Minutes of the 78th Meeting of the Expert Appraisal Committee for River Valley and Hydroelectric Projects constituted under the provisions of EIA Notification 2006, held on 16th – 17th October, 2014 at Brahmaputra Meeting Hall, 1st Floor, Vayu Wing, , Indira Paryavaran Bhawan, Jor Bagh, Aliganj, New Delhi110003

The 78th Meeting of the Expert Appraisal Committee (EAC) for River Valley and Hydropower Projects was held during 16th – 17th October, 2014 at Brahmaputra Meeting Hall, 1st Floor, Vayu Wing, Indira Paryavaran Bhawan, Jor Bagh, Aliganj, New Delhi110003. The meeting was chaired by Shri Alok Perti, Chairman. Shri H. S. Kingra, Vice-Chairman, Shri P. K. Choudhary, Member, Dr. S. Sathya Kumjar, Member, Shri K. D. Joshi could not attend the EAC meeting. The list of EAC Members and officials/consultants associated with various projects and who attended the meeting is at **Appendix**.

The following Agenda items were taken-up in that order for discussions:-

1st Day (16.10.2014)

1. **Agenda Item No.1 :** Welcome by Chairman and Confirmation of Minutes of the 77th EAC Meeting held on 16th -17th September, 2014. The Minutes of 77th EAC meeting was confirmed as was circulated. Thereafter, following agenda items weer taken up:

Agenda Item No. 2.1 Shongtong-Karcham HEP (450 MW) project in Distt Kinnaur of HP by M/s. Himachal Pradesh Power Corporation Limited - For re-consideration of Environment Clearance.

Shongtong Karchham HEP (402 MW) has been envisaged as a Run-of-River project being constructed by Himachal Pradesh Power Corporation Ltd. (A State Govt. Undertaking), on River Satluj in District Kinnaur of Himachal Pradesh. The barrage of project is located in village Powari and Power House in village Ralli. The project is located about 230 Kms. from State Headquarters Shimla on NH-5.

The project envisages the construction of:

- Diversion barrage, intake structure with 4 intake bays with gates and intake tunnels to four sedimentation chambers.
- Head Race tunnel of 8.02 Km long.
- Three circular steel lined underground pressure shafts to convey water to 3 Francis turbines to generate (3 x 134 MW) 402 MW of power in an underground power house.
- Tail Race Tunnel is 10.00 m in diameter and 90 meters in length.
- The Live storage is 431 hectare meters.

The Environmental Clearance for 402 MW installed capacity was granted by Ministry of Environment and Forests, GOI vide F. No. J-12011/58/2007-IA-I, dated 19/05/2011.

Total Land Requirement for the project is 77.3326 Hectares (63.5015 ha of forest land + 13.8311 ha of private land). Forest Clearance for 402 MW was granted by FC Division, MoEF vide F.No. 8-78/2010-FC, dated 14/11/2012. The CAT Plan of the project has been approved by Govt. of Himachal Pradesh (GoHP).

As per the muck management plan of the project 35.7 lac cubic meters of muck is to be generated (with 40% swelling factor) of which 14.7 lac cubic meter of muck is to be reutilized by the project proponent whereas, 20.5 lac cubic meter of the muck is to be dumped in 8 no. muck dumping sites of capacity 22.0 lac cubic meters.

As per the project layout four panchayats falls within the project area. The Resettlement and Rehabilitation Plan of HPPCL has been approved by the GoHP.

While granting Environmental Clearance, the EAC (RVP) in May 2011, MoEF had asked the project proponent to conduct environmental flow assessment of the project by a reputed institute.

Accordingly, HPPCL has got the environmental flow assessment study done from National Institute of Hydrology, Roorkee. Total outlay

for the Environment Management Plan (EMP) of the project is Rs. 8489.1 lac.

Now, the installed capacity of the project has been increased from 402 MW to 450 MW by Central Electricity Authority vide dated 12/01/2010. Central Electricity Authority (CEA) had allowed Government of Himachal Pradesh additional utilization of Monsoon Energy by 6.18 %(77.32 % to 83.50%) and increased Design Energy from 1003.29 MU to 1083.41 MU i.e an increase of 80.12 MU.

The EAC (RVP), has been apprised of the enhancement of installed capacity on 28/01/2010 while the Environmental Clearance for 402 MW was still under consideration. As mentioned, the installed capacity of the project was enhanced from 402 MW to 450 MW for which the Techno Economic Clearance was granted by Central Electricity Authority (CEA) of India, vide letter No. 2/HP/CEA/07-PAC/5066-97 dated 8.8.2012.

The case for revalidation of Environment Clearance of Shongtong Karchham HEP due to increase in enhanced capacity from 402 MW to 450 MW was presented before EAC in its meeting held on 10th & 11th December, 2013. The EAC recommended the revalidation of Environment Clearance to 450 MW. But, subsequently desired to have presentation on Environment Flow in view of revised norms being followed now. A presentation on Environmental Flow Release Studies which were carried out by National Institute of Hydrology, Roorkee was given by project proponent i.e. HPPCL before the EAC on 16.10.2014.

The EAC after detailed deliberations and discussions observed the following:

1. Environmental Flow Studies was carried out in accordance with the Flow Duration Curve method. While this is generally in order but, for further clarity the same should be carried out through Hydraulic Rating and Habitat Simulation method. This technique shall factor the need of aquatic faunal population. Also, the adequacy of environmental flow in terms of depth, velocity, and top width needs to be checked and proposed a fresh.

2. EAC noted that as the project domain remains the same for 450 MW except variation in Turbine capacity, HRT diameter, and some additional muck quantity. The comparative changes in EMP and

updated estimated cost due to enhancement of installed capacity from 402 MW to 450 MW shall be included and submitted.

3. Public Hearing for 450 MW to be carried out as soon as possible as the Public Hearing was conducted for 402 MW only.

On receipt of the above, the proposal may be reconsidered.

Agenda Item No. 2.2 Bina Complex Multipurpose project in Madhya Pradesh, Water Resources Department, Government of Madhya Pradesh – For ToR

The Water Resources Department, Government of Madhya Pradesh proposes to develop Bina Complex Irrigation and Multipurpose Project. The project was accorded TOR Clearance in June 2008. The field studies were conducted in 2008-09 and Public Hearing was conducted on 07.04.2011. The project was appraised for Environmental Clearance in the 55th EAC meeting held on 10.02.12-11.02.2012. The EAC raised several issues, for response by the project proponent which the response was awaited, the data has become almost 5-6 years old. Hence the project proponent have applied again for fresh TOR clearance for conducting a fresh EIA study of this project.

The proposed Bina Complex Irrigation and Multipurpose Project, is proposed on rivers, namely, Bina and Dhassan, both are tributaries of river Betwa and Dehra Nullah is tributary of Bina river. As part of the project, water flow of Bina river will be stored in earthen dam near Madia in Rahatgarh Tehsil of Sagar District. This structure will be known as Madia dam. To harness the hydro-electric power potential of Madia Dam, underground power house is also proposed at this location as was done while seeking initial ToR.

Water flow of Dhassan river will be stored in a dam to be constructed on this river. As a part of this project, concrete dam will be constructed at Dehra nallah. Water stored at Dhassan Dam will be diverted to Dehra Dam through a feeder canal. To harness the hydro-electric potential of Dhassan and Dehra waters stored in Dehra Dam, surface power house is proposed on Dehra Dam.

Tail water from Madia power house will flow in Bina river and 22 km downstream of Madia Dam, it will be arrested at Dam constructed Near Chakarpur. Tail water from Dehra power house will also ultimately join Bina River and would be arrested at Chakarpur Dam. Water stored at Chkarpur Dam will be adequate enough to isolate release pattern from upper dams, thereby, building a flexibility in operation for irrigation releases. Therefore, main canal will be constructed for irrigation of 70,000 ha in canal command area.

The proposed project is an Irrigation and Multipurpose Project, which will include generation of hydro-electric power by two hydroelectric power plants having installed capacities of 2 x 11.5 MW and 2 x 5 MW at Madia and Dehra dams respectively. Tail water from Madia and Dehra Dam will be stored at Chakarpur dam and will be used for irrigation purpose through main canal.

The key features of the project are given as below:

- Construction of Earthen Dam across Bina River near village Madia, in Rahatgarh Tehsil of Sagar District for irrigation purposes:
- Construction of Dehra Dam across Dehra Nala
- Dhasan Diversion Dam at Dhassan River and Feeder Canal to divert its water to Dehra Dam.
- Chakarpur Dam , 22 km downstream of Bina Dam to arrest tail water from Madia and Dehra Power House for irrigation purpose,
- Hydropower generating houses at Madia and Dehra Dams

The Bina complex irrigation and multipurpose project is proposed to be constructed to obtain the following benefits:

- Irrigation Benefits from diversion of water to the extent of 610Mm³. Canal Command Area (CCA) that can be covered is 24,000 Ha in Kharif and 102,500 Ha in Rabi season. Gross irrigated area is 102,500 ha approximately. The command area in Bina and Khurai Tehsils is almost flat. Thus, this area may be increased after the survey of command area and finalization of canal network.
- Two power houses, one underground at Madia Dam with 3 x 13.5 MW installed capacity and another on surface at Dehra Dam with

2 x 6.5MW are proposed to be constructed. The total annual energy generated will be as below

Madia Power house – 43.25 Million units
Dehra Power house – 11.94 Million units
Total 55.19 Million units

The submergence area at FRL in various dams is given as below;

Madia: 7137.78 ha
Dhasan : 2423.17 ha
Dehra : 754.56 ha
Chakarpur : 1349.58 ha
Total: 11665.09 ha

The total land to be acquired for the Bina Irrigation and Multi-purpose project is 11706.09 ha. The details are given as below:

Components	**Forest Land (ha)**	**Agricultural Land (ha)**	**Waste Land (ha)**	**Built up land (ha)**	**Total (ha)**
Madia Dam	108.435	7020.35	10	0	7137.78
Dasan Dam	0	2423.17	0	0	2423.17
Dehra Dam	222.654	531.906	0	0	754.56
Chakarpur Dam	372.56	978.62	0	0	1349.58
TRT	1.0	0	0	0	1.0
Feeder Canal	0	27	0	0	37.00
Main Canal	10.2	0	0	0	0
Madia Power House	2.0	0	0	0	2.0
Dehra Power House	1.0	0	0	0	1.0
Total	**717.849**	**10981.046**	**10**	**0**	**11706.09**

The total forest land to be acquired for the project is 717.849 ha. Extent of private land to be acquired is 10981.046 ha. The other type of land is 10 ha.

The TOR proposed the project proponent was discussed in the meeting and based on the detailed delivarables, the project was

recommended for TOR Clearance subject to the following additional stipulations/ studies:

- Ambient Air Quality Monitoring stations should be conducted at 6 stations.
- Water and Soil Quality to be monitored at 32 -35 stations(@ 1 Sample/2500 ha).
- Terrestrial and Aquatic Ecology to be monitored at 12 locations (@A3 site/dam).
- Fishery survey should be at 12 locations (3 site/dam).
- A detailed plan for the sustenance of fisheries.
- Biodiversity study including nocturnal fauna may be conducted through specialised institute (i.e. Biodiversity institute, Jabalpur).
- Assessment of Environmental releases in lean period.
- Assess the possibility of providing the fish ladders.
- R&R plan to be prepared as per the norms of Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013
- Livelihood plan for Project Affected Families losing land to be prepared.
- Public hearing to be conducted in both the districts namely Sagar and Vidisha.
- Monsoon data collected for the period 2014 can be utilized.

Agenda Item No. 2.3 Rupin HEP (45 MW) in Shimla District of Himachal Pradesh - For Environment Clearance.

The Project Developer, M/s S B Power made a detailed presentation of the project and EIA EMP studies through Consultants.

Rupin Hydro-electric Project (45 MW) has been envisaged as a run-of-the river scheme on Nargani and Rupin River, a tributary of Tons river which in turn drains into the river Yamuna. This Project is located in Dodra-Kawar Tehsil of District Shimla, in Himachal Pradesh; very near to Uttrakhand Border. The project site is located at about 210 km from Shimla, the State capital. The project is planned to utilise the hydropower potential of Rupin and its tributary Nargani river.

As the project area falls within 10 km from inter-state boundary of Himachal Pradesh and Uttarakhand, the project is treated as **Category-A** and thus, despite being a 45 MW capacity, it has to seek Environmental Clearance from MoEF, Govt of India. The project was issued **ToR** for EIA/EMP studies by Ministry of Environment & Forests, as recommended by the **EAC in its meeting held on 21-08-2010**, and through letter No. J-12011/23/2010-IA.I of MoEF dated **13-09-2010.** The project has been accorded extension of the validity period of ToR by Ministry of Environment & Forests, Govt. of India vide letter dated **11-02-2013** for a period of one year i.e. till **13-09-2013.** The Public Hearing was conducted on **27-06-13** within the validity period of the TOR; EAC considered & accorded extension of the validity of TOR for further one year i.e. till **12-09-2014**. EIA/ EMP reports were submitted o the Ministry on **04-09-2014** within validity of scoping clearance.

The Rupin HEP envisages construction of a raised crested gated weir on Nargani river with bed level at El. 2194.00 m to divert the water of Nargani river through a 2.5 km long and 3.2 m diameter D-shaped concrete lined feeder tunnel at the downstream of the proposed trench weir on Rupin river. The diversion structure at Nargani comprises 6 gates (6.25 m high and 6 m wide). The FRL at Nargani diversion structure is at El. 2206.00 m. The gross storage capacity at FRL is about 137,400 m^3 and Live Storage above MDDL at El 2202 m is 85200 $m^{3.}$

The diversion structure at Rupin river comprises a trench weir at river bed level with crest at El. 2207.16 m The combined water of Nargani and Rupin rivers will be routed through surface desilting basin cum storage tank. Desilting basin is designed to exclude sediment particles of 0.2 mm and higher and to cater for 110% of the power station design discharge. Desilting basin has six hoppers aligned in transverse direction, each 35 m long, 7 m wide and 11 m deep including 3 m deep hopper. A flushing drain has been provided at the bottom of each hopper.

The water conductor system after Desilting chambers will include a 6009 m long and 3.2 m diameter head race tunnel, a 8 m diameter, circular shaped, restricted orifice type surge shaft provided at the end of Head Race Tunnel and two 563.5m long pressure shaft/penstock of 1.55 m diameter provided downstream of surge shaft to feed surface power house on the right bank of the Rupin river near village Gosangu. A

design discharge of 19.46 m^3/sec will be diverted through the above scheme to feed 2 x 22.5 MW vertical axis pelton turbines to generate electricity using a gross available head and net head of approximately 285.30 m and 266.50 m respectively.

The energy generation in 90% and 50% dependable years has been computed as 180.40 GWh and 262.78 GWh respectively. The power generated is proposed to be injected and evacuated through a proposed 132 kV surface Switchyard cum pooling station in the near vicinity of the powerhouse. Total land required for the project has been estimated as 30.72 ha; out of which 24.9286 ha is forestland and 5.7897 ha is private land. Process of diversion of forestland is under progress.

Longitudinal profile of the Rupin river was presented and it was informed that there is no upstream and downstream project on Nargani river. On Rupin river, three small projects viz. Rupin III (8 MW), Rupin IV (10 MW) and Rupin V (24 MW) have been allotted by Govt. of Uttaranchal in the stretch of Rupin river flowing downstream of boundary of Himachal Pradesh. Developer further informed that projects have been recently allotted and also they would fall in the Govind Pashu Vihar Wild life sanctuary area; not much information is available on them as no progress made so far.

Catchment are at Rupin diversion site is 65 Km2 and that at Nargani diversion site is 168 Km2. Dhamwari gauging site in the Pabbar basin was identified as the most suitable site for transposing the discharge data for Rupin basin from where a 20 year 10-daily flow series (1975-93 & 1998-2000) was available. Discharge data of 6 additional years (1989-1993, 1998-2000) is available at Mandly gauging site (d/s of Dhamwari) and discharge data at Dhamwari & the Mandly is also available for a common period of 11 years (1978-1989). Using the correlation between Mandly & Dhamwari, flow series for 6 additional years (1989-93,1998-2000) have been generated at Dhamwari and flow series at Dhamwari have been transposed to the proposed diversion sites of Rupin and Nargani using the catchment area proportionality. EAC observed that based on the assessment of rainfed catchment, it appears that water availability may be on the higher side. EAC further noted that State government has issued TEC to Rupin HEP on 08.09.2011; therefore, EAC advised developer to review the water

availability and corresponding power potential at the time of detail engineering.

A detailed discussion was held on environment flow assessment. It was explained that TOR required that Environmental flow release is to be based on a site-specific study considering the depth and velocity of the four consecutive leanest months of the 90% dependable year. A separate study was conducted to assess the release of minimum environment flow from the project where five locations were identified on Rupin and Nargani rivers and Riffle and Rapid habitats were studied. Sampling was carried out to assess species diversity, density and richness. No fish could be caught or detected by underwater camera during the field surveys, however, the habitat is found suitable for snow trout (*Schizothorax richardsonii*). Hydraulic modeling was carried out to assess the requirement of environment flow release to meet the habitat requirement. 20% of average lean season discharge (0.68 cumec) on Nargani river and 30% of average lean season discharge (0.393 cumec) on Rupin river was found adequate to meet the habitat requirement and therefore, these values were recommended as environment flow.

Baseline data collected as part of EIA report was presented before EAC. Primary data was collected through field surveys from May 2010 to March 2011. Geography and physiography, regional and project site geology was discussed along with seismicity. Two landslides areas were identified – one on right bank of River Nargani after the confluence and another on left bank of Rupin river. Six natural springs are identified during field studies falling between diversion sites and tailrace outlets. Impact of tunnelling on drying up of the spring was also studied and treated in the separate section of the report. Baseline data was also collected and presented for physical environment viz. ambient air quality, sound levels, water quality, etc. and such parameters were found to be well within the limits. Data on terrestrial and aquatic flora and fauna was also collected and analyzed. 15 accessible sites were surveyed within the direct impact zone. For socio-economic survey, 6 villages were identified within the study area where survey was conducted to assess their occupational status, infrastructure facilities, etc. Impact assessment was carried out for construction and operation phase and was presented in tabular form. Issues raised in Public Hearing meeting were also discussed and EAC noted that such issues are

generally related to compensation, infrastructure development, employment and contract preference to locals in the region, etc.

Various environment management plan components have been prepared as per scoping requirement and discussed. Muck management plan was discussed in detail where about 6.02 lac m3 of muck will be generated (including 45% swell factor); out of which 3.30 lac m3 will be reused and remaining will be disposed off at 13 identified dumping sites with a total area of 6.1356 ha. Proposed fish pass was also discussed, which is of 1300 m long and 1.5 m wide and EAC observed that such a fish pass will provide longitudinal connectivity. Budgetary estimates made for the EMP was discussed in detail. EAC observed that overall EMP budget of Rs. 24.695 crore is over 6% of the total project cost and found it be adequate.

Observations have also been received from SANDRP to which developer has prepared a point-wise response and presented the same before the EAC. Observations and responses are presented below:

Sl. No.	Issues Raised	Response
1.	**Documents not in Public Domain** - EIA, EMP and Public Hearing minutes not available on the website, as statutorily required and as also directed by CIC.	We have checked several times - Rupin documents (EIA, Public Hearing report) are available under the head "Awaiting for EC".
2.	**Invalid TORs :** The EIA report states that the scope of the EIA is according to the TORs approved by the MEFCC on 13.09.2010 (p.53 of EIA Report). MEFCC while issuing the TORs had stipulated that the TORs were valid for a period of two years. Validity of the TORs thus ended on 13.09.2012. In 62nd	The project scheme was issued **ToR** for EIA/EMP studies by Ministry of Environment & Forests, Govt. of India in the **EAC meeting held on 21-8-2010**, and conveyed on **13-9-2010.** The project scheme has been accorded extension of the validity period of ToR by Ministry of Environment & Forests, Govt. of India vide letter dated **11-2-2013** for a period of one year till **13-9-2013.** The Public Hearing was conducted on **27-06-2013** within the validity

	meeting of EAC held on 23-24 November 2012 EAC granted an extension of validity for one year i.e. 30.9.2013. Further one year extension was granted upto 12.09.2014. That extended deadline is also over. This is a serious violation and the project does not qualify for grant of EC. The proponent should be asked to apply for fresh TOR and the subsequent steps need to be conducted afresh.	period of the TOR. EAC considered & accorded extension of the validity of TOR for further 1 year from **13.9.2013 to 12.9.2014** in its meeting during August 14**.** The final EIA report was submitted to MoEF &CC (uploaded to MoEF &CC site on 4th Sept 2014, well before ToR expiry date).
3.	**Four Years Old Data:** The entire critical baseline data including physical and chemical characteristics of soil, flora and fauna as well as social aspects used in the EIA report are from 2010, four years old. Such old baseline data is clearly in violation of the MEFCC and EIA notification norms and cannot be the basis for impact prediction. EIA study should thus be considered not valid and fresh field data needs to be obtained.	The baseline data generation process started in 2010 and have been completed in March 2011. Draft report was prepared during the 2012-13 period and submitted for Public Hearing to State Pollution Control Board. The Public hearing was held in June, 2013; with primary data less than 3 years old. Therefore there is no violation of MoEF's OM dated March 22, 2010.
4.	**Project is NOT RoR scheme**: Two hours of morning and evening peaking storage for Rupin water (29,880 m3) has been provided while designing the project (p.77 of report). The project cannot be a RoR scheme if it has provision for peaking. The report also	As per definition given in "The Best Practice in Planning & Appraisal of Hydro Electric Project" Published By CEA clause 2.2 TYPE of HE schemes: "***Section 2.2.1 Run-of-River Schemes: Run-of-River schemes are the schemes either having pondage sufficient to meet diurnal variation of power demand or***

	does not give any details of the diurnal fluctuations of the river water.	***no upstream pondage (i.e. all the incoming water is fed into the turbine at the same time***)". According to above classification Rupin HEP is ROR Scheme.
5.0	**Non Compliance with ToRs :** **5.1. No mention of cascading effect:** TORs while stipulated that EIA is to examine the cascading effect the project, a clear map showing the approved/ under construction/ completed HEPs on River Rupin and Nargani both upstream and downstream of the project.	Information on the cascading effect is provided under section 3.2.5 (a) in chapter 3. ➢ Nargani River • Upstream of Nargani River: No Project Allotted by Government of Himachal Pradesh. • Downstream of Nargani River: No Project Allotted by Government of Himachal Pradesh. ➢ Rupin River • Upstream of Main Rupin River: No Project Allotted by Government of Himachal Prades. • A small hydro project of 2 MW capacity has been allotted on Tela nallah, which joins Rupin about 500 m upstream of present scheme's Diversion structure i.e. Trench weir. • Downstream of Rupin River: 4 MW Kwar Small HEP on the downstream of confluence of Saru Khad nallah with Rupin.
	Rupin III, IV and V projects are proposed downstream on Rupin River downstream of the project and Naitwar Mori (60 MW) is proposed 580 m. downstream of the confluence of river Tons and Rupin. Cumulative EIA: Though	Three projects called Rupin III (8 MW), Rupin IV (10 MW) and Rupin V (24 MW) have been allotted by Govt. of Uttaranchal in the stretch of Rupin river flowing downstream of boundary of Himachal with Uttaranchal and up to Netwar. At Netwar, Rupin & Supin rivers combines to form Tons. Netwar – Mori project is thus located on the river Tons. Projects have been recently allotted and not much information is available on them as no progress made so far. Further,

	these project fall in Tons valley the proximity of the projects is such that the cumulative impacts cannot be ignored. The EIA report has no mention of these projects which are proposed close to each other on the tributaries in Northern tip of Yamuna Basin. Findings of such isolated study could be misleading.	all these projects would fall in the Wild life sanctuary area and not much progress has been made on these projects since allotment. The TOR is project specific and cumulative impact is not mentioned in the same. Also Rupin HEP is the first project on river Rupin and onus of Cumulative Impact Assessment with respect to other projects will fall on future allotments as per MoEF OM dated May 28, 2013.
5.2	**No Options Assessment**: TORs specifically ask for justification of the location and execution of the project in relation to structural components. The EIA report states that seven options were assessed by the technical consultant, it gives no details of these options. It just states that these options were checked with respect to economy, environment, costing, etc. and the alternative that envisages the construction of a dam on river Rupin just downstream of its confluence with river Nargani gives the maximum returns in terms of energy generation, higher load factor with lowest cost, therefore was considered to be the best option. The actual options assessment was done cannot be assessed. It is also not clear if no project was one of the options considered as is required	The detailed technical evaluation of different options was done at the time of preparation of Detailed Project Report. Further, out of these seven options three options were short listed and evaluated from environmental point of view.

	under MEFCC EIA manual.	
5.3	**No study of Natural Springs:** The TOR specifically states about carrying out study on drying up of natural springs while tunneling.	A separate study for impact on natural spring was conducted. The report is annexed as **Annexure XI in the EIA report**.
	The report however gives only an inventory of six springs and states that "…over the years since government water supply schemes are becoming active in these areas so the direct dependencies on these natural springs have decreased." (p. 99 of report) Further, without any kind of basis the report claims "hydro geological conditions of drying up of Natural springs induced by tunnel construction phase will be very minimal." (p. 155 of report). This is a clear noncompliance of TOR.	The findings in the report are based on interaction with the locals and actual measurement of discharges are as per the actual observation. The study 'impact of the project on local springs', has been made by the consultant based on the geological conditions prevailing at site. Moreover, in this report, it is also mentioned that, if such incidence happen, S. B Power will take full precaution as well as responsibilities of water supply to the locals, who were depended on the dried up spring.
5.4	No details of Project Affected Families: The TORs specify that land details including list of all the project affected families with other details such as their names, education, land holdings etc. should be given in the report. The project requires to acquire 5.7897 ha private land (p.145 of report). Report does not even estimate the project affected population.	No households are impacted, only small patches of land owned by private owner will be acquired. Detail list of all the project affected families with other details such as their names, land acquired etc. has been presented.

	Further details like list of names, dependence on the project area for livelihood etc. are also not given. This is a gross inadequacy of the study.	
5.5	**Generic statements or No Impact Assessments:** Impact prediction is too generic with no detailed assessment, no quantification. An EIA is supposed to do Impact prediction, assessment and quantification. Report merely states the likely impacts in 2 or 3 sentences. Several important impacts are missing and none of the serious impacts have been quantified.	The comments are not true and it is unjustified to state 'generic statements' or 'no impact assessments' without complete insight into the report. However, in your comments it has been recognized that a specific budget has been provided, that itself confirm that project specific impacts were assessed otherwise specific budget could not be prepared. All the possible impacts, which are highly specific to this Rupin HEP projects are identified and presented in detail in the chapter 4; Pg. No. 4-1 to Pg. No. 4-17 of the EIA report. In this chapter detailed methodology of impact assessment is given in Section 4.1. A detailed impact matrix is provided in Section 4.2, which includes impact of each of the activities to be undertaken during the construction and operation phases, on each of the components on the existing physical, biological and socio-economic environment. An elaborate impact predictions have been carried out and presented in sections from 4.4 to 4.10 for each of the environmental and socio-economic components, which are highly specific to this Rupin HEP Project. Some of the evidences from the report for the detailed impact

		assessment is present below: Under Section 4.4. Impacts on Land Environment during the construction and operation phases is discussed in detail under the following headings and sub-headings: • 4.4.1 Construction Phase o Influx of Immigrant Population during Construction Phase o Quarrying of Construction Materials o Movement and Operation of Construction Machinery o Runoff from Construction Site / Increased Siltation o Muck Disposal o Construction/Widening of Access Roads • 4.4.2 Operation Phase o Diversion of Land/Change in Land Use Pattern The details about the Private land and Forest land required for the proposed project is provided in Table 4.4 (a) and (b), respectively. Impacts on Ecology is provided in Section 4.5 from Pg. No. 4-9 to 4-12, in which detail to the level of the area of forest land to be affected is given, which is highly project specific. In addition, many of the following important aspects have been discussed in detail in this section.
	Impact on geophysical environment: The project envisages construction of	• The impact on Terrestrial Flora is discussed in Section 4.5.1, in which the following have been further elaborated in detail:

	underground structures on area of 3.79 Ha, which include a Head Race Tunnel of 6 KM (p.15 of report), quarrying of 1.57 lacs m3 of construction material (p.144 of report), 6.02 lacs m3 of muck disposal (p.85 of report). This will have serious impact on the geo physical environment of the region. Report however makes as generic impact prediction as "Landslides, induced due to toe cutting in loose soil and re-working of the slopes in the immediate vicinity of the roads." Seismic Impacts: As per	○ Loss of Green Cover (Section 4.5.1.1). A detailed inventory of trees to be cut and different areas in which the trees are Identified to be cut are provided in Table 4.5 and 4.6, respectively. ○ Increased Human Interferences (Section 4.5.1.2) • A detailed description of the impact on Terrestrial Fauna is provided in Section 4.5.2, which includes Disturbance to Wildlife (Section 4.5.2.1). Both positive and negative aspects of the impacts is provided in this section. • Aquatic Ecology inclusive of Impacts on Fishes, Habitats etc. is presented in Section 4.5.3. A separate study on the Impacts on Natural Springs was conducted, which is annexed in Annexure XI (13 pages) and the salient impacts identified by this study, during the construction and operation phases of the proposed project is presented in Section 4.10. Only an insight of few of the impacts given in the report is provided above, which itself clearly shows the depth of impact prediction undertaken. In view of the above stated facts, it is important to note that generic comments like 'No Impact Assessment' is highly inappropriate and unjustifiable. For muck disposal; Total 6.13 ha of land has been and a muck disposal

	the seismic zone map of India the project falls under Seismic Zone IV and is susceptible to major earthquakes (p.21 of report). Report fails to conduct any kind of study of the seismic impacts. A detailed study of the seismic aspects needs to be carried out before considering the project for a grant of EC. Impacts of blasting: Impacts of blasting to carry out construction of 6KM of HRT and 1.57 lacs m3 of construction material will have serious impacts on geology, wildlife and human habitations. Report makes generic statements like "Activities like blasting will generate vibrations and instantaneous noise, the explosive energy generated during these process sets up a seismic wave within the surface, which may affect the structures and cause discomfort to local inhabitants." with no detailed study. It further	and reclamation plan has been suggested and budgetary provision of Rs.111.55 lac for the same has been kept (ref. Section 5.6, Pg. No. 5-10 to 5-28). Two landslide area in the project site (with photographs) have been identified and presented in the section titled 'Landslide Zonation' (Section No. 3.2.4; Pg. No. 3-8). The causes for the impact leading to the Landslides are identified as high seismic zonation, land use, hydrology, geology and anthropogenic activities like quarrying, road making etc. are presented in Pg. No. 7-32 under section 7.7.3. In the immediate section (7.7.4), the following rehabilitation strategies, inclusive of both mechanical and biological measures, to control the landslides are proposed according to the stratum of the landslide area.

Type	**Mechanical Measures**	**Biological Measures**
Slide face having rills and gullies	Contour wattling by breaking the slope length into shorter portions	
Upper reach	Drop structures, stone check	

	states "However such impact will not be severe and will be restricted to in and around the construction site only." Impacts on wildlife: While issuing the TOR EAC has noted that Govind Pashu Vihar is within 10 KM from the project area and had thus referred the project to NBWL for obtaining wildlife clearance. As per the report the project area has five species of mammals of schedule I category and five of schedule II category. Assessment of impacts on wildlife thus assumes more importance. The EIA report making NO impact prediction on the wildlife. On the contrary the report comes up with 'positive impacts' such as "Habitat improvement through afforestation/regeneration. " and "Development and improvement of water bodies." Impacts on fishes: The report only lists two species of trouts as fish present viz. *Schyzothorax richardsoni and Salmo trutta fario* and makes as generic prediction of impacts as "Though no major impact is envisaged on these fisheries, and if any impact occurs that will		dams, vertical pots, check dams, crib check dams and proper drainage facility should be created.	
		Middle reach	Series of drop structures with adequate aprons, clear spill ways with proper alignment and gabion wire.	*Chrysopogen fulvus*
		Lower reach	Gabion toe walls (60 cm deep and 60 cm top width along the concave bank of torrent) Deflecting spurs	*Lannea grandis, Vitex negundo, Salix tetrasperma, Cassia fistula, Ipomea cornea,* & *Pueraria hirsuta*
		Debris cone reach	Retention barrier parallel to torrent. Drop structures with	*Pennisetum purpureum, Arundo donax* Slide

	be temporary." For a project involving 16 m high weir, there should also be a provision of fish ladder.		shallow foundation and aprons in the main torrent protect against scouring action.	faces stabilization species.	
		As per the guidelines for Safety Inspection of Dams (Government of India, Ministry of Water Resources Central Water Commission) Clause 3.6.4 seismic stability "The inertial forces for use in the conventional equivalent static force method of analysis should be obtained by multiplying the weight by the seismic coefficient and should be applied as a horizontal force at the center of gravity of the section or element. Seismic stability investigations for all high hazard category dams located in Seismic Zone 5 and high hazard dams of the hydraulic fill type in one 4 should include suitable dynamic procedures and analyses. Dynamic analyses for other dams and higher seismic coefficients are appropriate if in the judgment of the investigating engineer they were warranted because of proximity to active faults or other reasons. Seismic stability investigations should utilize "state-of-the-art" procedures involving seismological and geological studies to establish earthquake parameters for use in dynamic stability analyses and, where appropriate, the dynamic testing of materials." Rupin HEP lies in Zone-IV, therefore no project specific seismic analysis is required. There are two diversion structure one is trench weir and another 12 m				

		high diversion barrage and gross storage is less than 10 MCM, Hence no project specific seismic analysis is needed. It is a known fact that the impact of blasting activity is only prominent when it Is close to the surface. However, as the excavation moves deeper, the impact like noise and vibration generation keeps on reducing. Moreover this being a small sized tunnel of 3.6 m excavated section, these impacts have reduced dimensions. While fixing the layout, special precaution has been taken to keep the underground excavation activity as far possible from the residential area. Thus the reported findings that such impact will not be severe and will be restricted to in and around the construction site is logically presented and not written arbitrarily. As the Govind Pashu Vihar WLS is within 10 Km of the project components; a seprate wildlife clearance process is underway and is in advance stage. Report adequately addresses the impact assessment for terrestrial flora and fauna. Impact on Ecology is addressed in Section 4.5 (Pg. No. 4-8 to 4-12), under which the following has been provided

		• Terrestrial Flora (Sec. No. 4.5.1)
		  ○ Loss of Green Cover (Sec. No. 4.5.1.1) inclusive of inventory of trees to be cut.
		  ○ Increased Human Interferences (Sec. No. 4.5.1.2)
		• Terrestrial Fauna (Sec. No. 4.5.2)
		  ○ Disturbance to Wildlife (Sec. No. 4.5.2.1) impact address both positive and negative impacts.
		Aquatic Ecology (Sec. No. 4.5.3) inclusive of Impacts on Fishes, Habitats etc.
		
		EIA reports are not about assessing the negative impacts of the development activities; if there are positive impacts such impacts should be identified and highlighted as they are part of the scoping requirement.
		
		Report mentioned about two species of fish because, evidence of two referred species of fishes were only found during the EIA study. The evidence of any other species could be found not only at the time of the field investigation but also through cross verification from fisheries department, published scientific research paper, and interaction with the local people.
		
		Impact on fish and its habitat is described under section 4.5.3 (Pg. No. 4-11 to 4-12).
		
		Based on the Environmental Flow Study, a minimum depth of 0.3 to 0.4 m and velocity of 0.40 m/s was found to be sufficient for the habitat

		of snow trout (predominant fish species in the area), which can be maintained by the 0.68 cumecs environmental flow on Nargani and 0.393 cumecs environmental flows on Rupin side from the diversion site. Fish by-pass arrangement has been proposed.
5.6	Shoddy Environmental Flows Assessment The EIA mentions a study "Environmental Flow Assessment report for Rupin HEP by R S Envirolink Technologies Pvt. Ltd., July 2012", but the study should have been part of the EIA-EMP, as mandated by the TOR given by EAC. The report quotes some figures from this study which look woefully inadequate for the trout, as per WII Report on Upper Ganga Projects. Secondly, the EIA reports mentions only two trout specie to be found in the project area. This is extremely doubtful and should be cross checked. The minimum velocity of water recommended by RS Envirolinks is 0.40 m/s, according to WII study, all	A detailed environment flow assessment study has been carried out as part of the TOR; which is not a shoddy report. The study has assessed the environment flow requirement based on "Habitat Simulation and Hydrualic Modeling" methodology, where environment flow requirement for Rupin and Nargani river in lean season has been assessed based on the habitat needs. TOR mandated that "***Environmental flow release is to be based on a site-specific study considering the depth and velocity of the four consecutive leanest months of the 90% dependable year***", such a study has been conducted and submitted as a separately bound volume, although it is very much part of EIA-EMP study. This is a site specific study where detailed sampling was carried out of the Rupin river and Nargani river to assess the availability of micro flora and fauna including periphytons and macro-invertebrates during lean and monsoon seasons; and also sampling was also carried out to

	stages (Adult, Juvenile and Spawning stages) require a velocity of minimum 0.5m - 1 m. The minimum depth recommended by the study of 0.3-04 meters is also very low. As per the WII report, the minimum depth for spawning of trout ranges from 0.5 meters to 1 meter. The Minutes of the 40th EAC meeting held in Aug 2010 where the Rupin Project was accorded TOR clearance says: "Environmental flow release is to be decided based on a site specific study considering the depth and velocity of the four consecutive leanest months of the 90% dependable year." Such a site specific study is not a part of the EIA, nor is the RS Envirolinks study based on any globally tested and accepted methodology. The report keeps mentioning "15%minimum environmental flows" at a	identify the availability of fish fauna in the river, however, no fish could be landed during surveys. As the project is located at around 2200 m elevation, availability of fish species is scarce, however, environment flow assessment was carried out keeping in view the possibility of existence of snow trout in this area. Characteristics of sampling locations (Riffles and Rapid Habitats) show that current velocity recorded was as low as 0.27 m/s and depth as 0.20 m during pre-project condition.Assessment has been done, keeping in view the scientific literature available on cold-water fish and their habitat requirement. Following references were made in the study: • Coldwater Fish and Fisheries in the Indian Himalayas: Rivers and Streams by K. L. Sehgal. • Fish Diversity, Habitat Requirement, Environmental Limitations and Conservation of Freshwater Fish Resources of Garhwal Himalaya by Ramesh C Sharma. Final recommendations have been made based on the simulation study, keeping in view the pre-project conditions, habitat requirement, which works out to be 20% in Nargani and 30% in Rupin Khad as average of four leanest months in 90% dependable As discussed above, study is very much part of the EIA study, merely binding it separately does not mean it is not part of EIA study.

	number of places when EAC's norms themselves talk of 20% average lean season, 25% non-lean-non monsoon season and 30% monsoon season flows as eflows. This is a serious issue looking at the fact that MoEF itself seems to have accepted before the Supreme Court on affidavit that "aspect of e-flow was unfortunately not adequately addressed while granting environmental clearances (EC) for the HEPs in Uttarakhand".	While discussing the background, norms of Himachal Pradesh State government has been referred to which mentions that a minimum release of 15% of three lean months to be maintained in the river as environment flow. However, final recommendations based on site specific study are 20% in Nargani river and 30% in Rupin river as a percentage of four leanest months in 90% dependable year.
6.	No assessment of cumulative impacts In the northern tip of Yamuna Basin about 10 to 12 HEPs are proposed in the area of about 1000 sq. km. (Map of these have been provided earlier in this report).	Already replied under section 5.1
7.	The EIA report of Rupin fails to take any cognizance of these cumulative impacts in terms of: • Disaster potential of the area and how the project/ projects will	No cumulative impact assessment for the region has been conducted as per the approved ToR. The impact assessment provided in the EIA Report is specific to Rupin Project and is based on the approved ToR. All the aspects have

	increase that. • Impacts on flora, fauna, carrying capacity, livelihoods. • Cumulative downstream impact. • Cumulative impact of hydro peaking. • Impacts on springs and drainage pattern. • The impacts of forest diversion on environment, hydrology and society and implementation of the Forest Rights Act. • Changed silt flow pattern in different phases. • Impacts of Mining of materials for the project. • Impacts of Tunneling and blasting. • Impacts of Muck disposal. • Impact of reduction in adaptive capacity of the people and area to disasters in normal circumstance and with climate change. • Impact of climate change on the project. This is particularly when over 60% of the catchment area of the project is snow-fed and glacier fed. But project has no assessment of this. • Cumulative disaster management. • Geological disturbance caused. • Seismic impacts.	been duly covered for Rupin project.
8.	Environmental Management Plan (EMP)	The comments are not true and cannot be accepted as it is

	based on Lethang HEP Himachal Pradesh has been facing some very specific issues due to cascade hydropower development. Some of them including landslides and land destabilization due to blasting and tunneling, impacts of peaking projects, drying up of rivers, etc. It is evident that site specific issues need site specific mitigation measures. The EMP of Rupin is extensively based on EMP Report of Lethang HEP in Sikkim, which was prepared by the same agency. Apart from some information like tables, which include costing for the mitigation measures, most of the other details are the same.	misleading. The proposed EMP is highly specific to the Rupin HEP. A HEP project located anywhere in India, on a thickly vegetated mountain area, will have impacts on vegetation, wildlife, landslide etc. and will require Biodiversity management plan, landslide management plan etc. Hence, the heading of impact and EMP will remain the same. But the contents are site specific with site specific EMP budgets. A project specific budget can only be prepared, if the identified impacts, proposed mitigation measures and EMP are specific to the project. The project specific impacts have been presented in the previous responses.

After critically examining the proposal and considering the response to various issues raised, the project was recommended by EAC for accord of Environmental Clearance subject to the following conditions:

- All promises made in public hearing to be religiously fulfilled by the proponent.
- E-flow is to be released as 20% of lean season average from Nargani diversion location and 30% of lean season average for Rupin diversion location.
- Longitudinal connectivity, as proposed by the provision of fish pass, need to be provided.

Agenda Item No. 2.4 Umngot HEP (3x80 MW) in Shilong by M/s. MePGCL- For Environment Clearance.

The Public Hearing was conducted after the ToR validity was over. The EAC therefore, did not consider the proposal.

The State Government was advised to apply for a fresh ToR.

Agenda Item No. 2.5 Nakthan HEP (520 MW) in Kullu District of Himachal Pradesh by M/s.Himachal Pradesh Power Corporation Ltd.– For extension of validity of ToR.

Nakthan Hydroelectric Project is located in District Kullu (HP) on river Parvati and Tosh Nallah to harness 460 MW power at Guwacha (near Barsani village) upstream of Pulga Dam (under construction by NHPC). Two barrages have been proposed, one at river Parvati near Nihara Thach and other one at Tosh Nallah at Wanshil Thach, to divert water to Power House through HRTs to proposed power house.

The TOR for EIA/EMP was approved by MoEF, GoI vide their letter no-F.No.J-12011/31/2010-1A-1 dated 26-08-2011 for two years .The period was further extended for one year i.e. up to 25-08-2014.

All the works related to EIA/EMP were completed and draft EIA/EMP Report was submitted to HP State Pollution Control Board on 19-07-2014.

As the validity of TOR was expiring on 25-08-2014, an application was submitted on 14-08-2014 to MoEF vide letter no. HPPCL/GMSHEP/NK-DB-1/2014-2127-29 dated 14-08-14.

Now the Project Proponent has requested that a period of 6 months is required for submission of final EIA/EMP Report.

The EAC considered the request of Project Proponent sympathetically and allowed the required extension as requested above i.e. for a 6 months peirod.

Agenda Item No. 2.6 Nyamjang Chu HEP (780 MW) Project in District: Tawang, Arunachal Pradesh by M/s. NJC Hydro Power Ltd- For re-examine of e-flow

780 MW Nyamjang Chu HEP was recommended for environment clearance during 52nd meeting of EAC held on 17th September 2011. Consequent to the recommendations of EAC, MOEF accorded the environment clearance on 19th April 2013 *inter alia*, with the condition of ecological flow release of 30% of the monsoon flow downstream of Barrage. The project proponent has represented that this is contrary to the recommendations of EAC.

Subsequently, the project proponent M/S NJC Hydro Power Limited pursued the representation that no condition of 30% of monsoon releases was stipulated by EAC while recommending the environment clearance during its meeting on 17th September 2011. Due to this condition, the Project Proponent submitted that viability of the project is affected by the loss of 18% energy generation and increase in tariff by almost 18 %. Therefore, the project proponent requested that the condition of 30% Monsoon Releases should be removed in line with the findings of the site specific study and recommendations of EAC in its meeting held on 17th September 2011. In view of the above, it was decided for reconsideration of the e-flow issue of the Project by EAC.

The EAC revisited the condition of 30% Monsoon Flows imposed by Ministry on 11th November 2013. Based on the merits of the case, EAC desired for a detailed presentation by Central Inland Fisheries Research Institute (CIFRI) of the studies being carried out by them for the ecological releases of the project.

Accordingly, the Project Proponent and CIFRI presented the case during the meeting on 17th October 2014. It was presented that Nyamjang Chu River originates from Tibet and enters in India about 10 Km upstream of the proposed location of Barrage. And about 500

meters downstream of TRT outfall, it again enters Bhutan after its confluence with Tawang Chu. It was also explained by the proponent that majority of the catchment area (about 75%) of the river is in Tibet which is snow fed and catchment area of the river is comparable to the catchment area of Tawang chu. Therefore, it was explained that Nyamjang Chu is an independent river basin. The EAC was also informed that along the entire reach of the river Nyamjang Chhu in India, Nyamjang Chhu HEP is the only project and no other project is coming up possible in the remaining stretch of the river. Committee was appraised that Environment Impact studies for NJC HEP covers the entire basin of Nymajnag Chhu river in India and adjacent river basin has no impact on this river with regard to ecological flows and other environmental impacts. Due to major contribution from the snow fed Catchment, the discharge is uniform and there is not much variation in flow during non-monsoon and monsoon season. The average discharge in non-monsoon and monsoon season varies from 18 cumecs to 76 cumecs in 90 % dependable year. Project proponent, presented a detailed layout stating that entire stretch of the river in India is being fed by 14 perennial streams out of which 8 are major contributors to the flow of river in monsoon and non-monsoon season. The EAC deliberated in detail again and was informed that one stream Sumta Chhu having catchment area of more than 100 sq. km is just 300 m downstream of the barrage axis contributing sufficient flows to Nyamjang Chhu river ranging from 1.9 cumecs to 26 cumecs in non-monsoon and monsoon season respectively.

The CIFRI submitted that Sumta Chu, a major perennial is joining the Nyamjang Chu at 300 meter D/S of Barrage, therefore, only critical reach in the river is this 300 meter zone for environmental flow requirement for sustenance of aquatic life. CIFRI explained the studies and methodology they have adopted for the studies. They also mentioned that there is lot of lateral flow contribution from the intermediate catchment from the 8 major tributaries. Committee that sufficient discharge and depth of flow is available for migration of fish in the downstream of the HEP axis. CIFRI recommended in the study that:

1. Minimum environmental release of 3.5 cumec from the barrage during lean period is recommended for maintaining the aquatic life in the river.

2. Recommended discharge of 3.5 cumec will maintain minimum flow depth and flow velocity of 0.55 m and 0.36 m/s respectively.

3. Suitably designed fish ladder should be provided in the barrage to facilitate fish migration for sustenance of the native fish population.

4. Hatchery unit for indigenous species, nursery ponds, rearing ponds, stocking ponds must be created prior to storage of water in the barrage. Regular ranching of seeds of this species would be an alternative to natural recruitment.

5. Fisheries management plan for sustenance of migratory fish species in the Nyamjang Chhu River as proposed in the EIA/EMP Report of the project should be implemented.

Committee again deliberated the availability of water downstream of the barrage axis in monsoon based on the simulation studies for 20 years on restricted drawl of 87 cumec. Availability of water in river from releases from upstream catchment and availability of water from intermediate catchment was noted. The committee was of the opinion that there would be adequate flow during the monsoon at downstream of the barrage for an average period of 90 days out of 120 days and during the 90% dependable year (1994-95), downstream release from barrage will be for about 60 days out of 120 days. Apart from this, contribution ranging from 5.4 cumec to 11.90 cumec during lean season and about 161.59 cumec during the monsoon season will also be there from the intermediate catchment downstream of barrage. The committee was also satisfied with the ecological flow of 3.5 cumecs, there is sufficient discharge in the remaining period of non monsoon months in the river for aquatic ecology which was also approved by the EAC in earlier meeting. This was noted by earlier EAC also.

EAC after having been satisfied with the facts presented by Project Proponent asked about the recommendation of CIFRI regarding ecological releases in monsoon from the project for sustenance of aquatic lives. CIFRI submitted that as per their report they have indicated the ecological flow of about 13 cumecs for monsoon considering sufficiency of depth in the river and the availability of water in the intermediate catchment from lateral flow contributions from the perennial streams including Sumta chhu. The project proponent explained that discharge of 13 cumecs is almost 17 % of the average

monsoon flow of the 90% dependable year. Further, it was mentioned that discharge contribution from Sumta Chhu in monsoon is almost 26 cumecs which may also be considered for as contributor to the above ecological flows.

The EAC also considered an OM of the Ministry dated 7.10.2014 on the compliance of ToR conditions for EC.

Considering the above facts and the presentation of CIFRI the committee recommended that 13 cumecs (17% of the average flows during monsoon in 90% dependable year) towards ecological flow in monsoon will be sufficient for the downstream requirement of the river in Nyamjang Chhu basin and the condition of 30% monsoon flows may be rectified. This 13 cumec will be enhanced immediately at downstream during monsoon from catchment and various nallah.

Agenda Item No. 2.7 Raigam HEP (126 MW) in Anjaw District of Arunachal Pradesh- For amendment of ToR

This project was not included initially in the main agenda items for this meeting. This was added later with the permission of the Chairman of EAC. Accordingly, the Project Proponent made the presentation.

Raigam Hydroelectric Project is proposed in Anjaw District of Arunachal Pradesh. It envisages utilization of flow of Dalai River, a tributary of Lohit River, for generation of power in a run-off-the-river scheme. M/s SKIL has been allotted the project for development on Build-Own-Operate-Transfer (BOOT) basis by the Government of Arunachal Pradesh.

The project was discussed for scoping clearance during 76th meeting of Expert Appraisal Committee (EAC). EAC made certain observations and sought additional information from the developer. The Developer has submitted the required information. With the permission of the chairman the Developer was asked to make presentation before EAC.

The Developer explained that scoping clearance was applied earlier for 126 MW installed capacity during May 2013 and the matter was discussed in 67th meeting of EAC, where scoping clearance was recommended accordingly. Thereafter, MoEF vide a letter number J-12011/36/2011-IA-I dated 03.07.2013 sought clarification from State Government seeking on installed capacity and on project allotment. A letter from the state government, addressed to developer, was submitted confirming state's no objection to revising the capacity to 195 MW, instead of 126 MW. It bears recall that capacity of initial allotment was below 100 MW.

The Developer further explained that Hydrology and power potential studies have been approved by CWC and CEA. During the power potential review, CEA has advised to increase the FRL from 700m to 725m; as this is within the allotted reach as per MoA and also there is no upstream project on Dalai river. Earlier planned underground powerhouse has been revised is changed to a suitable downstream location as surface powerhouse and normal tail water level has changed from 572m to 538m. Change in FRL and TWL has resulted in increase in rated head from 115m to 173.9m and therefore installed capacity has been revised to 195 MW.

It was informed that there is no HEP project on Dalai river downstream of Raigam. Minimum one kilometer free flowing river stretch will be maintained between tail water level of Raigam and FRL of Upper Demwe HEP.

The Committee observed that earlier observations have been addressed and salient features revised to correct catchment area upto new diversion location as 1697.45 sq. Km against earlier figure of 1703 sq. Km with rainfed catchment as 1637.45 sq. Km; FRL and MDDL have changed to 725m and 723m with 710 m as river bed level at new barrage axis. Deepest foundation level is at 705m and maximum barrage height from deepest foundation level is 22m with revised length of barrage top as 162m. Design discharge has also been revised from 120.5 cumec to 123.43 cumec and HRT length has increased from 7.751 Km to 10.375 Km. Land requirement is revised from 77.62 ha to 83.23 ha; entire land is forest land.

EAC enquired about the provision of environment flow to which developer responded that prevailing environment flow norms will be

adhered to and such provisions have already been made while working out the power potential for the project.

EAC was satisfied with the response to earlier observations and recommended the project for scoping clearance subject to the following conditions:

1. The State Government shall confirm that they have allotted the project for 196 MW as the process for allotting below 100 MW and above 100 MW are different.
2. All other latest conditions of the MoEF shall apply.
3. A longitudinal connectivity is to be provided to ensure sediment transportation and biota movement.
4. Bio- diversity study shall be conducted by a reputed Institute as per list available in MoEF's portal.
5. E-flow to be assed based on a site specific study by Institutes of reputes such as WII/ CICFRI and outcome submitted.
6. Latest norms of minimum e-flow of the Ministry shall be followed.

The meeting ended with vote of thanks to Chair

****

Appendix

List of EAC members and Project Proponents who attended 77th Meeting of Expert Appraisal Committee for River Valley & Hydro Electric Power Projects held on 16th -17th September, 2014 in New Delhi

A. Members of EAC

1.	Shri Alok Perthi	-	Chairman
2.	Shri Vinay Kumar	-	Member
3.	Shri N. N. Rai	-	Member
4.	Dr. G. M. Lingaraju	-	Member
5.	Dr. Vijay Kumar	-	Member
6.	Shri B. B. Barman	-	Member Secretary & Director, MoEF
7.	Dr. P. V. Subba Rao	-	MoEF

B. Shongtong-Karcham HEP (450 MW) project in Distt Kinnaur of HP by M/s. Himachal Pradesh Power Corporation Limited - For re-consideration of Environment Clearance

1.	Shri Ajay Kumar Patyal	-	General Manager
2.	Shri D. S. Verma	-	AGM
3.	Shri Rakesh Sood	-	CES
4.	Shri Rahul Sharma	-	AE
5.	Shri Manohar Arora	-	Scientist 'D'
6.	Shri R. V. Ramana	-	AE

C. Beena Complex Multipurpose project in Madhya Pradesh, Water Resources Department, Government of Madhya Pradesh – For ToR

1.	Shri M. S. Dhakad	-	Commissioner
2.	Shri M. K. Choubey	-	Engineer-in-Chief
3.	Shri S. K. Nigam	-	Superintending Engineer
4.	Dr. S. K. Tyagi	-	Chief (Ecology)
5.	Shri H. D. Kumar	-	Executive Engineer
6.	Shri Avinash Chaturvedi	-	Assistant Engineer
7.	Ms. Sipika Srivastava	-	Assistant Engineer
8.	Shgri N. K. Jain	-	Executive Engineer

D. Rupin HEP (45 MW) in Shimla District of Himachal Pradesh - For Environment Clearance.

1.	Shri Swaraj B. Lalit	-	CEO
2.	Shri Jitendra Choudhary	-	Manager
3.	Shri Praveen Kumar	-	PE
4.	Dr. Suparna Mallik	-	Director
5.	Ms. Pratha Pratima Maji	-	Env. Executive
6.	Shri Sandeep Kumar Negi	-	Sr. Engineer

E. Umngot HEP (3x80 MW) in Shilong by M/s. MePGCL- For Environment Clearance. Nakthan HEP (520 MW) in Kullu District of Himachal Pradesh by M/s. Himachal Pradesh Power Corporation Ltd.– For Environment Clearance

1.	Shri Anup Mahanta	-	Chief Engineer
2.	Shri H. W. Lyngdoh Mawnai	-	Superintending Engineer
3.	Shri K. Thangkiew	-	Executive Engineer
4.	Shri Dharminder Singh	-	Tracer
5.	Shri Ashish Deepankar	-	Manager
6.	Dr. Dharma Reddy	-	Sr. Consultant

F. Nakthan HEP (520 MW) in Kullu District of Himachal Pradesh by M/s. Himachal Pradesh Power Corporation Ltd.– For extension of validity of ToR

1.	Shri Ramesh Choudhary	-	General Manager
2.	Shri Rakesh Sood	-	Chief (Env. Specialist)
3.	Shri Polo Verman	-	DGM
4.	Shri Rajan Sharma	-	Sr. Manager
5.	Cap. H. K. Sharma	-	Executive Director
6.	Shri Sumit Verma	-	Environment Specialist

G. Nyamjang Chu HEP (780 MW) Project in District: Tawang, Arunachal Pradesh by M/s. NJC Hydro Power Ltd- For re-examine of e-flow

1.	Dr. U. Bhowmik	-	Scientist
2.	Dr. Amiya Sahoo	-	Scientist
3.	Shri Jainender Kardam	-	DGM
4.	Shri Sumit Garg	-	General Manager
5.	Shri Neeraj Bhargav	-	DGM
6.	Shri Vaibhav Ahuja	-	Dy. Manager
7.	Shri Sanjay Jana	-	Engineer

F. Raigam HEP (126 MW) in Anjaw District of Arunachal Pradesh- For amendment of ToR

1.	Dr. H. K. Singh	-	Vice President
2.	Shri Raju Kilaru	-	Director
3.	Shri Ravinder Bhatia	-	Director

******