

# KALAI POWER PRIVATE LIMITED

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## 1200MW Kalai-II Hydroelectric Project

### Comprehensive Environmental Impact Assessment Study Report

EXECUTIVE SUMMARY REPORT  
(Translation in Miju Mishmi Dialect)

July 2013



**WAPCOS LIMITED**  
(A Government of India Undertaking)

PLOT NO. 76 - C, SECTOR 18, GURGAON -122 015, HARYANA

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## DAMYUT KHRAINAI

### 1. Mung Yut

Tlo brai an wan krah kanung atti. An atti wan Himalaya anjaw hai soh yaumun hai nak manjhi karou san nak ahoung neka taimun. Kasung rat Tan lai lei ka makrang lai mo wan soh mannung youneka dan atti latmun ka taimun. Tlo atti an leika mai ta-achao kang hatai kashit mang. An braileika chong kang mai-mung kalat phou da anluk mai-project kasam phou da hataimai. Mai ta-achao kang Tlo ta-katoh sampmang wan  $27^{\circ}54' 20''$  N ka  $96^{\circ} 48' 16''$  E luk sampmang. Tloh ta-katoh sampmang glat wan alei khrainai.

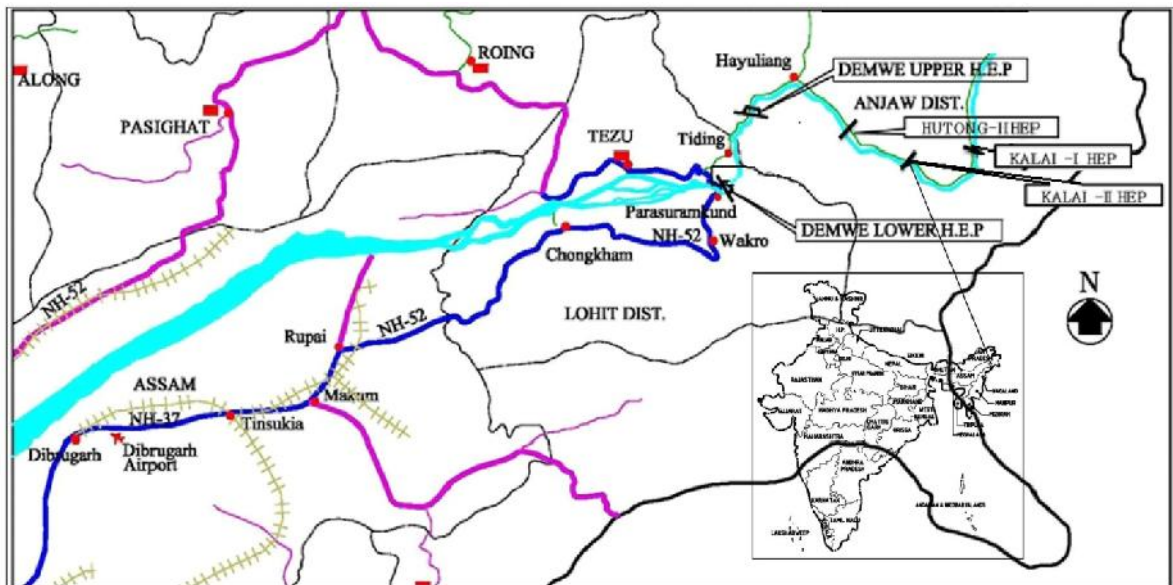


Figure-1;- Tloh Ta-katok glat

### 2. PROJECT Damhei Khrainai

Chipui rat Kalai-II luk 318.8 M cum leika 29.76 M cum kiphi atti hawai mang. Anluk tloh wan concrete cement ka tanna smpmang ka an nah nai rat 1137.2 cumec atti wan kashit katai phou taphi nyai rump kalein 7.5 dia ka kamo wan 8.5 dia kreneka wanhila katai phou takat sampmang. Mai ta-achao bui wan kanjhal rala nyai gung lei tanna sampmang. Anluk  $(6 \times 190 + 60)$  1200 MW mai samp chinmang.

Tloh wan ta-ktoh sampmang wan pangtao, Khi tao su ka 15654 sq Km glat mung tao ka taimun. Apui rat atti wan katoh kanera EL 904.80m hai mo hawaimang. An project luk Cement ka taktoh wanra ka wan lein lap coffer dam, Nyai rump, gung yut rump wanra ka nyai-gung lei mai-bui ta-achao sampmang. Anchan apui kang rat 1100 ha. nyai khra mang. An project yahao sampmang wan alei khannai.

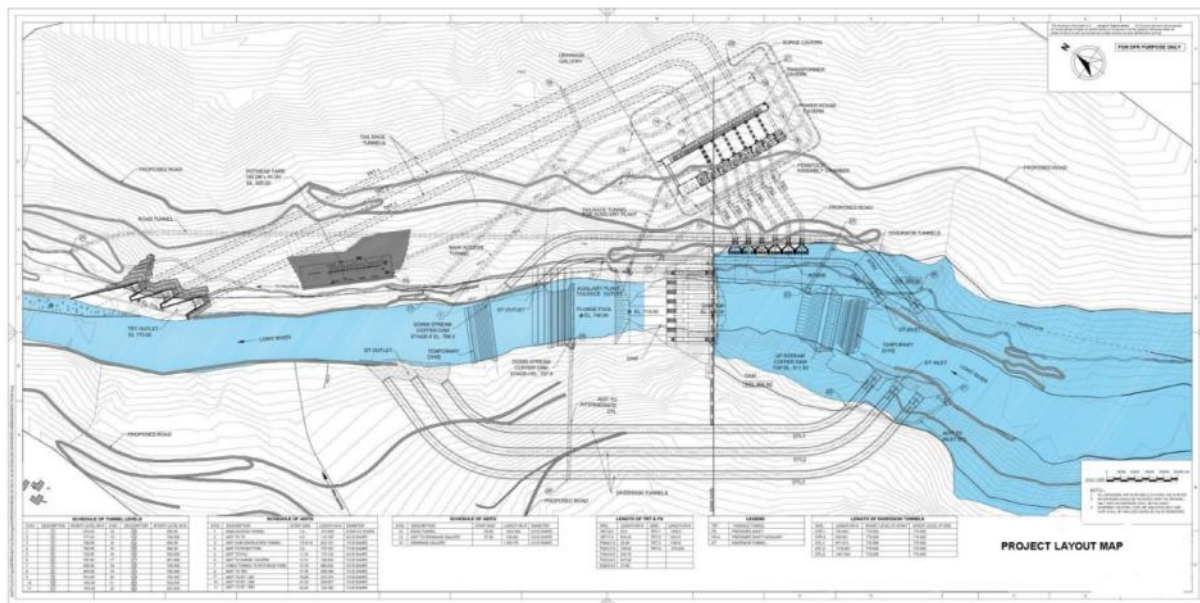


FIGURE-2

Figure-2: Kalai-II HEP luk yahao sampmang wan khannai

Apui rat 1100 ha nyai khramang wan dam hi alei khrainai

**TABLE-1**  
Kalai-II Mai project kang nyaiwan anchan hi nungmang

S. No.	Shan taphi	Shao mo (ha)
1	Atti hawai mang	640
2	Project phai khramang	160
3	Laoung/nyai tamphang	90
4	Blong, Bui-glat	80
5	Blong achao tamblai	30
6	Tangui tandouk, mal tanjam	25
7	Laung tantham, cement tanjam	10
8	Kpam chong tashouk	30
9	Nyai pi- tamblai	20
10	Nyai gung yut takre kang	15
	<b>Apui rat</b>	<b>1100</b>

### 3. Thong sam lei

CEIA kang anchan dam hi thong Sam lei:

- Atti ka hawai lum longma glat-glung
- Atti hawai mang leika KM 10 gunghei glat-glung
- Choh lai project kang ta-achao kang glat.
- Choh ta-achao leika km 10 gung hi glat-glung
- Poug ta-apat sampmang leika gai hi glat-glung

Thong sam lei glat glung wan Figure-3. Lei khrainai

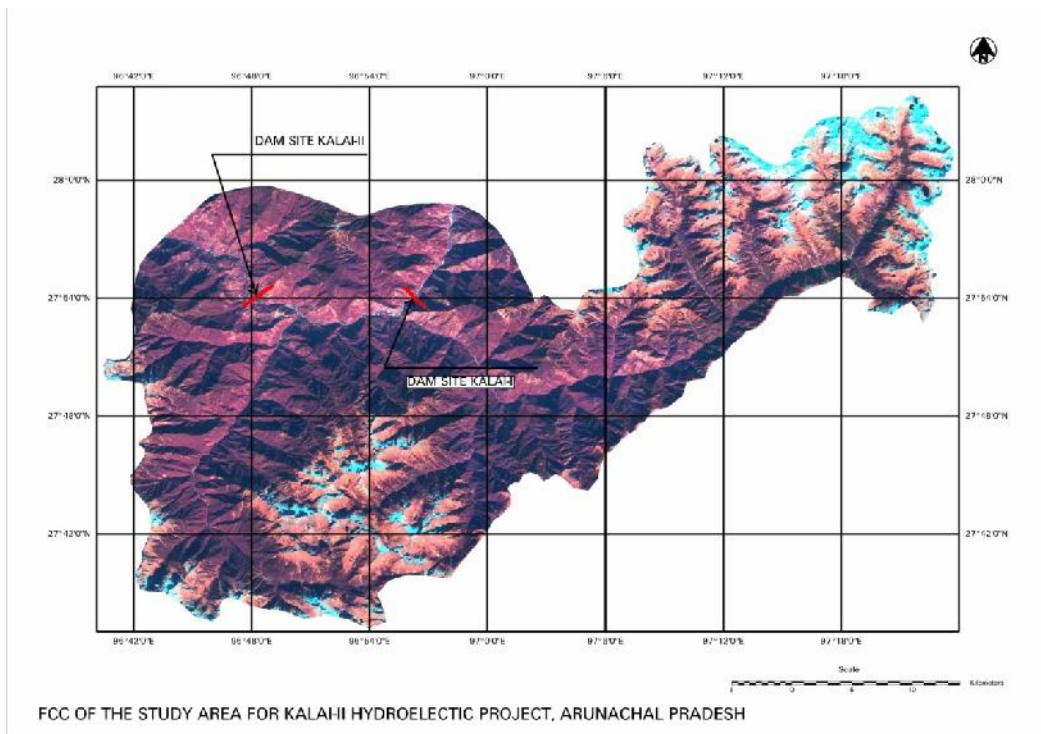


Figure-3: Nyou haika Kalai-II HEP kang thong-sam katlei glat glung mung(FCC)

4. Hei su taineka tangit puntlei

EIA kang broung kasam taphi chong wi awat sam lei wanja wan dam hi alei sainai.

TABLE-2  
CEIA hai tun taphi gai hai tngnit tara lei

Season	Lai
kasung	Akap 2010 - Anggong 2011
Byou	Thmit 2011- Halut 2011
Awang lau	Yatoung- Nall 2011

5. Kanan-kasin, boung-awang

5.1 Physico-chemical hailam ka

5.1.1 Awang-atti

Tloh guog yut kanam yut wan kanjhing ka klong hai wan hatai kanjhing. Kasung wan tamei lei atat mun ka Makrang mo tapei kamun wanra ka chang Byou humun. Thmit leika Halut mo. An guog yut awang atti katmun wan kawai na youleila numpenglung lei la boung atti kram yumun wanka soumun. an wan halut lai wahflang leika atat mun ka Muya lai mo tapei chant mun. Awang karam wan Yashie nak Nall lai nak kip rat soumun. Atti awang katka mal ra Angong mo tapei kawal sammun wan mal ra Kanddi rat laha byou mun. Tloh guog

yut awang wan 2500 nak 5000 mm.kip hi soumun.

### 5.1.2 Nyai tampam dam

Nyai nyo shoumo nung mang wan tangit tara lei ka dahi wan alei khrainai. Table-3 hai.

**TABLE-3**  
**Nyai shanshan hai kam tohwai**

S. No.	Category	Area(ha)	Area(%)
1	Atti gung lei	4397	2.53
2	Mallang	94225	54.17
3	Kanan	31974	18.38
4	Roh	1742	1.00
6	Manung khu	10956	6.30
7	Mapamnai nyai	30505	17.54
8	Chong glat	160	0.09
	<b>Apui rat</b>	<b>173959</b>	<b>100.00</b>

Ankhai sainai hai nganmun dansu nyai wan koh kanan .100 mo leika 72.55 wan koh kanan. Mapamnai nyai kawat wan 100 mo leika 17.54. Chong tei wan 100 mo leika 1 chan. 100 mo leika 6.3 nyai wan sou ka phyai pum mo.

### 5.1.3 Nyai

Nyai wan kipmo. EC wan mathyam. EC haila ka ngintmun an nyai lei tamin wan mathyam chan toumun. Nyai gung lei tuomun wanchan hi thongneka ngitnmun an nyai anluk tilang dan kho syat-shaw ra masam mang. Tloh an wi ta-katoh kang nyai leineka lein yut tamphang sammang wan ka ra lein yut nyai ti kora mang, wan pang hi ra an nyai luk tilang shan khoh marai mang. An raimang taphi wan tumun tawa syant nai takat da donai.

### 5.1.4 Atti

Kallai-II HEP kang atti ahoung neka atoung lei hai ngatla pH wan 7.2 leika 7.7 mo. pH khanmunhaila ka atti wan nai kipmo ro. TDS wan 47-50 mg/l kasung rat, 40-43 mg/l byou rat wanra ka 34-40 mg/l awang lau rat wanchao ka an wan atti tanthat kang khlantnai 500 mg/l pang hi tyang mathyam. Apui pang hi kachouh wannai 25 nak 37 kiphi mochan an khraimun, an atti an wan kachou mai. Apui pang hi kachou wan nai khlatn nai 200 mg/l lap lei tyang mathyam. chlorides 4 nak 10 mg/l, kiphei wan nai khlant nai 200 mg/l pang hei tyang mathyam roh. Atti tanthat kang 200mg/l sulphates tumun wannai matou. Atti tanthat kang tangui 1 mg/l tunmun wannai matou.

An nyai gung lei kung kanung twa cho-lai kayu syant tilang dan maka. Lang anjaw glat hi kamun phenolic wanra ka nyai gung lei brong shaw chong kang tapong -tapam tuomun wanchan kho anluk maka.

DO wan 9.6 nak 9.8 kipihi nganla an wan byou, kasung ka awang lau rat atoug lei.

### 5.1.5 Boung

Chong mathyam wanra ka Gari- gara dan mangyal taphi boug an wan hatai kshit. An wan byou, awang lau gairat wanra ka kasung katai rat atoug lei. Wanka an glat hi chong tashouk-talup kang tumang.

### 5.1.6 Chong-sin kah

Chong mathyam wanra ka Gari-Gara dan maka taphi takig-tandai kah maphan khoh maka.

An wan chong tashouk-talap kang tumun.

## 5.1 Chong-sin glat mung

### 5.2.1 Kanan

Project kang kanan-kasin sou katnai wan Champion ni Seth (1968) haila ka wan alei khrainai:

Subgroup 1B: Klong hailamp byou-kasung hangai byo kanan

C2. Assam luntlam byou-kasung hangai byo kanan (IB/C2)

Subgroup 8B: Klong hailam, lap katai sang kanan

C1. Kayantlam Himalayan kanjhak hai kanan (8B/C1)

## KUNG KANUNG SANG

Tangit da tara lei hai kung kunung sang wan anchan thanla

TABLE-4  
Kung kunung sang

S. No	Kangit san amang	Ara amang	Dam/matham	Shyant hi tunmun
<b>Angiosperms/ Gymnosperms</b>				
<b>Sang</b>				
1	<i>Abroma angusta</i> L.		Dan	Bui sang, mai
2	<i>Actinodaphne obovata</i>		dan	Bui sang, mai
3	<i>Albizia odoratissima</i> (L.f.) Benth.		dan	Bui sang, mai
4	<i>Alnus nepalensis</i> D.Don.		Dan	Bui sang, mai
5	<i>Altingia excelsa</i>	Jutuli	Dan	Buisang, mai
6	<i>Arnogeissus sericea</i> Brandes		Dan	Chal shat, mai
7	<i>Artocarpus lakucha</i> Buch.Ham.	Kathal	Dan	Bui sang, mai
8	<i>Bauhinia purpurea</i> L.	Kanchan	dan	Phant tashat

S. No	Kangit san amang	Ara amang	Dam/matham	Shyant hi tunmun
9	<i>Bischofia javonica</i> Bl.	Urium	Dan	Chal shyat
10	<i>Bombex ceiba</i> L.	Simul	Dan	Phant tashat
11	<i>Cedrella toona</i> Roxb.		dan	Bui sang, mai
12	<i>Celtis tetrandra</i> Roxb.		Dan	Bui sang, mai
13	<i>Croton oblongifolium</i> Roxb.	Changpephum	Dan	Bui sang, mai
14	<i>Dalbergia latifolia</i> Roxb.		Dan	Bui sang, mai
15	<i>Dendrocalamus hamiltonii</i> Nees		Dan	Bui sang
16	<i>Elaeocarpus floribundus</i> Bl.		Dan	Bui sang, mai
17	<i>Erythriana stricta</i> Roxb.	Modar	Dan	Bui sang, mai
18	<i>Eugenia jambolana</i> Lamik		Dan	Shit tatham
19	<i>Ficus auriculata</i> Lour.		Dan	Sith tatham
20	<i>F. oligodon</i> Miq		Dan	Bui sang, mai
21	<i>F. semichordata</i> Buch-Ham ex Smith		Dan	Siyh tatham
22	<i>Grewia microcos</i> L.		Dan	Bui sang, mai
23	<i>Juglans regia</i> L.		Dan	Bui sang, mai
24	<i>Kydia calycina</i> Roxb.	Pichola	dan	Bui sang, mai
25	<i>Lagestromia speciosa</i> (L.) Persoon		dan	Bui sang, mai
26	<i>Mallotus nepelensis</i>		Dan	Bui sang, mai
27	<i>Musa balbisiana</i> Colla		Dan	Phant tashat
28	<i>Mussaenda roxburghii</i> L.		Dan	Bui sang, mai
29	<i>Padamus nepalensis</i> St. John		Dan	Bui sang, mai
30	<i>Terminalia myriocarpa</i> Heurek	Holok	Dan	Bui sang, mai
31	<i>Trema orientalis</i> Bl.		Dan	Chal shyat
<b>SHRUBS</b>				
1	<i>Abroma angusta</i> L.	Bon kopahi	dan	mai
2	<i>Acacia torta</i> (Roxb.)		Dan	mai
3.	<i>Artemesia japonica</i> Thumb.		Dan	mai
4	<i>Artemesia nelegerica</i> C.B. Clarke	Sangaisaik	Dan	mai
5	<i>Arundo donex</i> L.		Dan	mai
6	<i>Boehmeria macrophylla</i> D. Don.		Dan	Chal shat
7	<i>Boehmeria regulosa</i> Wedd.		Dan	Chal shat
8	<i>Calamus tenuis</i> Roxb.		DAN	Bui sang
9	<i>Callicarpa macrophylla</i> Vahl.		Dan	mai
10	<i>Caryopteris odorata</i>		dAN	mai
11	<i>Cythea spinulosa</i> Wall. ex. Hook		Dan	mai
12	<i>Debregeasia velutina</i> Gaudich		Dan	Chal shat

S. No	Kangit san amang	Ara amang	Dam/matham	Shyant hi tunmun
13	<i>Girardiana diversifolia</i> (Link.) Friss.		Dan	Laf tashat
14	<i>Imperata cylindrica</i> (L.) P. Beauv.		Dan	mai
15	<i>Lantana camara</i> L.	Phutkilap	Dan	mai
16	<i>Leea asiatica</i> (L.) Richsdale	Dubjal-Aychnes	Dan	mai
17	<i>Mimosa himalayana</i> Gamble		Dan	MAi
18	<i>Perilla frutescens</i> (L.) Britt.		Dan	Sith tashat
19	<i>Randia cochinchinensis</i> Merr.		Dan	Mai tamphral
20	<i>Rhus ellipticus</i>		Dan	Sith tatam
21	<i>Rhus semialata</i> Murray	Boisang	Dan	Mai tamphral
22	<i>Rubus ellipticus</i> Smith		Dan	Sith tatham
23	<i>Sterculia roxburghii</i> Wall.		Dan	Bui kang
<b>HERBS</b>				
1	<i>Alocasia spp</i>		Dan	Tashat
2	<i>Chenopodium album</i> L.		Dan	Tashat
3	<i>Colocasia fallax</i> Schott.		Dan	Tashat
4	<i>Rubia manjit</i> Roxb. ex. Fleming		Dan	Kayum tangri
5	<i>Rumex dentatus</i> L.		Dan	Tashat
6	<i>Urena lobata</i> L.		Dan	ung

### Tasi-Tanga sang

An glat mung yut tasi-tanga sang wan hatai kam, anchan wi ara glat chong san ngitong nat-kunai tankhraw da toungtaw. Anchan amang wan kala lai ka *Abroma angusta*, *Achyranthes aspera*, *Artemisia nilagirica*, *Buddleja asiatica*, *Eleusine indica*, *Gynocardia odorata*, *Holarrhena pubescens*, *Oroxylum indicum*, *Phyllanthus emblica*, *Sapindus mukorossi*, *Spondias pinnata* wanra ka *Syzygium cumini* domtaw wanchan hatai dan kam. *Castanopsis hystrix*, *Dioscorea deltoidea*, *Fagopyrum cymosum*, *Hedychium spicatum*, *Rubia cordifolia*, *Saurauia roxburghii* wanra ka *Zanthoxylum acanthopodium* wanchan wan anjaw klong hai kamun ka anchan wi wan shai gung yut nat kakhraw luk da toungtaw.

### Phaimang gai sang

Kalai-II HEP kang kanan-kasin tangit dah builei rat nganla *Lagerstroemia minuticarpa* Wanja wan phaimang gai sang. Sang lang ra wema makhra yahai nai dan kam. Wanka nai an sang an atti gung luk khora malum mang.



## 5.2.2. Sin-Shat

Kanan- Kasein builei-glanglei rat sin-shyat karang towa khnung sei-wa, kloung-tngui anglat yut choukmun nganla wan alei khrainai.

**TABLE-5**  
**Rouk-PIh kambrein thal nganla wan**

Amang	Kangit san amang	Sin-Shat kasouk phou da nim sainai 1972 hai yawan hai thahnai
<b>Shan broung : Cercopithacidae</b>		
Common langur	<i>Semnopithecus entellus</i>	II
Assamese macaque	<i>Macaca assamensis</i>	II
Rhesus macaque	<i>Macaca mulatta</i>	II
<b>Family: Felidae</b>		
Katyung	<i>Felis chaus</i>	II
<b>Family: Canidae</b>		II
Mabou	<i>Vulpes bengalensis</i>	II
Krei	<i>Cuon alpinus</i>	
<b>Family: Viverridae</b>		
Large Indian Civet	<i>Viverra zibetha</i>	
Common palm civet	<i>Paradoxurus hermaphroditus</i>	
Small Indian Civet	<i>Viverricula indica</i>	
<b>Family: Herpestidae</b>		
Chirei	<i>Herpestes edwardsii</i>	IV
<b>Family Bovidae</b>		
Chal	<i>Bos frontalis</i>	
Goral	<i>Nemorhaedus goral</i>	III
Ra-ae	<i>Budorcas taxicolor</i>	I
<b>Family: Cervidae</b>		
Pahi	<i>Muntiacus muntjak</i>	III
Hog deer	<i>Axis porcinus</i>	III
<b>Family: Suidae</b>		
Tsum	<i>Sus scrofa</i>	III
<b>Family: Leporidae</b>		
Indian Hare	<i>Lepus nigricollis</i>	IV
<b>Family: Manidae</b>		
Indian Pangolin	<i>Manis crassicaudata</i>	
<b>Family : Sciuridae</b>		
Dawuo	<i>Tamiops macclellandi</i>	
Glangsou	<i>Petaurista magnificus</i>	
Particolored Flying Squirrel.	<i>Hylopetes alboniger</i>	
<b>Family: Muridae</b>		
Large Bandicoot-Rat	<i>Bandicota indica</i>	V
Seih	<i>Rattus rattus</i>	V
<b>Family: Vespertilionidae</b>		
Indian Pipistrelle	<i>Pipistrellus coromandra</i>	V
PHOHFI	<i>Pipistrellus tenuis</i>	V

TABLE-6  
Fiyungmun twa wah

Amang	Kangit san amang	Shau kantaw	Yawan hai toumPhohfi WPA(1972)
<b>Rallidae</b>			
White-breasted water hen	<i>Amaurornis phoenicurus</i>	R	IV
Moorhen	<i>Gallinula chloropus</i>	R	IV
<b>Jacanidae</b>			
Bronze winged jacana	<i>Metopidius indicus</i>	R	IV
<b>Phasianidae</b>			
Redjungle fowl	<i>Gallus gallus</i>	R	-
<b>Picidae</b>			
Grey-headed woodpecker	<i>Picus canus</i>	R	IV
<b>Megalaimidae</b>			
Great hill barbet	<i>Megalaima virens</i>	R	IV
<b>Upupidae</b>			
Common hoopoe	<i>Upupa epops</i>	RW	IV
<b>Columbidae</b>			
Rock pigeon	<i>Columba livia</i>	R	IV
Ashy wood pigeon	<i>C. pulchricollis</i>	r	IV
Speckled wood pigeon	<i>C. hodgsonii</i>	r	IV
Pintail green pigeon	<i>Treron apicauda</i>	r	IV
Green imperial pigeon	<i>Ducula aenea</i>	r	IV
Mountain imperial pigeon	<i>D. badia</i>		
Spotted dove	<i>Streptopelia chinensis</i>	R	IV
Emerald dove	<i>Chalcophaps indica</i>	R	IV
<b>Cuculidae</b>			
Common hawk cuckoo	<i>Hierococcyx varius</i>	r	IV
Pied crested cuckoo	<i>Clamator jacobinus</i>	rs	IV
Common koel	<i>Eudynamys scolopacea</i>	R	IV
<b>Centropodidae</b>			
Lesser coucal	<i>Centropus bengalensis</i>	r	IV
Greater coucal	<i>C. sinensis</i>	R	IV
<b>Aegithalidae</b>			
Green backed tit	<i>Parus monticolus</i>	R	IV
Brown crested tit	<i>P. dichrous</i>	R	IV
<b>Sittidae</b>			
Wall creeper	<i>Tichodroma muraria</i>	rw	IV
<b>Sturniidae</b>			
Gawui	<i>Acridotheres tristis</i>	R	IV
Hill myna	<i>Gracula religiosa</i>	r	IV
<b>Pycnonotidae</b>			
Red vented bulbul	<i>Pycnonotus cafer</i>	R	IV
Striated green bulbul	<i>P. striatus</i>	r	IV
Mountain bulbul <i>Hypsipetes mcclllandii</i>	r	IV	

Amang	Kangit san amang	Shau kantaw	Yawan hai toumPhohfi WPA(1972)
Black bulbul	<i>H. leucocephalus</i>	R	IV
<b>Laniidae</b>			
Rufous backed shrike	<i>Lanius schach</i>	R	IV
<b>Muscicapidae</b>			
Blue whistling thrush	<i>Myophonus caeruleus</i>	R	IV
Grey winged black bird	<i>Turdus boulboul</i>	r	IV
Plumbeous redstart	<i>Rhyacornis fuliginosus</i>	r	IV
Paradise flycatcher	<i>Terpsiphone paradisi</i>	R	IV
<b>Carvidae</b>			
Large billed crow	<i>Corvus macrorhynchos</i>	R	V
Himalayan treepie	<i>Dendrocitta formosae</i>	R	IV
Maroon oriole	<i>Oriolus traillii</i>	r	IV
Black headed oriole	<i>O. xanthornus</i>	r	IV
Scarlet minivet	<i>Pericrocotus flammeus</i>	R	IV
<b>Sylviidae</b>			
Striated laughing thrush	<i>Garrulax striatus</i>	r	IV
Greater laughing thrush	<i>G. pectoralis</i>	r	IV
Grey hooded warbler	<i>Seicercus poliogenys</i>	r	IV
<b>Passeridae</b>			
Russet sparrow	<i>Passer rutilans</i>	R	IV
Tree sparrow	<i>P. montanus</i>	R	IV
White wagtail	<i>Motacilla alba</i>	rW	IV

R - Dan choukmun; W - yahai yara choukmun; r - choukmun; s - Yahai-yara

**TABLE-7**  
Kawal-Kanjhak choukmun brong

Amang	Kangit san amang
<b>Bufonidae</b>	
Common toad	<i>Bufo melanostictus</i>
Himalayan toad	<i>Bufo himalayana</i>
<b>Ranidae</b>	
Meghalaya stream frog	<i>Amolops afghanus</i>
Daniel's Oriental Streamfrog	<i>Rana danieli</i>
Yembung Sucker Frog	<i>Rana gerbillus</i>
Taipei frog	<i>Rana taipehensis</i>
<b>Rhacophoridae</b>	
Pied theloderma	<i>Philautus annandalii</i>
Twin-spotted Flying Frog	<i>Rhacophorus bipunctatus</i>

**TABLE-8**  
Kloun-gngui choukmun brong

Amang	Kangit san amang
<b>Scincidae</b>	
Sikkim sunskink	<i>Scinella sikkimensis</i>
Large Forest-skink	<i>Sphenomorphus indicum</i>

Amang	Kangit san amang
Writhing skinks	<i>Lygosoma</i> sp
<b>Gekkoniade</b>	
Khasi lizard	<i>Cyrtodactylus khasiensis</i>
Brook's House Gecko	<i>Hemidactylus brookii</i>
House geckos,	<i>H. frenatus</i>
<b>Laceridae</b>	
Asian grass lizard	<i>Takydromus sexlineatus</i>
<b>Elapidae</b>	
Common krait	<i>Bungarus niger</i>
Banded krait	<i>B. fasciatus</i>
Cobra	<i>Naja naja</i>
<b>Viperidae</b>	
Bamboo pit viper	<i>Trimeresurus</i> spp
Brown-spotted pitviper	<i>Protobothrops mucrosquamatus</i>
Mountain pitviper	<i>Ovophis monticola</i>
<b>Colubridae</b>	
Green keelback	<i>Macropisthodon plumbicolor</i>
Common worm snake	<i>Typlina branmina</i>
Common wolf snake	<i>Lycodon aulicus</i>

TABLE-9  
Phachung brong

Amang	Kangit san amang
<b>Papilionidae</b>	
Blue Peacock	<i>Priceps arcturus</i>
The redbreasted	<i>P. aclmentor</i>
Common mormon	<i>Papilio polytes</i>
<b>Pieridae</b>	
Pale wanderer	<i>Pareronia avatar</i>
Yellow orange tip	<i>Ixias pyrene familiaris</i>
Indian cabbage white	<i>Pieris canidia</i>
<b>Lycaenida</b>	
Longbanded silverline	<i>Spindasis lohita himalayanus</i>
Metallic cerulean	<i>Jamides alecto euryaces</i>
Punchinello	<i>Zemeros flegyas indicus</i>
<b>Nymphalidae</b>	
Yellow owl	<i>Neorina hilda</i>
Nigger	<i>Orsotrioena medus medus</i>
Himalayan fivering	<i>Ypthima sacra sacra</i>
Common fourring	<i>Y. hubenri hubenri</i>
Large yeoman	<i>Cirrochroa aoris aoris</i>
Indian fritillary	<i>Argyreus hyperbius hyperbius</i>
Veriegated Sailer	<i>Neptis antilope</i>
Orange staff sergeant	<i>Parathyma cama</i>
Blackvein sergeant	<i>P. ranga ranga</i>
Stripped blue crow	<i>Euploea mulciber</i>

Krei nak Mabou nak wan An tapam sammang wan glat luk choukmun. Mabou wan sin-shat kasouk phuotaw nim tra nai hai II luk humun. Chal nak Corl nak wannig III luk toum ka Ra-ae wan I luk thahnai. Ra-ae wan anjaw klong hai 2100-3000m hai chan choukmun ka anluk tapam sammang wanluk khoh machouk. Seih brong wanchan weih nim 1972 hai V hih thahnai. Seih brong hai Ngit seih, Ngal seih, Hapi wanra ka Glangsou choukmun. Anchan wih nim achaw nai wanluk mathah nai. Phoifi wan an glat luk danshu choukmun. Wein wan kanam yut dan chouktaw. Phoifi anchan ngalrat kangtaw ka salmon tuwa wih kashit chumtaw. Anchan weih nim achao nai wanhai V hi thanai. Avi wanchan wan IV luk phyai thahnai.

Kawal- kanjhak sau haro kasouk mung lei ka wan an glat mung luk brong 7 ngantla. Anlei Changkhang, hairum, kangran wanra ka *Bufo melanostictus* wan dansuh chouktaw an glat luk. Changkhang brong leika kamo lang pratmo kang tasi makhra. Kloung brong lei 15 lang-lang ngantla. Anchan wan Forest skink, Khasi lizard, house lizard, common krait, Indian monitor wanra ka pit viper taw. Anchan apui nai nyai khap nai yut chouktaw phyai taphhi prat mang da khoh tasi makhra. Anchan wan IV luk thahnai mai ra mathah nai yong.

### 5.2.3 Atti gung lei kashouk thal

Atoung lei apui hai nganla wan Phytoplankton wan hatai klam- klam hai chan chouktaw (103 -109 ind. l<sup>-1</sup>). Kalai II HEP luk Tloh brai lei diversity index wan 2.438 nak 2.494 khiphi nganla.

Zooplankton wan Cladocera hai taxa(01), Rotifera (03) wanra ka Copepoda (02) wanchan khantaw. Zooplankton wan 70-91 ind. l<sup>-1</sup> khiphi ngantmun. Diversity index wan 2.123 - 2.750 khiphi nganymun..

Kalai II HEP brai luk macrophytes nai ngantla. An macrophytes wanchan wih *Equisetum spp.*, *Adiantum* wanra ka *Selaginella spp* amang haila ka jhal-muntaw. Atti lie macrophytes Kalai II lie chouktaw.

### 5.2.4 Annga

Tloh an wan anjaw tawla ka taimun atti karam taimun, anlie chut talat kang boungwan dan toumun. anluk kashouk annga san wan an atti kambran taimun hi tashouk kmal taw. An brai luk annga brong 6 chouktaw. Anlieka kayin (*Tor tor* nak *Tor putitora*;) wan pratmang gai. *Schizothorax richardsonii* wan nai taprat kanai roh. Wankanai anchan annga wan tloh luk kawat machouk taw. Wan kamuh nai anchan annga san wi kaprung phuo takat hatai tun

mun. Tloh katoh kanera annga tut-yut taimuntaw wanchan kang hatai tkhai sammang. Anchan annga wan manjhi aate hi pailong yutow me.

**TABLE-10**  
**Kalai II HEP Luk annga**

Broung	Amang	Status
<b>Family: Cyprinidae</b>		
<i>Schizothorax richardsonii</i> Gray	Kadang	Mathyam broung
<i>Tor putitora</i> Hamilton	Ngauch	Pratmang gai
<i>Tor tor</i> Hamilton	Ngorika	Pratmang gai
<i>Acrossocheilus hexagonolepis</i>		
<b>Family Sisoridae</b>		
<i>Glyptothorax pectinopterus</i>	Ngapang	Kayat maprat
<b>Family Cobitidae</b>		
<i>Botia dario</i>		

## 6. Shaw sammang

### 6.1 Atti yut

#### a) Nahnai rat

##### Kapam san glat

Pam hataim taw rat kapam wan glah 3000 saw sammang. Chong tasith-takhei hai ka atti kora wan 0.33mld latmang. BOD wan ngitm rat 135 kg sammang. Anlei saumo kora- kofa latmang wanwih braiyut matai wai shong mun katna mataw.

##### Loung thamnai hai

Loung thamnai hai wan kanjai twa kat huomang wanjhan wih kashit shoungmun takatna sammang.

##### Lang hai kora

Tloh ta-katoh kang pamnai rat atti wan dan shu nunmang wanchao ka wanhaila taineka young wara lein haila young taineka lap yutla atti wan proh kora mang an tafi atti an wih tilang mah kora hih tapam da tah-tara sammang.

#### b) Nguh lukra

##### Project chong chouktaw hai

Nguhluuk malra E&M chong chan ti chouk mataw wanlih ka atti yut kang tilang mah-kora mang. Ti koramun wannai kashit tah-achao na sammang.

**Atti hawaimang wantuk shou sammang**

Atti hawaimang wantut danshu nyai wan koh ka-tuwa ka nyai, antut sang chan tiha kam. An sang wanchan winai atti ma-huwainai wai apui tarit sammang. An project an wan atti taimun yut mai achaonai saroh sammang.

**Eutrophication risks**

Tasih haika pyam khoh an glat tut nya mapam taw ka toh lika kholang nya tilang tasi pyam akung-hanam hi phang mataw sou khow makatnai wantafi Eutrophication risk khoh maka

**Lap yutla chong atti kathoung san**

Kalai-II HEP wan atti maphlang khrung hawai khramang. Wan phlang luk chang mai ta-achao kang gung yutla gral mataw. An Maphlang kiprat lap youlam atti lei kashouk san kang proh tkhai sammang. An wan Kasung katai rat waw tkhai mang. Wan tafi braiyut tunmun tapei mo atti wan byo yut ktai takat sammang.

Tongit-tongal nim tara nai hailam ka anchaou mo atti byo katai takat sammang.

- **Awang law-Halut leika Tant lai mo** - 90% Atti Kateh rat byoyut taimun hai30%
- **Awang law mai rat-Muya leika Thmit lai mo** - 90% Atti Kateh rat byoyut taimun hai 20-30%
- **Kawal law rat- Tmei leika Makrang lai mo** - 90% Atti Kateh rat byoyut taimun hai20%

**6.2 Boung maroung yut****Boung****Tapam mal wanchanka boung sawmo raimang**

Danshu katai-katai kam wan mai bijuli ka takat sammang wanhi mai thoprong khoh tamphral wan masammang. Diesel wan laha laha mai-hai chan taloung sammang wan tphi shan tilang anluk pamnai tphi boung yut khoh marai mang.

**Loung thamnai hai huomang**

Loung thamnai rat nyai wan hatai karam huomang. Anchan wi Boung kamboungphou katneka ta-achao sammang. Labour san tashouk mal wan hurun neka proh klam hai tanna sammang.

### Poung apatnai hi

Poug apatnai hai gai hi nyai jhanmang ka loung-sang kangrul sammang wantfi poung wan nyai gung lei chan dan ta-apat sammang. Wanka nyai leinyut khoh shan lang mangit mang.

Nyai rump leinai rat rump youlam nyai wan karam huomang. An kahou phu wan rump kcha ta-achaw sammang ka nyai hwut wan kanan hi sang lap hi kathai phu takat sammang.

### Gari-Gara gyalmun hi

Gari gyalmun hai nai nyai toung wan proh houmang. Anlei nyaitoung an klam mateit tafi shan tilang boung hi marai mang.

### 6.3 Nyou yut kah

Anluk shouso pinya layumang ka pam mataw wanka shoumo kikmang-daimang wanka chong eing rai nai katmang. Dan kah katai kran munhi tashouk wan eing hikang maphan. chong wan 90db(A) pang hi dan kah beimun hi dan tathitmai.

### 6.4. Nyai yut

#### 6.4.1 Nyaising- loungkhri

Tapam tafi atti brai lei thanmun tuwa alei khrainai wanchan ta-ahai sammang.

**TABLE-11**  
Ti brai lei phah

Shan	Shouh mo kam (lakh Cum)
River Bed Material (RBM) 1	3.3
River Bed Material (RBM) 2	2.5
River Bed Material (RBM) 3	3.3

### Loung

Tapam kang loung yasoumo kam wan alie sainai.

**TABLE-12**  
Loung

Quarry	Shoumo kam (lakh Cum)
Rock Quarry RQ1	25
Rock Quarry RQ2	3
Rock Quarry RQ3	30

Nyaising-loungkhri ta-achao kang wan pinya bhyai khoh mathah mataw. Arunachal Pradesh soroh anjaw glat hi nyasing kalat phou da loung kathyuo hai tanchal sammun wanmal hichang kanjai chak wan glat lutmun.



Wanra rang hai ra boung awang thin neka an loukbah wi grul tumun wanlika taphal-tarit katmun. Wantafi tafal-tarit an ta-katoh tafi mandoh karam wan wi ta-achao tunmun.

### **Pinya-sotoro tantong**

Pinya-sotoro tantong kang wan nyai katai su khrah mang. Wanra an pang hi tunluk ra nyai wan loung tambum, nyasing-longkhri tambum wanra ka cement tathah kang nai nah nai tapeimo kang talat sammang. Anchan kashit hi tantong dah harun khra mang. Anchan tantong mal wan anchan lai wih thong khra mang:

- Tampam chak gai/kanai
- Kanan- Kasin marai hi
- Chong glat kanai/klam
- Atti tathut tool gai/kanai

### **Nyai tamphang**

Chipui rat 117.45 lacm<sup>3</sup> sou nyai nak loung nak wan nyai gung lika paineka tamphang sammang . Anluk tambal tunmun kang loung nak nyaising nak wan lein ra nak gung linuk loung tuomun wanchan ka promang. Chipui rat 42 lakh cum sou nyaising lounghri nungmang. Wanpang hira 2 lac cum Loung kanjai wan pal-lah peh tloh ta-katoh kang khramang. Chipui ahoung kanera Nyai-nyoh, lounghri-nyaising hauoh neka 55 lac cum sou linyut latmang wanlie ka 5.5 laccum wan hi dah kam tou namang.

### **Nyai tasyup**

Chipui rat an project kang 1100ha nyai tunmun. Nyai shaumo tasyup sammang wan kanan nyai bhyai da tanchum sammang. Yongmo nyai wanchan ra chong ga nyai yong ka yong wan chong mung nyai. Wanchan tuo san wih wan appai tamphit sammang. Glat mung nyai wan kanan nyai da tanchum samang. An nyai la naitaw wan kang kashit tumun appai tafyet da tara nai.

## **6.5 Glat mung lun yut tasyouk-talap**

### **a) Nahnai rat**

#### **Chong bulneka**

An nahnai talai rat chong wan glah 3000 sou sammang. Anchan chong wanchan mai tamfral kang sang tak yutaw lang kraw mapinai ra wan tafi mai bronglang tamfit dah donai. Munglut shat ta-achut kang nai LPG fral neka ta-tara sammang.

#### **Kanan nyai tasyup**

Chipui rat 1100ha nyai tunmun wanlika 640 ha wan atti ka lum longma. Shoumo lum

longma wanchan wan tloh wih guog tut fyai. Wan tafi an atti hawai mang wan ka kanan sin-shat temtaw-longtaw hih tilang matoh mang. Anproject sammang wan glat tut sin chongtaw glat khoh mai ka lahah hungtaw saw kholang makatnai. Wan tafi an dao hih shan tilang marai mang.

#### **Fyungmun tuwa wah**

An prject sammang wan glat tut glat mandoh tafi atti wan kambran taimun wanchawka atti wah tashouk mal kho kashit mai. Anluk tloh wan katoh kanera 640 ha nyai tut atti wan hawai dul longman ka tamai-tamai hih atti daohih tafun-taya gougmang wanchan hih atti wah tashouk wan hatai kashit. Wan tafi anluk atti wah kacha hai kanai hatai paihu mataw ka wah danshu prungmang.

#### **b) Nahnai rat**

##### **Bloung katong kashit mang ka**

An nah nai rat bloung katong wan kashit mang phyai ka chong tathit talong nai bulmang ka chong dan tafi an kanan-kasin anchan wih nai tihah raiyu. Chong wan dan ahoungmang ka sin-shat kap nai kat yutow wanhih kashit tayung byo tunmang.

#### **6.6 Atti gung lei kashouk san**

##### **a) Nahnai rat**

An nahnai rat chong tashouk-talap mal haika chong pongnai-pamnai atti-hanow kora wanchan atti brai luk taiyu. An pamnai talai rat chong kapam san kang 0.41 mld atti tunmang wanlieka 80% , 0.33mld wan braiyut da tai namang. An atti kora wan braiyut matut wai kashit kashoung ta-achaona sammang.

##### **b) Nguhluk ra**

Kalai-II HEP wan nguluk ra 640 ha. Glat mung tut atti hawai mang. An atti wan hatai kambran taimun haika nashang kahmun luk alit longmang. An atti hawai neka lein lap kayein shuh yut atti goung yut kashouk-kalap san kang hatai alit mang. Atti gung yut kloung ateh kashouk wanchan kang teng tashouk talap alit mang.

#### **6.7 Chong takrai tatho kang**

##### **Mannul kam kakat puomang**

An namtaw talai rat chong wan glah 3000 souh sammang. Chong kam katah chong san kam-lam thanmang. Tongit-tongal anra chong wan apui akung hai ka bhyai kremptou. An project wan anra glat chong san kang kam lam dan shu kram Yuma.

#### **7. Kanan-kasin shou takat kang**

##### **7.1 Chong tashouk mal lika mai mung dan kahu takatmai.**

An nahnai rat chong dan chongneka an glat mung tut kanan-kasin boung-awang wih dan kora mun kat yutou. Wan tafi shan soh takat samammang wan alieh khrainai.

**Labour san glat luk kamang**

Anluk contract kam kakat sanwih labour san kang bui kandang tanna dah tando sammang. An builuk tamung langlang ka mai bijuli, atti wanra ka takhui bui kacha kah khrahmang.

Anluk atti tanthut kang brailie kamuh manjhi hai kamuh laneka labour glat wan pang hail lah khramang. Atti rah kashit anwih toung chin mang.

**Takhui bui**

Glah katalmo chong rat takhui bui kammo pih chinmang. An takhui bui li ka atti kora taimang wan brai matut wai shoungmun takat na sammang.

**Labour san takhui wan shan takat**

Takhui ta-ahoung kang masonry danshu ta- achao sammang anchan chipui naif 2 m3 wah chinmun tuwa samang. Anlika ngitdangkramneka kacha hi tandoung sammang.

**Ngit makhra hih mai**

Anluk ka-tara tuo san nak Arunachal sokari nak runeka LPG tamfit dah tawa khramang. Anchan wan kung kanam hih tamfit sammang.

**7.2 Bloung lihnai rat kanan-kasin taraimai**

An nahnai rat bloung nai talih sammang. Mandoh anchan wan tapfal kang blong avhao muntaw wan tafi atti blong lein lam taimun khrung wan kashit tambraikat sammang. AN TAPFAL ANCHAN WIH WAN PINYA lamka katoh chinmang.

**7.3 Pyam tanthah mal**

Anjaw glat hi shan-shan tangkram wan nyai lihneka krapmtou.an wan gai hih kora mangan kasam phou dah takat sammun. Anluk lihneka kram kane mal lukra kashit kanan sammun sang talapna.

**7.4 Tah kato gai luk kashit tathah**

An ta-katoh sammang wan gailuk kashit kangan phuo tafi ring tampam sammang ka sang fant wanra ka kashit kashit sang mai talap sammang.anluk chong talap kang bench wanra ka hangyup kang nai kashyap tana sammang.

**7.5 Hangai tah tara**

Anluk shawmo pamnai- khruinai mal wanra ka an dao hih kacha hai nai shoumo pinya sotoro tongnai mal wanchan hi kashit hangai fyai kanganfuo dah sang fyai talap sammang.

An wan state rah Forest department nak praineka takat sammang.

### 7.6 Chong kang tasih-tanga

An kam katnai rat chong wan chipui rat glah 3000 sou sammang. Labour san wan lung kayein maira lung kasam hi chong mangtaw. Toh project an sammang gai luk tasi bui kanai wan maka. Wan tafi an gai luk tasi bui tanna dah donnai. Tasi ta-amal mal wan an nah nai rat shuh ta-achao dah donai.

Ateh peh kai hah kang mo tasih wan kam katnai dang hi tanthah dah donai.

Kai hah kang tasi wanhai anchan tuomang :

- Kai hah kang tasi the wanly tasi kasi wanra ka ORS nai kathou fuo.
- Kai hah kang thmai thloh taking kang apui tasih kathuo fuo.
- Stretcher wanra ka wheel chairnai kathuo fuo, .

### 7.7 SANG KAILIH HIH TALAPNA

Chipui rat 1100 ha. Nyai tunmun. Anluk nyai shaoumo tunmun khrung wan kanan nyai dah fyai tunnai. Anluk sang kailih hih tamblai talapna wan state rah forest department san kat matou. An panghainai aleh anchan takat dah donnai

- Sang lap tamblai
- Nyai kandangfuo takat,
- Amik hai nak atti lih nak mai latmun wan dan kapoungtou takat ka faimang tuwa choung wanchan akha kakattaw taka,
- Chut lahmun tuwa khrung kashouktow takat
- Sang mai faimun tuwa kangittow hih sang mal tapam ka tamblin.
- Kanan wanra ka sin-syat wih saudo kakha fuo takat ka sin tahui tahat mai.
- Kanan-kasin, sin-syat ksith kashouk tou hih chong kangitow takat
- Chong mung yut kasith kasam fou hih takat
- Chong wih tamblin wanra ka tangkhrai

### 7.8 Bounyut yut kora mathyam takat

Bounyut yut kora wan danshu wan lounyut tatham pinya hai ka lat mun. wantafi lounyut katham contractor san ngittow pinya luk bouk kandang wat neka kacha hila fyung khramang.

### 7.9 Atti gung lei kora mathyam takat

Nahnai rat

An nahnai rat kayein kasam lounyut katham kam ktamang wanlika frouk glatmun wan atti luk kora mang wan tafi an wih suoh kara hih tanjam kat da tah-tara sammang.

Gung yut nyai rump kreinai rat atti tai shanmang wanra ka wanyut kang lanai wanhai nai lounyut frou ahoung shan meh ka tai kalong ra brai kora mang tafi tanky roh utai ta-achau

sammang wanluk frow wanchan kanjhang fuo.

### Ngu lukra

An project wan ngu lukra project chong san kang glat bui 50 achou mangtaw wanlik takhui-tasith shoumo wan brai yut matai wait a-achao sammang.

### 7.10 Annga kang

#### a) Byo tihah katai fuo

Atti byo katai fuo kang wan alie khrainai

TABLE-13

Kalai-II HEP luk atti byo katai fuo wan

Laih	10 Daily	10 daily Discharge in 90% Year (Cumeecs)	lou	Av. Flow during the season in 90% year (Cumeecs)	Env. Flow during the season (Cumeecs)	Env Flow as a %age of 90% average flow
Halut	I	550	Awang lou	794	238	30%
	II	766				
	III	786				
Yasie	I	710				
	II	798				
	III	784				
Yatou ng	I	841				
	II	1124				
	III	1189				
Nall	I	861				
	II	863				
	III	619				
Tant	I	539				
	II	506				
	III	975				
Muya	I	758	Awang masoh lou	567	142	25%
	II	487				
	III	457				
Tmei	I	358	kasung	278	56	20%
	II	333				
	III	307				
Akap	I	294				
	II	283				
	III	270				

Anggonng	I	258				
	II	239				
	III	251				
Kanddi	I	255				
	II	257				
	III	258				
Makrang	I	251				
	II	285				
	III	276				
Thmit	I	322	Kawal lou	335	115	34%
	II	337				
	III	347				

Mai bui wanluk 190 MW kang katam ka 60 MW kang kamo pipe sammang. 60 MWkamo ka 190 MW kamo wan apui rat 250 MW thouma mo wan byo yut lap yutla atti katai phu tafi tantha sammang.

**b) Pratmang kai annga wanchan kashouk tou takat.**

An atti wan katoh nai lih ka tutwang lam 16Km mo hawai mang ka yutwang lap 2km mo wan atti wan braid a matai mang. An atti wan kilometermo rat 30mm hah 100fingerling mo sammang. Hawaimang wantut wan Hactare mo nyai rat 30 mm hah 1000 fingerling mo sammang. Paimun tuwa annga mahaseer nak snow trout wan tannan chin mang. An annga wan tannan tafi anning annga wih sah kakroh takat khra mang wan tafi wan annga department nak prai khra mang.

**7.11 Kah mathyam takat**

Labour san pinya kah katai kranmun gai hi kakam wanchan wih eing hih tapum tuwa tamfit sammang. Wanpang hih anchan nai tanthong sammang:

- Kah wan wanchou mo byo kakhah fuo tafi pinya wan byo tanthong sammang.
- Kah karuo kasam fuo da pipe wan wih byo ta-atong khra mang;
- Kah katai kik mun glat hih byo yut tamblat mai, an wan OSHA ka saimo wan lam takat sammang.

**8. An glat mung yut kashouk takat**

Atti hanoung kashit kashoung kakha fuo tafi Silt Yield Index (SYI) haila ka takat sammang. Tafal byo fal mun wanchan glat hih wan anluk project tuo san tara khramang, an wan 48.84% gyung kachou wanchan hih sammang. Alieh damhi khrainai.

**TABLE-14**  
**Lang lang glat hai falmun glat**

Category	Yataimo (ha)	shaumo (Percentage)
kanam	13789	9.28
kiphi	62240	41.88
Klonh hai	72571	48.84
<b>Apui rat</b>	<b>148600</b>	<b>100.00</b>

CAT wan anchan takat sammang:

- Sang maka kiphi talap
- Sang lap tamblai
- Sang sah talap ka kashit tanthong
- Kanan kang kanal tannah
- Katoh n
- ai wanluk tanthong

**9. KIN GLAT GONG KAM KISHIT TASUM GRUNGNEY**

An company hai lamka, school bie jang naah peimang tou, yeah wahi company ka kaam katni eh ka glat school wan rehla kang. Laapli khaanie sai neh un kaam katpi mantou(LADP) un gungli.

- School bie pangweh panghi katai chak naah pimangtou, wohrah ko school shaan talap kang taachoo(Tabl, Bench) who ka rah school lut neh school shaan ka tunmun saamaan neh company chong shian pimantou.
- School lut aati pipe bhei chowt/tagye bie nieh naah pimantou.
- School shaan sian kang school hi tathiet kang school Bus nieh pimang tou.
- School shaan nyah mungho kisit kopuri shaan wan wi Prize/scholar nieh kran Mantou.

**Taasie - Tanga bie nieh kisit Naah Pi Mantou**

- Taasi bie nieh katai naah napi mantou.
- Taasi bie hai katnaad kang, Chaang, Tachoo wonbhai he shiomod tonmun saaman mal chatong shoo pimantou.
- Kaanad kang aawee tah thong hi Laboratory/Bieh siuh nang pimangtou.
- Kannad shan we tashiu-Tambaa kang operation nieh achow mangtou.
- Taasi gari nieh kannad saan wi taakraam kang hi taasi gari nieh shep pimangtou, Company hailam.

Taashiok-Talap hi kang nieh bie - Glat kisit achow pi mangtou, Company son

Ta-Ngit-Ta-Thaaf kang talink(Training) bieh, Mastor pimangtou

Choopui-Mung hi Appye Won ( Rs 5910.0 lakh) Lakh Hing Kalait Wayeh Nad Mo Kyabmo won(LADP) Kaam ka appye pi mangtou company hailam ka taraah youmantou.Allie laapli Daamhi Khaanieh(Table - 15)

**Table -15**  
**Kaam-hi appye won toh ammal hi khaanie(LADP)**

S.No	Items	Budget(Rs.Lakh)
1	School kisit tashaam kaam kang	455.0
2	Kisit School shaan wi appye taphit	360.0
3	Taasi - Taanga kaam kang hi appye	675.0
4	Bie-Glat kang kisit taachow kang appye	3220.0
5	Taagit - Taalink kang krاند hi kaamkang aapye	1200.00
	<b>Aapoi appye</b>	<b>5910.00</b>

#### 10. Kai-sai sammang rat kang

Kai-sai doung mun rat anchan takat sammang:

- Katohnai wankang kashit kakha pit
- Kai rat shou takat
- Apisi hai ka shou lam ka kam takat
- Panghi wai tanchun
- Lai-jhuo tankhrai kraw kang
- Pit tamblan
- Kasam chong
- Kai rat shou takat chong kangitao
- Atti tafal mal ra shou takat

#### 11. Kanan-kasi tayung dam

An nah nairat nai ka nguh luk mal ra nai kanan-kasin wan kasith yung khramang. An tathong- tayung damhih wan alih khrainai.

**TABLE-16**  
**Nahnai kiprat kanan-kasin taung**

S. No.	Item	Parameters	Frequency	Location
1.	Takhui bui hai	pH, BOD, COD, TSS, TDS	Laumo rat bui mo	Treatment mal pang
2.	Atti hai frutmun nat	Atti hai frutmun tuwa nat wan tangit, anhi shan fih shanmun.	Laumo rat kasamlah	Labour san glat
3.	Kah	Sau haroh kah ( $L_{eq}$ )	Lau kasam rat buimo	Katai nah nai glat hih
4.	Boung	PM <sub>10</sub> , SO <sub>2</sub> and NO <sub>2</sub>	Byou-kasung buihah	Katai nahnai glathih
5.	Awang- atti	Boung yahaila boungmun, awang	Byou-kasung buihah	Boung atuongnai glat lung moluk



**TABLE-17**  
**Nguhluk mal rah kanan- kasin tayung**

	Items	Parameters	Frequency	Location
1.	Atti	pH, Temperature, EC, Turbidity, Total Dissolved Solids, Calcium, Magnesium, Total Hardness, Chlorides, Sulphates, Nitrates, DO. COD, BOD, Iron, Zinc, Manganese	Lau mo rat kasamlah	<ul style="list-style-type: none"> <li>Nahnai lih ka 1 km lin tou</li> <li>Atti hawai hih</li> <li>Lap yutlam1, 3 wanra ka 5 km yao</li> </ul>
2.	Takhui buihai lam humun wan achaunai haila	pH, BOD, COD, TSS, TDS	Yanun rat buimo	<ul style="list-style-type: none"> <li>Treatment mal pang</li> </ul>
3.	Falmun wan	Soil erosion rates, stability of bank embankment, etc.	Lauro rat buimo	Glat mung mo
4.	Karang tuwa tashoukglat mung	Lap blainai sang	Laumo rat buimo	-
5.	Atti hai nat	Atti hai nat tanjhal	Laumo rat bui kasam	<ul style="list-style-type: none"> <li>Project gai hih glat</li> </ul>
6.	Atti lih kashouk	Phytoplanktons, zooplanktons, benthic life, fish composition	Laumo rat buimo	1Km lun tou <ul style="list-style-type: none"> <li>Atti hawaimunmo</li> <li>1, 3 wanra ka 5 kmlapyut</li> </ul>
7.	Nyai tapam	Landuse pattern using satellite data	Laumo rat buimo	Glat mung
8.	Nayi	pH, EC, texture, organic matter	Laumo rat uimo	glatmung

## 12. Kung taknai

### 12.1 Kanan-kasin kashit tathah kang kung

Apui rat kanan-kasin kashit tathhah kanh 40660 lakh nungmang. Damhi wan alih khrainai.

**TABLE-18**  
**Kanan-kasin tathong kung**

S. No.	Item	Kung (Rs. lakh)
1.	Sang lap tamblai	5416.75
2.	Glat mung hih kashoung takat	3195.39
3.	Annga tanthah	516.80
4.	Tasih-tanga	678.12
5.	Kanan-kasin laour glat hih kakah takat	1044.33
6.	Pyam tathah	1470.28
7.	Nahnai luk loung sang a-achau	325.00
8.	Blong lihnai hih kanan-kasin tathong	520.00
9.	Hangai tathah	97.50
10.	Boung kora kashoung takat	400.40
11.	Atti kora mathyam takat	200.00
12.	Mai-mung mathyam takat	5910.00
13.	Chong takun	15087.60
14.	Glat ra kasith kasam fuo takat	100.00
15.	Mai -mung thanggi ta-katou	40.00
16.	Tafal ta-katoh	2839.19
17.	Kai sai rat kang	2622.80
18.	Nahnai rat kanan kasin tanthong	194.73
19.	Awang tah-atong kang pinya	0.70
20.	Kah takrung pinya tasyup	0.10
	<b>Apui ratl</b>	<b>40659.69</b> <b>Say 40660 lakh</b>

### 12.2 Kanan-kasin tayung kung

Kanan-kasin tayung kang wan lau hah rat lakh 23.96 hah katneka apui rat lakh 208.5 mo taimang. Lau hah rat 100 mo lika 10 wan bul nai katyuo. Tandam tak nai rat an chipui nah wan lau 7 flohmang dah taknai.

**TABLE-19**  
**Nahnai rat Kanan-kasin tayung kung**

S. No	Item	Kung (Rs. million/year)	Lau 7 kang chipui kung wan lin hail au dang 10% bulmang kang shu(Rs. million)
1	Atti	2.16	20.6
2	Boung	5.0	55.0
3	Karang tua tashuok-talap	12.0	113.9
4	Atti hai nat frutmun tua nat	2.0	19.0
	<b>Chipui</b>	<b>23.96</b>	<b>208.5</b>

An nah nguhluk mal rah kanan-kasin an tayung kang wan lau dang 18.7 lakh nungmang. Damhah wan alieh khrainai.

**TABLE-20**  
**Nguhluk mal ra kanan-kasin tayung kung.**

S. No	Item	Kung (Appai Lakh/lau)
1	Atti	6.2
2	Nyai	1.5
3	Karang tua	5.0
4	Atti hai nat frutmun tua	3.0
	Nyai tapam	3.0
	<b>Apui rat</b>	<b>18.7</b>

*(Disclaimer: Executive Summary of CEIA for Kalai II HEP has been translated in Mizu Mishmi Dialect. In the event of any discrepancy / conflict in translation, the English version will prevail.)*

*Translation in Mizu Mishmi Dialect Courtesy Shri Barum Masong, M.A. (Eco), Village Yealiang, PO - Hawaii, Anjaw District.*