File No.: J-12011/39/2023-IA.I (R)
Government of India
Ministry of Environment, Forest and Climate Change
IA Division
****

Dated **26/10/2026**

To,

Dr Ivaturi Rao
The Tata Power Co. Ltd.
24, Homi Modi Street, Bombay House, Mumbai 24, Homi Modi Street, Bombay House, Mumbai, MUMBAI, MAHARASHTRA, 34, Sant Tukaram Road, 400009
tatapower.moef@tatapower.com

Subject: Amendment in Environmental Clearance (EC) dated 15/09/2026 granted to the project under the provision of the EIA Notification 2006 and as amended thereof-regarding.

Sir/Madam,

This is in reference to your application submitted to MoEF&CC vide proposal number IA/MH/RIV/591888/2026 dated 15/09/2026 for grant of an amendment in prior Environmental Clearance (EC) to the project under the provision of the EIA Notification 2006-and as amended thereof.

2. The particulars of the proposal are as below :

(i) EC Identification No.	EC26A0000MH5465398A
(ii) File No.	J-12011/39/2023-IA.I (R)
(iii) Clearance Type	Amendment in EC
(iv) Category	A
(v) Schedule No./ Project Activity	1(c) River Valley/Irrigation projects
(vi) Sector	River Valley and Hydroelectric Projects
(vii) Name of Project	Bhivpuri Off-Stream Open Loop Pumped Storage Project (1000 MW)
(viii) Location of Project (District, State)	RAIGAD, MAHARASHTRA
(ix) Issuing Authority	MoEF&CC
(x) EC Date	14/10/2026
(xi) Applicability of General Conditions	NO
(xii) Status of implementation of the project	

3. In view of the particulars given in Para 1 above, the project proposal, including Form-1 (Common Application Form) (Part A, B and C), was submitted to the Ministry for appraisal by the Expert Appraisal Committee (EAC) under the provisions of the EIA Notification, 2006, and its subsequent amendments.

4. The above-mentioned proposal was reviewed by the 63rd Expert Appraisal Committee (EAC) during its meeting held on 25th September, 2026. The minutes of the meeting, along with all submitted application documents, are available on the PARIVESH portal, which can be accessed by scanning the QR Code above.

5. The EAC after detailed deliberations on the information submitted and as presented during the meeting recommended the proposal for amendment of EC issued by the Ministry vide letter dated 19.05.2025 for Bhivpuri Off-Stream Open Loop Pumped Storage Project (1000 MW) an area of 117.41 ha at Village Bhivpuri and Vadeshwar, Tehsil Karjat and Mawal, District Raigad and Pune, Maharashtra by M/s The Tata Power Co. Ltd. under the provisions of EIA Notification, 2006 and as amended along with certain additional conditions (Annexure - 1).

6. The details of the project as per the information submitted by the Project proponent are given in Annexure – 2.

7. The Ministry of Environment, Forest and Climate Change (MoEF&CC), having examined the proposal in accordance with the provisions of the Environment Impact Assessment (EIA) Notification, 2006, as amended, and based on the recommendations of the Expert Appraisal Committee (EAC), hereby accords approval for amendment of the Environmental Clearance (EC) granted to the Bhivpuri Off-Stream Open Loop Pumped Storage Project (1000 MW), located at Villages Bhivpuri and Vadeshwar, Tehsils Karjat and Mawal, Districts Raigad and Pune, Maharashtra, proposed by M/s The Tata Power Company Limited, under the provisions of the EIA Notification, 2006, as amended, subject to compliance with the Specific and Standard Environmental Clearance conditions stipulated in (Annexure – 1), for ensuring adequate environmental safeguards.

8. The amendment of the Environmental Clearance to the aforementioned project is under provisions of EIA Notification, 2006, as amended. It does not tantamount to approvals/consent/permissions etc. required to be obtained under any other Act/Rule/regulation. The Project Proponent is under obligation to obtain approvals /clearances under any other Acts/ Regulations or Statutes, as applicable, to the project.

9. The Ministry reserves the right to stipulate additional conditions, if found necessary at subsequent stages and the project proponent shall implement all the said conditions in a time bound manner. The Ministry may revoke or suspend the environmental clearance, if implementation of any of the above conditions is not found satisfactory.

10. All other environmental safeguards/ conditions mentioned in EC letter no. dated 19.05.2025 shall remain unchanged and be complied with.

11. This issues with the approval of the Competent Authority.

Copy To

1. The Secretary, Ministry of Power, Shram Shakti Bhawan Rafi Marg New Delhi -110 001, New Delhi, Delhi, secy-power@nic.in

2. The Secretary, Ministry of Jal Shakti Department of Water Resources River Development and Ganga Rejuvenation Government of India, Shram Shakti Bhawan Rafi Marg New Delhi – 110001, New Delhi, Delhi, secy-mowr@nic.in

3. The Member Secretary, CGWA, 18/11 Jamnagar House Man Singh Road, Central, Delhi, cgwa@nic.in
4. The Member Secretary, CPCB, Central Pollution Control Board Cbd-Cum-Office Complex East Arjun Nagar Delhi – 32, New Delhi, Delhi, mscb.cpcb@nic.in
5. The Chairman, Central Water Commission Ministry of Jal Shakti., 2nd Floor (South) Sewa Bhawan R K Puram New Delhi 110066, South, Delhi, chairman-cwc@nic.in
6. The Chairman Central Electricity Authority, Central Electricity Authority Ministry of Power, Room No. 201 2nd Floor (North) Sewa Bhawan New Delhi, Central, Delhi, chair@nic.in
7. The Deputy Director General, Regional Office, Deputy Director General Of Forests (C) Ministry Of Environment Forest And Climate Change Integrated Regional Office Ground Floor East Wing New Secretariat Building Civil Lines Nagpur-440001., N/A, N/A, apccfcentral-ngp-mef@gov.in
8. The Member Secretary, SPCB/PCC, Kalptaru Point 2nd - 4th Floor Opp. Cine Planet Sion Circle Sion (E), Mumbai, Maharashtra, mpcbparivesh@mpcb.gov.in
9. The District Collector, DC Office, 5th Floor Collector Office Building Opposite Sassoon Hospital Station Road Pune., Pune, Maharashtra, collector.pune@maharashtra.gov.in

Annexure 1

Specific EC Conditions for (River Valley/irrigation Projects)

1. The Eac After Detailed Deliberations On The Information Submitted And As Presented During The Meeting Recommended The Proposal For Amendment Of Ec Issued By The Ministry Vide Letter Dated 19.05.2025 For Bhivpuri Off-stream Open Loop Pumped Storage Project (1000 Mw) An Area Of 117.41 Ha At Village Bhivpuri And Vadeshwar, Tehsil Karjat And Mawal, District Raigad And Pune, Maharashtra By M/s The Tata Power Co. Ltd. Under The Provisions Of Eia Notification, 2006 And As Amended Along With The Following Additional Conditions.

S. No	EC Conditions
1.1	i. The Project Proponent (PP) shall carry out a comprehensive, site-specific enumeration of the additional shoreline vegetation, biodiversity, and habitat loss within the submerged zone. Based on this assessment, a targeted Shoreline Habitat Restoration and Compensatory Afforestation Plan shall be formulated and implemented in consultation with the State Forest Department prior to the impoundment of water up to the revised FRL." Time bound action plan for ensuring the compliance of Environmental Safeguard measures shall be submitted within one month to the concerned regional office. iii. "To mitigate the displacement of local fauna within the newly submerged zone between EL 132.0 m and EL 137.0 m, the Project Proponent (PP) shall prepare and implement a comprehensive, site-specific Wildlife Conservation and Eco-Restoration Plan in formal consultation with the State Forest and Wildlife Department. iv. All the conditions mentioned in Environmental Clearance dated 19.05.2025 and its subsequent amendment shall be complied with. v. All other environmental safeguards mentioned in EC letter no. dated 19.05..2025 shall remain unchanged.

Additional EC Conditions
N/A

Annexure – 2

Bhivpuri Off-Stream Open Loop Pumped Storage Project (1000 MW) at Village Bhivpuri and Vadeshwar, Tehsil Karjat and Mawal, District Raigad and Pune, Maharashtra by M/s The Tata Power Co. Ltd.

Details of the project:

The details of the project as per the information submitted by the Project proponent are given under:

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 Bhivpuri Off-Stream Open Loop Pumped Storage Project (1000 MW) is located in Karjat Taluka of Raigad District and Mawal Taluka of Pune District, Maharashtra. After obtaining all the required statutory clearances, approvals, and completing the land acquisition process, construction activities for the project commenced in May 2025.

ii. The chronology of EC/ FC approval is as under:

Sl. No.	Activity	Date	IC (MW)	Remarks
1	Scoping Clearance/TOR	23/09/2023	1000	TOR was issued to The Tata Power Co. Ltd.
2	Public Hearing (Pune District)	05/04/2024	1000	PH was conducted at Tata Camp, Mouje-Khand Village, Taluka-Mawal, District-Pune, Maharashtra.
3	Public Hearing (Raigad District)	12/04/2024	1000	PH was conducted at Tata Power Company Limited, Hydro Generating Station, P.O. Bhivpuri Camp, Taluka-Karjat District-Raigad, Maharashtra.
4	EC recommendation	30/08/2024	1000	EAC recommendation of environmental clearance subject to certain conditions vide MoEF&CC letter to The Tata Power Co. Ltd.
5	Consent to Establish (CTE)	13/01/2025	1000	In favour of The Tata Power Co. Ltd. for period up to commissioning of the unit or up to 5 year whichever is earlier.

Sl. No.	Activity	Date	IC (MW)	Remarks
6	Stage I forest Clearance for 20.15 ha of forest land	12/05/2025	1000	In favour of The Tata Power Co. Ltd.
7	Environment Clearance	19/05/2025	1000	In favour of The Tata Power Co. Ltd.
8	Stage II forest Clearance for 20.15 ha of forest land	04/11/2025	1000	In favour of The Tata Power Co. Ltd.
9	Final Diversion order for 20.14 Ha of forest land (0.01 Ha, after stage I and FC, was found to be non-forest land in possession of Tata Power)	05/03/2026	1000	Final Diversion order vide. FLD-1924/CR-215/F-10 issues by Government of Maharashtra Revenue and forest department dated 05.03.26
10	IRO EC Compliance Report	08/07/2026	1000	IRO site visit completed on 30th June 26. CCR compliance report vide **CCR No.: RO/MH/CCR/638884/2026 issued on 8/7/2026**
11	Memorandum of Change	29/08/2026	1000	Memorandum of Change (MoC) to the concurred DPR submitted to CEA for review and concurrence.

iii. At the DPR stage, the project was envisaged with an installed capacity of 1000 MW comprising 4 x 200 MW + 2 x 100 MW units. During detailed engineering, the configuration has been optimized to 3 x 333.33 MW units, while retaining the overall installed capacity of 1000 MW. The revised configuration and associated design modifications have been developed based on detailed engineering, site investigations, bathymetric and topographical surveys, optimization studies, safety considerations and recommendations received during the appraisal process. Accordingly, the proposed changes have been compiled through the Memorandum of Change (MoC) and submitted to CEA, vide letter dated 29/08/2026. The salient changes are summarized below:

1. **Geology & Geotechnical / Construction Materials**: The project location and overall geological setting remain unchanged. Additional boreholes at the revised upper-intake and HRT alignment confirm foundation suitability, and the characteristics and sources of construction materials remain as per the concurred DPR.
2. **Water Conductor System & Upper Intake:** The upper intake has been shifted within the existing Tata Power land boundary (optimising land use and the underwater approach channel), with the HRT alignment modified accordingly. The multiple bifurcated penstock arrangement has been simplified to three independent penstocks of 3.9 m diameter, the cofferdam has been eliminated, the two butterfly valve houses combined into one, and the approach-channel MDDL revised from 646.18 m to 651 m (approach channel ≈ 700 m). Access roads to the surge shaft and valve house have been realigned (including a tunnel section) within the approved forest corridors.

3. **Lower Reservoir:** The Full Reservoir Level has been raised from EL 132.0 m to EL 137.0 m (MDDL retained at EL 99.0 m), increasing live storage capacity from 4.5 MCM to 5.5 MCM; the freeboard has been increased from 3.0 m to 3.5 m (governing wind speed 44 m/s). The number of lower intake bays has been reduced from 4 to 3.
4. **Electro-Mechanical & Safety**: The machine speed has been revised to 428.57 rpm; the turbine / powerhouse centreline has been lowered from EL 56.0 m to EL 54.0 m for the required submergence and safety margins; and a Main Access Tunnel (MAT) of 7.5 m has been incorporated for enhanced safety, in line with CEA recommendations.
5. The proposed modifications improve constructability, safety and operational efficiency while retaining the 1000 MW installed capacity. As per the requirements set out in Environmental Impact Assessment (EIA) Notification, 2006, the OM dated 11/04/2022 and as per EC condition 10.9, *No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment, Forests and Climate Change (MoEF&CC).* Therefore, EC amendment is requested based on revised EIA/EMP report and Certified Compliance report.

iv. The major project components are:

- Upper intake structure.
- The water conductor system comprises of HRT and steel penstocks.
- Restricted orifice surge shaft with riser of 17.0m dia. with height of 57.58 and circular shaft of 20.0 m dia. and 67.50 m high.
- Pit powerhouse has an installation of three nos. of reversible Francis turbine each of 333.33 MW generating capacity.
- 3 numbers of steel lined tail race tunnel connecting the draft tube of the powerhouse and the lower intake gate shaft have a tunnel dia. of 4.50 m.
- Tailrace outlet structure (lower intake).
- Geomembrane faced rockfill embankment with height varying between 18.90 m to 34.50 m for creation of lower reservoir with 5.5 MCM live storage capacity.
- 1 no. of 150 m long bottom outlet equipped in lower reservoir for maintenance / evacuation of geomembrane faced rockfill dam.

v. The overall environmental and social footprint of the project remains essentially neutral, and the changes are addressed through updated EIA prepared for the amendment of Environmental Clearance. Salient Features, at the time of Environment Clearance, have been compared with that at present with proposed changes. The comparative salient features of the Project are as shown in **Table 2**.

Table 1: Comparative Salient Features of Bhivpuri Pumped Storage Project

S. No.	**Parameter**	**At the time of EC**	**Proposed (Post Detail Engineering)**
		4X200 MW+2X100 = 1000 MW	**3X333.33 = 1000 MW**
1	**Location**	Location	
	Country	India	India

S. No.	Parameter	At the time of EC	Proposed (Post Detail Engineering)
	State	Maharashtra	Maharashtra
	District	Raigad and Pune	Raigad and Pune
2	**Access to the Project**	Access to the Project	
	Road	Accessible from Highway 80 Km from Mumbai	Accessible from Highway 80 Km from Mumbai
	Nearest Airport	Navi Mumbai Airport	Navi Mumbai Airport
3	**PROJECT**		
	Type	Pumped Storage Project	
	Installed Capacity	1000 MW [2x100 MW + 4x200 MW]	1000MW [3 X 333.33 MW]
	Peak Generation duration	6 Hours	6 Hours
	Pumping Operation duration	6 Hours 42 Minutes	7.76 Hours
4	**RESERVOIR LEVELS & STORAGE DETAILS**		
4.1	**Upper Reservoir (Existing)**	Upper Reservoir (Existing)	
	Latitude	18^0 56’ 9.34” N	18^0 56’ 9.34” N
	Longitude	73^0 29’ 14.59” E	73^0 29’ 14.59” E
	FRL	667.17 m	667.17 m
	MDDL	646.18 m	651 m
	Live Storage	353.52 MCM at FRL	306.90 MCM at FRL
4.2	**Lower Reservoir (New proposed)**		
	Latitude	18^0 56’ 35.36” N	18^0 56’ 35.36” N
	Longitude	73^0 26’ 39.81” E	73^0 26’ 39.81” E
	FRL	132.0 m	137.0 m
	MDDL	99.00 m	99.00 m
	Total Storage	4.613 MCM	5.7 MCM
	Live Storage	4.577 MCM	5.5 MCM

S. No.	Parameter	At the time of EC	Proposed (Post Detail Engineering)
5	**CIVIL STRUCTURE**	CIVIL STRUCTURE	
5.1	**Lower Dam (New Proposed)**		
	Type	GFRD	GFRD
	Top of Dam	135.0 m	140.5
	Maximum Height	28.0 m	34.5 m
	Length	1899.00 m	1886.00 m
5.2	**Upper Intake**		
	Type	Diffuser Type	Diffuser Type
	Number of Intake Structure	1 Nos	1 Nos
	Nos of Trash rack bay	4 Nos.	4 Nos.
	Size of Trash rack bay	6.20 m (w) x 12.30 m (H)	6.20 m (w) x 13.50 m (H)
	Size of Trash rack Panel	20 Nos. [6.70 m (W) x 2.66 m (H) each] 05 Nos. in each bay	20 Nos. [6.70 m (W) x 2.66 m (H) each] 05 Nos. in each bay
	Sill Level of trash rack	629.00 m	633.00 m
	Invert level of Intake Conduit	629.00 m	633.00 m
	Nos. and size of Service Gate	1 Nos.- 6.5 m (W) x 8.3 m (H)	1 Nos.- 6.5 m (W) x 8.3 m (H)
	Nos. and size of Stoplog Gate	1 Nos.- 6.5 m (W) x 8.3 m (H)	1 Nos.- 6.5 m (W) x 8.3 m (H)
	Design Discharge (Each intake)	216.80 Cumec	228 Cumec
5.3	**Lower Intake**		
	Type	Diffuser Type	Diffuser Type
	Number of Intake Structure	5 Nos.	3 Nos.
	Nos of Trash rack bay	4 Nos. per Intake (Total 20 nos. Trash rack bays)	3x3 Nos. per Intake (Total 9 nos. Trash rack bays)
	Size of Trash rack Panel	4.10 m (w) x 5.0 m (H)	Size 5.50 m (W) x 6.5 m (H)

S. No.	Parameter	At the time of EC	Proposed (Post Detail Engineering)
	Sill Level of trash rack of Intake	75.0 m	88.00 m
	Invert level of Intake Conduit	74.60 m	88.00 m
	Nos and size of Service Gate	5 Nos.- 3.40 m (W) x 4.50 m (H)	3 Nos.- 3.60 m (W) x 4.50 m (H)
	Nos and size of Stoplog Gate	1 Nos.- 3.40 m (W) x 4.50 m (H)	3 Nos.- 3.60 m (W) x 4.50 m (H)
5.4	**Head Race Tunnel [HRT]**		
	Finish Shape and Size	Circular Finish - 8.3 m Diameter, Concrete Lined	Circular Finish - 8.3 m Diameter, Concrete Lined
	Length	1981.70 m	1855.42 m
	Design Discharge	216.80 Cumec	230 Cumec
5.5	**Surge Shaft**		
	Finish Shape and Size	Circular Finish – 20.0m Diameter	Circular Finish – 20.0 m Diameter
	Maximum Up surge	689.50 m	689.50 m
	Minimum Down surge	609.50 m	609.50 m
	Top Elevation of Surge shaft	691.50 m	691.50 m
	Bottom Elevation of Surge shaft	566.42 m	566.42 m
	Diameter of Orifice	4.50 m	4.50 m
5.6	**Surface/Buried Penstock & Pressure Tunnels (Left bifurcation)**		Surface/Buried Penstock & Pressure Tunnels
5.6.1	**Surface Penstock**	1 Nos	3 Nos
	Size and Type	5.30 m Diameter, Circular shape, steel lined	3.9 m Diameter, Circular shape, steel lined
5.6.2	**Surface Penstock**	1 Nos	NA
	Size and Type	4.3 m Diameter, Circular shape, steel lined	NA
5.6.3	**Surface Penstock**	2 Nos	NA

S. No.	Parameter	At the time of EC	Proposed (Post Detail Engineering)
	Size and Type	3.0 m Diameter, Circular shape, steel lined	NA
5.6.4	**Surface Penstock**	1 Nos	NA
	Size and Type	3.0 m Diameter, Circular shape, steel lined	NA
5.6.5	**Unit Pressure Shaft**	2 Nos.	3 Nos
	Size and Type	3.00m Diameter, Circular shape, steel lined	3.9m Diameter, Circular shape Steel lined
5.6.6	**Pressure Shaft**	1 Nos.	3 Nos
	Size and Type	3.00m Diameter, Circular shape, steel lined	3.9m Diameter, Circular shape Steel lined
5.6.7	**Unit Pressure Shaft**	2 Nos.	NA
	Size and Type	2.15m Diameter, Circular shape, steel lined	NA
5.7	**Surface/Buried Penstock & Pressure tunnels (Right bifurcation)**	Surface/Buried Penstock & Pressure tunnels (Right bifurcation)	
5.7.1	**Surface Penstock**	1 Nos	NA
	Size and Type	4.30 m Diameter, Circular shape, steel lined	NA
5.7.2	**Surface Penstock**	2 Nos	NA
	Size and Type	3.00 m Diameter, Circular shape, steel lined	NA
5.7.3	**Unit Pressure Shaft**	2 Nos.	NA
	Size and Type	3.00m Diameter, Circular shape, steel lined	NA
5.8	**POWERHOUSE**		
	Latitude	18^0 56’ 19.65” N	18^0 56’ 19.65” N
	Longitude	73^0 26’ 56.73” E	73^0 26’ 56.73” E
	Type	Pit-type Powerhouse	Pit-type Powerhouse
	Installed capacity	1000 MW [4x200 + 2x100]	1000 MW [3 x 333.33]
	Number of units	6 Nos	3 Nos
	Type of turbine	Reversible Francis, Vertical Shaft	Reversible Francis, Vertical Shaft

S. No.	Parameter	At the time of EC	Proposed (Post Detail Engineering)
	Centre line of generating unit	56.00 m	54.00 m
	Powerhouse size	207.50 m long x 24 m wide x 39m High (from MIV floor to bottom of roof truss)	164.3 m long x 25.2 m wide x 50.5m High (Approx. from MIV floor to bottom of roof truss)
	Rated Net Head (generation)	520.40 m for 200MW unit 516.60 m for 100MW unit	512.38 m
	Rated Net Head (Pumping)	553.80 m for 200MW unit 556.30 m for 100MW unit	548.83 m
	Service bay level	70.00 m	75.00 m
5.10	**TRANSFORMER CUM GIS Hall**		
	Type	Surface	Surface
	Transformer Bay Size	207.55 m Length x 17.0 m wide x 22.0 high	207.55 m Length x 17.0 m wide x 29.0 high
5.11	**TAIL RACE TUNNEL**		
5.11.1	**Unit TRT**	2 Nos, (From 100 MW Unit)	NA
	Size and Type	3.20 m Diameter, Circular shape, Steel Lined	NA
5.11.2	**Main TRT**	5 Nos	3 Nos,
	Size and Type	4.50 m Diameter, Circular shape, Steel Lined	4.50 m Diameter, Circular shape, Steel Lined
	Length	191.41 (Connected with Small Units) 230.21 m (Connected with Big Unit)	218 m
5.12	**POTHEAD YARD**		
	Type	Surface	Surface
	Size	135.0 m (L) x 51.0 (W)	85.0 m (L) x 51.0 (W)
6.	**CONSTRUCTION PERIOD**		
	Construction Period	4 Years (excluding 17 months of pre-construction activities)	44 Months (excluding 17 months of pre-construction activities)

S. No.	Parameter	At the time of EC	Proposed (Post Detail Engineering)
7.	**ELECTRO-MECHANICAL EQUIPMENT**		
7.1	**Generating Mode**		
	Turbine Type	Reversible Francis, Vertical Shaft	Reversible Francis, Vertical Shaft
	Max Net Head	549.37 m for 200MW unit 545.57 m for 100MW unit	544.74 m
	Min Net Head	495.38 m for 200MW unit 491.58 m for 100MW unit	486.05 m
	Rated Net Head	520.37 m for 200MW unit 516.57 m for 100MW unit	512.38 m
7.2	**Pumping Mode**		
	Max Net Head	582.87 m for 200MW unit 585.27 m for 100MW unit	577.37 m
	Min Net Head	528.88 m for 200MW unit 531.28 m for 100MW unit	526.10 m
	Rated Net Head	553.87 m for 200MW unit 556.27 m for 100MW unit	548.83 m
	Design Discharge per unit	For 6 Units	For 3 Units
	Generating Mode	43.3 cumec for 200MW unit 21.8 cumec for 100MW unit	76 cumec
	Pumping Mode	38.7 cumec for 200MW unit 19.30 cumec for 100MW unit	56.50 cumec
7.3	**Generator Motor**		
	Generator Type	Vertical shaft, Synchronous generator, Suspended type	Vertical shaft, Synchronous generator, Suspended type
	Turbine Weighted Average Efficiency (Generation)	0.92	0.90

S. No.	Parameter	At the time of EC	Proposed (Post Detail Engineering)
	Turbine Weighted Average Efficiency (Pumping)	0.935	0.9184
	Generator Weighted Average Efficiency	98.5%	98.74% (G) & 98.77% (P)
	Synchronous Speed	375 rpm for 200MW Unit 500 rpm for 100 MW unit	428.57 rpm
	Generator Voltage	18 kV for 200MW unit 18 kV for 100 MW unit	19 kV
	Transmission Voltage	400 kV	400 kV
	Generator Step up Transformer	87 MVA, 1 Phase, 18kV/400 kV for 200MW unit (total 13 Nos) 44 MVA, 1 Phase, 18kV/400 kV for 100MW unit (total 7 Nos)	152 MVA, 1 Phase, 19kV/400 kV for 333.33 MW unit (total 10 Nos)
8	**ANNUAL ENERGY (Upper Reservoir remains at FRL and Lower reservoir remains at MDDL whereas during Pumping LR is at FRL and UR at FRL)**		
	Annual Energy for Generation (Average)	2040.86 MU	2080.50 MU
	Average Generation Duration (Peaking)	5.93 Hours	6.0 Hours
	Average Annual Energy for Pumping	2612.79 MU	2659.69 MU
	Average Pumping Duration	6.567 Hours	7.76 Hours
	Average Cycle Efficiency of the Plant (95% Operational)	78.11%	78.22%

Environment Clearance letter was issued on 19/05/2025 based on total land requirement for the project as 117.41 Ha – 20.15 Ha as forest land and 97.26 ha as non-forest/private land. FC Stage I (12/05/2025) and FC Stage II (04/11/2025) are also for 20.15 Ha of forest land. However, during final handover of forest land, 0.01 Ha covered under the diverted

forest land is actually, Tata Power owned non-forest land. Therefore, final diversion order dated 05/03/2026 is for 20.14 Ha of forest land. Total project land requirement remains the same i.e. 117.41 Ha – 20.14 Ha forest land and 97.27 Ha non-forest/private land.

After the revision in project configuration, there are changes in components wise land requirement, however total land requirement remain unchanged as given below in **Table 3**.

For component wise change in forest land, an application will be made for amendment to a previously granted approval in Form H, under the Van (Sanrakshan Evam Samvardhan) Adhiniyam (formerly the Forest (Conservation) Act, 1980).

For component wise change in private land, no new land acquisition is required as the additional land required for some of the components is Tata Power owned land.

Table 2: Land Requirement for Bhivpuri Pumped Storage Project

Component	**Private Land (Ha)**		**Forest Land (Ha)**		**Total (Ha)**	
	Old	**New**	**Old[1]**	**New**	**Old**	**New**
Adit			0.370	0.470	0.370	0.470
Approac h Roads	1.960	7.140	2.000	1.550	3.960	8.690
Batching plant, Crusher, Cement Storage	0.410	1.430			0.410	1.430
Dump Yard	40.990	35.090			40.990	35.090
Labour Camp	2.000	1.740			2.000	1.740
Lower Reservoir	29.240	31.220			29.240	31.220
Magazine	0.400	0.000			0.400	0.000
Power House	8.150	3.520			8.150	3.520
Site Office	0.100	0.130			0.100	0.130
Surface Penstock	9.840	7.680	17.320	17.630	27.160	25.310
Underground HRT (Change of alignment)	2.140	1.350	0.450	0.490	2.590	1.840
Underground TRT	2.040	0.490			2.040	0.490
Upper Intake		2.210			0.000	2.210
Other Storage (EM, HM, Civil)		3.250			0.000	3.250

[1] Old reflects the corrected land classification; 0.01 ha earlier shown as forest is Tata Power non-forest land, hence EC-stage 20.15 ha forest / 97.26 ha private is revised to 20.14 ha / 97.27 ha.

Component	Private Land (Ha)		Forest Land (Ha)		Total (Ha)	
	Old	New	Old[1]	New	Old	New
Fabrication Yard		2.020			0.000	2.020
Grand Total	**97.270**	**97.270**	**20.140**	**20.140**	**117.410**	**117.410**

1. STATUS OF CONSTRUCTION WORK:

The development of the lower reservoir, powerhouse, project roads, and Job facility/ workshop areas is currently underway. Construction for the remaining components has not yet commenced. Present status of construction activities is shown in **Table 4** below.

Table 3: Status of Work of Bhivpuri PSP

S. No	Components	Construction work status	% of work Completed
1	Lower Reservoir	Excavation	65.5%
2	Upper Intake	Excavation	61.8%
3	Penstock/ Pressure Shaft	Excavation	16.4%
4	Switch Yard	Design WIP	-
5	Powerhouse	Excavation	72.1%
6	Adit to Pressure shaft	Ramp Excavation	89.0%
7	Project Roads	Excavation	25.0%
8	Contractor Facilities & Stores	Operational	80.0%
9	Muck Disposal Area	Available	-
10	Tail Race Channel	Linked to S.no.01	-
11	Job Facility Yard & others	Available	-

2. DESCRIPTION OF THE ENVIRONMENT

The baseline environmental studies for the proposed Bhivpuri Pumped Storage Project (PSP) were initially conducted during the winter season (December 2023 to February 2024) as part of the earlier Environmental Impact Assessment (EIA) study prepared for obtaining Environmental Clearance (EC). Keeping in view the expected appraisal during October-November, 2026; Dec 23-Feb 24, data is used as it will remain valid as it will be less than 3 years old. Fresh baseline data was collected during pre-monsoon season (March 2026 to May 2026) in compliance with the two seasons valid data requirement for Open loop PSPs. The assessment covers physical, biological and socio-economic components within the project area and 10 km study area.

3. SUMMARY OF COST

At the time of grant of Environmental Clearance, the approved EMP cost for Bhivpuri Pumped Storage Project was **Rs. 7504.63 lakh** (excluding the cost of NPV, Compensatory afforestation and R&R). Subsequent to the grant of Environmental Clearance and in compliance with FC requirements, a Soil and Water Conservation Plan for Bhivpuri PSP has been prepared. The cost of this plan has been incorporated in the updated forest cost.

Accordingly, the updated EMP and Forest Diversion cost works out to be **Rs. 8027.39 lakh**, comprising Rs. 7504.63 lakh for environmental components and Rs. 522.76 lakh for forest-components, including Compensatory Afforestation and NPV.

Out of the total updated EMP cost, expenditure of **Rs. 1428.85 lakh** has been incurred so far. On the forest side, as the diversion process is complete and land is handed over, entire amount of Rs. 522.76 lakh has been paid.

Total EMP cost of Rs. 75.04 crore works out to be 1.58% of the total project cost of Rs. 4743.59 crore.The component-wise EMP cost and expenditure incurred are summarized in **Table 5**.

Table 4: Cost for Implementing Environmental Management Plan

S. No.	Component of EMP	Capital Cost (Rs. In lakh)	Recurring Cost (Rs. In lakh)							Total Cost (Rs. In Lakh)	Total Expenditure Cost (Rs. In lakh) Year 1
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7		
1	Catchment Area Treatment Plan	121.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**121.25**	**121.25**
2	Biodiversity Conservation & Wildlife Management	210.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**210.00**	**210.00**
3	Fisheries Conservation and Management Plan	50.00	14.75	14.75	14.75	14.75	0.00	0.00	0.00	**109.00**	**0.00**
4	Muck Dumping and Management Plan	86.50	508.00	900.20	925.17	925.00	18.25	18.25	18.25	**3399.62**	**238.00**
5	Landscaping, Restoration of Construction Sites	20.00	15.00	20.00	30.25	25.75	20.25	10.25	10.00	**151.50**	**98.00**

6	Green Belt Development Plan	0.00	3.40	6.40	10.00	5.00	5.00	5.00	5.00	**39.80**	**6.00**
7	Sanitation and Solid Waste Management Plan	142.00	25.25	25.25	25.25	25.25	0.00	0.00	0.00	**243.00**	**69.30**
8	Public Health Delivery System	110.00	34.75	34.75	34.75	34.75	0.00	0.00	0.00	**249.00**	**101.50**
9	Energy Conservation Measures	40.00	65.50	65.50	65.50	65.50	0.00	0.00	0.00	**302.00**	**60.41**
10	Labour Management Plan	30.00	13.00	13.00	13.00	13.00	0.00	0.00	0.00	**82.00**	**66.28**
11	Disaster Management Plan	275.00	31.25	31.25	31.25	31.25	0.00	0.00	0.00	**400.00**	**0.00**
12	Control of Air, Noise and Water Pollution	0.00	15.00	15.00	15.00	15.00	0.00	0.00	0.00	**60.00**	**11.60**
13	Environmental Monitoring Programme	0.00	38.44	38.44	38.44	38.44	0.00	0.00	0.00	**153.76**	**24.00**
14	Local Area Development Plan	1172.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**1172.06**	**422.51**
15	Watershed Development Plan	811.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**811.64**	**0.00**
TOTAL		**3068.45**	**764.34**	**1164.54**	**1203.36**	**1193.69**	**43.50**	**33.50**	**33.25**	**7504.63**	**1428.85**

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Signature Not Verified

Digitally Signed by : Yogendra Pal Singh
Member Secretary, MoEFCC (EC)

Date: 26/10/2026