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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 3RD MEETING OF THE EXPERT APPRAISAL COMMITTEE FOR RIVER VALLEY AND HYDROELECTRIC PROJECTS meeting River Valley and Hydroelectric Projects held from 10/11/2023 to 10/11/2023

Date: 24/11/2023

MoM ID: EC/MOM/EAC/304791/11/2023

Agenda ID: EC/AGENDA/EAC/304791/11/2023

Meeting Venue: N/A

Meeting Mode: Virtual

Date & Time:

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

1. Opening remarks

The 3rd meeting (online mode) 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 10th November 2023 through virtual (online) mode, under the Chairmanship of Prof. G. J. Chakrapani.

2. Confirmation of the minutes of previous meeting

Confirmation of Minutes of 2nd EAC meeting held on 26th October 2023.

3. Details of proposals considered by the committee

Day 1 -10/11/2023

3.1. Agenda Item No 1:

3.1.1. Details of the proposal

Karauli Pumped Storage Project by **TORRENT POWER LIMITED** located at **KARAULI,RAJASTHAN**			
Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/RJ/RIV/450772/2023	J-12011/55/2023-IA.I (R)	01/11/2023	River Valley/Irrigation projects (1(c))

3.1.2. Project Salient Features

3.4.1: The proposal is for grant of terms of references (TOR) to the project for Karauli Closed Loop Pumped Storage Project of capacity 1400 MW in an area of 586.01 Ha located at Tehsil Sarmathura, District Dhaulpur (Rajasthan) by M/s Torrent Power Limited.

3.4.2: 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. Proposed closed loop off-stream Karauli Pumped Storage Project comprises an underground powerhouse with an installed capacity of 1400 MW having 6 units of 200 MW & 2 units of 100 MW, envisages utilization of available head of upper and lower reservoir at an elevation of El.343.00 masl (at FRL) and El. 223.00 masl (at FRL) respectively. For the proposed project water will be lifted from Parbati River in Dhaulpur district for initial filling.
2. Daily six-hour generation is considered for this project. This scheme is a pure pumped storage project which implies that power will be generated by recirculating water between lower and upper reservoir which would use same quantity of water for generation and pumping.
3. The water losses due to evaporation, seepage etc. would be met from the nearby water sources. Underground powerhouse is envisaged in between two reservoirs. Both the reservoirs are interconnected through nine individual water conductor systems and the generator-motor and pump-turbines installed at the powerhouse in between the reservoirs.
4. The proposed Karauli PSP (6 x 200 MW + 2 x 100 MW) envisages following major civil structures:

    a) **Upper Dam:** Concrete faced rockfill dam of length 5227 m with maximum height of 39.0 m with the ungated stepped Spillway.
    b) **Lower Dam:** Concrete faced rockfill dam of length 1450.90 m with a height of 41 m with the ungated stepped Spillway.
    c) **Power Intake:** Seven nos. of diffuser type Intake structure
    d) **Pressure Tunnel / Shaft:** Seven nos. of steel lined main pressure tunnel/ shaft with diameter 6.5 m and length 271 m. Only one of these pressure shafts bifurcates into two-unit pressure tunnels of diameter 4.6 m each and of 32.26 m length.
    e) **Underground Powerhouse:** The underground powerhouse of size 246.00 (L) X 25.00 (W) X 53.00 (H) to accommodate Six nos. of 200 MW and two nos. of 100 MW reversible pump-turbine units.
    f) **Transformer Cavern:** The underground transformer hall of size 235.00 m (L) x 17.75 m (W) x 27 m (H), to accommodate thirty (30 for units + 2 for spares) nos. single phase transformers.
    g) **Tail Race Tunnel:** Seven nos. of 8.50 m diameter circular shaped concrete lined tail race tunnel with a length of 149.70 m each.
    h) **Pump Intake:** Structure consisting of four nos. of lateral Intakes.

1. **Land Requirement:** The total land required for the construction of various components and related works for Karauli PSP is estimated to be **around 586.01 ha, out of which 255.15 ha is non-forest land and 330.86 ha is forest** land.
2. **Environmental sensitive Area:**. Proposed project is located around **4.5 km away from boundary of National Chambal Sanctuar**y. Thus, Wildlife Protection Act is applicable for this project and clearance / NOC to be obtainedfor thi s project from National Board of Wild Life (NBWL).
3. **Project Cost:** The estimated project cost is Rs. 7500.20 Crore including IDC. As a preliminary estimate, a construction period of 60 months from the date of award of civil works package has been estimated for this project.
4. **Salient Features are as under:**

Project details:

Name of the Proposal	Karauli Pumped Storage Project
Location	Upper Reservoir: Longitude:

(Including coordinates)	77°17'48.95"E Latitude: 26°24'17.60"N Lower Reservoir: Longitude: 77°18'44.78"E Latitude: 26°24'4.21"N
Inter- stateissue involved	-
Seismic zone	Zone-III

Category details:

Category of the project	A
Provisions	
Capacity / Cultural commandarea (CCA)	1400 MW
Attracts theGeneral Conditions (Yes/No)	Yes
Additional information (if any)	Nil

Electricity generation capacity:

Powerhouse Installed Capacity	1800 MW
Generation of Electricity Annually	3066 GWh
No. of Units	8 nos. (6 X 200 MW + 2 X 100 MW)
Additional information (if any)	Nil

ToR Details:

Cost of project	7500.20 Cr.
Total area of Project	586.01 ha
Height of Dam from River Bed (EL)	Lower Dam – 43.0 m Upper Dam – 39.0 m
Length of Tunnel/Channel	696.40 m
Details of Submergence area	534.24 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)
Did earlier Projects studythe Cumulative Impact assessment& Carrying Capacity (CIA&CC) for the River on which the project is located? If yes, then a)E-flow with TOR /Recommendation by b) EAC as per CIA&CC studyof River Basin.	No

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)	10.50 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 Break up:

Private Land	255.15 ha
Government land/Forest Land	330.86 ha
Submergence area/Reservoir area	534.24 ha
Land required for project components	51.77 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	--	Proposed project is located around 4.5 km away from Sanctuary. Thus, Wildlife Protection Act is applicable for this project and cl from National Boardof Wild Life (NBWL).
National Park	--- --	
Wildlife Sanctuary	--- --	

Court case details: nill

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

3.1.3. Deliberations by the committee in previous meetings

N/A

3.1.4. Deliberations by the EAC in current meetings

3.4.3: 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 Karauli Closed Loop Pumped Storage Project of capacity 1400 MW in an area of 586.01 Ha located at Tehsil Sarmathura, District Dhaulpur (Rajasthan) by M/s Torrent Power Limited.

The project/activity is covered under Category A of item 1 (c) 'River Valley & Hydroelectric 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 EAC was noted that requirement of forest land area is 330.86 ha which is high out of total land 586.01 ha and the project proponent has not carried out alternate site analysis. EAC members opined that project proponent has not justify the location of the project site as per environmental sustainability and economic viability in the meeting. The EAC after detailed deliberations deferred the proposal for want of following additional information: -

1. Justify the project location with respect to alternative site assessment studies with comparative chart in context of environmental degradation due to involvement of huge area of Forest land.
2. Project design/ plant capacity may be revaluated in order to reduce the forest area involved in creating the upper and lower reservoir.
3. Data on water availability in **Parbati River** to be submitted duly certified by the concerned Govt. department. MoU for water uses for the project signed and approved by concerned authority be submitted.
4. Details of tentative nos of trees felled during construction of the project.
5. Report on alternate site analysis to be submitted.
6. Check the land record and provide details of category of Forest land.
7. To obtain information on any critical mineral zone in the proposed site.

The EAC therefore **deferred** the proposal.

3.1.5. Recommendation of EAC

Deferred for ADS

3.2. Agenda Item No 2:

3.2.1. Details of the proposal

Sashnai Pumped Storage Project (1760 MW) by **TORRENT POWER LIMITED** located at **SONBHADRA,UTTAR PRADESH**			
Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/UP/RIV/449359/2023	J-12011/53/2023-IA.I (R)	30/10/2023	River Valley/Irrigation projects (1(c))

3.2.2. Project Salient Features

3.2.1: The proposal is for grant of terms of references (ToR) to the project for Closed Loop off stream Sashnai Pumped Storage Project of capacity 1760 MW in an area of 294.67 ha located at Tehsil Robertsganj, District Sonbhadra (Uttar Pradesh) by M/s Torrent Power Limited.

3.2.2: 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:

1. The proposed Sashnai PSP comprises an underground powerhouse with an installed capacity of 1760 MW having 7 units of 220 MW & 2 units of 110 MW, envisages utilization of available head of upper and balancing reservoir/lower reservoir at an elevation of El.581.00 masl (at FRL) and El. 288.00 masl (at FRL) respectively.
2. The Palhari village is at around 0.8 km from the upper reservoir and the village Sashnai is ≈1.9 km from the lower reservoir of the project. Daily six-hour generation is considered for this project.
3. This scheme is a pure pumped storage project which implies that power will be generated by recirculating water between lower and upper reservoir which would use same quantity of water for generation and pumping.
4. The water losses due to evaporation, seepage etc. would be compensated by pumping water from nearby River Sone periodically.
5. Underground powerhouse is envisaged in between upper reservoir and balancing reservoir. These upper and balancing reservoirs are interconnected through four individual water conductor systems and the generator-motor and pump-turbines installed at the powerhouse in between.
6. The balancing reservoir and lower reservoir are interconnected through Tailrace Channel.
7. The proposed Sashnai PSP (7 x 220 MW + 2 x 110 MW) envisages following major civil structures:

   a) **Upper Dam:** Concrete faced rockfill dam of length 3460 m with maximum height of 51 m (above deepest bed level) with the uncontrolled Spillway
   b) **Balancing Reservoir Dam:** Concrete faced rockfill dam of length 364 m with maximum height of 63 m (above deepest riverbed level) with the uncontrolled Spillway
   c) **Lower Dam:** Concrete faced rockfill dam of length 1893 m with maximum height of 52 m (above the deepest bed level). with the uncontrolled Spillway.
   d) **Power Intake:** Four nos. of diffuser type Intake structure
   e) **Head Race Tunnel:** Four nos. of 8.0 m diameter circular shaped concrete lined head race tunnel with a length of 200.4 m.
   f) **Pressure Tunnel / Shaft:** Four nos. of steel lined main pressure tunnel/ shaft with diameter 6.1 m of lengths 411.4 m. Each one of these pressure shafts bifurcates into two-unit pressure tunnels of diameter 4.3 m each and of 68.3 m length. One of this already bifurcated pressure tunnel further bifurcate into unit pressure tunnels for small unit with a diameter of 3.1 m
   g) **Underground Powerhouse:** The underground powerhouse of size 236 m (L) x 25.00 m (W) x 44 m (H), to accommodate Seven nos. of 220 MW and two nos. of 110 MW reversible pump-turbine units.
   h) **Transformer Cavern:** The underground transformer hall of size 235.00 m (L) x 17.75 m (W) x 26 m (H), to accommodate thirty (27 for units + 3 for spares) nos. single phase transformers. Transformer cavern also provide access to draft tube gates.
   i) **Tail Race Tunnel:** Two nos. of unit TRT of 4.7 m and Seven number unit pressure TRT of 6.7 diameter circular shaped concrete lined tail race tunnel with a length of 124.55 m each. Unit TRT combined to four nos. of Main TRT of 8.0 m diameter circular shaped concrete lined tail race tunnel with a length of 232.45 m each.
   j) **Pump Intake:** Structure consisting of four diffuser type Intakes.
   k) **Tailrace Channel:** Open channel of channel bottom width of 50m excavated for a length of 2160 m to link the Balancing Reservoir with the Lower reservoir.

1. The total land required for the construction of various components and related works for Sashnai PSP is estimated to be around 294.67 ha, out of which 95.35 ha is non-forest land and 199.32 ha is forest land.

1. Proposed project is located around 4.3 km away from boundary of Kaimur WLS boundary (Uttar Pradesh). ESZ of Kaimur WLS was notified on 20/03/2017 with an extent of 1 Km all around the boundary. Project being

falling outside the ESZ, would not need Wildlife Clearance.

1. The estimated project cost is Rs. 8192.70 Crore including IDC. As a preliminary estimate, a construction period of 60 months from the date of award of civil works package has been estimated for this project.

1. **Salient features of the project:**

Project details:

Name of the Proposal	**Sashnai Pumped Storage Project**
Location (Including coordinates)	**Upper Reservoir:** • Longitude: 83°10'44"E & Latitude: 24°31'20"N **Balancing Reservoir:** • Longitude: 83°11'6"E & Latitude: 24°30'45"N **Lower Reservoir:** • Longitude: 83°12'0"E & Latitude: 24°29'56"N
Inter- stateissue involved	-
Seismic zone	Zone-III

Category details:

Category of the project	A
Provisions	
Capacity / Cultural commandarea (CCA)	1760 MW
Attracts theGeneral Conditions (Yes/No)	No
Additional information (if any)	Nil

Electricity generationcapacity:

Powerhouse Installed Capacity	1760 MW
Generation of Electricity Annually	3854.40 GWh
No. of Units	11 nos. (7 X 220 MW + 2 X 110 MW)
Additional information (if any)	Nil

ToR Details:

Cost of project	8192.70 Cr.
Total area of Project	294.67 ha
Height of Dam from River Bed (EL)	Lower Dam – 52 m Upper Dam – 51 m Balancing Dam – 63 m
Length of Tunnel/Channel	9148 m
Details of Submergence area	220.59 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)
Did earlier Projects study the Cumulative Impact assessment & Carrying Capacity (CIA&CC) for the River on which the proposed project is 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)	15.86 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:

Private Land	95.35 ha
Government land/Forest Land	199.32 ha
Submergence area/Reservoir area	220.59 ha
Land required forproject components	74.08 ha
Additional information (if any)	Nil

Presence of Environmentally Sensitive areas in the study area

Court case details:

Forest Land/ Protected Area/ Environmental Sensitivity Zone	Yes/No	Details of Certificate / letter/ Remarks
Reserve Forest/Protected Forest Land	--	The proposed project is located approximately 4.3 km from the boundary of Kaimur WLS boundary (Uttar Pradesh). ESZ of Kaimur WLS was notified on 20/03/2017 with an extent of 1 Km all around the boundary. The proposed Project falls outside the ESZ, and hence may not need Wildlife Clearance.
National Park	--- --	
Wildlife Sanctuary	--- --	

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 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 shall be submitted seeking forest diversion for around 199.32 Ha after receipt of ToR Approval..

3.2.3. Deliberations by the committee in previous meetings

N/A

3.2.4. Deliberations by the EAC in current meetings

3.2.3: The EAC during deliberations noted the following:

The EAC deliberated on the information submitted (Form 1, PFR, kml file, etc.) as presented in the meeting and observed that the proposal is for grant of terms of reference to the project for Closed Loop off stream Sashnai Pumped Storage Project of capacity 1760 MW in an area of 294.67 ha located at Tehsil Robertsganj, District Sonbhadra (Uttar Pradesh) 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 EAC further observed that a number of Pump Storage Projects are being proposed in the catchment area/basin of Sone river in MP, UP and Bihar. The reservoirs are off River/stream and PP has proposed to fill it for initial filling as well as make up water annually from Sone River. Therefore, Cumulative Impact Assessment(CIA) & Carrying Capacity(CC) study is required for environmental sustainability of Sone River as well as life of Pump Storage Project dueto tapping of water for filling the reservoir. EAC recommended to the Ministry to take necessary action for conducting CIA&CC study in Sone river Basin in UP, Bihar and Madhya Pradesh. The project proponent must also include information if any, on the critical mineral zone mining or potential in the projected area from Geological Survey of India /Mineral Exploration Corporation Ltd or similar such Government organizations.

3.2.5. Recommendation of EAC

Recommended

3.2.6. Details of Terms of Reference

3.2.6.1. Specific

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 **Sone River** due to tapping of water for filling reservoir through reputed government expert institution. 2. Submit data on availability of water in Son River. 3. Alternative sites for various components shall be identified in terms of loss of forest area and other environmental aspects with respect of change of Installed capacity. 4. Explore the possibilities to reduce forest area for the construction of proposed project. Reduction of forest land with changing installed capacity. 5. Conduct geological survey and find out availability of mineral in study area. Take Geological opinion from GSI regarding mineral zone in the project study area. 6. Proposed project is located around 4.3 km away from boundary of Kaimur WLS boundary, therefore density of forest and its types including tentative nos of tree felled during construction of the project and details of plants species to be planted under compensatory plantation be mentioned in Compensatory Afforestation Plan under EIA/EMP. 7. MoU for water uses for the project signed and approved by concerned State Government Authority be submitted. 8. Impact assessment on the fish diversity based on the hydrological alteration at the water drawing from **Sone River** shall be studied. 9. Identify the sand mining/ quarrying sites in submergence area and downstream of reservoir. Source of construction material and its distance from the project site along with detailed transportation plan for construction material. 10. 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. 11. Impact zone decided prior to base line data generation and accordingly, sampling location shall be finalized. Baseline data as mentionedin 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. 12. 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. 13. 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. 14. A detailed reclamation/ restoration plan of quarrying site/sites be incorporated in the EIA/EMP report. 15. Certificate andcertified map from Chief Wildlife Warden shall be submitted mentioning that project boundary is located outside the Eco Sensitive Zone (ESZ) and Wildlife Sanctuary. 16. A detailed wildlife conservation plan for Schedule-I species be prepared duly approved by the Chief Wild Life Warden be submitted. 17. 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. 18. Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP. 19. 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. 20. Environmental matrix during construction and operational phase needs to be submitted. 21. Matrix formulated on the basis of detailed study and field survey of flora and fauna methodology used shall be mentioned in the EIA report. 22. Endemic plant and animal species found in the area concerned shall be provided instead listing entire endemic species found in the State. 23. 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.

	24. Project impact on avi-fauna shall be studied and incorporated in EIA/ EMP report. 25. NBWL recommendations & Stage-I Forest Clearance shall be obtained. 26. The project proponent must also include information if any, on the critical mineral zone mining or potential in the projected area from Geological Survey of India /Mineral Exploration Corporation Ltd or similar such Government organizations.
Miscellaneous**	
1.	1. Pre-DPR Chapters viz. Layout Map and Power Potential Studies duly approved by CWC/CEA shall be submitted. 1. 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. 2. Both capital and recurring expenditure under EMP shall be submitted. 3. 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. 4. Arial view video of project site shall be recorded and to be submitted. 5. Detailed plan to restore wider roads and convert them into narrow upto 10m after construction of the project. 6. Specific Terms of Reference (ToRs) issued by the Ministry vide Office Memorandum No. F. No. IA3-22/33/2022-IA.III dated 14.08.2023 for Pump storage projects shall be used for preparation of EIA/ EMP reports.

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

Dholpur Pumped Storage Project (1800 MW) by **TORRENT POWER LIMITED** located at **DHOLPUR,RAJASTHAN**			
Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/RJ/RIV/450802/2023	J-12011/54/2023-IA.I (R)	01/11/2023	River Valley/Irrigation projects (1(c))

3.3.2. Project Salient Features

3.3.1: The proposal is for grant of terms of references (ToR) to the project for Dholpur Closed Loop off stream Pumped Storage Project of capacity 1800 MW in an area of 719.51 Ha located at Tehsil Sarmathura, District Dhaulpur (Rajasthan) by M/s Torrent Power Limited.

3.3.2: 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 proposed Dholpur closed loop off-stream Pumped Storage Project comprises an underground powerhouse with an installed capacity of 1800 MW having 8 units of 200 MW & 2 units of 100 MW, envisages utilization of available head of upper and lower reservoir at an elevation of El.334.50 masl (at FRL) and El. 201.5 masl (at MDDL) respectively. For the proposed project water will be lifted from Parbati River in Dhaulpur district for initial filling.
2. Daily six-hour power generation is considered for this project. This scheme is purely a pumped storage project which implies that power will be generated by recirculating water between lower and upper reservoir which would use same quantity of water for generation and pumping.
3. The water losses due to evaporation, seepage etc. would be met by some inflows into the upper/lower reservoir and replenishment from the nearby water sources. Underground powerhouse is envisaged in between two reservoirs. Both the reservoirs are interconnected through nine individual water conductor systems and the generator-motor and pump-turbines installed at the powerhouse in between the reservoirs.
4. The proposed Dhlpur PSP (8 x 200 MW + 2 x 100 MW) envisages following major civil structures:

   a) **Upper Dam:** Concrete faced rockfill dam of length 6850 m with maximum height of 45.5 m with the controlled Spillway
   b) **Lower Dam:** Concrete faced rockfill dam of length 2000 m with maximum height of 53.0 m with the controlled Spillway
   c) **Power Intake:** Nine nos. of diffuser type Intake structure.
   d) **Pressure Tunnel / Shaft:** Nine nos. of steel lined main pressure tunnel/ shaft with diameter 6.6 m and length 277.0 m. Only one of these pressure shafts bifurcates into two-unit pressure tunnels of diameter 4.6 m each and of 32 m length.
   e) **Underground Powerhouse:** The underground powerhouse of size 296 m (L) x 25.00 m (W) x 40 m (H), to accommodate eight nos. of 200 MW and two nos. of 100 MW reversible pump-turbine units.
   f) **Transformer Cavern:** The underground transformer hall of size 285.00 m (L) x 17.75 m (W) x 25.5 m (H), to accommodate thirty (30 for units + 2 for spares) nos. single phase transformers.
   g) **Tail Race Tunnel:** Nine nos. of 8.6 m diameter circular shaped concrete lined tail race tunnel with a length of 472 m each. The length of 2 no. unit TRT is 104m.
   h) **Pump Intake:** Structure consisting of Nine nos. of diffuser type Intakes.

1. The total land required for the construction of various components and related works for Dholpur PSP is estimated to be around 719.51 ha, out of which 277.57 ha is non-forest land and 441.94 ha is forest land.
2. Proposed project is located around 4.3 km away from boundary of National Chambal Sanctuary. Thus, Wildlife Protection Act is applicable for this project and clearance / NOC to be obtainedfor this project from National Board of Wild Life (NBWL).
3. The estimated project cost is Rs. 9569.02 Crore including IDC. As a preliminary estimate, a construction period of 60 months from the date of award of civil works package has been estimated for this project.

Project details:

Name of the Proposal	Dholpur Pumped Storage Project
Location (Including coordinates)	Upper Reservoir: Longitude: 77°21'56.41"E Latitude: 26°26'34.99"N Lower Reservoir: Longitude: 77°22'49.29"E Latitude: 26°25'50.42"N
Inter- state issueinvolved	-
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)	Yes
Additional information (if any)	Nil

Electricity generation capacity:

Powerhouse Installed Capacity	1800 MW
Generation of Electricity Annually	3942 GWh
No. of Units	10 nos. (8 X 200 MW + 2 X 100 MW)

ToR Details:

Cost of project	9569.02 Cr.
Total area of Project	719.51 ha
Height of Dam from River Bed (EL)	Lower Dam – 53.0 m Upper Dam – 45.50 m
Length of Tunnel/Channel	1448.0 m
Details of Submergence area	667.56 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)
Did earlier Projects study any Cumulative Impact assessment & Carrying Capacity (CIA&CC) for the River on which the proposed project is located. If yes, then a) E-flow with TOR /Recommendation by	No

1. EAC as per CIA&CC study of RiverBasin. 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)	9.37 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:

Private Land	277.57 ha
Government land/Forest Land	441.94 ha
Submergence area/Reservoir area	667.56 ha
Land required for project components	51.95 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	--	Proposed project is located around 4.3 km away from Sanctuary. Thus, Wildlife Protection Act is applicable for this project and cl from National Boardof Wild Life (NBWL).
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
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 otherstatutory clearances	Forest Clearance - Online application shall be submitted seeking forest diversion for around **441.94** 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

3.3.3. Deliberations by the committee in previous meetings

N/A

3.3.4. Deliberations by the EAC in current meetings

3.3.3: 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 Dholpur Closed Loop off stream Pumped Storage Project of capacity 1800 MW in an area of 719.51 Ha located at Tehsil Sarmathura, District Dhaulpur (Rajasthan) by M/s Torrent Power Limited.

The project/activity is covered under Category A of item 1 (c) 'River Valley & Hydroelectric 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 EAC was noted that requirement of forest land area is 441 .94 ha which is high out of total land 719.51 ha. There is a huge land required for compensatory afforestation. It is also observed that huge quantity of construction material to be required for embankments of Reservoir area and evaporation loss may be very high. EAC members opined that project proponent has not justified the location of the project site as per environmental sustainability and economic viability in the meeting. The EAC after detailed deliberations deferred the proposal for want of following additional information: -

1. Justify the project location with respect to alternative site assessment studies with comparative chart in context

of environmental degradation due to involvement of huge area of Forest land.
2. Project design/ plant capacity may be revaluated in order to reduce the forest area involved in creating the upper and lower reservoir.
3. Data on water availability in **Parbati River** to be submitted duly certified by the concerned Govt. department. MoU for water uses for the project signed and approved by concerned authority be submitted.
4. Details of tentative nos of trees felled during construction of the project.
5. Report on alternate site analysis to be submitted.
6. Check the land record and provide details of category of Forest land.
7. To obtain information on any critical mineral zone in the proposed site.

-
The EAC therefore **deferred** the proposal.

3.3.5. Recommendation of EAC

Deferred for ADS

3.4. Agenda Item No 4:

3.4.1. Details of the proposal

Greenko UP01 Off-Stream Closed Loop Pumped Storage Project by **GREENKO ENERGIES PRIVATE LIMITED** located at **SONBHADRA,UTTAR PRADESH**			
Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/UP/RIV/449929/2023	J-12011/56/2023-IA.I (R)	31/10/2023	River Valley/Irrigation projects (1(c))

3.4.2. Project Salient Features

The Project Proponent vide letter (UP01PSP/MoEF&CC/EC/231102) & email dated 2.11.2023 informed that they have withdrawn the proposal.

3.4.3. Deliberations by the committee in previous meetings

N/A

3.4.4. Deliberations by the EAC in current meetings

The Project Proponent vide letter (UP01PSP/MoEF&CC/EC/231102) & email dated 2.11.2023 informed that they have withdrawn the proposal.

3.4.5. Recommendation of EAC

Deferred for ADS

3.5. Agenda Item No 5:

3.5.1. Details of the proposal

Pedakota Pumped Storage Project (1800 MW) by **ADANI GREEN ENERGY LIMITED** located at **ALLURI SITHARAMA RAJU,ANDHRA PRADESH**			
Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/AP/RIV/450630/2023	J-12011/57/2023-IA.I (R)	30/10/2023	River Valley/Irrigation projects (1(c))

3.5.2. Project Salient Features

3.6.1: The proposal is for grant of terms of references (ToR) to the project for Pedakota Open Loop Pumped Storage Project of capacity 1800 MW in an area of 202.11 ha located at Tehsil Anathagiri Taluka, Distrcit Alluri Seetharama Raju, (Andhra Pradesh) by M/s Adani Green Energy Limited.

Shri Janardan Choudhary, Member, EAC (RV&HE) informed that he is presently working as Advisor in M/s Adani Green Energy Ltd; so, to avoid any conflict of Interest, he remained absent on Agenda item No. 3.6 regarding grant of ToR to the project for Pedakota Open Loop Pumped Storage Project of capacity 1800 MW in an area of 202.11 ha located at Tehsil Anathagiri Taluka, Distrcit Alluri Seetharama Raju, (Andhra Pradesh) by M/s Adani Green Energy Limited.

3.6.2; The Project Proponent and the accredited Consultant M/s R.S Envirolink made a detailed presentation on the salient features of the project and informed that-

1. Pedakota PSP is an Off-stream Open Loop pumped storage scheme with an installed capacity of 1800 MW.
2. The Upper dam is located in between Dayarti village and Madrebu village, Alluri Seetharama Raju district and Lower dam is located near Sariya village, Alluri Seetharama Raju district of Andhra Pradesh.
3. Sarada River is a Minor East flowing River between Mahanadi & Pennar.
4. Upper Dam Catchment area is 2.34km2 and Catchment area of lower dam location is 81.20km2.
5. Water requirement from initial/one-time filling for reservoirs is about 9.1Mm3 and annual water requirement for recuperating of losses has been estimated to be about 0.8Mm3
6. The proposed 1800MW Pedakota PSP (6 x 300MW) envisages following major civil structures:

1. Upper Dam (Gravity Dam-Concrete): Crest length 860m, maximum height 83m above the deepest riverbed level. The gross storage capacity of Upper reservoir is 11.87Mm 3
2. Lower Dam (Gravity Dam-Concrete): Crest length 635m, maximum height 68m above the deepest riverbed level. The gross storage capacity of Lower reservoir is 16.95Mm3
3. Upper Intake/Outlet-Diffuser type, 3 nos. of trash rack bays, each with a size of 31.0 m (W) x 10.5 m (H).
4. Lower Intake/Outlet: Diffuser type, 3 nos. of trash rack bays, each with a size of 25.0 m (W) x 8.0 m (H).
5. Pressure Shaft: 3 nos. of 2072m (length), 5.9m (diameter), steel lined.
6. Surface Powerhouse: 195.0m (length) x 22m (width) x 54.0m (height above the draft tube invert).
7. Transformer Cavern: 155.0m (length) x 18.0m (width) x 18m (height above the transformer foundation). Bus ducts run from Powerhouse to Transformer Hall.
8. Tailrace Tunnel: 115m (length) with 4.75m and 6.75 m(diameter), D-shaped, concrete lined.
9. Main Access Tunnel: 1050m (length), 6.0m x 6.0m size, D-shaped with invert lined.
10. Pothead Yard: 50m x 50m near the portal of Cable Ventilation tunnel

1. Water availability: The upper dam is proposed to be located within the catchment of a rivulet draining into Bodderu river, a major tributary of Sarada River. The lower dam is proposed to be located across the minor nallah draining into Bodderu river, a major tributary of Sarada River. The catchment area up to the proposed

upper dam site has been estimated to be about 2.34km2 and that of Lower dam as 81.20km2. The weighted average annual rainfall of catchment at upper and lower dam sites has been found to be about 1151mm and 1178mm respectively. The average annual yield at upper & lower dam site has been estimated to be about 0.72 Mm3 and 25.89 Mm3

2. Land Requirement: Total 202.11 ha. Out of which 105.66 ha forest land.

Environment sensitive area: There is no ESA in project area. The Kambalkonda WLS is about 45 km from project site.

3.5.3. Deliberations by the committee in previous meetings

N/A

3.5.4. Deliberations by the EAC in current meetings

3.6.3: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 Pedakota Open Loop Pumped Storage Project of capacity 1800 MW in an area of 202.11 ha located at Tehsil Anathagiri Taluka, Distrcit Alluri Seetharama Raju, (Andhra Pradesh) by M/s Adani Green Energy Limited**.**

The project/activity is covered under Category A of item 1 (c) 'River Valley & Hydroelectric 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 EAC noted that the lower reservoir is proposed to be located within the catchment of Bodderu river, a major tributary of Sarada River. It was noted that the project site is located in dense forest area and the lower reservoir is blocking the path of Bodderu river**.** The consultant was also not able to explain the water availability in the river. The project proponent and their consultant were unable to explain the criterion/ justification for selecting the project site. The EAC was of the view that the tributaries/rivulets have vital role in survival of major river/reservoir and its ecosystem. The committee therefore suggested that the proponent to identify a suitable site in terms of forest land involvement or revise the project layout keeping in view the all environmental and ecosystem related aspects of Bodderu river. It was noted that alternative site analysis was largely based on economic variability of the project; whereas, it should be focused on sustainable environment and ecology. viz. loss of minimum forested area 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 also suggested to submit the land record and provide details of category of Forest land with revised layout and make a visual graphic of the project site showing the actual status of the site.

The EAC therefore decided to **defer** the proposal for want of above mentioned additional information.

3.5.5. Recommendation of EAC

Deferred for ADS

3.6. Agenda Item No 6:

3.6.1. Details of the proposal

Upper Indravati Pumped Storage Project by **ODISHA HYDRO POWER CORPORATION LIMITED** located at **KALAHANDI,ODISHA**			
Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity**

			(Schedule Item)
IA/OR/RIV/421598/2023	J-12011/09/2023-IA-I (R)	13/03/2023	River Valley/Irrigation projects (1(c))

3.6.2. Project Salient Features

3.6.3. Deliberations by the committee in previous meetings

Date of EAC 1 :27/03/2023

Deliberations of EAC 1 :
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 Upper Indravati Pumped Storage Project 600 MW (4x150 MW) in an area of 164 Ha located at Village Mukhiguda, Kalahandi District (Odisha) by M/s Odisha Hydro Power Corporation 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 EAC noted that presentation made by the PP/ consultant WAPCOS is not satisfactory as it could not highlight major issues like eco-sensitivity of the region, land area requirement showing project components proposed in forest land, etc. It was also not explained why project has been categorised as closed loop PSP, when upper reservoir is located on the river Indravati and water from Indravati river will be lifted on daily basis. The PP during discussion informed that some construction activities (sub-surface exploration) have already been started, so, the EAC desired to verify the status of construction activities at site.

The EAC therefore decided to conduct site visit by EAC sub-committee before making any recommendations on proposal.

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

3.6.4. Deliberations by the EAC in current meetings

The EAC noted that the proposal has already been considered by the EAC in its meeting held on 12th September 2023 by the previous committee, wherein, the previous EAC recommended the proposal for grant of specific/standard terms of reference as issued by the Ministry vide Office Memorandum No. F. No. IA3-22/33/2022-IA.III dated 14.08.2023 for Pump storage projects for preparation of EIA/ EMP report along with certain additional ToR for proposed Upper Indravati Pumped Storage Project 600 MW (4x150 MW) in an area of 164 Ha located at Village Mukhiguda, Kalahandi District (Odisha) by M/s Odisha Hydro Power Corporation Limited. The recommendations of the EAC may be processed accordingly.

3.6.5. Recommendation of EAC

Recommended

3.6.6. Details of Terms of Reference

3.6.6.1. Specific

N/A

3.6.6.2. Standard

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

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

	endangered and threatened (r.e.t.) species since they often occur in low densities and in case of faunal species are usually secretive in behaviour. Reaching the conclusion about the absence of such species in the study area based on such methodology is misleading. It is very important to document the status of such species owing to their high conservation value. Hence likely presence of such species should be ascertained from secondary sources by a proper literature survey for the said area including referring to field guides which are now available for many taxonomic groups in India. Even literature from studies/surveys in the larger landscapes which include the study area for the concerned project must be referred to, since most species from adjoining catchments is likely to be present in the catchments in question. In fact such literature form the entire state can be referred to. Once a listing of possible r.e.t. species form the said area is developed, species specific methodologies should be adopted to ascertain their presence in the study area which would be far more conclusive as compared to the conventional sampling. If the need be, modern methods like camera trapping can be resorted to, particularly for areas in the eastern Himalayas and for secretive/nocturnal species. A detailed listing of the literature referred to, for developing lists of r.e.t. species should be provided in the EIA reports.
4.	The R.E.T. species referred to in this point should include species listed in Schedule I and II of Wildlife (Protection) Act, 1972 and those listed in the red data books (BSI, ZSI and IUCN).
Components of the EIA Study: Various aspects to be studied and provided in the EIA/EMP report are as 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.

4. Any Other Item(s)

N/A

5. List of Attendees

Sr. No.	Name	Designation	Email ID	Remarks
1	Yogendra Pal Singh	Scientist E	yog*******@nic.in	
2	Prof. G. J. Chakrapani	Chairman	cha**********@gmail.com	
3	Dr. Udaykumar R. Y.	Member	uda*********@gmail.com	
4	Dr. Mukesh Sharma	Member	muk***@iitk.ac.in	Absent
5	Shri Janardan Choudhary	Member	jan**********@gmail.com	
6	Dr. J V Tyagi	Member	jvt******@gmail.com	
7	Shri Kartik Sapre	Member	kar********@gmail.com	
8	Shri Ajay Kumar Lal	Member	akl****@gmail.com	
9	Shri Sharvan Kumar	Member	krs******@nic.in	
10	Shri Alok Paul Kalsi	Member	emo***@nic.in	

11	Dr. J A Johnson	Member	jaj@wii.gov.in	Absent
12	Dr. A.K. Sahoo	Member	ami***@gmail.com	Absent

MINUTES OF THE 3RD MEETING OF THE EXPERT APPRAISAL COMMITTEE FOR RIVER VALLEY AND HYDROELECTRIC PROJECTS HELD ON 10TH NOVEMBER 2023 FROM 10:30 AM – 05:30 PM THROUGH VIDEO CONFERENCE.

The 3rd meeting (online mode) 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 10th November 2023 through virtual (online) mode, under the Chairmanship of Prof. G. J. Chakrapani. The list of Members present in the meeting is at **Annexure**.

Agenda Item No. 3.1: Confirmation of Minutes of 2nd EAC meeting held on 26th October 2023.

Agenda Item No. 3.2

Closed Loop off stream Sashnai Pumped Storage Project of capacity 1760 MW located at Tehsil Robertsganj, District Sonbhadra (Uttar Pradesh) by M/s Torrent Power Limited – Terms of References (ToR) - reg.

[Proposal No. IA/UP/RIV/449359/2023; F. No. J-12011/53/2023-IA.I (R)]

3.2.1: The proposal is for grant of terms of references (ToR) to the project for Closed Loop off stream Sashnai Pumped Storage Project of capacity 1760 MW in an area of 294.67 ha located at Tehsil Robertsganj, District Sonbhadra (Uttar Pradesh) by M/s Torrent Power Limited.

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

i. The proposed Sashnai PSP comprises an underground powerhouse with an installed capacity of 1760 MW having 7 units of 220 MW & 2 units of 110 MW, envisages utilization of available head of upper and balancing reservoir/lower reservoir at an elevation of El.581.00 masl (at FRL) and El. 288.00 masl (at FRL) respectively.
ii. The Palhari village is at around 0.8 km from the upper reservoir and the village Sashnai is ≈1.9 km from the lower reservoir of the project. Daily six-hour generation is considered for this project.
iii. This scheme is a pure pumped storage project which implies that power will be generated by recirculating water between lower and upper reservoir which would use same quantity of water for generation and pumping.
iv. The water losses due to evaporation, seepage etc. would be compensated by pumping water from nearby River Sone periodically.
v. Underground powerhouse is envisaged in between upper reservoir and balancing reservoir. These upper and balancing reservoirs are interconnected through four individual water conductor systems and the generator-motor and pump-turbines installed at the powerhouse in between.

vi. The balancing reservoir and lower reservoir are interconnected through Tailrace Channel.

vii. The proposed Sashnai PSP (7 x 220 MW + 2 x 110 MW) envisages following major civil structures:

a) **Upper Dam:** Concrete faced rockfill dam of length 3460 m with maximum height of 51 m (above deepest bed level) with the uncontrolled Spillway
b) **Balancing Reservoir Dam:** Concrete faced rockfill dam of length 364 m with maximum height of 63 m (above deepest riverbed level) with the uncontrolled Spillway
c) **Lower Dam:** Concrete faced rockfill dam of length 1893 m with maximum height of 52 m (above the deepest bed level). with the uncontrolled Spillway.
d) **Power Intake:** Four nos. of diffuser type Intake structure
e) **Head Race Tunnel:** Four nos. of 8.0 m diameter circular shaped concrete lined head race tunnel with a length of 200.4 m.
f) **Pressure Tunnel / Shaft:** Four nos. of steel lined main pressure tunnel/ shaft with diameter 6.1 m of lengths 411.4 m. Each one of these pressure shafts bifurcates into two-unit pressure tunnels of diameter 4.3 m each and of 68.3 m length. One of this already bifurcated pressure tunnel further bifurcate into unit pressure tunnels for small unit with a diameter of 3.1 m
g) **Underground Powerhouse:** The underground powerhouse of size 236 m (L) x 25.00 m (W) x 44 m (H), to accommodate Seven nos. of 220 MW and two nos. of 110 MW reversible pump-turbine units.
h) **Transformer Cavern:** The underground transformer hall of size 235.00 m (L) x 17.75 m (W) x 26 m (H), to accommodate thirty (27 for units + 3 for spares) nos. single phase transformers. Transformer cavern also provide access to draft tube gates.
i) **Tail Race Tunnel:** Two nos. of unit TRT of 4.7 m and Seven number unit pressure TRT of 6.7 diameter circular shaped concrete lined tail race tunnel with a length of 124.55 m each. Unit TRT combined to four nos. of Main TRT of 8.0 m diameter circular shaped concrete lined tail race tunnel with a length of 232.45 m each.
j) **Pump Intake:** Structure consisting of four diffuser type Intakes.
k) **Tailrace Channel:** Open channel of channel bottom width of 50m excavated for a length of 2160 m to link the Balancing Reservoir with the Lower reservoir.

viii. The total land required for the construction of various components and related works for Sashnai PSP is estimated to be around 294.67 ha, out of which 95.35 ha is non-forest land and 199.32 ha is forest land.

ix. Proposed project is located around 4.3 km away from boundary of Kaimur WLS boundary (Uttar Pradesh). ESZ of Kaimur WLS was notified on 20/03/2017 with an extent of 1 Km all around the boundary. Project being falling outside the ESZ, would not need Wildlife Clearance.

x. The estimated project cost is Rs. 8192.70 Crore including IDC. As a preliminary estimate, a construction period of 60 months from the date of award of civil works package has been estimated for this project.

xi. **Salient features of the project:**

Project details:

Name of the Proposal	**Sashnai Pumped Storage Project**
Location (Including coordinates)	**Upper Reservoir:** • Longitude: 83°10'44"E & Latitude: 24°31'20"N **Balancing Reservoir:** • Longitude: 83°11'6"E & Latitude: 24°30'45"N **Lower Reservoir:** • Longitude: 83°12'0"E & Latitude: 24°29'56"N
Inter- state issue involved	-
Seismic zone	Zone-III

Category details:

Category of the project	A
Provisions	
Capacity / Cultural command area (CCA)	1760 MW
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	Nil

Electricity generation capacity:

Powerhouse Installed Capacity	1760 MW
Generation of Electricity Annually	3854.40 GWh
No. of Units	11 nos. (7 X 220 MW + 2 X 110 MW)
Additional information (if any)	Nil

ToR Details:

Cost of project	8192.70 Cr.
Total area of Project	294.67 ha
Height of Dam from River Bed (EL)	Lower Dam – 52 m Upper Dam – 51 m Balancing Dam – 63 m
Length of Tunnel/Channel	9148 m
Details of Submergence area	220.59 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)
Did earlier Projects study the Cumulative Impact assessment & Carrying Capacity (CIA&CC) for the River on which the proposed project is 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)	15.86 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:

Private Land	95.35 ha
Government land/Forest Land	199.32 ha
Submergence area/Reservoir area	220.59 ha
Land required for project components	74.08 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	--	The proposed project is located approximately 4.3 km from the boundary of Kaimur WLS boundary (Uttar Pradesh). ESZ of Kaimur WLS was notified on 20/03/2017 with an extent of 1 Km all around the boundary. The proposed Project falls outside the ESZ, and hence may not need Wildlife Clearance.
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 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 shall be submitted seeking forest diversion for around 199.32 Ha after receipt of ToR Approval..

3.2.3: The EAC during deliberations noted the following:

The EAC deliberated on the information submitted (Form 1, PFR, kml file, etc.) as presented in the meeting and observed that the proposal is for grant of terms of reference to the project for Closed Loop off stream Sashnai Pumped Storage Project of capacity 1760 MW in an area of 294.67 ha located at Tehsil Robertsganj, District Sonbhadra (Uttar Pradesh) 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 EAC further observed that a number of Pump Storage Projects are being proposed in the catchment area/basin of Sone river in MP, UP and Bihar. The reservoirs are off River/stream and PP has proposed to fill it for initial filling as well as make up water annually from Sone River. Therefore, Cumulative Impact Assessment(CIA) & Carrying Capacity(CC) study is required for environmental sustainability of Sone River as well as life of Pump Storage Project due to tapping of water for filling the reservoir. EAC recommended to the Ministry to take necessary action for conducting CIA&CC study in Sone river Basin in UP, Bihar and Madhya Pradesh. The project proponent must also include information if any, on the critical mineral zone mining or potential in the projected area from Geological Survey of India /Mineral Exploration Corporation Ltd or similar such Government organizations.

3.2.4: 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 to the project for Closed Loop off stream Sashnai Pumped Storage Project of capacity 1760 MW in an area of 294.67 ha located at Tehsil Robertsganj, District Sonbhadra (Uttar Pradesh) 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. Cumulative Impact of project on carrying capacity and sustainability of **Sone River** due to tapping of water for filling reservoir through reputed government expert institution.
ii. Submit data on availability of water in Son River.

iii. Alternative sites for various components shall be identified in terms of loss of forest area and other environmental aspects with respect of change of Installed capacity.
iv. Explore the possibilities to reduce forest area for the construction of proposed project. Reduction of forest land with changing installed capacity.
v. Conduct geological survey and find out availability of mineral in study area. Take Geological opinion from GSI regarding mineral zone in the project study area.
vi. Proposed project is located around 4.3 km away from boundary of Kaimur WLS boundary, therefore density of forest and its types including tentative nos of tree felled during construction of the project and details of plants species to be planted under compensatory plantation be mentioned in Compensatory Afforestation Plan under EIA/EMP.
vii. MoU for water uses for the project signed and approved by concerned State Government Authority be submitted.
viii. Impact assessment on the fish diversity based on the hydrological alteration at the water drawing from **Sone River** shall be studied.
ix. Identify the sand mining/ quarrying sites in submergence area and downstream of reservoir. Source of construction material and its distance from the project site along with detailed transportation plan for construction material.
x. 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.
xi. 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.
xii. 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.
xiii. 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.
xiv. A detailed reclamation/ restoration plan of quarrying site/sites be incorporated in the EIA/EMP report.
xv. Certificate and certified map from Chief Wildlife Warden shall be submitted mentioning that project boundary is located outside the Eco Sensitive Zone (ESZ) and Wildlife Sanctuary.
xvi. A detailed wildlife conservation plan for Schedule-I species be prepared duly approved by the Chief Wild Life Warden be submitted.
xvii. 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.
xviii. Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP.

xix. Scope of watershed development in the 10 km radius of the project shall be studied in consultation with 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.
xx. Environmental matrix during construction and operational phase needs to be submitted.
xxi. Matrix formulated on the basis of detailed study and field survey of flora and fauna methodology used shall be mentioned in the EIA report.
xxii. Endemic plant and animal species found in the area concerned shall be provided instead listing entire endemic species found in the State.
xxiii. 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.
xxiv. Project impact on avi-fauna shall be studied and incorporated in EIA/ EMP report.
xxv. NBWL recommendations & Stage-I Forest Clearance shall be obtained.
xxvi. The project proponent must also include information if any, on the critical mineral zone mining or potential in the projected area from Geological Survey of India /Mineral Exploration Corporation Ltd or similar such Government organizations.

[B] Socio-economic Study

xxvii. Declaration by the project proponent by way of affidavit that "No" Inter-state issue/ policy issue is involved with any State in the project.
xxviii. 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.
xxix. 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.
xxx. Tentative no. of project affected families shall be identified and accordingly appropriate Rehabilitation & Resettlement plan shall be prepared.
xxxi. Details of settlement in 10 km area shall be submitted.

[C] Muck Management/ Disaster Management

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

[D] Miscellaneous

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

xxxvi. 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.

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

xxxviii. 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.

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

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

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

Agenda Item No. 3.3

Dholpur Closed Loop off stream Pumped Storage Project of capacity 1800 MW located at Tehsil Sarmathura, District Dhaulpur, Rajasthan by M/s Torrent Power Limited - Terms of References (ToR) - reg.

[Proposal No. IA/RJ/RIV/450802/2023; F. No. J-12011/54/2023-IA.I (R)]

3.3.1: The proposal is for grant of terms of references (ToR) to the project for Dholpur Closed Loop off stream Pumped Storage Project of capacity 1800 MW in an area of 719.51 Ha located at Tehsil Sarmathura, District Dhaulpur (Rajasthan) by M/s Torrent Power Limited.

3.3.2: 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 proposed Dholpur closed loop off-stream Pumped Storage Project comprises an underground powerhouse with an installed capacity of 1800 MW having 8 units of 200 MW & 2 units of 100 MW, envisages utilization of available head of upper and lower reservoir at an elevation of El.334.50 masl (at FRL) and El. 201.5 masl (at MDDL) respectively. For the proposed project water will be lifted from Parbati River in Dhaulpur district for initial filling.

ii. Daily six-hour power generation is considered for this project. This scheme is purely a pumped storage project which implies that power will be generated by recirculating water between lower and upper reservoir which would use same quantity of water for generation and pumping.

iii. The water losses due to evaporation, seepage etc. would be met by some inflows into the upper/lower reservoir and replenishment from the nearby water sources. Underground powerhouse is envisaged in between two reservoirs. Both the reservoirs are interconnected through nine individual water conductor systems and the generator-motor and pump-turbines installed at the powerhouse in between the reservoirs.

iv. The proposed Dhlpur PSP (8 x 200 MW + 2 x 100 MW) envisages following major civil structures:

a) **Upper Dam:** Concrete faced rockfill dam of length 6850 m with maximum height of 45.5 m with the controlled Spillway
b) **Lower Dam:** Concrete faced rockfill dam of length 2000 m with maximum height of 53.0 m with the controlled Spillway
c) **Power Intake:** Nine nos. of diffuser type Intake structure.
d) **Pressure Tunnel / Shaft:** Nine nos. of steel lined main pressure tunnel/ shaft with diameter 6.6 m and length 277.0 m. Only one of these pressure shafts bifurcates into two-unit pressure tunnels of diameter 4.6 m each and of 32 m length.
e) **Underground Powerhouse:** The underground powerhouse of size 296 m (L) x 25.00 m (W) x 40 m (H), to accommodate eight nos. of 200 MW and two nos. of 100 MW reversible pump-turbine units.
f) **Transformer Cavern:** The underground transformer hall of size 285.00 m (L) x 17.75 m (W) x 25.5 m (H), to accommodate thirty (30 for units + 2 for spares) nos. single phase transformers.
g) **Tail Race Tunnel:** Nine nos. of 8.6 m diameter circular shaped concrete lined tail race tunnel with a length of 472 m each. The length of 2 no. unit TRT is 104m.
h) **Pump Intake:** Structure consisting of Nine nos. of diffuser type Intakes.

v. The total land required for the construction of various components and related works for Dholpur PSP is estimated to be around 719.51 ha, out of which 277.57 ha is non-forest land and 441.94 ha is forest land.
vi. Proposed project is located around 4.3 km away from boundary of National Chambal Sanctuary. Thus, Wildlife Protection Act is applicable for this project and clearance / NOC to be obtained for this project from National Board of Wild Life (NBWL).
vii. The estimated project cost is Rs. 9569.02 Crore including IDC. As a preliminary estimate, a construction period of 60 months from the date of award of civil works package has been estimated for this project.

Project details:

Name of the Proposal	Dholpur Pumped Storage Project
Location (Including coordinates)	Upper Reservoir: Longitude: 77°21'56.41"E Latitude: 26°26'34.99"N Lower Reservoir: Longitude: 77°22'49.29"E Latitude: 26°25'50.42"N
Inter- state issue involved	-
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)	Yes
Additional information (if any)	Nil

Electricity generation capacity:

Powerhouse Installed Capacity	1800 MW
Generation of Electricity Annually	3942 GWh
No. of Units	10 nos. (8 X 200 MW + 2 X 100 MW)

ToR Details:

Cost of project	9569.02 Cr.
Total area of Project	719.51 ha
Height of Dam from River Bed (EL)	Lower Dam – 53.0 m Upper Dam – 45.50 m
Length of Tunnel/Channel	1448.0 m
Details of Submergence area	667.56 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)
Did earlier Projects study any Cumulative Impact assessment & Carrying Capacity (CIA&CC) for the River on which the proposed project is 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)	9.37 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:

Private Land	277.57 ha
Government land/Forest Land	441.94 ha
Submergence area/Reservoir area	667.56 ha
Land required for project components	51.95 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	--	Proposed project is located around 4.3 km away from boundary of National Chambal Sanctuary. Thus, Wildlife Protection Act is applicable for this project and clearance / NOC to be obtained for this project from National Board of Wild Life (NBWL).
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
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 shall be submitted seeking forest diversion for around **441.94** 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

3.3.3: 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 Dholpur Closed Loop off stream Pumped Storage Project of capacity 1800 MW in an area of 719.51 Ha located at Tehsil Sarmathura, District Dhaulpur (Rajasthan) by M/s Torrent Power Limited.

The project/activity is covered under Category A of item 1 (c) 'River Valley & Hydroelectric 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 EAC was noted that requirement of forest land area is 441 .94 ha which is high out of total land 719.51 ha. There is a huge land required for compensatory afforestation. It is also observed that huge quantity of construction material to be required for embankments of Reservoir area and evaporation loss may be very high. EAC members opined that project proponent has not justified the location of the project site as per environmental sustainability and economic viability in the meeting. The EAC after detailed deliberations deferred the proposal for want of following additional information: -

1. Justify the project location with respect to alternative site assessment studies with comparative chart in context of environmental degradation due to involvement of huge area of Forest land.
2. Project design/ plant capacity may be revaluated in order to reduce the forest area involved in creating the upper and lower reservoir.
3. Data on water availability in **Parbati River** to be submitted duly certified by the concerned Govt. department. MoU for water uses for the project signed and approved by concerned authority be submitted.
4. Details of tentative nos of trees felled during construction of the project.
5. Report on alternate site analysis to be submitted.
6. Check the land record and provide details of category of Forest land.
7. To obtain information on any critical mineral zone in the proposed site.

The EAC therefore **deferred** the proposal.

Agenda Item No. 3.4:

Karauli Closed Loop Pumped Storage Project of capacity 1400 MW located at Tehsil Sarmathura, District Dhaulpur (Rajasthan) by M/s Torrent Power Limited – Terms of References (ToR) - Reg.

[Proposal No. IA/RJ/RIV/450772/2023; F. No. J-12011/55/2023-IA.I (R)]

3.4.1: The proposal is for grant of terms of references (TOR) to the project for Karauli Closed Loop Pumped Storage Project of capacity 1400 MW in an area of 586.01 Ha located at Tehsil Sarmathura, District Dhaulpur (Rajasthan) by M/s Torrent Power Limited.

3.4.2: 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. Proposed closed loop off-stream Karauli Pumped Storage Project comprises an underground powerhouse with an installed capacity of 1400 MW having 6 units of 200 MW & 2 units of 100 MW, envisages utilization of available head of upper and lower reservoir at an elevation of El.343.00 masl (at FRL) and El. 223.00 masl (at FRL) respectively. For the proposed project water will be lifted from Parbati River in Dhaulpur district for initial filling.
ii. Daily six-hour generation is considered for this project. This scheme is a pure pumped storage project which implies that power will be generated by recirculating water between lower and upper reservoir which would use same quantity of water for generation and pumping.
iii. The water losses due to evaporation, seepage etc. would be met from the nearby water sources. Underground powerhouse is envisaged in between two reservoirs. Both the reservoirs are interconnected through nine individual water conductor systems and the generator-motor and pump-turbines installed at the powerhouse in between the reservoirs.

iv. The proposed Karauli PSP (6 x 200 MW + 2 x 100 MW) envisages following major civil structures:

a) **Upper Dam:** Concrete faced rockfill dam of length 5227 m with maximum height of 39.0 m with the ungated stepped Spillway.

b) **Lower Dam:** Concrete faced rockfill dam of length 1450.90 m with a height of 41 m with the ungated stepped Spillway.

c) **Power Intake:** Seven nos. of diffuser type Intake structure

d) **Pressure Tunnel / Shaft:** Seven nos. of steel lined main pressure tunnel/ shaft with diameter 6.5 m and length 271 m. Only one of these pressure shafts bifurcates into two-unit pressure tunnels of diameter 4.6 m each and of 32.26 m length.

e) **Underground Powerhouse:** The underground powerhouse of size 246.00 (L) X 25.00 (W) X 53.00 (H) to accommodate Six nos. of 200 MW and two nos. of 100 MW reversible pump-turbine units.

f) **Transformer Cavern:** The underground transformer hall of size 235.00 m (L) x 17.75 m (W) x 27 m (H), to accommodate thirty (30 for units + 2 for spares) nos. single phase transformers.

g) **Tail Race Tunnel:** Seven nos. of 8.50 m diameter circular shaped concrete lined tail race tunnel with a length of 149.70 m each.

h) **Pump Intake:** Structure consisting of four nos. of lateral Intakes.

v. **Land Requirement:** The total land required for the construction of various components and related works for Karauli PSP is estimated to be **around 586.01 ha, out of which 255.15 ha is non-forest land and 330.86 ha is forest** land.

vi. **Environmental sensitive Area:**. Proposed project is located around **4.5 km away from boundary of National Chambal Sanctuar**y. Thus, Wildlife Protection Act is applicable for this project and clearance / NOC to be obtained for this project from National Board of Wild Life (NBWL).

vii. **Project Cost:** The estimated project cost is Rs. 7500.20 Crore including IDC. As a preliminary estimate, a construction period of 60 months from the date of award of civil works package has been estimated for this project.

viii. **Salient Features are as under:**

Project details:

Name of the Proposal	Karauli Pumped Storage Project
Location (Including coordinates)	Upper Reservoir: Longitude: 77°17'48.95"E Latitude: 26°24'17.60"N Lower Reservoir: Longitude: 77°18'44.78"E Latitude: 26°24'4.21"N
Inter- state issue involved	-
Seismic zone	Zone-III

Category details:

Category of the project	A
Provisions	
Capacity / Cultural command area (CCA)	1400 MW
Attracts the General Conditions (Yes/No)	Yes
Additional information (if any)	Nil

Electricity generation capacity:

Powerhouse Installed Capacity	1800 MW
Generation of Electricity Annually	3066 GWh
No. of Units	8 nos. (6 X 200 MW + 2 X 100 MW)
Additional information (if any)	Nil

ToR Details:

Cost of project	7500.20 Cr.
Total area of Project	586.01 ha
Height of Dam from River Bed (EL)	Lower Dam – 43.0 m Upper Dam – 39.0 m
Length of Tunnel/Channel	696.40 m
Details of Submergence area	534.24 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)
Did earlier Projects studythe Cumulative Impact assessment& Carrying Capacity (CIA&CC) for the River on which the project is located? If yes, then a)E-flow with TOR /Recommendation by b) 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)	10.50 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:

Private Land	255.15 ha
Government land/Forest Land	330.86 ha
Submergence area/Reservoir area	534.24 ha
Land required for project components	51.77 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	--	Proposed project is located around 4.5 km away from boundary of National Chambal Sanctuary. Thus, Wildlife Protection Act is applicable for this project and clearance / NOC to be obtained for this project from National Board of Wild Life (NBWL).
National Park	--	
Wildlife Sanctuary	--	

Court case details: nill

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

3.4.3: 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 Karauli Closed Loop Pumped Storage Project of capacity 1400 MW in an area of 586.01 Ha located at Tehsil Sarmathura, District Dhaulpur (Rajasthan) by M/s Torrent Power Limited.

The project/activity is covered under Category A of item 1 (c) 'River Valley & Hydroelectric 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 EAC was noted that requirement of forest land area is 330.86 ha which is high out of total land 586.01 ha and the project proponent has not carried out alternate site analysis. EAC members opined that project proponent has not justify the location of the project site as per environmental sustainability and economic viability in the meeting. The EAC after detailed deliberations deferred the proposal for want of following additional information: -

1. Justify the project location with respect to alternative site assessment studies with comparative chart in context of environmental degradation due to involvement of huge area of Forest land.
2. Project design/ plant capacity may be revaluated in order to reduce the forest area involved in creating the upper and lower reservoir.
3. Data on water availability in **Parbati River** to be submitted duly certified by the concerned Govt. department. MoU for water uses for the project signed and approved by concerned authority be submitted.
4. Details of tentative nos of trees felled during construction of the project.
5. Report on alternate site analysis to be submitted.
6. Check the land record and provide details of category of Forest land.
7. To obtain information on any critical mineral zone in the proposed site.

The EAC therefore **deferred** the proposal.

Agenda Item No. 3.5

Greenko UP01 Closed Loop Pumped Storage Project (3660 MW) in an area of 699.4207Ha located at Village Gurar, District Sonbhadra, Uttar Pradesh by M/s Greenko Energies Private Limited – Terms of References (TOR) - Reg.

[Proposal No. IA/UP/RIV/449929/2023; F. No. J-12011/56/2023-IA.I (R)]

The Project Proponent vide letter (UP01PSP/MoEF&CC/EC/231102) & email dated 2.11.2023 informed that they have withdrawn the proposal.

Agenda Item No. 3.6:

Pedakota Open Loop Pumped Storage Project of capacity 1800 MW located at Tehsil Anathagiri Taluka, Distrcit Alluri Seetharama Raju, (Andhra Pradesh) by M/s Adani Green Energy Limited - Terms of References (ToR) - reg.

[Proposal No. IA/AP/RIV/450630/2023; F. No. J-12011/57/2023-IA.I (R)]

3.6.1: The proposal is for grant of terms of references (ToR) to the project for Pedakota Open Loop Pumped Storage Project of capacity 1800 MW in an area of 202.11 ha located at Tehsil Anathagiri Taluka, Distrcit Alluri Seetharama Raju, (Andhra Pradesh) by M/s Adani Green Energy Limited.

Shri Janardan Choudhary, Member, EAC (RV&HE) informed that he is presently working as Advisor in M/s Adani Green Energy Ltd; so, to avoid any conflict of Interest, he remained absent on Agenda item No. 3.6 regarding grant of ToR to the project for Pedakota Open Loop Pumped Storage Project of capacity 1800 MW in an area of 202.11 ha located at Tehsil Anathagiri Taluka, Distrcit Alluri Seetharama Raju, (Andhra Pradesh) by M/s Adani Green Energy Limited.

3.6.2; The Project Proponent and the accredited Consultant M/s R.S Envirolink made a detailed presentation on the salient features of the project and informed that-

i. Pedakota PSP is an Off-stream Open Loop pumped storage scheme with an installed capacity of 1800 MW.
ii. The Upper dam is located in between Dayarti village and Madrebu village, Alluri Seetharama Raju district and Lower dam is located near Sariya village, Alluri Seetharama Raju district of Andhra Pradesh.
iii. Sarada River is a Minor East flowing River between Mahanadi & Pennar.
iv. Upper Dam Catchment area is 2.34km2 and Catchment area of lower dam location is 81.20km2.
v. Water requirement from initial/one-time filling for reservoirs is about 9.1Mm3 and annual water requirement for recuperating of losses has been estimated to be about 0.8Mm3
vi. The proposed 1800MW Pedakota PSP (6 x 300MW) envisages following major civil structures:

    a) Upper Dam (Gravity Dam-Concrete): Crest length 860m, maximum height 83m above the deepest riverbed level. The gross storage capacity of Upper reservoir is 11.87Mm 3
    b) Lower Dam (Gravity Dam-Concrete): Crest length 635m, maximum height 68m above the deepest riverbed level. The gross storage capacity of Lower reservoir is 16.95Mm3

c) Upper Intake/Outlet-Diffuser type, 3 nos. of trash rack bays, each with a size of 31.0 m (W) x 10.5 m (H).
d) Lower Intake/Outlet: Diffuser type, 3 nos. of trash rack bays, each with a size of 25.0 m (W) x 8.0 m (H).
e) Pressure Shaft: 3 nos. of 2072m (length), 5.9m (diameter), steel lined.
f) Surface Powerhouse: 195.0m (length) x 22m (width) x 54.0m (height above the draft tube invert).
g) Transformer Cavern: 155.0m (length) x 18.0m (width) x 18m (height above the transformer foundation). Bus ducts run from Powerhouse to Transformer Hall.
h) Tailrace Tunnel: 115m (length) with 4.75m and 6.75 m(diameter), D-shaped, concrete lined.
i) Main Access Tunnel: 1050m (length), 6.0m x 6.0m size, D-shaped with invert lined.
j) Pothead Yard: 50m x 50m near the portal of Cable Ventilation tunnel

vii. Water availability: The upper dam is proposed to be located within the catchment of a rivulet draining into Bodderu river, a major tributary of Sarada River. The lower dam is proposed to be located across the minor nallah draining into Bodderu river, a major tributary of Sarada River. The catchment area up to the proposed upper dam site has been estimated to be about 2.34km2 and that of Lower dam as 81.20km2. The weighted average annual rainfall of catchment at upper and lower dam sites has been found to be about 1151mm and 1178mm respectively. The average annual yield at upper & lower dam site has been estimated to be about 0.72 Mm3 and 25.89 Mm3
viii. Land Requirement: Total 202.11 ha. Out of which 105.66 ha forest land.
ix. Environment sensitive area: There is no ESA in project area. The Kambalkonda WLS is about 45 km from project site.

3.6.3: 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 Pedakota Open Loop Pumped Storage Project of capacity 1800 MW in an area of 202.11 ha located at Tehsil Anathagiri Taluka, Distrcit Alluri Seetharama Raju, (Andhra Pradesh) by M/s Adani Green Energy Limited**.**

The project/activity is covered under Category A of item 1 (c) 'River Valley & Hydroelectric 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 EAC noted that the lower reservoir is proposed to be located within the catchment of Bodderu river, a major tributary of Sarada River. It was noted that the project site is located in dense forest area and the lower reservoir is blocking the path of Bodderu river**.** The consultant was also not able to explain the water availability in the river. The project proponent and their consultant were unable to explain the criterion/ justification for selecting the project site. The EAC was of the view that the tributaries/rivulets have vital role in survival of major river/reservoir and its ecosystem. The committee therefore

suggested that the proponent to identify a suitable site in terms of forest land involvement or revise the project layout keeping in view the all environmental and ecosystem related aspects of Bodderu river. It was noted that alternative site analysis was largely based on economic variability of the project; whereas, it should be focused on sustainable environment and ecology. viz. loss of minimum forested area 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 also suggested to submit the land record and provide details of category of Forest land with revised layout and make a visual graphic of the project site showing the actual status of the site.

The EAC therefore decided to **defer** the proposal for want of above mentioned additional information.

Agenda Item No. 3.7:

Upper Indravati Pumped Storage Project 600 MW (4x150 MW) in an area of 164 Ha located at Village Mukhiguda, Kalahandi District (Odisha) by M/s Odisha Hydro Power Corporation Limited- Terms of Reference (ToR) - reg.

[Proposal No. IA/OR/RIV/421598/2023; F. No. J-12011/09/2023-IA.I (R)]

The EAC noted that the proposal has already been considered by the EAC in its meeting held on 12th September 2023 by the previous committee, wherein, the previous EAC recommended the proposal for grant of specific/standard terms of reference as issued by the Ministry vide Office Memorandum No. F. No. IA3-22/33/2022-IA.III dated 14.08.2023 for Pump storage projects for preparation of EIA/ EMP report along with certain additional ToR for proposed Upper Indravati Pumped Storage Project 600 MW (4x150 MW) in an area of 164 Ha located at Village Mukhiguda, Kalahandi District (Odisha) by M/s Odisha Hydro Power Corporation Limited. The recommendations of the EAC may be processed accordingly.

The meeting ended with vote of thanks to the Chair.

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Annexure

ATTENDANCE

S. No.	Name	Role	Attendance
1.	Prof. G. J. Chakrapani	**Chairman**	P
2.	Dr. Udaykumar R. Y.	Member	P
3.	Shri Janardan Choudhary	Member	P
4.	Dr. Mukesh Sharma	Member	A
5.	Dr. J V Tyagi	Member	P
6.	Shri Kartik Sapre	Member	P
7.	Shri Ajay Kumar Lal	Member	P
8.	Shri Sharvan Kumar	Representative of CEA	P
9.	Shri Alok Paul Kalsi	Representative of CWC	P
10.	Dr. J.A. Johnson	Representative of WII	A
11.	Dr. A.K. Sahoo	Representative of CIFRI	A
12.	Shri Yogendra Pal Singh	Member Secretary	P

APPROVAL OF THE CHAIRMAN

Re: Draft MOM of 3rd EAC (RV&HEP) meeting held on 10.11.2023-Reg.

From : chakrapani govind <chakrapani.govind@gmail.com> Fri, Nov 24, 2023 10:10 AM

Subject : Re: Draft MOM of 3rd EAC (RV&HEP) meeting held on 10.11.2023-Reg.

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

Cc : Saurabh Upadhyay <saurabh.upadhyay85@gov.in>, Sourabh Kumar <sourabh.9@govcontractor.in>

Approved.

On Fri, Nov 24, 2023 at 9:42 AM Yogendra Pal Singh <yogendra78@nic.in> wrote:

> Dear Sir,
>
> The comments (highlighted) provide by you and Shri Janardan Choudhary have incorporated in the draft MOM of 3rd EAC meeting held on 10.11.2023 and . The correct draft MOM is attached herewith for your approval please.