

## **MINUTES OF THE 36<sup>TH</sup> MEETING OF THE EXPERT APPRAISAL COMMITTEE FOR RIVER VALLEY AND HYDROELECTRIC PROJECTS HELD ON 30<sup>TH</sup> JULY 2025 THROUGH VIDEO CONFERENCE**

The 36<sup>th</sup> 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 30<sup>th</sup> July, 2025 on 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 35<sup>th</sup> EAC meeting:**

The Minutes of the Meeting held on 35<sup>th</sup> EAC meeting on 11<sup>th</sup> July, 2025 were confirmed.

### **Agenda Item No. 36.1**

**Khadakwasala Fursungi Tunnel Project substitute to New Mutha Right Bank Canal KM 1 to Km 34 in an area of 23.8364 Ha located at Village Akole, Rui etc, Sub-district Indapur, Haveli, Pune City, etc. District Pune, Maharashtra by M/s Executive Engineer IPI Division Bsb Pune – Environmental Clearance - reg.**

**[Proposal No. IA/MH/RIV/530305/2025; F. No. J-12011/16/2024-IA-I(R)]**

**36.1.1:** The proposal is for grant of Environmental Clearance (EC) to the project for Khadakwasala Fursungi Tunnel Project substitute to New Mutha Right Bank Canal KM 1 to Km 34 in an area of 23.8364 Ha located at Village Akole, Rui etc, Sub-district Indapur, Haveli, Pune City, etc. District Pune, Maharashtra by M/s Executive Engineer IPI Division Bsb Pune.

**36.1.2:** 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. The Khadakwasla Irrigation Project comprises 4 Dams the Panshet dam (10.65 TMC) (Ambi River), the Varasgaon Dam (12.82TMC) (Mose River), & Temghar Dam (3.71 TMC) (Mutha River) the Khadakwasla Dam (1.97 TMC) (Mutha river). Storage capacity of four reservoirs is 29.15 TMC

Length of Existing canal	New Mutha Right Bank Canal 202 KM and Old Mutha Right Bank Canal 109 KM.
Capacity	39.63 Cumecs + 4 Cumecs
Gross Command area	117837 ha
Culturable command Area	101688 ha
Irrigable command Area	62146 ha

Number of Villages Under Command	107
District	Pune (Tehsils - Haveli ,Daund , Baramati, Indapur)

- ii. The Tunnel is a substitute to New Mutha Right Bank Canal Km 1 to 34 and proposed in upstream of Khadakwasla dam in Pune district of Maharashtra. The proposed Intake site is in upstream of Kadakwasla Dam and outlet at in Canal CH-34/00. The outlet site is located at Fursungi village, which is about 20 km from Pune city. Khadakwasla dam on the Mutha River situated 21 km from the City of Pune. This dam is one of the main sources of water for Pune city as well as for irrigation in Daund, Indapur, Haveli, Baramati Taluka.
- iii. First Administrative approval received vide GOM vide letter No. K. MID/1158/J dated 10/06/1958 and subsequent amendment till 1982 and the project is completed before 1994 in various stages. The tunnel between Khadakwasala- Dam to Fursungi is proposed substitutes for New Mutha Right Bank Canal Km 1 to 34. Total length of this Tunnel (Tunnel+ Cut & Cover + Channel) is 26.667 Km. The outlet site is located at Fursungi village, which is about 20 km from Pune city.
- iv. The geographical co-ordinates of the project are:

Name of the Proposal	Proposed Khadakwasala - Fursungi Tunnel Project Substitute to New Mutha Right Bank Canal KM 1 to KM 34, Dist. Pune, Maharashtra
Location (Including coordinates)	Latitude (N): 18° 26' 02" N and 18° 27' 43" N Longitude(E): 73° 46' 15" E and 74° 01' 02" E
Inter- state issue involved	No
Seismic zone	III

v. **Proposed Project: -**

The tunnel between Khadakwasala- Dam to Fursungi is proposed substitutes for New Mutha Right Bank Canal Km 1 to 34. Total Length of this Tunnel (Tunnel+ Cut & Cover + Channel) is 26.667 Km.

The details of proposed tunnel are as below

Particulars	Details
Tunnel	23.450 km
Cut & Cover	2.350 km
Open Channel	0.867 km
Total Length of Project	26.667 km

Method Of Construction	Drill & Blast Method
Shape of Tunnel	Horse Shoe
No. of Shafts	06
Area to be restored from existing command Area	3471 ha.

vi. **Status of Clearances**

**Environmental Clearance:** - The original Khadakwasla Dam Construction work was started in 1860 and completed in 1878. Hence Environmental Clearance was not applicable to existing project. A tunnel between Khadakwasala Dam to Fursungi is proposed substitutes for New Mutha Right Bank Canal km 1 to 34 is applied for Environmental Clearance As per the Gazette Notification dated 14th Sep, 2006 and its subsequent amendments. ToR Application Proposal no. IA/MH/RIV/459818/2024.

**Government of Maharashtra approval:** - Khadakwasala- Fursungi Tunnel Project is administratively approved by Govt. of Maharashtra vide resolution GR. No. प्रमाप्र-2023/(प्र.क्र.294/2023)/सिब्य(कामे) dated 05/09/2024.

**Forest Clearance:** Total area of forest affected due to project is 0.8064ha.

- Stage 1 Clearance granted for 0.8064 ha of forest land. vide online Proposal No. FP/MH /Minor Canal/ 460637/ 2024 dated 30/01/2025
- Stage 2 Clearance granted vide online Proposal No. FP/MH/MinorCanal/460637/2024 dated 22.03.2025

vii. **Land Requirement**

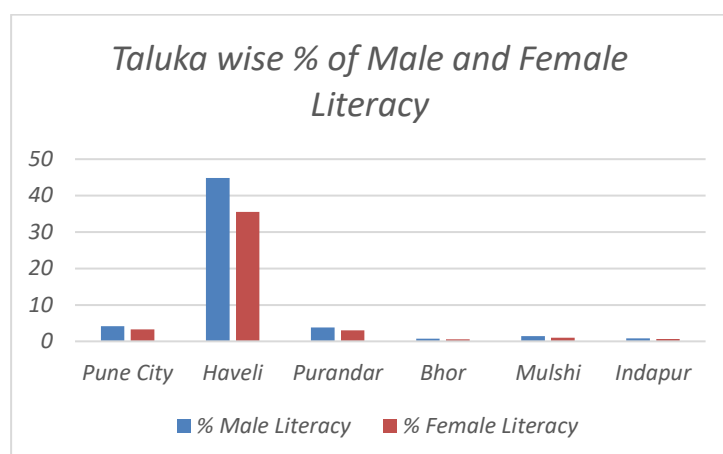
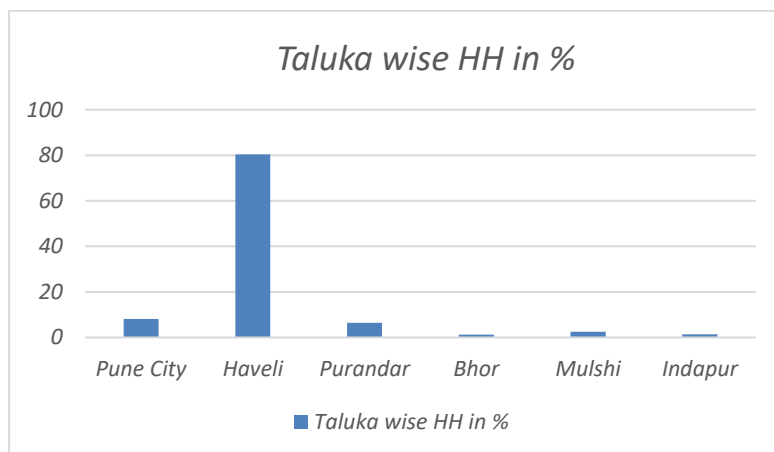
Total land required for New Mutha Right Bank Canal Km 1 to 34 PR is 23.8364 ha. 0.8064 Ha Forest land and Private land of around 23.03 ha is proposed for acquisition. Land acquisition will be required for tunnel shafts, open channel and cut & cover portion. The land acquisition will be done and compensation shall be paid to land owners as per the Right to Fair Compensation & Transparency in Land acquisition, Rehabilitation and Resettlement Act 2013 or as per the Government of Maharashtra GR dated 12 May, 2015 for purchase of land for irrigation projects through private negotiation.

viii. **Command Area Details**

The New Mutha Right Bank Canal irrigates an extensive command area spanning four talukas in Pune District: Haveli, Baramati, Daund, and Indapur. The total Gross Command Area (GCA) is 117,837 ha, of which 101,688 ha fall under Culturable Command Area (CCA). The Irrigable Command Area (ICA), which is the area actually proposed for irrigation, covers 62,146 ha. 2.18 TMC water will be saved and can be

used for Irrigation and Non-Irrigation purposes. Total 3471 ha command area will be restored from the saved water.

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



x. **Water requirement:**

**Actual Discharge through Tunnel:** 42.76 Cumecs (1510 Cusecs)

**Water Saving:** 2.18 TMC

Water (during construction stage): 200 KLD (Source: Water Tanker)

xi. **Project Cost:** The estimated project cost is Rs 2190.47 crores with a recurring annual cost of Rs 160 lakhs. Total capital cost earmarked towards environmental pollution control measures is Rs. 193.00 lakhs.

xii. **Project Benefit:** Total employment will be for 58 persons as direct & 20 persons as indirect, after expansion. Proponent proposes to allocate Rs 1095 lakh @ of 0.50 % towards CER (Corporate Environment Responsibility) (as per the 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/Wildlife Sanctuary/ESA	Tehsil	Distance	Direction
1	Ghera Sinhagad Village (ESA Western Ghat)	Haveli	3.65 km	SW
2	Rajiv Gandhi Zoological Park and Wildlife Research Center	Pune	1.65 km	N

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

Sr. No	Approvals	Amount (Lakh)	Remarks
Khadakwasala Complex			
1	Original Approval Government Resolution	1054.59	GOM vide letter No. K. MID/1158/J dated 10/06/1958
2	Revised Government Resolution	2966	GOM letter No. Khadak/1168/35567/ IP-4/ Dt.17/06/1972
3	Revised Government Resolution	3822	GOM letter No. Khadak/1104/85964/ IP-4/Dt.28/10/1974
4	Government Resolution	10858	GOM letter No. Khadak/ 1081/ 522/ (1962)MA- Dt.21/01/1982
Khadakwasla- Fursungi Tunnel Project			
5	Govt. of Maharashtra	219047	Khadakwasala- Fursungi Tunnel Project is administratively approved by Govt of Maharashtra vide resolution dated 05/09/2024 <b>प्रमाण-2023/(प्र.क्र.294/2023)/सिब्य(कामे)</b>
6	Stage 1 & 2 Clearance	0.8064 ha forest Land	❖ Stage 1 Clearance granted for 0.8064 ha of forest land. vide online Proposal No. FP/MH /Minor Canal/ 460637/ 2024 dated

			30/01/2025 ❖ Stage 2 Clearance granted vide online Proposal No. FP/MH/MinorCanal/460637/2024 dated 22.03.2025
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xv. **Resettlement and rehabilitation:**

**Private land:** 23.03 ha is proposed for acquisition (8 villages)

- ❖ 11.71 ha land required for tunnel shafts, approach road, open channel and cut & cover portion.
- ❖ Remaining 11.32 ha land will be taken on rent during the construction phase.
- ❖ The land acquisition will be done and compensation shall be paid to land owners as per the, The Right to Fair Compensation & Transparency in Land acquisition, Rehabilitation and Resettlement Act 2013 or as per the Government of Maharashtra GR dated 12 May, 2015 for purchase of land for irrigation projects through private negotiation.
- ❖ 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	Taluka	District	Particular	Village name	Gut No.
1	Haveli	Pune	Shaft no. 1	Kirkatwadi	356, 358, 359, 360
2			Shaft no. 2	Dhayari	35, 36
3			Shaft no. 3	Mangadewadi	6, 9, 10
4			Shaft no. 4	Yevalewadi	29, 30, 35, 36
5			Shaft no. 5	Vadachiwadi	33, 34
6			Shaft no. 6	Holkarwadi	111, 116
7			Cut & Cover	Vadaki	128, 129, 130, 183, 187
8			Open Channel	Loni Kalbhor	1995, 1997, 1996, 1998, 1971, 2010, 2009, 2008, 2007, 2006, 2005, 2013, 2014, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2137, 2138, 2140, 2141, 2152, 2153, 2151, 2168, 2167, 1894, 1893, 1892, 1891, 1890, 1889, 1888, 1887, 1886, 1885

xvi. **Scheduled –I species:**

Sr. No	Class	Scientific Name	Common Name	IWPA Status	IUCN Status
1.	Mammal	<i>Panthera pardus</i>	Leopard	Schedule - I	VU
2.	Mammal	<i>Hyena hyaena</i>	Striped Hyena	Schedule - I	LC
3.	Mammal	<i>Canis lupus Sykes</i>	Wolf	Schedule – I	LC
4.	Mammal	<i>Felis chaus</i>	Jungle cat	Schedule – I	LC
5.	Mammal	<i>Vulpes bengalensis</i>	Fox	Schedule – I	LC
6.	Mammal	<i>Muntiacus vaginalis</i>	Barking Deer	Schedule – I	LC
7.	Reptile	<i>Eryx johnii</i>	Red sand boa	Schedule – I	NT
8	Reptile	<i>Daboia russelli</i>	Russell's Viper	Schedule – I	NT
9.	Reptile	<i>Ptyas mucosa</i>	Indian Rat snake	Schedule – I	LC
10.	Reptile	<i>Naja naja</i>	Indian Cobra	Schedule – I	LC
11	Reptile	<i>Varanus bengalensis</i>	Indian monitor lizard	Schedule – I	NT
12.	Reptile	<i>Crocodylus palustris</i>	Muggar	Schedule – I	NT
13.	Bird	<i>Platalea leucorodia</i>	Eurasian Spoonbill	Schedule – I	LC
14	Bird	<i>Aythya ferina</i>	Common Poachard	Schedule – I	VU
15	Bird	<i>Haliastrus indius</i>	Brahmini Kite	Schedule – I	NT
16	Bird	<i>Accipter badius</i>	Shikra	Schedule – I	NT
17	Bird	<i>Hieraetus fasciatus</i>	Bonellie's Eagle	Schedule - I	LC
18	Bird	<i>Butastur teesa</i>	White-eyed Buzzard	Schedule - I	LC
19	Bird	<i>Spilornis cheela</i>	Crested Serpent Eagle	Schedule – I	LC

20	Bird	<i>Falco tinnunculus</i>	Common Kestral	Schedule – I	LC
21	Bird	<i>Pavo cristatus</i>	Indian Peafowl	Sch I & IV	LC
22	Bird	<i>Sterna aurantia</i>	River Tern	Schedule – I	VU
23	Bird	<i>Tyto alba</i>	Barn Owl	Schedule – I	LC

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

xvii. **Alternative Studies:**

**Summary of Alternatives**

Challenging area	Alt - IIA	Alt – 1	Alt – 2	Alt – 3	Alt – 4	Alt - 5
Length (km)	<b>26.75</b>	25.545	25.670	25.445	26.740	25.670
Rock cover (m)	<b>20-60 m Low cover for most of the stretch</b>	80-160 m From 3 – 16 km	20-60 m Low cover for most of the stretch	20-60 m Low cover for most of the stretch	70-200m most of stretch	80-200m most of stretch
Cut & Cover Tunnel Length (km)	<b>Around 3.2 km</b>	Around 1 km	Around 1.5 km	Around 1.75 km	Around 1 km	Around 1 km
Seepage (Lake Jambhulwadi)	<b>Might be high</b>	Might be low	Might be high	Might be high	Might be low	Might be low
Railway line	<b>To be taken care</b>					

xviii. **Baseline Environmental Scenario:**

Particulars	Details
Period of baseline data collection/Sampling period.	Baseline Study Period Season 1: March to May 2024 Season 2: June to August 2024 Season 3: October to December 2024
(Air, noise, water, land)	<b>AAQ parameters at 8 locations (min. &amp; Max.)</b> <ul style="list-style-type: none"> <li>PM10 = 30.3 to 87.5 µg/m<sup>3</sup></li> <li>PM2.5 = 12.8 to 47.5 µg/m<sup>3</sup></li> <li>SO<sub>2</sub> = 5.2 to 41.2 µg/m<sup>3</sup></li> <li>NO<sub>x</sub> = 9.2 to 56.9 µg/m<sup>3</sup>.</li> <li>CO = BDL</li> </ul> <b>Surface water samples (4 samples)</b>



Parameter	Season 1	Season 2	Season 3
pH	7.05 to 7.83	6.58 to 7.5	7.1 to 7.95
TDS	154 to 352 mg/L.	112 to 318 mg/lit.	125 to 343 mg/lit
Total Hardness as CaCO <sub>3</sub> ,	154.3 to 517 mg/lit.	169.54 to 490.12 mg/lit.	171 to 514 mg/lit.
Calcium as Ca	18.16 to 50.73 mg/lit	20.84 to 51.16 mg/lit	23.12 to 51.25 mg/lit
Magnesium as Mg	8.42 to 21.78 mg/lit	11.23 to 20.95 mg/lit	11.24 to 23.02 mg/lit
Chloride as Cl	25.73 to 54.25 mg/lit	14.18 to 44.16 mg/lit	13.49 to 42.37 mg/lit
Sulphate as SO <sub>4</sub>	8.52 to 24.12 mg/lit	7.12 to 25.02 mg/lit	10.98 to 23.37 mg/lit.
BOD (too high looks like adirt drain)	Below 1 to 63 mg/lit	Below 1 to 42 mg/lit	Below 1 to 56 mg/lit
COD	27 to 110 mg/lit	18 to 60 mg/lit	32 to 135 mg/lit
DO	3.2 to 6 mg/lit	3.6 to 6.1 mg/lit	3.8 to 6.2 mg/lit
Total Coliforms	present	present	present
<b>Ground Water samples at 36 locations</b>			
Parameters	Season 1	Season 2	Season 3
pH	7.15 to 7.57	7.02 to 7.67	7.2 to 7.69
Total Dissolved Solids	272 to 414 mg/lit.	264 to 420 mg/lit.	259 to 425 mg/lit.
Total Hardness as CaCO <sub>3</sub>	154.13 to 190.13 mg/lit.	123.69 to 187.16 mg/lit.	133.18 to 193.16 mg/lit.
Calcium as Ca	36.52 to 72.4 mg/lit &	40.14 to 60.12 mg/lit	43.54 to 55.84 mg/lit

	Magnesium as Mg	12.24 to 26.5 mg/lit	14.15 to 29.54 mg/lit	13.25 to 27.15 mg/lit
	Chloride as Cl	28.52 to 58.83 mg/lit &	32.16 to 56.12 mg/lit	32.43 to 60.13 mg/lit
	Sulphate as SO4	14.69 to 32.7 mg/lit.	16.54 to 32.64 mg/lit.	13.25 to 34.65 mg/lit.
	<b>Noise levels Leq (Day &amp; Night) at 10 locations:</b> The Leq values for day time was observed to be			
	Zone /Area	Day Time	Night Time	
	Residential Zone	51.2 to 68.2 dB(A)	60.6 to 60.6 dB (A).	
	Silent Zone	51.6 to 52.2dB (A)	42.8 to 43.1 dB (A).	
	Commercial Zone	65.8 to 69.4dB (A	56.1 to 60.5 dB (A).	
	<b>Soil Quality at 12 Locations</b>			
	Parameter	Season 1	Season 2	Season 3
pH	7.57 to 8.05.	7.49 to 7.99.	7.57 to 8.02.	
Conductivity	474.9 to 745.5 µs/cm	483.7 to 727.6 µs/cm.	436.4 to 763.5 µs/cm.	
N	126.44 to 175.1 kg/ha	108.13 to 170.12 kg/ha	111.52 to 178.02 kg/ha	
P	7.58 to 13.9 kg/ha	7.32 to 13.21 kg/ha	8.05 to 14.2 kg/ha	
K	145.12 to 190.13 kg/ha	142.67 to 190.13 kg/ha	138.54 to 190.14 kg/ha	
flora and fauna of the project area, aquatic ecology, etc.	Total 280 floral species were recorded in and around the project area (i.e. 10 km radius study). Among them 179 Trees, 93 shrubs, 5 Herb & 3 climbers etc. <b>Fauna Diversity:</b> <ul style="list-style-type: none"><li>• 11 mammal species,</li><li>• 161 bird species,</li><li>• 62 freshwater Fish species,</li><li>• 16 reptile species, and</li><li>• 27 RET &amp; 23 Schedule I (IWPA 1972)</li></ul>			

Brief description on hydrology and water assessment as per the approved Pre-DPR:	<b>Actual Discharge through Tunnel:</b> 42.76 Cumecs (1510 Cusecs) <b>Water Saving:</b> 2.18 TMC
Additional detail (If any)	

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

**Domestic Waste:**

Name of Waste	Source	Qty (TPA)
Dry Waste	Labour Colony	147.6
Wet Waste	Labour Colony	98.4

**Details of Excavation Waste (Muck)**

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

Name of Waste	Source	Qty (cu.m)	Method of Disposal
Muck	Excavation	1670000	❖ 375000 cu.m shall be used for backfilling of open channel portion. ❖ 600000 cu.m stone & aggregates shall be utilised for construction. ❖ Balance 695000 cu.m material shall be utilised for low lying area and adjoining Quarry area.

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

Advertisement for PH with date	<b>Marathi Newspaper</b> Pune: Loksatta dated 25/01/2025, A corrigendum was also published on 21st February 2025 in the same newspaper, <b>English Newspaper:</b> Pune: National Newspaper Indian Express dated 25/01/2025, A corrigendum was also published on 21st February 2025 in the same newspaper
Date of PH	Pune: 28/02/2025
Venue	Khadakwasla Judo Hall, Bypass road, Behind petrol pump, Khadakwasla, Haveli, Dist Pune
Chaired by	Hon. Jyoti Kadam - Chairman Resident Deputy Collector / Additional District Magistrate, Pune

	Shri. Jagannath Salunkhe - Member Regional Officer, MPCB, Pune
	Shri. Kartikeya Langote - Convener Sub Regional Officer, MPCB, Pune-1
Main issues raised during PH	<ol style="list-style-type: none"> <li>1. The land acquisition will be done and compensation shall be paid to land owners as per the, The Right to Fair Compensation &amp; Transparency in Land acquisition, Rehabilitation and Resettlement Act 2013.</li> <li>2. Where will the muck from tunnel excavation be disposed off?</li> <li>3. In Dhayari village, where the tunnel will pass, will there be any shafts? If not, since the tunnel is 80 meters underground, will the Pune Municipal Corporation or the Urban Development Department raise any objections for building permits?</li> <li>4. What will be done with the to be vacant land of existing new Mutha right canal in future?</li> </ol>
No. of people attended	Pune: 96

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

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

**1. EAC Meeting Details:**

Date of earlier EAC meetings	<ol style="list-style-type: none"> <li>1. 11th Meeting of EAC, MoEFCC, New Delhi held on 27/06/2024 (Agenda Item No. 11.5) for Terms of Reference (ToR)</li> <li>2. 18<sup>th</sup> Meeting of EAC, MoEFCC, New Delhi held on 05/11/2024 (Agenda Item No. 18.1) for Reconsideration for Terms of References (TOR) - reg.</li> <li>3. 28<sup>th</sup> Meeting of EAC, MoEFCC, New Delhi held on 15/04/2025 (Agenda Item No. 28.1) for Environmental Clearance.</li> </ol>
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**2. Project details:**

Name of the Proposal	Proposed Khadakwasala - Fursungi Tunnel
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	Project Substitute to New Mutha Right Bank Canal KM 1 to KM 34, Dist. Pune, Maharashtra
Proposal No.	IA/MH/RIV/530305/2025
Location (Including Coordinates)	Latitude (N): 18o 26' 02" N and 18o 27' 43" N Longitude (E): 73o 46' 15" E and 74o 01' 02" E
Company's Name	Executive Engineer Irrigation Project Investigation Division (BSB), Water Resources Department, Pune Maharashtra Krishna Valley Development Corporation (MKVDC), Pune 411011
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)	Latitude (N): 18o 26' 02" N and 18o 27' 43" N Longitude(E): 73o 46' 15" E and 74o 01' 02" E
Inter- state issue involved	No
Proposed on River/ Reservoir	Khadakwasla Dam
Type of Hydro-electric project	Not Applicable
Seismic zone	Zone III (i. e. Moderate Risk Zone)

### 3. Category details:

Category of the project	1 (c) Cat. 'A'					
Capacity / Cultural command area (CCA)	New Mutha Right Branch Canal	<b>Taluka</b>	<b>GCA (Ha)</b>	<b>CCA (Ha)</b>	<b>ICA (Ha)</b>	
		Haveli	10968	9465	5785	
		Baramati	1859	1604	980	
		Daund	53090	45814	27999	
		Indapur	51920	44805	27382	
		<b>Total</b>	<b>117837</b>	<b>101688</b>	<b>62146</b>	
Attracts the General Conditions (Yes/No)	Yes, ESA Western Ghat Ghera Sinhagad Village located @ 3.65 km from proposed alignment					

### 4. ToR/EC Details:

ToR Proposal No.	IA/MH/RIV/459818/2024, F. No. J J-12011/16/2024-IA-I(R)								
EAC meeting date	05/11/2024								
ToR Letter No.	J-12011/16/2024-IA-I(R)								
ToR grant Date	03/12/2024								
Cost of project	Rs. 2190.47								
Total area of Project	Nature of Land involved in (Ha)	Private land (Ha)	Forest/Govt. land (Ha)		Total Area required (Ha)				
	Tunnel + Cut & Cover and Open Channel	23.03* Ha	0.8064 Ha**		23.8364 Ha				
	Submergence	0	0		0				
	Total	23.03 Ha	0.8064 Ha		23.8364 Ha				
	* 11.71 Ha private land acquired & remaining 11.32 Ha land will be taken on rent								
	Forest Land details**								
	Sr. no.	Village	Ga. t No.	Chainage		Lengt h	Widt h	Area (Sq.m)	Area (Ha.)
				From	To				
	1	Khadakwasla	81	50	350	300	7.2	2160	0.2160
	2	Narhe	17	6420	6780	360	7.2	2592	0.2592
	3	Mangadewadi	4	8860	9040	180	7.2	1296	0.1296
	4	Katraj	39	11370	11650	280	7.2	2016	0.2016
						Total		8064	0.8064
Height of Dam from River Bed (EL)	NA								
Details of submergence area	Not applicable as there is no submergence.								
District to provide irrigation facility (if applicable)	Pune								
Details of tunnels on upper level & lower level and length of canal (if	Tunnel		23.450 km						
	Cut & Cover		2.350 km						
	Open Channel		0.867 km						

applicable)	Total Length of Project		26.667 km			
No. of affected Village.	8 villages					
No. of Affected Families	Sr. No	Taluka	District	Particular	Village name	Gut No.
	1	Haveli	Pune	Shaft no. 1	Kirkatwadi	356, 358, 359, 360
	2			Shaft no. 2	Dhayari	35, 36
	3			Shaft no. 3	Mangadewadi	6, 9, 10
	4			Shaft no. 4	Yevalewadi	29, 30, 35, 36
	5			Shaft no. 5	Vadachiwadi	33, 34
	6			Shaft no. 6	Holkarwadi	111, 116
	7			Cut & Cover	Vadaki	128, 129, 130, 183, 187
	8				Open Channel	Loni Kalbhor

						2022, 2023, 2024, 2025, 2137, 2138, 2140, 2141, 2152, 2153, 2151, 2168, 2167, 1894, 1893, 1892, 1891, 1890, 1889, 1888, 1887, 1886, 1885
Project Benefits	<ul style="list-style-type: none"> <li>❖ 2.18 TMC water will be saved and can be used for Irrigation and Non-Irrigation purpose.</li> <li>❖ Increasing demand for drinking and industrial purposes in Pune city and surroundings, leakage in canals etc. Due to these reasons, the stress on the irrigation sector can be reduced through this saving. Also, additional water may be available for drinking.</li> <li>❖ Total 3471 Ha command area has been restored due to saved water.</li> <li>❖ Land acquisition will not require except for tunnel shafts, approach road, open channel and cut &amp; cover portion (11.71 Ha). So, as there will be no question of rehabilitation.</li> </ul>					
R&R details	<p>Private land: 23.03 Ha is proposed for acquisition.</p> <ul style="list-style-type: none"> <li>❖ 11.71 Ha land required for tunnel shafts, approach road, open channel and cut &amp; cover portion.</li> <li>❖ Remaining 11.32 Ha land will be taken on rent during the construction phase.</li> </ul>					



	<ul style="list-style-type: none"><li>❖ The land acquisition will be done and compensation shall be paid to land owners as per the, The Right to Fair Compensation &amp; Transparency in Land acquisition, Rehabilitation and Resettlement Act 2013 or as per Government of Maharashtra GR dated 12 May, 2015 for purchase of land for irrigation projects through private negotiation.</li><li>❖ As there are no households in the land to be acquired, there is no issue of rehabilitation &amp; resettlement of the land owners.</li></ul>				
Command area	New Mutha Right Branch Canal	Taluka	GCA (Ha)	CCA (Ha)	ICA (Ha)
		Haveli	10968	9465	5785
		Baramati	1859	1604	980
		Daund	53090	45814	27999
		Indapur	51920	44805	27382
		Total	117837	101688	62146
Types of Waste and quantity of generation during Construction/ Operation	Name of Waste		Source	Qty (TPA)	
	Dry Waste		Labour Colony	147.6	
	Wet Waste		Labour Colony	98.4	
	Name of Waste		Source	Qty (cu.m)	Method of Disposal
	Muck	Excavation	1670000	<ul style="list-style-type: none"><li>❖ 375000 cu.m shall be used for backfilling of open channel portion.</li><li>❖ 600000 cu.m stone &amp; aggregates shall be utilised for construction.</li><li>❖ Balance 695000 cu.m material shall be utilised for lo lying area and adjoining</li></ul>	

				Quarry area.
Material used for blasting and its composition as per DGMS standards.	Controlled blasting activity is proposed during construction phase.			
E-Flows for the Project	NA			
Is Projects earlier studied in Cumulative Impact assessment & Carrying Capacity studies(CIA&CC) for River in which project located. If yes then  a) E-flow with TOR/Recommendation by EAC as per CIA&CC study of River Basin.  b) If not the E-Flows maintain criteria for sustaining river ecosystem.	NA			
Details on provision of fish pass	Not applicable			
Project benefit including employment details (no of employee)	<p><b>During construction phase</b></p> <p><b>Permanent employment</b></p> <ul style="list-style-type: none"> <li>No. of permanent employment: 75</li> <li>Period of employment (days): 7461</li> </ul> <p><b>Temporary employment</b></p> <ul style="list-style-type: none"> <li>Temporary employment: 1350</li> <li>Temporary / Contractual employment (No. of Man days): 1972350</li> </ul> <p><b>During operational phase</b></p> <ul style="list-style-type: none"> <li>Permanent employment proposed: 58</li> <li>Temporary employment: 20</li> </ul>			
Area of Compensatory Afforestation (CA) with tentative no of plantation.	No trees will be affected due to the proposed project. However, 25000 number of trees will be planted and Maintained.			
Previous EC details	Not applicable			

EC Compliance Report by R.O, MOEF&CC	Not Applicable
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## 5. Muck Management Details:

No. of proposed disposal area/ (type of land- Forest/Pvt. land)	Muck likely to be disposal 4 site at low lying area adjacent to project Site  <b>Method of Disposal</b> <ul style="list-style-type: none"> <li>375000 cu.m shall be used for backfilling of open channel portion.</li> <li>600000 cu.m stone &amp; aggregates shall be utilised for construction.</li> <li>Balance 695000 cu.m material shall be utilised for low lying area and adjoining Quarry area.</li> </ul>			
Cross section of proposed muck area, Height of muck with slope.	Utilization of 60 % of excavated material shall be used for backfilled of open channel portion and stone & aggregates shall be utilized for construction. 40% shall be filled in low laying areas and abundant Quarry Area.			
Distance of muck disposal area(location), from muck generation sources (project area)/River, HFL of proposed muck disposal area.	Average 0 km to 5 km			
Total Muck Disposal Area	<b>Name of Waste</b>	<b>Source</b>	<b>Qty (cu.m)</b>	<b>Method of Disposal</b>
Estimate Muck to be generated	Muck	Excavation	1670000	❖ 375000 cu.m shall be used for backfilling of open channel portion. ❖ 600000 cu.m stone & aggregates shall be utilised for construction. ❖ Balance 695000 cu.m material shall be utilised for low lying area and adjoining Quarry area.

Transportation	By Road
Monitoring mechanism for Muck Disposal Transportation	Environmental Management Cell (EMC) shall monitor mechanism of muck disposal.

## 6. Land Area Breakup:

Private land	23.03 Ha (11.32 ha land on rent basis and 11.71 ha land will be acquired)			
Government land/Forest Land	0.8064 Ha * Stage 2 Clearance granted vide online Proposal No. FP/MH/MinorCanal/460637/2024 dated 22.03.2025			
Submergence area/Reservoir area	NA			
Land required for project components	Nature of Land involved in (Ha)	Private land (Ha)	Forest/Govt. land (Ha)	Total Area required (Ha)
	Tunnel + Cut & Cover and Open Channel	23.03	0.8064	23.8364 Ha
	Submergence	0	0	0
	Total	23.03 Ha	0.8064 Ha	23.8364 Ha

## 7. 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/Protect ed Forest Land	Yes	Forest Land								
		Sl.	Village	Gat No.	Chainage		Length	Wid th	Area (Sq.m)	Area (Ha.)
					From	To				
		1	Khadakwasla	81	50	350	300	7.2	2160	0.2160
		2	Narhe	17	6420	6780	360	7.2	2592	0.2592

		3	Mangadewadi	4	8860	9040	180	7.2	1296	0.1296	
		4	Katraj	39	11370	11650	280	7.2	2016	0.2016	
								Total		8064	0.8064
		Protected Areas present in the study area									
		Sr. No.	Name of the Grove/Wildlife Sanctuary/ ESA				Tahsil	Distance	Direction		
1	Ghera Sinhagad Village (ESA Western Ghat)				Haveli	3.65 km	SW				
2	Rajiv Gandhi Zoological Park and Wildlife Research Center				Pune	1.65 km	N				
National Park	No	No within 10 km Radius									
Wildlife Sanctuary	No	No within 10 km Radius									
Archaeological sites monuments/ historical temples etc.	Yes	List of Historic places in study area 1. Shaniwar Wada 2. Sinhagad Fort									
Additional information (if any)	-	-									

#### 8. Court case details: Nil

#### 9. Status of other statutory clearances

Particulars	Letter no. and date
Status of Stage- I FC	❖ Stage 1 Clearance granted for 0.8064 ha of forest land. vide online Proposal No. FP/MH /Minor Canal/ 460637/ 2024 dated 30/01/2025 ❖ Stage 2 Clearance granted vide online Proposal No. FP/MH/MinorCanal/460637/2024 dated 22.03.2025
Approval of Central Water Commission	Khadakwasala- Fursungi Tunnel Project is administratively approved by Govt of Maharashtra vide resolution dated 05/09/2024
Approval of Central Electricity Authority	NA

Additional detail (If any)	NA
<b>Is FRA (2006) done for FC-I</b>	-

## 10. 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	-	18.00
2	Noise Level	-	12.00
3	Surface and Ground Water Quality	-	25.00
4	Soil Quality	-	15.00
5	Solid/ hazardous wastes	03.00	15.00
6	Green Belt Development	207.00	50.00
7	Fisheries Conservation & Management Plan	15.00	
8	Labour Management Plan	25.00	
9	Wildlife Conservation Plan	70.00	
10	Muck Management Plan	25.00	
11	Health & Safety	-	25.00
12	Command Area Development Plan	12050	
13	Corporate Environmental Responsibility	1095.00	-
Summary of allocation of fund for EMP			
1.	EMPs: (eg. Air Environment, Water Environment)	193.00 L	
2.	Capital Cost (in Cr.)	2190.47	
3.	Recurring Cost per annum (In Lakhs)	160.00 L	

**36.1.3** Earlier, the proposal was considered by the Expert Appraisal Committee (River Valley and Hydro-electric Sector) in its 28<sup>th</sup> meeting held on 15.04.2025. The EAC deferred the proposal seeking additional information. The PP submitted the replies of observations of EAC on PARIVESH portal on 18.07.2025. The replies of observations are:

**Query 1: Environmental Cost Benefit Analysis be conducted in terms of proximity of proposed tunnel to the Western Ghats Eco Sensitive Area and possibility analysis for use of existing canal after its reclamation and restoration.**

**Reply:**

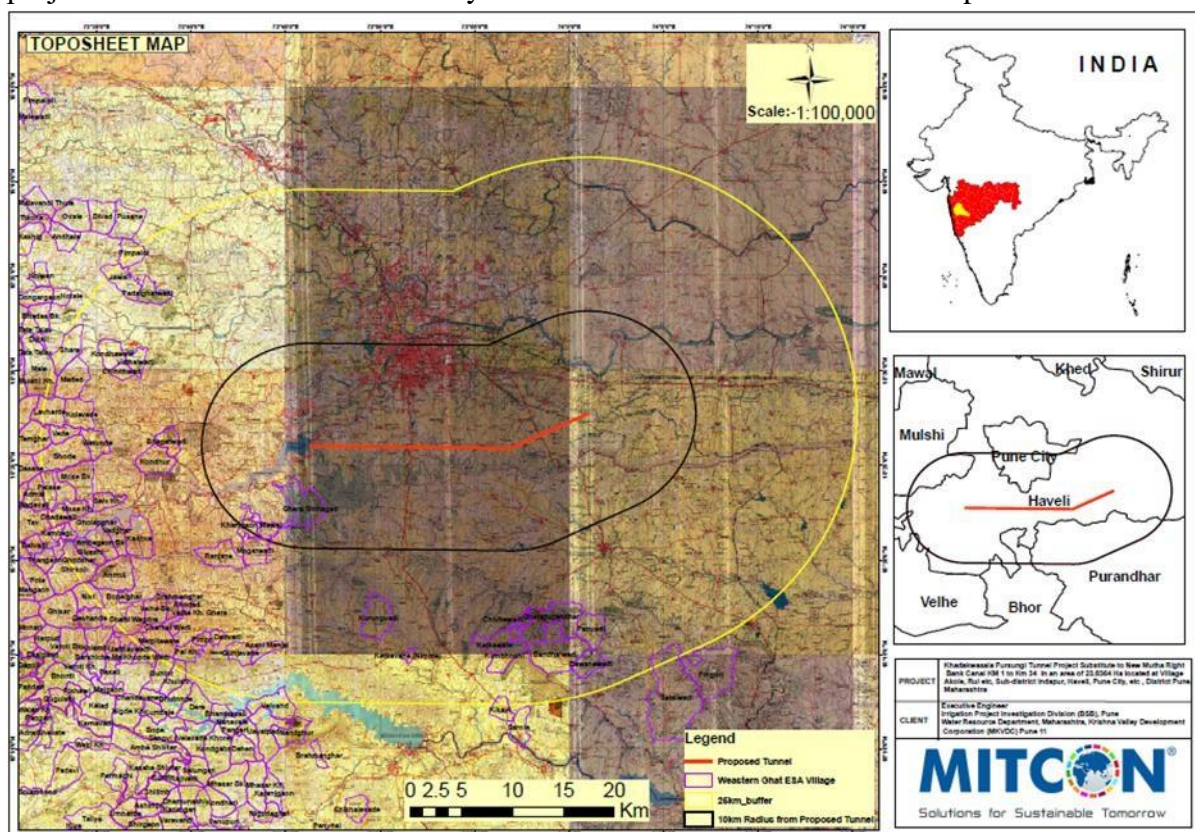
**Environment cost benefit Analysis and Justification for Tunnel Alignment**

The proposed underground tunnel alignment, intended as an alternative to the current New Mutha Right Bank Canal system, demonstrates clear superiority over other conventional options—such as the box culvert and closed pipe systems—based on comprehensive technical, financial, environmental, and socio-economic evaluations.

### 1. Proximity to the Western Ghats Eco-Sensitive Area (ESA):

One of the most crucial aspects of the proposed tunnel alignment is its relationship to the Western Ghats Eco-Sensitive Area (ESA), which lies at a safe distance of **3.65 km** from the proposed tunnel. Notably, the tunnel is to be constructed entirely underground, at depths ranging from **80 to 200 meters**, with **no construction shafts, surface disruption, or activity within the ESA boundaries**. This ensures **zero direct ecological interference** with the sensitive Western Ghats habitat. No any tree will be impacted during construction period.

Additionally, a **Wildlife Conservation Plan**, specifically aimed at protecting Schedule I species, has been proactively prepared with a dedicated budget of **₹70 lakhs**, reinforcing the project's commitment to biodiversity conservation and environmental compliance.



**Figure 1 - Topmap Showing Protected area in 25 km**

Sr. No.	Name of the Grove/Wildlife Sanctuary/ESA	Deity	Tahsil	Distance	Direction
1	Ghera Sinhadag	ESA Western Ghat	Haveli	3.65 km	SW

	Village				
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**2. Estimate of Damages for existing canal after its reclamation and restoration (Cost Benefit Analysis (CBA))**

<b>S No.</b>	<b>Parameters</b>	<b>Given Guideline</b>	<b>Evaluation</b>
1	Ecosystem Services losses due to Proposed forest diversion	<p>Ecosystem Services losses due to Proposed forest diversion (Net Present Value of the diverted forest land measuring of 0.8064 ha from the User Agency as per the orders of the Hon'ble Supreme Court dated 28.03.2008 and 09.05.2008 in IA Nos.826 in 566 with related IA's in Write Petition (Civil)No.202/1995 and Ministry's guideline).</p> <p>Note: -1: Net Present Value (NPV) of environment and ecosystem</p> <p>The Concept of Net Present Value of the forest land diverted is a scientific method of calculating the environment cost and other losses caused due to diversion of forest land for non-forestry purposes, the NPV represents the net value of various ecosystem services and other environmental services in monetary terms which the forest would have provided if the forest would not have been diverted.</p>	<p>NPV value (as per of forest Conservation act 1980) is in between Rs. 5.8 and 10.43 Lakhs per hectare.)</p> <p>Total NPV is 9.87 Lakhs.</p> <p>Life of Project:100 Years</p> <p><b>Annual Cost: 9,870 Rs = 0.0000987 Cr.</b></p>



2	Losses due to Land Acquisition	Quantified and expressed in monetary terms on actual terms as per Ready reckoner rate (The land acquisition will be done and compensation shall be paid to land owners as per the The Right to Fair Compensation & Transperancy in Land acquisition, Rehabilitation and Resettlement Act 2013 or as per Government of Maharashtra GR dated 12 May, 2015 for purchase of land for irrigation projects through private negotiation).	The project involves the Land acquisition of 11.71 hectares of barren, non-rehabilitation land, primarily for infrastructure development. Considering rate from ready reckoner is Rs 148.70 Cr. Life of Project:100 Years <b>Annual Cost: 1.487 Cr.</b>
3	Losses due to Muck Disposal	Quantified and expressed in monetary terms on actual terms as per Market rate.	A total of 11.32 hectares of land will be temporarily rented for 8 years to facilitate the safe disposal of excavated muck from tunnel construction. The estimated cost for this arrangement is 12.20 Cr. <b>Annual cost = 1.52 Cr.</b>
4	Rehabilitation and Resettlement	The social cost of rehabilitation (in additional to the cost likely to be incurred in providing residence, occupation and social services as per R&R plan)	NIL, no resettlement & rehabilitation is identified or required in forest and non-forest land which is proposed to be diverted.
5	Habitat Fragmentation Cost	While the relationship between fragmentation and forest goods and services is complex, for the sake of simplicity the cost due to fragmentation has been pegged at 50% of NPV applicable as a thumb rule.	Habitat fragmentation cost is 50% of NPV that is Rs. $9.87 \times 50\% = 4.93$ Lakhs. Life of Project:100 Years <b>Annual Cost: 4,930 Rs = 0.0000493 Cr.</b>

6	Air Pollutant	Quantified and expressed in monetary terms on actual terms	<p>The total emissions of particulate matter generated during the 4-year tunnel construction phase were estimated at 526 tons of PM10 and 105 tons of PM2.5. Using damage cost rates per kilogram of emission, derived from EEA studies and discounted for the Indian socio-economic context, the following rates were applied:</p> <p>PM10: ₹340/kg PM2.5: ₹524/kg</p> <p>Using these rates, the total environmental damage costs are calculated as:</p> <p>PM10 Cost = 526,000 kg × ₹340 = ₹17.88 crore</p> <p>PM2.5 Cost = 105,000 kg × ₹524 = ₹5.50 crore</p> <p>These rates reflect external costs associated with health impacts (e.g., respiratory illness, premature mortality), environmental degradation, and loss in productivity.</p> <p>Total Estimated Cost of PM Emissions: 23.38 Cr.</p> <p><b>Annual cost: 5.84 Cr.</b></p>
7	Public Safety Concerns (water- borne diseases)		<p>Pune has been facing a multi- faceted waterborne disease burden, from routine gastrointestinal infections (diarrhoea, typhoid, hepatitis) to rarer but serious conditions like</p>

			GBS linked to bacterial contamination.
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### 3. Estimating benefit for existing canal after its reclamation and restoration (Cost Benefit Analysis (CBA))

S No.	Parameters	Given Guideline	Evaluation
1	Irrigation Benefits	Quantified & expressed in monetary terms as per the DPR.	Benefits due to the Proposed project will provide the 2.18 TMC water will be saved and can be used for irrigation and allied pupose. Restoration of 3,471 Ha of irrigation command area, improving crop productivity. Lower maintenance compared to canal/pipe options over a 100-year tunnel life. As per the Administrative approval Net agricultural and allied uses benefits estimated at <b>292.41Cr/Annual.</b>
2	Ecological Benefits due to NMRBC Canal Reclamation project	The Incremental Ecological benefit in monetary terms due to Canal Reclamation as per Forest Conservation Act 1980..	Ecological gain due to NMRBC Canal Reclamation project, Total 297.10 ha land proposed for Green Spaces Wide range of development components: ecological restoration, recreational areas, commercial complexes, public utilities, and smart infrastructure, of which 168.70 ha area is proposed for Green Spaces (Dence Plantation, Biodiversity Park, Butterfly Park, Etc) Ecological Gain=Area×Ecological Value at 1.0× Density Factor The Ecological Value at 1.0 Density (over 50 years): ₹126.74 lakh per hectare as per Forest Conservation Act 1980). By considering minimum 0.8 density, the ecological gain for this project would be = 168.70 x 126.74 x 0.8 =17,030.34 lakh = 170.30 Cr <b>Annual Cost: 3.40 Cr.</b>
3	No. of population benefited due	As per detailed project report.	Water Saving: 2.18 TMC of water saved annually due to reduced leakage and theft. Due to saving of 2.18 TMC water 4195088

	to specific project		families will be benefited.																														
4	Economic benefit due to direct and indirect Employment Potential	As per detailed project report.	<p>Employments will be generated during the construction of the Project for a period of 4 years. Total 167.74 Cr. Annual rate: 41.93 Cr</p> <p><b>During Construction phase</b> Permanent employment proposed: 58 Temporary employment: 20</p> <p>Permanent employment No. of permanent employment: 75 Period of employment (days): 1461</p> <p>Temporary employment Temporary employment: 1350</p> <p>Temporary / Contractual employment (No. of Man days): 1972350</p> <table><tr><th>Class</th><th>Nos Employment</th><th>Working Days</th><th>Rate in RS</th><th>Amount</th></tr><tr><td>I</td><td>33</td><td>48213</td><td>2477/-</td><td>11.94 Cr</td></tr><tr><td>II</td><td>68</td><td>99348</td><td>1700/-</td><td>16.88 Cr</td></tr><tr><td>III</td><td>110</td><td>160710</td><td>1172/-</td><td>18.83 Cr</td></tr><tr><td>IV</td><td>1214</td><td>1773654</td><td>677/-</td><td>120.07 Cr</td></tr><tr><td><b>Total</b></td><td></td><td><b>2081925</b></td><td></td><td><b>167.74 Cr</b></td></tr></table>	Class	Nos Employment	Working Days	Rate in RS	Amount	I	33	48213	2477/-	11.94 Cr	II	68	99348	1700/-	16.88 Cr	III	110	160710	1172/-	18.83 Cr	IV	1214	1773654	677/-	120.07 Cr	<b>Total</b>		<b>2081925</b>		<b>167.74 Cr</b>
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<b>Total</b>		<b>2081925</b>		<b>167.74 Cr</b>																													

#### 4. Summary of Cost-Benefit Analysis for the project.

Sr. No	Damages	Benefits

1	<p>Ecosystem Services losses due to Proposed forest diversion (Net Present Value of the diverted forest land measuring of 0.8064 ha from the User Agency as per the orders of the Hon'ble Supreme Court dated 28.03.2008 and 09.05.2008 in IA Nos.826 in 566 with related IA's in Write Petition (Civil)No.202/1995 and Ministry's guideline).</p> <p>Total NPV is 9.87 Lakhs. Life of Project:100 Years</p> <p><b>Annual Cost:</b> <b>9,870 Rs</b> <b>= 0.0000987 Cr.</b></p>	<p>Ecological gain due to NMRBC Canal Reclamation project, Total 297.10 ha land proposed for Green Spaces Wide range of development components: ecological restoration, recreational areas, commercial complexes, public utilities, and smart infrastructure, of which 168.70 ha area is proposed for Green Spaces (Dence Plantation, Biodiversity Park, Butterfly Park, Etc)</p> <p>Ecological Gain=Area×Ecological Value at 1.0×Den sity Factor</p> <p>The Ecological Value at 1.0 Density (over 50 years): ₹126.74 lakh per hectare as per Forest Conservation Act 1980).</p> <p>By considering minimum 0.8 density, the ecological gain for this project would be = 169.21x126.74x0.8 =17,156.54 lakh = 171.56 Cr</p> <p><b>Annual Cost: 3.43 Cr.</b></p>
2	<p>The total emissions of particulate matter generated during the 4-year tunnel construction phase were estimated at 526 tons of PM10 and 105 tons of PM2.5. Using damage cost rates per kilogram of emission, derived from EEA studies and discounted for the Indian socio-economic context, the following rates were applied:</p> <p>PM10: ₹340/kg PM2.5: ₹524/kg</p> <p>Using these rates, the total environmental damage costs are calculated as:</p> <p>PM10 Cost = 526,000 kg × ₹340 = ₹17.88 crore PM2.5 Cost = 105,000 kg × ₹524 = ₹5.50 crore</p> <p>These rates reflect external costs</p>	<p>Water Saving: 2.18 TMC of water saved annually due to reduced leakage and theft. Due to saving of water 4195088 families will be benefited.</p> <p>Restoration of 3,471 Ha of irrigation command area, improving crop productivity. As per the Administrative approval Net agricultural and uses benefits estimated at <b>292.41 Cr/Annual.</b></p>

	<p>associated with health impacts (e.g., respiratory illness, premature mortality), environmental degradation, and loss in productivity.</p> <p>Total Estimated Cost of PM Emissions:23.38 Cr. For 4 Years.</p> <p><b>Annual cost = 5.84 Cr.</b></p>																															
3	<p>The project involves the Land acquisition of 11.71 hectares of barren, non-rehabilitation land, primarily for infrastructure development. Considering rate from ready reckoner is Rs 177.09 Cr.</p> <p>Life of Project:100 Years</p> <p><b>Annual Cost: 1.77 Cr</b></p> <p>A total of 11.32 hectares of land will be temporarily rented for 8 years to facilitate the safe disposal of excavated muck from tunnel construction. The estimated cost for this arrangement is 12.20 Cr.</p> <p><b>Annual cost = 1.52 Cr</b></p>	<p>Employments will be generated during the construction of the Project for a period of 4 years. Total 167.74 Cr.</p> <p><b>Annual Cost: 41.93 Cr</b></p> <p><b>During Construction phase</b></p> <p>Permanent employment proposed: 58 Temporary employment: 20</p> <p><b>Permanent employment</b></p> <p>No. of permanent employment: 75 Period of employment (days): 1461</p> <p><b>Temporary employment</b></p> <p>Temporary employment: 1350 Temporary / Contractual employment (No. of Man days): 1972350</p> <table><tr><th>Cl a ss</th><th>Nos Emp loym ent</th><th>Work in g Days</th><th>Rat e in RS</th><th>Amount</th></tr><tr><td>I</td><td>33</td><td>48213</td><td>2477 /-</td><td>11.94 Cr</td></tr><tr><td>II</td><td>68</td><td>99348</td><td>1700 /-</td><td>16.88 Cr</td></tr><tr><td>III</td><td>110</td><td>160710</td><td>1172 /-</td><td>18.83 Cr</td></tr><tr><td>IV</td><td>121 4</td><td>177365 4</td><td>677/-</td><td>120.07 Cr</td></tr><tr><td>To t al</td><td></td><td>208192 5</td><td></td><td>167.74 Cr</td></tr></table>	Cl a ss	Nos Emp loym ent	Work in g Days	Rat e in RS	Amount	I	33	48213	2477 /-	11.94 Cr	II	68	99348	1700 /-	16.88 Cr	III	110	160710	1172 /-	18.83 Cr	IV	121 4	177365 4	677/-	120.07 Cr	To t al		208192 5		167.74 Cr
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4	Habitat fragmentation cost is 50% of NPV that is Rs. 9.87 X 50% = 4.93 Lakhs. Life of Project:100 Years <b>Annual Cost: 4,930 Rs</b> <b>= 0.0000493 Cr.</b>	-
5	Total Cost/Loss = 0.0000987 Cr.+ 1.52 Cr.+ 1.487 Cr + 5.84 Cr. + 0.0000493 Cr = 8.84 Cr.	Total gain/benefit from project = 3.43 Cr. + 292.41 Cr. + 41.93 Cr. = 337.77 Cr.

### Conclusion:

$$\text{Cost Benefit Ratio} = \frac{\text{Total Benefit}}{\text{Total loss}} = \frac{337.74}{8.84} = 38.20$$

*Cost Benefit Ratio is 38.20 which is >1, so project is found valuable based on given/above described criteria.*

**Query 2: PP shall submit ecologically sustainable closure plan for 35 km existing canal in case Cost Benefit Analysis is in favour of proposed construction of tunnel.**

### Reply:

- The Existing canal will be used for canal operations & canal is fully functional providing water for irrigation for 62146 Ha. Land & drinking water. Considering the time period for completion of Proposed project it is not possible to close the existing canal till then.
- For the proposed work of Khadakwasala- Fursungi Tunnel Project a time period of about 5 years is expected for total completion. Reclamation work will be carried out after the completion of the Proposed work of Khadakwasala- Fursungi Tunnel Project.
- After Budget provision approved by state government & other required permission then the reclamation activity will be started.
- All required permissions such as Land use, Development authority, Budget, will be approved by state government for reclamation of existing NMRBC 0 to 35 km.

### **Ecologically sustainable closure plan for 35 km existing canal Project Overview:**

The NMRBC 0 to 35 km Canal Reclamation Plan aims to transform a 35 km stretch of canal into a vibrant, green, and people-centric linear corridor. It includes a wide range of development components: ecological restoration, recreational areas, commercial complexes, public utilities, and smart infrastructure. A critical component of this transformation is the backfilling and closure of the canal, which sets the foundation for all surface development.

**Objective:**

- Close and reclaim the canal bed in a safe, environmentally sustainable manner
- Backfill and stabilize land for civic and public usage
- Develop community amenities including gardens, parks, markets, gyms, and more
- Promote eco-tourism, walkability, and urban biodiversity
- Integrate smart, secure, and accessible public infrastructure

**Key Features (Reclamation Plan)**

Sr. No	Feature	Function / Impact
1	Dense Plantation	Increases carbon sequestration and biodiversity: Planting native/ indigenous tree species,
2	Biodiversity Park	Habitat conservation & eco-tourism
3	Butterfly Garden	Pollinator support, school awareness programs
4	Ayurvedic Plantation	Medicinal plants for public wellness
5	Botanical Garden	Plant conservation, environmental education
6	Existing Vegetation	Preserves ecological continuity
7	Parking	Needed for access; to use green pavers
8	Plaza	Social gathering, non-commercial
9	Garden	Ornamental green space
10	Park	Open leisure & community use
11	Outdoor Game Ground	Physical activity, youth engagement
12	Open Air Theatre	Culture, education in eco-setting
13	Weekly Market	Local economy boost
14	Event Space	Public celebrations, awareness programs
15	Convenient Shops	Mixed-use retail, eco-compliant materials
16	Community Center	Public use, health & civic programs

**NMRBC 0 TO 35 km Reclamation Plan Kilometer wise**

Section	Stretch (km)	Location
Segment 1	0 to 5.4 km	Khadakwasla dam to Wadgaon KH.
Segment 2	5.4 to 9.7 km	Wadgaon KH. To Parvati
Segment 3	9.7 to 14.1 km	Parvati to Swargate
Segment 4	14.1 to 22.9 km	Swargate to Hadpasar
Segment 5	22.9 to 27.2 km	Hadpasar to Manjari
Segment 6	27.2 to 34.9 km	Fursungi

**Area Statement for NMRBC 0 TO 35 Canal Reclamation Plan**



Sr. No.	SPACE	TOTAL AREA (SQ.M)	TOTAL AREA (Hectre)
1	DENSE PLANTATION	366200.04	36.62
2	PARKING	219380.09	21.94
3	PLAZA	196879.57	19.69
4	GARDEN	206994.40	20.70
5	PARK	407057.53	40.71
6	OUTDOOR GAME GROUND	182109.00	18.21
7	OPEN AIR THEATRE	33953.13	3.40
8	MARKET	68310.94	6.83
9	EVENT SPACE	55765.68	5.58
10	AYURVEDIC PLANTATION	424920.00	42.49
11	BOTANICAL GARDEN	15782.74	1.58
12	CONVENIENT SHOPS	44920.11	4.49
13	COMMUNITY CENTRE/ PARK	82337.06	8.23
14	BIODIVERSITY PARK	164666.59	16.47
15	BUTTERFLY GARDEN	106432.32	10.64
16	EXHIBITION SPACE	38242.79	3.82
17	OLYPIAN CIRCUS	26426.55	2.64
18	SMART CITY	65154.39	6.52
19	CARNIVAL SPACE	10440.89	1.04
20	MONUMENT AREA	8498.40	0.85
21	ROAD AND TRACK	246527.79	24.65
	TOTAL		297.10

**Query 3: PP shall submit details of management/reclamation plan for muck disposal sites for the muck proposed to be excavated from proposed tunnel.**

Reply:

### **Muck Management Plan**

For construction of different components of proposed project, it expects that huge earthwork will be carried out during construction stage of the project. The excavation will result in large quantity of excavated material i.e. Muck.

Muck generated from excavation of any project component is required to be disposed in a planned manner so that it takes a least possible space and is not hazardous to the environment. The muck disposal sites cause increased sedimentation in the rivers (though insignificant compared to natural sedimentation) and totally spoils the visual aesthetics of the area.

Muck, if not securely transported and dumped at pre-designated sites, can have serious environmental impacts, such as:

1. Muck, if not disposed properly, can be washed away into the main river which can cause negative impacts on the aquatic ecosystem of the river.
2. Muck disposal can lead to impacts on various aspects of environment. Normally, the land is cleared before muck disposal. During clearing operations, undergrowth perishes as a result of muck disposal.
3. In many of the sites, muck is stacked without adequate stabilization measures. In such a scenario, the muck moves along with runoff and creates landslide like situations. Many a times, boulders/large stone pieces enter the river/water body, affecting the benthic fauna, fisheries and other components of aquatic biota.
4. Normally muck disposal is done at low lying areas, which get filled up due to stacking of muck. This can sometimes affect the natural drainage pattern of the area leading to accumulation of water or partial flooding of some area which can provide ideal breeding habitat for mosquitoes.

#### **Quantity of muck generated:**

For excavation of tunnel, Total 1670000 Cubic Meters of muck will be generated. Detail of Muck generated as given below:

#### **1. Detail of muck generated**

Sr. No.	Excavation Qty Bifurcation	Coffer Dam	Intake Structure	Tunnel	Shaft	Cut & cover/ railway	Cut & Cover (Open Channel)	Sub Div/ Sec office	Other	Total	Unit
1	Soft Soil					6500.00		8.85	2000.00	8508.85	Cum
2	Hard murum & soft Rock	2989.33	5245.86				187530	29.52	4000	199794.71	Cum
3	Hard Rock		14775.08	1134390	26691	3000	261790	20.67	21200	1461866.75	Cum
		2989.33	20020.94	113439	2669	9500	449320	59.04	27200	16701	Cum

				0	1					70.3	
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## 2. Concrete & Shotcrete Qty

Sr. No.	Type of material	Total generated Qty in excavation in Cum	Total generated Qty in excavation in Mm3
1	Soft Soil	8508.85	0.00851
2	Hard murum & soft Rock	199794.71	0.19979
3	Hard Rock	1461866.75	1.46187
		1670170.31	1.67017
	Say	1670000.00	1.67

## 3. Muck management Qty wise for Construction purpose

For Construction (Concrete work)												
1	Aggregate	Cum	1120.47	7002.21	322622.64	3094.38	855.00	61380.00	3.74		396078.44	Cum
2	Sand	Cum	1776.37	4717.23	161311.32	1547.19	427.50	30690.00	1.87		200471.48	Cum
											596549.93	Cum
										Say	600000	Cum

## For Construction (Backfilling work)

For Backfilling of Cut & Cover and Oprn channel	=	<b>375000</b>	<b>Cum</b>
For Backfilling in low lying area	=	<b>695000</b>	<b>Cum</b>
Total	=	<b>1670000</b>	<b>Cum</b>

## 4. Muck Management- Location wise

Shaf t No.	Chainage	Muck Disposal Location	Distance in Km	Qty	Stack Ht. in Mtr	Arera of Muck Dispos al Locati on (In Sqm)	In Acres	In Hectar es
1	2460	Nandoshi	2.4	205502	15	13700	3.39	1.37

2	5780	Dhayari	1	175601	15	11707	2.89	1.17
3	9290	Mangadewadi	1.6	166790	15	11119	2.75	1.11
4	12200	Yevalewadi	1.0	152752	15	10183	2.52	1.02
5	15050	Vadachi wadi	2.8	153603	15	10240	2.53	1.02
6	18000	Vadachi wadi	3.1	326954	15	21797	5.39	2.18
7	Cut & Cover and Open Channel	Vadachiwadi	0.5	489057	1	489057	120	48.56
		Total		1670259		567803	139.47	56.43

## 5. Muck Management Location Details

Sr. No.	Name of Village	Lat	Long
1	Nandoshi	18°25'6.34"N	73°48'20.78"E
2	Dhayari	18.254	73.4936
3	Mangadewadi	18.2533	73.5170
4	Yevalewadi	18°25'45.58"N	73°53'23.17"E
5	Vadachiwadi	18.2514	73.5538

Name of Waste	Source	Qty (cu.m)	Method of Disposal
Muck	Excavation	1670000	<ul style="list-style-type: none"> <li>❖ 375000 cu.m shall be used for backfilling of open channel portion.</li> <li>❖ 600000 cu.m stone &amp; aggregates shall be utilised for construction.</li> <li>❖ Balance 695000 cu.m material shall be utilised for low lying area and adjoining Quarry area.</li> </ul>

## 6. Mitigation

Utilization of 60 % of excavated material shall be used in concrete preparation, backfilling of open channel portion, Approach roads, Conveyance roads, levelling, etc. and 40% shall be filled in low laying areas and adjoining quarry area.

## 7. Financial

Provision of **Rs 25 Lakhs** has been made in the estimate for the Muck Management plan

**Query 4: Site visit shall be conducted by a sub-committee of the EAC.**

**Reply:**

As per the compliance to the MoEF&CC office order no. J-12011/16/2024-IA-I(R) dated 23.06.2025 the Sub-committee comprising of Shri. Ajay Kumar Lal, Member EAC (Hydro & River Valley Project), Shri. Balram Kumar, Representative of CWC and Dr. P. R. Sakhare, Scientist E Representative from MoEF&CC undertook site visit to the "Proposed Khadakwasala Fursungi Tunnel Project Substitute to New Mutha Right Bank Canal KM 1 to Km 34, Pune, Maharashtra" on 26.06.2025. The sub-committee visited the Intake point of Tunnel, Shafts, Existing Canal, muck disposal areas and Hirwai garden (Jogging track, Cycle track) of Khadakwasala Fursungi Tunnel Project. The attendees of the site visit included project proponent authorized representatives, their consultants.

**36.1.4 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 Khadakwasala Fursungi Tunnel Project substitute to New Mutha Right Bank Canal KM 1 to Km 34 in an area of 23.8364 Ha located at Village Akole, Rui etc, Sub-district Indapur, Haveli, Pune City, etc. District Pune, Maharashtra by M/s Executive Engineer IPI Division Bsb Pune.
- The project/activity is covered under Category B of item 1 (c) 'River Valley & Hydroelectric projects' but due to applicability of general condition (3.6 km from ESA boundary of Western Ghats) the project appraised at Central level by the sectoral EAC in the Ministry.
- The Terms of References (ToRs) has been issued by Ministry vide letter No. J-12011/16/2024-IA-I(R) dated 03/12/2024

**Observations by the EAC in earlier meeting held on 15.04.2025**

- 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 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 noted that the proposed project is to construct a Tunnel which is substitute to New Mutha Right Bank Canal Km. 1 to 34 which is more than 60 years old and proposed in upstream of Khadakwasla dam in Pune district of Maharashtra.
- The EAC noted that the existing canal cannot be repaired or restructured, as the 35km of pipeline passes through city which has been encroached from both side of the canal and people around the canal are dumping garbage into it. Also it was noted that due to large amount of seepage losses it affects the water availability in the downstream.
- The EAC further noted that the total land area required for the project is 23.03 ha (11.32 ha land on rent basis and 11.71 ha land will be acquired), comprising 0.8064 Ha of forest land of which Stage- II Clearance granted by the Ministry vide online Proposal No. FP/MH/MinorCanal/460637/2024 dated 22.03.2025. The EAC observed that Khadakwasala- Fursungi Tunnel Project is administratively approved by Govt of Maharashtra vide resolution dated 05/09/2024.
- The estimated project cost is Rs 2190.47 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.
- 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 committee inquired about the closure plan of existing 35 km canal and its impact on downstream users. EAC was also of the view that leaving it as it is may become a problem for local people. PP were not able to convince the EAC about the muck disposal sites reclamation of proposed tunnel. The EAC was of the view to conduct site visit by the sub-committee of the EAC to before giving any recommendation to the project.

#### **EAC deliberations on 30.07.2025:**

- The EAC observed that PP has proposed to redevelop the 0 to 35 km stretch of the NMRBC canal into a lively, green, and community-friendly corridor. The plan includes a mix of features such as ecological restoration, recreational spaces, commercial areas, public amenities, and smart infrastructure. A key part of this redevelopment is the backfilling and closure of the existing canal, which will create the base needed for the surface-level development to take place.

- The EAC further noted that approximately 16,70,000 cubic meters of muck is expected to be generated during the construction phase of the project. Of this, around 60% of the excavated material will be reused for purposes such as concrete preparation, backfilling of open channel sections, construction of approach and conveyance roads, and site levelling. The remaining 40% is proposed to be used for filling low-lying areas and rehabilitating the adjoining quarry site. An allocation of ₹25 lakhs has been made in the project cost estimates for implementation of the Muck Management Plan.
- The EAC noted that the Sub-committee comprising of Shri. Ajay Kumar Lal, Member EAC (Hydro & River Valley Project), Shri. Balram Kumar, Representative of CWC and Dr. P. R. Sakhare, Scientist E, Representative from MoEF&CC undertook site visit to the proposed location on 26.06.2025. The Sub-Committee has made following observations:
  - i. The selected shaft location such as shaft no. 2 at chainage 5/780 (located at Dhayari), is topographically suitable and situated away from densely populated areas, with no buildings in the immediate vicinity. Site conditions are favorable, and the proposed project is not expected to cause significant adverse impacts on geological conditions, the surrounding environment, or the rights and interests of residents along the tunnel alignment.
  - ii. The old Mutha Left Bank Canal has been restored as part of the nearby city development initiatives. The concerned authorities have transformed the canal area into public infrastructure, including roads, cycle tracks, jogging tracks, and gardens. A notable example is Hirwai Garden on Prabhat Road, which was visited to study effective utilization of reclaimed canal land. Developed decades ago, the garden stands as a successful and enduring model of such transformation.
  - iii. The selected location for the muck disposal site appears to be proper as it is an abandoned quarry, which is ecologically beneficial. It is also located close to the shaft site and is suitably distant from human habitation.
  - iv. EAC Sub committee recommends restoration of the encroached and highly polluting areas along the canal banks; and take strict measures to create a wholesome healthy surrounding along it since the canal passes through densely populated mid Pune city at many points that have turned into garbage dumping points at present
  - v. EAC Sub-committee recommends that the project proponent should submit detailed as well as abstract of Reclamation Plan of the existing canal to be executed once filled and converted from water body to land surface. The plan should contain measures and activities to transform it into environment friendly, people welfare related assets such as green spaces, Biodiversity Park, Butterfly Garden, cycling and jogging tracks, amusement parks, public utility zones or spaces for community and social activities all aimed at enhancing the well being of Environment and society.
  - vi. The Project Proponent informed that the average design depth of the proposed tunnel of this project is about 80 to 100 meters from the ground surface and the

internal diameter of this horse shoe tunnel is 6.30 meters, therefore the sub-committee advises the project Proponent that from tunnel safety point of view, if the design of the tunnel is also got examined by CWC, then it would be in the best interest of the project.

- vii. The Project Proponent informed that the administrative approval of this project has been taken in Sep, 2024. Since this project is to construct a 26.667 KM (Tunnel+ Cut & Cover + Channel) in place of Ch.1 to Ch.34 of the New Mutha Right Main Canal of the old Khadakwasala Irrigation Project, therefore the sub-committee is of the view that if the techno-economic feasibility of the project is also appraised by the Central Water Commission, it would be in the interest of the project.

The site visit report is attached at Annexure II.

**36.1.5** The EAC after examining the information submitted and detailed deliberations **recommended** the proposal for grant of Environmental Clearance by the Ministry to Khadakwasala Fursungi Tunnel Project substitute to New Mutha Right Bank Canal KM 1 to Km 34 in an area of 23.8364 Ha located at Village Akole, Rui etc, Sub-district Indapur, Haveli, Pune City, etc. District Pune, Maharashtra by M/s Executive Engineer IPI Division Bsb Pune, under the provisions of EIA Notification, 2006 and as amended with subject to compliance of applicable Standard EC conditions with the following additional conditions:

**[A] Environmental management and Biodiversity conservation:**

- i. The green belt plan and reclamation plan of existing canal shall be implemented strictly in time bound manner, and bi-annual status shall be submitted to regional office in six monthly compliance report. The EAC Sub-Committee observations shall be suitably incorporated in the reclamation plan.
- ii. The Environmental Management Plan (EMP) shall strictly adhere to as submitted in the EIA/EMP reports. The budgetary provisions for implementation of EMP, shall be fully utilized and not to be diverted to any other purpose. In case of revision of the project cost or due to price level change, the cost of EMP shall also be updated proportionately.
- iii. The contract clause limiting the No. of vehicles used during excavation and transportation shall followed scrupulously and the same shall informed to the ministry.
- iv. Ambient Air Quality Monitoring Stations for real time data to be installed at project site before commencement of the construction, shall be displayed at project site and its report to be submitted to IRO, MoEF&CC.
- v. No vehicle purchase shall be allowed from funds earmarked for implementation of Wildlife Conservation plan. Measures for minimizing the human–animal conflict specially for black bear and leopard be suitably incorporated in the wildlife conservation plan in consultation with State Forest Department.



- vi. Native plants shall be planted around the muck disposal area in consultation with Forest Department and the survival of plants shall be reported in the 6 monthly compliance report.
- vii. Plantation of saplings (10000 nos.) shall be carried out as a part of the tree plantation campaign "Ek Ped Ma Ke Naam" and the details of the same shall be uploaded in the MeriLiFE Portal (<https://merilife.nic.in>).

**[B] Disaster Management:**

- i. Disposal of the excavated muck and its filling on the low-lying area with proper measures for the stabilization and greenery to minimize the impacts of the generated construction muck shall be taken up pari passu with construction work.
- ii. Stabilization of muck disposal sites using biological and engineering measures shall be taken up immediately to ensure that muck does not roll down the slopes and does not pollute the natural streams and water bodies in surrounding area. The plantation on muck disposal site with local species for restoration of ecology and environment of the project site area.
- iii. Necessary control measures such as water sprinkling arrangements, and construction of paved roads leading to muck disposal sites etc. shall be taken up on priority to arrest fugitive dust at all the construction sites.
- iv. Solid waste generated, especially plastic waste, etc. should not be disposed of as landfill material. It should be treated with scientific approach and recycled. Use of single-use plastics may be discouraged.

**[C] Socio-economic:**

- i. Land acquired for the project shall be suitably compensated in accordance with the prevailing guidelines of the state government and provisions under Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013.
- ii. An institutional mechanism to be developed to ensure the preference of jobs to PAFs and also a policy for preferential treatment for award of sundry works to the PAFs and their dependents.
- iii. Solar panel be provided to the families living in rural areas within 10 km radius of project.
- iv. School up to 12<sup>th</sup> Standard with smart classrooms shall be established to provide quality education for children from project affected villages/Tribal villages.
- v. Skill Development Centre shall be established within 10 km radius of the project and regular training programmes for development and promotion of traditional art/products of tribal/local population.
- vi. The compliance of above conditions shall be monitored by IRO, MoEF&CC and regularly site visit once in year. The compliance report of IRO shall be regularly submitted to MoEF&CC.

- vii. Bio-Gas plant shall be installed in the Project affected villages @ per family for Utilizing Cattle waste (Cow Dung) into renewable source of fuel.

**[D] Miscellaneous:**

- i. After 5 years of the commissioning of the project, a study shall be undertaken regarding impact of the project on the environment. The study shall be undertaken by an independent agency.
- ii. The conditions mentioned in the Western Ghats notification (draft notification no. S.O.3060(E) dated 31.07.2024) for development of hydro-power projects issued by the MOEF&CC shall be complied with.
- iii. PP should establish in house (at project site) environment laboratory for measurement of environment parameter with respect to air quality and water (surface and ground). A dedicated team to oversee environment management shall be setup which should comprise of Environment Engineers, Laboratory chemist and staff for monitoring of air, water quality parameters on routine basis.
- iv. PP shall procure construction material only from those Organizations having all valid legal/statutory clearances/permissions or necessary permission to be obtained for quarrying construction materials for the project as per the EIA Notification, 2006 and as amended thereof.

**Agenda item 36.2**

**Etalin H.E. Project (3097 MW) in an area of 1175.03Ha located at Village Adapowa, Aguli, Emuli etc., Sub-district Etalin & Anini, District Upper Dibang Valley, Arunachal Pradesh by M/s SJVN Limited– Environmental Clearance - reg.**

**[Proposal No. IA/AR/RIV/544875/2025; F. No. J-12011/60/2006-IA-I(R)]**

**36.2.1:** The proposal is for grant of Environmental Clearance (EC) to the project for Etalin H.E. Project (3097 MW) in an area of 1175.03Ha located at Village Adapowa, Aguli, Emuli etc., Sub-district Etalin & Anini, District Upper Dibang Valley, Arunachal Pradesh by M/s SJVN Limited.

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

- i. Etalin HEP is a run-of-the-river project that will be using the waters of Dri and Tangon (Talo) rivers in Dibang Valley district of Arunachal Pradesh. The diversion structure on Dri limb is located near Yuron village, around 22 km from Etalin village while the diversion structure on Tangon (Talo) limb is located near Avonli village, around 17 km from Etalin village.
- ii. The powerhouse site is located near Etalin village, around 185 km from Roing, the district headquarter of Lower Dibang Valley district. Anini, the district headquarter of

Dibang Valley district, is around 240 km north of Roing. The nearest railhead is at Tinsukia, about 110km from Roing. Roing and Tinsukia are connected by means of NH-313. The project site is about 190km from Roing. The nearest airport is at Dibrugarh, about 350km from the project site.

- iii. The project scheme comprises of concrete gravity dams on Talo (Tangon) and Dri rivers and diverting the water through two (2) separate waterway systems to utilize the available head in a common underground powerhouse located just upstream of the confluence of Dri and Talo (Tangon) rivers. Height of dams as envisaged for diversion of Dri and Talo (Tangon) rivers, are 101.5m and 80m, respectively. Installed capacity of the project is 3097 MW Etalin HEP (10 X 307 MW common underground powerhouse + 1 x 19.6 MW Dam-Toe surface powerhouse on Dri Limb + 1 x 7.4 MW Dam-Toe surface powerhouse on Talo Limb). The other major project components will be diversion tunnels, desilting chambers, head race tunnel, surge shaft, tail race tunnel, office complex, residential colony, approach roads, and other related structures.
- iv. The geographical co-ordinate of the project are Dam site on Dri Limb: 28°42'24" N, 95°51'52" E; Dam site on Talo (Tangon) Limb: 28°39'18" N, 96°00'07" E; Powerhouse: 28°36'40" N, 95°51'51" E.

v. **BACKGROUND**

- a) The project was initially conceptualized by the CEA with two diversion structures—one each on the Dri and Tangon (Talo) rivers—with a common underground powerhouse located at their confluence. It was subsequently studied by the NHPC Ltd. as part of the preparation of the Pre-Feasibility Report under the Government of India's 50,000 MW Hydro Initiative.
- b) In 2008, the Government of Arunachal Pradesh (GoAP) allotted the project to Etalin Hydroelectric Power Company Ltd., a joint venture of the Hydro Power Development Corporation of Arunachal Pradesh Limited (HPDCAPL), a GoAP enterprise, and Jindal Power Limited (JPL).
- c) The Terms of Reference (ToR) for the EIA study of the 4000 MW Etalin HEP were granted by the MoEF&CC vide letter no. J-12011/60/2006-IA-I dated 30.11.2009. During the preparation of the DPR, and based on approved hydrology from the CWC, the installed capacity was revised to 3097 MW and approved by CEA. Accordingly, the DPR was prepared and concurred by the Technical Appraisal Committee (TAC) of CEA in January 2013. Due to the downward revision of capacity from 4000 MW to 3097 MW, MoEF&CC issued a revised ToR via letter no. J-12011/60/2006-IA-I (Part File) dated 26.04.2013.
- d) EIA and EMP reports were prepared as per the ToR, and based on the draft reports, the public consultation process was initiated. A public hearing was held on

12.12.2014 at Etalin HQ village, Etalin. The reports were submitted to MoEF&CC for appraisal and were considered six times by the EAC in its meetings held on 26–27 February 2015, 23–24 April 2015, 3–4 June 2015, 24–25 August 2015, 30 December 2016 and 30–31 January 2017.

- e) After detailed deliberations and consideration of all project-related facts presented by the project proponent (PP), the EAC recommended the grant of Environmental Clearance (EC) for the project.
  - f) Despite EAC's recommendation after detailed appraisal, the EC letter could not be issued due to the pending Stage-I Forest Clearance. The proposal was considered in FAC meetings dated 28/02/17, 17/10/19, 23/04/20, 11/05/20, 27/12/22, 28/01/25 and 26/05/25. Stage-I (in-principle) approval was finally granted on 20.06.2025 in favour of SJVN Ltd., which had taken over the project from Etalin Hydroelectric Power Company Ltd. On 12.08.2023.
  - g) Scoping clearance was subsequently transferred in favour of SJVN on 07.07.2025 read with corrigendum issued by MoEF&CC.
  - h) Accordingly, for the Etalin HEP, after obtaining Stage-I Forest Clearance, the EAC is requested to re-examine the proposal. To ensure that outdated baseline data does not hinder the EAC in reiterating its recommendation, fresh baseline data has been collected for two seasons and compared with the data collected in 2012. During the processing of Forest proposal, cost of certain components of EMP has also been updated.
- vi. **Land Requirement:** The total land requirement for the various project activities is 1175.03 ha. The entire land required for the various project activities is unclassed forest land. Stage-I (in-principle) Forest Clearance approval has been granted by MoEF&CC (Forest Conservation Division) on 20.06.2025.
- vii. **Demographic details in 10 km radius of project area:**
- The entire study area falls under Dibang Valley district. Total of 57 villages/towns falls within the study area. Out of 57 villages/towns, 21 are in Anini circle, 28 are in Etalin circle, 3 are in Anelih circle and 5 are in Kronli circle.
- The demographic profile of the study area is based on the Mission Antyodaya 2020. Total households in the study area are 1283 with a total population of 5664, out of which, 2988 (52.75%) are males and 2676 (47.24%) are females. The sex ratio in these villages is 895 females per 1000 males.
- The population of Scheduled Tribes (ST) is 63.65%, while there is no Scheduled Castes population. The average household size in the study area is 4 to 5. About 14.11% of the total population is in the 0-6 year age group. The literacy rate in the study area is

71.27%, among males, it is 75.86% while among females it is 65.60% creating a gender gap of (-) 10.26% in favor of men.

About 40.20% of the population is engaged in different kinds of works. Of the total working population, 73.85% are Main Workers and the remaining 26.15% are Marginal Workers.

The majority of the working population (26.08%) is engaged in agricultural activities, out of which 24.18% are Cultivators and 1.90% are Agricultural Labours. 3.04% of the working population is engaged as Household Industrial Workers and about 70.86% are in miscellaneous services. The gender gap in Cultivators is about 5.17% while the gap in population engaged as Agricultural Labours is 42.85%.

- viii. **Water requirement:** Total requirement is 850.66 m<sup>3</sup>/s. Out of which, 510.94 m<sup>3</sup>/s (480.30 m<sup>3</sup>/s for common underground powerhouse + 30.64 m<sup>3</sup>/s for Dam-Toe surface powerhouse) is the design discharge on Dri Limb, while, 339.72 m<sup>3</sup>/s (320.20 m<sup>3</sup>/s for common underground powerhouse + 19.52 m<sup>3</sup>/s for Dam-Toe surface powerhouse) is the design discharge on Talo Limb.
- ix. **Project Cost:** The estimated project cost is Rs 30037.36 Crore. Total capital cost earmarked towards Environment Management Plan/environmental pollution control measures is Rs. 59394.75 lakh and the Recurring cost (operation and maintenance) will be about Rs. 18803.00 lakh.
- x. **Project Benefit:** Total 3800 persons will be engaged during construction phase. The project proposes to allocate Rs. 6431.00 Lakh towards CER (as per Ministry's OM dated 30<sup>th</sup> Sep 2020).
- xi. **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..
- xii. **MoU / any other clearance/ permission signed with State government:** Memorandum of Agreement (MOA) signed with the Government of Arunachal Pradesh on 12/08/2023 for the development of project.
- xiii. **Resettlement and rehabilitation:** Total 18 (including 3 villages which are not recognized census village) villages shall be affected due to acquisition of land for various components of proposed project. Total 284 project affected families have been identified, out of which 176 families have been identified as coming under Involuntary Displacement due to loss of their houses. A budgetary provision of Rs. 10953.00 lakh has been kept towards implementation of R&R plan.

xiv. **Schedule – I species:** As per Wildlife (Protection ) Amendment Act, 2022, 27 mammals (Himalayan Serow, Himalayan Goral, Sambar, Gongshan muntjac, Red Panda, Indian fox, Jackal, Wild Dog, Asiatic golden cat, Leopard, Leopard cat, Jungle Cat, Fishing Cat, Indian Mongoose, Small Indian Mongoose, Smooth Coated Otter, Yellow-throated Marten, Asiatic black Bear, Large Indian Civet, Small Indian Civet, Himalayan palm civet, Chinese pangolin, Indian pangolin, Assam Macaque, Brush-tailed porcupine, Indian Crested Porcupine and Black Giant Squirrel); 2 birds (Crested Serpent-eagle and Great Hornbill); and 4 herpetofauna (Rat Snake, Monocled cobra, King Cobra and Bengal Monitor Lizard) species are listed as Schedule I species.

xv. **Baseline Environmental Scenario:**

<b>Period</b>	<b>From December 2012 to August 2012 and December 2024 to April 2025</b>				
<b>AAQ parameters at 08 locations (Min. &amp; Max.)</b>	<b>Core Zone</b>				
	<b>Parameter</b>	<b>Unit</b>	<b>Min</b>	<b>Max</b>	<b>Standards</b>
	PM <sub>2.5</sub>	µg/m <sup>3</sup>	10.10	12.90	60
	PM <sub>10</sub>	µg/m <sup>3</sup>	20.20	22.70	100
	SO <sub>2</sub>	µg/m <sup>3</sup>	5.90	8.10	80
	NO <sub>2</sub>	µg/m <sup>3</sup>	6.40	15.50	80
	<b>Buffer Zone</b>				
	<b>Parameter</b>	<b>Unit</b>	<b>Min</b>	<b>Max</b>	<b>Standards</b>
	PM <sub>2.5</sub>	µg/m <sup>3</sup>	12.50	14.80	60
	PM <sub>10</sub>	µg/m <sup>3</sup>	20.50	29.20	100
	SO <sub>2</sub>	µg/m <sup>3</sup>	6.30	8.10	80
	NO <sub>2</sub>	µg/m <sup>3</sup>	8.30	16.20	80
<b>Incremental GLC Level</b>					
	<b>Criteria Pollutant</b>	<b>Unit</b>	<b>Baseline Concentration [A]</b>	<b>Predicted incremental value considering worst case stability class [B]</b>	<b>Total GLC [A]+[B]</b>
	PM <sub>10</sub>	µg/m <sup>3</sup>	14.80	20	34.8
	PM <sub>2.5</sub>	µg/m <sup>3</sup>	29.20	15	44.2
	SO <sub>2</sub>	µg/m <sup>3</sup>	8.10	5	13.1
	NO <sub>2</sub>	µg/m <sup>3</sup>	16.20	8	24.2
<b>River water samples (12 samples)</b>	<b>Core Zone</b>				
	<b>S. No.</b>	<b>Parameters</b>	<b>Min</b>	<b>Max</b>	<b>Standards</b>
	1	pH	7.3	7.9	8.5
	2	Total Dissolved Solids, mg/L	14.7	57.7	500
	3	Dissolved Oxygen (mg/l)	9.1	11.1	6

	4	Chloride (as Cl), mg/L	8.1	10.8	250
	5	Total Hardness (as CaCO <sub>3</sub> ), mg/L	43.1	49.3	300
	6	Biological Oxygen Demand (mg/l)	0	0	2
	7	Chemical Oxygen Demand (mg/l)	0	0	0
	8	Total Coliform (MPN/100 ml)	0	0	50
	<b>Buffer Zone</b>				
	<b>S. No.</b>	<b>Parameters</b>	<b>Min</b>	<b>Max</b>	<b>Standards</b>
	1	pH	7.1	7.7	8.5
	2	Total Dissolved Solids, mg/L	19	118.4	500
	3	Dissolved Oxygen (mg/l)	9.1	11.9	6
	4	Chloride (as Cl), mg/L	8.1	11.9	250
	5	Total Hardness (as CaCO <sub>3</sub> ), mg/L	42.3	48.4	200
	6	Biological Oxygen Demand (mg/l)	0	0	2
	7	Chemical Oxygen Demand (mg/l)	0	0	0
	8	Total Coliform (MPN/100 ml)	0	0	50
<b>Pond water samples quality at --locations</b>	-				
<b>Ground Water samples at 7 locations</b>	<b>Core Zone</b>				
	<b>S. No</b>	<b>Parameters</b>	<b>Min</b>	<b>Max</b>	<b>Desire d Limits</b>
	1	pH	13.8	16.5	6.5
	2	Total Dissolved Solids, mg/L	56	177	500
	3	Chloride (as Cl), mg/L	35.55	43.85	250
	4	Total Hardness (as CaCO <sub>3</sub> ), mg/L	167.43	179.08	200
	5	Fluoride (as F), mg/L	0.1	0.11	1
	<b>Buffer Zone</b>				
	<b>S. No</b>	<b>Parameters</b>	<b>Min</b>	<b>Max</b>	<b>Desire d Limits</b>
	1	pH	7.17	8.33	6.5
	2	Total Dissolved Solids, mg/L	91	154	500
	3	Chloride (as Cl), mg/L	36.75	43.01	250
	4	Total Hardness (as CaCO <sub>3</sub> ), mg/L	151.79	180.7	200
	5	Fluoride (as F), mg/L	0.1	0.13	1
<b>Noise levels Leq</b>					

(Day & Night) at 8 locations	Zone	Category	Leq Day dB(A)		Leq Night dB(A)		Prescribed Limits	
			From	To	From	To	Day	Night
	Core	Residential	52	59.9	32.2	42.1	55	45
	Buffer	Residential	53.4	59.7	32.1	42.3	55	45
Soil Quality at 8 Locations	Core Zone							
	S. No.	Parameters			Min	Max	Prescribed Limits	
	1	Calcium (mg/kg)			547.1	965.5	500	
	2	Magnesium (mg/kg)			48.4	86.3	500	
	3	Nitrogen (kg/ha)			369	487	500	
	4	Phosphorus (kg/ha)			11.8	16.4	50	
	5	Potassium (kg/ha)			77.5	91.4	500	
	6	Carbon (%)			1.15	1.78	4	
	7	Sodium Absorption Ratio			1.4	2.39	10	
	8	Salinity (ppt)			1.05	1.58	0	
	Buffer Zone							
	S. No.	Parameters			Min	Max	Prescribed Limits	
	1	Calcium (mg/kg)			620.4	887.3	500	
	2	Magnesium (mg/kg)			65.3	88.2	500	
	3	Nitrogen (kg/ha)			366	673	500	
	4	Phosphorus (kg/ha)			12.5	15.2	50	
	5	Potassium (kg/ha)			60.2	99.2	500	
	6	Carbon (%)			1.15	1.58	4	
7	Sodium Absorption Ratio			1.62	2.82	10		
8	Salinity (ppt)			1.15	1.5	0		
Flora & Fauna	Schedule-I species observed in the study area:							
	As per Wildlife Protection Amendment Act, 2022, 27 mammals (Himalayan Serow, Himalayan Goral, Sambar, Gongshan muntjac, Red Panda, Indian fox, Jackal, Wild Dog, Asiatic golden cat, Leopard, Leopard cat, Jungle Cat, Fishing Cat, Indian Mongoose, Small Indian Mongoose, Smooth Coated Otter, Yellow-throated Marten, Asiatic black Bear, Large Indian Civet, Small Indian Civet, Himalayan palm civet, Chinese pangolin, Indian pangolin, Assam Macaque, Brush-tailed porcupine, Indian Crested Porcupine and Black Giant Squirrel); 2 birds (Crested Serpent-eagle and Great Hornbill); and 4 herpetofauna (Rat Snake, Monocled cobra, King Cobra and Bengal Monitor Lizard) species are listed as Schedule I species.							



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

- The solid waste will be transported for disposal at the designated landfill sites. The landfill shall have impervious clay at the bottom-most layers. The second layer shall be impervious liner (Geomembrane), the third layer will be of sand, after that well-compacted solid waste is to be put over the sand, then again, a layer of clay, finally a layer of soil. Vegetation shall be grown on the topmost layers. It will give a good aesthetic view of the landfill.
- For Disposal of hazardous waste vendors authorized by State Pollution Control Committee shall be engaged.
- 12 muck disposal yards has been identified with a total area of 113.70 ha and capacity has been worked as 163.15 lakh cum which is more than the total quantity of muck to be disposed i.e. 117.35 lakh cum. All the sites 30m away from HFL.

xvii. Public Hearing for the proposed project has been conducted by the State Pollution Control Committee on 12.12.2014 at Etalin village in Dibang Valley District. The main issues raised and replies by the user agency during the public hearing are;

**Suggestions/ Comments Given by Stakeholders**

<b>S. No.</b>	<b>Issues Raised by PAFs/Public</b>	<b>Clarification given by Project Proponent</b>
<b>1</b>	Strike out words such as solung dance, adi tribe and ja-jin-ja as a folk song of Idu (Mishmi) from the draft SIA report before publication of final SIA report. Especially, since whole Dibang Valley District area is entirely dominated by the Idu-Mishmi tribe how can the project proponent mentioned solung dance as major festival, Adi tribe as a major tribe and Ja-Jin-Ja as folk song of Dibang Valley District. Therefore, the PAPF takes this matter as very serious and highly objectionable things.	The same shall be taken care in the final EIA / EMP Report before submission to MoEF (GoI)
<b>2</b>	Budget for feeder school and nursery school should be up to 10 crores for each school.	The necessary construction / up-gradation would be carried out by EHEPCL & a budget provision of Rs 8 Crore has been kept for the purpose

<b>S. No.</b>	<b>Issues Raised by PAFs/Public</b>	<b>Clarification given by Project Proponent</b>
		which is sufficient for the construction of such schools
<b>3</b>	Additional economic package for partially affected villages, viz., Etalin HQ, Aguli, Athunli, Ayeso similar to additional economic package declared for Aruli village amounting to Rs. 95,00,000/-	This point shall be discussed with district administration and the decision given by the State Govt. shall be followed.
<b>4</b>	Revision of list of PAFs should be undertaken since no. of people hailing from project affected area was excluded in original PAFs list. Hence, it is requested to rectify the PAF list before its final publication.	List of PAFs was prepared based on the SIA study undertaken in consultation with the Distt. Administration.  Distt. Administration to see the exclusions, if any.
<b>5</b>	As per draft SIA report numbers of involuntary displaced family is 156 only out of 256 families. As per our knowledge, numbers of involuntary displaced family ought to be more than 156. Thus, it is required to revise the list of involuntary displaced families so that not even a single family suffers in future.  SIA report has many loopholes. Name of many people have been left out in the list of PAFs.	Number of involuntary displacement is 156 out of 265 families, which has been arrived at based on the SIA study undertaken in consultation with the Distt Administration. Revision, if any, in respect of involuntary displacement is to be intimated by the Distt Administration.
<b>6</b>	Number of self employed local artisans given in the draft is 9 persons only. Hence, review of same is necessary to ensure that names of genuine self-employed local artisans both man and woman should not be deprived of benefits they are entitled under appropriate law. In addition, one time financial assistance of Rs.	This number has been brought out based on the SIA study undertaken in consultation with the Distt Administration. Revision, if any, is to be intimated by district administration. However an amount of Rs. 25,000/- has been kept in accordance with the SRRP 2008.

<b>S. No.</b>	<b>Issues Raised by PAFs/Public</b>	<b>Clarification given by Project Proponent</b>
	25,000/- proposed for local artisans should be enhanced to Rs. 50,000/-	
<b>7</b>	Project developer is urged to provide scholarship for 50 students each year for 45 years instead of 10 years.	<p>Suitable provision of scholarship scheme has already been kept under EDP of the R&amp;R Plan for upliftment of the children of PAFs.</p> <p>Scholarship grant shall presently be extended only up to 10 years, which is till construction period of the project, as stipulated in R&amp;R plan. However, scholarship beyond 10 years shall be seen under CSR scheme after commissioning of the project.</p>
<b>8</b>	Entire PAFs of Akobe village should be included under involuntary displaced family.	This point shall be discussed with district administration and the decision given by the State Govt. shall be followed.
<b>9</b>	Insert provision for allocation of 2 hectares of agricultural land and 2 hectares of horticultural land and 10 hectares of grazing land for domestic animal like Mithun in and around the resettlement area.	A context specific provision for infrastructure facility and amenities at resettlement sites has been listed in EMP. The decision given by the State Govt. shall be followed.
<b>10</b>	<p>Under Health Care, one referral hospital should be constructed at Etalin Bridge Point.</p> <p>A multi facilitated hospital should be opened for people of the area.</p>	We have kept a provision of hospital in the DPR. Location shall be decided in consultation with District Administration and Committee members.
<b>11</b>	Routine vaccination programme and health checkup should be undertaken. However, prior consultation of PAFs/PRI/GBs is necessary during the peak period of	Health checkup programmes already taken up & stipulated in the R&R plan.

<b>S. No.</b>	<b>Issues Raised by PAFs/Public</b>	<b>Clarification given by Project Proponent</b>
	construction of Hydro Electric Project.	Vaccination programmes shall be taken up in consultation with District Administration and GBs.
<b>12</b>	Regular sanitation programme under CSR scheme shall be undertaken involving the PAPF executive members and the PRI functionaries at R&R village/colony to maintain the Health & Hygiene of the PAFs.	Regular sanitation program is a part of maintaining health and hygiene of R & R village/colony which shall be undertaken as per the requirement. However CSR scheme shall be taken up after commissioning of the project.
<b>13</b>	If possible housing grants should be given to entire PAFs of Etalin HQ since it is located in the proximity of prime working zone area.	The land under Etalin HQ settlement is not under proposed Land requirement so the housing benefit cannot be given as per existing policy.
<b>14</b>	<p>Compensation should be given at the highest possible rate i.e., 4 times as envisioned in the RFCT in LARR Act, 2013 against the diversion of the USF/Community Land and against the killing of access to Rights &amp; Privileges.</p> <p>Compensation should be given in one go, not in installment.</p>	<p>Compensation shall be made as the provision made in LARR-Act-2013 and SRRP-2008</p> <p>Payment of compensation shall be made by Distt. Administration.</p>
<b>15</b>	Budget for R&R Plan should be enhanced from 15 crores to 30 crores.	Detail estimation has been done for finalisation of Budget for amenities and basic infrastructure in resettlement villages. A provision of Rs 15 Crores for the 8 resettlement locations has been kept towards drinking water, electrification, community centre, approach road, internal pathways, drainage system, avenue plantation, grave yard, etc.
<b>16</b>	PAPF demands for allocation of contractual work up to 5 crores on non-tender basis to the PAFs.	During construction, based on suitability / requirement of work & expertise / experience available with

<b>S. No.</b>	<b>Issues Raised by PAFs/Public</b>	<b>Clarification given by Project Proponent</b>
	<p>Construction of Existing road, Contractor colony, workshop, stores etc works should be awarded to the local contractor.</p> <p>Raw materials requirement for construction work should be procured from local people.</p>	<p>individual / party, PAFs would be given first preference for carrying out the works by the contractor engaged for execution of Etalin HEP. However, if they are not found suitable, locals from other area of Dibang Valley or Arunachal Pradesh / Outsiders may be considered. Project work cannot be awarded on non-tender basis. All the works would be awarded in transparent manner by following non-discriminatory procedures and the work has to be in line with the specifications and quality.</p>
<b>17</b>	<p>Each and every individual who attained 18 years of age should be identified and given separate household in the revised PAF list.</p> <p>For compensation only the head of families should not be considered. Provision for children should be kept.</p>	<p>This point shall be discussed with district administration and the decision given by the State Govt. shall be followed.</p>
<b>18</b>	<p>Appealed to Shri Rajesh Tacho, MLA 41st Anini (ST) A.C. to move a bill in the state assembly for the implementation of direct cash transfer by local area development committee (LADC) to the bank accounts of PAFs of the amount received from the sale of 1% free-power by the project developers according to new draft Hydro Power Policy, 2013 in respect of EHEPCL project.</p>	<p>The matter relates to Government of Arunachal Pradesh.</p>
<b>19</b>	<p>PAPF demands for providing 5% power free from the State Govt.</p>	<p>The matter relates to Government of Arunachal Pradesh.</p>

<b>S. No.</b>	<b>Issues Raised by PAFs/Public</b>	<b>Clarification given by Project Proponent</b>
	under LADF as per Hydro Power Policy, 2008 & 2013.	
<b>20</b>	Appealed to Dy. Commissioner, Anini to initiate immediate property survey of Etalin Bridge point.	District Administration has initiated the process.
<b>21</b>	Representative of EHEPCL was told to handover the responsibility to the Environment & Forest Department for reasonable calculation of timber and non-timber products. The DFO and RFO, Anini were requested to frame an estimate regarding the growth of timber/non-timber products for the next 10 years. Valuation of medicinal plants/herbal plants should be analysed by the Environment & Forest Department.	Regarding forest matters, the guidelines of state forest department has to be followed.
<b>22</b>	Appealed to Dy. Commissioner, Anini to frame new rate for land category namely- Land approachable by Motorable road atleast upto Rs. 120/-sqm	District administration shall decide on this issue.
<b>23</b>	Provide housing grant of Rs 25 lacs against the approved rate 15 lacs as indicated in draft and summary SIA/R&R Plan report.	Housing benefit of Rs 15 lacs finalized in consultation with PAC & District Administration. Detailed Estimation has been done for finalisation of cost for construction of houses. Houses shall be accordingly built by the Company.
<b>24</b>	Strict adherence to formalities with regards to issue of Inner Line Permit (ILP) to large number of labourers who will be hired by the project developer & contractors during the construction period of Hydro Electric Project (3097 MW). Hence, the District Administration is hereby	To be followed by district administration.

<b>S. No.</b>	<b>Issues Raised by PAFs/Public</b>	<b>Clarification given by Project Proponent</b>
	requested to maintain strict procedure for issue of ILP to hired labourers for the security, safety and safeguard of the PAF's.	
<b>25</b>	Land for CAMPA against the diversion of USF/community Land for EHEPCL/AHEPCL project should be identified within the district and implemented thereof.	In case of Etalin-HEP, vigorous & concerted efforts had been made jointly with Forest department for identification of CA land within the district. However, due to non availability of the same and locals not agreeing to donate their community land for the CA, the CA land was identified by the forest department in Tawang (Arunachal Pradesh).
<b>26</b>	<p>The Labour Law of the state should be amended in order to ensure the basic rights and privileges of the labourers especially women and child labourers viz. Proper working time table, equal pay for equal work, safe working environment and other basic amenities.</p> <p>Labour law should be reviewed and regulated as and when construction starts.</p>	Matter pertains to the state Government. However the projects will follow the applicable labour laws.
<b>27</b>	Provide compensation against Catchment area treatment (CAT).	GoAP will implement catchment area treatment plan in identified area and this issue shall be handled by state govt. within ambit of law.
<b>28</b>	Provide specific fund allocation for preservation of rich Culture & Tradition of Mishmi (Idu).	Under social welfare scheme provision has been kept under EMP for preservation of culture & Tradition of local tribe.
<b>29</b>	Provide separate fund component for promotion and protection of Idu-	Under social welfare scheme provision has been kept under EMP for

<b>S. No.</b>	<b>Issues Raised by PAFs/Public</b>	<b>Clarification given by Project Proponent</b>
	Mishmi dialect which is endangered language listed under UNESCO.	preservation of culture & Tradition of local tribe.
<b>30</b>	Representative of PAPF should be involved in the monitoring of R&R, Environment Management, and payment of Compensation Package.	<p>For monitoring of R&amp;R plan, committee will be constituted under chairmanship of DC and representative of PAF's.</p> <p>As per guidelines of MoEF for preparation of EIA/EMP, managing committee will be formed during construction stage to oversee the compliance of provisions made in EMP, Also, Regional Office of MoEF (Govt. of India) shall monitor and ensure the compliances of provision in final EIA/EMP report.</p> <p>Payment of compensation packages shall be made by Distt. Administration.</p>
<b>31</b>	Before any construction, boundary of the project proponent and village/ community land should be clearly demarcated so as to avoid land dispute and conflict in between project proponent and PAFs.	Agreed.
<b>32</b>	The fund allocated for basic amenities and facilities for rehabilitation should be increased and the fund allocated in the SIA is very minimum.	Detail estimation has been done for finalisation of Budget for amenities and basic infrastructure in resettlement villages. A provision of Rs 15 Crores for the 8 resettlement locations has been kept towards drinking water, electrification, community centre, approach road, internal pathways, drainage system, avenue plantation, grave yard, etc.
<b>33</b>	Provide specific scheme for cultivation of Mishmi Teeta and Retisi (Paris-Polyphyla) to improve economic condition of indigenous	Already considered under Biodiversity Conservation Plan of EMP.



<b>S. No.</b>	<b>Issues Raised by PAFs/Public</b>	<b>Clarification given by Project Proponent</b>
	tribes of Dibang Valley (Idu-Mishmi)	
<b>34</b>	Allocation of fund for establishment of Mithun ( <i>Bos Frontalis</i> ) breeding centre in the district of Dibang Valley.	Decision will be taken in consultation with District Administration and shall be incorporated in final EMP report
<b>35</b>	Specific fund allocation and scheme for promotion and protection of varieties of Orchids by establishing Orchid research centre.	Already considered under Biodiversity Conservation Plan of EMP.
<b>36</b>	<p>The influx of a large number of populations will impinge on our constitutional and legal safeguards and also lead to encroachment on our resources such as MFP etc. There is need to taken safety majors.</p> <p>The greatest concern coming out of EIA, is the completely disconcerting scenario of the local miniscule Idu population being swamped by the outsiders. Some 12000 outsiders will compete with some 700- 800 locals in terms of natural resource extraction and basic civic amenities which is scare, thereby paving the way for extinction of the local Idu Mishmi community. Other than loss of identity, culture and livelihood, the locals will be subjected to transportation and infection of diseases that they may not be immune from. Etalin will cease to be a Idu Mishmi habituated settlement dominated by outsiders.</p>	<p>For protection of natural resources (MFP) Energy conservation measures and Biodiversity conservation Plan was proposed under EMP.</p> <p>The impacts of the immigration of Construction workers and their mitigation measure are dealt in detail in chapter 8 of EIA and chapter 4, 5 and 6 of EMP respectively. Some of the mitigation measures are separate accommodation and related facilities for the workers, service providers and technical staff. The mitigation measures to be adopted by the project proponent regarding the transportation and infection of the diseases are described in detail in Chapter 5 of the Environment Management Plan (EMP).</p>
<b>37</b>	The traditional aspects of life will be obliterated once our culture unity is	Under social welfare scheme provision has been kept under EMP for

<b>S. No.</b>	<b>Issues Raised by PAFs/Public</b>	<b>Clarification given by Project Proponent</b>
	dismissed. This is our worst fear as the threat of cultural loss is real and imminent.	preservation of culture & Tradition of local tribe.
<b>38</b>	Nowhere in EIA EMP do we find any mitigation measure and compensation for the permanent loss of Mithun grazing areas, fishing grounds and medicinal plants	In accordance with SRRP-2008, suitable compensation provision has been kept in the R&R Plan under compensation towards FRA (like compensation for the loss/ Extinction of the rights and privileges of the tribal people over the USF land use, other community rights of uses/entitlements such as fish and water bodies, grazing etc).
<b>39</b>	The 25% of the NPV to be given to the local community is not likely to be raised by the Government. The EHEPCL must bring in extra measures to counter the losses that will occur due to encroachment on our forest and natural resources.	Provision of 25% of NPV to the community is as per SRRP-2008.
<b>40</b>	In order to provide quality skilled and semi-skilled jobs, it is demanded that an ITI be started at Anini.	Provision for skill development centre has been made in R&R Plan
<b>41</b>	Allocation of only few lakhs as the cost for implication for monitoring and curatives measures of probable diseases is not sufficient.  There is a need of multi specialised medical centre near the project area	Appropriate budget provision has been made in the EMP towards measures for prevention and cure of diseases. We have kept a provision of hospital in the DPR.
<b>42</b>	Under the CSR the EHEPCL must provide:  <ul style="list-style-type: none"> <li>• Create a corpus fund for the PAFs</li> <li>• Construction of a Modern Community Hall cum Auditorium</li> <li>• Flood protection work</li> </ul>	CSR activities shall be undertaken after the COD of the project. However, we have kept a provision of Community Hall in the EDP of R&R plan.  Flood protection works have been covered in Disaster Management Plan of EMP.

<b>S. No.</b>	<b>Issues Raised by PAFs/Public</b>	<b>Clarification given by Project Proponent</b>
<b>43</b>	Under the CSR the EHEPCL must provide: <ul style="list-style-type: none"> <li>• Adaptation of one village as a Model village for development activities</li> </ul>	CSR activities shall be undertaken after COD. Model village for development activities shall be decided in consultation with Distt. Administration and PAFs.
<b>44</b>	First priority be given to the graduates from the district in providing employment in EHEP	During Construction, jobs will be offered by the Contractors engaged for execution of Etalin HEP. Number of personnel for executing a particular job shall be decided with the progress of works. Locals employed during Construction phase would be Trained for Operation & Maintenance of Project after completion based on their suitability. PAFs would be given first preference for jobs.
<b>45</b>	Constitution of Grievance Redressal Cell (GRC)	GRC will be constituted by Distt. Administration.
<b>46</b>	Monitoring committee must have not less than 03 PAFs member	Members of monitoring committee will be decided by Distt. Administration.
<b>47</b>	The Jhum land Regulation is not an act to acquire land for Hydro project. Guarantees towards payment of Compensation.	In accordance with the Section 10 of Jhum Land acquisition act, there is a provision for acquisition of land for public purpose. It has been decided by the state Govt to provide compensation as per new Land Act 2013.
<b>48</b>	The provision of Forest Rights Act 2006 must be implemented in full for protecting the rights and privileges of the common man.	Agreed
<b>49</b>	Heavy Blasting will be used for which will create crack in hill and houses of the surrounding area.	Base line will be created before start of project through videography of the houses/Structures. Impact due to blasting and excavation operations have been identified in the EIA and suitable mitigation measures recommended in the EMP. Controlled

<b>S. No.</b>	<b>Issues Raised by PAFs/Public</b>	<b>Clarification given by Project Proponent</b>
		blasting shall be undertaken to avoid any crack.
<b>50</b>	The excavation material will directly dumped into river or near road side will cause deterioration of water quality.	Impact of muck disposal has been addressed in EIA report and appropriate mitigation measures have been kept in Muck dumping plan of EMP.  Monitoring of Ambient Air Quality and water quality during construction period has been proposed in Air and Water Monitoring Plan of EMP.
<b>51</b>	Since Etalin HEP is a second upcoming Dam on Talo River, EHEPCL must conduct SEIA of all projects in the Dibang River basin in accordance with EIA Notification 2006 & OM of MoEF dated 28.05.2013. Prior completion of the cumulative impact assessment of multiple projects in Dibang valley.	CEIA studies have been initiated by Govt. of India for all the River basins of Arunachal Pradesh. Lohit, Bichom, Subansiri & Siang basin studies have already been conducted. Kameng & Dibang Basin studies have been initiated by the Govt. of India & shall be completed in 1½ - 2 year time period. The studies are being Independently conducted by Govt. of India.
<b>52</b>	The project is not a run of river project as claimed. The project involve high Dam (105 m in Dri & 80 m in Tangon ) 4 coffer dams of which 2 are large dam more than 20 m height. So it not fit into definition of ROR which is not supposed to change hydrograph of the river at any time scale (Federal Energy Regulatory Commission (FERC), defines ROR as projects where instantaneous inflow equal to instantaneous outflows.	The project is concurred as Run of the river with diurnal pondage scheme by Central Electricity Authority (CEA), which is a statutory authority of Govt. of India,
<b>53</b>	Chapter 2 of EIA states that the project will need 27 MW Power and	Since there is no grid power available in the region, the construction power is met through Diesel generating sets to

S. No.	Issues Raised by PAFs/Public	Clarification given by Project Proponent
	<p>will generate this through 7 diesel Generating sets. This is false as the project has already applied for diversion of 22MW Anonpani HEP to contribute towards construction power need of the 3097 MW Etalin Project.</p>	<p>meet the continuous power requirement.</p> <p>Anonpani is a separate small hydroelectric project located in downstream of Talo (Tangon) reservoir on Anonpani Nallah. Since this project is not utilizing the water of Talo (Tangon) river, this project cannot be considered as part of Etalin HEP. If constructed in time, the power generated from Anonpani SHEP, may be used for construction of Etalin HEP. The Project cannot fully rely on Anonpani SHEP as it cannot meet the continuous power requirement. Further, Etalin HEP shall be awarded in ICB basis with clear contracting philosophies with probable contractors being responsible for execution of the project. To achieve commissioning of the project in the schedule construction period, the construction power will have to be met by DG Sets.</p> <p><b>Background of Etalin HEP</b></p> <p>The Etalin HEP (4000 MW) was identified by the Central Electricity Authority (CEA) and Pre-Feasibility Report (PFR) of the project was prepared by NHPC under 50,000 MW Hydroelectric Initiative launched by the Hon'ble Prime Minister in 2003.</p> <p>The Etalin HEP (4000 MW) was allotted by Govt. of Arunachal Pradesh (GoAP) in Dec'2008 to Hydro Power Development Corporation of Arunachal Pradesh Limited (HPDCAPL) to be implemented in Joint Venture (JV) with Jindal Power</p>

S. No.	Issues Raised by PAFs/Public	Clarification given by Project Proponent
		<p>Ltd (JPL). Accordingly, a JV Agreement was signed between HPDCAPL and JPL on 8th Dec'2008. Subsequently, Etalin Hydro Electric Power Company Limited (EHEPCL) was incorporated on 16th May'2009 as a JV company between JPL and HPDCAPL to promote, develop, operate maintain and own Etalin HEP.</p> <p>Thereafter, ToR for Etalin HEP with installed capacity of 4000 MW was granted by MoEF during Nov'2009. During the preparation of Detailed Project Report (DPR), based on the approved hydrology by CWC, installed capacity was revised to 3097 MW and the same was approved by CEA. Accordingly, DPR was prepared and Technical Appraisal Committee (TAC) of CEA concurred the DPR in January'2013. Subsequently, the concurrence letter was issued on 12th July'2013.</p> <p>As per the approved DPR, construction power requirement of Etalin HEP is of the order of 27 MW, which is to be met through the DG sets due to the remote location of the project.</p> <p><b>Anonpani SHEP</b></p> <p>In the meantime, Anonpani SHEP was identified by EHEPCL in accordance with Cl. No 7 (Under obligation of State Government) of MoA signed for Etalin HEP to meet the construction power requirement of Etalin HEP. Subsequently, Anonpani SHEP was allotted to EHEPCL on BOOT basis for 50 years from COD and MoA was</p>

S. No.	Issues Raised by PAFs/Public	Clarification given by Project Proponent
		<p>signed on 16th April'2013 for its implementation in line with Small Hydro Power Policy-2007 of Arunachal Pradesh. Thereafter, DPR was prepared and concurred by GoAP during June'2014.</p> <p>It is assessed from the approved DPR that generation of Anonpani SHEP varies from 3.3 MW to 22 MW depending up on the water availability of Anonpani River, being a purely run-off-river project. Hence, it is not a reliable source of construction power for Etalin HEP. However, it would reduce the dependency on DG sets to some extent during the 7 years of construction period of Etalin HEP. This would result in reduction on cost and tariff of Etalin HEP as the power from Anonpani SHEP shall be cheaper than power from the DG sets. As per Cl. No 5.2 of MoA signed for Anonpani SHEP, the power of Anonpani SHEP would be sold to either Govt. of Arunachal Pradesh or other party (ies) after the COD of Etalin HEP.</p> <p>Further, Anonpani SHEP is located on Anonpani River, which does not fall in the catchment of Talo (Tangon) dam, as this River meets the Talo (Tangon) River at 1.3 Km downstream of Talo (Tangon) dam axis.</p> <p>It is evident from the above that Etalin HEP and Anonpani SHEP are two separate projects which are to be dealt separately in respect of laws, Regulations, Policies, Clearances etc. Therefore, the Anonpani SHEP is</p>

<b>S. No.</b>	<b>Issues Raised by PAFs/Public</b>	<b>Clarification given by Project Proponent</b>
		<p>neither a sub project of Etalin HEP nor taken out from Etalin HEP.</p> <p>In the forest proposal submitted for Anonpani SHEP, it is stated that power of Anonpani SHEP would be utilized for construction of Etalin HEP. It does not imply that Anonpani SHEP is a part of Etalin HEP, as explained above.</p>
<b>54</b>	<p>The Hydrology, Geology and Seismotronics chapter in EIA is not done by EIA Agent. It is done by SNC Lavalin Engineering India which is debarred by World Bank for 10 years due to bribing charges. In addition, the firm which did these studies is not on the QCI accredited list of MoEF so their studies cannot form Chapter of EIA.</p>	<p>Hydrological and Geological studies are done for the project by expert agencies and approved by the Central Electricity Authority (CEA) - a statutory authority of Govt. of India in consultation with various directorates such as Central Water Commission (CWC), Geological Survey of India (GSI), etc. DPR requires extensive hydrological and geological studies to firm up the project location, features, power potential, etc, hence it is a standard practice to undertake such studies by DPR consultant and get them approved from CEA. Once such studies are approved, data is used in EIA study for impact assessment, environment flow requirement, etc.</p> <p>Irrespective of the stature of consultant, the data referred to and used in EIA study of Etalin HEP on hydrology and geology is from government approved studies. Further SNC Lavalin is not debarred by the law of India to work in India.</p>
<b>55</b>	<p>The information in Environment Baseline Status under Biological Status is incorrect.</p>	<p>The data present in EIA report are area specific based on detailed field survey carried out during post monsoon, monsoon and pre monsoon season as per as ToR issued by MoEF&amp;CC.</p>



<b>S. No.</b>	<b>Issues Raised by PAFs/Public</b>	<b>Clarification given by Project Proponent</b>
<b>56</b>	<p>No mention of impacts of blasting and tunnelling on the geology, landslide and disaster potential of the region.</p> <p>No assessment of Impact of Deforestation, Muck disposal, Compensatory Afforestation, Loss of species</p>	<p>All the issues are well addressed in EIA and after assessing the impact, suitable prevention and mitigation measures were proposed in EMP Chapters of Catchment Area Treatment Plan, Muck Management Plan, Land restoration and Green Belt Development Plan</p>
<b>57</b>	<p>The EIA does not bother to assess impacts on presence of other fish species as study consider only snow trout</p>	<p>The baseline data present in EIA clearly define that during sampling, 12 species of fishes were observed. Fisheries management plan was prepared after considering the behaviour of all the species recorded and reported from the area.</p>
<b>58</b>	<p>1% free power for management of LADF for cash transfer to the accounts of the PAFs of the project affected area.</p>	<p>The matter relates to Government of Arunachal Pradesh.</p>
<b>59</b>	<p>In the hydrology chapter of EIA, project proponent has not provided any independent hydrological data related to Dri &amp; (Tangon) – The two rivers on which the Etalin HEP is dependent. It is merely borrowed data from the Pre- feasibility Report of the proposed project done in 2000-2001, from Brahmaputra Board and that of the Dibang Multipurpose project. Even of those set of borrowed data it is impossible to construct a statistical model for 3097 MW HEP.</p>	<p>Every project's Water availability (Hydrology) has to be concurred by the Central Water Commission - a statutory authority of Govt. of India. Basic requirement of accessing hydrology is the Hydrological stations for obtaining observed Discharge, sediments rainfall etc. whenever there is no station available in project sites, nearest available hydrological stations data are used as input and after through correlation and regressions the water availability is estimated. Accordingly, For Etalin Hydro Electric project the observed discharge data of Elopa and Munli of nearby downstream project has been adopted as input. The data is validated by internal and external consistency checks like Mass Curves, Stage</p>

<b>S. No.</b>	<b>Issues Raised by PAFs/Public</b>	<b>Clarification given by Project Proponent</b>
		<p>Discharge Curves. Thereafter the Hydrological model was developed. This model was also validated by Homogeneity tests. The final Elopa series derived after various consistency and homogeneity tests were reduced by 10 % for observational errors. Then this series was transported to respective dam sites of Etalin by catchment area proportion with a rainfall variability of 0.958 for Dri limb and 0.874 for Talo (Tangon) limb.</p> <p>All these studies were carried out as advised by Hydrology department of Central Water Commission (CWC) which then concurred the water availability series. EHEPCL has also established gauge discharge stations at various project sites from 2011 onwards and the observed discharges are in line with the water availability series concurred by CWC.</p>
<b>60</b>	The outsiders should undergo monthly medical checkup and anybody found with any infectious disease such as Hepatitis, Flu and Influenza strains, STD and HIV should be isolated and immediately deported from the area.	Chapter 5 of EMP deals with the Public Health Delivery system. Screening camps will be conducted for diseases and only after screening they can be registered for work. The project authorities would ensure that the strict Quartinine procedure should be adopted by the contractors. Provision of budget for Medical Facilities has already been considered including the above.
<b>61</b>	As a possible mitigation measure, no employee colony, labour camp should be located near the current settlements and the project proponent should provide them with	<p>No labour camp and employee colony is foreseen outside the Land acquisition area.</p> <p>As mentioned above, separate accommodation and related facilities</p>

<b>S. No.</b>	<b>Issues Raised by PAFs/Public</b>	<b>Clarification given by Project Proponent</b>
	their basic amenities and not use present scarce amenities used by locals.	for the workers, service providers and technical staff is envisaged.
<b>62</b>	Jindal company has provided training on mushroom cultivation, Poultry Farming and Horticulture farming practices at Roing. These ladies who have obtained these training should be encouraged in their endeavour.	Agreed
<b>63</b>	For working women, a day care school for their children should be opened. A provision for night class should be made for the women of the area, so that ladies / women are educated and empowered. Education provided should be job oriented.	Agreed, it will be a part of contractor's establishment.  Shall be done under CSR.
<b>64</b>	Special packages for women, widows and orphans should be provided. Special Police cell for women should be opened, so that in case of any sexual harassment, complaints could be lodged.	Provision exists in the R&R Plan in accordance with the SRRP 2008.  State Govt subject.
<b>65</b>	Project developer should post a paediatrics and gynaecologist for people of the area	It shall be a part of hospital establishment.
<b>66</b>	Project affected families cannot be resettled at one go. It would be in pocket wise. Resettlement area should be at one place, so that benefits provided to project affected families could be availed by all.	District Administration to see.

<b>S. No.</b>	<b>Issues Raised by PAFs/Public</b>	<b>Clarification given by Project Proponent</b>
	Chanli village could be considered for resettlement. The area should be surveyed by Distt. Administration.	
<b>67</b>	Rehabilitation site should be developed with road, link road, etc. prior to start of the project. The R&R works must be completed before the construction phase of the project.	Provision of development of rehabilitation sites exists in the R&R plan. District Administration to see.
<b>68</b>	Compensatory allowance of Rs 2 crore annually for 20 years be given to DRI & Taloh valley PAFs welfare fund from date of commencement of operation of Etalin HEP	To be seen after COD.
<b>69</b>	Jindal company has given training for seven month and issued Diploma certificate. This certificate has got no meaning because neither the Jindal company nor the committee members give any value of the certificate.	We are training people for self-employment.
<b>70</b>	Salary difference is very high between us and employee brought from outside.	It depends on the type of expertise.
<b>71</b>	Jindal company should make an effort to provide teachers in schools where there is shortage of teachers.	Efforts are being made to locate qualified teachers to man the vacant positions.
<b>72</b>	Jindal company has deleted huge land from existing land requirement.	Land requirement has been optimized on the basis of certain technical requirements related to Topographical, Geological & Structural point of view. The feasibility of the proposed structures in the land reduced were not found to be in order due to steepness of slope & existence of adverse Geological conditions which were encountered recently during the geotechnical investigations. As a

S. No.	Issues Raised by PAFs/Public	Clarification given by Project Proponent
		result, we were compelled to shift the proposed structures further downstream & this area was found to be unsuitable for the intended purpose. However, during detail design engineering, the land deleted shall be revisited, if required.
73	Name of the village that has been misspelt as “Tangon” in the maps should be corrected as “Talo”.	Agreed.
74	Office of Jindal company should be established at Anini, so that if any queries are there with public/PAFs it could be address to.	We have a well-equipped office in Etalin with proper internet facilities and telephone lines, which are easily accessible.

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

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

#### 1. EAC Meeting Details:

EAC meeting/s	36 <sup>th</sup> Meeting
Date of Meeting/s	30.07.2025
Date of earlier EAC meetings	<ul style="list-style-type: none"> <li>21.10.2009 &amp; 16.11.2009 (Scoping Clearance for 4000 MW)</li> <li>26-27<sup>th</sup> December 2012 &amp; 1-2<sup>nd</sup> February 2013 (Scoping Clearance for 3097 MW)</li> <li>26-27<sup>th</sup> February 2015, 23-24<sup>th</sup> April 2015, 3-4<sup>th</sup> June 2015, 24-25<sup>th</sup> August 2015, 30<sup>th</sup> December 2016 and 30-31<sup>st</sup> January 2017 (for Environmental Clearance)</li> </ul>

#### 2. Project details:

Name of the Proposal	Etalin H.E. Project (3097 MW)
Proposal No.	IA/AR/RIV/544875/2025

Location (Including Coordinates)	<ul style="list-style-type: none"> <li>The diversion site on Dri Limb is located at Latitude 28°42'24" N, Longitude 95°51'52" E near Yuron village in Dibang Valley district.</li> <li>The diversion site on Talo (Tangon) Limb is located at Latitude 28°39'18" N, Longitude 96°00'07" E near Avonli village in Dibang Valley district.</li> <li>The Powerhouse site is located at Latitude 28°36'40" N, Longitude 95°51'51" E near Etalin village in Dibang Valley district.</li> </ul>
Company's Name	M/s SJVN Limited
CIN no. of Company/user agency	L40101HP1988GOI008409
Accredited Consultant and certificate no.	Name: R S Envirolink Technologies Pvt. Ltd. Certificate No.: NABET/EIA/2225/RA 0274
Project location (Coordinates /River/ Reservoir)	<ul style="list-style-type: none"> <li>The diversion site on Dri Limb is located at Latitude 28°42'24" N, Longitude 95°51'52" E near Yuron village in Dibang Valley district.</li> <li>The diversion site on Talo (Tangon) Limb is located at Latitude 28°39'18" N, Longitude 96°00'07" E near Avonli village in Dibang Valley district.</li> <li>The Powerhouse site is located at Latitude 28°36'40" N, Longitude 95°51'51" E near Etalin village in Dibang Valley district.</li> </ul>
Inter- state issue involved	No
Proposed on River/ Reservoir	Dri Limb (River) and Talo (Tangon) Limb (River)
Type of Hydro-electric project	Run-of-river
Seismic zone	V

### 3. Category details:

Category of the project	A
Capacity / Cultural command area (CCA)	3097 MW
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	-

### 4. ToR/EC Details:

ToR Proposal No.	<ul style="list-style-type: none"> <li>IA/AR/RIV/10114/2009</li> <li>IA/AR/RIV/542725/2025 (Transfer of ToR)</li> </ul>
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EAC meeting date	<ul style="list-style-type: none"> <li>• 21.10.2009 &amp; 16.11.2009 (for 4000 MW)</li> <li>• 26-27<sup>th</sup> December 2012 &amp; 1-2<sup>nd</sup> February 2013 (for 3097 MW)</li> </ul>
ToR Letter No.	<ul style="list-style-type: none"> <li>• J-12011/60/2006-IA-I (for 4000 MW)</li> <li>• J-12011/60/2006-IA-I (Part File) (for 3097 MW)</li> <li>• ToR Identification No.: TO25A0501AR5747175T (Transfer of ToR)</li> </ul>
ToR grant Date	<ul style="list-style-type: none"> <li>• 30.11.2009 (for 4000 MW)</li> <li>• 26.04.2013 (for 3097 MW)</li> <li>• 07.07.2025 (Transfer of ToR)</li> </ul>
Cost of project	Rs. 30037.36 Crore
Total area of Project	1175.03 Ha
Height of Dam from River Bed (EL)	<ul style="list-style-type: none"> <li>• 101.50 m on Dri Limb (from deepest foundation level)</li> <li>• 80.0 m on Talo Limb (from deepest foundation level)</li> </ul>
Details of submergence area	<ul style="list-style-type: none"> <li>• 83.32 ha on Dri Limb</li> <li>• 36.12 ha on Talo Limb</li> </ul>
District to provide irrigation facility (if applicable)	NA
Details of tunnels on upper level & lower level and length of canal (if applicable)	<ul style="list-style-type: none"> <li>• 10.72 km long Head Race Tunnel along Dri Limb</li> <li>• 13.04 km long Head Race Tunnel along Talo Limb</li> </ul>
No. of affected Village	18 (including 3 villages which are not recognized census village)
No. of Affected Families	284
Project Benefits	<p><b>Social Benefits</b> A number of marginal activities and jobs will be available to the locals during the construction phase. Local Area development facilities in education, medical, transportation, road network and other infrastructure. An opportunity for small-scale and cottage industries to develop in the area.</p> <p><b>Financial Benefits</b> Annual Energy Generation in 90%</p>

	dependable year is 12476.96 MU and Design Energy in 90% Dependable Year with 95% Plant availability is 12260.43 MU. An investment of Rs. 3003736.0 lakhs will be made for the project.
R&R details	Total 18 (including 3 villages which are not recognized census village) villages shall be affected due to acquisition of land for various components of proposed project. Total 284 project affected families have been identified, out of which 176 families have been identified as coming under Involuntary Displacement due to loss of their houses. A budgetary provision of Rs. 10953.00 lakh has been kept towards implementation of R&R plan.
Catchment area/ Command area	Catchment Area: 3685 sq km on Dri Limb and 2573 sq km on Talo Limb
Types of Waste and quantity of generation during construction/Operation	Municipal Solid Waste during construction - Degradable (400.00 Tons), Non degradable (600 Tons)
Material used for blasting and its composition as per DGMS standards.	Explosive is mainly required for open and underground rock excavation. Explosive magazines of 3160 MT capacity shall be provided at a suitable location selected at the site keeping sufficiently away from the human habitat.
E-Flows for the Project	E-Flow recommended on Dri Limb are 30.64 cumec during lean period, 50.00 cumec during monsoon period and 30.64 during intermediate period. E-Flow recommended on Talo Limb are 19.52 cumec during lean period, 26.17 cumec during monsoon period and 19.52 during intermediate period. Furthermore, dam-toe environmental units of 19.6 MW (Dri Limb) and 7.4 MW (Talo Limb) shall remain operational throughout the year in order to discharge the recommended environmental flows.
Is Projects earlier studied in Cumulative Impact assessment & Carrying Capacity studies(CIA&CC)	Yes E-Flow recommended by EAC as per CIA&CC study of River Basin. On Dri Limb, 30.64 cumec during lean period,



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.	50.00 cumec during monsoon period and 30.64 during intermediate period. On Talo Limb, 19.52 cumec during lean period, 26.17 cumec during monsoon period and 19.52 during intermediate period.
Details on provision of fish pass	As the heights of Dri and Talo (Tangon) dams is 101.5 m and 80m, respectively the construction of any fish passage or fish ladders is not feasible in the proposed dams.
Project benefit including employment details (no of employee)	During the peak construction phase, there will be a need to engage about 3000 labourers and 800 technical manpower. The majority of this labour force will be from the adjacent localities. Some other unskilled and skilled labourers will be brought from outside. These labourers will be settled near the construction site in the labour camps set up by the project authorities through their labour contractors.
Area of Compensatory Afforestation (CA) with tentative no of plantation.	2351.0603 ha; tentative no. of plantation - 2586167
Previous EC details	-
EC Compliance Report by R.O, MOEF&CC	-
No. of trees/saplings proposed in view of 'Ek Ped Maa Ke Naam' campaign	-

**5. Electricity generation capacity:**

Powerhouse Installed Capacity	3097 MW
Generation of Electricity Annually	12260.43 MU
No. of Units	12 (6 X 307 MW at Dri Limb + 4 X 307 MW at Talo (Tangon) Limb + 1 X 19.6 MW at Dri Limb + 1 X 7.4 MW at Talo (Tangon) Limb)

**6. Muck Management Details:**

No. of proposed disposal area/ (type of land- Forest/Pvt land)	12 nos. (forest land)
Cross section of proposed muck area, Height of muck with slope.	Attached as Appendix I
Distance of muck disposal area (location), from muck generation sources (project area)/River, HFL of proposed muck disposal area.	30 m from HFL.
Total Muck Disposal Area	113.70 ha
Estimate Muck to be generated	16564523 Cum (including swell factor considered as 1.25 and 1.4 for overburden or loose deposit and Rock respectively)
Transportation	The generated muck will be carried in dumper trucks covered with heavy-duty tarpaulin properly tied to the vehicle in line with international best practices. All precautionary measures will be followed during the dumping of muck. Based upon the varying cycle time of 20T Rear Dumpers at different excavation sites and their distance from the disposal site appropriate pollution management will be devised. The Standard practices of pollution abatement and control will be enforced through the contractor.
Monitoring mechanism for Muck Disposal Transportation	The provisions of Monitoring have been kept under proposed Environmental Monitoring Plan.

**7. Land Area Breakup:**

Private land	0.00
Government land	0.00
Forest Land	1175.03
Total Land	1175.03
Submergence area/Reservoir area	119.44
Additional information (if any)	-

**8. Presence of Environmentally Sensitive areas in the study area**

Forest Land/ Protected Area/	Yes/	Detailsof Certificate/ letter/ Remarks
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<b>Environmental Sensitivity Zone</b>	<b>No</b>	
Reserve Forest/ Protected Forest Land	No	No project component falls in any notified protected area. Nearest Protected Area to the Project Components is Dibang Wildlife Sanctuary which is at a distance of around 15.4 km (with ESZ boundary 14.5 km away) from tip of proposed reservoir area on Talo (Tangon) Limb (River)
National Park	No	
Wildlife Sanctuary	No	
Archaeological sites monuments/ historical temples etc.	No	
Additional information (if any)	-	

## 9. Public Hearing (PH) Details

Advertisement for PH with date	The Times of India, The Arunachal Time (English and Idu Mishmi Dialect) and Echo of Arunachal (English and Idu Mishmi Dialect), dated 11/11/2014
Date of PH	12/12/2014
Venue	Etalin Village, Dibang Valley District
Chaired by	Deputy Commissioner, Dibang Valley District
Main issues raised during PH	<ul style="list-style-type: none"> <li>i. Budget for feeder school and nursery school should be up to 10 crores for each school.</li> <li>ii. Additional economic package for partially affected villages, viz., Etalin HQ, Aguli, Athunli, Ayeso similar to additional economic package declared for Aruli village amounting to Rs. 95,00,000/-.</li> <li>iii. Revision of list of PAFs should be undertaken since no. of people hailing from project affected area was excluded in original PAFs list. Hence, it is requested to rectify the PAF list before its final publication.</li> <li>iv. As per draft SIA report numbers of involuntary displaced family is 156 only out of 256 families. As per our knowledge, numbers of involuntary displaced family ought to be more than 156. Thus, it is required to revise the list of involuntary displaced families so that not even a single family</li> </ul>

	<p>suffers in future.</p> <p>v. Number of self employed local artisans given in the draft is 9 persons only. Hence, review of same is necessary to ensure that names of genuine self-employed local artisans both man and woman should not be deprived of benefits they are entitled under appropriate law. In addition, one time financial assistance of Rs. 25,000/- proposed for local artisans should be enhanced to Rs. 50,000/-.</p> <p>vi. Project developer is urged to provide scholarship for 50 students each year for 45 years instead of 10 years.</p> <p>vii. Entire PAFs of Akobe village should be included under involuntary displaced family.</p> <p>viii. Insert provision for allocation of 2 hectares of agricultural land and 2 hectares of horticultural land and 10 hectares of grazing land for domestic animal like Mithun in and around the resettlement area.</p> <p>ix. Under Health Care, one referral hospital should be constructed at Etalin Bridge Point. A multi facilitated hospital should be opened for people of the area.</p> <p>x. Routine vaccination programme and health checkup should be undertaken. However, prior consultation of PAPFs/PRI/GBs is necessary during the peak period of construction of Hydro Electric Project.</p> <p>Complete issues raised during PH and clarification given by Project Proponent are attached as Appendix II</p>
No. of people attended	545

#### 10. Brief of base line Environment:

Particulars	Details		
Period of baseline data collection/Sampling period.	Winter	Pre-Monsoon/ Summer	Monsoon

Soil	December 2012 & December 2024	March-April 2012 & April 2025	July-August 2012
Air Environment	December 2012 & December 2024	March-April 2012 & April 2025	July-August 2012
Noise & Traffic	December 2012 & December 2024	March-April 2012 & April 2025	July-August 2012
Vegetation	December 2012 & December 2024	March-April 2012 & April 2025	July-August 2012
Faunal	December 2012 & December 2024	March-April 2012 & April 2025	July-August 2012
Water and Aquatic Ecology	December 2012 & December 2024	March-April 2012 & April 2025	July-August 2012
Socio-economic survey of study area villages	December 2012 & December 2024	March-April 2012 & April 2025	July-August 2012
Socio-economic survey of project affected families	-	June 2012, November 2013 and December 2024. In addition Social Impact Assessment (SIA) study carried out was submitted in January 2015	
Brief description on hydrology and water assessment as per the approved Pre-DPR:	The Etalin HEP is a run-of-the-river scheme proposed on the Dri and Tangon rivers in the Dibang basin of Arunachal Pradesh. The Dri River, after meeting Mathun, flows downstream and is joined by Tangon near Etalin village, where it is then called the Dibang River. The catchment area upstream of the diversion site is 3685 sq.km for Dri (128 sq.km snow-fed) and 2573 sq.km for Tangon (176 sq.km snow-fed), with most discharge contributed by rainfall. Hydrological data from 1986–2022 has been adopted for the project. The 1-in-25-year diversion floods are estimated at 4805 cumecs for Dri and 3670 cumecs for Tangon. For spillway design,		

	deterministic PMF values are 11811 cumecs (Dri) and 10218 cumecs (Tangon). GLOF contributions have been estimated at 1170 cumecs and 2143 cumecs respectively. Annual sediment inflow is 3.685 MCM for Dri and 2.573 MCM for Tangon, with capacity-inflow ratios of 0.002 and 0.0007; below the 0.005 threshold indicating serious sedimentation concerns. A desilting basin is proposed on the Tangon limb for sediment management.
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#### 11. Status of other statutory clearances

Particulars	Letter no. and date
Status of Stage- I FC	Stage-I (in-principle) approval granted by MoEF&CC (Forest Conservation Division) on 20.06.2025. Online Proposal No. FP/AR/HYD/IRRIG/462857/2024
Approval of Central Water Commission	<ul style="list-style-type: none"> <li>• Inter State Clearance vide letter 7/2/12/(NE)/2010-ISM/170 dated 06.06.2012.</li> <li>• FE&amp;SA clearance vide letter 11/32/TE/2012/FE&amp;SA/455 dated 09.08.2012.</li> <li>• International Aspects Clearance vide letter 31/43/2011/B&amp;B/2868-72 dated 23.10.2012.</li> <li>• CMDD (E&amp;NE) approvals vide letter No. 20/28/2012-CMDD (E&amp;NE)/388 dated 09.07.2013.</li> <li>• Hydel Civil Design (HCD) (E&amp;NE) approvals vide letter No. 3/5(24)2012-CMDD (E&amp;NE)/264 dated 05.07.2013.</li> <li>• Sedimentation studies cleared vide letter no. 4/356/2010-Hyd(NE)/141 dated 06.05.2011.</li> <li>• Design Flood for Dri Dam and Tangon Dam was recommended vide letter 4/356/2010-Hyd(NE)/385 dated 14.09.2011.</li> <li>• Diversion Flood for both Dri and Tangon limb was communicated vide letter dated 14.09.2011.</li> <li>• GLOF study approved vide their letter 6/11/2009/FE&amp;SA/632-633 dated 14.11.2011.</li> <li>• Water Availability Series approved vide their</li> </ul>

	letter dated 24.02.2024.
Approval of Central Electricity Authority	<ul style="list-style-type: none"> <li>• CEA vide its Letter No. 2/ARP/26/CEA/2010-PAC/3885-3917 dated 12/07/2013 accorded Concurrence at an estimated completion cost of Rs. 25296.95 Crore to M/s EHEPCL.</li> <li>• Subsequently, Concurrence was transferred in favour of M/s SJVNL on the same cost, features and terms and conditions as stipulated in CEA's concurrence letter dated 12.07.2013 and validity of concurrence was extended upto 31.12.2024 vide CEA letter dated 09.11.2023.</li> <li>• Further, CEA vide Letter dated 30.01.2025, extended the validity of Concurrence up to 31.12.2026 on the same terms and conditions as mentioned in letter dated 09.11.2023.</li> <li>• Further, CEA vide Letter dated 12.06.2025, Vetted the Total Project Cost at Completion level.</li> </ul>
Additional detail (If any)	
<b>Is FRA (2006) done for FC-I</b>	Yes, Deputy Commissioner, Dibang Valley District vide his Letter No. DV/LM-193(VOL-1/FRA)/14-15/6863 dated 12/02/2015 submitted the FRA Compliance Certificate (Form-II) under FRA-2006 to The Chief Conservator of Forests (Cons) cum Nodal Officer (FCA), Department of Environment & Forest, Govt. of Arunachal Pradesh.

### 36.2.3 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 Etalin H.E. Project (3097 MW) in an area of 1175.03Ha located at Village Adapowa, Aguli, Emuli etc., Sub-district Etalin & Anini, District Upper Dibang Valley, Arunachal Pradesh by M/s SJVN Limited.
- 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 Terms of Reference (ToR) for the EIA study of the 4000 MW Etalin HEP were granted by the MoEF&CC vide letter no. J-12011/60/2006-IA-I (Part File) dated 26.04.2013.
- 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 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.
- It has been noted by the EAC that the project [proposal number: IA/AR/RIV/10114/2009] was earlier considered by the EAC in its meetings held on 26<sup>th</sup> -27<sup>th</sup> February, 2015; 23<sup>rd</sup> - 24<sup>th</sup> April, 2015; 3<sup>th</sup> - 4<sup>th</sup> June, 2015; 24<sup>th</sup> -25<sup>th</sup> August, 2015, 30<sup>th</sup> December, 2016 and 30<sup>th</sup>-31<sup>st</sup> January, 2017. The EAC in its meeting held on 30<sup>th</sup>-31<sup>st</sup> January, 2017 recommended the proposal for grant of Environmental Clearance, however, the EC could not be issued by the Ministry due to involvement of forest land as the Stage-I forest clearance was not obtained by the PP. Meanwhile PP has been changed from M/s Etalin Hydro Electric Power Company Limited to M/s SJVN limited. Therefore, Terms of reference was transferred in favour of M/s SJVN by MoEF&CC on 07.07.2025 read with corrigendum dated 29.07.2025.
- PP not submitted Stage-I FC within stipulated time frame, i.e. 18 months; therefore, the PP submitted the proposal on Parivesh-2 for consideration by the EAC in terms of the provisions of the MoEF&CC Office Memorandum dated 19.06.2014 along with Stage-I forest Clearance granted by the Ministry vide letter dated 20.06.2025 in favour of SJVN Ltd. The EAC noted that collection of primary data commenced from April 2010 up to November 2013 and were conducted in different seasons of the year i.e. winter/lean season, pre-monsoon/summer and monsoon to collect data/ information on flora, fauna, forest types and ecological parameters as well as sociological aspects. Additionally , PP has submitted additional EIA report along with fresh baseline data i.e. in December, 2024 Pre and April, 2025.
- The EAC noted that earlier the total land required for the project was 1,155.11 ha whereas now the total land area has been revised to 1175.03 ha and the entire land required for project activities is unclassed forest land. Also, the Stage-I (in-principle) Forest Clearance



approval has been granted by MoEF&CC for 1175.03 ha forest land on 20.06.2025. There is no national park, wildlife sanctuary, Biosphere Reserve, Tiger/Elephant Reserve, Wildlife Corridor etc. within 10 km distance from the project site..

- The estimated project cost is Rs 30037.36 Crore. Total capital cost earmarked towards Environment Management Plan/environmental pollution control measures is Rs. 59394.75 lakh and the Recurring cost (operation and maintenance) will be about Rs. 18803.00 lakh.
- Public Hearing for the proposed project has been conducted by the State Pollution Control Committee on 12.12.2014 at Etalin village in Dibang Valley District. The meeting was chaired by the Deputy Commissioner, Dibang Valley District, ensuring due diligence in addressing public concerns and regulatory compliance. PP had informed that there has been no change in the demographic profile of the region, primarily due to the continuing lack of the basic infrastructure and development interventions. All the key features of the project – namely its location, technical parameters, land requirement, project affected villages and families remain unchanged since the last public hearing.
- The EAC discussed the concerns raised during the Public Hearing (PH) and reviewed the action plan submitted by the PP to address these issues. After detailed deliberation, the Committee found the action plan satisfactory, recognizing that the proposed mitigation measures adequately respond to stakeholders' concerns. The EAC was of the view that there is no requirement of fresh public hearing. However, it was emphasised to fulfill the commitments made in time bound manner.
- The EAC was also informed that the Cumulative Impact Assessment & Carrying Capacity Study(CIA&CCS) of Dibang River Basin in Arunachal Pradesh have been completed and the report has been accepted by the Ministry. PP further informed that the outcome and recommendations of CIA&CCS been dully incorporated in the updated EIA/EMP.
- The EAC also noted that the Wildlife Conservation Plan has been prepared by the Wildlife Institute of India, Dehradun, and has been duly approved by the Chief Wildlife Warden to address and mitigate potential impacts of the project on local wildlife. This has been formally communicated by the Principal Chief Conservator of Forests (PCCF) and Chief Wildlife Warden through a letter dated 07.04.2025. A year-wise action plan has been submitted, with a total budget allocation of ₹2,950.655 lakhs under this plan.

**36.2.4** The EAC after examining the information submitted and detailed deliberations reiterated its earlier recommendation on the project and recommended the proposal for grant of prior Environmental Clearance to Etalin H.E. Project (3097 MW) in an area of 1175.03Ha located at Village Adapowa, Aguli, Emuli etc., Sub-district Etalin & Anini, District Upper Dibang Valley, Arunachal Pradesh by M/s SJVN Limited, under the provisions of EIA Notification, 2006 and as amended with subject to compliance of applicable Standard EC conditions with the following additional specific environmental safeguard conditions:

**[A] Environmental management and Biodiversity conservation:**

- i. On-line monitoring system for the e-flow releases to be installed.
- ii. The plastic waste shall be disposed of by recycling and not by land filling.
- iii. Local indigenous varieties of plants to be grown and maintained till their full growth including gap filling.
- iv. Skill mapping be undertaken for the youths of the affected project area and based on the skill mapping, the trainings to the youths be incorporated for their appropriate engagements in the Project.
- v. Land acquired for the project shall be suitably compensated with the prevailing guidelines and all commitments made during the Public Hearing shall be fulfilled.
- vi. The project-affected population should be resettled and rehabilitated as per the latest R & R Policy.
- vii. Six monthly compliance reports shall be submitted by the PP to Regional Office, MoEF& CC, Shillong without fail until completion of the works.
- viii. The outcome and recommendations of Dibang River Basin Study will have to be fully abided by the project proponent.
- ix. The Environmental Management Plan (EMP) shall be strictly adhered to as submitted in the EIA/EMP reports. The budgetary provisions for implementation of EMP, shall be fully utilized and not to be diverted to any other purpose. In case of revision of the project cost or due to price level change, the cost of EMP shall also be updated proportionately.
- x. The contract clause limiting the No. of vehicles used during excavation and transportation shall followed scrupulously and the same shall informed to the ministry.
- xi. Ambient Air Quality Monitoring Stations for real time data to be installed at project site before commencement of the construction, shall be displayed at project site and its report to be submitted to IRO, MoEF&CC.
- xii. No vehicle purchase shall be allowed from funds earmarked for implementation of Wildlife Conservation plan.
- xiii. The Project Proponent shall explore the possibility to undertake tree transplantation, wherever feasible, in consultation with the State Forest Department. Survival of at least 80% of transplanted trees shall be ensured, with monitoring for a minimum period of five years.
- xiv. Plantation of saplings shall be carried out as a part of the tree plantation campaign "Ek Ped Ma Ke Naam" and the details of the same shall be uploaded in the MeriLiFE Portal (<https://merilife.nic.in>).

**[B] Disaster Management:**

- i. Disposal of the excavated muck and its filling on the low-lying area with proper measures for the stabilization and greenery to minimize the impacts of the generated

- construction muck shall be taken up pari passu with construction work.
- ii. Stabilization of muck disposal sites using biological and engineering measures shall be taken up immediately to ensure that muck does not roll down the slopes and does not pollute the natural streams and water bodies in surrounding area. The plantation on muck disposal site with local species for restoration of ecology and environment of the project site area shall be done as per instructions of the Forest Department.
  - iii. Necessary control measures such as water sprinkling arrangements, and construction of paved roads leading to muck disposal sites etc. shall be taken up on priority to arrest fugitive dust at all the construction sites.
  - iv. Solid waste generated, especially plastic waste, etc. should not be disposed of as landfill material. It should be treated with scientific approach and recycled. Use of single-use plastics may be discouraged.

**[C] Socio-economic:**

- i. Land acquired for the project shall be suitably compensated in accordance with the prevailing guidelines of the state government and provisions under Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013.
- ii. Solar panel be provided to the families living in rural areas within 10 km radius of project with annual maintenance.
- iii. School up to 12<sup>th</sup> Standard with smart classes shall be established and managed to provide free quality education for children from project affected villages/Tribal villages.
- iv. Scholarship programme shall be initiated for the youths in the project affected villages.
- v. 50 bed multi-specialty hospital shall be established to cater the need of tribal population/locals. The tribal population within 10 km radius of the project/Project Affected Villages shall be given free of cost medical facility.
- vi. Skill development Centre shall be established within 10 km radius of the project and regular training programmes for development and promotion of traditional art/products of tribal/local population.
- vii. Bio-Gas plant shall be installed in the Project affected area for Utilizing Cattle waste (Cow Dung) into renewable source of fuel.
- viii. An institutional mechanism to be developed to ensure the preference of jobs to PAFs and also a policy for preferential treatment for award of sundry works to the PAFs and their dependents.
- ix. The compliance of above conditions shall be monitored by IRO, MoEF&CC and regularly site visit once in year. The compliance report of IRO shall be regularly submitted to MoEF&CC.

**[D] Miscellaneous:**

- i. After 5 years of the commissioning of the project, a study shall be undertaken regarding impact of the project on the environment. The study shall be undertaken by an independent agency.
- ii. PP should establish in house (at project site) environment laboratory for measurement of environment parameter with respect to air quality and water (surface and ground). A dedicated team to oversee environment management shall be setup which should comprise of Environment Engineers, Laboratory chemist and staff for monitoring of air, water quality parameters on routine basis.
- iii. PP shall procure construction material only from those Organizations having all valid legal/statutory clearances/permissions or necessary permission to be obtained for quarrying construction materials for the project as per the EIA Notification, 2006 and as amended thereof.

### **Agenda Item No. 36.3**

**Damanganga-Vaitarna-Godavari Intrastate Link Project in an area of 1203.38Ha located at Village Poshera, Kurnoli, Met Humbhachi etc., Sub-district Mokhada, Igatpuri & Trimbakeshwar etc., District Palghar & Nashik by M/s Godavari Marathwada Irrigation Development Corporation, Aurangabad, Govt. of Maharashtra - Terms of References (TOR) – reg.**

**[Proposal No. IA/MH/RIV/522997/2025; F. No. J-12011/13/2025-IA.I (R)]**

**36.3.1** The proposal is for grant of Terms of References (ToR) to the project for Damanganga-Vaitarna-Godavari Intrastate Link Project in an area of 1203.38Ha located at Village Poshera, Kurnoli, Met Humbhachi etc., Sub-district Mokhada, Igatpuri & Trimbakeshwar etc., District Palghar & Nashik by M/s Godavari Marathwada Irrigation Development Corporation, Aurangabad, Govt. of Maharashtra.

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

- i. The proposal given by Govt. of Maharashtra viz., Damanganga (Val & Vagh) - Vaitarna (Kalampada, Dulachiwadi, Udhale & Upper Vaitarna) - Godavari (Kadva) - Godavari (Dev River) link project, herein after called as 'Damanganga- Vaitarna - Godavari link project'.
- ii. The Damanganga-Vaitarna-Godavari Intrastate River Link Project is designed to use a network of 7 dams; 5 are proposed and two existing along with lift and water conveyance

system to store and transfer water to Upper Godavari sub-basin. One of the proposed RCC dam (Borkhind) will replace the existing earthen embankment minor project. The project is designed to divert 160.97 MCM (including reservoir losses) of water from proposed reservoirs – Nilmati and Met in Damanganga basin and Koshimshet, and Udhale, in Vaitarna basin. These proposed dams will be integrated with existing reservoirs—Upper Vaitarna on the Vaitarna river, Kadwa reservoir on the Kadwa river, and the Borkhind reservoir (which will be replaced) in the Godavari basin-into the system for water diversion. The link project aims to provide irrigation to 33,110 hectares.

- iii. The water balance studies carried out by NWDA indicate that while the Damanganga and Vaitarna basins are having surplus water to the order of 995 MCM and 1818 MCM respectively, the adjacent Upper Godavari sub-basin is deficit of 2458 MCM at 75% dependability. Thus, the Upper Godavari sub-basin could be augmented with the surplus waters of Damanganga and Vaitarna rivers.
- iv. The geographical co-ordinate of the project are

**Nilmati Dam** (Proposed): Lat 19° 57' 24.24" N & Long 73° 26' 50.94" E.

**Met Dam** (Proposed): Lat 19° 55' 51.58" N & Long 73° 19' 22.84" E.

**Koshimshet Dam** (Proposed): Lat 19° 51' 28.2" N & Long 73° 22' 1.05" E.

**Udhale Dam** (Proposed): Lat 19° 46' 2.37" N & Long 73° 24' 56.87" E.

**Borkhind Dam** (Expansion): Lat 19° 45' N & Long 73° 50' E.

Upper Vaitarna Dam (Existing): Lat 19° 47' N & Long 73° 31' E.

Kadwa Dam (Existing): Lat 19° 45' 19.8" N & Long 73° 46' 37.8" E.

- v. The Damanganga-Vaitarna-Godavari link project comprises of the following components:

#### **A. Nilmati-Upper Vaitarna sub link**

- a) A 395.00m long proposed Roller Compacted Concrete dam across river Val, a tributary of Damanganga near village Nilmati with FRL 460.0 m and corresponding gross storage capacity of 24.12 MCM. The length of the non-overflow section of dam is 365.00 m and the length of overflow section is 30.0 m;
- b) A pump house with static lift of 182.00 m on the foreshore of Nilmati reservoir for diversion of water with total installed capacity of 9.6 MW;
- c) Water conveyance system (7.72 km) with combination of rising main, tunnel and deep cut canal from Nilmati reservoir to existing Upper Vaitarna reservoir;

#### **B. Met- Upper Vaitarna sub link**

- a) A 524.50m long proposed roller compacted concrete dam across river Vagh, a tributary of Damanganga near village Met with FRL 340.00 m and corresponding gross storage

capacity of 55.88 MCM. The length of the non-overflow section of dam is 494.5 m and the length of overflow section is 33.0 m.

- b) 3 Pump houses, located at RD 0.164 km, 5.544 km and 11.7 km of the conveyance system between the Met reservoir to existing Upper Vaitarna reservoir for diversion of water with total static lift of 325.00 m and installed capacity of 38.00 MW;
- c) Water conveyance system (14.542 km) with combination of raising main, tunnel and deep cut canal from Met reservoir to existing Upper Vaitarna reservoir;

#### **C. Koshimshet-Upper Vaitarna sub link**

- a) A 1667.50 m long proposed Roller Compacted Concrete dam across river Pinjal, a tributary of Vaitarna near village Koshimshet with FRL 380.0 m and corresponding gross storage capacity of 43.66 MCM. The length of the non-overflow section of dam is 1633.0 m and the length of overflow section is 34.50 m.
- b) 3 Pump houses, located at RD 0.377 km, 4.726 km and 5.065 km of the conveyance system between reservoir to existing Upper Vaitama reservoir with total static lift of 258m and installed capacity of 23.10 MW;
- c) Water conveyance system. comprising of raising main 8.335 km long from reservoir to existing Upper Vaitarna reservoir.

#### **D. Udhale- Upper Vaitarna sub link**

- a) A 485.0 m long proposed Roller Compacted Concrete dam across river Gargai a tributary of Vaitama near village Udhale with FRL 404.50 m and corresponding gross storage capacity of 16.05 MCM. The length of the non- overflow section of dam is 464.0 m and the length of overflow section is 21.0m.
- b) 3 Pump houses, located at RD 0.141 km, 1.433 km and 2.45 km of the conveyance system between Udhale reservoir to existing Upper Vaitarna reservoir with total static capacity of 228m and installed capacity of 11.5 MW;
- c) Water conveyance system comprising raising main of 8.10 km long from Udhale reservoir to existing Upper Vaitarna reservoir.

#### **E. Upper Vaitarna - Kadva sub link**

- a) A 6715.70 m long existing Upper Vaitarna reservoir across river Vaitarna near village Dharwad with FRL 603.51 m and corresponding gross storage capacity of 353.96 MCM. The reservoir facilitates for collection of surplus waters from four proposed reservoirs and further diversion to existing Kadva reservoir in Godavari basin;
- b) A pump house at RD 0.14 km with static lift of 40 m with installed capacity of 15.3 MW
- c) Water conveyance system (28.05 km) with combination of 5 tunnels and interconnecting open pipeline from existing Upper Vaitarna reservoir to existing Kadva reservoir on Godavari basin

#### **F. Kadva-Borkhind sub link**

- a) A 1683 m long existing Kadva reservoir across river Kadva, a tributary of Godavari near village Kadva with FRL 589.00 m and corresponding gross storage capacity of 54.47 MCM. The reservoir will facilitate to receive water from Upper Vaitarna reservoir and release 40 MCM into Dama a tributary of Godavari and transfer remaining 109 MCM to Borkhind dam.
- b) A Pump houses, at foreshore of existing Kadva reservoir with a static lift of 96 m with an installed capacity of 17.7 MW;
- c) Water conveyance system comprising raising main of 8.979 km long from existing Kadva reservoir to Borkhind reservoir.

#### **G. Borkhind-Dev nadi sub link**

- a) A 1043 m long proposed Roller Compacted Concrete dam across Kolwal a tributary of Dama river 200m dis of existing Borkhind dam with FRL 670 m with Gross storage of 46.75 MCM. The length of non-overflow section is 1022 m and the length of spillway is 21 m.
- b) A dam-toe pumphouse with static lift of 100m with installed capacity of 16.5 MW
- c) Water conveyance system with combination of rising main and tunnel of 8.199 Km long from Borkhind to Dev nadi.

vi. **Land requirement:** The total land required for the construction of various components and related works for DVG project is estimated to be around 1203.38 ha, out of which 993.02 ha is non-forest land, 1.2 ha is Govt. land and 209.16 ha is forest land. Diversion of forest land for non-forest purpose will be involved for construction of DVG project components. Therefore, Forest Clearance is required to be obtained under the Forest Conservation Act.

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

#### **Nilmati Reservoir:**

The total population of all 5 affected villages i.e. Dandwal, Ambai, Karchurli, Kalmuste and Umbrande is 4027 spreads over 724 households. Thus, the average number of members per household is about 6. The population of males in the affected villages is 2014 while that of the females is 2013. The average sex ratio in the villages is almost 1000. The number of Schedule Caste (SC) and Scheduled Tribe (ST) households in the villages are 63 and 643 respectively. Number of families belonging to other category is 596. Maximum ST families 198 are found in village Dandwal (*Source: Census 2011*).

#### **Met Reservoir:**

Total population of all the 5 affected villages i.e. Mokhada, Sakhari, Kelghar and NyhaleBk is 12984 spreads over 2893 households. Thus, the average number of members per household is about 4. Population of males in the villages area is 6363 while that of the

females is 6531. The average sex ratio in the project area is 1026. The number of Schedule Caste (SC) and Scheduled Tribe (ST) households in the project affected villages are 40 and 2297 respectively. Number of families belonging to other category is 596. Maximum ST families 1271 are found in village Mokhada (*Source: Census 2011*).

#### **Koshimshet Reservoir:**

Total population of all the 4 affected villages i.e. Washala, Dolhare, Saturly and Palsunde is 6752 spreads over 1453 households. Thus, the average number of members per household is about 5. Population of males in the villages is 3416 while that of the females is 3336. The average sex ratio in the project area is 977. The number of Schedule Caste (SC) and Scheduled Tribe (ST) households in the project affected villages are 38 and 1342 respectively. Number of families belonging to other category is 73. Maximum ST families 452 are found in village Saturly (*Source: Census 2011*).

#### **Udhale Reservoir:**

Total population of all the 4 affected villages i.e. Jogalwadi, Sayade and Udhale is 4349 spreads over 869 households. Thus, the average number of members per household is about 5. Population of males in the villages is 2212 while that of the females is 2137. The average sex ratio in the project area is 966. The number of Schedule Caste (SC) and Scheduled Tribe (ST) households in the project affected villages are 10 and 863 respectively. Number of families belonging to other category is 6. Maximum ST families 423 are found in village Sayade (*Source: Census 2011*).

- viii. **Water requirement:** 160.97 MCM
- ix. **Project Cost:** The estimated project cost is Rs 13497.24 Cr. Total capital cost earmarked towards environmental pollution control measures will be worked out during EIA studies as well as Recurring cost (operation and maintenance).
- x. **Project Benefit:** Total employment will be 1875 including direct and indirect. Intended benefits are
- The diverted water will cater mainly to the domestic, industrial, and irrigation needs of the water-scarce Sinnar Taluka in the Godavari basin (Nashik district), as well as support local development in Mokhada and Jawhar talukas of Palghar District, Maharashtra.
  - The link project aims to provide direct irrigation to 17,960 hectares, utilizing 61.53 MCM of water
  - An additional 14.21 MCM will be allocated for industrial water requirements along the Delhi-Mumbai industrial corridor.



- 3.00 MCM is earmarked for domestic water needs.
  - The project will release 40.0 MCM of water to the Godavari river—20 MCM to stabilize irrigation and 20 MCM for industrial use in the Marathwada region.
  - Furthermore, irrigation is proposed for an additional 4,020 hectares using recycled water available from the domestic and industrial water supply from Sinnar Town.
- xi. **Environmental Sensitive area:** Tansa Wildlife Sanctuary is about 2.4 km from the proposed Udhale dam on Gargai nala, a tributary of Pinjal river. ESZ of Tansa WLS is not yet notified. Therefore, wildlife NOC from NBWL will be applicable. Kalsubai Harishchandragad WLS is about 11 km from pipeline. ESZ is notified and project is outside the ESZ.
- xii. **MoU / any other clearance / permission signed with State government:** MoU between National Water Development Agency (NWDA), Ministry of WR, RD & GR, Govt. of India and Water Resources Department (WRD), Govt. of Maharashtra was executed on 19/06/2019.
- xiii. **Alternative Studies:** Alternative site analysis has been carried out for each of the dam location to select the best site from technical as well as environment and social parameters. Alternative site analysis was carried out with a view to submerge minimum forest land and avoid submergence of habitation.

## 1. Alternative for Nilmati Dam

Two alternate dam axis alignments have been studied of which the best possible one after detailed topographic survey of the area has been considered followed by their technoeconomic feasibility study.

**Alternative-1** Dam location, at N 19° 57' 43.88" E 73°26'39.19 FRL is 442 M and MDDL 501.6 M, gross storage (FRL = 25.24) but during topographical survey, and during the combined field investigation of GSI, Nagpur and CSMRS, New Delhi. team cancel this location due to rock quality not satisfied.

Land affected (reservoir submergence including quarry, colony and approach road) as below:

Name	Forest	Govt	Private
Nilmati	113.24 ha	0 ha	10.81 ha

**Alternative-2** Nilmati dam axis alignment lies with the end coordinates of N 19° 56' 53.6", E 73°26' 57.78" and N 19° 56' 38.79", E 73° 27.4' 4.07" FRL 460M is and MDDL 430 M, gross storage 24.12 M is upstream side of Alternative 1.

This location has been considered suitable from the point of view saving of forest land

which is 4.68 ha. Land effected (reservoir submergence including quarry, colony and approach road) as below:

Name	Forest	Govt	Private
Nilmati	108.56 ha	0 ha	10.81 ha

## 2. Alternative for Met Dam

### Alternative – I (Ghatkarpada dam)

During DPR stage and survey works going on the Ghatkarpada dam site is located at 19°54'29.92" and 73°20'14.94" with a catchment area of 36.605 sq.km. But as shown in KMZ, Sakhri village is near the dam line and about 1000 people are affected in this village and along with that forest and private land is also getting affected by this dam, and due to the presence of more houses in the FRL 372.25 M with a catchment area of 36.605 sq.km and submergence area including colony and approach road Forest – 8.02 ha Govt. 0 ha Private- 283.14 ha total – 291.16 ha, In this alternative also, 3 villages are getting submerged.

Name	Forest	Govt	Private
Ghatkarpada dam	8.02 ha	0 ha	283.14 ha

### Alternative – II : (Pimpalpada Dam)

Another alternative dam site is explored across Vagh near village Pimplapada at 19°56'26.1223" and 73°19'26.2569" with a catchment area of 64.723 sq.km. which is about 8.3 km d/s of original proposal. Considering same FRL (350 m) as in Alternative II, the area of submergence is estimated to be 612 ha with a storage capacity of 144.64 Mm<sup>3</sup>. In this alternative also, 2 villages are getting submerged. To restrict the height of dam and submergence, a dam with lower FRL could be planned at this site. Land affected (reservoir submergence including quarry, colony and approach road) as below:

Name	Forest	Govt	Private
Pimpalpada dam	242.24 ha	4.2 ha	365.40 ha

### Alternative – III : (Met Dam)

Met dam site is explored across Vagh near village Met at 19°55'51.58" and 73°19'22.84" (catchment area of 57.0 sq.km.) which is about 6.5 km d/s from ghatkarpada dam proposal. An FRL of 340.0M. and a capacity of 58.47 MCM. This site is nearer to Ambepani village. The submergence is mostly limited to gorge portion only and it appears that no villages are getting submerged. Max. height of dam is 80 m. To restrict the height of dam and submergence, a dam with lesser live storage in combination with other dams could be planned. 5 Villages partial likely to be affected due to storages. Population affected are

minimum.

After finalising the location, multiple core samples were taken on the dam line by the agency and examined by Geological Survey of India, Nagpur. GSI submitted an inspection note on met dam. This location has been considered suitable from the point of view of forest land is 8.02 ha, and private land and state highway road also. avoiding about 600people. Land affected (reservoir submergence including quarry, colony and approach road) as below:

Name	Forest	Govt	Private
Met dam	0 ha	1.2 ha	279.81 ha

### 3. Alternative for Koshimshet Dam

**Alternative 1:-** Pulachiwadi dam site is located at 19°52'37.33" and 73°52'52.63" with MDDL- 396.0M and FRL 420.15 M

**Alternative 2:-** Bedukpada dam site is located 19°51'26.19" and 73°23'46.88" In this project there are 5 village are fully affected and more than 700 people are also affected.

Mostly land use under submergence is forest and private. One state highway road from Mokhada - Khodala are also affected. Viewpoint of saving approximate 1000 people, forest and private land, and state highway road, this dam was not considered appropriate. Land affected (reservoir submergence including quarry, colony and approach road) as below:

Name	Forest	Govt	Private
Pulachiwadi dam	51.8 ha	0 ha	361.08 ha
Bedukpada	49.53 ha	0 ha	364.19 ha

**Alternative-3** dam site is explored across Vagh near village Met at 19°51'28.2" and 73°22'1.05" catchment area of 38.49 sq.km.) which is about 3/4 km d/s from 2 alternative dam proposal. An FRL of 380.0M. and a capacity of 60.07 MCM. The submergence is mostly limited to gorge portion only and it appears that no villages are getting submerged. Max. height of dam is 84.35 m. 4 Villages partial likely to be affected due to storages. Population affected are minimum. Land affected (reservoir submergence including quarry, colony and approach road) as below:

Name	Forest	Govt	Private
Koshimshet	48.6 ha	0 ha	350.1 ha

Keeping in view the lowest forest and private land requirement; this alternative was finalised. After finalising the location, multiple core samples were taken on the dam line

by the agency and examined by Geological Survey of India, Nagpur. This location has been considered suitable from the point of view of saving cost, avoiding about people, forest and private land and state highway road.

#### 4. Alternative for Udhale Dam

According to Topographic survey and after visit to Gargai nala, basin there are no such kind of location is suitable for propose new dam. Only one site was found to be suitable for dam site. The Udhale dam axis alignment lies with the end coordinates of N 19° 46' 2.37", E 73° 24' 56.87" After finalising the location, multiple core samples were taken on the dam line by the agency and examined by Geological Survey of India, Nagpur.

This location has been considered suitable from the point of view of saving cost, avoiding about people, forest and private land. Land affected (reservoir submergence including quarry, colony and approach road) as below:

Name	Forest	Govt	Private
Udhale	0 ha	0 ha	153.7 ha

xiv. Status of Litigation Pending against the proposal, if any : **Nil**

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

#### 1. Project details:

Name of the Proposal	Damaganga-Vaitarna-Godavari Intrastate Link Project
Location (Including coordinates)	<p>Nashik &amp; Palghar districts, Maharashtra</p> <p><b>Nilmati Dam</b> (Proposed): Lat 19° 57' 24.24" N &amp; Long 73° 26' 50.94" E.</p> <p><b>Met Dam</b> (Proposed): Lat 19° 55' 51.58" N &amp; Long 73° 19' 22.84" E.</p> <p><b>Koshimshet Dam</b> (Proposed): Lat 19° 51' 28.2" N &amp; Long 73° 22' 1.05" E.</p> <p><b>Udhale Dam</b> (Proposed): Lat 19° 46' 2.37" N &amp; Long 73° 24' 56.87" E.</p> <p><b>Borkhind Dam</b> (Expansion): Lat 19° 45' N &amp; Long 73° 50' E.</p> <p><b>Upper Vaitarna Dam</b> (Existing): Lat 19° 47' N &amp; Long 73° 31' E.</p> <p><b>Kadwa Dam</b> (Existing): Lat 19° 45' 19.8" N</p>

	& Long 73° 46' 37.8" E.
Inter- state issue involved	No
Seismic zone	Zone-III

## 2. Category details:

Category of the project	A
Provisions	
Capacity / Cultural command area (CCA)	33110 ha
Attracts the General Conditions (Yes/No)	Yes
Additional information (if any)	Nil

## 3. Electricity generation capacity: Nil

## 4. ToR/EC Details:

Cost of project	Rs. 13497.24 Cr.
Total area of Project	1203.38 ha
Height of Dam from River Bed (EL)	<p>Nilmati Dam (Proposed): 87.50 m</p> <p>Met Dam (Proposed): 80.0 m</p> <p>Koshimshet Dam (Proposed): 84.35 m</p> <p>Udhale Dam (Proposed): 68 m</p> <p>Borkhind Dam (Expansion): 69.50 m</p>
Length of Tunnel/Channel	<p>Nilmati reservoir to Upper Vaitarna reservoir: 7723.0 m</p> <p>Met reservoir to Upper Vaitarna reservoir: 14542.0 m</p> <p>Koshimshet reservoir to Upper Vaitarna reservoir: 8335.0 m</p> <p>Udhale reservoir to Upper Vaitarna reservoir: 8100.0 m</p> <p>Upper Vaitarna to Kadva: 28050 m</p> <p>Kadva to Borkhind: 8979.0 m</p>

	Borkhind to Dev Nadi: 8199.0 m
Details of Submergence area	Nilmati Dam (Proposed): 119.4 ha  Met Dam (Proposed): 275.0 ha  Koshimshet Dam (Proposed): 375.8 ha  Udhale Dam (Proposed): 153.7 ha Borkhind Dam (Expansion): 42.62 ha
Types of Waste and quantity of generation during construction/ Operation	Muck from excavation, solid waste from  labour colony and construction waste
E-Flows for the Project	As per EIA Study to be carried out/as recommended by EAC
Is Projects earlier studies in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes, then  a) E-flow with TOR /Recommendation by EAC as per CIA&CC study of River Basin.  b) If not the E-Flows maintain criteria for sustaining river ecosystem.	No

## 5. Land Area Breakup:

Private Land	993.02 ha
Government land	1.20 ha
Forest Land	209.16 ha
Total Land	1203.38
Submergence area/Reservoir area	1072.79 ha
Additional information (if any)	Nil

## 6. Presence of Environmentally Sensitive areas in the study area

<b>Forest Land/ Protected Area/ Environmental Sensitivity Zone</b>	<b>Yes/No</b>	<b>Details of Certificate / letter/ Remarks</b>
Reserve Forest/Protected Forest Land		<ul style="list-style-type: none"> <li>Distance of Tansa Wildlife Sanctuary is about 2.4 km from the proposed Udhale dam on Gargai nala, a tributary of Pinjal river. ESZ is not notified.</li> </ul> <p>Therefore, wildlife NOC from NBWL will be applicable.</p> <ul style="list-style-type: none"> <li>Kalsubai Harishchandragad WLS is about 11 km from pipeline. ESZ is notified and project is outside the ESZ.</li> </ul>
National Park		
Wildlife Sanctuary		

## **7. Court case details: Nil**

## **8. Miscellaneous**

<b>Particulars</b>	<b>Details</b>
Details of consultant	<p>M/s. R S Envirolink Technologies Pvt. Ltd. (RSET) (NABET Accredited Consultant Organization)</p> <p>Certificate No : NABET/EIA/2225/RA0274</p> <p>Validity : August 15, 2025</p> <p>Contact Person : Mr. Ravinder Bhatia</p> <p>Name of Sector : River Valley and Hydroelectric Projects</p>

	Category : A MoEF Schedule : I(C) Address : 403, Bestech Chambers, Block-B, Sushant Lok Phase I, Sector 43, Gurugram, Haryana - 122009 E-mail : ravi@rstechnologies.co.in Land Line : (0124) 4295383 Cellular : (+91) 9810136853
Project Benefits	<ul style="list-style-type: none"> <li>The link project will provide direct irrigation to 23250 ha, in addition, it is proposed to provide irrigation to an extent of 9860 ha using recycled water available from the domestic and industrial water supply in Sinnar tehsil.</li> <li>Employment generation for technical staff &amp; workmen category (including locals)</li> </ul>
Status of other statutory clearances	Forest Clearance - Online application seeking forest diversion for around 209.16 Ha after receipt of ToR Approval, alongwith other statutory clearances (as applicable) from State as well as Central government will be obtained post completion of Detailed Project Report.
R&R details	Details shall be evaluated during EIA/EMP Studies
Additional detail (If any)	Nil

### 36.3.3 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 to the project for conducting EIA/EMP and Public hearing for Damanganga-Vaitarna-Godavari Intrastate Link Project in an area of 1203.38Ha located at Village Poshera, Kurnoli, Met Humbhachi etc., Sub-district Mokhada, Igatpuri & Trimbakeshwar etc., District Palghar & Nashik by M/s Godavari Marathwada Irrigation Development Corporation, Aurangabad, Govt. of Maharashtra.
- The EAC noted that the all irrigation projects falls under Category B as per EIA Notification 2006 as amended. The command area of the project is 33110 Ha, however, the project attracts the General Condition of EIA Notification 2006 as amended, as the



proposed project cover area is about 2.4 km from Tansa Wildlife Sanctuary; hence, the project has to be appraised at Central Level as Category “A” project of item 1 (c) ‘River Valley projects’ of the Schedule to the EIA Notification, 2006.

- The EAC noted that the Damanganga-Vaitarna-Godavari is Intrastate River Link Project and designed to use a network of 7 dams; 5 are proposed and two existing along with lift and water conveyance system to store and transfer water to Upper Godavari sub-basin.
- The committed observed that the total land required for the construction of various components and related works for the proposed project is estimated to be around 1203.38 ha, out of which 993.02 ha is non-forest land, 1.2 ha is Govt. land and 209.16 ha is forest land. The application for Stage-I forest clearance yet to be submitted.
- The EAC noted that the Tansa Wildlife Sanctuary is about 2.4 km from the proposed Udhale dam on Gargai nala, a tributary of Pinjal river. The ESZ of Tansa WLS is not yet notified therefore, recommendations of the NBWL will be applicable. Kalsubai Harishchandragad WLS is about 11 km from pipeline. ESZ is notified and project is outside the ESZ.

**36.3.4** The EAC based on the information submitted and as presented during the meeting, recommended the proposal for grant of Standard ToR issued by the Ministry for conducting EIA/EMP study with Public consultation for Damanganga-Vaitarna-Godavari Intrastate Link Project in an area of 1203.38Ha located at Village Poshera, Kurnoli, Met Humbhachi etc., Sub-district Mokhada, Igatpuri & Trimbakeshwar etc., District Palghar & Nashik by M/s Godavari Marathwada Irrigation Development Corporation, Aurangabad, Govt. of Maharashtra., under the provisions of EIA Notification, 2006, as amended along with the following additional/specific ToR.

**[A] Environmental Management and Biodiversity Conservation**

- i. PP shall obtain NBWL Clearance in view of project cover area is about 2.4 km from Tansa Wildlife Sanctuary.
- ii. Explore the possibilities for reducing the Forest land requirement. The application for obtaining Stage I FC for 209.16 ha of forest land involved in the project shall be submitted.
- iii. Prepare Wildlife conservation plan with mitigation measures for minimizing the human–animal conflict and be suitably incorporated in the wildlife conservation plan in consultation with reputed government expert institute and State Forest Department.
- iv. Prepare Environmental Cost Benefit Analysis in terms of ecological damage due to diversion of Forest land/ loss of biodiversity and its impacts on ecosystem, water availability, water uses for generation of hydro power in study area 10 km from periphery of Project components.

- v. A study shall be carried out on impact of project activity on the aquatic and terrestrial ecosystem, within project area classifying the impact zones (highly impact/low impact zone) based on seasonal variations and covering the aspects related to impacts on aquatic ecosystem/ primary productivity due to quantity of water to be lifted and thermal stratification. Accordingly, Environment Management plan shall be prepared.
- vi. Sampling locations be located to cover villages situated near the reservoir and around boundary of forest area for collection of baseline data and data to be incorporated in EIA/EMP report.
- vii. Source of construction material and its distance from the project site along with detailed transportation plan for construction material be elaborated in the EIA EMP report. A detailed reclamation/ restoration plan of quarrying site/sites be incorporated in the EIA/EMP report.
- viii. A detailed wildlife conservation plan for Schedule –I species, duly approved by the Chief Wildlife Warden, be submitted.
- ix. In case any wildlife corridor is located within 10 km radius of the project site a detailed study shall be conducted to assess the impact of project on safe movement of wild animals.
- x. Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP.
- xi. PP shall prepare detailed plan for Plantation of saplings under the tree plantation campaign "Ek Ped Ma Ke Naam".

**[B] Socio-economic Study**

- i. Public Health Delivery Plan including the provisions of drinking water supply for local population shall be in the EIA/EMP Report. Status of the existing medical facilities in the project area shall be discussed. Possibilities of strengthening of existing medical facilities, construction of new medical infrastructure etc. will be explored after assessing the need of the labour force and local population.
- ii. Declaration by the Project Proponent by way of affidavit that "No" Inter-state issue/ policy issue is involved with any State in the project.
- iii. All the tasks including conducting public hearing shall be done as per the provisions of EIA Notification, 2006 and as amended from time to time. Public hearing issues raised and compliance of the same shall be incorporated in the EIA/ EMP report in the relevant

chapter.

- iv. Statement on the commitments (activity-wise) made during public hearing to facilitate the discussion on the CER in compliance of the Ministry's OM F. No. 22- 65/2017- IA.III dated 30th September, 2020 shall be submitted.
- v. Tentative no. of project affected families shall be identified and accordingly appropriate Rehabilitation & Resettlement plan shall be prepared.
- vi. Details of settlement in 10 km area shall be submitted.
- vii. Statement on the commitments (activity-wise) made during public hearing to facilitate the discussion on the CER in compliance of the Ministry's OM F. No. 22- 65/2017- IA.III dated 30<sup>th</sup> September, 2020 shall be submitted.

**[C] Muck Management:**

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

**[D] Miscellaneous.**

- i. Pre-DPR Chapters viz. Hydrology, Layout Map and Power Potential Studies duly approved by CWC/CEA shall be submitted.
- ii. Undertaking need to submitted on affidavit that regarding no activities has been yet started on the project site and water allocated to this scheme shall not be diverted to other purpose.
- iii. Both capital and recurring expenditure under EMP shall be submitted.
- iv. The photograph should bear the date, time, latitude & longitude of the monitoring station/sampling location. In addition to this PP should submit the original test reports and certificates of the labs which will analyse the samples.
- v. Arial view video of project site shall be recorded and to be submitted.

- vi. As per Ministry's OM dated 1<sup>st</sup> August, 2013, PP shall submit application to obtain prior approval of Central Government under the Forest Conservation Act, 1980 for diversion of forest land required for such projects will be submitted as soon as the actual extent of forest land required for the project is known to the project proponent, and in any case, within 6 months of issuance of ToR. However, no proposal will be put up before EAC without submission of application for forest clearance, wherever applicable.

#### **Agenda Item No. 36.4**

**Kandhaura Pumped Storage Project (1680 MW) in an area 569.707 Ha at Village Sashnai Sub- district Robertsganj, District Sonbhadra, Uttar Pradesh by M/s JSW Energy PSP Six Limited – Environmental Clearance - reg.**

**[Proposal No. IA/UP/RIV/544923/2025; F. No. J-12011/62/2023-IA.I (R)]**

**36.4.1:** The proposal is for grant of Environmental Clearance (EC) to the project for Kandhaura Pumped Storage Project (1680 MW) in an area 569.707 Ha at Village Sashnai Sub- district Robertsganj, District Sonbhadra, Uttar Pradesh by M/s JSW Energy PSP Six Limited.

**36.1.2:** The Project Proponent and the accredited Consultant M/s. J.M. EnviroNet Pvt. Ltd., made a detailed presentation on the salient features of the project and informed that:

- i. M/s. JSW Energy PSP Six Limited is proposing an Off-stream Closed Loop Pump Storage Hydropower Project (1680 MW) at Village: Sashnai, Taluka: Obra, and Villages: Markuri & Cherue, Taluka: Robertsganj, District: Sonbhadra, Uttar Pradesh. Kandhaura Pumped Storage Project (PSP) is Off-Stream Closed Loop pumped storage development proposed with an installed capacity of 1680 MW.
- ii. The Project comprises of development of upper & lower reservoirs with a gross storage capacity of 15.16 MCM (0.535 TMC) & 17.19 MCM (0.607 TMC) respectively, out of which upper reservoir to be constructed with maximum dam height of 48.00 m (from deepest bed level) to create the desired storage capacity while the lower reservoir will have maximum height of 34.32 m (from deepest bed level) constructed at the downhill. The scheme of operation for the project is with 6.35 Hours of peak hour generation per day and 7.22 Hours for pumping back the water to the upper reservoir.
- iii. 19.19 MCM water is needed for One-time filling of reservoir which will be sourced from Sone River during surplus flows in the monsoon season, this requirement is less than 1 percent of the water available at Sone River in monsoon months and 2.65 MCM water will be required annually to recoup the water losses and the same will be met from Rain water and Sone River.
- iv. Project will generate 1680 MW (5 units of large pump turbines x 280 MW and 2 units of small pump turbines x 140 MW) of peak power for about 6.35 hours by utilizing a design discharge of 477.25 Cumec with a rated head of 328.20 m for large pump

turbines and 95.74 Cumec with a rated head of 327.20 m for smaller pump turbines respectively. The Project will utilize 1860 MW to pump water 13.16 MCM (0.465 TMC) of water to the upper reservoir in 7.22 hours.

- v. The Terms of Reference issued by MoEF&CC, New Delhi vide ToR letter no. J-12011/62/2023-IA.(R) dated 16.04.2024 which was further amended on dated 21.10.2024 & 14.07.2025.

- vi. The geographical co-ordinate of the project are:

Pillar No.	Direction	Latitude	Longitude
P1	North	24°31'37.46"N	83°7'53.65"E
P2	West	24°31'11.32"N	83° 7'26.71"E
P3	East	24°30'2.57"N	83°11'44.56"E
P4	South	24°28'13.08"N	83°10'1.14"E

- vii. The Proposed Kandhaura Pumped Storage Project envisages construction of an Upper reservoir with a gross storage 15.16 MCM featuring a Geomembrane Faced Rockfill Dam (GFRD) with Spillway (including Saddle dams) of length 1590.01 m (including Main dam & Saddle dam). The lower reservoir envisages construction of 672.07 m long Geomembrane Faced Rockfill Dam (GFRD) with Spillway (including non-overflow and overflow section) for formation of gross storage of 17.19 MCM.
- viii. **Land requirement:** Total area required for the proposed project is 569.707 Ha (Private land: 64.537 Ha, Forest land: 493.51Ha and Government land: 11.66 ha). Out of total Project area, 20 Ha area is proposed to be developed under the greenbelt development/ Plantation.
- ix. **Demographic details in 10 km radius of project area:** The study area comprises of 52 villages with a total population of 112852, number of Households 19956, SC Population as 15811 and ST Population as 49535. Total Working population of the study area is 40 % (51 % Main workers & 49 % Marginal workers) & 60 % is non-working population. Total Literacy rate of the study area is 54 %. Sex Ratio (Females per 1000 Males) of the study area is 942.
- x. **Water requirement:** The water requirement for one-time filling of reservoirs of Kandhaura PSP is 19.19 MCM which will be sourced from Sone River during surplus flows in the monsoon season. This is less than 1 percent of the water available at Sone River in monsoon months. To recoup the evaporation losses, there will be recurring requirement of 2.56 MCM water which will be met from Rain water and Sone River.

- xi. **Project Cost:** The estimated project cost is Rs. 11278.55 Crores. Total capital cost earmarked towards Environmental Management Plan is Rs. 40.94 Crores and the Recurring cost (operation and maintenance) will be about Rs. 4.97 Crores per annum.
- xii. **Project Benefit:**  
Social benefit: Direct & Indirect employment opportunities during construction phase will significantly contribute in uplifting quality of life of people of the region. During operation phase also, local people will get preference for employment opportunity in operation, maintenance and auxiliary activities. The company will provide social benefit regarding Education, Socio-Economic and Infrastructure Development, Healthcare, Environment improvement under Socio-economic Development Plan & Skill Development and Training and Construction of Skill Development Centre under Local Area Development Plan.  
Financial benefits of project or activity: The project with a proposed peaking energy installation of 1680 MW would generate designed energy. This project would generate designed energy of 3679.71 MU which will contribute in reduction in gap between demand and supply of peak power in the state and country.  
The Project activity will also mobilize financial resources in the form of small business/ Indirect employment opportunities in the area.  
Environmental benefit: Out of total project area, 20.0 ha area will be developed under the greenbelt/ plantation. The company will carry out compensatory afforestation in consultation with the forest department; Avenue plantation @ 200 Nos/ village with 3 years maintenance and cost of tree guard for 35 villages will be carried out under Socio-economic development plan;  
Apart from these, during operation phase of the Project, two new water bodies in the form of reservoir would be created.
- xiii. **Environmental Sensitive area:**  
There is one Wildlife Sanctuary i.e., Kaimoor Wildlife Sanctuary present within 10 km distance from the project site. However, as per the MoEF&CC Notification vide S.O. 891(E) dated 20.03.2017, the proposed intake point in Son river is located at approx. 0.36 km, the Upper Reservoir is located at approx. 0.44 km, while the Lower Reservoir is located at approx. 1.81 km from the ESZ. The Intake point in Son river is located at a distance of 1.36 km, the Upper Reservoir at 1.44 km and the Lower Reservoir at 2.81 km from the boundary of the Kaimoor Wildlife Sanctuary. No Objection Certificate authenticating the above-mentioned distances has been issued by Divisional Forest Officer, Kaimoor Wildlife Division, Mirzapur vide letter dated 13.06.2025.  
Amwa Nala (No-perennial nallah) is passing through the project site, Amjhar Nala is flowing at a distance of 1.2 km in NW direction and Sone river is flowing at a distance of 1.5 km in SE direction. Apart from these, there are few other water bodies and few seasonal Nallahs which are active during Monsoon season present within the 10 km distance from the project site.

Pakkamasonry Fort (Vijaygarh Fort) is present approximately 6.0 km in NNE Direction from Project site. NoC from Archaeological Survey of India, Sarnath Circle, Uttar Pradesh has been obtained by the Company on 03.01.2025.

- xiv. **MoU / any other clearance/ permission signed with State government:**  
MOU signed between M/s. JSW Energy PSP Six Limited and Governor of Uttar Pradesh vide MOU Number: 22/IID/0000000086 dated 25.11.2022.
- xv. **Resettlement and rehabilitation:** A total of 75 PAFs of 3 villages will be affected due to the proposed project, out of which 44 are PDFs (Project Displaced Families), who will be fairly compensated in consonance with “The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013”, (RFCTLARRA 2013). The budget allocated for R&R Plan is Rs. 46.01 Crores/-.
- xvi. **Schedule –I species:** As per W(P) Act, 1972 and subsequent amendments and the list of flora and fauna received from DFO, Kaimoor Wildlife Division, Mirzapur vide letter dated 13.06.2025, there are 66 schedule - I species i.e., *Panthera pardus* (Leopard), *Felis Caracal* (Fishing cat), *Cuon alpinus* (Asiatic Wild Dog/ Dhole), *Felis chaus* (Jungle Cat), *Canis aureus* (Jackal), *Vulpes bengalensis* (Indian Fox), *Hyaena hyaena* (Hyaena), *Hystrix indica* (Indian Porcupine), *Gazella bennettii* (Indian Gazelle/Chinkara), *Tetracerus quadricornis* (Four-horned Antelope), *Paradoxurus hermaphroditus* (Asian Palm Civet), *Viverricula indica* (Small Indian Civet), *Canis lupus* (Indian Wolf), *Lutrogale perspicillata* (Smooth-coated Otter), *Rusa unicolor* (Sambar), *Manis crassicaudata* (Indian Pangolin), *Mellivora capensis* (Ratel/Honey Badger), *Melursus ursinus* (Sloth Bear), *Panthera tigris* (tiger), *Urva Edwardsii* (Indian Grey Mongoose), *Caracal caracal* (caracal), *Chameleon zeylanicus* (Indian Chamaeleon), *Antelope cervicapra* (Blackbuck), *Naja naja* (Indian Cobra), *Daboia russelli* (Russell's Viper), *Python molurus* (Indian Python), *Eryx johnii* (Common Sand Boa), *Ptyas mucosa* (Indian Rat Snake), *Fowlea piscator* (Checkered Keelback), *Crocodylus palustris* (Marsh Crocodile), *Strix ocellata* (Mottled Wood Owl), *Strix leptogrammica* (Brown Wood Owl), *Sarcogyps calvus* (King Vulture), *Gavialis gangeticus* (Gharial), *Varanus bengalensis* (Indian Monitor Lizard), *Lissemys punctate* (Indian Flap Shell Turtle), *Nilssonina gangetica* (Indian Softshell Turtle), *Nilssonina leithii* (Leith's Softshell Turtle), *Ciconia Ciconia* (White Stork), *Leptoptilos dubius* (Adjutant Stork), *Leptoptilos javanicus* (Lesser Adjutant stork), *Platalea leucorodia* (Eurasian Spoonbill), *Nettapus coromandelianus* (Cotton Teal), *Haliastur indus* (Brahminy kite), *Accipiter badius* (Shikra), *Accipiter nisus* (Sparrow Hawk), *Falco chicquera* (Red Necked Falcon), *Nisaetus cirrhatus* (Crested hawk eagle), *Testudo elegans* (Indian Star Tortoise), *Ichthyophaga ichthyaetus* (Grey-headed Fish Eagle), *Gyps fulvus* (Indian griffon), *Gyps indicus* (Indian longbilled vulture), *Gyps bengalensis* (Indian white backed vulture), *Neophron percnopterus* (Scavenger vulture), *Circus cyaneus* (Hen Harrier), *Circus melanoleucos* (Pied Harrier), *Circus aeruginosus* (Marsh Harrier), *Spilornis cheela* (Crested Serpent Eagle), *Pavo cristatus* (Common Peafowl), *Grus Antigone* (Sarus Crane), *Tringa nebularia* (Greenshank),

*Gallinago nemoricola* (Wood Snipe), *Bubo bubo* (Eagle Owl), *Bubo nipalensis* (Forest eagle Owl), *Bubo zeylonensis* (Brown Fish Owl), *Pericrocotus cinnamomeus* (Small Minivet) falling in the study area.

xvii. **Baseline Environmental Scenario: (Applicable for EC proposals)**

Period	From March to May, 2023
AAQ parameters at 10 locations	<ul style="list-style-type: none"> <li>• PM 10= 32.3 to 75.9 µg/m<sup>3</sup></li> <li>• PM 2.5= 17.1 to 40.9 µg/m<sup>3</sup></li> <li>• SO<sub>2</sub>= 5.2 to 11.1 µg/m<sup>3</sup></li> <li>• NO<sub>2</sub>= 8.4 to 24.0 µg/m<sup>3</sup></li> <li>• CO= BDL (DL: 0.5) to 0.75 mg/m<sup>3</sup></li> </ul>
Incremental GLC Level	<ul style="list-style-type: none"> <li>• PM 2.5= Max. GLC: 1.12 µg/m<sup>3</sup></li> <li>• PM 10= Max. GLC: 2.79 µg/m<sup>3</sup></li> <li>• SO<sub>2</sub>= Max. GLC: 0.856 µg/m<sup>3</sup></li> <li>• NO<sub>x</sub>= Max. GLC: 1.91 µg/m<sup>3</sup></li> </ul>
Surface water quality samples at 12 locations	<p>pH: 7.52 to 7.88; Dissolve Oxygen: 6.8 to 7.3 mg/l; Total Dissolved Solids: 94.6 to 314 mg/l; Total Hardness (as CaCO<sub>3</sub>): 90.06 to 230.34 mg/l; Total Alkalinity: 55 to 198 mg/l; Calcium: 18.04 to 62.16 mg/l; Magnesium: 10.92 to 22.47 mg/l; Sulphate: 14.34 to 29.87 mg/l, Nitrate: 0.91 to 1.55 mg/l; Chloride: 30.96 to 56.42 mg/l; Iron: 0.31 to 0.70 mg/l.</p> <p><i>Heavy metals like Copper (as Cu), Lead (as Pb), Chromium (as Cr), Manganese (as Mn), Arsenic (as As) and Mercury (as Hg) were also analyzed in the surface water samples but not detected.</i></p>
Ground Water samples at 10 locations	<p>pH: 7.58 to 7.88; Total Dissolved Solids: 315 mg/l to 561 mg/l; Total Hardness (as CaCO<sub>3</sub>): 185.27 to 350.39 mg/l; Total Alkalinity: 165 mg/l to 286 mg/l; Calcium: 56.05 mg/l to 102.2 mg/l; Magnesium: 10.91 mg/l to 23.05 mg/l; Sulphate: 22.1 mg/l to 56.66 mg/l, Nitrate: 2.1 mg/l to 9.81 mg/l; Chloride: 49.57 mg/l to 85.05 mg/l; Iron: 0.64 mg/l to 1.15 mg/l.</p> <p><i>Heavy metals like Copper (as Cu), Lead (as Pb), Chromium (as Cr), Manganese (as Mn), Arsenic (as As) and Mercury (as Hg) were also analyzed in the ground water samples but not detected.</i></p>
Noise Level Leq (Day & Night) at 10 locations	<p>The Leq values for day time was observed to be 49.3 to 54.4 dB (A) in residential area, while during night time 40.2 to 43.9 dB (A).</p> <p>The Leq values for day time was observed to be 47.8 to 54.4 dB (A) in industrial area, while during night time 38.7 to 39.5 dB (A).</p>



Soil Quality at 10 Locations	Bulk density: 1.35 to 1.51 gm/cm <sup>3</sup> ; pH range 7.21 to 7.77; Electrical conductivity (EC); 0.17 to 0.32 $\mu$ mhos/cm; Calcium content: 917.52 to 1537.57 mg/kg; Sodium: 109.4 to 168.72 mg/kg; Potassium: 1022.63 to 1604.99 kg/hectare; Nitrogen: 253.23 to 457.75 kg/hectare; Phosphorous: 21.22 to 40.21 mg/kg; Magnesium: 241.88 to 458.59 mg/kg; Organic Matter: 0.71 to 1.05.
Flora & Fauna	As per WPA, 1972 and subsequent amendments and the list of flora and fauna received from DFO, Kaimoor Wildlife Division, Mirzapur vide letter dated 13.06.2025, there are 66 schedule - I species falling in the study area. Details has been already given in point xv.

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

**Solid waste/ Hazardous waste generation/ Muck and its management**

S.No.	Waste Generated	Source	Quantity	Mode of Disposal	Mode of Transport
1.	Muck	Quantity of muck / debris generated	14.5 million Cubic meter	Reused in construction activities (6.5 Million Cubic meter) and disposed (8.0 Million Cubic meter) at muck dumping sites.	Road
2.	MSW	Project and labour camp	110 TPA	Composting & Incinerator	Road
3.	Electronic equipment	Project and labour camp	0.28 TPA	As per CPCB Guidelines	Road
4.	Batteries	Project and labour camp	2.19 TPA	As per CPCB Guidelines	Road
5.	Bio-medical waste	Dispensary	1.1 TPA	Through CBWTF	Road
6.	Burnt Mobil oil, Grease	Construction equipment	5.6 TPA	Through authorized dealer	Road
7.	Plastic Waste	Labour camp	22 TPA	As per CPCB Guidelines	Road
8.	Construction and	Waste generated	47159.5 TPA	Through authorized dealer	Road

S.No.	Waste Generated	Source	Quantity	Mode of Disposal	Mode of Transport
	Demolition waste	from construction activities			

- xix. Public hearing was conducted for the project on 11.09.2024 at 10:00 a.m at Village-Sashnai, Tehsil- Obra, District-Sonbhadra, Uttar Pradesh under the Chairmanship of Additional District Magistrate. Issues / Points / Suggestions / Opinions of Local Public raised during the Public Hearing along with action. Public Hearing Notice was published in Newspapers “Amar Ujala” & “Hindustan Times” dated 02.08.2024. The main issues raised during the public hearing are related to Employment, Socio-Economic and Infrastructure Development, Education, Land, etc.
- xx. No litigation pending against the proposal.
- xxi. The salient features of the project are as under: -

### 1. EAC Meeting Details:

EAC meeting/s	36 <sup>th</sup> Meeting of Expert Appraisal Committee (River Valley & Hydro-Electric Projects) for EC.
Date of Meeting/s	30.07.2025
Date of earlier EAC meetings	<ol style="list-style-type: none"> <li>5<sup>th</sup> meeting of EAC (River Valley &amp; Hydro-Electric Projects) held on 19.12.2023 for ToR Appraisal.</li> <li>Reconsidered in the 8<sup>th</sup> meeting held on 28.02.2024.</li> <li>Second reconsideration in the 9<sup>th</sup> EAC meeting held on 20.03.2024.</li> <li>14<sup>th</sup> meeting of EAC (River Valley &amp; Hydro-Electric Projects) for Amendment in ToR held on 31.08.2024.</li> <li>33<sup>rd</sup> meeting of the EAC (River Valley &amp; Hydro-Electric Projects) held on 17.06.2025 considered the proposal for the second Amendment in the ToR.</li> </ol>

### 2. Project details:

Name of the Proposal	Proposed Kandhaura Pumped Storage Project (1680 MW)			
Proposal No.	IA/UP/RIV/544923/2025			
Location (Including Coordinates)	Village: Sashnai, Taluka: Obra and Village(s): Markuri & Cherue Taluka: Robertsganj, District: Sonbhadra, Uttar Pradesh			
	<b>Pillar No.</b>	<b>Direction</b>	<b>Latitude</b>	<b>Longitude</b>
	P1	North	24°31'37.46"N	83°7'53.65"E
	P2	West	24°31'11.32"N	83° 7'26.71"E
	P3	East	24°30'2.57"N	83°11'44.56"E
	P4	South	24°28'13.08"N	83°10'1.14"E

Company's Name	M/s. JSW Energy PSP Six Limited			
CIN no. of Company/user agency	U35101MH2023PLC403659			
Accredited Consultant, Validity and certificate no.	J.M. EnviroNet Pvt. Ltd. Registered EIA Consultant by NABET (QCI) (Certificate no.: - NABET/EIA/2326/RA 0308, Valid till August 07, 2026)			
Project location (Coordinates /River/ Reservoir)	<b>Pillar No.</b>	<b>Direction</b>	<b>Latitude</b>	<b>Longitude</b>
	P1	North	24°31'37.46"N	83°7'53.65"E
	P2	West	24°31'11.32"N	83° 7'26.71"E
	P3	East	24°30'2.57"N	83°11'44.56"E
	P4	South	24°28'13.08"N	83°10'1.14"E
Inter- state issue involved	No			
Proposed on River/ Reservoir	It is an Off stream close loop Pumped Storage Project			
Type of Hydro-electric project	Hydropower (Pumped Storage Project) - Off-Stream Closed Loop			
Seismic zone	The project area falls under Zone III, i.e., Moderate Risk Zone as per IS-1893 (Part 1) 2002, Seismic Zoning Map of India.			

### 3. Category details:

Category of the project	A
Capacity / Cultural command area (CCA)	1680 MW
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	NA

### 4. ToR/EC Details:

ToR Proposal No.	IA/UP/RIV/488779/2025
EAC meeting date	17.06.2025
ToR Letter No.	J-12011/62/2023-IA.I (R)
ToR grant Date	14.07.2025
Cost of project	11278.55 crores
Total area of Project	569.707 ha
Height of Dam from River Bed (EL)	34.32 m (Lower Dam) and 48 m (Upper Dam)
Details of submergence area	Total Submergence Area: 178.67 ha (Forest Land: 177.695 Ha, Private Land: 0.015 Ha and Government Land: 0.96 Ha)
District to provide irrigation facility (if applicable)	NA
Details of tunnels on upper level & lower level and length of canal (if applicable)	Length of tunnel is 1904.42 m which includes: 629.61m (HRT), 166.12m (TRT), 129.91m (MAT), 808.89m (Adit 1,2,3) and 169.89m (CAT).

No. of affected Village	3 villages (Cherui, Markuri, Sashnai)
Project Benefits	<p>Social benefit:</p> <ul style="list-style-type: none"> <li>➤ Direct &amp; indirect employment opportunities during construction phase will significantly contribute in uplifting quality of life of people of the region. During operation phase also, local people will get preference in employment opportunity for operation, maintenance and auxiliary activities.</li> <li>➤ The company will provide social benefit regarding Education, Socio-Economic &amp; Infrastructure Development, Health care, Environment Improvement under Socio-economic development Plan &amp; Skill Development and Training &amp; Construction of Skill Development Centre under Local Area Development Plan.</li> </ul> <p>Financial benefits of project or activity:</p> <ul style="list-style-type: none"> <li>➤ The project with a proposed peaking energy installation of 1680 MW would generate designed energy of 3679.71 MU. This will contribute in reduction in gap between demand and supply of peak power in the state and country.</li> <li>➤ The Project activity will also mobilize financial resources in the form of small business/ Indirect employment opportunities in the area.</li> </ul> <p>Environmental benefit:</p> <ul style="list-style-type: none"> <li>➤ Out of total project area, 20.0 ha area will be developed under the greenbelt/ plantation. The company will carry out compensatory afforestation in consultation with the forest department.</li> <li>➤ Avenue plantation @ 200 Nos/ village with 3 years maintenance and cost of tree guard for 35 villages will be carried out under Socio-economic development plan.</li> <li>➤ Apart from these, during operation phase of the Project, two new water bodies in the form of reservoir would be created.</li> </ul>
R&R details	<p>A total of 75 PAFs of 3 villages will be affected due to the proposed project, out of which 44 are PDFs (Project Displaced Families), who will be fairly compensated in consonance with “The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013”, (RFCTLARRA 2013). The budget allocated for R&amp;R Plan is Rs. 46.01 Crores/-.</p>

Catchment area/ Command area	Catchment area: 3186 ha		
Types of Waste and quantity of generation during construction/Operation	Waste Generated	Source	Quantity
	Muck	Quantity of muck / debris generated	14.5 MCM
	MSW	Project and labour camp	110 TPA
	Electronic equipment	Project and labour camp	0.28 TPA
	Batteries	Project and labour camp	2.19 TPA
	Bio-medical waste	Dispensary	1.1 TPA
	Burnt Mobil oil, Grease	Construction equipment	5.6 TPA
	Plastic Waste	Labour camp	22 TPA
	Construction and Demolition waste	Waste generated from construction activities	47159.5 TPA
Material used for blasting and its composition as per DGMS standards.	Type of explosives: Ammonium Nitrate Fuel Oil (a mixture of Ammonium nitrate and fuel oil) with NONEL down-the-hole delay detonator.		
E-Flows for the Project	Water from Sone river will be abstracted only during flood/ monsoon season.		
Is Projects earlier studied in Cumulative Impact assessment & Carrying Capacity studies (CIA&CC) for River in which project located. If yes then a) E-flow with TOR/Recommendation by EAC as per CIA&CC study of River Basin. b) If not the E-Flows maintain criteria for sustaining river ecosystem.	No  Not applicable, in case of PSP  Not applicable, in case of PSP		
Details on provision of fish pass	Being an off stream closed-loop Pump storage project, no provision of fish pass has been proposed.		
Project benefit including employment details (no of employee)	Direct and Indirect employment opportunities will be created as a result of the proposed project.		

	<p>During the construction phase, a total of 70 permanent employees and 2100 temporary/contractual workers will be employed for a period of 1460 days.</p> <p>During the operation phase, a total of 250 permanent employees and 70 temporary/contractual workers will be employed for 365 days per year.</p>
Area of Compensatory Afforestation (CA) with tentative no of plantation.	<p>The forest land proposed to be diverted is 493.51 ha. The compensatory afforestation shall be done on the same amount of land.</p> <p>Approximate 500000 trees will be planted at the rate 1000 trees/ ha.</p> <p>An amount of Rs. 21.67 Crore has been earmarked for Compensatory Afforestation Scheme.</p> <p>However, CA scheme duly approved by the Forest department will be complied by the Company.</p>
Previous EC details	This is a Greenfield project
EC Compliance Report by R.O, MOEF&CC	This is a Greenfield project
No. of trees/saplings proposed in view of 'Ek Ped Maa Ke Naam' campaign	2500 Nos.

#### 5. Electricity generation capacity:

Powerhouse Installed Capacity	1680 MW
Generation of Electricity Annually	3679.71 MU
No. of Units	7 No's. (5 X 280MW & 2 X 140 MW)

#### 6. Muck Management Details:

<b>No. of proposed disposal area/ (type of land- Forest/Pvt land)</b>	<p>2 no. of muck disposal sites have been identified with total area of 50.475 Ha (Upper muck dumping site: 18.446 ha &amp; Lower muck dumping site: 32.029 ha).</p> <p>Type of land: 43.67 ha Private land &amp; 6.81 ha Government land.</p>
<b>Cross section of proposed muck area, Height of muck with slope.</b>	<p>Cross section of proposed muck area has been incorporated in Chapter 10 of the EIA/EMP Report.</p> <p>D-1(UR): Area=18.446 ha, Height average=25 m</p> <p>D-2 (LR): Area=32.029 ha, Height average=20 m</p> <p>Slope of muck shall be lesser than 28 Degree</p>
<b>Distance of muck disposal area(location), from muck generation</b>	Distance of muck disposal area from muck generation sources:

sources (project area)/River, HFL of proposed muck disposal area.	<ul style="list-style-type: none"> <li>• <b>Upper Reservoir:</b> The muck disposal area is located at a distance of approximately 0.57 km from the muck generation source near the upper reservoir site.</li> <li>• <b>Lower Reservoir:</b> The designated muck disposal site is situated approximately 0.22 km from the muck generation source near the lower reservoir. Sone river HFL from muck disposal area: 1500 m</li> </ul>
<b>Total Muck Disposal Area</b>	50.475 Ha
<b>Estimate Muck to be generated</b>	14.5 MCM
<b>Transportation</b>	By road
<b>Monitoring mechanism for Muck Disposal Transportation</b>	<ul style="list-style-type: none"> <li>➤ The Project authorities shall erect a barrier to regulate to and fro movement of traffic from the excavation site.</li> <li>➤ 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.</li> <li>➤ Proper e-Challan shall be issued.</li> </ul>

#### 7. Land Area Breakup:

<b>Private land</b>	64.537 Ha
<b>Government land</b>	11.66 Ha
<b>Forest Land</b>	493.51 Ha
<b>Total Land</b>	569.707 Ha
<b>Submergence area/Reservoir area</b>	Total Submergence Area: 178.67 ha (Forest Land: 177.695 Ha, Private Land: 0.015 Ha and Government Land: 0.96 Ha)
<b>Additional information (if any)</b>	None

#### 8. Presence of Environmentally Sensitive areas in the study area:

<b>Forest Land/ Protected Area/ Environmental Sensitivity Zone</b>	<b>Yes/No</b>	<b>Details of Certificate/ letter/Remarks</b>
<b>Reserve Forest/Protected Forest Land</b>	Yes	Out of 569.707 ha, total 493.51 ha forest land falls within the Reserve Forest Area. There are Open Jungle Mainly Salai, Fairly dense jungle mainly bamboo, Open jungle mainly bamboo, Open mixed jungle within the study area of the project.
<b>National Park</b>	No	—

<b>Wildlife Sanctuary</b>	Yes	<p>Kaimoor Wildlife Sanctuary is present within the 10 km radius study area of the proposed project site. However, as per the MoEFCC Notification vide S.O. 891(E) dated 20.03.2017, the proposed intake point in Sone river is located at approx. 0.36 km, the Upper Reservoir is located at approx. 0.44 km, while the Lower Reservoir is located at approx. 1.81 km from the ESZ.</p> <p>No Objection Certificate authenticating the above-mentioned distances has been issued by Divisional Forest Officer, Kaimoor Wildlife Division, Mirzapur vide letter dated 13.06.2025.</p>
<b>Archaeological sites monuments/ historical temples etc.</b>	Yes	<p>Pakkamasonry Fort (Vijaygarh Fort) (~6.0 km in NNE Direction).</p> <p>No objection certificate for installation of the Proposed PSP has been issued by Archaeological Survey of India, Sarnath Circle, Uttar Pradesh vide their letter no. F.No.3/100/NOC/2024-M-1250 dated 03.01.2025.</p>
<b>Additional information (if any)</b>	None	

#### 9. Public Hearing (PH) Details:

Advertisement for PH with date	Advertisement given in newspaper “Amar Ujala” & “Hindustan Times” dated 02.08.2024
Date of PH	11.09.2024
Venue	Village- Sashnai, Tehsil- Obra, District- Sonbhadra, Uttar Pradesh
Chaired by	Additional District Magistrate
Main issues raised during PH	Employment, Land, Socio-Economic, Health and Infrastructure Development, Education related.
No. of people attended	694

#### 10. Brief of base line Environment:

Particulars	Details
Period of baseline data collection/ Sampling period.	Pre-monsoon season (March to May, 2023)
(Air, noise, water, land)	<p><b><u>Ambient Air Quality:</u></b></p> <ul style="list-style-type: none"> <li>PM 10= 32.3 to 75.9 µg/m<sup>3</sup></li> <li>PM 2.5= 17.1 to 40.9 µg/m<sup>3</sup></li> </ul>



Particulars	Details
	<ul style="list-style-type: none"> <li>• SO<sub>2</sub>= 5.2 to 11.1 µg/m<sup>3</sup></li> <li>• NO<sub>2</sub>= 8.4 to 24.0 µg/m<sup>3</sup></li> <li>• CO= BDL (DL 0.5) to 0.75 mg/m<sup>3</sup></li> </ul> <p><b>Incremental GLC Level:</b></p> <ul style="list-style-type: none"> <li>• PM 2.5= Max. GLC: 1.12 µg/m<sup>3</sup></li> <li>• PM 10= Max. GLC: 2.79 µg/m<sup>3</sup></li> <li>• SO<sub>2</sub>= Max. GLC: 0.856 µg/m<sup>3</sup></li> <li>• NO<sub>x</sub>= Max. GLC: 1.91 µg/m<sup>3</sup></li> </ul> <p><b><u>Noise Level:</u></b></p> <p><b>Industrial Area:</b> Day time [47.8 to 54.4 dB(A)] Night time [38.7 to 39.5 dB(A)]</p> <p><b>Residential Area:</b> Day time [49.3 to 54.4 dB(A)] Night time [40.2 to 43.9 dB(A)]</p> <p><b><u>Surface water quality:</u></b> pH: 7.52 to 7.88; Dissolve Oxygen: 6.8 to 7.3 mg/l; Total Dissolved Solids: 94.6 to 314 mg/l; Total Hardness (as CaCO<sub>3</sub>): 90.06 to 230.34 mg/l; Total Alkalinity: 55 to 198 mg/l; Calcium: 18.04 to 62.16 mg/l; Magnesium: 10.92 to 22.47 mg/l; Sulphate: 14.34 to 29.87 mg/l, Nitrate: 0.91 to 1.55 mg/l; Chloride: 30.96 to 56.42 mg/l; Iron: 0.31 to 0.70 mg/l. <i>Heavy metals like Copper (as Cu), Lead (as Pb), Chromium (as Cr), Manganese (as Mn), Arsenic (as As) and Mercury (as Hg) were also analyzed in the surface water samples but not detected.</i></p> <p><b><u>Ground water quality:</u></b> pH: 7.58 to 7.88; Total Dissolved Solids: 315 mg/l to 561 mg/l; Total Hardness (as CaCO<sub>3</sub>): 185.27 to 350.39 mg/l; Total Alkalinity: 165 mg/l to 286 mg/l; Calcium: 56.05 mg/l to 102.2 mg/l; Magnesium: 10.91 mg/l to 23.05 mg/l; Sulphate: 22.1 mg/l to 56.66 mg/l, Nitrate: 2.1 mg/l to 9.81 mg/l; Chloride: 49.57 mg/l to 85.05 mg/l; Iron: 0.64 mg/l to 1.15 mg/l. <i>Heavy metals like Copper (as Cu), Lead (as Pb), Chromium (as Cr), Manganese (as Mn), Arsenic (as As) and Mercury (as Hg) were also analyzed in the ground water samples but not detected.</i></p> <p><b><u>Soil Quality:</u></b></p>

Particulars	Details
	Bulk density: 1.35 to 1.51 gm/cm <sup>3</sup> ; pH range 7.21 to 7.77; Electrical conductivity (EC); 0.17 to 0.32 µmhos/cm; Calcium content: 917.52 to 1537.57 mg/kg; Sodium: 109.4 to 168.72 mg/kg; Potassium: 1022.63 to 1604.99 kg/hectare; Nitrogen: 253.23 to 457.75 kg/hectare; Phosphorous: 21.22 to 40.21 mg/kg; Magnesium: 241.88 to 458.59 mg/kg; Organic Matter: 0.71 to 1.05.
flora and fauna of the project area, aquatic ecology, etc.	<p><b>Flora-</b> 98 species of trees, 28 species of shrubs, 18 species of climbers, 19 species of grasses, 2 species of pulses, 6 species of bamboo, and 3 species of epiphytes. Additionally, 12 species of aquatic flora were documented through both primary observations and secondary data sources. There are three “Near Threatened” plant species and one “Vulnerable Species” and one “Endangered species” are present in area.</p> <p><b>Fauna-</b> 36 species of mammals, 76 species of Birds, 20 species of reptiles, 10 species of butterflies, 13 species of fishes, 10 species of arthropods, and 6 species of amphibians. Migratory bird species have also been recorded, which includes <i>Ciconia nigra</i> (Black Stork), <i>Threskiornis aethiopic</i> (White Ibis), <i>Platalea leucorodia</i> (Spoonbill), <i>Anser anser</i> (Greyag Goose), <i>Tadorna tadorna</i> (Common Shelduck), <i>Marmaronetta angustirostris</i> (Marbled Teal), etc.,. As per WPA, 1972 and subsequent amendments, there are 66 schedule - I species.</p>
Brief description on hydrology and water assessment as per the approved Pre-DPR:	The Detailed Project Report (DPR) for the proposed project has been approved by the Central Electricity Authority (CEA) & Central Water Commission (CWC) vide concurrence letter dtd. 13.06.25. As per the approved Hydrology Chapter of DPR, the water requirement for one time filling of reservoirs is about 19.19 MCM (2.00 MCM for Upper Reservoir's dead storage and 17.19 MCM for Lower Reservoir's gross storage) and annual top up requirement of about 2.65 MCM to compensate the loss due to evaporation is approved by CWC. The one-time & annual top-up water requirement will be taken from surplus flow of Monsoon season from the Sone river.

**11. Court case details: Nil****12. Status of other statutory clearances:**

<b>Particulars</b>	<b>Letter no and date</b>
Status of Stage- I FC	<p>Initially, an application for forest land (713.72 ha area) diversion was submitted on 29.12.2023 and the proposal was considered in the Project Screening Committee (PSC-I) Meeting held on 07.02.2024. Thereafter, in compliance with the ToR letter, the project area was re-evaluated and the area was reduced from 756.89 ha (including 713.72 ha Forest land, 36.48 ha Govt. Land 7.69 ha Pvt. Land) to 584.57Ha (including 493.51 ha forest land, 14.14 Ha Govt. Land, 76.92 Ha Pvt. Land).</p> <p>Thereafter, as per the Minutes of the Meeting chaired by the Chairperson, CEA, held in New Delhi on 02.04.2025, to review the progress of Pumped Storage Projects, the project layout was updated in accordance with the Hydel Civil Design (HCD) aspects. Subsequently, based on further instructions from the HCD Directorate of the Central Water Commission (CWC), the layout was re-evaluated with respect to area and configuration, resulting in a reduction of the total project area from 584.57 Ha (comprising 493.51 Ha forest land, 14.14 Ha government land, and 76.92 Ha private land) to 569.707 Ha (comprising 493.51 Ha forest land, 11.66 Ha government land, and 64.537 Ha private land). The revised application for forest diversion of 493.51 Ha is under process.</p>
Approval of Central Water Commission	<p>The Detailed Project Report (DPR) for the proposed project has been approved by the Central Electricity Authority (CEA) &amp; Central Water Commission (CWC) vide concurrence letter dtd. 13.06.25. As per the approved Hydrology Chapter of DPR, the water requirement for one time filling of reservoirs is about 19.19 MCM (2.00 MCM for Upper Reservoir's dead storage and 17.19 MCM for Lower Reservoir's gross storage) and annual top up requirement of about 2.65 MCM to compensate the loss due to evaporation is approved by CWC. The one-time &amp; annual top-up water requirement will be taken from surplus flow of Monsoon season from the Sone river.</p>

	Now, the Request letter for water allotment to the tune of 19.19 MCM has been submitted to Engineer-in-Chief & Head of Dept., Irrigation & Water Resource Department, Govt. of Uttar Pradesh vide letter dated 27.06.2025
Approval of Central Electricity Authority	Power potential study has been approved by Central Electricity Authority vide letter dated 17.05.2025.
Additional detail (If any)	NA
Is FRA (2006) done for FC-I	The application for FRA certificate was submitted vide letter no. JSW/PSP-Kandhaura/6.1/23 on 25.09.2023 in District- Sonbhadra and same is under process

### 13. Details of the EMP:

Item Description	Capital Cost (Crores)	Recurring Cost / annum (Crores)
Watershed Development Activities	6.45	0.00
Catchment Area Treatment Plan	2.5	0.0
Biodiversity and Wildlife Conservation and Management Plan	4.00	0.00
Fisheries Management Plan	0.36	0.00
Green Belt Development Plan	0.80	0.16
Reservoir Rim Treatment Plan	0.56	0.00
Muck Management Plan	22.23	1.78
Disaster Management Plan	0.45	0.02
Water, Air and Noise Management Plan	0.70	1.06
Sanitation & Solid Waste Management Plan	1.14	0.09
Energy Conservation Measures	0.32	0.03
Occupational and Safety Hazards	0.31	0.15
Environmental Monitoring Plan	1.12	1.68
<b>Total</b>	<b>40.94</b>	<b>4.97</b>

### 36.4.3 The EAC during deliberations noted the following:

- The EAC deliberated on the information submitted and presented during the meeting, observing that the proposal is for the grant of Environmental Clearance (EC) to the project for Kandhaura Pumped Storage Project (1680 MW) in an area 569.707 Ha at Village Sashnai Sub- district Robertsganj, District Sonbhadra, Uttar Pradesh by M/s JSW Energy PSP Six Limited.

- The project is listed under S.N.1(c) of the Schedule to the Environmental Impact Assessment (EIA) Notification 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 in various fields, examined the proposal submitted by the Project Proponent, including the EIA/EMP reports prepared and submitted by the Consultant accredited by QCI/NABET on behalf of the Project Proponent.
- The EAC noted that the Project Proponent has provided an undertaking affirming that the data and information provided in the application and enclosures are accurate to the best of their knowledge, with no suppression of information in the EIA/EMP reports. The proponent also acknowledged that if any part of the data/information submitted is found to be false or misleading at any stage, the project will be rejected, and any Environmental Clearance granted will be revoked at the risk and cost of the Project Proponent.
- The Terms of Reference issued by MoEF&CC, New Delhi vide ToR letter no. J-12011/62/2023-IA.(R) dated 16.04.2024 which was further amended on dated 21.10.2024 & 14.07.2025. The EAC observed that the baseline data for the EIA/EMP studies was collected in March to May, 2023.
- The EAC observed that the total land required for the project is 569.707 Ha (Private land: 64.537 Ha, Forest land: 493.51Ha and Government land: 11.66 ha). Out of total Project area, 20 Ha area is proposed to be developed under the greenbelt development/ Plantation. The PP has not obtained Stage-I Forest Clearance, however PP have applied for the same vide proposal FP/UP/HYD/IRRIG/456980/2023 dated 493.51 Ha.
- The EAC noted that the Public hearing was conducted for the project on 11.09.2024 at 10:00 a.m at Village-Sashnai, Tehsil- Obra, District-Sonbhadra, Uttar Pradesh under the Chairmanship of Additional District Magistrate. The notice for the Public Hearing was published in state-level newspapers advertisement given in newspaper "Amar Ujala" & "Hindustan Times" dated 02.08.2024. The EAC discussed the concerns raised during the Public Hearing (PH) and reviewed the action plan submitted by the PP to address these issues. After detailed deliberation, the Committee found the action plan satisfactory, recognizing that the proposed mitigation measures adequately respond to stakeholders' concerns.

**36.4.4** The EAC after examining the information submitted and detailed deliberations recommended the proposal for grant of prior Environmental Clearance by the Ministry to Kandhaura Pumped Storage Project (1680 MW) in an area 569.707 Ha at Village Sashnai Sub-district Robertsganj, District Sonbhadra, Uttar Pradesh by M/s JSW Energy PSP Six Limited,

under the provisions of EIA Notification, 2006 and as amended with subject to compliance of applicable Standard EC conditions with the following specific environmental safeguard conditions:

**[A] Environmental management and Biodiversity conservation:**

- i. The water of rainfall yield of self-catchment of the reservoir shall be released to downstream through body of dam/ barrage/ embankment etc.
- ii. The Environmental Management Plan (EMP) shall be strictly adhered to as submitted in the EIA/EMP reports. The budgetary provisions for implementation of EMP, shall be fully utilized and not to be diverted to any other purpose. In case of revision of the project cost or due to price level change, the cost of EMP shall also be updated proportionately.
- iii. The contract clause limiting the No. of vehicles used during excavation and transportation shall followed scrupulously and the same shall informed to the ministry.
- iv. Ambient Air Quality Monitoring Stations for real time data to be installed at project site before commencement of the construction, shall be displayed at project site and its report to be submitted to IRO, MoEF&CC.
- v. No vehicle purchase shall be allowed from funds earmarked for implementation of Wildlife Conservation plan. Measures for minimizing the human–animal conflict specially for black bear and leopard be suitably incorporated in the wildlife conservation plan in consultation with State Forest Department.
- vi. 10000 plants shall be planted around the muck disposal area and the survival of plants shall be submitted with the 6 monthly compliance report.
- vii. Plantation of saplings shall be carried out as a part of the tree plantation campaign "Ek Ped Ma Ke Naam" and the details of the same shall be uploaded in the MeriLiFE Portal (<https://merilife.nic.in>).
- viii. Watershed development plan prepared in consultation with MNIT be implemented within 10 km radius of the project. Implementation status be submitted in the 6 monthly compliance report to the concerned regional office of the Ministry.

**[B] Disaster Management:**

- i. Disposal of the excavated muck and its filling on the low-lying area with proper measures for the stabilization and greenery to minimize the impacts of the generated construction muck shall be taken up pari passu with construction work.
- ii. Stabilization of muck disposal sites using biological and engineering measures shall be taken up immediately to ensure that muck does not roll down the slopes and does not pollute the natural streams and water bodies in surrounding area. The plantation on muck disposal site with local species for restoration of ecology and environment of the project site area.
- iii. Necessary control measures such as water sprinkling arrangements, and construction of paved roads leading to muck disposal sites etc. shall be taken up on priority to arrest fugitive dust at all the construction sites.

- iv. Solid waste generated, especially plastic waste, etc. should not be disposed of as landfill material. It should be treated with scientific approach and recycled. Use of single-use plastics may be discouraged.

**[C] Socio-economic:**

- i. Land acquired for the project shall be suitably compensated in accordance with the prevailing guidelines of the state government and provisions under Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013.
- ii. RO plant shall be installed in the nearby 5 villages and the maintenance shall be done by the project Authorities.
- iii. Solar panel be provided to the families living in rural areas within 10 km radius of project.
- iv. School up to 12<sup>th</sup> Standard shall be established and managed to provide free quality education for children from project affected villages/Tribal villages. Adequate transportation facilities shall also be provided to students to ensure connectivity and ease of access.
- v. 50 bed multi-specialty hospital shall be established to cater the need of tribal population/locals. The tribal population within 10 km radius of the project shall be given free of cost medical facility.
- vi. Skill development Centre shall be established within 10 km radius of the project and regular training programmes for development and promotion of traditional art/products of tribal/local population.
- vii. Bio-Gas plant shall be installed in the Project affected area for Utilizing Cattle waste (Cow Dung) into renewable source of fuel.
- viii. The area is ecologically fragile therefore Project Proponent shall ensure that safety measures as mentioned in the EMP shall be fully implemented.
- ix. Preference in employment opportunities and admission to ITI institutions shall be given to Project Affected Families (PAFs).
- x. An institutional mechanism to be developed to ensure the preference of jobs to PAFs and also a policy for preferential treatment for award of sundry works to the PAFs and their dependents.
- xi. The compliance of above conditions shall be monitored by IRO, MoEF&CC and regularly site visit once in year. The compliance report of IRO shall be regularly submitted to MoEF&CC.

**[D] Miscellaneous:**

- i. After 5 years of the commissioning of the project, a study shall be undertaken regarding impact of the project on the environment. The study shall be undertaken by an independent agency.
- ii. PP should establish in house (at project site) environment laboratory for measurement

of environment parameter with respect to air quality and water (surface and ground). A dedicated team to oversee environment management shall be setup which should comprise of Environment Engineers, Laboratory chemist and staff for monitoring of air, water quality parameters on routine basis.

- iii. PP shall procure construction material only from those Organizations having all valid legal/statutory clearances/permissions or necessary permission to be obtained for quarrying construction materials for the project as per the EIA Notification, 2006 and as amended thereof.

### **Agenda Item No. 36.5**

**Sirkari-Bhyol Rupsiabagar Hydro Electric Project of 120 MW as Run of River scheme in an area of 30 ha by M/s UJVN LTD in Tehsil Munsiyari, Pithoragarh District (Uttarakhand) – Environmental Clearance (EC) – Reg.**

**[Proposal No. IA/UK/RIV/130432/2019; F. No. J-12011/12/2015-IA.I]**

**36.5.1** The proposal is for grant of Environment Clearance (EC) to SirkariBhyol Rupsiabagar Hydro Electric Project of 120 MW as Run of River scheme in an area of 30 ha in Tehsil Munsiyari, Pithoragarh District (Uttarakhand) by M/s UJVN LTD.

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

- i. Sirkari Bhyol-Rupsiabagar HEP, conceived as R-O-R scheme across Goriganga, a tributary of Kali River (Sarda) in Munsiyari tehsil of Pithoragarh district of Uttarakhand, envisages utilization of gross head of about 357.83 m for annual power generation of 529.12 MU in a 90 % dependable year with 95% machine availability. The proposed barrage site on river Goriganga near is about 470m downstream of the confluence of River Goriganga with Jaulchidda gad near a place called Rargari Tok of village Sai Bhat with intake structure proposed on the right bank. An underground powerhouse (3X40 MW,) on the right bank of river near village Rupsiabagar has been proposed.
- ii. The project shall encompass the following structures:
  - A 12m high and 80 m long barrage, with 4 spillway bays and 1 auxiliary bay, located about 470m downstream of the confluence of River Goriganga with Jaulchhida Gad.
  - Two reservoir intakes structures with bell mouth entries located just upstream of the barrage on the right bank which leads into 2 circular shape, 3m dia., 80m feeder tunnels
  - Two underground Desilting chambers, each 10 m (W) x 12m (H) x 165 m (L).
  - 2 circular shape, 3m dia., 66 m long connecting tunnels to HRT.
  - 4.2m dia. and 1316.30m long Circular Shape Head Race Tunnel.
  - 8 m diameter underground surge shaft with 2.3m diameter orifice.
  - A steel lined pressure shaft of 3.4m dia. bifurcating for 3 branch penstocks of 2m dia.
  - Underground Power House complex of 120 MW (3x40 MW) located on right bank.



- 4.2m diameter main tail race tunnel with normal tail water level of EL 1721.50m.
- iii. The project proposal (168 MW) was considered by the Expert Appraisal Committee (Hydro River Valley Sector) in its meeting held during 26-27/10/2015 and Ministry granted Terms of References vide letter No.J-12011/12/2015-IA.I dated 20/01/2016. Extension of validity of Terms of Reference (ToR) was issued on 17/04/2020 and Amendment of ToR for Project (120MW) was approved on 13/10/2020.
- iv. The geographical co-ordinate of the project are:
- Reservoir Coordinates:  
80° 13' 56.97" E 30° 11' 3.71" N  
80° 14' 5" E 30° 11' 0.51" N  
80° 13' 57.81" E 30° 11' 1.59" N  
80° 13' 54.59" E 30° 11' 6.05" N
- Intake Structure  
80° 14' 3.92" E 30° 11' 0.07" N
- Underground Powerhouse  
80° 15' 0.03" E 30° 10' 20.05" N  
80° 15' 0.89" E 30° 10' 19.45" N
- v. The SirkariBhyol -Rupsiyabaar hydro Project envisages construction of a 12m high and 80 m long barrage, with 4 spillway bays and 1 auxiliary bay; two reservoir intakes structures; 2 circular shape, 3m dia., 80m feeder tunnels; 2 circular shape, 3m dia., 66 m long connecting tunnels to HRT; 4.2m dia and 1316.30m long Circular Shape Head Race Tunnel; 8 m diameter underground surge shaft with 2.3m diameter orifice ; a steel lined pressure shaft of 3.4m dia. bifurcating for 3 branch penstocks of 2m dia.; Underground Powerhouse complex of 120 MW (3x40 MW) and a 4.2m diameter tail race tunnel
- vi. **Land requirement:**  
The total land requirement for SirkariBhyol-Rupsiabagar HEP works out to 29.997 hectares, which is comprised of 8.562 ha of Government land (civil soyam) and 21.435ha of forest land.
- vii. **Demographic details in 10 km radius of project area:**  
As per the Census of India 2011, the total population of 19 villages of study area comprising of 898 household aggregates to 3748 of which male population is 1914 and female population is 1834. The overall sex ratio is 966 females per thousand males. The cast wise composition of the total population of the project affected villages is made up of SC 715 (19.08%) and ST 1568(41.84%). Total literate population is 2556(77.244%) of which male and female literate population is 1471(89.16%) and 1085(65.08%) respectively. There is total 2559 (55.38%) workers of which 1387(89.06%) are male and 1172(65.08%) are female, which implies there is a gender gap of 24.08%. Study area villages have total 1923 workers with a work participation rate of 51.31%. The male and

female work participation being 1068(55.80%) and 855(46.62%) respectively with an overall gender gap of 9.18% for work participation rate. The main workers are 1384 (36.92%), whereas the marginal workers are 1007 (14.39%). This implies that 48.69% of the population is comprised of non-workers. No private land shall be acquired from any project affected villages.

**viii. Water requirement:**

The quantity of water required during construction is estimated as 201.50 kld which shall be drawn from the river water can be pumped and stored in a tank at higher elevation. The drinking water (43.5 kld) shall be drawn from hill stream. Total water requirement shall be 245 kld.

**ix. Project Cost:**

The estimated project cost is Rs 941.96 crores. The total capital cost earmarked towards the environmental management plan is Rs50.44 crore and the Recurring cost (operation and maintenance) will be about Rs 1.3825 crore per annum.

**x. Project Benefit:**

Annual generation of 529.12 MU of energy in a 90 % dependable year; ; (ii) Against sale of 1% free power to be deposited with Local Area Development Fund annually and (iii) Employment opportunities to locals in project work. Permanent and temporary employment.

**xi. 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. River/ water body is flowing at 0.00 m from project in NS direction. The distance of project boundary from nearest Askot WLS is 21.4 km as certified by the competent authority.

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

The DPR of the project was approved by Project Investment Board (PIB), Government of Uttarakhand on 31.12.2024. In principal approval for diversion of forest land for non-forestry use has been accorded vide MoEF letter no I/117349/2025 dated 23/06/2025.

**xiii. Resettlement and rehabilitation:** No R&R issue is involved.

**xiv. Schedule –I species:**

Bharal (*Pseudois nayaur*)

Himalayan Tahr (*Hemitragus jemlahicus*)

Himalayan Wolf (*Canis chanco*)

**xv. Alternative Studies:**

Considering the geological conditions of all three alternative locations, we were studied. The first alternate was for a dam proposed about 1.8 km upstream of the confluence of Ralam Gad with Goriganga river and about 750m downstream of confluence of Jaulchhida Gad with Goriganga river. The material at this location was observed to be loose and prone to sliding. Beside this About 60 m upstream of dam axis at left bank of river Goriganga, two active landslides have been noticed. The second site was located about 600 m upstream of D1 axis location, and it lies in a narrow, and straight reach of the river. This axis was rejected for locating the barrage in view of the risks associated with the muck and debris carried by the Jaulchhida nallah situated in the immediate upstream of the axis. The third alternative is the proposed barrage site (D2) on River Goriganga is located about 450m downstream of the confluence of river Goriganga with Jaulchhida Gad. This alternative-3 appeared to be most suitable for constructing the barrage of 12 m height on the permeable foundation and so adopted for further study.

xvi. **Baseline Environmental Scenario:**

Period	From February 2018 to December 2018 (Three seasons)
AAQ parameters at 6 locations (minimum & maximum)	PM <sub>10</sub> : 18 to 40 µg/m <sup>3</sup>
	PM <sub>2.5</sub> : 9.7 to 18.7 µg/m <sup>3</sup>
	SO <sub>2</sub> : <5.0 µg/m <sup>3</sup>
	NO <sub>x</sub> : 6.2 to 9.7 µg/m <sup>3</sup>
Incremental GLC Level	PM <sub>10</sub> : Max. GLC: 8.63 µg/m <sup>3</sup>
	PM <sub>2.5</sub> : Max. GLC: 0.77 µg/m <sup>3</sup>
	SO <sub>2</sub> : Max. GLC: 0.26 µg/m <sup>3</sup>
	NO <sub>x</sub> : Max. GLC: 2.09 µg/m <sup>3</sup>
River water samples at 9 locations	pH: 7.32 to 8.04
	Dissolved Oxygen: 6.8 to 8.9 mg/l
	Total Dissolved Solids: 51 to 102 mg/l
	Total Hardness (as CaCO <sub>3</sub> ): 30 to 68 mg/l
	Total Alkalinity (as CaCO <sub>3</sub> ): 22 to 56 mg/l
	Calcium (as Ca): 10.4 to 23.2 mg/l
	Magnesium (as Mg): 1.0 to 4.9 mg/l
	Oil and Grease: 1 mg/l
	Sulphate (as SO <sub>4</sub> ): 2.2 to 5.2 mg/l
	Nitrate (as Na): <0.1
	Chloride (as Cl): 6.0 to 14.0 mg/l
	Iron (as Fe): 0.06 to 0.24 mg/l
	Copper (as Cu): <0.05 mg/l
	Lead (as Pb): <0.01 mg/l
	Cadmium (as Cd): <0.003 mg/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: 7.28 to 7.46
	Total Dissolved Solids: 247to 327 mg/l
	Total Hardness (as CaCO <sub>3</sub> ):139to192mg/l
	Total Alkalinity (as CaCO <sub>3</sub> ): 94 to 172 mg/l
	Calcium (as Ca): 30.8 to 40.1mg/l
	Magnesium (as Mg): 15.1 to24.6 mg/l
	Oil and Grease: :<1mg/l
	Sulphate (as SO <sub>4</sub> ):3.9to 17.0 mg/l
	Nitrate (as Na):0.72 to 28.2 mg/l
	Chloride (as Cl):6.6 to 32 mg/l
	Iron (as Fe) : 0.09 to 0.18mg/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): 41.5 to 54.5 dB (A) Residential Area Leq. (Night): 36.6 to43.5 dB (A)
Soil Quality at 6 locations	Bulk density:1.28to1.47 gm/cc
	pH range: 6.66-to7.15
	Electrical conductivity (EC); 232.9to 286.2 µmhos/cm
	Calcium content: 698.1 to 732.4mg/kg;
	Sodium:207.6to 241.5 mg/kg
	Potassium: 164.1to 172.4 mg/kg;
	Nitrogen:287 to 301.2 mg/kg
	Phosphorous: 15.9 to 23.3 mg/kg;
	Cation Exchange Capacity (CEC):10.7 to 23.67meq/100gm
	Magnesium: 242 to 452mg/kg
	Organic Carbon:0.67 % to 0.85 %
Flora & Fauna	Schedule-I species observed in the study area: Bharal ( <i>Pseudois nayaur</i> ) Himalayan Tahr ( <i>Hemitragus jemlahicus</i> ) Himalayan Wolf ( <i>Canis chanco</i> )

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

(a) Municipal Solid Waste (MSW) likely to be generated during construction and operation shall be 167.5 Ton/annum and 67.5 ton/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) The total quantity of muck / debris, to be generated due to the project, shall be 8.59 lakh cum, of which 4.29 lakh cum shall be consumed on project work leaving 4.30 lakh cum, which with 40% swell factor shall amount to 6.01 lakh cum. Five muck disposal sites have been identified on d/s of barrage on right flank of the river. The muck disposal sites 1 and 2 shall have to be developed from below the ground level by providing 10 m high counterfort retaining wall and the other three dump sites shall be developed by providing 6 m high R.R. Stone Masonry retaining wall. The retaining wall shall be kept at least 30m away from the point of intersection of HFL of the river with the hill slope. 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. The cost of Plan has been assessed as Rs.1262 lakh.

xviii. Public Hearing for the proposed project has been conducted by the State Pollution Control Board on 21.12.2020. The main issues raised were demand for a school and other issues related to employment, hiring vehicles of villagers, provision for free electricity, award of petty contracts for project works, construction of internal concrete paths, playgrounds in villages and reservation for wards of affected area for selection of trainees to ITI and also in employment

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

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

- **EAC Meeting Details:**

EAC meeting/s	34th Meeting (River Valley Projects)
Date of Meeting/s	30.06.2025
Date of earlier EAC meetings	7 <sup>th</sup> EAC Meeting held on 05.02.2021. 10 <sup>th</sup> EAC meeting held on 15.04.2021 33 <sup>rd</sup> EAC meeting held on 29.08.2022

- **Project Details:**

Name of the Proposal	Sirkari Bhyol- Rupsiabagar HEP (120 MW) Tehsil Munsiyari, District Pithoragarh, Uttarakhand
Proposal No.	IA/UK/RIV/130432/2019)
Location (Including Coordinates)	Village Saibhat, Tehsil Munsiyari, District Pithoragarh, Uttarakhand. Barrage :30 <sup>0</sup> 11'0.55" N, 80 <sup>0</sup> 14'4.80" E
Company's Name	UJVN LTD, Dehradun
CIN no. of Company/user agency	U40101UR2001SGC025866

Accredited Consultant and certificate no.	EQMS India Pvt. Ltd., Delhi-110092. NABET/EIA//2225/RA 0303 valid up to 23rd November 2025
Project location (Coordinates /River/Reservoir)	Reservoir Coordinates: 80° 13' 56.97" E 30° 11' 3.71" N 80° 14' 5" E 30° 11' 0.51" N 80° 13' 57.81" E 30° 11' 1.59" N 80° 13' 54.59" E 30° 11' 6.05" N Intake Structure 80° 14' 3.92" E 30° 11' 0.07" N Underground Powerhouse 80° 15' 0.03" E 30° 10' 20.05" N 80° 15' 0.89" E 30° 10' 19.45" N
Inter- state issue involved	No
Proposed on River/ Reservoir	Goriganga River
Type of Hydro-electric project	R-O-R
Seismic zone	Zone V.

- Category Details**

Category of the project	A
Capacity / Cultural command area (CCA)	120MW
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	-

- ToR/EC Details**

ToR Proposal No.	IA/UK/RIV/26993/2015
EAC meeting date	26/27 <sup>th</sup> October 2015
ToR Letter No.	J-12011/12/2015-IA-1, dated 20-1-2016 Amendment of ToRJ-12011/12/2015-IA.(R), dated 13-10-2020
ToR grant Date	Dated 20-1-2016; Dated 13-10-2020
Cost of project	Rs. 941.96 Crores
Total area of Project	29.997 ha
Height of Dam from River Bed (EL)	12m
Details of submergence area	The submergence area at FRL is 2.24 ha only and it is entirely in forest land.
District to provide irrigation facility (if applicable)	Not applicable
Details of tunnels on upper level & lower level and length of canal (if applicable)	2 circular shape, 3m dia., 80m feeder tunnels; 2 circular shape, 3m dia., 66 m long connecting tunnels to HRT 4.2m dia. and 1316.30m long circular Head Race Tunnel; 4.2m diameter tail race tunnel
No. of affected Village.	None

No. of Affected Families	None
Project Benefits	(i) Annual generation of 529.12 MU of energy in a 90 % dependable year; (ii) 12 % free power of total generation will be given to state, which will help in regular power supply in the area; (iii) Against sale of 1% free power to be deposited with Local Area Development Fund annually and (iv) Employment opportunities to locals in project work. Permanent and temporary employment.
R&R details	Neither any private land nor any other asset shall be acquired for the project. Therefore, no Rehabilitation and Resettlement Plan has been formulated.
Catchment area/ Command area	Catchment area: 957 sq. km.
Types of Waste and quantity of generation during construction/Operation	MSW-167.4Ton/annum during construction and 67.5Ton/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	Environmental flow of 1.87 cumec, 6.42 cumec and 14.13 cumec respectively shall be released through barrage during lean months (November-February) non-monsoon – non-lean season (October, March to May) and during monsoon (June to September).
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.	Sirkari Bhyol-Rupsiyabagar HEP will be first project on river Goriganga Basin. As per MoEF&CC order dated February 2025 (File no. J11/114/2024-FC) first project in any river basin does not need CEIA& CCS study.
Details on provision of fish pass	Yes. As per ICAR (CIFRI) recommendations fish passage been included in the barrage design.
Project benefit including employment details (no of employee)	Benefits from project already stated at S.N.4(13) Permanent employment during operation and temporary employment.

Area of Compensatory Afforestation (CA) with tentative no of plantation.	60 ha area shall be planted with 60060 plants @ 1000 plants /ha
Previous EC details	None, as EC is yet to be granted
EC Compliance Report by R.O, MOEF&CC	Not applicable
No. of trees/saplings proposed in view of 'Ek Ped Maa Ke Naam' campaign	An area of 60.06 ha Civil Soyam land is proposed for Compensatory Afforestation scheme. As general guidelines 1000 trees can be planted on 1 hectare land. So, the number of trees shall be planted are 60060. Moreover, trees shall be planted in the catchment area treatment plan, Green Belt Development Plan

- Electricity Generation Capacity**

Powerhouse Installed Capacity	120 MW
Generation of Electricity Annually	529.12 GWh
No. of Units	3x40 MW

- Muck Management Details:**

No. of proposed disposal area/ (type of land- Forest/Pvt land)	5 disposal sites- total area 8.6 ha (forest)
Cross section of proposed muck area, height of muck with slope.	Cross sections have been provided in Figure 10.11 through 10.15 of EIA/EMP report. Height of Muck pile varies from 16 m to 28m and slope of muck profile shall be 35°
Distance of muck disposal area(location), from muck generation sources (project area)/River, HFL of proposed muck disposal area.	Approximately 0.3 km to 1.0 km. The retaining wall shall be kept at least 30m away from the point of intersection of HFL of the river with the river bank slope.
Total Muck Disposal Area	8.6 ha which is entirely forest land
Estimate Muck to be generated	Muck to be generated: 8.59 lakh cum Consumed on work: 4.29 lakh cum Balance to be disposed: 4.30 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 muck piles site. Entry of all vehicles passing the barrier and the information regarding quantities of muck 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.
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• **Land Area Breakup:**

Private land	0 ha
Government land	8.562 ha
Forest Land	21.435 ha
Total Land	29.997 ha
Submergence area/Reservoir area	2.24 ha
Additional information (if any)	

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

Forest Land/ Protected Area/ Environmental Sensitivity Zone	Yes/No	Details of Certificate/ letter/Remarks
Reserve Forest/Protected Forest Land.	Yes	-
National Park	No	The certificate from the Chief wildlife Warden, Uttarakhand, to the effect that all components of the proposed Sirkari Bhyol - Rupsiabagar HEP (120MW) are outside the Askot Wildlife Sanctuary (WLS) or any other WLS, has been issued vide letter No.3016/12-1, Dehradun, dated 31.3.2021.
Wildlife Sanctuary	No	
Archaeological sites monuments/historical temples etc	No	-
Additional information (if any)	-	-

• **Public Hearing (PH) Details:**

Advertisement for PH with date	24th/25th October 2020 in two Daily viz., "Hindustan Times" and Dainik Jagran.
Date of PH	21st December, 2020
Venue	Village Lilum, Tehsil Munsiyari, District Pithoragarh
Chaired by	ADM, Pithoragarh
Main issues raised during PH	The main issues raised was demand for a school and other issues were related to employment, hiring of vehicles of villagers, provision for free

	electricity, award of petty contracts for project works, construction of internal concrete paths, playgrounds in villages and reservation for wards of affected area for selection of trainees to ITI and also in employment.
No. of people attended	120

• **Brief of base line Environment:**

Period of baseline data collection/Sampling period.	Pre-monsoon, Monsoon and Post- monsoon, 2018.
Air, noise, water, land	<p><b>Air:</b> The maximum concentration for 3 seasons of PM<sub>10</sub>, PM<sub>2.5</sub> NO<sub>x</sub> and SO<sub>2</sub> was found to be 45 µg/m<sup>3</sup>, 20.6 µg/m<sup>3</sup>, 10 µg/m<sup>3</sup> and &lt;5 µg/m<sup>3</sup> respectively and within the NAAQS prescribed by CPCB.</p> <p><b>Noise:</b> The maximum L-equivalent noise levels for three seasons during day and night time recorded at barrage and powerhouse site were 67.9 dB(A) and 61.6 dB(A) respectively and exceed the prescribed limits.</p> <p><b>Water:</b> The water is suitable for meeting drinking water requirements after conventional treatment and disinfection. All physical and general parameters of ground water were observed within the desirable limit at all sampling locations as per IS10500:2012, Second Edition.</p> <p><b>Soil:</b> The soils are neutral in soil reactivity; medium in available nitrogen and phosphorus content, medium in potassium content. The soils have medium to high organic carbon content and have good SAR value (1 to 1.9).</p>
Flora and Fauna of the project area,	<p>Based on the primary survey of the specific sites flora under 62 families were found. Among these, 22 trees, 28 shrubs and 51 herbs 14 grasses and 3 sedges, 4 ferns, 3 bryophytes, 5 fungi and 4 lichen species were found.</p> <p>21 mammalian species of which three (Bharal, Tahr, Himalayan and Wolf) belong to Schedule-1 of WPA, 1972; 63 bird species of which none belongs to Schedule-I; 9 species of herpetofauna were recorded /reported of which none belongs to Schedule-I, under WPA. 1972.</p>
Aquatic ecology, etc.	ICAR (CIFRI) carried out the survey for investigation on fish diversity in the project area. 2 types of fish species were recorded namely <i>Schizothorax richardsonii</i> (Snow trout) and

	<i>Naziritorchelynoides</i> (Dark mahaseer) during the summer season in the river stretch.
Brief description on hydrology and water assessment as per the approved pre-DPR	The 10-daily flow series at barrage site has been approved by the CWC, New Delhi, vide letter No. CWC No.01/UTT/60/2014/Hyd (N)/131-33, dated 21.02.2017. Based on run off series of 32 years (1977-78 to 2014-15) yield for 50%, 75% and 90% dependability has been assessed as 1285 MCM, 1170 MCM and 993 MCM respectively. SPF of 2501 cumecs has been recommended by CWC for the planning and design purpose.
Additional detail (If any)	

- **Court case details: NIL**

- **Status of other statutory clearances:**

Particulars	Letter no. and date
Status of Stage- I FC	In principal approval accorded vide MoEF letter no I/117349/2025 dated 23/06/2025.
Approval of Central Water Commission	Hydrological aspects of projects were approved by the C.W.C, New Delhi, vide letter No. 1/UTT/60/2014/Hyd (N)/131-33, dated, 21.02.2017.
Approval of Central Electricity Authority	CEA, New Delhi, accorded approval to power potential study vide letter No:207/1/2014/HPA/846, dated, 21.7.2017.
Additional detail (If any)	-
Is FRA (2006) done for FC-I	Yes, FRA done on 07.03.2022.

- **Details of the EMP:**

S. N.	Activities	Capital cost (Rs Crore)	Annual recurring cost (Rs lakh)
1.	Catchment Area Treatment Plan	21.99	00.00
2.	Compensatory Afforestation Scheme	6.07	00.00
3.	Wildlife and Bio-diversity Management plan	0.39	15.00
4.	Resettlement & Rehabilitation Plan	0.00	0.00
5.	Green Belt Development Plan	0.17	2.00
6.	Reservoir Rim Treatment Plan	2.52	0.00
7.	Fisheries Management Plan	0.00	0.00
8.	Muck Management Plan	12.02	15.00
9	Restoration Plan for Quarry Sites &	0.54	4.00

	landscaping		
10.	Disaster Management Plan	0.23	0.50
11.	Water, Air and Noise Management Plan	0.20	4.00
12.	Public Health Delivery Plan	0.09	32.00
13.	Labour Management Plan	0.13	10.50
14.	Sanitation and Solid Waste Management Plan	1.25	12.50
15.	Local Area Development Plan	4.00	10.00
16.	Environmental Safeguards During Const.	0.50	7.50
17.	Energy Conservation Measures	0.18	8.00
18.	Environmental Monitoring Plan	0.16	17.25
<b>Grand Total</b>		<b>50.44</b>	<b>138.25</b>

• **ADS details:**

S. N.	ADS Point	Reply
<b>A- Point-wise replies to additional details sought by EAC in its 7th meeting dated 25.2.2021</b>		
(I)	Approved pre-DPR chapters on hydrology and Power Potential studies be submitted to the Ministry before EAC meeting along with the status of DPR approval.	Copy of approved pre-DPR chapters on Hydrology and Power Potential studies have been submitted online and the status of DPR approval/clearances from various directorates is elucidated
(II)	Development of HEP from upstream and downstream of the project should be mentioned along the details sketch (FRL, longitudinal distance/free flowing area etc).	Two Hydro-electric Projects viz., Mapang-Bogdiyar (200MW) and Bogdiyar-Sirkaribhyol (146MW), proposed on the upstream of Sirkari Bhyol Rupsiabagar HEP, have been cancelled by the Government of Uttarakhand & the DPR of the Rupsiyabagar-Kharsiyabara (260 MW), located on downstream is under revision. Thus, presently, Sirkari Bhyol-Rupsiyabagar HEP (120 MW), is the only project in advance stage in Goriganga sub basin.
(iii)	The methodology and study period of Fish sampling/ Flora and fauna should be submitted.	Methodology adopted for aquatic ecology has been described in section 3.3.3.3 of EIA report. Methodology adopted for fish sampling has been described in section 3.9.6.5 of EIA report. Primary catch survey was conducted in the main stem of Goriganga and its tributaries in project area viz.,

		<p>Ralam Gad and Pitti gad, during Pre-monsoon, monsoon and post-monsoon, 2018, with the help of local fishermen using cast net. No species of fish were recorded in the project area.</p> <ul style="list-style-type: none"> <li>• Previous studies/references viz., “Studies on Ichthyofaunal Diversity with special reference to Monthly and Seasonal variations of Fish Landings in glacial fed mountainous Goriganga River of Kumaun Himalaya, Uttarakhand, India” (Kumar A., Research Journal of Animal, Veterinary and Fishery Science, Vol. 2(4), 1-12, April 2014), was reviewed.</li> <li>• The State Fishery Department was also consulted to get previous fisheries records and their availability in different stretches of Goriganga river located in project area and downstream. The Assistant Director Fisheries, Pithoragarh, vide letter No.185/10-Matsya Niyamawali/2020-21, dated 1.9.2020, certified that there is no fauna present in the project zone of SBR HEP.</li> <li>• Fisheries data were also gathered from the ongoing CEIA Study of Goriganga sub-basin being caused by UJVN by engaging WAPCOS, which also reveals that no species of fishes were recorded in the project area and on its u/s.</li> </ul>
(iv)	Conservation plan for Schedule I shall be prepared and submitted to the Chief Wildlife Warden for approval	Letter of Approval of Conservation Plan by CWLW, Uttarakhand No, 3017/12-1, Dehradun, dated 31.3.2021 has been submitted.
(v)	The minimum observed flow in the river to be compared with the proposed e-flow. What arrangements are proposed for real time monitoring of the compliance of the e-flow releases.	As per observed discharge data observed at G&D site at Rargiri (near barrage) for Year 2015-16 to 2019 20, the minimum observed discharge is 8.32 cumec in first ten daily of February 2020. This is compatible with the minimum discharge of 8.2 cumec corresponding to 90% dependable year (1987-88) and is also more

		<p>than the minimum e-flow requirement of 1.83 cumecs computed based on 20% of average flow in four consecutive leanest months in 90% dependable year (1987-88) derived from CWC approved flow series of 37 years (1977 78 to 2014-15).</p> <p>Arrangements proposed for real-time monitoring of the e-flow releases:</p> <ul style="list-style-type: none"> <li>• The e-flow during lean season and non-lean, non-monsoon period shall be released through under sluice bay and measured by setting up a calibrated open channel flow meter to be fitted at the end of d/s pier of under sluice and at two intake structures to measure the discharge entering intake.</li> <li>• During monsoon period the e-flow shall also be released through other bays where calibrated open channel flow meter to be fitted at the end of d/s training walls and an online monitoring system shall be installed at control room to ensure the e flow monitoring as per direction of MoEF&amp;CC.</li> <li>• Compliance details, as per EC conditions, shall be submitted on a regular basis to UEP&amp;PCB and Regional office MoEF&amp;CC.</li> </ul>
(vi)	<p>Environment Cost Benefits Analysis should be revised considering the cost of negative/positive impacts on all ecological entities in the region rather than focusing on the cost of impacts on human beings</p>	<ul style="list-style-type: none"> <li>• The Environment Cost - benefit analysis (ECBA) has been carried out by considering impacts to various environmental entities like physical, ecological and social environment by reducing numerous complex physical, ecological and social-economic variables of environment to easy, quantifiable components of costs and benefits.</li> <li>• The focus has not been only on the cost of impacts on human beings but includes impacts due to project., loss of forest land and the vegetal cover over it, of loss of eco-system services due to</li> </ul>

		<p>diversion of forests, loss of animal husbandry productivity, loss of fodder, habitat fragmentation, loss of soil moisture, loss due to land degradation.</p> <ul style="list-style-type: none"> <li>• Besides these, the impacts due to increase in fugitive dust particles, impairment of quality of water, increased noise levels during construction, have also been considered in the analysis.</li> <li>• As per revised analysis submitted now, the Total Environment Cost and Total Environment Benefits are Rs 4356.10 lakhs and Rs 22098.69 lakhs respectively, thus the benefits from the project clearly outweigh the cost to environment. Considering the benefits during the useful life of project, the Environment Benefit Cost Ratio has been assessed as 200.03 :1.</li> </ul>
(vii)	Air and water analysis results may be re-checked and updated in EIA report.	<ul style="list-style-type: none"> <li>• Baseline data for air quality for three seasons, as enumerated in Table 3.8 through 3.10, has been rechecked and no anomaly/discrepancy has been observed.</li> <li>• Factually, during presentation against contents of slide No.19, it was pointed out how such a low concentration value was measured in case of SO<sub>2</sub>. It was clarified that the 24-hourly maximum concentration value was not a measured value, but a predicted value of concentration for the pollutant and the word predicted has not been stated in the title of Table 4.3. The omission has been rectified now.</li> <li>• As regards water quality analysis results in respect of BOD, its value ranged between 0.4 to 0.9mg/l and were less than 2mg/l and satisfy CPCB Water Quality Criteria i.e., Designated-Best Use Criteria (DBU) for Class A water.</li> <li>• In respect of the query raised, during presentation, related to the</li> </ul>

		Effluent Discharge Standard (GSR1265(E), dated 13.10. 2017) it is stated that the effluent discharge through STP shall conform to the Standard, according to which the BOD concentration should not exceed 20 mg/l, the standard set for Metro cities and all state capitals. The concentration does not exceed 30mg/l for areas/regions other than mentioned. Since the project area falls neither under any metro city nor under state capital, the limiting concentration shall be 30mg/l.
(vii)	Certificate from the CWLW that all the components of the project are outside the Askot Wildlife Sanctuary (WLS) or any other WLS.	Certificate from CWLW, Uttarakhand No, 3016/12-1, Dehradun, dated 31.3.2021 has been submitted.
(ix)	Sketches showing the arrangement of the proposed de-silting arrangement of the quarry water to be provided by the PP.	For intercept sediment laden runoff from rock quarry settling tank/sediment trap of dimension 9.3m x 2.7m x 1.8m has been proposed. It shall be constructed by excavation and lining sides and bottom with 10cm thick cement concrete and with one baffle wall and an outlet discharging into connecting drain. Sketch was submitted.
(x)	For the muck disposal arrangement, it should be certified that a proper slope stability analysis of the dumped muck pile has been done and the requisite engineering measures evolved accordingly	Submitted the undertaking
<b>B-Point-wise replies to additional details sought by EAC in 10th meeting dated 15.4.2021</b>		
(I)	Approval of CWC on Pre-DPR chapter of hydrology.	Copy of approval of CWC on pre-DPR chapter of Hydrology are submitted as Annexure-1 (A) through 1(C). Monthly water availability at SirkariBhyol - Rupsiabagar diversion site vide letter no.1/UTT/60/2014/Hyd(N)/131-33 dated 21.02 2017 (Annexure-1A). Water availability series (10 Daily discharge) has been approved by



		CWC vide letter no.1/UTT/60/2014/Hyd(N)/367-69 dated 10.03 2017 (Annexure-1B). Design flood has been approved by CWC vide letter no. 1/UTT/60/2014/Hyd(N)/303-305 dated 13.04.2017 (Annexure-1C).
(II)	The study report on the extent of the occurrence of glaciers and glacial lakes within the study area and their contribution to the river flow and the risk assessment of Glacier Lake Outburst Floods (GLOFs) in consultation CWC.	Glacial Lake Outburst Flood, "GLOF" Study of Sirkari Bhyol-Rupsiabagar HEP (120 MW), Uttarakhand was entrusted to R.S. Envirolink Technologies Pvt. Ltd., Gurgaon. They conducted the <b>study</b> , and the report was submitted to the CWC vide letter No. 980/UJVNL/03/D (P/GM(CDH&NP)/SBR, dated 14.12.2021(Annexure-2A). The CWC vide letter No. 6/11/2021/FE&SA/50-54, dated 7.2.2022 (Annexure-2B) intimated that report was generally found to be in order within the conditions/criterion, assumptions and imitations of the model parameters adopted in the study.
(iii)	Fish sampling methodology, sampling location and area covered during sampling required to be revalidated from scientific references. Fish occurrence and requirement of fish pass needs to be examined in consultation with CIFRI.	Revalidation of fishery survey of Goriganga at project site of Sirkari-Bhyol Rupsiabagar Hydro Electric <b>Project</b> , District Pithoragarh, Uttarakhand was conducted through Centre for Interdisciplinary Studies of Mountain & Hill Environment (CISMHE) University of Delhi, during October 2021 (Annexure-3).
(iv)	The downstream of the project area is a known habitat for cold-water fishes like snow trout and endemic catfishes, the e-flow requirement in the downstream should be revised or the CWC recommended e-flows for trout zone should be adopted.	The three-regime e-flow requirement {Lean season 1.87 cumec (20%); Monsoon season 14.13 cumec (30%) and non-monsoon - non-lean season 6.42cumec (25%) does not warrant any revision.
(v)	As the project area is known for <b>conservation of</b> significant wildlife such as Musk deer, Snow leopard, Himalayan Black bear etc., the wildlife conservation plan requires revision in terms of dominant wildlife species of the	In line with the queries raised by the EAC members, the Wildlife and Biodiversity Conservation & Management plan was prepared in consultation with <b>the Forest</b> Department and submitted to Divisional Forest Officer

	region and a specific conservation plan for the same in the consultation with Expert from State govt and other reputed Central Govt. agencies. Purchase of Vehicles from the budget of the Wildlife Conservation Plan is not allowed.	Pithoragarh. The latter vide his office letter no 5214/12-I dated 22.04.2021 recommended the revised Wildlife and Biodiversity Conservation & Management plan for approval by the competent authority i.e., Chief Wildlife Warden, Uttarakhand (Annexure-4A). The latter has approved the Wildlife and Biodiversity Conservation & Management plan vide Letter No.246/12-1, Dehradun, dated 24.7.2021 which is enclosed as Annexure-4B.
(vi)	Sketches showing the arrangement of the proposed de-silting arrangement of the quarrying water should be prepared correctly and be submitted.	The sketch showing the arrangement of the proposed de-silting arrangement of the quarrying water Is enclosed as Annexure-5.
<b>C-Point-wise replies to additional details sought (ADS) by EAC in 33rd meeting date 29.8.2022</b>		
(i)	The EAC was not in agreement with data generated during the study regarding non-occurrence of fish species in the study area. There are numerous studies which reported the presence of various cold-water fishes in the region. The EAC opined that fishes are the best bio indicator for illustrating the ecological health of any aquatic ecosystem including rivers. It was noted that as per previous recommendations of the EAC fish occurrence and requirement of fish pass had to be examined in consultation with CIFRI. But it was conducted through some other institute during October 2021. It was also noted that a representation has been received mentioning the issues regarding eco vulnerability of the region viz. frequent occurrence of extreme climate events resulting in flooding, landslides and then related life and property losses in Gori River Basin as the basin already exists 7	<p>As per EAC suggestions the Fish Survey was conducted by the ICAR (CIFRI), Barrackpore. During the survey conducted in May 2023, two types of fish species were recorded namely <i>Schizothoraxrichardsonii</i> (Snow trout) and <i>Naziritorchelynoides</i> (Dark mahaseer) during the summer season in the river stretch. As per the CIFRI survey and suggestions of report, the provision of fish passage has been incorporated in barrage design.</p> <p>Sirkari Bhyol-Rupsiayabagar HEP will be first project on river Goriganga Basin. As per MoEF&amp;CC order dated February 2025 (File no. J11/114/2024-FC) first project in any river basin does not need CEIA&amp; CCS study.</p> <p>Forest proposal of Sirkaribhyol-Rupsiabagar HEP has been discussed in the 4th Meeting of</p>

	large Hydro Power Projects (HPP's) in Gori Ganga River basin and 1 medium scale HPP (proposed).	Forest Advisory Committee (FAC) held on May 26, 2025, and. Forest Conservation Division, MoEF&CC vide letter no I/117349/2025 dated 23/06/2025 forwarded the In Principle approval of Central government for the project.
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### 36.5.3 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 Sirkari Bhyol Rupsiabagar Hydro Electric Project of 120 MW as Run of River scheme in an area of 30 ha in Tehsil Munsiyari, Pithoragarh District (Uttarakhand) by M/s UJVN LTD.

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).

The EAC noted that the Project Proponent (PP) has submitted an undertaking stating that the data and information provided in the application and its enclosures are true and accurate to the best of their knowledge and belief, and that no information has been suppressed in the Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) reports. The PP has also acknowledged that if any part of the submitted data or information is found to be false or misleading at any stage, the project will be rejected, and any Environmental Clearance (EC) granted will be revoked at the risk and cost of the Project Proponent.

The EAC noted that the Ministry had granted Terms of References to the proposed project vide letter No. J-12011/12/2015-IA.I dated 20/01/2016 for 168 MW power generation capacity. Subsequently, extension of validity of Terms of Reference (ToR) was issued on 17/04/2020 and Amendment of ToR for revised power generation capacity to 20MW was granted on 13/10/2020.

The committee noted that the proposal was earlier considered by EAC in its 7<sup>th</sup> held on 25.02.2021, 10th meeting held on 15.04.2021 and 33<sup>rd</sup> EAC meeting held on 29.8.2022. During the 33<sup>rd</sup> EAC meeting, the observations of the EAC were as under:

*“....The EAC was not in agreement with data generated during the study regarding non-occurrence of fish species in the study area. There are numerous studies which reported presence of various cold water fishes in the region. The EAC opined that the fishes are the best bio indicator for illustrating the ecological health of any aquatic ecosystem including rivers. It was noted that as per previous recommendations of the EAC fish occurrence and requirement of fish pass had to be examined in consultation with CIFRI. But it was conducted through some other institute during October 2021.*

*It was also noted that a representation has been received mentioning the issues regarding eco-vulnerability of the region viz. frequent occurrence of extreme climate events resulting in flooding, landslides and then related life and property losses in Gori River Basin as the basin already exists 7 large Hydro Power Projects (HPP's) in Gori Ganga River basin and 1 medium scale HPP (proposed). It is also mentioned in the representation that Forest Advisory Committee (FAC) in 2012 has denied the Forest Clearance for 261 MW NTPC Rupsiyabagar - Khasiyabara HydroPower Project on the grounds of severe ecological impacts due the site being of high ecological and wildlife value. Sirkari Bhyol Rupsiabagar HEP (120 MW) project not only lies in the same ecological region but is immediately upstream of the cancelled project and shares the same geographical zone of Rupsiabagar..."*

Accordingly, the proposal got deferred and the EAC decided to conduct site visit by EAC sub-committee members before making any recommendations on proposal. In view of the above, the EAC sub-committee visited the site during 17th – 21st April 2023 and site visit report were deliberated by the sectoral EAC in its 8<sup>th</sup> meeting held on 28.02.2024. The recommendations of the site visit report are as follows:

*".....The EAC highlighted the region's high sensitivity and geological fragility, coupled with the proposed construction of 7-8 hydro-electric projects in the Goriganga river basin. Consequently, to conduct a comprehensive cumulative impact assessment study of the river basin by the MoEF&CC is imperative. This assessment aims to evaluate the basin's capacity to withstand the cumulative impacts of these projects on flora, fauna, forest wilderness, river sustainability, landslide vulnerability, and other relevant factors before any recommendations are made regarding the proposal. The proposal was therefore deferred for Cumulative Impact Assessment and Carrying Capacity study of the river basin for further consideration. EAC desired that Ministry may expedite the conduct of Cumulative Impact Assessment and Carrying Capacity study of the river basin of other rivers including Goriganga river...."*

The EAC in the present meeting noted that the proposed project has been granted in principal approval for diversion of forest land for non-forestry use vide MoEF letter no I/117349/2025 dated 23/06/2025. PP has justified that the proposed Sirkari Bhyol Rupsiabagar HEP (120 MW) is the first project in Gori Ganga river basin; therefore, as per MoEF&CC OM no. J-11013/01/2013-IA.II (I) dated 28.05.2013 this project may not be insisted for conducting the Cumulative Impact Assessment study of the Gori Ganga river basin. However, subsequent projects, if any, shall be appraised in view of their cumulative impacts and carrying capacity of the river basin. The EAC was agreed to the submissions made by the project proponent.

The EAC observed that said project was considered by the EAC in its meeting held on 30.06.2025 wherein the project got deferred due to poor internet connectivity, the EAC members could not clearly hear the consultant's presentation.

The Committee noted that the total land requirement for SirkariBhyol-Rupsiabagar HEP works out to 29.997 hectares, which is comprised of 8.562 ha of Government land (civil soyam) and 21.435ha of forest land. The Stage-I Forest Clearance approval has been accorded vide MoEF letter no I/117349/2025 dated 23/06/2025. It was further noted that there is no national park, wildlife sanctuary, Biosphere Reserve, Tiger/Elephant Reserve, Wildlife

Corridor etc. within 10 km distance from the project site. The distance of project boundary from nearest Askot WLS is 21.4 km as certified by the competent authority. The estimated project cost is Rs 941.96 crores. The total capital cost earmarked towards the environmental management plan is Rs50.44 crore and the Recurring cost (operation and maintenance) will be about Rs 1.3825 crore per annum.

The EAC noted that the baseline environmental data was collected over three seasons, from February 2018 to December 2018, and the EIA/EMP report has been prepared accordingly. The Public Hearing for the proposed project has been conducted by the State Pollution Control Board on 21.12.2020 under the chairmanship of Additional District Magistrate, Pithoragarh. The notice for the Public Hearing was published on 24th/25th October 2020 in two Daily viz., "Hindustan Times" and "Dainik Jagran". The committee found the public consultation/public hearing satisfactory. It was recommended to prepare action for fulfilment of the commitments made during public hearing in a time bound manner and be submitted to the concerned regional office of the Ministry for effective monitoring.

The Committee observed that the hydrological aspects of the project were approved by the Central Water Commission (CWC), New Delhi, vide letter No. 1/UTT/60/2014/Hyd (N)/131-33 dated 21.02.2017. Further, the Central Electricity Authority (CEA), New Delhi, accorded approval to the power potential study vide letter No. 207/1/2014/HPA/846 dated 21.07.2017.

The PP vide email dated 01.08.2025 informed that there are no restrictions imposed by Hon'ble Supreme Court/NGT/any other authority for the development of projects proposed on Goriganga rivers in District Pithoragarh.

**36.5.4** The EAC after examining the information submitted and detailed deliberations recommended the proposal for grant of prior Environmental Clearance by the Ministry to Sirkari Bhyol Rupsiabagar Hydro Electric Project of 120 MW as Run of River scheme in an area of 30 ha in Tehsil Munsiyari, Pithoragarh District (Uttarakhand) by M/s UJVN LTD, under the provisions of EIA Notification, 2006 and as amended with subject to compliance of applicable Standard EC conditions with the following specific environmental safeguard conditions:

**[A] Environmental management and Biodiversity conservation:**

- i. The Environmental Management Plan (EMP) shall be strictly adhered to as submitted in the EIA/EMP reports. The budgetary provisions for implementation of EMP, shall be fully utilized and not to be diverted to any other purpose. In case of revision of the project cost or due to price level change, the cost of EMP shall also be updated proportionately.
- ii. The contract clause limiting the No. of vehicles used during excavation and transportation shall followed scrupulously and the same shall informed to the ministry.
- iii. Ambient Air Quality Monitoring Stations for real time data to be installed at project

site before commencement of the construction, shall be displayed at project site and its report to be submitted to IRO, MoEF&CC.

- iv. No vehicle purchase shall be allowed from funds earmarked for implementation of Wildlife Conservation plan. Measures for minimizing the human–animal conflict specially for black bear and leopard be suitably incorporated in the wildlife conservation plan in consultation with State Forest Department.
- v. Plantation of saplings shall be carried out as a part of the tree plantation campaign "Ek Ped Ma Ke Naam" and the details of the same shall be uploaded in the MeriLiFE Portal (<https://merilife.nic.in>).
- vi. Biodiversity hotspots in the 10 km radius of the project site shall be identified and listed for their conservation and preservation through time bound action plan in consultation with WII/Expert Government Institute.
- vii. Watershed development plan shall be prepared in consultation with ICAR institute/Expert Government Institute and implemented within 10 km radius of the project site in time-bound manner.

**[B] Disaster Management:**

- i. Disposal of the excavated muck and its filling on the low-lying area with proper measures for the stabilization and greenery to minimize the impacts of the generated construction muck shall be taken up pari passu with construction work.
- ii. Stabilization of muck disposal sites using biological and engineering measures shall be taken up immediately to ensure that muck does not roll down the slopes and does not pollute the natural streams and water bodies in surrounding area. The plantation on muck disposal site with local species for restoration of ecology and environment of the project site area shall be done as per instructions of the Forest Department.
- iii. Necessary control measures such as water sprinkling arrangements, and construction of paved roads leading to muck disposal sites etc. shall be taken up on priority to arrest fugitive dust at all the construction sites.
- iv. Solid waste generated, especially plastic waste, etc. should not be disposed of as landfill material. It should be treated with scientific approach and recycled. Use of single-use plastics may be discouraged.
- v. Sensor based/AI driven Early Warning System (EWS) shall be established.
- vi. Disaster prone places/villages in 10 km upstream and downstream of the project shall be identified and proper disaster management practices shall be applied in such places to mitigate/minimize the impact of any unprecedented event.

**[C] Socio-economic:**

- i. Land acquired for the project shall be suitably compensated in accordance with the prevailing guidelines of the state government and provisions under Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement

Act, 2013.

- ii. Solar panel be provided to the families living in rural areas within 10 km radius of project with annual maintenance.
- iii. Bio-Gas plant shall be installed in the Project affected area for Utilizing Cattle waste (Cow Dung) into renewable source of fuel.
- iv. School up to 12<sup>th</sup> Standard with smart classes shall be established and managed to provide free quality education for children from project affected villages/Tribal villages.
- v. 50 bed multi-speciality hospital shall be established to cater the need of tribal population/locals. The tribal population within 10 km radius of the project shall be given free of cost medical facility.
- vi. Skill development Centre shall be established within 10 km radius of the project and regular training programmes for development and promotion of traditional art/products of tribal/local population.
- vii. An institutional mechanism to be developed to ensure the preference of jobs to PAFs and also a policy for preferential treatment for award of sundry works to the PAFs and their dependents.
- viii. The compliance of above conditions shall be monitored by IRO, MoEF&CC and regularly site visit once in year. The compliance report of IRO shall be regularly submitted to MoEF&CC.

**[D] Miscellaneous:**

- i. After 5 years of the commissioning of the project, a study shall be undertaken regarding impact of the project on the environment. The study shall be undertaken by an independent agency.
- ii. PP should establish in house (at project site) environment laboratory for measurement of environment parameter with respect to air quality and water (surface and ground). A dedicated team to oversee environment management shall be setup which should comprise of Environment Engineers, Laboratory chemist and staff for monitoring of air, water quality parameters on routine basis.
- iii. PP shall procure construction material only from those Organizations having all valid legal/statutory clearances/permissions or necessary permission to be obtained for quarrying construction materials for the project as per the EIA Notification, 2006 and as amended thereof.

**Agenda Item No. 36.6**

**Extension, Renovation & Modernization (ERM) of Kamla Irrigation Project (CCA: 29,711 Ha) in an area of 342.67 ha (existing) 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)]**

**36.6.1:** The proposal is for grant of Terms of Reference (TOR) to the project for Extension, Renovation & Modernization (ERM) of Kamla Irrigation Project (CCA: 29,711 Ha) in an area of 342.67 Ha (existing) at Sub District Jainagar, Basopatti, Khajauli etc, District Madhubani, Bihar by M/s Water Resources Department, Govt of Bihar.

**36.6.2:** 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: 29,711 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	29,711

- v. **Land requirement:** Existing land area is 342.67Ha., additional 0.00Ha land will be used for proposed expansion.
- vi. **Project Cost:** The estimated project cost is Rs. 933.63Crores.
- 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).
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Total area of Project (CCA)	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	0.0 Ha
Submergence area/Reservoir area	NA
Land required for project components	0.00 Ha
Additional information (if any)	Nil

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

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

• **Court case details:** Nil

• **Miscellaneous**

<b>Particulars</b>	<b>Details</b>
Details of consultant	M/s Aarvee Engineering Consultants Ltd., Hyderabad (former known as Aarvee Associates Architects Engineers and Consultants Pvt., Ltd.,)
Project Benefits	<p>The following benefits are anticipated from the project construction and operation phases:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> <li>• A number of marginal activities and jobs would be available to the locals during construction phase.</li> <li>• Developers bringing large scale of investment to the area will also invest in local area development and benefit will be reaped by locals.</li> </ul>

	<ul style="list-style-type: none"> <li>Education, medical facilities, transportation, road network and other infrastructure will improve.</li> </ul>
Status of other statutory clearances	NA
R&R details	There are 171 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

**36.6.3** Earlier, the proposal was considered by the Expert Appraisal Committee (River Valley and Hydro-electric Sector) in its 30th meeting held on 30.04.2025. The EAC deferred the proposal seeking additional information. The PP submitted the replies of observations of EAC on PARIVESH portal on 25.07.2025. The replies of observations are:

**Query 1:** 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.

**Reply:**

- In order to overcome the challenges and restore the performance of the scheme, Water Resources Department, Govt. of Bihar has taken up the project Extension, Renovation and Modernisation(ERM) of Kamla Irrigation Project.
- However, it is to confirm that there is no extension of command area envisaged in the present project proposal as the Main canals are contour canals and command area is bounded on its South by Western Kosi Main Canal. Renovation and Modernisation works are proposed for the existing canal system of Kamla Irrigation Project.
- Irrigation in Kamla irrigation project is facilitated through the East and West Bank Canal Systems.

**Kamla Western Main Canal**

- The Kamla Western Main Canal is a gravity-fed system that off-takes from the right bank Head Regulator of the Jainagar Weir, at a location approximately 3.5 km from the Indo Nepal border near Jainagar town in Madhubani District. Length of the Kamla Western Main Canal is 16.043 kms. Total Length of canal system under Kamla Western Main Canal comprising of King's Canal, distributaries, sub-distributaries and water courses is 207.259 Kms. The command area under Kamla Western Main Canal is 24307 Ha.

**Kamla Eastern Main Canal**

- The Kamla Eastern Main Canal is also gravity-fed, taking off from the left bank Head Regulator of the Jainagar Weir, located 3.5 km from the Indo-Nepal border near Jainagar

town. Length of the Kamla Eastern Main Canal is 8.194 kms. Total length of canal system under Kamla Eastern Main Canal comprising of distributaries, sub-distributaries and water courses is 24.76 Kms. The command area under Kamla Eastern Main Canal is 5404 Ha.

The total length of the canal network of the project is 256.256 Kms.

The canal wise activities (Scope of work) of each canal proposed under ERM of Kamla Irrigation Project has been submitted

**Query 2:** 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.

**Reply:**

- Despite various initiatives, irrigation efforts in the Kamla Basin faced challenges due to the river's changing course and sediment load. A proposal to construct a weir on the Kamla River at Jainagar was initiated in 1959, and construction was completed by 1964.
- The canal system was completed in 1974/75 to irrigate a CCA of 39,921 Ha. The project has been critical water resource for agricultural activities in the region for several decades.
- After the Western Kosi Canal Project was implemented, the command areas of King's Canal, Jiraul Distributary, Sugraul Sub-Distributary, and Pakri Distributary were curtailed, resulting in a reduction of the command area of the Kamla Irrigation Scheme to 28,384.13 hectares (CCA).
- The command area of the project is covered in 9 blocks of Madhubani district benefitting around 1,80,000 population of 120 villages.
- The average annual irrigation of past 10 years by the project is 19241Ha (15850 in Kharif + 3391 in Rabi) which yielded an agriculture produce of 68,247.14 MT.

**Query 3:** 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.

**Reply:** Total increase in command area utilisation is 20,276 Ha at proposed annual irrigation intensity of 133% against existing 64.76% as shown in table below

S.No.	Description	Units	Existing	Increase Post ERM	Total
1	Command Area Utilisation (Kharif)	Ha	15850	13861	29711
		% of CCA	53.35	46.65	100
2	Command Area Utilisation (Rabi)	Ha	3391	6414	9805
		% of CCA	11.431	21.587	33

- Proposed Renovation and Modernisation works focuses on enhancing conveyance efficiency by lining and control through technological advancements and better

management practices by implementation of SCADA system. These improvements aim to reduce water losses, increase crop yields, and improve overall agricultural sustainability.

- The estimated increase in agricultural productivity is 200637.41 MT as shown in table below

S.No.	Description	Units	Pre-ERM	Post-ERM	Increase
1	Impact on agricultural productivity	MT	68247.14	268884.55	200637.41

**Query 4:** 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.

**Reply:** Revised KML showing the command areas of Kamla Western Main Canal and Kamla Eastern Main Canal is enclosed and Project maps has been submitted.

**Query 5:** 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.

**Reply:**

- As per the CWC guideline, "A Guide to prepare chapter on Irrigation Planning Aspects of Detailed Project Report, CWC, 2018", unlined canals have a conveyance efficiency of 55 to 60% and 65 to 70% for partially lined system. In the present ERM proposal, a conveyance efficiency of 65% has been considered as the system is proposed to be developed as a partially lined system under ERM.
  - Field application efficiency as per the above mentioned guideline has to adopted as 80 to 85% for ponded crops and 65% for non-ponded crops. In the present ERM proposal, field application efficiency has been adopted 80% for ponded crops (Paddy
  - and Wheat) and 65% for non-ponded crops as there is no proposal to implement micro irrigation (Sprinkler and drip) due to cultivation of paddy and wheat in the command area.

Combined irrigation efficiency of the system after ERM is estimated at about 52%.

**Query 6:** 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.

**Reply:**

The hydrology aspects of Extension, Renovation and Modernisation of Kamla Irrigation Project are approved by Central Water Commission, New Delhi while approving the Pre Feasibility Report (Letter of PFR approval by CWC has been submitted).

#### **36.6.4 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: 29,711 Ha) in an area of 342.67 Ha (existing) 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 border, hence, it requires appraisal at the Central level by the Expert Appraisal Committee (EAC).

#### **Observations by the EAC in its earlier meeting held on 30.04.2025**

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.

#### **EAC Deliberations during its meeting on 30.07.2025:**

The Committee noted that the Extension, Renovation, and Modernization (ERM) of the Kamla Irrigation Project has been undertaken by the Water Resources Department, Government of Bihar, to address operational challenges and restore the scheme's performance. It was clarified by the PP that no extension of the command area is proposed under the present project, as the main canals are contour canals, and the command area is naturally bounded by the Western Kosi Main Canal. The proposed works are limited to the renovation and modernization of the existing East and West Bank Canal Systems.

The EAC observed that the proposed Extension, Renovation, and Modernization (ERM) works are expected to significantly enhance irrigation efficiency and agricultural productivity in the Kamla Irrigation Project area. The project aims to increase annual command area utilization from the existing 64.76% to 133%, resulting in a net increase of 20,276 hectares. Specifically, Kharif utilization is expected to rise from 15,850 ha to 29,711 ha, and Rabi from 3,391 ha to 9,805 ha. The ERM activities include canal lining, technological upgrades, and the introduction of SCADA systems for improved monitoring and water distribution. These measures are projected to reduce water losses and enhance crop yields, with an estimated increase in agricultural production of approximately 2,00,637 metric tonnes. The Committee noted that these outcomes will contribute to improved livelihood opportunities and long-term sustainability in the command area.

The Committee noted that the hydrological aspects related to the Extension, Renovation, and Modernization (ERM) of the Kamla Irrigation Project have been duly approved by the Central Water Commission (CWC), New Delhi, as part of the Pre-Feasibility Report (PFR). The approval letter from CWC vide letter dated 13.02.2025 states that there are no issue and the hydrology aspects have been cleared.

The EAC noted that although an additional 26.7 hectares of land was initially proposed for the project, the PP has now decided to carry out construction activities within the existing available land area of 342.67 hectares. As a result of this optimization, the total project cost has been reduced from ₹1,268.81 crores to ₹933.63 crores.

**36.3.4** The EAC based on the information submitted and as presented during the meeting, recommended the proposal for grant of Standard ToR issued by the Ministry for conducting EIA/EMP study with Public consultation for Extension, Renovation & Modernization (ERM) of Kamla Irrigation Project (CCA: 29,711 Ha) in an area of 342.67 Ha (existing) at Sub District Jainagar, Basopatti, Khajauli etc, District Madhubani, Bihar by M/s Water Resources Department, Govt of Bihar, under the provisions of EIA Notification, 2006, as amended along with the following additional/specific ToR.

## **[A] Environmental Management and Biodiversity Conservation**

- i. Prepare Wildlife conservation plan with mitigation measures for minimizing the human–animal conflict and be suitably incorporated in the wildlife conservation plan in consultation with reputed government expert institute and State Forest Department.
- ii. Prepare Environmental Cost Benefit Analysis in terms of ecological damage due to diversion of Forest land/ loss of biodiversity and its impacts on ecosystem, water availability, water uses for generation of hydro power in study area 10 km from periphery of Project components.
- iii. A study shall be carried out on impact of project activity on the aquatic and terrestrial ecosystem, within project area classifying the impact zones (highly impact/low impact zone) based on seasonal variations and covering the aspects related to impacts on aquatic ecosystem/ primary productivity due to quantity of water to be lifted and thermal stratification. Accordingly, Environment Management plan shall be prepared.
- iv. Sampling locations be located to cover villages situated near the reservoir and around boundary of forest area for collection of baseline data and data to be incorporated in EIA/EMP report.
- v. Source of construction material and its distance from the project site along with detailed transportation plan for construction material be elaborated in the EIA EMP report. A detailed reclamation/ restoration plan of quarrying site/sites be incorporated in the EIA/EMP report.
- vi. A detailed wildlife conservation plan for Schedule –I species, duly approved by the Chief Wildlife Warden, be submitted.
- vii. In case any wildlife corridor is located within 10 km radius of the project site a detailed study shall be conducted to assess the impact of project on safe movement of wild animals.
- viii. Reservoir/ River banks protection plan all along the submergence need to be prepared and incorporated in EIA/ EMP.
- ix. PP shall prepare detailed plan for Plantation of saplings under the tree plantation campaign "Ek Ped Ma Ke Naam".

## **[B] Socio-economic Study**

- i. Public Health Delivery Plan including the provisions of drinking water supply for local population shall be in the EIA/EMP Report. Status of the existing medical facilities in the project area shall be discussed. Possibilities of strengthening of existing medical facilities, construction of new medical infrastructure etc. will be explored after assessing the need of the labour force and local population.
- ii. Declaration by the Project Proponent by way of affidavit that "No" Inter-state issue/ policy issue is involved with any State in the project.
- iii. All the tasks including conducting public hearing shall be done as per the provisions of EIA Notification, 2006 and as amended from time to time. Public hearing issues raised and compliance of the same shall be incorporated in the EIA/ EMP report in the relevant chapter.
- iv. Statement on the commitments (activity-wise) made during public hearing to facilitate the discussion on the CER in compliance of the Ministry's OM F. No. 22- 65/2017- IA.III dated 30<sup>th</sup> September, 2020 shall be submitted.
- v. Tentative no. of project affected families shall be identified and accordingly appropriate Rehabilitation & Resettlement plan shall be prepared.
- vi. Details of settlement in 10 km area shall be submitted.

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

**[C] Muck Management:**

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

**[D] Miscellaneous.**

- i. Pre-DPR Chapters viz. Hydrology, Layout Map and Power Potential Studies duly approved by CWC/CEA shall be submitted.
- ii. Undertaking need to submitted on affidavit that regarding no activities has been yet started on the project site and water allocated to this scheme shall not be diverted to other purpose.
- iii. Both capital and recurring expenditure under EMP shall be submitted.
- iv. The photograph should bear the date, time, latitude & longitude of the monitoring station/sampling location. In addition to this PP should submit the original test reports and certificates of the labs which will analyse the samples.
- v. Arial view video of project site shall be recorded and to be submitted.
- vi. As per Ministry's OM dated 1st August, 2013, PP shall submit application to obtain prior approval of Central Government under the Forest Conservation Act, 1980 for diversion of forest land required for such projects will be submitted as soon as the actual extent of forest land required for the project is known to the project proponent, and in any case, within 6 months of issuance of ToR. However, no proposal will be put up before EAC without submission of application for forest clearance, wherever applicable.

\*\*\*\*\*

**ANNEXURE I****ATTENDANCE**

<b>S. No.</b>	<b>Name of Member</b>	<b>Role</b>
1.	Prof. Govind Chakrapani	Chairman
2.	Dr. Uday Kumar R Y	Member
3.	DR. J. V. Tyagi	Member
4.	Dr. Mukesh Sharma	Member
5.	Shri Kartik Sapre	Member
6.	Shri Ajay Kumar Lal	Member
7.	Shri Rakesh Goyal	Member Representative of Central Electricity Authority (CEA)
8.	Shri Balram Kumar	Member Representative of Central Water Commission (CWC)
9.	Shri Yogendra Pal Singh	Member Secretary

**Site visit Report of Sub-Committee of the EAC (River Valley &  
Hydroelectric Project) on 26<sup>th</sup> June, 2025 for Proposed  
Khadakwasala Fursungi Tunnel Project Substitute to New Mutha Right  
Bank Canal KM 1 to Km 34, Pune, Maharashtra**

In compliance to the MoEF&CC office order no. J-12011/16/2024-IA-I(R) dated 23.06.2025 the Sub-committee comprising of Shri. Ajay Kumar Lal, Member EAC (Hydro & River Valley Project), Shri. Balram Kumar, Representative of CWC and Dr. P. R. Sakhare, Scientist E Representative from MoEF&CC undertook site visit to the "Proposed Khadakwasala Fursungi Tunnel Project Substitute to New Mutha Right Bank Canal KM 1 to Km 34, Pune, Maharashtra" on 26.06.2025. The sub-committee visited the Intake point of Tunnel, Shafts, Existing Canal, muck disposal areas and Hirwai garden (Jogging track, Cycle track) of Khadakwasala Fursungi Tunnel Project. The attendees of the site visit included project proponent authorized representatives, their consultants (List is given as Annexure-I)

**2. Background: Issues in the Existing Canal**

- The existing open surface canal system is now more than six decade old and has over-lived its life at many points especially from the first kilometre upto 34km along its length. At some locations, damages have occurred canal section there is high possibility of canal breaching any time
- As it is necessary to keep providing continuous water supply for irrigation as well as drinking purpose, it has become quite a difficult and cost prohibitive task to repair the canal running from the Khadakwasla dam. This has lead to leakages from the canal at many points
- At many places due to collapse of canal sides canal section become such unstable that there is possibility of happening major accident.
- Due to ever growing habitation on both sides of the canals, water from the canal gets contaminated due to things such as throwing garbage, washing clothes, etc. in the open canal.
- Due to siltation canal water flowing capacity is reduced subsequently, so canal rotation period is increased.

In this background, Terms of Reference (TOR) was granted by the MoEF&CC, vide letter no. J-12011/16/2024-IA-I(R), dated 03.12.2024 and accordingly, Public hearing were conducted on 28.02.2025 for Pune District (Maharashtra). Final EIA report was submitted to MoEF&CC on 27.03.2025. Thereafter, proposal was considered by Expert Appraisal Committee (EAC) in the 28th Meeting of the River Valley & Hydroelectric Projects Sector held on 15.04.2025, In meeting, it was decided to conduct the site visit of the proposed projects by a sub-committee of the EAC (River Valley & Hydroelectric Sector) members. The sub-committee undertook site visit on 26<sup>th</sup> June 2025, to assess ground conditions and likely environmental impacts due to project intervention.

### **3. Desk Review**

The Khadakwasla Irrigation Project comprises 4 Dams the Panshet dam (10.65 TMC) (Ambi River), the Varasgaon Dam (12.82 TMC) (Mose River), & Temghar Dam (3.71 TMC) (Mutha River) the Khadakwasla Dam (1.97 TMC) (Mutha river). Storage capacity of four reservoirs is 29.15 TMC. The tunnel between Khadakwasala Dam to Fursungi is proposed substitutes for New Mutha Right Bank Canal Km 1 to 34. Total Length of this Tunnel (Tunnel+ Cut & Cover + Channel) is 26.667 Km. The New Mutha Right Bank Canal irrigates an extensive command area spanning four talukas in Pune District: Haveli, Baramati, Daund, and Indapur. The total Gross Command Area (GCA) is 117,837 hectares, of which 101,688 hectares fall under Culturable Command Area (CCA). The Irrigable Command Area (ICA), which is the area actually proposed for irrigation, covers 62,146 hectares. 2.18 TMC water will be saved and can be used for Irrigation and Non-Irrigation purpose. Total 3471 Ha command area will be restored due to saved water. Total Land required for Proposed Khadakwasala-Fursungi Tunnel Project Substitute to New Mutha Right Bank Canal KM 1 to KM 34 is 23.8364 Ha. 0.8064 Ha Forest land and Private land of around 23.03 Ha is proposed for acquisition. In Forest Clearance Stage 1 Clearance granted for 0.8064 ha of forest land. vide online Proposal No. FP/MH /Minor Canal/ 460637/ 2024 dated 30/01/2025 and Stage 2 Clearance granted vide online Proposal No. FP/MH/MinorCanal/460637/2024 dated 22.03.2025.



## **4. General Observations at Site**

### **4.1 Topography**

Proposed project is located in the western edge of the Deccan Plateau along Sahyadri Range of the Western Ghat, the proposed project area is hilly terrain-with undulating rocky (mainly volcanic basalt) subsurface and having black soil in the plains to reddish-brown soils in the western parts. The heights of the hillocks vary between 100 to 150 m above the ground level. The minimum elevation in the area is 516 m above mean sea level and the maximum being 1403 m above m.s.l.

### **4.2 Vegetative Cover**

Pune and its surrounding region exhibit a diverse range of vegetation due to their location between the Western Ghats and the Deccan Plateau. The predominant natural vegetation consists of dry deciduous forests with species like teak, neem, babul, and palash, which shed leaves in the dry season. In the drier and more degraded areas, scrub and thorny plants such as Ziziphus and Prosopis juliflora are common. The nearby Sahyadri (Western Ghats) ranges, host semi-evergreen forests rich in biodiversity, with species like jamun, mango, and various Terminalia. Within Pune city, urban greening efforts have introduced many ornamental and shade-giving trees such as rain tree, gulmohar, banyan, and Ashoka, which are common along roadsides and in public gardens like Empress Garden and VetalTekdi. Surrounding rural areas support agriculture, with crops like sugarcane, pomegranate, jowar, groundnut and exotic vegetables. Scrub land (25.61), Reserve Forest (9.68 %), Waterbody (2.08), Agriculture (40.14%), Build-up (22.50%) forms around 37.37 % of natural wilderness habitats in the area.

## **5. Specific Observation and Recommendation**

**5.1** The selected shaft location such as shaft no. 2 at chainage 5/780 (located at Dhayari), is topographically suitable and situated away from densely populated areas, with no buildings in the immediate vicinity. Site conditions are favorable, and the proposed project is not expected to cause significant adverse impacts on geological conditions, the surrounding environment, or the rights and interests of residents along the tunnel alignment.

**5.2** The selected location for the muck disposal site appears to be proper as it is an abandoned quarry, which is ecologically beneficial. It is also located close to the shaft site and is suitably distant from human habitation.

**5.3** The old Mutha Left Bank Canal has been restored as part of the nearby city development initiatives. The concerned authorities have transformed the canal area into public infrastructure, including roads, cycle tracks, jogging tracks, and gardens. A notable example is Hirwai Garden on Prabhat Road, which was visited to study effective utilization of reclaimed canal land. Developed decades ago, the garden stands as a successful and enduring model of such transformation.

**5.4** EAC Sub Committee recommends restoration of the encroached and highly polluting areas along the canal banks; and take strict measures to create a wholesome healthy surrounding along it since the Canal passes through densely populated mid Pune city at many points that have turned into garbage dumping points at present

**5.5** EAC Sub committee recommends that the Project Proponent should submit detailed as well as abstract of Reclamation Plan of the existing Canal to be executed once filled and converted from water body to land surface. The plan should contain measures and activities to transform it into environment friendly, people welfare related assets such as green spaces, Biodiversity Park, Butterfly Garden, cycling and jogging tracks, amusement parks, public utility zones or spaces for community and social activities all aimed at enhancing the wellbeing of Environment and society.

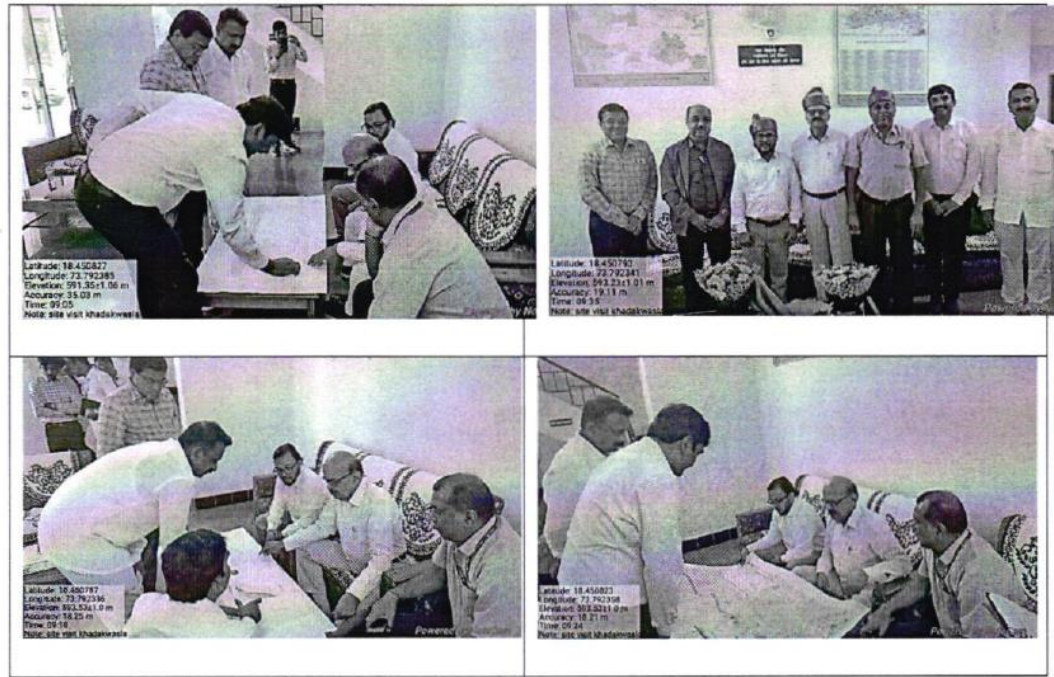
**5.6** The Project Proponent informed that the average design depth of the proposed tunnel of this project is about 80 to 100 meters from the ground surface and the internal diameter of this horse shoe tunnel is 6.30 meters, therefore the sub-committee advises the Project Proponent that from tunnel safety point of view, if the design of the tunnel is also got examined by CWC, then it would be in the best interest of the project.

**5.7** The Project Proponent informed that the administrative approval of this project has been taken in Sep, 2024. Since this project is to construct a 26.667 KM (Tunnel+ Cut & Cover + Channel) in place of Ch.1 to Ch.34 of the New Mutha Right Main Canal of the old Khadakwasala Irrigation Project, therefore the Sub-Committee is of the view that if the



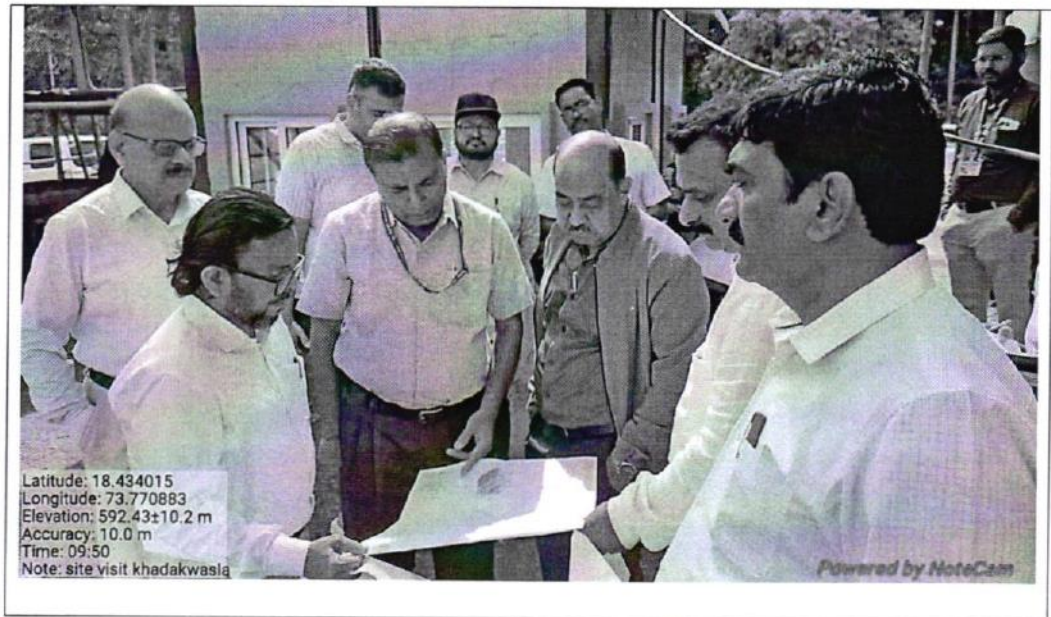
techno-economic feasibility of the project is also appraised by the Central Water Commission, it would be in the interest of the project.

### Site Visit Visuals



**National Water Academy Guest House Khadakwasala, Dist. Pune**





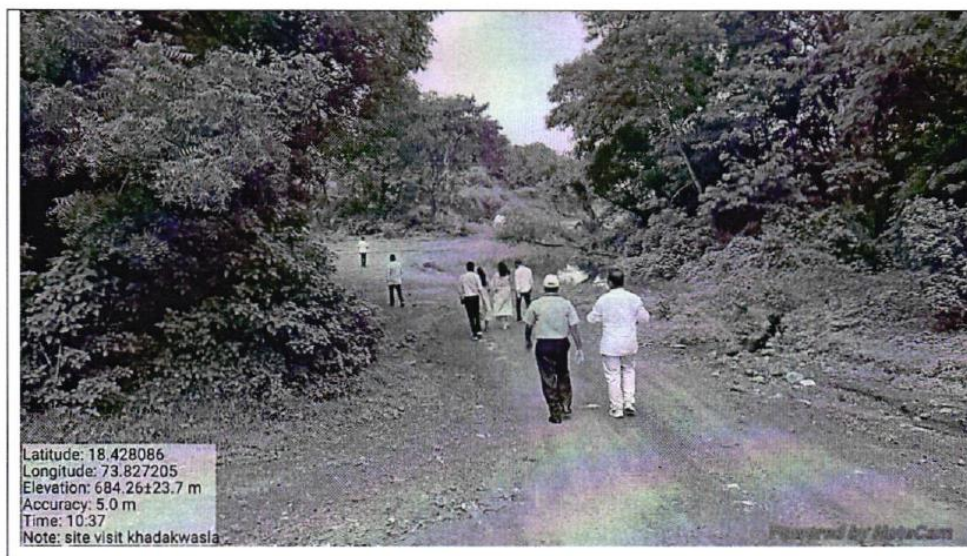
**Intake Point, Khadakwasla, Dist Pune**



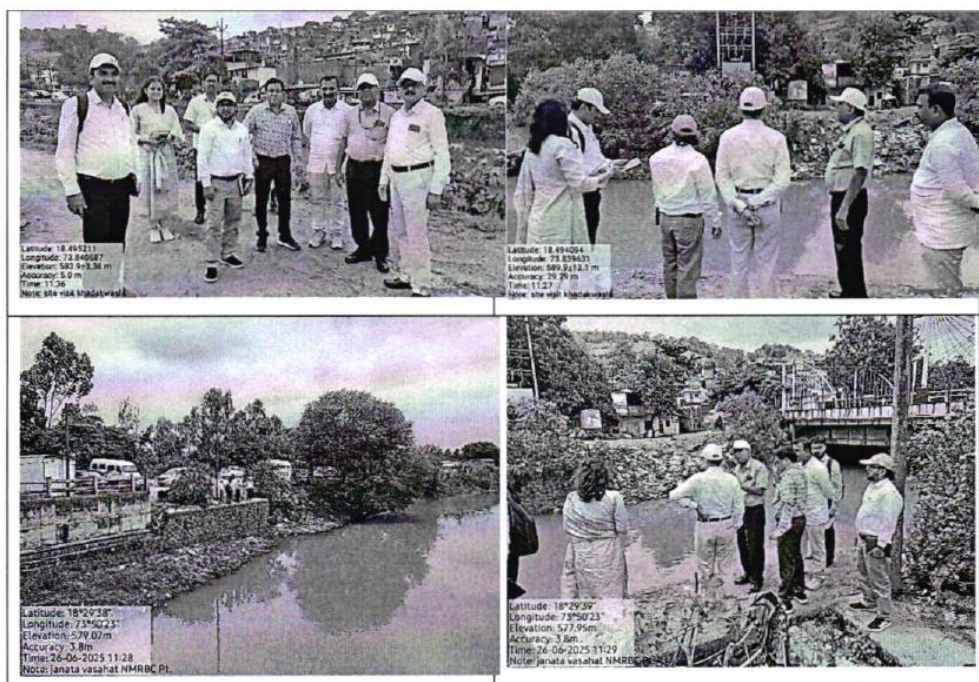
**Shaft No. 2 at Dhayari, Dist. Pune**





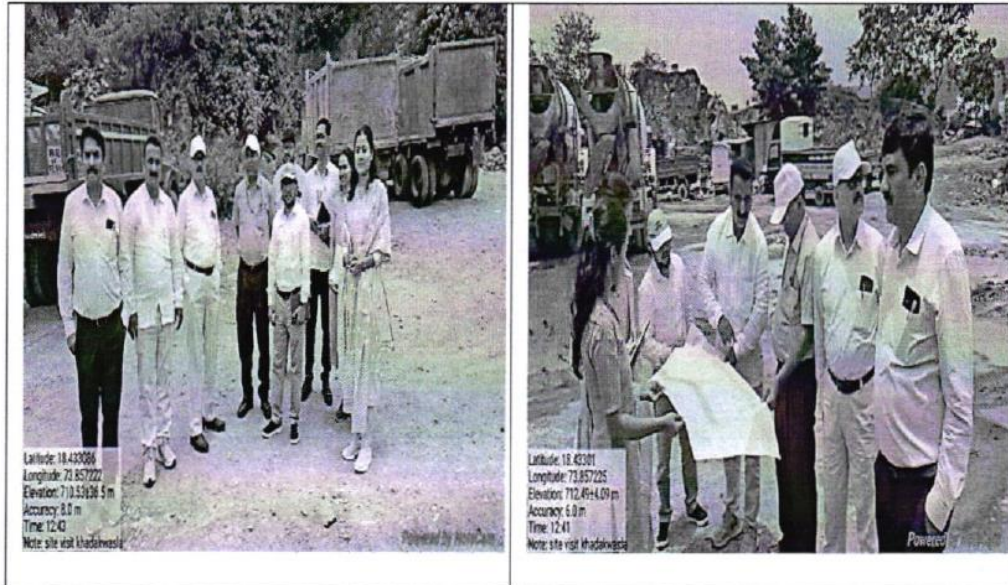


**Muck Disposal areas, Dhayari, Dist Pune**

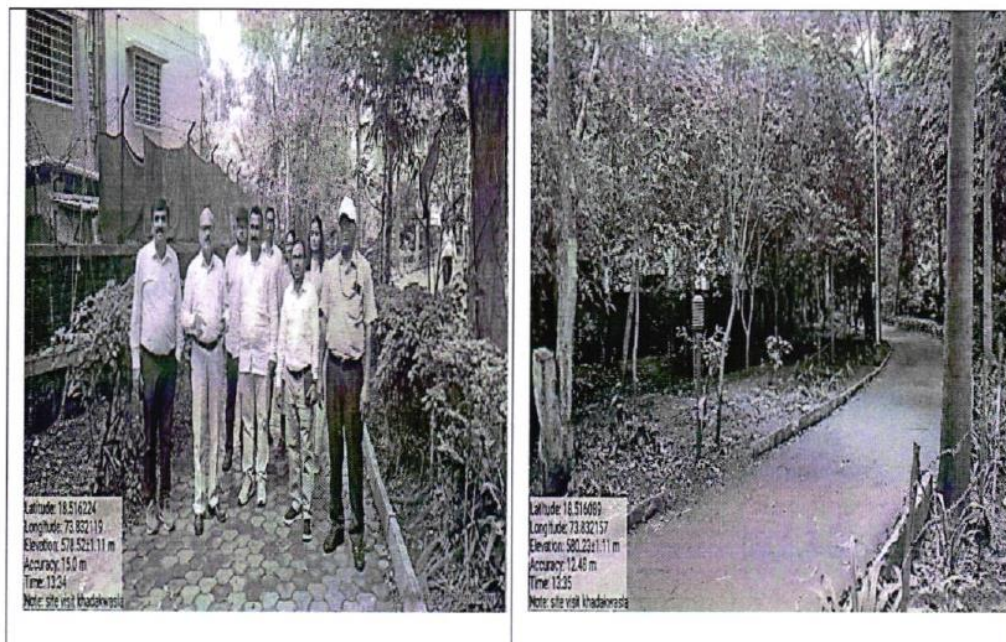


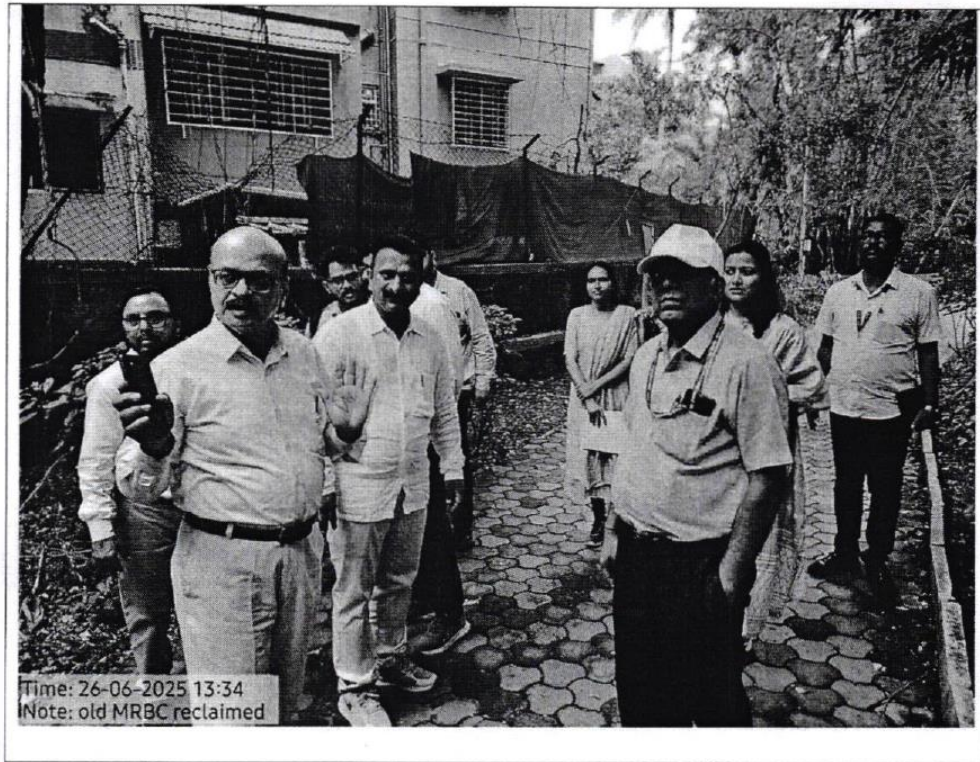
**Existing Canal (Janta Vasahat near P L Deshpande garden) NMRBC (CH. 11/500), Dist Pune**





**Shaft No. 3 Katraj, Dist. Pune**





Hirwai Garden (Jogging Track, Cycle Track), Dist Pune

*Signature of Mr. Ajay Kumar Lal*

(Mr. Ajay Kumar Lal)  
Signature of EAC member

*Signature of Mr. Balram Kumar*

(Mr. Balram Kumar)  
Signature of EAC member

*Signature of Dr. P. R. Sakhare*

(Dr. P. R. Sakhare)  
Signature of MoEFCC Representative

## APPROVAL OF THE CHAIRMAN

**Re: Draft MOM of the 36th EAC (RVHEP) HELD ON 30.07.2025-REG.**

*7 emails*

**chakrapani govind** <chakrapani.govind@gmail.com >

Mon, 11 Aug 2025 10:37:08 AM +0530

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

Approved.  
Chakrapani

On Mon, 11 Aug, 2025, 10:33 am Yogendra Pal Singh, <yogendra78@nic.in> wrote:

Dear Sir,

The draft minutes of the 36th EAC (RVHEP) meeting held on 30.07.2025 was circulated to all EAC members. The comments received from the EAC members have been suitably incorporated. The updated draft MoM is attached herewith for approval please.

With Regards,

Yogendra Pal Singh  
Scientist 'F'

**Government of India**

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