सत्यमेव जयते

Government of India
Ministry of Environment, Forest and Climate Change
IA Division
(River Valley and Hydroelectric Projects)
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Minutes of 30TH EXPERT APPRAISAL COMMITTEE meeting River Valley and Hydroelectric Projects held from 30/04/2025 to 30/04/2025

Date: 06/05/2025

MoM ID: EC/MOM/EAC/256587/4/2025

Agenda ID: EC/AGENDA/EAC/256587/4/2025

Meeting Venue: N/A

Meeting Mode: Virtual

Date & Time:

30/04/2025	10:30 AM	05:30 PM

1. Opening remarks

The 30th meeting of the EAC for River Valley & Hydroelectric Projects organized by the Ministry of Environment, Forest and Climate Change, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi, was held on 30th April, 2025 through Virtual mode, under the Chairmanship of Prof. G. J. Chakrapani.

2. Confirmation of the minutes of previous meeting

The Minutes of the Meeting held on 29th EAC meeting on 21st April, 2025 were confirmed.

3. Details of proposals considered by the committee

Day 1 -30/04/2025

3.1. Agenda Item No 1:

3.1.1. Details of the proposal

Bhavali Pumped Storage Project (1500 MW) by **JSW Renewable Energy (Vijayanagar) Limited** located at **NASHIK,MAHARASHTRA**			
Proposal For		Fresh EC	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/MH/RIV/481391/2024	J-12011/08/2022-IA-I(R)	08/08/2024	River Valley/Irrigation projects (1(c))

3.1.2. Project Salient Features

30.1.1: The proposal is for grant of Environmental Clearance (EC) to the project for Bhavali Pumped Storage Project (1500 MW) in an area of 278.92 Ha in Village Kalbhonde, Kothale and Jamunde Sub District Shahapur and Igatpuri, District Thane and Nashik, Maharashtra by M/s JSW Energy PSP Two Limited.

30.1.2: The Project Proponent and the accredited Consultant M/s. EQMS India Private Limited, made a detailed presentation on the salient features of the project and informed that:

i. The proposal is for environmental clearance to the project for Bhavali Pumped Storage Project (1500MW), located at Village Kalbhonde, Kothale and Jamunde Sub District Shahapur and Igatpuri, District Thane and Nashik, Maharashtra, by M/s JSW Energy PSP Two Ltd.

ii. The project proposal was considered by the Expert Appraisal Committee (Hydro River Valley Sector) in its 27th meeting held during 09.05.2022 and recommended for grant of Terms of References (ToR) for the Project. The ToR has been issued by Ministry vide letter No J-12011/08/2022-IA. I(R) dated 27.6.2022.

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

iv. The geographical co-ordinate of the project are –

Upper Reservoir: $19^0$36'31.69" N ,$73^0$35' 45.06" E;

Lower Reservoir: $19^0$34' 56.38" N,73^0 35'10.0'' E"

v. The Bhavali Pumped Storage Project envisages creation of an upper reservoir (gross storage:12.35 MCM & live storage: 11.08 MCM) by constructing 962.47m long dam comprising of 822.47 m long Geomembrane faced rockfill dam (GRFD) with maximum height of 48.64m from foundation, 60m long and 61m height ungated spillway with 4 bays of 12.5m each; 4 blocks of 20m length each non-overflow section of maximum height of 49.57m from foundation, two each on either side of spillway. 80m long saddle dam (maximum height 10m from foundation) to reduce backwater to enter ESZ area. The lower reservoir (gross storage:13.26MCM; live storage:11.71MCM) shall be created by constructing concrete gravity dam 365.5m long at top with maximum height of 48.15m from foundation and 104 m long ,74m high (from foundation) ungated spillway with 8 bays of 10.5m each. Diffuser type Intake structure with 3 intakes (25.5mx10.5m) of 42.44m length shall be provided. The water conductor system shall comprise of 67.96 m long three intake tunnels of 7m diameter each with design discharge of 131.74cumec each. 5.1m diameter, followed Steel lined pressure shaft 3 nos. of independent, 5.1m diameter with length varying from 1568.09m to 1594.89m, six 3.8m diameter branch pressure shaft after first bifurcation of design discharge 65.96cumec each; two 2.9m diameter 46.83m long steel lined branch pressure shaft after second bifurcation of design discharge 32.98cumec each. Underground powerhouse (167mx22mx52.9m) housed with 7 No's. Francis vertical shaft reversible pump-turbine (5 X 250MW & 2 X 125 MW) discharging into circular draft tube 5.20 m and 4.0m diameter for large and small unit; two 4m diameter concrete lined branch tail race tunnel for 32.98cumec discharge after 3rd bifurcation; six 5.2meter diameter concrete lined branch tail race tunnel for 65.78 cumec discharge after 4th bifurcation; followed by three 7m diameter main tail race tunnel with length varying from 621.17m to 646.57m,each discharging 131.74cumec, 105m long trapezoidal tail race pool followed by 560m long trapezoidal tail race channel. Annual energy generation by Bhavali PSP in turbine mode is 4049.17 MU whereas annual energy consumed in pump mode is 5110.33 MU.

vi. **Land Requirement:** The total land requirement under the project for upper and lower rock fill dam, reservoir & other works, has been assessed as 278.92 ha of which private land is 35.18 ha, forest land 243.74 ha.

vii. **Demographic details in 10 km radius of project area:** The study area comprises of 40 villages. As per the Census of India 2011, the total households under study area villages are 9190. The total population of villages is 52201 composed of 26398 males and 25803 females with sex ratio of 977. The cast wise composition of the total population made up the Scheduled Cast population is 2234 (4.28%) and Scheduled Tribe population is 32079 (61.45%), which shows that the Scheduled Tribe is the dominant cast in most of the villages in study area. The total literate population is

28605, of which male and female population is 16974 and 11631 respectively. Total literate population is 64.83%, of which male and female literates are 76.40 % are 53.09 % respectively. The total working population is 24293 (46.53%) which comprises of main workers 18849 (36.10%) and marginal workers 5444 (10.43%) while non-workers are 27908 (53.47%). Among main workers, cultivators constitute the highest category (54.3%), followed by cultivators (29.7%) and other workers (15.90%). Among marginal workers agricultural labour constitutes the highest category (50.7%) followed by cultivators (31.9%) and other workers (15.4%).

viii. **Water Requirement:** The total water requirement during construction shall be 1000 kld(Domestic:100kld & Construction 900kld) and shall be met from the surface sources viz., nearby reservoir(s).

ix. **Project Cost**: The estimated project cost is Rs. 8964.02 Crores. Total capital cost earmarked towards environmental pollution control measures and the Recurring cost (operation and maintenance) will be about Rs. 282 lakh per annum.

x. **Project Benefit**: Employment will be 3000 persons as direct. PP proposes to allocate Rs 600 lakh for implementing issues raised during public hearing towards CER (As per Ministry's O.M. F.No.22-65/2017-IA.III, dated 30th September,2020, CER cost is not based on percentage cost of project)

xi. **Environmental Sensitive area**: Kalsubai Harichandragad Wildlife Sanctuary exists within 10 km of project boundary. However, no part of the project lies within Eco-sensitive zone of the Sanctuary. The distance between the project boundary and Kalsubai Harichandragad Wildlife Sanctuary is 2.21 km and 12.5 from ESZ boundary. The distance of the Wildlife Sanctuary has been duly approved by the Chief Wildlife Warden, Nagpur, Maharashtra vide letter no. -()///..//- on dated 29th Nov., 2024.

(1) The MOU for setting up of the proposed Bhavali Pumped Storage Project (1500MW) has been made on 14th day of September,2021, between the Industries Department, Government of Maharashtra and M/s JSW Neo Energy Ltd.

(2) Govt. of Maharashtra, Water Resources Department, Hydrology and Dam Safety, issued certificate for water availability for project vide No. WFR/Ulhas/894, dated 21.11.2022.

xiii. **Resettlement and rehabilitation:** The total private land required for the project is 35.18 ha which is spread over Jamunde village in Tehsil Igatpuri, District Nashik, Maharashtra. There shall be 130 affected families of which 10 shall be displaced families. The acquisition of the land shall be carried out by mutual negotiation in consonance with "RFCTLARRA", 2013. The total cost for implementing Rehabilitation and Resettlement Plan is Rs 1232 lakh comprised of the cost of land acquisition (Rs 854.54 lakh), R&R entitlement (Rs 82.05 lakh) and the cost of Tribal Development Plan (Rs 295 lakh).

xiv. **Scheduled –I species:** Nine mammalian species (Panther, Striped Hyaena, Jackal, Khokad, Jungle cat, Wolf, Chow Singha, Barking deer and Porcupine); 11 avifauna species (White backed Vulture, Slender billed vulture, Sparrow hawk. Brahminy kite, Booted eagle, Crested serpent eagle, Grey junglefowl, Indian peafowl, River tern, Barn owl and Brown wood) and three herpetofauna species (Indian Cobra, Russell's Viper and Rat snake) were recorded/reported from study area.

A budget of Rs. 326.50 Lakhs/- has been approved by Chief Wildlife Warden, Nagpur, Maharashtra vide letter no. -()///..//- on dated 29th Nov., 2024 for conservation of these Schedule-I species under Wildlife and Biodiversity Management Plan.

xv. **Alternative Studies:**

Based on ground topography and surface geo-mapping for preliminary understanding of the geological set up of the project area, for layout of WCS and powerhouse, two alternatives, viz., Alternate -1 with all components of WCS and powerhouse as underground and the Alternate-2 with surface powerhouse, were studied. Alternate-1 was preferred over Alternate-2 as the latter involved about 135m deep surface excavation for surface powerhouse, which would necessitate intricate supports and slope stability measures, besides posing seepage problem during operation compounded with problems with storm water drainage. The selected alternative has been found to be more suitable considering the minimal overall forest land requirement and minimal requirement of private land and least displacement of people habitations.

Period	**1.3.2022 to 30.12.2022 (Three seasons)**
AAQ parameters at 6 locations (minimum & maximum)	PM_{10}: 38.3 to 66.3 µg/m^3
	$PM_{2.5}$: 15.6 to 25.5 µg/m^3
	SO_2: 5.1 to 9.6 µg/m^3
	NOx: 6.5 to 12.8 µg/m^3

Incremental GLC Level	PM_{10}: Max. GLC: 13.83 µg/m^3	
	$PM_{2.5}$: Max. GLC: 1.22 µg/m^3	
	SO_2: Max. GLC: 1.08 µg/m^3	
	NOx: Max. GLC: 12.67 µg/m^3	
River water	pH: 6.97to 7.41	

samples at 3 locations	Dissolved Oxygen: 7.3 to 8.3 mg/l
	Total Dissolved Solids: 74to 81mg/l
	Total Hardness (as $CaCO_3$):56 to63mg/l
	Total Alkalinity (as $CaCO_3$):2

	to28 mg/l
	Calcium (as Ca): 16.8to 18.4 mg/l
	Magnesium (as Mg): 2.9 to 4.7 mg/l
	Oil and Grease: <2 mg/l
	Sulphate (as SO_4): 8.2 to11.6 mg/l

	Nitrate (as Na): 2.4 to 6.7 mg/l	
	Chloride (as Cl): 30.3 to 40.8 mg/l	
	Iron (as Fe): 0.12to 0.3 mg/l	
	Copper (as Cu): <0.05 mg/l	
	Lead (as Pb):	

	<0.01 mg/l
	Cadmium (as Cd): <0.003mg/l
	Chromium (as Cr): <0.05 mg/l
	Mangan ese (as Mn): <0.05 mg/l
	Arsenic (as As): <0.01 mg/l

	Mercury (as Hg): <0.001mg/l
Pond water samples at 3 locations	pH: 7.12 to7.56
	Dissolved Oxygen: 6.9 to 8.4 mg/l
	Total Dissolved Solids: 82to 107 mg/l
	Total Hardness (as Ca

	CO_3):59to77mg/l	
	Total Alkalinity (as $CaCO_3$):2to27mg/l	
	Calcium (as Ca): 18.1to21.mg/l	
	Magnesium (as Mg): 3.3 to 5.8 mg/l	
	Oil and Gr	

	ease:<2mg/l	
	Sulphate (as SO_4): 7.4 to14.1 mg/l	
	Nitrate (as Na): 3.1 to 4.9 mg/l	
	Chloride (as Cl): 30.9to 41.1 mg/l	
	Iron (as Fe): 0.05 to 0.21m	

	g/l
	Copper (as Cu): <0.05 mg/l
	Lead (as Pb): <0.01 mg/l
	Cadmium (as Cd): <0.003mg/l
	Chromium (as Cr): <0.05 mg/l
	Manganese (as

	Mn): <0.05 mg/l	
	Arsenic (as As): <0.01 mg/l	
	Mercury (as Hg): <0.001mg/l	
Ground Water samples at 6 locations	pH: 6.58 to 7.86	
	Total Dissolved Solids: 216 to 310 mg/l	

	Total Hardness (as $CaCO_3$):140 to190 mg/l	
	Total Alkalinity (as $CaCO_3$): 37 to 89 mg/l	
	Calcium (as Ca): 34.1 to 47mg/l	
	Magnesium (as Mg):	

	12.4 to 26.9 mg/l
	Oil and Grease: :< 2mg/l
	Sulphate (as SO_4): 21.3to 36.0 mg/l
	Nitrate (as Na): 2.8 to 5.1 mg/l
	Chloride (as Cl): 57.1to 83 m

	g/l
	Iron (as Fe): 0.3 to 0.10mg/l
	Copper (as Cu): <0.05 mg/l
	Lead (as Pb): <0.01 mg/l
	Cadmium (as Cd): <0.003mg/l
	Chromium (as C

	r): <0.05 mg/l	
	Manganese (as Mn): <0.05 mg/l	
	Arsenic (as As): <0.01 mg/l	
	Mercury (as Hg): <0.001mg/l	
Noise levels Leq (Day & Ni	Residential Area Leq. (Day): 46.9 t	

ght) at 6 locations	o 53.1 dB (A)	
	Residential Area Leq. (Night): 35.7 to 42.8 dB (A)	
	Commercial Area Leq. (Day): 59.9 to 62.6 dB (A)	
	Commercial Area Leq. (	

	Night): 48.3 to 50.3 dB (A)
Soil Quality at 10 locations	Bulk density: 1.28 to 1.49 gm/cc
	pH range: 6.60 to 7.34
	Electrical conductivity (EC); 107 to 446 µmhos/cm
	Ca

	lcium content: 1524 to 3281 mg/kg;
	Sodium: 154 to 418 mg/kg
	Potassium: 127to826 mg/kg;
	Nitrogen: 153to849 mg/kg
	Phosphoro

	us: 6.6 to 46.9 mg/kg;
	Cation Exchange Capacity (CEC): 10.7 to 23.67 meq/100 gm
	Magnesium: 242 to 452 mg/kg
	Sulphur: 15.4 to 32.8 m

	g/kg	
	Organic Matter: 1.33 % to 5.26%	
Flora & Fauna	**Flora:** During primary and secondary study carried out under present project, 88 tree species (37 families	

	s), 41 shrub species (23 families), 40 herbs species (26 families) and 14 species of climbers (10 families) and 18 species of grasses (1 family) were

	recorded from the study area. About 5 economically important and 36 important medicinal/ethnobotanical important an ce plant species were recorded. One e nd

	emic species was also reported.
	Fauna Sixteen mammalian species were found/ reported from secondary sources as well as from the primary survey and

	consultations. Out of reported species nine species are Schedule-I species and three species and four species belong to Schedule - II and IV respective

	ly. As per IUCN criteria (3.1) study area harbors three vulnerable species and one species categorized under threatened category, Forty-nine bird species

	s were observed / reported during the survey of which ten species belong to Schedule-1 of WPA, 1972. Rest of the species belong to either Schedule-II o

	r IV. As per the IUCN Red list two species Vultures are categorized as “Critically Endangered” and all other species are listed as “Least Concern”. Tw

	o species of amphibians, 4 species of snakes and 4 species of lizards recorded/ confirmed in the study area of which Indian Cobra, Russell's Viper and Ra

	ts nake belong to Schedule-I of WPA, 1972, as amended in December, 2022. Eight species of butterflies were recorded/ reported of which none bel

	on g to Sch edul e-1 **Aq ua tic** Tw ent y-o ne Ph yto pla nkt on spe cie s we re rec ord ed: Cy an op hy cea n (8), Ba cill ari op hy cea e (5), Ch lor op hy cea e (7), Eu gle no ph

	ycin (1). Twelve species of Zooplankton were recorded: Rotifera (5), Cladocera (4), Copepods (2) and Ostracoda (1). Among fish population 10 s

	pecies belonging to 4 families viz., Cyprinidae (*Catla catla, Labeo rohita, Cirrihinus mrigala, Labeo calbasu, Puntius chola* and *Garra mullya*); Chan

	nidae (*Channagachua&Channapunctatus*); *Bagridae*(*Rita rita*); Saccobranchidae (*Heteropneustes fossilis*) were identified.

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

a) Solid Waste: Municipal Solid Waste (MSW) likely to be generated during construction and operation shall be 38.8 Ton/annum and 7.2ton/annum respectively which shall be managed as per Solid Wastes Management Rules, 2016.

Hazardous waste: It inter alia includes burnt mobile oil and greases (6ton/annum) from vehicles and construction machinery and equipment which shall be handled and disposed through authorised dealer as per Hazardous and other Wastes (Management &Transboundary Movement) Rules,2016.

The total quantity of muck / debris, to be generated due to the project, shall be 64.06 lakh cum, out of which 36.08 lakh cum shall be consumed on the project work leaving 28.43 lakh cum, which with 42% swell factor shall amount to 40.37 lakh cum shall be disposed at two designated muck disposal sites in an area of 44.09 ha. The muck disposal sites shall be developed from below the ground level by providing retaining wall. After construction of retaining wall, the muck brought in dumpers shall be dumped and manually spread behind the wall. The muck shall be laid with vertical angle not exceeding 28^0 in such a manner that rock mass is properly stacked behind the wall with minimum of voids. The muck pile shall be later covered with geo-Geo-coir textile properly held to the ground by steel wire U-nails and rehabilitated by afforestation of herbs and shrubs.

Particular	District Nashik	District Thane
Advertisement for PH with date	Local newspaper “Sakal” (Marathi) and the “Times of India” (English) on 07.1	Local newspaper” Sakal” (Marathi) and the “Free Press

	2.2023.	Journal” (English) on 12.01.2024.
Date of Public Hearing	10.01.2024	13.02.2024
Venue	Near to the Upper Reservoir, in village	Near to the Lower Reservoir, in

	Jamunde, Post Manvede, Tehsil Igatpuri, District Nashik	village Kalbhonde, Tehsil Shahapur, District Thane.
Chaired by	Mr. Ravindra Thakre, SDM, Igatpuri, Nashi	Ms. Manisha Jaybhaye Dhule, A

	k	ditional Collector, Thane
Main issues raised during PH	• Adequate compensation should be granted for acquiring their land •Job opportunit	•Job opportunities for the youth and unemployed peopl

	ies for the youth and unemployed people • Impact to flow of water, wildlife, trees and medicinal plants, agricultural and ho	e • Address all of problems like scarcity of water, electricity and lack of roads and education fa

	rti cu ltu ral cr op s •R e m ed ial m ea su re s f or ad dr es si ng po llu tio n co ntr ol an d wi ldl ife im pa cts du rin g co ns tru cti on •A dd re ss al of pr	ci lit ie s • D e m a n d e d C o m p a n y to es ta bl is h a H ig h S c h o ol in th e vi ll a g e • R e p ai rs of lo ca l

	oblems like scarcity of water, electricity and lack of roads and education facilities, • Relocation of Temple in Jamunde. •	Deities & clan God • Mobile team of health workers should be provided • Books and clothes

	Demanded school bus for children •Assistance to the villagers in education, health and employment sector •Livelihood oppo	should be distributed to village children • Plantation of trees by the company •Jobo ppor

	rtunities for the people of the area •CSR grant for developing local villages	tunities for the youth and unemployed people

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

•Project Details

EAC meeting/s	30th EAC meeting for reconsideration of EC proposal
Date of Meeting/s	30th April, 2025
Date of earlier EAC meetings	Earlier, the proposal was appraised in front of the EAC (River Valley & Hydroelectric Project) in its 14th EAC meeting held on 30th Aug., 2024. The proposal was deferred for want of additional details.
Name of the Proposal	**"Bhavali Pumped Storage Project"** (1500MW) at village Jamunde, Tehsil Igatpuri, District Nashik and villages Kalbhonde and Kothale, Te

	hsil Shahpur District Thane, Maharashtra M/s J SW Energy PSP Two Limited
Proposal No.	Proposal No.: IA/MH/RIV/481391/2024; File No. J-12011/08/2022-IA. I(R)
Location (Including Coordinates)	Upper dam: Jamunde (Igatpuri Tehsil-Nasik) Lower dam: Kalbhonde & Kothale (Shahapur T ehsil - Thane) Upper Reservoir: $19^0$36’31.69” N ,$73^0$35’ 45.0 6” E; Lower Reservoir: $19^0$34’ 56.38” N,73^0 3 5’10.0’’ E
Company’s Name	JSW Energy PSP Two Ltd.
CIN no. of Company/user agency	U40108MH2021PLC367136
Accredited Consultant and certificate no.	EQMS India Pvt. Ltd., Karkardooma, Delhi-11 0092 QCI/NABET/ENV/ACO/2225/0303, Valid up t o 23.11.2025.
Project location (Coordinates /River/Reservoi r)	Upper Reservoir: $19^0$36’31.69” N ,$73^0$35’ 45.0 6” E; Lower Reservoir: $19^0$34’ 56.38” N,73^0 3 5’10.0’’ E
Inter- state issue involved	No
Proposed on River/ Reservoir	This is an Off-stream Open Loop Pumped Stora ge Project
Type of Hydro-electric project	Standalone Pump Storage Project.
Seismic zone	Zone III (Moderate Damage Risk Zone)

Category of the project	A
Capacity / Cultural command area (CCA)	1500MW/11600 MWH
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	-

To R P rop osa l N o.	IA/ M H/ RI V/ 26 51 29/

	2022
EAC meeting date	27th meeting held on 09.05.2022.
To R Letter No.	J-12011/08/2022-IA.I(R)
To R grant Date	27th June 2022.
Cost of project	Rs. 8964.02 Crores
Total area of Project	278.92 ha (excluding transmission li

	ne RO W)
Hei ght of Da m f ro m Riv erb ed (E L)	Up per da m: Ma xi mu m 48. 64 m f ro m f ou nda tio n Lo we r d a m: Ma xi mu m 48. 15 m f ro m f ou nda tio n
Det ails of s ub me rge nce are a	16 9.6 0 h a
Dis tric t to	No t a ppl

provide irrigation facility (if applicable)	icable
Details of tunnels on upper level & lower level and length of canal (if applicable)	Intake tunnel (3 Nos , 7.0 m dia and 67.96 m long) 3 Nos. of Independent Penstocks (5.2 m dia.)-2 nos. bifurcating into 4

	nos. individual units (250 MW each) and 1 no. bifurcating for 3 nos. individual unit 1 no. 250 MW unit & 2 nos. 125MW Units). Length of Penstock/Pressur

	e Shaft: 1741m Main TRT (7.0 m dia.; 621.17 to 646.57 m long) Branched TRT (4.0 m & 5.20 m diameter Total length of TRT: 713.43 m from Draft tube

No. of affected Village.	3
No. of Affected Families	130
Project Benefits	Project benefits *inter alia* shall include the benefits like (i) Average annual generation of 4044.06 MU of ene

	rgy with 95% plant availability; (ii) Increased vegetal cover due to implementing of CAT Plan and Green Belt Development Plans (iii) Employment Potential during constr

	uction (3000 labour); (iv) Overall development of area by implementing CER initiatives based on the Public hearing issues and Watershed Development Plan.
R&	Tot

R details	al Private land to be acquired: 35.18 ha. Displaced families: 10 Project Affected Families: 130 Land acquisition cost: Rs 854.54 lakh R&R Grants: Rs 82.05 lakh Tri

	bal Development Plan: Rs 295 lakh Total: Rs 1232 lakh
Catchment area/ Command area	Catchment : 11.72 sq. km; Command area: Nil
Types of Waste and quantity of generation during con	MSW- 38.8 Ton/ annum during construction and 7.2 To

struction/Operation	n/annum during operation
Material used for blasting and its composition as per DGMS standards	Ammonium Nitrate Fuel Oil (ANFO), a mixture of ammonium nitrate and fuel oil.
E-Flows for the Project	The inflow of Darna River at upper dam site

	shall be released from bottom outlet throughout the year. The inflow of Chorni River at lower dam site shall be released from spillway after first filling of reservoir.

Is Projects earlier studied in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then c) E-flow with T	No Not applicable, in case of PSP. Not applicable, in case of PSP

OR/ Recommendation by EAC as per CIA&CC study of River Basin. d) If not the E-Flows maintain criteria for sustaining river ecosystem.	
Details on provision of fish	Pumping operation can hav

pass	e strong impacts like mortality of fishes through turbine passage, change of habitat etc. During operation phase water shall travel through reversible turbines under high p

	res sur e fr om the col um n o f w ate r a bo ve it, con diti ons for org ani c s pec ies are qui te t ou gh. Lar ger spe cie s li ke fis h o r w ate r a ni ma ls c ann ot s urv ive pas sin g t hro ug h t urb

	ines. The diurnal very high extent of water-level fluctuation of about 26 m in the upper reservoir and 30 m in lower reservoir may affect changes in the fish-food faun

	a and cause mortality of fries and fingerlings. Extreme fluctuations can increase turbidity which is detrimental to egg and fry survival. Therefore, no fisheries management pla

	n is proposed in either of pump storage reservoir.
Project benefit including employment details (no of employee)	Benefits from project already stated at S. N. 4 Temporary employment during construction: 1575000 man-d

	ays Permanent employment during construction :100 Nos.
Area of Compensatory Afforestation (CA) with tentative no of plantation.	Area proposed for Compensatory afforestation is 245.735 ha. Out of 245.735 ha area, 187 50 tall plants

	(625 tall plants/ha) will be planted in 30 ha area and remaining 215.735 ha will be developed/ maintained under Crop Investment Programme.
Previous EC	None, as EC

details	is yet to be granted
EC Compliance Report by R.O, MOEF&CC	Not applicable

- **Electricity Generation Capacity**

Powerhouse Installed Capacity	1500MW
Generation of Electricity Annually	4049.17 MU
No. of Units	5 X 250MW + 2 X 125 MW

- **Muck Management Details:**

No. of proposed disposal area/ (type of land- Forest/Pvt land)	2 (Forest land)
Cross section of proposed muck area, height of muck with slope.	D-1: Area=22.3ha, Height average=12.50m D-2: Area=22.6ha, Height average=5.5m Slope of muck shall be lesser than 28^0
Distance of muck disposal area(location), from muck generation sources (project area)/River, HFL of proposed muck disposal area.	1.0-2.5 km No river at muck disposal site.
Total Muck Disposal Area	44.90 ha (forest)
Estimate Muck to be generated	Muck to be generated: 64.51 lakh cum Consumed on work: 36.08 lakh cum To be disposed: 28.43 lakh cum
Transportation	By road
Monitoring mechanism for Muck Disposal	The project authorities shall erect a barrier to r

	egulate to and fro movement of traffic from th e excavation site. Entry of all vehicles passing the barrier and the information regarding quan tities of earth material being transported shall be properly arrayed in a register in a transpare nt manner and shall be liable to be made publi c by the project authorities as and when requir ed. Proper e-challan shall be issued.

- **Land Area Breakup:**

Private land	35.18 ha
Forest Land	243.74 ha
Government land	0.00 ha
Submergence area/Reservoir area	169.60
Land required for project components	74.14 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.	Yes	-
National Park	No	Kalsubai Harichandragad Wildlife San ctuary exists within 10 km of project b oundary. However, no part of the proj ect lies within Eco-sensitive zone of th e Sanctuary. The distance between the project boun dary and Kalsubai Harichandragad Wi ldlife Sanctuary is 2.21 km and 12.5 fr om ESZ boundary. The distance of the Wildlife Sanctuary has been duly auth eticated by the Chief Wildlife Warde n, Nagpur, Maharashtra vide their lette r no. -()///..//- on dated 29th Nov., 202 4
Wildlife Sanctuary	Yes	
Archaeological sites monuments/historical te mples etc	No	-
Additional information (if any)	No	-

- **Court case details:** No court case/litigation is pending.
- **Status of other statutory clearances:**

P arti	**Le tte r n**

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	MH/HYD/153240/2022 on 6th March, 2022. The application has been recommended by DFO West Nashik Division,

	Nashik Circle on 10th April, 2025 and DFO Shahapur Division, Thane Circle on 12th April, 2025 by filling part-II of Form-A on 'PARIV

	ESH Portal’ and the same is yet to be recommended & forwarded by CCF at Nodal Office for his further approval.
Approval of Centr	Hydrology approved v

al Water Commission	ide letter CWC U.O.: 7/ Maha-2021-Hyd(S)/107, dated 28.6.2022
Approval of Central Electricity Authority	The power potential Studies have been cleared by Directorate (HPA)

	CEA, New Delhi, vide letter dated 05.09.2024
Additional detail (If any)	The Concurrence on DPR has been granted by Ministry of Power, Central Electricity Auth

	ority, Hydro Project Appraisal Division vide their letter no. CEA-HY-12-24/4/2021-HPA Division I/43296/2024 on dated 24.09.

	2024
Is FRA (2006) done for FC-I	FRA for Village: Kothale & Kalbhonde, District Thane is completed on 3rd March, 2025 and FRA for Distrcit Nashik is under imple

	mentation.

S. N.	Plans	Cost (Rs. Lakh)	Capital cost (Rs lakh)	Annual recurring cost (Rs lakh)
1.	Catchment Area Treatment Plan	250.00	210.00	10.00
2.	Compensatory Afforestation Scheme	~~4854.00~~	~~4854.00~~	~~0.00~~
		3914.26	3914.26	
3.	Wildlife and Bio-diversity Management plan	326.00	326.50	0.00
4.	Resettlement & Rehabilitation Plan	1232.00	1232.00	0.00
5.	Green Belt Development Plan	120.00	80.00	10.00
6.	Reservoir Rim Treatment Plan	30.00	30.00	0.00
7.	Fisheries Management Plan	130.00	130.00	0.00
8.	Muck Management Plan	2390.00	2350.00	10.00
9	Restoration Plan for Quarry Sites &lands caping	65.00	45.00	5.00
10.	Disaster Management Plan	30.00	26.0	1.00
11.	Water, Air and Noise Management Plan	140.00	48.00	23.00
12.	Public Health Delivery Plan	95.00	31.00	16.00
13.	Labour Management Plan	160.00	42.00	29.50
14.	Sanitation & Solid Waste Management Plan	145.00	85.00	15.00
15.	Local Area Development Plan	100.00	100.00	0.00
16.	Environmental Safeguards During Const.	316.00	00.00	79.00
17.	Energy Conservation Measures	225.00	15.00	52.50

18.	Environmental Monitoring Plan	140.00	16.00	31.00
19	CER Plan for addressing issues raised du ring public hearing	600.00	600.00	0.00
20	Watershed Management	500.00	500.00	0.00
Total EMP		**11848.00**	**10680.00**	**292.00**

30.1.3 The proposal was earlier considered by the EAC in its 14th meeting held on 30th August, 2024. Accordingly, PP submitted following additional details sought by the EAC on 14th April, 2025.

Query 1: The Project Proponent (PP) shall re-visit soil sampling analysis as results show very high organic carbon in soils and submit the revised results mentioning permissible limits in the results of soil analysis.

Reply: The soil sampling results were reviewed for all ten locations in the study area and the range of soil organic carbon analysed is presented in the following table which also mentions the soil fertility status for organic carbon as outlined in Soil manual of ICAR at National level and State (Maharashtra) level. It is evident from the table that the soil of the study area is medium to very high in organic matter.

S. N	Location	Environmental Setting	Organic carbo n %	Soil fertility range for SOC
1.	Upper dam site (Jamund e)	Forest	1.04-1.19	**National Level** <0.5%-Low 0.5%-0.75%-Medi um >0.75%-High **State Level** <0.2%- Very Low 0.21%-0.40 %-Low 0.41%-0.60 %- Mediu m Low 0.61%-0.80 %- Mediu m 0.81%-1.00 %- High >1.00 %-Very High
2.	Dhamudkiwadi	Scrub	0.89-1.14	
3.	Bhavali Khurd	Agriculture	0.78-1.02	
4.	Lower dam site (Kalbhonde)	Forest	2.57-2.67	
5.	Kothale	Agriculture	2.83-3.00	
6.	Kahnodapada	Agriculture	1.08-1.17	
7.	Hinglod	Agriculture	1.93-2.05	
8.	Manwedhe	Forest	1.19-1.31	
9.	Kurungwadi	Agriculture	1.04-1.16	
10	Borli	Agriculture	0.76-0.91	

Sampli ng Vill age	**Soil Organic Carbon (%)**								
	Total Samples	**<0.5**	**0.51-0.75**	**0.76-0.99**	**1.0-3.0**	**>3.0**	**Min**	**Max**	**AV**

Bhavali Khurd	23	1	8	13	1	-	0.45	1.03	0.78
(Kalmonde)	49	1	4	3	16	25	0.38	4.8	2.73
Kothala	39	1	3	4	8	23	0.45	4.64	2.83
Hinglod	54	1	4	1	37	11	0.45	3.60	1.93
Kurungwadi	63	16	14	11	22	-	0.11	1.40	0.71
Borli	15	10	2	1	2	-	0.19	1.67	0.5

Source: *https://soilhealth.dac.gov.in/PublicReports/NutrientsStatusReportFarmer Wise*

Query 2: PP shall relocate the location of Muck Disposal site and should be away from Forest land.
Reply: The upper reservoir of the Bhavali Pumped Storage Project is proposed in Village Jamunde, Tehsil Igatpuri, District Nashik while the lower reservoir is proposed in Village Kalbhonde, Tehsil Shahpur, District Thane, Maharashtra. Muck generated during the construction will be disposed on the designated area. Since no viable alternative locations with better ecological advantages are available nearby, the earmarked area for muck disposal in forest land has been considered to minimise the impacts of project on the Environment and Forest.
The forest land diversion proposal has been duly accepted by the Forest Department, with the Deputy Conservator of Forests (DCF) recommending it by completing Part-II of Form-A under the Forest (Conservation) Act. Furthermore, the Project layout of the Proposed PSP site has been approved by the Central Water Commission, Hydel Civil Designs (E&NE) Directorate, New Delhi vide their letter dated 15th Feb., 2024. All measures outlined in the 'Muck Disposal Management Plan' will be implemented by the Company, with a separate budget allocated under the Muck Management Plan.
Additionally, the same has been verified by the Members of Sub-Committee of EAC (Hydro & River Valley Project) during their project site visit on 2nd & 3rd Jan., 2025. The findings of the site visit were discussed amongst the Hon'ble EAC members at Additional Agenda Item 22.4 in the 22nd EAC Meeting held on 10th Jan., 2025. As per the recommendations of Minutes of the Meeting,

"the relocation of muck disposal site may not be insisted on while considering the proposal for clearance since the muck disposal site was found to have been selected properly. Further, ecologically better sites were not appeared available in nearby areas. Any relocation at this stage might lead to much changes and may lead to more adverse consequences. However, safety measures as contained in EMP and in other documents should be adhered into".

Query 2: Assessment of water requirement of local population and water availability shall be studied.
Reply: Total water requirement for all purposes in the micro-watershed villages has been assessed, considering domestic consumption by inhabitants, water needs for livestock, and irrigation requirements for crop grown in irrigated areas during both cropping seasons. The total water requirement for domestic use, including drinking water and livestock needs has been estimated at 2056806 cum (205.68 ham) and 205680.6 cum (20.57 ham), respectively. The irrigation water requirement based on groundwater abstraction has been assessed at 2402400 cum (240.24 ham). Thus, the total water requirement for all purposes shall be 466.49 ham.

S. N.	Name	Population census	Projected Popula	Annual Domestic water	Irrigation Requirement	Annual Domestic animal	Total Annual require

1.	Bhavli Bk	**s 2011**	**tion 2 022**	**Require ment @ 70 lpcd (cum)**	**Ar ea (ha)**	**cum**	**Require ment @ 10% of domesti c water require ment**	**ment (h am)**
2.	Titoli	1023	1146	29274	0	0	2927.4	3.22
		1076	1205	30791	0	0	3079.1	3.39
3.	Bortemb he	1673	1874	47875	0	0	4787.5	5.27
4.	Kanchan gaon	1906	2135	54542	84	6720 00	5454.2	73.20
5.	Talogha	2501	2801	71569	60	4800 00	7156.9	55.87
6.	Taloshi	1795	2010	51366	44	3520 00	5136.6	40.85
7.	Nandgao nsado	4203	4707	120273	0	0	12027.3	13.23
8.	Pimpri S adroddin	2316	2594	66275	0	0	6627.5	7.29
9.	Fangul Gavhan	1531	1715	43811	0	0	4381.1	4.82
1 0.	Borli	616	690	17627	0	0	1762.7	1.94
1 1.	Bhavli Kh	23073	25842	660257	83.9	6712 00	66025.7	139.75
1 2.	Kaluste	3885	4351	111173	20.1	1608 00	11117.3	28.31
1 3.	Bharwaj	819	917	23437	0	0	2343.7	2.58
1 4.	Manjarg aon	889	996	25440	0	0	2544	2.80
1 5.	Nirpan	828	927	23694	0	0	2369.4	2.61

16.	Gavhande	701	785	20060	8.3	66400	2006	8.85
17.	Jamunde	589	660	16855	0	0	1685.5	1.85
18.	Kurungwadi	1055	1182	30190	0	0	3019	3.32
19.	Ambewadi	2183	2445	62469	0	0	6246.9	6.87
20.	Taked Kh	1120	1254	32050	0	0	3205	3.53
21.	Kasara Kh.	2588	2717	69430	0	0	6943	7.64
22.	Dand	165	173	4427	0	0	442.7	0.49
23.	Umbravane	249	261	6680	0	0	668	0.73
24.	Fugale	1018	1069	27310	0	0	2731	3.00
25.	Vashala Bk	1439	1511	38605	0	0	3860.5	4.25
26.	Vashala Kh	325	341	8719	0	0	871.9	0.96
27.	Susarwadi	1044	1096	28008	0	0	2800.8	3.08
28.	Pingalwadi	162	170	4346	0	0	434.6	0.48
29.	Dhakane	1882	1976	50489	0	0	5048.9	5.55
30.	Kothale	1233	1295	33078	0	0	3307.8	3.64
31.	Kalbhonde	997	1047	26747	0	0	2674.7	2.94
32.	Julawani	1382	1451	37076	0	0	3707.6	4.08

33.	Jambhulwad	665	698	17840	0	0	1784	1.96
34.	Roadvahal	476	500	12770	0	0	1277	1.40
35.	Hinglud	404	424	10838	0	0	1083.8	1.19
36.	Chondhe Kh.	384	403	10302	0	0	1030.2	1.13
37.	Chilhar	588	617	15775	0	0	1577.5	1.74
38.	Ranvihir	1468	1541	39383	0	0	3938.3	4.33
39.	Ghatghar	1176	1288	32901	0	0	3290.1	3.62
40.	Udadawane	1539	1685	43057	0	0	4305.7	4.74
Grand Total		**72966**	**80501**	**2056806**	**300.3**	**2402400**	**205680.6**	**466.49**

Table 2: Ground Water Recharge & Annual Requirement

S. N.	Name	Rainfall recharge (ham)	Total annual ground water requirement (ham)	Deficit (-ve) Surplus (+)
1.	Bhavli Bk	101.33	3.22	98.11
2.	Titoli	42.22	3.39	38.83
3.	Bortembhe	46.91	5.27	41.64
4.	Kanchangaon	139.50	73.20	66.3
5.	Talogha	132.85	55.87	76.98
6.	Taloshi	172.84	40.85	131.99
7.	Nandgaonsado	150.41	13.23	137.18
8.	Pimpri Sadroddin	209.82	7.29	202.53
9.	Fangul Gavhan	103.75	4.82	98.93

10.	Borli	119.23	1.94	117.29
11.	Bhavli Kh	151.35	139.75	11.6
12.	Kaluste	209.12	28.31	180.81
13.	Bharwaj	113.25	2.58	110.67
14.	Manjargaon	151.54	2.80	148.74
15.	Nirpan	78.17	2.61	75.56
16.	Gavhande	136.10	8.85	127.25
17.	Jamunde	96.59	1.85	94.74
18.	Kurungwadi	485.10	3.32	481.78
19.	Ambewadi	586.14	6.87	579.27
20.	Taked Kh	117.57	3.53	114.04
21.	Kasara Kh.	729.02	7.64	721.38
22.	Dand	415.94	0.49	415.45
23.	Umbravane	350.74	0.73	350.01
24.	Fugale	260.40	3.00	257.4
25.	Vashala Bk	521.22	4.25	516.97
26.	Vashala Kh	112.50	0.96	111.54
27.	Susarwadi	154.01	3.08	150.93
28.	Pingalwadi	334.91	0.48	334.43
29.	Dhakane	311.54	5.55	305.99
30.	Kothale	480.82	3.64	477.18
31.	Kalbhonde	480.27	2.94	477.33
32.	Julawani	237.64	4.08	233.56
33.	Jambhulwad	357.98	1.96	356.02

34.	Roadvahal	316.39	1.40	314.99
35.	Hinglud	132.27	1.19	131.08
36.	Chondhe Kh.	272.58	1.13	271.45
37.	Chilhar	144.19	1.74	142.45
38.	Ranvihir	303.63	4.33	299.3
39.	Ghatghar	753.12	3.62	749.5
40.	Udadawane	620.19	4.74	615.45
Total		**1373.31**	**8.36**	**1364.95**

As inferred from Table 1 & 2, the total annual groundwater requirement for all purposes is 466.49 ham, while the annual groundwater recharge is 1373.31 ham. This indicates that the villages in the study area have a sufficient groundwater supply, with no signs of water scarcity.

Query 4: Permission for water availability obtained from CWC /concerned department mentioning that rain water is sufficient for filling one time filling reservoir.

Reply: Water availability certificate has been issued by the Chief Engineer, Water Resource Department, Hydrology & Dam Safety, Government of Maharashtra vide letter no. WFR/Ulhas/894 on 21st Nov., 2022.

Query 5: PP shall submit the undertaking stating that no water flow stoppage/blockage shall be done for filling reservoir during monsoon season.

Reply: Copy of undertaking dated 14.04.2025 has been submitted.

Query 6: The PP shall prepare wild life conservation plan in consultation with expert Institutions and submit the wildlife conservation plan approved by Chief Wildlife Warden as Kalsubai Harichandragad Wildlife Sanctuary exists within 10 km of project boundary. As the project cover area is located in Western Ghats, the EAC sub-committee shall conduct site visit for assessing the ground conditions and possible environmental impacts due to project comprehensively before further consideration of the proposal.

Reply: The distance between the project boundary and Kalsubai Harichandragad Wildlife Sanctuary is 2.21 km and 12.5 from ESZ boundary. The distance of the Wildlife Sanctuary along with Wildlife and Biodiversity Management Plan has been duly approved by PCCF (HoFF), Maharashtra vide letter dated 29th Nov., 2024. Approved budget for Wildlife and Biodiversity Management Plan is Rs. 326.50 Lakhs/-. Copy of Approval letter along with Certified Map has been submitted.

Dr. Ajay Kumar Lal, Member EAC (Hydro & River Valley project) and Dr. P. R. Sakhare Members & Representative from MoEF&CC visited the Proposed Bhavali Pumped Storage Project" site on 2nd & 3rd Jan., 2025 and the findings of the site visit were discussed amongst the Hon'ble EAC members at Additional Agenda Item 22.4 in the 22nd EAC Meeting held on 10th Jan., 2025

Query 7: Given that 243.74 ha. Forest land are involved, the PP shall provide a detailed classification /land use pattern /vegetation details of the project area including information on forest density, species diversity, and other relevant ecological characteristics.

Reply:

The Forest Clearance application (FP/MH/HYD/153240/2022) is currently under process and has been recommended by the concerned Divisional Forest Officer by filling Part-II for further processing. The details given below are based on the uploaded Form Part - II of FC application and copy of the uploaded Form Part – II has been submitted.

Detail Classification-

The project area is 274.82 ha. and forest land required to be diverted is 243.74 ha of which 181.45 ha in Forest Division Shahapur and 62.29 ha lies in Nasik West Forest Division, Maharashtra. as shown in Table 3

Table 3: Forest Land details and Classification

S.N.	Village /Tehsil/District	Forest Division	Classification	Forest (ha)
1	Kalbhonde/ Shahapur/Thane	Shahapur Forest Division, Maharashtra	Reserved Forest	97.92
2	Kothale/ Shahapur/Thane		Protected Forest	9.68
3	Kothale/ Shahapur/Thane		Private Forest (Deemed RF)	73.85
Forest Area for Diversion				**181.45**
4	Jamunde/Igatpuri / Nasik	Nasik West Forest Division, Maharashtra	Reserved Forest	62.29
Forest Area for Diversion				**62.29**
Grand Total				**243.74**

Land Use Pattern

The dominating classes are Tropical Moist Deciduous Forest (75%) and Tropical Semi- evergreen Forest (25%). The land use pattern of Forest area in study area is given below in Table 4

Table 4: Land use & Land cover of Forest covered Area in project

S.N.	Land use category	Area in ha.	Area in %
1	Tropical Moist Deciduous Forest (Open & Dense Forest)	181.45	75%
2	Tropical Semi- evergreen Forest	62.29	25%
Total		**243.74**	**100%**

Vegetation details:

Details of Vegetation available in the forest land proposed for diversion as per given in following table:

S. No.	Forest Division	Area(in ha.)	Forest Type	Density	Eco-Class

1	Shahapur Forest Division, Maharashtra	73.85	Private Forest	0.2	Eco- Class 1
2		107.6	Reserved & Protected Forest	0.6	Eco- Class 1
3	Nasik West Forest Division, Maharashtra	62.29	Reserved Forest	0.5	Eco- Class 1

Species diversity:

The details of Species diversity of Shahpur and Nashik Forest division is given below:

A. The details of Species diversity in Shahpur Forest Division is given in Table 5

Table 5: Species-wise local/scientific names and girth-wise enumeration of trees at FRL

S. No.	Scientific Name	Local Name	(0-30)cm.	(31-60)cm.	(61-90)cm.	(91-120)cm.	(121-150)cm.	(>150)cm.
1	*Tectona grandis*	Sag	157	102	8	1	0	0
2	Others	other species	18155	13537	3440	938	442	153
3	*Adina cordifolia*	Hedu	90	64	19	9	4	3
4	*Terminalia tomentosa*	Ain	11345	10184	1663	475	163	49
5	*Gmelina arborea*	Shivan	263	265	6	14	2	3
Total			**30010**	**24152**	**5136**	**1437**	**611**	**208**
Sub Total (No of Trees.)			**61554**					

B. The details of Species diversity in Nashik West Forest Division is given in Table 6

Table 6: Species-wise local/scientific names and girth-wise enumeration of trees at FRL

S. No.	Scientific Name	Local Name	(0-30)cm.	(31-60)cm.	(61-90)cm.	(91-120)cm.	(121-150)cm.	(>150)cm.
1	*Mangifera indica*	Aam	62	140	70	65	63	99

2	*Gomphrena globosa*	Aamantegali	13	4	0	0	0	0
3	*Bauhinia racemosa*	Aapta	0	4	2	0	0	0
4	*Pterocarpus marsupium Roxb*	Aasan	98	85	17	3	1	4
5	*Phyllanthus emblica*	Avala	98	10	0	2	0	0
6	*Terminalia elliptica*	Ain	505	693	98	9	2	0
7	*Albizia odoratissima*	Aiv	15	23	4	0	0	0
8	*Cassia fistula*	Bahava	6	9	0	1	0	0
9	*Bambusa vulgaris*	Bambu	1	0	0	0	0	0
10	*Thespesia populnea*	Bhendi	1	2	1	1	0	0
11	*Mimusops elengi L*	Bogada	16	0	0	0	0	0
12	*Cordia dichotoma*	Bokar	0	2	0	0	0	0
13	*Pterocarpus marsupium*	Bonda	164	212	47	9	2	0
14	*Ziziphus mauritiana*	Borkut	1	0	0	0	0	0
15	*Butea monosperma*	Butuska	0	1	0	0	0	0
16	*Santalum album*	Chanda	4	3	0	0	0	0
17	*Tamarindus indica*	Chinch	0	1	0	0	0	0
18	*Grewia tiliifoli*	Dhaman	1	0	0	0	0	0

	a Vahl							
19	*Anogeissus lat ifolia*	Dhavada	1	0	0	0	0	0
20	*Woodfordia frut icosa L*	Dhayati	5	1	0	0	0	0
21	*Elettaria carda momum*	Ela	1	4	4	1	3	1
22	*Artocarpus hete rophyllus*	Fanas	1	3	1	0	0	0
23	*Dialium ovoide um Thwaites*	Gaal	11	5	0	1	1	0
24	*Psidium guajav a*	Gawa	2	0	0	0	0	0
25	*Delonix regia*	Gol	1	1	0	0	0	0
26	*Plumeria rubra L*	Gulchay	257	108	5	1	1	1
27	*Terminalia che bula*	Hirda	139	207	66	31	26	25
28	*Syzygium cumi ni*	jambhul	472	506	98	54	19	0
29	*Murraya koeni gii*	Kadipata	0	1	0	0	0	0
30	*Neolamarckia c adamba*	Kalamb	0	1	0	0	0	0
31	*Bauhinia varie gata*	Kanchan	4	4	0	0	0	0
32	*Macaranga pel tata*	Kandar	0	1	0	0	0	0
33	*Averrhoa cara mbola*	Karambi	211	146	39	20	9	9
34	*Carapa guiane nsis*	karap	28	51	38	4	2	1

35	*Capparis decidua*	Karel	11	7	4	1	0	0
36	*Carissa carandas*	Karval	16	11	0	1	0	1
37	*Murraya koenigii*	Karwa	0	2	0	0	0	0
38	*Carissa carandas*	Kavandar	11	0	0	0	0	0
39	*Grewia villosa*	Kharmati	1	0	0	0	0	0
40	*Glycosmis pentaphylla*	Kirmira	10	0	0	0	0	0
41	*Cyphostemma currorii*	Kobat	0	1	0	0	0	0
42	*Butea monosperma*	Koyakhar	0	5	0	1	0	1
43	*Schleichera*	Koyambal	1	5	0	0	1	0
44	*Holarrhena pubescens*	Kuda	22	6	0	0	0	0
45	*Careya arborea*	Kumbha	34	35	10	1	2	0
46	*Ixora brachiata Roxb*	Lokhandi	6	1	0	0	0	0
47	*Madhuca longifolia*	Moh	27	11	2	0	0	0
48	*Feronia limonia*	Pabha	77	9	1	0	0	0
49	*Butea monosperma*	Palas	11	12	4	0	0	0
50	*Erythrina variegata*	Pangara	3	0	1	1	0	0
51	*Monoon longifolium.*	Patgiri	1	0	0	0	0	0

52	*Ficus amplissima*	Payer	8	18	2	4	0	1
53	*Ficus arnottiana*	Payir	0	8	1	0	1	0
54	*Psidium guajava*	Peru	0	1	0	0	0	0
55	*Cerbera odollam*	Pombal	1	0	0	0	0	0
56	*Bombax ceiba*	Savar	0	1	0	1	0	0
57	*Bixa orellana*	Shendri	16	16	1	1	0	0
58	*Gmelina arborea*	Shivan	10	3	1	0	0	0
59	*Flacourtia indica*	Tambat	1	1	0	0	0	0
60	*Ziziphus rugosa*	Toran	7	6	0	0	0	0
61	*Senna tora*	Tura	0	1	0	0	0	0
62	*Ficus racemosa*	Umbar	17	74	45	51	43	124
63	*Heterophragma quadriloculare*	Varas	68	136	18	7	5	0
64	*Limonia acidissima*	vila	12	11	2	3	0	1
65	*Elettaria cardamomum*	Velvachi	0	1	0	0	0	0
Total			**2489**	**2610**	**582**	**274**	**181**	**268**
Sub Total (No of Trees.)			**6404**					

Relevant Ecological Characteristics:

1. Presence of water bodies such as rivers, lakes, streams, wetlands, etc., has been studied.
2. The project does not involve diversion or disturbance of any major aquatic or wetland ecosystem.
3. The area does not fall under any known migratory routes or wildlife corridors.
4. Biodiversity in the area is typical of the region and does not indicate the presence of any unique

or sensitive ecosystems.

5. The project is not located within any Notified Eco- Sensitive Zone (ESZ), National Park, Wildlife Sanctuary, Biosphere Reserve, or Important Bird Area (IBA).
6. No traditional sacred groves, community-conserved areas, or ecologically significant cultural practices have been identified in the study area.

Query 8: Submit details of tree to be removed for construction of the project.

Reply: Total no. of trees are 67958, out of which 64050 trees are affected by the project, out of which at ~ 50% of trees girth size below 30 cm scheduled to be cut down during the construction phase However, there is no need to cut trees that are located in the areas designated for the underground components of the project.

Tree Enumeration Summary Data				
Sr. No.	**Division**	**Village Name**	**Total Tree As per Part-II FC**	**Trees to be felled**
1	Nashik	Jamunde	6404	6235
2	Shahpur	Kothale, Kalbhonde	61554	57646
Total			**67958**	**64050**

3.1.3. Deliberations by the committee in previous meetings

Date of EAC 1 :30/08/2024

Deliberations of EAC 1 :

14.1.3 The EAC during deliberations noted the following:

The EAC deliberated on the information submitted and as presented in the meeting and observed that the proposal is for grant of Environmental Clearance to the project for Bhavali Pumped Storage Project (1500 MW) in an area of 278.92 Ha in Village Kalbhonde, Kothale and Jamunde Sub District Shahapur and Igatpuri, District Thane and Nashik, Maharashtra by M/s JSW Energy PSP Two Limited

The Hydro-electric project is listed as item no. 1(c) of the Schedule to the Environment Impact Assessment (EIA) Notification, 2006, as amended under category 'A' and are appraised at Central Level by Expert Appraisal Committee (EAC).

The project proposal was earlier considered by the Expert Appraisal Committee (Hydro River Valley Sector) in its 27th meeting held during 09.05.2022 and recommended for grant of Terms of References (ToR) for the Project. The ToR has been issued by Ministry vide letter No J-12011/08/2022-IA. I(R) dated 27.6.2022.

The EAC noted that the total land requirement under the project for upper and lower rock fill dam, reservoir & other works, has been assessed as 278.92 ha of which private land is 35.18 ha, forest land 243.74 ha. The EAC also noted that, Kalsubai Harichandragad Wildlife Sanctuary exists within 10 km of project boundary. However, no part of the project lies within Eco-sensitive zone of the Sanctuary. The nearest project boundary is about 12.5m from ESZ boundary. Same has been certified by Deputy Conservator of Forest (Wildlife). Nashik, vide letter O.W. No. Cell-4/Survey/C.N.1/7/ Year 2023-24, Date: 06/4/2023. There are no tiger/elephant corridors within the project area.

The EAC members expressed serious concerns about the availability of water for filling the reservoir, as the PP indicated that the reservoir would be filled only once during the rainy season. However, based on existing records, rainfall during the rainy season is very limited. Under these conditions, the reservoir cannot be adequately filled during the monsoon season. The EAC also observed that the regular flow of water in the tream/nalah is crucial for mangrove plants, and any blockage may have negative impacts on them. Additionally, the EAC noted that soil sampling analysis revealed a high carbon content in the soil which has no correlation with the topography of the region.

14.1.4 The EAC after detailed deliberations deferred the proposal for want of following additional information:

i. The Project Proponent (PP) shall re-visit soil sampling analysis as results shows very high contain carbon in Soil analysis and submit the revised results mentioning permissible limits in the results of soil analysis.
ii. PP shall relocate the location of Muck Disposal site and should be away from Forest land.
iii. Assessment of water requirement of local population and water availability shall be studied.
iv. Permission for water availability obtained from CWC /concerned department mentioning that rain water is sufficient for filling one time filling reservoir.
v. PP shall submit the undertaking stating that no water flow stoppage/blockage shall be done for filling reservoir during monsoon season.
vi. The PP shall prepare wild life conservation plan in consultation with expert Institutions and submit the wildlife conservation plan approved by Chief Wildlife Warden as Kalsubai Harichandragad Wildlife Sanctuary exists within 10 km of project boundary. As the project cover area is located in Western Ghats, the EAC sub-committee shall conduct site visit for assessing the ground conditions and possible environmental impacts due to project comprehensively before further consideration of the proposal.
vii. Given that 243.74 ha. Forest land are involved, the PP shall provide a detailed classification /land use pattern /vegetation details of the project area including information on forest density, species diversity, and other relevant ecological characteristics.
viii. Submit details of tree to be removed for construction of the project.

3.1.4. Deliberations by the EAC in current meetings

30.1.4 The EAC during deliberations noted the following:

The EAC deliberated on the information submitted and as presented in the meeting and observed that the proposal is for grant of Environmental Clearance to the project for Bhavali Pumped Storage Project (1500 MW) in an area of 278.92 Ha in Village Kalbhonde, Kothale and Jamunde Sub District Shahapur and Igatpuri, District Thane and Nashik, Maharashtra by M/s JSW Energy PSP Two Limited

The proposed project is listed as item no. 1(c) of the Schedule to the Environment Impact Assessment (EIA) Notification, 2006, as amended under category 'A' and are appraised at Central Level by Expert Appraisal Committee (EAC).

Earlier observations by the EAC

- The project proposal was earlier considered by the Expert Appraisal Committee (Hydro River Valley Sector) in its 27th meeting held during 09.05.2022 and recommended for grant of Terms of References (ToR) for the Project. The ToR has been issued by Ministry vide letter No J-12011/08/2022-IA. I(R) dated 27.6.2022.
- The EAC noted that the total land requirement under the project for upper and lower rock fill dam, reservoir & other works, has been assessed as 278.92 ha of which private land is 35.18 ha, forest land 243.74 ha. The EAC also noted that, Kalsubai Harichandragad Wildlife Sanctuary exists within 10 km of project boundary. However, no part of the project lies within Eco-sensitive zone of the Sanctuary. The nearest project boundary is about 12.5m from ESZ boundary. Same has been certified by Deputy Conservator of Forest (Wildlife). Nashik, vide letter O.W. No. Cell-4/Survey/C.N.1/7/ Year 2023-24, Date: 06/4/2023. There are no tiger/elephant corridors within the project area.
- The EAC members expressed serious concerns about the availability of water for filling the reservoir, as the PP indicated that the reservoir would be filled only once during the rainy season. However, based on existing records, rainfall during the rainy season is very limited. Under these conditions, the reservoir cannot be adequately filled during the monsoon season. The EAC also observed that the regular flow of water in the tream/nalah is crucial for mangrove plants, and any blockage may have negative impacts on them. Additionally, the EAC noted that soil sampling analysis revealed a high carbon content in the soil which has no correlation with the topography of the region.

Current deliberations:

- The EAC noted that the sub-committee of the EAC visited the proposed Bhavali Pumped Storage Project" site on 02.01.2025 and 03.01.2025. and the recommendations of site visit were deliberated by the EAC members in its 22nd EAC Meeting held on 10th January, 2025. The observations and recommendations of the Sub-committee are as follows:

i. The selected location is topologically stable and non-prone to landslides as such. It is not therefore so fragile or sensitive., The proposed project is not likely to cause considerable negative impacts on the geological conditions; rights and interests of people related to water resources of downstream locations if the conditions and safeguards imposed vide the TOR granted are complied with fully and comprehensibly. Further, the Project Proponent is also to ensure strict compliance of the assurances given during public hearing.

ii. The relocation of muck disposal site may not be insisted on while considering the proposal for clearance since the muck disposal site was found to have been selected properly. Further, ecologically better sites did not appear available in nearby areas. Any relocation at this stage might lead to much changes and may lead to more adverse consequences. However, safety measures as contained in EMP and in other documents should be adhered to in toto.

iii. Water for operation of project will be sourced from self-yield from catchment area. There will be no dependency on the nearby streams and already established dams/reservoirs as confirmed and assured by the proponent. As stated above, since there are not much agricultural or drinking requirements in or nearby areas, the dam intervention should not be a matter of concern. Nevertheless, project proponent, as assured, will ensure maintenance of e-flow and minimum threshold water availability all year around.

iv. Nalla passing through the lower reservoir is a non-perennial and was containing very low level of water at the time of visit. However, as per the discussion held with the PP, natural flow of nallas/streams will not be restricted/diverted. Provision of ungated slipways has been considered to maintain natural flow of non-perineal nallas/streams.

v. Out of total forest area of 243.74ha, 160.21ha is reserved forest,73.85 ha is deemed forest and 9.68 ha is

protected forest. The forest density in the proposed forest land involved in the project site is approx. 150 trees/la. A total of around 35000 trees and saplings are likely to be sacrificed. Therefore, it is important to insist on submitting the case under FCA and receive stage-I clearance at the earliest by the Project Proponent.

vi. PP has started the CER/CSR activities in the affected villages which includes the construction of public toilets, classrooms in the Govt. School, Mid-day Meal kitchens, and distribution of study materials, Shoes etc. to the students, blankets to the villagers.

vii. Wildlife conservation and biodiversity management plan has been approved by CWLW on 29.11 .2024 with a cost of Rs. 326.50 Lakhs

The EAC observed that PP has revised EMP budget from Rs10680 lakh to Rs 9780.76 lakh, therefore it was advised not to change the cost of EMP specially under head compensatory afforestation plan. Further, the EAC noted that PP has signed MOU for setting up of the proposed Bhavali Pumped Storage Project (1500MW), which was made on 14th day of September,2021, between the Industries Department, Government of Maharashtra and M/s JSW Neo Energy Ltd.

The EAC noted that the proposed muck disposal site is entirely located within a forest area. Although the sub-committee, during its site visit, recommended that relocating the site may not be necessary, concerns were raised during further discussions. It was observed that the estimated cost for the muck management plan is ₹29.90 crore, with over 80% (₹20.52 crore) allocated to engineering measures, specifically, the construction of a reinforced cement concrete (RCC) retaining wall measuring 6 meters in height, 30 cm in thickness, and approximately 2 kilometers in length. The EAC expressed serious concerns about the suitability of the site and questioned the necessity of the RCC retaining wall. In response, the project proponent explained that the wall is intended to stabilize the muck disposal area. Nevertheless, the EAC further raised concerns about potential restrictions on the free movement of wildlife in the area following construction of the wall.

The EAC noted that the Wildlife Conservation Plan has been duly approved by Chief Wildlife Warden, Nagpur Maharashtra with a cost of INR 326.50 Lakhs vide letter dated 29th November 2024. However, the EAC expressed concern over the absence of a time-bound action plan outlining the implementation strategy. Given that the project area falls within the Western Ghats Eco-Sensitive Zone, the Committee emphasized the need for a well-defined mechanism to ensure the effective execution of the Wildlife Conservation Plan. The EAC also discussed on the utilization of seismicity in the study area and associated seismic hazard zonation mapping related recommendation on the construction of structures. A comprehensive watershed management related recommendations were also not very clear.

30.1.5 The EAC after detailed deliberations deferred the proposal for want of following additional information:

1. PP shall revisit the muck management plan along with cost estimate, reclamation plan and requirement/ justification of RCC retaining wall.
2. Justification for revising the EMP cost from Rs10680 lakh to Rs 9780.76 lakh.
3. Impact on migration of birds because of noise levels, changes in water body, if any should be discussed with experts in ornithology and presented.
4. Impact of micro seismicity and hazards and recommendations on concrete structures are to be discussed properly.
5. A comprehensive watershed management including, surface water flow- scarcity and overflow, climate change impacts, soil erosion, restoration of green cover, enhanced groundwater recharge, impacts on surface and sub-surface spring flow, improvements in livelihood and cultural restoration, and related recommendations must be provided.

3.1.5. Recommendation of EAC

Deferred for ADS

3.2. Agenda Item No 2:

3.2.1. Details of the proposal

Proposed Expansion of Tembhu Lift Irrigation Project Taluka Karad, District Satara, Maharashtra by **Departm ent of Irrigation** located at **SATARA,MAHARASHTRA**			
Proposal For		Fresh EC	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/MH/RIV/482689/2024	J-12011/48/2023-IA.I (R)	06/01/2025	River Valley/Irrigation project s (1(c))

3.2.2. Project Salient Features

30.1.4 The EAC during deliberations noted the following:

The EAC deliberated on the information submitted and as presented in the meeting and observed that the proposal is for grant of Environmental Clearance to the project for Bhavali Pumped Storage Project (1500 MW) in an area of 278.92 Ha in Village Kalbhonde, Kothale and Jamunde Sub District Shahapur and Igatpuri, District Thane and Nashik, Maharashtra by M/s JSW Energy PSP Two Limited

The proposed project is listed as item no. 1(c) of the Schedule to the Environment Impact Assessment (EIA) Notification, 2006, as amended under category 'A' and are appraised at Central Level by Expert Appraisal Committee (EAC).

Earlier observations by the EAC

- The project proposal was earlier considered by the Expert Appraisal Committee (Hydro River Valley Sector) in its 27th meeting held during 09.05.2022 and recommended for grant of Terms of References (ToR) for the Project. The ToR has been issued by Ministry vide letter No J-12011/08/2022-IA. I(R) dated 27.6.2022.
- The EAC noted that the total land requirement under the project for upper and lower rock fill dam, reservoir & other works, has been assessed as 278.92 ha of which private land is 35.18 ha, forest land 243.74 ha. The EAC also noted that, Kalsubai Harichandragad Wildlife Sanctuary exists within 10 km of project boundary. However, no part of the project lies within Eco-sensitive zone of the Sanctuary. The nearest project boundary is about 12.5m from ESZ boundary. Same has been certified by Deputy Conservator of Forest (Wildlife). Nashik, vide letter O.W. No. Cell-4/Survey/C.N.1/7/ Year 2023-24, Date: 06/4/2023. There are no tiger/elephant corridors within the project area.
- The EAC members expressed serious concerns about the availability of water for filling the reservoir, as the PP indicated that the reservoir would be filled only once during the rainy season. However, based on existing records, rainfall during the rainy season is very limited. Under these conditions, the reservoir cannot be adequately filled during the monsoon season. The EAC also observed that the regular flow of water in the tream/nalah is crucial for mangrove plants, and any blockage may have negative impacts on them. Additionally, the EAC noted that soil sampling analysis revealed a high carbon content in the soil which has no correlation with the topography of the region.

Current deliberations:

- The EAC noted that the sub-committee of the EAC visited the proposed Bhavali Pumped Storage Project" site on 02.01.2025 and 03.01.2025. and the recommendations of site visit were deliberated by the EAC members in its 22nd EAC Meeting held on 10th January, 2025. The observations and recommendations of the Sub-committee are as follows:

i. The selected location is topologically stable and non-prone to landslides as such. It is not therefore so fragile or sensitive., The proposed project is not likely to cause considerable negative impacts on the geological conditions; rights and interests of people related to water resources of downstream locations if the conditions and safeguards imposed vide the TOR granted are complied with fully and comprehensibly. Further, the Project Proponent is also to ensure strict compliance of the

assurances given during public hearing.

ii. The relocation of muck disposal site may not be insisted on while considering the proposal for clearance since the muck disposal site was found to have been selected properly. Further, ecologically better sites did not appear available in nearby areas. Any relocation at this stage might lead to much changes and may lead to more adverse consequences. However, safety measures as contained in EMP and in other documents should be adhered to in toto.

iii. Water for operation of project will be sourced from self-yield from catchment area. There will be no dependency on the nearby streams and already established dams/reservoirs as confirmed and assured by the proponent. As stated above, since there are not much agricultural or drinking requirements in or nearby areas, the dam intervention should not be a matter of concern. Nevertheless, project proponent, as assured, will ensure maintenance of e-flow and minimum threshold water availability all year around.

iv. Nalla passing through the lower reservoir is a non-perennial and was containing very low level of water at the time of visit. However, as per the discussion held with the PP, natural flow of nallas/streams will not be restricted/diverted. Provision of ungated slipways has been considered to maintain natural flow of non-perineal nallas/streams.

v. Out of total forest area of 243.74ha, 160.21ha is reserved forest,73.85 ha is deemed forest and 9.68 ha is protected forest. The forest density in the proposed forest land involved in the project site is approx. 150 trees/la. A total of around 35000 trees and saplings are likely to be sacrificed. Therefore, it is important to insist on submitting the case under FCA and receive stage-I clearance at the earliest by the Project Proponent.

vi. PP has started the CER/CSR activities in the affected villages which includes the construction of public toilets, classrooms in the Govt. School, Mid-day Meal kitchens, and distribution of study materials, Shoes etc. to the students, blankets to the villagers.

vii. Wildlife conservation and biodiversity management plan has been approved by CWLW on 29.11 .2024 with a cost of Rs. 326.50 Lakhs

The EAC observed that PP has revised EMP budget from Rs10680 lakh to Rs 9780.76 lakh, therefore it was advised not to change the cost of EMP specially under head compensatory afforestation plan. Further, the EAC noted that PP has signed MOU for setting up of the proposed Bhavali Pumped Storage Project (1500MW), which was made on 14th day of September,2021, between the Industries Department, Government of Maharashtra and M/s JSW Neo Energy Ltd.

The EAC noted that the proposed muck disposal site is entirely located within a forest area. Although the sub-committee, during its site visit, recommended that relocating the site may not be necessary, concerns were raised during further discussions. It was observed that the estimated cost for the muck management plan is ₹29.90 crore, with over 80% (₹20.52 crore) allocated to engineering measures, specifically, the construction of a reinforced cement concrete (RCC) retaining wall measuring 6 meters in height, 30 cm in thickness, and approximately 2 kilometers in length. The EAC expressed serious concerns about the suitability of the site and questioned the necessity of the RCC retaining wall. In response, the project proponent explained that the wall is intended to stabilize the muck disposal area. Nevertheless, the EAC further raised concerns about potential restrictions on the free movement of wildlife in the area following construction of the wall.

The EAC noted that the Wildlife Conservation Plan has been duly approved by Chief Wildlife Warden, Nagpur Maharashtra with a cost of INR 326.50 Lakhs vide letter dated 29th November 2024. However, the EAC expressed concern over the absence of a time-bound action plan outlining the implementation strategy. Given that the project area falls within the Western Ghats Eco-Sensitive Zone, the Committee emphasized the need for a well-defined mechanism to ensure the effective execution of the Wildlife Conservation Plan. The EAC also discussed on the utilization of seismicity in the study area and associated seismic hazard zonation mapping related recommendation on the construction of structures. A comprehensive watershed management related recommendations were also not very clear.

30.1.5 The EAC after detailed deliberations deferred the proposal for want of following additional information:

1. PP shall revisit the muck management plan along with cost estimate, reclamation plan and requirement/ justification of RCC retaining wall.

2. Justification for revising the EMP cost from Rs10680 lakh to Rs 9780.76 lakh.
3. Impact on migration of birds because of noise levels, changes in water body, if any should be discussed with experts in ornithology and presented.
4. Impact of micro seismicity and hazards and recommendations on concrete structures are to be discussed properly.
5. A comprehensive watershed management including, surface water flow- scarcity and overflow, climate change impacts, soil erosion, restoration of green cover, enhanced groundwater recharge, impacts on surface and sub-surface spring flow, improvements in livelihood and cultural restoration, and related recommendations must be provided.

3.2.3. Deliberations by the committee in previous meetings

Date of EAC 1 :10/01/2025

Deliberations of EAC 1 :

The accredited consultant 'MITCON Consultancy & Engineering Services Limited' vide email dated 10.01.2025 informed that they will be unable to attend meeting and present their case.

Accordingly, the EAC decided to **defer** the matter.

Date of EAC 2 :27/02/2025

Deliberations of EAC 2 :

The EAC during deliberations noted the following:

- The Expert Appraisal Committee (EAC) deliberated on the information submitted by the Project Proponent and the details presented during the meeting. The Committee observed that the proposal pertains to the grant of Environmental Clearance for the Expansion of Tembhu Lift Irrigation Project in an area of 2284.601 ha at Village Tembhu, Ranad, Govare and etc, Sub District Khatav, Atpadi, Karad and etc, District Satara, Sangli and Solapur, Maharashtra by M/s Minor Irrigation Division, Sangli Water Resources Department, Maharashtra Krishna Valley Development Corporation.
- The project falls under Item 1(c) of the Schedule to the Environmental Impact Assessment (EIA) Notification, 2006, and is categorized as a Category 'A' project, which requires appraisal at the Central level by the Expert Appraisal Committee (EAC).
- The EAC, constituted under the provisions of the EIA Notification, 2006, and comprising expert members/domain experts from various relevant fields, examined the proposal submitted by the Project Proponent. This examination included a review of the Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) reports, which were prepared and submitted by a QCI/NABET-accredited consultant on behalf of the Project Proponent.
- The EAC further noted that the Ministry had granted Environmental Clearance (EC) to the existing project vide letter No. 12011/43/2003-A.I dated 17/08/2007, in favor of M/s. Minor Irrigation Circle, Maharashtra Krishna Valley Development Corporation, Warnali, Sangli for an Irrigation Command Area (ICA) of 80,472 ha. For the current expansion project, the Ministry has issued Terms of Reference (ToR) for conducting the Environmental Impact Assessment (EIA)/Environmental Management Plan (EMP) and a public hearing vide letter File No. J-12011/48/2023-IA.I(R) dated 02/11/2023.
- The EAC also noted that the project was previously considered during its 22nd meeting on 10/01/2025. However, the proposal was deferred as the Project Proponent (PP) did not attend the meeting.
- The EAC noted that the Project Proponent has given an undertaking that the data and information given in the application and enclosures are true to the best of his knowledge and belief and no information has been suppressed in the EIA/EMP reports. If any part of data/information submitted is found to be false/ misleading at any stage, the project will be rejected and Environmental Clearance given, if any, will be revoked at the risk and cost of the project proponent.
- The EAC further noted that the total land area required for the project is 2282.90 ha, comprising 2272.18 ha of the existing project area and an additional 10.71 ha required for the proposed expansion. Of this additional land, 2.78 ha is non-forest land, while 7.93 ha is forest land. The PP informed that for the 7.93 ha of forest land, Stage-I Forest Clearance (FC) has already been obtained for 4.10 ha (vide FP/MH/Pipeline/466395/2024 dated 06/01/2025), while the proposal for the remaining 3.83 ha has been submitted for approval.
- The estimated project cost is ₹7370.03 crore, which includes the existing investment of ₹4088.14 crore. A total capital cost of ₹193.00 lakh has been allocated for environmental pollution control measures, with a recurring (operation and maintenance) cost of ₹160.00 lakh per annum.
- The Committee discussed the issues raised during the Public Hearing (PH) which was conducted in three districts as per the EIA Notification, 2006 and reviewed the action plan submitted by the Project Proponent to address these concerns. After careful deliberation, the Committee found the action plan satisfactory.
- The EAC observed that approval on the Hydrology has been obtained from State Government, vide letter (Marathi) . - /0411/11/305.1-2019/02/04. The expert representative from CWC informed the Committee that DPR of the existing project was examined by the CWC; however, the PP has not submitted the DPR for concurrence of CWC for present expansion proposal.
- Additionally, the EAC noted that Certified Compliance Report of earlier EC conditions has been submitted by RO, MoEF&CC vide F. No. EC-2556/RON/2024-NGP/3436 dated 12th August, 2024. The RO, MoEF&CC raised serious concerns over compensatory afforestation,

Multidisciplinary Committee, non- submission of half yearly compliance report etc. Taking cognizance of these issues, the EAC requested the PP to submit a closure report from the RO, MoEF&CC, addressing the observations/ suggestions provided by the RO, MoEF&CC.

The EAC after detailed deliberations deferred the proposal for want of following additional information:

1. PP shall submit the status of the 3.83 Ha of forest land for obtaining Stage-I Forest Clearance (FC), along with all relevant supporting documents.
2. PP shall submit a closure report from the RO, MoEF&CC, addressing the observations/suggestions provided by the RO, MoEF&CC.
3. The concurrence/approval of CWC for hydrology of the present expansion proposal shall be examined and a clarification of CWC in this regard be submitted.
4. The MoU for water usage for the proposed project shall be submitted along with an English-translated copy, duly attested by the PP.
5. PP shall submit detail plan on water utilization for existing project and proposed project.
6. PP shall submit details of land reclamation practices undertaken in the existing project. Based on these practices, a comprehensive plan for implementing land reclamation in the proposed expansion shall also be submitted.

3.2.4. Deliberations by the EAC in current meetings

The EAC during deliberations noted the following:

- The Expert Appraisal Committee (EAC) deliberated on the information submitted by the Project Proponent and the details presented during the meeting. The Committee observed that the proposal pertains to the grant of Environmental Clearance for the Expansion of Tembhu Lift Irrigation Project in an area of 2284.601 ha at Village Tembhu, Ranad, Govare and etc, Sub District Khatav, Atpadi, Karad and etc, District Satara, Sangli and Solapur, Maharashtra by M/s Minor Irrigation Division, Sangli Water Resources Department, Maharashtra Krishna Valley Development Corporation.
- The project falls under item 1(c) of the Schedule to the Environmental Impact Assessment (EIA) Notification, 2006, as amended and is categorized as a Category 'B1' project, as Culturable Command Area (CCA) is 223425 Ha. However, presence of Mayani Bird Conservation Reserve it requires appraisal at the Central level by the Expert Appraisal Committee (EAC).

Earlier observations by the EAC

- The EAC, constituted under the provisions of the EIA Notification, 2006, and comprising expert members/domain experts from various relevant fields, examined the proposal submitted by the Project Proponent. This examination included a review of the Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) reports, which were prepared and submitted by a QCI/NABET-accredited consultant on behalf of the Project Proponent.
- The EAC further noted that the Ministry had granted Environmental Clearance (EC) to the existing project vide letter No. 12011/43/2003-A.I dated 17/08/2007, in favor of M/s. Minor Irrigation Circle, Maharashtra Krishna Valley Development Corporation, Warnali, Sangli for an Irrigation Command Area (ICA) of 80,472 ha. For the current expansion project, the Ministry has issued Terms of Reference (ToR) for conducting the Environmental Impact Assessment (EIA)/Environmental Management Plan (EMP) and a public hearing vide letter File No. J-12011/48/2023-IA.I(R) dated 02/11/2023.
- The EAC also noted that the project was previously considered during its 22nd meeting on 10/01/2025. However, the proposal was deferred as the Project Proponent (PP) did not attend the meeting.
- The EAC noted that the Project Proponent has given an undertaking that the data and information

given in the application and enclosures are true to the best of his knowledge and belief and no information has been suppressed in the EIA/EMP reports. If any part of data/information submitted is found to be false/ misleading at any stage, the project will be rejected and Environmental Clearance given, if any, will be revoked at the risk and cost of the project proponent.

- The EAC further noted that the total land area required for the project is 2282.90 ha, comprising 2272.18 ha of the existing project area and an additional 10.71 ha required for the proposed expansion. Of this additional land, 2.78 ha is non-forest land, while 7.93 ha is forest land. The PP informed that for the 7.93 ha of forest land, Stage-I Forest Clearance (FC) has already been obtained for 4.10 ha (vide FP/MH/Pipeline/466395/2024 dated 06/01/2025), while the proposal for the remaining 3.83 ha has been submitted for approval.
- The estimated project cost is ₹7370.03 crore, which includes the existing investment of ₹4088.14 crore. A total capital cost of ₹193.00 lakh has been allocated for environmental pollution control measures, with a recurring (operation and maintenance) cost of ₹160.00 lakh per annum.
- The Committee discussed the issues raised during the Public Hearing (PH) which was conducted in three districts as per the EIA Notification, 2006 and reviewed the action plan submitted by the Project Proponent to address these concerns. After careful deliberation, the Committee found the action plan satisfactory.
- The EAC observed that approval on the Hydrology has been obtained from State Government, vide letter (Marathi) . - /0411/11/305.1-2019/02/04. The expert representative from CWC informed the Committee that DPR of the existing project was examined by the CWC; however, the PP has not submitted the DPR for concurrence of CWC for present expansion proposal.
- Additionally, the EAC noted that Certified Compliance Report of earlier EC conditions has been submitted by RO, MoEF&CC vide F. No. EC-2556/RON/2024-NGP/3436 dated 12th August, 2024. The RO, MoEF&CC raised serious concerns over compensatory afforestation, Multidisciplinary Committee, non- submission of half yearly compliance report etc. Taking cognizance of these issues, the EAC requested the PP to submit a closure report from the RO, MoEF&CC, addressing the observations/ suggestions provided by the RO, MoEF&CC.

Current deliberations:

- The EAC observed that approval of pre chapter of hydrology is a requisite document for examination of the proposal. In this regard, earlier, an ADS was raised and PP couldn't submit the document for appraisal. Therefore, it was opined that PP shall obtain concurrence/ approval of CWC for hydrology of the present expansion or otherwise.
- The EAC further noted that the values submitted in the water balance table shall be rechecked and be submit accordingly.

The proposal ***deferred*** on the following lines.

i. The PP shall submit the approval/concurrence/clarification of the Central Water Commission (CWC) for the preliminary hydrology chapter related to the proposed expansion.

ii. The PP is required to re-check and revise the Water Balance Table, ensuring all values are accurate and consistent with the hydrological and project design parameters. The revised table must be accompanied by a brief explanation of methodology and assumptions used.

3.2.5. Recommendation of EAC

Deferred for ADS

3.3. Agenda Item No 3:

3.3.1. Details of the proposal

ERM OF KAMLA IRRIGATION PROJECT, BIHAR by **Water Resources Department, Govt of Bihar** located at **MADHUBANI,BIHAR**			
Proposal For		Fresh ToR	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/BR/RIV/525753/2025	J-12011/17/2025-IA.I (R)	14/04/2025	River Valley/Irrigation projects (1(c))

3.3.2. Project Salient Features

30.3.1: The proposal is for grant of Terms of Reference (TOR) to the project for Extension, Renovation & Modernization (ERM) of Kamla Irrigation Project (CCA: 23,419.08 ha + 4,965.05 ha) in an area of 26.7 Ha (additional) at Sub District Jainagar, Basopatti, Khajauli etc, District Madhubani, Bihar by M/s Water Resources Department, Govt of Bihar.

30.3.2: The Project Proponent and the accredited Consultant M/s. Aarvee Engineering Consultants Limited, made a detailed presentation on the salient features of the project and informed that:

i. The Kamla Irrigation Project is an essential water management initiative in the floodplains of Bihar, India, a state characterized by fertile alluvial soils and abundant water resources. Agriculture plays a critical role in Bihar's economy, with 77% of the workforce engaged in this sector, and the Kamla Basin supports a significant portion of this activity. The Kamla River, originating from the Mahabharat Range in Nepal, traverses the Madhubani district in Bihar before merging with the Kosi River. However, due to its foothills-fed nature, the river carries heavy sediment loads, creating challenges for water flow stability and distribution. As a response to these challenges, the Kamla Irrigation Project aims to modernize and optimize water infrastructure to secure agricultural productivity, mitigate flood risks, and provide reliable irrigation for a diverse crop base.

ii. The Kamla Irrigation Project, commissioned in 1975, was designed to irrigate a CCA of 39921 hectares. However, over the decades, the aging canal system, unlined infrastructure, heavy siltation, and structural vulnerabilities have severely impacted the project's efficiency and effectiveness. The deterioration of infrastructure, including canals, cross drainage (CD) works, and cross masonry (CM) structures, has compromised the efficiency of the system. Unlined canals have exacerbated these issues, leading to erosion and instability in canal banks. In order to overcome this challenges and restore the performance of the scheme, Water Resources Department, Govt. Of Bihar has taken up the project ERM of Kamla Irrigation Project.

iii. **Project Location**: The Kamla Irrigation Project is located near the India-Nepal international border within Madhubani district, Bihar. Accessible via National Highway 105, the site lies approximately 40 kilometers from Madhubani and 200 kilometres from Patna, with the nearest airport at Darbhanga (60 km) and the closest railhead at Jainagar (3 km). The command area of the project is distributed across nine administrative blocks in Madhubani district.

The geographical co-ordinate of the project are: 26.597175°N, 86.144642°E (Kamla Weir)

iv. **Project Background:**

a. The Kamla Irrigation Project, initiated in 1901, has evolved through various phases. Originally established under the guidance of Mr. King, the then Circle Manager of Darbhanga Raj, the project included the construction of the King's Canal, which covers approximately 8,093.71 hectares (20,000 acres). The canal was integrated into the Integrated Kamla Project in 1951, sanctioned by the Bihar Government's Irrigation Department in 1956/57, with a designed discharge capacity of 400 cusecs. To enhance irrigation efficiency and ensure a consistent water supply, a weir was constructed across the Kamla River at Jainagar, with coordinates 26°35'49.83" N and 86°08'40.71" E. Completed in 1969/70, this weir has a discharge capacity of 3,964.4 cumecs and spans 292.5 meters in length.

b. Existing Kamla Irrigation Network: The canal system, completed in 1974/75, was designed to irrigate 39,921 hectares (CCA). However, following the implementation of the Western Kosi

Canal Project, the command areas of King's Canal, Jiraul Distributary, Sugraul Sub-Distributary, and Pakri Distributary were curtailed, reducing the command area of the Kamla Irrigation Scheme to 28,384.13 hectares (CCA).

c. Command Area Details

d. Total CCA: 28,384 hectares, representing approximately 67% of the Gross Command Area (GCA) of 42,364.37 hectares.

A total of 912 cusecs of water is derived from the Kamla weir through the Kamla Eastern and Western Main Canals. This water is distributed directly to the fields or through various distributaries, sub-distributaries, and watercourses. Irrigation achievements over the past decade indicate an average irrigated CCA of only 15,850 hectares, which highlights the challenges faced by the canal system in achieving its full irrigation potential.

e. Salient Features of the Canal Systems

Kamla Western Main Canal: Includes a Gross Command Area of 34,953.84 ha, with a CCA of 23,419.08 ha and a discharge capacity of 22.653 cumecs (800 cusecs).

Kamla Eastern Main Canal: Features a gross command area of 7,410.53 ha and a CCA of 4,965.05 ha with a design capacity of 3.398 cumecs (120 cusecs).

Actual CCA Calculation in ERM 2024: CCA arrived to 29,711 hectares for Western & Eastern Kamla Main Canals after considering land features such as habitations, plantations, ponds, roads, streams, railway tracks, and canal widths.

The comparison of CCA original contemplated and identified as part of ERM is given in below table

Canal System	**Culturable Command Area (Ha)**	
	Existing	**ERM 2024**
Kamla Western Canal system	23,419	24,307
Kamla Eastern Canal system	4,965	5,404
Total CCA	28384	29711

v. **Land requirement:** 26.7 Ha

vi. **Project Cost:** The estimated project cost is Rs. **1268.81** Crores.

vii. **Resettlement and Rehabilitation:** 159 Nos. (encroached structures identified)

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

- **Project details:**

Name of the Proposal	ERM of Kamla Irrigation Project, Bihar
Location (Including coordinates)	The Kamla Irrigation Project is located near the India-Nepal international border within Madhubani district, Bihar. Accessible via National Highway 105, the site lies approximately 40 kilometers from Madhubani and 200 Kilometres from Patna, with the nearest airport at Darbhanga (60 km) and the closest railhead at Jainagar (3 km). The command area of the project is distributed across nine administrative blocks in Madhubani district.
Inter- state issue involved	The Proposed Project lies within the Indo-Nepal International Boundary within the distance of 3.5 km.
Seismic zone	As per the seismic zonation map of India, the Project are a lies in the seismic Zone-V which falls in highly active

	zone.

- **Category details:**

Category of the project	Category A
Provisions	Irrigation Project
Capacity / Cultural command area (CCA)	29711 Ha CCA
Attracts the General Conditions (Yes/No)	Yes. The Kamla Irrigation Project is situated in Jainagar, approximately 3.5 km from the India-Nepal international border in Madhubani District, Bihar.
Additional information (if any)	Nil

- **ToR/EC Details:**

Cost of project	Total Hard Cost of the project is Rs. 126881.00 Lakhs (1268.81 Cr).
Total area of Project	29,711 Ha
Height of Dam from Riverbed (EL)	NA
Length of Tunnel/Channel	NA
Details of Submergence area	NA
Types of Waste and quantity of generation during construction/ Operation	Sewage and solid waste generated at the construction staff colony/ project colony shall be adequately treated/ disposed to avoid water pollution and associated public health problems. Adequate measures will be undertaken to dispose of the sewage and waste generated from the labor camps. Appropriate management measures will be recommended as a part of the Comprehensive EIA study.
E-Flows for the Project	NA
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then a) E-flow with TOR /Recommendation by EAC as per CIA&CC study of River Basin. If not the E-Flows maintain criteria for sustaining river ecosystem.	NA

- **Muck Management Details:**

No. of proposed disposal area/(type of land-Forest/Pvt. land)	Excavated material will be used in formation of canal banks and Service Roads. The balance material will be dis

	posed of along the canal as spoil bank on both sides of t he canals.
Muck Management Plan	Total quantity of muck will be generated in the project is 1838926 cum and the same will be used in formation of canal banks and Service Roads. The balance materia l will be disposed of along the canal as spoil bank on b oth sides of the canals.
Monitoring mechanism for Muck Dispos al	Not Applicable

- **Land Area Breakup:**

Private land	0.0Ha
Government land/Forest Land	26.7 Ha
Submergence area/Reservoir area	NA
Land required for project components	26.7 Ha
Additional information (if any)	Nil

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

Forest Land/ Protected Area/ Envi ronmental Sensitivity Zone	**Yes/No**	**Details of Certificate/ letter/ R emarks**
Reserve Forest/Protected Forest Land	No	
National Park	No	
Wildlife Sanctuary	No	

- **Court case details:** Nil
- **Miscellaneous**

Particulars	**Details**
Details of consultant	M/s Aarvee Engineering Consultants Ltd., Hyderaba d (former known as Aarvee Associates Architects En gineers and Consultants Pvt., Ltd.,)
Project Benefits	The following benefits are anticipated from the proje ct construction and operation phases: • With the implementation of the proposed modernizat ion of irrigation, it is expected to not only improv e the socio-economic status and quality of life of the farming community in the command area but also provides an impetus to agriculture and the pr oductivity of the cropping pattern in the Culturab le Command Area (CCA) of the region.

	• The total CCA is 29,711 hectares, representing approximately 74% of the Gross Command Area (GCA). Annual benefit of Rs.28291.26 Lakhs is estimated from the project. • A number of marginal activities and jobs would be available to the locals during construction phase. • Developers bringing large scale of investment to the area will also invest in local area development and benefit will be reaped by locals. • Education, medical facilities, transportation, road network and other infrastructure will improve.
Status of other statutory clearances	NA
R&R details	There are 159 nos. of encroachments identified along the existing canal banks. The compensation for the encroachers will be paid as per the LARR Act 2013.
Additional details, (If any)	Nil

3.3.3. Deliberations by the committee in previous meetings

N/A

3.3.4. Deliberations by the EAC in current meetings

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 TOR for conducting EIA study for Extension, Renovation & Modernization (ERM) of Kamla Irrigation Project (CCA: 28,384 ha) in an area of 26.7 Ha (additional) at Sub District Jainagar, Basopatti, Khajauli etc, District Madhubani, Bihar by M/s Water Resources Department, Govt of Bihar.

The EAC noted that the present project proposal comes under “B1” category; as per the provisions of the EIA Notification, 2006, as amended as Culturable Command Area (CCA: 28,384 ha). However, the location of the project is 3.5 km away from Indo-Nepal, hence, it requires appraisal at the Central level by the Expert Appraisal Committee (EAC).

The EAC observed that the Water Resources Department, Govt. of Bihar has taken up the Western Kamla Main Canal (WKMC) and Eastern Kamla Main Canal (EKMC), currently which are significantly below their design capacities, which is a major factor limiting irrigation in the command area. The WKMC is currently carrying around 350-400 cusecs, far below its designed discharge of 800 cusecs, while the EKMC is delivering only 20-40 cusecs, compared to its intended capacity of 112 cusecs. The canal system needs rehabilitation to restore and maximize its irrigated area. Lining canals and improving infrastructure can boost agricultural productivity, especially during Kharif season. Addressing the engineering, agronomical, administrative, and legislative deficiencies in the Kamla Irrigation Project is crucial to restoring its full efficiency and ensuring sustainable water distribution. This would increase crop yields, revenues, and per capita income, thereby improving the rural economy and enhancing the standard of living for farmers.

The EAC noted that PP was unable to clearly articulate the specific activities that would be undertaken as part of the proposed Extension, Renovation, and Modernization (ERM) scheme. Furthermore, the PP did not adequately explain the anticipated benefits or improvements that would result from the implementation of this scheme. This lack of clarity raised concerns regarding the overall objectives and justification of the

proposed ERM activities.

During the presentation it was observed through the kml that the command area of Western Kamla Main Canal (WKMC) and Eastern Kamla Main Canal (EKMC) are overlapping with each other. Such overlap raised serious concerns regarding the accuracy of the project planning and the level of diligence shown by PP.

The EAC also emphasized the importance of clearly outlining the expected improvements in irrigation efficiency as a result of the proposed Extension, Renovation, and Modernization (ERM) scheme. The Committee noted that the PP did not provide adequate information on how the proposed interventions would enhance water-use efficiency, reduce conveyance and application losses, or improve crop productivity per unit of water used due to which it became difficult for the committee to assess the tangible benefits of the scheme. The EAC further highlighted that increasing irrigation efficiency is essential not only for maximizing agricultural output but also for minimizing environmental impacts such as groundwater depletion and waterlogging. Therefore, a detailed assessment and quantifiable targets related to irrigation efficiency improvements shall be included in the revised proposal to justify the environmental and economic viability of the ERM activities.

The proposal ***deferred*** on the following lines.

i. The Project Proponent (PP) shall submit a clearly defined and itemized list of activities proposed under the Extension, Renovation, and Modernization (ERM) scheme. The modernization proposal which was not explained properly by the PP should include what modernization shall be done and how it's better than the existing irrigation canal etc. This should include technical specifications, scope of work, and implementation timelines.

ii. The PP shall provide a report on the salient achievements of the existing irrigation project on the improved crop yield, livelihood and socio-economic aspects of the farmers and other users and proper distribution without loss due to water diversion canals by individuals etc.

iii. The PP shall provide a detailed explanation of the anticipated benefits from the proposed ERM scheme. This should include measurable outcomes such as increase in command area utilization, expected improvements in irrigation reliability, and overall impact on agricultural productivity and livelihoods.

iv. The PP shall submit a revised and verified KML file and updated project map clearly delineating the command areas of Western Kamla Main Canal (WKMC) and Eastern Kamla Main Canal (EKMC), ensuring there is no overlap. Proper GIS-based delineation and planning documentation shall be submitted.

v. The PP shall provide a quantitative analysis of how the proposed ERM works will enhance irrigation efficiency. This should include baseline data and post-implementation targets for reduction in conveyance and application losses, improvements in water-use efficiency, and increase in crop yield per unit of water.

vi. If any hydrological interventions or flow modifications are involved, the PP shall obtain concurrence/approval from the Central Water Commission (CWC), or submit a clarification on whether such approval is not necessary for the proposed scheme.

3.3.5. Recommendation of EAC

Deferred for ADS

4. Any Other Item(s)

N/A

5. List of Attendees

Sr. No.	Name	Designation	Email ID	Remarks
1	Prof G J Chakrapani	Chairman, EAC	cha**********@gmail.com	
2	Dr Mukesh Sharma	Member (EAC)	muk***@iitk.ac.in	Absent
3	Dr Uday Kumar R Y	Member (EAC)	uda********@yahoo.com	
4	Dr J A Johnson	Member (EAC)	jaj@wii.gov.in	

5	Dr J V Tyagi	Member (EAC)	jvt******@gmail.com	
6	Shri Kartik Sapre	Member (EAC)	kar********@gmail.com	
7	Shri Ajay Kumar Lal	Member (EAC)	akl****@gmail.com	
8	Dr A K Sahoo	Member (EAC)	ami***@gmail.com	
9	Shri Rakesh Goyal	Member	goy*********@nic.in	
10	Shri Balram Kumar	Member	emo***@nic.in	
11	Yogendra Pal Singh	Scientist - F	yog*******@nic.in	

MINUTES OF THE 30TH MEETING OF THE EXPERT APPRAISAL COMMITTEE FOR RIVER VALLEY AND HYDROELECTRIC PROJECTS HELD ON 30TH APRIL, 2025 THROUGH VIDEO CONFERENCE (ONLINE)

The 30th meeting of the EAC for River Valley & Hydroelectric Projects organized by the Ministry of Environment, Forest and Climate Change, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi, was held on 30th April, 2025 through Virtual mode, under the Chairmanship of Prof. G. J. Chakrapani. The list of Members present in the meeting is at **Annexure**.

Confirmation of the Minutes of the 29th EAC meeting:

The Minutes of the Meeting held on 29th EAC meeting on 21st April, 2025 were confirmed.

Agenda Item No. 30.1

Bhavali Pumped Storage Project (1500 MW) in an area of 278.92 Ha in Village Kalbhonde, Kothale and Jamunde Sub District Shahapur and Igatpuri, District Thane and Nashik, Maharashtra by M/s JSW Energy PSP Two Limited – Environmental Clearance (EC) – reg.

[Proposal No. IA/MH/RIV/481391/2024; F. No. J-12011/08/2022-IA-I(R)]

30.1.1: The proposal is for grant of Environmental Clearance (EC) to the project for Bhavali Pumped Storage Project (1500 MW) in an area of 278.92 Ha in Village Kalbhonde, Kothale and Jamunde Sub District Shahapur and Igatpuri, District Thane and Nashik, Maharashtra by M/s JSW Energy PSP Two Limited.

30.1.2: The Project Proponent and the accredited Consultant M/s. EQMS India Private Limited, made a detailed presentation on the salient features of the project and informed that:

i. The proposal is for environmental clearance to the project for Bhavali Pumped Storage Project (1500MW), located at Village Kalbhonde, Kothale and Jamunde Sub District Shahapur and Igatpuri, District Thane and Nashik, Maharashtra, by M/s JSW Energy PSP Two Ltd.

ii. The project proposal was considered by the Expert Appraisal Committee (Hydro River Valley Sector) in its 27th meeting held during 09.05.2022 and recommended for grant of Terms of References (ToR) for the Project. The ToR has been issued by Ministry vide letter No J-12011/08/2022-IA. I(R) dated 27.6.2022.

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

iv. The geographical co-ordinate of the project are –

Upper Reservoir: $19^0$36'31.69" N ,$73^0$35' 45.06" E;

Lower Reservoir: $19^0$34' 56.38" N,73^0 35'10.0'' E"

v. The Bhavali Pumped Storage Project envisages creation of an upper reservoir (gross storage:12.35 MCM & live storage: 11.08 MCM) by constructing 962.47m long dam comprising of 822.47 m long Geomembrane faced rockfill dam (GRFD) with maximum height of 48.64m from foundation, 60m long and 61m height ungated spillway with 4 bays of 12.5m each; 4 blocks of 20m length each non-overflow section of maximum height of 49.57m from foundation, two each on either side of spillway. 80m long saddle dam (maximum height 10m from foundation) to reduce backwater to enter ESZ area. The lower reservoir (gross storage:13.26MCM; live storage:11.71MCM) shall be created by constructing concrete gravity dam 365.5m long at top with maximum height of 48.15m from foundation and 104 m long ,74m high (from foundation) ungated spillway with 8 bays of 10.5m each. Diffuser type Intake structure with 3 intakes (25.5mx10.5m) of 42.44m length shall be provided. The water conductor system shall comprise of 67.96 m long three intake tunnels of 7m diameter each with design discharge of 131.74cumec each. 5.1m diameter, followed Steel lined pressure shaft 3 nos. of independent, 5.1m diameter with length varying from 1568.09m to 1594.89m, six 3.8m diameter branch pressure shaft after first bifurcation of design discharge 65.96cumec each; two 2.9m diameter 46.83m long steel lined branch pressure shaft after second bifurcation of design discharge 32.98cumec each. Underground powerhouse (167mx22mx52.9m) housed with 7 No's. Francis vertical shaft reversible pump-turbine (5 X 250MW & 2 X 125 MW) discharging into circular draft tube 5.20 m and 4.0m diameter for large and small unit; two 4m diameter concrete lined branch tail race tunnel for 32.98cumec discharge after 3rd bifurcation; six 5.2meter diameter concrete lined branch tail race tunnel for 65.78 cumec discharge after 4th bifurcation; followed by three 7m diameter main tail race tunnel with length varying from 621.17m to 646.57m,each discharging 131.74cumec, 105m long trapezoidal tail race pool followed by 560m long trapezoidal tail race channel. Annual energy generation by Bhavali PSP in turbine mode is 4049.17 MU whereas annual energy consumed in pump mode is 5110.33 MU.

vi. **Land Requirement:** The total land requirement under the project for upper and lower rock fill dam, reservoir & other works, has been assessed as 278.92 ha of which private land is 35.18 ha, forest land 243.74 ha.

vii. **Demographic details in 10 km radius of project area:** The study area comprises of 40 villages. As per the Census of India 2011, the total households under study area villages are 9190. The total population of villages is 52201 composed of 26398 males and 25803 females with sex ratio of 977. The cast wise composition of the total population made up the Scheduled Cast population is 2234 (4.28%) and Scheduled Tribe population is 32079 (61.45%), which shows that the Scheduled Tribe is the dominant cast in most of the villages in study area. The total literate population is 28605, of which male and female population is 16974 and 11631 respectively. Total literate population is 64.83%, of which male and female literates are 76.40 % are 53.09 % respectively. The total working population is 24293 (46.53%) which comprises of main workers 18849 (36.10%) and marginal workers 5444 (10.43%) while non-workers are 27908 (53.47%). Among main workers, cultivators constitute the highest category (54.3%), followed by cultivators (29.7%) and other workers (15.90%). Among marginal workers agricultural labour constitutes the highest category (50.7%) followed by cultivators (31.9%) and other workers (15.4%).

viii. **Water Requirement:** The total water requirement during construction shall be 1000 kld(Domestic:100kld & Construction 900kld) and shall be met from the surface sources viz., nearby reservoir(s).

ix. **Project Cost**: The estimated project cost is Rs. 8964.02 Crores. Total capital cost earmarked towards environmental pollution control measures and the Recurring cost (operation and maintenance) will be about Rs. 282 lakh per annum.

x. **Project Benefit**: Employment will be 3000 persons as direct. PP proposes to allocate Rs 600 lakh for implementing issues raised during public hearing towards CER (As per Ministry's O.M. F.No.22-65/2017-IA.III, dated 30th September,2020, CER cost is not based on percentage cost of project)

xi. **Environmental Sensitive area**: Kalsubai Harichandragad Wildlife Sanctuary exists within 10 km of project boundary. However, no part of the project lies within Eco-sensitive zone of the Sanctuary. The distance between the project boundary and Kalsubai Harichandragad Wildlife Sanctuary is 2.21 km and 12.5 from ESZ boundary. The distance of the Wildlife Sanctuary has been duly approved by the Chief Wildlife Warden, Nagpur, Maharashtra vide letter no. कक्ष-२३(२)/वज्र/सर्वे/प्र.क्र.१६३/४३६६/२०२४-२५ on dated 29th Nov., 2024.

xii. **MoU / any other clearance/ permission signed with State government:**
(1) The MOU for setting up of the proposed Bhavali Pumped Storage Project (1500MW) has been made on 14th day of September,2021, between the Industries Department, Government of Maharashtra and M/s JSW Neo Energy Ltd.

(2) Govt. of Maharashtra, Water Resources Department, Hydrology and Dam Safety, issued certificate for water availability for project vide No. WFR/Ulhas/894, dated 21.11.2022.

xiii. **Resettlement and rehabilitation:** The total private land required for the project is 35.18 ha which is spread over Jamunde village in Tehsil Igatpuri, District Nashik, Maharashtra. There shall be 130 affected families of which 10 shall be displaced families. The acquisition of the land shall be carried out by mutual negotiation in consonance with "RFCTLARRA", 2013. The total cost for implementing Rehabilitation and Resettlement Plan is Rs 1232 lakh comprised of the cost of land acquisition (Rs 854.54 lakh), R&R entitlement (Rs 82.05 lakh) and the cost of Tribal Development Plan (Rs 295 lakh).

xiv. **Scheduled –I species:** Nine mammalian species (Panther, Striped Hyaena, Jackal, Khokad, Jungle cat, Wolf, Chow Singha, Barking deer and Porcupine); 11 avifauna species (White backed Vulture, Slender billed vulture, Sparrow hawk. Brahminy kite, Booted eagle, Crested serpent eagle, Grey junglefowl, Indian peafowl, River tern, Barn owl and Brown wood) and three herpetofauna species (Indian Cobra, Russell's Viper and Rat snake) were recorded/reported from study area.

A budget of Rs. 326.50 Lakhs/- has been approved by Chief Wildlife Warden, Nagpur, Maharashtra vide letter no. कक्ष-२३(२)/वज्र/सर्वे/प्र.क्र.१६३/४३६६/२०२४-२५ on dated 29th Nov., 2024 for conservation of these Schedule-I species under Wildlife and Biodiversity Management Plan.

xv. **Alternative Studies:**

Based on ground topography and surface geo-mapping for preliminary understanding of the geological set up of the project area, for layout of WCS and powerhouse, two alternatives, viz., Alternate -1 with all components of WCS and powerhouse as underground and the Alternate-2 with surface powerhouse, were studied. Alternate-1 was preferred over Alternate-2 as the latter involved about 135m deep surface excavation for surface powerhouse, which would necessitate intricate supports and slope stability measures, besides posing seepage problem during operation compounded with problems with storm water drainage. The selected alternative has been found to be more suitable considering the minimal overall forest land requirement and minimal requirement of private land and least displacement of people habitations.

xvi. **Baseline Environmental Scenario:**

Period	**1.3.2022 to 30.12.2022 (Three seasons)**
	PM_{10}: 38.3 to 66.3 µg/m^3
	$PM_{2.5}$: 15.6 to 25.5 µg/m^3

AAQ parameters at 6 locations (minimum & maximum)	SO_2: 5.1 to 9.6 µg/m^3
	NOx: 6.5 to 12.8 µg/m^3
Incremental GLC Level	PM_{10}: Max. GLC: 13.83 µg/m^3
	$PM_{2.5}$: Max. GLC: 1.22 µg/m^3
	SO_2: Max. GLC: 1.0 µg/m^3
	NOx: Max. GLC:12.67 µg/m^3
River water samples at 3 locations	pH: 6.97to7.41
	Dissolved Oxygen: 7.3to8.3mg/l
	Total Dissolved Solids: 74to 81mg/l
	Total Hardness (as $CaCO_3$):56 to63mg/l
	Total Alkalinity (as $CaCO_3$):2 to28 mg/l
	Calcium (as Ca):16.8to18.4 mg/l
	Magnesium (as Mg):2.9to4.7 mg/l
	Oil and Grease: <2mg/l
	Sulphate (as SO_4):8.2 to11.6 mg/l
	Nitrate (as Na):2.4 to6.7mg/l
	Chloride (as Cl):30.3 to40.8mg/l
	Iron (as Fe):0.12to 0.3mg/l
	Copper (as Cu): <0.05 mg/l
	Lead (as Pb): <0.01mg/l
	Cadmium (as Cd): <0.003mg/l
	Chromium (as Cr): <0.05mg/l
	Manganese (as Mn): <0.05mg/l
	Arsenic (as As): <0.01mg/l
	Mercury (as Hg): <0.001mg/l
Pond water samples at 3 locations	pH:7.12 to7.56
	Dissolved Oxygen:6.9 to8.4mg/l
	Total Dissolved Solids:82to 107mg/l
	Total Hardness (as $CaCO_3$):59to77mg/l
	Total Alkalinity (as $CaCO_3$):2to27mg/l
	Calcium (as Ca):18.1to21. mg/l
	Magnesium (as Mg):3.3 to5.8mg/l
	Oil and Grease:<2mg/l
	Sulphate (as SO_4):7.4to14.1mg/l
	Nitrate (as Na): 3.1to 4.9mg/l
	Chloride (as Cl):30.9to 41.1 mg/l
	Iron (as Fe):0.05 to 0.21mg/l
	Copper (as Cu): <0.05 mg/l

	Lead (as Pb): <0.01mg/l
	Cadmium (as Cd): <0.003mg/l
	Chromium (as Cr): <0.05mg/l
	Manganese (as Mn): <0.05mg/l
	Arsenic (as As): <0.01mg/l
	Mercury (as Hg): <0.001mg/l
Ground Water samples at 6 locations	pH: 6.58 to 7.86
	Total Dissolved Solids: 216 to 310 mg/l
	Total Hardness (as $CaCO_3$):140 to190mg/l
	Total Alkalinity (as $CaCO_3$): 37 to 89 mg/l
	Calcium (as Ca): 34.1 to 47mg/l
	Magnesium (as Mg): 12.4 to26.9 mg/l
	Oil and Grease: :<2mg/l
	Sulphate (as SO_4):21.3to36.0 mg/l
	Nitrate (as Na):2.8 to 5.1 mg/l
	Chloride (as Cl):57.1to 83 mg/l
	Iron (as Fe) : 0.3 to 0.10mg/l
	Copper (as Cu): <0.05 mg/l
	Lead (as Pb): <0.01mg/l
	Cadmium (as Cd): <0.003mg/l
	Chromium (as Cr): <0.05mg/l
	Manganese (as Mn): <0.05mg/l
	Arsenic (as As): <0.01mg/l
	Mercury (as Hg): <0.001mg/l
Noise levels Leq (Day & Night) at 6 locations	Residential Area Leq. (Day): 46.9 to 53.1 dB (A)
	Residential Area Leq. (Night): 35.7 to 42.8 dB (A)
	Commercial Area Leq. (Day): 59.9 to 62.6 dB (A)
	Commercial Area Leq. (Night): 48.3 to 50.3 dB (A)
Soil Quality at 10 locations	Bulk density:1.28 to 1.49 gm/cc
	pH range: 6.60 to 7.34
	Electrical conductivity (EC);107 to 446 µmhos/cm
	Calcium content:1524 to 3281mg/kg;
	Sodium:154 to 418 mg/kg
	Potassium: 127to 826 mg/kg;
	Nitrogen:153to 849 mg/kg
	Phosphorous: 6.6to 46.9 mg/kg;
	Cation Exchange Capacity (CEC):10.7 to 23.67 meq/100gm
	Magnesium: 242 to 452mg/kg

	Sulphur: 15.4 to 32.8 mg/kg
	Organic Matter: 1.33 % to 5.26%
Flora & Fauna	**Flora:** During primary and secondary study carried out under present project, 88 tree species (37 families), 41 shrub species (23 families), 40 herbs species (26 families) and 14 species of climbers (10 families) and 18 species of grasses (1 family) were recorded from the study area. About 5 economically important and 36 important medicinal/ethnobotanical importance plant species were recorded. One endemic specie was also reported.
	Fauna Sixteen mammalian species were found/reported from secondary sources as well as from the primary survey and consultations. Out of reported species nine species are Schedule-I species and three species and four species belong to Schedule -II and IV respectively. As per IUCN criteria (3.1) study area harbors three vulnerable species and one species categorized under threatened category, Forty-nine bird species were observed /reported during the survey of which ten species belong to Schedule-1 of WPA, 1972. Rest of the species belong to either Schedule-II or IV. As per the IUCN Red list two species Vultures are categorized as "Critically Endangered" and all other species are listed as "Least Concern". Two species of amphibians, 4 species of snakes and 4 species of lizards recorded/confirmed in the study area of which Indian Cobra, Russell's Viper and Rat snake belong to Schedule-I of WPA,1972, as amended in December,2022. Eight species of butterflies were recorded/reported of which none belong to Schedule-1 **Aquatic** Twenty-one Phytoplankton species were recorded: Cyanophycean (8), Bacillariophyceae (5), Chlorophyceae (7), Euglenophycin (1). Twelve species of Zooplankton were recorded: Rotifera (5), Cladocera (4), Copepods (2) and Ostracoda (1). Among fish population 10 species belonging to 4 families viz., Cyprinidae (*Catla catla, Labeo rohita,*

	Cirrihinus mrigala, Labeo calbasu, Puntius chola and *Garra mullya*); Channidae (*Channa gachua*&*Channa punctatus*);*Bagridae*(*Rita rita)*; Saccobranchidae (*Heteropneustes fossilis*) were identified.

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

a) Solid Waste: Municipal Solid Waste (MSW) likely to be generated during construction and operation shall be 38.8 Ton/annum and 7.2ton/annum respectively which shall be managed as per Solid Wastes Management Rules, 2016.

Hazardous waste: It inter alia includes burnt mobile oil and greases (6ton/annum) from vehicles and construction machinery and equipment which shall be handled and disposed through authorised dealer as per Hazardous and other Wastes (Management &Transboundary Movement) Rules,2016.

b) Muck & its management

The total quantity of muck / debris, to be generated due to the project, shall be 64.06 lakh cum, out of which 36.08 lakh cum shall be consumed on the project work leaving 28.43 lakh cum, which with 42% swell factor shall amount to 40.37 lakh cum shall be disposed at two designated muck disposal sites in an area of 44.09 ha. The muck disposal sites shall be developed from below the ground level by providing retaining wall. After construction of retaining wall, the muck brought in dumpers shall be dumped and manually spread behind the wall. The muck shall be laid with vertical angle not exceeding 28^0 in such a manner that rock mass is properly stacked behind the wall with minimum of voids. The muck pile shall be later covered with geo-Geo-coir textile properly held to the ground by steel wire U-nails and rehabilitated by afforestation of herbs and shrubs.

xviii. **Public Hearing:**

Particular	District Nashik	District Thane
Advertisement for PH with date	Local newspaper "Sakal" (Marathi) and the "Times of India" (English) on 07.12.2023.	Local newspaper" Sakal" (Marathi) and the "Free Press Journal" (English) on 12.01.2024.
Date of Public Hearing	10.01.2024	13.02.2024
Venue	Near to the Upper Reservoir, in village Jamunde, Post Manvede, Tehsil Igatpuri, District Nashik	Near to the Lower Reservoir, in village Kalbhonde, Tehsil Shahpur, District Thane.
Chaired by	Mr. Ravindra Thakre, SDM, Igatpuri, Nashik	Ms. Manisha Jaybhaye Dhule, Additional Collector, Thane

Main issues raised during PH	• Adequate compensation should be granted for acquiring their land •Job opportunities for the youth and unemployed people • Impact to flow of water, wildlife, trees and medicinal plants, agricultural and horticultural crops •Remedial measures for addressing pollution control and wildlife impacts during construction •Addressal of problems like scarcity of water, electricity and lack of roads and education facilities, • Relocation of Temple in Jamunde. • Demanded school bus for children •Assistance to the villagers in education, health and employment sector •Livelihood opportunities for the people of the area •CSR grant for developing local villages	•Job opportunities for the youth and unemployed people •Addressal of problems like scarcity of water, electricity and lack of roads and education facilities •Demanded Company to establish a High School in the village •Repairs of local Deities & clan God •Mobile team of health workers should be provided •Books and clothes should be distributed to village children •Plantation of trees by the company •Job opportunities for the youth and unemployed people

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

- **Project Details**

EAC meeting/s	30th EAC meeting for reconsideration of EC proposal
Date of Meeting/s	30th April, 2025

Date of earlier EAC meetings	Earlier, the proposal was appraised in front of the EAC (River Valley & Hydroelectric Project) in its 14th EAC meeting held on 30th Aug., 2024. The proposal was deferred for want of additional details.

- **Project Details**

Name of the Proposal	**"Bhavali Pumped Storage Project"** (1500MW) at village Jamunde, Tehsil Igatpuri, District Nashik and villages Kalbhonde and Kothale, Tehsil Shahpur District Thane, Maharashtra M/s JSW Energy PSP Two Limited
Proposal No.	Proposal No.: IA/MH/RIV/481391/2024; File No. J-12011/08/2022-IA. I(R)
Location (Including Coordinates)	Upper dam: Jamunde (Igatpuri Tehsil-Nasik) Lower dam: Kalbhonde & Kothale (Shahapur Tehsil - Thane) Upper Reservoir: $19^0$36'31.69" N ,$73^0$35' 45.06" E; Lower Reservoir: $19^0$34' 56.38" N,73^0 35'10.0'' E
Company's Name	JSW Energy PSP Two Ltd.
CIN no. of Company/user agency	U40108MH2021PLC367136
Accredited Consultant and certificate no.	EQMS India Pvt. Ltd., Karkardooma, Delhi-110092 QCI/NABET/ENV/ACO/2225/0303, Valid up to 23.11.2025.
Project location (Coordinates /River/Reservoir)	Upper Reservoir: $19^0$36'31.69" N ,$73^0$35' 45.06" E; Lower Reservoir: $19^0$34' 56.38" N,73^0 35'10.0'' E
Inter- state issue involved	No
Proposed on River/ Reservoir	This is an Off-stream Open Loop Pumped Storage Project
Type of Hydro-electric project	Standalone Pump Storage Project.
Seismic zone	Zone III (Moderate Damage Risk Zone)

- **Category Details**

Category of the project	A
Capacity / Cultural command area (CCA)	1500MW/11600 MWH
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	-

- **ToR/EC Details**

ToR Proposal No.	IA/MH/RIV/265129/2022
EAC meeting date	27th meeting held on 09.05.2022.
ToR Letter No.	J-12011/08/2022-IA. I(R)
ToR grant Date	27th June 2022.
Cost of project	Rs. 8964.02 Crores
Total area of Project	278.92 ha (excluding transmission line ROW)
Height of Dam from Riverbed (EL)	Upper dam: Maximum 48.64m from foundation Lower dam: Maximum 48.15m from foundation
Details of submergence area	169.60 ha
District to provide irrigation facility (if applicable)	Not applicable
Details of tunnels on upper level & lower level and length of canal (if applicable)	Intake tunnel (3 Nos ,7.0 m dia and 67.96 m long) 3 Nos. of Independent Penstocks (5.2 m dia.)-2 nos. bifurcating into 4 nos. individual units (250 MW each) and 1 no. bifurcating for 3 nos. individual unit 1 no. 250 MW unit & 2 nos. 125MW Units). Length of Penstock/Pressure Shaft: 1741m Main TRT (7.0 m dia.;621.17 to 646.57m long) Branched TRT (4.0 m & 5.20 m diameter Total length of TRT: 713.43 m from Draft tube
No. of affected Village.	3
No. of Affected Families	130

Project Benefits	Project benefits *inter alia* shall include the benefits like (i) Average annual generation of 4044.06 MU of energy with 95% plant availability; (ii) Increased vegetal cover due to implementing of CAT Plan and Green Belt Development Plans (iii) Employment Potential during construction (3000 labour); (iv) Overall development of area by implementing CER initiatives based on the Public hearing issues and Watershed Development Plan.
R&R details	Total Private land to be acquired: 35.18 ha. Displaced families: 10 Project Affected Families:130 Land acquisition cost: Rs 854.54 lakh R&R Grants: Rs 82.05 lakh Tribal Development Plan: Rs 295 lakh Total: Rs 1232 lakh
Catchment area/ Command area	Catchment :11.72 sq.km; Command area: Nil
Types of Waste and quantity of generation during construction/Operation	MSW-38.8 Ton/annum during construction and 7.2 Ton/annum during operation
Material used for blasting and its composition as per DGMS standards	Ammonium Nitrate Fuel Oil (ANFO), a mixture of ammonium nitrate and fuel oil.
E-Flows for the Project	The inflow of Darna River at upper dam site shall be released from bottom outlet throughout the year. The inflow of Chorni River at lower dam site shall be released from spillway after first filling of reservoir.
Is Projects earlier studied in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then c) E-flow with TOR/Recommendation by EAC as per CIA&CC study of River Basin. d) If not the E-Flows maintain criteria for sustaining river ecosystem.	No Not applicable, in case of PSP. Not applicable, in case of PSP
Details on provision of fish pass	Pumping operation can have strong impacts like mortality of fishes through turbine passage, change of habitat etc. During

	operation phase water shall travel through reversible turbines under high pressure from the column of water above it, conditions for organic species are quite tough. Larger species like fish or water animals cannot survive passing through turbines. The diurnal very high extent of water-level fluctuation of about 26 m in the upper reservoir and 30m in lower reservoir may affect changes in the fish-food fauna and cause mortality of fries and fingerlings. Extreme fluctuations can increase turbidity which is detrimental to egg and fry survival. Therefore, no fisheries management plan is proposed in either of pump storage reservoir.
Project benefit including employment details (no of employee)	Benefits from project already stated at S.N.4 Temporary employment during construction: 1575000 man-days Permanent employment during construction :100 Nos.
Area of Compensatory Afforestation (CA) with tentative no of plantation.	Area proposed for Compensatory afforestation is 245.735 ha. Out of 245.735 ha area, 18750 tall plants (625 tall plants/ ha) will be planted in 30 ha area and remaining 215.735 ha will be developed/ maintained under Crop Investment Programme.
Previous EC details	None, as EC is yet to be granted
EC Compliance Report by R.O, MOEF&CC	Not applicable

- **Electricity Generation Capacity**

Powerhouse Installed Capacity	1500MW
Generation of Electricity Annually	4049.17 MU
No. of Units	5 X 250MW + 2 X 125 MW

- **Muck Management Details:**

No. of proposed disposal area/ (type of land-Forest/Pvt land)	2 (Forest land)
Cross section of proposed muck area, height of muck with slope.	D-1: Area=22.3ha, Height average=12.50m D-2: Area=22.6ha, Height average=5.5m Slope of muck shall be lesser than 28^0
Distance of muck disposal area(location), from muck generation sources (project area)/River, HFL of proposed muck disposal area.	1.0-2.5 km No river at muck disposal site.
Total Muck Disposal Area	44.90 ha (forest)
Estimate Muck to be generated	Muck to be generated: 64.51 lakh cum Consumed on work: 36.08 lakh cum To be disposed: 28.43 lakh cum
Transportation	By road
Monitoring mechanism for Muck Disposal	The project authorities shall erect a barrier to regulate to and fro movement of traffic from the excavation site. Entry of all vehicles passing the barrier and the information regarding quantities of earth material being transported shall be properly arrayed in a register in a transparent manner and shall be liable to be made public by the project authorities as and when required. Proper e-challan shall be issued.

- **Land Area Breakup:**

Private land	35.18 ha
Forest Land	243.74 ha
Government land	0.00 ha
Submergence area/Reservoir area	169.60
Land required for project components	74.14 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.	Yes	-
National Park	No	

Wildlife Sanctuary	Yes	Kalsubai Harichandragad Wildlife Sanctuary exists within 10 km of project boundary. However, no part of the project lies within Eco-sensitive zone of the Sanctuary. The distance between the project boundary and Kalsubai Harichandragad Wildlife Sanctuary is 2.21 km and 12.5 from ESZ boundary. The distance of the Wildlife Sanctuary has been duly autheticated by the Chief Wildlife Warden, Nagpur, Maharashtra vide their letter no. कक्ष-२३(२)/वज्र/सर्वे/प्र.क्र.१६३/४३६६/२०२४-२५ on dated 29th Nov., 2024
Archaeological sites monuments/historical temples etc	No	-
Additional information (if any)	No	-

- **Court case details:** No court case/litigation is pending.

- **Status of other statutory clearances:**

Particulars	Letter no. and date
Status of Stage- I FC	Application for Diversion of 243.74 ha forest land has been submitted via Proposal no: FP/MH/HYD/153240/2022 on 6th March, 2022. The application has been recommended by DFO West Nashik Division, Nashik Circle on 10th April, 2025 and DFO Shahapur Division, Thane Circle on 12th April, 2025 by filling part-II of Form-A on 'PARIVESH Portal' and the same is yet to be recommended & forwarded by CCF at Nodal Office for his further approval.

Approval of Central Water Commission	Hydrology approved vide letter CWC U.O.:7/Maha-2021-Hyd(S)/107, dated 28.6.2022
Approval of Central Electricity Authority	The power potential Studies have been cleared by Directorate (HPA) CEA, New Delhi, vide letter dated 05.09.2024
Additional detail (If any)	The Concurrence on DPR has been granted by Ministry of Power, Central Electricity Authority, Hydro Project Appraisal Division vide their letter no. CEA-HY-12-24/4/2021-HPA Division I/43296/2024 on dated 24.09.2024
Is FRA (2006) done for FC-I	FRA for Village: Kothale & Kalbhonde, District Thane is completed on 3rd March, 2025 and FRA for Distrcit Nashik is under implementation.

- **Details of the EMP:**

S. N.	Plans	Cost (Rs. Lakh)	Capital cost (Rs lakh)	Annual recurring cost (Rs lakh)
1.	Catchment Area Treatment Plan	250.00	210.00	10.00
2.	Compensatory Afforestation Scheme	~~4854.00~~	~~4854.00~~	~~0.00~~
		3914.26	3914.26	
3.	Wildlife and Bio-diversity Management plan	326.00	326.50	0.00
4.	Resettlement & Rehabilitation Plan	1232.00	1232.00	0.00
5.	Green Belt Development Plan	120.00	80.00	10.00
6.	Reservoir Rim Treatment Plan	30.00	30.00	0.00
7.	Fisheries Management Plan	130.00	130.00	0.00
8.	Muck Management Plan	2390.00	2350.00	10.00
9	Restoration Plan for Quarry Sites &landscaping	65.00	45.00	5.00
10.	Disaster Management Plan	30.00	26.0	1.00
11.	Water, Air and Noise Management Plan	140.00	48.00	23.00
12.	Public Health Delivery Plan	95.00	31.00	16.00
13.	Labour Management Plan	160.00	42.00	29.50
14.	Sanitation & Solid Waste Management Plan	145.00	85.00	15.00

15.	Local Area Development Plan	100.00	100.00	0.00
16.	Environmental Safeguards During Const.	316.00	00.00	79.00
17.	Energy Conservation Measures	225.00	15.00	52.50
18.	Environmental Monitoring Plan	140.00	16.00	31.00
19	CER Plan for addressing issues raised during public hearing	600.00	600.00	0.00
20	Watershed Management	500.00	500.00	0.00
Total EMP		**11848.00**	**10680.00**	**292.00**

30.1.3 The proposal was earlier considered by the EAC in its 14th meeting held on 30th August, 2024. Accordingly, PP submitted following additional details sought by the EAC on 14th April, 2025.

Query 1: The Project Proponent (PP) shall re-visit soil sampling analysis as results show very high organic carbon in soils and submit the revised results mentioning permissible limits in the results of soil analysis.

Reply: The soil sampling results were reviewed for all ten locations in the study area and the range of soil organic carbon analysed is presented in the following table which also mentions the soil fertility status for organic carbon as outlined in Soil manual of ICAR at National level and State (Maharashtra) level. It is evident from the table that the soil of the study area is medium to very high in organic matter.

S. N	Location	Environmental Setting	Organic carbon %	Soil fertility range for SOC
1.	Upper dam site (Jamunde)	Forest	1.04-1.19	**National Level** <0.5%-Low 0.5%-0.75%-Medium >0.75%-High **State Level** <0.2%- Very Low 0.21%-0.40 %-Low 0.41%-0.60 %- Medium Low 0.61%-0.80 %- Medium 0.81%-1.00 %- High
2.	Dhamudkiwadi	Scrub	0.89-1.14	
3.	Bhavali Khurd	Agriculture	0.78-1.02	
4.	Lower dam site (Kalbhonde)	Forest	2.57-2.67	
5.	Kothale	Agriculture	2.83-3.00	
6.	Kahnodapada	Agriculture	1.08-1.17	
7.	Hinglod	Agriculture	1.93-2.05	
8.	Manwedhe	Forest	1.19-1.31	
9.	Kurungwadi	Agriculture	1.04-1.16	
10	Borli	Agriculture	0.76-0.91	

				>1.00 %-Very High

Factors controlling Soil Organic Carbon status inter alia include climate (especially rainfall and temperature), hydrology, biological activity, vegetation and land use.

The study area lies in western coast area under the foothills of Sahyadri hills in Igatpuri Tehsil (District Nashik) & Shahpur Tehsil (District Thane) and experiences very high rainfall (Av. 3000mm). Soil of the study area is derived from the Deccan trap. The dominant land use classes in the study area are dense forest (47.75%), agriculture land (29.87%), and open forest (20.61%). Agricultural fields are very close to forested areas. The organic carbon content in the surface soil is relatively higher due to accumulation of vegetative residues during soil formation, combined with very high rainfall in the region.

According to soil fertility data from the Soil Health Card (SHC) Scheme (Cycle-II, 2017–19), soil samples from six villages were analyzed. The results indicate that organic carbon levels are high in most of the samples. For sampling location Kalbhonde, out of 49 samples analysed, 41 samples contained organic carbon levels exceeding 1.0%, with 25 samples registering above 3.0%. For sampling location Kothale, out of 39 samples analysed, 31 samples had organic carbon levels above 1.0%, with 23 samples exceeding 3.0%.

Sampling Village	**Soil Organic Carbon (%)**								
	Total Samples	**<0.5**	**0.51-0.75**	**0.76-0.99**	**1.0-3.0**	**>3.0**	**Min**	**Max**	**AV**
Bhavali Khurd	23	1	8	13	1	-	0.45	1.03	0.78
(Kalmonde)	49	1	4	3	16	25	0.38	4.8	2.73
Kothala	39	1	3	4	8	23	0.45	4.64	2.83
Hinglod	54	1	4	1	37	11	0.45	3.60	1.93
Kurungwadi	63	16	14	11	22	-	0.11	1.40	0.71
Borli	15	10	2	1	2	-	0.19	1.67	0.5

Source: *https://soilhealth.dac.gov.in/PublicReports/NutrientsStatusReportFarmer Wise*

Query 2: PP shall relocate the location of Muck Disposal site and should be away from Forest land.

Reply: The upper reservoir of the Bhavali Pumped Storage Project is proposed in Village Jamunde, Tehsil Igatpuri, District Nashik while the lower reservoir is proposed in Village Kalbhonde, Tehsil Shahpur, District Thane, Maharashtra. Muck generated during the construction will be disposed on the designated area. Since no viable alternative locations with better ecological advantages are available nearby, the earmarked area for muck disposal in forest land has been considered to minimise the impacts of project on the Environment and Forest.

The forest land diversion proposal has been duly accepted by the Forest Department, with the

Deputy Conservator of Forests (DCF) recommending it by completing Part-II of Form-A under the Forest (Conservation) Act. Furthermore, the Project layout of the Proposed PSP site has been approved by the Central Water Commission, Hydel Civil Designs (E&NE) Directorate, New Delhi vide their letter dated 15th Feb., 2024. All measures outlined in the 'Muck Disposal Management Plan' will be implemented by the Company, with a separate budget allocated under the Muck Management Plan.

Additionally, the same has been verified by the Members of Sub-Committee of EAC (Hydro & River Valley Project) during their project site visit on 2nd & 3rd Jan., 2025. The findings of the site visit were discussed amongst the Hon'ble EAC members at Additional Agenda Item 22.4 in the 22nd EAC Meeting held on 10th Jan., 2025. As per the recommendations of Minutes of the Meeting,

"the relocation of muck disposal site may not be insisted on while considering the proposal for clearance since the muck disposal site was found to have been selected properly. Further, ecologically better sites were not appeared available in nearby areas. Any relocation at this stage might lead to much changes and may lead to more adverse consequences. However, safety measures as contained in EMP and in other documents should be adhered into".

In view of the above submissions, it is being requested by the Company to kindly consider the muck disposal site as proposed in the Approved Project Layout.

Copy of the Layout approval letter issued by the CWC and the Copy of Minutes of 22nd EAC Meeting has been submitted.

Query 2: Assessment of water requirement of local population and water availability shall be studied.

Reply: Total water requirement for all purposes in the micro-watershed villages has been assessed, considering domestic consumption by inhabitants, water needs for livestock, and irrigation requirements for crop grown in irrigated areas during both cropping seasons. The total water requirement for domestic use, including drinking water and livestock needs has been estimated at 2056806 cum (205.68 ham) and 205680.6 cum (20.57 ham), respectively. The irrigation water requirement based on groundwater abstraction has been assessed at 2402400 cum (240.24 ham). Thus, the total water requirement for all purposes shall be 466.49 ham.

S.N.	Name	Popul	Project	Annual	Irrigation Requirem	Annual	Total

		ation census 2011	ed Population 2022	Domestic water Requirement @70 lpcd (cum)	ent		Domestic animal Requirement @10% of domestic water requirement	Annual requirement (ham)
					Area (ha)	cum		
1.	Bhavli Bk	1023	1146	29274	0	0	2927.4	3.22
2.	Titoli	1076	1205	30791	0	0	3079.1	3.39
3.	Bortembhe	1673	1874	47875	0	0	4787.5	5.27
4.	Kanchangaon	1906	2135	54542	84	672000	5454.2	73.20
5.	Talogha	2501	2801	71569	60	480000	7156.9	55.87
6.	Taloshi	1795	2010	51366	44	352000	5136.6	40.85
7.	Nandgaonsado	4203	4707	120273	0	0	12027.3	13.23
8.	Pimpri Sadroddin	2316	2594	66275	0	0	6627.5	7.29
9.	Fangul Gavhan	1531	1715	43811	0	0	4381.1	4.82
10.	Borli	616	690	17627	0	0	1762.7	1.94
11.	Bhavli Kh	23073	25842	660257	83.9	671200	66025.7	139.75
12.	Kaluste	3885	4351	111173	20.1	160800	11117.3	28.31
13.	Bharwaj	819	917	23437	0	0	2343.7	2.58
14.	Manjargaon	889	996	25440	0	0	2544	2.80
15.	Nirpan	828	927	23694	0	0	2369.4	2.61
16.	Gavhande	701	785	20060	8.3	66400	2006	8.85
17.	Jamunde	589	660	16855	0	0	1685.5	1.85
18.	Kurungwadi	1055	1182	30190	0	0	3019	3.32
19.	Ambewadi	2183	2445	62469	0	0	6246.9	6.87
20.	Taked Kh	1120	1254	32050	0	0	3205	3.53
21.	Kasara Kh.	2588	2717	69430	0	0	6943	7.64
22.	Dand	165	173	4427	0	0	442.7	0.49
23.	Umbravane	249	261	6680	0	0	668	0.73
24.	Fugale	1018	1069	27310	0	0	2731	3.00
25.	Vashala Bk	1439	1511	38605	0	0	3860.5	4.25
26.	Vashala Kh	325	341	8719	0	0	871.9	0.96

27.	Susarwadi	1044	1096	28008	0	0	2800.8	3.08
28.	Pingalwadi	162	170	4346	0	0	434.6	0.48
29.	Dhakane	1882	1976	50489	0	0	5048.9	5.55
30.	Kothale	1233	1295	33078	0	0	3307.8	3.64
31.	Kalbhonde	997	1047	26747	0	0	2674.7	2.94
32.	Julawani	1382	1451	37076	0	0	3707.6	4.08
33.	Jambhulwad	665	698	17840	0	0	1784	1.96
34.	Roadvahal	476	500	12770	0	0	1277	1.40
35.	Hinglud	404	424	10838	0	0	1083.8	1.19
36.	Chondhe Kh.	384	403	10302	0	0	1030.2	1.13
37.	Chilhar	588	617	15775	0	0	1577.5	1.74
38.	Ranvihir	1468	1541	39383	0	0	3938.3	4.33
39.	Ghatghar	1176	1288	32901	0	0	3290.1	3.62
40.	Udadawane	1539	1685	43057	0	0	4305.7	4.74
Grand Total		**72966**	**80501**	**2056806**	**300.3**	**240 240 0**	**205680.6**	**466.49**

Table 2: Ground Water Recharge & Annual Requirement

S. N.	Name	Rainfall recharge (ham)	Total annual ground water requirement (ham)	Deficit (-ve) Surplus (+)
1.	Bhavli Bk	101.33	3.22	98.11
2.	Titoli	42.22	3.39	38.83
3.	Bortembhe	46.91	5.27	41.64
4.	Kanchangaon	139.50	73.20	66.3
5.	Talogha	132.85	55.87	76.98
6.	Taloshi	172.84	40.85	131.99
7.	Nandgaonsado	150.41	13.23	137.18
8.	Pimpri Sadroddin	209.82	7.29	202.53
9.	Fangul Gavhan	103.75	4.82	98.93
10.	Borli	119.23	1.94	117.29
11.	Bhavli Kh	151.35	139.75	11.6
12.	Kaluste	209.12	28.31	180.81
13.	Bharwaj	113.25	2.58	110.67

14.	Manjargaon	151.54	2.80	148.74
15.	Nirpan	78.17	2.61	75.56
16.	Gavhande	136.10	8.85	127.25
17.	Jamunde	96.59	1.85	94.74
18.	Kurungwadi	485.10	3.32	481.78
19.	Ambewadi	586.14	6.87	579.27
20.	Taked Kh	117.57	3.53	114.04
21.	Kasara Kh.	729.02	7.64	721.38
22.	Dand	415.94	0.49	415.45
23.	Umbravane	350.74	0.73	350.01
24.	Fugale	260.40	3.00	257.4
25.	Vashala Bk	521.22	4.25	516.97
26.	Vashala Kh	112.50	0.96	111.54
27.	Susarwadi	154.01	3.08	150.93
28.	Pingalwadi	334.91	0.48	334.43
29.	Dhakane	311.54	5.55	305.99
30.	Kothale	480.82	3.64	477.18
31.	Kalbhonde	480.27	2.94	477.33
32.	Julawani	237.64	4.08	233.56
33.	Jambhulwad	357.98	1.96	356.02
34.	Roadvahal	316.39	1.40	314.99
35.	Hinglud	132.27	1.19	131.08
36.	Chondhe Kh.	272.58	1.13	271.45
37.	Chilhar	144.19	1.74	142.45
38.	Ranvihir	303.63	4.33	299.3
39.	Ghatghar	753.12	3.62	749.5
40.	Udadawane	620.19	4.74	615.45
Total		**1373.31**	**8.36**	**1364.95**

As inferred from Table 1 & 2, the total annual groundwater requirement for all purposes is 466.49 ham, while the annual groundwater recharge is 1373.31 ham. This indicates that the villages in the study area have a sufficient groundwater supply, with no signs of water scarcity.

Query 4: Permission for water availability obtained from CWC /concerned department mentioning that rain water is sufficient for filling one time filling reservoir.

Reply: Water availability certificate has been issued by the Chief Engineer, Water Resource Department, Hydrology & Dam Safety, Government of Maharashtra vide letter no.

WFR/Ulhas/894 on 21st Nov., 2022.

Query 5: PP shall submit the undertaking stating that no water flow stoppage/blockage shall be done for filling reservoir during monsoon season.

Reply: Copy of undertaking dated 14.04.2025 has been submitted.

Query 6: The PP shall prepare wild life conservation plan in consultation with expert Institutions and submit the wildlife conservation plan approved by Chief Wildlife Warden as Kalsubai Harichandragad Wildlife Sanctuary exists within 10 km of project boundary. As the project cover area is located in Western Ghats, the EAC sub-committee shall conduct site visit for assessing the ground conditions and possible environmental impacts due to project comprehensively before further consideration of the proposal.

Reply: The distance between the project boundary and Kalsubai Harichandragad Wildlife Sanctuary is 2.21 km and 12.5 from ESZ boundary. The distance of the Wildlife Sanctuary along with Wildlife and Biodiversity Management Plan has been duly approved by PCCF (HoFF), Maharashtra vide letter dated 29th Nov., 2024. Approved budget for Wildlife and Biodiversity Management Plan is Rs. 326.50 Lakhs/-. Copy of Approval letter along with Certified Map has been submitted.

Dr. Ajay Kumar Lal, Member EAC (Hydro & River Valley project) and Dr. P. R. Sakhare Members & Representative from MoEF&CC visited the Proposed Bhavali Pumped Storage Project" site on 2nd & 3rd Jan., 2025 and the findings of the site visit were discussed amongst the Hon'ble EAC members at Additional Agenda Item 22.4 in the 22nd EAC Meeting held on 10th Jan., 2025

Query 7: Given that 243.74 ha. Forest land are involved, the PP shall provide a detailed classification /land use pattern /vegetation details of the project area including information on forest density, species diversity, and other relevant ecological characteristics.

Reply:

The Forest Clearance application (FP/MH/HYD/153240/2022) is currently under process and has been recommended by the concerned Divisional Forest Officer by filling Part-II for further processing. The details given below are based on the uploaded Form Part - II of FC application and copy of the uploaded Form Part – II has been submitted.

Detail Classification-

The project area is 274.82 ha. and forest land required to be diverted is 243.74 ha of which 181.45 ha in Forest Division Shahapur and 62.29 ha lies in Nasik West Forest Division, Maharashtra. as shown in Table 3

Table 3: Forest Land details and Classification

S.N.	Village /Tehsil/District	Forest Division	Classification	Forest (ha)
1	Kalbhonde/ Shahapur/Thane	Shahapur Forest Division, Maharashtra	Reserved Forest	97.92
2	Kothale/ Shahapur/Thane		Protected Forest	9.68
3	Kothale/ Shahapur/Thane		Private Forest (Deemed RF)	73.85
Forest Area for Diversion				**181.45**
4	Jamunde/Igatpuri / Nasik	Nasik West Forest Division, Maharashtra	Reserved Forest	62.29
Forest Area for Diversion				**62.29**
Grand Total				**243.74**

Land Use Pattern

The dominating classes are Tropical Moist Deciduous Forest (75%) and Tropical Semi- evergreen Forest (25%). The land use pattern of Forest area in study area is given below in Table 4

Table 4: Land use & Land cover of Forest covered Area in project

S.N.	Land use category	Area in ha.	Area in %
1	Tropical Moist Deciduous Forest (Open & Dense Forest)	181.45	75%
2	Tropical Semi- evergreen Forest	62.29	25%
Total		**243.74**	**100%**

Vegetation details:

Details of Vegetation available in the forest land proposed for diversion as per given in following table:

S. No.	Forest Division	Area(in ha.)	Forest Type	Density	Eco-Class
1	Shahapur Forest Division, Maharashtra	73.85	Private Forest	0.2	Eco- Class 1
2		107.6	Reserved & Protected	0.6	Eco- Class 1

			Forest		
3	Nasik West Forest Division, Maharashtra	62.29	Reserved Forest	0.5	Eco- Class 1

Species diversity:

The details of Species diversity of Shahpur and Nashik Forest division is given below:

A. The details of Species diversity in Shahpur Forest Division is given in Table 5

Table 5: Species-wise local/scientific names and girth-wise enumeration of trees at FRL

S. No.	Scientific Name	Local Name	(0-30)cm.	(31-60)cm.	(61-90)cm.	(91-120)cm.	(121-150)cm.	(>150)cm.
1	*Tectona grandis*	Sag	157	102	8	1	0	0
2	Others	other species	18155	13537	3440	938	442	153
3	*Adina cordifolia*	Hedu	90	64	19	9	4	3
4	*Terminalia tomentosa*	Ain	11345	10184	1663	475	163	49
5	*Gmelina arborea*	Shivan	263	265	6	14	2	3
Total			**30010**	**24152**	**5136**	**1437**	**611**	**208**
Sub Total (No of Trees.)			**61554**					

B. The details of Species diversity in Nashik West Forest Division is given in Table 6

Table 6: Species-wise local/scientific names and girth-wise enumeration of trees at FRL

S. No.	Scientific Name	Local Name	(0-30)cm.	(31-60)cm.	(61-90)cm.	(91-120)cm.	(121-150)cm.	(>150)cm.
1	*Mangifera indica*	Aam	62	140	70	65	63	99
2	*Gomphrena globosa*	Aamantegali	13	4	0	0	0	0
3	*Bauhinia racemosa*	Aapta	0	4	2	0	0	0

4	*Pterocarpus marsupium Roxb*	Aasan	98	85	17	3	1	4
5	*Phyllanthus emblica*	Avala	98	10	0	2	0	0
6	*Terminalia elliptica*	Ain	505	693	98	9	2	0
7	*Albizia odoratissima*	Aiv	15	23	4	0	0	0
8	*Cassia fistula*	Bahava	6	9	0	1	0	0
9	*Bambusa vulgaris*	Bambu	1	0	0	0	0	0
10	*Thespesia populnea*	Bhendi	1	2	1	1	0	0
11	*Mimusops elengi L*	Bogada	16	0	0	0	0	0
12	*Cordia dichotoma*	Bokar	0	2	0	0	0	0
13	*Pterocarpus marsupium*	Bonda	164	212	47	9	2	0
14	*Ziziphus mauritiana*	Borkut	1	0	0	0	0	0
15	*Butea monosperma*	Butuska	0	1	0	0	0	0
16	*Santalum album*	Chanda	4	3	0	0	0	0
17	*Tamarindus indica*	Chinch	0	1	0	0	0	0
18	*Grewia tiliifolia Vahl*	Dhaman	1	0	0	0	0	0
19	*Anogeissus latifolia*	Dhavada	1	0	0	0	0	0
20	*Woodfordia fruticosa L*	Dhayati	5	1	0	0	0	0
21	*Elettaria cardamomum*	Ela	1	4	4	1	3	1
22	*Artocarpus heterophyllus*	Fanas	1	3	1	0	0	0
23	*Dialium ovoideum Thwaites*	Gaal	11	5	0	1	1	0
24	*Psidium guajava*	Gawa	2	0	0	0	0	0
25	*Delonix regia*	Gol	1	1	0	0	0	0

26	*Plumeria rubra L*	Gulchay	257	108	5	1	1	1
27	*Terminalia chebula*	Hirda	139	207	66	31	26	25
28	*Syzygium cumini*	jambhul	472	506	98	54	19	0
29	*Murraya koenigii*	Kadipata	0	1	0	0	0	0
30	*Neolamarckia cadamba*	Kalamb	0	1	0	0	0	0
31	*Bauhinia variegata*	Kanchan	4	4	0	0	0	0
32	*Macaranga peltata*	Kandar	0	1	0	0	0	0
33	*Averrhoa carambola*	Karambi	211	146	39	20	9	9
34	*Carapa guianensis*	karap	28	51	38	4	2	1
35	*Capparis decidua*	Karel	11	7	4	1	0	0
36	*Carissa carandas*	Karval	16	11	0	1	0	1
37	*Murraya koenigii*	Karwa	0	2	0	0	0	0
38	*Carissa carandas*	Kavandar	11	0	0	0	0	0
39	*Grewia villosa*	Kharmati	1	0	0	0	0	0
40	*Glycosmis pentaphylla*	Kirmira	10	0	0	0	0	0
41	*Cyphostemma currorii*	Kobat	0	1	0	0	0	0
42	*Butea monosperma*	Koyakhar	0	5	0	1	0	1
43	*Schleichera*	Koyambal	1	5	0	0	1	0
44	*Holarrhena pubescens*	Kuda	22	6	0	0	0	0
45	*Careya arborea*	Kumbha	34	35	10	1	2	0
46	*Ixora brachiata Roxb*	Lokhandi	6	1	0	0	0	0
47	*Madhuca longifolia*	Moh	27	11	2	0	0	0
48	*Feronia limonia*	Pabha	77	9	1	0	0	0
49	*Butea monosperma*	Palas	11	12	4	0	0	0
50	*Erythrina variegata*	Pangara	3	0	1	1	0	0

51	*Monoon longifolium.*	Patgiri	1	0	0	0	0	0
52	*Ficus amplissima*	Payer	8	18	2	4	0	1
53	*Ficus arnottiana*	Payir	0	8	1	0	1	0
54	*Psidium guajava*	Peru	0	1	0	0	0	0
55	*Cerbera odollam*	Pombal	1	0	0	0	0	0
56	*Bombax ceiba*	Savar	0	1	0	1	0	0
57	*Bixa orellana*	Shendri	16	16	1	1	0	0
58	*Gmelina arborea*	Shivan	10	3	1	0	0	0
59	*Flacourtia indica*	Tambat	1	1	0	0	0	0
60	*Ziziphus rugosa*	Toran	7	6	0	0	0	0
61	*Senna tora*	Tura	0	1	0	0	0	0
62	*Ficus racemosa*	Umbar	17	74	45	51	43	124
63	*Heterophragma quadriloculare*	Varas	68	136	18	7	5	0
64	*Limonia acidissima*	vila	12	11	2	3	0	1
65	*Elettaria cardamomum*	Velvachi	0	1	0	0	0	0
Total			**2489**	**2610**	**582**	**274**	**181**	**268**
Sub Total (No of Trees.)			**6404**					

Relevant Ecological Characteristics:

1. Presence of water bodies such as rivers, lakes, streams, wetlands, etc., has been studied.
2. The project does not involve diversion or disturbance of any major aquatic or wetland ecosystem.
3. The area does not fall under any known migratory routes or wildlife corridors.
4. Biodiversity in the area is typical of the region and does not indicate the presence of any unique or sensitive ecosystems.
5. The project is not located within any Notified Eco- Sensitive Zone (ESZ), National Park, Wildlife Sanctuary, Biosphere Reserve, or Important Bird Area (IBA).
6. No traditional sacred groves, community-conserved areas, or ecologically significant cultural practices have been identified in the study area.

Query 8: Submit details of tree to be removed for construction of the project.

Reply: Total no. of trees are 67958, out of which 64050 trees are affected by the project, out of which at ~ 50% of trees girth size below 30 cm scheduled to be cut down during the construction phase However, there is no need to cut trees that are located in the areas designated for the underground components of the project.

Tree Enumeration Summary Data				
Sr. No.	**Division**	**Village Name**	**Total Tree As per Part-II FC**	**Trees to be felled**
1	Nashik	Jamunde	6404	6235
2	Shahpur	Kothale, Kalbhonde	61554	57646
Total			**67958**	**64050**

30.1.4 The EAC during deliberations noted the following:

The EAC deliberated on the information submitted and as presented in the meeting and observed that the proposal is for grant of Environmental Clearance to the project for Bhavali Pumped Storage Project (1500 MW) in an area of 278.92 Ha in Village Kalbhonde, Kothale and Jamunde Sub District Shahapur and Igatpuri, District Thane and Nashik, Maharashtra by M/s JSW Energy PSP Two Limited

The proposed project is listed as item no. 1(c) of the Schedule to the Environment Impact Assessment (EIA) Notification, 2006, as amended under category 'A' and are appraised at Central Level by Expert Appraisal Committee (EAC).

Earlier observations by the EAC

- The project proposal was earlier considered by the Expert Appraisal Committee (Hydro River Valley Sector) in its 27th meeting held during 09.05.2022 and recommended for grant of Terms of References (ToR) for the Project. The ToR has been issued by Ministry vide letter No J-12011/08/2022-IA. I(R) dated 27.6.2022.

- The EAC noted that the total land requirement under the project for upper and lower rock fill dam, reservoir & other works, has been assessed as 278.92 ha of which private land is 35.18 ha, forest land 243.74 ha. The EAC also noted that, Kalsubai Harichandragad Wildlife

Sanctuary exists within 10 km of project boundary. However, no part of the project lies within Eco-sensitive zone of the Sanctuary. The nearest project boundary is about 12.5m from ESZ boundary. Same has been certified by Deputy Conservator of Forest (Wildlife). Nashik, vide letter O.W. No. Cell-4/Survey/C.N.1/7/ Year 2023-24, Date: 06/4/2023. There are no tiger/elephant corridors within the project area.

- The EAC members expressed serious concerns about the availability of water for filling the reservoir, as the PP indicated that the reservoir would be filled only once during the rainy season. However, based on existing records, rainfall during the rainy season is very limited. Under these conditions, the reservoir cannot be adequately filled during the monsoon season. The EAC also observed that the regular flow of water in the tream/nalah is crucial for mangrove plants, and any blockage may have negative impacts on them. Additionally, the EAC noted that soil sampling analysis revealed a high carbon content in the soil which has no correlation with the topography of the region.

Current deliberations:

- The EAC noted that the sub-committee of the EAC visited the proposed Bhavali Pumped Storage Project" site on 02.01.2025 and 03.01.2025. and the recommendations of site visit were deliberated by the EAC members in its 22nd EAC Meeting held on 10th January, 2025. The observations and recommendations of the Sub-committee are as follows:

i. The selected location is topologically stable and non-prone to landslides as such. It is not therefore so fragile or sensitive., The proposed project is not likely to cause considerable negative impacts on the geological conditions; rights and interests of people related to water resources of downstream locations if the conditions and safeguards imposed vide the TOR granted are complied with fully and comprehensibly. Further, the Project Proponent is also to ensure strict compliance of the assurances given during public hearing.

ii. The relocation of muck disposal site may not be insisted on while considering the proposal for clearance since the muck disposal site was found to have been selected properly. Further, ecologically better sites did not appear available in nearby areas. Any relocation at this stage might lead to much changes and may lead to more adverse consequences. However, safety measures as contained in EMP and in other documents should be adhered to in toto.

iii. Water for operation of project will be sourced from self-yield from catchment area. There will be no dependency on the nearby streams and already established dams/reservoirs as confirmed and assured by the proponent. As stated above, since there are not much agricultural or drinking requirements in or nearby areas, the dam intervention should not be a matter of concern. Nevertheless, project proponent, as

assured, will ensure maintenance of e-flow and minimum threshold water availability all year around.

iv. Nalla passing through the lower reservoir is a non-perennial and was containing very low level of water at the time of visit. However, as per the discussion held with the PP, natural flow of nallas/streams will not be restricted/diverted. Provision of ungated slipways has been considered to maintain natural flow of non-perineal nallas/streams.

v. Out of total forest area of 243.74ha, 160.21ha is reserved forest,73.85 ha is deemed forest and 9.68 ha is protected forest. The forest density in the proposed forest land involved in the project site is approx. 150 trees/la. A total of around 35000 trees and saplings are likely to be sacrificed. Therefore, it is important to insist on submitting the case under FCA and receive stage-I clearance at the earliest by the Project Proponent.

vi. PP has started the CER/CSR activities in the affected villages which includes the construction of public toilets, classrooms in the Govt. School, Mid-day Meal kitchens, and distribution of study materials, Shoes etc. to the students, blankets to the villagers.

vii. Wildlife conservation and biodiversity management plan has been approved by CWLW on 29.11 .2024 with a cost of Rs. 326.50 Lakhs

The EAC observed that PP has revised EMP budget from Rs10680 lakh to Rs 9780.76 lakh, therefore it was advised not to change the cost of EMP specially under head compensatory afforestation plan. Further, the EAC noted that PP has signed MOU for setting up of the proposed Bhavali Pumped Storage Project (1500MW), which was made on 14th day of September,2021, between the Industries Department, Government of Maharashtra and M/s JSW Neo Energy Ltd.

The EAC noted that the proposed muck disposal site is entirely located within a forest area. Although the sub-committee, during its site visit, recommended that relocating the site may not be necessary, concerns were raised during further discussions. It was observed that the estimated cost for the muck management plan is ₹29.90 crore, with over 80% (₹20.52 crore) allocated to engineering measures, specifically, the construction of a reinforced cement concrete (RCC) retaining wall measuring 6 meters in height, 30 cm in thickness, and approximately 2 kilometers in length. The EAC expressed serious concerns about the suitability of the site and questioned the necessity of the RCC retaining wall. In response, the project proponent explained that the wall is intended to stabilize the muck disposal area. Nevertheless, the EAC further raised concerns about potential restrictions on the free movement of wildlife in the area following construction of the wall.

The EAC noted that the Wildlife Conservation Plan has been duly approved by Chief Wildlife Warden, Nagpur Maharashtra with a cost of INR 326.50 Lakhs vide letter dated 29th November 2024. However, the EAC expressed concern over the absence of a time-bound action plan outlining the implementation strategy. Given that the project area falls within the Western Ghats Eco-Sensitive Zone, the Committee emphasized the need for a well-defined mechanism to ensure the effective execution of the Wildlife Conservation Plan. The EAC also discussed on the utilization of seismicity in the study area and associated seismic hazard zonation mapping related recommendation on the construction of structures. A comprehensive watershed management related recommendations were also not very clear.

30.1.5 The EAC after detailed deliberations deferred the proposal for want of following additional information:

1. PP shall revisit the muck management plan along with cost estimate, reclamation plan and requirement/ justification of RCC retaining wall.

2. Justification for revising the EMP cost from Rs10680 lakh to Rs 9780.76 lakh.

3. Impact on migration of birds because of noise levels, changes in water body, if any should be discussed with experts in ornithology and presented.

4. Impact of micro seismicity and hazards and recommendations on concrete structures are to be discussed properly.

5. A comprehensive watershed management including, surface water flow- scarcity and overflow, climate change impacts, soil erosion, restoration of green cover, enhanced groundwater recharge, impacts on surface and sub-surface spring flow, improvements in livelihood and cultural restoration, and related recommendations must be provided.

<u>Agenda Item No. 30.2</u>

Expansion of Tembhu Lift Irrigation Project in an area of 2284.601 ha at Village Tembhu, Ranad, Govare and etc, Sub District Khatav, Atpadi, Karad and etc, District Satara, Sangli and Solapur, Maharashtra by M/s Minor Irrigation Division, Sangli Water Resources Department, Maharashtra Krishna Valley Development Corporation– Environmental Clearance (EC) - reg.

[Proposal No. IA/MH/RIV/482689/2024; F. No. J-12011/48/2023-IA.I (R)]

30.2.1: The proposal is for grant of Environmental Clearance (EC) to the project for Expansion of Tembhu Lift Irrigation Project in an area of 2284.601 ha at Village Tembhu, Ranad, Govare and etc, Sub District Khatav, Atpadi, Karad and etc, District Satara, Sangli and Solapur, Maharashtra by M/s Minor Irrigation Division, Sangli Water Resources Department, Maharashtra Krishna Valley Development Corporation.

30.2.2: The Project Proponent and the accredited Consultant M/s MITCON Consultancy & Engineering Services Ltd., Pune, Maharashtra, made a detailed presentation on the salient features of the project and informed that:

i. Krishna Koyana Lift Irrigation Scheme (KKLI), which is under construction, provides irrigation benefits to drought prone Kadegaon, Khanapur, Tasgaon, Miraj &Kavathe Mahankal and Jat Taluka of Sangli districtand Songola and Mangalvedha taluka of Solapur of district. Takari Lift Irrigation Scheme provides irrigation in Khanapur, Kadegaon and Tasgaon talukas up to RL 2100 ft. while Mhaisal Lift Irrigation Scheme provides Irrigation in Miraj, and Kavathemahankal, Jath, Songala and Mangalvedha taluka up to RL. 2200 ft. There was persistent demand for irrigation benefits to areas above RL 2100 ft from Kadegaon, Khanapur, Tasgaon, Atpadi, Sangola, Kavathe Mahankal talukas by way of Lift Irrigation Scheme. As it was not possible to make changes in scope of KKLIS, which was in advanced stage of construction, a separate lift irrigation scheme named Tembhu Lift Irrigation Scheme was proposed for drought prone area of Kadegaon, Khanapur, Tasgaon, Atpadi, Sangola, Kavathemahankal taluka above RL 2100 Ft i.e. which could not be covered under KKLI scheme. Accordingly, a preliminary report based on topo sheet study was submitted to Govt. by C.E. (I.D.) Pune vide Letter No. PB/ Desk (2)/ DE (10) Tembhu/ 971 Dt. 22/02/1994 Govt. approved this proposal, vide letter No. 5-95/ 1093/ 668/ (140/93) WRI, DT. 15/04/1994 and directed to prepare D.P.R. of this scheme.

ii. The barrage across Krishna River @ Tembhu is constructed. The F.S.L. of barrage is within the river bank. The 11 gates of size 15 x 9 m. are provided to let out the water from Krishna River to irrigate 80472 ha (ICA) of land from drought prone regions of Satara, Sangli and Solapur districts of Maharashtra state. (Total 5 stages).

iii. The Proposed Expansion of Tembhu Lift Irrigation Project Taluka Karad, Dist. Satara, Sangli and Solapur, Maharashtra by M/s. Executive Engineer, Minor Irrigation Division, Sangli project envisage construction to irrigate ICA 41003 ha

- ❖ Existing Khanapur -Tasgaon Canal (Stage 6 A-6B LIS)
- ❖ Kavathe Mahankal Canal (Bevnur Scheme)
- ❖ Palashi LIS (Palshi LIS)
- ❖ 3 A to Ghanand Canal (Man - Khatav LIS)

- ❖ Kamath Lake (Kamath Scheme)
- ❖ Length of new pipeline proposed (PDN) : 200 km
- ❖ Length of proposed Distributaries :1000 km
- ❖ Total electricity requirement: 22 MW (Source: MSEDCL)
- ❖ Water Utilization: Existing: 22.0 TMC + Proposed 8.00 TMC = Total 30.00 TMC

iv. Accordingly, detailed project Report of Tembhu Lift Irrigation Scheme was prepared which envisaged construction of barrage across river Krishna near village Tembhu and Lifting the stored water in 5 stages to irrigate 79600Ha. Of area from 7, taluka's of Satara, Sangli and Solapur district. This DPR was administratively approved by Govt. letter no. (Marathi) Tembhu 1095/ 1427/ (361/ 95) WRI dt. 19.02.1996. (for Rs. 1456.19 crores)

v. The project proposal was considered by the Expert Appraisal Committee (Hydro River Valley Sector) in its 51st meeting held during 12 Sept 2023 and recommended for grant of Terms of References (ToRs) for the Project. The ToR has been issued by Ministry vide letter File No: J-12011/48/2023-IA. I (R) Dated 02/11/2023.

vi. Earlier, Ministry had issued EC vide letter no. 12011/43/2003-A. I Dated August 17, 2007 to the existing project in favour of M/s. Minor Irrigation Circle, Maharashtra Krishna Valley Development Corporation, Warnali, Sangli.

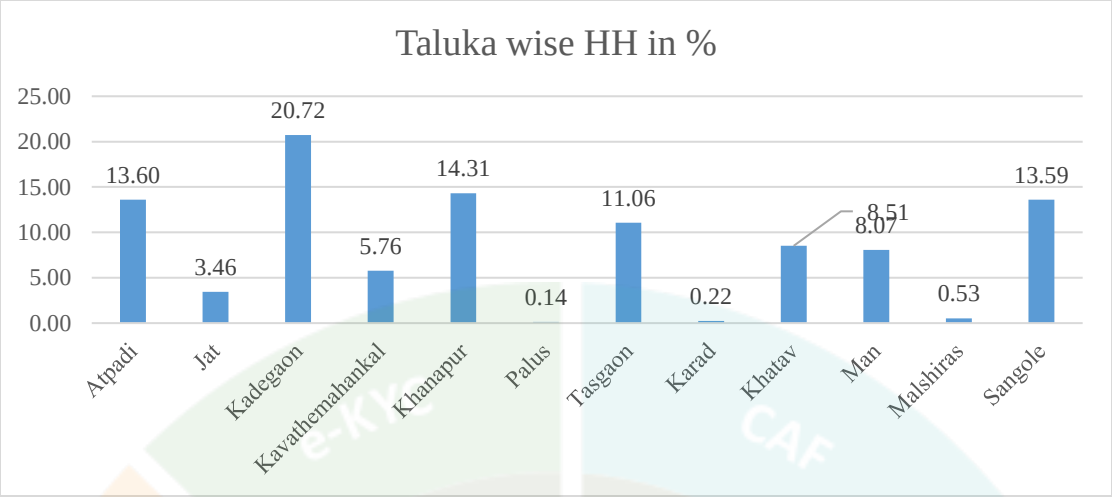
vii. The geographical co-ordinate of the project are

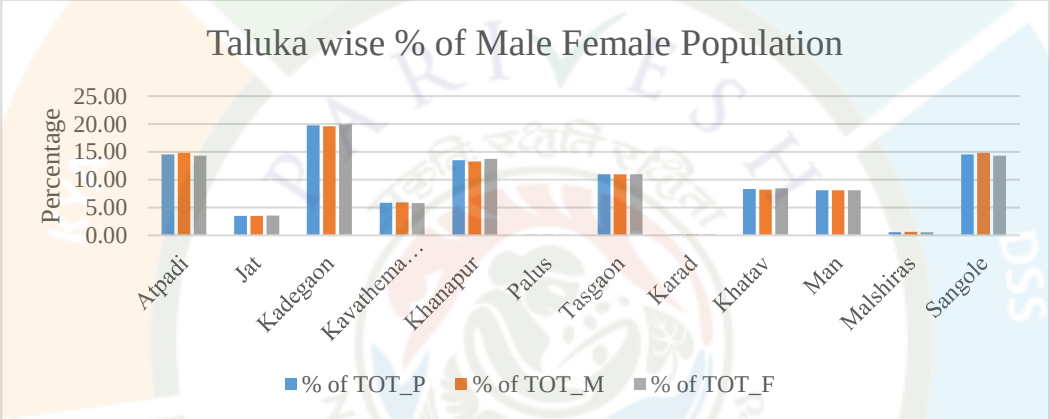
Location (Including coordinates)	Longitude: 74º 14’ (East) Latitude : 17º17’ (North)

viii. **Land requirement:**

Nature of Land involved in (Ha)	Area Existing in Ha	Additional Area Proposed in Ha	Total Area required after expansion in Ha
Non-Forest Land	2265.13	2.78	2267.92
Forest Land	7.05	7.93	14.98
Total	2272.18	10.71	2282.90

ix. **Demographic details in 10 km radius of project area:**





x. **Water requirement:**

District	Taluka	No. of villages	ICA (Ha)	Water Requirement TMC
Sangli	1) Khanapur	11	6471	1.5
	2) Tasgaon	17	6026	1.00
	3) Kawathemahankal	9	2450	0.50
	4) Atpadi	12	5294	1.00
	5) Jat	4	2636	0.50
	Total of Sangli	**53**	**22877**	**4.50**
Satara	6) Khatav	21	7440	1.50
	7) Maan	27	5686	1.00
	Total of Satara District	**48**	**13126**	**2.50**
Solapur	8) Sangola	8	5000	1.00
	Total Of Solapur	**8**	**5000**	**1.00**

	District			
	Gross Total	109	41003	8.00

xi. **Project Cost:** The estimated project cost is Rs 7370.03 Cr. including existing investment of Rs 4088.14 crores. Total capital cost earmarked towards environmental pollution control measures is Rs. 193.00 L and the Recurring cost (operation and maintenance) will be about Rs 160.00 L per annum.

xii. **Project Benefit**: Total Employment will be 15 persons as direct & 360 persons indirect after expansion. Industry proposes to allocate Rs 820 Lakh @ of 0.25 % towards CER (as per Ministry's OM dated 1st May 2018).

xiii. **Environmental Sensitive area:** There are no national parks, wildlife sanctuaries, Biosphere Reserves, Tiger/Elephant Reserves, Wildlife Corridors etc. within 10 km distance from the project site. However, Mayani Bird Conservation Reserve & Other sacred groves are present within 10 km radius.

Sr. No.	Name of the Grove	Deity	Tahsil	Distance	Direction
1	Arewadi	Biroba	Kavathe Mahankal	3 km	SE
2	Raywadi	Lord Shiva	Kavathe Mahankal	3 km	W
3	Shukacharya	Sukhdev	Khanpur-Atpadi	2 km	NE
4	Mayani	Bird Conservation Reserve*	Khatav	1.28 km	NE

**5.2 km from Khatav Main Distributary*

xiv. **MoU / any other clearance/ permission signed with State government:**

Sr. No.	Approvals	Amount	DSR	Remarks
1.	Original Administrative Approval	1416.59	1995-96	GOM vide letter No. Tembhu-1095/ 1427 /(361/95)/WRI dated 19/02/1996
2.	1st Revised Administrative Approval	2106.09	2000-01	MKVDC letter No MKVDDC/MP-6/(383/2002)/718 dated 22/01/2004
3.	CWC Approval	3450.35	2009-10	In 109th Technical advisory committee of Central Water

				Commission meeting on 14/03/2011
4.	2nd Revised Administrative Approval cost	4088.94	2016-17	(work portion Rs.3729.82 Cr.+ ETP Rs.359.12 Cr)
5.	3nd Revised Administrative Approval cost (Proposed)	7370.03	2022-23	(work portion Rs.6708.48. Cr.+ ETP Rs.661.55 Cr)
6.	Up to date Expenditure September 2022	3388.33	2022-23	(work portion Rs.3155.52. Cr.+ ETP Rs.232.81.Cr)
7.	Balance Cost of Project	3981.69	2022-23	(work portion Rs.3552.96cr +ETP428.73cr)
8.	Stage 1 Clearance	-	-	Stage 1 Clearance received vide online Proposal No. FP/MH/Pipeline/ 466395/ 2024 dated 06.01.2025

xv. **Resettlement and rehabilitation:**

For the Expansion of Tembhu Lift Irrigation Project, private land of around 2.7825 Ha is proposed for acquisition. The land acquisition will be done and compensation shall be paid to land owners as per The Right to Fair Compensation & Transparency in Land Acquisition, Rehabilitation and Resettlement Act 2013. As there are no households in the land to be acquired, there is no issue of rehabilitation & resettlement of the land owners.

Details of Land Acquisition:

Sr. No	Name of Farmers	Village	Gut No	Area in Ha
1.	Shri. Dattu Chandru More and Shri. Laxman Chandru More	Vejegaon Tal:- Khanapur, Dist. Sangli	145	0.28
2.	Shri. Rajaram Govind Devkar Shri. Hanmant Govind Devkar	Vejegaon Tal:- Khanapur, Dist. Sangli	146	0.19
3.	Shri. Daval Malik Archak	Bhikavadi Tal:- Khanapur, Dist. Sangli	992	0.0625
4.	Shri. Uttam Atmaram	Renavi Tal:- Khanapur,	498	0.40

	Yadav and other	Dist. Sangli		
5.	Shri. Anil Pandhrinath Gaikead and other 10	Kasabe Vita east, Tal:- Khanapur, Dist. Sangli	194	0.40
6.	Smt. Sharada Ramchandra Nichal and other	Posewadi, Tal:- Khanapur, Dist. Sangli	836	0.05
7.	Shri. Arjun Tukaramkole and other	Dhonewadi, Tal:- Kanapur, Dist. Sangli	450	0.05
8.	Shri. Dipak Sadashiv Kanase and other 2	Vijaynagar, Tal- Khanapur, Dist. Sangli	309	0.05
9.	Ujawala Hindurao Sawant other 14	Vita putva	148	0.60
10.	Maruthi Deo and others	Palashi Tal:- Khanapur Dist. Sangli	610/3	0.20
11.	Jagubai Bhimrao Chandanshive, Mangal Bhimrao Chandanshive and other	Palashi Tal:-Khanapur, Dist. Sangli	602	0.40
12.	Umesh Sukhdeo Jadhav, Sulochna Sukhdeo Jadhav and other	Palashi Tal:- Khanapur, Dist. Sangli	232	0.10
Total				2.7825 Ha

xvi. **Scheduled –I species:**

Sr. No	**Class**	**Scientific Name**	**Common Name**	**IWPA Status**	**IUCN Status**
1.	Mammal	*Canis lupus*	Grey Wolf	Schedule - I	LC
2.	Mammal	*Antilope cervicapra*	Blackbuck	Schedule – I	LC
3.	Mammal	*Hyena hyaena*	Striped Hyeana	Schedule – I	Not Enlisted
4.	Mammal	*Vulpes bengalensis*	Bengal Fox	Schedule – I	LC
5.	Mammal	*Bos gaurus*	Gaur	Schedule – I	VU
6.	Mammal	*Prionailurus rubiginosus*	Rusty Spotted Cat	Schedule – I	NT
7.	Mammal	*Felis chaus*	Jungle Cat	Schedule – I	LC
8	Bird	*Pavo cristatus*	Indian Peafowl	Schedule – I	LC

Sr. No	Class	Scientific Name	Common Name	IWPA Status	IUCN Status
9.	Bird	*Accipiter badius*	Shikra	Schedule – I	LC
10.	Bird	*Haliastur indus*	Brahminy Kite	Schedule – I	LC
11.	Reptile	Crocodylus palustris	Mugger	Schedule – I	VU
12.	Reptile	Fowlea piscator	Chequered keelback	Schedule – I	LC
13.	Reptile	Ptyas mucosa	Dhaman	Schedule - I	LC
14	Reptiles	*Varanus bengaiensis*	Bengal Monitor	Schedule - I	EN
15	Bird	*Platalea leucorodia*	Eurasian Spoonbill	Schedule – I	LC
16	Bird	*Sterna aurantia*	River Tern	Schedule – I	VU
17	Bird	*Circaetus gallicus*	Short-toed Snake-Eagle	Schedule – I	LC
18	Bird	*Tringa nebularia*	Common Greenshank	Schedule – I	LC
19	Bird	*Aythya ferina*	Common Pochard	Schedule - I	LC
20	Bird	*Pericrocotus cinnamomeus*	Small Minivet	Schedule - I	LC
21	Bird	*Clanga clanga*	Greater Spotted Eagle	Schedule – I	VU

** VU = Vulnerable; **NT = Near Threatened, EN = Endangered*

xvii. **Baseline Environmental Scenario:**

<table>
<tr><td>Period</td><td colspan="4">From 01/03/2023 to 31/12/2023</td></tr>
<tr><td>AAQ parameters at 14 locations (min. & Max.)</td><td colspan="4">• PM10 = 23.5 to 76.3 µg/m3
• PM2.5 = 12.4 to 31.9 µg/m3
• SO2 = 6.2 to 16.5 µg/m3
• NOx = 10.4 to 23.2 µg/m3.
• CO = BDL</td></tr>
<tr><td>Surface water samples (10 samples)</td><td colspan="4"><table>
<tr><th>Parameter</th><th>Season 1</th><th>Season 2</th><th>Season 3</th></tr>
<tr><td>pH</td><td>7.01 to 7.43</td><td>7.02 to 7.49</td><td>7.1 to 7.5</td></tr>
<tr><td>TDS</td><td>385 to 1459 mg/lit.</td><td>357 to 1662 g/lit.</td><td>492 to 1415 mg/lit.</td></tr>
<tr><td>Total Hardness as CaCO3</td><td>154.3 to 517 mg/lit.</td><td>169.54 to 490.12 mg/lit.</td><td>171 to 514 mg/lit.</td></tr>
<tr><td>Calcium as</td><td>46.13 to 113.37</td><td>50.13 to 130.45</td><td>48 to 110 mg/lit</td></tr>
</table></td></tr>
</table>

	Ca	mg/lit	mg/lit	
	Magnesium as Mg	18.13 to 83.28 mg/lit	20.14 to 83.02 mg/lit	23 to 80 mg/lit
	Chloride as Cl	23.25 to 130.15 mg/lit	41.14 to 138.16 mg/lit .	19 to 104 mg/lit
	Sulphate as SO4	32.16 to 145.25 mg/lit	37.12 to 148.13 mg/lit	33 to 142 mg/lit.
	BOD	4 to 9 mg/lit	5 to 13 mg/lit	4 to 10 mg/lit
	COD	15 to 33 mg/lit	19 to 47 mg/lit	18 to 32 mg/lit
	DO	3.7 to 4.7 mg/lit	2.9 to 4.4 mg/lit	3.5 to 4.6 mg/lit
	Total Coliforms	present	present	present

Ground Water samples at 36 location s	**Parameters**	**Season 1**	**Season 2**	**Season 3**
	pH	7.02 to 7.57	7.08 to 7.62	7.03 to 7.78
	Total Dissolved Solids	314 to 2012 mg/lit.	320 to 1990 mg/lit.	289 to 2183 mg/lit.
	Total Hardness as CaCO3	140.56 to 758.13 mg/lit.	130.14 to 771.19 mg/lit.	125.16 to 767.52 mg/lit.
	Calcium as Ca	41.08 to 124.1 mg/lit &	37.1 to 130.18 mg/lit &	18.52 to 145.12 mg/lit
	Magnesium as Mg	13.26 to 92.14 mg/lit	14.25 to 95.24 mg/lit	11.13 to 95.27 mg/lit
	Chloride as Cl &	24.25 to 110.92 mg/lit &	21.16 to 115.24 mg/lit	25.42 to 128.12 mg/lit
	Sulphate as SO4	14.92 to 120.15 mg/lit.	16.02 to 120.14 mg/lit.	15.9 to 131.15 mg/lit.

Noise levels Leq (Day & Night) at 25 locations	The Leq values for day time was observed to be		
	Zone /Area	Day Time	Night Time
	Residential Zone	47.3-to 54.8dB (A)	39.1to 43.8 dB (A).
	Silent Zone	41.6-to 48.9dB (A)	33.2 to 39.8 dB (A).
	Commercial Zone	66.5 to 69.4dB (A	60.5 to 64. 2 dB (A).

Soil Quality at 30 Locations	**Parameters**	**Season 1**	**Season 2**	**Season 3**
	pH	7.35 to 8.05.	7.21 to 7.92.	7.02 to 8.24.
	Conductiv	411.8 to 900.8	501.6 to	424.5 to 872.5

	ity	µs/cm.	1014.6 µs/cm.	µs/cm.
	N	132.12 to 168.9 kg/ha	118.47 to 160.3 kg/ha	138.15 to 185.15 kg/ha,
	P	9.15 to 25.2 kg/ha	11.02 to 19.1 kg/ha	13.45 to 24.1 kg/ha
	K	152.13 to 204.3 kg/ha	124.05 to 206.1 kg/ha	148.1 to 211.67 kg/ha
Flora & Fauna	Total 172 floral species were recorded in and around the project area (i.e. 10 km radius study). Among them 41 Herbs, 97 Trees, 27 shrubs & climbers were 7. Fauna Diversity : Mammals - 15, Bird – 135, Fishes-109, Frog -3, Reptile -4, Total 22 Schedule 1 species observed in the study area			

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

Domestic Waste:

Name of Waste	Source	Qty (TPA)
Dry Waste	Labour Colony	39.42
Wet Waste	Labour Colony	26.28

Details of Excavation Waste (Muck)

Name of Waste	Qty (cu.m)
Quantity of cutting material (muck)	2906835
Proposed utilization /dispose of cutting material	2558014.624
Quantity of filling material	348820.176
Source of filling Material	Trench cutting

The detail of the muck likely to be disposal at low lying area adjacent to project site

Sr. No	Stage of LIS	Total Muck quantity in cum
1	Man Khatav	104646
2	Kamat	69764

3	Bevnoor	69764
4	6 A and 6 B	34882
5	Palshi	34882
6	Budhyal	34882

xix. **Public Hearing Details**: Public Hearing for the proposed project has been conducted by the State Pollution Control Board at three districts separately.

Advertisement for PH with date	**Marathi Newspaper:** **Sangli:** Sakal Dated 19.01.2024 **Solapur:** Sanchar 31.01.2024**,** **Satara:** Pudhari Dated 01.02.2024**,** **English Newspaper**: **Sangli:** The Times of India Dated 19.01.2024, **Solapur:** Divya Marathi Dated 31.01.2024, **Satara:** The Indian Express Dated 01.02.2024
Date of Public Hearing	1. Sangli: 21/02/2024 2. Solapur: 01/03/2024 3. Satara: 05/03/2024
Venue	1. Vita Panchayat Samiti, Vita, Khanapur, Sangli 2. Bachat Bhavan Auditorium, Panchayat samite, Sangola, Solapur 3. Tai Convention Hall, Shri Shivaji Maharaj Chowk, Satara
Chaired by	1. Dr. Raja Dayanidhi, Chairman & District Magistrate, Sangli 2. Mrs. Manisha Kumbhar, Chairman & Additional District Magistrate, Solapur 3. Shri. Nagesh Patil, Chairman &Upper District Magistrate (Residential Deputy Collector), Satara
Main issues raised during PH	All the participants raised the water scarcity issue by heart. Many years the local people are suffering due to drought
No. of people attended	Sangli: 157 Solapur: 102 Solapur: 140

xx. **Details of Certified compliance report submitted by RO, MoEF&CC.**

Dr. P. R. Sakhare, Scientist E, inspected the site to check implementation of environmental safeguards status on 29.07.2024.

Status of compliance of conditions stipulated in the environmental clearance granted by MOEF & CC New Delhi vide letter No. J-12011/43/2003-IAI, dated 17.08.2007 submitted by Regional Office, Nagpur, vide F. No. EC-2556/RON/2024-NGP/3436 dated 12th August, 2024.

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

xxii. The salient features of the project are as under:

- **EAC Meeting Details:**

EAC meeting/s	Agenda ID: EC/AGENDA/EAC/216917/2/2025 Agenda Of 25th Meeting Of The Expert Appraisal Committee
Date of Meeting/s	27/02/2025
Date of earlier EAC meetings	• 51st Meeting of EAC, MoEFCC, New Delhi held on 12/09/2023 (Agenda Item No. 51.4) for Terms of Reference (ToR) • 22nd Meeting of The Expert Appraisal Committee held on 10.01.2025 for EC (PP Absent) • 25th Meeting Of The Expert Appraisal Committee held on 27/02/2025 **for EC**

- **Project details:**

Name of the Proposal	Proposed Expansion of Tembhu Lift Irrigation Project Dist. Satara, Sangli and Solapur, Maharashtra
Proposal No.	IA/MH/RIV/482689/2024
Location (Including Coordinates)	Longitude: 74º 14’ (East) Latitude : 17º17’ (North)
Company’s Name	Executive Engineer Minor Irrigation Division, Sangli Water Resource Department Maharashtra Krishna Valley Development Corporation (MKVDC), District Sangli 416 415

CIN no. of Company/user agency	-
Accredited Consultant and certificate no.	MITCON Consultancy & Engineering Services Ltd., Pune, Maharashtra Certificate No. NABET/EIA/24-27/RA 0343
Project location (Coordinates /River/ Reservoir)	Longitude: 74o 14' (East) Latitude : 17o17' (North)
Inter- state issue involved	No
Proposed on River/ Reservoir	-
Type of Hydro-electric project	Not Applicable
Seismic zone	Zone III (i. e. Moderate Risk Zone)

- **Category details:**

Category of the project	1 (c) Cat. 'A'							
Capacity / Cultural command area (CCA)	**Sr No**	**Taluka**	**District**	**Command Area**				
				GCA		**CCA**		**ICA**
				Existing	**Extended**	**Existing**	**Extended**	**Existing**	**Extended**
	A	Karad	Satara	1150	0	860	0	600	0
	B	Khanapur	Sangli	41135	19691	32921	11902	18975	6471
	C	Kadegaon	Sangli	20215	0	16179	0	9325	0
	D	Tasgaon	Sangli	20570	15280	15450	11083	7700	6026
	E	Atpadi	Sangli	61569	9015	43100	9737	16000	5294
	F	Sangola	Solapur	36500	20745	29200	5876	20000	5000
	G	Jat	Sangli	-	6506	-	4848	-	2636
	H	Kavathe Mahankal	Sangli	17475	12455	10300	7826	7872	2450
	I	Khatav	Satara	-	18362	-	13685	-	7440

	J	Man	Satara	-	14033	-	10458	-	5686
		Total		**198614**	**116087**	**148010**	**75415**	**80472**	**41003**
Attracts the General Conditions (Yes/No)	Yes, Bird Conservation Reserve located @ 1.2 km from proposed alignment								
Additional information (if any)									

- **ToR/EC Details:**

ToR Proposal No.	IA/MH/RIV/439901/2023, F. No. J-12011/48/2023-IA. I (R)			
EAC meeting date	12/09/2023			
ToR Letter No.	F.No. J-12011/48/2023-IA. I (R)			
ToR grant Date	02/11/2023			
Cost of project	Existing Project: Rs 4088.14 Proposed Expansion: Rs. 3281.89 Total Cost: Rs. 7370.0			
Total area of Project	**Nature of Land involved in (Ha)**	**Area Existing in Ha**	**Additional Area Proposed in Ha**	**Total Area required after expansion in Ha**
	Non-Forest Land	2265.138	2.7825	2267.92
	Forest Land	7.051	7.93	14.981
	Total	2272.189	10.7125	2282.902
Height of Dam from River Bed (EL)	NA			
Details of submergence	Not applicable as there is no submergence.			

<table>
<tr><td>area</td><td></td></tr>
<tr><td>District to provide irrigation facility (if applicable)</td><td>❖ Length of new pipeline proposed (PDN) : 200 km
❖ Length of proposed Distributaries :1000 km</td></tr>
<tr><td>Details of tunnels on upper level & lower level and length of canal (if applicable)</td><td>Not Applicable</td></tr>
<tr><td>No. of affected Village.</td><td>9</td></tr>
<tr><td>No. of Affected Families</td><td>
<table>
<tr><th>SI</th><th>Name of Farmers</th><th>Village</th><th>Gut No</th><th>Area in Ha</th></tr>
<tr><td>1</td><td>Shri. DattuChandruMore and Shri. LaxmanChandruMore</td><td>Vejegaon Tal:- Khanapur, Dist. Sangli</td><td>145</td><td>0.28</td></tr>
<tr><td>2</td><td>Shri. Rajaram GovindDevkar Shri. Hanmant Govind Devkar</td><td>Vejegaon Tal:- Khanapur, Dist. Sangli</td><td>146</td><td>0.19</td></tr>
<tr><td>3</td><td>Shri. DavalMalik Archak</td><td>Bhikavadi Tal:- Khanapur, Dist. Sangli</td><td>992</td><td>0.0625</td></tr>
<tr><td>4</td><td>Shri. Uttam Atmaram Yadav and other</td><td>Renavi Tal:- Khanapur, Dist. Sangli</td><td>498</td><td>0.40</td></tr>
<tr><td>5</td><td>Shri. Anil Pandhrinath Gaikead and other 10</td><td>Kasabe Vita east, Tal:-Khanapur, Dist. Sangli</td><td>194</td><td>0.40</td></tr>
<tr><td>6</td><td>Smt. Sharada Ramchandra Nichaland other</td><td>Posewadi, Tal:- Khanapur, Dist. Sangli</td><td>836</td><td>0.05</td></tr>
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	7	Shri. Arjun Tukaram Kole and other	Dhonewadi, Tal:- Kanapur, Dist. Sangli	450	0.05
	8	Shri. Dipak Sadashiv Kanaseand other 2	Vijaynagar, Tal- Khanapur, Dist. Sangli	309	0.05
	9	Ujawala Hindurao Sawant other 14	Vita putva	148	0.60
	10	Maruthi Deoand others	Palashi Tal:- Khanapur Dist. Sangli	610/3	0.20
	11	Jagubai Bhimrao Chandanshive, Mangal Bhimrao Chandanshive and other	Palashi Tal:- Khanapur, Dist. Sangli	602	0.40
	12	Umesh Sukhdeo Jadhav, Sulochna Sukhdeo Jadhav and other	Palashi Tal:- Khanapur, Dist. Sangli	232	0.10
	Total		2.7825 Ha		
Project Benefits	❖ With increased land parcels from draught prone area getting irrigated, farmers are shifting from food crops like sorghum, pearl millet and wheat to Cash crops like sugarcane, pulses, grapes, and Pomegranate. ❖ Provide better consumer experience and improved operational performance with an end-to-end coverage from pump house to water distribution network with minimum water charges cost to farmers. ❖ The drought prone area earlier is transforming to horticulture hub. ❖ Improvement in operational performance and reliability in water supply by futuristic interventions enabled through SCADA interventions qualifying smart utilities and digital utilities. ❖ Generation of Employment - The draught prone area under the jurisdiction of Tembhu LIS has limited activities for income generation.				
R&R details	For the Expansion of Tembhu Lift Irrigation Project, private land of around 2.7825 Ha is proposed for acquisition. The land acquisition will be done and compensation shall be paid to land owners as per The Right to Fair				

	Compensation & Transparency in Land Acquisition, Rehabilitation and Resettlement Act 2013.
Command area	

Sr No	Taluka	District	Command Area					
			GCA		CCA		ICA	
			Existing	Extended	Existing	Extended	Existing	Extended
A	Karad	Satara	1150	0	860	0	600	0
B	Khanapur	Sangli	41135	19691	32921	11902	18975	6471
C	Kadegaon	Sangli	20215	0	16179	0	9325	0
D	Tasgaon	Sangli	20570	15280	15450	11083	7700	6026
E	Atpadi	Sangli	61569	9015	43100	9737	16000	5294
F	Sangola	Solapur	36500	20745	29200	5876	20000	5000
G	Jat	Sangli	-	6506	-	4848	-	2636
H	Kavathe Mahankal	Sangli	17475	12455	10300	7826	7872	2450
I	Khatav	Satara	-	18362	-	13685	-	7440
J	Man	Satara	-	14033	-	10458	-	5686
	Total		**198614**	**116087**	**148010**	**75415**	**80472**	**41003**

Types of Waste and quantity of	Name of Waste	Source	Qty (TPA)
	Dry Waste	Labour Colony	39.42

<table>
<tr><td>generation during Construction/ Operation</td><td>
<table>
<tr><td>Wet Waste</td><td>Labour Colony</td><td>26.28</td></tr>
</table>
<table>
<tr><th>Sr No</th><th>Type of material</th><th>Total generated quantity in excavation in cum</th><th>Total generated quantity in excavation in Mm^3</th></tr>
<tr><td>1</td><td>Soft Soil</td><td>225174.6</td><td>0.225175</td></tr>
<tr><td>2</td><td>Hard murum & soft Rock</td><td>505580.2</td><td>0.50558</td></tr>
<tr><td>3</td><td>Hard Rock</td><td>2176080</td><td>2.176080</td></tr>
<tr><td></td><td>Total</td><td>2906835</td><td>2.90684</td></tr>
</table>
</td></tr>
<tr><td>Material used for blasting and its composition as per DGMS standards.</td><td>Not Applicable</td></tr>
<tr><td>E-Flows for the Project</td><td>NA</td></tr>
<tr><td>Is Projects earlier studied in Cumulative Impact assessment & Carrying Capacity studies(CIA& CC) for River in which project located. If yes then E-flow with TOR/Recommendation by EAC as per</td><td>NA</td></tr>
</table>

CIA&CC study of River Basin. If not the E-Flows maintain criteria for sustaining river ecosystem.	
Details on provision of fish pass	NA
Project benefit including employment details (no of employee)	**During construction phase** ***Permanent employment*** • No. of permanent employment: 360 • Period of employment (days): 730 ***Temporary employment*** Temporary / Contractual employment (No. of Man days): 33000 **During operational phase** • Permanent employment proposed: 10 • Temporary employment proposed: 5
Area of Compensatory Afforestation (CA) with tentative no of plantation.	Compensatory land 4.50 ha non forest land gut no. 36 at Village Pimpri B, Tal Atpadi, Dist Sangli selected for Compensatory afforestation. 130 number of trees will be affected and same will be transplanted in nearby area.
Previous EC details	Environmental clearance for 80472 ha ICA. Vide letter No.12011/43/2003-A.I Dated August 17,2007
EC Compliance Report by	Dr. P. R. Sakhare, Scientist E, inspected the site to check implementation of environmental safeguards status on 29.07.2024.

R.O, MOEF&CC	Status of compliance of conditions stipulated in the environmental clearance granted by MOEF &CC New Delhi vide letter No. J-12011/43/2003-IAI, dated 17.08.2007 submitted by Regional Office, Nagpur, vide F. No. EC-2556/RON/2024-NGP/3436 dated 12th August 2024

- **Muck Management Details:**

<table>
<tr><td rowspan="8">No. of proposed disposal area/ (type of Land /Pvt. land)</td><td>Sr. No</td><td>Stage of LIS</td><td>Total Muck quantity in cum</td></tr>
<tr><td>1</td><td>Man Khatav</td><td>104646</td></tr>
<tr><td>2</td><td>Kamat</td><td>69764</td></tr>
<tr><td>3</td><td>Bevnoor</td><td>69764</td></tr>
<tr><td>4</td><td>6 A and 6 B</td><td>34882</td></tr>
<tr><td>5</td><td>Palshi</td><td>34882</td></tr>
<tr><td>6</td><td>Budhyal</td><td>34882</td></tr>
<tr><td colspan="3">Muck likely to be disposal at low lying area adjacent to project Site</td></tr>
<tr><td>Cross section of proposed muck area, Height of muck with slope.</td><td colspan="3">Utilization of 80 % of excavated material shall be backfilled in Approach roads, Conveyance roads, Pump House and 20% shall be filled in low laying areas and local bunds of agriculture land.</td></tr>
<tr><td>Distance of muck disposal area(location), from muck generation sources (project area)/River, HFL of proposed muck disposal area.</td><td colspan="3">Average 0 km to 5 km</td></tr>
<tr><td rowspan="5">Total Muck Disposal Area</td><td>Sr. No</td><td>Stage of LIS</td><td>Total Muck quantity in cum</td></tr>
<tr><td>1</td><td>Man Khatav</td><td>104646</td></tr>
<tr><td>2</td><td>Kamat</td><td>69764</td></tr>
<tr><td>3</td><td>Bevnoor</td><td>69764</td></tr>
<tr><td>4</td><td>6 A and 6 B</td><td>34882</td></tr>
</table>

	5	Palshi	34882
	6	Budhyal	34882

Estimate Muck to be generated	**Sr No**	**Type of material**	**Total generated quantity in excavation in cum**	**Total generated quantity in excavation in Mm^3**
	1	Soft Soil	225174.6	0.225175
	2	Hard murum & soft Rock	505580.2	0.50558
	3	Hard Rock	2176080	2.176080
		Total	2906835	2.90684
Transportation	By Road			
Monitoring mechanism for Muck Disposal Transportation	Environmental Management Cell (EMC) shall monitor mechanism of muck disposal.			

- **Land Area Breakup:**

Private land	2265.138 + 2.7825 = 2267.92			
Government land/Forest Land	7.051 + 7.93 = 14.981			
Submergence area/Reservoir area	NA			
Land required for project components	**Nature of Land involved in (Ha)**	**Area Existing in Ha**	**Additional Area Proposed in Ha**	**Total Area required after expansion in Ha**
	Non-Forest Land	2265.138	2.7825	2267.92
	Forest Land	7.051	7.93	14.981
	Total	2272.189	10.7125	2282.902

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

Forest Land/ Protected Area /	**Yes/ No**	**Details of Certificate/ letter/ Remarks**

<table>
<tr><td>Environmental Sensitivity Zone</td><td></td><td></td></tr>
<tr><td>Reserve Forest/Protected Forest Land</td><td>Yes</td><td>
<table>
<tr><th>Nature of Land involved in (Ha)</th><th>Area Existing in Ha</th><th>Additional Area Proposed in Ha</th><th>Total Area required after expansion in Ha</th></tr>
<tr><td>Forest Land</td><td>7.051</td><td>7.93</td><td>14.981</td></tr>
</table>
Sacred groves & conservation reserves present in the study area
<table>
<tr><th>Sr. No.</th><th>Name of the Grove</th><th>Deity</th><th>Tahsil</th><th>Distance</th><th>Direction</th></tr>
<tr><td>1</td><td>Arewadi</td><td>Biroba</td><td>Kavathe Mahankal</td><td>3km</td><td>SE</td></tr>
<tr><td>2</td><td>Raywadi</td><td>Lord Shiva</td><td>Kavathe Mahankal</td><td>2km</td><td>W</td></tr>
<tr><td>3</td><td>Shukacharya</td><td>Sukhdev</td><td>Khanpur-Atpadi</td><td>2km</td><td>NE</td></tr>
<tr><td>4</td><td>Mayani</td><td>Bird Conservation Reserve*</td><td>Khatav</td><td>1.28 km</td><td>NE</td></tr>
</table>
*5.2 km from Khatav Main Distributary
</td></tr>
<tr><td>National Park</td><td>No</td><td>-</td></tr>
<tr><td>Wildlife Sanctuary</td><td>No</td><td>Not Applicable as per Parivesh Web portal under applicability of green clearances</td></tr>
<tr><td>Archaeological sites monuments/historical temples etc.</td><td>No</td><td>No within 10 km Radius</td></tr>
<tr><td>Additional information (if any)</td><td>-</td><td>-</td></tr>
</table>

- **Court case details:** Nil
- **Status of other statutory clearances**

Particulars	**Letter no. and date**
Status of Stage- I FC	Stage 1 Clearance received vide online Proposal No. FP/MH/Pipeline/466395/2024 dated 06.01.2025
Approval of Central Water Commission	In 109th Technical advisory committee of Central Water Commission meeting on 14/03/2011
Approval of Central Electricity Authority	NA
Additional detail (If any)	NA
Is FRA (2006) done for FC-I	Yes

- **Details of the EMP**

Sr. No	**Pollution Control & Other Environment Infrastructure**	**Capital Cost Rs. Lakhs**	**Recurring Cost (per annum) Rs. Lakhs**
1.	Ambient Air Quality	-	12.00
2.	Noise Level	-	25.00
3.	Surface and Ground Water Quality	-	15.00
4.	Soil Quality	-	15.00
5.	Solid/ hazardous wastes	03.00	15.00
6.	Green Belt Development	400.00	50.00
7.	Fisheries Conservation & Management Plan	15.00	
8.	Labour Management Plan	25.00	
9.	Wildlife Conservation Plan	75.00	
10.	Muck Management Plan	25.00	
11.	Health & Safety	-	25.00
12.	Command Area Development Plan	24887.00	
13.	Corporate Environmental Responsibility	820.00	-
Summary of allocation of fund for EMP			

Sr. No	Pollution Control & Other Environment Infrastructure	Capital Cost Rs. Lakhs	Recurring Cost (per annum) Rs. Lakhs
1.	EMPs: (eg.: Air Environment, Water Environment)	193.00 L	
2.	Capital Cost (in Cr.)	3281.89	
3.	Recurring Cost per annum (In Lakhs)	160.00 L	

30.2.3 The proposal was earlier considered by the EAC 22nd EAC meeting held on 10.01.2025 wherein PP did not attend the meeting. Afterwards, the proposal was again considered by the EAC in its 22nd meeting held on 10.01.2025. Accordingly, PP submitted following additional details sought by the EAC on 9th April, 2025:

Query 1: PP shall submit the status of the 3.83 Ha of forest land for obtaining Stage-I Forest Clearance (FC), along with all relevant supporting documents.

Reply: Status of the online application of forest land for obtaining Stage-I Forest Clearance (FC) is as below

Sr. No.	Area in ha	Village /Scheme	Status
FP/MH/Pipeline/479779/2024	0.63	Vejegaon & Bhikawadi, Tal-Khanapur, Dist-Sangli	Proposal pending at APCCF, Nagpur
FP/MH/Pipeline/ 514447/2024	0.922	Rewangaon, Pare, Vita Stage 6 A & 6 B	Pending at DCF Office, Sangli

And few more forest land proposals are pending at DFO Sangli office for area evaluation. The forest land for project is increasing because in the pipe drain network (PDN) area on revenue records the land is with government of Maharashtra or private land but in actual it is in custody of forest. Therefore, the proposals are increasing and the initially assessed land area is increasing.

Query 2: PP shall submit a closure report from the RO, MoEF&CC, addressing the observations/ suggestions provided by the RO, MoEF&CC.

Reply: Closure report F. No. EC-2556/RON/2024-NGP/14157 dated 9th April 2025 has been submitted.

Query 3: The concurrence/ approval of CWC for hydrology of the present expansion proposal shall be examined and a clarification of CWC in this regard be submitted.

Reply: The proposed expansion of Tembhu LIS project is the part of Tembhu project and its approved by Government of Maharashtra. Hydrology and water availability for this project is assessed by the State Chief Engineer Hydrology and within the state allocated share of 585 TMC water by KWDT-1. It is an enbloc allocation so projects is in within the allocated share of the state. So separate concurrence /approvals for this expansion of the project is not necessary at this stage.

Query 4: The MoU for water usage for the proposed project shall be submitted along with an English-translated copy, duly attested by the PP.

Reply: The MoU for water usage for the project has been submitted. However, for proposed expansion projects MOU will be signed after completion of Command Area Development Works (CADA)

Query 5: PP shall submit detail plan on water utilization for existing project and proposed Project.

Reply: The Tembhu Lift Project lifting of 22.00 TMC of water from Krishna river and utilizing it for irrigation of 80472 Ha of ICA command area from drought prone talukas of Sangli, Satara and Solapur districts. Also proposed to utilize an addition 8 TMC of water for providing irrigation facility to 109 villages from Sangli, Satara and Solapur districts. Availability of water for Tembhu Lift Irrigation scheme is 30 TMC and which is available from following sources.

S. No.	Sources	Content
1	Koyana Dam	18.46 TMC
2	Wang Dam	0.97 TMC
3	Tarali Dam	1.67 TMC
4	Krishna river monsoon flow	0.90 TMC
5	Balance Water of Tembhu Project (As per 1st Tribunal report)	3.500 TMC
6	Krishna Canal Project Difference in Total provision & actual use of water (as per 1st Tribunal report)	2.5 00 TMC
7	Saving of water (Qty to be diverted towards western from Koyana Project)	2.00 TMC
	Total Qty Of Water	**30.00 TMC**

Tembhu scheme has water use of 30.00 TMC and the water use is as per following:

Sr. No.	Description	Water requirement in TMC			
		Kharif	Rabi	H.W.	Total
1	Irrigation purpose	6.06	16.72	5.41	28.19
2	Non-irrigation purpose	1.21			1.21
3	K.T. Weir on Man river	---			0.60
				Total	30.00

Details of villages of existing command of Tembhu Project is as given below:

District	**Taluka**	**No. of villages**	**ICA(Ha)**	**Water Requirement TMC**
Sangli	1) Khanapur	54	18957	5.19
	2) Tasgaon	35	7700	2.11
	3) Kawathemahankal	31	7872	2.15
	4) Atpadi	47	16000	4.37
	5) kadegaon	39	9325	2.55
	Total Of Sangli District	206	59854	16.37
Satara	karad	3	600	0.16
	Total Of Satara District	3	600	0.16
Solapur	8) Sangola	31	20000	5.47
	Total Of Solapur District	31	20000	5.47
	Gross Total	240	80472	22.00

Details of villages of proposed command of Extented Tembhu Project is as given below:

District	**Taluka**	**No. of villages**	**ICA (Ha)**	**Water Requirement TMC**
Sangli	1)Khanapur	**11**	**6471**	**1.5**
	2) Tasgaon	**17**	**6026**	**1.00**
	3) Kawathemahankal	**9**	**2450**	**0.50**
	4) Atpadi	**12**	**5294**	**1.00**

	5) Jat	**4**	**2636**	**0.50**
	Total Of Sangli District	**53**	**22877**	**4.50**
Satara	6) Khatav	**21**	**7440**	**1.50**
	7) Maan	**27**	**5686**	**1.00**
	Total of Satara District	48	13126	2.50
Solapur	8) Sangola	**8**	**5000**	**1.00**
	Total Of Solapur	**8**	**5000**	**1.00**
	Gross Total	**109**	**41003**	**8.00**

The same data was submitted in EIA report also.

Query 6: PP shall submit details of land reclamation practices undertaken in the existing project. Based on these practices, a comprehensive plan for implementing land reclamation in the proposed expansion shall also be submitted.

Reply: Existing land reclamation practices focus on the efficient use of excavated materials to restore and enhance land conditions. The muck retained from excavation is utilized for backfilling purposes, ensuring stability and support for construction or rehabilitation activities. Additionally, the excess muck is strategically placed in low-lying areas to improve land elevation and prevent water logging. The topsoil layer, which is rich in nutrients, is provided to nearby farmers for agricultural purposes.

Reclamation land practices for proposed expansion will be according to PDN Policy. After adopting the PDN policy in 2017 by government of Maharashtra. Extensive PDN work was executed by water resources department 2018-2020. While executing the PDN work the alignment of PDN was through farmer's fertile land. To avoid the losses of farmers, we have made reclamation of land by refilling the top 1 to 1.5 feet layer root zone of with fertile soil from nearby area and make the land to its original state as before excavation.

Encloses the geo tagged photographs of the existing practices and some area where PDN work was executed and then land work reclaims and after that the farmers are taking regular crops on it.

Similar to above we have made provision of around 303558.79 m3 of soil for top 1 feet of layer of fertile soil for reclamation of land. For the proposed expansion work.

30.2.4 The EAC during deliberations noted the following:

- The Expert Appraisal Committee (EAC) deliberated on the information submitted by the Project Proponent and the details presented during the meeting. The Committee observed

that the proposal pertains to the grant of Environmental Clearance for the Expansion of Tembhu Lift Irrigation Project in an area of 2284.601 ha at Village Tembhu, Ranad, Govare and etc, Sub District Khatav, Atpadi, Karad and etc, District Satara, Sangli and Solapur, Maharashtra by M/s Minor Irrigation Division, Sangli Water Resources Department, Maharashtra Krishna Valley Development Corporation.

- The project falls under item 1(c) of the Schedule to the Environmental Impact Assessment (EIA) Notification, 2006, as amended and is categorized as a Category 'B1' project, as Culturable Command Area (CCA) is 223425 Ha. However, presence of Mayani Bird Conservation Reserve it requires appraisal at the Central level by the Expert Appraisal Committee (EAC).

Earlier observations by the EAC

- The EAC, constituted under the provisions of the EIA Notification, 2006, and comprising expert members/domain experts from various relevant fields, examined the proposal submitted by the Project Proponent. This examination included a review of the Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) reports, which were prepared and submitted by a QCI/NABET-accredited consultant on behalf of the Project Proponent.

- The EAC further noted that the Ministry had granted Environmental Clearance (EC) to the existing project vide letter No. 12011/43/2003-A.I dated 17/08/2007, in favor of M/s. Minor Irrigation Circle, Maharashtra Krishna Valley Development Corporation, Warnali, Sangli for an Irrigation Command Area (ICA) of 80,472 ha. For the current expansion project, the Ministry has issued Terms of Reference (ToR) for conducting the Environmental Impact Assessment (EIA)/Environmental Management Plan (EMP) and a public hearing vide letter File No. J-12011/48/2023-IA.I(R) dated 02/11/2023.

- The EAC also noted that the project was previously considered during its 22nd meeting on 10/01/2025. However, the proposal was deferred as the Project Proponent (PP) did not attend the meeting.

- The EAC noted that the Project Proponent has given an undertaking that the data and information given in the application and enclosures are true to the best of his knowledge and belief and no information has been suppressed in the EIA/EMP reports. If any part of data/information submitted is found to be false/ misleading at any stage, the project will be rejected and Environmental Clearance given, if any, will be revoked at the risk and cost of the project proponent.

- The EAC further noted that the total land area required for the project is 2282.90 ha, comprising 2272.18 ha of the existing project area and an additional 10.71 ha required for the proposed expansion. Of this additional land, 2.78 ha is non-forest land, while 7.93 ha is forest land. The PP informed that for the 7.93 ha of forest land, Stage-I Forest Clearance (FC) has already been obtained for 4.10 ha (vide FP/MH/Pipeline/466395/2024 dated 06/01/2025), while the proposal for the remaining 3.83 ha has been submitted for approval.

- The estimated project cost is ₹7370.03 crore, which includes the existing investment of ₹4088.14 crore. A total capital cost of ₹193.00 lakh has been allocated for environmental pollution control measures, with a recurring (operation and maintenance) cost of ₹160.00 lakh per annum.

- The Committee discussed the issues raised during the Public Hearing (PH) which was conducted in three districts as per the EIA Notification, 2006 and reviewed the action plan submitted by the Project Proponent to address these concerns. After careful deliberation, the Committee found the action plan satisfactory.

- The EAC observed that approval on the Hydrology has been obtained from State Government, vide letter (Marathi) शासन ननर्णय क्र. टेंभूसुप्रमा- /0411प्रक्र/11/305.मोप्र1-नि2019/02/04. The expert representative from CWC informed the Committee that DPR of the existing project was examined by the CWC; however, the PP has not submitted the DPR for concurrence of CWC for present expansion proposal.

- Additionally, the EAC noted that Certified Compliance Report of earlier EC conditions has been submitted by RO, MoEF&CC vide F. No. EC-2556/RON/2024-NGP/3436 dated 12th August, 2024. The RO, MoEF&CC raised serious concerns over compensatory afforestation, Multidisciplinary Committee, non- submission of half yearly compliance report etc. Taking cognizance of these issues, the EAC requested the PP to submit a closure report from the RO, MoEF&CC, addressing the observations/ suggestions provided by the RO, MoEF&CC.

Current deliberations:

- The EAC observed that approval of pre chapter of hydrology is a requisite document for examination of the proposal. In this regard, earlier, an ADS was raised and PP couldn't submit the document for appraisal. Therefore, it was opined that PP shall obtain concurrence/ approval of CWC for hydrology of the present expansion or otherwise.

- The EAC further noted that the values submitted in the water balance table shall be rechecked and be submit accordingly.

The proposal ***deferred*** on the following lines.

i. The PP shall submit the approval/concurrence/clarification of the Central Water Commission (CWC) for the preliminary hydrology chapter related to the proposed expansion.
ii. The PP is required to re-check and revise the Water Balance Table, ensuring all values are accurate and consistent with the hydrological and project design parameters. The revised table must be accompanied by a brief explanation of methodology and assumptions used.

Agenda Item No. 30.3

Extension, Renovation & Modernization (ERM) of Kamla Irrigation Project (CCA: 23,419.08 ha + 4,965.05 ha) in an area of 26.7 Ha (additional) at Sub District Jainagar, Basopatti, Khajauli etc, District Madhubani, Bihar by M/s Water Resources Department, Govt of Bihar– Terms of Reference (ToR) - reg.

[Proposal No. IA/BR/RIV/525753/2025; F. No. J-12011/17/2025-IA.I (R)]

30.3.1: The proposal is for grant of Terms of Reference (TOR) to the project for Extension, Renovation & Modernization (ERM) of Kamla Irrigation Project (CCA: 23,419.08 ha + 4,965.05 ha) in an area of 26.7 Ha (additional) at Sub District Jainagar, Basopatti, Khajauli etc, District Madhubani, Bihar by M/s Water Resources Department, Govt of Bihar.

30.3.2: The Project Proponent and the accredited Consultant M/s. Aarvee Engineering Consultants Limited, made a detailed presentation on the salient features of the project and informed that:

i. The Kamla Irrigation Project is an essential water management initiative in the floodplains of Bihar, India, a state characterized by fertile alluvial soils and abundant water resources. Agriculture plays a critical role in Bihar's economy, with 77% of the workforce engaged in this sector, and the Kamla Basin supports a significant portion of this activity. The Kamla River, originating from the Mahabharat Range in Nepal, traverses the Madhubani district in Bihar before merging with the Kosi River. However, due to its foothills-fed nature, the river carries heavy sediment loads, creating challenges for water flow stability and distribution. As a response to these challenges, the Kamla Irrigation Project aims to modernize and

optimize water infrastructure to secure agricultural productivity, mitigate flood risks, and provide reliable irrigation for a diverse crop base.

ii. The Kamla Irrigation Project, commissioned in 1975, was designed to irrigate a CCA of 39921 hectares. However, over the decades, the aging canal system, unlined infrastructure, heavy siltation, and structural vulnerabilities have severely impacted the project's efficiency and effectiveness. The deterioration of infrastructure, including canals, cross drainage (CD) works, and cross masonry (CM) structures, has compromised the efficiency of the system. Unlined canals have exacerbated these issues, leading to erosion and instability in canal banks. In order to overcome this challenges and restore the performance of the scheme, Water Resources Department, Govt. Of Bihar has taken up the project ERM of Kamla Irrigation Project.

iii. **Project Location**: The Kamla Irrigation Project is located near the India-Nepal international border within Madhubani district, Bihar. Accessible via National Highway 105, the site lies approximately 40 kilometers from Madhubani and 200 kilometres from Patna, with the nearest airport at Darbhanga (60 km) and the closest railhead at Jainagar (3 km). The command area of the project is distributed across nine administrative blocks in Madhubani district.

The geographical co-ordinate of the project are: 26.597175°N, 86.144642°E (Kamla Weir)

iv. **Project Background:**

a. The Kamla Irrigation Project, initiated in 1901, has evolved through various phases. Originally established under the guidance of Mr. King, the then Circle Manager of Darbhanga Raj, the project included the construction of the King's Canal, which covers approximately 8,093.71 hectares (20,000 acres). The canal was integrated into the Integrated Kamla Project in 1951, sanctioned by the Bihar Government's Irrigation Department in 1956/57, with a designed discharge capacity of 400 cusecs. To enhance irrigation efficiency and ensure a consistent water supply, a weir was constructed across the Kamla River at Jainagar, with coordinates 26°35'49.83" N and 86°08'40.71" E. Completed in 1969/70, this weir has a discharge capacity of 3,964.4 cumecs and spans 292.5 meters in length.

b. Existing Kamla Irrigation Network: The canal system, completed in 1974/75, was designed to irrigate 39,921 hectares (CCA). However, following the implementation of the Western Kosi Canal Project, the command areas of King's Canal, Jiraul Distributary, Sugraul Sub-Distributary, and Pakri Distributary were curtailed, reducing the command area of the Kamla Irrigation Scheme to 28,384.13 hectares (CCA).

c. Command Area Details

d. Total CCA: 28,384 hectares, representing approximately 67% of the Gross Command Area (GCA) of 42,364.37 hectares.

A total of 912 cusecs of water is derived from the Kamla weir through the Kamla Eastern and Western Main Canals. This water is distributed directly to the fields or through various distributaries, sub-distributaries, and watercourses. Irrigation achievements over the past decade indicate an average irrigated CCA of only 15,850 hectares, which highlights the challenges faced by the canal system in achieving its full irrigation potential.

e. Salient Features of the Canal Systems

Kamla Western Main Canal: Includes a Gross Command Area of 34,953.84 ha, with a CCA of 23,419.08 ha and a discharge capacity of 22.653 cumecs (800 cusecs).

Kamla Eastern Main Canal: Features a gross command area of 7,410.53 ha and a CCA of 4,965.05 ha with a design capacity of 3.398 cumecs (120 cusecs).

Actual CCA Calculation in ERM 2024: CCA arrived to 29,711 hectares for Western & Eastern Kamla Main Canals after considering land features such as habitations, plantations, ponds, roads, streams, railway tracks, and canal widths.

The comparison of CCA original contemplated and identified as part of ERM is given in below table

Canal System	Culturable Command Area (Ha)	
	Existing	ERM 2024
Kamla Western Canal system	23,419	24,307
Kamla Eastern Canal system	4,965	5,404
Total CCA	28384	29711

v. **Land requirement:** 26.7 Ha

vi. **Project Cost:** The estimated project cost is Rs. **1268.81** Crores.

vii. **Resettlement and Rehabilitation:** 159 Nos. (encroached structures identified)

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

- **Project details:**

Name of the Proposal	ERM of Kamla Irrigation Project, Bihar
Location (Including coordinates)	The Kamla Irrigation Project is located near the India-Nepal international border within Madhubani district,

	Bihar. Accessible via National Highway 105, the site lies approximately 40 kilometers from Madhubani and 200 Kilometres from Patna, with the nearest airport at Darbhanga (60 km) and the closest railhead at Jainagar (3 km). The command area of the project is distributed across nine administrative blocks in Madhubani district.
Inter- state issue involved	The Proposed Project lies within the Indo-Nepal International Boundary within the distance of 3.5 km.
Seismic zone	As per the seismic zonation map of India, the Project area lies in the seismic Zone-V which falls in highly active zone.

- **Category details:**

Category of the project	Category A
Provisions	Irrigation Project
Capacity / Cultural command area (CCA)	29711 Ha CCA
Attracts the General Conditions (Yes/No)	Yes. The Kamla Irrigation Project is situated in Jainagar, approximately 3.5 km from the India-Nepal international border in Madhubani District, Bihar.
Additional information (if any)	Nil

- **ToR/EC Details:**

Cost of project	Total Hard Cost of the project is Rs. 126881.00 Lakhs (1268.81 Cr).
Total area of Project	29,711 Ha
Height of Dam from Riverbed (EL)	NA
Length of Tunnel/Channel	NA
Details of Submergence area	NA
Types of Waste and quantity of generation during construction/ Operation	Sewage and solid waste generated at the construction staff colony/ project colony shall be adequately treated/ disposed to avoid water pollution and associated public health problems. Adequate measures will be undertaken to dispose of the sewage and waste generated from the labor camps. Appropriate management measures will be

	recommended as a part of the Comprehensive EIA study.
E-Flows for the Project	NA
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then a) E-flow with TOR /Recommendation by EAC as per CIA&CC study of River Basin. If not the E-Flows maintain criteria for sustaining river ecosystem.	NA

- **Muck Management Details:**

No. of proposed disposal area/(type of land-Forest/Pvt. land)	Excavated material will be used in formation of canal banks and Service Roads. The balance material will be disposed of along the canal as spoil bank on both sides of the canals.
Muck Management Plan	Total quantity of muck will be generated in the project is 1838926 cum and the same will be used in formation of canal banks and Service Roads. The balance material will be disposed of along the canal as spoil bank on both sides of the canals.
Monitoring mechanism for Muck Disposal	Not Applicable

- **Land Area Breakup:**

Private land	0.0Ha
Government land/Forest Land	26.7 Ha
Submergence area/Reservoir area	NA
Land required for project components	26.7 Ha
Additional information (if any)	Nil

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

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

- **Court case details:** Nil

- **Miscellaneous**

Particulars	**Details**
Details of consultant	M/s Aarvee Engineering Consultants Ltd., Hyderabad (former known as Aarvee Associates Architects Engineers and Consultants Pvt., Ltd.,)
Project Benefits	The following benefits are anticipated from the project construction and operation phases: • With the implementation of the proposed modernization of irrigation, it is expected to not only improve the socio-economic status and quality of life of the farming community in the command area but also provides an impetus to agriculture and the productivity of the cropping pattern in the Culturable Command Area (CCA) of the region. • The total CCA is 29,711 hectares, representing approximately 74% of the Gross Command Area (GCA). Annual benefit of Rs.28291.26 Lakhs is estimated from the project. • A number of marginal activities and jobs would be available to the locals during construction phase. • Developers bringing large scale of investment to the area will also invest in local area development and benefit will be reaped by locals. • Education, medical facilities, transportation,

	road network and other infrastructure will improve.
Status of other statutory clearances	NA
R&R details	There are 159 nos. of encroachments identified along the existing canal banks. The compensation for the encroachers will be paid as per the LARR Act 2013.
Additional details, (If any)	Nil

30.3.3 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 TOR for conducting EIA study for Extension, Renovation & Modernization (ERM) of Kamla Irrigation Project (CCA: 28,384 ha) in an area of 26.7 Ha (additional) at Sub District Jainagar, Basopatti, Khajauli etc, District Madhubani, Bihar by M/s Water Resources Department, Govt of Bihar.

The EAC noted that the present project proposal comes under "B1" category; as per the provisions of the EIA Notification, 2006, as amended as Culturable Command Area (CCA: 28,384 ha). However, the location of the project is 3.5 km away from Indo-Nepal, hence, it requires appraisal at the Central level by the Expert Appraisal Committee (EAC).

The EAC observed that the Water Resources Department, Govt. of Bihar has taken up the Western Kamla Main Canal (WKMC) and Eastern Kamla Main Canal (EKMC), currently which are significantly below their design capacities, which is a major factor limiting irrigation in the command area. The WKMC is currently carrying around 350-400 cusecs, far below its designed discharge of 800 cusecs, while the EKMC is delivering only 20-40 cusecs, compared to its intended capacity of 112 cusecs. The canal system needs rehabilitation to restore and maximize its irrigated area. Lining canals and improving infrastructure can boost agricultural productivity, especially during Kharif season. Addressing the engineering, agronomical, administrative, and legislative deficiencies in the Kamla Irrigation Project is crucial to restoring its full efficiency and ensuring sustainable water distribution. This would increase crop yields, revenues, and per capita income, thereby improving the rural economy and enhancing the standard of living for farmers.

The EAC noted that PP was unable to clearly articulate the specific activities that would be undertaken as part of the proposed Extension, Renovation, and Modernization (ERM) scheme. Furthermore, the PP did not adequately explain the anticipated benefits or improvements that would result from the implementation of this scheme. This lack of clarity raised concerns regarding the overall objectives and justification of the proposed ERM activities.

During the presentation it was observed through the kml that the command area of Western Kamla Main Canal (WKMC) and Eastern Kamla Main Canal (EKMC) are overlapping with

each other. Such overlap raised serious concerns regarding the accuracy of the project planning and the level of diligence shown by PP.

The EAC also emphasized the importance of clearly outlining the expected improvements in irrigation efficiency as a result of the proposed Extension, Renovation, and Modernization (ERM) scheme. The Committee noted that the PP did not provide adequate information on how the proposed interventions would enhance water-use efficiency, reduce conveyance and application losses, or improve crop productivity per unit of water used due to which it became difficult for the committee to assess the tangible benefits of the scheme. The EAC further highlighted that increasing irrigation efficiency is essential not only for maximizing agricultural output but also for minimizing environmental impacts such as groundwater depletion and waterlogging. Therefore, a detailed assessment and quantifiable targets related to irrigation efficiency improvements shall be included in the revised proposal to justify the environmental and economic viability of the ERM activities.

The proposal ***deferred*** on the following lines.

i. The Project Proponent (PP) shall submit a clearly defined and itemized list of activities proposed under the Extension, Renovation, and Modernization (ERM) scheme. The modernization proposal which was not explained properly by the PP should include what modernization shall be done and how it's better than the existing irrigation canal etc. This should include technical specifications, scope of work, and implementation timelines.
ii. The PP shall provide a report on the salient achievements of the existing irrigation project on the improved crop yield, livelihood and socio-economic aspects of the farmers and other users and proper distribution without loss due to water diversion canals by individuals etc.
iii. The PP shall provide a detailed explanation of the anticipated benefits from the proposed ERM scheme. This should include measurable outcomes such as increase in command area utilization, expected improvements in irrigation reliability, and overall impact on agricultural productivity and livelihoods.
iv. The PP shall submit a revised and verified KML file and updated project map clearly delineating the command areas of Western Kamla Main Canal (WKMC) and Eastern Kamla Main Canal (EKMC), ensuring there is no overlap. Proper GIS-based delineation and planning documentation shall be submitted.
v. The PP shall provide a quantitative analysis of how the proposed ERM works will enhance irrigation efficiency. This should include baseline data and post-implementation targets for reduction in conveyance and application losses, improvements in water-use efficiency, and increase in crop yield per unit of water.
vi. If any hydrological interventions or flow modifications are involved, the PP shall obtain concurrence/approval from the Central Water Commission (CWC), or submit a clarification on whether such approval is not necessary for the proposed scheme.

The meeting ended with vote of thanks to the Chair.

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ANNEXURE

ATTENDANCE

S. No.	Name of Member	Role
1.	Prof. Govind Chakrapani	Chairman
2.	Dr. Uday Kumar R Y	Member
3.	DR. J. V. Tyagi	Member
4.	Shri Kartik Sapre	Member
5.	Shri Ajay Kumar Lal	Member
6.	Shri Rakesh Goyal	Member Representative of Central Electricity Authority (CEA)
7.	Dr. J.A. Johnson, Scientist - F	Member
8.	Shri Balram Kumar	Member Representative of Central Water Commission (CWC)
9.	Dr. A.K. Sahoo	Member Representative of CIFRI
10.	Shri Yogendra Pal Singh	Member Secretary

APPROVAL OF THE CHAIRMAN

========== Forwarded message ==========
From: Chakrapani GovindaJoseph <govind.chakrapani@es.iitr.ac.in>
To: "Yogendra Pal Singh"<yogendra78@nic.in>
Date: Mon, 05 May 2025 18:05:01 +0530
Subject: Re: Fwd: Re: Draft MOM of 30th EAC (RVHEP) meeting held on 30.04.2025-reg.
========== Forwarded message ==========

Approved.
Chakrapani