

INDIA

MEGHALAYA

EAST KHASI HILLS AND JAINTIA HILLS DISTRICTS

UMNGOT HYDRO-ELECTRIC PROJECT

(3 X 80 MW)

KA SUMMARY NA KA BYNTA

KA ENVIRONMENTAL IMPACT ASSESSMENT

BAD

KA ENVIRONMENTAL MANAGEMENT PLAN

KYNTHUP IA KA REHABILITATION AND RESETTLEMENT

UMNGOT HYDRO ELECTRI PROJECT (3 X 80 MW)

KA BYNTA BA- I

ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

1. JINGLAMPHRANG.

1.1 Ka Sorkar India ka la seng ia ka Ministry of Environment & Forest (MOEF) ban khmih kyrpang ia ki jingpynneh ia ka mariang . Ki lad jingiada ia ka mariang ki long lyngba ki jingkhmih bniah kiba lah ban ktah ia ka mariang (environmental impacts) bad pyn pynkhreh ia ki lad ki rukom sumar mariang (environmental management plan) kaba ai jingbit ban seng /shna ia ki kharkhana, ki jingden pung um, lynti rel, ki kharkhana pynmih bording bad kumta ter ter khnang ban pynduna ia ka jingktah ia ka mariang. Ha kiwei ki kyntien, kano kano ka projek kaba don ka jinglushai ia ka mariang, la teh da ka Environmental Protection Act jong ka Sorkar India. Ka MOEF, namar kata , ka dei ka tnat kaba ai jingbit ha kaba ia dei bad ka mariang (environmental clearance) halor ki projek pynroi. Haba ai jingbit , ka MOEF ka khmih ban pynbit pynbiang ia ka jingdonkam ka mariang ha ki sawdong sawkun jong kito ki jaka jong ki projek pynroi pynpar ha kylleng ka ri.

1.2 Kum shi bynta ban pynioh ia ka Environmental Clearance kumba la ai jingtip bad kat kum ki kyndon ba la buh da ka MOEF jong ka sorkar India, Ka Meghalaya Energy corporation Limited ka la leh shibun ki jingwad bniah (Studies) ban peit ia ka jingktah jong ka Mariang (Environment Impact Assessment) bad ban pynkhreh ia ki lad ki lynti kiba biang na ka bynta ka Environmental Management plan khnang ban pynduna ia ka jingjulor ne jingsniew bad ban pynbha pat ia ka jinglong ka mariang baroh sawdong ki jaka da kaba pyntrei ia kane ka Umngot Hydro-Electric projek kaba 240MW.

1.3. Shaphang ka Projek bad ki jingthmu jong ka.

1.3.1 Namar jong ka jingiar bad ka jingheh palat hagdeng ka jingdon bad ka jingdonkam bording electric , ka Meghalaya Energy Corporation Limited (MeECL) ka wad lad ban ioh bad pynmih bording. Ha kane ka jingwad, ka MeECL ka la Shem ba ka wah Umngot ka long kaba biang bha ban shna projek bording.

1.3.2 Ka jylla ka la thmu ba ka Umngot Hydro Electric project kaba lah ban pymih bording elektrik haduh (3 x 80) 240 MW kan iarap ban wanrah ia ka jingpynduna hagdenga ka jingkyrdueh bording bad ruh ban pynduna ia ka jingiapher (ratio) hagdeng ka jingpynmih bording lyngba thermal project bad ka jingpynmih bording lyngba hydro project. Ka projek namarkata ka la thmu ban ioh ar bynta ki jingmyntoi ha kaba kan iarap ban pynrit ia ka jingduna hagdeng jong ka jingdawa bad ka jingdon jong ka bording bad ha kajuha por ruh ban pynduna ia jingbun ki thermal projek haba ia nujor ba ki hydro projek.

1.3.3 Ka Umngot hydro elektrik projek ka dei kaba sha neng jong kita ki artylli ki projek kiba la thmu ban pynurlong ha kane ka wah . Ka jingden um ba da ka dewbilat jong kane ka projek kan long ka jaka kaba 92° 00' 38'' E, 25° 21' 31'' N, hajan Siangkhnai , East khasi hills bad Moosohkhia , Jaintia hills. Ka tunnel kaba heh 3.50 m pyllun , kan sdang na ka intake kaba jngai kumba 75.00 m na ka dam bad kan iaaid lyngba ki mawsiang granite –gneiss ha ka jingjngai kumba 5600.00 m . Ka surge shaft ha kaba kut jong ka tunnel kan long kumba 70 m ka jingjrang bad ka jingiar kaba 10 m pyllun. U High pressure shaft 2.5 m pyllun , un sdang na surge shaft bad un iaaid napoh khyndew lyngba ki juh ki jait mawsiang bad un mih pat shabar ha ka power house kaba un pynshong 3 tylli ki machine kiba 80 MW kawei kawei. Ia kane ka power house yn tei sha ka liang ka mon bad (ha syndah) jong ka wah umngot kumba 20 km na ka dam .

1.4 Ki Jingwad jingtip halor ka jingtah ia ka mariang.

1.4.1 Ka jingkhylia ha kamariang ka lah ban long na ka jingngop ki jaka ha um, ingpynkyriah ia ka jaka shong/sah jong ki briew kynthup ia ki mard ki mreng bad ki dieng ki siej ha sawdong jong ka lum ka wah , jingpynjutor ia ki khlaw, jinglong ahor ki jaka , jinglongmluh bad jinglong shun ka um/khyndew, jinglong ka um bad ka jinghiar jingkiew jong ka um hapoh khyndew bad kiwei kiwei de . Bun jait ki jingtah ha ka mariang ki lah ban wan jia da ka jingwan jong kane ka projek. Ka long kaba donkam namar kata ban ialeh ban tip kiei ki ban shah ktah pynjutor bad kiei pat ki ban pynbha bad myntoi ha ki jaka sawdong ka projek khnang ba yn lah ban wallam ia ki lad ki lynti ban pynduh lane pynduna ia ki jingtah pynjutor. Namar kata , ka jingkongsan jong kane ka jingwad jingtip ka long ban sngewthuh ia ka jingtah ia ka mariang na ka jingtei ia ka Umngot HEP halor ka khyndew ka shyiap, ka um ka wah , ka jinglong ka suinbneng kaba kynthup ia ka lyer bad ka jingsawa , ki mrad ki mreng bad ki dieng ki siej , ka koit ka khiah , jingngop ki iing ki sem bad kiwei kiwei , bad kumno ban ai jingmut halor kumno ban wanrah ia ki lad ki lynti ban pynbha na kano ka jingtah halor kitei ki bynta.

2 KI JINGLONG JINGMAN HA KI JAKA SAWDONG JONG KA PROJEK.

2.1 Ka wah Umngot ka dei kawei na ki wah jong ka Meghalaya kiba tuid shaphang shathie bad ka tyllong jong ka la long na ka lad Nongkrem kaba don ha ka jingkynjang kumba 1840 m , ka jingpynlang um kaba pura ka long kumba 38.59 Mcum bad ka um kaba lah ban pyndonkam ka long 32.95 Mcum ha ka FRL 1040 m bad MDDL 995 M . Ka jingbuh machine ban pynmih bording kan long haduh 240 MW na ki 3 tylli ki Pelton Turbines kiba 80 MW kawei.

2.2 Ki jingtei kiba kham kongsan ha ka Umngot HEP ka long kumne harum:-

1. Ka Dam concrete ha ka wah Umngot kaba ka kynjang jong ka long kumba 111 m bad ka linter kaba 362 m ban pynioh ia ka jingpyndonkam um haduh 32.95 Mcum .
2. Ka Intake bad Head Race tunnel kaba jrong 5588 m bad ka jingheh kaba 3.6 m.
3. U High pressure shaft uba jrong 2200m bad heh haduh 2.75 m.
4. U Surge shaft hapdeng ka HRT bad HPS uba kynjang 79.90 m bad ka jingheh haduh 10 m
5. Ka power house kaba heh haduh 107.5 m x 31.0 m x 20.0m bad ka Gas Insulated switch yard (107.5 m x 34.0 m x 24.0 m).
6. Ka Tail race 146.0 m kaba pyntuid pat ia ka um sha ka wah Umngot.

2.3. Ki Jingmyntoi na ka projek.

2.3.1 Ki jingmyntoi kiba lah ban ioh beit na ka Umngot HEP ki long ka jingpynmih bording kaba 240 MW peaking kaba lah ban pynioh haduh kumba 856.75 MU ha ka snem kaba kham tyrkhang slap(90 % dependable year) . Ia ka dor jong ka bording la shim tang kumba 838.73 MU ba la khein na ka 95 % ka jingpynmih bording ha ka 90 % dependable year. Ka bai bording kan long kumba Tyngka 3.11 paise ha u snem ba nyngkong bad T 3.03 p hadien ba la khein kyllum lang ia baroh ki snem, ba la khein kat kum ka dor ban shim ram na ka JBIC bad T 6.27 p /unit bad T 4.35 p / unit lada shi shim da ka FI loan.

2.3.2 Ki nongshongshnong ha ki jaka baroh sawdong jong ka projek kin ioh shibun kiwei ki jingmyntoi kaba yn kyntiew ia ka imlang ka sahleng bad ka ioh ka kot da ka jingpyntrei ia kane ka projek kum ki jingshna ia ki surok, ki jaka sumar pang, ki skul, ki telecommunication bad kiwei kiwei ki program ki ban pyntrei da kiba pyniaid ia kane ka projek. Ki lad ioh kam ioh jam lyngba kin jingpynrung kam ha ki ophis jong ka projek, ki jingpyntrei contract, kum ki nongbylla sngi, ki jingplie dukan tiar bad jingbam bad ter ter kin pynmyntoi shibun ia u paidbah. Shuh shuh kin don ki lad ban pynioh ja kpoh kaba shirta lyngba ki kam jingri dohkha bad ki kam jngoh kai pyrthei lyngba ka jingdon jong ka pung um kaba heh ha kato ka jaka.

3. KA MARIANG HA KA JINGLONG KA KHYNDEW KA SHYIAP.

3.1 Ka jylla Meghalaya ka don shaphang shatei lam mihngi jong ka ri India hapteng ka Brahmaputra shaphang shatei bad ka Bangladesh shaphang shathie. Ka jaka jong ka catchment ka long ha ka jaka pdeng ba kynjang ba la khot Shillong plateau. Kane ka plateau baroh kawei ka dap da ki kynja lum ha kaba shaphang mihngi bad sepngi ki long kiba kham duna ka kynjang. Ka jingrein um sha ki them ka wah Umngot ka long ha ka Trellia pattern ha kaba ki shnat wah bad ki wah duid ki sia snoh lang kat kum ka jingnoh jong ki lum. Kine ki tuid shaphang shathie bad hapteng jong ka jaka den um bad ka jaka ba pynshong ia ka power house kaba long kumba 20 km eiei ka jingngai la shem ba kane ka shi lynter don bun ki jaka tharia bad ki kshaid ha kaba ka wah ka hiar naduh ka kynjang kaba 940 m shaduh 210 m .

3.2 Ka jingheh jong ka catchment haduh ba don ka dam ka long kumba 304 sq.km (30400 hactare) bad ka long kaba don da ki lum bad ki lhuh. La shem ba haduh 76.18 % (kata 15 % shajrong) jong katei ka area ki long kiba riat sharing bha . Ki jonglum jingtip ha kaba iadei bad ka rukom pyndonkam ia ki jaka(Land use) bad ka jingtap ia ki jaka(land cover) ha ka jingheh kumba 10 Km pyllum la leh da kaba peit lyngba ki GIS application Bad RS imageries bad la shem ba 57 % ha kane ka area la tap da ki khlaw kiba rben bad kiba stang kumjuh. Ha baroh kawei ka catchment ka jingdon ki jaka rep ka kdew ba ki long tang 20.52 % , ki jaka ba rep shirti 5.29 % , ki khlaw 34.3 % bad ki jaka phlang 33.05 % . Ki khlaw ki dei ki jaka paidbah kiba kynthup ia ki khlaw kiba khleh ki jait dieng.

3.3 Hadien ba la peit thuh da ka Geological Survey of India bad ynda la dep ban leh mapping bad wad jingtip shaphang ka jinglong ki maw jong shapoh jon ka mei rame, la lah ban jied hangno ban pynshong ia ka dam , intake, lynti iaid ka tunnel bad pressure shaft bad ruh ia ka power house.

3.4 Ka jingktah ia ka mariang.

Ka jingtei ia ka dam ban den um ka wan rah ki jingktah kiba pynsniew bad kumjuh ruh kiba pynbha ia ka mariang bad kham bun ka dei kaba pynsniew. Ka jingkhlong ia ka khyndew, u shyiap, u maw ter ter bad ka jingpynkit ia kitei ka pynjakhlia ia ka mariang. Ki jingjakhlia ba mih ha ka por ba pyntrei ki lah ban pynmih ia ka jingeh ha kaba bret ia ki . Ka jinglong jong ki lum bad ki khyndew ki lah ban wan rah ia ki jingkylla ha ki lyngba ki jingpyntrei ia ki projek.

3.4.1 Ka jingktah ha ka khyndew rep/jingtap khlaw lyngba ki jingtih ia ki mar trei:

Ka jingtih ia ki mar trei kum ia u maw bad ki shyiap na ki par bapher bapher kan wan rah ia ki jinglong them bad kan don malu mala ka jingkylla ha ka jinglong jong ka jaka. Ka jingdonkam ia ki maw ha ka ban shna dam bad tunnel yn lah ban pyndonkam da kito ki maw kiba mih na ka jingtih ia ka nongrim jong ka dam bad ka tunnel. Ba kaba sah yn pynmih na ki par ba la mang ha ki jaka ban shah pynngam ha ka jingden um. Yn ym don kano kano ka jingktah kaba palat na kine ki jingtih mar . Hynrei la buh bad mang ban iada ia kine ki par naka ka jingtwa kumba la kdew ha ka EMP. Ia u shyiap la thmu ban wanrah na ki par shyiap ha Kharkhana haruh wah Myntdu kaba don kumba 55 km na ka dam . Ia u shyiap na kane ka jaka la ju pyndonkam baroh shi katta ha ka ban tei ia kiwei kiwei ki projek. Namarkata ym donkam ban da pynbha kyrpang ia kane ka jaka.

3.4.2 Ka jingbret ia ka sakhit sakhai na ki jingtih.

Shibun bah ki shakhit shakhai ki lah ban mih na ki jingtih nongrim bad na ki par . Kumba 50 % na u maw ba pynmih na ka jingtih nongrim jong ki jingtei yn pyndonkam ha ka ba shna ia ki maw kynroh bad surki dewbilat bad 50 % pat hap ban buh na ka bynta ka Environmetal measures.

3.4.3 Ka Jingngop um jong ki jaka.

Ka jingngop um jong ki jaka kan long haduh 253.85 ha (kynthup ia ki jaka ba shong um) bad yn ym don kano kano ka shnong ka ban shah pynngop. Hynrei kin don katto katne ki jaka rep jong kyndiat ki shnong ki ban shah ktah. Ka jingheh jong ka jaka kaba yn donkam pura, kaba khynthup ia ki jaka ba shah pynngop ha ka jingden um bad kiew kiwei jong ki riew shimet, ki jaka piadbah, ter ter kan kot sha ka 420 Ha.

3.4.4 Kiwei ki jingktah ia ka dew mariang.

Ka jingrep jingriang kaba ym da pyndonkam than eh ia ki dawai bad ka jingbym pyndonkam da ki tiar machine ka pynlong ba ka khyndew kan ym da julor than eh bad ka jingmih jaboh dawai na ki lynkha kan yn ym da bun . Ka dam ha wah Umngot kan don hapoh ki jaka ba jur bha u jumai. Ki jinglong ban warah ia ki jingkhie u jumai bad ka jingjur ka shong ha ka jingkiew sted jong ka um ka por jong ka jingneh ka um, ka jingkiew jong ka um haduh ha khlieh eh bad katno ka neh hangta. Ki jingkhynniuh jumai kiba rit haduh ki ba malu mala la iohi ba ki ju jia ha ki jingden um. Ha ki jaka ba kham jur u jumai ka jingkylla ha ki rukom long ki jingtei barabor ki kham heh ban ia ki jingkylla jong ka jinglong u jumai. Ym don mar poh khyndew hapoh ka pung um kiba lah ban pynkylla ia ka jinglong jong ka um ha ka ba lah ban ktah bad pynsniew ia ka um ha kaba yn pyndonkam ban pynmih bor ding bad kino kino ki jindonkam sha trai jong ka.

3.4.5 Ka jingktah ia ka jingtuid khyndew

Ki jait khyndew ha ka jaka jong ka catchment ki dei ka dew saw, dew shyiap bad dew khleh mawria ba la pynlong na ki met bah mawsiang kum u gneiss, sandstone bad shale. Ki jaka ki long kiba padun bad kiba riat bha ruh kumjuh. Kane ka thain ka lah dei lypa ha ki jaka kiba jur ka jingtuid ka khyndew. Yn ym don shuh ka jingktah kab kham jur nalar kine. Ka jingtuid ka khyndew kan kham duna pynban hadien ba la pyntrei kam ia ka catcthment area treatment hapoh ka EMP. Ki lad jingiada ki kynthup ban thung dieng, jingpynbha ia ki jingthung jingtep, bad kumta ter ter

4. KA JINGLONG JINGMAN JONG KI UM KI WAH.

Ka jinglum jingtip jong shaphang ki um ki wah ka dei kyrpang ha ka jinglong jong ka um kaba tuid ha ka wah Umngot ha ki aiom bapher bapher . Kham bunsien u slap u wan na ka south-west monsoon bad ka jinghap slap ka sdang naduh u May haduh September . Kiwei pat ki aiom ki khythup ia ka pyrem (March/April) , ka synrai (October/November) bad ka tlang (December/February) . La shim ia ki sample jong ka um ha ka por lyiur ha u 7/2008 bad ha ka tlang ha 12/2008.

4.1 Ka Jingioh um (Hydrology)

Ka wah Umngot ka dei ka shnat jong ka war Surma ha Bangladesh. Ka umngot HE Projek ka don hajan Siangkhnai bad ka jingheh ka jaka tuid um sha ka wah Umngot ha kane ka jaka ka long haduh 304 Sq.km . Ka jaka thew ia ka um ha wah Umngot ka don ha syndah jong ka ban tei ia ka dam. Ka jingioh um kumba 1500 cumecs ha ki bnai lyiur. Ka jingthew ia u slap kaia nujor bad ka jinghap slap ha kito ki thain ha kaba u kham duna katba dang iaid na shaphang shathie bad kiew arshut shaphang shatei jong ka catchment. Ka jingioh slap ka long kumba 3500 mm ha ka shi snem.

4.1.1 Ka jingkhein ia ka umsawbah (Design flood).

Ka IMD ka la ai ia ka jingkhein ia u slap bah haduh 140 cms uba lah ban hap ha ka catchment jong ka umngot haduh ha dam. Ka jingkhein jong umsaw bah na une u slap ka long kumba 9760.68 cumecs ha dam site bad ha ka power house site ka don kumba 10740 cumecs.

4.1.2 Ka jingtuid ktieh ha ka wah (sedimentation rate)

Ka jingwad jingtip shaphang ka jingtuid ktieh shapoh wah Umiam, ha kaba don shibun ki kam pynroi pynpar , ka pyni ba ka long kumba 23.95 ham/100 sq.km/snem na ka catchment area jong ka. Ka jingmang kaba 17.65 ham/100 Sq.km /snem na ka bynta ka wah umngot la antad ba kan long kaba biang. Ka jinglang ka ktieh ha ki snem ba pher la antad da ki Brune Trap efficiency curve bad ka jingsaphriang ia kane ka ktieh la antad da ka empirical area reduction method. Ka jinglang jong ka ktieh Kan long 4.65 Mcum hadien 50 snem bad 11.18 Mcum hadien 100 snem.

4.2 Ka jinglong jingman jong ka um ba ha ryngkew

La shim samples jong ka wah Umngot na ka jaka ban den um bad na ka jaka ban pynynshong ia ka powerhouse ha ka por lyiur bad ha ki bnai tlang. La shem ba ka jingling jong ka um ka long kaba bha bad bang kat kum ka jingling ki um ban di.

Yn ym don jingktah halor jong ka jingioh pyndonkam ia ka um shaphang sharum na ka jaka jong ka projek hynrei kan don jingktah malu mala ia ki kynja ba don jingim kiba don hapdeng ka bynta jong ka dam bad ka powerhouse na ka jingduna ha ka jingtuid jong ka um ha katei ka bynta. Ka jingpyllait um khyndiat khyonsoit ka dei ban don sharum jong ka dam khnang ban pynneh pynsah ia ki kynja baim ha um.

4.2.1 Ka jingktah ia ka jinglong jingman jong ka um

Ka Umngot HEP ka don ha ka jaka kaba duna bha ka jingdon briew bad ha ka bym don kino kino ki tyllong bal ah ban pynmih shibun ka jingjakhlia. Ki jingshong shnong ki long kiba kham jngai na ka wah Umngot. Ka jingpyndonkam um lyngba ki jingsam um rep ka long tang kumba 2% bad kaba duna bha. Ki jingpyndonkam ia ki sboh dawai bad ki dawai pyniap khniang ruh ki duna bha. Ym don ruh ki kynja karkhana kiba hajan kane ka wah. Kumta ka jingpynmih jakhlia na ki tyllong bapher bapher kum ki jaboh na ki ing ki sem, ki jakhlia na ki karkhana bad ki bih na ki dawai rep sha ki jaka jong kane ka projek ka long kaba lah ban shim ba kam da don ei ei than. Bad namar ba kan ym don jingsam um sha ki jaka rep lyngba kane ka projek, la antad ba kan ym don jingktah ei ei halor ki um kiba ha sla khyndew lane kiba shapoh khyndew.

Ka jingtei ia kane ka projek kan shim por haduh kumba 6 snem. Kumba 1500 ngut ki nongtrei sngi bad 500 ngut ki nongpyniaid kin don ha ka jingpyntrei ia kane ka projek. Ka jingdonkam um ha ki jaka shong jaka sah kan kot sha ka 110 litre man la uwei u briew ha ka shi sngi bad kumta ka jingdonkam um kyllum kan long kumba 0.55 million litre shi sngi. Ka jingpynmih um jakhlia la antad kan long kumba 80% na katei bad kan long haduh kumba 0.44 million litre shi sngi. Ka jingbun ka BOD ka ban pynroi lyngba kine kan long kumba 270 kg. shi sngi. La mang ba kin don 6 tylli ki jaka sah nongtrei, sha baroh ar liang bad shaneng jong ka dam bad ruh ha man ki jaka trei kiba kham kongsan. La shu shim kyllum ba kine ki jakhlia kiba mih na kine ki jaka sah baroh kin leit hap ha ka juh ka jaka jong ka wah khlem da don kano kano ka jingpynkhuid. Na ka bynta kane ka um ha ka wah ka dei ban ym duna ia ka 1 cumec ha ka jingiamilai kumba 1:200. Ia kane ka 1 cumec hap ban pyllait sharum jong ka dam ha ka por ba puntrei khnang bay n lah ban pynkhuid ia katei ka jakhlia bad ba yn ym don ka jingktah ia ki doh ha um ha ki jaka ba don hapdeng ka dam bad ka powerhouse.

4.2.2 Ka jingktah na ka jingkylla ha ka jingtuid um

Ka umsaw bah kaba lah ban wan ha jaka ba don ka dam la antad ba kan long haduh 8969 cumeecs. La buh ba ka jingpyllait um lyngba ka dam kan ym duna ia kane hynrei ka jingdon jong ka pung um bad ka jingtan um ruh sha ka powerhouse kin iarap khyndiat ia ki jaka ba don sharum na kum kine ki umsaw ha shuwa ba ka um kan leit ia kynduh ia ka wah Surma ha Bangladesh. Shuh shuh namar ka jingdon jong ka pung um, kane kan wan rah ia ka jingmih jong ki dieng ki siej, ka jingkieh ha ka um ba shapoh khyndew bad kan iarap ruh ia ka rukom jingtuid um na ki lum ki wah. Kumta la antad ba kan ym don kano kano ka ban wanrah ia ka jingkylla kaba kham palat ha ka rukom tuid jong ka um lyngba ka jingtei ia ka dam.

5. BIOLOGICAL ENVIRONMENT

Ka jylla Meghalaya ka long ka thiar jong ka spah mariang ha kaba lah ban lap ia bun jait ki syntiew ki skud. Ka don ia ka jingheh kaba iar haduh 22,429.00 square kilometre sawdong. La buh jingkhein ba ka jingdon jong ki khlaw ki btap hapoh ka jylla ka long kumba 8,514.00 square kilometre ha kaba tang 722.36 square kilometre ki hap hapoh ka jingpeit jong ka Tnat ba dei peit ia ki khlaw ki btap jong ka jylla (State Forest Department). Lah ban kynthup ia ki khlaw jong ka jylla Meghalaya ha ki jait khlaw kiba mih ha ki jaka ba shit bha (tropical), ki khlaw kiba mih ha ki jaka baduna ka jingshit (sub-tropical) bad ki khlaw kiba mih ha ki jaka ba pyngngad (temperate). Ka Indian Institute of Remote Sensing ka la pynbynta ia ki jait jingthung-jingtep hapoh Meghalaya kiba mih ha ki jaka bashit bha kum ki jingthung bajyrngam baroh shirta (tropical evergreen), ki jinthung ki bajyrngam tang shipor (semi-evergreen), ki jingthung kiba hap noh ki sla shisien shi snem, ki jingthung ki baheh sla bad ki diengkseh kiba mih ha ki jaka baduna ka jingshit, bad ki jinthung kiba mih ha ki jaka ba pyngngad bad ki jaka phlang. Ym don ki khlaw ba la sumar kyrpang na ka bynta ki mrad ki mreng (sanctuaries) lane ki park lane ki jaka kyrpang na ka bynta kiwei pat ki jingthaw baim-bakhih baroh hapoh jong ka them Umngot (catchment) naduh ka jaka ban tei ia ka Den-um (Dam) shaneng kynthup ia ka jaka ban pynlang-um (reservoir) jong ka project.

Ym don kino kino ki khlaw bala sumar kyrpang hapoh ki jaka ba lah ban shah pynngam hapoh um ynda tei ia ka Den-um. Ki jait khlaw/jingthung kiba mih ha rud wah ki dei ki jingthung kiba mih ha ki jaka bashit bha bad katto katne na ki kiba mih ha ka jaka pynlang-um kin shah tap lut ha ka um. La lap ia ki jait jingthung kum ki jyrmi-dieng, ki siej, ki dieng rit, ki jinthung bajem jyntang, ki phlang, ki syntiew dieng bad kiwei pat ki jait jingthung kiba hap hapoh ka kynhun Pteridophytes, Bryophytes bad Macrophytes. Don ruh ki Law Kyntang (sacred grooves) hapoh ka them Umngot. Kawei na kine ki jait khlaw ka don ha Mosohkhia, Jaintia Hills District bad kawei pat ha Nonghulew ha jan Siangkhnai, East Khasi Hills District.

La buh jingkhein ia ka jingiakynduh (frequency), ka jingbun (density), ka jingkynrei (dominance) bad ka dor IVI jong ki jait jingthaw ba la iakynduh ha ki jaka ba la leit jurip hapoh ka them Umngot bad ka jaka pynlang-um jong ka project. Lah ban pynkut nia ba ka jingkdew lane jingkhein ia ka jingdon jong ki kynja baim bapher bapher katsum ka Shanon-Weaver Indices ka long 4 shaneng bad ka jingsaphriang (evenness) ka kham heh ban ia 0.95 hynrei ka jingkynrei (dominance) ka kham duna. Ym shym lap ha baroh ki bynta jong ka them Umngot lane ha ka jaka pynlang-um jong ka Umngot HEP ia u Nepenthes Khasiana u jait jingthung u bym da kynrei bha bad u ba im da ki kynja khniang. Ka jingleit sikar lane jingbeh mrad ka dei ka jingmlien basngewtynnad bha jong ki briew kiba shong hapoh ka them Umnot naduh mynnor bad ia kane ka kam dangialeh/bteng haduh kine ki sngi. Ym don shuh kino kino ki mrad heh kum ki sier ha kane ka thain, namarkatta ka jingbeh mrad kan sa duh noh.

Ka jingshah ktah ba lah ban jia: La shim ia ki lad ki lynti bashai bad biang ryntih bha na ka bynta ban tip/lap ia ki jingshah ktah jong ka mariang hapoh u pud u sam jong ka project katsum ki kyndon/mat ba la pynmih/buh da ka International Association for Impact Assesment (IAIA). Ia ki jingshah ktah lah ban pynbynta ha ki jingktah ba lah ban pynioh biang ia ka juh ka jinglong (reversible) bad ka bym lah shuh ban pynkylla biang sha ka juh ka jinglong (irreversible), ki jingshah ktah beit (direct) lane da kumwei pat (indirect), ka jingshah ktah jur bha (severe), ka jingshah ktah ba long pdeng (moderate) lane ka jingshah ktah ba malu-mala (light) katsum ka jingiar (magnitude)

bad ka por jong ka jingshah ktah. Ki jaka haduh 260.00 hectare (254 hectare ka jaka pynlang-um bad 6.00 hectare kiwei pat jaka tei ia ki bynta bapher-bapher jong ka project) sawdong ka project kin shah ktah bha (direct). Kham bun na ki (REET) jait mrad ba-aibuin (mammals) kim don ha them Umngot kynthup ia ka jaka pynlang-um. Baroh ki dieng bad ki jait jingthung kiba mih ha ka jaka pynlang-um kin duh jait lut. Hynrei ym don pat kino kino ki jingthung ha ka kynthun REET, namarkata yn ym don kano kano ka jingma ia kane ka kynthun jingim (REET). Ha ka juh ka rukom ki syntiew ki skud ha ki jaka ban tei ki jingtei bapher-bapher jong ka project haduh 6.00 hectare bad ki ja tih maw tih khyndew (quarries) kin sa shah ktah jur bha.

Ka jingpyntrei ia ka Umngot HE project kan long katkum ki kyndon bad ki ain pynneh mariang kum (a) Ka ain iada mariang, 1986 (b) Ka ain iada ia ki kynja baim-bakhih baroh , 2002 (c) Ka ain iada ia ki mrad khlaw, 1972 (d) Ka ain pynneh-pynsah ia ki khlaw ki btap, 1980 (e) Ka ain iada ia ki riwolum (ST) bad kiwei pat ki briew ki bashong-basah ha khlaw ha btap, 2006.

6. KA JINGLONG KA SUINBNENG

Ka jinglong jong ka suinbneng hapoh ka them Umngot, kumba long ha ka jylla Meghalaya hi baroh kawei, ka la shah ktah ha ka jinglong jong ki lum ki wah bad ka jingkiew-jinghiar jong ka bor mariang (pressure) ba la pynlong da ki lyer ha man la ki aiom. Ki lyer syaid ba kit jynhaw ka wan na Shathie bad Shathie-lam-Sepngi ha ka por lyiur bad ki lyer khriat na sha Shatei-lam-Sepngi ha ka por tlang. Ki lum ha Mehalaya ha shi linter ka phang Mihngi-Sepngi ki ioh ia u slap na ka lyer kit slap ba beh na shaphang Shathie-lam-Sepngi. Ka aiom slap ka sdang naduh ka taiew bakhadu jong u bnai May haduh ki taiew banyngkong lane ba-ar jong u bnai October.

6.1 Ki daw kiba ktah ia ka jinglong ka mariang:- Ki saw tylli ki daw kiba ktah ia ka jinglong jingman jong ka mariang ki long (i). U Slap (ii) ka Jingshit Jingkhriat (iii) Jingsngem (iv) Ka jingbehsted jong ka lyer. Ka Jingshit Jingkhriat kaba heh duh bad kaba duna duh , kaba longpdeng ia kaba la ioh ban buh record naduh ka snem 1999-2000 ka long kumba 25.1⁰C bad 6.1⁰C. Ka jingpher ka long ka bym da jur. Ka jinghap slap kaba ju long barabor ha kane ka jaka kaba thmu na ka bynta ka project ka long kaba 3530.626 mm. Ka jingsngem jong kane ka jaka ka long hapdeng 35% haduh 82% hadien ka aiom slap, 65% haduh 85% ha ka por shit , bad 76% - 82% ha ka por slap. Ka jingbehsted jong ka lyer kam da long kaba jur ha kane ka jaka. Ka jingbehsted ka lyer hadien ka aiom slap ka long hapdeng 1.0 haduh 9.0 Kmph, ha ka por shit ka long hapdeng 1.0 haduh 3 Kmph , bad haka por slap ka long hapdeng 1 haduh 2 Kmph. Ka jingsawa kaba don ha Syntung bad ha Siangkhnai jong ki jaka ha ka Umngot Hydro Electric Project la ioh ban khmih bniah ha ka aiom slap bad hadein jong u snem 2008 bad shwa ka aiom slap jong u snem 2009. Ka jingthew ia ka jingsawa la lap ba ka long hapdeng 40.2 bad 48.7 dB (A). Ka jingsawa ia kaba la khmih ha ka por mynsngi bad por mynmiet kumjuh la lap ba ka long hapoh jong u pud ba lah ban pdiang na ka bynta ka jaka sah briew kumba la kdew katkum ka EPA notification.

6.2 Ka jingktah ia ka lyer sawdong:- Ka jingktah ia ka lyer sawdong ka long eh ha ka por ba dang iaid ka jingpyntrei ia kane ka project. Ia ki jingtrei ba bun la pyntrei da ki kor kiba pyndonkam da ka umphniang diesel. Kine ki jingtrei ka iarap ban pynkiew shuh shuh ia ka jingdap pui pui ha ka lyer, kumjuh ruh ia ki jynhaw lane lyer kum ki SO₂, Nox lane kiwei kiwei. Ka jingjakhlia ka lyer kaba kumne kumtai ka lah ban don namar ka CO bad HC. Ka jinglong jingman kiba kynthup lang ia katei ka project kum ka jingsah briew ba shipor kan don ka jingktah hynrei ka bymda phoida haba ia nujor ia kiwei pat ki daw kiba pynjakhlia ia ka lyer. Ka jinglong ka lyer ha kiba bun ki liang ka long hapoh u pud ba dang lah ban pdiang ia kaba la buh (Baseline data). Ka jingtrei ia kane ka project ia kaba la thmu ka don tang khyndiat kaba la ktah ia ka mariang kum ka lyer, ka jingsawa hynrei kaba bun pat ka dei ka jingmyntoi ia u paidbah ha ka liang ka ioh ka kot. Ka jingjakhlia ka lyer kaba mih na kane ka jingtrei kum lyngba ka jingsamthliew, jingtih, jingtei kan don ka jingktah tang khyndiat ha kaba ia dei bad ka jinglong ka lyer ne ka jingitynnad ka mariang ha ka por ba trei. Namarkata ka daw hap ban phikir bha ioh lehse lyngba kano kano ka jingbakla ka ba rit ka lah ban wanrah ia ka jingktah kaba jur.

6.3 Ka jingmyntoi ka mariang bad jingiohnong bala mang lyngba ka Clean development mechanism- Ka jingmih jong ka lyer bih sha ka haw haw ka wanrah ia ka jingkhluit salonsar. Ka Clean development mechanism ka shah ia ki ri kiba la kiew shaphrang ban kynshan pisa ia ki project kiba pynduna ban pynmih ia ki lyer bih ha ki ri kiba dang kiew. Ia kine ki ri kiba la kiew pat ki ioh ia ka certified emissions reduction units (CERs) kiba la ju tip ruh kum ka carbon credits na ka UNFCCC na ka bynta kane ia kaba ki lah ban pyndonkam khnang ban kot ia ka thong. Shi bynta ka CERs ka mut shi ton ka lyer carbon dioxide ia kaba la pynduna.ka sorkar lane ka karkhana shimet kiba ha ki ri kiba dang kiew ki lah ban pyntrei ia ki project kiba lah pynduna ia ki jing pynmih ia ka lyer carbon dioxide bad ioh ruh ia ka CERs na ka UNFCCC. Te kine ki CERs lah ban die pat sha kiwei ki ri kiba la kiew shaphrang ha ka dor kaba ia sngewthuh lang. ka Sorkar pdeng ka lah pynmih ia ka tnat National Clean Development Mechanism Authority hapoh ka tnat Environment bad Forest ha u bnai April 16tarik 2004 ban peit bad shah ia ki project kiba hapoh ka CDM. Katei ka tnat ka ai jingbit ia ki CDM project kiba la phah sha ka hadien ba ki la peit bad bishar bniah ba kine ki project ki pynbiang ia ki kyndon ba la buh da ka. Shi bynta ka CERs ka ia ryngkat bad shi ton ka carbon dioxide ia kaba lah ban die ha ka iew pyrthei salonsar pynmih lyer. Kane pat kan iarap ban pynduna ia ka jing pynmih bor ding kumba Rs. 0.41/Unit.

7. KA KOIT KA KHIAH KI PAIDBAH

Ha ka jingpeit bad wad bniah la lap ba ka jingduna ha ka koit ka khiah, ka jaka leit shabar ha kane ka jaka treikam kin don shibun ka jing ktah kumne harum:- Ki nong bylla kiba bun hap ban buh ha ka por ba pyntrei ia kane ka project. Ki nongbylla ki ba bun kiba shong ha ki iing jain lane sem kim don jaka leit shabar ba tikna. Ka jingbun jong ki nongbylla shipor ha kane ka jaka trei kan wanrah katto katne ka jingktah ha ka koit ka khiah. Ki nong trei kiba bun ki lah ban wan na ki jaka ia kaba ka jingpang khieshoh kam don kumjuh ruh na ki jaka kiba don bad kane kan nang pynkiew ia ka jingpang khieshoh. Kumjuh lada don ka jing iajan hapdeng kine ki nongtrei bad trai jaka ha kaba ka project ka don ka jing man jong ka jingpang niang huliah (HIV) ka lah ban don.

Ki nongbylla kiba bun leit kin hap ban leit shabar klumar lada ym lah ban pyn biang ia ki jaka leit shabar kiba biang. Ka jing jakhlia kaba mih na ki briew ki long ki daw kiba kongsan eh na ka bynta ki jingpang AMEBIASIS, WORMS bad kiwei kiwei. Ha ka por slap ha ki jing bym biang ki jaka leit shabar ka wanrah ia ki jingpang kiba bun jait kum ka jingpang daplyer, pynhiar bad kiwei kiwei. Ka jing jakhlia kiba wan na ki pui pui bad pum pum ha ka por ba pyntrei ia kane ka project kan ktah ia ka koit ka khiah u klongsnam bad kumjuh ruh ia ka rukom pynhiar bad ring mynsiem. Ka jingbymbiang ha ka umbam um dih kan wanrah ia ki jingpang ki ba bun. Kumta ki plan ba tikna dei ban don khnang ban pynduna ia ka jingktah jong ka khyndew ha ka por ba dang pyntrei ia ka project bad wat hadien ba la dep ka project ruh.

KA BYNTA BA –II.

ENVIRONMENT MANAGEMENT PLAN(Ka plan ban pyniaid ia ka jinglong ka mariang).

8. CATCHMENT AREA TREATMENT

(KA JINGPYNKHREH BAD IADA IA KA JAKA HA KABA KA UM KAN WAN)

Ka jingtuid jong ki um sha kane ka project ba sdang na naduh Mawkynrew ban mawryngkneng jong ka East Khasi Hills District bad kumjuh ruh na Amlarem bad Thadlaskein block ha Jaintia Hills District ym pat ju don ki project ha ka wah Umngot, la haneng jong ka dam lane harum jong ka dam ruh haduh ka jaka ia kaba ka mih iang ka um na ka tail race. Ka dei ka jingshisha kaba shai/skhem ba ka pung kaba mih lyngba kane ka project ka don ka jinglang ktieh ha ka khyndew naba twa na ki jaka hapoh kane ka catchment kin ioh ban lang hapoh ka wah bad haruid wah ha kaba ki pynlong ka rukom thian jo.

Kumta ka catchment Area treatmen plan kaba long bniah bad bishar bha ka long kaba donkam ban pynbha lane pynduna ia ka jing ktah jong ka jingtwa khyndew hapoh ka catchment. Ka jingtwa khyndew ha kine ki jaka lum jong ka catchment ka dei bunsien na ka daw u slap/um, bad ki long ki ba jia khari khari, bad kumta la wad bniah ia kane ka bynta la ioh ban pynlang um shibynta hapoh kane ka catchment Area Treatment Plan.

Ka jinghap slap hapoh ka Catchment jong ka Umngot HE Projek ka ia pher hapdeng 2890 – 4904 mm ha ki snem 1991 -92 haduh 2005 – 2006. Kumta ka jingtwa khyndew ka long kaba kham jur.

Ka CAT Plan kumta ka wanrah ia ka rukom iada lane pynduna iia ka jingtwa khyndew hapoh kane ka Catchment jong ka Umngot Project. Ka CAT plan ka kynthup, kumno ban sngewthuh ia ka rukom twa khyndew , Ka rukom man ka lum ka wah bad ban ai jingmut ruh kumno ban iada ia ka two khyndew. Ia mynta la pyndonkam da ka S Y I “Silt Yield Index”. Hangne ka rukom peit la ioh ban phiah ia kane ka catchment sha ki Sub-Water sheds kiba rit bar it, bad ia ka rukom twa khyndew la ioh ban khein da ka ba ia nujor lang. Ka S Y I ka wanrah ia ka jing ianujor hapdeng ka rukom tw khyndew jong ka catchment baroh (duna, pdeng, jur etc).

8.1 Ka Jinglong ka Catchment Area :

8.1.1 Ka jing donkam jong ki Sub Watersheds :- Ia ka catchment la phiah ha ki 19 tylli ki micro-watershed kiba ka jingheh ka long naduh 754 haduh ka jingheh kaba 2736 Ha. Ka jing pyntreikam kaba biang la mang ha ki san tylli ki micro-watershed ha kiba ka jingheh ka long kumba 8819 Hektar, kaba long 28.98% jong ka Catchment. Kiwei pat ki kyrdan jong ki micro-watershed ym shym la phah naka bynta kano kano ka jingpyntreikam. Namarkata ki jaka bala mang naka bynta ka jingtreikam ki long kumne harum :-

1. Open forests	– 470 Ha
2. Scrub lands	– 730 Ha
3. Ki jaka rep syrti	– 788 Ha
4. Arable area	<u>- 1030 Ha</u>
Baroh	- 3018 Ha

8.2 Ki lad ban iada bad pynneh ia mariang.

8.2.1 Ka prokram thung dieng bad ban pynrben khlaw: - Ka jaka kaba 1200 hactare la shim khia bha na ka , kaba don ha ki micro-watershed kiba la mang ban thung dieng. Bun na ki khlaw kidei ki khlaw raid bad kiwei pat ki dei ki jaka sorkar bad ki jaka jong ki riew shimet. Haba peit ia ki data bala pynmih da ka tnad forest bad kaba pdiang ia ka jingtip kaba iadei bad ka jingkiew jong ka dor trei bad ban wanrah ka jing ryntih ha ki dor na ka bynta ban shna ia ka report, ka dor na ka bynta kane ka long 32,100.00 tyngka shi hectare na kabynta san snem. Namar ba bun na

kine ki jaka ki dei ki jaka khlaw laitlan (470 ha) bad ki jaka diengrit (730 ha), kumta ka program thung dieng bad kumjuh ka jingpynriewspah ia ki jingthung la ai jingmut khamtam ha ki jaka ba harud jong ka pung ka ban sa mih na kane ka jing den um .Namarkata ka dor jong ka jingthung dieng lyngba ki lad silvi-pastural ha ki jaka ba kham kongsan ka lam sha ka 385.20 lak tyngka na ka bynta san snem.

8.2.2 Ki Nur(Staggered Trenches) :- Ynda shna ruh ia ki nur naka bynta ka silvi horticulture (ka rukom rep soh) bad ka rukom sumar ia ki khlaw sainnium/ki jaka bym sei soh bad kumjuh ruh na ka bynta ban set bad ban pynneh ia ka um slap bad ka jingtuid ka khyndew. Ka um kaba tuid na ki jaka ba bunjait ki jingthung kan tuid lyngba ki nur sha ki jaka silvi-horticulture,ka ban lam sha ka jing lum lang ka khyndew bad ban khang noh ia ka um bad ban pyn khie im biang ia ka khyndew kaba la tuid bad ki um poh khyndew. Yn shna ia ki nur kiba kham jrong ha ka jingheh kaba 5m bad ka jing jngai na kawei sha kawei pat ka long 3.3 m. Ka jinglut jingsep n ka bynta ka shi hektar ka long 11701 tyngka.Ka jaka ba la mang naka bynta ban shna ia kine ki nur ka long 2230 ia ki khlaw sainnium bad jaka rep. Ka jinglut baroh ka long 260.93 lak tyngka.

8.2.3 Ka Jingthung bad Jing Pynroi Iaka Jaka phlang Bad Ki phlang Ai bam Masi (Lyngba ka jingiarap) :- La lap ba ki nur kiba long 5 tylli na ka bynta shi hektar ki pyn khie im ia ka khyndew bad ki umpohliw ban pyndap ia ka jing donkam um jong ki jaka phlang bad ki phlang ai bam masi jong ki jaka.Na ka bynta ban pynmih ia ki jaka dieng thang bad phlang ai bam masi la ai jingiarap 2500 tyngka na ka bynta shi hektar ha ka estimate. Ka dor jong ka jing iarap ka poi sha ka 55.75 lak tyngka.

8.2.4 Jingrep ha ka rukom balong kyrdan:- Ha ki jaka ba sharing naduh 10%-35% la mang da ki jingrep ba long kyrdan khnang ban pynduna iaka jinglong sharing jong ka da kaba tih bad pyndap. Na kiba bun ki lad ban shna ia kine ki rukom rep kyrdan ka Table top level terraces bad ka Sloping inward terraces la ioh ban ia jingmut . Ka jinglut kaba 47245 tynka shi hectare la ioh ban khein. Ka jaka kumba 3011 hectare la ioh ban mang khamtam ha ki ki sub-watershed kiba la ioh peit bniah bad kumjuh ki jaka sharing. Ka jinglut baroh na ka bynta kane ka long 1422.55 lakh tyngka.

8.2.5 Ka jingiada ia ka khyndew bad ka Um – Da ki buit saian.

Shuwa ban wad ia ki lad ban iada ia ka khyndew bad um jong kano kano ka jaka , ka jingtip ba bniah ia ka jaka kum ka jinglong at lane them , ka jinglong ka khyndew, ka jingdon ki jingthung, kumjuh ruh ia ki jingpyndonkam ia ka ka khyndew hapoh jong ka , bad ruh ia ka jingtuid um dei ban peit . Ki buit saian kiba pyndonkam ka long ban tei ia ka kynja dam ba rit ha ki wah khnang ban iada ka jingtuid jong ka khyndew bad lait ban tuid sha ka jaka ban dew um. Khnang ban teh lakam ia kum kine ki jingtuid khyndew kine harum ki long katto katne ki lad kiba donkam ban leh:

8.2.5.1 Gully control structures or gully plugging: Don ar tylli ki lad kiba lah ban tei khnang ban iada ia kane ka jingtuid nala jong ka um.

Double Row Brush Dam: Kine ki jait dam la tei ia ka ban iada ia ka jingtuid um na ki nala ha ki jaka ba ka jingylliew ki long pdeng bad kumjuh ha ki jaka ba kham jylliew(kumba 2.5 m to 2.50 m jingjylliew haduh 6.0 ka jingiar). Ha kane ka jingtei ar line lynter ki dieng kiba heh kumba 10 cm -13 cm yn pynngam sha ka khyndew kumba 0.9 m haduh 1.20 m ka jingjylliew ha ki jaka maw bad kumba 0.90 m ka jingjngai na uwei sha uwei pat bad na kawei ka line sha kawei pat. Ka jinglut kaba pdeng na ka bynta kawei ka jingtei kan long kumba 1783 tyngka bad ka jinglut na ka bynta 140 tylli kum kine kan long baroh 2.50 lakh tyngka.

Loose boulder Check dam: Ia kine ki jait dam lah ban tei lada ki maw kiba biang ka jingheh ki bun ha ka jaka ka ba mut ban tei ia ki.Ka jaka kaba mut ban tei dei ban pynkhuid bad ka slope kaba 1.5:1 dei ban pynioh . Ka jingtei maw ha kine ki jait jingtei dei ban pynjrung kumba 0.3 haduh 0.6 meter khnang ban iada ia ka jingkhlong jong ka um na ki rud wah. Shadien jong ka pat dei ban pynjrung ka rukom buh maw kumba 0.90 m ka lynter bad ka pynkiang kaba biang khnang ban iada ia ka jingkhlong jong ka um. Ka jinglut kaba long pdeng jong kane ka jingtei

kan long kumba 12966 tyngka kawei bad ka jinglut baroh na ka bynta 310 kine ki jait dam kan long kumba 40.19 lakh.

8.2.5.2 Ki jingtei kiba donkam ban iada ia ka Um.

8.2.5.2.1 Percolation tanks (PTs): Ha ki jaka kiba lah ban pynlang um, ki jingtei da kaba ker kum da ka khyndew bad ki maw lah ban shna. Kumta kumba 6 tylli ei ei lah ban shna ha ka dor kaba 1 lakh tyngka ei ei. Ka jinglut baroh kan long kumba 6 tyngka.

8.2.5.2.2 Ka jingkhong lad ia ka jingrep shyrti ha ka catchment: Ka jingrep shyrti kaba long naduh myndai ka long kawei na ki daw kaba ktah ia ka catchment. Ban iada ia kane, donkam ban pyntrei kam da kine ki rukom rep kum ka Strip-Cropping (contour stripping) , Modified Strip Cropping (Field stripping) and Agricultural and Horticultural Development, Horticultural crop strips , ki Cover Crop bad Mixed Crop strips, ki jingthung kiba don ha ka ha ka dor kaba 46.66 lakh tyngka

8.2.6 Jingsumar Ia Ki Phud wah/Jing Pynroi Ia Ka Jing Jyrngam Ka Mariang

Haka por slap ka jaka kumba 253.85 ha haduh ka FRL la pynithuh ba ka hap hapoh ka jingtap noh ka um.Ka jaka baroh kaba la mang na ka bynta ka jingsumar phud um ka long 60000 m lane 60 Km bad ka jaka kaba hap hapoh ka jing pynjyrngam mariang kalong 60 ha. Te namarkata la mang ban pynneh ia ka khlaw haduh 60 Ha na ka bynta ban pynroi iaka jingsumar phud wah bad ka jing pynjyrngam ka mariang.Na ka bynta kane,ka jinglut baroh ka long 19.26 lak tyngka.

Ka jingsumar ia ka catchment area ka kynthup ia ka jingiada ia ka khyndew ,ka um bad ki jingthung jingtep ha ka ban pynneh pynsah ia ka mariang, ban lait na ka thang bun. Naka bynta kane la mang kumba 2239 lak tyngka,khlem kynthup ia ka jingthung dieng ban pyniadep bad ki khlaw ba la shah tap ha ka um.

8.2. 7 Ka Jingthung dieng na ka bynta kito ki jaka kiba la sha ktah ha ka project

Ka jaka kaba 93.53 Ha la pynmang na ka bynta ka jingthung ia ki dieng ban pynneh pynsah biang ia ki khlaw rben (1291 Ha) bad ki khlaw stang (680.62 Ha) na ka jing sha tap ka um.Ia kane la pynmang ha ka dor 32,100 tyngka/ha. Ka jinglut baroh ka long 30.02 lak tyngka.Ka jingthung ia ki dieng ka long ha ki jaka bym don jingrep jingriang.Ki ar tylli ki jingthmu ia ka jing pynneh biang ia ki khlaw ka pynlong ia ka jingiohnong kaba khrav na ka bynta ki jaka khlaw kiba la shah tap noh haka um.Nalor kata ka jaka ban thung ia kine ki dieng ruh ka dei ban iarap ban pynneh ia ka khyndew kaba synjor hajan ka catchment zone.Ka jinglut jingsep baroh la phiah ha ki lai bynta kita ki long (a) Ka jingthung dieng (32100tyngka/ha na ka bynta ka jaka kaba 93.53 ha) (b). Ka jing pynngat noh ia ki dieng (26250 tyngka/ha) (c). Ka jaka ban thied na ka bynta ban pynrben ia ki khlaw (8.03-6.26 lak tyngka/ha). Ka jinglut jingsep baroh ka long 662.92 lak tyngka.

9. KA RUKOM SUMAR IA KA KHYNDEW KA SHYIAP

Ha kane ka project don bun jait ki rukom tih khyndew kum ka muck disposal plan,kaba tih iaka tunnel da kabaleh blasting bad kiwei kiwei.

9.1 Ka Rukom Bret Iaka Khyndew Kaba mih na kaba trei ia ka projek

Kumba 1.09 Mm³ ka khyndew batam dei ban bret ha ki jaka bala buh ha kata ka rukom ban ym pynsniew ia ka mariang. Bun na ki khyndew batam ki mih na ka jingshna ia ki dam,ki tunnel bad kiwei pat ki jingshna kiba iadei bad kine . Ka jinglut jingsep na ka bynta ka jingbret ia ka khyndew kaba tam kalong 118.58 lak tyngka kynthup lang iaka jingshna kynroh mawthup,ki nur nala bad kaba pynkit ia ki khyndew ba tam na kine ki

jingshna. Ka kynthup ruh ia ki jingsumar jingthung jingtep, ia ki dawai sumar jingthung, jingker pud, ar ngut ki nong peit ha ka dor 4000 tyngka shi bnai marwei na ka bynta 5 snem bad 10% ka jing kiew dor man la u snem.

Ha ka dor 4000 tyngka shi bnai na ka bynta uwei u briew ha ka por 5 snem bad la mang 10 naka 100 ka jingkiew dor ba man u snem.

9.2 Ka plan ban pynbha ia ki par maw bad shyiap: Bun na ki maw bad shyiap ba donkam ban shna iaka dam , iing pynmih bording (power house) bad kiwei ki jingtei lah ban ioh naka khyndew ba tih ia ka jaka ba shna ia ki jingtei bad ki thliw um heh (tunnel) u maw uba biang u ba mih nangne lah ban pyndonkam ban khleh surki. Ki par maw la jied hajan bad shaneng jong ka wah umngot kaba lah ban shah tap hadien. Ki par la jied ban dei ha ki kaka sorkar . Ka par shyiap la jied ban tih na ka wah myntdu ha Jaintia hills district kaba jngai kumba 55 kms na ka jaka ban tei ia ka dam . U shyiap ba pyndonkam na ka bynta kiwei pat ki project la tih na kane ka wah hi bad ym shem la shim kano kano ki lad jingiada.

Donkam ban shna bha ia kine ki par hadien ba la tih ia ki maw ne shyiap da kaba shna ia ki maw kynroh rel (117.30 lakh tyngka) bad pyndap ia ka jaka da ka khyndew bad ki maw ne dieng (38.25 lakh tyngka).

10 KA PLAN BAN PYNBHA IA KI JINGIM HA KA MARIANG

10.1 Ka plan ban pynjyrngam ia ka mariang (green belt):- Ka jingpynjyrngam ia ka mariang (green belt) kan iarap ban pynbiang ia ka jingidei ki jait jingim ba ka mariang. Ki jait jingthung lah ban ioh na ka social Forest Department bad ruh na ki jaka sar jingthung jong ki briew. Ki jait jingthung ki lah ban im kat kum ka jaka. Ka jaka thung jingthung la mang kumba 40 na ka 100 (55 ha) jong ka jaka bala mang (136.67 ha) na ka bynta ban shna ia ki surok, bording electric bad kiwei kiwei ba hap hapoh kane ka projek. La don ka jingthmum ban thung kumba 500 tylli ki jingthung man ka shi hectare na ka bynta ban shna ia ka jaka ba jyrngam ha ka jaka ba la julor ki jingthung jingtep na ka daw jong shibun ki kam . Ka jinglut na ka bynta ban thung dieng ka long 41500 tyngka shi hectare , ban thung ha baroh ka 55 ha la mang ban lut kumba 22.83 lakh tyngka hapoh ka EMP.

10.2 Ka plan ban pynneh ia ki jingim ha ka mariang : - Ki jaka ba kongsan ba don ki jingim ba Meghalaya ki dei ka Nokrek bad ka Balpakram park. Bad ruh don lai tylli ki jaka pynneh ia ki mrad khlaw, ki briew kiba thmu ban shna projek ki la pyni ban shna ia ka park bad pynneh ia ki jait jingim da ka jingiarap jong ka tnat forest bad ka NEHU, Shillong. Shuwa ban pyndap ka pung , ki briew ba thmu ban shna projek ki dei ban ai sha ki nongpule puthi ban tih bniah ban leh survey bha, jinglum bad jingpynneh ia baroh ki jait jingthung bad jait mrad (REET species) . Lada ym lah ruh ban rah sha kawei pat ka jaka kaba la shna kyrpang. Na kata ka daw ka donkam ban wad jingiarap na ki jaka tih bniah (research institutions) ban leh ia kane ka kam .

10.3 Ka plan ban pynneh ia ki mraw khlaw:- La pyrkhath ban pan jingiarap na ka Meghalaya state wildlife Division, Shillong na ka bynta ban pyllait bad ban rah sha ka jaka ba biang (rehabilitation) ia ki mrad kiba la ju im ha ka jaka ba pynlang um (reservoir area) . La pyrkhath bad thaw da ka Umngot bio diversity conservation board kiba kynthup ia ki nongmikhmat na ka Forest, wildlife, BSI bad ZSI ka ban khmih bniah na ka por sha ka por da ki jingthmu (plans) ban pynneh pynsah ia ki mrad bad ban ai jingiada ia ki REET species. Ka jingmang pisa na ka bynta kane ka long 50 lakh tyngka da kaba shna ia ka Bio-Diversity park bad ia ka jingpyntrei kam ia ka Bio-diversity wildlife conservation plan.

10.4 Ka plan ban pynneh ia ki jait dohkha :- Kane ka kynthup ia ka jingthaw ia ka seng jong ki nongtongdohkha kaba khot organization of Fisherman cooperative society bad ban ai ia ki training 50 ngut ki dkhong jong kane ka seng , ban lum bad ban jied ia ki jait dohkha (ka jaka ban ri ia kine ki jait dohkha la mang kumba 125 ha kata kumba 50 % jong ka jaka ka ban shah tap ha ka um ynda la shna ka dam kaba haduh ka level FRL 1040 M bad la shim ba ka stocking rate ka long 200 tylli ki dohkha rit shi hectare), ban pynkha symbai ka donkam (1.74 lakh ki pyllong dohkha ban pyllong 0.25 lakh ki dohkha rit) , la don jingthmu ban sam ia ki jar dohkha, ki lieng ban khwai dohkha ruh. Ka jinglut baroh ban thaw ia ka jingri jingpar jong ki dohkha (fisheries development) na ka bynta 50 tylli ki

long iing ka poi 23.13 lakh tyngka. Kane ka kynthup 20.63 tyngka na ka bynta ba sdang kum ka bai seng bad kumba 2.50 lakh ka jinglut ka mih man la ka por kumba 10 snem . Ka jingroi jong ki dohkha ha ka jaka kynshew um kan sa nangkiew, ha ka rukom ba ki lah ban im, haduh ban da poi sha ka jingroi kaba 25 ton ha ka shi snem tad ynda da ki la roi pura. La khein ba ka jingstet ka jingroi ka long 200 kg ha shi hectare. Ka project kan ai kam ia kumba 50 ngut ki nongkhwai doh na riwulum ha ka rukom ba thikna.

11. JINGPYNIAID BAN PYNBIANG IA KA KOIT KA KHIAH U PAIDBAH

11.1 Ki ing ki nongbylla: _ U Ka jingdon jong ki nongbylla(1000) ha ka por ba trei, ka don ka jingtah ba jur ha kaba iadei bad ka mariang. Katba nang iaid ka por, ka jingbun ki briew kan nang roi sha 2000 ngut. Ki jingpynbiang na bynta ki ing ki long kumne:-

11.2 Jinglekhuid ha kaba leitshabar ne leit khyndew:- Kawei ka painkhana na bynta 20 ngut ki briew bad kawei ka septic tank na bynta 500 ngut ki briew dei ban mang. Ka um jakhlia na kine ki septic tank dei ban lum sha ki thliew ba lah ban kjit um. La khein kumba 100 tylli ki painkhana paidbah bad 4 tylli ki septic tank dei ban shna. Ka jinglut baroh ba donkam na bynta kine ki jingpynbiang kan long kumba T. 40.00 lak.

11.3 Jingpyniaid ban iada na ki jakhlia batylli: - Ka jingmih jong ki jakhlia batylli na ki ing nongbylla ka poi kumba 0.85 ton ha ka shi sngi. Kumba 8 tylli ki jaka pyllang jakhlia, ba lah ban lum 2 cu m , dei ban shna ha ki jaka ba ibit ban theh ia ka jakhlia ba mih na ki shnong bad jaka sah ki nongbylla kiba hajan ka projek. Ka jingmang pisa kaba T. 61.00 lak la buh ba bynta kane.

11.4 Ka umjakhlia na ki jaka sah nongbylla:- Ia ka um jakhlia ba mih na ki jaka sah ki nongbylla, ynda la dep pynjar ha ki septic tank yn sa pyntuid sha ki wah. Ia ki septic tank dei ban shna ha ki jaka ban nym pynjakhlia ia ka um bam um di. Yn pynbiang ruh ia ki settling tank na bynta ban pynjar jakhlia. Ha ka dor ba T. 5.00 lak la bun na ka bynta ban shna ia kine tank. Hadien ba la dep trei ia ka projek , ha ka por ba pyntrei kam pat ia ka, ki colony ba pura yn sa buh. La bthah ruh bah sdang ia ka jaka pynkhuid ba ibit ban pynkhuid ia ka jakhlia ba mih na kine ki colony.

11.5 Jingroi jingpar ha ka jingpynbiang ia ki jaka sumar pang:- Kam pat don kano kano ka jingpynbiang ia ka jaka sumar pang hangne ne ha ki shnong ba hajan ka projek. La ai jingmut ban buh noh ia ki jaka sumar pang ba biang. La bthah ruh ba ka jaka die dawai kan sdangnoh ha ka por ba trei ia ka projek hi, khnang ba ka lah ban ai jingmyntoi ia ki nongtrei ba tuid sha kane ka jaka bad ia ki nongshong shnong hi ruh. Donkam ruh ban buh ia ki tin buh dawai ha man ki jaka ba trei khnang ba ia ki nongtrei kiba hap ha ka jingmynsaw lah ban iarap hangto hangto hi. La mang pisa T. 19.67 lak ha ka shisnem na ka bynta ka jingpyniaid ia kine ki kam bad jinglut ia ki nongtrei, jinglut ha kaba shna ia ki jaka ai dawai bad kiwei kiwei. Na ka bynta ban pynbiang ia ka 5 snem hadien, kata ha ka por ba trei ia ka projek, ka jinglut baroh kaba T. 98.35 lak la mang ha ka EMP.

11.6 Kiwei kiwei pat ki jingtei:- La khain ba 5000Sqft ka jaka (ba shongdor kumba T. 1.00 lak) yn sa donkam na bynta ki jaka ai dawai. Na kane, 3000Sqft yn pyndonkam na bynta ban shna ia ki quarter/ing sah nongtrei ophis. La khein kumba shi bynta shiteng(1.5times) na ka jaka ba shna ia ki quarter, kaba long 4500Sqft ka jingheh jong ka ingmaw(RCC building) ka ban sa tei, kan lut kumba T. 41.50 lak. Shuh shuh , kin don ki jaka sumar kiba hajan, ba la sop da ki saraw/tiles, siej, ter ter, ki ban lut kumba T.2.00 lak. Ka pisa baroh kaba T. 11.00 lak la buh ha ka snem ba nyngkong na ka bynta ka jingdonkam ki kali ban jingbit ia ka ophis trei kam.

Kumta baroh ka jinglut na bynta ka koit ka khiah kan poi kumba T. 278.52 lak.

12 KA PROKRAM NA KA BYNTA KA JINGKHMIAH BNIAH IA KA MARIANG

Ka jingkhmih bniah ia ka mariang ka dei bynta ba donkam eh na ka bynta kyrshan ia kano kano ka water resource project. Kadei ka bynta ba kongsan jong kano kano ka jingpynshongdor ia ka mariang. Ka jingkhmih bniah

ia ki mat ba shong dor ka long ka ba donkam ha ka por ba pyntrei ia ka project, na kata ka daw ka prokram na bynta ka jingkhmih bniah ia ka Mariang la shna khnang.

12.1 Jinglong ka um:-

12.1.1 Ha ka por ba tei ia ka dam bad ka power house:- Donkam kumba 240 ki nongmuna um ha ka shisnem ban eksamin. Ki mat kiba donkam ban khmih bniah ki kynthup ia ka pH, BOD, Total Suspended Solids bad Total Dissolved Solids. Ka jinglut ban eksamin ia kawei ka nongmuna um la khein ba kan poi T. 2000. Te ka jinglut baroh ha kaba eksamin ia ki 240 ki nongmuna um kan poi T. 4.80 lak ha ka shisnem. Da kaba pyrkhat ba ka por trei kan neh kumba 6 snem bad ka jingkiew dor man ka snem ka long 10%, ka jinglut baroh ka long T. 37.00 lak. Ia ka jingeksamin lah ban leh ha ka jaka trei kaba la ithuh da ka State Pollution Control Board ne da ka State Pollution Control Board ha Shillong hi.

12.1.2 Ha ka por ba pyntrei kam:- Donkam ban khmih bniah ia ka sla um jong ka um ba sahkut (impounded water)bad ka wah Umngot 3 sien shi snem na ki jaka ba shim ia ki nongmuna um, ha ka jaka kynshew um, shaneng jong u surge shaft, jaka kynshew um – kaba sharud wah shaliang ka mon hajan Amlarem bad sha ba kut ka tail race tunnel. Ka jingmang pisa kaba T. 1.00 lak la buh na bynta kane ha ka por ba 10 snem. Kumba 50 tylli ki nongmuna um , ka ban lut kumba T. 3000 kawei, na ka Sewage Treatment Plant, hap ban eksamin. Ka jingmang pisa kaba T. 15.00 lak, yn sa buh na bynta ban eksamin ia ki nongmuna um ha ka por ba 10 snem.

Ka jinglut baroh ban khmih bniah ia ka jinglong ka um ka mih T. 53.00 lak

12.2 Jinglong ka lyer bad ka suinbneng:- Lah ban eksamin ia ka jinglong ka lyer sawdong ha ka por ba tei ia ka project. Ka jingeksamin ka lah ban long arsein shi taiew na ka bynta 4 taiew lynter ha man ka steshon ha man ka aiom. Ki mat kiba donkam ban khmih bniah ki ong Respirable particulate Matter (RPM) bad Suspended Particulate Matter(SPM), Sulphur Dioxide (SO₂) bad Nitrogen Oxides(NOx).

Man ka snem donkam ban eksamin ia ka jinglong ka lyer sawdong ha Umngot dams site bad power house. Ki nongmuna lyer kin poi kumba 64 tylli ha 1 snem. Ka jinglut kaba T. 19.75 lak (kynthup ia ka jingkiew dor ba 10%), ha ka dor ba T. 4000 na bynta kawei ka nongmuna lyer, kan poi ha ka por ba tei ia ka project ba 6 snem. Ka jingmang pisa ba T. 15.00 lak la shna ha ka EMP na bynta ban buh ia ka jaka eksamin ia ka jinglong ka suinbneng hajan ka projek. Ka jinglut baroh ban khmih bniah ia ka jinglong ka lyer bad kiwei kiwei ki jinglong ka suinbneng ka mih T. 34.75 lak.

12.3 Jingkhoh bad jingdap ka khyndew:- Donkam ban khmih bniah kumba 2 shi snem ia ka jingstet ka jingkhoh ka kyndew ha ka catchment area bad ia ki lad ban pynneh ia ka kyndew. Ha ka jingmang pisa ba T. 5.00 lak ha shi snem, ka jinglut baroh ka long T. 50.00 lak ha 10 snem. Hadein 10 snem, ia ki ne ki mat dei ban khmih biang bad ka jingmang pisa na ka fund kan iai bteng lada donkam.

12.4 Jinglong bad jingiadei kiba don jingim bad ka mariang(Ecology):- Ka jing khmih bniah ia ka jinglong bad jingiadei ki jingim ha um ka long kaba donkam na bynta ki prokram jingroi jingpar jong ki dohkha. Donkam ruh ban khmih bniah 2 sien shi snem ha ki jaka ba shim nongmuna um, kata sharud wah kaba sha liang kadiang bad kamon bad ha ka jaka ba don ka power house. Ia ka jingkhmih bniah lah ban leh da ka agency na shabar kaba tikna, ha ka dor ba T. 1.00 lak shisnem eiei. Kumta ka jinglut baroh kan long T. 10.00 lak. Ki nongtrei ha kane ka jingkhmih bniah jong ka mariang ki lah ban shim bynta. Ka mang tyngka kaba 5 lak man u snem lah ban buh na ka bynta kane ka jingthmu 10 snem linter ka ba la khien lang kan kot kumba 50 lak tyngka . Ka mang tyngka tang na ka bynta ka jingpeit bniah ka ka jinglong jingman jong ka mariang lane ka ecology ha kane ka thain ka long baroh kumba 60 Lak tyngka.

12.5 Ka Jingsawa: _Ka jingpeit bniah kaba man la ka por_ka dei ban long shisien shi bnai. Yn buh 5 tylli ki sound level meters khnang ban peit bniah ia ka jingmih ka jingsawa bad la mang kumba 3 lakh tyngka na ka bynta kane ka kam.

12.6 Ki JINGPANG BADEI NA KA UM: Ban lap ia ki jingpang kiba mih na ka um , bad ki lad jingiada bad kumjuh ruh bad peit ia ka koit ka khiah ki long katto katne ki liang kiba dei ban peit bniah man la ka 3 sien shi snem..Ka jingkhein ia ka mang tyngka na ka bynta ban shim ne peit ia ka jingkoit ka jingkhiah baroh ha kane ka projek kaba dang ia id sha khmat na ka bynta jong ki 6 snem ba dang tei ia ka projek ka dei ban long la kumno la kumno 38.58 Lak tyngka .Ka jinglut jingsep na ka bynta ki 10 snem hadien pat long baroh 31.87 Lak tynka.

Ka jinglut jingsep baroh na ka bynta ka prokam ban khmih bniah ia ka jinglong ha kine ki thain ka long 272.48 lakh tyngka.

13 DAM BREAK ANALYSIS AND DISASTER MANAGEMENT PLAN

_Ka jinglait um kynsan na ka dam lada ka pra kan wanrah ia ka jingshlei um bad kan ktah ia ka jingim jong ki briew bad kumjuh ruh ia ki jaka. Namar kata ka daw ki lad ki lynti kiba biang la shim bad peit bniah lada jia kumne na ka bynta kane ka projek. ka por ban ia id ka umsaw ka long 12 minute hapoh 20 Km na ka daw jong ka jing long sharing ne ka ranap ki lum. Ka um ka lang ban khot haduh ka jaka kaba ka um saw ka wan ha ki jaka kiba bun . Ka map ba la pyni ia ka jingshah tap ka um ka pyni ba tang khyndiat ki jaka yn shah tap sharud jong ka wah and kim don ki jaka shong briew , te ki lad ki lynti kiba biang ban iada lada don kumne ka jingjia la pynkhreh .

Ka jingjot bunsien ka dei na ka daw jong ka jing bym shim khia ia ki lad ki lynti ban iada. Kumta ha kane ka report la ioh ban pyni ia ki bynta kumno ban leh lada jia kum kine ki jingpynjot , kiba ki kynthup , Fixe fire detection and protection system, portable fire extinguishers , communication facilities , emergency power supply , emergency safety equipment, emergency alarms , kumjuh ruh ia ka jingshim khia bad ki training , bad ka jingiashim bynta jong kiwei ki department .

14 KI LAD BAN AI JAKA SHONG SHNONG BAD BAN WANRAH BIAN SHA KA RUKOM IM BA THYMMAI

Ka jaka kiba don kam nalor ka ba la shah tap ha ka um ki long ban shana ia ka power house , ki iing sah (project colony) . Na ka bynta kine donkam kumba 56.60 ha ka jaka shimet , 93.53 hectare ka jaka ia ka forest bad 146.84 hectare jaka raid. Ka jinglut baroh na ka bynta ban thied ia ka jaka rep jong ki riew shimet kaba long Rs 4,90,000 shi hectare bad Rs 4,30,000 shi hectare na ka bynta ka jaka raid, ka bai duh haba pong ia ki dieng, ki jingthung jingtep , ka bai sut , ka jingbuhdak bad ka bai kashari bad ka jinglut ha kaba iadei ha ophis ka long kumba 2331.07 lakh tyngka.

Ka Economic Rehabilitation package na ka bynta ki iing kiba la ktah da kane ka project kumba la ioh lum jingtip ha ka por ba leh ia ka Socio-Economic survey ka long kumba 524.59 lak tyngka . Kumba 5 % ei ei la buh tam na kane ka jingmang pisa ioh lehse kan don ka jingpynbeit ha ka por ba pyntrei kam ia ka ne ka Rehabilitation and resettlement program . Kumta ka jingmang ka na ka bynta ka Economic rehabilitation package kan long kumba 550.82 lakh tyngka kynthup lang ia ka budget ba la kdew kumba 26.23 lakh tyngka. Baroh kane ka jingmang la ioh ban khein ha ka jing pynshong dor jong ka dor sngi kaba 100.00 uwei briew .

Kumba 5.00 lakh la buh kyllum na ka bynta kane ka kam . Ha kajuha ka por kine ki iing kiba ka projek ka ktah ki dei ban ioh ia ki training kiba ba biang khnang ba ki lah ban seng ia ki kam kiba thymmai. Ka jingmang pisa na ka bynta kane ka training ka long kumba 5000 tyngka shi iing ia baroh kine ki 228 iing. Kumta ka jinglut baroh ha kaba ai

training ia kine ki iing ka long 11.40 lakh tyngka , kumta ka jinglut baroh na ka bynta ka jingai training ia kine ki iing kiba la ktah bad kumjuh ruh ia ki ophisar kan long 16.40 lakh tyngka. Kumta ka jinglut baroh na ka bynta ban pyntrei ia ka Rehabilitationbad Resettelement package kynthup ruh ia ka jingthied ia ki jaka ba donkam kan long kumba 2898.29 lakh tyngka

15. KA JINGLUT JONG KANE KA PROJECT NA KA BYNTA KA EMP BAD R & R.

16.19 Ka jinglut baroh haba thmu ban pyntrei ia kane ka EMP bad ka R & R plan kan long kumba 3823.04 bad 2898.29 lakh tyngka .

Total Project of EMP and R&R		
Sl. No	Particulars	Amount Rs lakhs
A	Environmental Management Plan	
1	Catchment area treatment including reservoir rim treatment and Compensatory Afforestation	2,901.96
2	Land Management	274.13
3	Biological Conservation plan	95.95
4	Public Health Management Plan	278.52
5	Environmental Monitoring Plan	272.48
	Sub-Total of EMP	3,823.04
B	Resettlement and Rehabilitation Plan	
1	Land Acquisition	2,331.07
2	Economic Rehabilitation	550.82
3	Training	16.40
	Sub-Total of R & R	2,898.29
	Total Project cost Including R & R	6,721.33

16. KA JINGPYNKUT

Ka jingpyntrei ia ka Umngot HEP (3x80) MW kumba la thmu, ka don ka jingktah ia ka Mariang bad ia ka ioh ka kot bad ka imlang sahlang ki briew ha ki jaka marjan jong ka projek, kumba long lem ha ki projek ka roi ka par kum kine. Ki jingktah kiba pynsniew la dep shemphang hynrei ki lad ki lynti ban pyntrei kam ba la pruid dak ha ka Environmental Management Plan bad Rehabilitation and Resettlement Plan kin wanrah ym tang ban pynduna ia kine ki jingktah hynrei ban kham pynbha shuh shuh ia ka mariang bad ia ka ioh ka kot bad ka imlang ka sahlang jong ki briew ym tang ha ki jaka jong ka projek hynrei wat ha ka catchment hi baroh kawei. Nalor kata ki jingmyntoi ki ban mih na ka jingpyntrei ia kane ka projek ym tang ba kan iarap ban pynbiang ia ka jingdonkam bording ha ka jylla bad ka ri hynrei kan wanrah ia ka jingkiew ha ka roi ka par bad ka imlang ka sahlang jong ki briew ha baroh sawdong ki jaka jong ka projek.