GYATRI HYDEL PROJECTS PVT. LTD.

MOHALLA CHARPAT PO, TEHSIL AND DISTT. CHAMBA HP- 176301
Correspondence Address—Gyatri Hydel Projects c/o Naman Engineers and consultants Tapovan HP Vidhansabha Road Dharamshala Distt. Kangra HP
Mob. No. 9418254538,945924259 Email Id– mkapoor.8000@gmail.com

Ref.No.- GHPPL/FCA/536/23 Dated 5-2-2023

To,
The Divisional Forest Officer
Forest Division Chamba
Chamba HP
Reference- Email: - Dated 29-11-2022

Subject – Diversion of 1.0188 ha of forest land in favor of M/S New Gyatri Hydel Project Pvt. Ltd. Mohalla Charpat Tehsil and Distt. Chamba for construction of Banuala Baroond-I HEP (2MW), within the jurisdiction of Chamba Forest Division, Distt. Chamba HP.

Respected Sir,

With humble request under above reference we are submiting here the point wise reply to EDS for your kind consideration as under:-

1. The matter pertains to department of forest Shimla.
2. That all the component structures of the project are on surface. Site is slightly sleep but has hard strata and due to excavation there is no scope of soil erosion and land slide. Wherever the vulnrability of the soil will see there gabbion wall and protection work will be provoided. Moreover concrete based structure of Dumping site will be constructed for proper rest of muck/debries so that no danger to soil erosion and land sliding in future. The soil and moisture conservation plan has also been attached here for your ready refefrence.
3. That Transmission line has been proposed in 11 kv line nearby the Project. The nearby solid tap point/sub station has been marked in KML file as well as in Layout Plan.
4. That undertaking for Complete FRA submission has been enclosed here and will be submitted before stahe-II approval.
5. The muck dumping sites has been proposed on barren land and there is not availability of non forest land for the disposal of muck. There are not any standing trees in the Dumping sites and the report from the concerned officials has been enclosed here for your ready refrence.
6. That the project has very small components and there will be no huge excavation even then the work will be done manually with proper caution to keeping in view the no roll down of debries as well as muck in the nala. The distance of dumping sites from nala has been mentioned in Plan. Crate work and gabbion wall will be provoided where the chances of roll down of debries and muck will be maximum. for dumping the muck in dumping sites they will be properly protected with concrete based structures so that the muck don't roll anywhere and cause any demage. All the generated muck will be dumped in Dumping sites carefuly. The Muck Plan has been enclosed.
7. That in the joint inspection Report enclosed here the Dumping sites of 5 nos. has been taken in Joint Inspection Report vide Sr. Nos. 6-DS-I, S.No.7-DS-II, S.No.12-DS-III, S. No.16-DS-IV, and Sr. No. 17-DS-V.
8. That in the earlier the project was alloted with capacity of 5 MW and then we have obtained the NOC from IPH Department. Now the project has been bifurcated in two stages between same alloted parametres i.e Banuala Baroond-I (2MW) and Banuala Baroond-II (0.80MW). So there is not any change in Project name (**i.e Banuala Baroond)** only capacity has been changed within the alloted

Gyatri Hydel Projects P. Ltd.
Authorised Signatory

elevations. No Location and elevations beyond allotment parametres has been changed. So it should be entertained and the capacity bifurcation permission has been enclosed here for your ready reference pls.

9. That the NOC from Fishery department has been granted and enclosed here for your ready reference.
10. The undertaking to submit the TEC and lA has been uploaded on the portal.

10. That the Prabha which is beneficiary Village and same has been marked in the KML file and same also uploaded on portal.

11. That the matter pertains to your office please.
12. That legible copy of Layout Plan has been uploaded and is being submitted here.
13. That total 28 Nos. of tress are coming in the alignment of components in construction of Banuala Baroond SHEP (2MW) . All these trees are required to fell for construction of Project. But we assure you that during construction time we will adequately reduce and save the felling of trees.
14. That the length of the road has been taken 200 M as per the joint inspection report in the proposal and same has been corrected in the Additional information detail vide checklist no. 23 and its Anextures.
15. That all the documents have been authenticated by concerned DFO and uploaded in PARIVESH portal.
16. That geo reference map for CA land has been corrected and uploaded on Parivesh Portal.
17. That the abstract of trees with detail of Khasra Numbers has been uploaded in the Portal.
18. **(i)** Detailed list of approved/existing proposed projects in the river basin area enclosed here. The landscape Plan showing evacuation/Transmission Plan of each Project has been enclosed here.
    (ii) The theKML file and geo referenced map showing the boundaries of nearest PAs and their ESZs along with distance of HEPs has been uploaded in the portal.
    (iii) The approved Potential/capcity of the Ravi basin is 2559.56 MW out of which 1399.36 MW has been harnessed and different projects of capacities 1160.2 MW are in pipeline. The HEPs, Sal-I Hep 6.5MW,Suil 10MW,Chobia-I HEP 14MW and Dhanchho HEP 18 MW (Total 48.5MW) Projects are yet to be alloted. The list from Govt. of HP has been enclosed here for your reference Please.
    (iv) The detailed E flow mechanism regarding water availability and utilization for running the project with release of 20% discahrge in nala and undertaking for mentaining the same has been enclosed here.
    (v) That it is pertinent to be mentioned here that the proposed project is concerning to the catchment of Ravi basin, for which independent Cumulative Impact Assessment and Carrying Capacity study (CIA & CCS) is carried out as a integral part of the previous project of the state of H.P. with German collaboration and identified the potential of Ravi Basin to generate power as 3237.12 MW. The hydel Projects up to 25 MW does not cover under the provisions of EIA notification, 2006 hence may not involved preparation of EMPs. However it is incorporated as an additional condition that the State Government/User Agency shall ensure adherence to stipulated E- flow, as recommended by the Govt. of Himachal Pradesh, NGT, MoEF & CC, GoI and many other regulatory authority, for the conservation and development of aquatic flora and fauna. Further the detail with regard to potential harnessed/utilized so far and Potential yet to be utilize in Ravi Basin is enclosed here with.
19. The matter pertains to your good office
20. The matter pertains to DFO office Chamba.

So you are requested to kindly accept the same and do needful for which we shall be very grateful to you.

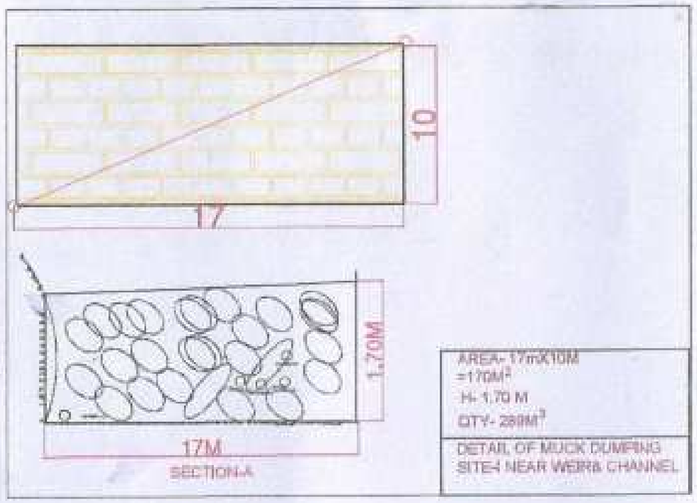
Thanks and Regards

Gyatri Hydel Projects Pvt. Ltd.

Gyatri Hydel Projects Pvt. Ltd.
Authorised Signatory

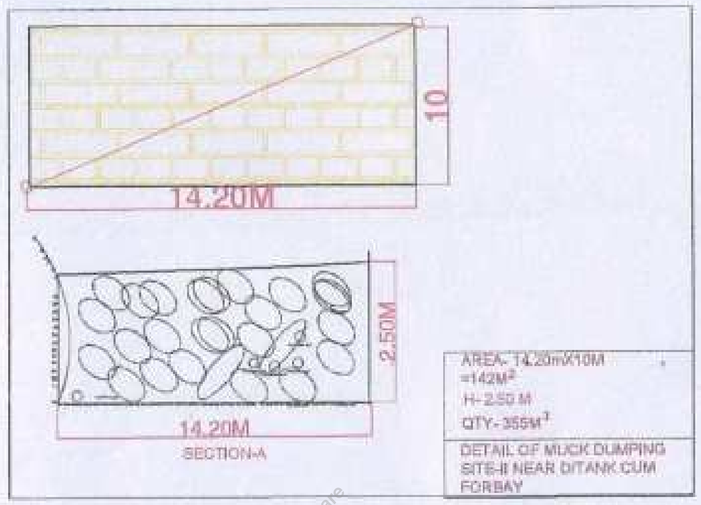
Authorised Signatory

MUCK DUMPING SITE PLAN OF BANUALA BAROOND-I SHEP 2MW



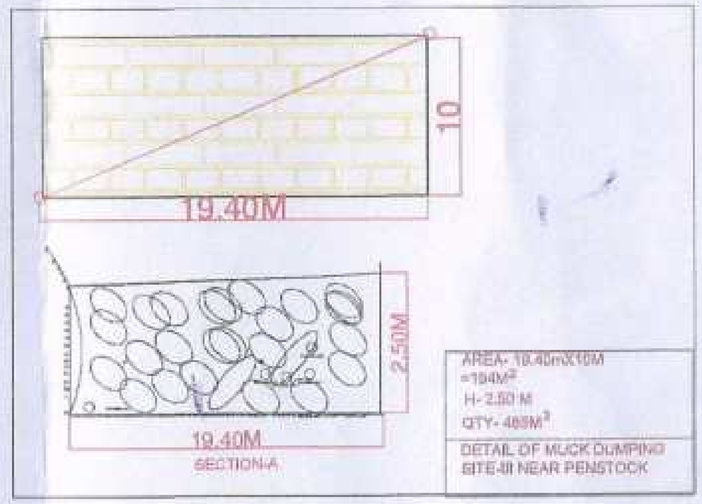
AREA- 17mX10M
=170M²
H- 1.70 M
QTY- 289M³

DETAIL OF MUCK DUMPING SITE-I NEAR WEIR& CHANNEL



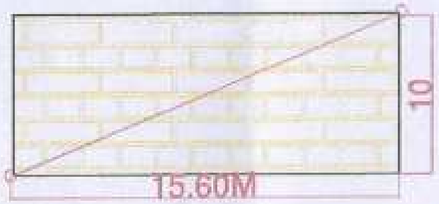
AREA- 14.20mX10M
=142M²
H- 2.50 M
QTY- 355M³

DETAIL OF MUCK DUMPING SITE-II NEAR DITANK CUM FORBAY



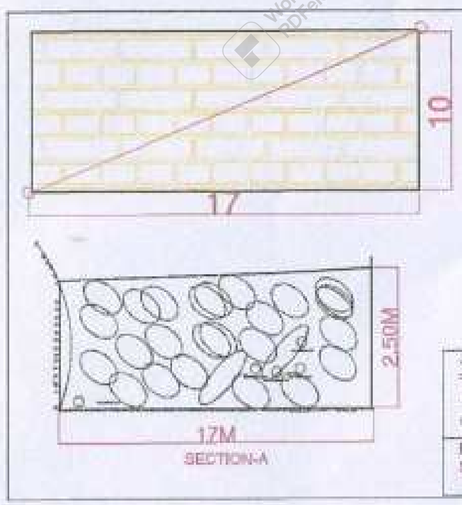
AREA- 19.40mX10M
=194M²
H- 2.50 M
QTY- 485M³

DETAIL OF MUCK DUMPING SITE-III NEAR PENSTOCK



AREA- 15.60mX10M
=156M²
H- 2.50 M
QTY-390M³

DETAIL OF MUCK DUMPING SITE-IV NEAR PENSTOCK



AREA- 17mX10M
=170M²
H- 2.50 M
QTY- 425M³

DETAIL OF MUCK DUMPING SITE-V NEAR PH &ROAD

Jyoti Hydel Project (P) Ltd
Authorised Sign.

Divisional Forest Officer
Chamba Forest Division
CHAMBA-176310

SOIL AND MOISTURE CONSERVATION PLAN

1. Name of Project — Banuala Baroond-I hydel Project (2MW)
2. State — Himachal Pradesh
3. District — Chamba
4. Forest division — Chamba
5. Project cost of diversion of Forest land
   a) Forest land proposed for diversion — 1.088 hac
   b) Cost of NPV — Rs 10,89,576
   c) Cost of CA (2.037 hac) — Rs 6,13,576
   d) Cost of trees — Rs 1,89,153
   e) Total Project cost of diversion — Rs 18,92,025
6. Provision for soil and moisture conservation — 0.5% of (e)
7. Cost of soil and moisture conservation — Rs 94601/-

   Or say Rs 95,000/-

8. Soil and Moisture Conservation Plan

Sr No	Particular of work	Qty/ No	Unit	Rate	Amount
1	Preparation of Gradonial Trenches size100cmx30cmx30cm including adjustment of dug up soil on downhill side i/c dressing to form a patch in CA area DPF Kathwad	300	Rmt	27	8100
2.	Fixing of single vegetative spurs in CA area and in small gullies along water channel	150	Rmt	101.8	15270
3	Fixing of double vegetative spurs in CA area and in small	150	Rmt	135.7	20355

	gullies along water channel				
4.	Construction of percolation ponds 3mtrx3mtrx1mtr in1/2 pick &1/2 jumper work in the catchment/ recharge zone of CA area and in flat area along alignment areas	5	No	3000	15000
5.	Construction of puddle core wall for percolation ponds	15	Cum	364	5460
6	Construction of contour trenches of size 1mtx.5mtx.3mt	150	No	45	6750
7.	Construction of dry-stone check dams/ check walls along small nullahs/gullies falling along water channel i/c carriage up to 300 mtr	34	cum	725	24650
	GRAND TOTAL				95585

Or say 95000/

(Rs. Ninety Five thousand Only)

9. Implementing agency Forest Department

The User agency under takes to bear the cost

Prepared by

Sanjay Sen (Rtd HPFS) MD

Geo Environment Origin Pvt. Ltd

9418079955, 8219636836

Jyatri Hydel Project (P) Ltd

Authorised Signatory

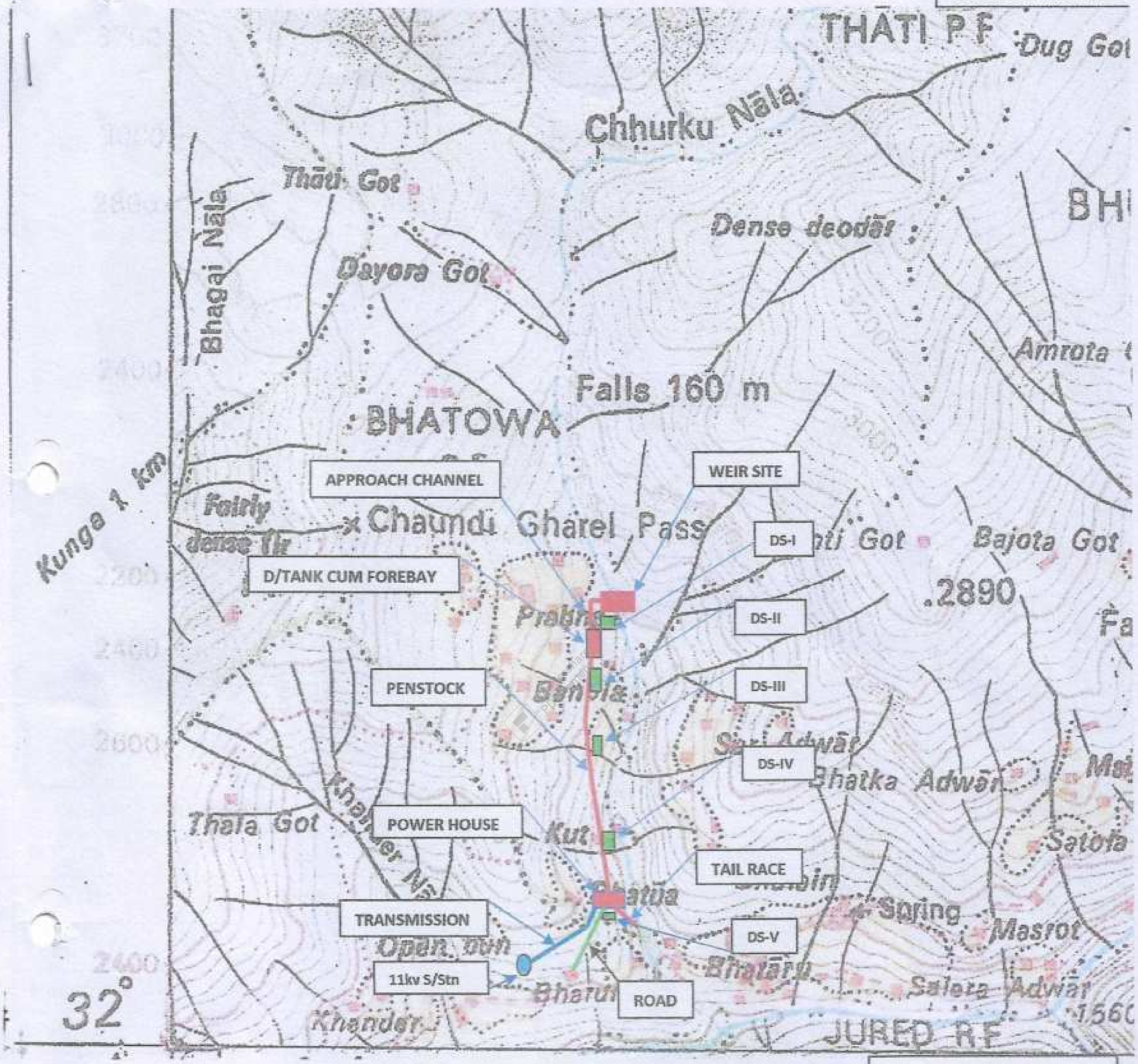
Divisional Forest Officer

Chamba Forest Division

CHAMBA-176310

LAYOUT PLAN BANUALA BAROOND-I SHEP 2 MW

SOI TOPO SHEET 52D/5



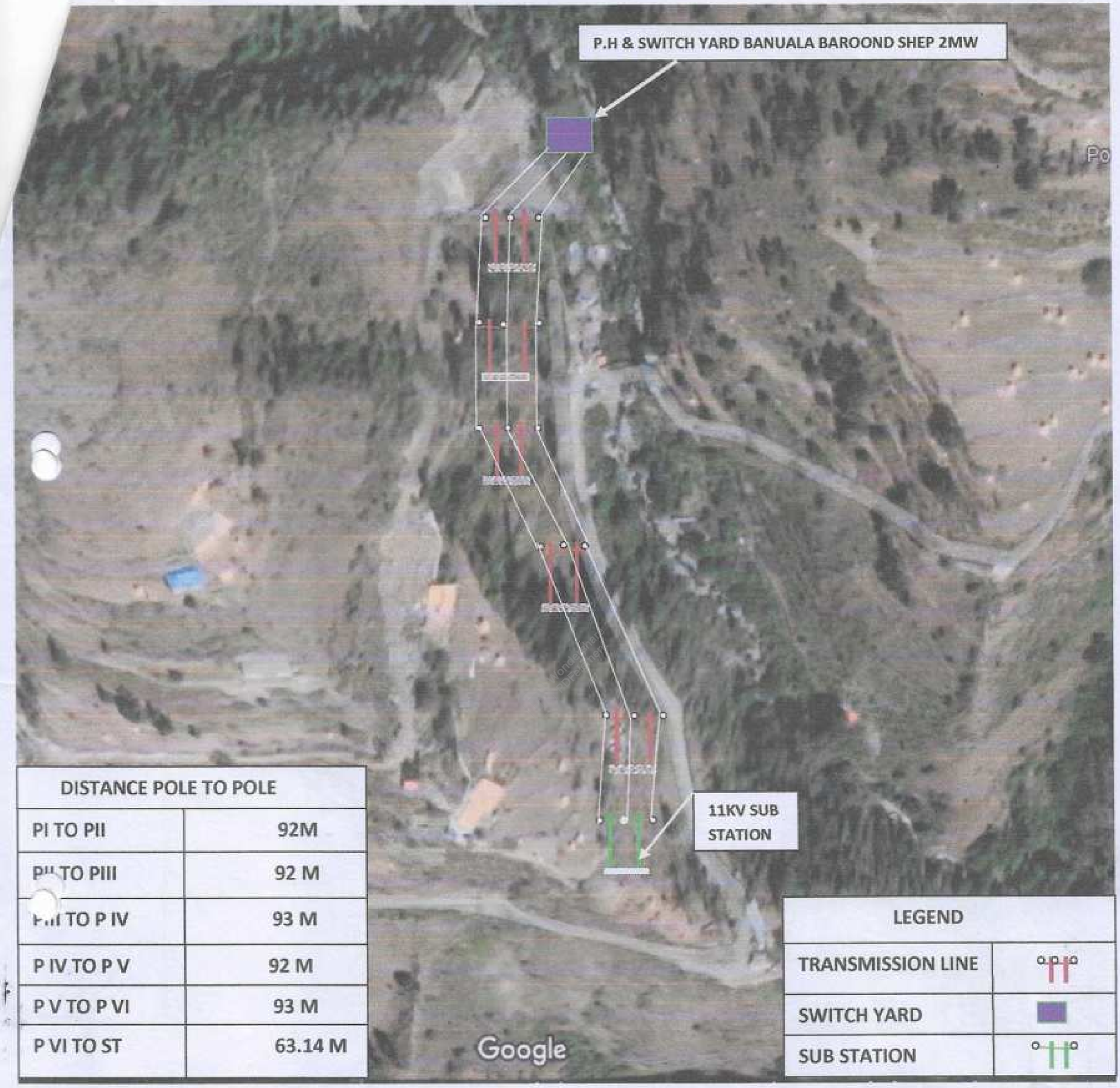
LEGEND	
PROJECT COMPONENTS	
DUMPING SITE	
ROAD	
TRANSMISSION/S. STN	
CHHURKU NALA	

Jaiprakash Hydel Project (P) Ltd.
Authorised Signatory

Divisional Forest Officer
Chamba Forest Division
CHAMBA-176310

5

TRANSMISSION PLAN OF BANUALA BAROOND SHEP-I SHEP 2MW



DISTANCE POLE TO POLE	
PI TO PII	92M
PII TO PIII	92 M
PIII TO P IV	93 M
P IV TO P V	92 M
P V TO P VI	93 M
P VI TO ST	63.14 M

LEGEND	
TRANSMISSION LINE	
SWITCH YARD	
SUB STATION	

Gyalin Hydel Project (P) Ltd
Authorised Signatory

Divisional Forest Officer
Chamba Forest Division
CHAMBA-176310

GYATRI HYDEL PROJECTS PVT. LTD.

MOHALLA CHARPAT PO, TEHSIL AND DISTT. CHAMBA HP- 176301

Correspondence Address—Gyatri Hydel Projects c/o Naman Engineers and consultants Tapovan HP Vidhansabha Road Dharamshala Distt. Kangra HP

Mob. No. 9418254538,945924259 Email Id– mkapoor.8000@gmail.com

Ref.No.- GHPPL/FCA/115/22 Dated ----- 31/12/22

UNDERTAKING FOR SUBMISSION PROCEEDING OF GRAM SABHA AND FRCs

I Ved Vyas Thakur authorised signatory of M/S GYATRI HYDEL PROJECTS PVT. LTD. hereby undertake to obtain and submit the proceedings of Gram Sabha and FRCs regarding settlement of forest right r/o schedule Tribes and forest dwellers as per FRA 2006 from Gram Panchayat Charda and Deputy commissioner Chamba HP before stage-II approval.

Date---- 31/12/22

Place--- Chamba

For Gyatri Hydel Projects Pvt. Ltd.
Gyatri Hydel Projects P. Ltd.
Authorized Signatory
Authorised Signatory

Divisional Forest Officer
Chamba
CHAMBA-176310

P.5

List of Standing trees in the dumping Sites of C/o Banuala Baroond-1 HEP (2.00 MW)

Sr. No.	Name of Speices	Volume	Class	Remarks.
NiL				

Omesh Rod
I/c Baghei Beat

Dyson Hydel Project (P) Ltd.
Authorised Signatory

Premraj
RANGE FOREST OFFICER
TIKRI FOREST RANGE

CS

Divisional Forest Officer
Chamba Forest Division
CHAMBA-176310

MUCK PLAN OF BANUALA BAROOND-I SHEP 2MW

MUCK DUMPING SITE PLAN

PROTECTION WORKS /CRATE WORK

LEGEND

PROJECT COMPONENT	
MUCK DUMPING SITE	
CHUMBHU NALA	
ROAD	

Jyoti Hydel Project (P) Ltd
Authorised Signatory

Divisional Forest Officer
Chamba Forest Division
CHAMBA-176310

(9)

JOINT INSPECTION REPORT

We the undersigned have jointly inspected the area Proposed for Diversion in favour of **M/s Gyatri Hydel Projects Pvt. Ltd.**, Mohalla Charpat P.O, Tehsil and District Chamba, Himachal Pradesh for setting up **2 MW Banuala Baroond-I Small Hydro Power Project** on Churkhu Stream District Chamba, Himachal Pradesh on 07-11-2020.

The project requires a total area of **01-0188** hectare forest land, for different components viz., Intake on Churkhu stream, Desilting cum Forebay Tank , Power Channel, Penstock, Power House, Switchyard, Tail Race Channel, Muck Dumping Sites, approach road to Powerhouse, Transmission Line from Power House to 11kv Line of HPSEBL near village Bhararuin in Tehsil Churah , District Chamba (H.P.)

The details of Forest Land area as under :

SL .NO	MOHAL	KHASRA NO.	COMPONENT / DESCRIPTION	AREA IN FOREST LAND (B-B-B)	AREA IN PRIVAT E LAND (B-B-B)	AREA IN SQ. METER	AREA IN FOREST LAND (Sqm)	AREA IN PRIVATE LAND (Sqm)	CLASSIFICATION OF LAND
1	PRABHA	275 / 1	WEIR SITE	00-01-12	-	65.00	65.00	-	Gair Mumkin Nali
2	PRABHA	346 / 334 / 264 / 1	CONVEYANCE CHANNEL	00-04-04	-	170.00	170.00	-	Charagah Bila Darakhtan
3	PRABHA	346 / 334 /264 / 2	D-TANK CUM FOREBAY	00-08-15	-	354.00	354.00	-	Charagah Bila Darakhtan
4	PRABHA	346 / 334 / 264 / 3	PENSTOCK PIPE	00-15-16	-	639.00	639.00	-	Charagah Bila Darakhtan
5	PRABHA	346 / 334 / 264 / 4	SILT FLUSHING	00-01-10	-	61.00	61.00	-	Charagah Bila Darakhtan
6	PRABHA	349 / 334 /264 / 5	DUMPING SITE - I	00-04-04	-	170.00	170.00	-	Charagah Bila Darakhtan
7	PRABHA	346 / 334 / 264 / 6	DUMPNG SITE - II	00-03-10	-	142.00	142.00	-	Charagah Bila Darakhtan
8	PRABHA	123 / 1	PENSTOCK PIPE	00-00-04	-	8.00	8.00	-	Gair Mumkin Nali
9	PRABHA	306 / 114 / 1	PENSTOCK PIPE	00-18-00	-	728.00	728.00	-	Charagah Bila Darakhtan
10	PRABHA	350 / 344 / 311 / 1	PENSTOCK PIPE	00-00-12	-	24.00	24.00	-	Charagah Bila Darakhtan

11	PRABHA	111 / 1	PENSTOCK PIPE	00-12-14	-	514.00	514.00	-	Charagah Bila Darakhtan
12	PRABHA	111 / 2	DUMPING SITE - III	00-04-16	-	194.00	194.00	-	Charagah Bila Darakhtan
13	PRABHA	286 / 96 / 1	PENSTOCK PIPE	01-12-00	-	1295.00	1295.00	-	Charagah Bila Darakhtan
14	PRABHA	286 / 96 / 2	POWER HOUSE COMPLEX CUM SWITCH YARD	01-02-10	-	910.00	910.00	-	Charagah Bila Darakhtan
15	PRABHA	286 / 96 / 3	ROAD & TRANSMISSION	01-05-18	-	1048.00	1048.00	-	Charagah Bila Darakhtan
16	PRABHA	286 / 96 / 4	DUMPING SITE - IV	00-03-17	-	156.00	156.00	-	Charagah Bila Darakhtan
17	PRABHA	286 / 96 / 5	DUMPING SITE - V	00-04-04	-	170.00	170.00	-	Charagah Bila Darakhtan
18	PRABHA	286 / 96 / 6	TAIL RACE	00-01-00	-	40.00	40.00	-	Charagah Bila Darakhtan
19	PRABHA	284 / 81 / 1	ROAD & TRANSMISSION	01-18-00	-	1538.00	1538.00	-	Charagah Bila Darakhtan
20	PRABHA	284 / 81 / 2	TRANSMISSION	00-02-15	-	111.00	111.00	-	Charagah Bila Darakhtan
21	PRABHA	74 / 1	TRANSMISSION LINE	00-01-12	-	65.00	65.00	-	Charagah Bila Darakhtan
22	PRABHA	64 / 1	TRANSMISSION LINE	00-00-10	-	20.00	20.00	-	Gair Mumkin Rasta
23	PRABHA	77 / 1	TRANSMISSION LINE	00-13-04	-	534.00	534.00	-	Charagah Bila Darakhtan
24	PRABHA	62 / 1	TRANSMISSION LINE	01-10-09	-	1232.00	1232.00	-	Charagah Bila Darakhtan
TOTAL				**12-11-16**	-	**10188**	**10188**	**0**	

TOTAL AREA IN HECTARES **01-0188** HECTARES

It was also observed that the proposed approach road alignment is taking off from the HPPWD Road. The ROW (Right of Way) for the Transmission line has been taken as 7 m and it will be in common with road alignment for 200 m length. Three numbers of Dumping Sites have been proposed in the Project.

The Joint Inspection team has examined all the alternatives with a view to avoid / minimize the use of forest land

and we have come to the conclusion that land of the above Khasra Nos. of forest land is the minimum required land for the construction of Banuala Baroond -I Small Hydro Project and so is absolutely essential.

Sub Divisional Officer (Civil)

Sub Divisional Officer (Civil)
CHURAH

Tissa Division

Distt. Chamba HP

Divisional Forest Officer

Divisional Forest Officer
Forest Division Chamba
CHAMBA 176310

Forest Division Chamba

Distt. Chamba HP

Range Forest Officer

Range Forest Officer
Tikri Forest Range
TIKRI

Tikri Range

Chamba Forest Division

Project Officer

Project Officer
HIMURJA Chamba (H.P.)

HIMURJA Distt. Chamba HP

Gyatri Hydel Projects Pvt. Ltd.

Gyatri Hydel Prject (P) Ltd.

Authorized Signatory

Authorised Signatory

Regd. Post

HIMURJA
(H.P. GOVT. ENERGY DEVELOPMENT AGENCY)
SHIMLA: - 171 009.

HIMURJA/ SHP/Banuala Baroond (298)/2015 13561 Dated 27-11-2018

To

M/s Gaytri Hydel Projects (P) Ltd,
Mohalla Charpat, Distt. Chamba-176301

Subject: - Bifurcating 0f project into two projects within allotted elevations..

Dear Sir,

This is in continuation to consent issued on 10.08.2015 in respect of Banuala Baroond (5.00MW) HEP and request received from you vide letter no-nil dated 06.07.2018 for bifurcation of allotted project Banuala Baroond in two stages within allotted elevations. The State Government has approved bifurcation of project into two projects within allotted elevations of Banuala Baroond as per details given under:

Name of Project	Allotted elevation /cap	Revised elevation & Cap.	Stream
Banuala Baroond Stage-I	2000-1615 (5.00MW)	1990-1765 (2.00MW)	Churkhu
Banuala Baroond Stage-II	2000-1615 (5.00MW)	1700-1615 (0.80MW)	Churkhu

The approval is subject to completion of codal formalities as per Hydro Power Policy 2006 and instruction/ amendments issued their under from time to time and following conditions:-

1. IPP has to deposit Upfront premium, Security charges and processing fee afresh applicable as per prevailing Hydro Power Policy.
2. The above approval is further subject to the condition that the riparian distance of 50 mtrs elevation wise or 250 mtr horizontal distance is to be maintained between two projects to allow visible flow of water in the stream / nalla, failing which the allotment is liable to be cancelled for violation of the same.
3. IPP has to obtain the applicable NOCs as per policy provisions.

It is further stated that the exemption of extension fee for the delay in approval of change in elevations is subject to approval of Government.

Yours Sincerely,

(Er K. L.Thakur)
Director
Himurja Urja Bhawan
Kasumpti, Shimla-171009

Endst.No. - A/A
Copy is forwarded to the following for information and necessary action:-
1. The Special Secretary (NES), to the Govt. of H.P. w.r.t letter no. NES-F (2)2018 dated 30.10.18.
2. Director Energy, Directorate of Energy, Shanti Bhawan, Phase-III, Sector-6, New Shimla-171009.
3. Deputy Commissioner, Chamba, Distt.Chamba, H.P.
4. Sr. Project Officer Himurja Chamba, Distt. Chamba, H.P.

Director
Himurja Urja Bhawan
Kasumpti, Shimla-171009

Gyatri Hydel Projects P. Ltd.
Authorised Signatory

(13)

HIMACHAL PRADESH
IRRIGATION CUM P.H. DEPARTMENT

No.AE-IPH-TSD-NOC/2016- 443-444 Dated- 27/5/2016

To,

The Executive Engineer,
IPH.Division Salooni
Distt.-Chamba
Himachal Pradesh

Sub- No Objection Certificate.

This department has no objection for the construction of Banoula Baroond S.H.P (5 MW) on chhurku Nallah a tributary of Bhararu Nallah & Sub- tributary of chanju Nallah in Tehsil Churah, Distt. Chamba (H.P.) subject to following conditions:-

1. If any damage happens to the existing structure of department then all the expenditure will be beared by the construction company.
2. In future on the basis of public demand if any new water supply scheme or irrigation scheme will be constructed by department then water as required should be released without any obstruction.

Assistant Engineer
HP IPH Sub-DivisionTissa,
Distt. Chamba (H.P.)

Copy to Gayatri Hydel Project Mohalla charpat Distt. Chamba (H.P.) 176310.

Assistant Engineer
HP IPH Sub-DivisionTissa,
Distt. Chamba (H.P.)

(14)

E-mail

No. FSH-F (2)54-39-/2015-ARC-Banuala Baroond-1 - 7955

Directorate of Fisheries,
Himachal Pradesh.

From

The Director-cum-Warden of Fisheries,
Himachal Pradesh, Bilaspur.

To

M/S Gyatri Hydel Projects Pvt. Ltd
Mohalla Charpat, P.O., Tehsil & District Chamba,
H.P. 176301
Email ld-mkapoor.8000@gmail.com
Mob.No. 94182-54538

Dated Bilaspur-174001 the, 02/08/2022

Subject: - **Consent for obtaining the NOC for installation of Banuala Baroond- I (2.00 MW), on Chukhu nala, a tributary of Ravi River in Tehsil Churah, District Chamba (H.P.)**

Sir,

I am directed to invite a reference of letter No. - GHPPL/NOC/621/21, dated-10.08.2021 on the above cited subject.

Keeping in view of the undertaking given by you for the disposal of silt and maintenance of Environmental flow of water downstream to the weir, it is intimated that as per provisions contained in clause –(i) of rule 14 of revised hydro power policy of H.P. notified by the Govt. of HP vide notification No-MPP-F(1)2/2005-VIII, dated 4th March, 2014. NOC of Fisheries Department is not required and no charges/fisheries development fund up to the capacity of 2.00 MW is leviable. Hence, the Department of Fisheries, HP has no objection if the project with above mentioned capacity may get installed within allocated/consented elevation with sanctioned power capacity at its proposed site.

Yours faithfully.

(Satpal Mehta)
Director-cum-Warden of Fisheries,
Himachal Pradesh, Bilaspur.
E-mail : fisheries-hp@nic.in
Tel/Fax: 01978-224068

Endst No. As above- 7956 Dated:- 02/08/2022

Copy forward to Assistant Director of Fisheries, Chamba, H.P in reference to letter no. 615, dated 26.07.2022 for favour of information, please.

2/8

(Satpal Mehta)
Director-cum-Warden of Fisheries,
Himachal Pradesh, Bilaspur.
E-mail : fisheries-hp@nic.in
Tel/Fax: 01978-224068

(15)

DIVERSION OF1.0188HA. OF FOREST LAND FOR CONSTRUCTION OF BANUALA BAROOND-I SMALL HYDRO PROJECT 2MW IN TEHSIL CHURAH DISTRICT CHAMBA (H.P)
FILE NO : **FP/HP/HYD/148103/2021**
DATE OF PROOSAL : 7-10-2021

UNDERTAKING TO SUBMIT TEC AND IA

I, Ved Vyas Thakur, Authorised Signatory for M/s Gyatri Hydel Projects Pvt. Ltd. having its office at Mohal Charpat, PO, Tehsil and District Chamba, HP 176310 have applied for diversion of 1.0188 ha. Of forest land for the purpose of execution of BANUALA BAROOND-I SHP (2MW), in Distt. Chamba HP.

I hereby submit that the TEC is under process and the IA shall be signed after TEC is recorded. I hereby undertake that the Techno economic concurrence (TEC) and implementation agreement (IA) shall be submitted before the stage-II approval of the above said forest land.

Place : Chamba
Dated : - 15/12/2022

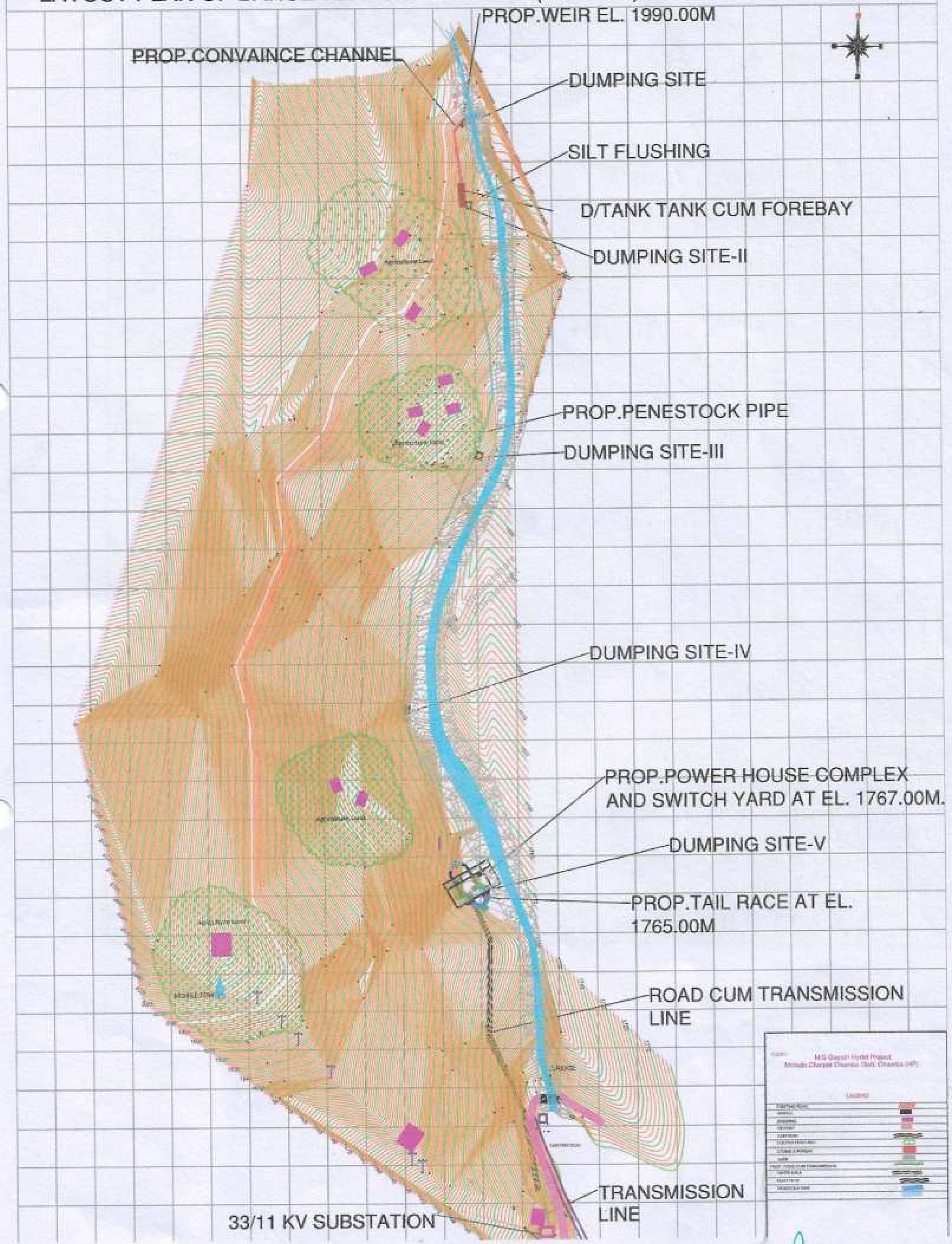
For Gyatri Hydel Project P. Ltd.
Authorised Signatory

Countersigned by :

Divisional Forest Officer
Chamba Forest Division
CHAMBA-176310

Divisional Forest Officer
Chamba Forest Division
Chamba

LAYOUT PLAN OF BANULA BAROOND-I SHEP (2.00 MW) IN DISTT CHAMBA (HP)

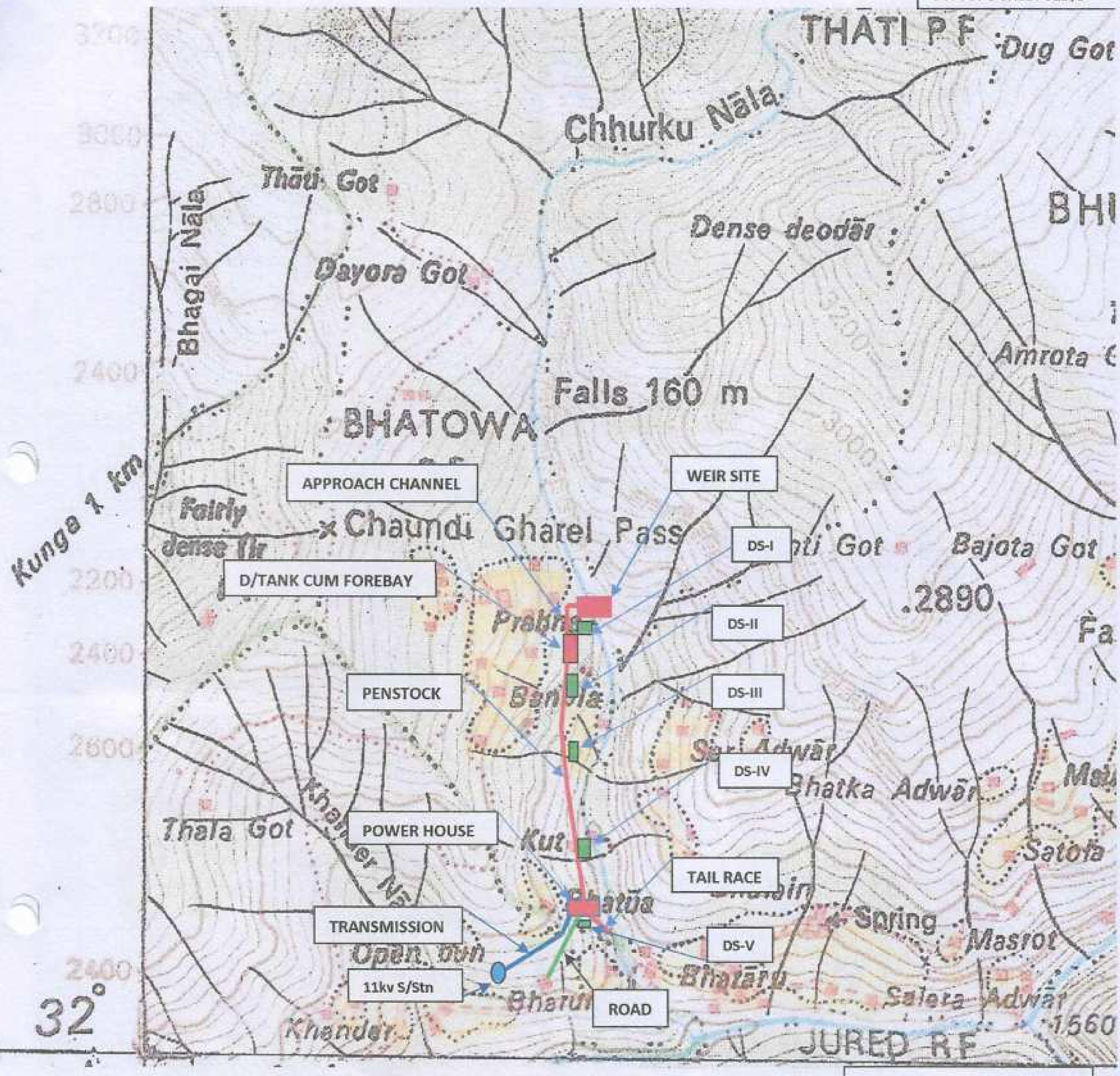


Gyatri Hydel Projects P. Ltd.
Authorised Signatory

Divisional Forest Officer
Chamba
CHAMBA-176310

LAYOUT PLAN BANUALA BAROOND-I SHEP 2 MW

SOI TOPO SHEET 52D/5



LEGEND	
PROJECT COMPONENTS	
DUMPING SITE	
ROAD	
TRANSMISSION/S. STN	
CHHURKU NALA	

Gyatri Hydel Project (P) Ltd
Authorised Signatory

Divisional Forest Officer
Chamba Forest Division
CHAMBA-176310

(15)

P-13

C/o Banuala Baroond-1 HEP (2.00 MW)

Total 28 numbers of (OBL species) trees coming for C/o Banuala Baroond-1 HEP (2.00 MW). All the trees are required to felled for construction of Project. But at the time of construction work we have try to reduce the numbers of trees to be felled.

Jyoti Hydel Project (P) Ltd
Authorised Signatory

RANGE FOREST OFFICER
TIKRI FOREST RANGE

Divisional Forest Officer
Chamba Forest Division
CHAMBA-176310

DIVERSION OF1.0188HA.OF FORESTLAND FOR CONSTRUCTION OF BANUALA BAROOND-I SMALL HYDRO PROJECT 2MW IN TEHSIL CHURAH DISTRICT CHAMBA (H.P) (19)
FILE NO . : **FP/HP/HYD/148103/2021**
DATE OF PROOSAL :

CHECK LIST SERIAL NUMBER:-23

ANNEXURE - A

1. Details regarding Transmission Lines

Sr. No.	Particulars	Remarks
1.	Voltage of Transmission Line (KV)	11kv
2	Total length of the Transmission Line	525 M
3	Length passing through forest area	525M
4	Right of Way	7 M
5	Number of Towers to be erected	7(00-36-76 Hact. Forest Land)
6	Number of Towers to be erected in forest area	7
7	Height of Transmission Towers	9 M

1. Details regarding Road / Railway Lines

Sr. No.	Particulars	Remarks
1.	Length and width of the strip and forest area required	200m Length x 4.36 m Width and Area- 00-08-72Ha.
2	Total length of the road	200 m
3	Length of the road already constructed	Nil
4	Length of the road passing through forest	200 m

Place : Chamba
Dated : - 15/12/22

For Gyatri Hydel Project P. Ltd.
Authorised Signatory

Countersigned by :

Divisional Forest Officer
Chamba Forest Division
Chamba

DIVERSION OF1.0188HA.OF FORESTLAND FOR CONSTRUCTION OF BANUALA BAROOND-I SMALL HYDRO PROJECT 2MW IN TEHSIL CHURAH DISTRICT CHAMBA (H.P)
FILE NO . : **FP/HP/HYD/148103/2021**
DATE OF PROOSAL :7-10-2021

ANNEXURE – "C"
PROFORMA – IV ((Refer item no. 9(I) to (IV)

STATEMENT SHOWING DETAILS OF THE ROAD TO BE CONSTRUCTED FROM PWD ROAD NEAR HPPWD ROAD TO BANUALA BAROOND-I POWER HOUSE IN DISTRICT CHAMBA, HIMACHAL PRADESH

Sr. No.	R.D no.from	R.D no. to	Distance in Meters			Width of right of way (meters)	Area of the road			Name of village and forest nearby	Muck debris to be produced (Total) '000 M³ with swollen factor@45%	Muck debris to be used locally '000M³	Muck debris to be dumped '000M³	Remarks
			In forest land	In non forest land	Total		In forest land (sq.mt) (4 X 7)	In non forest land (sq.mt) (5 X 7)	Total (sq.mt) (4 X 7)					
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1.	0	100	100	NIL	100	4.36	436	NIL	436	Prabha	160*45/100=72 160+72=232	93	139	40% of muck produced will be used for back filling of retaining/Brest walls, producing aggregates and filling up of culvert embankment.
2.	101	200	100	NIL	100	4.36	436	NIL	436	Prabha	140*45/100=63 140+63=203	81	122 **Total=261 M3**	-do-

Jyoti Hydel Project (P) Ltd
Authorised Signatory

Divisional Forest Officer
Chamba Forest Division
CHAMBA-176310

MUCK DUMPING PLAN FOR BANUALA BAROOND-I SMALL HYDRO PROJECT 2.00 MW

Sr. No.	Name of Component From Where Muck is To Be Produced	Actual Size Of Component in sqm.	Total Qty. Of Muck is to be Produced (in cum)	Factor of Increase in volume after excavation (35%)	Total Qty. Of Muck is to be Dumped on The Basis Of Increased Qty (in cum)	Qty.Of Muck TO Be utilised (in cum)	Total Qty. Of Muck Remaining After Utilisation	Nme of Dumping place	Size of Dumping Sites	Area of Dumping place in sqm	Remaining Height of Muck Dumped	Capacity of Muck To be Dumped	Quantity to be Dumped	Remarks
1	Intake/Trench WEIR	13x5	65		87.75	30.71	57.04	Dumping Site-I	17x10	170	2.3	381.8	57.04	Out of total Muck Generated About 40% Shall Be Used In Construction of Crates. Protection of weir retaing walls & Rest Of The Muck Including Swell Factor (35%) shall be Dumped in muck Dumping site I
2	Convence Chennel	85 X2	170		230	23	207		17x10	170	2.3	381.8	207	Out of total Muck Generated About 10% Shall Be Used In Construction of Crates and Protection work. Rest of Muck Including Swell Factor (35%) shall be Dumped in muck Dumping site I
4	D-tank cum forebay	26x13.6	354		478	48	430	Dumping Site-II	14.2x10	142	3.2	470	430	Out of total Muck Generated About 10% Shall Be Used In Construction of Crates and Protection work. Rest of Muck Including Swell Factor (35%) shall be Dumped in muck Dumping site II
5	Penstock Pipe	955x3	850	35%	1147.5	229.5	918	Dumping Site -III	19.4x10	194	2.9	529.2	480	Out of total Muck Generated About 20% Shall Be Used In Construction of Crates and Protection work. Rest of Muck Including Swell Factor (35%) shall be Dumped in muck Dumping site III & IV
								Dumping Site-IV	15.6x10	156	3.1	480.6	438	
6	Power house and swictyard	37x24.60	200		270	108	162	Dumping Site-V	17x10	170	3.2	540	162	Out of total Muck Generated About 40% Shall Be Used In Construction of Crates, Agreegates, Road R/Walls, B/Walls, Filling, Bearing and Soling. Rest Of The Muck Including Swell Factor (35%) shall be Dumped in muck Dumping sites V
7	Tail Race	20x2	40		54	21.6	32.4	Dumping Site-V	17x10	170	3.2	540	32.4	
8	Road	200x4.36	400		540	216	324	Dumping Site-V	17x10	170	3.2	540	324	
	Total		**2079**		**2807.25**	**676.81**	**2130.44**			**1342**	**2.90(Avg)**	**3863.4**	**2130.44**	

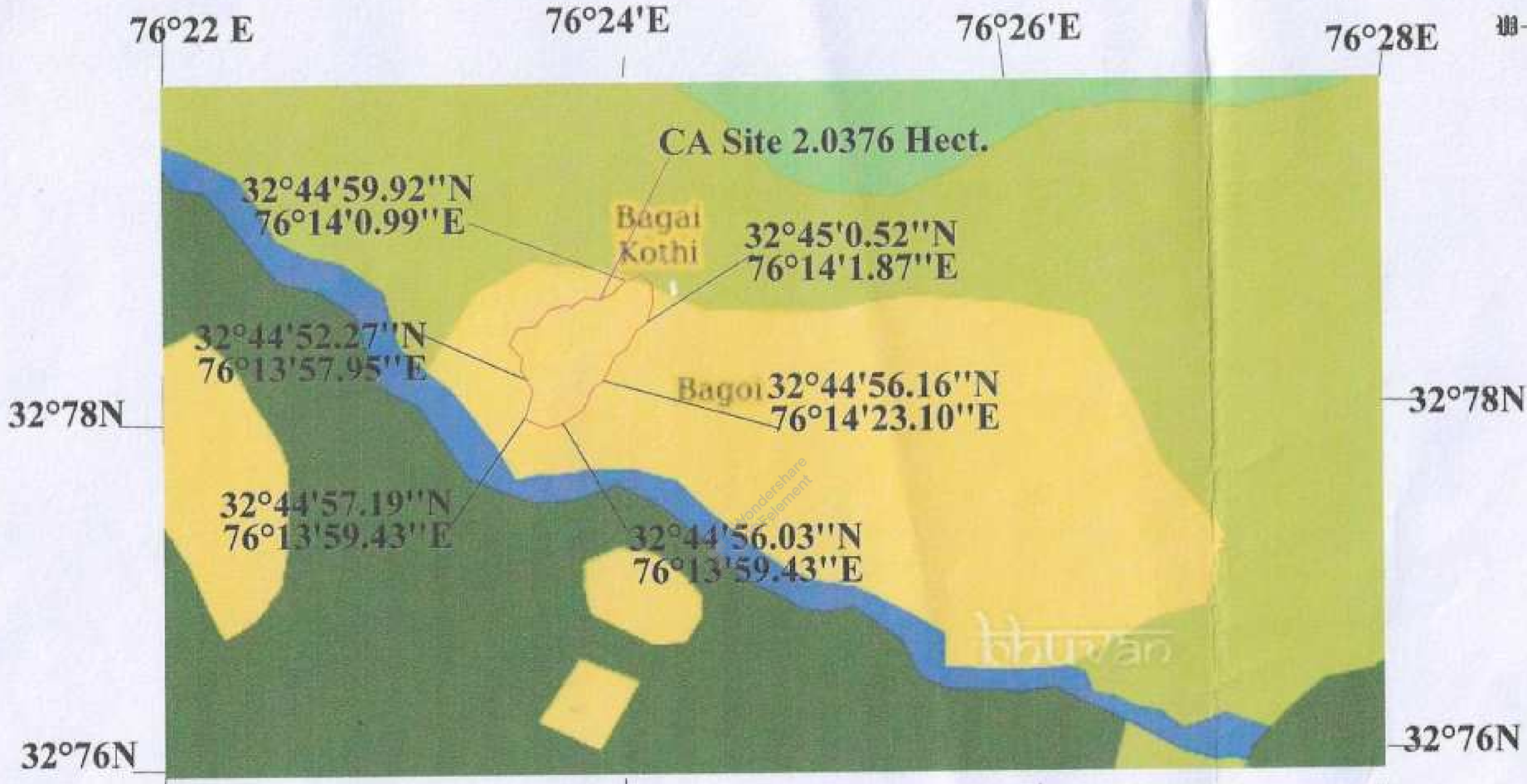
Gyatri Hydel Project Pvt. Ltd.

Authorised Signatory

Divisional Forest Officer
Chamba Forest Division
Chamba-176310

Divisional Forest Officer
Chamba Forest Division
CHAMBA-176310

Digital Landuse Map For C/O CA Site Banuala Baroond-I SHEP(2.0376Hect.)



Proposed ca site

Forest land

Open land

Private land

Water Body

Divisional Forest Officer
Chamba Forest Division
Chamba 0310

Enumeration list of trees coming in Banila Baroond- 1 2 MW Hydro Project in Bhatova DPF in Baghei Beat Chanju Block Forest Range Tikri

Sr. No.	Spieces	Dia	Class	Khasra No.	No. of Tree
1	Haleu	30-32	III	346/334/1	1 No.
2	Khirak	28-30	IV	346/334/2	1 No.
3	Khirak	31-33	III	346/334/2	1 No.
4	Chirindi	22-24	IV	346/334/2	1 No.
5	Chirindi	34-36	III	346/334/2	1 No.
6	Chirindi	22-23	IV	346/334/3	1 No.
7	Chirindi	22-20	IV	346/334/3	1No.
8	Chirindi	32-34	III	346/334/3	1 No.
9	Chirindi	20-22	IV	346/334/3	1 No.
10	Khirak	21-22	IV	346/334/3	1 No.
11	Khirak	30-32	III	346/334/3	1 No.
12	Willow	21-24	IV	346/334/3	1 No.
13	Moral	21-23	IV	346/334/3	1 No.
14	Chirindi	30-32	III	123/1	1 No.
15	Chrindi	22-24	IV	306/114/1	1 No.
16	Chirindi	22-23	IV	306/114/1	1 No.
17	Chirndi	21-23	IV	306/114/1	1 No.
18	Chirndi	26-28	IV	350/344/1	1 No.
19	Chirndi	30-32	III	111/1	1 No.
20	Chirndi	22-24	IV	286/96/1	1 No.
21	Lodhar	30-32	III	286/96/1	1 No.
22	Chirndi	18-20	V	286/96/2	1 No.
23	Chirndi	21-23	IV	286/96/2	1 No.
24	Chirndi	42-44	V	286/96/2	1 No.
25	Chirndi	42-44	IIA	286/96/2	1 No.
26	Chirndi	18-20	V	286/96/2	1 No.
27	Chilunth	18-20	V	286/96/2	1 No.
28	Chilunth	34-36	III	286/96/2	1 No.

Cmesh Rgd.
I/c Baghei Beet
fromhj

RANGE FOREST OFFICER
TIKRI FOREST RANGE

Divisional Forest Officer
Chamba Forest Division
CHAMBA-176310

LIST of APPROVED/ PROPOSED PROJECTS IN CHURKU RIVULET

		Niwas, Lower Chakkar, Shimla-5									
456	Shiv Shakti Enterprises (Partnership)	Anurag Kutir, Lower Dohru, Ghuggar, P.O. & Tehsil Palampur, Distt Kangra-176061	Upper Bhagair	Bhagair/Kiunr/ Chirchind	Ravi	0.50	Chamba	2600.00	2400.00	10-08-2015	S&I in progress
457	Shiv Shakti Enterprises (Partnership)	Anurag Kutir, Lower Dohru, Ghuggar, P.O. & Tehsil Palampur, Distt Kangra-176061	Lower Bhagair	Bhagair/Kiunr/ Chirchind	Ravi	1.00	Chamba	2365.00	2115.00	10-08-2015	S&I in progress
458	Rudraveer Hydro Power Developers (Partnership)	Mohalla Sapari-Chamba, Distt Chamba-176310	Rudraveer	Bhujla	Ravi	4.00	Chamba	2800.00	2590.00	10-08-2015	S&I in progress
459	Banni Hydro Project (Sole Prop.)	C/o Mrs. Veena Devi, W/o SH Hans Raj, Village Khalna, P.O. Kunr, Sub Tehsil Dharwala, Distt Chamba-176315	Braguna	Braguna	Ravi	0.75	Chamba	1660.00	1540.00	10-08-2015	S&I in progress
460	Shiva Hydro Power Project (Partnership)	501/2 Model Town Back Side Guru Nanak Girls College-Ludhiana-141002	Upper Tain	Bushdun	Ravi	5.00	Chamba	2400.00	1900.00	10-08-2015	S&I in progress
461	Maa Bhadrakali Hydro (P) Ltd.	Mohalla-Sultanpur-Post Office Chamba-176309	Changed - Parhed	Changed tributary of Joiner	Ravi	2.00	Chamba	1930.00	1640.00	10-08-2015	S&I in progress
462	Kalawati (Sole)	Sunrise Building, Strawberry Hills East View Shimla-171002	Chanju	Chanju	Ravi	2.00	Chamba	2970.00	2850.00	10-08-2015	S&I in progress
463	Gayatri hydel Projects (P) Ltd.	Mohalla Charpat, Distt Chamba-176301	Banuala Baroond/Churku	Churku /Bhararu	Ravi	5.00	Chamba	2000.00	1615.00	10-08-2015	S&I in progress
464	Gopal Hydropro (P) Ltd.	296. F.I.E. Patparganj-Delhi-110094	Dera-I	Dera	Ravi	2.50	Chamba	2600.00	2320.00	10-08-2015	S&I in progress
465	Madan Lal (Sole)	S/o Late Sh Jai Bihari Lal, Village Bain Attarian, P O-Kandrori, Tehsil Indora Distt Kangra-176403	Dodu-II	Dodu/Siul	Ravi	1.00	Chamba	2300.00	2210.00	10-08-2015	S&I in progress
466	Madan Lal (Sole)	S/o Late Sh Jai Bihari Lal, Village Bain Attarian, P O-Kandrori, Tehsil Indora Distt Kangra-176403	Dodu-I	Dodu/Siul	Ravi	2.00	Chamba	2130.00	2010.00	10-08-2015	S&I in progress
467	Gopal Hydropro (P) Ltd.	296. F.I.E. Patparganj-Delhi-110092	Gargu	Gargu	Ravi	2.50	Chamba	3000.00	2655.00	10-08-2015	S&I in progress
468	Hail Hydro Power Venture (Partnership)	Banjaroo- Tehsil Churah, Distt Chamba-176316	Hail	Hail	Ravi	1.00	Chamba	2600.00	2355.00	10-08-2015	S&I in progress
469	Anthan Dhall Mini Hydel Power Project (P) Ltd.	Mohlla-Dhrobhi, P.O. Chamba Distt. Chamba-176310	Hail-I	Hail	Ravi	1.60	Chamba	2860.00	2650.00	10-08-2015	S&I in progress

Gyatri Hydel Projects P. Ltd.
Authorised Signatory

Divisional Forest Officer
Chamba Forest Division
CHAMBA-176310

682	Ashish Hydro Projects (sole Prop. Gian	VPO Bharmoti, Tehsil Nadaun Distt Hamirpur.	Chhurkhu	Chamba	2.75	DPR with DOE for TEC	No	Chhurkhu Nala	Ravi	19-12-2016		20.7.2018		
683	Mamta Hydro Project, (Sole Prop. Mamta	VPO Bharmoti, Tehsil Nadaun Distt Hamirpur.	Belij Top	Chamba	2.00	DPR with DOE for TEC	No	Belij	Ravi	19-12-2016		20.7.2018		
684	Bindya Sood	Roshan Lal Chowk-Bhuntar, Distt Kullu-175125	Keuli	Mandi	1.00	S&I in progress	No	Keuli	Beas	19-12-2016		DPR yet to be submitted		
685	M C Vashisht S/o Sh Sher Singh	Village Dhanotu, P.O. Mahadev, Tehsil Sundernagar	Lower Holi	Chamba	2.00	DPR with DOE for TEC	No	holi	Ravi	19-12-2016		10.12.2018		
686	Soma Devi W/o late Sh. Khyali Ram	VPO Sajaopiplu, Tehsil Sarkaghat, Distt Mandi.	Bhagair	Chamba	0.50	S&I in progress	No	Bhagair/kunr	Ravi	19-12-2016		DPR yet to be submitted		
687	Kasol Hydro Power Project (Partnershi	H.O. Dhanotu, P.O. mahadev, Tehsil Sundernagar	Niharni	Kullu	5.00	S&I in progress (For EL Change	No	Sainj	Beas	19-12-2016		DPR yet to be submitted		
688	Kasol Hydro Power Project (Partnershi	H.O. Dhanotu, P.O. mahadev, Tehsil Sundernagar	Lambadug Middle	Kangra	5.00	S&I in progress	No	Lambadug	Beas	19-12-2016		DPR yet to be submitted		
689	Nehria NV Hydro Project (Sole Prop. Vishal	, Village Sawala P.O. Naganpat, Tehsil Dharmshala	Lower Manuni	Kangra	0.50	DPR with DOE for TEC	No	Manuni	Beas	19-12-2016		24.1.2019		

Gyatri Hydel Projects P. Ltd.
Authorised Signatory

Divisional Forest Officer
Chamba Forest Division

Divisional Forest Officer
Chamba Forest Division

(26)

Regd. Post

HIMURJA
(H.P. GOVT. ENERGY DEVELOPMENT AGENCY)
SHIMLA: - 171 009.

HIMURJA/ SHP/Banuala Baroond (298)/2015 13561 Dated 27-11-2018

To

M/s Gaytri Hydel Projects (P) Ltd,
Mohalla Charpat, Distt. Chamba-176301

Subject: - Bifurcating 0f project into two projects within allotted elevations..

Dear Sir,

This is in continuation to consent issued on 10.08.2015 in respect of Banuala Baroond (5.00MW) HEP and request received from you vide letter no-nil dated 06.07.2018 for bifurcation of allotted project Banuala Baroond in two stages within allotted elevations. The State Government has approved bifurcation of project into two projects within allotted elevations of Banuala Baroond as per details given under:

Name of Project	Allotted elevation /cap	Revised elevation & Cap.	Stream
Banuala Baroond Stage-I	2000-1615 (5.00MW)	1990-1765 (2.00MW)	Churkhu
Banuala Baroond Stage-II	2000-1615 (5.00MW)	1700-1615 (0.80MW)	Churkhu

The approval is subject to completion of codal formalities as per Hydro Power Policy 2006 and instruction/ amendments issued their under from time to time and following conditions:-

1. IPP has to deposit Upfront premium, Security charges and processing fee as fresh applicable as per prevailing Hydro Power Policy.
2. The above approval is further subject to the condition that the riparian distance of 50 mtrs elevation wise or 250 mtr horizontal distance is to be maintained between two projects to allow visible flow of water in the stream / nalla, failing which the allotment is liable to be cancelled for violation of the same.
3. IPP has to obtain the applicable NOCs as per policy provisions.

It is further stated that the exemption of extension fee for the delay in approval of change in elevations is subject to approval of Government.

Yours Sincerely,

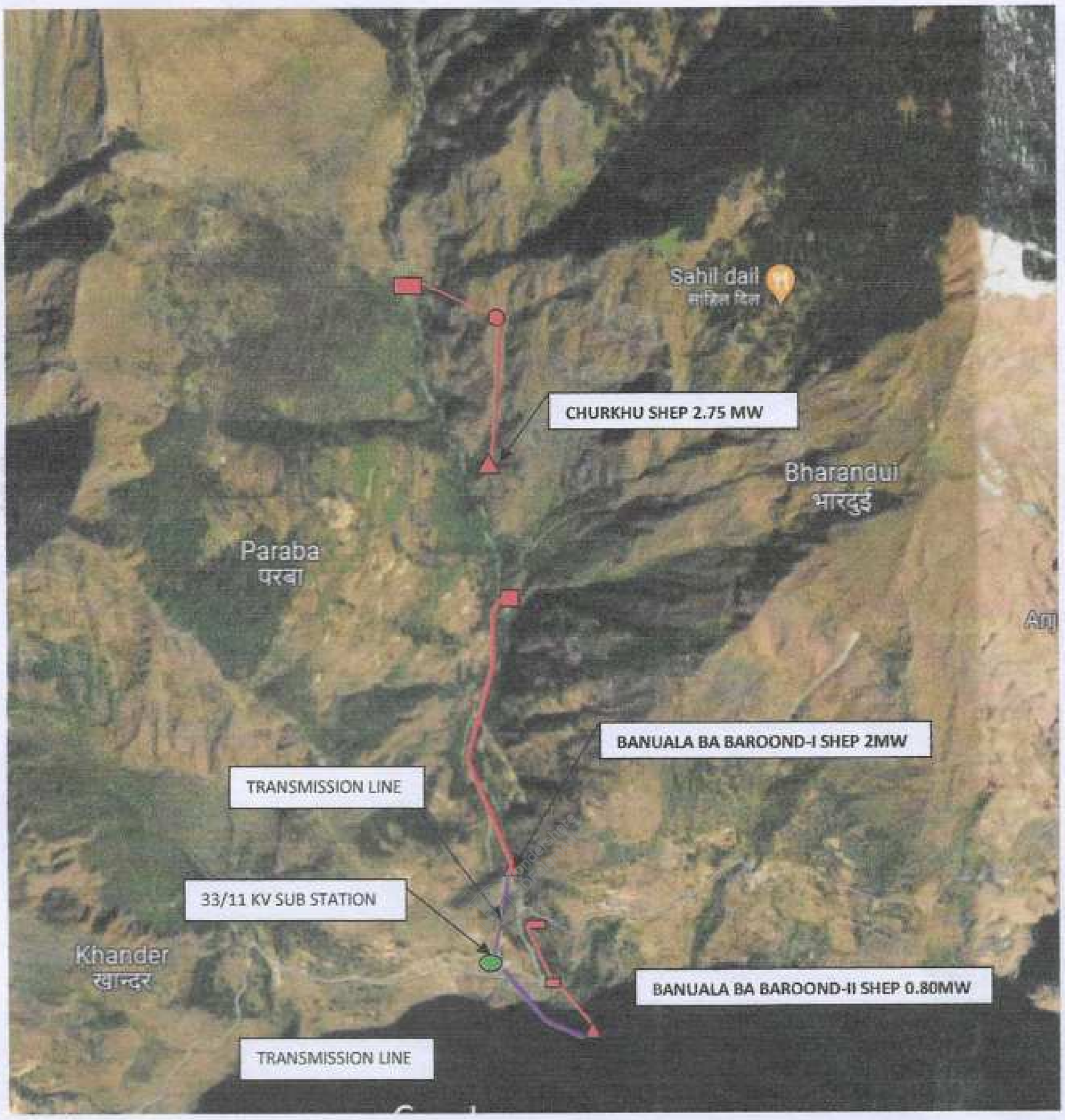
(Er K. L.Thakur)
Director
Himurja Urja Bhawan
Kasumpti, Shimla-171009

Endst.No. - A/A
Copy is forwarded to the following for information and necessary action:-
1. The Special Secretary (NES), to the Govt. of H.P. w.r.t letter no. NES-F (2)2018 dated 30.10.18.
2. Director Energy, Directorate of Energy, Shanti Bhawan, Phase-III, Sector-6, New Shimla-171009.
3. Deputy Commissioner, Chamba, Distt.Chamba, H.P.
4. Sr. Project Officer Himurja Chamba, Distt. Chamba, H.P.

Director
Himurja Urja Bhawan
Kasumpti, Shimla-171009

Gyatri Hydel Projects P. Ltd
Authorised Signatory

LANDSCAPE PLAN OF ALL SHEP ALLOTED IN CHURKU NALA



Total 3 nos. Of small projects are alloted in the Churku Nala

1. Churku SHEP 2.75MW
2. Banuala Baroond –I 2.00MW
3. Banuala Baroond-II 0.80MW

LEGEND	
PROP.PROJECTS	
SUB STATION	
TRANSMISSION	

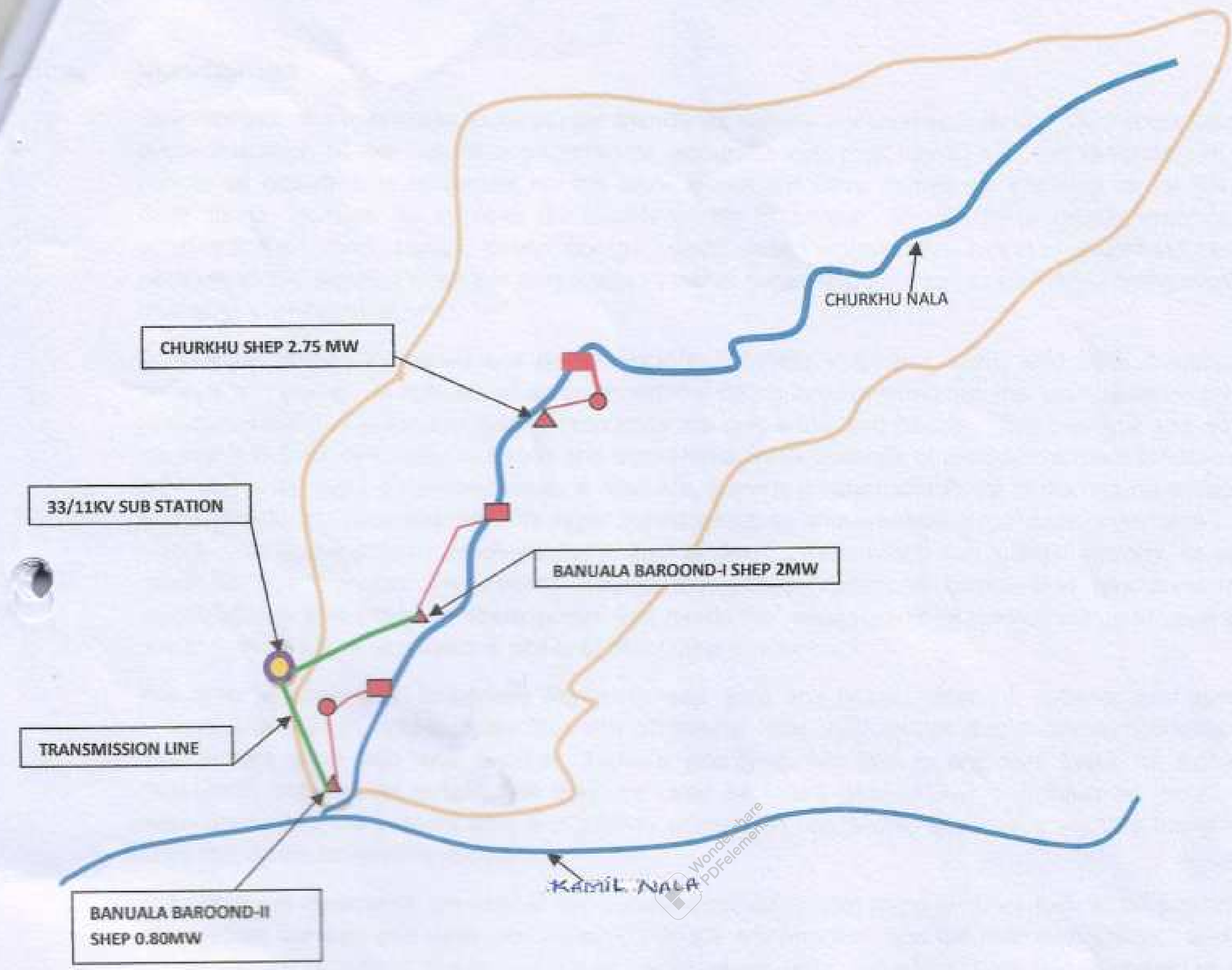
Status of these Projects- Sr. No. 1 Churku SHEP 2.75 MW is under survey And investigation. The Transmission Plan has not been finalised yet.
Whereas Sr. No. 2 Baanuala Baroond –I (2.00MW) and Sr. No.3 Banuala Baroond-II (0.80MW) are under FCA clearence . The evacuation Plan of thses Projects has been mentioned above.

ECOLOGICAL VIEW- These projects are run off the river schemes and no reservior needed for these projects even not any kind of rehabilitation due to the implimantation of such schemes. These type of schemes comes under renewable energy projects less than 25 MW so there is not any impact on the ecology of the area.

Gyatri Hydel Projects P. Ltd
Authorised Signatory

Divisional Forest Officer
Chamba Forest Division
CHAMBA-176310

LANDSCAPE PLAN OF ALL SHEP ALLOTED IN CHURKU NALA



LEGEND	
PROP. PROJECTS	
NALLAS	
CATCHMENT BOUNDARY	
33/11KV SUB STATION	
TRANSMISSION LINE	

Gyatri Hydel Projects P. Ltd.

Authorised Signatory

Divisional Forest Officer
Chamba Forest Division
CHAMBA-176310

ECOLOGICAL IMPACTS OF HEPs

Introduction

Development of a nation has to be people friendly as well as environment friendly. Over-exploitation and over-exhaustion of the natural environmental resources can play havoc with the development of the people as depletion of resources on this finite planet will have dangerous implications for the future generations. Besides, to improve the quality of life of people, infrastructural development such as construction of dams, canals, power energy, roads, telecommunication, airways, waterways, irrigation network, etc. is significant but this may lead to various negative outcomes, one of these being involuntary displacement of population.

Developing countries planned and are planning to establish industries, dams and other developmental projects in the rural, as well as, urban areas without taking into consideration the environmental problems associated with the misuse of natural resources like soil, water and forests. They overlook and disregard the fact that there are many intended and unintended consequences of the development processes. For instance, while treating environment as a resource, there is an imminent threat to the natural environment of the developing countries with the rapid industrialization and urbanization. Hence, there is a need of 'sustainable development', which implies a kind of development which can sustain ecology, as well as, conserve and preserve the existing natural resources. Brundtland commission has projected the Sustainable development as development that meets the requirements of the current generation without compromising future generations' ability to meet their own needs.

The term "environment" comprises air, water, soil, flora and fauna, societies, habitats, and livelihood, among other things, and is a complex mix of diverse inter-relationships that these components of the environment have with one another. Today's priority is not just to preserve them for the current generation, but also to ensure that they are used by future generations. The future of the people is dependent upon the present acts and actions of ours, in conserving and sustaining this benign gift of God, that is Himalayan Environment.[1]

The Himalaya mountains are one of the world's most vulnerable regions. They look to be powerful and intimidating, but they are weak and vulnerable in the environment, and the man-environment connection is dangerously balanced. Population growth, rapid urbanization, industrialization and the greed of man to overuse resources, have further accentuated the process of environmental degradation in the inhabited parts of Himalayas. The Himalaya has become an environmentally dangerous zone as a result of declining biota, soil erosion, and landslides caused by the loss of forest cover, and the entire hydrological cycle appears to have been disrupted.[1]

Himachal Pradesh and Hydropower

The state of Himachal Pradesh, which forms a part of the Western Himalaya, is environmentally fragile and ecologically vulnerable. It has been passing through a state where evaluation of environmental problems has become necessary in order to identify the entire points and suggest strategies for sustainable development, which is socially relevant, economically viable, and environmentally safe and eco-friendly.[1]

The Union Territory of Himachal Pradesh was elevated to the status of a full-fledged state on January 25, 1971, making it the Indian Union's 18th state. Currently, the state is divided into the following twelve districts:

1. Bilaspur, 2. Chamba, 3. Hamirpur, 4. Kangra, 5. Kinnaur, 6. Kulu, 7. Lahul-Spiti, 8. Mandi, 9. Shimla, 10. Sirmour, 11. Solan, and 12. Una.

The history of power generation in the state goes back to the year 1908 when the Chamba State under the administrative capabilities of the then Raja Sir Bhuri Singh set up a 35 K.W. D.C. hydel generating

power house at Chamba. This was the first Power House in northen India and as such Chamba town had electricity much earlier than Lahore, the capital of Punjab.

Another hydro-electric power project (Chaba Project near Shimla) in the area what comprises now the State of Himachal Pradesh was set up way back in 1912 . The then British Government initiated the Chaba Project near Shimla, to meet the requirements of this erstwhile capital of the British Raj. This was followed by commissioning of power house in Bharmour (Chamba District) in 1933 and also installing another 100 K.W. D.C. hydel generating set in Bhuri Singh Power House, Chamba in 1938 which was replaced by new 100 K.W. A.C. hydel generating set in 1957. The old 35 K.W. D.C. hydel generating set was also replaced by 100 K.W. A.C. hydel generating set by augmenting the power house, thus making the capacity of the power generation as 200 K.W. Further augmentation of Bhuri Singh power house was taken in hand in 1983 and completed in 1985 by installing a new generating unite of 250 KW by extending the existing power house building. With this augmentation the capacity of Bhuri Singh Power House has increased to 450 KW.

The Shanan Power House was built at Joginder Nagar (Mandi District), for the construction of which the Kangra railway line was laid down from Pathankot to Jogindernagar. Though in the late sixties a number of small projects were taken up, it was only after the formation of Himachal Pradesh as a full- fledged State in 1971 that systematic hydro-power development was undertaken.

The first significant dam was built at Village Pong in the Dehra-Gopipur tehsil of Kangra district in Himachal Pradesh, across the river Beas near the foothills of the Shivalik Range. The dam's construction began in 1961 and was finished in 1974. The dam's full reservoir level was 433.12 metres.

In 1975, the National Hydroelectric Power Corporation (NHPC) was formed. Over the course of its 45-year history, NHPC has grown to become India's largest organisation for hydropower development, with the ability to handle all aspects of hydropower project development, from inception to commissioning. Baira Siul Hydroelectric Project in Himachal Pradesh was the first venture to be taken up by the N.H.P.C. The Project is located in the District of Chamba. It utilizes flow of the three tributaries of the river Ravi - Baira, siul and Bhaledh. The Project construction was initially taken up in 1970 by the Central Hydroelectric Power Construction Board under Ministry of Irrigation and Power as a Central Sector Project. Subsequently, after the formation of N.H.P.C., Project was entrusted to NHPC on 21.1.1978. The project was commissioned in 1982 at a total cost of Rs.148.08 crores. The original installed capacity of the project was 180 MW. Subsequently, it has been increased to 198 MW by up-rating the capacity of each unit to 66 MW through Renovation and Modernization of the Plant during 1991-92.

The five largest rivers that run through Himachal Pradesh are the Chenab, Ravi, Beas, Sutlej, and Yamuna, which all originate in the Western Himalayas and flow through the state. These snow-fed rivers and its tributaries discharge a large amount of water throughout the year and run with high bed slopes, which are used to generate electricity. Himachal Pradesh is naturally suited for hydropower generation and accounts for around 25.9 % of India's total hydropower potential. It has been predicted that roughly 27,436 MW of hydroelectricity power can be generated in the state by developing various big, medium, small, and mini/micro hydel projects on the state's five river basins based on preliminary hydrological, topographical, and geological investigations.

The Satluj is the state's largest river system, with a catchment area of 20,398 km2. It flows through the districts of Lahaul and Spiti, Kinnaur, Shimla, Solan, and Bilaspur before entering Punjab and flowing into the huge Bhakra dam.

The Beas formerly known as the 'Vipasa,' the Beas is the second-largest river in the country, having a catchment area of 13,663 km2. It begins near the Rohtang pass at Beas Kund. It flows 286 kilometres from north to south west before entering the Pong Reservoir and Punjab.

The Chenab, also known as the Chandrabhaga, is the world's largest river by volume. It has a 7850 km2 catchment area. At an elevation of 4891 metres, the Chandra and Bhaga originate on opposite sides of the Baralacha. Before entering Kashmir, it flows north-west.

The Yamuna is nourished by a number of tributaries before flowing into Uttar Pradesh in the south-eastern part of Himachal Pradesh.

The Ravi river rises in an amphitheatre-shaped basin in the Dhauladhar Range and flows southwards through the Dhauladur Hills, carving a wide valley. The Ravi flows approximately 130 kilometres before entering Punjab and Pakistan.[2]

Ecological Consequences of Hydro-electric Power Project

Himachal Pradesh's rivers and catchments are under severe strain. Large-scale development initiatives, in combination with climate change, have a demonstrable impact on natural ecosystems and runoff characteristics. Water resource strategies will need to strike a careful balance between development and economic goals and basic requirements for conservation and environmental protection in vulnerable mountain and river ecosystems. Environmental flow maintenance is necessary in the environmental approval process, although it is rarely monitored or enforced. The assessment of acceptable environmental flow is difficult, and additional research is needed to ensure that rivers maintain a minimal level of ecological balance. Dams and abstractions must be strategically placed to limit their impact. Dams have now blocked the majority of rivers, obstructing fish migration. Future dams, on the other hand, might be properly placed to reduce their impact. The provision of fish passes should be taken into consideration.

Over the previous few decades, there has been an increase in environmental knowledge and concern. This has been related to proposals for better development approaches since the mid-1980s. More recently, there have been increasing efforts to understand the causes of these environmental problems and to address the policy for, and political aspects of, development and environment. Right from the outset, the building of a large-scale dam causes irrevocable environmental destruction. Sadly, this destruction does not end with the filling of the reservoir and the inevitable loss of land, forests and wildlife. In truth, there is scarcely an aspect of the dam's future operations which will not carry a heavy environmental cost.[3]

Dams have the potential to cause earthquakes. Over 100 earthquakes have been found around the world that scientists believe were produced by reservoirs.[4] It has only recently been recognized that the pressure applied to often fragile geological structures by the mass of water impounded by a big dam can – and often does – give rise to earthquakes.[3] The 7.9-magnitude Sichuan earthquake in May 2008, which killed an estimated 80,000 people and was linked to the construction of the Zipingpu Dam, may be the most devastating occurrence. Dr. V. P. Jauhari wrote about this phenomenon, known as Reservoir-Induced Seismicity (RIS), in a paper prepared for the World Commission on Dams: "The most widely accepted theory for how dams cause earthquakes is that the extra water pressure created in micro-cracks and fissures in the ground beneath and near a reservoir causes earthquakes. When the pressure of water in the rocks rises, it works as a lubricant, lubricating faults that are already under tectonic strain but are prevented from slipping by friction between the rock surfaces".[5]

Environmental loss due to large dams has been described by Ramaswamy R. Iyer[6] as under:-

Let us now look at the specifics of major dams' environmental impact. The phrase "environmental impact" is used in the broadest sense possible here. There is a curious view that the displacement of people is not an 'environmental' aspect. Whatever we may call it, it is certainly a very important aspect, and it is difficult to see how anyone can object to this issue being raised by the environmentalists. The environmental impact of large projects of this kind would include:

The loss of agricultural and forest land through submergence under the reservoir which is created;

The project's displacement of people and animals, as well as the loss of jobs, causing significant suffering to the landless and indigenous populations;

The displacement of wild animals and the possible extinction of some rare flora and fauna;

The public health issues that may arise as a result of large-scale water impoundment and possible climatic changes;

The inherent hazards of huge dams (the likelihood of breaches and dam-bursts, resulting in the flooding of wide areas), particularly in seismically active places, as well as the problem of reservoir-induced seismicity;

The loss of vegetation in the upper catchment, resulting in excessive run-off and loss of top soil, resulting in faster siltation of the reservoir and a reduction in its useful life (this might be considered an example of the project's environmental impact); and

The onset of water-logging salinity in the project's command area after several years of irrigation, resulting in the abandonment of important agricultural land.

Construction activities in the dam region nearly usually result in a large increase in dust levels in the air. Such dust not only harms the region's woods and other vegetation, but it also pollutes the river and other bodies of water. People who live and work in the region's health are also affected significantly. Construction activities, such as diverting the river through a tunnel, produce enormous disruptions and have negative consequences for the aquatic ecosystem. Vulnerable species with limited distribution or low tolerance often become extinct even before the dam is constructed.[7]

According to Patrick McCully, Executive Director of the International Rivers Network, few people are aware that the reservoirs behind dams are a major source of global-warming pollution. The huge hydropower business, which has been chastised for polluting rivers and evicting villages that stand in the way of its reservoirs, has taken the opportunity to rebrand itself as climate-friendly. When a large dam is built, the reservoir floods plants and soils that contain massive amounts of carbon. This organic waste rots underwater, releasing carbon dioxide, methane, and, in some cases, nitrous oxide, a highly strong global warming gas. Although emissions are highest in the first few years after the reservoir is built, they can last for decades. Because the river that feeds the reservoir and the plants that grow there will continue to offer additional organic matter to drive greenhouse gas production, this is the case. Some of the emissions make their way to the surface of the reservoir. The rest takes place at the dam. Like the fizz from an opened bottle of soda, methane-rich water shoots out of turbines and spillways, releasing its methane. When these 'fizz' emissions are taken into account, estimates of hydropower's global warming impact increase. Although reservoirs generate greenhouse gases in all temperature zones, these emissions are typically worse than those caused by fossil fuels in the tropics. He goes on to argue that given the large sums of money at stake in carbon-trading programmes and other measures to combat global warming, it's understandable that the hydropower business is concerned about being labelled as another global-warming contributor.[8]

In addition, it has been reported that, in Himachal Pradesh, hydel projects, in addition to slate mining and industrialization, have been a major source of interstitial lung diseases (ILDs) for the labourer class in recent years. Employees, particularly labourers, have developed silicosis and sarcoilosis as a result of hydel projects and slate mining. According to Dr. S. Kashyap, Principal of Indira Gandhi Medical College and Hospital, Shimla, the number of people suffering from these disorders has increased dramatically in the recent few years. He also stated that silicosis tuberculosis was a common and unusual condition among slate-mine workers in Chamba, Dharamsala, and other places. Large hydel projects in Kullu, Kinnaur, Lauhal-Sapiti, Mandi, and other areas of the districts have also exacerbated ailments among the working class.[9]

In India, the environmental and social consequences of major dams were poorly recognised, and the avoidance and mitigation of negative consequences were frequently overlooked in financial and commercial calculations. This has been stated by Shekhar Singh and Pranab Banerji[10]. Though things have improved in the recent past, the situation remains far from satisfactory. Judge[11] in his paper argues that in the understanding of environmental management, the project-affected people should constitute the first priority. There is a need for taking stock of the nature and needs of human society as well as the logic and character of economic development. He further questions whether society should develop at the cost of destroying the socio-economic and ecological basis of a community, and is development benefiting the

privileged and further pauperizing the unprivileged. Hirsch[12] said that the age of large dams is drawing to a close. Yet the number and scale of dams that are on the cards is indicative of the destruction that remains to be wrought on vulnerable people and fragile environments if these projects are allowed to go ahead. As a matter of logic, increasing scarcity of suitable sites for dam construction means that each new site tends to be in a more vulnerable area than the last.

Review of Literature

According to Rajeshwari Tandon[13], both man-made and natural heritage are areas of concern in terms of heritage — the entire ambience and unique way of life, including the hill areas, must be maintained. There is a need for the State Government or Local Bodies to compile a list, document it, and enact legislation. A strategy on afforestation and soil conservation is also required, as is a policy on encroachments, road widening without causing harm, and a framework for controlled approaches for longer-lasting roads. Another crucial topic is disaster management, particularly in the case of earthquakes. The importance of community involvement cannot be overstated, as no programme can flourish without active community participation.

Tehri Dam, in Uttaranchal State's Garhwal Himalayas, requires the submersion of Tehri town and 23 villages in its vicinity, according to Vijay Paranjpye's[14] assessment. A total of 72 communities in the surrounding area have been impacted in some way by this procedure. Around 85,000 people have been displaced as a result of the dam. Local residents have occasionally expressed their displeasure with the dam. They believe the Bhagirathi to be a sacred river, and they are concerned that the project will irrevocably ruin a number of holy sites downstream. People are also aware of the government's poor track record in rehabilitating dam oustees in other parts of the country where large-scale displacement occurred. They also fear that a large dam in the vicinity will break sooner or later due to the area's complicated geological and seismic circumstances, flooding the entire valley and destroying everything they hold dear and precious.

Mathur and Cernea[15] contribute a large collection of empirical facts as well as critical analysis to the present settlement debate. Both voluntary and involuntary resettlements have been studied by the authors. This volume is well positioned to expand the policy debate and contribute to improving the practise of resettlement, as the concerns of displacement, resettlement, and rehabilitation have recently been more controversial and contested than at any other time in the past. Scudder[16] shows the reader the human side of huge dams, past, present, and future: population resettlement, hydroelectric power benefits, water resource development, flood management, and ecosystem destruction. He finds that the traditional cost-benefit analysis of major dams has been proven to be fatally flawed.

Barrow[17] examines the sources and implications of global environmental problems in the past, present, and future, and suggests, where possible, ways in which they might be reduced or avoided through prudent management. Some of these issues are caused by natural factors, while many environmental issues are the result of flawed development ethics.

Thus, it is clear that various problems have been surfacing frequently wherever river dams are being proposed and constructed at different locations all over the world and in India. It is with this in view that we decided to investigate the issue of displacement and resettlement by looking into the experiences of people affected by the construction of the Chamera Dam in Himachal Pradesh.

The Chamera Hydro-electric Power Project

The Chamera Hydro-electric power Project Dam has been constructed by the N.H.P.C. which generates electricity to the tune of 540 Mega Watt. It is a major project for accelerating development of hydropower in Himachal Pradesh. It is constructed as Indo-Canadian Joint venture by N.H.P.C. Actual construction work of the project was commenced in 1985 and the project was commissioned in March, 1994. The completion cost of the project is Rs. 2114.02 crores. The project comprises 140 metres high concrete dam, a 9.5 meters dia and 6.41 kms long Head Race Tunnel, a 25 M dia and 84 M high surge shaft, a 8.5 metres dia and 157 metres high pressure shaft and an underground Power House housing 3 nos Francis Turbines and generating units of 180 MW each.

Methodology

A survey approach has been selected as a principal means for data collection from the people affected by the construction of Chamera Hydro-electric power project in Chamba. The interview method was adopted for collecting data which was supplemented by on the spot observations and informal discussions. Head of the each family has been interviewed to get the basic information. Survey has been conducted with the help of a well designed interview schedule, which broadly covered aspects such as loss of green cover, loss of access to common property, loss of flora and fauna. The Interview Schedule has been flexible with some open ended questions having been included in it.

Four villages have been selected for the study, viz. Chakloo, Palehi, Thari and Bhanota. Because they are worst sufferers of the Dam. Eighty families have been selected (Twenty families from each village). The technique of systematic Random Sampling has been applied for the survey and 20 per cent of the affected families have been covered from each village. List of affected families was obtained from the office of the Relief and Rehabilitation Officer (RRO) of the Chamera Hydro-electric Power Project. All the respondents of the study are from rural area. The youngest respondent in our study was 25 years of age and the oldest 80 years old. The majority of respondents belong to the age group of 25 to 55 years.

Damage to Environment due to Construction of Chamera Dam

Development policies and programmes have consistently failed to pay careful attention to the issue of environment and adopt approaches that may result in many adverse impacts on the environment and the ecology of the area.

Developmental projects causing mass displacement, not only lead to erosion of cultural diversity, but also, cause the destruction of biological diversity. While ecological imbalance seriously threatens the survival of those dependent on it, the imposition of external technologies on it disrupts the natural genetic diversities that have taken years to evolve. The overall consequence of all this is a degradation that is almost irreversible.[16]

Loss of Green Cover

Dams which are normally constructed in the hill areas create large impact on environment of the area, as is the case in the constructon of Chamera Dam Project shown in Figure 2. Out of the total eighty respondents, sixty one (76.25 per cent) complain of the loss of green cover, whereas, nineteen (23.75 per cent) respondents do not feel the loss of green cover.

Loss of Access to Common Property

Whether displaced people are resettled within a reservoir basin or elsewhere, a major cost of large dams to the indigenous people is loss of common property resources, such as forests, rivers and grazing lands etc.

we can infer that sixty three (78.75 percent) respondents out of the total of eighty believed that they suffered the loss of access to common property. Seventeen respondents, i.e., 21.25 per cent do not feel any loss to the common property resources. When we came in contact with Pritam Singh, one of the respondents, he told that, "Pahale paani ke chasme the jo doob gaye, paani bada achha tha. Samsan ghat tha jo ab nahin hai. Pashu charane ke jagah nahin rahi, gharat bhi chale gaye. Ab har kaam ke liye door jana padata hai." (Previously there were water springs which have been submerged. Drinking water was clean and pure. There was crematorium which is not there. There are no grazing fields now or the water mills. Now we have to go far off places for every work). So it is clear that the Chamera Dam has also caused damage to the common property resources as has been emphasised by Cernea.

Loss of Flora and Fauna

There are certain local species of plant and animals that are special to the area which are related closely enough to interbreed naturally. Such species are in danger when any developmental activity starts in the area. Figure 4 shows that twenty one (26.25 percent) respondents were of the view that there is a definite

loss of flora and fauna in the area due to the construction of Chamera Dam, whereas a majority of fifty nine (73.75 per cent) did not think so.

In the construction of Chamera Project, clearly much loss to the different environmental aspects has incurred. On environmental aspect, our data show that fifty nine (73.75). respondents believed that the area suffered the loss of green cover due to the construction of Chamera Dam. There were as many as twenty one (26.25 percent) respondents who felt the loss of flora and fauna. They said that the area was earlier full of natural orchards which bore local species of fruits. Those are now extinct and their children are unaware of such species of local fruits.

Additionally, sixty three (78.75 percent) respondents complained the loss of access to common property due to the impoundment of water in the reservoir. They are facing great hardships as the reservoir invariably submerged large tracts of forest and eco-systems, including grasslands etc. The people of Chakloo, Palehi, Thari and Bhanota villages told that they are the worst sufferers of the Dam. They have lost access to the common property, especially the natural water-springs. Besides, there were small water-mills (Gharats) on the banks of river where people of the nearby villages used to get various cereals, like wheat and maize, ground to make flour. Now they have to go to far-off distances to get the flour which costs them dearly as they would go in the morning and return in the afternoon after getting the flour ground through mechanical machines, which, they say, burn most of the energetic contents of the cereals. They have also lost natural grazing fields for their cattle. In addition, the local people have lost their traditional crematorium on the banks of the river and now the dead bodies have to be cremated on the fringe of the reservoir and as such the ash and the remains, which were considered sacred to be carried away by the running water of the river, are now seen floating on the surface of the reservoir water.

Another point that emerged when we further delved into the situation that our respondents have been facing due to construction of Chamera Dam, is the submergence of forests. Attempts to compensate for the loss are often made by seeking to reproduce such ecosystems elsewhere. Natural ecosystems, on the other hand, cannot be recreated. A plantation can be created, but not a natural forest or grassland. According to available research, compensatory afforestation is difficult to perform and, in some cases, was not completed until several years after the project was completed. If a specific type of forest is depleted in a given region as a result of the dam, it must be compensated by the creation of another forest in the same location. In many situations, compensatory afforestation is carried out in locations and ecosystems that are vastly different from those for which it was intended.

The history of dam construction includes many cases in which the ecological and environmental damage caused by sediment accumulation in reservoirs has been severe and difficult to repair. Sedimentation deposition is the most serious impact of dams which result in a loss of storage capacity of the reservoir due to deposited sediment.[19] This has been seen in the Chamera Dam reservoir as well. Sedimentation deposition has extended some distance of the reservoir upstream. This has increased the surface and raised water level in the surrounding villages. In some areas deposits have been exposed during long periods of reservoir drawdown and some times wind-blown dust has become a significant problem. During the field work, some respondents told that in the rainy season when it rains heavily, the water of the rivulets, which form part of the reservoir, recedes and enters their fields and houses. These families live in fear of being washed away by flash floods which may occur during the rainy season.

There is also the loss of green cover due to the Dam construction and many rare local species of fruit plants and forests have been lost. People have also lost their grasslands etc. Moreover, there is soil erosion on the edges of Chamera Dam reservoir. It came to our notice that as promised, no land in lieu of land was given to the displaced families and no colonies have been made to resettle the displaced persons. All the respondents told that they lost much of their cultivated land due to the construction of the Project. Similarly Chamera –II 300MW, Chamera –III 231MW, Budhil 70 MW, Bajoli Holi 180MW,and Kuther 240 MW are the largest schemes in the Ravi river which has been commissioned succesfully bu the eclogical impacts can not be ignored although the Kuther 240 MW is under construction.

Ecological comparison

As comparitively view with reservior based and run of the river schemes the dam based projects leads to the submergence of amount of fortile lands, displacement of villages coming under the catchment of dam and envolves the huge expendatures to rehabilitate the inhabitants affected as well as project construction. Similar ecological impacts were seen in the execution of Baira Suil, Chamera II and Chamera III HEPs . Where as in the run of the river scheme projects there is no need of submergence and not major effects on the ecology of the area. There are so many hydro power plants has been commissioned in surroundings area of this Banula Baroond-I SHEP 2 MW. The Chanju-I HEP 36 MW and Chanju-II 20MW HEP has been commissioned succesfuly without any major effects on the ecology of the area i.e on environment, loss of green cover, access to common property, loss of flora and fauna etc. Some Hydro projects are under clearences which are being executed by IPPs and HP Govt. Sector i.e Chanju Deothal 30MW, Chanju-III, Chanju Tanger 5MW, Kamil 4 MW, Kamil II 5MW, Churku SHEP 2.75 MW, Banula Baroond –II 0.80MW, Dkarund I and II 3 and 3.5 MW respectively are under clearance stage. All these projects are run of the river scheme projects so there do not seem any major effects on the ecology of the area due to installing these projects.

Conclusion

Since the construction of the project has been considered as an essential pre- requisite for the development of the area, adverse consequences and environmental degradation have been overlooked by the politicians, planners, policy makers as well as, administrators. It has clearly been forgotten that environmental degradation is not simply the ecology, flora and fauna, but also the quality of human life. Developing countries planned and are planning to establish industries, dams and other developmental projects both in rural and urban areas without taking into consideration the environmental problems associated with the misuse of natural resources like soil, water and forests. They overlook and disregard the fact that there are many intended and unintended consequences of the development processes. For instance, while treating environment as a resource, there is an imminent threat to the natural environment of the developing countries with the rapid industrialization and urbanization. The protection of environment should be considered as a crucial component of development planning. Development will be hampered without effective environmental protection, and without development, resources will be insufficient for much-needed investments in important economic and social areas. Therefore, a strong case for combining the concerns of environment; both must be designed to ensure sustainable development. Hence, there is a need of 'sustainable development', which implies a kind of development which can sustain ecology, as well as, conserve and preserve the existing natural resources.

It may be more beneficial, both economically and environmentally, to construct large number of small dams in the catchment areas of rivers. Such projects may cost less and may also prove more beneficial in the long run. Environmentally, small dams and hydro-electric projects may be more suitable in the fragile eco-system of regions like Himalayas. But micro hydro projects should not be allotted in an indiscriminate manner ignoring the traditional rights of the local people and the environment. Keeping in view the fragile hill strata, the Government should be very selective and should not allow more than one project on one stream. If large number of projects is allowed to come up, these streams, which are vital to the local eco-system, will be virtually wiped out. As a result, the people will loose their traditional sources of water which cater to their need for drinking, irrigation, livestock and even running the water mills. While ecological imbalance seriously threatens the survival of those dependent on it, the imposition of external technologies on it disrupts the natural genetic diversities that have taken years to evolve. The overall consequence of all this is degradation that is almost irreversible.

By the time the Government of Himachal Pradesh takes decision to do away with the construction of large projects in the state, it would be too late since much damage to the fragile ecology and environment of the hilly state would already have been done. Large-scale projects earn greater kudos for politicians and engineers alike; the more grandiose the scheme, the more prestige accrues to those involved in its construction. It is reasonable to assume that governments and other developmental agencies pay little

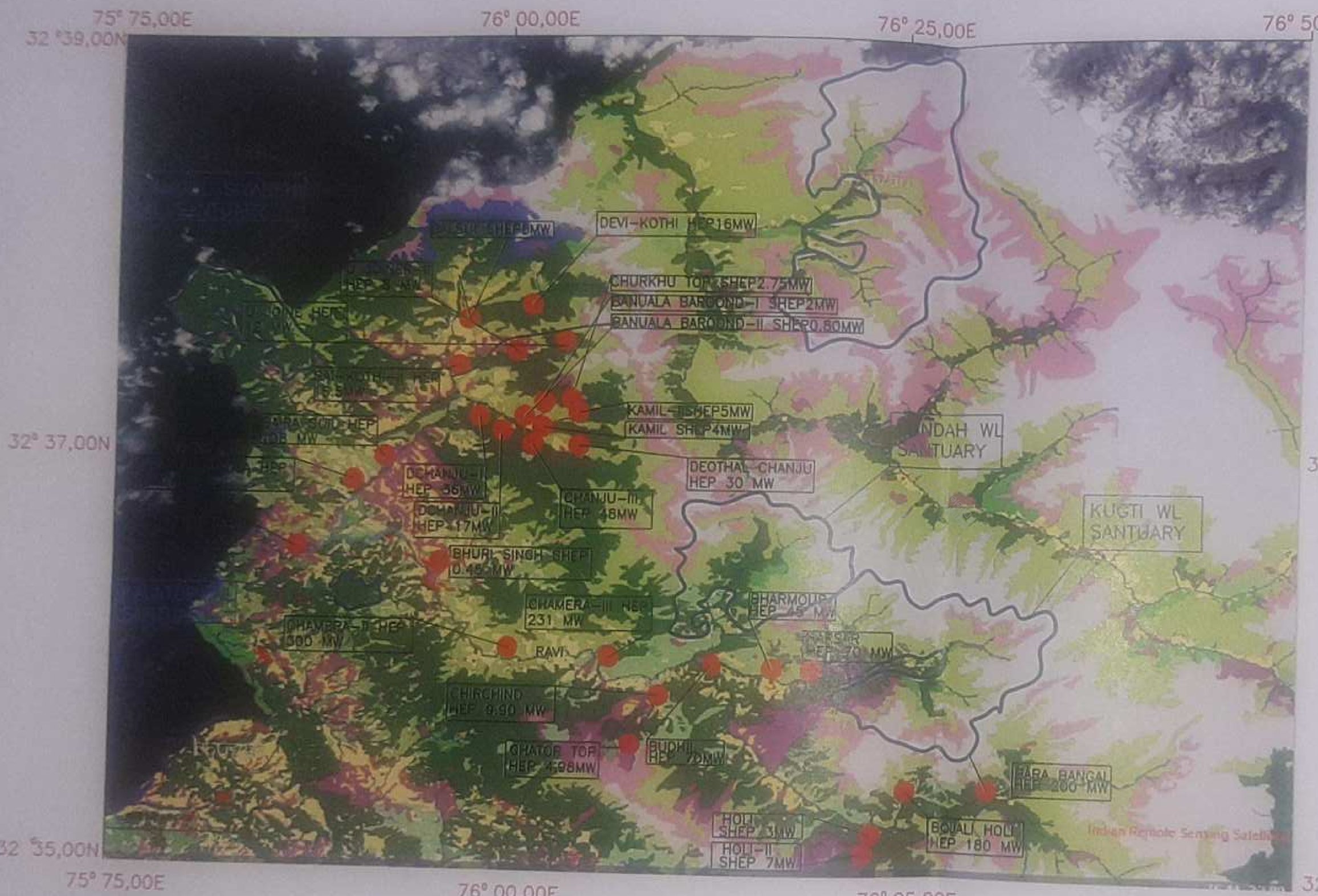
attention to the ecological and social problems caused by large dams. So there seems a remote possibility that the Government of Himachal Pradesh at this stage would review the policy of constructing large dams in the state since the work on the construction of many large dams has already been awarded to different sectors and many more are under construction. The fact of the matter is, that there has not been any definite policy of the Government and in the absence of such policy, people were made to suffer due to the ill-planned, badly executed, inadequate and inappropriate rehabilitation programme. There is thus a need to formulate a comprehensive national policy for the construction of various projects in the country with environmental, economic and socio-cultural impact assessment through national legislation.

Keeping in view the above points, some suggestions are offered. As the mega hydel projects result in submergence of large tracts of fertile lands, displace villages falling under the catchment area, involve huge expenditure as difficult terrains to be negotiated, the state of Himachal Pradesh should now concentrate on the mini-and-micro hydel projects. It may be more beneficial, both economically and environmentally because there is no need of any submergence and rehabilitation to inhabitants. Small amount of land needed for installing these projects and by mentainig the E flow in the river/nala there is no danger to the flora and fauna. So there are not any impacts on the ecology of the area and these types of projects are beneficial for the state.

Gyatri Hydel Projects P. Ltd.
Authorised Signatory

Divisional Forest Officer
Chamba Forest Division
CHAMBA-176310

DISTANCE OF HEPs FROM PAs & ESZs



DISTANCE OF HEPs TO PAs / ESZs

Project Name	Capacity in MW	River/ Basin	WL Sanctuary	Distance In KM.
Bara Bangal	200	Ravi	Kugti	8.45
Kuwarsi	15	Ravi	Kugti	13.40
Bajoli Holi	180	Ravi	Kugti	7.24
Kutehar	240	Ravi	Tundah	5.50
Holi	3	Ravi	Kugti	11.60
Holi-II	7	Ravi	Kugti	13.00
Harsar	70	Ravi	Kugti	1.00
Bharmour	45	Ravi	Kugti	5.30
Kurtha	5	Ravi	Kala Top	21.00
Budhil	70	Ravi	Tundah	4.15
Chirchind	9.90	Ravi	Tundah	7.65
Ghator Top	4.98	Ravi	Tundah	11.10
Chamera-III	231	Ravi	Tundah	14.90
Chamera-II	300	Ravi	Tundah	23.10
Bhuri Singh	0.45	Ravi	Kala Top	9.34
Chamera-I	540	Ravi	Kala Top	12.30
Surgani Sondla	48	Ravi	Gamgul Siyabehi	17.50
BairaSuil	108	Ravi	Gamgul Siyabehi	16.10
Saikothi-II	16.50	Ravi	Gamgul Siyabehi	16.70
U Joiner	12	Ravi	Gamgul Siyabehi	26.20
Chanju tanghar	4.80	Ravi	Gamgul Siyabehi	38.63
Chanju-II	17	Ravi	Gamgul Siyabehi	28.97
Chanju-I	36	Ravi	Gamgul Siyabehi	31.80
Chanju-III	48	Ravi	Gamgul Siyabehi	32.80
Deoth Chanju	30	Ravi	Gamgul Siyabehi	37.64
Churkhu Top	2.75	Ravi	Gamgul Siyabehi	26.68
Banuala Baroond-I	2	Ravi	Gamgul Siyabehi	27.96
Banuala Baroond-II	0.80	Ravi	Gamgul Siyabehi	28.66
Kamil	4	Ravi	Gamgul Siyabehi	31.50
Kamil-II	5	Ravi	Gamgul Siyabehi	32.50
Belij	5	Ravi	Tundah	8.96
Devikhothi	16	Ravi	Gamgul Siyabehi	27.10
Balsui	5	Ravi	Gamgul Siyabehi	20.30
Upper Makhan	5	Ravi	Gamgul Siyabehi	7.97
Makkan	5	Ravi	Gamgul Siyabehi	5.51

LEGEND

WL SANCTUARY	
PROJECT SITES	
RIVER & NALLAS	

WL SANTUARAY AREA

Sr.no	WL SANTUARY NAME	COORDINATE	
		LATITUDE	LONGITUDE
1	KUGTI	32°26'0.56"E 32°27'20.60"E	76°38'32.43"E 76°40'09.85"E
2	TUNDAH	32°31'27.84"E 32°31'38.05"E	76°26'55.99"E 76°26'30.00"E
3	GAMGUL SIYABEHI	32°52'55.94"E 32°52'34.21"E	75°49'22.46"E 75°53'15.04"E
4	KALA TOP	32°33'05.84"E 32°32'40.29"E	76°01'15.02"E 76°01'39.64"E

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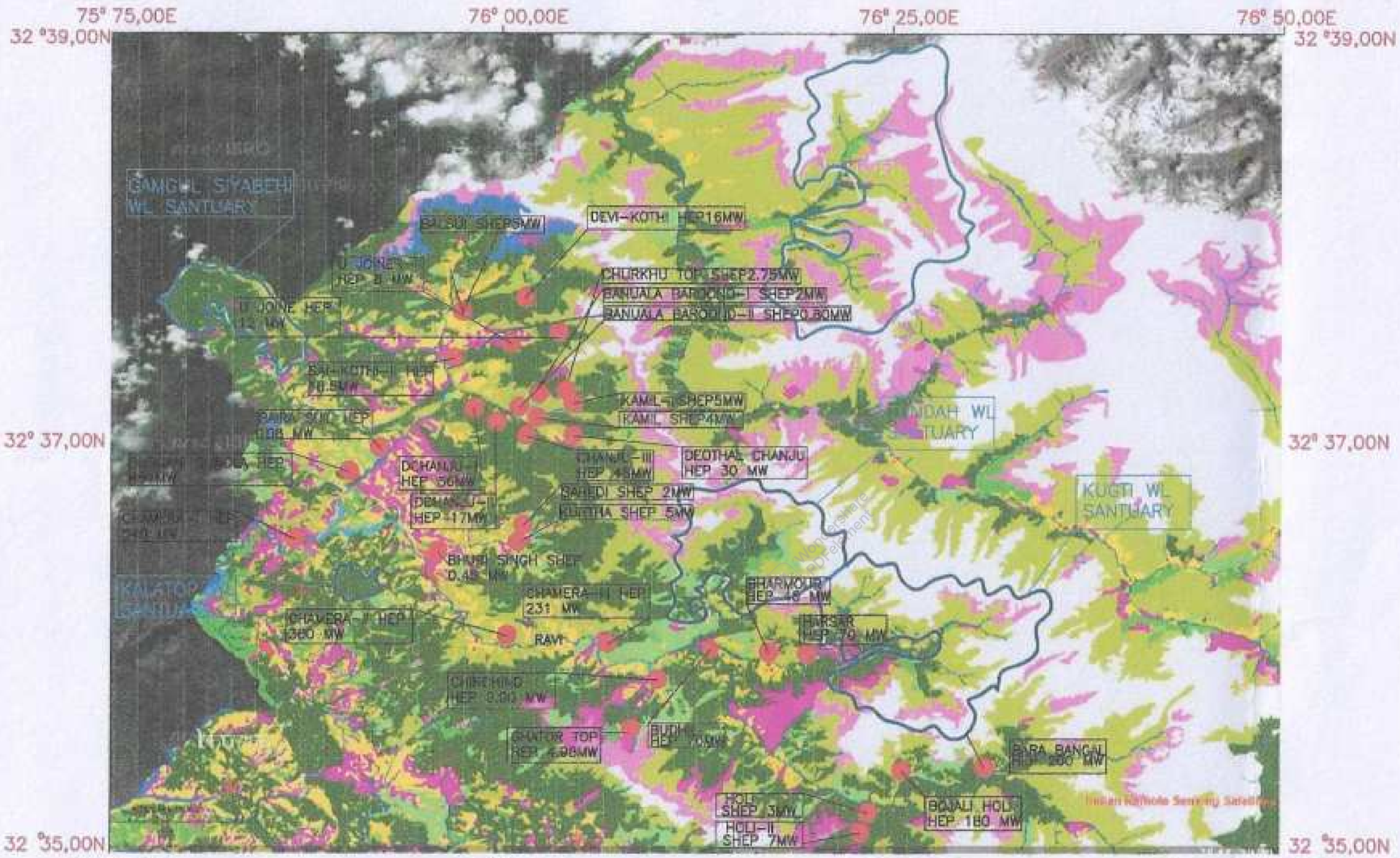
Divisional Forest Officer
Chamba Forest Division
CHAMBA-176310

DISTANCE OF HEPs FROM PAs & ESZs



LEGEND

WL SANCTUARY	
PROJECT SITES	
RIVER & NALLAS	

WL SANTUARAY AREA

Sr.no	WL SANTUARY NAME	COORDINATE	
		LATITUDE	LONGITUDE
1	KUGTI	32°36'0.56"E 32°27'20.60"E	76°38'32.43"E 76°40'09.85"E
2	TUNDAH	32°31'27.84"E 32°31'38.05"E	76°26'55.99"E 76°26'30.00"E
3	GAMGUL SIYABEHI	32°53'55.94"E 32°52'34.21"E	75°49'22.46"E 75°53'15.04"E
4	KALA TOP	32°33'05.84"E 32°32'40.29"E	76°01'15.02"E 76°01'39.64"E

PROP. PROJECTS IN CHURKHU NALA

Sr.no	PROJECT NAME	CAPACITY IN MW	NALLA
1	CHURKHU TOP	2.75	CHURKU
2	BANUALA BAROOND-I	2	CHURKU
3	BANUALA BAROOND-II	0.80	CHURKU

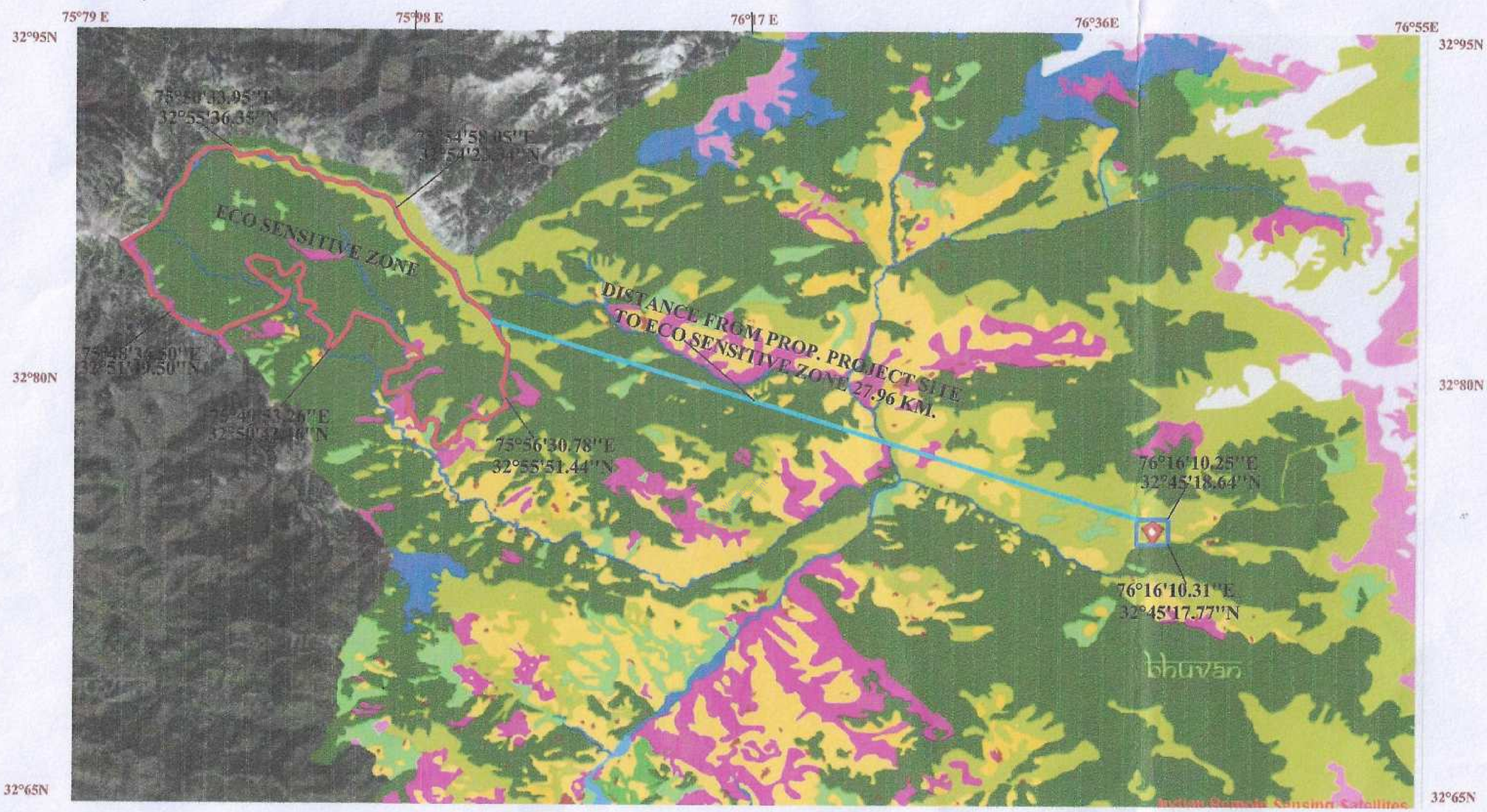
WL SANTUARY	DISTANCE IN KM	CORDENATE	
		LATITUDE	LONGITUDE
GAMGUL SIYABEHI	26.68	32°45'56.32"E 32°45'55.98"E	76°16'9.77"E 76°16'9.32"E
GAMGUL SIYABEHI	27.96	32°45'18.64"E 32°45'17.77"E	76°16'18.25"E 76°16'18.31"E
GAMGUL SIYABEHI	28.66	32°45'0.86"E 32°45'0.68"E	75°16'18.18"E 75°16'19.31"E

New Aydel Power
Authorised Signatory

Divisional Forest Officer
Chamba Forest Division
CHAMBA-176310

(40)

LandUse Map For C/O ECO SENSITIVE ZONE BANUALA BAROOND-I SHEP SHEP (2MW)



ECO SENSITIVE ZONE BOUNDRY

DISTANCE

PROP PROJECT SITE

Gyatri Hydel Projects P. Ltd.

Authorised Signatory

Divisional Forest Officer
Chamba Forest Division
CHAMBA-176310

DIRECTORATE OF ENRGY
GOVERNMENT OF HIMACHAL PRADESH
SHANTI BHAWAN PHASE-III SECTOR-6 NEW SHIMLA -9
TEL NO: 0177-2673551, FAX NO: 2673553, Email: dir.doehp@nic.in

No. - HPDoE/CE (Energy)/CEIA (Ravi Basin)/2021- 1630-31 **Dated:** 19/06/2021

From

Director (Energy),
Directorate of Energy,

To

The Chief Engineer (PCA),
HPSEBL, Kumar House Shimla-04.

Subject: **Clarification sought by MoEF & CC regarding River Basin study for Ravi Basin: FCA approval for Hail HEP.**

Ref.: **Your office letter no. HPSEBL/CE (PCA)/S & I Expenditure/2020-1292 dated 09/06/2021.**

Sir,

On the subject cited matter, I am directed to intimate that at present no independent study is being carried out to assess the total potential of Ravi Basin/ Catchment to generate power. However, a Digitized Basin wise Plan for Ravi Basin study was carried out through Lahmeyer International (India) Pvt. Ltd. in the year 2012 and as per the report the Hydro Power Potential of Ravi Basin has been identified as 3237.12 MW. Further the detail with regard to potential harnessed so far and projects in pipeline in Ravi Basin is attached herewith at **Annexure-I**.

This is for your kind information please.

Yours faithfully,

DA: As above

Superintending Engineer,
Directorate of Energy, Shimla-09.

Copy to the Superintending Engineer, Planning Circle (Civil), HPSEB Ltd., Mandi, H.P for information please.

DA: As above

DETAIL OF PROJECTS IN RAVI BASIN (EXCULDING HIMURJA)

Sr. No	Project Name	Capacity in MW	District	River/ Basin	Executing Agency
A) Already harnessed Potential in Ravi Basin					
1	Sural	0.01	Chamba	Ravi	Himachal Pradesh State Electricity Board Limited (HPSEBL)
2	Bhuri Singh PH	0.45	Chamba	Ravi	Himachal Pradesh State Electricity Board Limited (HPSEBL)
3	Sach	0.9	Chamba	Ravi	Himachal Pradesh State Electricity Board Limited (HPSEBL)
4	Sal-II	2	Chamba	Ravi	Himachal Pradesh State Electricity Board Limited (HPSEBL)
5	Holi	3	Chamba	Ravi	Himachal Pradesh State Electricity Board Limited (HPSEBL)
6	Salun	9	Chamba	Ravi	Swadeshi Distributors Private Limited
7	Upper Joiner	12	Chamba	Ravi	Tejas Sarnika Hydro Energies Private Limited
8	Kuwarsi	15	Chamba	Ravi	Jagdambey Hydro Project Limited
9	Chanju-I	36	Chamba	Ravi	IA Hydro Energy Private Limited
10	Budhil	70	Chamba	Ravi	Greenko Budhil Hydro Private Limited
11	Baira Suil	180	Chamba	Ravi	National Hydro Power Corporation Limited (NHPCL)
12	Chamera-III	231	Chamba	Ravi	National Hydro Power Corporation Limited (NHPCL)
13	Chamera-II	300	Chamba	Ravi	National Hydro Power Corporation Limited (NHPCL)
14	Chamera-I	540	Chamba	Ravi	National Hydro Power Corporation Limited (NHPCL)
Total (A)		**1399.36**	**MW**		
B)Projects in Pipeline					
1	Holi-II	7	Chamba	Ravi	Om Energy Generation Private Limited
2	Chanju-II	19.8	Chamba	Ravi	Cosmos Hydro Power Private Limited
3	Bajoli Holi	180	Chamba	Ravi	GMR Energy Limited
4	Kutehr	240	Chamba	Ravi	JSW Energy Limited
5	Devi Kothi	16	Chamba	Ravi	Himachal Pradesh State Electricity Board Limited (HPSEBL)

6	Sai kothi-II	16.5	Chamba	Ravi	Himachal Pradesh State Electricity Board Limited (HPSEBL)
7	Sai kothi-I	15	Chamba	Ravi	Himachal Pradesh State Electricity Board Limited (HPSEBL)
8	Hail	18	Chamba	Ravi	Himachal Pradesh State Electricity Board Limited (HPSEBL)
9	Kurhed-II	7.5	Chamba	Ravi	Meridian Hydro Power Consultants
10	Kalah Khol	11	Chamba	Ravi	Pariyal Power
11	Sundrali	11	Chamba	Ravi	Saiurja Hydel Projects Pvt. Ltd.,
12	Chirchind-II	12.9	Chamba	Ravi	Shivalik Energy Private Limited
13	Choned	15	Chamba	Ravi	Kundan Energy LLP
14	Tundan	15	Chamba	Ravi	Gee Cee Hydro Power (P) Limited
15	Chatte Ka Nallah	9	Chamba	Ravi	Jagdambey Hydro Project Limited
16	Toral Kundli	18	Chamba	Ravi	Jagdambey Hydro Project Limited
17	Dunali-I &II	17	Chamba	Ravi	Saiurja Hydel Projects Pvt. Ltd.,
18	Tundah–II	18	Chamba	Ravi	Sai Engineering Foundation,
19	Harsar Stage-III	19	Chamba	Ravi	Harsar Hydro Projects Private Limited
20	Bharmour Stage-II	21	Chamba	Ravi	Bharmour Hydro Projects Private Limited
21	Harsar Stage-II	22.5	Chamba	Ravi	Harsar Hydro Projects Private Limited
22	Bharmour Stage-I	24	Chamba	Ravi	Bharmour Hydro Projects Private Limited
23	Jai Banni Mata	24	Chamba	Ravi	K.S. Energy (JBM) Private Limited
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31	Suil	10	Chamba	Ravi	Yet to be alloted

32	Chobia-I	14	Chamba	Ravi	Yet to be alloted
33	Dhancho	18	Chamba	Ravi	Yet to be alloted
Total(B)		**1160.2**	**MW**		
Grand Total (A+B)		**2559.56**	**MW**		

Sr. Executive Engineer,
Directorate of Energy
New Shimla, Phase-3, Shimla

AEE(Mon.)

E FLOW MECHANISM ON DISCHARGE AVAILABILITY FOR 90% DEPENDABLE YEAR

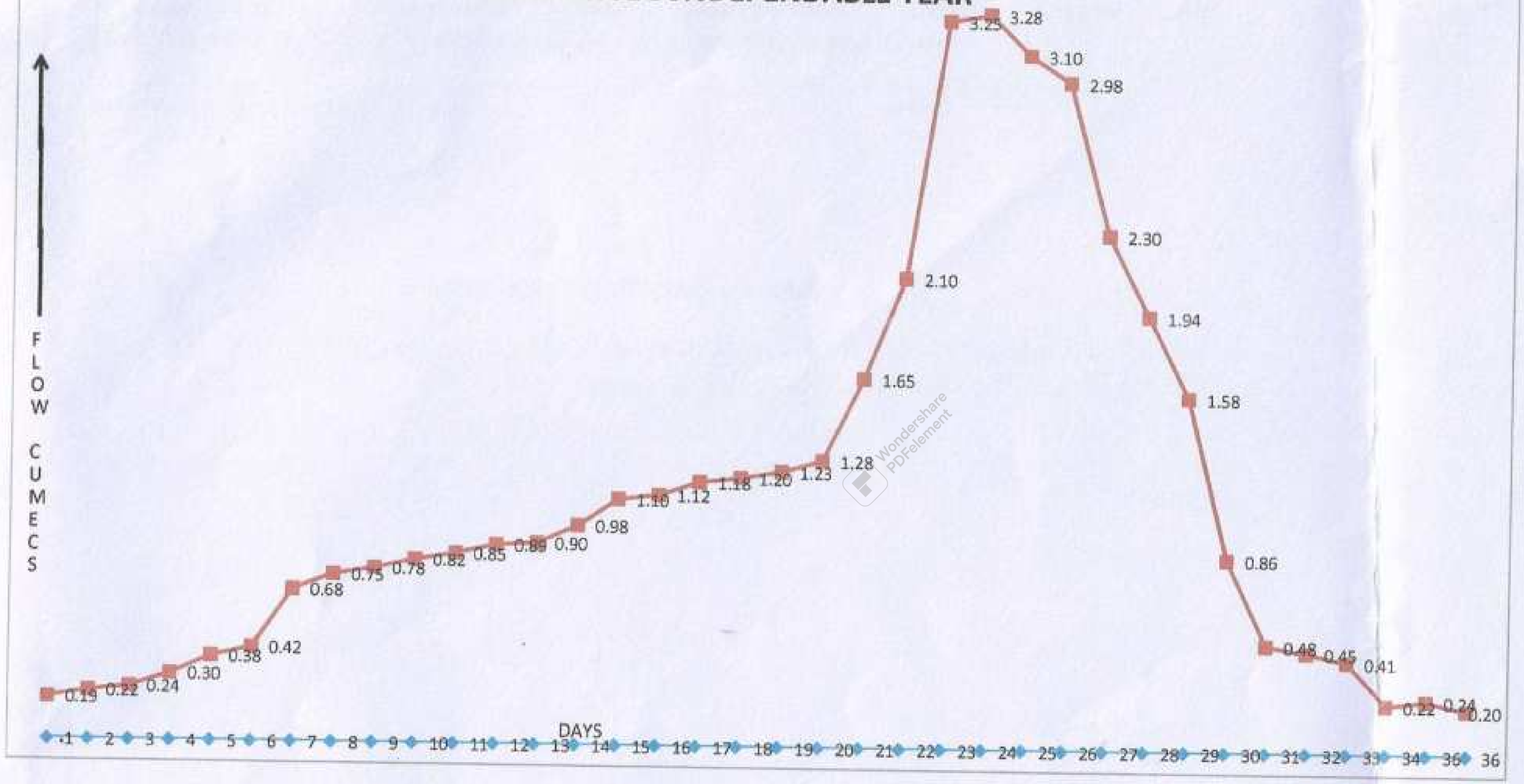
		DISCHARGE IN NALA	20% RELEASED DISCHARGE IN LEAN SEASON	DISCHARGE AVAILABILITY FOR GENERATION	REMARAKS
JAN	I	0.24	0.05	0.19	Lean Season
	II	0.28	0.06	0.22	Lean Season
	III	0.30	0.06	0.24	Lean Season
FEB	I	0.38	0.08	0.30	Lean Season
	II	0.48	0.10	0.38	Lean Season
	III	0.53	0.11	0.42	Lean Season
MAR	I	0.68		0.68	
	II	0.75		0.75	
	III	0.78		0.78	
APR	I	0.82		0.82	
	II	0.85		0.85	
	III	0.89		0.89	
MAY	I	0.90		0.90	
	II	0.98		0.98	
	III	1.10		1.10	
JUN	I	1.12		1.12	
	II	1.18		1.18	
	III	1.20		1.20	
JULY	I	1.23		1.23	
	II	1.28		1.28	
	III	1.65		1.65	
AUG	I	2.10		2.10	
	II	3.25		3.25	
	III	3.28		3.28	
SEP	I	3.10		3.10	
	II	2.98		2.98	
	III	2.30		2.30	
OCT	I	1.94		1.94	
	II	1.58		1.58	
	III	0.86		0.86	
NOV	I	0.48		0.48	
	II	0.45		0.45	
	III	0.41		0.41	
DEC	I	0.28	0.06	0.22	Lean Season
	II	0.30	0.06	0.24	Lean Season
	III	0.26	0.06	0.20	Lean Season
	AVERAGE DISCHRAGE 1.14		20% RELEASED DISCHARGE 0.07	AV. DISCHRAGE 1.07	
				TOTAL GENERATION 2001.35KW	

The average discharge in the churku Nala is 1.14 Cumecs on 90% dependable year.20% discharge @0.07 Cumecs will be mentained in the nala as E Flow throughout the year . For the generation of 2 MW with Gross Head of (At Weir site 1990M and Power House 1767M. 1990-1767=223M) 223M i.e 9.0*0.95*1.07*9.81*223=2001.35KW or say 2.00MW.

Gyatri Hyde Projects P Ltd
Authorised Signatory

Divisional Forest Officer
Chamba Forest Division
CHAMBA-176310

DISCHARGE 90%DEPENDABLE YEAR



Gyatri Hydel Projects P. Ltd
Authorised Signatory

Divisional Forest Officer
Chamba Forest Division
CHAMBA-176310

47

GYATRI HYDEL PROJECTS PVT. LTD.

MOHALLA CHARPAT PO, TEHSIL AND DISTT. CHAMBA HP- 176301
Correspondence Address—Gyatri Hydel Projects c/o Naman Engineers and consultants Tapovan HP Vidhansabha Road Dharamshala Distt. Kangra HP
Mob. No. 9418254538,945924259 Email Id– mkapoor.8000@gmail.com

Ref.No.- GHPL/Fee/155/23 Dated 28/11/23

UNDERTAKING TO MENTAIN e- FLOW

I Ved Vyas Thakur authorised signatory of M/S GYATRI HYDEL PROJECTS PVT. LTD. hereby undertake to mentain the e-flow in the lean season in the Nala c/o Banuala Baroons SHEP 2MW in Tehsil Churah Distt. Chamba HP .

Date---- 28/11/23

Place--- Chamba

For Gyatri Hydel Projects Pvt. Ltd.
Gyatri Hydel Projects P. Ltd.
Authorized Signatory
Authorised Signatory

Divisional Forest Officer
Chamba Forest Division
CHAMBA-176310

98

DIRECTORATE OF ENRGY
GOVERNMENT OF HIMACHAL PRADESH
SHANTI BHAWAN PHASE-III SECTOR-6 NEW SHIMLA -9
TEL NO: 0177-2673551, FAX NO: 2673553, Email: dir.doehp@nic.in

No. - HPDoE/CE (Energy)/CEIA (Ravi Basin)/2021- 1630-31 **Dated:** 19/06/2021

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Sr. Executive Engineer,
Directorate of Energy
New Shimla, Phase-3, Shimla

AEE(Mon.)