Minutes of the 7th Meeting of the Expert Appraisal Committee for River Valley and Hydroelectric Projects held on 24-25.08.2017 at Teesta/Indus Meeting Hall, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi-3.

The 7th meeting of the re-constituted EAC for River Valley & Hydroelectric Projects was held with the Chairmanship of Dr. Sharad Kumar Jain on 24.08.2017 in the Ministry of Environment, Forest & Climate Change at Teesta Meeting Hall, 1st Floor, Vayu Wing, Ground Floor, Indira Paryavaran Bhawan, Jorbagh Road, New Delhi. As Dr. Sharad Kumar Jain, Chairman was not available on 25.08.2017 due to pre-occupation, meeting was held under the Chairmanship of Dr. D.M. Morein the Ministry of Environment, Forest & Climate Change at Narmada Meeting Hall, Ground Floor, Jal Wing, Indira Paryavaran Bhawan, Jorbagh Road, New Delhi. The following members were present:

1.	Dr. Sharad Kumar Jain	-	Chairman (only on 24.08.2017)
2.	Shri Sharvan Kumar	-	Representative of CEA
3.	Shri N. N. Rai	-	Representative of CWC
4.	Dr. J.A. Johnson	-	Representative of WII
5.	Dr. Vijay Kumar	-	Rep. of MOES(only on 24.08.2017)
6.	Dr. A. K. Sahoo	-	Representative of CIFRI
7.	Dr. T.P. Singh	-	Member
8.	Shri Chetan Pandit	-	Member
9.	Dr. Poonam Kumria	-	Member
10.	Dr. D. M. More	-	Member
11.	Dr. S. R. Yadav	-	Member
12.	Dr. S. Kerketta	-	Member Secretary

Dr. R. Vasudeva, Dr. J.P. Shukla and Dr. Govind Chakrapani could not present due to pre-occupation. The deliberations held and the decisions taken are as under.

Member Secretary apprised the members of the outcome of a meeting taken by the Hon'ble Minister for Ministry of Environment, Forest & Climate Change.

Item No. 7.0 Confirmation of minutes of 6th EAC meeting.

The Minutes of the 6th EAC (River Valley & Hydroelectric Projects) meeting held on 11.07.2017 were confirmed.

Item No. 7.1 Sondur Reservoir Project in Dhamtari District of Chhattisgarh by Water Management Division, Government of Chhattisgarh – **For ToR Clearance**

The Project Proponent (PP) and the Consultant, M/s EIA Infra Solutions Pvt. Limited, Ghaziabad, made a presentation of the project and *inter-alia*, provided the following information:

Sondur Dam Projectis proposed across river Sondur, a right bank tributary of Mahanadi. The erstwhile Madhya Pradesh Government had envisaged this project with a view to augment supplies in Ravi Shankar Sagar Project (RSP) under the ambitious Mahanadi Reservoir Project Complex (MRP) in 1972. From its evolution,

the project was conceived on Sondur river, in Tehsil and Block Nagri, District Dhamtari with a view to impound water of the river for feeding/augmenting supplies in Dudhawa reservoir and downstream RSP reservoir both on Mahanadi river. The present site with FRL471.065m shall irrigate a proposed command area of Kharif (12,260 ha) in Nagri Tehsil, besides augmenting supplies in RSP reservoir *en-route* Dudhawa reservoir.

After having carried out the appraisal of the project proposal, which was submitted in December,1976, the then Government accorded the administrative approval of Rs1,086.84 lakh on 04.03.1977 and the Technical sanction was issued by the Competent Authority on 26.04.1979.

The erstwhile Madhya Pradesh Government accorded the revised Administrative Approval for Rs. 3,399 lakh on 20.11.1982.

The work of the project, which commenced in 1978, continued as per original design. The composite dam with homogeneous earthen section with top bund level 474.265 m AMS Land the masonry dam section with 5 bays ofspillway,crestlevel461.07m AMSL fitted radial gates (15x10m) to pass the probable maximum flood of 5,163 cumec, was completed in 1988. The work of feeder canal and excavation of the distributaries and sub-distributary was completed in June, 1997. However, the cement concrete lining in Nagri and Sihawa distributaries was completed 52% and 88%, respectively till June,1997. **At present all civil and mechanical works are complete under the project, except works of B.K. minor under Nagri distributary including the works of epoxy mortar treatment, remodeling, lining, renovation work of structures of SFC and BFC and the distribution network for which Rs. 303.07 crore has been estimated.**

Out of 2,025.14 ha forest land requirement, 944.92 ha has been transferred in November,1979. Since, all the forest land couldn't be transferred, the Irrigation Department in 1991submitted the revised proposal for diversion of balance 1080.22 ha forestland (529.70 ha under Sitanadi WLS and 550.52 under territorial forest). **As 529.70 ha of forest land of Sitanadi Wildlife Sanctuary was coming under submergence, the proposal was rejected**. Then, the State Government in 2003, resubmitted the proposal indicating that in *lieu* of 529.70 ha of forestland of Sitanadi Sanctuary, an another area of 671.983 ha of forestland will be included in the sanctuary. After that the case was reconsidered, the Standing Committee of National Board for Wildlife, **Government of India in 2004 communicated the consent for this transfer of area from the sanctuary subject to the various conditions.**

The Government of Chhattisgarh had filed an application in 2005 to the Hon'ble Supreme Court of India seeking permission for the use of 529.70 ha of the forest land falling within Sitanadi Wildlife Sanctuary for the Sondur Reservoir Project. The Hon'ble Apex Court heard this matter and then it was referred to the Central Empowered Committee (CEC). The CEC prepared report after examining the matter and recommended to transfer the said land under Sitanadi WLS subject to certain conditions. The Hon'ble Supreme Court granted permission by its order dated, 5.7.2012 in IA No.3701370A for diversification/de-notification of

529.70 ha of Sitanadi WLS and for compensating the forest area coming under the said sanctuary by the forest area adjacent to the sanctuary of the same ecology.

In view of the above permission, the State Government requested the Government of India for Stage–I forest clearance under Forest (Conservation) Act, 1980. **The Ministry, in view of recommendation of FAC in 2014, asked the State Government to submit a fresh application.**

In view of the increased cost of project, the case for revised administrative approval for Rs. 557.11 crore was submitted on 17.12.2013 to the Competent Authority for grant of approval. **The balance works under the project are still continuing. The balance works, *inter-alia*, include works under compensatory afforestation scheme in forest and non-forest area, catchment area treatment plan, wildlife conservation and management plan in impact zone, though to be executed by the Forest Department, are yet to commence. Rs. 54.56 crore has been estimated to implement these balance work.** Therefore, in terms of provisions laid down under EIA Notification, 2006, the project falls under Category 1 (c), being major irrigation project, shall require prior environmental clearance.

Now major balance works involved (Compensatory Afforestation, Catchment Area Treatment Plan, Wildlife Conservation and Management Plan in Impact Zone) are such which can be implemented for betterment of the environment and are strictly by the nature and are remediation plan for mitigating damage/loss to ecology. Therefore, in pursuance of philosophy behind the EIA Notifications, it is imperative to bring Sondur Dam Project, an infrastructure project in tribal area of the state, in compliance with the environmental laws.

Five revenue villages viz. Kaslore, Boirgaon and Barpader villages have fully been submerged and two villages viz. Belarbahra and Mecha villages have partially been submerged. As the submergence has already been done, people have already been impacted. **Similarly, forestland is also being submerged now without diversion of forestland.** However, without completing necessary the entire process was not completed, the diversion of forestland got delayed. Till November 1993, the project cost revised to Rs. 74.25 crore and didn't attract the EIA Notification, 1994. **The PP intimated that the project cost was revised in March 2005 and the revised cost became Rs. 232.69 crore. Thus, it is a peculiar case that till 14th September, 2006 or the point of time investment exceeded Rs. 100 crores, vide Ministry's Circular dated 04.09.2006, PP should have obtained EC as per EIA Notification, 1994 on or before 14.09.2008.As EC has not been taken till date, the period after 14.06.2008 is considered as violation of EIA Notification, 2006.**

After deliberations and considering all the facts of the project as presented by the PP, the EAC ***recommended*** for grant of scoping clearance/ToR for the proposed project with the following additional conditions along with standards ToR:

i. Till 14th September, 2006orthe point of time investment exceeded Rs. 100 crores, vide Ministry's Circular dated 04.09.2006, PP should have obtained EC as per EIA Notification, 1994 on or before 14.09.2008.As EC has not

been obtained till date, the period after 14.06.2008 is considered as violation of EIA Notification, 2006, therefore, the committee suggested that the Ministry may take a separate call on the this issue.

ii. Provision of e-flow should be ensured for the sustenance of aquatic life in the downstream river.

iii. Land acquired for the project shall be suitably compensated in accordance with the law of the land with the prevailing guidelines.

iv. Total power requirement to be provided and its firm linkage to be supported with documents.

v. Proof of application for diversion of forestland for non-forest purpose will be submitted to the Ministry within one month.

vi. Detailed information on species composition in particular to fish species from any previous study/literature should be included.

vi. A detailed irrigation management plan should be worked out so that at least 10% of the CCA would be covered by micro irrigation scheme.

vi. The issue of conjunctive irrigation may also be considered in the project right from the formulation stage.

vi. Wildlife clearance is to be obtained from the Competent Authority as per the Wildlife (Protection) Act, 1972.

vi. Wildlife Conservation plan be prepared for the area located within the project and implemented by the project proponent in consultation with the State Forest Department.

vi. Wildlife Conservation plan also to be prepared for the impacted area due to construction of the project outside the project area and implemented by the local state Forest Department.

Item No. 7.2 Dikchu HEP 96 MW (3x32 MW) in North & East Sikkim districts of Sikkim by M/s Sneha Kinetic Power Private Ltd.– **Amendment inEnvironmental Clearance**

The Project Proponent (PP) and the Consultant, M/s R.S. Environ link Technologies Pvt. Ltd, Gurgaon, made a detailed presentation of the project and *inter-alia*, provided the following information:

For Dikchu HEP (96 MW) in North &East Sikkim Districts of Sikkim, environmental clearance (EC) has been accorded on 01.04.2008 as per EIA Notification, 1994 and 2006. The EC is valid for 10 years. The FC clearance has been obtained on 09.02.2010 and 21.03.2013. As per the records, about 97% of the construction works have already been completed till now.

The PP submitted an application during August, 2016 mentioning that some project parameters have been changed during the construction phase, i.e. after getting EC in 2008 and requested the Ministry for an amendment in EC. The PP also mentioned that in the EC letter dated 01.04.2008, a condition has been stipulated at Sl. No. 7 i.e. "***in case of any change in the scope of the project, then the project would require a fresh appraisal***" and hence an amendment is requested in the EC. Thereafter, the Ministry requested PP to submit a detailed report regarding changes and requested Regional Office, MoEF& CC, Shillong to submit the latest status of compliance of the EC conditions vide Circular dated 30.05.2012. The Ministry again wrote to Regional Office, MoEF, Shillong to inspect the site and submit a latest factual report including para-wise compliance to EC conditions, changes in the scope

of work, etc. The major details of project and report of RO, Shillong are presented in the Table in next page:

Head	Original layout	Response of PP	Reported by RO
Location	~1 km u/s of the confluence of Dikchuwith Teesta river	~3 km u/s of the confluence of Dikchu river with Teesta river	~150 m d/s ofthe confluence of Rate Chu and Bakchachu Lingdok
Installed Capacity	96 MW (3x32 MW)	96 MW (2x48 MW)	96 MW (2x48 MW)
Dam height	36 m	36 m	35 m
HRT	5.7 km x 4 m Φ	5.46 km x 4.8 m Ǿ	5.492 km x 4.8 m Φ
Powerhouse	(3x32 MW)	(2x48 MW)	(2x48 MW)
Surge shaft	90 m (H), 9 m Φ	58.7 m (H), 10.5 m Ǿ	65 m (H), 10.5 m Φ
Total land	39.126 ha	46.001 ha	55.533 ha
Forestland	7.794 ha	9.5319 ha	9.7129 ha
Non-forestland	31.332 ha	46.001 ha	46.001 ha
Muck (m^3)	3.6 lakh	3.29 lakh	5.22 lakh
PAFs (Nos.)	75	90	Not reported
EMP Cost	Rs.2346.88 lakhs	Rs.3595 lakhs	--
Total Cost	Rs.499 crores	Rs.745 crores	Rs.745 crores

The RO, Shillong has submitted (i) monitoring report carried out during 12-13.05.2016 on the status of compliance of EC conditions, (ii) Multi-disciplinary Committee Report and (iii) changes in HRT, location of Powerhouse, etc. The RO, Shillong, among other things, mentioned the following:

i. The muck generation quantity is much beyond the EC quantity. Further, consolidation and compaction of dumps have not been done. The debris is finding ways into the river due to poor strength of retaining wall. And thus, no reclamation of muck disposal areas.
ii. Fisheries Management Plan for the project remains unattended. During meeting of Multidisciplinary Committee, the officials of the State Fisheries Department informed that they could take up this work.
iii. Forest clearance has been obtained for 9.5 ha forestland, which is beyond 7.794 ha area as originally planned.
iv. The status on raising plantation in 15.6 ha area along with details of site, species planted, etc. is yet to be submitted to the RO, Shillong including development of green belt in 39.1 ha of the project area along the network of approach of the reservoir.
v. In-situ/ex-situ conservation of orchids and rehabilitation of the species along the road from Rangpoo to Ranipool has not yet been initiated as yet.
vi. The amenities and facilities provided to workers are very poor. Better facilities are required to modernize the kitchen, dining area, drinking water, etc.
vii. The dumping sites need to be completely reclaimed to avoid soil and sediment run off from dumps. A reclamation plan with time bound implementation schedule is required to be prepared.
viii. Sufficient funds to be provided for reclamation of all the 6 dumping sites.

Vide CAG Report No. 39 of 2016, it has also been mentioned that the muck is being dumped at 6 locations in North and South Districts, instead at 4 locations as proposed in the EMP.

After deliberations and considering all the facts of the project as presented by the PP, the EAC noted that the minor changes in the project parameters but these changes have not materially changed the basic configuration, scope, etc. **Thus, the EAC recommended that the changes made by the PP, shall be amended in the EC accordingly.**

Item No. 7.3 Construction of additional Spillway of Hirakud Dam in Odisha by WRD, Government of Odisha – **Consideration of applicability of EIA Notification / fresh Scoping clearance**

The Project Proponent (PP) made a presentation of the project and *inter-alia*, provided the following information:

The PP applied for applicability of EIA Notification, 2006 to the proposed project and thereby consideration of ToR/scoping clearance by the EAC, if any, on onlin10.08.2017 in the website of the Ministry. The PP informed that an additional Spillway of Hirakud Dam built across river Mahanadi near Sambalpur, Odisha is one of the earliest major multi-purpose river valley projects of India, which was completed in 1957.Spanning an area of 743 km^2 when full, the reservoir is the most important water infrastructure of the state contributing water for generating 307.5 MW of hydropower, irrigating 2,64,478 ha of Culturable Command Area annually in Bargarh, Bolangir and Subarnapur Districts; and providing flood protection to 9,500 km^2 of Mahanadi Delta, which is thickly populated. Total length of the dam and dykes is 25.8 km. The length of the main dam is 4,800 m with two spillways. The left spillway has 40 sluice gates and 21 crest gates. The right spillway has 24sluice gates and 13 crest gates. The total discharging capacity of both the spillways is42,450 m^3/s (15 lakh cusec). Taking into account of the operational constraint of few gates the effective discharge is about 36,806 m^3/s (13 lakh cusec). The Central Water Commission (CWC) in 1997, reassessed the Inflow Design Flood with up to date data. The revised design flood was computed as 69,632 m^3/s(24.5 lakh cusec). **In order to safely release the inflow design flood, the CWC advised to construct additional spillways at suitable locations.** A joint expert team comprising of CWC, Egis-consultants of DRIP and World Bank visited Hirakud Dam site in March, 2015 to finalize the proposed feasible locations for the additional spillway. The conclusive recommendation for the best alternatives is (1)At the left bank in the 2ndsaddle at left of Gandhi hillock with 5 nos. of spillway gates to discharge 3 lakh cusecs of flood water into the river Mahanadi just downstream of left spillway and (2) Another at 13,100 ft. of right dyke with 8 nos. of spillway gates to discharge 4 lakh cusec flood water through a spill channel to Jhanijore Nallah which meets river Mahanadi near Dhama, downstream of Sambalpur Town. The option (1) will be taken up in the first phase for which the World Bank has agreed for necessary funding. The Govt. of Odisha has administratively approved the project. The layout of the spillway and spill channel has been finalized. The Ministry of Water Resources, River Development and Ganga Rejuvenation, Government of India is closely monitoring the progress of the project, as it is related to the safety of the prestigious Hirakud dam. **The**

project involves rehabilitation of 716 households and 1,429 families. All are squatters, non-title holders. The families to be displaced will be provided compensation and other allowances as per Odisha Government R&R Policy, 2006 and Right to Fair Compensation and Transparency in Land acquisition, Rehabilitation and Resettlement Act, 2013 (RFCTLAR&R Act 2013). The R&R assistance currently based on 2014 prices will be indexed to 2018 prices as desired by the World Bank. **The spill channel of the proposed additional spillway involves diversion of Reserve Forest of 9.441 ha area from Laxmidungri Reserve forest in Sambalpur district.** The concrete additional spillway will be constructed at the downstream of the existing left dyke. The spillway will be connected to the existing dyke by constructing earthen dykes at both sides. Later, the existing dyke will be cut thereby extending the existing reservoir by 10 ha only. The height of the spillway is 32.68m. There will be 5 nos. of crest gates of size 15x15m to discharge a maximum quantity of 3 lac cusec of water. The length of the spill channel is 1,900m and width of the channel varies from 120m to 200m. The spill channel joins the river Mahanadi below the existing left. The cost of the proposed construction work is estimated to be Rd. 484 crores. During construction, around 2,000 people would be benefited and 50 persons would be engaged during operation phase mainly for O & M operation. The construction period is 30 months from the date of start of construction of the work. As the World Bank is funding the proposed construction, the World Bank insisted the PP that a clarification be obtained from the MoEF & CC on the applicability of EIA Notification, 2006, if any.

It is a proposal to build additional spillways structures along the reservoir dykes of Hirakud dam across the river Mahanadi near Sambalpur, Odisha. By execution of this additional spillway of Hirakud dam, there will be no increase in the hydroelectric power generation and no increase in Culturable Command Area. But, it is related to the safety of the dam, which has inadequate spillway capacity as determined by the CWC through detailed hydrological studies.

After deliberations and considering all the facts of the project as presented by the PP, the committee noted that once, the present proposal and the existing Hirakud dam is integrated, applicability of EIA Notification, 2006 and amendment thereof does apply. Accordingly, the EAC ***recommended*** **for grant of scoping clearance/ToR** for the proposed project with the following additional conditions along with standards ToR:

i. As the proposed project is for construction spillways and for the safety of the dam, one season base line data shall be collected for various environmental parameters for preparation of the EIA/EMP report.
ii. Apart from construction of the spillways, other alternatives for flood control measures such as creating storages in the catchment may also be considered.
iii. Impact of upstream developments on flood generation in the basin may also be studied and included in the EIA/EMP report.
iv. Downstream impact of release of water from the dam in the event of PMF may be studied and included in the EIA/EMP report.
v. Land acquired for the project shall be suitably compensated in accordance with the law of the land with the prevailing guidelines.

vi. Proof of application for diversion of forestland for non-forest purpose will be submitted to the Ministry within one month.

vii. Wildlife clearance is to be obtained from the Competent Authority as per the Wildlife (Protection) Act, 1972, if any.

Item No. 7.4 Mawphu HEP (85 MW) Stage II Project in Meghalaya by Government of Meghalaya by M/s North Eastern Electric Power Corporation Ltd.-**Consideration of fresh Environmental Clearance**

The Project Proponent (PP) and the Consultant, M/s WAPCOS, Gurgaon made a presentation of the project and *inter-alia*, provided the following information:

The PP applied for consideration of granny of Environmental clearance on online 08.08.2017 in the website of the Ministry. PP informed that Mawphu Hydro Electric Project, Stage II is proposed as a R-O-R scheme on the river Umiew in East Khasi Hills District of Meghalaya. The proposed dam site is located at about 3.17km downstream of Umduna HEP (90 MW) Power House location and the Power House site and is also located at about 2km downstream of Thieddieng village on the right bank of the river. North Eastern Electric Power Corporation Ltd., a Government of India enterprise, is implementing the project. **MoEF&CC accorded scoping clearance for pre-construction activities along with approved TOR on 30.09.2014.** This clearance was obtained with project-installed capacity of 75MW and other associated parameters. EIA/EMP studies have been carried out and completed based on above standard ToR. In the meantime, the installed capacity of the project has undergone upward revision to 85MW as per recommendation of CEA. Project parameters have remained unaltered with the above change in installed capacity barring changes in Powerhouse dimensions, Design Energy and Turbine-Generators.

The matter of upward revision to 85MW was placed before the Expert Appraisal Committee in its meeting held on 2-3rdJune, 2016. MoEF&CC accorded revised scoping for pre-construction activities on 18.07.2016.

Mawphu HEP, Stage II is located on the Umiew river in East Khasi Hills district of Meghalaya. The proposed dam site is located at latitude 25°18'32"N and longitude 91°38'19"E. The project area can be accessed from Guwahati airport, which is at about 120 km from Shillong, the capital of Meghalaya.

The proposed civil components of the project are as follows:

- A concrete gravity dam of 51 m high (from the deepest foundation level) and 140 m long (at top) comprising 3 overflow blocks with spillway arrangement of 6 bays, each with radial gate of size 9x13.70m and four non-overflow block. Energy dissipation arrangement is proposed with trajectory bucket.
- River diversion arrangement consists of one diversion tunnel of 7.0 m dia., Horseshoe shaped and 384 m long, on the left bank with 18 m high upstream cofferdam and 6 m high downstream coffer dam.
- Power intake structure is of 16.0 m wide and 17.60 m high on the right bank with an inclined trash rack.

- Head Race Tunnel is of 4.80m ΦHorseshoe shaped and 2.62km long. Restricted orifice type surge shaft is of 10.0 m Φand 38.35 m high at the end of HRT.
- Main pressure shaft is of 3.50 m Φ, 873 m long and branch pressure shaft is of 2.50 m Φ and 32 m long each.
- Surface powerhouse is of size 65.84m (L) x 18.0 m (W) x 35.70 m (H) housing two vertical axis Francis Turbines each of 42.50 MW installed capacity.
- Tail race tunnel is of 10.0m dia. and 70.29 m long (including Recovery Bay) to discharge water into the river.
- 132kV Gas insulated switchgear installed on the floor above the transformers.

The power potential studies have been carried out based on 26 years (1979-80 to 2004-05) generated flow series on 10-daily basis at dam site. The net storage capacity of the reservoir between MDDL at EL.464.00 m and FRL at EL.470.00m is 0.52 million $m^3$and gross store would be 1.55 MCM. The net head available for the turbine is 230.50m and the design discharge is 40.81 cumecs without overload.

The proposed installed capacity is 85 MW (2x42.50 MW) with 10% continuous overload. The annual energy generation in 90% dependable year with 95% plant availability is 335.96MU.

The proposed dam is near to the village Mawphu (L/B) and the powerhouse is near to Thieddieng village (R/B) in East Khasi Hills District of Meghalaya. The climate of the sub-basin characterized by torrential rains caused by South-West monsoon and 60% to 70% rainfall occurs between June to September. The river flows in deep channel and swells into torrents during the rainy season while during the remaining month, there is no significant flow. The river has floods during June to October with peaks mostly occurring in July to September.

The submergence area in the reservoir of the project at FRL is 13 ha. land will also be required for the project components and the same has been arrived as 110 ha based on preliminary assessment. **Approximately 22 ha of forestland will be affected by the project.**The total cost of the project (including IDC) is Rs. 1,042.13 crores. The levelised tariff has been calculated as Rs 6.44. The construction period for the project is 60 months (including pre-construction period).

River Diversion & Construction of Coffer Dam

The river water will be diverted in 6thmonth after the start of construction during lean season flow. The river diversion shall be achieved by constructing a closure dyke. Thereafter, the construction of Cofferdam shall be undertaken. Upstream Cofferdam is to be made on overburden. The maximum height of the Cofferdam is 18m from the riverbed level. The central core of the Cofferdam is filled with clay. Materials from excavation of Diversion Tunnel, DT inlet and outlet will be used for cofferdams. Filling of the cofferdam will be carried out in layers of not more than 100cm each. Compaction roller will be used to compact in layers. **Total quantity of rock fill in the Cofferdam is 71,690 cum and targeted average rate of placing rock fill shall be 4,320 cum.**

E-Flows

The dependable flows for analysis of installed capacity etc. are based on 90% dependable year as per guidelines of CEA. For obtaining the dependable flows, unrestricted energy generation has been computed for all the 26 years. The years 1996-97 and 2002-03 works out to be the 90% and 50% dependable years, respectively.

The Umiew River is typically a hill stream, which has a fast water current with rich dissolved Oxygen. Most of the fishes inhabiting the river are well adapted to hill streams. A total of 18 species represented by three families has been reported from the Umiew river. A total of four species (*Tor tor*; *Tor putitora; Glyptothorax cavia* and *Noemacheilus arunachalnensis*) has been categorized as endangered (EN) species. However, five fish species (*Schizothorax richardsonii*; *Garra gotyla gotyla; Labeo dero, Pseudocheneis sulcatus, Euchiloganis hodgarti*) have been categorized as vulnerable (VU). However, these species are not restricted to the Umiew River. In spite of this, there is an urgent need to protect these endangered fish species dwelling the Umiew River. The dam construction activities will also create a problem for migratory fish species (*Tor tor*; *Tor putitora* and *Labeo dero*). These migratory fish species may move into the Siyom river, if they do not find passage into the Umiew River.

The project proponent intimated that the environmental flow releases have been calculated based on prescribed norms given in TOR i.e. environment flow to be released during monsoon months (i.e. from June to September) from the Dam will be 30% of the river discharge. During transition months (post monsoon months of October and November, and pre monsoon of April and May), the water to be released will be 25% of the river discharge and during non-monsoon months i.e. from December to March, the water to be released will be 20% of the river discharge. The details are given in the Table below.

Table- Release of E-flows in 90% dependable year

Season	Average flow (m^3/s)	% of flow	Average E-flow (m^3/s)
Lean Season (December-March)	4.23	20%	0.85
Non-monsoon/Non-lean (October-November & April-May)	28.8&24.43	25%	7.20&6.11
Monsoon (June – September)	46.28	30%	13.89

GEOLOGY OF THE PROJECT COMPONENTS

Dam

The geotechnical parameters collected during geological mapping indicates RMR value of outcrops of left bank as 55 to 62 (fair to good without rating adjustment) whereas that of right bank as 64 to 73 (good). Based on the surface mapping data

and the geomorphic expression in the left bank / abutment, it is inferred that the stripping limit shall be of the order of approx. 5 to 6m on the left bank. In the right abutment, however, the stripping limit as assessed from the surface data is of the order of 1 to 2 m approximately. Accordingly, acceptable foundation grade has been fixed for the dam. However the extent of excavation in abutment area shall be modified on the basis of slope mass rating for each abutment once the data from Drift are available on completion of drift.

Head Race Tunnel

Rock classes in various stretches of HRT as predicted on the basis of surface exposures details are 40% for Class-II, 45% for Class-III, 10% for Class-IV and 5% for Class-V. Low cover and weak zones apart from zones where seepage is anticipated are to be evaluated further by advance probing. Wedge analysis results indicate the formation of gravity wedges at certain reaches of the tunnel crown, for which appropriate support measures shall be provided

Surge Shaft

A 10 m dia. surge shaft is proposed to be excavated after removing the overburden of 27m and 15.16m of rock, the top of the surge shaft from where sinking will start is at El. 492m whereas rock is encountered at El. 507.16 m. For open excavation, initially about 10m of overburden shall be in silty soil and would be followed by slope and its material characterized by medium sized angular to sub-angular rock blocks/ fragments with silty matrix till El. 507m. The overburden slopes mentioned above would contain rock blocks of partially disintegrated rock confined within a clayey matrix.

While excavating these zones instability is to get initiated, especially when the material will be saturated. As such the dressed slopes need to be provided with suitable drainage and soil anchors for stability. From El. 507m to El. 492m i.e. top of the surge shaft, the excavation shall bemoderately strong, moderately to highly weathered granite gneiss with biotite schist banding. As no major shear zone was encountered during drilling, as such, no serious difficulty during the excavation of shaft is anticipated. In general there is an improvement in rock strength, weathering and opening of the joints with the depth barring few exceptions at El.491m, El.482m, El. 472m, El.451m and El.436m where RQD has been found to be low though the recovery remains constantly high. In such area provision of consolidation grouting shall be required for ground improvement. Considering the nature of rock encountered in drill holes and observed rock mechanic parameters, it is anticipated that the major part of Surge shaft shall negotiate fair to good rock with occasional patches of poor rock.

Dam Break Analysis

For reasons of simplicity, wide applicability and the uncertainty in the actual mechanism, the HEC-RAS model has been used. The model uses failure time interval, terminal size and shape of the breach as the inputs. The shapes of the breach that can be considered by the model are rectangular, triangular and trapezoidal. The model is capable of adopting either storage routing or dynamic routing methods for routing floods through reservoirs depending on the nature of

flood wave movement in reservoirs at the time failure.

A rectangular breach at an El. 472 MASL with side slope 1:0 and breach formation time as one hour has been considered in the study for Dam Break Analysis forProject. The magnitude of the simulated outflow hydrograph is 7120 cumec corresponding to maximum stage elevation El. 465.16 MASL at km 1.10;it will be attenuated to 3,541 cumec corresponding to maximum stage elevation of El. 432.50 MASL at km 12.81. The maximum flow and flood wave arrival time at various distances downstream of the dam is shown in the Table below.

Table: Summary of wave profile in the event of Dam Break

Distance from dam (km)	Max. Elevation (MASL)	Maximum flow (cumec)	Time to Max. stage (Minutes)
1.10	465.16	7120.1	05.36
2.23	460.21	6840.3	12.46
4.10	456.71	6620.1	17.80
6.40	452.10	5820.7	19.70
8.10	448.30	4976.2	24.30
10.76	436.10	4431.81	30.40
12.81	432.50	3540.71	34.31

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:

Table: Status of Emergency

S.N.	Status of Emergency	Water Level	Preventive measures
1.	Normal Flood	Below FRL i.e. El. 470 MASL and flood discharge <9,970 cumec	Utmost vigil, observed in regulation of spillway gates
2.	Level-1Emergency	Rises above E. 470 MASL but flood discharge <9,970 cumec	(1) All gates fully operational (2) All the official should attend dam site. Local officials informed and warning system be kept on alert.
3.	Level –2 Emergency	Above FRL i.e. E. 470 MASL but below top of dam i.e. El. 472 MASL and the discharge continues rising above 9970 cumec	Communication & public announcement system should be put into operation and flood warning issued to people.
4.	Level –3 Emergency	Top of dam i.e. El. 472 MASL	(1) All staff from dam site, powerhouse& TRC

			outlets alerted to move to safer places (2) Possibility of dam failure should be flashed to District Administration.
5.	Disaster	Rising above El. 472 MASL and the breach appears in any form	District Admin. and Project authorities be intimated and only lifesaving measures should be resorted too.

Muck generation and its disposal

The project is likely to generate 15.95 lac m^3 of muck due to excavation. Out of which 50% is to be utilized for construction purpose and remaining 7.98 lac m^3 will be dumped in designated disposal sites (5 locations) covering an area of 13.25 ha for this purpose. The muck disposal sites are located at least 30 m away from river HFL. The drainage side bank of the area will be properly protected and stabilized with gibbon/retaining wall of suitable designated sections. The muck disposal sites shall be reclaimed/ restored with vegetation once capacity is utilized. An amount of Rs.2.19 Crores has been allocated for this purpose

Catchment Area Treatment and Compensatory Afforestation

The total catchment area at proposed dam is 320 km^2. Out of this, high erosion category, which account for 57% of directly draining catchment area having a total area of 18,204 ha categorized, as very high priorities will be treated with both biological and engineering measures. The Catchment Area Treatment (CAT) Plan proposed in the EMP will be implemented in consultation with Meghalaya State Forest Department. An amount of Rs.1148.95 lakhs has been allocated for this purpose. The CAT plan will be implemented over a period of five years, i.e. in synchronization with the construction of the project.

The compensatory afforestation programme is proposed in 44 ha of forestland which is double the forestland diverted for the project and will be implemented in consultation with State Forest Department. An amount of Rs.67.65 lakhs has been allocated for this purpose. Biodiversity Conservation and Management Plan has also been proposed with Meghalaya State Forest Department. An amount of Rs.205.74 lakhs has also been allocated for this purpose.

Fishery Management

Fishery development and management plan are proposed for the conservation of fish in river. Under this programme development of Mahsheer and *snowtrout* hatchery has been proposed to stock the reservoir and river Umiew for a length of 1 km on the upstream side and upto confluence with river Siyom on the downstream side. The rate of stocking is proposed as 100 fingerlings of about 30 mm size per km. For reservoir area, stocking shall be 1,000 fingerlings/ha of 30 mm size. The migratory fish species namely, mahseer and *snow trout* can be stocked. The plan will be implemented in consultation with Meghalaya State

Fisheries Department. An amount of Rs. 1.307 Crore has been allocated for this purpose.

EIA Study

Primary surveys have been conducted for three seasons namely, monsoon (August, 2014), post-monsoon(December, 2014) and pre-monsoon season (April, 2015). The data has been collected for flora, fauna, forest types and ecological parameters, geological and soil features. During these surveys data and information was collected on Physico-chemical, biological and socio-economic aspects of the study area. In addition, detailed surveys and studies were also conducted for understanding bio-diversity in the study area. Impact of project activities has been predicted using Mathematical Models and Overlay Technique (super-imposition of activity on environmental parameter). For intangible impacts, qualitative assessment has been done. As a part of study impacts likely to accrue during construction and operation phases on various aspects of Environment have been assessed accordingly.

Public Consultation

Meghalaya State Pollution Control Board organized the Public Hearing on 05.05.2015 at Dainthlen village, East Khasi Hill, Meghalaya with **the Chairmanship of Sub Divisional Officer, Sohra Civil and on 16.05.2017 at Trai, Mawthoh (Tezpatta) village, East Khasi Hill, Meghalaya** with the Chairmanship of Addl. District Collector for the propose project. One of the main issues of the public was to include Umblai village as part of impacted area of the project. Share in the profit to the villagers, representative of Dorbal Elaka Nongttan in the Board of Director of the project, 2% of the gross revenue from this project be utilized for sustainable development, one paisa per unit electricity generation be earmarked towards Green Cess, 1% of the project cost be used for construction of village roads, etc. In this regards, the PP committed that it will be implemented as per the Central Government Rules and Regulations. Besides, the other issues raised were on R & R, payment of compensation as per the new policy, implementation of CSR, development of village roads, provision of drinking water and electricity, provision of recreation and sports facilities, development of Vocational Training Centre, preference to PAFs for employment, construction of new school buildings, Free education, free health care facility, etc. Three underprivileged students from the impacted village be selected every year to inculcate them free education. It was also proposed that the name of the project should be changed to Kongkhen HEP instead of Mawphu HEP as the project is located on Kongkhen river. The PP has agreed to almost all the proposals placed during the Public Hearing by the general public.

After deliberations and considering all the facts of the project as presented by the PP, the EAC ***recommended*** for grant of Environmental Clearance for the proposed project for Sl. No. 2 to Sl. No. 10 as additional conditions. However, for Sl. No. 1, the PP has to clarify whether the Sub-divisional Officer, Sohra Civil was of the rank or equivalent to Addl. District Magistrate on the date of conducting Public Hearing, otherwise the proposal **shall be rejected**.

1. **Clarification to be obtained from PP whether the Sub-divisional Officer, Sohra Civil was of the rank or equivalent to Addl. District Magistrate on the date of conducting Public Hearing.**
2. Before impounding of the water, Cofferdam is to be decommissioned for which a comprehensive plan is to be prepared so that once the project is commissioned; cofferdam should not create any adverse impact on water environment including the rock mass and muck used to create the Cofferdam.
3. Forest Clearance Stage I shall be submitted for grant of Environmental clearance.
4. CAT plan shall be prepared in synchronization with the construction of the project and submitted to the Ministry within three months of issuance of Environmental clearance.
5. Non-biodegradable wastes to be safely disposed of in accordance with safe environmental practices.
6. Water depth sensors shall be installed at a suitable location in the river to monitor the EF, and hourly data shall be collected, and converted to discharge. The Gauge and Discharge data in form of Excel files shall be emailed to concerned regional office of MoEF and to concerned CWC office, on a weekly basis. Any deviation on the lower side shall be highlighted.
7. Local indigenous species of plants to be grown and maintained till their full growth including gap filling.
8. Skill mapping be undertaken for the youths of the affected project area and based on the skill mapping, necessary trainings to the youths be provided for their appropriate engagements in the Project.
9. Land acquired for the project shall be suitably compensated with the prevailing guidelines and all commitments made during the public hearing shall be fulfilled.
10. Six monthly compliance reports shall be submitted to Regional Office, MoEF& CC, Shillong without fail until completion of the modernization works.

Item No. 7.5 Basaveshwara Lift Irrigation Scheme in Belagavi District of Karnataka by Karnataka Neeravari Ltd., Government of Karnataka - **Reconsideration of Environment Clearance.**

In an earlier meeting of EAC held on 12.04.2017, the Project Proponent (PP) and the Consultant, M/s Health and safety Consultant, Bengaluru had made a presentation of the project and *inter-alia,* provided the following information.

The project involves lifting of 4 TMC water from Krishna River in Belgaon District to provide irrigation facility to 27,462 ha benefiting 22 villages Kharif season. The2. 5TMC of water is proposed to draw through an intake canal for a length of 1.25 m on Krishna River near old Ainapura village in Athani Taluka, which is 20 km away from Athani town. Thereafter, water is to be pumped to the delivery chamber through MS rising main of 15.9 km long. The project has two major gravity canals viz. south canal of 3.68 km long to irrigate 1313ha & North canal of 59.92 km long to irrigate 26,149 ha. The total land requirement is about 420ha. No submergence is envisaged in the project. Interstate boundary with Maharashtra is located at a distance of 1 km from the boundary of the command area. The estimate project cost is about Rs. 1,120 Crores.

The Scoping/ToR clearance was granted on 17.11.2015 for a period of 3 years. The Public Hearing was conducted in Ainapur village, Athani Taluk, Bagalkot District on 10.2.2017. PP informed that all the issues raised during the Public Consultation have been incorporated in the EIA/EMP report. The socio- economic impact assessment was carried out separately and report was also submitted. Thereafter, the final EIA/EMP reports were submitted to the Ministry for environment clearance.

The various environmental aspects covering catchment area, submergence area and project influence area, i.e. area within 10km radius from main project components have been considered. The baseline data has been collected covering Physico-chemical aspects, biological aspects and socio-economic aspects. Three seasons' data have been collected for air, noise, water, soil and ecological aspects. Impacts during construction and operation phases have been assessed and mitigation measures suggested minimizing the anticipated impacts.

The salient features of the project in the EIA/EMP reports are as under:

i. The Public Hearing was conducted in Ainapur village, Athani Taluk, Bagalkot Districton10.2.2017of Karnataka state. The major concerns expressed during the Public Consultation were on land Acquisition, seepage of water, land treatment of affected area, road access etc. All the issues discussed during the public consultation were considered in the EIA/EMP report. Thereafter, final EIA/EMP reports were submitted for environmental clearance.
ii. The project is likely to generate 20.59lakhm^3 of muck due to excavation. Out of which, 6.17 lakh m^3 is to be utilized for Service road & Inspection path, 3.08 lakh m^3 to be utilized for formation of embankment, 2.05 lakh m^3 to be utilized for land leveling and remaining 8.23 lakh m^3 to be for filling trenches.
iii. Green belt will be developed around intake canal and jack well of the project and is proposed with 34 different local plant species. A grant of Rs.2.43 crores has been allocated for this purpose.
iv. Fishery development and management plan is proposed for the conservation of fish in river and reservoir. Under this programme, development of Indian major carps viz., *Catlacatla, Labeorohita* and *Cirrhinusmrigala* have been proposed. A grant of Rs.10 lakhs has been allocated for this purpose.
v. The EMP has been prepared based on predicted impact, actual requirement and incorporating suggestions of local people, stakeholders with the details as under:

Table: Cost estimates for implementation n of EMP

Sl. No.	**Environmental Management Plan**	**Cost (Rs. in lakhs)**
A.	**Construction Phase**	
1.	Air Pollution Control	26.00
2.	Noise Pollution Control	0.50
3.	Water Pollution Control	1.50

4.	Solid & Hazardous Waste Management	3.00
5.	Greenbelt Development	243.77
6.	Agro Forestry Activities	27.46
7.	Fisheries Development	10.00
8.	Socio-economic Environment	9395.00
9.	Environmental Monitoring	55.40
10.	Implementation of CAT plan	968.00
B. Operation Phase		
10.	Environmental Monitoring	11.52
11.	Greenbelt Maintenance	30.00
	Total	10,772.15

After detailed deliberations and considering all the facts of the project as presented by the PP, the EAC **deferred the proposal** for a subsequent meeting. The following have been asked to submit by the PP for reconsideration of the project in the meetings:

1. Economic viability of the project should be worked out based on the guidelines issued by CBIP, New Delhi, in April 2002 or so in regard to the planning and design of large lift irrigation schemes. The true cost (not subsidized) of electricity is to be considered for economic analysis.
2. Concept of conjunctive irrigation should also be investigated treat its benefits for optimal water use.
3. Clearance of CWC with respect to Hydrology, Inter State Aspects as per CWC Guidelines "Submission, Appraisal and Acceptance of Irrigation and Multipurpose Projects 2017" is to be obtained.
4. Data on surface water quality of all the stations should be verified once again with regards to all the seasons
5. Inventorization of flora and fauna be updated based on IUCN classification.
6. Total requirement of power to be provided and its firm linkage to be supported with document.
7. Cost on green belt development plan to be revised and local indigenous plant species to be included for development of green belt.
8. For cutting down the cost, this Scheme may be designed for 70to 75%of the peak water requirement. The provision of standby pumps could be omitted from the design of LIS as an inbuilt flexibility in LIS exists to take care of the standby requirement of pumps.

The PP submitted the reply of the above clarification. The detailed provided below:

Sl. No	Observation	Compliance
1.	Economic viability of the project should be worked out based on the guidelines issued by CBIP, New Delhi, in April 2002 or so in regard to the planning and design of large lift irrigation schemes. The true cost (not subsidized)of electricity is to be considered for economic analysis.	The seminar proceedings of CBIP held in April, 2002 has been referred. Universally, CWC guidelines were adopted for design of LIS schemes in India. As per Karnataka Electricity Regulatory

		Commission (KERC) vide order dated 30.03.2016 in respect of supplying power for Lift irrigation schemes is Rs. 200 paise / unit Subject to an annual minimum of Rs. 1,120 per HP / annum has been adopted for calculation of BC ratio.
2.	Concept of conjunctive irrigation should also be investigated treat its benefits for optimal water use.	Farmers will be advised/trained by CADA for conjunctive use of surface and groundwater. Presently, the ground water in the command area is over exploited. Once the ground water table improves over a period of time, use of ground water will be encouraged.
3.	Clearance of CWC with respect to Hydrology, Inter State Aspects as per CWC Guidelines" Submission, Appraisal and Acceptance of Irrigation and Multipurpose Projects 2017" is to be obtained.	**The project is taken up with the 100% assistance of State Govt. within the state allocation. Hence, the project do not require clearance from CWC.**
4.	Data on surface water quality of all the stations should be verified once again with regards to all the seasons.	The report reveals that all the parameters, except Fe are meeting the norms. The PP informed that high Fe could be due to presence of Iron Ore Mines in the area.
5.	Inventorization of flora and fauna be updated based on IUCN classification.	A list of the IUCN classification for fishes has been provided.
6.	Total requirement of power to be provided and its firm linkage to be supported with document.	Total power required for the scheme is 32,440 HP (24.20 MW) and the clearance for supply of power shall be obtained from KPTCL.
7.	Cost on green belt development plan to be revised and local indigenous plant species to be included for development of green belt.	Cost of green belt development plan has been revised.
8.	For cutting down the cost, this Scheme may be designed for 70 to 75% of the peak water requirement. The provision of standby pumps could be omitted from the design of LIS as an inbuilt flexibility in LIS exists to take care of the standby requirement of pumps.	The LIS scheme is proposed for rain shadow area and drought prone areas. The water requirement is worked out based on the peak water demand of the crops proposed. Since, it is drought prone area, the crops are to be provided with the peak

		water demands to sustain the growth. A standby pump is proposed, to provide peak water needs, in case of break down, in any one of the pumps, during peak demand period, so that peak water demands of the crops are met with, to sustain the growth. The cost of the standby pump is very less as compared to the total cost of the entire project.

After deliberations and considering all the facts of the project as presented by the PP, the EAC opined that the PP constructing a project from his own funds results in avoidance of examination by the CWC for hydrology, and for interstate aspect. Vetting by CWC for these two aspects is essential. Therefore, it was decided that even if the PP is to construct the project from his own funds, EC will be given only after PP produces the clearance from CWC for hydrology and interstate aspect. **This procedure will be followed henceforth for all projects.**

In the present instance, the PP has not obtained the clearance from CWC for hydrology and inter-state aspect. Therefore, the Committee **deferred the proposal** and again advised the PP to obtain the same so that the proposal will be reconsidered in the next EAC meeting.

Item No. 7.6 Veerabhadreshwara Lift Irrigation Scheme in Bagalkot District of Karnataka by Karnataka Neeravari Ltd., Government of Karnataka - **Reconsideration of Environment Clearance.**

Earlier, in the meeting of EAC held on 12.04.2017, the Project Proponent (PP) and the Consultant, M/s Health and safety Consultant, Bengaluru made a presentation of the project and *inter-alia*, provided the following information:

The project involves lifting of 2.5 TMC water from Ghataprabha River near Chikkur Thanda village, Mudhol Taluk in Bagalkot District (Karnataka), to provide irrigation to 17,377ha of land. This project is likely to benefit 34 villages during Kharif season (June-September). The 2.5 TMC of water is proposed to draw through an intake canal for a length of 100m on Ghataprabha River near Chikkur Thanda Village, Mudhol Taluka and is 21km away from Mudhol town. Thereafter, the water is proposed to be pumped to delivery chamber through MS raising main of 7.6 km length. The project has two major gravity canals, viz. Hosakoti canal of 13 km long to irrigate 5,900 ha & Sallahalli canal of 20 km long to irrigate11,477 ha. The project also proposes to fill 10 Minor Irrigation Tanks within the command area. The total land requirement is about 125 ha. The estimated project cost is Rs. 544 crores.

The Scoping/ToR clearance was granted on 17.11.2015 for a period of 3 years. The Public Hearing was conducted at Killa Hosakoti Village, Mudhol Taluk,

Bagalkot District on 13.1.2017 and at Boodaanur Village, Belagavi District on 7.2.2017of Karnataka state. PP informed that all the issues raised during the Public Consultation have been incorporated in the EIA/EMP report. The socio-economic impact assessment was carried out separately and report was also submitted. Thereafter, the final EIA/EMP reports were submitted to the Ministry for environment clearance.

The various environmental aspects covering catchment area, submergence area and project influence area, i.e. area within 10 km radius from main project components have been considered. The baseline data has been collected covering Physico-chemical aspects, biological aspects and socio-economic aspects. Three seasons' data have been collected for air, noise, water, soil and ecological aspects. Impacts during construction and operation phases have been assessed and mitigation measures suggested minimizing the anticipated impacts.

The other salient features of the project reported in the EIA/EMP reports are as under:

i. The major concerns expressed during the Public Hearing were to extend the irrigation facilities to other areas and to complete the project in a time bound manner. All the issues discussed during the public consultation were considered in the EIA/EMP report. Thereafter, final EIA/EMP report was submitted for environmental clearance.
ii. The project is likely to generate 13.03lakh $m^3$of muck due to excavation. Out of this, 3.90 lakh $m^3$of muck is to be utilized for Service road & Inspection path, 1.95 lakh m^3 to be used for construction of embankment, 1.30 lakh m^3 to be used for land leveling and remaining 5.21 lakh m^3 to be used for filling trenches.
iii. Greenbelt will be developed around intake canal and in and around the jack well pumps of the project. A total of 34 different local plant species shall be planted for which a grant of Rs. 13.03 crores has been allocated for the purpose.
iv. Fishery development and management plan is proposed for the conservation of fish in river and reservoir. Under this programme, development of Indian major carps viz., *Catlacatla, Labeorohita* and *Cirrhinusmrigala* shall be included for conservation of fish species. A grant of Rs.10 lakhs has been proposed for the same.
v. The EMP has been prepared based on predicted impact, actual requirement and incorporating suggestions of local people, stakeholders with the details as provided in the table below:

Table: Cost estimates for implementation of EMP

Sl. No.	Environmental Management Plan	Cost (Rs.in lakhs)
	A. Construction Phase	
1.	Air Pollution Control	28.6
2.	Noise Pollution Control	0.25
3.	Water Pollution Control	1.75
4.	Solid & Hazardous Waste Management	2.45
5.	Greenbelt Development	1273.00
6.	Agro Forestry Activities	17.40

7.	Fisheries Development	10.00
8.	Socio-economic Environment	1977.00
9.	Environmental Monitoring	45.88
10.	Implementation of CAT plan	1885.00
B.	**Operation Phase**	
10.	Environmental Monitoring	10.74
11.	Greenbelt Maintenance	30.00
	Total	**5,282.00**

After detailed deliberations, and considering all the facts of the project as presented by the PP including the Public Representation, the EAC **deferred the proposal** for the next EAC meeting. The following information is to be submitted by the PP for reconsideration of the project by the EAC:

1. Economic viability of the project should be worked out based on the guidelines issued by CBIP, New Delhi, in April 2002 or so in regard to the planning and design of large lift irrigation schemes. The true (not subsidized) cost of electricity is to be considered for economic analysis.
2. Concept of conjunctive irrigation should also be introduced to deriveits benefit for enhancing the command area.
3. Clearance of CWC with respect to Hydrology, Inter State Matter Aspects as per CWC Guidelines" Submission, Appraisal and Acceptance of Irrigation and Multipurpose Projects 2017"should be provided.
4. Data on surface water quality of all the stations should be verified once again with regards to all the seasons.
5. Inventorization of flora and fauna be updated based on IUCN classification.
6. Total requirement of power to be provided and its firm linkage to be supported with documents.
7. Cost on green belt development plan to be revised and local indigenous plant species to be included for development of green belt.
8. For cutting down the cost, this Scheme may be designed for 70 to 75% of the peak water requirement. The provision of standby pumps could be omitted from the design of LIS as an inbuilt flexibility in LIS exists to take care of the standby requirement of pumps.

The PP has now furnished the above reply point-wise. The Project Proponent (PP) and the Consultant, M/s Health and Safety Consultant, Bengaluru made a presentation on the above clarification and *inter-alia*, provided the following information:

Sl. No	Observation	Compliance
1.	Economic viability of the project should be worked out based on the guidelines issued by CBIP, New Delhi, in April 2002 or so in regard to the planning and design of large lift irrigation schemes. The true cost (not subsidized) of electricity is to be considered for economic analysis.	The seminar proceedings of CBIP held in April, 2002 has been referred. Universally, CWC guidelines were adopted for design of LIS schemes in India. As per Karnataka Electricity Regulatory Commission (KERC) vide order dated 30.03.2016 in respect of supplying power for Lift irrigation schemes is Rs. 200 paise / unit Subject to an annual minimum of Rs.

		1,120 per HP / annum has been adopted for calculation of BC ratio.
2.	Concept of conjunctive irrigation should also be investigated treat its benefits for optimal water use.	Farmers will be advised/trained by CADA for conjunctive use of surface and groundwater. Presently the ground water in the command area is over exploited. Once the groundwater table improves over a period of time, use of groundwater will be encouraged.
3.	Clearance of CWC with respect to Hydrology, Inter State Aspects as per CWC Guidelines "Submission, Appraisal and Acceptance of Irrigation and Multipurpose Projects 2017" is to be obtained.	**The project is taken up with the 100% assistance of State Govt. within the state allocation. Hence, the project does not require clearance from CWC.**
4.	Data on surface water quality of all the stations should be verified once again with regards to all the seasons	The report reveals that all the parameters, except Fe are meeting the norms. The PP informed that high Fe could be due to presence of Iron Ore Mines in the area.
5.	Inventorization of flora and fauna be updated based on IUCN classification.	The IUCN classification for fishes has been provided.
6.	Total requirement of power to be provided and its firm linkage to be supported with document.	Total power required for the scheme is 32,084 HP (24 MW) and the clearance for supply of power shall be obtained from KPTCL.
7.	Cost on green belt development plan to be revised and local indigenous plant species to be included for development of greenbelt.	Cost of green belt development plan has been revised.
8.	For cutting down the cost, this Scheme may be designed for 70 to 75% of the peak water requirement. The provision of standby pumps could be omitted from the design of LIS as an inbuilt flexibility in LIS exists to take care of the standby requirement of pumps.	The LIS scheme is proposed for rain shadow area and drought prone areas. The water requirement is worked out based on the peak water demand of the crops proposed. Since, it is drought prone area, the crops are to be provided with the peak water demands to sustain the growth. A standby pump is proposed to provide peak water needs in case any one of the pumps break down during peak demand period. The cost of the standby pump is very small as compared to the total cost of the entire project.

After deliberations and considering all the facts of the project as presented by the PP, the EAC opined that the PP constructing a project from his own funds results in avoidance of examination by the CWC for hydrology, and for interstate aspect. Vetting by CWC for these two aspects is essential. Therefore, it was decided that even if the PP is to construct the project from his own funds, EC will be given only after PP producing the clearance from CWC for hydrology and interstate aspect. **This procedure will be followed henceforth for all projects.**

In the present instance, the PP has not obtained the clearance from CWC for hydrology and inter-state aspect. Therefore, the Committee **deferred the proposal** and advised the PP to obtain the same after which the proposal will be reconsidered by the EAC.

Item No.7.7 Lower Kopili HEP (120 MW) in Karbi Anglog & North Cachar Hill, Assam by M/s Assam Power Generation Corporation Ltd.- **Consideration of fresh Environmental Clearance**

The Project Proponent (PP) and the Consultant, M/s WAPCOS, Gurgaon made a detailed presentation of the project and *inter-alia*, provided the following information:

PP had applied for grant of environmental clearance on 19.06.2017 online in the website of the Ministry. Scoping clearance was for pre-construction activities along with approved TOR on 31.01.2014. The Lower Kopili Hydro electric project (120MW) is located in east of Karbi Anglong and west of Dima Hasao districts of Assam. It is a storage scheme of a 70.13 m high concrete gravity dam across the river Kopiliat Longku, about 20 km down stream of Kopili HEP power house, spills of Khandong and Umrong Dam and the discharge from the intermediate catchment area of 2,076.62km^2 by creation of a reservoir and utilizing a gross head of about114m. The dam structure is located on Kopili River (a major tributary of the Brahmaputra River) and the power house structure is located on right bank of Kopili River. The project envisages utilization of the regulated discharge from Kopili HEP, Awater conductor system comprising of an Intake Structure, Head Race Tunnel alongwith Surge Shaft and pen stock and a surface power house of installed capacity of 110 MW comprising of 2units of 55MW each with overall efficiency of 0.92. An Auxiliary Power House having a capacity of 10MW (2x2.5MW+1x5MW) has also been planned at the toe of the dam for utilizing the mandatory releases for ecological purposes.

The location of the dam site is 25^{0}39'57.39" N latitude and 92^{0}46'53.62"E longitude. It is envisaged to fully harness the power potential of the Kopili River is a major tributary of Brahmaputra River, which alongwith Barak is the principal River basin of North-East region. The scheme has been conceived to run at full potential in monsoon season and operate as a peaking station in non-monsoon season. The total land requirement for the project is 1,577 ha, of which 523 ha is forestland and 1,054 ha is private land and is part of Dima Hasso and Karbi Anglong districts of Assam. The total cost of the project is Rs.1,115.91crore.As per the norms, about 0.5% of the project cost has been earmarked for development of Local Area Development Plan. Thus, an amount of Rs.5.58 crores has been earmarked for implementation of Local Area Development Plan.

Project Description

The key components of the project are:

- A concrete gravity dam with sluice spillways of 345.15m long,70.13m high across river Kopili at Longku.
- An independent intake structure with trash racks located at 35m upstream of Lower Kopili Dam to carry a discharge of 112.71m^3/sec.
- 6.65m Φ,3619.62 m long, Modified Horse shoe section, with one adit of 334m long, 6.0m Φ, D-shaped at CH.2216.44m.
- 25.0m Φ, 82.9m total height with restricted orifice of 3.6mΦ provided as a Riser Shaft of 32.21m height (one adit is also proposed for approach to bottom of Surge Shaft)
- 5.20m Φ,703.8 m long up to bifurcation at 75 m upstream of D-line in the power house. The Pressure Tunnel is steel lined for its full length.
- 2nos.penstocks of 3.70 m Φ fully steel lined with lengths varying from 75 to 80 m from bifurcation point to the power house. Surface power house to accommodate 2 units of 55 MW each. Power House building of size 77.55(L) x 21.50 (W) m at the elevation of service bay with a common EOT crane 230/40T capacity over units and service bay.
- 2 Nos.of draft tube gates at EL.92.00 m is proposed.
- 1 No., 26.3 m wide and 52.0 m long rectangular channel with reverse slope of 1 in 5, designed for carrying a discharge of 112.71 m^3/sec.
- Surface type power house is also proposed to accommodate 2 units of 2.5MW each and 1 unit of 5MW totaling 10MW. Power house building is located just downstream of dam on the right bank side.
- Tail Race channel of the Auxiliary Power House is an open channel.

The total requirement for coarse and fine aggregates is 12.42 lac m^3. As a part of investigations for preparation of DPR, identification of quarries for extraction of coarse and fine aggregate material, analysis to assess their suitability, silt analysis of river water was done. The available quantity of construction material from various selected quarries is provided below:

Table: Details of Selected Quarries

Quarry No.	Location	Haulage Distance	Type of Aggregate	Estimated Quantity
A.	Near Sudariang Nala Lat:25°35'30"NLong:92°44'30"E	10kmu/s of dam axis	Fine	40,500m^3/year
B.	Near KalaNala Lanka Umrangshu Lat: 25°41'53.56"NLong:92°48'47.50"E	3 km d/s of proposed Powerhouse	Coarse	15,58,037 m^3/year

C.	Near Langpher Nala,Panimur Lat:25°42'49"N Long:92°50'21"E	7 km d/s Of proposed Powerhouse	Fine	55,000m^3/year

Muck Disposal

The total quantity of muck has been estimated to be of the order of 10.05 lakh m^3. Considering, 40% swelling factor, the total muck to be handled is 14.07 lakh m^3. About 35% material of muck shall be used as construction material. Thus, 9.85 lakh m^3 of muck is planned to be disposed at the identified disposal areas. The holding capacity of disposal areas is estimated to be 10.32lacm^3. The muck disposal sites will be suitably stabilized on completion of the muck disposal. The details of stabilization of muck disposal sites shall be taken up as per EMP proposed for disposal and management of muck. Two sites have been identified for accommodating the muck so generated and the details are provided below:

Table: Muck Disposal Area and Capacities

Specifications	DumpingArea1	DumpingArea2
Area(m^2) approx.	60,000	52,000
Capacity (m^3) approx.	5,61,000	4,71,250
Distance from HFL (m) approx	800	540

During construction, 5 lakh liter of fresh water per day shall be required for which Longku and Kala nallahs have been proposed, besides, **a provision for treatment of acidic water (pH: 3.2-5.2) of river Kopili with adequate capacity will be made during construction stage, if required. The reason for low pH is due to indiscriminate rate hole coal mining in the area.**

River Diversion and Coffer Dam

The diversion arrangement comprises of upstream cofferdam, a diversion channel along with two construction sluices and a downstream cofferdam. The diversion has been designed to release the 25 year flood at the rate of 720m/s. The project is envisaged on the right bank of the river, hence river diversion has beenplanned on the right bank of Kopili river through the diversion channel and sluices with the upstream and downstream coffer dams. Diversion channel alignment is fixed to pass the construction flood through the sluices at right bank block. Based on the topography, inlet and outlet of the Diversion channel area planned for a length of 104 m at upstream and 155m at downstream alongwith 50.12m of construction sluice at the right block. The quantity of total earthwork and rock-fill shall be 74,261 m^3 and 3,470.50, respectively. Upstream Cofferdam shall have 17.95m height at El.188.20m top. The quantity of total earthwork and concreting shall be 10,894 m^3 and 45,920 m^3, respectively. Similarly, downstream Cofferdam shall have 13mheight at EL.186m top. The quantity of total earthwork and concrete shall be 42,795 m^3 and 11,037.25 m^3, respectively. The muck and rock of good strength generated from the surface excavation will be utilized for construction of diversion channel, upstream cofferdam and downstream cofferdam.

E-flows

As river will be impounded due to construction of the dam, the physical structure of riverbeds may change, physicochemical environment may get impacted, upstream-downstream linkages may get cut off, etc. Therefore, a thorough investigation has been carried out to inventorize the flora and fauna of the river eco-system through the expert fisherman. A total of four species viz. *Garragotylagotyla, Daniorerio, Puntiussophore and Bariliusbendelisis* could be found from the downstream part of influence zone (near powerhouse and 4 km downstream of power house site) from the distributaries however, no fish species could be seen in the Kopili river. Absence of fish diversity in the vicinity can be attributed to the acidic water of the river due to coal mining activities. The project proponent intimated that the environmental flow releases have been calculated based on prescribed norms given in TOR i.e. environment flow to be released during different seasons. It is proposed to release environmental flows for sustenance of aquatic ecology as per the Table below:

Table- Release of E-flows in 90% dependable year

Season	Average flow (m^3/s)	% of flow	Average E-flow (m^3/s)
Lean Season (December-March)	21.40	20%	4.30
Non-monsoon/Non-lean (October-May)	53.70	25%	13.40
Monsoon (June-September)	79.20	30%	23.80

The power station is proposed to comprise of 2 units of 55 MW each. Two units each of 2.5 MW and 1 unit of 5 MW have been proposed to release the mandatory Environmental Flows. These units shall be operated to meet the requirement of the Environmental Flows into the river just downstream of the dam.

Geology of the Project

Dam Site

The dam area has been geologically mapped on 1:1000 scale for the terminal area of both abutments. On the right bank/abutment, mapping has been carried out from upstream cofferdam to downstream cofferdam on left bank/abutment, mapping has been carried out upto 100 m on either sides of the dam axis between elevation El.240 m and El.255m. Around the dam site, along the riverbed, the metamorphic rocks comprise of mainly leucocratic grey and pink granite gneisses belonging to the Achaean Gneissic Complex that have been traversed by younger intrusive of porphyritic and normal granites, pegmatite and quartz veins. Exposures of granite gneiss occur mainly on or along the riverbed and at times granite gneissic rocks occur on steep slopes. Sporadic exposures of Cherra sandstones occur on the abutments. The

sandstones are overlaying the granite gneissic rock as a cap. Apart from soil and slope wash material; off-white to pinkish white quartzitic sandstone is present as *in-situ* rock on both the abutments at higher elevation. Two other joint sets have been indentified apart from the bedding joint in the sandstone outcrop on both abutments. On the right abutment between dam axis and downstream cofferdam, third set of joint as also been observed. Granite gneiss rocks are pink to grayish white in colour and coarse-grained in nature. Small lenses of pegmatic also occur in granite gneisses. Due to weathering, the foliation is not clearly depicted on surface, but occasionally foliation is clearly depicted by fresh rock at a depth.

Head Race Tunnel

The slope around the HRT alignment is mostly covered with scree material where thick vegetation has grown and only few exposures of granite gneiss and Cherr as and stone are occurring along the route of HRT. Sandstone with varying thickness occurs as capping on granite gneiss rock. The inferred contact between granite gneiss and sandstone lies at an elevation of 226 m approximately, on the right abutment hill slope at chain age 36m (taking intake point as 0 chainage) along the tunnel alignment. The trend of foliation plane in gneisses varies between N015^0 and N195^0 with dips of 70^0 in the easterly direction.

Surge Shaft

Based on the surface geological mapping and traverses, area around the surge shaft and pressure shaft, is mostly covered with overburden material with sporadic exposures of sandstone and gneissic rocks. Depth of overburden material varies between 9.0 m and 29.0 m. Beyond 29 m depth, sandstone and granite gneiss do occur.

(i) The excavation of surge shaft will be done in poor to very poor rock mass, 33.0m down the depth of hole.
(ii) Beyond33.0 m depth, the excavation of surge shaft will be done in poor to fair rock mass with occasional small patches of good granite gneiss. Surgeshaft-pressure shaft alignment has been explored by six drill holes.

Powerhouse and Switchyard

The area is located on a nearly flat ground having gentle to moderate slope due northwest (towards Kopili River). Majority of the area is covered under topsoil with few exposures of *in-situ* rock. Weathered pegmatite within gneissic rock towards river end is exposed. Rock is moderately hard and dissected with three joint sets apart from foliation (FJ). The area encompasses very steep slope towards eastern and south-eastern side while slope is gentle towards western and northern sides. General slope of power house hill is towards west i.e. towards KopiliRiver.

Granite gneiss occurs towards western and south-western periphery of power house area. There is a large exposure of pegmatite, which has been exposed

towards north-western, central and north-eastern portion of powerhouse. General orientation of slope face is N020^0-030^0/85^0-90^0 i.e. roughly parallel to J3.

Dam Break Analysis

For reasons of simplicity, generally, wide applicability and the uncertainty in the actual mechanism, the HEC-RAS model has been used. The model uses failure time interval, terminal size and shape of the breach as the inputs. The possible shapes of the breach that can be accomplished by the model are rectangular, triangular and trapezoidal. The model is capable of adopting either storage routing or dynamic routing methods for routing floods through reservoirs depending on the nature of flood wave movement in reservoirs at the time failure.

The critical condition for a dam break is when the reservoir is at Full Reservoir Level (FRL) and design flood hydrograph is impinged. Accordingly, the study was carried out keeping the initial reservoir level at El.229.60m, impinging the design flood hydrograph and keeping all the spillway gates fully open. The maximum flow and flood wave arrival time at various distances downstream of the dam is **shown in the Table below:**

Table: Summary of wave profile in the event of Dam Break

RD (km)	Discharge (m^3/s)	Min Ch. Elevation (m)	W.S. Elevation (m)	Velocity (m/s)	Depth of Flow,	Top Width (m)
0	52185.31	170	226.69	56.6	25.21	255.04
0.65	58497.31	163	202.9	39.9	28.34	151.41
1.65	57770.67	157	205.67	48.6	25.18	150
2.65	27587.22	156	204.72	48.7	27.42	150
3.65	23269.57	150	206.69	56.6	27.95	150
4.65	52862.23	144	204.03	60.0	28.71	150
5.70	64297.14	127.7	150.67	22.9	29.75	159.64
7.00	61147.68	106.38	157.88	51.5	29.84	120
8.00	57332.24	93.45	156.65	63.0	23.05	120
9.00	53802.18	88.9	157.43	68.1	25.90	175
10.5	47899.96	80.67	156.19	75.5	27.99	155

The emergency planning for dam break scenario is devised on the basis of result of dam break analysis is mainly the travel time of flood wave to various locations in the downstream stretch of the river. The plains, 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 edged demarcation between different levels of emergency yet the following flood conditions have been contemplated and the preventive measures suggested against each as given in the next Table.

Table: Status of Emergency

S. No.	Status of emergency	Water Level	Preventive measures

1.	Level–1 Emergency	Rises above El. 226.0masl, but flood discharge below 7,510 cumecs	(1) All gates fully operational (2) All the official should attend dam site. Local officials informed and warning system be kept on alert.
2.	Level–2 Emergency	Above MWLi.e.EL226.0masl but below top of dam i.e.EL229.60 and the discharge continues rising above 7510 cumecs	Communication & public announcement system should be put into operation and flood warning issued to people.
3.	Level–3 Emergency	Topofdami.e.EL232.50m asl	(1) All staff from dam site to move to safer places (2) Possibility of dam failure should be flashed to District Administration.
4.	Disaster	Rising above El. 232.50m as land the breach appears in any form.	District administration and project authorities be intimated and only life saving measures should be resorted too.

Muck generation and its disposal

The project is likely to generate 9.63 lakh m^3 of muck due to excavation. A part of the muck can be utilized for generation of concrete aggregates, and balance quantity is proposed to be dumped at designated muck dump sites proposed on the right bank of the Kopili River. Most of the project area is flat with mild slopes. To accommodate muck, area has been proposed to dump the muck up to the possible extent. Seven meter high retaining wall (where ever required) is proposed and muck will be disposed up to a height of 10 -12 m with 36^0 of slope. It is also suggested to use the muck in widening of the roads, i.e. laying the muck on the downstream side of the road and widening the road width upto 15m. It will solve two purposes at the same time, first is muck disposal and secondly widening of road. Balance quantity of muck is proposed to be dumped at designated muck dump sites proposed on the right bank of the Kopili River.

EIA Study

Primary surveys have been conducted for three seasons namely, monsoon (August, 2014), post-monsoon (December, 2014-January, 2015) and pre-monsoon season (April, 2015). The data has been collected for flora, fauna, forest types and ecological parameters, geological and soil features. During these surveys data and information was collected on Physico-chemical, biological and socio-economic aspects of the study area. In addition, detailed surveys and studies were also conducted for understanding bio-diversity in the study area. Impact of project activities has been predicted using Mathematical Models and Overlay Technique (super-imposition of activity on environmental parameter). For intangible impacts, qualitative assessment has been done. As a part of study impacts likely to accrue during construction and operation phases on various aspects of environment have been assessed accordingly.

Public Consultation

Assam State Pollution Control Board organized the 'Public Hearing' on 10.01.2017 at Longku, APGCL Project Site, district Dima-Hasao, Assam for the proposed Lower Kopili HEP (120 MW). The Public Hearing was conducted under the Chairmanship of the ADM, Dima Hasao. A total of 208 people have attended the proceedings of the Public Hearing. The main issues of the public were supply of discharge water of tail race tunnel for irrigation facility to Diyungbra area, impact due to sand extraction from Kopili river, impact to the picnic spot located downstream of the proposed project, R & R, payment of compensation through banks, implementation of CSR, development of village roads, provision of drinking water and electricity, provision of recreation and sports facilities, development of Vocational Training Centre, preference to PAFs for employment, construction of new school buildings, Free education, free health care facility, etc. The PP has agreed to all the proposals placed during the Public Hearing by the general public.

After deliberations and considering all the facts of the project as presented by the PP, the EAC ***deferred*** the proposal **for grant of Environmental Clearance.** The Committee decided that a sub-committee of EAC would visit the project site and would examine the viability of the project whether the project has economic viability in the extreme weather condition **(whether the acidic water would be sustainable to the viability of the project including machine availability).** The following is the composition of the Sub-committee:

1. Shri N.N Rai
2. Shri Sharvan Kumar
3. Dr. A.K. Sahoo
4. Dr. S. Kerketta

No. 7.8 Rego HEP Project in West Siang, Arunachal Pradesh by M/s Greenko Rego Hydro Projects Pvt. Ltd. – **Amendment in ToRand extension of validity of ToR**

The Project Proponent (PP) and the Consultant, M/s R.S. Environlink Technologies Pvt. Ltd, Gurgaon, made a presentation of the project and *inter-alia,* provided the following information:

Rego HEP is located on Yargyap Churiver, a right bank tributary of Siyom River in West Siang District of Arunachal Pradesh. Rego HEP has been envisaged as a R-O-R scheme with the tail race extension of upstream project of Kangtangshiri HEP. The FRL and TWL of Rego HEP is EL1805.00m and EL 1685.00m, respectively. This project tis planned to utilize the hydro power potential of Yargyap Chu River.

The Scoping/ToR clearance to this project was accorded on 21.08.2014 for a period of 3 years, which was expired on 21.08.2017. Now, as per the Ministry's OM dated 8.10.2014, a provision of extension by one more year exists for River

Valley & HEP projects i.e. beyond 4 years. The PP has submitted online application on 24.07.2017 for the validity of TOR for two more years, i.e. beyond 26.08.2017.

Hydrology of upstream project of Kangtangshiri HEP has been approved by CWC. Based on the 10-daily approved discharge series and after release of environment flow as per MoEF guidelines viz., 30% of flow in monsoon, 25% of flow in non-monsoon and 20% of flow in lean season, the installed capacity was arrived to 66MW with the FRL and TWL of EL1900.00 m and EL1805.00m, respectively and with the rated head of 92.75m. As it is being a tail race scheme of Kangtangshiri HEP, the 10-daily discharge utilized for power generation in Kangtangshiri HEP will be utilized or Rego HEP also. Hydrology study for Rego HEP has also been approved by CWC. Accordingly, the installed capacity of Rego HEP has been arrived to 82.80MWwiththeRated Headof116.33m. Accordingly, ToR for preparation of EIA/EMP was taken from MoEF for installed capacity of 82.80MW. The main features of the above two projects as per old MoEF guidelines are tabulated below:

Sl.No.	Description	Kangtangshiri	RegoHEP
1	FRL	EL 1900.00m	EL 1804.85m
2	TWL	EL 1805.00m	EL 1685.00m
3	Design Discharge	78.42Cumec	78.42Cumec
4	Design Head	92.75m	116.33m
5	Combined Efficiency	92.50%	92.50%
6	Installed Capacity	66MW	82.80MW
7	E-flow	30%inmonsoon,25 % in non-monsoon&20% in Lean period	30% in monsoon, 25% in non-monsoon & 20% in Lean period

Later, the Ministry has considered the case and recommended the release of environment flow based on Siang River basin Study. Accordingly, there commended environment flows are 20% in monsoon, 20% in non-monsoon and 20% in lean season. Based on this revised release of environment flow, the installed capacity of Kangtangshiri HEP has been enhanced from 66 MW to75 MW with the revised rated head of 90.02 m. Alternate Hydro Energy Centre (AHEC), IIT, Roorkee, recommended the power potential study for the enhanced capacity of 75 MW for Kangtangshiri HEP and DPR for the same was prepared and submitted for Techno Economic Appraisal (TEA).

Based on the revised release of environment flow, the power potential study for Rego HEP has also been revised and the installed capacity of Rego HEP has now been enhanced from 82.80 MW to 97.00 MW with the Rated Head of 116.42 m. The Detailed Project Report (DPR) is also being prepared for the enhanced capacity of 97.00MW. Therefore, for conducting Public Hearing and based on the enhanced installed capacity of 97MW, the general layout and power potential study have been prepared and submitted. Also, the main features of Kangtangshiri and Rego HEP for the enhanced capacity based on new MoEFg uidelines are tabulated below:

As per New MoEF&CC Guideline:

Sl. No.	Description	Kangtangshiri HEP	Rego HEP
1.	FRL	EL 1900.00 m	EL 1804.85 m
2.	TWL	EL 1805.00 m	EL 1685.00 m
3.	Design Discharge	91.82cumec	91.82cumec
4.	Design Head	90.02 m	116.42 m
5.	Combined Efficiency	92.50%	92.50%
6.	Installed Capacity	75MW	97.00 MW
7.	E-flow release	20%inmonsoon,20% innon-monsoon&20% in Lean period	20%inmonsoon, 20%in non-monsoon& 20% in Lean period

After deliberations and considering all the facts of the project as presented by the PP, the EAC ***recommended*** **for extension of the validity of ToR for two years**, i.e. from 20.08.2017 to 21.08.2019 and **for enhancement of capacity of the proposed project from 82.80 MW to 97 MW** with same ToR as communicated vide Ministry's letter dated 21.08.2014 with an additional ToR. It is also mentioned that this is the last and final extension of the validity of the project. In case Public Hearing is not held in time, PP fails to submit the EIA/EMP report, and the total time of five years is fully exhausted, the PP has to apply afresh for scoping clearance. During final appraisal of EIA/EMP report before the EAC for Environmental Clearance, the baseline data including the date of Public Hearing should not be older than three years.

"Solid waste management should be planned in details. Land filling of plastic waste shall be avoided and instead proposal for various uses may be proposed in the revised EIA/EMP report."

Item No. 7.9 Papu HEP (90 MW) in Arunachal Pradesh by Papu Hydropower Projects Ltd. – **Extension of validity of ToR**

The Project Proponent (PP) and the Consultant, M/s R.S. Environlink Technologies Pvt. Ltd, Gurgaon, made a presentation of the project and *inter-alia*, provided the following information:

Papu Hydroelectric Project is proposed on Papu River in East Kameng District of Arunachal Pradesh with an installed capacity of 90 MW. The project is envisages construction of 16.5 m high barrage from the foundation level across Papu river. Total land requirement is about 77 ha, out of which 35.5 ha is forestland. Total submergence area is 6.01 ha. A surface powerhouse is proposed with 3 units of 30 MW each. **The proposed project is in proximity of Pakke Tiger Reserve (PTR) but all project components are outside protected area boundary.** The nearest point of protected area is approximately at a distance of about 500 m from the project. The total cost of the project is about Rs. 857.51 Crores.

The Scoping/ToR clearance to this project was accorded on 27.08.2013 for a period of 2 years, which was expired on 26.08.2015 and then extended the validity

period of ToR till 26.08.2017 vide Ministry's letter dated 03.04.2016. In the present case, 4 years of ToR validity shall be ended on 26.08.2017. Now, as per the Ministry's OM dated 8.10.2014, a provision of extension by of one more year exists for River Valley & HEP projects i.e. beyond 4 years. The PP has submitted online application on24.07.2017 for the validity of TOR for one more year, i.e. beyond 26.08.2017.

As the barrage site of the project is coming near the boundary of Pakke Tiger Reserve, hence, clearance under Wildlife (Protection) Act, 1972 is required which is pending. The PP also informed that State Board Wildlife, Govt. of Arunachal Pradesh, in its meeting held on 08.05.2015 recommended this project for consideration by NBWL to grant WL clearance and accordingly, the proposal was submitted to the Ministry. MoEF&CC, as per the observation made by the NTCA, referred back to the State Govt. Arunachal Pradesh in November, 2015 and a committee was constitute headed by the Chief Conservator of Forest, Govt. of Arunachal Pradesh. The Committee visited the site in March, 2016 and submitted their report to the Ministry. The response of the Ministry is yet to be submitted by the Govt. of Arunachal Pradesh. **It has been informed that preparation of the draft EIA/EMP report has been completed and Social Impact Assessment is pending due to delay in getting NBWL permission.** The PP committed that once, NBWL clearance is received, SIA would be completed at the earliest and Public Hearing would be carried out accordingly before expiry of five years period of validity of ToR.

After deliberations and considering all the facts as presented by the PP, the EAC **recommended for extension of the validity of ToR for one more year**, i.e. from 27.08.2017 to 26.08.2018. It is also mentioned that this is the last and final extension of the validity of the project. In case Public Hearing is not held in time, PP fails to submit the EIA/EMP report, and the total time of five years is fully exhausted, the PP has to apply afresh for scoping clearance. During final appraisal of EIA/EMP report before the EAC for Environmental Clearance, the baseline data including the date of Public Hearing should not be older than three years.

Item No. 7.10 Modikunta Vagu Irrigation Project in Jayashankar Bhoopalpally district of Telangana by Irrigation & CAD Department, Government of Telangana - **Fresh ToR Clearance**

The Project Proponent (PP) and the Consultant, M/s Health and safety Consultant, Bengaluru made a presentation of the project and *inter-alia*, provided the following information:

PP applied for grant of ToR/Scoping clearance on 02.08.2017 online in the website of the Ministry. Modikunta Vagu Irrigation project envisages construction of 1,359 m earthen dam across Modikunta Vagu which is a tributary of Godavari River to store 2.142 TMC of water to irrigate 5,500 ha of command area along with supply of 0.12 TMC drinking water belongs to 35 benefiting villages of Wazeedu Mandal in Jayashankar Bhupalapally District, Telangana. Modikunta Vagu is Minor tributary of River Godavari rises from the hills near Baster District in Godavari basin and passes in between Krishnapuram and Kadekal villages in Wazeedu Mandal, Jayashankar Bhupalapally district of Telangana. The proposed dam site is located at about 2.00 km from Krishnapuram village, Wazeedu Mandal which is

about 292 km from Hyderabad on Hyderabad-Chandruptla (Via Warangal-Eturnagaram) NH 163 Road. The construction work involves construction of 1,359m earthen dam, spill well, sluice gates and distributary networks. The net Culturable Command Area under the project is 5,500 ha. Out of which, 900 ha on right flank and the rest of 4,600 ha is on left flank. Due to existing high hillock on left flank only one head sluice is provided on right flank to cater to the needs of whole command. The scheme comprises of gravity flow and hence power requirement doesn't arise. The main canal is proposed to start from CH. 600 m of the Dam. The carrying capacity of the main canal at head reach is 9.03 cumecs against the required discharge of the main 8.08 cumecs. The first distributor of length 5.270 km starts from CH: 0.12 at EL: 95.94 m through Pipe Culvert or Trough cross the TRC of length 150 m, to feed an Ayacut of 900 ha. The left main canal crosses the main course of the Modikunta Vagu by an Aqueduct to feed an Ayacut of 4,600 ha. The length of the Main canal is 21.850 km. The total land required for the project is 574.96 ha, of which 75.96 ha is non-forestland and 499 ha is forestland. **The Stage-II clearance as per Forest (Conservation) Act, 1980 is awaited.** A total of 500.20 ha of compensatory afforestation land has been handed over to the state Forest Department. The project involves submergence of 472 ha of forestland at FRL 124 m. No village will be submerged under the scheme. Private land shall be acquired as per provision of Right to Fair Compensation and Transparency in Land acquisition, Rehabilitation and Resettlement Act, 2013.

Modikunta VaguIrrigation project is located near Krishnapuram village Wajeedu Mandal, Jayashankar BhupalpallyDistrict, Telangana. The location of proposed intake is at longitude 80°0.26'20"E and latitude 18°0.32'47"N near Krishnapuram village of Wazeedu Mandal Jayashankar Bhupalapally district. Total cost of the project is **Rs. 491.25** crore and the total development period of the entire project will be about 2 years. The BC Ratio as per CWC guidelines is worked out to be 1.697. A total of 150 people (50 technical + 100 labourers) will be employed during construction of the project. There is no clear mention of people to be employed during operation and maintenance of the project.

According to EIA Notification, 2006 and its subsequent amendments, the project is categorized as 'B'. The PP informed that **General Condition is applicable as Eturnagaram Wildlife Sanctuary is falling within a distance of 4.9 km from the project site. However, during appraisal the PP clarified that the project site and the command area is falling 4.9 km away from the Eco-sensitive Zone of Eturnagaram Wildlife Sanctuary.**

After deliberations and considering all the facts of the project as presented by the PP, the EAC decided that as the project is falling beyond the boundary of Eco Sensitive Zone area, the project doesn't qualify for General Condition. Therefore, the proposal should be appraised in SEIAA as Category "B" project. **However, the Committee further advised that the PP should clarify on the same and submit an NOC from the Wildlife Department of State Forest Department, Govt. of Maharashtra so that the proposal can be transferred to the State.**

Item No. 7.11 Nardave Medium Irrigation Project in Sindhudurg District of Maharashtra, Medium Irrigation Division, by Water Resources Department, Maharashtra–**Reconsideration of ToR.**

Earlier the Expert Appraisal Committee for River Valley and Hydroelectric Projects held during 2-3rd March, 2017 considered the proposal for grant of ToR. The Project Proponent (PP) made a presentation of the project and *inter-alia*, provided the following information:

The project is a medium irrigation project covering Culturable Command Area of 8,084 ha benefitting 48 villages. The project envisages construction of 66.43 m high earthen dam on Gad River near Nardev village in Sindhudurg District of Maharashtra. The irrigation is proposed in the project by lift irrigation for which 14 numbers of K.T. weirs are proposed along the riverside enable lifting of water for irrigation. The project also envisages a dam-foot powerhouse with 3 MW Installed Capacity for generation of hydropower. The total land requirement is ~627.744 ha and the submergence area is ~356.352 ha. The forestland is ~34.135 ha and the Stage-I FC clearance has already been obtained (No. 6-MHC 018/2011-BHO/1691, dated 30.9.2014). Five (5) villages consisting of 967 houses are likely to be submerged due to the proposed project. The project is about 2 km away from the Radhanagari Wildlife Sanctuary. The estimated cost of the project is about Rs. 44,670.76 lakhs.

During appraisal the PP informed that the project was originally approved on 12.7.1989 (Marathi letter No. MHD/1085/(390/85)/WRI dated 12.7.1989) with an estimated cost of Rs. 3,243.78 lakhs. The revised administrative approval was made on 19.7.2007 (Marathi Govt. order No. Nardave-2007/140/(47/2007)-MPR-MPR Mantralay, Bombay dated 19.7.2007). As the project is a prior to 2006 proposal, it doesn't attract EIA Notification, 1994. Therefore, construction works had already been initiated and thereafter, the project was stopped due to paucity of funds. It was intimated that the CWC vide its letter dated 6.11.2001, clarified that "only major irrigation projects having CCA of 10,000 ha and more only require clearance from environmental angle from Ministry of Environment and Forests, Government of India and hence no such clearance is required for medium irrigation projects having CCA less than 10,000 ha, even though the estimated cost is more than Rs.50 crores as per EIA Notification, 1994."

The PP informed that the project was submitted to Ministry for environmental clearance (EC) in 2011. The Ministry asked for forest clearance status on 19.12.2011 and the project was again resubmitted to the Ministry on 27.9.2012. The MoEF & CC did not consider the proposal as the project was falling in Western Ghat areas. The PP also intimated the following:

i. During 2001-2006, dam works of the project were partially completed.
ii. ICPO & Spillway works have been partially completed. Out of 14 KT weirs, 10 have been completed.
iii. Land acquired is 507.028 ha and balance land of 120.716 ha is to be acquired.
iv. About 82% rehabilitation work has been completed.
v. Project is recommended by SBWL and is under consideration at Central level for wildlife clearance.
vi. Moratorium on Western Ghats has been lifted and therefore PP has applied for environmental clearance on 8.2.2017.

The committee noted that the project was initiated before EIA Notification, 1994 and construction activities were taken up accordingly. It was also further noted that some works have been completed which appeared to be an ongoing project and the project was stopped due to paucity of funds. It was informed that till date Rs. 382.00 crores have already been spent.

The PP applied online on 08.02.2017 for granting ToR/Scoping Clearance as per the EIA Notification, 2006 and amendment thereon.

During EAC meeting held on 2-3rd March, 2017, Committee suggested to submit the present status including likely date of completion of the project from State Environment Department, Government of Maharashtra. Then only, grant of ToR/scoping clearance would be considering accordingly. The PP then submitted the present status of the project obtained from the State Environment Department, Government of Maharashtra **on 05.08.2017 online in the website of the Ministry.** As per the DSR 2005-06, the present cost of the project has been revised to Rs. 446.71 crore. The BC ratio of the scheme is 1.54. Annual utilization on 75% dependable year is about 96%.

The presented status as provided in Para-5 above, the same has been reiterated by the State Environment Department, Government of Maharashtra, the following details are once again provided:

1. *During 2001-2006, dam works of the project were partially completed.*
2. *Vide Ministry's letter dated 19.12.2011, forest clearance was asked to submit. Stage I forest clearance has been granted vide letter No. 6-MHC018/2011-BHO/1691 dated 30.09.2014. The proposal was recommended by SBWL vie letter dated 20.04.2014.*
3. *Resubmitted the proposal for grant of EC on 27.09.2012. Due to moratorium on Western Ghats, the proposal was kept on hold. When moratorium on Western Ghats was lifted, PP again applied for environmental clearance on 8.2.2017.*
4. *ICPO & Spillway works have been partially completed. Out of 14 KT weirs, 10 have been completed.*
5. *Land acquired is 507.028 ha and balance land of 120.716 ha is to be acquired.*
6. *About 82% rehabilitation work has been completed till December, 2016.*
7. *The project is part of Prime Minster Krushi Sinchan Yojan (PMKSY) and constructed is likely to be completed by December, 2019.*

The PP informed that the construction of the proposed project has been submitted stopped before After deliberations and considering all the facts of the project as presented by the PP, the EAC ***recommended* for grant of scoping clearance/ToR** for the proposed project with the following observation/additional conditions along with the standard ToR:

i. Although, the State Environment Department, Government of Maharashtra furnished that during 2001-2006, dam works of the project were partially completed. However, the PP has to submit that the construction work has been stopped on or before 14.09.2006.

ii. 82% of construction activities have been completed till date and start of work has been taken up prior to 1994, therefore Ministry will take a separate call and may take appropriate decision to this effect as the construction was in progress till December, 2016.
iii. Provision of minimum e-flow to be maintained throughout the year.
iv. Detailed information on species composition in particular to fish species from any previous study/literature should be included.
v. Land acquired for the project shall be suitably compensated in accordance with the law of the land with the prevailing guidelines.
vi. A detailed irrigation management plan should be worked out so that at least 10% of the CCA would be covered by micro irrigation scheme.
vii. The issue of conjunctive irrigation may also be considered in the project right from the formulation stage.
viii. Total power requirement to be provided and its firm linkage to be supported with document.
ix. Solid waste management should be planned in details. Land filling of plastic waste shall be avoided and instead proposal for various uses may be proposed in the EMP report.
x. Wildlife clearance is to be obtained from the Competent Authority as per the Wildlife (Protection) Act, 1972.
xi. Wildlife Conservation plan be prepared for the area located within the project and implemented by the project proponent in consultation with the State Forest Department.
xii. Wildlife Conservation plan also to be prepared for the impacted area due to construction of the project outside the project area and implemented by the local state Forest Department.

Item No. 7.12 Tiuni Plasu HEP (72 MW) project in Dehradun, Uttarakhand by Project Development and Construction Corporation Ltd.– **Fresh ToR Clearance.**

The Project Proponent (PP) and the Consultant, M/s EQMS India Pvt. Ltd., new Delhi, made a presentation of the project and *inter-alia*, provided the following information:

PP applied for grant of ToR/Scoping clearance on 02.08.2017 online in the website of the Ministry. Tiuni Plasu Hydro-Electric Project, conceived as R-O-R scheme across river Tons in Dehradun district of Uttarakhand, envisages utilization of gross head of about 67 m for annual power generation of 293.9 MU in a 90% dependable year. The proposed barrage site on river Tons is 200 m downstream of its confluence with river Pabbar. A surface powerhouse (3x24 MW) on the left bank of river Tons near Naval village, upstream of confluence of Suker Khad with the Tons, has been proposed. The Project Site is located on SH-1 (Dehradun-Koti-Atal-Tiuni) in Dehradun district of Uttarakhand State and is about 190 km from the nearest railhead Dehradun.

The project shall comprise the following structures:

1. 138 m long gated barrage comprising of one under sluice and 7 barrage bays of 5 m width each with crest level at 909.5 MASL and 911.00 MASL, respectively design for 6,946 cumec.

2. One Intake Structure with 6 bays of 4.5 m each with crest level at EL. 917.5 m for 181 cumec design discharge.
3. Two nos. of 6 m diameter Intake Tunnel of length 2.035 km each.
4. Two nos. desilting chamber with hoppers to exclude silt particle six above 0.15 mm.
5. 3.2 m diameter and 1300 m long flushing tunnel with design discharge 18 cumec.
6. 7.6 m dia., 1.85 km long Headrace tunnel for design discharge 145 cumec.
7. 35 m dia. x 28 m high-restricted Orifice type surge shaft.
8. 3 Steel lined 4.0 m internal diameter penstocks of 110 m length each for design discharge of 48.33 cumec each
9. Surface Powerhouse of 66.0 m (L) x 19.50 m (W) x 45.2 m (H) having an installation of 3 Nos. Vertical Francis type turbines of 24 MW each operating under rated head of 63.0 m.
10. 40 m long tailrace channel.

For execution of the project, 65.342 ha land shall be required of which the apportionment between Private, Forest and State land shall be 21.654 ha, 42.473 and 1.215 ha, respectively. No archaeological monument of national importance either lies in the project area or in its submergence area. No National Park, Sanctuary, Defense Establishments, Archeological Monuments, Notified Eco-sensitive areas or protected area under Wildlife (Protection) Act, 1972 exists within the project area or within 15 km distance from it. Govind Pashu Vihar Wildlife Sanctuary is about 22 km away from the barrage site. **The total cost of the project is Rs. 826.81 crore and 1,200 people will be engaged during peak construction period.**

Earlier, the Expert Appraisal Committee examined the project and vide letter No. J-12011/39/2007-IA-I dated 18.02.2008,accorded clearance for pre-construction activities in the proposed site for preparation of EIA/EMP report for project with installed capacity of 66 MW.

Subsequently, the installed capacity of the project (66 MW) has been enhanced to 72 MW as per the DPR submitted to CEA in August, 2010. The CEA has approved the installed capacity as 72 MW. In view of the enhanced installed capacity and request from the project proponent the MoEF & CC, vide letter No. J-12011/39/2007-1A-1 dated 12.10.2010, agreed that the standard ToR granted for 66 MW may be used for preparation of EIA report for 72 MW.

The PP further informed that the baseline study of environmental parameters as provided in the ToR were carried out during post-monsoon, 2012, pre-monsoon, 2013 and monsoon, 2013. The public hearing was conducted on 26.10.2015 at Barrage Site, Tiuni, with the Chairmanship of ADM Dehradun and representatives of UEPPCB. After incorporating the compliance of the issues raised during public hearing, the EIA/EMP reports of the project for consideration of EC were uploaded on 25.01.2016.

The MoEF & CC vide letter No.J-12011/12/2016-IA.1 (R), dated 13.06.2016, intimated that since the validity of ToR for Tiuni Plasu HEP (72 MW) was ended on 11.10.2015, the PP may apply online for fresh Terms of Reference as per EIA Notification, 2006. **In the light of the above circumstances, the fresh**

application for scoping clearance has been resubmitted.

After deliberations and considering all the facts of the project as presented by the PP, the EAC ***recommended*** for grant of scoping clearance/ToR for the proposed project with the following additional conditions along with the standards ToR:

i. Land acquired for the project shall be suitably compensated in accordance with the law of the land with the prevailing guidelines.
ii. Proof of application for diversion of forestland for non-forest purpose will be submitted to the Ministry within one month.
iii. Provision of minimum e-flow to be maintained throughout the year.
iv. Detailed information on species composition in particular to fish species from any previous study/literature should be included.
v. Land acquired for the project shall be suitably compensated in accordance with the law of the land with the prevailing guidelines.
vi. Total power requirement to be provided and its firm linkage to be supported with document.
vii. Proof of application for diversion of forestland for non-forest purpose will be submitted to the Ministry within one month.
viii. Solid waste management should be planned in details. Land filling of plastic waste shall be avoided and instead proposal for various uses may be proposed in the EMP report.

Item No. 7.13 Mohanpura Major Project in Rajgarh District of Madhya Pradesh by Water Resources Department, Government of Madhya Pradesh - **Fresh ToR Clearance.**

The Project Proponent (PP) and the Consultant, M/s WAPCOS, Gurgaon made a presentation of the project and *inter-alia*, provided the following information:

PP applied for grant of ToR/Scoping clearance on 22.07.2017 in the website of the Ministry. The project is proposed on river Newaj, which is one of the major three rivers constituting this zone of lower Chambal sub basin. Under the scope of proposed project, a barrier is proposed on river Newaj near village Banskhedi of Rajgarh tehsil of district Rajgarh. The proposed dam site is proposed to be located at latitude 23°57'54"N and longitude 76°46'37"E on Topo sheet No.55A/13. Nearest Highway is NH-3, which is 15km far from the project site and NH-12 is 5 km. The project is designed as a high level storage dam taking into consideration the topographical limitation of the river and sub-basin and in particular the gross surplus availability of water. The project, in its proposed form, will provide irrigation on downstream of proposed Mohanpura dam on left and right flank of Newaj river in1,81,000 ha of GCA, out of which 1,25,000 ha of CCA is proposed. The irrigation benefits will include Rabi irrigation in 1,23,000 ha, Kharif irrigation in 17,000 ha and perennial in 2,000 ha, besides water supply for industrial use and fulfillment of drinking water requirement of 5 million m^3each.The proposed reservoir will also have provision for regulated water supply for downstream use and also maintaining ecological balance@52 million m^3. By adopting micro-irrigation, the CCA would increase from 65,000ha vide environment Clearance No. J-12011/41,/2012/ IA-I dated 10.03.2014 to 1,25,000 ha, **but the submergence will remain unaltered. The present proposal pertains to the additional 60,000 ha command area only.**

There is no protected area under International Conventions, National or Local Legislation for their Ecological, Landscape, cultural or other related value is falling with 10 km radius from the proposed project site. No forestland is involved in the project area. There is no densely polluted area or Industrial area coming under submergence. Also there is no critically or severely polluted area as per CPCB. Most of the land coming under submergence is barren and stony waste.

The catchment of proposed site is 3,825 km^2 and it is 30% barren and 56% cultivated. It is under rain-fed agriculture and vulnerable to erosion and weathering. The present rate of siltation in catchment is 0.75 MAF/year/km^2. By suitable measures it is expected to bring down rate of siltation by 50% such as construction of dykes, gully traps, farm bunding, check dams, slope stabilization, stone pitching, agronomical practices, crop rotation, and so on and so forth. A provision of Rs. 40.24 per ha is proposed amounting to total Rs. 15.39 crores for command area development and water Management. The total cost of the project is Rs. 3,866.34 crore which include construction of head work, Canal work, installation of 60 MW Solar Power Plant, cost of land, etc.

The Present proposal will comprise of following main components:

1. Construction of complete piped canal system including main pipe line, gravity mains other pipe line right up to 30ha chak including construction of ail in line canal structure required therein.
2. Provision of LBC Rising main about 40.00 km long is proposed to irrigate about CCA of 87,000ha (including a Gravity Distributary pressure pipe canal for GCA 1,26,900ha) land, and about 13.00 kmlong Rising main is proposed for extension of LBMC (Pachore Area) CCA of 16,000ha out of GCA 20,250 ha, project shall provide irrigation in Rajgarh, Khilchipur, Sarangpur and Zeerapur tehsil of Rajgarh district.
3. Provision of RBC Rising main about 3 km long is proposed to irrigate about CCA of 22,000 ha and GCA 33,850 ha of land of Tanwarvad Area of Rajgarh tehsil of Rajgarh district.
4. To provide lift irrigation for 1,26,900 ha of GCA in the form of pressure irrigation by constructing intake well near the village Beerampura to lift water directly from the reservoir through a network of 2,227 km long pressure irrigation system.
5. It is proposed to irrigate about 1,81,000 ha GCA through RBMC and LBM with about 48.925km (excluding minors) canal network.

By adopting micro-irrigation, the CCA is increased from 65,000 ha to 1,25,000 ha but the submergence will remain unaltered. The reservoir created will involve a submergence of 7,056 ha of land, out of which 1,540.77 ha of belongs to government land and 5,515.23 ha belongs to private land. **No forestland is involved.** The private land falling under submergence is barren, stony waste and is under rain-fed cultivation. The submergence zone has 36 villages coming under it of which 2 villages are getting fully submerged.

Resettlement and Rehabilitation of oustees is being done in accordance with R & R Policy and Mohanpura special package. The resettlement colonies being developed village-wise, to the extent possible, i.e., oustees from one village will be resettled at

one site. R&R sites at Khimakhedi and Patan Road have been identified and are being developed. The land is suitable and the project oustees have the choice for opting for urban or rural areas. A provision of Rs. 910.00 crores for Land acquisition and R-R is made in the project.

After deliberations and considering all the facts of the project as presented by the PP, the EAC ***recommended*** for grant of scoping clearance/ToR for the proposed project with the following additional conditions:

i. It is an expansion to the existing project, having micro-irrigation scheme with CCA is increased from 65,000 ha to 1,25,000 ha.
ii. Provision of minimum e-flow to be maintained throughout the year.
iii. Detailed information on species composition in particular to fish species from any previous study/literature should be included.
iv. Land acquired for the project shall be suitably compensated in accordance with the law of the land with the prevailing guidelines.
v. A detailed irrigation management plan should be worked out so that at least 10% of the CCA would be covered by micro irrigation scheme.
vi. The issue of conjunctive irrigation may also be considered in the project right from the formulation stage.
vii. Total power requirement to be provided and its firm linkage to be supported with document.
viii. Solid waste management should be planned in details. Land filling of plastic waste shall be avoided and instead proposal for various uses may be proposed in the EMP report.
ix. The Regional Office, MoEF & CC, Bhopal will submit a certified compliance report on the EC conditions of the existing project within six months of the issuance of the ToR to this expansion proposal. During consideration of grant of EC to the proposed project, the compliance of the EC conditions will be reviewed.

Item No. 7.14 Any other item with the permission of the Chair

Item No. 7.14 (a) Par HEP (52 MW) in Papumpare District of Arunachal Pradesh by M/s KVK Par Power Pvt. Ltd. - **For reconsideration of Environmental Clearance.**

Earlier, the EAC in its meeting held on 11.07.2017, the Project Proponent (PP) and the Consultant, M/s R.S. Environlink Technologies Pvt. Ltd, Gurgaon, made a detailed presentation of the project and *inter-alia*, provided the following information:

Ministry of Environment, Forest and Climate Change has earlier accorded the Scoping/ToR Clearance for this project on 17.10.2012 for development of 60 MW capacity. Due to e-flow provisions, the capacity got revised to 52 MW and ToR for revised capacity with extension of validity till 16.10.2015. Thereafter, the Ministry again revalidated the TOR till 16.10.2017 vide Ministry's OM date 22.10.2014.

The project is proposed on Pare River (a tributary of Brahmaputra river) in Papum-Pare District of Arunachal Pradesh. The project envisages construction of 27.52 m

high barrage across Pare River near Balapu village. The total land requirement for the project is 28.25 ha, out of which 17 ha is unclassified forest land and 11.25 ha is private land. Total submergence area is 8.5 ha. A surface powerhouse is proposed on the left bank of the river with 2 units of 26 MW IC each. The catchment area of the project is 420 km^2. No family will be displaced but owners of 11.25 ha of private land will be affected due to this project. Total cost of the project is about Rs. 287.59 Crores. The proposed project is to be completed in 45 months.

The Public Hearing was conducted in Papum-Pare District on 14.10.2015. PP informed that all the issues raised during the Public Hearing have been incorporated in the EIA/EMP report. The socio-economic impact assessment was carried out separately and report was also submitted. Thereafter, the final EIA/EMP reports were submitted online to the Ministry for environment clearance on 17.04.2017. During appraisal, it was noted that the baseline data collected are more than three years (Base line data for monsoon from June-July, 2014, that of winter during January, 2013 and that of Summer in April, 2014) old. The Member Secretary informed the Committee that as per the OM dated 07.11.2014 " *....the date of Public Hearing and the primary data used in preparation of EIA/EMP report submitted after Public Consultation should not be more than three years old and in case these conditions are not met, the proponent will have to start the process de novo after obtaining fresh ToR.*"

The Committee deliberated on the issue and it was decided that **the Member Secretary might consult the Policy Wing of the Impact Assessment Division and clarify the issue in detailed.** Accordingly, the proposal has been deferred for the next EAC meeting.

Dr. S. Kerketta, Member Secretary of the EAC for River Valley projects consulted the IA (Policy) and also various OMs of the Ministry on the related issue. The Member Secretary further reiterated that as per the OM dated 07.11.2014 " *....the date of Public Hearing and the primary data used in preparation of EIA/EMP report submitted after Public Consultation should not be more than three years old and in case these conditions are not met, the proponent will have to start the process de novo after obtaining fresh ToR.*"Hence in view of the above, the **Committee recommended that the PP have to apply the proposal afresh as per the EIA Notification, 2006 and amendment thereof.**

Item No. 7.14 (b) Upper Krishna Project - Stage III on Krishna River, Karnatakaby M/s. Krishna Bhagya Jala Nigam Ltd., Government of Karnataka - **For fresh of Environmental Clearance.**

Item No. 7.14 (b) Upper Krishna Project - Stage III on Krishna River, Karnataka by M/s. Krishna Bhagya Jala Nigam Ltd., Government of Karnataka - **For fresh of Environmental Clearance.**

The Project Proponent (PP) and the Consultant, M/s WAPCOS, Gurgaon made a presentation of the project and *inter-alia,* provided the following information:

Upper Krishna Project is a lifeline project for desert areas of Vijayapura and drought prone areas of Bagalkot, Raichur, Kalburgi and Yadgir in northern Karnataka.The project has 2 major dams near Alamatti and Narayanpur to facilitate the irrigation. Under UKP Stage – III, FRL of Almatti dam is proposed to be raised from RL-519.60 m to RL-524.256 m to store and make use of additional water allocated to UKP project under KWDT Award – 2.

UKP Stage-III has been conceived as an extension of UKP Stage-I and II project to make use of the water available to the state under KWDT award -2. UKP Stage-III does not envisage construction of dam or new structure across the river. **The construction of dam upto 524.25 m was already completed and sub-projects, which are taken up under UKP Stage-III are only an extension of canals.** This project has been planned with an ulterior motive of improving socio-economic status of the people of the Hyderabad - Karnataka region, where there is no assured drinking water and crops. The total cost of the project is 17,207 crores as per 2011-12 price level and the B.C. ratio is 1.09.

The proposed project involves 9 sub project components and utilization of 130 TMC of water for irrigating 5, 30,475 ha in 7 districts. Out of 9 sub-projects, 8 are extension of the UKP Stage-I and II and only Koppal LIS is the new scheme. The proposed scheme benefits 746 villages belonging to Vijayapura, Bagalkot, Gulbarga, Yadgir, Gadag, Koppal and Raichur districts in the state of Karnataka. The details of sub-projects are as follows:

Sl. No.	Name of the Scheme	Command area (Ha.)	District	Taluk
Almatti				
1	Mulwad LIS	2,27,966	Vijayapura	Vijayapura, Muddebihal, Basavana Bagewadi
			Bagalkot	Jamakhandi, Bilagi
2	Chimmalagi LIS	87,067	Vijayapura	Vijayapura, Muddebihal, Basavana Bagewadi, Indi, Sindhagi
3	Herkal LIS	15,344	Bagalkot	Badami, Bilagi
4	Koppal LIS	48,436	Koppal	Koppal, Kusthagi, Yelburga
			Bagalkot	Badami & Hungund
			Gadag	Rona
		Total (A)	3,78,813	
Narayanapura				
5	NRBC Extension	61,747	Raichur	Raichur & Devadurga
6	Mallabad LIS	33,730	Kalburgi	Jewargi
			Yadgir	Surapura & Shahpura
7	Bheema Flank LIS	21,572	Yadgir	Shahpura
8	Rampur LIS	13,923	Raichur	Lingasugur & Devadurga
9	Indi LIS	20,690	Vijayapura	Sindhagi & Indi
		Total (B)	1,51,662	
		Total (A+B)	5,30,475	

Due to increase in dam height, 17 villages of Bagalkot and 3 villages of Vijayapura districts and 10 Wards of Bagalkot town will be submerged.

The total land required for the project is 58,375 ha. Out of which, 31,439 ha under submergence and 26,936 ha for construction of canal and project works. The project also requires 514.08 ha of forestland under submergence. However, the area of forests has been reduced to 214 ha after re-survey. Necessary forest clearance will be obtained as per the provisions of the Forest (Conservation) Act, 1980.There is no ecologically sensitive areas, wildlife sanctuaries and national parks present in the command area. To utilize the water allocated for the state under KWDT Award-II.

The command area of UKP is a part of undeveloped Hyderabad Karnataka region. Govt. of India has accorded special status to these areas under article 371 (J) of the constitution. Hence, providing irrigation is utmost important to these regions. KBJNL has initiated water conservation measures by adopting Govt. of India program on 'National Water Mission (NWM)' as a part of National Action Plan for Climate Change. The main objective of NWM is conservation of water and minimizing wastage and ensuring its more equitable distribution both across and within states through 'Integrated Water Resource Development and Management (IWRM).

To eradicate regional imbalances in the command area and to fulfill the persistent demands of the farmers and public representatives. Increased demands of adjoining farmers of the command areas in the event of savings of water in the allocation. Technological advancement in lift irrigation schemes helps in providing irrigating facility to higher lands to eradicate regional imbalances. Micro-irrigation technology helps in conservation of water and hence equitable distribution/benefit sharing. Adaptation of farmers to new irrigation technologies thrive KBJNL for providing irrigation for drought prone areas.

The scoping/ ToRs clearance was granted on 22.08.2014 for a period of 3 years. The Environmental Public Hearing was conducted in 7 districts namely at Almatti, B. Bagewadi Tq, Vijayapura District on 14.07.2017, at Raichur, on 21.07.2017, Agasankoppa village, Badami Tq, Bagalkot district on 27.07.2017, at Khanpur camp, Shahapur Tq, Yadgir district on 31.07.2017, Ijjeri village, Jewargi Tq, Kalburgi districton 01.08.2017, Shantgeri village, Ron Tq, Gadag district on 05.08.2017 and at Yelburga, Koppal district on 07.08.2017. PP informed that all the issues raised during the Public Consultation have been incorporated in the EIA/ EMP report. The socio-economic impact assessment was carried out separately and report was also submitted. Thereafter, the final EIA/ EMP reports were submitted to the Ministry for Environmental Clearance.

The various environmental aspects covering catchment area, submergence area and project influence area, i.e., area within 10 km radius from main project components have been considered. The baseline data has been collected covering Physico-chemical aspects, biological aspects and socio-economic aspects. Three season data have been collected for air, noise water, soil and ecological aspects. Impacts during construction and operation phases have been assessed and mitigation measures suggested minimizing the anticipated impacts.

The Environmental Management Plan proposed for the project and their details are given below:

Sl. No.	Item	Cost in crores
1.	CA and Bio-diversity conservation	24.19

Sl. No.	Item	Cost in crores
2.	Fisheries Management	11.42
3.	Environmental Management in labour camps	48.15
4.	Public health delivery system	12.84
5.	Restoration and Landscaping of construction sites	7.54
6.	Greenbelt development	3.75
7.	Energy Conservation measures	0.50
8.	Catchment Area Treatment Plan	87.47
9.	Env. Monitoring during construction phase	4.55
10.	Purchase of noise meter	0.015
11.	Purchase of meteorological instruments	0.1
12.	Resettlement and Rehabilitation Plan	841.00
13.	Local Area Development Plan	255.38
14.	Monitoring and Evaluation Aspects	1.00
15.	Disaster Management Plan	12.30
	Total	**1310.205**

There is a dedicated R & R Commissioner and District Forest Officer for the project to address the matters related to social and environmental interest. The project is being implementing in the drought prone areas of Hyderabad-Karnataka region.

After deliberations and considering all the facts of the project as presented by the PP, the EAC opined that the PP is constructing a project from his own funds. The project has not been appraised by the Central Water Commission (CWC) for hydrology and interstate aspects, if any. Vetting by CWC for these two aspects is essential. Therefore, it was decided that the PP be asked to obtain and produce the clearance from CWC for hydrology and interstate aspects. In view of this, the Committee **deferred the proposal** and advised the PP to obtain the same. The proposal will be reconsidered by the EAC thereafter.

As, there was no Agenda Item left for discussion, the meeting ended with thanks to the Chair.

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LIST OF MEMBERS

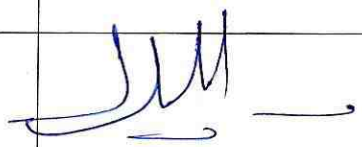
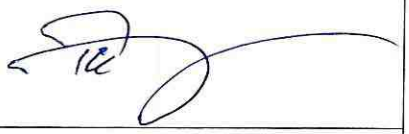
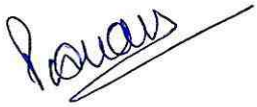
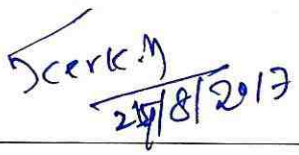
7th MEETING OF RE-CONSTITUTED EXPERT APPRAISAL COMMITTEE (EAC) FOR RIVER VALLEY & HYDROELECTRIC PROJECTS

DATE : **24th August 2017**

TIME : **10:00 AM to 5:30 PM**

VENUE : **TEESTA HALL, INDIRA PARYAVARAN BHAWAN, NEW DELHI**

Sl.No.	Name of Member	Signature
1.	Prof. Sharad Kumar Jain, Chairman	
2.	Shri. T. P. Singh Member	
3.	Shri. Sharvan Kumar, Member,	
4.	Shri N. N. Rai, Member	
5.	Dr. J.A.Johnson, Member	
6.	Dr. B. K. Das/ Dr. AK Sahoo Member	24.08.17
7.	Dr. Vijay Kumar, Member	24.8.17

8.	Prof. Govind Chakrapani, Member	
9.	Dr. Chetan Pandit, Member	
10.	Dr. Dinkar Madhavrao More, Member	
11.	Dr. R. Vasudeva, Member	
12.	Prof. S.R. Yadav, Member	
13.	Dr. Jai Prakash Shukla, Member	
14.	Dr. Poonam Kumria Member	
15.	Dr. Kerketta, Member Secretary Director (IA-1)	

LIST OF MEMBERS

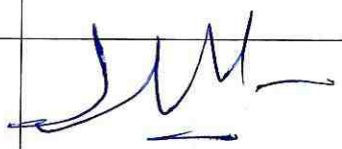
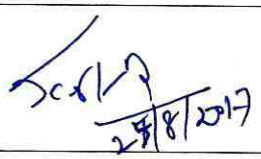
7th MEETING OF RE-CONSTITUTED EXPERT APPRAISAL COMMITTEE (EAC) FOR RIVER VALLEY & HYDROELECTRIC PROJECTS

DATE : **25th August 2017**

TIME : **10:00 AM to 5:30 PM**

VENUE : **INDUS HALL, INDIRA PARYAVARAN BHAWAN, NEW DELHI**

Sl.No.	Name of Member	Signature
1.	Prof. Sharad Kumar Jain, Chairman	
2.	Shri. T. P. Singh Member	
3.	Shri. Sharvan Kumar, Member,	
4.	Shri N. N. Rai, Member	
5.	Dr. J.A.Johnson, Member	25/8/17
6.	Dr. B. K. Das/ Dr. AK Sahoo Member	25/8/17
7.	Dr. Vijay Kumar, Member	

8.	Prof. Govind Chakrapani, Member	
9.	Dr. Chetan Pandit, Member	
10.	Dr. Dinkar Madhavrao More, Member	
11.	Dr. R. Vasudeva, Member	
12.	Prof. S.R. Yadav, Member	
13.	Dr. Jai Prakash Shukla, Member	
14.	Dr. Poonam Kumria Member	
15.	Dr. Kerketta, Member Secretary Director (IA-1)	

Subject: **Re: Resending the 7th Draft MoM for approval.**
To: Dr S Kerketta <s.kerketta66@gov.in>
Cc: S Kerketta <suna1466@rediffmail.com>, Dinakar Madhavrao More <dnkrmore@yahoo.co.in>

Date: 08/28/17 09:35 PM
From: Sharad Jain <s_k_jain@yahoo.com>
Reply-To: Sharad Jain <s_k_jain@yahoo.com>

7th_EAC_Meeting_24-25.08.2017_Chairman.docx (252kB) 7th_EAC_Meeting_24-25.08.2017_Chairman.pdf (705kB)

Dear Dr Kerketta,
I am sending the approved minutes of the 7th meeting of EAC.
It is assumed that all the facts mentioned in the minutes have been carefully checked by the Secretariat.

Regards,

Sharad Jain
NIH Roorkee

From: Dr S Kerketta <s.kerketta66@gov.in>
To: Sharad Kumar Jain <skj.nihr@gov.in>; Dr Sharad K Jain <s_k_jain@yahoo.com>; Prof Sharad Kumar Jain <skj@nih.ernet.in>
Cc: S Kerketta <suna1466@rediffmail.com>
Sent: Monday, 28 August 2017 7:08 PM
Subject: Resending the 7th Draft MoM for approval.

Sir/s,

I have enclosed the draft minutes of 7th EAC meeting for River Valley Projects. Kindly approve it.

--
regards,

Dr. S. Kerketta
Director- IA (Thermal, River Valley & HEP)
MoEF&CC, New Delhi
Phone: 011-24695314 (O), 26113096 (R)

Subject: **Re: Approval of draft minutes of 7th EAC meeting of RV projects. - reg.**
To: Dr S Kerketta <s.kerketta66@gov.in>
Date: 08/27/17 12:17 PM
From: Dinkar More <dnkrmore@yahoo.co.in>
Reply-To: Dinkar More <dnkrmore@yahoo.co.in>

Dear Dr.

Minutes of points 8-13 are approved in general.

Yours

dr. d. m. more

On Saturday, 26 August 2017 1:31 PM, Dr S Kerketta <s.kerketta66@gov.in> wrote:

Sir/s,

Please find the modified draft minutes of the 7th EAC meeting of River Valley projects. It is requested to kindly approve the same. The minutes have been seen by all the members present yesterday and modified accordingly.

Dr. S.K. Jain sir will approve the Agenda Nos. 1 to 7 and Agenda No. 14 (b) and remaining will be approved by Dr. D. M. More sir.

regards,

Dr. S. Kerketta
Director- IA (Thermal, River Valley & HEP)
MoEF&CC, New Delhi
Phone: 011-24695314 (O), 26113096 (R)