ALTERNATIVE PROPOSAL
OF
A TRUE RUN OF THE RIVER BASE LOAD DAM FOR LOWER SUBANSIRI HYDROELECTRIC PROJECT (LSHEP) USING THE EXISTING INTAKE AND POWERHOUSE

As Recommended By:

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Executive Summary

The present report is being filed by the Applicant pursuant to the Orders dated 13.07.2017 as well as 17.07.2017 of this Hon'ble Tribunal in Aabhijeet Sharma versus union of India (O.A. No 346/OA No. 346/2013/PB/9/EZ with MA 1088 / 2013 EZ & MA 06/2014 / EZ; MA 85/2015/ EZ& MA 828/2016/EZ. This is in the form of an Alternative Proposal as a true run-of -river baseload hydro electric project using the existing intake structure of the powerhouse and all components as constructed as a substitute for the (LSHEP) which in its original form, is a four hour peaking hydro electric project on the Subhasiri River in Assam/Arunachal Pradesh.

Before going into the details of the Alternative Proposal of the Applicant, it is important to highlight the brief history of the various events that prompted the Applicant to submit this Alternative Proposal subject to the foundation competency being proved beyond doubt of the dam itself. TheApplicant first approached the Hon'ble Supreme Court and subsequently this Hon'ble Tribunal (in the matter titled Aabhijeet Sharma vs Union of India & Ors, O.A. No. 346/2013/EZ) wherein the Applicant has prayed for scrapping of the 116m high, 2000 MW LSHEP proposed on the Subhansiri river at Gerukamukh in the states of Assam/Arunachal Pradesh as being environmentally and ecologically destructive, unsustainable and structurally flawed and seismically hazardous. During the course of the hearing of the matter in this Hon'ble Tribunal, there were several pleadings and arguments put forth by the Applicant, all of which pointed to the extremely weak and unfounded bonafides of the LSHEP. This averment of the Applicant was further strengthened by as many as nine committees that were constituted by the Central as well as the State Governments to look into numerous aspects of the dam and their impacts and which were unequivocal in bringing to the fore the severe deficiencies with this dam and the project as a whole.

The Applicant, aware of the power generation needs of the region as well as the nation at large, consulted a Senior Engineer from IIT Kharagpur and developed an Alternative Proposal whichis likely to settle all the downstream environmental issues as well as reduces the risk of adverse seismic and structural issues. This is however, subject to the foundation competency being proved beyond doubt of the dam itself.

The salient features of the alternative proposal, which is largely a replica of the present 116m peaking dam, utilizing the construction in the present format including the length of the dam, length of the non – spillway section, length and area of the spillway, width of the dam, its intake arrangements, head race tunnels, the power house which remains the same, except that the spillway section will be elevated from El. 150 Crest level to El. 175 Crest level to enable the river to flow naturally over the spillway at all times. As a result of this change, the height of the dam as well as the water level of the reservoir will be substantially reduced by 35 m in the spillway section and 17 m in the non spill way section.

The minimum level of the spillway is being fixed at a level which is 5m higher than the top of the intake structure. Other options are available subject to the foundation competency, seismic issues among others.

This proposalis divided into two parts, Part –I deals with the technical aspects of the proposal and Part-II deals with the factors for which the peaking dam should be scrapped. The proposal envisages adequate power generation from afixed hydraulic head of 80m plus (approx.) as sustainable power.

To the best of the Applicant's knowledge, this Alternative Proposal would withstand the test of the times and serve the dual purpose of power generation as well as environmental sustainability, which would be beneficial for all.

PART –I

I. Introduction

The present report is being filed by the Applicant pursuant to the Orders dated 13.7.2017 as well as 17.7.2017 of this Hon'ble Tribunal in Aabhijeet Sharma versus union of India (O.A. No 346/OA No. 346/2013/PB/9/EZ with MA 1088 / 2013 EZ & MA 06/2014 / EZ; MA 85/2015 / EZ & MA 828 / 2016 / EZ. This is in the form of an Alternative Proposal as a true run-of –river baseload hydro-electric project using the existing intake structure of the powerhouse and all components as constructed as a substitute for the (LSHEP) which in its original form, is a four hour peaking hydro electric project on the Subansiri River in Assam/Arunachal Pradesh.

Before going into the details of the Alternative Proposal of the Applicant, it is important to highlight the brief history of the various events that prompted the Applicant to submit this Alternative Proposal subject to the foundation competency being proved beyond doubt of the dam itself. The Applicant first approached the Hon'ble Supreme Court and subsequently this Hon'ble Tribunal (in the matter titled Aabhijeet Sharma vs Union of India & Ors, O.A. No. 346/2013/EZ) wherein the Applicant has prayed for scrapping of the 116m high, 2000 MW LSHEP proposed on the Subansiri river at Gerukamukh in the states of Assam/Arunachal Pradesh as being environmentally and ecologically destructive, unsustainable and structurally flawed and seismically hazardous. During the course of the hearing of the matter in this Hon'ble Tribunal, there were several pleadings and arguments put forth by the Applicant, all of which pointed to the extremely weak and unfounded bonafides of the LSHEP. This averment of the Applicant was further strengthened by as many as nine committees that were constituted by the Central as well as the State Governments to look into numerous aspects of the dam and their impacts and which were unequivocal in bringing to the fore the severe deficiencies with this dam and the project as a whole.

The Applicant, aware of the power generation needs of the region as well as the nation at large, consulted a Senior Engineer from IIT Kharagpur and developed an Alternative Proposal which is likely to settle all the downstream environmental issues as well as reduce the risk of adverse seismic and structural issues. This is however, subject to the foundation competency being proved beyond doubt of the dam itself.

As stated earlier the Alternative Dam Proposal to the peaking Lower Subansiri Hydro Electric Project (LSHEP)is envisaged as a true run of the river baseload 24x7 generating hydro-electric project that will utilize the present level of construction of the peaking hydro electric project as well as the intake structure and the power house as constructed.

For that the LSHEP will have to be converted to a naturally flowing dam where the river will flow naturally over the spillway section of the damat all times.There may not be anyneed of gatesin the spillway. The height of the Alternative Dam is being be fixed in such a way so that water from the reservoir will flow freely through the present intake structure to power house through the Head Race tunnels already constructed without any difficulty.

In short, the alternative proposal, is largely a replica of the present 116m peaking dam, utilizing the construction in the present form including the length of the dam, length of the non – spillway section, length and area of the spillway, width of the dam, its intake arrangements, head race tunnel, the power house which remains the same, except that the spillway section will be elevated from El. 150 Crest level to El. 175 Crest level to enable the river to flow naturally over the spillway at all times. As a result of this change, the height of the dam as well as the water level of the reservoir will be substantially reduced.

The minimum level of the spillway is being fixed at a level which is 5m higher than the top of the intake structure. Other options are available subject to the foundation competency, seismic issues among others.

It is a considered view of the technical consultant that there would be no difficulty to convert the LSHEP from a peaking HEP to a true run of the river (RoR) baseload HEP because of the following important reasons among others:

(a) The height of the dam constructed as of today is only 44m now (El 138m) of the 116m high dam.This is also as per the response to a request by the Applicant dated 30.03.2013. A copy of the information under RTI is appended as **Annexure – A.**

(b) The Sluice gates of the spillway section at crest El 150 metres, originally planned, is yet to be constructed.

The spillway level only needs to be raised to a suitable level, say crest EL 175 meters,which will ensure the necessary level of water in the reservoir so that water from the reservoir will flow smoothly through the present 'Intake Structure', Head race tunnels, to the Power House to generate adequate electric power.

(c) Energy Dissipation Arrangement (EDA) of the flowing spillway need to be constructed as needed.

(d) Every component of the dam which has been constructed will remain the same and may be utilized as such.

- Intake structure, Head race tunnels, Power House Tail race tunnels
- The spillway section - length, height i.e. size will remain the same (only the level of the spillway section could be raised in the dam as needed-say crest EL 175 meters as stated earlier)
- Height of the dam only should be reduced by say 35 meters. There need not be any spillway gates, - the river will always flow naturally generating sustainable power.

II. Basic features of the Alternative Dam Proposal

a. The Intake Level

The Intake level of the present construction is 160m (Invert level).
The number and size of gate opening is 8Nos., 7.3 metres x 9.5 metres . That the top level of the intake: 160m – 9.5m = 169.5m (say 170m). This could remain as such.

b. Crest of the spillway: Alternative proposed

The spillway crest elevation of the Alternative Dam Proposal could befixed asEL175m instead of the current EL 150 metres. Accordingly, the height of the Dam could be fixed at El 195m instead of the current EL 210 metres. The height of the dam in the Spillway Section therefore will effectively be EL 175 metres.
The fixation of the height of the spillway crest of the dam at EL175metreswill ensure a clear water head of 5mfrom the top of the intake gatcat an of EL 170 metresall times ensuring adequate head for free flow of water through the intake openings to the power house for generation of power.
The effective reduction of height of the spillway section of the dam is 35 metresin the spillway section and 17 metres of the non-spillway section.
The water level of the reservoir will be lowered by about 26 to 27metres for average discharge of 9152 cumecas noted by the TEC (Thatte Committee Report at page 80 of M.A. No 5 of 2014; para 93). It will greatly reduce the volume of water stored in the reservoir and thereby making the dam much safer.

c. Power Generation – It will be sustainable power

The LSHEP has a design hydraulic head of 86metres, as stated in the Salient features of the LSHEP and as submitted by NHPC Ltd. in their reply affidavit to the O.A. No. 346/2013 (Page 196).

The Alternative Dam Proposal as being put forward could beEL 80metresplus of hydraulic head which will be available for power generation. The advantage of the Alternative Dam Proposal is that the hydraulic head will be constant year round. (The Petitioner is not aware of the exact level of the generator sets, but depending on the exact level of the gensets, this hydraulic head can be anything between EL 80metrestoEL 86metres).

The EL 80metres plus hydraulic head will generate adequate sustainable electricity year round. But whatever is generated will be 'sustainable' power which will be in tune with ecology and the environment. The power generated will augment the country's baseload power requirement which is likely to grow at 8% per year in the next decade.

The power requirement of the country in the peaking period demand is now surplus as per Central Electricity Authority (CEA) report as reported widely in the media. For the year 2016 –

17 this surplus is 3.1%. The baseload power requirement of the country and generation is more or less at par now, as per CEA. But the baseload power requirement of the country is likely to grow by 8% orso in the coming decade because of various additional demands. See **ANNEXURE B**, a news excerpt stating the same which can be further verified by official CEA records.

The basic issue to be noted is that whatever power will be generated will be sustainable power. It is submitted that NHPC Ltd. has fixed a generation level of 2000MW arbitrarily at the cost of ecology, environment and at the total expense of the riparian people.

d. The Spillway opening: A free-flowing river

The proposed Alternative Dam is based on the premise of a true run of the river where the river flows naturally – unfettered and unhindered (ensuring Aviral Dhara).There will be no longitudinal dis-connectivity of the river anywhere.

As a free flowing true RoR HEP, the Alternative Dam Proposal will not really need any spillway gates. The LSHEP as planned now as a peaking HEP which has planned for 9 No.s of spillway gates at El 150m of 11.5m x 14.7m (page 161 of NHPC reply)

The Length of the Spillway section :9x11.5m = 103.5m
The spillway area is therefore 1521sqm of opening which can pass the probable max flood of 37,500 cumec (Sl. 123 of TEC report Page No. 87 of the M.A. 5 of 2014). The area provided in the proposed alternative is 103m x 16.5m (say) = 1700 sqm. There is a freeboard of 1.5m above it upto the bottom of the bridge.

The river will flow over crest level of the spillway year round at El 175m as per the Alternative Dam Proposal.

In short size of the Spillway section will remain unaltered. Length of the Dam. Abutment will remain the same as constructed now.

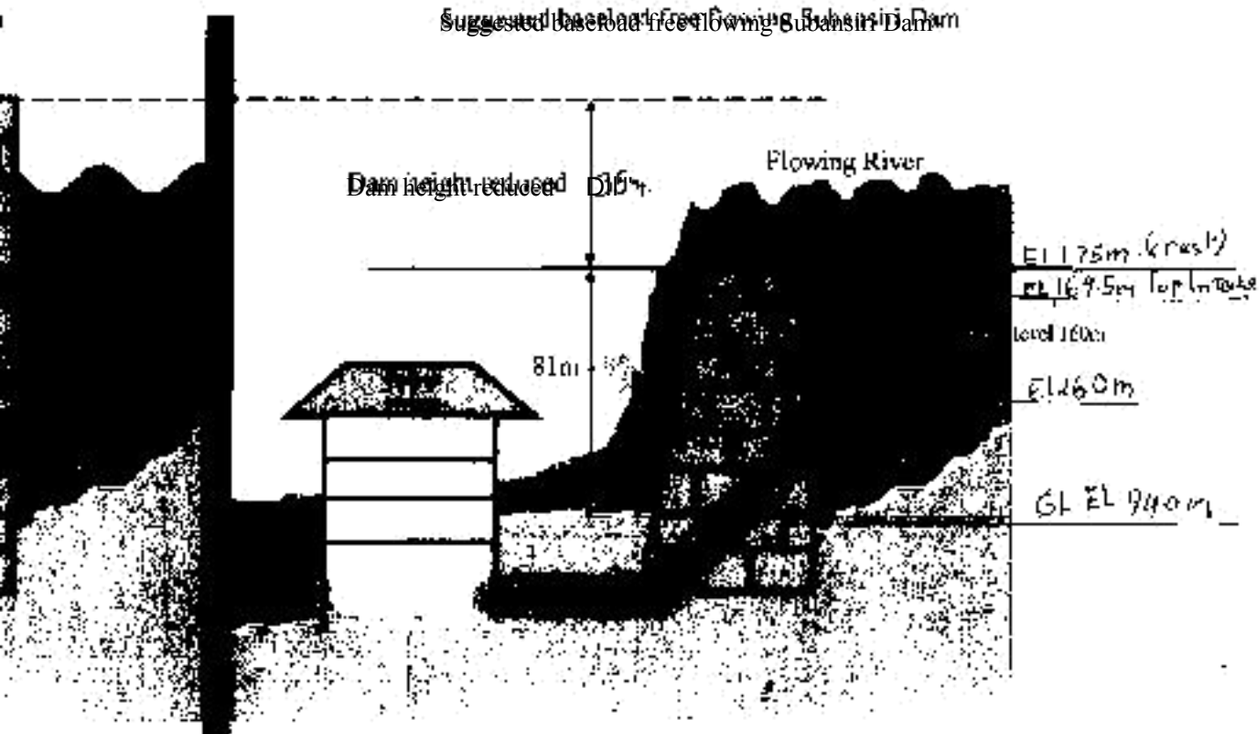
e) Mandatory Minimum Draw Down Level (MDDL) release: 60 cumecs

A 60 cumecs flow should always be released automatically at an elevation of El 160m. i.e. at the bottom of the intake structure to cater to any rare drawdown below the MDDL as minimum flow for the 500 m stretch which includes width of the dam upto the release point from the power house which would otherwise remain dry on such rare occasions.

mparision of Peaking vs Baseload HEP

ubansiri Lower Hydro Electric Project

Suggested baseload free flowing Subansiri Dam



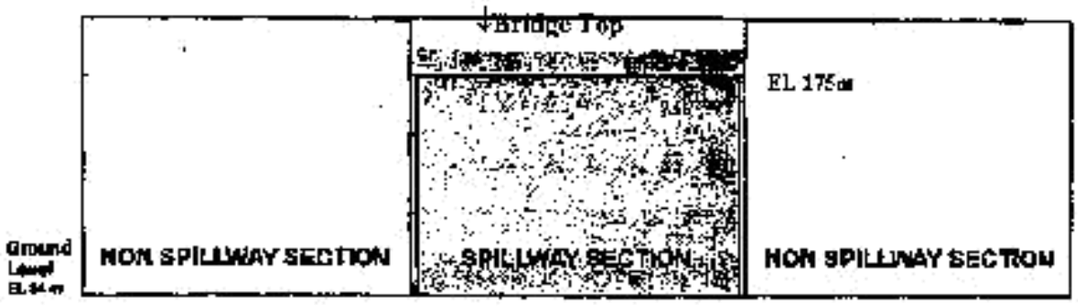
1. Height of the dam is reduced to 81m
2. No part of the river will be dry as the river will flow naturally.
3. Will generate adequate sustainable power from 80m hydraulic head.
4. Will have no adverse ecological impact in the downstream

d

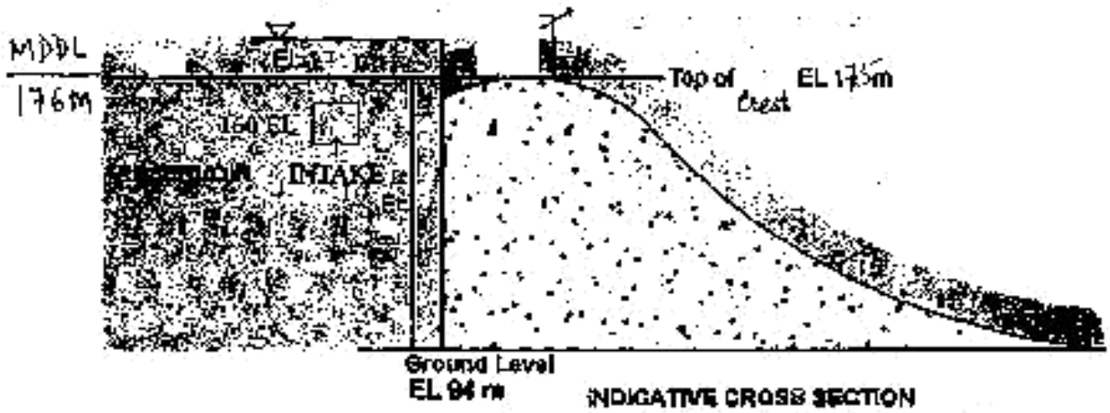
nectivity of the

III. Alternative Dam Proposalfor LSHEP as a Base Load HEP

Utilizing the present intake structure and power house as constructed



FRONT VIEW OF THE PROPOSED DAM CUM WEIR



INDICATIVE CROSS SECTION

(Invert level of the intake structure : 160 m as per salient features of the dam)

Alternative by PK Bhuyan, Sr Engr
&
Technical Consultant to Petitioner
Aabhijeet Sarma

Salient features of the proposed alternative

1. Height of the dam : EL 193m

Over flow section, crest elevation EL 175m

Effective height of the dam : 81m

Non-overflow section : EL 193m

Height of dam 99m

2. Height of the dam will be reduced by

25m in the spillway section;

17m in the non-spillway section

3. Intake Level

Invert EL 160m

Top of intake structure :EL 160m + 9.5 m of gate = EL 169.5m

4. Top of crest level of the spillway = EL 175m

5. Area of the spillway section has been kept as planned by NHPC Ltd., - it is merely raised from elevation -- EL 150m to EL 175m

Length of spillway section 103m same as provided by NHPC Ltd.

Height of the spillway section as per gate size : 24.7m

The height provided in the Alternative Proposal : 16.5m

(1.5m freeboard upto bridge is planned)

6. Hydraulic Head EL 80m plus

7. Adequate sediment sluicing arrangement is to be provided, as designed.

[There are only two critical issues in planning the Alternative Dam Project – they are (a) Exact top level of the intake structure (b) the height of the head of water over it]

8. Mandatory Minimum Draw Down Level (MDDL) release. 60 cumecs

A 60 cumecs flow should always be released automatically at an elevation of EL 160m. i.e. at the bottom of the intake structure to cater to any rare drawdown below the MDDL as minimum flow for the 500 m stretch which includes width of the dam upto the release point from the power house which would otherwise remain dry on such rare occasions.

A Comparative Model Study

IV. The benefits of the changeover to the Alternative Dam Proposal

The changeover to the Alternative Dam Proposal (ADP) will ensure the following-

1) The river will flow naturally at all time. No water will be held up even for a second except on rare occasions where the drawal results in below MDDL in which case a provision of 60 cumec release from the bottom level of the intake channel has been proposed. The river will flow,
   (a) over the dam
   (b) through the turbine(s) generating power
   (c) through scour gates
   (d) 60 cumec as MDDL requirement automatically
   in any of the combinations as the case may be.

   The LSHEP will then become a true run of the river (ROR) project.

2) Most downstream ecological problems downstream of the dam will be removed. Dolphins and other biota will swim free and the river will sustain them for ages to come.

3) The question of sudden catastrophic flooding due to opening of the sluice gates will be eliminated. Flooding will be in natural sequence of gradual rise of water to which people are used to.

4) Foundation competency, seismic fear etc. will be greatly reduced because of the lowered level of the dam and the reservoir level

5) Livelihood options of the riparian people and their intimate relationship with a flowing river will not be severed.

Note :

1 Various levels, sizes of gates and other technicalities have been taken from salient features as available from NHPC's reply affidavit and from TEC report of Thatte & Reddy. There may be some minor variations to it based on exact data, but will not change the concept of the Alternative Dam Proposal.

2. The Petitioner is fully confident that the proposed Alternative Dam Proposal (ADP)as finalized, is feasible and easily implementable. However it is most humbly submitted that the Hon'ble Court may kindly seek an independent expert's opinion as well as to whether the Proposed Alternative Dam Proposal is prima-facie acceptable as per the above facts.

3. But the Alternative Dam Proposal may be termed as a corollary to the scrapping of the peaking HEP, because, only after the Hon'ble Court has taken any decision to scrap the LSHEP as Peaking HEP for many grave reasons and as prayed for by the Petitioner, - only then Alternative Dam Proposal will be able to restore the scrapped peaking dam

project to a true run of the river project using the level of construction as already completed.

4. The Alternative Dam Proposal shall have to be scrutinized for foundation competency issue, seismic issues etc. and if found safe on these issues can be implemented immediately.
5. NHPC Ltd. as a professional engineering organization can easily make the necessary modifications etc. as may be needed to the Dam and execute it as per the spirit and guideline of the Alternative Dam Proposal.
6. In case, the peaking LSHEP is retained with a lowered height of the dam, then the environmental flow must flow through the dam 'ungated' i.e. without human control.

PART – II

I. Reasons for the Scrapping of the LSHEP

Before consideration of the Alternative Dam Proposal to the peaking LSHEP, we need to know why this Peaking HEP must be scrapped. LSHEP must be scrapped as peaking HEP for the following broad reasons which may be read along with the written submissions already filed by the Applicant :

1. LSHEP is not a Run of the River Project :

It is a peaking HEP that holds up water for 20 hours. LSHEP is not a run of the river (RoR) project even though it is termed as one because it will hold up the flow of river Suhansiri to a trickle for 20 hours every day in the winter lean months and release this held up water in 4 hours by running all the 8 turbines of the project. The Environmental Clearance(EC) of the project by MoEFCC has stipulated only 6 cumec of water through the dam for the downstream sustenance!

Because, the flow of the river will be held up for 20 hours and there will be a huge diurnal variation in 24 hours – 6 cumec for 20 hours and 2560 cumec for 4 hours, the downstream ecology and environment will certainly perish. The life of the tribal communities living downstream of the dam upto the confluence with Brahmaputra will be drastically effected, - economically, socially and culturally.

Even though some assurances are being given now, that one turbine in part load will be kept running, which will discharge 250-260 cumec of water from the powerhouse, this cannot be an environmental solution. Environmental Flow must flow through the dam, ungated i.e. without human control. Even, if we accept this unacceptable proposition, the diurnal variation will be 260+6=266 cumec or so for 20 hours and 2560 cumec for 4 hours is - a huge variation. This huge flow variation downstream of the dam everyday in winter months will destroy the river ecologically and the cripple riparian people.

2. *Survival of the Dolphins*

When water from LSHEP will not be released for 20 hours from the dam and a winter flood is created for 4 hours every day of the winter lean months, survival of dolphins, endangered turtles, many species of fishes will face grave threats. As per experts such diurnal variations are critical for survival of many endangered species, specially the dolphins. The dolphins are India's Water Aquatic Natural Animal and is in the red list of International Union of Conservation of Nature (IUCN). It is in schedule 1 of the Indian Wildlife Protection Act (1972). Even one dolphin needs to be protected through preservation of its habitat. Dolphins are sited 20 km downstream of the dam upto the confluence of Brahmaputra.Please refer to**ANNEXURE C**for a compilation on the habitat of the Dolphins in the Subansiri Basin.

3. *The diurnal variations of LSHEP will endanger the survival of the gangetic dolphins and other biota of river Subansiri downstream of the dam.*

As per N. LeRoy Poff, a leading freshwater biologist – "The extreme daily variation below peaking power hydroelectric dams have no natural analogue in freshwater systems and represent in evolutionary sense, an extremely harsh environment of frequent, unpredictable flow disturbances. Many aquatic population living in these environment. Suffer high mortality from physiological stress from washout during high flow and from stranding during rapid dewatering especially in shallow shoreline habitat, frequency exposure for even brief periods can result in massive mortalities of bottom dwelling organism and subsequent severe reduction in biological productivities" Poff et al 1997)

The diurnal variations of LSHEP will endanger the survival of the gangetic dolphins and other biota of river Subansiri downstream of the dam.

4. *LSHEP has no effective flood moderation component – panic release during monsoon*

Brahmaputra Board planned a multipurpose project in the present LSHEP site at Gerukamukh for flood moderation and for generation of electricity with a proposal to construct a 257m high dam to store 14,000 Mcum of water in its reservoir with a flood storage of 2700 Mcum. (source NHPC reply page 113)

Subansiri Lower Hydro Electric Project (LSHEP), as the name suggests, is an exclusive hydro electric project only. The storage capacity of the reservoir is only 1360 Mcum (as against 14,000 Mcum of Brahmaputra Board proposal). It has flood storage capacity of only 645 Mcum between the Minimum Draw Down Level (MDDL) and Full Reservoir Level (FRL).

As per TEC report of the Thattee & Reddy, in Sl. 123 on pg 87 of the MA No. 5/2014 it is stated that

"If the reservoir is operated purely for flood control, a 100 year return flood of 19,600 cumec can be moderated to 14,000 cumec and a (Probable Max Flood) PMF of 37,500 cumec can be moderate to 26,550 cumec." These moderated releases by themselves are very big floods. That is because the flood storage capacity of the Hydro Electric Project is very small, - only 645 Mcum as against 2700 Mcum which was proposed by Brahmaputra Board.

5. *Panic Release of Sluice Gates*

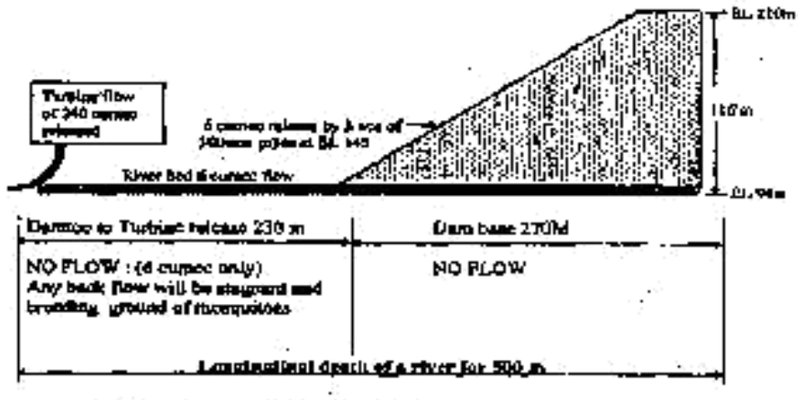
During monsoon period, the sluice gates of LSHEP will be released suddenly creating catastrophic floods downstream of the dam because the peaking dam does not have any flood retention capacity.

In this connection, the very recent catastrophic sudden floods on 12th July, 2017 because of the opening of the sluice gates of peaking 405 MW Ranganadi HEP which has created catstropic disaster upto North Lakhimpur town is a live example. It has happened many times earlier also and will keep on repeating because peaking HEPs have no flood storage component and has to open the sluice gates in the mere inkling of any flood.

There has been great outcry because panic release of the Ranganadi sluice gates. AASU has demanded closer of the project as it is now dated.
(Please refer to **ANNEXURED** for newspaper reports on ill effect of the Ranganadi Hydro Electric Plant by NEEPCO)

6. *Longitudinal Disconnection - killing of a river*

The LSHEP will create a longitudinal disconnection of 500m in the river, because no water will be released through the dam (6 cumec only), and from the toe of the dam upto the release point of the turbine water.
Subansiri, the most biodiverse river of India, will be killed. In this context it is most pertinent to refer to the fact that Ganga and Yamuna have been given the status of a Living River by the Uttarakhand High Court i.e. these rivers are to be treated as living human beings. Can we cut a living human being in two? Please refer to **ANNEXURE E**for the judgment of the Hon'ble High Court of Uttarakhand declaring the Ganga as a living entity.



Note : The bed level is not flat as claimed. It has a moderate gradient.

The above is an indicative drawing based on available data base width.

Longitudinal Death of Subansiri for 500m

7. *Project Oversight Committee – A divided house*

The Project Oversight Committee was a divided house, where the 4 experts of Assam Group could not reconcile design deficiencies with the 4 members of the GoI group even after 11 sittings clearly indicating, the fact that there are real design safety issues which cannot be brushed aside. The issues involved are seismic issues, structural design, foundation competency, energy dissipation assessment etc. of the 116m high LSHEP.

The TEC of Thatcc & Reddy has also raised concerns on many safety issues of the LSHEP dam.

TEC view on seismological aspect in Para 42 of the report

"To sum up, the above review throws up the uncertainity and unpredictability of ways for determining seismic co-efficient for EGs. While 0.38g recommended by IITR might be based on judiciously selected data, though subjective. EG recommended value of 0.5g cannot be sidestepped unless so proven by scientific assessment, in the overall context of various responses from experts"

Regarding the foundation rock competency, TEC in para 52 has stated that

"While euphemistically calling it sandstone the report of CMRI (RR-21,25,26) repeatedly labels the foundation rock as "weak"

"The above assessment of foundation rock leads to some concern about the stability of SLP. Dam as planned and as under construction.

8. *Throttling of Brahmaputra*

The peaking HEPs of Arunachal, LSHEP included, will throttle Brahmaputra at its formative stage near Dibru Saikhowa National Park (DSNP), when these peaking HEPs will hold up its water for 20 hours of a day to trickle of eflow (20% as proclaimed now). When Lohit Lower, Dibang Lower, Siang(Lower), Subansiri(Lower) will hold up water. Brahmaputra will be throttled every day of the winter lean seasons, to say 20% of its natural flow and a tsunami every night when all the turbines will be run.

Brahmaputra, the holy river of the north east and a cradle of civilization will certainly lose its character which will be akin to its death.

In this context, it is relevant to note that the Govt. of India, through the Ministry of Water Resources, Ganga Rejuvenation etc. has submitted an Affidavit before the Hon'ble Supreme Court in IA No. 6 of 2013 in CA No.6735 of 2013. On 30th May 2016, seeking unfettered / unhindered flow of the 3 constituents of Ganga – Alakananda, Bhagirathi & Mandakini.

Like Ganga, Brahmaputra must flow unfettered / unhindered for which the proposed peaking HEPs of Arunachal that hold water for 20 hours must be scrapped including the LSHEP.

9. The destructive Peaking HEPs are not justified now – as the country is surplus in electricity generation during Peakload period.

The Peaking HEPs of Arunachal including Subansiri Lower Hydro Electric Project (LSHEP) basically operate during Peakload period only to augment the country's Peakload requirements. There was a peakload shortage of 13% or so of power requirement of the country about a decade back and there may have been some justification of peaking HEPs inspite of their destructive characterization. But today as per Central Electricity Authority(CEA) for fiscal year for the 2016 – 2017, India will have a peakload surplus of 3.1%.

Meeting the peakload demand of the country has been a very vocal assertion in favour of the Peakload generation HEPs. But this contention does not hold any ground now as has been established by the news report already attached as ANNEXURE B.

10. The Peaking HEPs are not viable when forced to release adequate environment flow.

This is clearly established in case of LSHEP which is the only peaking HEP in Arunachal /Assam now under active implementation. For LSHEP only 6 cumec was sanctioned as eflow at the time of the Environmental Clearance through the dam. Now, the Project Oversight Committee (POC) has recommended that 240 cumec of water is needed for survival of the Dolphins. It means, we may assume, 240 cumec is the Environmental Flow of the river downstream of the dam as per the POC. Even if we accept this contention, which is not based on any scientific study. It will mean that :

Out of the average flow of Subansiri is 450 – 550 cumec in winter lean months. 240 cumec will have to be released directly through the dam 'ungated' as 'eflow' for survival of the dolphins, in which case an average flow of 200 cumec or so every day only will be available for Power Generation in the peak demand period. To generate 2000 mw of power a flow of 440 cumec of natural flow is needed in the river. If only 200 cumec is available then power generation will be reduced proportionately and will come down from 2000 mw to 800 – 1000 mw only.

Even if one turbine is kept running 24x7 as is being talked about now, 240 cumec or so water will be released if one turbine is run in part load (320 cumec in full load), then also the evening peakload generation will have to come down to 800 – 1000 MW only. Peaking HEPs are viable

only when no adequate eFlow is released. Please refer to **ANNEXURE F**detailing the release mechanism of environmental flow.

II. Reality of the ground situation

People are now aware of the destructive nature of the peaking HEPs. People are aware that these HEPs in Arunachal including Subansiri will throttle the Brahmaputra in winter months. There have been writings in local papers about the Central Government's actions through Affidavit to ensure that the 3 constituents of Ganga to flow unfettered / unhindered, so that Ganga flows freely. While welcoming the Central Government's resolve for a flowing Ganga, people want the same treatment for Brahmaputra. For Brahmaputra to flow freely, the peaking HEPs of Arunachal including LSHEP must be replaced by true run or river (RoR) baseload HEPs. Such an action will ensure people's goodwill and cooperation in construction of the HEPs including LSHEP.