations.
11.	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.
12.	(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.
13.	History of the ground water table fluctuation in the study area.
14.	Water quality for both surface water and ground water for (i) Physical parameters (pH, temperature, electrical conductivity, TSS); (ii) Chemical parameters (Alkalinity, Hardness, BOD, COD, NO2, PO4, CI, SO4, Na, K, Ca, Mg, Silica, Oil & Grease, phenolic compounds, residual sodium carbonate); (iii) Bacteriological parameter (MPN, Total coliform) and (iv) Heavy Metals (Pb, As, Hg, Cd, Cr-6, total Cr, Cu, Zn, Fe) (6 locations).
15.	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
16.	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.
17.	Run off, discharge, water availability for the project, sedimentation rate, etc.
18.	Basin characteristics
19.	Catastrophic events like cloud bursts and flash floods, if any, should be documented.
20.	For estimation of Sedimentation Rate, direct sampling of river flow is to be done during the EIA study. The

	study should be conducted for minimum one year. Actual silt flow rate to be expressed in ha-m km2 year-1.
21.	Set up a G&D monitoring station and a few rain gauge stations in the catchment area for collecting data during the investigation.
22.	Flow series, 10 daily with 90%, 75% and 50% dependable years discharges.
23.	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.
24.	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.
25.	Sedimentation data available with CWC may be used to find out the loss in storage over the years.
26.	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.
27.	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.
28.	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.
29.	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.
30.	Documentation of all plant species i.e. Angiosperm, Gymnosperm, Pteriodophytes, Bryophytes (all groups).
31.	General vegetation profile and floral diversity covering all groups of flora including lichens and orchids. A species wise list may be provided.
32.	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.
33.	Existence of National park, Sanctuary, Biosphere Reserve etc in the study area, if any, should be detailed.
34.	Economically important species like medicinal plants, timber, fuel wood etc.
35.	Details of endemic species found in the project area.
36.	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.
37.	Cropping pattern and Horticultural Practices in the study area.
38.	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.
39.	Documentation of fauna plankton (phyto and zooplankton), periphyton, benthos and fish should be done and

	analysed.
40.	Information (authenticated) on Avi-fauna and wildlife in the study area.
41.	Status of avifauna their resident/ migratory/ passage migrants etc.
42.	Documentation of butterflies, if any, found in the area.
43.	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.
44.	Existence of barriers and corridors, if any, for wild animals.
45.	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.
46.	Collection of primary data on agricultural activity, crop and their productivity and irrigation facilities components.
47.	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.
48.	Documentation of aquatic fauna like macro-invertebrates, zooplankton, phytoplantktons, benthos etc.
49.	Fish and fisheries, their migration and breeding grounds.
50.	Fish diversity composition and maximum length & weight of the measured populations to be studies for estimation of environmental flow.
51.	Conservation status of aquatic fauna.
52.	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.
53.	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.
54.	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.
55.	Collection of information on sensitive habitat of historical, cultural and religious and ecological importance.
56.	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.
57.	Documentation of demographic, Ethnographic, Economic Structure and development profile of the area.
58.	Information on Agricultural Practices, Cultural and aesthetic sites, Infrastructure facilities etc.
59.	Information on the dependence of the local people on minor forest produce and their cattle grazing rights in the forest land.

60.	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.
61.	Special attention has to be given to vulnerable groups like women, aged persons etc. and to any ethnic/indigenous groups that are getting affected by the project.
Impact Prediction and Mitigation Measures	
1.	The adverse impact due to the proposed project should be assessed and effective mitigation steps to abate these impacts should be described.
2.	Changes in ambient and ground level concentrations due to total emissions from point, line and area sources.
3.	Effect on soil, material, vegetation and human health.
4.	Impact of emissions from DG set used for power during the construction, if any, on air environment.
5.	Pollution due to fuel combustion in equipments and vehicles
6.	Fugitive emissions from various sources
7.	Changes in surface and ground water quality
8.	Steps to develop pisci-culture and recreational facilities
9.	Changes in hydraulic regime and downstream flow.
10.	Water pollution due to disposal of sewage
11.	Water pollution from labour colonies/ camps and washing equipment.
12.	Adverse impact on land stability, catchment of soil erosion, reservoir sedimentation and spring flow (if any) (a) due to considerable road construction / widening activity (b) interference of reservoir with the inflowing stream (c) blasting for commissioning of HRT, TRT and some other structures.
13.	Changes in land use / land cover and drainage pattern
14.	Immigration of labour population
15.	Quarrying operation and muck disposal
16.	Changes in land quality including effects of waste disposal
17.	River bank and their stability
18.	Impact due to submergence.
19.	Impact on forests, flora, fauna including wildlife, migratory avi-fauna, rare and endangered species, medicinal plants etc.
20.	Pressure on existing natural resources
21.	Deforestation and disturbance to wildlife, habitat fragmentation and wild animal's migratory corridors

22.	Compensatory afforestation-identification of suitable native tree species for compensatory afforestation and green belt.
23.	Impact on fish migration and habitat degradation due to decreased flow of water
24.	Impact on breeding and nesting grounds of animals and fish.
25.	Impact on local community including demographic profile.
26.	Impact on socio-economic status
27.	Impact on economic status.
28.	Impact on human health due to water / vector borne disease
29.	Impact on increase traffic
30.	Impact on Holy Places and Tourism
31.	Impacts of blasting activity during project construction which generally destabilize the land mass and leads to landslides, damage to properties and drying up of natural springs and cause noise population will be studies. Proper record shall be maintained of the baseline information in the post project period.
32.	Positive and negative impacts likely to be accrued due to the project are listed.
Environmental Management Plan	
1.	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.
2.	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.
3.	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.
4.	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.
5.	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.
6.	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.
7.	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.
8.	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.
9.	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.
10.	Muck Disposal Plan- suitable sites for dumping of excavated material should be identified in consultation with the State Pollution Control Board and Forest Department. All Muck disposal sites should be minimum 30 m away from the HFL of river. Plan for rehabilitation of muck disposal sites should also be given. The L- section/ cross section of muck disposal sites and approach roads to be given. Financial out lay for this may be given separately. Deatailed muck transportation plan delinating the path ways, number of trucks, quantity of muck to be transportated along with monitoring mechanism using latest technology, shall be prepared.
11.	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.
12.	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.
13.	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.
14.	Local Area Development Plan to be formulated in consultation with the Revenue Officials and Village Pancahayats. Appropriate schemes shall be prepared under EMP for the Local Area Development Plan with sufficient financial provisions.
15.	Labour Management Plan for their Health and Safety.
16.	Sanitation and Solid waste management plan for domestic waste from colonies and labour camps etc.
17.	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.

18.	Environmental safeguards during construction activities including Road Construction.
19.	A summary of Cost Estimates for all the plans, cost for implementing all the Environmental Management Plans.
20.	Water, Air and Noise Management Plans to be implemented during construction and post-construction periods.

3.4. Agenda Item No 4:

3.4.1. Details of the proposal

Saidongar-1 Pumped Storage Project (3000 MW) by **TORRENT POWER LIMITED** located at **RAIGAD,MAHARASHTRA**			
Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/MH/RIV/438958/2023	J-12011/42/2023-IA.I (R)	03/08/2023	River Valley/Irrigation projects (1(c))

3.4.2. Project Salient Features

50.6.1 The proposal is for grant of Terms of References (ToR) to the project for Saidongar-1 Closed Loop Pumped Storage Project (3000 MW) in an area of 279.69 ha at Village Saidongar, Kusur and Dhak, Tehsil Mawal and Karjat, District Pune and Raigarh, Maharashtra by M/s Torrent Power Limited.

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

1. The proposal is for ToR to the project for Saidongar-1 Pumped Storage Project located (3000 MW) in an area of 279.69 ha at Village Dhak, Kusur Taluka Kajraj & Mawal, District Raigad & Pune, Maharashtra by M/s Torrent Power Limited.
2. The project is listed at S.N. **1**
   (c) of the Scheduleto the Environment Impact Assessment (EIA) Notification under category 'A' and are apprais edat Central Level by Expert Appraisal Committee (EAC). Saidongar-1 PSP is a standalone pumped storage project proposed by M/s Torrent Power Limited, located on the border of Raigad and Pune Districts in the state of Maharashtra.
3. Project comprises of an underground powerhouse with an installed capacity of 3000 MW having 9 units of 300 MW & 2 units of 150 MW each.
4. **Background of the project**: Saidongar Pumped Storage Project was initially conceived with 4200 MW installed capacity having two upper reservoirs, two powerhouses with installed capacity of 3000 MW and 1200 MW each and one common lower reservoir; all to be constructed new. The project was earlier considered **by the EAC for grant of TOR during its meeting held on 26th and 27th June 2023**. The EAC was of the view that as per the proposed project design the proposal may not be considered as single project. The PP should consult with Central Electricity Authority to look into the design aspect and submit the proposal accordingly.
5. Project proponent after meeting with CEA, has decided to split the project into two separate project without changing any of the project features and name them as Saidongar 1 (3000 MW) and Saidongar 2 (1200 MW). Two separate PFRs have been prepared and two separate applications have been filed on Parivesh portal for grant of TOR to these two projects.
6. The upper reservoir is proposed near Dhak village on the left bank while a common lower reservoir (for Saidongar-1 & Saidongar-2 PSPs) is envisaged near Pali T. Kothal Khalathi village.
7. The reservoirs are interconnected through individual water conductor systems, and the generator-motor and pump-turbines are installed at the underground powerhouse in between the reservoirs.
8. The main features of major components of the Saidongar-1 PSP (3000MW) as per the present feasibility report are as follows:

a) **Upper Dam:** CFRD dam of length 2653m with a height of 33m with the gated Spillway
b) **Lower Dam:** Concrete gravity dam of length 664m with a height of 67m with gated Spillway (common for alternative -1 of Saidongar-1 PSP & alternative 1 of Saidongar-2 PSP)
c) **Power Intake:** Five nos. of morning glory type Intake structure
d) **Head Race Tunnel:** Five nos. of 7.1m diameter circular shaped concrete lined head race tunnel with a length of 250.77m each.
e) **Upstream Surge Shaft**: Five nos. of semi underground and semi elevated restricted orifice surge shaft with a dia of 12m & total height of 88 m
f) Valve House Surface valve house is to accommodate five nos. of 5.2m butterfly valve
g) **Pressure shaft Tunnel**: Five nos. of steel lined main pressure shaft with 5.2m diameter of length 728.5m length each, nine nos. of unit pressure shaft with 3.7m diameter of length 52 m each and two nos. of unit pressure shaft with 2.6m diameter of length 38m each.
h) **Underground Powerhouse:** The underground powerhouse of size 268 m(L) x 22.00 m(W) x 53.20m(H), to accommodate nine nos. of 300 MW and two nos. of 150 MW reversible pump-turbine units.
i) **Transformer Cavern**: The underground transformer hall of size 263.00 m(L) x 16.00 m(W) x 26.00m(H), to accommodate thirty five nos. single phase transformers.
j) **Tail Race Tunnel**: Five nos. of 7.1m diameter circular shaped concrete lined tail race tunnel with a length of 190m each.
k) **Pump Intake:** Five nos. of lateral Intake structure

1. **Land requirement:** The total land required for the construction of various components and related works for Saidongar-1 PSP is estimated around **279.69 ha,** out of which **118.86** ha is non-forest land and **160.83** ha is forest land.
2. The estimated project cost is Rs **7855.62 crore.** Total capital cost earmarkedtowards environmental pollution control measures will be worked out during EIA study as well as the Recurring cost (operation and maintenance).
3. **Environmental sensitivity**: There are no nationalparks, wildlife sanctuaries, Biosphere Reserves, Tiger/Elephant Reserves, Wildlife Corridor s etc. within 10 km distancefrom the project site. River/ water body, Thokarwadi reservoir at the distance of 2 km in west direction. There is no Protected Area in the vicinity of the proposed project. Bhimashankar WLS is about 15 Km from site, is the nearest protected area.
4. Project falls within the proposed **Western Ghats Eco-Sensitive Area (ESA**) as per the draft notification dated 06th July 2022.
5. Status of Litigation Pending against the proposal,if any. **No**
6. The salient features of the project are as under:-

EAC Meeting Details:

EAC meeting/s	50th Meeting
Date of Meeting/s	11.08.2023
Date of earlier EAC meetings	Nil

Project details:

Name of the Proposal	Saidongar-1 Pumped Storage Project
Location (Including coordinates)	Upper Reservoir: 73°24'32"E; 18°54'15"N Lower Reservoir: 73°25'34"E; 18°54'37"N
Inter- state issue involved	No
Seismic zone	Zone-III

Category details:

Category of the project	A
Provisions	
Capacity / Cultural command area (CCA)	3000 MW
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	Nil

Electricity generation capacity:

Powerhouse Installed Capacity	3000 MW
Generation of Electricity Annually	6570 MU
No. of Units	11 nos. (9X300+2X150)
Additional information (if any)	Nil

ToR Details:

Cost of project	7,855.62 Cr.
Total area of Project	279.69 ha
Height of Dam from River Bed (EL)	Lower Dam – 67 m Upper Dam – 33 m
Length of Tunnel/Channel	1790 m
Details of Submergence area	233.36 ha
Types of Waste and quantity of generation during construction/ Operation	Muck from excavation, solid waste from labour colony and construction waste
E-Flows for the Project	Not Applicable, as this is Off-Stream Closed Loop Pumped Storage Project (PSP)
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then 1. E-flow with TOR /Recommendation by 2. EAC as per CIA&CC study of River Basin. If not the E-Flows maintain criteria for sustaining river ecosystem.	No

Muck Management Details:

No. of proposed disposal area/ (type of land-Forest/Pvt. land)	5.97 ha Private Land
Muck Management Plan	Will be Provided in EIA/EMP report
Monitoring mechanism for Muck Disposal	Will be Provided in EIA/EMP report

Land Area Breakup:

Government land/Forest Land	No
Submergence area/Reservoir area	233.36 ha
Land required for project components	46.33 ha
Additional information (if any)	Nil

Presence of Environmentally Sensitive areas in the study area

Forest Land/ Protected Area/ Environmental Sensitivity Zone	**Yes/No**	**Details of Certificate / letter/ Remarks**
Reserve Forest/Protected Forest Land	--	There is no Protected Area in the vicinity of the proposed project. Bhimashankar WLS is about 15.0 Km from site, is the nearest protected area.
National Park	--- --	
Wildlife Sanctuary	--- --	

Court case details: nil

Affidavit/Undertaking details:

Affidavit/Undertaking	Enclosed
Additional information (if any)	Nil

Previous EC compliance and necessary approvals:

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

Miscellaneous

Particulars	**Details**
Details of consultant	M/s R S Envirolink Technologies Pvt. Ltd. (RSET) (*NABET* Accredited *Consultant Organization*) Certificate No: NABET/EIA/2225/RA0274
Project Benefits	Proposed PSP will also benefit the local community by creating employment opportunities and will result in upliftment of livelihood and socio-economic conditions.
Status of other statutory clearances	Forest Clearance - Online application seeking forest diversion for around 160.83 Ha after receipt of ToR Approval. Alongside, other statutory clearances (as applicable) from State as well as Central government will be obtained post completion of Detailed Project Report.

3.	R&R details	Details shall be evaluated during EIA/EMP Studies

4.

3. Deliberations by the EAC in previous meetings

N/A

3.4.4. Deliberations by the EAC in current meetings

The EAC deliberated on the information submitted (Form 1, PFR, kml file, etc.) and as presented in the meeting and observed that the proposal is for grant of terms of reference to the project Saidongar-1 Closed Loop Pumped Storage Project (3000 MW) in an area of 279.69 ha at Village Saidongar, Kusur and Dhak, Tehsil Mawal and Karjat, District Pune and Raigarh, Maharashtra by M/s Torrent Power Limited The project/activity is covered under Category A of item 1 (c) 'River Valley projects' of the Schedule to the Environmental Impact Assessment Notification, 2006 and requires appraisal at Central level by the sectoral EAC in the Ministry**.** The project site is located in Western Ghats ESA, the EAC decided to conduct site visit before considering the proposal for grant environmental clearance to know the ground conditions.

3.4.5. Recommendation of EAC

Recommended

3.4.6. Details of Terms of Reference

3.4.6.1. Specific

Environmental Management and Biodiversity Conservation::	
1.	1. The EAC will visit the project site before considering the proposal for grant of environmental Clearance. 2. Approach road for the proposed project shall be in non- forest area. 3. Conduct Environmental Cost Benefit Analysis in terms of loss of Forest ecosystem due to diversion of Forest land/ loss of biodiversity and its impacts on ecosystem, water availability, water uses for generation of hydro power in study area 10 km from periphery of Project components 4. Cumulative Impact of project on carrying capacity and sustainability of Reservoir/ nalahs of catchment area / due to tapping of water for filling reservoir. 5. Alternative sites for various components shall be identified in terms of loss of forest area and other environmental aspects. 6. Action plan for survival of the rivulets located in the study area. 7. Impact zone decided prior to base line data generation and accordingly, sampling location shall be finalized. Baseline data as mentioned in Standard 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. 8. 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. 9. Sampling locations be located to cover villages situated near the reservoir and around boundary of forest area for collection of baseline data and data to be incorporated in EIA/ EMP report. 10. A detailed reclamation/ restoration plan of quarrying site/sites be incorporated in the EIA/EMP report. 11. A detailedwildlife conservation plan for Schedule –I species, duly approved by the Chief Wild Life Warden, be submitted. 12. In case any Wildlife corridor is located within 10 km radius of the project site a detailed study shall be conducted to assess the impact of project on safe movement of wild animals. 13. Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in

	EIA/ EMP. 14. Scope of watershed development in the 10 km radius of the project shall be studied in consultation with Govt. institutions/ Indian Council of Agriculture Research (ICAR)and accordingly a detailed Water Shed Development Plan shall be prepared and incorporated in EIA/ EMP report. 15. MoU for water uses for the project shall be signed and approved by concerned authority. 16. Environmental matrix during construction and operational phase needs to be submitted. 17. Matrix formulated on the basis of detailed study and field survey of flora and fauna methodology used shall be mentioned in the EIA report. 18. Endemic plant and animal species found in the area concerned shall be provided instead listing entire endemic species found in the State. 19. Details of Flora and Fauna reported in submergence area, Nos. of tree along with their density and nomenclature of the tree species required to be felled for reservoir creation and other project component. 20. Impact assessment on the fish diversity based on the hydrological alteration at the water drawing sources shall be studied. 21. Stage-I Forest Clearance shall be obtained.
Miscellaneous.	
1.	1. Pre-DPR Chapters viz. Layout Mapand Power Potential Studies duly approved by CWC/CEA shall be submitted. 2. Undertaking need to submitted on affidavit that regarding no activities has been yet started on the project site and water allocated to this scheme shall not be diverted to other purpose. 3. Both capital and recurring expenditure under EMP shall be submitted. 4. The photograph should bear the date, time, latitude & longitude of the monitoring station/ sampling location. In addition to this PP should submit the original test reports and certificates of the labs which will analyse the samples. 5. Arial view video of project site shall be recorded and to be submitted. 6. Detailed plan to restore wider roads and convert them into narrow upto10m after construction of the project.
Socio-economic Study	
1.	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. Public hearing issues raised and compliance of the same shall be incorporated in the EIA/ EMP report in the relevant chapter. 3. Statement on the commitments (activity-wise) made during public hearing to facilitate the discussion on the CER in compliance of the Ministry's OM F. No. 22- 65/2017- IA.III dated 30th September, 2020 shall be submitted. 4. Tentative no. of project affected families shall be identified and accordingly appropriate Rehabilitation & Resettlement plan shall be prepared. 5. Details of settlement in 10 km area shall be submitted.
Muck Management/Disaster Management..	
1.	1. Details of quantity of muck generation component wise and disposal site along with transportation plan and its monitoring to be provided. 2. Details of Muck Management plan prepared along with estimated cost incorporated in EIA/ EMPreport. 3. Techno-economic viability of the project must be recommended from CEA/ CWC.

3.4.6.2. Standard

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

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

	their high conservation value. Hence likely presence of such species should be ascertained from secondary sources by a proper literature survey for the said area including referring to field guides which are now available for many taxonomic groups in India. Even literature from studies/surveys in the larger landscapes which include the study area for the concerned project must be referred to, since most species from adjoining catchments is likely to be present in the catchments in question. In fact such literature form the entire state can be referred to. Once a listing of possible r.e.t. species form the said area is developed, species specific methodologies should be adopted to ascertain their presence in the study area which would be far more conclusive as compared to the conventional sampling. If the need be, modern methods like camera trapping can be resorted to, particularly for areas in the eastern Himalayas and for secretive/nocturnal species. A detailed listing of the literature referred to, for developing lists of r.e.t. species should be provided in the EIA reports.
4.	The R.E.T. species referred to in this point should include species listed in Schedule I and II of Wildlife (Protection) Act, 1972 and those listed in the red data books (BSI, ZSI and IUCN).
Components of the EIA Study: Various aspects to be studied and provided in the EIA/EMP report are as follows:	
1.	null
2.	Physical geography, Topography, Regional Geological aspects and structure of the Catchment.
3.	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.
4.	Landslide zone or area prone to landslide existing in the study area should be examined.
5.	Presence of important economic mineral deposit, if any.
6.	Justification for location & execution of the project in relation to structural components (dam /barrage height).
7.	Impact of project on geological environment.
8.	Meteorology (viz. Temperature, Relative humidity, wind speed/direction etc.) to be collected from nearest IMD station.
9.	Ambient Air Quality with parameters viz. Suspended Particulate Matter (SPM), Respirable Suspended Particulate Matter (RSPM) i.e. suspended particulate materials < 10 microns, Sulphur dioxide (SO2) and Oxides of Nitrogen (NOX) in the study area at 5-6 Locations.
10.	Existing Noise Levels and traffic density in the study area at 5-6 Locations.
11.	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.
12.	(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.
13.	History of the ground water table fluctuation in the study area.
14.	Water quality for both surface water and ground water for (i) Physical parameters (pH, temperature, electrical conductivity, TSS); (ii) Chemical parameters (Alkalinity, Hardness, BOD, COD, NO2, PO4, CI, SO4, Na, K, Ca, Mg, Silica, Oil & Grease, phenolic compounds, residual sodium carbonate); (iii) Bacteriological parameter (MPN, Total coliform) and (iv) Heavy Metals (Pb, As, Hg, Cd, Cr-6, total Cr, Cu, Zn, Fe) (6 locations).

15.	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
16.	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.
17.	Run off, discharge, water availability for the project, sedimentation rate, etc.
18.	Basin characteristics
19.	Catastrophic events like cloud bursts and flash floods, if any, should be documented.
20.	For estimation of Sedimentation Rate, direct sampling of river flow is to be done during the EIA study. The study should be conducted for minimum one year. Actual silt flow rate to be expressed in ha-m km2 year-1.
21.	Set up a G&D monitoring station and a few rain gauge stations in the catchment area for collecting data during the investigation.
22.	Flow series, 10 daily with 90%, 75% and 50% dependable years discharges.
23.	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.
24.	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.
25.	Sedimentation data available with CWC may be used to find out the loss in storage over the years.
26.	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.
27.	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.
28.	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.
29.	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.
30.	Documentation of all plant species i.e. Angiosperm, Gymnosperm, Pteriodophytes, Bryophytes (all groups).
31.	General vegetation profile and floral diversity covering all groups of flora including lichens and orchids. A species wise list may be provided.
32.	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.
33.	Existence of National park, Sanctuary, Biosphere Reserve etc in the study area, if any, should be detailed.

34.	Economically important species like medicinal plants, timber, fuel wood etc.
35.	Details of endemic species found in the project area.
36.	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.
37.	Cropping pattern and Horticultural Practices in the study area.
38.	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.
39.	Documentation of fauna plankton (phyto and zooplankton), periphyton, benthos and fish should be done and analysed.
40.	Information (authenticated) on Avi-fauna and wildlife in the study area.
41.	Status of avifauna their resident/ migratory/ passage migrants etc.
42.	Documentation of butterflies, if any, found in the area.
43.	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.
44.	Existence of barriers and corridors, if any, for wild animals.
45.	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.
46.	Collection of primary data on agricultural activity, crop and their productivity and irrigation facilities components.
47.	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.
48.	Documentation of aquatic fauna like macro-invertebrates, zooplankton, phytoplantktons, benthos etc.
49.	Fish and fisheries, their migration and breeding grounds.
50.	Fish diversity composition and maximum length & weight of the measured populations to be studies for estimation of environmental flow.
51.	Conservation status of aquatic fauna.
52.	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.
53.	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.
54.	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.

55.	Collection of information on sensitive habitat of historical, cultural and religious and ecological importance.
56.	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.
57.	Documentation of demographic, Ethnographic, Economic Structure and development profile of the area.
58.	Information on Agricultural Practices, Cultural and aesthetic sites, Infrastructure facilities etc.
59.	Information on the dependence of the local people on minor forest produce and their cattle grazing rights in the forest land.
60.	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.
61.	Special attention has to be given to vulnerable groups like women, aged persons etc. and to any ethnic/indigenous groups that are getting affected by the project.
Impact Prediction and Mitigation Measures	
1.	The adverse impact due to the proposed project should be assessed and effective mitigation steps to abate these impacts should be described.
2.	Changes in ambient and ground level concentrations due to total emissions from point, line and area sources.
3.	Effect on soil, material, vegetation and human health.
4.	Impact of emissions from DG set used for power during the construction, if any, on air environment.
5.	Pollution due to fuel combustion in equipments and vehicles
6.	Fugitive emissions from various sources
7.	Changes in surface and ground water quality
8.	Steps to develop pisci-culture and recreational facilities
9.	Changes in hydraulic regime and downstream flow.
10.	Water pollution due to disposal of sewage
11.	Water pollution from labour colonies/ camps and washing equipment.
12.	Adverse impact on land stability, catchment of soil erosion, reservoir sedimentation and spring flow (if any) (a) due to considerable road construction / widening activity (b) interference of reservoir with the inflowing stream (c) blasting for commissioning of HRT, TRT and some other structures.
13.	Changes in land use / land cover and drainage pattern
14.	Immigration of labour population
15.	Quarrying operation and muck disposal

16.	Changes in land quality including effects of waste disposal
17.	River bank and their stability
18.	Impact due to submergence.
19.	Impact on forests, flora, fauna including wildlife, migratory avi-fauna, rare and endangered species, medicinal plants etc.
20.	Pressure on existing natural resources
21.	Deforestation and disturbance to wildlife, habitat fragmentation and wild animal's migratory corridors
22.	Compensatory afforestation-identification of suitable native tree species for compensatory afforestation and green belt.
23.	Impact on fish migration and habitat degradation due to decreased flow of water
24.	Impact on breeding and nesting grounds of animals and fish.
25.	Impact on local community including demographic profile.
26.	Impact on socio-economic status
27.	Impact on economic status.
28.	Impact on human health due to water / vector borne disease
29.	Impact on increase traffic
30.	Impact on Holy Places and Tourism
31.	Impacts of blasting activity during project construction which generally destabilize the land mass and leads to landslides, damage to properties and drying up of natural springs and cause noise population will be studies. Proper record shall be maintained of the baseline information in the post project period.
32.	Positive and negative impacts likely to be accrued due to the project are listed.
Environmental Management Plan	
1.	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.
2.	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.
3.	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.
4.	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.
5.	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.
6.	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.
7.	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.
8.	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.
9.	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.
10.	Muck Disposal Plan- suitable sites for dumping of excavated material should be identified in consultation with the State Pollution Control Board and Forest Department. All Muck disposal sites should be minimum 30 m away from the HFL of river. Plan for rehabilitation of muck disposal sites should also be given. The L- section/ cross section of muck disposal sites and approach roads to be given. Financial out lay for this may be given separately. Deatailed muck transportation plan delinating the path ways, number of trucks, quantity of muck to be transportated along with monitoring mechanism using latest technology, shall be prepared.
11.	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.
12.	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.
13.	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.
14.	Local Area Development Plan to be formulated in consultation with the Revenue Officials and Village Pancahayats. Appropriate schemes shall be prepared under EMP for the Local Area Development Plan with sufficient financial provisions.
15.	Labour Management Plan for their Health and Safety.
16.	Sanitation and Solid waste management plan for domestic waste from colonies and labour camps etc.
17.	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.
18.	Environmental safeguards during construction activities including Road Construction.
19.	A summary of Cost Estimates for all the plans, cost for implementing all the Environmental Management Plans.
20.	Water, Air and Noise Management Plans to be implemented during construction and post-construction periods.

3.5. Agenda Item No 5:

3.5.1. Details of the proposal

Shirawta Off Stream Open Loop Pumped Storage Project (1800 MW) by **The Tata Power Co. Ltd.** located at **PUNE,MAHARASHTRA**			
Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/MH/RIV/438423/2023	J-12011/38/2023-IA.I (R)	28/07/2023	River Valley/Irrigation projects (1(c))

3.5.2. Project Salient Features

The proposal is for grant of Terms of References (ToR) to the project for Shirawta Off Stream Open Loop Pumped Storage Project (1800 MW) in an area of 197.9 ha at Village Khandshi, Tehsil Maval, District Pune, Maharashtra by M/s The Tata Power Company Limited.

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

1. The proposal is for ToR to the project for Shirawta Off Stream Open Loop Pumped Storage Project (1800 MW) in an area of 197.9 ha at Village Khandshi, Tehsil Maval, District Pune, Maharashtra by M/s The Tata Power Company Limited.
2. The project is listed at S.N. 1 (c) of the Schedule to the Environment Impact Assessment(EIA) Notification under category 'A' and are appraised at Central Level by Expert Appraisal Committee (EAC).
3. The estimated project cost is Rs **7027.72 crore.** Total capital cost earmarked towards environmental pollution control measures will be worked out during EIA study as well as the Recurring cost (operation and maintenance).
4. **Environmental sensitivity:** There are no National Parks, Wildlife Sanctuaries, Biosphere Reserves,

Tiger/Elephant Reserves, Wildlife Corridors etc within 10 km distance from the project site. River/ water body, Shirawta reservoir at the aerial distance of 1.5 km in south direction. Bhimashankar Wildlife Sanctuary located about 19.70 km north-east from site, is the nearest protected area.

5. **Land requirement:** Out of 197.9 ha of total land requirement, 60.1 ha is forest land and 137.8 ha is non-forest land of which 135.6 ha belongs to Tata Power.
6. The proposed Shirawta Pumped Storage Project (Shirawta PSP) is an Off- stream Open Loop PSP scheme with an installed capacity of **1800 MW** (5 x 300 MW + 2 x 150 MW) with existing lower Shirawta reservoir located at village Khandshi, Tal Maval, Dist. Pune which is owned and operated by Tata Power and new proposed upper reservoir situated in same village in land owned by Tata Power Co Ltd.
7. The project area is in the Sahyadri ranges of the **Western Ghats of Maharashtra State in the area bordering Pune and Raigad districts**. Shirawta PSP has been designed to meet the peaking requirement daily in the southern region grid and the state of Maharashtra for a duration of about six (6) hours. It is proposed to utilize the head available between existing Shirawta lower dam and upper dam proposed in company's land. Lower Shirawta reservoir located at village Khandshi, Tal Maval, Dist. Pune of Maharashtra state having a geographical latitude 18°48'24.47"N and longitude 73°28'46.62"E. The upper dam is proposed to be located on Tata Power's own upthe-hill table plot having a geographical latitude 18°50'22.15"N and longitude 73°27'5.12"E.
8. Proposed project envisages a scheme to generate 1800 MW of peak power for duration of about Six (6) hours daily by drawing water from the upper reservoir into the reversible PTG units by utilizing a gross head of about 301.03 m available at project site.
9. **Water Source and Availability:** This Project is envisaged as off-Stream open Loop Pumped Storage Project where it involves existing Shirawta reservoir (lower reservoir) having its own catchment and proposed new upper reservoir partly within the premises of Tata power (64%) (Private Land) and partly in Forest (36%). The project is designed fort a discharge of 676.51 cumec for generation of 1800 MW (5 x 300 MW+ 2 x150 MW). The Krishna Water District Tribunal (KWDT) has been constituted under Inter-State River Water Dispute's Act 1956. KWDT has allocated 213 TMC water to Tata Hydel Projects for generation of electricity in rolling 5 years with a liberty to divert 54.5 TMC in any one water year. The Shirawta PSP (1800 MW) has been proposed using one existing reservoir namely Shirawta Lake (as lower).
10. The water use for the Shirawta PSP is proposed to be sourced from the already allocated KWDT quota. No amount of additional water (neither for initial filling nor for annual make up towards tank losses) shall be augmented from any of the water resource of the State.
11. **Power potential:** The energy storage potential of Shirawta PSP is estimated as 1800 MW (in terms of power storage) and 10800 MWhr (in terms of energy storage).
12. **Project components**: The proposed Shirawta PSP (5 x 300 MW + 2 x 150 MW) envisages following major civil structures:

1. An artificial upper reservoir including embankment/bund having live storage capacity of 15.33 MCM (0.54 TMC) and elevation varies from FRL 965.00 m and MDDL 948.00 m. Rockfill embankment with asphalt face for creation of upper reservoir. The length of embankment dam is order of 4732.77 m and maximum height is 33 m.
2. Intake Structure comprising of trash rack structure & gates at upper reservoir. (Intake structure during generation mode & outlet structure during pumping mode).
3. 6 numbers circular penstock of 4.80 m dia. with 1026.41 m length each has been proposed. Out of 6, one penstock is bifurcated in two-unit penstock of 3.40 m diameter each to feed two turbines of 150 MW units & 5 penstock will feed 300 MW units each.
4. A Surface powerhouse (Pit Type) of 251.0 m (L) x 28.0 m (W) x 70.0 m (H) housing 5 nos. vertical Reversible Francis turbines of 300 MW & two units of 150 MW each.
5. Underground Powerhouse & Transformer Cavern: The overall dimensions of the powerhouse are 201.0 m long x 23 m wide x 48 m high. Transformer Cavern size is 201.0 m x 17.0 m x 22.0 m
6. Transformer deck for the installation of single-phase transformers with GIS floor above transformer floor.
7. 7 numbers of draft tube to feed the water to the Tail race tunnel.
8. 8 Numbers of circular shaped Tail race tunnel having length of about 145.65 m.
9. Out of 7 tunnels, 5 tunnels are having diameter of 6.40 m & two tunnels are 4.50 m diameter. A lower intake for discharging the water in lower reservoir after power generation & to pump back the water from lower reservoir to upper reservoir. During generation mode it will be outlet structure & during pumping it will be inlet structure.
10. A diversion arrangement at the lower reservoir (existing Shirawta reservoir) for the construction of lower intake and for the connection of TRT to existing Shirawta reservoir
11. **Alternative studies**: Four (4) alternatives have been studied for Shirawta pumped storage project with four different locations of Upper Reservoirs. Out of these Alternative -4 is recommended.

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

EAC Meeting Details:

EAC meeting/s	50th Meeting
Date of Meeting/s	11.08.2023
Date of earlier EAC meetings	Nil

Project details:

Name of the Proposal	Shirawta Pumped Storage Project
Location (Including coordinates)	Upper Reservoir: 73°27'15.78"E; 18°50'26.26"N
Inter- state issue involved	No
Seismic zone	Zone-III

Category details:

Category of the project	A
Provisions	
Capacity / Cultural command area (CCA)	1800 MW
Attracts the General Conditions (Yes/No)	No

Electricity generation capacity:

Powerhouse Installed Capacity	1800 MW
Generation of Electricity Annually	3744.90 MU
No. of Units	7 nos. (5X300+2X150)

ToR Details:

Cost of project	7,027.72 Cr.
Total area of Project	197.80 ha
Height of Dam from River Bed (EL)	Upper Dam – 21 m
Length of Tunnel/Channel	1172 m
Details of Submergence area	124.70 ha
Types of Waste and quantity of generation during construction/ Operation	Muck from excavation, solid waste from labour colony and construction waste

E-Flows for the Project	Not Applicable, as this is Off-Stream Open Loop Pumped Storage Project (PSP)
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then 1. E-flow with TOR /Recommendation by 2. EAC as per CIA&CC study of RiverBasin. If not the E-Flows maintain criteria for sustaining river ecosystem.	No

Muck Management Details:

No. of proposed disposal area/ (type of land- Forest/Pvt. land	40 ha Private Land
Muck Management Plan	Will be Provided in EIA/EMP report
Monitoring mechanism for Muck Disposal	Will be Provided in EIA/EMP report

Land Area Breakup:

Forest Land	60.1
Non Forest land	137.8
Land required for project components	197.9

Presence of Environmentally Sensitive areas in the study area

Forest Land/ Protected Area/ Environmental Sensitivity Zone	**Details of Certificate / letter/ Remarks**
Reserve Forest/Protected Forest Land	There is no Protected Area in the vicinity of the proposed project. Bhimashankar WLS is about 19.70 Km from site, is the nearest protected area.
National Park	
Wildlife Sanctuary	

Court case details: Nil

Affidavit/Undertaking details:

Affidavit/Undertaking	Enclosed

Previous EC compliance and necessary approvals:

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

Is FRA(2006) done for FC-I	Yet to Apply

Miscellaneous

Particulars	Details
Details of consultant	M/s. R S Envirolink Technologies Pvt. Ltd.
Project Benefits	Proposed PSP will also benefit the local community by creating employment opportunities and will result in upliftment of livelihood and socio-economic conditions.
Status of other statutory clearances	Forest Clearance - Online application seeking forest diversion for around 60.10 Ha after receipt of ToR Approval. Alongside, other statutory clearances (as applicable) from State as well as Central government will be obtained post completion of Detailed Project Report.
R&R details	Details shall be evaluated during EIA/EMP Studies

3.5.3. Deliberations by the EAC in previous meetings

N/A

3.5.4. Deliberations by the EAC in current meetings

The EAC deliberated on the information submitted (Form 1, PFR, kml file, etc.) and as presented in the meeting and observed that the proposal is for grant of Terms of Reference to the project for Shirawta Off Stream Open Loop Pumped Storage Project (1800 MW) in an area of 197.9 ha at Village Khandshi, Tehsil Maval, District Pune, Maharashtra by M/s The Tata Power Company Limited.

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

Since the project site is located in Western Ghats ESA, the EAC decided to conduct site visit before considering the proposal for grant environmental clearance to know the ground conditions and to suggest suitable environmental safeguards accordingly.

3.5.5. Recommendation of EAC

Recommended

3.5.6. Details of Terms of Reference

3.5.6.1. Specific

Environmental Management and Biodiversity Conservation::	
1.	1. The EAC shall conduct site visit before considering the proposal for grant environmental clearance.

	2. Approach road for the proposed project shall be in non- forest area. 3. Cumulative Impact of project on carrying capacity and sustainability of Reservoir/ nalahs of catchment area / due to tapping of water for filling reservoir. 4. Alternative sites for various components shall be identified in terms of loss of forest area and other environmental aspects. Action plan for survival of rivulets in the study area. 5. Impact zone decided prior to base line data generation and accordingly, sampling location shall be finalized. Baseline data as mentioned in Standard 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. 6. Prepare Environmental Cost Benefit Analysis in terms of loss of Forest ecosystem due to diversion of Forest land/ loss of biodiversity and its impacts on ecosystem, water availability, water uses for generation of hydro power in study area 10 km from periphery of Project components. 7. Action plan for survival of rivulets in the study area. 8. 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. 9. Sampling locations be located to cover villages situated near the reservoir and around boundary of forest area for collection of baseline data and data to be incorporated in EIA/ EMP report. 10. Source of construction material and its distance from the project site along with detailed transportation plan for construction material be elaborated in the EIA EMP report. A detailed reclamation/ restoration plan of quarrying site/sites be incorporated in the EIA/EMP report. 11. A detailed wildlife conservation plan for Schedule –I species, duly approved by the Chief Wild Life Warden, be submitted. 12. In case any Wildlife corridor is located within 10 km radius of the project site a detailed study shall be conducted to assess the impact of project on safe movement of wild animals. 13. Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP. 14. Scope of watershed development in the 10 km radius of the project shall be studied in consultation with Govt. institutions/ Indian Council of Agriculture Research (ICAR)and accordingly a detailed Water Shed Development Plan shall be prepared and incorporated in EIA/ EMP report. 15. MoU for water uses for the project shall be signed and approved by concerned authority. 16. Environmental matrix during construction and operational phase needs to be submitted. 17. Matrix formulated on the basis of detailed study and field survey of flora and fauna methodology used shall be mentioned in the EIA report. 18. Endemic plant and animal species found in the area concerned shall be provided instead listing entire endemic species found in the State. 19. Details of Flora and Fauna reported in submergence area, Nos. of tree along with their density and nomenclature of the tree species required to be felled for reservoir creation and other project component. 20. Impact assessment on the fish diversity based on the hydrological alteration at the water drawing sources shall be studied. 21. Stage-I Forest Clearance shall be obtained.
Miscellaneous.	
1.	1. Pre-DPR Chapters viz. Layout Map and Power Potential Studies duly approved by CWC/CEA shall be submitted. 2. Undertaking need to submitted on affidavit that regarding no activities has been yet started on the project site and water allocated to this scheme shall not be diverted to other purpose. 3. Both capital and recurring expenditure under EMP shall be submitted. 4. The photograph should bear the date, time, latitude & longitude of the monitoring station/ sampling location. In addition to this PP should submit the original test reports and certificates of the labs which will analyse the samples. 5. Arial view video of project site shall be recorded and to be submitted. 6. Detailed plan to restore wider roads and convert them into narrow upto10m after construction of the project
Socio-economic Study	

1.	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. Public hearing issues raised and compliance of the same shall be incorporated in the EIA/ EMP report in the relevant chapter. 3. Statement on the commitments (activity-wise) made during public hearing to facilitate the discussion on the CER in compliance of the Ministry's OM F. No. 22- 65/2017-IA.III dated 30th September, 2020 shall be submitted. 4. Tentative no. of project affected families shall be identified and accordingly appropriate Rehabilitation & Resettlement plan shall be prepared. 5. Details of settlement in 10 km area shall be submitted.
Muck Management/Disaster Management..	
1.	1. Details of quantity of muck generation component wise and disposal site along with transportation plan and its monitoring to be provided. 2. Details of Muck Management plan prepared along with estimated cost incorporated in EIA/ EMP report. 3. Techno-economic viability of the project must be recommended from CEA/ CWC.

3.5.6.2. Standard

1(c)	**River Valley/Irrigation projects**
Scope of EIA Study	
1.	The EIA Report should identify the relevant environmental concerns and focus on potential impacts that may change due to the construction of proposed project. Based on the baseline data collected for three (3) seasons (Pre-monsoon, Monsoon and Winter seasons), the status of the existing environment in the area and capacity to bear the impact on this should be analysed. Based on this analysis, the mitigation measures for minimizing the impact shall be suggested in the EIA/EMP study.
Details of the Project and Site	
1.	General introduction about the proposed project.
2.	Details of Project and site giving L-Sections of all U/S and D/S Projects with all relevant maps and figures. Connect such information as to establish the total length of interference of Natural River and the committed unrestricted release from the site of Dam/Barrage into the main river.
3.	A map of boundary of the project site giving details of protected areas in the vicinity of 25 km of project location.
4.	Location details on a map of the project area with contours indicating main project features. The project layout shall be superimposed on a contour map of ground elevation showing main project features (viz. location of dam, Head works, main canal, branch canals, quarrying etc.) shall be depicted in a scaled map.
5.	Layout details and map of the project along with contours with project components clearly marked with proper scale maps of at least 1:50,000 scale and printed at least on A3 scale for clarity.
6.	Existence of National Park, Sanctuary, Biosphere Reserve etc. in the study area, if any, should be detailed and presented on a map with distinct distances from the project components.
7.	Drainage pattern and map of the river catchment up to the proposed project site.

8.	Delineation of critically degraded areas in the directly draining catchment on the basis of Silt Yield Index as per the methodology of Soil and Land use Survey of India.
9.	Soil characteristics and map of the project area.
10.	Geological and Seismo-tectonic details and maps of the area surrounding the proposed project site showing location of dam site and canal sites.
11.	Remote Sensing studies, interpretation of satellite imagery, topographic sheets along with ground verification shall be used to develop the land use/land cover pattern of the study using overlaying mapping techniques viz. Geographic Information System (GIS), False Color Composite (FCC) generated from satellite data of project area.
12.	Land details including forests, private and other land.
13.	Demarcation of snow fed and rain fed areas for a realistic estimate of the water availability.
14.	Different riverine habitats like rapids, pools, side pools and variations in the river substratum bedrocks, rocks, boulders, sand/silt or clay etc. need to be covered under the study
Description of Environment and Baseline Data	
1.	To know the present status of environment in the area, baseline data with respect to environmental components air, water, noise, soil, land and biology & biodiversity (flora & fauna), wildlife, socioeconomic status etc. should be collected within 10 km radius of the main components of the project/site i.e. dam site and power house site. The air quality and noise are to be monitored at such locations which are environmentally & ecologically more sensitive in the study area. The baseline studies should be collected for 1 season (Preferably Monsoon season). Flora-Fauna in the catchment and command area should be documented. The study area should comprise of the following:
2.	(i) Catchment area up to the dam/barrage site.
3.	(ii) Submergence Area.
4.	(iii) Project area or the direct impact area should comprise of area within 10 km radius of the main project components like dam, canals etc.
5.	(iv) Downstream upto 10 km from the tip of the reservoir.
Details of the Methology	
1.	The methodology followed for collection of base line data along with details of number of samples and their locations in the map should be included. Study area should be demarcated properly on the appropriate scale map. Sampling sites should be depicted on map for each parameter with proper legends. For Forest Classification, Champion and Seth (1968) methodology should be followed.
Methodology for Collection of Biodiversity Data	
1.	The number of sampling locations should be adequate to get a reasonable idea of the diversity and other attributes of flora and fauna. The guiding principles should be the size of the study area (larger area should have larger number of sampling locations) and inherent diversity at the location, as known from secondary sources (e.g. eastern Himalayan and low altitude sites should have a larger number of sampling locations owing to higher diversity).
2.	The entire area should be divided in grids of 5kmX5km preferably on a GIS domain. There after 25% of the grids should be randomly selected for sampling of which half should be in the directly affected area (grids including project components such as reservoir, dam, powerhouse, tunnel, canal etc.) and the remaining in the

	rest of the area (areas of influence in 10 km radius form project components). At such chosen location, the size and number of sampling units (e.g. quadrates in case of flora/transects in case of fauna) must be decided by species area curves and the details of the same (graphs and cumulative number of species in a tabulated form) should be provided in the EIA report. Some of the grids on the edges may not be completely overlapping with the study area boundaries. However, these should be counted and considered for selecting 25% of the grids. The number of grids to be surveyed may come out as a decimal number (i.e. it has an integral and a fractional part) which should be rounded to the next whole number.
3.	The conventional sampling is likely to miss the presence of rare, endangered and threatened (r.e.t.) species since they often occur in low densities and in case of faunal species are usually secretive in behaviour. Reaching the conclusion about the absence of such species in the study area based on such methodology is misleading. It is very important to document the status of such species owing to their high conservation value. Hence likely presence of such species should be ascertained from secondary sources by a proper literature survey for the said area including referring to field guides which are now available for many taxonomic groups in India. Even literature from studies/surveys in the larger landscapes which include the study area for the concerned project must be referred to, since most species from adjoining catchments is likely to be present in the catchments in question. In fact such literature form the entire state can be referred to. Once a listing of possible r.e.t. species form the said area is developed, species specific methodologies should be adopted to ascertain their presence in the study area which would be far more conclusive as compared to the conventional sampling. If the need be, modern methods like camera trapping can be resorted to, particularly for areas in the eastern Himalayas and for secretive/nocturnal species. A detailed listing of the literature referred to, for developing lists of r.e.t. species should be provided in the EIA reports.The conventional sampling is likely to miss the presence of rare, endangered and threatened (r.e.t.) species since they often occur in low densities and in case of faunal species are usually secretive in behaviour. Reaching the conclusion about the absence of such species in the study area based on such methodology is misleading. It is very important to document the status of such species owing to their high conservation value. Hence likely presence of such species should be ascertained from secondary sources by a proper literature survey for the said area including referring to field guides which are now available for many taxonomic groups in India. Even literature from studies/surveys in the larger landscapes which include the study area for the concerned project must be referred to, since most species from adjoining catchments is likely to be present in the catchments in question. In fact such literature form the entire state can be referred to. Once a listing of possible r.e.t. species form the said area is developed, species specific methodologies should be adopted to ascertain their presence in the study area which would be far more conclusive as compared to the conventional sampling. If the need be, modern methods like camera trapping can be resorted to, particularly for areas in the eastern Himalayas and for secretive/nocturnal species. A detailed listing of the literature referred to, for developing lists of r.e.t. species should be provided in the EIA reports.
4.	The R.E.T. species referred to in this point should include species listed in Schedule I and II of Wildlife (Protection) Act, 1972 and those listed in the red data books (BSI, ZSI and IUCN).
Components of the EIA Study: Various aspects to be studied and provided in the EIA/EMP report are as follows:	
1.	null
2.	Physical geography, Topography, Regional Geological aspects and structure of the Catchment.
3.	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.
4.	Landslide zone or area prone to landslide existing in the study area should be examined.
5.	Presence of important economic mineral deposit, if any.
6.	Justification for location & execution of the project in relation to structural components (dam /barrage height).
7.	Impact of project on geological environment.

8.	Meteorology (viz. Temperature, Relative humidity, wind speed/direction etc.) to be collected from nearest IMD station.
9.	Ambient Air Quality with parameters viz. Suspended Particulate Matter (SPM), Respirable Suspended Particulate Matter (RSPM) i.e. suspended particulate materials < 10 microns, Sulphur dioxide (SO2) and Oxides of Nitrogen (NOX) in the study area at 5-6 Locations.
10.	Existing Noise Levels and traffic density in the study area at 5-6 Locations.
11.	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.
12.	(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.
13.	History of the ground water table fluctuation in the study area.
14.	Water quality for both surface water and ground water for (i) Physical parameters (pH, temperature, electrical conductivity, TSS); (ii) Chemical parameters (Alkalinity, Hardness, BOD, COD, NO2, PO4, CI, SO4, Na, K, Ca, Mg, Silica, Oil & Grease, phenolic compounds, residual sodium carbonate); (iii) Bacteriological parameter (MPN, Total coliform) and (iv) Heavy Metals (Pb, As, Hg, Cd, Cr-6, total Cr, Cu, Zn, Fe) (6 locations).
15.	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
16.	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.
17.	Run off, discharge, water availability for the project, sedimentation rate, etc.
18.	Basin characteristics
19.	Catastrophic events like cloud bursts and flash floods, if any, should be documented.
20.	For estimation of Sedimentation Rate, direct sampling of river flow is to be done during the EIA study. The study should be conducted for minimum one year. Actual silt flow rate to be expressed in ha-m km2 year-1.
21.	Set up a G&D monitoring station and a few rain gauge stations in the catchment area for collecting data during the investigation.
22.	Flow series, 10 daily with 90%, 75% and 50% dependable years discharges.
23.	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.
24.	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.
25.	Sedimentation data available with CWC may be used to find out the loss in storage over the years.

26.	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.
27.	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.
28.	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.
29.	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.
30.	Documentation of all plant species i.e. Angiosperm, Gymnosperm, Pteriodophytes, Bryophytes (all groups).
31.	General vegetation profile and floral diversity covering all groups of flora including lichens and orchids. A species wise list may be provided.
32.	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.
33.	Existence of National park, Sanctuary, Biosphere Reserve etc in the study area, if any, should be detailed.
34.	Economically important species like medicinal plants, timber, fuel wood etc.
35.	Details of endemic species found in the project area.
36.	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.
37.	Cropping pattern and Horticultural Practices in the study area.
38.	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.
39.	Documentation of fauna plankton (phyto and zooplankton), periphyton, benthos and fish should be done and analysed.
40.	Information (authenticated) on Avi-fauna and wildlife in the study area.
41.	Status of avifauna their resident/ migratory/ passage migrants etc.
42.	Documentation of butterflies, if any, found in the area.
43.	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.
44.	Existence of barriers and corridors, if any, for wild animals.
45.	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.

46.	Collection of primary data on agricultural activity, crop and their productivity and irrigation facilities components.
47.	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.
48.	Documentation of aquatic fauna like macro-invertebrates, zooplankton, phytoplantktons, benthos etc.
49.	Fish and fisheries, their migration and breeding grounds.
50.	Fish diversity composition and maximum length & weight of the measured populations to be studies for estimation of environmental flow.
51.	Conservation status of aquatic fauna.
52.	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.
53.	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.
54.	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.
55.	Collection of information on sensitive habitat of historical, cultural and religious and ecological importance.
56.	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.
57.	Documentation of demographic, Ethnographic, Economic Structure and development profile of the area.
58.	Information on Agricultural Practices, Cultural and aesthetic sites, Infrastructure facilities etc.
59.	Information on the dependence of the local people on minor forest produce and their cattle grazing rights in the forest land.
60.	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.
61.	Special attention has to be given to vulnerable groups like women, aged persons etc. and to any ethnic/indigenous groups that are getting affected by the project.
Impact Prediction and Mitigation Measures	
1.	The adverse impact due to the proposed project should be assessed and effective mitigation steps to abate these impacts should be described.
2.	Changes in ambient and ground level concentrations due to total emissions from point, line and area sources.
3.	Effect on soil, material, vegetation and human health.

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

29.	Impact on increase traffic
30.	Impact on Holy Places and Tourism
31.	Impacts of blasting activity during project construction which generally destabilize the land mass and leads to landslides, damage to properties and drying up of natural springs and cause noise population will be studies. Proper record shall be maintained of the baseline information in the post project period.
32.	Positive and negative impacts likely to be accrued due to the project are listed.
Environmental Management Plan	
1.	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.
2.	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.
3.	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.
4.	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.
5.	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.
6.	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.
7.	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.
8.	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.
9.	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.
10.	Muck Disposal Plan- suitable sites for dumping of excavated material should be identified in consultation with the State Pollution Control Board and Forest Department. All Muck disposal sites should be minimum 30 m away from the HFL of river. Plan for rehabilitation of muck disposal sites should also be given. The L- section/ cross section of muck disposal sites and approach roads to be given. Financial out lay for this may be given separately. Deatailed muck transportation plan delinating the path ways, number of trucks, quantity of muck to be transportated along with monitoring mechanism using latest technology, shall be prepared.
11.	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.
12.	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.
13.	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.
14.	Local Area Development Plan to be formulated in consultation with the Revenue Officials and Village Pancahayats. Appropriate schemes shall be prepared under EMP for the Local Area Development Plan with sufficient financial provisions.
15.	Labour Management Plan for their Health and Safety.
16.	Sanitation and Solid waste management plan for domestic waste from colonies and labour camps etc.
17.	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.
18.	Environmental safeguards during construction activities including Road Construction.
19.	A summary of Cost Estimates for all the plans, cost for implementing all the Environmental Management Plans.
20.	Water, Air and Noise Management Plans to be implemented during construction and post-construction periods.

3.6. Agenda Item No 6:

3.6.1. Details of the proposal

Ramial Left Bank Pumped Storage Project (1500 MW) by **RENEW SOLAR POWER PRIVATE LIMITED** located at **KENDUJHAR,ODISHA**

Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/OR/RIV/438758/2023	J-12011/40/2023-IA.I (R)	01/08/2023	River Valley/Irrigation projects (1(c))

3.6.2. Project Salient Features

50.4.1: The proposal is for grant of Terms of References (TOR) to theRamial Left Bank Close Loop Pumped Storage Project (1500 MW) in an area of 335.25 ha at Village Patkelipur and Godinarda, Tehsil Telkoi, District Keonjhar, Odisha by M/s Renew Solar Power Private Limited.

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

1. The proposal is for ToR to the project for Ramial Left Bank Pumped Storage Project located (1500 MW) at Village Patkelipur and Godinarda, Taluka Telkoi, District Keonjhar, Odisha by M/s Renew Solar Power Private Limited.

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

1. The estimated project cost is Rs 6383.23 crore. Total capital cost earmarked towards environmental pollution control measures will be worked out during EIA study as well as the Recurring cost (operation and maintenance).

1. **Environmental sensitivity**: There are no national parks, wildlife sanctuaries, Biosphere Reserves, Tiger/Elephant Reserves, Wildlife Corridors etc. within 10 km distance from the project site. Simlipal WLS is about 70.0 Km from site, is the nearest protected area. River/ water body, Dandadhar reservoir at the aerial distance of 6 km in south direction.

1. **Land requirement:** Total 335.25 ha land (Forest land- 147.15 ha, Non Forest land- 188.10 ha) required for the project**.**

1. **The proposed project envisages following major civil components:**

1. A Concrete Faced Rock-Fill dam, 2862 m long embankment having weighted average height of 20m (with maximum height of 24 m from bed level) for creation of Upper reservoir with gross storage capacity of 12.95 MCM.
2. A Concrete Faced Rock-Fill dam, 2873 m long embankment having weighted average height of 19 m (with maximum height of 23 m from bed level) for creation of Lower reservoir with gross storage capacity of 14.04 MCM.
3. Three nos. of Intake structure proposed at the upper reservoir comprising of a self-cleaning vertical trash rack for each intake to avoid entry of debris in the water conductor system.
4. 3 nos. of 6 m dia. Circular Buried Steel Penstocks /Pressure Shafts each of length 1433.8 m bifurcating into 6 Unit Penstocks of 4.4 m dia. (4unit Penstocks of length 63.75m each, one-unit Penstock of length 114.69m and

one-unit penstock of 69.00 m). Furthermore, one-unit penstock of 4.4m of dia. will bifurcate into two penstocks of 3.2m dia. of length 48.3 m each.

5. Surface Powerhouse (Machine Hall) of size 162 m (L) x 24 m (W) x 57 m (H) housing 5 units of 250 MW & 2 units of 125 MW is proposed. A service bay of size 40 m (L) x 24 m (W) x21m (H) with EL at 121.00 m is proposed. Transformer yard will be placed on the downstream side in the open area at EL157 m. The size of the transformer yard area would be about 202 m (L) x 16 m (W). GIS building of size 87 m (L) x 14 m (W) x 17.5m (H) is proposed on the downstream side of the transformer yard.
6. A Pothead yard of size 78 m (L) x 30 m (W) at EL157.00 m is proposed.
7. One no. of 8.0 m diameter D–shaped Main Access Tunnel of length 366 m is proposed to provide access to the service bay at EL 121 m.
8. 5 nos. of Tail Race Tunnel of 5.2 m diameter having length of 241.15 m have been proposed to discharge water from the draft tubes to the lower reservoir of outlet structure from the bigger units of 250 MW each. In addition ,2 nos. of Tail Race Tunnel of 3.8 m diameter having length of 241.15 m have been proposed to discharge water from the draft tubes to the lower reservoir of outlet structure from the smaller units of 125 MW each.
9. 7 nos. of outlet structure at the lower reservoir which discharges the water from the tailrace tunnels into the lower reservoir, the same acts as an inlet during pumping to draw water from the lower reservoir. The structure comprises of a self-cleaning vertical track rack to avoid entry of debris into the tail race tunnels.
10. **Water source and availability:** Proposed reservoirs are not on any perennial streams and few seasonal streams are draining towards the lower reservoir area which are having very small catchment areas**.**

    Catchment area of lower reservoir is 0.752 sq km and the upper reservoir does not have any catchment. It is proposed to pump water from the Dandadhar reservoir (Ramial Dam) into the lower reservoir during monsoon season over a period of 2 seasons / years for initial filling of reservoirs (15.76 MCM) through an approx. 7 km long pipeline.
    Water will remain in circulation from upper to lower during power generation and vice versa during non-generation hours daily. Reservoir water requirements will be met once and thereafter only small quantities will be added to compensate for evaporation losses/leakages.

1. **Alternatives studies:** Four alternatives for the Project Layout have been considered. Alternative 2 with surface powerhouse has been considered for preparation of pre-feasibility report owing to its advantages over Alternatives 1,3 &4 with Underground powerhouse.
2. Status of Litigation Pending against the proposal, if any. **No**
3. The salient features of the project are as under:-

EAC Meeting Details:

EAC meeting/s	50th Meeting
Date of Meeting/s	11.08.2023
Date of earlier EAC meetings	Nil

Project details:

Name of the Proposal	Ramial Left Bank Pumped Storage Project
Location (Including coordinates)	Lower Reservoir: 85°33'58.87"E; 21°15'11.74"N Upper Reservoir: 85°32'46.04”E"; 21°16'9.69"N
Inter- state issue involved	No
Seismic zone	Zone-II

Category details:

Category of the project	A
Provisions	
Capacity / Cultural command area (CCA)	1500 MW
Attracts the General Conditions (Yes/No)	No

Electricity generation capacity:

Powerhouse Installed Capacity	1500 MW
Generation of Electricity Annually	3214.7 MU
No. of Units	7 nos. (5X250 MW+2X125 MW)

ToR Details:

Cost of project	6383.23 Cr.
Total area of Project	335.25 ha
Height of Dam from River Bed (EL)	Lower Dam – 23 m Upper Dam – 24 m
Length of Tunnel/Channel	2116 m
Details of Submergence area	176.20 ha
Types of Waste and quantity of generation during construction/ Operation	Muck from excavation, solid waste from labour colony and construction waste.
E-Flows for the Project	Not Applicable, as this is Off-Stream Closed Loop Pumped Storage Project (PSP)
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then 1. E-flow with TOR /Recommendation by 2. EAC as per CIA&CC study of River Basin. If not the E-Flows maintain criteria for sustaining river ecosystem.	No

Muck Management Details:

No. of proposed disposal area/ (type of land-Forest/Pvt. land)	82.40 ha Private Land
Muck Management Plan	Will be Provided in EIA/EMP report
Monitoring mechanism for Muck Disposal	Will be Provided in EIA/EMP report

Land Area Breakup:

Government land/Forest Land	147.15 ha
Submergence area/Reservoir area	176.20 ha

Land required forproject components	159.05 ha
Additional information (if any)	Nil

Presence of Environmentally Sensitive areas in the study area

Forest Land/ Protected Area/ Environmental Sensitivity Zone	**Yes/No**	**Details of Certificate / letter/ Remarks**
Reserve Forest/Protected Forest Land	--	There is no Protected Area in the vicinity of the proposed project. Simlipal WLS is about 70.0 Km from site, is the nearest protected area.
National Park	--- --	
Wildlife Sanctuary	--- --	

Court case details: Nil
Affidavit/Undertaking details:

Affidavit/Undertaking	Enclosed

Previous EC compliance and necessary approvals:

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

Miscellaneous

Particulars	**Details**
Details of consultant	M/s. R S Envirolink Technologies Pvt. Ltd. (RSET) (*NABET* Accredited *Consultant Organization*) Certificate No : NABET/EIA/2225/RA0274
Project Benefits	Proposed PSP will also benefit the local community by creating employment opportunities and will result in upliftment of livelihood and socio-economic conditions.
Status of other statutory clearances	Forest Clearance - Online application seeking forest diversion for around **147.15** Ha after receipt of ToR Approval. Alongside, other statutory clearances (as applicable) from State as well as Central government will be obtained post completion of Detailed Project Report.
R&R details	Details shall be evaluated during EIA/EMP Studies

3.6.3. Deliberations by the EAC in previous meetings

N/A

3.6.4. Deliberations by the EAC in current meetings

The EAC deliberated on the information submitted (Form 1, PFR, kml file, etc.) and as presented in the meeting and observed that the proposal is for grant of terms of reference to the project for Ramial Left Bank Close Loop Pumped Storage Project (1500 MW) in an area of 335.25 ha at Village Patkelipur and Godinarda, Tehsil Telkoi, District Keonjhar, Odisha by M/s Renew Solar Power Private Limited.

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

50.4.4 The EAC during deliberation observed that the alternative site study is focused on power generation perspective, no environmental consideration has been taken in to account. The PP should revisit the proposed alternatives in terms of loss of forest land, impact on ecosystem services and scope for restoration of natural environment.

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

3.6.5. Recommendation of EAC

Deferred for ADS

3.7. Agenda Item No 7:

3.7.1. Details of the proposal

Bhivpuri Off-Stream Open Loop Pumped Storage Project (1000 MW) by **The Tata Power Co. Ltd.** located at **RAIGAD,MAHARASHTRA**

Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/MH/RIV/437464/2023	J-12011/39/2023-IA.I (R)	07/08/2023	River Valley/Irrigation projects (1(c))

3.7.2. Project Salient Features

50.3.1: The proposal is for grant of **Terms of References (ToR)** to the project for Bhivpuri Off-Stream Open Loop Pumped Storage Project (1000 MW) in an area of 74 ha at Village Vadeshwar and Bhivpuri, Tehsil Karjat and Mawal, District Raigarh and Pune, Maharashtra by M/s The Tata Power Co. Ltd.

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

1. The proposal is for ToR to the project for Bhivpuri Off-Stream Open Loop Pumped Storage Project (1000 MW) in an area of 74 ha at Village Vadeshwar and Bhivpuri, Tehsil Karjat and Maval, District Raigad and Pune, Maharashtra by M/s The Tata Power Co. Ltd.
2. The project is listed at S.N. 1 (c) of the Schedule to the Environment Impact Assessment (EIA) Notification under category 'A' and are appraised at Central Level by Expert Appraisal Committee (EAC).
3. The estimated project cost is Rs. 4743.59 crore including IDC. Total capital cost earmarked towards environmental pollution control measures will be worked out during EIA study as well as the Recurring cost (operation and maintenance).
4. **Land requirement:** The total land required for the construction of various components and related works for Bhivpuri PSP is estimated to be around **74.0 ha, out of which is 50.4 ha is private land and 23.6 ha is forest/govt. land**. Forest Clearance is required to be obtained under Forest Conservation Act.
5. **Environmental sensitivity:** There are no national parks, wildlife sanctuaries, Biosphere Reserves,

Tiger/Elephant Reserves, Wildlife Corridors etc. within 10 km distance from the project site. River/ water body, Bhivpuri reservoir at the aerial distance of 4 km in east direction. **Bhimashankar Wildlife Sanctuary is about 10.70 km** from site is the nearest protected area from the proposed project.

6. This Project is envisaged as Off-Stream open Loop Pumped Storage Project where it involves existing Thokarwadi reservoir (upper reservoir) having its own catchment and proposed new lower reservoir within the premises of Tata power (Private Land).
7. The Krishna Water District Tribunal (KWDT) has been constituted under Inter-State River Water Dispute's Act 1956. The decree of the such Tribunal has the same effect as that of the decree of Hon Supreme Court of India. KWDT has allocated 213 TMC water to Tata Hydel Projects for generation of electricity in rolling 5 years with a liberty to divert 54.5 TMC in any one water year. ´
8. **Water source and Availability:** The Bhivpuri PSP (1000 MW) has been proposed using one existing reservoir namely Thokarwadi Thokarwadi Lake (as upper). The water use for Bhivpuri PSP is proposed to be sourced from the already allocated KWDT quota at. No amount of additional water (neither for initial filling nor for annual make up towards tank losses) shall be augmented from any of the water resource of the State. ´ In other words, the overall water use of existing Bhivpuri HEP (72 MW) and proposed Bhivpuri PSPs (1000 MW) shall remain within entitlement allocated by KWDT.
9. **Water Source and Availability**: 15 Water Source and Availability The new lower reservoir is not proposed across any of the river or streams. Hence no amount of water shall be consumed/used/diverted. However, precipitation falling on water spread area of the reservoir shall be released through appropriate arrangements and hence downstream ecology shall not be impacted. ´There shall be no effect in whatsoever means on these existing established water uses due to installation of the proposed PSP and the existing use shall continue in future too.
10. **Alternative studies**: Total seven alternatives have been developed with a view to select the best alternative based on the following criteria:
11. Utilization of head to the maximum extent feasible
12. Ease of construction
13. Minimal area of land acquisition to accommodate various project components
14. Minimum requirement of forest land
15. Distance from protected area
16. Availability of access road to the project components

Out of seven alternatives, Alternative 6, selected as the most of the project components are located in company's land which further brings down the overall project cost.

1. **The salient features of the project are as unde**r:

EAC meeting/s	50th Meeting
Date of Meeting/s	11.08.2023
Date of earlier EAC meetings	Nil

Project details:

Name of the Proposal	Bhivpuri Pumped Storage Project
Location (Including coordinates)	Upper Reservoir: 73°29'14.59"E; (Existing) 18°56'9.34"N Lower Reservoir: 73°26'39.81"E; (Proposed) 18°56'35.36"N
Inter- state issue involved	No
Seismic zone	Zone-III

Category details:

Category of the project	A
Provisions	
Capacity / Cultural command area (CCA)	1000 MW
Attracts the General Conditions (Yes/No)	No

Electricity generation capacity:

Powerhouse Installed Capacity	1000 MW
Generation of Electricity Annually	2080 MU
No. of Units	6 nos. (4X200+2X100)

ToR/EC Details:

Cost of project	4,753.59 Cr.
Total area of Project	74 ha
Height of Dam from River Bed (EL)	Lower Dam (Proposed) – 12.75 m
Length of Tunnel/Channel	3300 m
Details of Submergence area	20.50 ha
Types of Waste and quantity of generation during construction/ Operation	Muck from excavation, solid waste from labour colony and construction waste
E-Flows for the Project	Not Applicable, as this is Off-Stream Open Loop Pumped Storage Project (PSP)
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then 1. E-flow with TOR /Recommendation by 2. EAC as per CIA&CC study of River Basin. If not the E-Flows maintain criteria for sustaining river ecosystem.	No

Muck Management Details:

No. of proposed disposal area/ (type of land-Forest/Pvt. land)	16 ha Private Land
Muck Management Plan	Will be Provided in EIA/EMP report
Monitoring mechanism for Muck Disposal	Will be Provided in EIA/EMP report

Land Area Breakup:

Government land/Forest Land	No
Submergence area/Reservoir area	20.50 ha
Land required for project components	53.50 ha

Presence of Environmentally Sensitive areas in the study area

Forest Land/ Protected Area/ Environmental Sensitivity Zone	**Yes/No**	**Details of Certificate / letter/ Remarks**
Reserve Forest/Protected Forest Land	--	There is no Protected Area in the vicinity of the proposed project. **Bhimashankar WLS is about 10.70 km from site, is the nearest protected area**.
National Park	--- --	
Wildlife Sanctuary	--- --	

Court case details: Nil

Affidavit/Undertaking details: Enclosed

Previous EC compliance and necessary approvals:

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

Miscellaneous

Particulars	**Details**
Details of consultant	M/s R S Envirolink Technologies Pvt. Ltd. (RSET) (*NABET* Accredited *Consultant Organization*) Certificate No: NABET/EIA/2225/RA0274 Validity : August 15, 2025 Contact Person : Mr. Ravinder Bhatia E-mail : ravi@rstechnologies.co.in Land Line : (0124) 4295383 Cellular : (+91) 9810136853
Project Benefits	Proposed PSP will also benefit the local community by creating employment opportunities and will result in upliftment of livelihood and socio-economic conditions.
Status of other statutory clearances	Forest Clearance - Online application seeking forest diversion for around 23.60 ha after receipt of ToR Approval. Alongside, other statutory clearances (as applicable) from State as well as Central government will be obtained post completion of Detailed Project Report.
R&R details	Details shall be evaluated during EIA/EMP Studies

3.7.3. Deliberations by the EAC in previous meetings

N/A

3.7.4. Deliberations by the EAC in current meetings

The EAC deliberated on the information submitted (Form 1, PFR, kml file, etc.) and as presented in the meeting and observed that the proposal is for grant of terms of reference to the project for Bhivpuri Off-Stream Open Loop Pumped Storage Project (1000 MW) in an area of 74 ha at Village Vadeshwar and Bhivpuri, Tehsil Karjat and Mawal, District Raigarh and Pune, Maharashtra by M/s The Tata Power Co. Ltd. The project/activity is covered under Category A of item 1 (c) 'River Valley projects' of the Schedule to the Environmental Impact Assessment Notification, 2006 and requires appraisal at Central level by the sectoral EAC in the Ministry**.**

The project site is located in the Sahyadri ranges of the Western Ghats of Maharashtra State in the area bordering Pune and Raigad districts which is a well-known biodiversity rich area.

3.7.5. Recommendation of EAC

Recommended

3.7.6. Details of Terms of Reference

3.7.6.1. Specific

Environmental Management and Biodiversity Conservation::	
1.	1. The EAC shall conduct site visit before considering the proposal for grant environmental clearance. 2. Approach road for the proposed project shall be in non- forest area. 3. Cumulative Impact of project on carrying capacity and sustainability of Rivulets/ Reservoir/ nalahs of catchment area / due to tapping of water for filling reservoir. 4. Alternative sites for various components shall be identified in terms of loss of forest area and other environmental aspects. 5. Impact zone decided prior to base line data generation and accordingly, sampling location shall be finalized. Baseline data as mentioned in Standard 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. 6. Prepare Environmental Cost Benefit Analysis in terms of loss of Forest ecosystem due to diversion of Forest land/ loss of biodiversity and its impacts on ecosystem, water availability, water uses for generation of hydro power in study area 10 km from periphery of Project components. 7. Action plan for survival of rivulets in the study area. 8. 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. 9. Sampling locations be located to cover villages situated near the reservoir and around boundary of forest area for collection of baseline data and data to be incorporated in EIA/ EMP report. 10. Identify the sand mining/ quarrying sites in submergence area and downstream of reservoir. 11. Source of construction material and its distance from the project site along with detailed transportation plan for construction material 12. A detailed reclamation/ restoration plan of quarrying site/sites be incorporated in the EIA/EMP report.

	13. A detailed wildlife conservation plan for Schedule –I species, duly approved by the Chief Wild Life Warden, be submitted. 14. In case any Wildlife corridor is located within 10 km radius of the project site a detailed study shall be conducted to assess the impact of project on safe movement of wild animals. 15. Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP. 16. Scope of watershed development in the 10 km radius of the project shall be studied in consultation with Govt. institutions/ Indian Council of Agriculture Research (ICAR)and accordingly a detailed Water Shed Development Plan shall be prepared and incorporated in EIA/ EMP report. 17. MoU for water uses for the project shall be signed and approved by concerned authority. 18. Environmental matrix during construction and operational phase needs to be submitted. 19. Matrix formulated on the basis of detailed study and field survey of flora and fauna methodology used shall be mentioned in the EIA report. 20. Endemic plant and animal species found in the area concerned shall be provided instead listing entire endemic species found in the State. 21. Details of Flora and Fauna reported in submergence area, Nos. of tree along with their density and nomenclature of the tree species required to be felled for reservoir creation and other project component. 22. Impact assessment on the fish diversity based on the hydrological alteration at the water drawing sources shall be studied. 23. Stage-I Forest Clearance shall be obtained.
Miscellaneous.	
1.	1. Pre-DPR Chapters viz. Layout Map and Power Potential Studies duly approved by CWC/CEA shall be submitted. 2. Undertaking need to submitted on affidavit that regarding no activities has been yet started on the project site and water allocated to this scheme shall not be diverted to other purpose. 3. Both capital and recurring expenditure under EMP shall be submitted. 4. The photograph should bear the date, time, latitude & longitude of the monitoring station/ sampling location. In addition to this PP should submit the original test reports and certificates of the labs which will analyse the samples. 5. Arial view video of project site shall be recorded and to be submitted. 6. Detailed plan to restore wider roads and convert them into narrow upto 10m after construction of the project.
Socio-economic Study	
1.	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. Public hearing issues raised and compliance of the same shall be incorporated in the EIA/ EMP report in the relevant chapter. 3. Statement on the commitments (activity-wise) made during public hearing to facilitate the discussion on the CER in compliance of the Ministry's OM F. No. 22- 65/2017- IA.III dated 30th September, 2020 shall be submitted. 4. Tentative no. of project affected families shall be identified and accordingly appropriate Rehabilitation & Resettlement plan shall be prepared. 5. Details of settlement in 10 km area shall be submitted.
Muck Management/Disaster Management..	
1.	1. Details of quantity of muck generation component wise and disposal site along with transportation plan and its monitoring to be provided.

	2. Details of Muck Management plan prepared along with estimated cost incorporated in EIA/ EMP report. 3. Techno-economic viability of the project must be recommended from CEA/ CWC.

3.7.6.2. Standard

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

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

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

13.	History of the ground water table fluctuation in the study area.
14.	Water quality for both surface water and ground water for (i) Physical parameters (pH, temperature, electrical conductivity, TSS); (ii) Chemical parameters (Alkalinity, Hardness, BOD, COD, NO2, PO4, CI, SO4, Na, K, Ca, Mg, Silica, Oil & Grease, phenolic compounds, residual sodium carbonate); (iii) Bacteriological parameter (MPN, Total coliform) and (iv) Heavy Metals (Pb, As, Hg, Cd, Cr-6, total Cr, Cu, Zn, Fe) (6 locations).
15.	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
16.	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.
17.	Run off, discharge, water availability for the project, sedimentation rate, etc.
18.	Basin characteristics
19.	Catastrophic events like cloud bursts and flash floods, if any, should be documented.
20.	For estimation of Sedimentation Rate, direct sampling of river flow is to be done during the EIA study. The study should be conducted for minimum one year. Actual silt flow rate to be expressed in ha-m km2 year-1.
21.	Set up a G&D monitoring station and a few rain gauge stations in the catchment area for collecting data during the investigation.
22.	Flow series, 10 daily with 90%, 75% and 50% dependable years discharges.
23.	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.
24.	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.
25.	Sedimentation data available with CWC may be used to find out the loss in storage over the years.
26.	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.
27.	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.
28.	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.
29.	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.
30.	Documentation of all plant species i.e. Angiosperm, Gymnosperm, Pteriodophytes, Bryophytes (all groups).
31.	General vegetation profile and floral diversity covering all groups of flora including lichens and orchids. A species wise list may be provided.

32.	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.
33.	Existence of National park, Sanctuary, Biosphere Reserve etc in the study area, if any, should be detailed.
34.	Economically important species like medicinal plants, timber, fuel wood etc.
35.	Details of endemic species found in the project area.
36.	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.
37.	Cropping pattern and Horticultural Practices in the study area.
38.	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.
39.	Documentation of fauna plankton (phyto and zooplankton), periphyton, benthos and fish should be done and analysed.
40.	Information (authenticated) on Avi-fauna and wildlife in the study area.
41.	Status of avifauna their resident/ migratory/ passage migrants etc.
42.	Documentation of butterflies, if any, found in the area.
43.	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.
44.	Existence of barriers and corridors, if any, for wild animals.
45.	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.
46.	Collection of primary data on agricultural activity, crop and their productivity and irrigation facilities components.
47.	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.
48.	Documentation of aquatic fauna like macro-invertebrates, zooplankton, phytoplantktons, benthos etc.
49.	Fish and fisheries, their migration and breeding grounds.
50.	Fish diversity composition and maximum length & weight of the measured populations to be studies for estimation of environmental flow.
51.	Conservation status of aquatic fauna.
52.	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.

53.	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.
54.	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.
55.	Collection of information on sensitive habitat of historical, cultural and religious and ecological importance.
56.	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.
57.	Documentation of demographic, Ethnographic, Economic Structure and development profile of the area.
58.	Information on Agricultural Practices, Cultural and aesthetic sites, Infrastructure facilities etc.
59.	Information on the dependence of the local people on minor forest produce and their cattle grazing rights in the forest land.
60.	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.
61.	Special attention has to be given to vulnerable groups like women, aged persons etc. and to any ethnic/indigenous groups that are getting affected by the project.
Impact Prediction and Mitigation Measures	
1.	The adverse impact due to the proposed project should be assessed and effective mitigation steps to abate these impacts should be described.
2.	Changes in ambient and ground level concentrations due to total emissions from point, line and area sources.
3.	Effect on soil, material, vegetation and human health.
4.	Impact of emissions from DG set used for power during the construction, if any, on air environment.
5.	Pollution due to fuel combustion in equipments and vehicles
6.	Fugitive emissions from various sources
7.	Changes in surface and ground water quality
8.	Steps to develop pisci-culture and recreational facilities
9.	Changes in hydraulic regime and downstream flow.
10.	Water pollution due to disposal of sewage
11.	Water pollution from labour colonies/ camps and washing equipment.
12.	Adverse impact on land stability, catchment of soil erosion, reservoir sedimentation and spring flow (if any) (a) due to considerable road construction / widening activity (b) interference of reservoir with the inflowing stream (c) blasting for commissioning of HRT, TRT and some other structures.

13.	Changes in land use / land cover and drainage pattern
14.	Immigration of labour population
15.	Quarrying operation and muck disposal
16.	Changes in land quality including effects of waste disposal
17.	River bank and their stability
18.	Impact due to submergence.
19.	Impact on forests, flora, fauna including wildlife, migratory avi-fauna, rare and endangered species, medicinal plants etc.
20.	Pressure on existing natural resources
21.	Deforestation and disturbance to wildlife, habitat fragmentation and wild animal's migratory corridors
22.	Compensatory afforestation-identification of suitable native tree species for compensatory afforestation and green belt.
23.	Impact on fish migration and habitat degradation due to decreased flow of water
24.	Impact on breeding and nesting grounds of animals and fish.
25.	Impact on local community including demographic profile.
26.	Impact on socio-economic status
27.	Impact on economic status.
28.	Impact on human health due to water / vector borne disease
29.	Impact on increase traffic
30.	Impact on Holy Places and Tourism
31.	Impacts of blasting activity during project construction which generally destabilize the land mass and leads to landslides, damage to properties and drying up of natural springs and cause noise population will be studies. Proper record shall be maintained of the baseline information in the post project period.
32.	Positive and negative impacts likely to be accrued due to the project are listed.
Environmental Management Plan	
1.	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.
2.	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.
3.	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.
4.	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.
5.	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.
6.	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.
7.	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.
8.	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.
9.	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.
10.	Muck Disposal Plan- suitable sites for dumping of excavated material should be identified in consultation with the State Pollution Control Board and Forest Department. All Muck disposal sites should be minimum 30 m away from the HFL of river. Plan for rehabilitation of muck disposal sites should also be given. The L- section/ cross section of muck disposal sites and approach roads to be given. Financial out lay for this may be given separately. Deatailed muck transportation plan delinating the path ways, number of trucks, quantity of muck to be transportated along with monitoring mechanism using latest technology, shall be prepared.
11.	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.
12.	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.
13.	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.
14.	Local Area Development Plan to be formulated in consultation with the Revenue Officials and Village Pancahayats. Appropriate schemes shall be prepared under EMP for the Local Area Development Plan with sufficient financial provisions.
15.	Labour Management Plan for their Health and Safety.
16.	Sanitation and Solid waste management plan for domestic waste from colonies and labour camps etc.
17.	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.
18.	Environmental safeguards during construction activities including Road Construction.
19.	A summary of Cost Estimates for all the plans, cost for implementing all the Environmental Management Plans.
20.	Water, Air and Noise Management Plans to be implemented during construction and post-construction periods.

3.8. Agenda Item No 8:

3.8.1. Details of the proposal

Tokarpada Pumped Storage Project by **TORRENT POWER LIMITED** located at **VALSAD,GUJARAT**			
Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/GJ/RIV/437160/2023	J-12011/44/2023-IA.I (R)	03/08/2023	River Valley/Irrigation projects (1(c))

3.8.2. Project Salient Features

50.8.1: The proposal is for grant of Terms of References (TOR) to Tokarpada Close Loop Pumped Storage Project (1300 MW) in an area of 168.78 ha at Village Tokarpada and Vavar, Tehsil Kaprada, District Valsad, Gujarat by M/s Torrent Power Limited

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

1. The proposal is for ToR to the project for Tokarpada Pumped Storage Project located (1300 MW) at Village Tokarpada & Vavar, Tehsil Kaprada, District Valsad, Gujarat by M/s. Torrent Power Limited.
2. The project is listed at S.N. **1 (c)** of the Schedule to the Environment Impact Assessment (EIA) Notification under category 'A' and are appraised at Central Level by Expert Appraisal Committee (EAC).

3. The proposed Tokarpada Pumped Storage Project is located near village Tokarpada and Vavar, in Kaprada Tehsil of Valsad District, Gujarat.
4. The Tokarpada PSP will be a standalone PSP and will comprise of two newly constructed reservoirs of which lower reservoir will be constructed across a small seasonal stream near village Vavar and Upper Reservoir will be constructed, on a nearby high level plateau, about 320 m higher in elevation w.r.t to lower reservoir, near village Tokarpada of Valsad, Gujarat. The scheme envisages recycling of stored water between upper reservoir and lower reservoir.
5. The project is designed as a pumped storage scheme which will utilize a gross head of 316 m and design discharge of 438 cumec for generation of 1300 MW.
6. The estimated project cost is Rs. 5620.82 crore. Total capital cost earmarked towards environmental pollution control measures will be worked out during EIA study as well as the Recurring cost (operation and maintenance).
7. **Land requirement:** The total land required for the construction of various components and related works for Tokarpada PSP is estimated around **168.78** ha, out of which 63.05 ha is non-forest land and **105.73** ha is forest land.
8. **Water source and availability:** This proposed closed loop Off-Stream project is envisaged between two proposed reservoirs (both reservoirs to be constructed newly).

   Onetime water requirement of 12.23 MCM will be pumped from nearby Par River to fill up the proposed lower reservoir & also to fill the upper reservoir up to its MDDL. The upper and lower reservoir have negligible /no catchment area and hence the inflow from rainfall is negligible, however, any contribution from the catchment will be released downstream without interruption

1. **Environmental sensitivity:** There are no national parks, wildlife sanctuaries, Biosphere Reserves, Tiger/Elephant Reserves, Wildlife Corridors etc. within 10 km distance from the project site. River/ water body, Par River is flowing in southwest direction. Dadra and Nagar Haveli WLS is about 26 Km from site, is the nearest protected area.
2. **Alternative Studies:** As a part of alternative studies, 3 Alternatives have been identified and studied for development of PSP, keeping location of Lower reservoir same for all the options. considering the cost, forest land and extent of R & R activities required in different alternative; Alternative-3 layout is finalized
3. Details of Solid waste/ Hazardous waste generation/ Muck and its management will be covered in EIA report.
4. Status of Litigation Pending against the proposal, if any. **No**
5. The salient features of the project are as under: -

EAC Meeting Details:

EAC meeting/s	50th Meeting
Date of Meeting/s	11.08.2023
Date of earlier EAC meetings	Nil

Project details:

Name of the Proposal	Tokarpada Pumped Storage Project
Location (Including coordinates)	Upper Reservoir: 73°23'10.60"E; 20°20'35.95"N Lower Reservoir: 73°22'19.94"E; 20°21'46.18"N
Inter- state issue involved	Nil
Seismic zone	Zone-III

Category details:

Category of the project	A
Provisions	
Capacity / Cultural command area (CCA)	1300 MW
Attracts the General Conditions (Yes/No)	Yes
Additional information (if any)	Nil

Electricity generation capacity:

Powerhouse Installed Capacity	1300 MW
Generation of Electricity Annually	2847 MU
No. of Units	8 nos. (5 X 200 MW + 3 X 100 MW)
Additional information (if any)	Nil

ToR/EC Details:

Cost of project	5620.82 Cr.
Total area of Project	168.78 ha
Height of Dam from River Bed (EL)	Lower Dam – 55.42 m Upper Dam – 64.42 m
Length of Tunnel/Channel	2737 m
Details of Submergence area	104.48 ha
Types of Waste and quantity of generation during construction/ Operation	Muck from excavation, solid waste from labour colony and construction waste
E-Flows for the Project	Not Applicable, as this is Off-Stream Closed Loop Pumped Storage Project (PSP)
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then 1. E-flow with TOR /Recommendation by 2. EAC as per CIA&CC study of River Basin. If not the E-Flows maintain criteria for sustaining river ecosystem.	No

Muck Management Details:

No. of proposed disposal area/ (type of land-Forest/Pvt. land)	9.96 ha Private Land
Muck Management Plan	Will be Provided in EIA/EMP report
Monitoring mechanism for Muck Disposal	Will be Provided in EIA/EMP report

Land Area Breakup:

Government land/Forest Land	105.73 ha
Submergence area/Reservoir area	104.48 ha
Land required forproject components	64.30 ha
Additional information (if any)	Nil

Presence of Environmentally Sensitive areas in the study area

Forest Land/ Protected Area/ Environmental Sensitivity Zone	**Yes/No**	**Details of Certificate / letter/ Remarks**
Reserve Forest/Protected Forest Land	--	There is no Protected Area in the vicinity of the proposed project Dadra and Nagar Haveli WLS is about 26.0 Km from site, is the nearest protected area
National Park	--- --	
Wildlife Sanctuary	--- --	

Court case details: nil

Affidavit/Undertaking details:

Affidavit/Undertaking	Enclosed
Additional information (if any)	Nil

Previous EC compliance and necessary approvals:

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

Miscellaneous

Particulars	**Details**
Details of consultant	M/s. R S Envirolink Technologies Pvt. Ltd. (RSET) (*NABET* Accredited *Consultant Organization*) Certificate No: NABET/EIA/2225/RA0274 Validity : August 15, 2025 Contact Person : Mr. Ravinder Bhatia E-mail: ravi@rstechnologies.co.in Land Line : (0124) 4295383 Cellular : (+91) 9810136853
Project Benefits	Proposed PSP will also benefit the local community by creating employment opportunities and will result in upliftment of livelihood and socio-economic conditions.
Status of other statutory clearances	Forest Clearance - Online application seeking forest diversion for around 105.73 Ha after receipt of ToR Approval. Alongside, other

		statutory clearances (as applicable) from State as well as Central government will be obtained post completion of Detailed Project Report.
	R&R details	Details shall be evaluated during EIA/EMP Studies

3.8.3. Deliberations by the EAC in previous meetings

N/A

3.8.4. Deliberations by the EAC in current meetings

The EAC deliberated on the information submitted (Form 1, PFR, kml file, etc.) and as presented in the meeting and observed that the proposal is for grant of terms of reference to the project Tokarpada Close Loop Pumped Storage Project (1300 MW) in an area of 168.78 ha at Village Tokarpada and Vavar, Tehsil Kaprada, District Valsad, Gujarat by M/s Torrent Power Limited.

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

3.8.5. Recommendation of EAC

Recommended

3.8.6. Details of Terms of Reference

3.8.6.1. Specific

Environmental Management and Biodiversity Conservation::	
1.	1. Conduct Environmental Cost Benefit Analysis in terms of loss of Forest ecosystem due to diversion of Forest land/ loss of biodiversity and its impacts on ecosystem, water availability, water uses for generation of hydro power in study area 10 km from periphery of Project components. 2. Cumulative Impact of project on carrying capacity and sustainability of Reservoir/ nalahs of catchment area, irrigation facilities due to tapping of water for filling reservoir. 3. Action plan for survival of the rivulets located in the study area i.e. 10 km. radius of the project periphery be prepared and submitted along with EIA/EMP report. No obstruction shall be allowed in natural flow of the streams/nalah/rivulet. 4. Alternative sites for various components shall be identified in terms of loss of forest area. 5. Impact zone decided prior to base line data generation and accordingly, sampling location shall be finalized. Baseline data as mentioned in Standard 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. 6. 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. 7. Sampling locations be located to cover villages situated near the reservoir and around boundary of forest area for collection of baseline data and data to be incorporated in EIA/ EMP report. 8. Identify the sand mining/ quarrying sites in submergence area and downstream of reservoir. 9. Scope of watershed development in the 10 km radius of the project shall be studied in consultation with expert Govt. institutions/ Indian Council of Agriculture Research (ICAR)and accordingly a detailed Water Shed Development Plan shall be prepared and incorporated in EIA/ EMP report. 10. Source of construction material and its distance from the project site along with detailed transportation plan

	for construction material. 11. A detailed reclamation/ restoration plan of quarrying site/sites be incorporated in the EIA/EMP report. 12. Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP. 13. MoU for water uses for the project signed and approved by concerned authority shall be submitted. 14. Environmental matrix during construction and operational phase needs to be submitted. 15. Matrix formulated on the basis of detailed study and field survey of flora and Fauna methodology used shall be mentioned in the EIA report. 16. Endemic plant and animal species found in the area concerned shall be provided instead listing entire endemic species found in the State. 17. Details of Flora and Fauna reported in submergence area, Nos. of tree along with their density and nomenclature of the tree species required to be felled for reservoir creation and other project component. 18. Impact assessment on the fish diversity based on the hydrological alteration at the water drawing sources shall be studied. 19. Stage-I Forest Clearance shall be obtained. 20. Explore the possibilities to reduce Forest area for the construction of proposed project, Muck disposal sites should be outside the forest area. 21. Revised the project layout by shifting the muck disposal site to non-forest area. 22. A detailed wildlife conservation plan for Schedule –I species, duly approved by the Chief Wild Life Warden, be submitted. 23. In case any Wildlife corridor is located within 10 km radius of the project site a detailed study shall be conducted to assess the impact of project on safe movement of wild animals.
Miscellaneous.	
1.	1. Pre-DPR Chapters viz. Layout Map and Power Potential Studies duly approved by CWC/CEA shall be submitted. 2. Undertaking need to submitted on affidavit that regarding no activities has been yet started on the project site and water allocated to this scheme shall not be diverted to other purpose. 3. Both capital and recurring expenditure under EMP shall be submitted. 4. The photograph should bear the date, time, latitude & longitude of the monitoring station/ sampling location. In addition to this PP should submit the original test reports and certificates of the labs which will analyse the samples. 5. Arial view video of project site shall be recorded and to be submitted. 6. Detailed plan to restore wider roads and convert them into narrow upto 10m after construction of the project. 7. Commitment for lifting of water during rainy season.
Socio-economic Study	
1.	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. Public hearing issues raised and compliance of the same shall be incorporated in the EIA/ EMP report in the relevant chapter. 3. Statement on the commitments (activity-wise) made during public hearing to facilitate the discussion on the CER in compliance of the Ministry's OM F. No. 22-65/2017-IA.III dated 30th September, 2020 shall be submitted. 4. Tentative no. of project affected families shall be identified and accordingly appropriate Rehabilitation & Resettlement plan shall be prepared. 5. Details of settlement in 10 km area shall be submitted. 6. Details of Tribal population and resettlement plan if any.
Muck Management/Disaster Management..	

1.	1. Details of quantity of muck generation component wise and disposal site along with transportation plan and its monitoring to be provided. 2. Details of Muck Management plan prepared along with estimated cost incorporated in EIA/ EMP report. 3. Techno-economic viability of the project must be recommended from CEA/ CWC.

3.8.6.2. Standard

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

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

	question. In fact such literature form the entire state can be referred to. Once a listing of possible r.e.t. species form the said area is developed, species specific methodologies should be adopted to ascertain their presence in the study area which would be far more conclusive as compared to the conventional sampling. If the need be, modern methods like camera trapping can be resorted to, particularly for areas in the eastern Himalayas and for secretive/nocturnal species. A detailed listing of the literature referred to, for developing lists of r.e.t. species should be provided in the EIA reports.The conventional sampling is likely to miss the presence of rare, endangered and threatened (r.e.t.) species since they often occur in low densities and in case of faunal species are usually secretive in behaviour. Reaching the conclusion about the absence of such species in the study area based on such methodology is misleading. It is very important to document the status of such species owing to their high conservation value. Hence likely presence of such species should be ascertained from secondary sources by a proper literature survey for the said area including referring to field guides which are now available for many taxonomic groups in India. Even literature from studies/surveys in the larger landscapes which include the study area for the concerned project must be referred to, since most species from adjoining catchments is likely to be present in the catchments in question. In fact such literature form the entire state can be referred to. Once a listing of possible r.e.t. species form the said area is developed, species specific methodologies should be adopted to ascertain their presence in the study area which would be far more conclusive as compared to the conventional sampling. If the need be, modern methods like camera trapping can be resorted to, particularly for areas in the eastern Himalayas and for secretive/nocturnal species. A detailed listing of the literature referred to, for developing lists of r.e.t. species should be provided in the EIA reports.
4.	The R.E.T. species referred to in this point should include species listed in Schedule I and II of Wildlife (Protection) Act, 1972 and those listed in the red data books (BSI, ZSI and IUCN).
Components of the EIA Study: Various aspects to be studied and provided in the EIA/EMP report are as follows:	
1.	null
2.	Physical geography, Topography, Regional Geological aspects and structure of the Catchment.
3.	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.
4.	Landslide zone or area prone to landslide existing in the study area should be examined.
5.	Presence of important economic mineral deposit, if any.
6.	Justification for location & execution of the project in relation to structural components (dam /barrage height).
7.	Impact of project on geological environment.
8.	Meteorology (viz. Temperature, Relative humidity, wind speed/direction etc.) to be collected from nearest IMD station.
9.	Ambient Air Quality with parameters viz. Suspended Particulate Matter (SPM), Respirable Suspended Particulate Matter (RSPM) i.e. suspended particulate materials < 10 microns, Sulphur dioxide (SO2) and Oxides of Nitrogen (NOX) in the study area at 5-6 Locations.
10.	Existing Noise Levels and traffic density in the study area at 5-6 Locations.
11.	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.
12.	(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.
13.	History of the ground water table fluctuation in the study area.
14.	Water quality for both surface water and ground water for (i) Physical parameters (pH, temperature, electrical conductivity, TSS); (ii) Chemical parameters (Alkalinity, Hardness, BOD, COD, NO2, PO4, CI, SO4, Na, K, Ca, Mg, Silica, Oil & Grease, phenolic compounds, residual sodium carbonate); (iii) Bacteriological parameter (MPN, Total coliform) and (iv) Heavy Metals (Pb, As, Hg, Cd, Cr-6, total Cr, Cu, Zn, Fe) (6 locations).
15.	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
16.	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.
17.	Run off, discharge, water availability for the project, sedimentation rate, etc.
18.	Basin characteristics
19.	Catastrophic events like cloud bursts and flash floods, if any, should be documented.
20.	For estimation of Sedimentation Rate, direct sampling of river flow is to be done during the EIA study. The study should be conducted for minimum one year. Actual silt flow rate to be expressed in ha-m km2 year-1.
21.	Set up a G&D monitoring station and a few rain gauge stations in the catchment area for collecting data during the investigation.
22.	Flow series, 10 daily with 90%, 75% and 50% dependable years discharges.
23.	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.
24.	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.
25.	Sedimentation data available with CWC may be used to find out the loss in storage over the years.
26.	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.
27.	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.
28.	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.
29.	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.
30.	Documentation of all plant species i.e. Angiosperm, Gymnosperm, Pteriodophytes, Bryophytes (all groups).

31.	General vegetation profile and floral diversity covering all groups of flora including lichens and orchids. A species wise list may be provided.
32.	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.
33.	Existence of National park, Sanctuary, Biosphere Reserve etc in the study area, if any, should be detailed.
34.	Economically important species like medicinal plants, timber, fuel wood etc.
35.	Details of endemic species found in the project area.
36.	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.
37.	Cropping pattern and Horticultural Practices in the study area.
38.	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.
39.	Documentation of fauna plankton (phyto and zooplankton), periphyton, benthos and fish should be done and analysed.
40.	Information (authenticated) on Avi-fauna and wildlife in the study area.
41.	Status of avifauna their resident/ migratory/ passage migrants etc.
42.	Documentation of butterflies, if any, found in the area.
43.	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.
44.	Existence of barriers and corridors, if any, for wild animals.
45.	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.
46.	Collection of primary data on agricultural activity, crop and their productivity and irrigation facilities components.
47.	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.
48.	Documentation of aquatic fauna like macro-invertebrates, zooplankton, phytoplantktons, benthos etc.
49.	Fish and fisheries, their migration and breeding grounds.
50.	Fish diversity composition and maximum length & weight of the measured populations to be studies for estimation of environmental flow.
51.	Conservation status of aquatic fauna.

52.	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.
53.	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.
54.	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.
55.	Collection of information on sensitive habitat of historical, cultural and religious and ecological importance.
56.	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.
57.	Documentation of demographic, Ethnographic, Economic Structure and development profile of the area.
58.	Information on Agricultural Practices, Cultural and aesthetic sites, Infrastructure facilities etc.
59.	Information on the dependence of the local people on minor forest produce and their cattle grazing rights in the forest land.
60.	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.
61.	Special attention has to be given to vulnerable groups like women, aged persons etc. and to any ethnic/indigenous groups that are getting affected by the project.
Impact Prediction and Mitigation Measures	
1.	The adverse impact due to the proposed project should be assessed and effective mitigation steps to abate these impacts should be described.
2.	Changes in ambient and ground level concentrations due to total emissions from point, line and area sources.
3.	Effect on soil, material, vegetation and human health.
4.	Impact of emissions from DG set used for power during the construction, if any, on air environment.
5.	Pollution due to fuel combustion in equipments and vehicles
6.	Fugitive emissions from various sources
7.	Changes in surface and ground water quality
8.	Steps to develop pisci-culture and recreational facilities
9.	Changes in hydraulic regime and downstream flow.
10.	Water pollution due to disposal of sewage
11.	Water pollution from labour colonies/ camps and washing equipment.

12.	Adverse impact on land stability, catchment of soil erosion, reservoir sedimentation and spring flow (if any) (a) due to considerable road construction / widening activity (b) interference of reservoir with the inflowing stream (c) blasting for commissioning of HRT, TRT and some other structures.
13.	Changes in land use / land cover and drainage pattern
14.	Immigration of labour population
15.	Quarrying operation and muck disposal
16.	Changes in land quality including effects of waste disposal
17.	River bank and their stability
18.	Impact due to submergence.
19.	Impact on forests, flora, fauna including wildlife, migratory avi-fauna, rare and endangered species, medicinal plants etc.
20.	Pressure on existing natural resources
21.	Deforestation and disturbance to wildlife, habitat fragmentation and wild animal's migratory corridors
22.	Compensatory afforestation-identification of suitable native tree species for compensatory afforestation and green belt.
23.	Impact on fish migration and habitat degradation due to decreased flow of water
24.	Impact on breeding and nesting grounds of animals and fish.
25.	Impact on local community including demographic profile.
26.	Impact on socio-economic status
27.	Impact on economic status.
28.	Impact on human health due to water / vector borne disease
29.	Impact on increase traffic
30.	Impact on Holy Places and Tourism
31.	Impacts of blasting activity during project construction which generally destabilize the land mass and leads to landslides, damage to properties and drying up of natural springs and cause noise population will be studies. Proper record shall be maintained of the baseline information in the post project period.
32.	Positive and negative impacts likely to be accrued due to the project are listed.
Environmental Management Plan	
1.	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.
2.	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.
3.	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.
4.	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.
5.	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.
6.	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.
7.	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.
8.	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.
9.	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.
10.	Muck Disposal Plan- suitable sites for dumping of excavated material should be identified in consultation with the State Pollution Control Board and Forest Department. All Muck disposal sites should be minimum 30 m away from the HFL of river. Plan for rehabilitation of muck disposal sites should also be given. The L- section/ cross section of muck disposal sites and approach roads to be given. Financial out lay for this may be given separately. Deatailed muck transportation plan delinating the path ways, number of trucks, quantity of muck to be transportated along with monitoring mechanism using latest technology, shall be prepared.
11.	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.
12.	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.
13.	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.
14.	Local Area Development Plan to be formulated in consultation with the Revenue Officials and Village Pancahayats. Appropriate schemes shall be prepared under EMP for the Local Area Development Plan with sufficient financial provisions.
15.	Labour Management Plan for their Health and Safety.
16.	Sanitation and Solid waste management plan for domestic waste from colonies and labour camps etc.
17.	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.
18.	Environmental safeguards during construction activities including Road Construction.
19.	A summary of Cost Estimates for all the plans, cost for implementing all the Environmental Management Plans.
20.	Water, Air and Noise Management Plans to be implemented during construction and post-construction periods.

3.9. Agenda Item No 9:

3.9.1. Details of the proposal

Raiwada Pumped Storage Project by **ADANI GREEN ENERGY LIMITED** located at **ANAKAPALLI,ANDHRA PRADESH**			
Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/AP/RIV/438787/2023	J-12011/45/2023-IA.I (R)	04/08/2023	River Valley/Irrigation projects (1(c))

3.9.2. Project Salient Features

The Project Proponent vide email dated 10.08.2023 has informed that due to unavoidable circumstances and predetermined commitments they could not attend the virtual meeting and requested for deferment.

3.9.3. Deliberations by the EAC in previous meetings

N/A

3.9.4. Deliberations by the EAC in current meetings

The EAC decided to **defer** the proposal.

3.9.5. Recommendation of EAC

Deferred for ADS

4. Any Other Item(s)

N/A

5. List of Attendees

Sr. No.	Name	Designation	Email ID	Remarks
1	Dr K Gopakumar	Chairman, EAC	kgopa@iisc.ac.in	Absent
2	Dr N Lakshman	Member (EAC)	lnand@rocketmail.com	
3	Dr Mukesh Sharma	Member (EAC)	mukesh@iitk.ac.in	
4	Dr B K Panigrahi	Member (EAC)	bijayaketan.panigrahi@gmail.com	Absent
5	Dr Chandrahas Deshpande	Member (EAC)	chandrahas.despande@welingkar.org	Absent
6	Dr A K Malhotra	Member (EAC)	ajitkumarmalhotra463@gmail.com	
7	Dr Uday Kumar R Y	Member (EAC)	udaykumarry@yahoo.com	
8	Dr Narayan Shenoy K	Member (EAC)	kn.shenoy@manipal.edu	Absent
9	Shri Sharvan Kumar	Member (EAC)	Dirhpa3@gmail.com	
10	Shri Ashok Kumar Kharya	Member (EAC)	ceenvtmgmt@nic.in	Absent
11	Dr J A Johnson	Member (EAC)	jaj@wii.gov.in	Absent
12	Dr B K Das	Member (EAC)	amiya.sahoo@icar.gov.in	Absent
13	Dr Vijay Kumar	Member (EAC)	vijay.kumar66@nic.in	Absent
14	Yogendra Pal Singh	Scientist E	yogendra78@nic.in	

MINUTES OF THE 50TH MEETING OF THE EXPERT APPRAISAL COMMITTEE FOR RIVER VALLEY AND HYDROELECTRIC PROJECTS HELD ON 11TH AUGUST, 2023 FROM 10:30 AM – 05.30 PM THROUGH VIDEO CONFERENCE.

The 50th meeting of the re-constituted EAC for River Valley & Hydroelectric Projects organized by the Ministry of Environment, Forest and Climate Change, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi, was held on 11th August 2023 through virtual mode, under the Chairmanship of Dr. A. K. Malhotra. The list of Members present in the meeting is at **Annexure**.

Agenda Item No. 50.1: Confirmation of Minutes of 49th EAC meeting held on 24th July, 2023.

The EAC confirmed the minutes of 49th EAC meeting held on 24th July, 2023.

Agenda Item No. 50.2

Shirawta Off Stream Open Loop Pumped Storage Project (1800 MW) in an area of 197.9 ha at Village Khandshi, Tehsil Maval, District Pune, Maharashtra by M/s The Tata Power Company Limited – Terms of References (TOR) – reg.

[**Proposal No. IA/MH/RIV/438423/2023; F. No. J-12011/38/2023-IA.I (R)**]

50.2.1: The proposal is for grant of Terms of References (ToR) to the project for Shirawta Off Stream Open Loop Pumped Storage Project (1800 MW) in an area of 197.9 ha at Village Khandshi, Tehsil Maval, District Pune, Maharashtra by M/s The Tata Power Company Limited.

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

i. The proposal is for ToR to the project for Shirawta Off Stream Open Loop Pumped Storage Project (1800 MW) in an area of 197.9 ha at Village Khandshi, Tehsil Maval, District Pune, Maharashtra by M/s The Tata Power Company Limited.
ii. The project is listed at S.N. 1 (c) of the Schedule to the Environment Impact Assessment(EIA) Notification under category 'A' and are appraised at Central Level by Expert Appraisal Committee (EAC).
iii. The estimated project cost is Rs **7027.72 crore.** Total capital cost earmarked towards environmental pollution control measures will be worked out during EIA study as well as the Recurring cost (operation and maintenance).
iv. **Environmental sensitivity:** There are no National Parks, Wildlife Sanctuaries, Biosphere Reserves, Tiger/Elephant Reserves, Wildlife Corridors etc within 10 km distance from the project site. River/ water body, Shirawta reservoir at the aerial distance of 1.5 km in south direction. Bhimashankar Wildlife Sanctuary located about 19.70 km north-east from site, is the nearest protected area.
v. **Land requirement:** Out of 197.9 ha of total land requirement, 60.1 ha is forest land and 137.8 ha is non-forest land of which 135.6 ha belongs to Tata Power.

vi. The proposed Shirawta Pumped Storage Project (Shirawta PSP) is an Off- stream Open Loop PSP scheme with an installed capacity of **1800 MW** (5 x 300 MW + 2 x 150 MW) with existing lower Shirawta reservoir located at village Khandshi, Tal Maval, Dist. Pune which is owned and operated by Tata Power and new proposed upper reservoir situated in same village in land owned by Tata Power Co Ltd.

vii. The project area is in the Sahyadri ranges of the **Western Ghats of Maharashtra State in the area bordering Pune and Raigad districts**. Shirawta PSP has been designed to meet the peaking requirement daily in the southern region grid and the state of Maharashtra for a duration of about six (6) hours. It is proposed to utilize the head available between existing Shirawta lower dam and upper dam proposed in company's land. Lower Shirawta reservoir located at village Khandshi, Tal Maval, Dist. Pune of Maharashtra state having a geographical latitude 18°48'24.47"N and longitude 73°28'46.62"E. The upper dam is proposed to be located on Tata Power's own upthe-hill table plot having a geographical latitude 18°50'22.15"N and longitude 73°27'5.12"E.

viii. Proposed project envisages a scheme to generate 1800 MW of peak power for duration of about Six (6) hours daily by drawing water from the upper reservoir into the reversible PTG units by utilizing a gross head of about 301.03 m available at project site.

ix. **Water Source and Availability:** This Project is envisaged as off-Stream open Loop Pumped Storage Project where it involves existing Shirawta reservoir (lower reservoir) having its own catchment and proposed new upper reservoir partly within the premises of Tata power (64%) (Private Land) and partly in Forest (36%). The project is designed fort a discharge of 676.51 cumec for generation of 1800 MW (5 x 300 MW+ 2 x150 MW). The Krishna Water District Tribunal (KWDT) has been constituted under Inter-State River Water Dispute's Act 1956. KWDT has allocated 213 TMC water to Tata Hydel Projects for generation of electricity in rolling 5 years with a liberty to divert 54.5 TMC in any one water year. The Shirawta PSP (1800 MW) has been proposed using one existing reservoir namely Shirawta Lake (as lower).

x. The water use for the Shirawta PSP is proposed to be sourced from the already allocated KWDT quota. No amount of additional water (neither for initial filling nor for annual make up towards tank losses) shall be augmented from any of the water resource of the State.

xi. **Power potential:** The energy storage potential of Shirawta PSP is estimated as 1800 MW (in terms of power storage) and 10800 MWhr (in terms of energy storage).

xii. **Project components**: The proposed Shirawta PSP (5 x 300 MW + 2 x 150 MW) envisages following major civil structures:

1. An artificial upper reservoir including embankment/bund having live storage capacity of 15.33 MCM (0.54 TMC) and elevation varies from FRL 965.00 m and MDDL 948.00 m. Rockfill embankment with asphalt face for creation of upper reservoir. The length of embankment dam is order of 4732.77 m and maximum height is 33 m.
2. Intake Structure comprising of trash rack structure & gates at upper reservoir. (Intake structure during generation mode & outlet structure during pumping mode).
3. 6 numbers circular penstock of 4.80 m dia. with 1026.41 m length each has been proposed. Out of 6, one penstock is bifurcated in two-unit penstock of 3.40 m diameter each to feed two turbines of 150 MW units & 5 penstock will feed 300 MW units each.

4. A Surface powerhouse (Pit Type) of 251.0 m (L) x 28.0 m (W) x 70.0 m (H) housing 5 nos. vertical Reversible Francis turbines of 300 MW & two units of 150 MW each.
5. Underground Powerhouse & Transformer Cavern: The overall dimensions of the powerhouse are 201.0 m long x 23 m wide x 48 m high. Transformer Cavern size is 201.0 m x 17.0 m x 22.0 m
6. Transformer deck for the installation of single-phase transformers with GIS floor above transformer floor.
7. 7 numbers of draft tube to feed the water to the Tail race tunnel.
8. 8 Numbers of circular shaped Tail race tunnel having length of about 145.65 m.
9. Out of 7 tunnels, 5 tunnels are having diameter of 6.40 m & two tunnels are 4.50 m diameter. A lower intake for discharging the water in lower reservoir after power generation & to pump back the water from lower reservoir to upper reservoir. During generation mode it will be outlet structure & during pumping it will be inlet structure.
10. A diversion arrangement at the lower reservoir (existing Shirawta reservoir) for the construction of lower intake and for the connection of TRT to existing Shirawta reservoir

xiii. **Alternative studies**: Four (4) alternatives have been studied for Shirawta pumped storage project with four different locations of Upper Reservoirs. Out of these Alternative -4 is recommended.

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

EAC Meeting Details:

EAC meeting/s	50th Meeting
Date of Meeting/s	11.08.2023
Date of earlier EAC meetings	Nil

Project details:

Name of the Proposal	Shirawta Pumped Storage Project
Location (Including coordinates)	Upper Reservoir: 73°27'15.78"E; 18°50'26.26"N
Inter- state issue involved	No
Seismic zone	Zone-III

Category details:

Category of the project	A
Provisions	
Capacity / Cultural command area (CCA)	1800 MW
Attracts the General Conditions (Yes/No)	No

Electricity generation capacity:

Powerhouse Installed Capacity	1800 MW
Generation of Electricity Annually	3744.90 MU
No. of Units	7 nos. (5X300+2X150)

ToR Details:

Cost of project	7,027.72 Cr.
Total area of Project	197.80 ha
Height of Dam from River Bed (EL)	Upper Dam – 21 m
Length of Tunnel/Channel	1172 m
Details of Submergence area	124.70 ha
Types of Waste and quantity of generation during construction/ Operation	Muck from excavation, solid waste from labour colony and construction waste
E-Flows for the Project	Not Applicable, as this is Off-Stream Open Loop Pumped Storage Project (PSP)
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then a) E-flow with TOR /Recommendation by b) EAC as per CIA&CC study of River Basin. If not the E-Flows maintain criteria for sustaining river ecosystem.	No

Muck Management Details:

No. of proposed disposal area/ (type of land- Forest/Pvt. land	40 ha Private Land
Muck Management Plan	Will be Provided in EIA/EMP report
Monitoring mechanism for Muck Disposal	Will be Provided in EIA/EMP report

Land Area Breakup:

Forest Land	60.1
Non Forest land	137.8
Land required for project components	197.9

Presence of Environmentally Sensitive areas in the study area

Forest Land/ Protected Area/ Environmental Sensitivity Zone	**Details of Certificate / letter/ Remarks**
Reserve Forest/Protected Forest Land	There is no Protected Area in the vicinity of the proposed project. Bhimashankar WLS is about 19.70 Km from site, is the nearest protected area.
National Park	
Wildlife Sanctuary	

Court case details: Nil

Affidavit/Undertaking details:

Affidavit/Undertaking	Enclosed

Previous EC compliance and necessary approvals:

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

Miscellaneous

Particulars	Details
Details of consultant	M/s. R S Envirolink Technologies Pvt. Ltd.
Project Benefits	Proposed PSP will also benefit the local community by creating employment opportunities and will result in upliftment of livelihood and socio-economic conditions.
Status of other statutory clearances	Forest Clearance - Online application seeking forest diversion for around 60.10 Ha after receipt of ToR Approval. Alongside, other statutory clearances (as applicable) from State as well as Central government will be obtained post completion of Detailed Project Report.
R&R details	Details shall be evaluated during EIA/EMP Studies

50.2.3 The EAC during deliberations noted the following:

The EAC deliberated on the information submitted (Form 1, PFR, kml file, etc.) and as presented in the meeting and observed that the proposal is for grant of Terms of Reference to the project for

Shirawta Off Stream Open Loop Pumped Storage Project (1800 MW) in an area of 197.9 ha at Village Khandshi, Tehsil Maval, District Pune, Maharashtra by M/s The Tata Power Company Limited.

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

Since the project site is located in Western Ghats ESA, the EAC decided to conduct site visit before considering the proposal for grant environmental clearance to know the ground conditions and to suggest suitable environmental safeguards accordingly.

50.2.4 The EAC after detailed deliberation on the information submitted and as presented during the meeting **recommended** for grant of Standard ToR for conducting EIA study Shirawta Off Stream Open Loop Pumped Storage Project (1800 MW) in an area of 197.9 ha at Village Khandshi, Tehsil Maval, District Pune, Maharashtra by M/s The Tata Power Company Limited under the provisions of EIA Notification, 2006, as amended along with the following additional/specific ToR.

[A] Environmental Management and Biodiversity Conservation:

i. The EAC shall conduct site visit before considering the proposal for grant environmental clearance.
ii. Approach road for the proposed project shall be in non- forest area.
iii. Cumulative Impact of project on carrying capacity and sustainability of Reservoir/ nalahs of catchment area / due to tapping of water for filling reservoir.
iv. Alternative sites for various components shall be identified in terms of loss of forest area and other environmental aspects. Action plan for survival of rivulets in the study area.
v. Impact zone decided prior to base line data generation and accordingly, sampling location shall be finalized. Baseline data as mentioned in Standard 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.
vi. Prepare Environmental Cost Benefit Analysis in terms of loss of Forest ecosystem due to diversion of Forest land/ loss of biodiversity and its impacts on ecosystem, water availability, water uses for generation of hydro power in study area 10 km from periphery of Project components.
vii. Action plan for survival of rivulets in the study area.
viii. 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.
ix. Sampling locations be located to cover villages situated near the reservoir and around boundary of forest area for collection of baseline data and data to be incorporated in EIA/ EMP report.

x. Source of construction material and its distance from the project site along with detailed transportation plan for construction material be elaborated in the EIA EMP report. A detailed reclamation/ restoration plan of quarrying site/sites be incorporated in the EIA/EMP report.

xi. A detailed wildlife conservation plan for Schedule –I species, duly approved by the Chief Wild Life Warden, be submitted.

xii. In case any Wildlife corridor is located within 10 km radius of the project site a detailed study shall be conducted to assess the impact of project on safe movement of wild animals.

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

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

xv. MoU for water uses for the project shall be signed and approved by concerned authority.

xvi. Environmental matrix during construction and operational phase needs to be submitted.

xvii. Matrix formulated on the basis of detailed study and field survey of flora and fauna methodology used shall be mentioned in the EIA report.

xviii. Endemic plant and animal species found in the area concerned shall be provided instead listing entire endemic species found in the State.

xix. Details of Flora and Fauna reported in submergence area, Nos. of tree along with their density and nomenclature of the tree species required to be felled for reservoir creation and other project component.

xx. Impact assessment on the fish diversity based on the hydrological alteration at the water drawing sources shall be studied.

xxi. Stage-I Forest Clearance shall be obtained.

[B] Socio-economic Study

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

xxiii. All the tasks including conducting public hearing shall be done as per the provisions of EIA Notification, 2006 and as amended from time to time. Public hearing issues raised and compliance of the same shall be incorporated in the EIA/ EMP report in the relevant chapter.

xxiv. Statement on the commitments (activity-wise) made during public hearing to facilitate the discussion on the CER in compliance of the Ministry's OM F. No. 22- 65/2017-IA.III dated 30th September, 2020 shall be submitted.

xxv. Tentative no. of project affected families shall be identified and accordingly appropriate Rehabilitation & Resettlement plan shall be prepared.

xxvi. Details of settlement in 10 km area shall be submitted.

[C] Muck Management/ Disaster Management

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

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

xxix. Techno-economic viability of the project must be recommended from CEA/ CWC.

[D] Miscellaneous.

xxx. Pre-DPR Chapters viz. Layout Map and Power Potential Studies duly approved by CWC/CEA shall be submitted.

xxxi. Undertaking need to submitted on affidavit that regarding no activities has been yet started on the project site and water allocated to this scheme shall not be diverted to other purpose.

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

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

xxxiv. Arial view video of project site shall be recorded and to be submitted.

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

Agenda Item No. 50.3:

Bhivpuri Off-Stream Open Loop Pumped Storage Project (1000 MW) in an area of 74 ha at Village Vadeshwar and Bhivpuri, Tehsil Karjat and Mawal, District Raigarh and Pune, Maharashtra by M/s The Tata Power Co. Ltd. – Terms of References (ToR) – reg

[Proposal No. IA/MH/RIV/437464/2023; F. No. J-12011/39/2023-IA.I (R)]

50.3.1: The proposal is for grant of **Terms of References (ToR)** to the project for Bhivpuri Off-Stream Open Loop Pumped Storage Project (1000 MW) in an area of 74 ha at Village Vadeshwar and Bhivpuri, Tehsil Karjat and Mawal, District Raigarh and Pune, Maharashtra by M/s The Tata Power Co. Ltd.

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

i. The proposal is for ToR to the project for Bhivpuri Off-Stream Open Loop Pumped Storage Project (1000 MW) in an area of 74 ha at Village Vadeshwar and Bhivpuri, Tehsil Karjat and Maval, District Raigad and Pune, Maharashtra by M/s The Tata Power Co. Ltd.

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

iii. The estimated project cost is Rs. 4743.59 crore including IDC. Total capital cost earmarked towards environmental pollution control measures will be worked out during EIA study as well as the Recurring cost (operation and maintenance).

iv. **Land requirement:** The total land required for the construction of various components and related works for Bhivpuri PSP is estimated to be around **74.0 ha, out of which is 50.4**

ha is private land and 23.6 ha is forest/govt. land. Forest Clearance is required to be obtained under Forest Conservation Act.

v. **Environmental sensitivity:** There are no national parks, wildlife sanctuaries, Biosphere Reserves, Tiger/Elephant Reserves, Wildlife Corridors etc. within 10 km distance from the project site. River/ water body, Bhivpuri reservoir at the aerial distance of 4 km in east direction. **Bhimashankar Wildlife Sanctuary is about 10.70 km** from site is the nearest protected area from the proposed project.

vi. This Project is envisaged as Off-Stream open Loop Pumped Storage Project where it involves existing Thokarwadi reservoir (upper reservoir) having its own catchment and proposed new lower reservoir within the premises of Tata power (Private Land).

vii. The Krishna Water District Tribunal (KWDT) has been constituted under Inter-State River Water Dispute's Act 1956. The decree of the such Tribunal has the same effect as that of the decree of Hon Supreme Court of India. KWDT has allocated 213 TMC water to Tata Hydel Projects for generation of electricity in rolling 5 years with a liberty to divert 54.5 TMC in any one water year. ´

viii. **Water source and Availability:** The Bhivpuri PSP (1000 MW) has been proposed using one existing reservoir namely Thokarwadi Thokarwadi Lake (as upper). The water use for Bhivpuri PSP is proposed to be sourced from the already allocated KWDT quota at. No amount of additional water (neither for initial filling nor for annual make up towards tank losses) shall be augmented from any of the water resource of the State. ´ In other words, the overall water use of existing Bhivpuri HEP (72 MW) and proposed Bhivpuri PSPs (1000 MW) shall remain within entitlement allocated by KWDT.

ix. **Water Source and Availability**: 15 Water Source and Availability The new lower reservoir is not proposed across any of the river or streams. Hence no amount of water shall be consumed/used/diverted. However, precipitation falling on water spread area of the reservoir shall be released through appropriate arrangements and hence downstream ecology shall not be impacted. ´There shall be no effect in whatsoever means on these existing established water uses due to installation of the proposed PSP and the existing use shall continue in future too.

x. **Alternative studies**: Total seven alternatives have been developed with a view to select the best alternative based on the following criteria:

a) Utilization of head to the maximum extent feasible
b) Ease of construction
c) Minimal area of land acquisition to accommodate various project components
d) Minimum requirement of forest land
e) Distance from protected area
f) Availability of access road to the project components

Out of seven alternatives, Alternative 6, selected as the most of the project components are located in company's land which further brings down the overall project cost.

xi. **The salient features of the project are as unde**r:

EAC meeting/s	50th Meeting
Date of Meeting/s	11.08.2023
Date of earlier EAC meetings	Nil

Project details:

Name of the Proposal	Bhivpuri Pumped Storage Project
Location (Including coordinates)	Upper Reservoir: 73°29'14.59"E; (Existing) 18°56'9.34"N Lower Reservoir: 73°26'39.81"E; (Proposed) 18°56'35.36"N
Inter- state issue involved	No
Seismic zone	Zone-III

Category details:

Category of the project	A
Provisions	
Capacity / Cultural command area (CCA)	1000 MW
Attracts the General Conditions (Yes/No)	No

Electricity generation capacity:

Powerhouse Installed Capacity	1000 MW
Generation of Electricity Annually	2080 MU
No. of Units	6 nos. (4X200+2X100)

ToR/EC Details:

Cost of project	4,753.59 Cr.
Total area of Project	74 ha
Height of Dam from River Bed (EL)	Lower Dam (Proposed) – 12.75 m
Length of Tunnel/Channel	3300 m
Details of Submergence area	20.50 ha
Types of Waste and quantity of generation during construction/ Operation	Muck from excavation, solid waste from labour colony and construction waste
E-Flows for the Project	Not Applicable, as this is Off-Stream Open Loop Pumped Storage Project (PSP)
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then a) E-flow with TOR /Recommendation by	No

b) EAC as per CIA&CC study of River Basin. If not the E-Flows maintain criteria for sustaining river ecosystem.	

Muck Management Details:

No. of proposed disposal area/ (type of land- Forest/Pvt. land)	16 ha Private Land
Muck Management Plan	Will be Provided in EIA/EMP report
Monitoring mechanism for Muck Disposal	Will be Provided in EIA/EMP report

Land Area Breakup:

Government land/Forest Land	No
Submergence area/Reservoir area	20.50 ha
Land required for project components	53.50 ha

Presence of Environmentally Sensitive areas in the study area

Forest Land/ Protected Area/ Environmental Sensitivity Zone		**Details of Certificate / letter/ Remarks**
Reserve Forest/Protected Forest Land	--	There is no Protected Area in the vicinity of the proposed project. **Bhimashankar WLS is about 10.70 km from site, is the nearest protected area**.
National Park	--	
Wildlife Sanctuary	--	

Court case details: Nil

Affidavit/Undertaking details: Enclosed

Previous EC compliance and necessary approvals:

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

Miscellaneous

Particulars	**Details**
Details of consultant	M/s R S Envirolink Technologies Pvt. Ltd. (RSET) (*NABET* Accredited *Consultant Organization*)

	Certificate No: NABET/EIA/2225/RA0274 Validity : August 15, 2025 Contact Person : Mr. Ravinder Bhatia E-mail : ravi@rstechnologies.co.in Land Line : (0124) 4295383 Cellular : (+91) 9810136853
Project Benefits	Proposed PSP will also benefit the local community by creating employment opportunities and will result in upliftment of livelihood and socio-economic conditions.
Status of other statutory clearances	Forest Clearance - Online application seeking forest diversion for around 23.60 ha after receipt of ToR Approval. Alongside, other statutory clearances (as applicable) from State as well as Central government will be obtained post completion of Detailed Project Report.
R&R details	Details shall be evaluated during EIA/EMP Studies

50.3.3 The EAC during deliberations noted the following:

The EAC deliberated on the information submitted (Form 1, PFR, kml file, etc.) and as presented in the meeting and observed that the proposal is for grant of terms of reference to the project for Bhivpuri Off-Stream Open Loop Pumped Storage Project (1000 MW) in an area of 74 ha at Village Vadeshwar and Bhivpuri, Tehsil Karjat and Mawal, District Raigarh and Pune, Maharashtra by M/s The Tata Power Co. Ltd. The project/activity is covered under Category A of item 1 (c) 'River Valley projects' of the Schedule to the Environmental Impact Assessment Notification, 2006 and requires appraisal at Central level by the sectoral EAC in the Ministry**.**

The project site is located in the Sahyadri ranges of the Western Ghats of Maharashtra State in the area bordering Pune and Raigad districts which is a well-known biodiversity rich area.

50.3.4 The EAC after detailed deliberation on the information submitted and as presented during the meeting **recommended** for grant of Standard ToR for Bhivpuri Off-Stream Open Loop Pumped Storage Project (1000 MW) in an area of 74 ha at Village Vadeshwar and Bhivpuri, Tehsil Karjat and Mawal, District Raigarh and Pune, Maharashtra by M/s The Tata Power Co. Ltd. under the provisions of EIA Notification, 2006, as amended along with the following additional/specific ToR:

[A] Environmental Management and Biodiversity Conservation:

i. The EAC shall conduct site visit before considering the proposal for grant environmental clearance.
ii. Approach road for the proposed project shall be in non- forest area.
iii. Cumulative Impact of project on carrying capacity and sustainability of Rivulets/ Reservoir/ nalahs of catchment area / due to tapping of water for filling reservoir.
iv. Alternative sites for various components shall be identified in terms of loss of forest area and other environmental aspects.

v. Impact zone decided prior to base line data generation and accordingly, sampling location shall be finalized. Baseline data as mentioned in Standard 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.

vi. Prepare Environmental Cost Benefit Analysis in terms of loss of Forest ecosystem due to diversion of Forest land/ loss of biodiversity and its impacts on ecosystem, water availability, water uses for generation of hydro power in study area 10 km from periphery of Project components.

vii. Action plan for survival of rivulets in the study area.

viii. 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.

ix. Sampling locations be located to cover villages situated near the reservoir and around boundary of forest area for collection of baseline data and data to be incorporated in EIA/ EMP report.

x. Identify the sand mining/ quarrying sites in submergence area and downstream of reservoir.

xi. Source of construction material and its distance from the project site along with detailed transportation plan for construction material

xii. A detailed reclamation/ restoration plan of quarrying site/sites be incorporated in the EIA/EMP report.

xiii. A detailed wildlife conservation plan for Schedule –I species, duly approved by the Chief Wild Life Warden, be submitted.

xiv. In case any Wildlife corridor is located within 10 km radius of the project site a detailed study shall be conducted to assess the impact of project on safe movement of wild animals.

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

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

xvii. MoU for water uses for the project shall be signed and approved by concerned authority.

xviii. Environmental matrix during construction and operational phase needs to be submitted.

xix. Matrix formulated on the basis of detailed study and field survey of flora and fauna methodology used shall be mentioned in the EIA report.

xx. Endemic plant and animal species found in the area concerned shall be provided instead listing entire endemic species found in the State.

xxi. Details of Flora and Fauna reported in submergence area, Nos. of tree along with their density and nomenclature of the tree species required to be felled for reservoir creation and other project component.

xxii. Impact assessment on the fish diversity based on the hydrological alteration at the water drawing sources shall be studied.

xxiii. Stage-I Forest Clearance shall be obtained.

[B] Socio-economic Study

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

xxv. All the tasks including conducting public hearing shall be done as per the provisions of EIA Notification, 2006 and as amended from time to time. Public hearing issues raised and compliance of the same shall be incorporated in the EIA/ EMP report in the relevant chapter.

xxvi. Statement on the commitments (activity-wise) made during public hearing to facilitate the discussion on the CER in compliance of the Ministry's OM F.No.22- 65/2017- IA.III dated 30th September, 2020 shall be submitted.

xxvii. Tentative no. of project affected families shall be identified and accordingly appropriate Rehabilitation & Resettlement plan shall be prepared.

xxviii. Details of settlement in 10 km area shall be submitted.

[C] Muck Management/ Disaster Management

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

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

xxxi. Techno-economic viability of the project must be recommended from CEA/ CWC.

[D] Miscellaneous.

xxxii. Pre-DPR Chapters viz. Layout Map and Power Potential Studies duly approved by CWC/CEA shall be submitted.

xxxiii. Undertaking need to submitted on affidavit that regarding no activities has been yet started on the project site and water allocated to this scheme shall not be diverted to other purpose.

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

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

xxxvi. Arial view video of project site shall be recorded and to be submitted.

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

<u>Agenda Item No. 50.4:</u>

Ramial Left Bank Close Loop Pumped Storage Project (1500 MW) in an area of 335.25 ha at Village Patkelipur and Godinarda, Tehsil Telkoi, District Keonjhar, Odisha by M/s Renew Solar Power Private Limited– Terms of References (TOR) – reg.
[Proposal No. IA/OR/RIV/438758/2023; F. No. J-12011/40/2023-IA.I (R)]

50.4.1: The proposal is for grant of Terms of References (TOR) to the Ramial Left Bank Close Loop Pumped Storage Project (1500 MW) in an area of 335.25 ha at Village Patkelipur and Godinarda, Tehsil Telkoi, District Keonjhar, Odisha by M/s Renew Solar Power Private Limited.

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

i. The proposal is for ToR to the project for Ramial Left Bank Pumped Storage Project located (1500 MW) at Village Patkelipur and Godinarda, Taluka Telkoi, District Keonjhar, Odisha by M/s Renew Solar Power Private Limited.

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

iii. The estimated project cost is Rs 6383.23 crore. Total capital cost earmarked towards environmental pollution control measures will be worked out during EIA study as well as the Recurring cost (operation and maintenance).

iv. **Environmental sensitivity**: There are no national parks, wildlife sanctuaries, Biosphere Reserves, Tiger/Elephant Reserves, Wildlife Corridors etc. within 10 km distance from the project site. Simlipal WLS is about 70.0 Km from site, is the nearest protected area. River/ water body, Dandadhar reservoir at the aerial distance of 6 km in south direction.

v. **Land requirement:** Total 335.25 ha land (Forest land- 147.15 ha, Non Forest land- 188.10 ha) required for the project**.**

vi. **The proposed project envisages following major civil components:**

a.) A Concrete Faced Rock-Fill dam, 2862 m long embankment having weighted average height of 20m (with maximum height of 24 m from bed level) for creation of Upper reservoir with gross storage capacity of 12.95 MCM.
b.) A Concrete Faced Rock-Fill dam, 2873 m long embankment having weighted average height of 19 m (with maximum height of 23 m from bed level) for creation of Lower reservoir with gross storage capacity of 14.04 MCM.
c.) Three nos. of Intake structure proposed at the upper reservoir comprising of a self-cleaning vertical trash rack for each intake to avoid entry of debris in the water conductor system.
d.) 3 nos. of 6 m dia. Circular Buried Steel Penstocks /Pressure Shafts each of length 1433.8 m bifurcating into 6 Unit Penstocks of 4.4 m dia. (4unit Penstocks of length 63.75m each, one-unit Penstock of length 114.69m and one-unit penstock of 69.00 m). Furthermore, one-unit penstock of 4.4m of dia. will bifurcate into two penstocks of 3.2m dia. of length 48.3 m each.
e.) Surface Powerhouse (Machine Hall) of size 162 m (L) x 24 m (W) x 57 m (H) housing 5 units of 250 MW & 2 units of 125 MW is proposed. A service bay of size 40 m (L) x 24 m (W) x21m (H) with EL at 121.00 m is proposed. Transformer

yard will be placed on the downstream side in the open area at EL157 m. The size of the transformer yard area would be about 202 m (L) x 16 m (W). GIS building of size 87 m (L) x 14 m (W) x 17.5m (H) is proposed on the downstream side of the transformer yard.

f.) A Pothead yard of size 78 m (L) x 30 m (W) at EL157.00 m is proposed.

g.) One no. of 8.0 m diameter D–shaped Main Access Tunnel of length 366 m is proposed to provide access to the service bay at EL 121 m.

h.) 5 nos. of Tail Race Tunnel of 5.2 m diameter having length of 241.15 m have been proposed to discharge water from the draft tubes to the lower reservoir of outlet structure from the bigger units of 250 MW each. In addition ,2 nos. of Tail Race Tunnel of 3.8 m diameter having length of 241.15 m have been proposed to discharge water from the draft tubes to the lower reservoir of outlet structure from the smaller units of 125 MW each.

i.) 7 nos. of outlet structure at the lower reservoir which discharges the water from the tailrace tunnels into the lower reservoir, the same acts as an inlet during pumping to draw water from the lower reservoir. The structure comprises of a self-cleaning vertical track rack to avoid entry of debris into the tail race tunnels.

vii. **Water source and availability:** Proposed reservoirs are not on any perennial streams and few seasonal streams are draining towards the lower reservoir area which are having very small catchment areas**.**

Catchment area of lower reservoir is 0.752 sq km and the upper reservoir does not have any catchment. It is proposed to pump water from the Dandadhar reservoir (Ramial Dam) into the lower reservoir during monsoon season over a period of 2 seasons / years for initial filling of reservoirs (15.76 MCM) through an approx. 7 km long pipeline.

Water will remain in circulation from upper to lower during power generation and vice versa during non-generation hours daily. Reservoir water requirements will be met once and thereafter only small quantities will be added to compensate for evaporation losses/leakages.

viii. **Alternatives studies:** Four alternatives for the Project Layout have been considered. Alternative 2 with surface powerhouse has been considered for preparation of pre-feasibility report owing to its advantages over Alternatives 1,3 &4 with Underground powerhouse.

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

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

EAC Meeting Details:

EAC meeting/s	50th Meeting
Date of Meeting/s	11.08.2023
Date of earlier EAC meetings	Nil

Project details:

Name of the Proposal	Ramial Left Bank Pumped Storage Project

Location (Including coordinates)	Lower Reservoir: 85°33'58.87"E; 21°15'11.74"N Upper Reservoir: 85°32'46.04”E"; 21°16'9.69"N
Inter- state issue involved	No
Seismic zone	Zone-II

Category details:

Category of the project	A
Provisions	
Capacity / Cultural command area (CCA)	1500 MW
Attracts the General Conditions (Yes/No)	No

Electricity generation capacity:

Powerhouse Installed Capacity	1500 MW
Generation of Electricity Annually	3214.7 MU
No. of Units	7 nos. (5X250 MW+2X125 MW)

ToR Details:

Cost of project	6383.23 Cr.
Total area of Project	335.25 ha
Height of Dam from River Bed (EL)	Lower Dam – 23 m Upper Dam – 24 m
Length of Tunnel/Channel	2116 m
Details of Submergence area	176.20 ha
Types of Waste and quantity of generation during construction/ Operation	Muck from excavation, solid waste from labour colony and construction waste.
E-Flows for the Project	Not Applicable, as this is Off-Stream Closed Loop Pumped Storage Project (PSP)
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then a) E-flow with TOR /Recommendation by b) EAC as per CIA&CC study of River Basin. If not the E-Flows maintain criteria for sustaining river ecosystem.	No

Muck Management Details:

No. of proposed disposal area/ (type of land- Forest/Pvt. land)	82.40 ha Private Land
Muck Management Plan	Will be Provided in EIA/EMP report
Monitoring mechanism for Muck Disposal	Will be Provided in EIA/EMP report

Land Area Breakup:

Government land/Forest Land	147.15 ha
Submergence area/Reservoir area	176.20 ha
Land required for project components	159.05 ha
Additional information (if any)	Nil

Presence of Environmentally Sensitive areas in the study area

Forest Land/ Protected Area/ Environmental Sensitivity Zone	**Yes/No**	**Details of Certificate / letter/ Remarks**
Reserve Forest/Protected Forest Land	--	There is no Protected Area in the vicinity of the proposed project. Simlipal WLS is about 70.0 Km from site, is the nearest protected area.
National Park	--- --	
Wildlife Sanctuary	--- --	

Court case details: Nil
Affidavit/Undertaking details:

Affidavit/Undertaking	Enclosed

Previous EC compliance and necessary approvals:

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

Miscellaneous

Particulars	**Details**
Details of consultant	M/s. R S Envirolink Technologies Pvt. Ltd. (RSET) (*NABET* Accredited *Consultant Organization*) Certificate No : NABET/EIA/2225/RA0274

Project Benefits	Proposed PSP will also benefit the local community by creating employment opportunities and will result in upliftment of livelihood and socio-economic conditions.
Status of other statutory clearances	Forest Clearance - Online application seeking forest diversion for around **147.15** Ha after receipt of ToR Approval. Alongside, other statutory clearances (as applicable) from State as well as Central government will be obtained post completion of Detailed Project Report.
R&R details	Details shall be evaluated during EIA/EMP Studies

50.4.3 The EAC during deliberations noted the following:

The EAC deliberated on the information submitted (Form 1, PFR, kml file, etc**.)** and as presented in the meeting and observed that the proposal is for grant of terms of reference to the project for Ramial Left Bank Close Loop Pumped Storage Project (1500 MW) in an area of 335.25 ha at Village Patkelipur and Godinarda, Tehsil Telkoi, District Keonjhar, Odisha by M/s Renew Solar Power Private Limited.

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

50.4.4 The EAC during deliberation observed that the alternative site study is focused on power generation perspective, no environmental consideration has been taken in to account. The PP should revisit the proposed alternatives in terms of loss of forest land, impact on ecosystem services and scope for restoration of natural environment.

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

Agenda Item No. 50.5:

Musakhand Close Loop Pumped Storage Project (600 MW) in an area of 313.70 ha at Village Mobarakpur and Jamsoti, Tehsil Chakia, District Chandauli, Uttar Pradesh by M/s Acme Cleantech Solutions Private Limited– Terms of References (TOR) – reg.

[**Proposal No. IA/UP/RIV/438820/2023; F. No. J-12011/41/2023-IA.I (R)]**

50.5.1: The proposal is for grant of **Terms of References (ToR)** to the project for Musakhand Close Loop Pumped Storage Project (600 MW) in an area of 313.70 ha at Village Mobarakpur and Jamsoti, Tehsil Chakia, District Chandauli, Uttar Pradesh by M/s Acme Cleantech Solutions Private Limited.

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

i. The proposal is for grant of ToR to the project for Musakhand Pumped Storage Project located (600 MW) at Village Mobarakpur and Jamsoti, Taluka Chakia, District Chandauli, Uttar Pradesh by M/s Acme Cleantech Solutions Private Limited.
ii. The project is listed at S.N. 1 (c) of the Schedule to the Environment Impact Assessment (EIA) Notification under category 'A' and are appraised at Central Level by Expert Appraisal Committee (EAC).
iii. Musakhand PSP is a closed-loop off-stream pumped storage scheme proposed by M/s ACME Cleantech Solutions Pvt. Ltd. The scheme is proposed with an installed capacity of 600 MW located in the Chakia Tehsil of Chandauli district of Uttar Pradesh.
iv. Project envisaged construction of two artificial reservoirs; Upper reservoir near village Jamsoti and Lower reservoir near village Mobarakpur in the Chandauli district of Uttar Pradesh.
v. It is proposed to utilize the water from existing Musakhand Reservoir for initial filling of the Musakhand PSP reservoir. The Project is proposed with gross storage capacity of 11.78 MCM in the lower reservoir and 12.20 MCM in the upper reservoir.
vi. **Land requirement**: A total of 313.70 ha of land will be required for the project. 293.70 ha is forest land and 20.0 ha is private land.
vii. **Water Source and availability**: Proposed to pump water from the Musakhand reservoir into the lower reservoir during monsoon season for initial filling of reservoir (13 MCM) through an approx. 5 km long approach channel. The gross storage capacity of the Musakhand reservoir is 113.27 MCM. Out of which, 91.75 MCM is live storage. During operation of project, water required for recuperation of losses to the extent of 2.5 MCM will be pumped from Musakhand reservoir every year.
viii. This Project envisages non-consumptive re-utilization of 11.68 MCM of water for recirculation among two proposed reservoirs for power generation.
ix. Th**e estimated project cost is Rs 2671.75 c**rore. Total capital cost earmarked towards environmental pollution control measures will be worked out during EIA study as well as the Recurring cost (operation and maintenance).
x. **Environmental Sensitivity**: Chandraprabha and Kaimur (Bihar) Wildlife Sanctuaries are located about 3.20 Km & 6.70 km respectively. River/ water body, Karamnasa river is flowing at the aerial distance of 500 m in west to north direction.
xi. **Alternative studies**: Total 4 alternative sites were studied. Out of these Alternative 1A is presently not a dense forest area. The area will be planted on completion of muck dumping in addition to other green belt areas, which will be proposed during EIA study. Therefore, alternative 1A site selected for further studies.
xii. Details of Solid waste/ Hazardous waste generation/ Muck and its management will be covered in EIA report.
xiii. Status of Litigation Pending against the proposal, if any. No
xiv. The salient features of the project are as under: -

EAC Meeting Details:

EAC meeting/s	50th Meeting
Date of Meeting/s	11.08.2023
Date of earlier EAC meetings	Nil

Project details:

Name of the Proposal	Musakhand Pumped Storage Project
Location (Including coordinates)	Lower Reservoir: 83°14'24.95"E; 24°59'10.07"N Upper Reservoir: 83°13'19.30”E"; 24°58'57.63"N
Inter- state issue involved	No
Seismic zone	Zone-III

Category details:

Category of the project	A
Provisions	
Capacity / Cultural command area (CCA)	600 MW
Attracts the General Conditions (Yes/No)	Yes
Additional information (if any)	Nil

Electricity generation capacity:

Powerhouse Installed Capacity	600 MW
Generation of Electricity Annually	1821.5 MU
No. of Units	4 nos. (2X200 MW+2X100 MW)
Additional information (if any)	Nil

ToR Details:

Cost of project	2671.75 Cr.
Total area of Project	313.70 ha
Height of Dam from River Bed (EL)	Lower Dam – 24 m Upper Dam – 26.5 m
Length of Tunnel/Channel	1753 m
Details of Submergence area	214.0 ha
Types of Waste and quantity of generation during construction/ Operation	Muck from excavation, solid waste from labour colony and construction waste
E-Flows for the Project	Not Applicable, as this is Off-Stream Closed Loop Pumped Storage Project (PSP)
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then a) E-flow with TOR /Recommendation by	No

b) EAC as per CIA&CC study of River Basin. If not the E-Flows maintain criteria for sustaining river ecosystem.	

Muck Management Details:

No. of proposed disposal area/ (type of land- Forest/Pvt. land)	60 ha Forest Land
Muck Management Plan	Will be Provided in EIA/EMP report
Monitoring mechanism for Muck Disposal	Will be Provided in EIA/EMP report

Land Area Breakup:

Government land/Forest Land	293.70 ha
Submergence area/Reservoir area	214.0 ha
Land required for project components	99.70 ha
Additional information (if any)	Nil

Presence of Environmentally Sensitive areas in the study area

Forest Land/ Protected Area/Environmental Sensitivity Zone	Yes/No	Details of Certificate / letter/ Remarks
Reserve Forest/Protected Forest Land	--	Chandraprabha and Kaimur (Bihar) Wildlife Sanctuaries are located about 3.20 Km & 6.70 km respectively.
National Park	--- --	
Wildlife Sanctuary	--- --	

Court case details: Nil

Affidavit/Undertaking details:

Affidavit/Undertaking	Enclosed
Additional information (if any)	Nil

Previous EC compliance and necessary approvals:

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

Miscellaneous

Particulars	Details
Details of consultant	M/s. R S Envirolink Technologies Pvt. Ltd. (RSET) (*NABET* Accredited *Consultant Organization*) Certificate No : NABET/EIA/2225/RA0274
Project Benefits	Proposed PSP will also benefit the local community by creating employment opportunities and will result in upliftment of livelihood and socio-economic conditions.
Status of other statutory clearances	Forest Clearance - Online application seeking forest diversion for around 293.70 Ha after receipt of ToR Approval. Alongside, other statutory clearances (as applicable) from State as well as Central government will be obtained post completion of Detailed Project Report.
R&R details	Details shall be evaluated during EIA/EMP Studies

50.5.3 The EAC during deliberations noted the following:

The EAC deliberated on the information submitted (Form 1, PFR, kml file, etc.) and as presented in the meeting and observed that the proposal is for grant of Terms of Reference to the project for Musakhand Close Loop Pumped Storage Project (600 MW) in an area of 313.70 ha at Village Mobarakpur and Jamsoti, Tehsil Chakia, District Chandauli, Uttar Pradesh by M/s Acme Clean Tech Solutions Private Limited.

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

50.5.4 The EAC after detailed deliberation on the information submitted and as presented during the meeting **recommended** for grant of Standard ToR for Musakhand Close Loop Pumped Storage Project (600 MW) in an area of 313.70 ha at Village Mobarakpur and Jamsoti, Tehsil Chakia, District Chandauli, Uttar Pradesh by M/s Acme Clean Tech Solutions Private Limited under the provisions of EIA Notification, 2006, as amended along with the following additional/specific ToR:

[A] Environmental Management and Biodiversity Conservation:

i. Explore the possibilities to reduce forest area for the construction of proposed project.
ii. Prepare Environmental Cost Benefit Analysis in terms of loss of Forest ecosystem due to diversion of Forest land/ loss of biodiversity and its impacts on ecosystem, water availability, water uses for generation of hydro power in study area 10 km from periphery of Project components.

iii. Cumulative Impact of project on carrying capacity and sustainability of Reservoir/ nalahs of catchment area, irrigation facilities due to tapping of water for filling reservoir.

iv. Action plan for survival of rivulets in the study area.

v. Alternative sites for various components shall be identified in terms of loss of forest area and environmental aspects.

vi. Impact zone decided prior to base line data generation and accordingly, sampling location shall be finalized. Baseline data as mentioned in Standard 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.

vii. 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.

viii. Sampling locations be located to cover villages situated near the reservoir and around boundary of forest area for collection of baseline data and data to be incorporated in EIA/ EMP report.

ix. Identify the sand mining/ quarrying sites in submergence area and downstream of reservoir.

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

xi. Source of construction material and its distance from the project site along with detailed transportation plan for construction material.

xii. A detailed reclamation/ restoration plan of quarrying site/sites be incorporated in the EIA/EMP report.

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

xiv. MoU for water uses for the project signed and approved by concerned authority shall be submitted.

xv. Environmental matrix during construction and operational phase needs to be submitted. Matrix formulated on the basis of detailed study and field survey of flora and Fauna methodology used shall be mentioned in the EIA report.

xvi. Endemic plant and animal species found in the area concerned shall be provided instead listing entire endemic species found in the State.

xvii. Details of Flora and Fauna reported in submergence area, Nos. of tree along with their density and nomenclature of the tree species required to be felled for reservoir creation and other project component.

xviii. Impact assessment on the fish diversity based on the hydrological alteration at the water drawing sources shall be studied.

xix. Stage-I Forest Clearance shall be obtained.

xx. Muck disposal sites and approach roads should be outside the forest area.

[B] Socio-economic Study

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

xxii. All the tasks including conducting public hearing shall be done as per the provisions of EIA Notification, 2006 and as amended from time to time. Public hearing issues raised and compliance of the same shall be incorporated in the EIA/ EMP report in the relevant chapter.

xxiii. Statement on the commitments (activity-wise) made during public hearing to facilitate the discussion on the CER in compliance of the Ministry's OM F. No. 22-65/2017-IA.III dated 30th September, 2020 shall be submitted.

xxiv. Tentative no. of project affected families shall be identified and accordingly appropriate Rehabilitation & Resettlement plan shall be prepared.

xxv. Details of settlement in 10 km area shall be submitted.

[C] Muck Management/ Disaster Management

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

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

xxviii. Techno-economic viability of the project must be recommended from CEA/ CWC.

[D] Miscellaneous.

xxix. Pre-DPR Chapters viz. Layout Map and Power Potential Studies duly approved by CWC/CEA shall be submitted.

xxx. Undertaking need to submitted on affidavit that regarding no activities has been yet started on the project site and water allocated to this scheme shall not be diverted to other purpose.

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

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

xxxiii. Arial view video of project site shall be recorded and to be submitted.

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

Agenda Item No. 50.6:

Saidongar-1 Closed Loop Pumped Storage Project (3000 MW) in an area of 279.69 ha at Village Saidongar, Kusur and Dhak, Tehsil Mawal and Karjat, District Pune and Raigarh, Maharashtra by M/s Torrent Power Limited – Terms of References (ToR) – reg.

[Proposal No. IA/MH/RIV/438958/2023; F. No. J-12011/42/2023-IA.I (R)]

50.6.1 The proposal is for grant of Terms of References (ToR) to the project for Saidongar-1 Closed Loop Pumped Storage Project (3000 MW) in an area of 279.69 ha at Village Saidongar, Kusur and Dhak, Tehsil Mawal and Karjat, District Pune and Raigarh, Maharashtra by M/s Torrent Power Limited.

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

i. The proposal is for ToR to the project for Saidongar-1 Pumped Storage Project located (3000 MW) in an area of 279.69 ha at Village Dhak, Kusur Taluka Kajraj & Mawal, District Raigad & Pune, Maharashtra by M/s Torrent Power Limited.

ii. The project is listed at S.N. **1 (c)** of the Schedule to the Environment Impact Assessment (EIA) Notification under category 'A' and are appraised at Central Level by Expert Appraisal Committee (EAC). Saidongar-1 PSP is a standalone pumped storage project proposed by M/s Torrent Power Limited, located on the border of Raigad and Pune Districts in the state of Maharashtra.

iii. Project comprises of an underground powerhouse with an installed capacity of 3000 MW having 9 units of 300 MW & 2 units of 150 MW each.

iv. **Background of the project**: Saidongar Pumped Storage Project was initially conceived with 4200 MW installed capacity having two upper reservoirs, two powerhouses with installed capacity of 3000 MW and 1200 MW each and one common lower reservoir; all to be constructed new. The project was earlier considered **by the EAC for grant of TOR during its meeting held on 26th and 27th June 2023**. The EAC was of the view that as per the proposed project design the proposal may not be considered as single project. The PP should consult with Central Electricity Authority to look into the design aspect and submit the proposal accordingly.

v. Project proponent after meeting with CEA, has decided to split the project into two separate project without changing any of the project features and name them as Saidongar 1 (3000 MW) and Saidongar 2 (1200 MW). Two separate PFRs have been prepared and two separate applications have been filed on Parivesh portal for grant of TOR to these two projects.

vi. The upper reservoir is proposed near Dhak village on the left bank while a common lower reservoir (for Saidongar-1 & Saidongar-2 PSPs) is envisaged near Pali T. Kothal Khalathi village.

vii. The reservoirs are interconnected through individual water conductor systems, and the generator-motor and pump-turbines are installed at the underground powerhouse in between the reservoirs.

viii. The main features of major components of the Saidongar-1 PSP (3000MW) as per the present feasibility report are as follows:

a) **Upper Dam:** CFRD dam of length 2653m with a height of 33m with the gated Spillway

b) **Lower Dam:** Concrete gravity dam of length 664m with a height of 67m with gated Spillway (common for alternative -1 of Saidongar-1 PSP & alternative 1 of Saidongar-2 PSP)

c) **Power Intake:** Five nos. of morning glory type Intake structure

d) **Head Race Tunnel:** Five nos. of 7.1m diameter circular shaped concrete lined head race tunnel with a length of 250.77m each.

e) **Upstream Surge Shaft**: Five nos. of semi underground and semi elevated restricted

orifice surge shaft with a dia of 12m & total height of 88 m
f) Valve House Surface valve house is to accommodate five nos. of 5.2m butterfly valve
g) **Pressure shaft Tunnel**: Five nos. of steel lined main pressure shaft with 5.2m diameter of length 728.5m length each, nine nos. of unit pressure shaft with 3.7m diameter of length 52 m each and two nos. of unit pressure shaft with 2.6m diameter of length 38m each.
h) **Underground Powerhouse:** The underground powerhouse of size 268 m(L) x 22.00 m(W) x 53.20m(H), to accommodate nine nos. of 300 MW and two nos. of 150 MW reversible pump-turbine units.
i) **Transformer Cavern**: The underground transformer hall of size 263.00 m(L) x 16.00 m(W) x 26.00m(H), to accommodate thirty five nos. single phase transformers.
j) **Tail Race Tunnel**: Five nos. of 7.1m diameter circular shaped concrete lined tail race tunnel with a length of 190m each.
k) **Pump Intake:** Five nos. of lateral Intake structure

ix. **Land requirement:** The total land required for the construction of various components and related works for Saidongar-1 PSP is estimated around **279.69 ha,** out of which **118.86** ha is non-forest land and **160.83** ha is forest land.

x. The estimated project cost is Rs **7855.62 crore.** Total capital cost earmarked towards environmental pollution control measures will be worked out during EIA study as well as the Recurring cost (operation and maintenance).

xi. **Environmental sensitivity**: There are no national parks, wildlife sanctuaries, Biosphere Reserves, Tiger/Elephant Reserves, Wildlife Corridors etc. within 10 km distance from the project site. River/ water body, Thokarwadi reservoir at the distance of 2 km in west direction. There is no Protected Area in the vicinity of the proposed project. Bhimashankar WLS is about 15 Km from site, is the nearest protected area.

xii. Project falls within the proposed **Western Ghats Eco-Sensitive Area (ESA**) as per the draft notification dated 06th July 2022.

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

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

EAC Meeting Details:

EAC meeting/s	50th Meeting
Date of Meeting/s	11.08.2023
Date of earlier EAC meetings	Nil

Project details:

Name of the Proposal	Saidongar-1 Pumped Storage Project
Location (Including coordinates)	Upper Reservoir: 73°24'32"E; 18°54'15"N Lower Reservoir: 73°25'34"E; 18°54'37"N
Inter- state issue involved	No
Seismic zone	Zone-III

Category details:

Category of the project	A
Provisions	
Capacity / Cultural command area (CCA)	3000 MW
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	Nil

Electricity generation capacity:

Powerhouse Installed Capacity	3000 MW
Generation of Electricity Annually	6570 MU
No. of Units	11 nos. (9X300+2X150)
Additional information (if any)	Nil

ToR Details:

Cost of project	7,855.62 Cr.
Total area of Project	279.69 ha
Height of Dam from River Bed (EL)	Lower Dam – 67 m Upper Dam – 33 m
Length of Tunnel/Channel	1790 m
Details of Submergence area	233.36 ha
Types of Waste and quantity of generation during construction/ Operation	Muck from excavation, solid waste from labour colony and construction waste
E-Flows for the Project	Not Applicable, as this is Off-Stream Closed Loop Pumped Storage Project (PSP)
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then a) E-flow with TOR /Recommendation by b) EAC as per CIA&CC study of River Basin. If not the E-Flows maintain criteria for sustaining river ecosystem.	No

Muck Management Details:

No. of proposed disposal area/ (type of land-Forest/Pvt. land)	5.97 ha Private Land
Muck Management Plan	Will be Provided in EIA/EMP report
Monitoring mechanism for Muck Disposal	Will be Provided in EIA/EMP report

Land Area Breakup:

Government land/Forest Land	No
Submergence area/Reservoir area	233.36 ha
Land required for project components	46.33 ha
Additional information (if any)	Nil

Presence of Environmentally Sensitive areas in the study area

Forest Land/ Protected Area/ Environmental Sensitivity Zone	**Yes/No**	**Detailsof Certificate / letter/ Remarks**
Reserve Forest/Protected Forest Land	--	There is no Protected Area in the vicinity of the proposed project. Bhimashankar WLS is about 15.0 Km from site, is the nearest protected area.
National Park	--- --	
Wildlife Sanctuary	--- --	

Court case details: nil

Affidavit/Undertaking details:

Affidavit/Undertaking	Enclosed
Additional information (if any)	Nil

Previous EC compliance and necessary approvals:

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

Miscellaneous

Particulars	**Details**
Details of consultant	M/s R S Envirolink Technologies Pvt. Ltd. (RSET) (*NABET* Accredited *Consultant Organization*) Certificate No: NABET/EIA/2225/RA0274
Project Benefits	Proposed PSP will also benefit the local community by creating employment opportunities and will result in upliftment of livelihood and socio-economic conditions.
Status of other statutory clearances	Forest Clearance - Online application seeking forest diversion for around 160.83 Ha after receipt of ToR Approval. Alongside, other statutory

	clearances (as applicable) from State as well as Central government will be obtained post completion of Detailed Project Report.
R&R details	Details shall be evaluated during EIA/EMP Studies

50.6.3 The EAC during deliberations noted the following:

The EAC deliberated on the information submitted (Form 1, PFR, kml file, etc.) and as presented in the meeting and observed that the proposal is for grant of terms of reference to the project Saidongar-1 Closed Loop Pumped Storage Project (3000 MW) in an area of 279.69 ha at Village Saidongar, Kusur and Dhak, Tehsil Mawal and Karjat, District Pune and Raigarh, Maharashtra by M/s Torrent Power Limited The project/activity is covered under Category A of item 1 (c) 'River Valley projects' of the Schedule to the Environmental Impact Assessment Notification, 2006 and requires appraisal at Central level by the sectoral EAC in the Ministry**.**

The project site is located in Western Ghats ESA, the EAC decided to conduct site visit before considering the proposal for grant environmental clearance to know the ground conditions.

50.6.4 The EAC after detailed deliberation on the information submitted and as presented during the meeting **recommended** for grant of Standard ToR for Saidongar-1 Closed Loop Pumped Storage Project (3000 MW) in an area of 279.69 ha at Village Saidongar, Kusur and Dhak, Tehsil Mawal and Karjat, District Pune and Raigarh, Maharashtra by M/s Torrent Power Limited under the provisions of EIA Notification, 2006, as amended along with the following additional/specific ToR:

[A] Environmental Management and Biodiversity Conservation:

i. The EAC will visit the project site before considering the proposal for grant of environmental Clearance.
ii. Approach road for the proposed project shall be in non- forest area.
iii. Conduct Environmental Cost Benefit Analysis in terms of loss of Forest ecosystem due to diversion of Forest land/ loss of biodiversity and its impacts on ecosystem, water availability, water uses for generation of hydro power in study area 10 km from periphery of Project components
iv. Cumulative Impact of project on carrying capacity and sustainability of Reservoir/ nalahs of catchment area / due to tapping of water for filling reservoir.
v. Alternative sites for various components shall be identified in terms of loss of forest area and other environmental aspects.
vi. Action plan for survival of the rivulets located in the study area.
vii. Impact zone decided prior to base line data generation and accordingly, sampling location shall be finalized. Baseline data as mentioned in Standard 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.
viii. 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.

ix. Sampling locations be located to cover villages situated near the reservoir and around boundary of forest area for collection of baseline data and data to be incorporated in EIA/ EMP report.

x. A detailed reclamation/ restoration plan of quarrying site/sites be incorporated in the EIA/EMP report.

xi. A detailed wildlife conservation plan for Schedule –I species, duly approved by the Chief Wild Life Warden, be submitted.

xii. In case any Wildlife corridor is located within 10 km radius of the project site a detailed study shall be conducted to assess the impact of project on safe movement of wild animals.

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

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

xv. MoU for water uses for the project shall be signed and approved by concerned authority.

xvi. Environmental matrix during construction and operational phase needs to be submitted.

xvii. Matrix formulated on the basis of detailed study and field survey of flora and fauna methodology used shall be mentioned in the EIA report.

xviii. Endemic plant and animal species found in the area concerned shall be provided instead listing entire endemic species found in the State.

xix. Details of Flora and Fauna reported in submergence area, Nos. of tree along with their density and nomenclature of the tree species required to be felled for reservoir creation and other project component.

xx. Impact assessment on the fish diversity based on the hydrological alteration at the water drawing sources shall be studied.

xxi. Stage-I Forest Clearance shall be obtained.

[B] Socio-economic Study

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

xxiii. All the tasks including conducting public hearing shall be done as per the provisions of EIA Notification, 2006 and as amended from time to time. Public hearing issues raised and compliance of the same shall be incorporated in the EIA/ EMP report in the relevant chapter.

xxiv. Statement on the commitments (activity-wise) made during public hearing to facilitate the discussion on the CER in compliance of the Ministry's OM F. No. 22- 65/2017- IA.III dated 30th September, 2020 shall be submitted.

xxv. Tentative no. of project affected families shall be identified and accordingly appropriate Rehabilitation & Resettlement plan shall be prepared.

xxvi. Details of settlement in 10 km area shall be submitted.

[C] Muck Management/ Disaster Management

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

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

xxix. Techno-economic viability of the project must be recommended from CEA/ CWC.

[D] Miscellaneous.

xxx. Pre-DPR Chapters viz. Layout Map and Power Potential Studies duly approved by CWC/CEA shall be submitted.

xxxi. Undertaking need to submitted on affidavit that regarding no activities has been yet started on the project site and water allocated to this scheme shall not be diverted to other purpose.

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

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

xxxiv. Arial view video of project site shall be recorded and to be submitted.

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

Agenda Item No. 50.7:

Saidongar-2 Closed Loop Pumped Storage Project (1200 MW) in an area of 132.59 ha at Village Saidongar, Kusur and Dhak, Tehsil Mawal and Karjat, District Pune and Raigarh, Maharashtra by M/s Torrent Power Limited – Terms of References (TOR) - reg.

[Proposal No. IA/MH/RIV/438692/2023; F. No. J-12011/43/2023-IA.I (R)]

50.7.1: The proposal is for grant of Terms of References (ToR) to Saidongar-2 Closed Loop Pumped Storage Project (1200 MW) in an area of 132.59 ha at Village Saidongar, Kusur and Dhak, Tehsil Mawal and Karjat, District Pune and Raigarh (Maharashtra) by M/s Torrent Power Limited.

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

i. The proposal is for ToR to the project for Saidongar-1 Pumped Storage Project located (3000 MW) in an area of 279.69 ha at Village Dhak, Kusur Taluka Kajraj & Mawal, District Raigad & Pune, Maharashtra by M/s Torrent Power Limited.

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

iii. **Background:** Saidongar Pumped Storage Project was initially conceived with 4200 MW installed capacity having two upper reservoirs, two powerhouses with installed capacity of

3000 MW and 1200 MW each; and one common lower reservoir; all to be constructed new.

iv. **Appraisal in Earlier EAC:** The project was considered by EAC for grant of TOR during its meeting held on **26th and 27th June 2023**. The EAC was of the view that as per the proposed project design the proposal may not be considered as single project. The PP should consult with Central Electricity Authority to look into the design aspect and submit the proposal accordingly.

v. Project proponent after meeting with CEA, has decided to split the project into two separate project without changing any of the project features and name them as Saidongar 1 (3000 MW) and Saidongar 2 (1200 MW).

vi. Two separate PFRs have been prepared and two separate applications have been filed on Parivesh portal for grant of TOR to these two projects.

vii. The estimated project cost is Rs. 7855.62 crore. Total capital cost earmarked towards environmental pollution control measures will be worked out during EIA study as well as the Recurring cost (operation and maintenance).

viii. **Water source and availability:** The Project is a stand-alone scheme with upper reservoirs on high plateau terrains with no significant catchment area, while the lower reservoir will be on seasonal nala with a small catchment area of about 21.85 Sq.km. The **total planned storage capacity of upper reservoir is 16.28 MCM, where in live storage capacity is 15.23 MCM. Similarly, gross storage capacity & live storage capacity of lower reservoir (common for Saidongar 1 and 2) are 26.58 MCM & 20.18 MCM, respectively**. Therefore, One-time requirement has been worked out as 29.03 MCM for both projects together. The requirement of water for initial filling of the lower reservoir and that for the upper reservoir up to the dead storage level will be met by pumping water from the Thokarwadi reservoir. The evaporation losses are proposed to be compensated by pumping required water from the Thokarwadi reservoir.

ix. **Environmental sensitivity**: There are no national parks, wildlife sanctuaries, Biosphere Reserves, Tiger/Elephant Reserves, Wildlife Corridors etc. within 10 km distance from the project site. River/ water body, Thokarwadi reservoir at the distance of 2 km in west direction.

x. Details of Solid waste/ Hazardous waste generation/ Muck and its management will be covered in EIA report.

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

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

Project details:

Name of the Proposal	Saidongar-2 Pumped Storage Project
Location (Including coordinates)	Upper Reservoir: 73°26'50"E; 18°53'60"N Lower Reservoir: 73°25'34"E; 18°54'37"N
Inter- state issue involved	No
Seismic zone	Zone-III

Category details:

Category of the project	A
Provisions	
Capacity / Cultural command area (CCA)	1200 MW
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	Nil

Electricity generation capacity:

Powerhouse Installed Capacity	1200 MW
Generation of Electricity Annually	2628 MU
No. of Units	5 nos. (3X300+2X150)
Additional information (if any)	Nil

ToR Details:

Cost of project	4,450.28 Cr.
Total area of Project	132.59 ha
Height of Dam from River Bed (EL)	Lower Dam – 67 m Upper Dam – 31.10 m
Length of Tunnel/Channel	2425 m
Details of Submergence area	104.56 ha
Types of Waste and quantity of generation during construction/ Operation	Muck from excavation, solid waste from labour colony and construction waste
E-Flows for the Project	Not Applicable, as this is Off-Stream Closed Loop Pumped Storage Project (PSP)
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then c) E-flow with TOR /Recommendation by d) EAC as per CIA&CC study of RiverBasin. If not the E-Flows maintain criteria for sustaining river ecosystem.	No

Muck Management Details:

No. of proposed disposal area/ (type of land- Forest/Pvt. land)	9.0 ha Private Land
Muck Management Plan	Will be Provided in EIA/EMP report
Monitoring mechanism for Muck Disposal	Will be Provided in EIA/EMP report

Land Area Breakup:

Government land/Forest Land	73.33 ha
Submergence area/Reservoir area	104.56 ha
Land required for project components	28.03 ha
Additional information (if any)	Nil

Presence of Environmentally Sensitive areas in the study area

Forest Land/ Protected Area/ Environmental Sensitivity Zone	Yes/No	Details of Certificate / letter/ Remarks
Reserve Forest/Protected Forest Land	--	There is no Protected Area in the vicinity of the proposed project. Bhimashankar WLS is about 15.0 Km from site, is the nearest protected area.
National Park	--- --	
Wildlife Sanctuary	--- --	

Court case details:

Court Case	Nil
Additional information (if any)	Nil

Affidavit/Undertaking details:

Affidavit/Undertaking	Enclosed
Additional information (if any)	Nil

Previous EC compliance and necessary approvals:

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

Miscellaneous

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

Status of other statutory clearances	Forest Clearance - Online application seeking forest diversion for around 73.33 Ha after receipt of ToR Approval. Alongside, other statutory clearances (as applicable) from State as well as Central government will be obtained post completion of Detailed Project Report.
R&R details	Details shall be evaluated during EIA/EMP Studies
Additional detail (If any)	Nil

50.7.3 The EAC during deliberations noted the following:

The EAC deliberated on the information submitted (Form 1, PFR, kml file, etc.) and as presented in the meeting and observed that the proposal is for grant of terms of reference to the project Saidongar-2 Closed Loop Pumped Storage Project (1200 MW) in an area of 132.59 ha at Village Saidongar, Kusur and Dhak, Tehsil Mawal and Karjat, District Pune and Raigarh, Maharashtra by M/s Torrent Power Limited The project/activity is covered under Category A of item 1 (c) 'River Valley projects' of the Schedule to the Environmental Impact Assessment Notification, 2006 and requires appraisal at Central level by the sectoral EAC in the Ministry**.**

The project site is located in Western Ghats ESA, the EAC decided to conduct site visit before considering the proposal for grant environmental clearance to know the ground conditions.

50.7.4 The EAC after detailed deliberation on the information submitted and as presented during the meeting **recommended** for grant of Standard ToR for Saidongar-2 Closed Loop Pumped Storage Project (1200 MW) in an area of 132.59 ha at Village Saidongar, Kusur and Dhak, Tehsil Mawal and Karjat, District Pune and Raigarh, Maharashtra by M/s Torrent Power Limited under the provisions of EIA Notification, 2006, as amended along with the following additional/specific ToR:

[A] Environmental Management and Biodiversity Conservation:

i. Conduct Environmental Cost Benefit Analysis in terms of loss of Forest ecosystem due to diversion of Forest land/ loss of biodiversity and its impacts on ecosystem, water availability, water uses for generation of hydro power in study area 10 km from periphery of Project components. Cumulative Impact of project on carrying capacity and sustainability of Reservoir/ nalahs of catchment area, irrigation facilities due to tapping of water for filling reservoir.
ii. Alternative sites for various components shall be identified in terms of loss of forest area.
iii. Action plan for survival of the rivulets located in the study area.
iv. Impact zone decided prior to base line data generation and accordingly, sampling location shall be finalized. Baseline data as mentioned in Standard 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.

v. 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.

vi. Sampling locations be located to cover villages situated near the reservoir and around boundary of forest area for collection of baseline data and data to be incorporated in EIA/ EMP report.

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

viii. A detailed wildlife conservation plan for Schedule –I species, duly approved by the Chief Wild Life Warden, be submitted.

ix. In case any Wildlife corridor is located within 10 km radius of the project site a detailed study shall be conducted to assess the impact of project on safe movement of wild animals.

x. Source of construction material and its distance from the project site along with detailed transportation plan for construction material.

xi. A detailed reclamation/ restoration plan of quarrying site/sites be incorporated in the EIA/EMP report.

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

xiii. MoU for water uses for the project signed and approved by concerned authority shall be submitted.

xiv. Environmental matrix during construction and operational phase needs to be submitted.

xv. Matrix formulated on the basis of detailed study and field survey of flora and Fauna methodology used shall be mentioned in the EIA report.

xvi. Endemic plant and animal species found in the area concerned shall be provided instead listing entire endemic species found in the State.

xvii. Details of Flora and Fauna reported in submergence area, Nos. of tree along with their density and nomenclature of the tree species required to be felled for reservoir creation and other project component.

xviii. Impact assessment on the fish diversity based on the hydrological alteration at the water drawing sources shall be studied.

xix. Stage-I Forest Clearance shall be obtained.

xx. Explore the possibilities to reduce Forest area for the construction of proposed project, Muck disposal sites should be outside the forest area.

[B] Socio-economic Study

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

xxii. All the tasks including conducting public hearing shall be done as per the provisions of EIA Notification, 2006 and as amended from time to time. Public hearing issues raised and compliance of the same shall be incorporated in the EIA/ EMP report in the relevant chapter.

xxiii. Statement on the commitments (activity-wise) made during public hearing to facilitate the discussion on the CER in compliance of the Ministry's OM F. No. 22-65/2017-IA.III dated 30th September, 2020 shall be submitted.

xxiv. Tentative no. of project affected families shall be identified and accordingly appropriate Rehabilitation & Resettlement plan shall be prepared.

xxv. Details of settlement in 10 km area shall be submitted.

[C] Muck Management/ Disaster Management

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

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

xxviii. Techno-economic viability of the project must be recommended from CEA/ CWC.

[D] Miscellaneous.

xxix. Pre-DPR Chapters viz. Layout Map and Power Potential Studies duly approved by CWC/CEA shall be submitted.

xxx. Undertaking need to submitted on affidavit that regarding no activities has been yet started on the project site and water allocated to this scheme shall not be diverted to other purpose.

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

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

xxxiii. Arial view video of project site shall be recorded and to be submitted.

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

Agenda Item No. 50.8:

Tokarpada Close Loop Pumped Storage Project (1300 MW) in an area of 168.78 ha at Village Tokarpada and Vavar, Tehsil Kaprada, District Valsad, Gujarat by M/s Torrent Power Limited– Terms of References (TOR) – reg.

[Proposal No. IA/GJ/RIV/437160/2023; F. No. J-12011/44/2023-IA.I (R)]

50.8.1: The proposal is for grant of Terms of References (TOR) to Tokarpada Close Loop Pumped Storage Project (1300 MW) in an area of 168.78 ha at Village Tokarpada and Vavar, Tehsil Kaprada, District Valsad, Gujarat by M/s Torrent Power Limited

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

i. The proposal is for ToR to the project for Tokarpada Pumped Storage Project located (1300 MW) at Village Tokarpada & Vavar, Tehsil Kaprada, District Valsad, Gujarat by M/s. Torrent Power Limited.
ii. The project is listed at S.N. **1 (c)** of the Schedule to the Environment Impact Assessment (EIA) Notification under category 'A' and are appraised at Central Level by Expert Appraisal Committee (EAC).
iii. The proposed Tokarpada Pumped Storage Project is located near village Tokarpada and Vavar, in Kaprada Tehsil of Valsad District, Gujarat.
iv. The Tokarpada PSP will be a standalone PSP and will comprise of two newly constructed reservoirs of which lower reservoir will be constructed across a small seasonal stream near village Vavar and Upper Reservoir will be constructed, on a nearby high level plateau, about 320 m higher in elevation w.r.t to lower reservoir, near village Tokarpada of Valsad, Gujarat. The scheme envisages recycling of stored water between upper reservoir and lower reservoir.
v. The project is designed as a pumped storage scheme which will utilize a gross head of 316 m and design discharge of 438 cumec for generation of 1300 MW.
vi. The estimated project cost is Rs. 5620.82 crore. Total capital cost earmarked towards environmental pollution control measures will be worked out during EIA study as well as the Recurring cost (operation and maintenance).
vii. **Land requirement:** The total land required for the construction of various components and related works for Tokarpada PSP is estimated around **168.78** ha, out of which 63.05 ha is non-forest land and **105.73** ha is forest land.
viii. **Water source and availability:** This proposed closed loop Off-Stream project is envisaged between two proposed reservoirs (both reservoirs to be constructed newly). Onetime water requirement of 12.23 MCM will be pumped from nearby Par River to fill up the proposed lower reservoir & also to fill the upper reservoir up to its MDDL. The upper and lower reservoir have negligible /no catchment area and hence the inflow from rainfall is negligible, however, any contribution from the catchment will be released downstream without interruption
ix. Environmental sensitivity: There are no national parks, wildlife sanctuaries, Biosphere Reserves, Tiger/Elephant Reserves, Wildlife Corridors etc. within 10 km distance from the project site. River/ water body, Par River is flowing in southwest direction. Dadra and Nagar Haveli WLS is about 26 Km from site, is the nearest protected area.
x. **Alternative Studies:** As a part of alternative studies, 3 Alternatives have been identified and studied for development of PSP, keeping location of Lower reservoir same for all the options. considering the cost, forest land and extent of R & R activities required in different alternative; Alternative-3 layout is finalized
xi. Details of Solid waste/ Hazardous waste generation/ Muck and its management will be covered in EIA report.
xii. Status of Litigation Pending against the proposal, if any. **No**
xiii. The salient features of the project are as under: -

EAC Meeting Details:

EAC meeting/s	50th Meeting
Date of Meeting/s	11.08.2023
Date of earlier EAC meetings	Nil

Project details:

Name of the Proposal	Tokarpada Pumped Storage Project
Location (Including coordinates)	Upper Reservoir: 73°23'10.60"E; 20°20'35.95"N Lower Reservoir: 73°22'19.94"E; 20°21'46.18"N
Inter- state issue involved	Nil
Seismic zone	Zone-III

Category details:

Category of the project	A
Provisions	
Capacity / Cultural command area (CCA)	1300 MW
Attracts the General Conditions (Yes/No)	Yes
Additional information (if any)	Nil

Electricity generation capacity:

Powerhouse Installed Capacity	1300 MW
Generation of Electricity Annually	2847 MU
No. of Units	8 nos. (5 X 200 MW + 3 X 100 MW)
Additional information (if any)	Nil

ToR/EC Details:

Cost of project	5620.82 Cr.
Total area of Project	168.78 ha
Height of Dam from River Bed (EL)	Lower Dam – 55.42 m Upper Dam – 64.42 m
Length of Tunnel/Channel	2737 m
Details of Submergence area	104.48 ha
Types of Waste and quantity of generation during construction/ Operation	Muck from excavation, solid waste from labour colony and construction waste

E-Flows for the Project	Not Applicable, as this is Off-Stream Closed Loop Pumped Storage Project (PSP)
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then a) E-flow with TOR /Recommendation by b) EAC as per CIA&CC study of River Basin. If not the E-Flows maintain criteria for sustaining river ecosystem.	No

Muck Management Details:

No. of proposed disposal area/ (type of land- Forest/Pvt. land)	9.96 ha Private Land
Muck Management Plan	Will be Provided in EIA/EMP report
Monitoring mechanism for Muck Disposal	Will be Provided in EIA/EMP report

Land Area Breakup:

Government land/Forest Land	105.73 ha
Submergence area/Reservoir area	104.48 ha
Land required for project components	64.30 ha
Additional information (if any)	Nil

Presence of Environmentally Sensitive areas in the study area

Forest Land/ Protected Area/ Environmental Sensitivity Zone	**Yes/No**	**Detailsof Certificate / letter/ Remarks**
Reserve Forest/Protected Forest Land	--	There is no Protected Area in the vicinity of the proposed project Dadra and Nagar Haveli WLS is about 26.0 Km from site, is the nearest protected area
National Park	--- --	
Wildlife Sanctuary	--- --	

Court case details: nil

Affidavit/Undertaking details:

Affidavit/Undertaking	Enclosed
Additional information (if any)	Nil

Previous EC compliance and necessary approvals:

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

Miscellaneous

Particulars	**Details**
Details of consultant	M/s. R S Envirolink Technologies Pvt. Ltd. (RSET) (*NABET* Accredited *Consultant Organization*) Certificate No: NABET/EIA/2225/RA0274 Validity : August 15, 2025 Contact Person : Mr. Ravinder Bhatia E-mail: ravi@rstechnologies.co.in Land Line : (0124) 4295383 Cellular : (+91) 9810136853
Project Benefits	Proposed PSP will also benefit the local community by creating employment opportunities and will result in upliftment of livelihood and socio-economic conditions.
Status of other statutory clearances	Forest Clearance - Online application seeking forest diversion for around 105.73 Ha after receipt of ToR Approval. Alongside, other statutory clearances (as applicable) from State as well as Central government will be obtained post completion of Detailed Project Report.
R&R details	Details shall be evaluated during EIA/EMP Studies

50.8.3 The EAC during deliberations noted the following:

The EAC deliberated on the information submitted (Form 1, PFR, kml file, etc.) and as presented in the meeting and observed that the proposal is for grant of terms of reference to the project Tokarpada Close Loop Pumped Storage Project (1300 MW) in an area of 168.78 ha at Village Tokarpada and Vavar, Tehsil Kaprada, District Valsad, Gujarat by M/s Torrent Power Limited.

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

50.8.4 The EAC after detailed deliberation on the information submitted and as presented during the meeting **recommended** for grant of Standard ToR to Tokarpada Close Loop Pumped Storage Project (1300 MW) in an area of 168.78 ha at Village Tokarpada and Vavar, Tehsil Kaprada, District Valsad, Gujarat by M/s Torrent Power Limited under the provisions of EIA Notification, 2006, as amended along with the following additional/specific ToR:

[A] Environmental Management and Biodiversity Conservation:

i. Conduct Environmental Cost Benefit Analysis in terms of loss of Forest ecosystem due to diversion of Forest land/ loss of biodiversity and its impacts on ecosystem, water availability, water uses for generation of hydro power in study area 10 km from periphery of Project components.
ii. Cumulative Impact of project on carrying capacity and sustainability of Reservoir/ nalahs of catchment area, irrigation facilities due to tapping of water for filling reservoir.
iii. Action plan for survival of the rivulets located in the study area i.e. 10 km. radius of the project periphery be prepared and submitted along with EIA/EMP report. No obstruction shall be allowed in natural flow of the streams/nalah/rivulet.
iv. Alternative sites for various components shall be identified in terms of loss of forest area.
v. Impact zone decided prior to base line data generation and accordingly, sampling location shall be finalized. Baseline data as mentioned in Standard 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.
vi. 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.
vii. Sampling locations be located to cover villages situated near the reservoir and around boundary of forest area for collection of baseline data and data to be incorporated in EIA/ EMP report.
viii. Identify the sand mining/ quarrying sites in submergence area and downstream of reservoir.
ix. Scope of watershed development in the 10 km radius of the project shall be studied in consultation with expert Govt. institutions/ Indian Council of Agriculture Research (ICAR)and accordingly a detailed Water Shed Development Plan shall be prepared and incorporated in EIA/ EMP report.
x. Source of construction material and its distance from the project site along with detailed transportation plan for construction material.
xi. A detailed reclamation/ restoration plan of quarrying site/sites be incorporated in the EIA/EMP report.
xii. Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP.
xiii. MoU for water uses for the project signed and approved by concerned authority shall be submitted.
xiv. Environmental matrix during construction and operational phase needs to be submitted.
xv. Matrix formulated on the basis of detailed study and field survey of flora and Fauna methodology used shall be mentioned in the EIA report.
xvi. Endemic plant and animal species found in the area concerned shall be provided instead listing entire endemic species found in the State.

xvii. Details of Flora and Fauna reported in submergence area, Nos. of tree along with their density and nomenclature of the tree species required to be felled for reservoir creation and other project component.

xviii. Impact assessment on the fish diversity based on the hydrological alteration at the water drawing sources shall be studied.

xix. Stage-I Forest Clearance shall be obtained.

xx. Explore the possibilities to reduce Forest area for the construction of proposed project, Muck disposal sites should be outside the forest area.

xxi. Revised the project layout by shifting the muck disposal site to non-forest area.

xxii. A detailed wildlife conservation plan for Schedule –I species, duly approved by the Chief Wild Life Warden, be submitted.

xxiii. In case any Wildlife corridor is located within 10 km radius of the project site a detailed study shall be conducted to assess the impact of project on safe movement of wild animals.

[B] Socio-economic Study

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

xxv. All the tasks including conducting public hearing shall be done as per the provisions of EIA Notification, 2006 and as amended from time to time. Public hearing issues raised and compliance of the same shall be incorporated in the EIA/ EMP report in the relevant chapter.

xxvi. Statement on the commitments (activity-wise) made during public hearing to facilitate the discussion on the CER in compliance of the Ministry's OM F. No. 22-65/2017-IA.III dated 30th September, 2020 shall be submitted.

xxvii. Tentative no. of project affected families shall be identified and accordingly appropriate Rehabilitation & Resettlement plan shall be prepared.

xxviii. Details of settlement in 10 km area shall be submitted.

xxix. Details of Tribal population and resettlement plan if any.

[C] Muck Management/ Disaster Management

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

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

xxxii. Techno-economic viability of the project must be recommended from CEA/ CWC.

[D] Miscellaneous

xxxiii. Pre-DPR Chapters viz. Layout Map and Power Potential Studies duly approved by CWC/CEA shall be submitted.

xxxiv. Undertaking need to submitted on affidavit that regarding no activities has been yet started on the project site and water allocated to this scheme shall not be diverted to other purpose.

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

xxxvi. The photograph should bear the date, time, latitude & longitude of the monitoring station/ sampling location. In addition to this PP should submit the original test reports and certificates of the labs which will analyse the samples.
xxxvii. Arial view video of project site shall be recorded and to be submitted.
xxxviii. Detailed plan to restore wider roads and convert them into narrow upto 10m after construction of the project.
xxxix. Commitment for lifting of water during rainy season.

Agenda Item No. 50.9:

Pindval Closed Loop Pumped Storage Project (1000 MW) in an area 165.88 ha at Village Pindval & Moti Kosbadi, Taluk Dharampur, District Valsad, Gujarat by M/s Torrent Power Limited – Reconsideration for Terms of Reference (TOR) - reg.

[Proposal No. IA/GJ/RIV/429647/2023; F. No. J-12011/26/2023-IA.I (R)]

50.9.1: The proposal is for grant of Terms of References (TOR) to Pindval Closed Loop Pumped Storage Project (1000 MW) in an area 165.88 ha at Village Pindval & Moti Kosbadi, Taluk Dharampur, District Valsad, Gujarat by M/s Torrent Power Limited

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

i. The proposal is for ToR to the project for Pindval Pumped Storage Project located at Village Pindval & Moti Kosbadi, Taluk Dharampur, District Valsad, Gujarat by M/s Torrent Power Limited.
ii. The project is listed at S. N. **1 (c)** of the Schedule to the Environment Impact Assessment (EIA) Notification under category 'A' and are appraised at Central Level by Expert Appraisal Committee (EAC).
iii. Pindval PSP is a standalone pumped storage project proposed by M/s Torrent Power Limited, located in the Dharampur Taluka of Valsad district of Gujarat.
iv. Project comprises of an underground powerhouse with an installed capacity of 1000 MW having 3 units of 250 MW & 2 units of 125 MW each.
v. **Background:** The project was earlier considered by EAC in its 47th meeting meeting held on 02/06/2023. EAC deferred the project as the project proposed to utilise the water from catchment of lower reservoir for initial filling as well as for recuperation of losses. EAC made the following observations:
   a) The EAC noted that alternative site analysis was not done properly.
   b) The committee suggested to exercise to reduce the forest area involved in the project.
   c) The committee suggested to first identify the suitable site and revise project layout design accordingly keeping in view the aspects about sustainability of natural streams/rivulets/Nallah.
   d) The committee also observed that the project site is also blocking the path of one tributary. The proposal submitted in present form is not allowed.
vi. Consultant has carried out a fresh Alternative Site Analysis, keeping in view the

observations made by EAC and submitted the report.

vii. **Not blocking of Tributary Flow:** The proposed alternative is different from earlier alternative, which was deferred by EAC on the grounds that the project is blocking the path of the tributary. The present alternative is off-stream closed loop project, where lower reservoir is proposed across seasonal nalla, however, the project is designed to source water from Nar river for one time requirement and recuperation of losses. Lower level sluice is proposed to release water as well sediment contribution of the catchment of the lower reservoir**.**

viii. **Land requirement**: The total land required for the construction of various components and related works for Pindval PSP is estimated around 152.05 ha, out of which 21.94 ha is non-forest land and 130.11 ha is forest land.

ix. **Optimization of Land requirement**: Total land requirement has been reduced from earlier proposed 165.88 ha to 152.05 ha. Forest land could not be reduced further as the forest land is strictly kept for essential components – upper and lower reservoir, water conductor system and approach road.
Forest land requirement is only 130 ha for 1000 MW PSP i.e. about 0.13 ha/MW. Efforts will be made to further optimize the forest land requirement during detailed survey and investigation. Private land requirement has been reduced to 21.94 ha from earlier estimation of 35.94 ha; no major R&R issues envisaged as no displacement involved

x. The estimated **project cost is Rs 4206.62 crore**. Total capital cost earmarked towards environmental pollution control measures will be worked out during EIA study as well as the Recurring cost (operation and maintenance).

xi. **Environmental Sensitivity:** There are no national parks, wildlife sanctuaries, Biosphere Reserves, Tiger/Elephant Reserves, Wildlife Corridors etc. within 10 km distance from the project site. River/ water body, Nar River is flowing in southwest direction.

xii. **Alternative Studies:** As a part of alternative studies, 4 Alternatives (earlier only 2 Alternatives were studied) have been identified and studied for development of PSP. **Alternative 1 is considered as the best alternative** and therefore selected.

xiii. Details of Solid waste/ Hazardous waste generation/ Muck and its management will be covered in EIA report.

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

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

EAC Meeting Details:

EAC meeting/s	50th Meeting
Date of Meeting/s	11.08.2023
Date of earlier EAC meetings	Nil

Project details:

Name of the Proposal	Pindval Pumped Storage Project
Location (Including coordinates)	The proposed project involves creation of upper reservoir are at longitude 73°20'23"E and latitude is 20°28'37"N and that of lower

	reservoir are at longitude 73°22'00"E and latitude 20°28'18"N
Inter- state issue involved	Nil
Seismic zone	Zone-III

Category details:

Category of the project	A
Provisions	
Capacity / Cultural command area (CCA)	1000 MW
Attracts the General Conditions (Yes/No)	Yes
Additional information (if any)	Nil

Electricity generation capacity:

Powerhouse Installed Capacity	1000 MW
Generation of Electricity Annually	2190 MU
No. of Units	5 nos. (3 X 250 MW + 2 X 125 MW)
Additional information (if any)	Nil

ToR/EC Details:

Cost of project	4206.62 Cr.
Total area of Project	165.88 ha
Height of Dam from River Bed (EL)	Lower Dam – 63.11 m Upper Dam – 64.65 m
Length of Tunnel/Channel	761.1 m
Details of Submergence area	119.18 ha
Types of Waste and quantity of generation during construction/ Operation	Muck from excavation, solid waste from labour colony and construction waste
E-Flows for the Project	Not Applicable, as this is Off-Stream Closed Loop Pumped Storage Project (PSP)
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then E-flow with TOR /Recommendation by EAC as per CIA&CC study of River Basin. If not the E-Flows maintain criteria for sustaining river ecosystem.	No

Muck Management Details:

No. of proposed disposal area/ (type of land- Forest/Pvt. land)	0
Muck Management Plan	Will be Provided in EIA/EMP report
Monitoring mechanism for Muck Disposal	Will be Provided in EIA/EMP report

Land Area Breakup:

Government land/Forest Land	130.11 ha
Submergence area/Reservoir area	119.18 ha
Land required for project components	32.87 ha
Additional information (if any)	Nil

Presence of Environmentally Sensitive areas in the study area

Forest Land/ Protected Area/ Environmental Sensitivity Zone		**Details of Certificate/ letter/ Remarks**
Reserve Forest/Protected Forest Land	--	There is no Protected Area in the vicinity of the proposed project Vasda NP is about 26.0 Km from site, is the nearest protected area
National Park	--	
Wildlife Sanctuary	--	

Court case details:

Court Case	Nil
Additional information (if any)	Nil

Affidavit/Undertaking details:

Affidavit/Undertaking	Enclosed
Additional information (if any)	Nil

Previous EC compliance and necessary approvals:

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

Miscellaneous

Particulars	Details

Details of consultant	M/s. R S Envirolink Technologies Pvt. Ltd. (RSET) (NABET Accredited Consultant Organization) Certificate No : NABET/EIA/2225/RA0274
Project Benefits	Pumped storage hydropower is a modified use of conventional hydropower technology to store and manage energy or electricity by moving water between an upper and lower reservoir. Currently, pumped storage round-trip or cycle energy efficiencies exceed 80%, comparing favorably to other energy storage technologies and thermal technologies. This effectively shifts, stores, and reuses energy generated until there is corresponding demand for system reserves and variable energy integration. This shifting can also occur to avoid transmission congestion periods, to help more efficiently manage transmission grid, and to avoid potential interruptions to energy supply. This is important because many of the renewable energy resources being developed (e.g., wind and solar) are generated at times of low demand and off-peak energy demand periods are still being met with fossil fuel resources, often at inefficient performance levels that increase the release of greenhouse gas emissions. Further, pumped storage projects are critical to the national economy and overall energy reliability because it's: Least expensive source of electricity, not requiring fossil fuel for generation An emission-free renewable source Balancing grid for demand driven variations Balancing generation driven variations Voltage support and grid stability Apart from this, proposed PSP will also benefit the local community by creating employment opportunities and will result in upliftment of livelihood and socio-economic conditions.
Status of other statutory clearances	Forest Clearance - Online application seeking forest diversion for around 130.11 Ha after receipt of ToR Approval. Alongside, other statutory clearances (as applicable) from State as well as Central government will be obtained post completion of Detailed Project Report.

R&R details	Details shall be evaluated during EIA/EMP Studies
Additional detail (If any)	Nil

50.9.3 The EAC during deliberations noted the following:

The EAC deliberated on the information submitted (Form 1, PFR, kml file, etc.) and as presented in the meeting and observed that the proposal is for grant of terms of reference to the project Pindval Closed Loop Pumped Storage Project (1000 MW) in an area 165.88 ha at Village Pindval & Moti Kosbadi, Taluk Dharampur, District Valsad, Gujarat by M/s Torrent Power Limited**.**

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

50.9.4 The EAC after detailed deliberation on the information submitted and as presented during the meeting **recommended** for grant of Standard ToR to Pindval Closed Loop Pumped Storage Project (1000 MW) in an area 165.88 ha at Village Pindval & Moti Kosbadi, Taluk Dharampur, District Valsad, Gujarat by M/s Torrent Power Limited under the provisions of EIA Notification, 2006, as amended along with the following additional/specific

[A] Environmental Management and Biodiversity Conservation:

i. Cumulative Impact of project on carrying capacity and sustainability of Reservoir/ nalahs of catchment area, irrigation facilities due to tapping of water for filling reservoir.
ii. Action plan for survival of rivulets in the study area
iii. Prepare Environmental Cost Benefit Analysis in terms of loss of Forest ecosystem due to diversion of Forest land/ loss of biodiversity and its impacts on ecosystem, water availability, water uses for generation of hydro power in study area 10 km from periphery of Project components.
iv. Alternative sites for various components shall be identified in terms of loss of forest area.
v. Impact zone decided prior to base line data generation and accordingly, sampling location shall be finalized. Baseline data as mentioned in Standard 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.
vi. 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.
vii. Sampling locations be located to cover villages situated near the reservoir and around boundary of forest area for collection of baseline data and data to be incorporated in EIA/ EMP report.
viii. Identify the sand mining/quarrying sites in submergence area and downstream of reservoir.

ix. Scope of watershed development in the 10 km radius of the project shall be studied in consultation with expert Govt. institutions/ Indian Council of Agriculture Research (ICAR)and accordingly a detailed Water Shed Development Plan shall be prepared and incorporated in EIA/ EMP report.
x. Source of construction material and its distance from the project site along with detailed transportation plan for construction material.
xi. A detailed reclamation/ restoration plan of quarrying site/sites be incorporated in the EIA/EMP report.
xii. Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP.
xiii. Scope of watershed development in the 10 km radius of the project shall be studied in consultation with Govt. institutions/ Indian Council of Agriculture Research (ICAR)and accordingly a detailed Water Shed Development Plan shall be prepared and incorporated in EIA/ EMP report.
xiv. MoU for water uses for the project signed and approved by concerned authority shall be submitted.
xv. Environmental matrix during construction and operational phase needs to be submitted.
xvi. Matrix formulated on the basis of detailed study and field survey of flora and Fauna methodology used shall be mentioned in the EIA report.
xvii. Endemic plant and animal species found in the area concerned shall be provided instead listing entire endemic species found in the State.
xviii. Details of Flora and Fauna reported in submergence area, Nos. of tree along with their density and nomenclature of the tree species required to be felled for reservoir creation and other project component.
xix. Impact assessment on the fish diversity based on the hydrological alteration at the water drawing sources shall be studied.
xx. Stage-I Forest Clearance shall be obtained.
xxi. Explore the possibilities to reduce Forest area for the construction of proposed project, Muck disposal sites and approach roads should be outside the forest area.

[B] Socio-economic Study

xxii. Declaration by the project proponent by way of affidavit that "No" Inter-state issue/ policy issue is involved with any State in the project.
xxiii. All the tasks including conducting public hearing shall be done as per the provisions of EIA Notification, 2006 and as amended from time to time. Public hearing issues raised and compliance of the same shall be incorporated in the EIA/ EMP report in the relevant chapter.
xxiv. Statement on the commitments (activity-wise) made during public hearing to facilitate the discussion on the CER in compliance of the Ministry's OM F. No. 22-65/2017-IA.III dated 30th September, 2020 shall be submitted.
xxv. Tentative no. of project affected families shall be identified and accordingly appropriate Rehabilitation & Resettlement plan shall be prepared.
xxvi. Details of settlement in 10 km area shall be submitted.

[C] Muck Management/ Disaster Management

xxvii. Details of quantity of muck generation component wise and disposal site along with transportation plan and its monitoring to be provided.
xxviii. Details of Muck Management plan prepared along with estimated cost incorporated in EIA/ EMP report.
xxix. Techno-economic viability of the project must be recommended from CEA/ CWC.

[D] Miscellaneous.

xxx. Pre-DPR Chapters viz. Layout Map and Power Potential Studies duly approved by CWC/CEA shall be submitted.
xxxi. Undertaking need to submitted on affidavit that regarding no activities has been yet started on the project site and water allocated to this scheme shall not be diverted to other purpose.
xxxii. Both capital and recurring expenditure under EMP shall be submitted.
xxxiii. The photograph should bear the date, time, latitude & longitude of the monitoring station/ sampling location. In addition to this PP should submit the original test reports and certificates of the labs which will analyse the samples.
xxxiv. Arial view video of project site shall be recorded and to be submitted.
xxxv. Detailed plan to restore wider roads and convert them into narrow upto 10m after construction of the project.

Agenda Item No. 50.10:

Raiwada Close Loop Pumped Storage Project (850 MW) in an area 337.10 ha of at Village Mariki and Sammeda, Tehsil Devarapalle and Vepada, District Anakapalli and Vizianagaram, Andhra Pradesh by M/s Adani Green Energy Limited– Terms of References (TOR) – reg.
[Proposal No. IA/AP/RIV/438787/2023; F. No. J-12011/45/2023-IA.I (R)]

The Project Proponent vide email dated 10.08.2023 has informed that due to unavoidable circumstances and predetermined commitments they could not attend the virtual meeting and requested for deferment.

The EAC decided to **defer** the proposal.

The meeting ended with vote of thanks to the Chair.
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ANNEXURE

ATTENDANCE LIST

S. No	Name& Address	Role	Attendance
1.	Dr. A. K. Malhotra	**Chairman**	P
2.	Dr. Uday Kumar R.Y.	Member	P
3.	Dr. N. Lakshman	Member	P
4.	Dr. Mukesh Sharma	Member	P
5.	Shri Sharvan Kumar	Member (Representative of CEA)	P
6.	Shri Rishi Srivastava	Representative of CWC	P
7.	Shri Yogendra Pal Singh	Member Secretary	P

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APPROVAL OF THE CHAIRMAN

From: ajitkumarmalhotra463@gmail.com
To: "Yogendra Pal Singh" <yogendra78@nic.in>
Sent: Friday, August 25, 2023 2:13:29 PM
Subject: Re: Draft minutes of the 50th EAC (RV&HEP) meeting held on 11.08.2023-reg

Approved.

Dr.A.K.Malhotra