

Minutes of the 5th Meeting of the Expert Appraisal Committee (EAC) for River Valley and Hydroelectric Projects held on 30th December, 2020 from 10:00 a.m. - 01:15 p.m. through video conference.

In the 5th meeting of the EAC for River Valley & Hydroelectric Projects which was held on 02/12/2020 under the Chairmanship of Dr. K. Gopakumar in the Ministry of Environment, Forest & Climate Change through video conference (VC). The following members participated in the video conference:

1. Dr. K. Gopakumar - Chairman
2. Dr. Uday Kumar R.Y. Member
3. Dr. N. Lakshman - Member
4. Dr. Mukesh Sharma - Member
5. Dr. Chandrahas Deshpande - Member
6. Dr. A.K. Malhotra - Member
7. Dr. Narayan Shenoy K. - Member
8. Shri Balraj Joshi - Member
9. Shri Sharvan Kumar - Representative of CEA
10. Shri A. K. Singh - Representative of CWC
11. Dr. A. K. Sahoo - Representative of CIFRI
12. Shri Yogendra Pal Singh - Member Secretary

Item No. 5.1 Confirmation of the minutes of 4th EAC meeting.

Item No. 5.2 Discussion on Project Proposals

Item No. 5.2.1 Rongnichu HEP (115 MW) by Madhya Bharat Power Corporation Limited - Consideration of Environment Clearance - reg. [Proposal No. -IA/SK/RIV/159493/2019 F. No. J-12011/14/2019-IA.I (R)]

Project Proponent alongwith the Consultant M/s EQMS India Pvt. Ltd, New Delhi made the detailed presentation before the EAC and apprised following:

- i. Rongnichu Hydroelectric Project (115 MW) on Rongnichu stream in East Sikkim district of Sikkim, is being developed by M/s. Madhya Bharat Power Corporation Ltd. (MBPCL). The Barrage complex is located about 2km downstream of Namli village and 16km south of Gangtok city along NH-31A. Rongnichu Hydroelectric Project is a run-of-river hydro development project with installed capacity of 96 MW proposed to be enhanced to 115 MW.
- ii. The EC was accorded on 04.04.2007 to Rongnichu HEP (96MW) for a period of 10 years as per the provisions of EIA Notification, 2006. After obtaining the EC in April 2007, there has been an initial delay of more than 3 years to start the actual construction. The geological difficulties of lower Himalayan region resulted in slower pace of excavation of underground works. Viewing the delays being encountered, M/s. Madhya Bharat Power Corporation Ltd., had applied for extension of validity of EC for 3 years. The Ministry vide letter dated 16.6.2017

granted extension of validity of EC initially for six months and vide letter No J-12011/56/2006-IA-I dated 9.11.2017 accorded extension of validity for two and half year i.e. up to 3.4.2020.

- iii. M/s. Madhya Bharat Power Corporation Ltd. intends to enhance the installed capacity of power house from 96 MW to 115MW owing to higher inflows available during 5 10-daily blocks in monsoon period and in the light of enabling provision of running machines at 20% overload as stipulated in power potential studies carried earlier. Even if the amendment to the capacity enhancement of earlier EC granted for 96 MW to 115 MW is accorded, the main issue of working beyond the extended EC period shall remain un-resolved. In the wake of this application for ToR was submitted to the Ministry for Rongnichu Hydroelectric Project (115 MW) on 19.08.2019.
- iv. Proposal was considered by the EAC and ToR was granted vide Ministry's letter dated 16.01.2020 for 115 MW installed capacity with waiver on the requirement fresh Public hearing. However, while recommending TOR, EAC recommended that EIA report shall be uploaded in the Public domain for one month at SPCB. In compliance with ToR, the draft report was uploaded by SPCB, Sikkim, on website on 11.2.2020 for inviting opinion/suggestion from stakeholder. The SPCB, Sikkim, vide their letter No. 952/SPCB/2385 dated 14.5.2020 intimated that 14 written suggestions/objections were received. Compliance of these suggestion has been incorporated in the report. Final EIA/EMP report was submitted to the Ministry on 23.06.2020 for Environmental Clearance.
- v. The civil works are either completed or near completion. The balance works are erection of hydro-mechanical component besides erection of electro-mechanical equipment/plant. The catchment area is 190 sq. km. Total land requirement is 59.872 ha of which 11.3895 ha is Lease Hold Land. Energy & Power Department, Government of Sikkim (Lessor), have acquired land and leased it to MBPCL (Lessee) for a period of 35 years for construction permanent structures/components of project and 48.4825 ha is Forest Land. There were 62 affected families of which none was displaced. Techno-Economic Clearance for the revised capacity of 115 MW at an estimated cost of Rs.1453.34 Crores has been accorded by the Energy and Power Department, Government of Sikkim vide letter No. 91/GoS/E&P/2004-05/PART-IV/20, dated 15.6.2020.
- vi. The project envisages construction of a 14 m high barrage with 3 bays fitted with gates (12.2m x 6.5m); surface desilting basin; one gated power intake, 12.581 km long D-shape lined HRT, vertical surge shaft; underground steel lined pressure shaft and surface powerhouse for housing 2 vertical shaft Pelton turbine of capacity 57.5 MW each. The barrage is located (27°16'6.859" N/88° 35'20.058" E) about 2 Km downstream of Namli village and 16 Km south of Gangtok along NH-31A. The powerhouse is located (27°10' 42.339" N/88° 32'21.577" E) on the right bank of Rangpo River 2.5 km from Rangpo Town on Rangpo-Rongli SH.
- vii. Total land requirement for the project has been assessed as 59.872 ha of which diverted forest land is 48.4825 ha and private land permanently acquired is 11.3895 ha which has been totally acquired. Besides this 11.3116 ha was taken on short term lease basis from land owners for the construction of temporary

structures of which 10.792 ha has been returned to the lessor (land owners) and their lease has been terminated. Balance 0.5196 ha will be returned before commissioning of the project.

- viii. The submergence area at FRL is 10.70 ha. Fambonglho Wildlife Sanctuary exists within 3.79 km from the project area but no part of the project falls within the ESZ of WLS as per map authenticated by the Chief Wildlife Warden and Environment, Sikkim, communicated by DFO Wildlife East vide letter No. 360/WL/E, dated, 20.12.2019.
- ix. Based on catchment area proportional method and available discharge data sets for Rongnichhu, Rangpochhu and Rangit River, a long-term stream runoff series (31 years) at the Rongnichu barrage site was derived. Yield for 50%, 75% and 90% dependability has been assessed as 600.56 MCM, 548.47 MCM and 488.20 MCM respectively.
- x. To establish the base line environmental status of the physico-chemical, biological and socio-economic parameters in the project area and within the project influence area the baseline study and primary data collection has been carried out during pre-monsoon, monsoon and post-monsoon, 2019.
- xi. The maximum concentration for 3 seasons of PM₁₀, NO_x and SO₂ has been found to be 61.0 µg/m³, 15.7 µg/m³ and 9.5 µg/m³ respectively and within the NAAQS prescribed by CPCB. The maximum L-equivalent noise levels for three seasons during day and night time recorded were 50.3 dB(A) and 41.9dB(A), respectively, and are within the limits prescribed by CPCB.
- xii. The pH for surface water ranged between 6.88 to 7.42, within the specified standard of 6.5 to 8.5 limit. TDS ranged between 80 to 158 mg/l. Chlorides were within the acceptable limits (200 mg/l) as it ranged between 21.5 -32.8 mg/l. Sulphates were within the acceptable limits (200 mg/l) as it ranged between 5.2 – 8.5 mg/l. Fluorides recorded ranged between 0.10 to 0.22 mg/l and were within the acceptable limit (1.0mg/l). The nitrate level ranged between 0.3 to 0.54 mg/l. The BOD values exceeded the tolerance limit of 3.0 mg/l in some samples. The concentration of various heavy metals was below the tolerance limits, indicating the suitability of water for meeting domestic requirements. The concentration of cyanides and phenolic compounds were also below the tolerance limits. The Total Coliform level was within the limits specified for Class C water i.e. the water can be suitable for meeting drinking water requirements after conventional treatment and disinfection. All physical and general parameters for ground water samples were observed within the desirable limit at all sampling locations as per IS10500:2012.
- xiii. The soils are low to medium in available nitrogen and phosphorus content, medium in available potassium content in the area. The soils have medium to high organic carbon.
- xiv. In the study area 121 species of plants were recorded which include 82 trees, 11 shrubs, 28 species of herbs and climbers. Ten economically important plant and 24 important medicinal/ethnobotanical importance plant species were recorded. No

RET species falling under IUCN Red List was recorded/reported from study area. The faunal study reveals that 43 mammalian species of which Red Panda and Clouded leopard are the Schedule-I species as per the wildlife Act 1972; 91 bird species; 14 species of herpetofauna were recorded /reported. Twenty-five fish species belonging to 4 families were recorded in the project area.

- xv. **Anticipated Environment Impacts and Mitigation Measures:** Habitat loss due to diversion of 48.4825 ha forestland for mitigation of which compensatory afforestation (Rs 606 lakhs) shall be carried out by the Forest Department. Reduction in reservoir capacity and water available for the designated use shall be addressed through implementation of biological and engineering measures in 2071 ha area under CAT Plan (Rs 578.00 lakh). Fragmentation of habitat and consequent increase in temporary stress levels of wildlife during construction phase for mitigation of which Wildlife and Bio-diversity Management Plan (Rs 110 lakh) has been proposed.
- xvi. Due to construction and increased transportation fugitive dust emission shall increase for mitigation of which various steps shall be undertaken which include periodical air quality monitoring and copious sprinkling at barrage site and on roads for dust suppression shall be done under Air Pollution Control. Ambient air noise levels are expected to increase only during the project construction phase only. Movement of fish across barrage shall be stopped but the reservoir on upstream shall continue a habitat for the indigenous species as well as reservoir species for which Fisheries Management Plan (Rs 170 lakh) has been provided. The flows downstream of the barrage shall be reduced to a maximum diverted discharge of 31.56 cumec carried through water conductor system to surface power house for power generation. During lean season i.e., Dec to March) 0.95 cumec (20%); during monsoon June to Sep on an average 8.63 cumec (30%); during October -November about 3.18 cumec (20%) and during April and May 1.91cumec (20%) shall be released on downstream. During other than monsoon season the e-flow shall be released through 1400 mm diameter sluice pipe fitted with Clamp on ultrasonic meter at its end with its sensors connected to control room. During monsoon season, flow shall be released through under sluice bay and flow shall be measured by calibrated open channel flow meter already fitted at the end of d/s pier.
- xvii. **Disaster Management:** The problem likely to be encountered during construction/operation inter alia include (i) accidents due to explosives/blasting, (ii) accidents due to HEMM, (iii) sabotage in case of magazine. Most of accidents during operation of HEMM can be significantly averted by periodical maintenance and operation. In case of barrage break the flood peak discharge as it propagates through valley shall inundate downstream stretch of first km within 2.0 minutes. Therefore, disaster management plan is based on such measures, which are purely preventive in nature.
- xviii. **Social Impact Assessment and Rehabilitation and Resettlement Plan:** For execution of the project permanent acquisition of private land 11.3859 ha land was carried out before 2013. Now no further acquisition of private land is involved. There were 62 affected families (whose land was acquired) of which none was

displaced. The cost of implementing Rehabilitation and Resettlement Plan and the cost of local area Development worked out to Rs 284.00 lakh.

Environmental Management Plan with Budget Breakup (Capital & Recurring cost):

S. N.	Plans	Cost (Rs. Lakh)	Capital Cost (Rs. lakh)	Recurring (Rs lakh)
1.	Catchment Area Treatment Plan	578.00	488.00	9.00
2.	Compensatory Afforestation Scheme	606.00	591.00	1.50
3.	Wildlife and Bio-diversity Management plan	110.00	90.00	2.00
4.	Resettlement & Rehabilitation Plan	284.00	284.00	0.00
5.	Green Belt Development Plan	15.00	5.00	1.00
6.	Reservoir Rim Treatment Plan	11.00	11.00	0.00
7.	Landscape and Restoration Plan	12.00	3.00	0.90
8.	Fisheries Management Plan	170.00	110.00	6.00
9.	Muck Management Plan	128	117.00	1.10
10.	Restoration Plan for Quarry Sites	16.00	11.00	0.50
11.	Disaster Management Plan	65.00	60.00	0.50
12.	Water, Air and Noise Management Plan	20.00	10.00	1.00
13.	Public Health Delivery Plan	155.00	35.00	12.00
14.	Labour Management Plan	16.00	3.00	1.30
15.	Sanitation and Solid Waste Management Plan	39.00	19.00	2.00
16.	Environmental Safeguards	10.00	0.00	1.00
17.	Energy Conservation Measures	46.00	0.50	4.55
18.	Environmental Monitoring Plan	90.00	5.00	8.50
Grand Total		2371.0	1842.50	52.85

xix. **Project Benefit:** Project benefits inter alia shall include the benefits like (i) Additional annual generation of 413.78 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) Access to improved infrastructure facilities; (iv) Employment Potential (About 1000 people).

xx. **Details of Consultant Engaged in Base Line Data Collection & Preparation of EIA Report:** M/s EQMS India Pvt. Ltd., 304-305, 3rd floor, Rishabh Corporate Tower, Community Centre, Karkardooma, Delhi-110092, has conducted the

Environment Impact study. The three-season data has been collected by the EIA Consultant by engaging J.P. Test & Research Centre, Sahibabad Industrial Area, Ghaziabad, U.P.

Observation and recommendation of the EAC in the earlier meeting held on 29th July 2020

EAC in its 1st meeting deliberated on the information submitted (Form 2, EIA/EMP reports, Public Hearing details, kml file, etc.) and as presented by the PP. EAC observed that the instant project Fambonglho Wildlife Sanctuary exists within 3.79 km from the project area but no part of the project falls within the ESZ of WLS as per map authenticated by the Chief Wildlife Warden and Environment, Sikkim.

EAC further noted that in the instant project forestland is 48.4825 ha and has been acquired by the PP. EAC, however, also noted deficiencies in the submission of PP. EAC after detailed deliberation on the information submitted and as presented, deferred the project for want of following information:

- (i) E-flow assessment shall be done as per the ToR condition and what arrangement has been proposed to meet the e flow.
- (ii) Land requirement details do not matches with a ToR. Clarification shall be submitted in this regard.
- (iii) Form 2, Sr. No. 18.1: Under Air quality impact prediction table, base line concentration of PM, NO_x and SO₂ is mentioned zero.
- (iv) In Form 2, Sr. No. 24 it is mentioned that No forest land is involved whereas as per the report forestland is involved
- (v) Ambient air quality monitoring was done for two seasons. Instead of six locations, five locations were taken and PM 2.5 monitoring was not done.
- (vi) Noise monitoring was done at five stations instead of six 6, groundwater sample analysis was done for one location and Surface water sample analysis was done for five locations instead of six.
- (vii) Meteorological data reported is more than three years (2010) and seasonal variation is not studied especially wind pattern.
- (viii) Compliance report from the regional office of MoEFCC for the earlier EC granted vide letter dated 04.04.2007.
- (ix) Pre-DPR Chapters viz., Hydrology and Layout Map and Power Potential Studies duly approved by CWC/CEA shall be submitted

PP vide dated 22nd December 2020 submitted the above information through Parivesh Portal and accordingly proposal was taken to the EAC for discussion in the 5th EAC meeting (present meeting).

Observation and recommendation of the EAC in the present 5th EAC meeting

EAC noted that Project Proponent along with the consultant made the detailed presentation on the additional information sought by the EAC in the earlier meeting held in July 2020. After detailed presentation by the PP, EAC observed that PP has now submitted the E-flow assessment as per the ToR condition i.e 30% (Monsoon season), 20% (Lean season) and 20% (Non monsoon and Non lean season) of 90% dependable year. Further, during other than monsoon season the e-flow shall be released through 1400mm diameter sluice pipe fitted with

Clamp-on Ultrasonic meter at its end with its sensors connected to control room. During monsoon season, e-flow shall be released through under sluice bay and flow shall be measured by calibrated open channel flow meter already fitted at the end of d/s pier.

In regard to total land requirement, EAC observed that total land requirement for the project has been assessed as 59.872ha of which diverted forest land is 48.4825 ha [Diversion of Forest Land (26.2313 ha) vide letter dated 18.05.2009; Diversion of additional Forest Land (2.5325 ha) vide letter dated: 21.02.2012; Surrender of already diverted forest land(3.6250 ha) vide letter dated: 21.02.2012; Forest Land for construction of 220Kv transmission line (Right of Way)- 23.3437ha vide letter dated 05.05.2017] and private land permanently acquired is 11.3895 ha. Besides, EAC also deliberated on the submission made by the PP regarding monitoring of ambient air quality, noise, water monitoring and meteorological data. Further, EAC also took note on the Regional Office, MoEFCC monitoring report of the existing EC and submission made regarding approval of pre-DPR chapters.

EAC after detailed deliberation on the additional information and other information submitted (Form 2, EIA/EMP report, Public Hearing issues, kml file) and as presented by the Project Proponent, **recommended the proposal for grant of Environmental Clearance** subject to compliance of applicable Standard EC conditions with the following additional conditions:

- 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. In pursuant to the Ministry OM dated 30.09.2020, the Environmental Management Plan (EMP) shall be revised considering the commitments made to address the concern raised during public consultation. Activities proposed including establishment of Primary health Centre at Namiland Namcheybong shall be made part of EMP under local area development plan and to be submitted to the Ministry.
- iii. 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.
- iv. Conservation plan prepared for Schedule I species shall be implemented with approval of the concerned CWLW.
- v. 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.
- vi. Land acquired for the project shall be suitably compensated in accordance with the law of the land with the prevailing guidelines. Private land shall be acquired as per provisions of Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013.
- vii. Necessary permission to be obtained for quarrying construction materials, if any required, for the project as per the EIA Notification, 2006 and as amended thereof.

- viii. Necessary control measures such as water sprinkling arrangements, etc. and construction of paved roads leading to muck disposal sites shall be taken up on priority to arrest fugitive dust at all the construction sites.
- ix. 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 shall be disposed safely and that it does not pollute the natural streams and water bodies in surrounding area. Report of the same to be submitted to Ministry and its Regional office, Shillong.
- x. Real time monitoring of e-flow to be done in consultation with State PCB or any other institution.

Item No. 5.2.2 Ujh Multipurpose (196 MW) Project in Kathua District of Jammu & Kashmir by M/s. J&K State Power Development Corporation Limited - Environmental Clearance - Reg. [Proposal No. IA/JK/RIV/84991/2018; F. No. J-12011/39/2014 –IA.I]

Project Proponent alongwith the Consultant M/s WAPCOS Ltd, Gurgaon made the detailed presentation before the EAC and apprised following:

- i. The Ujh Multipurpose Project located (Lat. 32°33 to 32°40'N & long. 75°5' to 75°35'E) in district Kathua of Jammu and Kashmir, is proposed on river Ujh which is one of the main tributaries of River Ravi. The proposed dam site is located at village Barbari about 1.6km downstream of Panchtirthi. The Powerhouse site is approximately 9.5km downstream of dam site near village Deoli. A Barrage has been proposed 1.5km d/s of Power house which also lies in tehsil and district Kathua. Two canals, Right Main Canal (RMC) and Left Main Canal (LMC) shall offtake from barrage from both the banks to meet the irrigation requirements in districts Kathua and Samba. In each canal 10 cusec water has been earmarked for meeting drinking water requirement of district Kathua of Jammu & Kashmir.
- ii. The project envisages construction of a 116.0m high dam on river Ujh with FRL at 608m and the MDDL at 564m. The water from the reservoir is proposed to be diverted through 2.474km long HRT to power house located on the right bank. The annual energy benefit from the project in 90% dependable year is estimated as 238.66MU. The firm power from the project has been estimated as 27.28 MW. Three units of Francis turbine with the unit size of 62MW have been proposed for the power house. A dam toe powerhouse comprising of 4 units of 2.5MW has also been proposed to generate the hydro-power of the water meant for mandatory environmental releases.
- iii. A barrage has been proposed 1.5 km d/s of Power house. Two canals, Right Main Canal (RMC) and Left Main Canal (LMC) will offtake from the barrage along both the banks of river Ujh. About 10 cusec of water has been earmarked for RMC and LMC for meeting drinking water requirements of district Kathua. The RMC will provide irrigation in Kathua and Samba districts, while, LMC will provide irrigation in district Kathua. The CCA of RMC and LMC is 5595 ha and 3053 ha respectively. In addition to that, the RMC will irrigate an additional area of 8095ha in Kharif season

and 5989ha in Rabi season from Samba to Vijaypur in the command area of existing Ravi and Tawi canals.

- iv. Major project Components includes the main dam comprises of a compacted rock fill section with a concrete face slab on the upstream slope and a concrete toe slab on the plinth. The FRL has been fixed at 608m and MWL at 609.5m with gross storage of 925 MCM. The top of dam, as decided has been kept as EL 619.0m. This arrangement would provide an option to raise the storage capacity in future in view of growing demand of water. The average existing river bed level at dam axis is about EL 503.0 m. The total length of dam at its top will be 420.0m. For the construction of Concrete Faced Rockfill Dam, Ujh River would be diverted through 4 diversion tunnels, each of 12.0m diameter and approximately 450m in length. A chute spillway has been proposed in a saddle on the hill at left flank of the dam. This spillway will have five bays controlled by radial gates of size 13.00m (W) X 19.16m (H). The length of the proposed overflow structure shall be 81.00m. From the intake, a 2.474km long lined Head Race Tunnel of 7.3m dia has been provided. A surge shaft of 87 meter height, 25 meter dia with an orifice of 4.5m dia has been provided. After surge shaft, a steel lined 6.3m dia vertical drop shaft of 85.35m height followed by a 397.10m long horizontal pressure shaft has been provided. After two bifurcations, three penstocks of 4 m dia each have been provided to feed three Francis Turbines of 62 MW capacities of each to be installed in a surface power house located on the right bank of river Ujh. The size of power house at the turbine floor level is 72.25m × 35.50m. A dam toe powerhouse comprising of 4 units of 2.5MW has also been proposed to generate hydro-power of the water meant for mandatory environmental releases.
- v. A regulating barrage of 17.50 m height and 380 m length has been proposed 1.5km d/s of powerhouse to utilize power house releases for irrigation purpose. The barrage also lies in tehsil and district Kathua. Two canals, Right Main Canal (RMC) 36.628 km long and Left Main Canal (LMC) 32.510 km long will be emanating from barrage along both the banks of the river.
- vi. The land requirement of Ujh Multipurpose project is 4350 ha, out of which submergence area is 3450.0 (Govt land: 329 ha; Forest land: 680.1 ha and Private land: 2441 ha). The Jasrota Wildlife Sanctuary, with an area of 10.04 km², is situated on the right bank of Ujh River in district Kathua, between 32°27' and 32°31'N latitudes and 75°22' and 75°26' longitudes. Wildlife clearance has been accorded vide letter dated 7th August 2020. Ujh Multipurpose Project does not involve any interstate aspect as the River Ujh, does not cross any other Indian state except Jammu & Kashmir.
- vii. Proposed project is covered under under Schedule 1 (c) of the EIA notification 2006 and as amended thereof. The TOR was granted by MOEF&CC vide letter dated 06.12.2018 for conducting the CEIA Study for the proposed Ujh Multipurpose (196 MW). Most of the land acquisition for construction of dam, submergence and canal network will be in Kathua district. However, some land acquisition will be required for canal portion in Samba district also. Therefore, JKPCB conducted the public hearing in both the districts on 16.07.2020 and 26.08.2020, respectively. PH at Kathua and Sambha district was chaired by Sh. Om Prakash Bhagat, Deputy Commissioner and Mr. Jitendeer Mishra (KAS), ACR Samba, Additional District Magistrate, respectively. Key issues were related to employment, compensation, resurveying and

shifting of canal towards north in consultations with local people etc. EIA/EMP report was submitted to the Ministry on 04.12.2020.

- viii. To establish the base line environmental status of the physico-chemical, biological and socio-economic parameters in the project area and within the project influence area the baseline study and primary data collection has been carried out during Winter (February-March 2019), summer (May- June 2019) and Monsoon (August- September 2019).
- ix. The water availability study of the project has been carried out by using observed flow data of river Ujh at proposed dam site (1989-2008) and Ujh barrage site (1984-2008). The data was analyzed for its consistency. The 10-daily flow data observed at Ujh dam site (854 sq km) and Ujh Barrage (990 sq km) are found to be almost same. The 1-day Probable Maximum Precipitation (PMP) for Ujh Dam project has been taken from the PMP atlas of IITM (2008) as 44.9 cm. Probable maximum flood at the Ujh dam using SUG and observed UG (1962) with 1-day PMP value of 44.9 cm have been computed as 11400 cumec and 10060 cumec respectively. 100 year return flood for the Ujh multipurpose project works out to be 5480 cumecs by hydro-meteorological approach.
- x. The average concentration of PM10 at various monitoring stations ranged from 44.9 to 73.0 $\mu\text{g}/\text{m}^3$ in winter season, 51.1 to 74.4 $\mu\text{g}/\text{m}^3$ in summer season and 42 to 68.3 $\mu\text{g}/\text{m}^3$ in monsoon season. The highest PM10 value was recorded as 88 $\mu\text{g}/\text{m}^3$ in winter season at Barrage site and lowest value of 37 $\mu\text{g}/\text{m}^3$ were recorded at dam site. The highest PM10 value was recorded as 97 $\mu\text{g}/\text{m}^3$ in summer season at Barrage site and lowest value of 41 $\mu\text{g}/\text{m}^3$ was recorded at dam site. The highest PM10 value was recorded as 83 $\mu\text{g}/\text{m}^3$ in monsoon season at Barrage site and lowest value of 35 $\mu\text{g}/\text{m}^3$ were recorded at Dam site.
- xi. The average concentration of PM 2.5 at various monitoring stations monitored ranged from 22.8 to 38.6 $\mu\text{g}/\text{m}^3$ in winter season, 26.9 to 45.4 $\mu\text{g}/\text{m}^3$ in summer season and 19 $\mu\text{g}/\text{m}^3$ to 32.4 $\mu\text{g}/\text{m}^3$ in monsoon season. The highest PM2.5 value in winter season was recorded as 47 at Barrage site and lowest value of 17 $\mu\text{g}/\text{m}^3$ was recorded at Dam site. The highest PM2.5 value in summer season was recorded as 52 $\mu\text{g}/\text{m}^3$ at Barrage site and lowest value of 22 $\mu\text{g}/\text{m}^3$ was recorded at Dam site. The highest PM2.5 value in monsoon season was recorded as 44 $\mu\text{g}/\text{m}^3$ at Barrage site and lowest value of 17 $\mu\text{g}/\text{m}^3$ was recorded at Dam site
- xii. The ambient SO₂ level at various stations monitored ranged from 6.7 to 7.2 $\mu\text{g}/\text{m}^3$ in winter season and 6.5 to 7.2 $\mu\text{g}/\text{m}^3$ in summer season and 6.4-6.5 $\mu\text{g}/\text{m}^3$ in monsoon season. The highest SO₂ value was recorded as 7.5 $\mu\text{g}/\text{m}^3$ at both dam site and Power house site in winter season and 7.8 $\mu\text{g}/\text{m}^3$ at Powerhouse site in summer season. The highest SO₂ value was recorded as 6.8 $\mu\text{g}/\text{m}^3$ at Barrage site in monsoon season.
- xiii. The average NO₂ concentration at various sampling stations ranged from 17.6 to 25.1 $\mu\text{g}/\text{m}^3$ in winter season, 18.7 to 25 $\mu\text{g}/\text{m}^3$ in summer season and 16 to 23.3 $\mu\text{g}/\text{m}^3$ in monsoon season. The highest NO₂ value was recorded as 34.5 $\mu\text{g}/\text{m}^3$ in winter season at Powerhouse site, 32.2 $\mu\text{g}/\text{m}^3$ in summer season at Powerhouse site and 32.6 $\mu\text{g}/\text{m}^3$ in monsoon season at Powerhouse site.

- xiv. **Surface Water Quality:** The Electrical Conductivity (EC) in water samples ranged from 92.6 to 249.2 μ S/cm, 111.1 to 203.2 μ S/cm and 238.1 to 308 μ S/cm in winter, summer and monsoon season respectively. The low EC values indicate low TDS reflected in low concentration of cations and anions in water. The low hardness level can be attributed to low calcium and magnesium levels. The BOD and COD levels are quite low, which indicate the absence of organic pollution loading. It can be concluded that water quality was observed to be quite good, as parameters are well below the permissible limits specified for meeting drinking requirements.
- xv. **Ground Water Quality:** The pH level of the Ground water ranged from 6.53 to 8.01, 6.94 to 7.87 and 6.01 to 8.11 during winter, summer and monsoon seasons respectively which indicates neutral nature of the water. The parameters such as electrical conductivity, total dissolved solids, sulphates, chlorides etc. were well within the permissible limit of the drinking water standards. The DO level varied from 5.0 to 7.2 mg/l, 4.9 to 5.3 mg/l and 5.4 to 6.6 mg/l during winter, summer and monsoon seasons respectively. This is mainly due to the low population density and absence of industries in the area. The DO level of water indicates the good quality of water suitable for meeting the drinking requirement of people living in project vicinity.
- xvi. **Noise monitoring:** The day time equivalent noise level at various sampling stations ranged from 41.46 to 46.05 dB(A), 40.94 to 44.19 dB(A) and 41.14 to 44.89 dB(A) in winter, summer and monsoon seasons respectively.
- xvii. **Land use pattern:** The major land use category in the study area of Ujh Multipurpose Project is vegetation, as it accounts for about 50% of the study area followed by Agriculture land (22.31%). The area under Barren land is 21.96% of the study area. River and river bed accounts for about 5% of the study area. Settlements and Snow account for about 0.83% and 0.88 of the study area respectively.
- xviii. During the floristic survey, a total of 241 plant species were recorded in winter season, 257 plant species in summer season and 379 plant species in monsoon season from the Ujh HE project. Out of these, 71 species are trees, 50 are shrubs, 98 herbs, 1 bamboo sp., 21 lianas including climbers in winter, 71 species are trees, 50 are shrubs, 114 herbs, 1 bamboo species, 21 lianas including climbers in summer and 71 species are trees, 50 are shrubs, 236 herbs, 1 bamboo sp., 21 lianas including climbers in monsoon.
- xix. The terrestrial fauna in the Ujh Multipurpose Project are represented by mammals, birds, reptiles, butterflies and amphibians. Avian-fauna or Birds are one of the most popular life forms on the planet, and their diversity leads to a richness of life and beauty. Some of the birds found in the region include Black winged Kite, Great horned Owl, Black faced Banting, Blue throated barbet, Common Hawk Chuckoo, Common Indian Nightjar & Common myna. Reptiles are tetrapod animals in the class Reptilia, comprising today's turtles, crocodilians, snakes, amphisbaenians, lizards, tuatara, and their extinct relatives. Some of them include Jerdon's Forest Lizard, Blue-throated lizard & Mountain Pit Viper. Mammals are vertebrate animals constituting the class Mammalia, and characterized by the presence of mammary glands which in females produce milk for feeding their young, a neocortex, fur or hair, and three middle ear bones. Some of them found in the project vicinity are Asiatic Jackal,

Barking deer, Common Grey Mongoose, Grey Musk Shrew, Himalayan Hoary bellied squirrel, Himalayan palm civet, Himalayan rat, House Rat, Indian Fox. Jungle Cat and Leopard are listed under Schedule I species of WPA.

- xx. A total of 35 species of different groups of Phytoplanktons and Phytobenthos community were recorded to be growing in the Ujh Multipurpose Project area. Mainly bacillariophyceae and chlorophyceae group of periphytons were recorded in the study area. The list of Benthos identified from the study area are Ameletus species, Baetismuticus, Ecdynurus spp., Rhyacophilla spp., Tendipes spp., Perla spp., Ephemerella notate, Centropilum spp., etc. Zooplanktons comprised of protozoan, rotifers and Cladocera. Centropyxisaculeata, Centropyxisecornis, Euglypha sp., Epistylis sp., Trichocercamulticrinis, Cyclops magnus, Cyclops scutifer, Cyclops bicolour, Cyclops panamensis, Mesocyclopsleukartii, Mesocyclops tenuis, Halicyclops sp., Eucycloppsp. reported during various seasons covered as a part of field studies. Major Fish Species Recorded During Field Studies Schizothoraxniger, Triplophysasp., Labeobata, Catlacatla, Gudusiachapra& Rita rita.
- xxi. **Anticipated Environment Impacts and Mitigation measures:** During construction and operation phase likely impacts are increase in soil erosion from various construction and quarry sites, Pollution by construction spoils, Acquisition of land for labour camps/ colonies, Solid waste generated from labour camps/ colonies, Acquisition of land for various project appurtenances, Loss of forest land due to acquisition of land for various project appurtenances, Impact on water quality of receiving water body due to disposal of runoff from construction Sites carrying high sediment level, degradation of water quality due to disposal of effluent from labour, camps/colonies etc. To mitigate the above impacts following measures will be taken up: Effective drainage system will be provided to avoid the infiltration of run-off and surface waters into the ground of quarry sites, Filling of depressions, Construction of retaining walls, Rocks for landscaping, Muck Disposal Plan, Solid Waste Management Plan Sewage Treatment Plant (STP) to treat the sewage generated from the colony, construction of settling tanks to treat effluent generated from Batching Plants, Fabrication Units & Workshops etc.
- xxii. PP apprised EAC that passage/fish ladder/fish bypass to provide migratory passage have been assessed to evolve effective conservation strategies for sustainable management of aquatic biodiversity. However, these passages have been found more effective in low head barrage but for high barrage passage are not found viable due to immediate loss of habitats. The barrage shall act as a barrier between the upstream and downstream habitat of migratory fishes because neither any fish ladder/pass has been provided in original layout nor constructed. Since all barrage bays and u/s and d/s wing/walls and piers have been completed, nor it is now feasible to construct any fish pass.
- xxiii. **Disaster Management:** The emergency planning for Dam break scenario is devised on the basis of results of dam break analysis mainly the travel time of flood wave to various locations in the downstream stretch of the river. It is inferred from the analysis that in case of main Dam failure the flood peak discharge as it prorogates through valley shall inundate downstream stretch of 17.05km and the flood wave peak in 0.50 hour implying that a little reaction time for executing any rescue plan. The plan is, therefore, based on such measures, which are purely preventive in nature. The degree

of alertness has to enhance during high stage of river manifested with sharp increase in discharge. Though there cannot be very sharp edge demarcation between different levels of emergency yet the following flood conditions have been contemplated and the preventive measures suggested against each as given in Table below:

S. No.	Status of emergency	Water Level	Preventive Measures
1.	Normal Flood	Below FRL and flood discharge below 6902.43 cumec	Utmost vigil observed in regulation of gates
2.	Level –1 Emergency	Below 616.00 masl and flood discharge below 6902.43 cumec	(1) All gates fully operational (2) All the official should attend Dam site. Local officials informed and warning system will be kept on alert. Flood warning to people.
3.	Level –2 Emergency	Rises above EL 616.0 masl but below 619.0 masl	Communication & public announcement system should be put into operation and flood warning issued to people.
4.	Level –3 Emergency	Top of Dam i.e. 619.0 masl	(1) All staff from Dam site, power house & TRC outlets alerted to move to safer places (2) Possibility of Dam failure should be flashed to District Administration.
5.	Disaster	Rising above top of Dam and the breach appears in any form	District Administration and Project authorities be intimated and only life saving measures should be resorted too

xxiv. **Social Impact Assessment and Rehabilitation and Resettlement Plan:** The total 12 villages in Billawar Tehsil, Kathua district are coming under the submergence area. Out of 12 submergence villages, 2 villages are fully submerged and 10 villages are partially submerged. The fully submerged villages are namely Dharalta, and Dungara. As per 2011 Census the total population of the area is about 26829. The male and female population in the villages is 53.05% and 46.95% respectively and population below 6 years of age accounts for 12% of the total population. The number of females per 1000 males is 885 and average family (persons per family) size is 5. The male and female literacy rate in the villages is 70.70% and 54.01% respectively. It is further observed that 20.60% of the total population falls under main worker category. The marginal workers account for about 10.77% of the total population. In all 52 villages with 3700 families are likely to lose their homesteads as a result of the process of land acquisition due to construction of dam and subsequent submergence area. These families would be eligible to receive resettlement benefits, in addition to compensation of homestead plot and structure. The provisions “Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013” have been taken into consideration. Further, it is suggested that these families be resettled/ relocated at one place as a group, in one or more of the existing nearby villages.

xxv. **Environmental Management Plan with budget breakup (Capital & Recurring) in Tabular form:**

S. No.	Item	Cost (Rs. lakh)
Environmental Management Plan(Mitigation measures)		
1.	Restoration of Quarries	1410.0
2.	Landscaping and Restoration of Construction Areas	100.0
3.	Stabilization of Muck Disposal Sites	710.0
4.	Solid waste Management	53.53
5.	Environmental Management in Road Construction	2400.0
6.	Control of Water Pollution	375.00
7.	Control of Air Pollution	114.3
8.	Control for Noise Pollution	29.0
9.	Provision of Free Fuel	1084.0
10.	Compensatory Afforestation	1267.74
11.	Biodiversity Conservation Plan	127.0
12.	Wildlife Protection Plan	274.07
13.	Habitat Improvement for Avi-Fauna	32.00
14.	Fisheries Management Plan	146.48
15.	Public Health Delivery System	236.31
	Sub-Total	8359.43
14.	Rehabilitation and Resettlement	373923.0
15.	Livelihood Plan	1978.2
17.	Local Area Development Plan	5850.0
18.	Monitoring and Implementation of R& R plan.	300.0
19.	Disaster Management Plan	200.0
	Sub-Total	382251.2
20.	Catchment Area Treatment Plan	9543.5
21.	Greenbelt Development Plan	50.0
22.	Energy Conservation Measures	50.0
23.	Public Awareness Programme	50.0
	Sub-Total (C)	9693.5
Environmental Monitoring Programme		
24.	Implementation of Environmental Monitoring Programme during construction stage	170.68
	Sub-Total (D)	170.68
	Grand Total	400474 lakhs say 4004.74 crore

xxvi. **Project benefit including employment details:** The power demand in J&K is very high. Industrialization in the area is also very prominent. Peaking hour demand for the power is even higher. Ujh Dam Project has been proposed to be a Peak load station. Therefore the power generated from the Ujh Dam can be utilized economically at the peak hours and can be sold to the industries even on high rates.

- xxvii. Due to construction of the proposed project, area of about 30381 ha will become cultivable. The BC ratio for the irrigation, drinking water supply and flood protection component works out to 1.163. Thus, the project does not offer a very good return on capital invested but it will definitely bring about an improvement of socio-economic conditions of the people of the area. An improvement in farming practices and increase in yield will lead to the development of the area.
- xxviii. **Benefits of project:** The project has provision for the supply of 10 cusec of drinking water to the Ujh Command area. It will solve the drinking water problem of the people in the area. The project will provide relief from the miseries of flood to the people living in the area. The project has the scope of indirect benefits such as pisciculture, tourism and other progressive development. Job opportunities will drastically improve in this area. At present most of the population sustains on agriculture and allied activities. There are no major industries or other avenues of occupation in the area. The project will open a large number of jobs to the local population during project construction phase. Various types of indirect business opportunities like shops, food-stall, tea stalls, etc. besides a variety of suppliers, traders, transporters will concentrate here and benefit immensely as demand will increase significantly for almost all types of goods and services.

Observation and recommendation of the EAC in the present meeting:

EAC in the present meeting (5th meeting) deliberated on the information submitted (Form 2, EIA/EMP report, Public Hearing issues kml file, etc.) and as presented in the meeting observed that it's a Multipurpose Project and instant application for only hydroelectric and irrigation component. Further, the total land requirement of Ujh Multipurpose project is 4350 ha, out of which submergence area is 3450.0 (Govt land: 329 ha; Forest land: 680.1 ha and Private land: 2441 ha). The Jasrota Wildlife Sanctuary is within 10 km of project site. Wildlife clearance has been accorded vide letter dated 07.08.2020. Ujh Multipurpose Project does not involve any interstate aspect as the River Ujh, does not cross any other Indian state except Jammu & Kashmir.

EAC also noted that application for diversion of total forest land (680.1 ha) involved in the project is under consideration. Also, muck management plan does not have details muck disposal sites and capacity. As the instant proposal involves irrigation component as well, a detailed CAD plan as per the ToR to be prepared and submitted. EAC also noted presence of Indian Fox, Jungle Cat and Leopard which are listed under Schedule I of WPA. EAC observed that key issue related to resurveying and shifting of canal towards north in consultations with local people was raised during the PH at Samba district. In response, PP submitted possibility of the alignment of the canal shall be investigated for supply of water before construction stage. EAC deliberated on this aspect and opined that since EC is site specific, therefore, PP is required to submit the declaration about alignment of the canal.

EAC after detailed deliberation on the information submitted by the PP and as presented **recommended** the proposal for grant of Environmental Clearance subject to submission of following information to the Ministry at the earliest prior to grant of EC and compliance of applicable Standard and additional EC conditions:

1. Stage I Forest Clearance for the forest land (680.1 ha) involved in the project.

2. Wildlife conservation plan for Schedule I species shall be prepared and submitted to the CWLW for approval. Purchase of Vehicles from the budget of Wildlife Conservation Plan is not allowed.
3. Detailed Muck management plan shall be prepared having details of coordinates, capacity and approach roads of all the muck disposal sites. All disposal sites shall be minimum 30m away from the HFL of river.
4. Command area development plan shall be prepared as per the ToR.
5. Details of the proposed activities under local area development plan are to be worked out with budgetary provision.
6. Ministry in suppression of OM dated 1stMay 2018 regarding CER has issued an OM dated 30.09.2020. Therefore, issues raised during Public hearing and activities proposed to address such issues shall be made part of EMP under local area development plan. The Primary Schools of all project affected villages shall be equipped with Computer lab providing internet connectivity.
7. Chapter 10 be restructured compiling all the EMPs at one place as per the ToR.
8. Revised budgetary provision both (**Capital & Recurring**) against each Environmental Management Plan be submitted as per the EMPs mentioned in ToR.
9. Justification of e flow less than 30% during monsoon season shall be submitted.
10. As EC is site specific, therefore, declaration about alignment of the canal in Samba district to be submitted.

Additional EC conditions:

- 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. 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.
- iii. Necessary permission to be obtained for quarrying construction materials, if any required, for the project as per the EIA Notification, 2006 and as amended thereof.
- iv. Necessary control measures such as water sprinkling arrangements at all the construction sites, etc. and construction of paved roads leading to muck disposal sites shall be taken up on priority to arrest fugitive dust.
- v. Stabilization of muck disposal sites using biological and engineering measures shall be taken up to ensure that muck does not roll down the slopes and shall be disposed safely and that it does not pollute the natural streams and water bodies in surrounding area.
- vi. 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.

- vii. Land acquired for the project shall be suitably compensated in accordance with the law of the land with the prevailing guidelines. Private land shall be acquired as per provisions of Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013.
- viii. Necessary permission to be obtained for quarrying construction materials for the project as per the EIA Notification, 2006 and as amended thereof.
- ix. Conservation plan for Schedule I species shall be implemented with the approval of the concerned CWLW.
- x. Possibility of fish pass/ladder for migration of fish shall be explored in consultation with CIFRI/WII.
- xi. Real time monitoring of e-flow to be done in consultation with State PCB or any other institution.

Item No. 5.2.3 Sunni Dam HEP in (382 MW) in Shimla & Mandi Districts of Himachal Pradesh by SVJN Project- Environmental Clearance – Reg. [Proposal No. IA/HP/RIV/63789/2017; F. No. J-12011/14/2017-IA.I (R)]

Project Proponent along with the consultant (M/s Voyants Solutions Pvt. Ltd.) made the detailed presentation and appraised following to the EAC:

- i. The project was earlier identified by the HPSEB as a single stage Luhri Hydroelectric Project located in Shimla, Mandi and Kullu districts of Himachal Pradesh to harness the hydel potential between tail water of Rampur Hydro Electric Project and Full Reservoir Level of Kol Dam Hydro Electric Project. Later Luhri HEP has been divided in to three stages i.e. into Luhri Stage-1 (210MW), Luhri Stage-II (172MW) and Sunni Dam HEP (382MW). The proposed Sunni Dam HEP is situated on Satluj River near Khaira Village, in Shimla and Mandi Districts of Himachal Pradesh. The project envisages construction of a ± 71 m high, concrete gravity dam (Longitude $77^{\circ}12'39''$ E and Latitude $31^{\circ}14'53''$ N) from river bed level ± 644 m (average). The underground powerhouse is located on the right bank of Satluj River at Marola in Bindla Panchayat. The project site can be approached by NH-5 followed by SH-13 and MDR-22 via Shimla, Naldhera and Chaba.
- ii. The project majorly envisages construction of a ± 71 m high, concrete gravity dam from river bed level, with low level spillway having 6 bays fitted with radial gates of size of 8.5m (W) x 16.0m (H) and Upper-level spillway of one bay fitted with Flap gate of size 5m (W) x 4.5m (H) to pass 15473 cumecs (PMF). The Full Reservoir Level has been kept at El.712.0 masl and Minimum Draw Down Level at El. 709.5.0masl. The dam would provide a gross pondage of 82.5 MCM and live storage of 7.9 MCM. The length and width of the dam at top shall be 178 m and 8.0m respectively. Three intakes are proposed for diverting the water from the reservoir to the dam toe powerhouse on the right bank. Three pressure shafts have been proposed which shall further bifurcate into six to pass total discharge of 726.95 cumecs, Underground power house shall be provided on right bank with installed capacity of

382 MW (4 x 73 MW- Main Units, 1x73 MW+ 1x17 MW- Auxiliary Units). Two 10.5 m diameter and 9.0 m diameter horseshoe shaped tailrace tunnels of length 288 m and 208 m respectively have been proposed. A 642.208 m long and 10.0 m diameter, horse shoe shaped diversion tunnel lined with 300 mm thick concrete, shall be constructed on the left bank. The height of upstream cofferdam shall be ± 18.80 m and the height of downstream coffer dam shall be ± 9.20 m. The top width of both coffer dam shall be 8m and side slope 2:1. It is designed to pass lean season and non-monsoon season diversion flood up to 773 cumecs

- iii. Total land required for construction of the project components and other infrastructures is estimated as 459.4546 ha of which forest land shall be 397.8863 ha and private land 62.2854 ha. The land requirement in Shimla District is 246.4051 ha comprised of 196.7343 ha forest land and 49.6708 ha private land. The land requirement in Mandi District is 213.0495 ha comprised of 201.152 ha forest land and 12.6146 ha private land. The project would result in submergence of 382.7884 ha of land. Rest of the land will be required for residential and non-residential buildings for construction of the project, roads, stores, and for the main project components such as diversion structure, dam, intake, surge shaft, power house, tailrace tunnel, switchyard, area identified for muck dumping, quarry area, etc. The PP has already moved online the application on 27.12.2017 for diversion of forest land. About 2091 families from 21 villages are likely to be affected of which 45 shall be displaced. The cost of project is Rs. 2443.84 Crores, and is proposed to be completed in 63 months.
- iv. No National Park, Sanctuary, Defence Establishments, Archaeological Monuments, Notified Eco-sensitive areas or protected area under Wildlife (Protection) Act exists within the project area or within 10 km distance from it.
- v. The capacity of Sunni Dam HEP is 382 MW (>50 MW), thus falls under 'Category A'. TOR was finalized by Expert Appraisal Committee (EAC), MoEF&CC and issued clearance for pre-construction activities (along with approved TOR), vide their letter no. J-12011/14/2017-IA.I dated 29.06.2017. The ToR for installed capacity enhancement from 355MW to 382 MW was issued vide letter no. J-12011/14/2017-IA.I dated 24.01.2019. Public Hearing, presided by ADC, Shimla, was conducted by Himachal Pradesh State Pollution Control Board on 28th October, 2020 in village Ogli, Tehsil Sunni, District Shimla. In the meeting 16 stake holders verbally recorded their objection/suggestions while 7 submitted written statement. Public hearing, presided by ADM Mandi, was also conducted on 30th October, 2020 in village Parlog, Tehsil Karsog, District Mandi. Twenty-three stake holders/people representative discussed their views and recorded their objection/suggestions verbally in the meeting. Compliance of these suggestions have been incorporated in the report. Application for Environmental Clearance was submitted to the Ministry on 19.12.2020.
- vi. Water assessment was carried out based on long term discharge data available at Khab, Rampur, Nirath and Lunsu in the catchment of the Sunni Dam site. The 10-daily flow series at Sunni dam site has been approved by the CWC, New Delhi, vide letter No. CWCNo.1/hp/17/2003/HYD(N)/196-98 Dated 20.7. 2017. Yield for 50% and 90% dependability has been assessed as 12738.64 MCM and 10130.57 MCM respectively.

- vii. To establish the base line environmental status of the physico-chemical, biological and socio-economic parameters in the project area and within the project influence area the baseline study and primary data collection has been carried out during winter, 2017-18, pre-monsoon 2018 and monsoon, 2018.
- viii. The maximum concentration for 3 seasons of PM₁₀, PM_{2.5} NO_x and SO₂ was found to be 67.6 µg/m³, 43.6 µg/m³, 15.1 µg/m³ and 7.7 µg/m³ respectively and within the NAAQS prescribed by CPCB. The maximum L-equivalent noise levels for three seasons during day and night time recorded were 51.4dB(A) and 40.9dB(A), respectively, and are within the limits prescribed by CPCB.
- ix. The pH for surface water ranged between 7.28 to 7.89, within the specified standard of 6.5 to 8.5 limit. TDS ranged between 263 to 339 mg/l and was within the acceptable limits (500 mg/l). Chlorides were within the acceptable limits (250 mg/l) as it ranged between 13.7 -20.9 mg/l. Sulphates were within the acceptable limits (200 mg/l) as it ranged between 28.6–48.7 mg/l. Fluorides recorded ranged between 0.05 to 0.25 mg/l and were within the acceptable limit (1.0mg/l). The nitrate levels ranged between 0.30 to 0.90 mg/l and were within the desirable limit of 45 mg/l. The BOD values ranged between 1.1 to 1.8mg/l and were within the CPCB criteria for Class A water for designated best use of drinking Water Source without conventional treatment but after 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.
- x. The soils in the area are loam; neutral to slightly alkaline; low to medium in available nitrogen content; medium to high in available phosphorus content and medium in available potassium content. The soils have medium to high organic carbon.
- xi. In the study area 88 species of plants were recorded which include 85 species of angiosperms, only one species of gymnosperm and two species of Pteridophytes. Twenty economically important plants and thirty-six medicinal/ ethno-botanical importance plant species were recorded. No RET species falling under IUCN Red List was recorded/reported from study area. The faunal study reveals that 11 mammalian species of which none belongs to Schedule-1 of WPA, 1972; 19 bird species of which one (Peafowl) belongs to Schedule-I; 7 species of herpeto fauna were recorded /reported of which 1 (Monitor Lizard) belongs to Schedule-I, under WPA. 1972. Thirteen fish species belonging to four families viz., Cyprinidae, Cobitidae, Sisoridae and Salmonidae were recorded in the project area.
- xii. **Anticipated Environment Impacts and Mitigation Measures:** Habitat loss due to diversion of 397.8863 ha forest land for mitigation of which compensatory afforestation (Rs 4810.00 lakh) shall be carried out by the Forest Department. Reduction in reservoir capacity and water available for the designated use shall be addressed through implementation of Biological measures and engineering measures under CAT Plan (Rs 3834.00 lakh). Fragmentation of habitat and consequent increase in temporary stress levels of wildlife during construction phase for mitigation of which Wildlife and Bio-diversity Management Plan (Rs 105 lakh) has been proposed. Due to construction inside dam complex excavation area, maximum GLC of pollutants PM₁₀, PM_{2.5}, NO_x and SO₂ was found to be 9.15 µg/m³, 2.83 µg/m³, 9.91 µg/m³ and 1.27 µg/m³ respectively for mitigation of which various steps shall be undertaken

which include periodical air quality monitoring (Rs 26.18 lakh) and copious sprinkling at construction site and on roads for dust suppression shall be done under Air Pollution Control (Rs 20 lakh). Ambient air noise levels are expected to increase only during the project construction phase only. Movement of fish across dam shall be stopped but the reservoir on upstream shall continue a habitat for the indigenous species as well as reservoir species for which Fisheries Management Plan (Rs 187 lakh) has been provided. From intake structure, a maximum diverted discharge of 726.95 cumecs shall be conducted through power shaft to underground power house for power generation and thereafter released to the river through TRT outfall. Based on recommendation of Cumulative Environmental Impact Assessment (CEIA) study for Sutlej Basin, the minimum EFR of 15.24 cumecs downstream of dam shall be released by running auxiliary powerhouse round the clock.

- xiii. **Disaster Management:** The problems likely to be encountered during construction/operation inter alia include (i) accidents due to explosives/blasting, (ii) accidents due to HEMM and (iii) sabotage in case of magazine. Most of the accidents during operation of HEMM can be significantly averted by periodical maintenance. In case of dam break, the flood peak discharge as it propagates through valley shall inundate downstream stretch of five km within 12.0 minutes. Therefore, disaster management plan is based on such measures, which are purely preventive in nature.
- xiv. **Social Impact Assessment and Rehabilitation and Resettlement Plan:** SJVN has conducted SIA studies by engaging specialist agency (HIPA, Government of Himachal Pradesh) for the purpose. For execution of the project permanent acquisition of 62.2854 ha private land is covered under 21 villages falling in 11 Gram Panchayats under two districts namely Shimla and Mandi. There shall be 2091 affected families (whose land was acquired) of which 45 families shall be displaced. The cost of implementing Rehabilitation and Resettlement Plan and the cost of local area Development works out to Rs 17809 lakh.

Environmental Management Plan with Budget Breakup (Capital & Recurring cost)

S.No.	Plans	Cost (Rs. Lakh)	Capital Cost (Rs lakh)	Annual Recurring (Rs lakh)
1.	Catchment Area Treatment Plan	3834.00	3254.00	116.00
2.	Compensatory Afforestation Scheme	4810.00	4550.00	52.00
3.	Wildlife & Bio-diversity Management plan	105.00	30.00	15.00
4.	Resettlement & Rehabilitation Plan	17909.00	16659.00	250.00
5.	Green Belt Development Plan	36.00	19.00	3.40
6.	Reservoir Rim Treatment Plan	571.00	571.00	0.00
7.	Landscape and Restoration Plan	90.00	70.00	4.00

8.	Fisheries Management Plan	187.00	97.00	18.00
9	Muck Management Plan	1915.00	1785.00	26.00
10.	Restoration Plan for Quarry Sites	60.00	48.00	2.40
11.	Disaster Management Plan	135.00	125.00	2.00
12.	Water, Air and Noise Management Plan	40.00	20.00	4.00
13.	Public Health Delivery Plan	280.00	30.00	50.00
14.	Labour Management Plan	112.00	30.00	16.40
15.	Sanitation & Solid Waste Management	297.00	130.00	33.40
16.	Environmental Safeguards	15.00	0.00	3.00
17.	Energy Conservation Measures	45.00	19.00	5.20
18.	Environmental Monitoring Plan	105.00	28.00	15.40
Grand Total		30546.00	27465.00	616.20

- xv. **Project Benefits:** Project benefits inter alia shall include the benefits like (i) annual generation of 1381.77 MU of energy in a 90% dependable year; (ii) 12% free power of total generation will be given free to the state, which will help in regular power supply in the area; (iii) 1.5% of the total cost of the project towards the Local Area Development fund during construction; (iv) against sale of 1% free power to be deposited with Local area development Fund annually and (v) Employment opportunities/to locals in project work and fisheries.

Observation and recommendation of the EAC in the present meeting:

EAC in the present meeting (5th meeting) deliberated on the information submitted (Form 2, EIA/EMP report, Public Hearing issues kml file, etc.) and as presented in the meeting observed that Water assessment was carried out based on long term discharge data available at Khab, Rampur, Nirath and Lunsu in the catchment of the Sunni Dam site. The 10-daily flow series at Sunni dam site has been approved by the CWC, New Delhi, vide letter no. CWCNo.1/hp/17/2003/HYD(N)/196-98 dated 20.7. 2017. No National Park, Sanctuary, Notified Eco-sensitive areas or protected area under Wildlife (Protection) Act exists within the project area or within 10 km distance from project site. Conservation plan for Schedule I species of WPA has been prepared and is yet to be submitted to CWLW for approval.

EAC further noted that total land required for construction of the project components and other infrastructures is estimated as 459.4546 ha of which forest land shall be 397.8863 ha and private land 62.2854 ha. The project would result in submergence of 382.7884 ha of land. The PP has already moved online the application on 27.12.2017 for diversion of forest land.

EAC after detailed deliberation on the additional information and other information submitted (Form 2, EIA/EMP report, Public Hearing issues, kml file) and as presented by the Project

Proponent, **recommended the proposal for grant of Environmental Clearance** subject to compliance of applicable Standard EC conditions with the following additional conditions:

- i. Stage I Forest Clearance shall be submitted for the total forest land (397.8863 ha) involved in the project prior to grant of Environmental Clearance.
- 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. In pursuant to the Ministry OM dated 30.09.2020, the Environmental Management Plan (EMP) shall be revised considering the commitments made to address the concern raised during public consultation. Activities proposed shall be made a part of EMP under local area development plan and to be submitted to the Ministry.
- iv. 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.
- v. Conservation plan prepared for Schedule I species shall be implemented with approval of the concerned CWLW.
- vi. 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.
- vii. Land acquired for the project shall be suitably compensated in accordance with the law of the land with the prevailing guidelines. Private land shall be acquired as per provisions of Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013.
- viii. Necessary permission to be obtained for quarrying construction materials, if any required, for the project as per the EIA Notification, 2006 and as amended thereof.
- xii. Necessary control measures such as water sprinkling arrangements at all the construction sites, etc. and construction of paved roads leading to muck disposal sites shall be taken up on priority to arrest fugitive dust.
- xiii. Stabilization of muck disposal sites using biological and engineering measures shall be taken up to ensure that muck does not roll down the slopes and shall be disposed safely and that it does not pollute the natural streams and water bodies in surrounding area.
- xiv. Recommendations of the Cumulative Impact Assessment and Carrying capacity Study of Satluj River Basin Study shall be followed while implementing the project.
- xv. Possibility of fish pass/ladder for migration of fish shall be explored in consultation with CIFRI/WII.

- xvi. Real time monitoring of e-flow to be done in consultation with State PCB or any other institution.

Item No. 5.2.4 Any other items with the permission of the Chair
