

## EXECUTIVE SUMMARY

1. India hmarchhak ram North East Region (NER) hi Himalaya hmar lam tlang bulthut ah state 7 Assam, Manipur, Meghalaya, Mizoram, Nagaland, Arunachal Pradesh leh Tripura te an awm a ni. North East hmarchhak ram hi India ram dangte nena in zawmna chu kaw te tak te “ar nghawng” tiat lek in West Bengal state kal tlangin a zawm a ni. Mihring cheng tluklehdingawn 45.6 (2011 census) chhiar in India ram pum mihring cheng zat ah 3.7% bawr vel hmun a luah a. Tin, ram leilung zau zawng ah 7.9% bawr vel hmun a luah thung a ni. Mihring tam zawk chu thingtlang hmunah (rural areas) 82% a zavaiin an khawsa a, ram pumah national average 69% bawr vel a ni (2011 census). NER huam chhungah hmun tam zawk chu tlang ram niin, hnim leh mau, thlai/thing chi hrang hrang leh a in sem rual dan te zirchianna neih a, khawvel a hmun pawimawh tak luah zinga chhiar tel a ni. Ramngaw (forest) hi hmun thuma then a hmun hnih (2/3<sup>rd</sup>) vel a ni a. Hmun hrang hrangah hnam chi hrang hrang, kohhran hrang, tawng hrang hrang hmangin hnam 160 Schedule Tribes an awm a (ram pumah 630 atangin). Hnam thliar hran tlangmi (tribal) 400 chuang leh hmun hrang hrang ah non-tribal mi te pawh thahnem tak an cheng bawk a ni.

2. **Regional Power Transmission and Distribution.** India hmarchhhak ram (NER) hian leilung hausakna nei ngah hle chung hian, kawlpheha lamah a la changtlung lo em em a ni. Mihring pakhat zel in kawlpheha (Per capita) hman ral zat hi chhut chuan India ram pum ah kawlpheha hmun thum a then a hmun khat ang vel a ni. Hmarchhak bial ram hian MW 500 choh hman tur a neih lain a mamawhna a sang lai ber chuan MW 1950 vel a ni. Kawlpheha in daihloh lutuk vang hian ram hmasawn na lamah pawh dodalna nasa tak a siam mai bakah ram intodelhna lamah pawh hma a sawn theiloh thin a ni. State thenkhat phei chuan Central Generating Stations (CGS) rem tih zat pawh transmission network that loh lutuk vang in an pawt theilo thin a, a chhan bulpui ber chu State in sum a neiloh thin vang a ni. Transmission leh Distribution (T&D) te pawh hian kawlpheha pek chhuah naah a hloh teuh thin a ni, hei hi za zel ah sawmga (50%) vel nia hriat a ni, acchan berah chuan state pakhat atanga state in kar ram tlang leh ngaw tam vang leh thingtlang hmun kil ber te thlen nan thui tak pawh thin a tul vang hian voltage pawh a hloh pha thin a ni, hei hian mipui hmangtute tan dukhawp lohna leh harsatna a siam fo thin a ni. Tunah hian hman lai bakah MW 4000 program chu kalpui

mek a nih lain hmarchhak bial (NER) mipui hnen thhlen tirnan transmission leh distribution changtlung taka siam hi tunah hmachhawp pawimawh ber a ni.

## **Project Context**

3. Kawlphetha tih changtlun kawngah hmarchhak bialah (NER) T&D tha zawka siam tum a ni. India sorkar laipui chuan scheme tha tak duangin hmarchhak bial ah kawlphetha pek chhuah that nan “Composite scheme for transmission and distribution (T&D) in NER” a duang a ni. He scheme hian hmarchhak bial a mi te hnenah khamkhawp kawlphetha pek chhuah theih mai bakah state chhungah leh state leh state inkar transmission te a siam tha dawn bawk a ni. India Sorkar Laipui Govt of India (Gol) chuan World Bank dawr in sum US \$ 1500 million (Maktaduai tam tak) hi IBRD kaltlangin he scheme “NER Power System Improvement Project (NERPSIP)” tanpuina a dil a ni. He tanpuina hi hmun thum a then a (3 investment tranches) hmun khat theuh US\$ 500 million hi hman zel nise tih a rel tel bawk a ni. A hmasa ah chuan kawlphetha hmanlai tih chak leh zual nan, tin, state chhunga pek chhuah dante state hrang hrang a kawlphetha (33kVa leh ai sang zawk) in thlun zawm dan transmission & distribution schemes leh tanpuina petu World Bank leh India sorkarin a hna kalpui dan chungchang a zirtirna tha tak hmarchhak bial (NER) state paruk Assam, Manipur, Mizoram, Meghalaya, Tripura leh Nagaland ah te pek nana hman tum a ni. Ministry of Power (MoP), Gol chuan he hna hmarchhak bial state paruk ah Project kalpui tur a tan POWERGRID hi Central Implementing Agency (IA) ah a ruat a ni. A neitu turte erawhchu state sorkar tin te an ni anga, siam fel hnuah engkim state sorkar kutah hlan niin, state tin hian mahni state sum leh mawhphurna in an enkawl zui ang.

4. He Project a Investment Tranche hmasa ber hi kum sarih (2014-2021) chhung kalpui a ni a nga, hemi chhung hian hna pawimawh tak pahnih chu kalpui a ni ang, chung hna te chu:

- a. Priority investments for strengthening of intra-state transmission and distribution systems (Pawimawh berah chuan state chhunga transmission leh distribution tih changtlun);

- b. Technical Assistance for Institutional Strengthening and Capacity Building of power utilities and departments (Hmalatute hna thawhdan in zirtirna pek leh department mi te kawlphehtha a thil pawimawh leh hmalak dan in zirtirna hna)

5. Mizoram: Hmachhak bial state te zingah Mizoram chuan kawlphehtha hi hmalam hunrawn kal tur thlir lawkin tih changtlun leh zual tum in tanpuina hrang hrang India sorkar kal tlangin World Bank leh ADB ah te a dil a ni. Mihring khawsak inrelbawl dan, hnam zia danglam tak leh ram chhung dinhmun leilung hausakna thlir in Power & Electricity Department of Mizoram (PEDM) chuan hma lak a tum a ni. He hmalakna kawngah PEDM chuan Environment and Social Policy and Procedures (ESPP) a bul vel a nghawng hrang hrang, leilung ei leh bar zawna te, khawtlang a nghawng a neih theih dan tur te, hna thawh lai leh a nghawng tur te thleng in thlir lawk vek na a ni. PEDM chuan environment leh social a nghawng turte thlir lawk a, pumpelh emaw nghawng tih hniam dan te ngaihtuah tel in hna hi kalpui zel tura ruahhman a ni. ESPP hian environment leh social lamah nghawng tur veng chungin hna hi kalpui thin a ni ang, tin, PEDM te pawn anmahni inrelbawl dan chauh nagipawimawh lovin Project kalpui hna kalpui chunchangah pawh ngaipawimawh zel thin turah ngaih a ni. Hei vang hian POWERGRID chu ESPP siam tur hian tih a ni. POWERGRID hian kawlphehtha pek chhuah transmission hna tam tak thawk tawh in experience tha tak a nei a ni, tin, India ram chhung mai nilovin ram pawn lamah te pawh a lo thawk thin tawh a ni. Experience tha tak a neih hnem tawh vangin ESPP pawh siam tura ruahhman fel nghal a ni. PEDM chu heng a hnuai tar lan te hi a kalpui thei dawn a ni;

- Environment leh social kalpui dan chunchang fel takin a duang ang. Tin, sum hman dan tur thleng in mumal tak a Project hmalak dan tur te a tel dawn a ni.
- A mawhpurtute a duan fel rualin environment leh social pawimawhna te tar lang zel in hna te pawh endik thin a ni ang.
- Inzirtirna leh technical lamah tanpuina te pawh a ruahhman tel bawh dawn a ni. ESPP hi a hlawtlin theihnan a tul leh pawimawh te chu fel tak leh tha zawk a kalpui tur.

- Hna in harsatna a siam tur ah te sum sen tur a ruahman lawk thin a nga, tin, hna in nghawng lian tham tak a neih ai chuan a pumpelh dan a ngaihtuah theih loh pawn tih hniam dan kawng te a ngaihtuah thin ang.

PEDM chuan ESPP hi hna a kalpui kawngah a tul dan angin a siam tha thin a nga environmental leh social pawimawhna te hi hna kalpui chungchang zelah a ngaipawimawh in kalpui thin a ni ang.

### **PEDM's Environment & Social Policy**

#### **Environment & Social Policy Statement**

*“PEDM commits itself to follow the goal of sustainable development through identification, assessment and management of social and environmental issues at both project planning and implementation stages with total transparency and introducing the state of art technologies by adhering to the basic principles of Avoidance, Minimization and Mitigation”.*

6. PEDM Environmental leh Social Policy tul pawimawh zual bik na te:

- Environment leh social nghawng thil awmna hmun te chu project ruahman lai in ngai pawimawh in a pumpelh dan te pawh a ngaihtuah nghal thin tur a ni.
- Hna thawh tak tak hunah Mipui tan leh leilung leh nungcha te nghawng lo turin theih tawp chhuah tur a ni.
- Nghawng tha lo project in a pumpelh theih loh a awm chuan theih tawp chhuah in a ti hniam tur a ni.

### **Methodology & Approach**

7. ESPP hi state tinte environment leh social hmun a zirin hriattirna awmsa te, hriat chawp belh atangte, sawihona atang leh library hrang hrang zirchian hnua buatsaih a ni. Hetiang project lo thawh thin atang ten environment leh social nghawng tur phumbo tam

tak chu a kalhmang atang hian a hriat theih a ni. A kalhmang zirchianna hi a zau hle a ni, chungte chu:

- Physical & chemical environment (entirnan tui, lei etc.);
- Biological environment (ramgaw, ramsa, savate, etc.); leh
- Vangtlang khawtlang, khawtlang a pawl hrang hrang leh mimalte (ram tih chereu, thlawhhma tih chhiat, tlangmi (tribal), mireitheih harsate (hmeichhia leh hnam hnufual), ei leh bar dinhmun, hriselna leh intih palh laka fimkhurna).

#### 8. **A bul zau zawka zirchiana kawng te chu:**

- Environment leh social inngahna bul leh a hnu lam hriatheih chin te ennawn
- National leh state te dan leh dun leh pawl hrang hrang kalphung te ennawn
- Project hna lehkha pawimawh te ennawn; leh
- Chanvo leh mawhphurhna nei hrang hrang te biak rawna

### **Consultation/ Participation**

9. Chanvo leh mawhphurhna nei hrang hrang te biakrawnna neih bakah mipui, state, sokar laipui mi pawimawhte, minister state leh sokar laipui, World Bank-a hnathawkte rawn an ni tawh bawk a ni., Hemi hian environment leh social a chanvo leh mawhphurna nei te inkawmkhawmna leh thlir dan hrang hrang te chu ESPP tar lan a ni. Tin, project stage hrang hrang kalpui naah hman thin tum a ni.

### **Mizoram at a Glance**

10. Mizoram hi north-eastern India a awm a ni a geographical location ah chuan 22o 19' to 24o 19' North latitudes and 92o 16' to 93o 26'. A ram zau zawng hi 21081 sq km a ni. Mizoram hi Burma kan tih mai Myanmar in east ah, Manipur leh Assam in north ah, Tripura leh Bangladesh in west lam ah leh Myanmar bawkin south ah an hual kual vek a ni. International boundary (ramri) hi a vai a belhkhawm in km 722, Myanmar nen ramri 404 km a nei a, Bangladesh nen ramri 318 km an nei bawk a ni. Mizoram hi a leilung pian hmang inter state boundary hi 227 km north atanga south, leh 121 km east atanga west. Assam nen 123 km, Tripura nen 277 km leh Manipur nen 95 km. A ramsa leh a ngaw te hi Indo-Malayan leh Indo-Chinese sub-regions te nen in anna an nei deuh a ni. Mizoram state hi bio-geographic zone 9B-North-East hills a awm a ni a. tin, bio-diversity nei tha tak a ni.

Mizoram a tlang dung vel hi mau, balhla leh thingkung mawi tak tak ten an bawm a ni. Ramngaw ah hian nauban chi hrang hrang hmuh tur a awm bawk a ni. 90% area hi chu ramngaw in ala tuam a ni. Mizoram a cheng 94% mihirng hi a tam zawk chu Schedule Tribes an ni.

11. Mizoram hi dan leh dun, politics leh inrelbawl dan hi kum engnge maw zat atang a lo danglam tawh hle a ni. **Sixth Schedule** hmangin inrelbawl dan te thlak thleng a ni tawh a, hemi sixth scheldule hmang hian **Distrist leh Regional Councils** te siam a ni. Hemi councils te hian thu neihna pathum (3) a nei a, chung te chu Legislative, Executive, leh Judiciary te an ni. India constitution in a lo duan tawh angin heng dan hmang hian **Autonomous District Council** (ADC) a chengte hi venhim, khawtlang leh inrelbawl dan te dan hamanga enkawl a ni. Lai, Mara leh Chakma ho te hian ADC te an nei a ni. Village Council te hi Mizoram bultum tu ber te an ni. District pathum (3) te hian administrative district -Lawngtlai leh Saiha te an huam a ni chungte chu:

1. Chakma Autonomous District Council (CADC) – Area 1500 Sq km.
2. Mara Autonomous District Council (MADC) – Area 1445 Sq. km
3. Lai Autonomous District Council (LADC) – Area 1,871 Sq.km

12. 2011 Census neih tawh ah rama mipui cheng zat hi 1,091,014 an tling tawh a, mipa 50.63% leh 49.37% hmeichhia an awm a ni. Sex ratio a chhut dan angin mipa 1000 ah hmeichhia 975 zel awm anga chhut a ni. Kum 2001-2011 a mipui pun dan chu 22.78% vel a chhut chhuah a ni. Kum 0-6 hi polulation atanga chhut dan chuan 15.36% vel a chhut an ni. Non-tribal hi 0.11% awm anga chhut a ni a, chuan a bak 94% hi tribal population a chhut a ni. Population bit dan hi mihirng 52 hian sq km khat zel awh anga ngaih a ni. National census 2011 nen a tehkhin dan ah chuan 382 mihing per sq km a chhut ve thung a ni. Ziak leh thiamna lam ah chuan Mizoram hi 91.58% a ni a, India ramah chuan sangber te zinga mi a ni.

13. **Mizoram** ah ramngaw hian mizo mipui te leh a ram inrelbawl dan kawngah hmun pawimawi tak a luah a ni. Ramngaw hian 19.054 sq km a luah a, chu chu 90.38% state ram puma a luah zat a ni. Ramngaw chhah zawng te zirchian chuan 138 sq km vel hi

ramngaw chhah tak leh 5900 sq km hi chhah vaklo a awm a ni, tin ramngaw in hawng hi 13016 sq km a awm bawk a ni. Mizoram state in a chhut dan ah ramngaw hi 16717 sq km a ni. Ramngaw humhalh bik hi (Forest Reserve) 7909 sq km, ramngaw ven that bik (Protect Forest) 3568 sq km leh ramngaw thliar lem loh hi 5240 sq km hi a pumpuia Forest Area ramngaw awm zat chu a ni.

14. Mizoram hian hmun 10 ah ram humhalh anei ani, chung zinga ami te chu National Park pahnih (2) leh Tiger Reserve pakhat (1) a dang pasarih (7) te chu Wildlife Sanctuaries te an ni, hemi huam chhung hi 1240 sq km a ni a, 5.88% geographical area a chhut ani. A hnuai Table 1 ah hian ram humhalh te chu tar lan a ni.

**Table - 1 : List of Protected Areas**

| Sl. No. | Name of Protected Areas         | Area in sq.km. | District  |
|---------|---------------------------------|----------------|-----------|
| 1       | Murlen National Park            | 100            | Champhai  |
| 2       | Phawngpui National Park         | 50             | Lawngtlai |
| 3       | Dampa Tiger Reserve             | 500            | Mamit     |
| 4       | Ngengpui Wildlife Sanctuary     | 110            | Lawngtlai |
| 5       | Khawnglung Wildlife Sanctuary   | 35.75          | Lunglei   |
| 6       | Lengteng Wildlife Sanctuary     | 60             | Champhai  |
| 7       | Tawi Wildlife Sanctuary         | 35             | Aizawl    |
| 8       | Thorangtlang Wildlife Sanctuary | 50             | Lunglei   |
| 9       | Pualreng Wildlife Sanctuary     | 50             | Kolasib   |
| 10      | Tokalo Wildlife Sanctuary       | 250            | Saiha     |
| Total   |                                 | 1240.75        |           |

15. Mizoram state hian tun dinhmunah kawlpheha lakna kawng pahnih chauh a nei a ni, pakhat chu state siam chhuah liau liau MW 29.35 a ni a, a dang chu sokar laipui Central Sector Allocation atanga kan dawn MW 64.53 a ni. Mizoram in a mawmawh san lai ber tun dinhmunah chuan MW 178 vel a ni a. Indaihlohna chu MW 84 vel a ni. He indaihlohna su kiang tur hian PEDM chuan hma an la mek a Tlawva SHP (2x2.5 MW) hna hi kum 2014-15

hman theih tura besei a ni. A dang leh ah chuan Tural HEP (MW60) NEEPCO thawh lai mek hna chu 12th Five year Plan chhunga zawh fel tum a ni bawk. Tuivai HEP (MW 210) pawh hi state sector in PPP Mode tih VGF policy of Gol in kalpui tel tum a ni. PEDM hian KM 729 a sei 132 kV line a nei a ni, km 117 hi 66kV transmission line leh 132kV Grid sub station with transformation capacity 140.6 MVA pasarih a ni bawk a ni. Tin, km 1170 a sei 33 kV line, km 5045 a sei 11 kV line, 2747.59km LT lines, 33kV Grid S/S 45 leh 1630 ai tam capacity hrang hrang a Distribution Transformer state chhung hmun hrang hrangah transformation capacity 146.9 MVA a pe chhuak a ni. 11th Plan zawh hmain Power Department chuan consumer nuai 2 vel hnenah kawlphehtha a sem chhuak a, tin, mi pakhat in a hman (Per capita) zat chhut chhuah chuan 252 kWh a ni. 12th Plan a zawh dawn hnaiah chuan consumer awm thei zat rin chu 2,55,561 niin per capita 318 kWh lai ni dawn a rin a ni. Hetianga kalpetha mamawh na su kiang tur hian leh state economy ti chak tel turin hma lak mek a ni. Tranche 1 hnuaih subproject hnaah (expansion/augmentation of power system network in the state of Mizoram) sum hman dan tur ruahman dan chu tarlan a ni.

**Table 2: Summary of Subprojects in Tranche- I under NERPSIP**

| Sl. No. | Name of the subproject                            | Quantity (Nos.) | Capacity Addition (Ckt. km/MVA) | Estimated Cos (in Millions) |
|---------|---|-----------------|---------------------------------|-----------------------------|
| 1.      | 132 kV Transmission lines                         | 3               | 214 Ckt.km.                     | 2967.20                     |
| 2.      | 132/33kV substations (New/Augmentation/Extension) | 6               | 125 MVA                         |                             |
| 3.      | 33 kV Distribution lines (New/Strengthening)      | 12              | 5.2 Ckt.km.                     | 200.40                      |
| 4.      | 33/11kV substations (New/Augmentation)            | 3               | 6.3 MVA                         |                             |

### Stakeholder analysis

16. Project hna kaihnawih ah mawhpurthu leh a hnain a nghawng tur leh hemi hna atanga hlawkpui turte kawm tawh a ni a, project hna kalpui hunah heng mite hian hmun pawimawh tak an luah avangin anni hi a rel bawlnaah an tel nghal a ni. Hemi tan hian



project mawhphurtute leh a nghawng turte inlaichindan te hriathiam a, an mawhphurhna zawn theuha environment te social pawimawhnate kengkawh turin project hi kalpui turin duan a ni. Mawhphurtute hi a sang ber natonal level atanga village level thlengin an awmna zawn theuh a hian project chungchang kaihnawi sawihopui tawh a ni. Hemi tan hian mawhphurtute nen a inrawntawwna sawihona khunkhan tak leh mumal taka sawihona pawh neih tawh a ni. Thil pawimawh te sawihovin environmental/social lam bika ngaituah tur te chu a hnuai tarlan ang te hi a ni.

#### 17. **Environment Issues.**

- Ramngaw leh thing/thlai mau a nghawng awm thei te hrechunga ram humhalh bik neih te.
- Oil ti tih buak, bawhlawh siamte vanga nghawng chi tin reng awm theite
- Hna thawk te in venhimna kawng te leh hna enkawl chhonzawm zel dan te
- Lei laih leh lei min awm thei tur te
- SF6 in greenhouse gas put awm thei te
- Kan chheh vel environment thil pawimawh awm thei zawng te.

#### 18. **Social and Institutional Issues.**

- Sub station hmunah hmun fal (mihring chen lohna hmun) thlante
- Hna thawh hun chung ram leilung a ti chhiat tur leh thing leh mau emaw in dinglaite
- Project chhungah vantlang mipui ngaihdan lak telte chungte chu plan, hnathawh lai leh hna thawh zawh hnuah hman atan te
- Hriselna leh intipalh lakah fimkhurna mai bakah HIV/AIDs lakah inven him dan te
- Tlangmi/mirethei pawl
- A khua leh tui leh hmeichhiate chhawmdawl a an rawn tel ve theihna

#### **Impacts – Social**

19. Hemi section ah hian project hna thawh tur hian social lam pang eng ang nghawng nge a siam te zirchianna tar lan a ni a. Nghawng hi chi hnih in thliar hran a ni positive leh negative (tha leh tha lo).

**i. Positive Impacts (nghawng tha)**

- Mipui tan hna thar a siam ang
- Kawlphetha changtlung leh rintlak
- Ei leh bar kawngah ram hmasawanna
- Kawng tha
- Mipa leh Hmeichhia intluktlanna ( hna thawh chungin hmeichhiate tan hna siam sak an ni a nga, hemi bakah camp hmun ei leh in tur siam a te leh kaihnawih tul dang dang a te thawh tur awm dawn a ni)
- Thing leh maihawl hman tlem
- Hriatna, thiamna leh hmasawanna kawnga in kheuhharhna

**ii. Negative Impacts (nghawng thalo)**

- Ram channa
- Ram hman theilohva siam
- Hna thawh chung hun reilote chungah in dipdalna siam
- Hriselna leh inti palh theih thil a leh HIV/AIDS

**Impacts – Environment**

20. Hemi section hi chuan hna thawh a nih huna environment nghawng awm thei te a thliar lawk dawn a ni. Hetiang nghawng awm thei a rin te hi tha leh tha lova thliar a ni a, tin, heng nghawng te hi hna ruahhman design siam tirh atanga construction hna leh hman hun hma thlenga ruahmana te nen a in zawm tel a ni.

**i. Positive Impacts (nghawng tha)**

- Kawlphetha a that chuan leilung hausakna entirman thing tuah alh, meihawl te mamawhna a ti tlem a nga chumi chuan ramngaw te a venghim zawk dawn a ni.

**ii. Negative Impacts (Nghawng thalo)**

- Hna thawh na hmun aThing kung kih thluk ngai;

- Ramngaw leh ramsa a nghawng bakah chungleng savate hmun danga in sawn;
- Tui hawk leh leimin te a siam phah a, tui hnate a ti chhe bawk;
- Traffic leh kawng tha te a ti buai in a ti chhe thin;
- Ram leh hmun mawinate a ti bawrbang thin;
- Oil tih buak atanga nghawng awm thei te;
- SF6 put awm thei leh;
- Hriselna leh intihpalh;

E leh S kainhawih thil awm te chu zirchianna a tha thei ang bera buaipui turin framework duan a ni.

### **Policy, Legal and Regulatory Framework**

21. PEDM in Transmission/ Distribution system (33 kV leh sang) hna hi dan duan lawk Constitutional provisions, Polciy, Legal, leh Regulatory Framework in environmental leh social kaihawih thil huam in kawphetha pek chhuah leh sem (transmission & distribution) atan hman thin a ni ang. Hemi rual hian sum pe chhuak tute pawh he dan hian environment leh social chungchangah a huam tel vek a ni.

22. India Constitution hian environment venhima siam that dan tur duan sa fel tak a nei a, fundamental duty leh Directive Principles of State Policy under Article 51 A(g) leh Article 48 A ah te a tar lang a ni. Apex Court (thunehna sang) chuan zau takin Article 21 (Right to Life) hnuaiah environmental nghawng thei te chu a dah a ni. Chutiang bawkin constitutionin social venhimna dan zawng zawng hi Constitution Preambleah a dah thung a ni, entirnan; rorelna fel (justice), vantlang khawih thil (social), khawsak inrelbawl dan kawng (economic) leh ram kaihruai (political); zalen taka ngaituahna hman (liberty of thought), ngaihnan zalenna (expression), sakhaw zalenna (belief, faith) leh Pathian biakna ah zalenna (worship); Intluktlanna leh hamthatna (inequality of status and of opportunity); lungrual taka cheng hova mihring in zahtawna leh ram tana rinawmna (fraternity assuring the dignity of the individual and the unity and integrity of the Nation.) Hriselna, intihpalh lakah fimkhur leh ei zawnnana lam te hi zau takin a sawi tel bawk a ni. Social safeguard hi Article 14, 15, 17, 23, 24, 25, 46, 330, 332 etc. ah te a chuang a ni.

23. **Sixth Schedule:** Fundamental Rights hi a bikin tlangmite (tribal) tan hian ruahman a ni a Tribal Areas of State under the 6<sup>th</sup> Schedule (Article 244(2) leh 275(1) ah te a chuang a ni. Sixth Schedule hian a zaivain tribal area leh an hamthatna a humhim a, tin, district levelah te mahnia ro inrelna te chu constitution chuan dan zamin a din tel bawk a ni. Heng dan te hian a rualin tlangmite (tribal) hnam zia leh hnam dan te a venghim, tin,

hmasawnnan hma a la tel bawk a ni. Sixth Schedule hian tribal areaah mahnia ro in rel theihna (Autonomous) a pe tel bawk a ni. Autonomous districtah chuan District Councilin ro a rel ang, autonomous region ah Regional Council. Heng Councils te hi dan siamtu, dan kengkawhtu (judicial) enkawltu/viltu (executive) leh sum hman theihna thu te pek an ni. Hemi inrelbawl dan hian tribal area ah te hnam zia leh dan te hman tel a mahnia ro rel theih zel nan a ruahhman a ni. District Council mawphurna te chu:

- Forest rizap ramngaw tel lovin thlawhma tan hna siam leh ram sem chhuah.
- Ramngaw enkawl dan (rizap ramngaw huam lovin)
- Thlai chin dan leh lo halah ruahmanna siam
- Village emaw khawchungh enkawl na leh mipui hriselna leh vantlang fainate
- Vantlang in leh lo ro khawm chungchang
- Vantlang hmasawna

24. Heng bakah te hian India Constitution hian a bikin state hamthatna atan Article-371G hi duang a ni, hemi hian India Parliament chuan Mizo mipui te sakhaw chunchang ah leh hnam dan zia, rorelna, dan leh enkawl dan te, dan bawhchhiatna kawngah hrem dan ah te Mizo hnam dan angin ro rel hi phal a ni, tin, ram neitu hming thlak ah pawh Mizoram state a thu ber ang, mahse State Assembly chuan a tidanglam thei thung ang (“no act of parliament in respect of religious and social practice of the Mizos, Mizo customary laws and procedures, administration of civil and criminal justices involving decisions according to Mizo customary law and ownership and transfer of land shall apply to the state of Mizoram, unless Legislative Assembly of the state, by a resolution, so decides”). Constitution chuan **RFCTLARRA**, 2013 sokarin mimal ram acquire theina chu tih chhuah a la nih loh avangin ram acquire naa hman a theih dawn rih loh a ni. Sorkar laipuiin dan a siam that hi a tlangpui in thil tam tak ngaihtuah tel a nih thin vangin hun a duh rei phian zel thin a ni. PEDM chuan dan hman tur awm rih loh avangin mimal ram hman a tul dawn chuan phalna lak phawt emaw lei sak tul pawhin a neitu dawr a, a man pawh a neitu phal leh a leitu rem tih anga in lei sak hi dan tih chhuah hma chuan a huam a ni. Amaherawhchu, vaneihthlak takin tranche-1 hna a substation siam tum na hmun te hi PEDM ram neihsa vek a ni a, mimal ram a acquire tul dawn lo a ni. (refer **Table-5.3**).

25. **Enviroment:** Environmental kaihnawih awm PEDMin state level a tih ngei ngei tur te chu: Mizoram sorkar (GoM) hnuaia section 68 (1) of the Electricity Act, 2003 phalna;

Forest (Conservation) Act, 1980 phalna (clearance) lak; sum hman chungchang; Battery hman leh paih phalna (Batteries Rules, 2001), mihring tan hlauhawm (Hazardous Wastes Rules, 2008), tranformerin oil hmanhnu paih bo na, Ozone ti chhe thei thil (Ozone Depleting Substances (Regulation and Control) Rules, hei hian ozone ti chhe thei kaihnewih thil hman tih tlem dan leh tul ang a buaipui turin Biological Diversity Act, 2002 2000 ten zawm tur an tih zawm te awm tel bawk a ni, Electronic kaihnewih bawhlawhte (E-waste) chhinchhiah leh sawngbawl dan (Management and Handling) Rules 2011 leh Schedule Tribes leh Other Traditional Forest Dwellers (ramngaw a khawsa) (Recognition of Forest Rights) Act, 2006 te pawh zawm a ngai a ni.

26. Forest Conservation Act, 1980 hian transmission project hna bik ah environment nghawngte enkawl nanna hman ber a la ni a, tunalaia dan hman hian environment kaihnewih nghawng enkawl na atan Environmental Impact Assesment for transmission line a nei ve lo a ni. Dan chuan ramngaw a tih chhiat lah a let hnih zel in ramngaw nilo mahni State Forest Department hnuaiia ram a tih chhiat let hnih chu ramngawa chan tir leh tur a ni. National fund hnuaiia CAMPA hi hetiang tih nan hian duan a ni. Project hna in ram humhalh (protected area) a pal tlang dawn chuan Wildlife Board atangin phalna a lak tur a ni. PEDM chuan hma a lak tumna hmunte danin humhalh lo mahse environment nghawng awm thei chhut lawk tur a ni a (environment impact assesment). Chu chuan ram a nghawng khawih danglam a chian zawk theih nan tih ngei tur in a rel a ni.

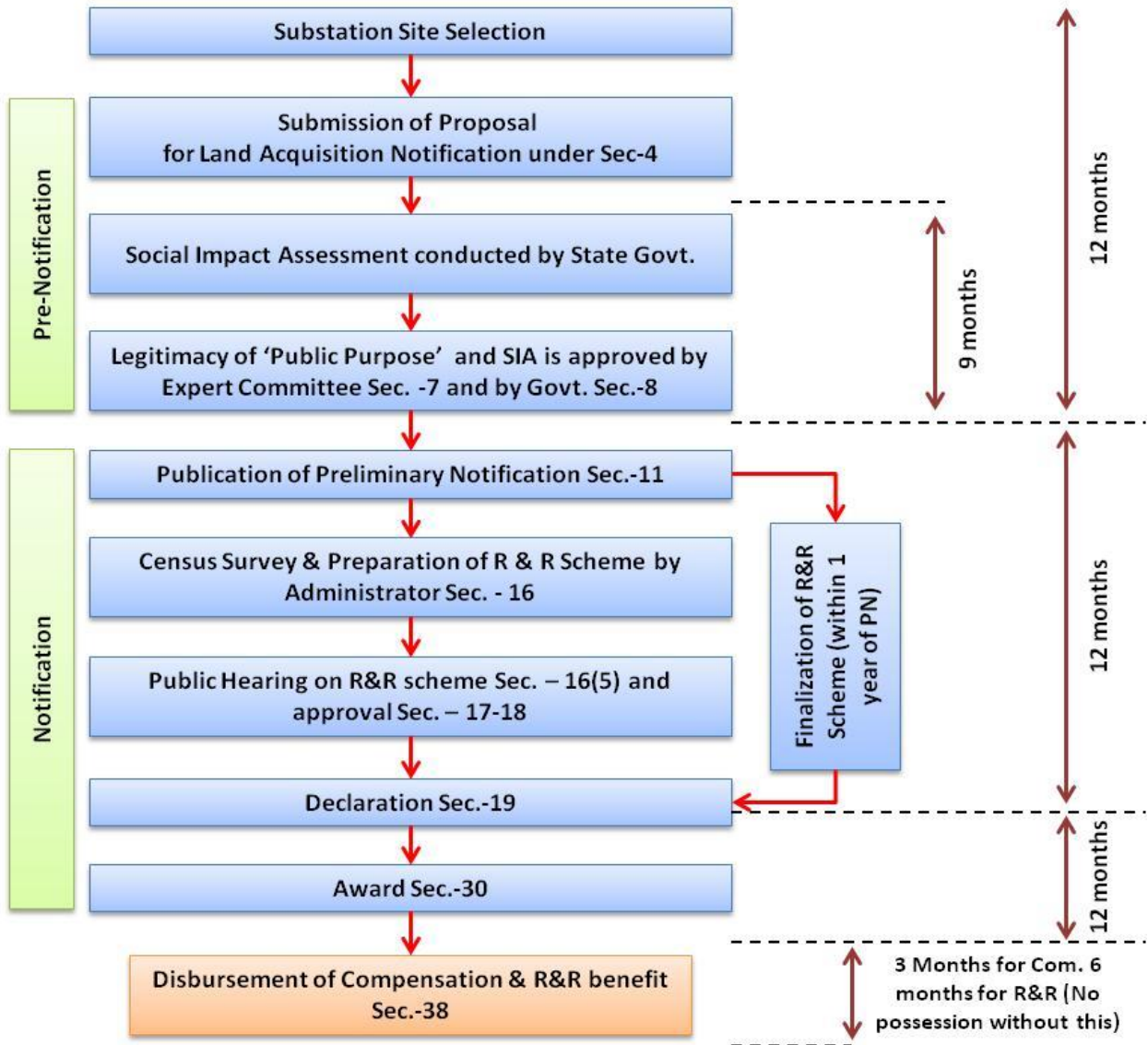
27. Social lam kaihnewih thilah te state hnuaiia PEDM ten an tih ngei ngei leh tur chu section 67 leh 68 of Electircity Act, 2003 dan hmangin hun rei vaklo (hna thawh chung) a thil a tih chhiat man (compensation) awm thei a chhut ang. Substation siam nan mimal ram lak a tul dawn chuan leh RFCTLARRA Act 2013 in a huam chuan he dan hi Legislative Assemblyah pass a nih hnuah chuan hman a ni ang (refer para24). Indian Treasure Trove Act, 1878 kum 1949 atanga siam that hi remchanga hman theih bawk a ni. The Right to Information Act, 2005 (RTI) dan hian India khua leh tui mite tan sorkar lakah thil hriat duh a neih chuan he dan hmang hian a zawt chhuak thei bawk a ni.

28. **World Bank** (WB) Operational Policies OP 4.01, 4.04, 4.11 & 4.36/ADB's Safeguard Policy Statement 2009 (SPS 2009) for Environmental and Social Considerations sum

thawhtu ten Environment Assesment (EA) hi project hna a piangah tih ngei ngei hi an kalphung a ni. Project hna in a nghawng turte chhutin category A, B and C a thliar a ni. Category A hi nghawng sang berah ngaih ani a, a dawt leh B niin category C chu nghawng nei tlem berah ngaih a ni. He project hi World Bank danah chuan Category A a ni. Chutiang bawkin OP 4:0 leh 4:12 hian tlangmite (tribal people) harsatna leh ram acquire sak leh indin that lehna kawngah te a venghim a ni.

29. RFCTLARRA, 2013 dan chuan Land Acquisition Act, 1894 chu luahlan in 1<sup>st</sup> January 2014 atang khan hman tan a ni. RFCTLARRA, 2013 hian State sorkar (GoM) emaw sorkar department bik chu mimal ram acquire sak chungchangah thuneihna a pe a ni, tin, Social Impact Assesment (SIA), Action Plan for R&R (Resettlement & Rehabilitation) te a buaipui tel nghal ang. He dan hian PEDM chuan sum dinhmun leh technical zawnga ram remchang zawk a zawna kawngah an mawhpurhna ah tawpchin a nei dawn a ni. Tin, he dan tharah hian Social Impact Assesment (SIA) nei ngei ngei tura tih a nih avangin engkim chhut chhuah hnuah project mawhpurtute leh mipuiteah engkim chiang zawkin a hriattir ang. A dawtah chuan zangnadawmna (tih chhiat a compensation) leh hna in a tih buai siam that leh (R&R)nate chu a duang fel bawk ang. Mimal hnena zangnadawmna a pek tur leh lehkha pawimawh zawng zawngte chu a chheh vel hmuna mipuite hriatthiam theih turin internet emaw VC te hmangin theh darh tur a ni. Ram acquire dan chungchangte chu a hnuai Figure 1-ah tarlan a ni. Table 3 leh 4ah hian zangnadawmna leh puihna pek chhuah dan tur chungchangte hi tarlan a ni.

Figure 1: Activity Chart **RFCTLARRA**, 2013



**Table 3: Ram lak nana zangnadawmna lak hniam thei ber**

| <b>Comprehensive Compensation Package (First Schedule)</b>  |   |
|---|---|
| <b>Dawng thei tute</b>  | <b>Dan hman tur</b>   |
| Ram neitu chung tin te<br>▪ Ram neitu:<br>1. Chhungkua emaw Company ram/in emaw acquire sak tur neitu te;<br>2. Sorkar in schemes a kalpui mek na ram te;<br>3. Right holders under the Forest Rights Act, 2006 | <b>Zangnadawmna chhut dan :</b><br><b>1. Ram hlut dan hman lai</b><br><ul style="list-style-type: none"> <li>• Indian Stamp Act, 1899 a tarlan angin emaw</li> <li>• A bula ram leilung man hlut dan tlangpuia chhut, emaw</li> <li>• Dan in a lo rem tih ang mimal ram emaw sorkar, mimal leh partnership taah te,</li> </ul> <b>a sang zawk a piang</b><br><b>Hralhna man ding lai a puntir* pakhat atanga pahnih hi thingtlang ram rural area tan (Urban area tan puntir ngailo)</b><br>2. Ram a thil dang hlutna awm: Building/thingkung/tui khur/thlai etc te chu a hlutna sorkar chhut angin;<br><b>Zavaia zangnadawmna chhut chhuah chu = 1+2</b><br>3. Solatium: 100% of total compensation |
| (*) A teh dan dik tak chu state sorkarin a ti ang.<br>Puntir dan value te chu a khawpui (urban) atanga a hlat zawng dan anga chhut a ni ang   |   |
| <b>Radial Distance from Urban area (km)<br/>(Khawpui urban area atanga hlat zat)</b>  | <b>Multiplier Factor (Puntir na tur zat)</b>  |
| 0-10  | 1.00  |
| 10-20   | 1.20  |
| 20-30   | 1.40  |
| 30-40   | 1.80  |
| 40-50   | 2.00  |

**Table 4: R&R dinhmun leh chenna hmun sawn ngai te tana hamthatna/remchana awm thei te**

| <b>Comprehensive R&amp;R Package (Second Schedule)</b> |   |  |
|--|---|--|
| <b>S. N.</b>   | <b>Dawng thei chin te</b>                     | <b>Dan hman tur</b>  |
| 1.   | Chhungkua in sawn chhuah ngaite tan           | Cheng 3000 chungkaw khat tan thla 12 chung   |
| 2.   | Harsatna tawh chungkua te hamthatna awm thei; | (a) Project in hna thawh tur a siam chuan, chungkau atagin member pakhat zel chutiang hna chu a siam sak ngei ngei ang <b>emaw</b> |



**Comprehensive R&R Package (Second Schedule)**

| S. N.  | Dawng thei chin te   | Dan hman tur  |
|--|--|---|
|  |  | <p><b>(b)</b> Cheng Nuai 5 chhungtin a pe ang; <b>emaw</b><br/>                     (c) Thaltin Cheng 2000 harsatna tawk chhungtin te kum 20 chhung chhawmdawl an ni ang (thil man a zirin tih danglam a ni bawk ang);<br/> <b>Achunga tarlan (A) emaw (B) emaw (C) hi chhungkua ten an duh an thlang thei ang</b></p>  |
| 3.   | <p>In thar sak sak ngai ah:<br/>                     i) Thingtlangah in thiah leh sak ngai ni chuan;<br/>                     ii) Khawpuiah in thiah leh sak ngai ni chuan</p> | <p>i) In thar sak dan chu Indira Awas Yojana angin kalpui a ni ang.<br/>                     ii) In thar sak hi a zau zawngah 50sqm aia te lo a nit u a ni.<br/> <b>A chung a mi bakah a neituin sak that kher tullo a tih a, a man a dawn zawk a duh pawn chhugkua duthlannaah a in nght ang).</b><br/>                     In thara hming thlak ngai emaw sorkar dan tul pawimawh tura sum senso chu a lei saktu (sorkar) in a tum vek ang.</p> |
| 4.   | Insawn chhuah a lo ngaih chuan   | Chhungkua tin te cheng sing nga (Rs. 50,000) pek theih a ni ang.  |
| 5.   | Chhunkua in sawn chhuah ngai tan Resettlement Allowance  | Pek tur a nih chuan cheng sing nga (Rs. 50000) a dawn gang.   |
| 6.   | Ran vulh in/ dawr te chungchang  | Vawi khat a tan chauh State sorkar rel angin cheng sing hnih sang nga (Rs. 25000) ai tlem pek theih a ni ang.   |
| 7.   | Artist (lem ziak a ei zawng/ sumdawnna tenau te in sawn tir ngaih chuan  | Vawi khat a tan chauh State sorkar rel angin cheng sing hnih sang nga (Rs. 25000) ai tlem lovin pek theih a ni ang.   |
| <p><b>Humthatna bik SC/ST-te tan:</b> Heng bakah khian R&amp;R hian SC/ST chhungkua tan a bikin hamthatna dang siam sak theih a ni bawk a chungte chu:</p> <ol style="list-style-type: none"> <li>1. Vawi khat atan chhawmdawl na cheng sing nga chhunkua te hnenah pek a ni ang;</li> <li>2. Chhunkua district dangah cheng bik tan za a sawm hnih panga (25%) R&amp;R hlut zawng hi belh sak theih an ni ang;</li> <li>3. Zangnadawmna hi hmun thum a then a hmun khat chu pek chhuah nghal a ni ang;</li> <li>4. Insawn chhuah duhna bik a neih chuan ngaituah sak theih an ni bawk ang;</li> <li>5. Hmun awl remchanga vantlang in kawmkhawm na hmun siam sak theih a ni bawk ang;</li> <li>6. In sawn ngai te in din leh ngai a nih chuan in din that theih dan tur ngaituahpui an</li> </ol> |  |   |

| Comprehensive R&R Package (Second Schedule) |   |              |
|---|---|--------------|
| S. N.                                       | Dawng thei chin te  | Dan hman tur |
|   | ni ang  |              |
|   | 7. Schedule V leh Schedule VI dan in humthatna dang siam sak te chu chhunzawm zel a ni ang. |              |

30. Project mawphurtuten ngun taka zirchian hnuah thil tul pawimawh ngaihtuah turte a hmu chhuak leh a nih chuan, chung thil pawimawhte chu ngaituah tel a nih theih nan project cycleah dah tir a ni. PEDM chuan transmission/distribution (33 kV and above) hna kalpui tura thil tul ngaituah a nih hnuah hetiang hian thawh chhunzawm dan tur rel a ni:

- i) Project Conceptualization (Ngaihtuah fel lawkna)
- ii) Project Planning (Project Plan siam)
- iii) Approval (Phalna tul apiang lak)
- iv) Detailed Design and Tendering (Design siam leh a hnathawktu zawn)
- v) Project Implementation (Project hna thawh)
- vi) Operation & Maintenance (Thawh zawh hnuah hman danah leh enkawl)
- vii) Review and Monitoring and Evaluation. (Thlirletna enzui leh hlut na chhut)

### Environment leh Social lam thil tul leh ngaipawimawh tur te

#### 31. Environmental Concerns.

##### Environment lamah thil ngaihpawimawh turte:

- Hna thawh na tur hmuna thing leh mau kih fai;
- Khawl chetna tur hmun sam fai;
- Transformer oil hman tawhnu thehthang;
- Battery hman thawh hnu paih chhuah;
- E- waste (electronic thil chhia) te paih chhuah/thlak;
- SF6 gas hmanlai put atul anga buaipui;

#### 32. Social Concerns

##### Social Concerns lamah thil ngaihpawimawh turte

- Thlai tih chhiat
- Ram man inthlak danglam;
- Hun relote chung kalkawng tih buai/ khaihlak
- Ram hman theih lova siam

- Thlawhma acquire avangin mimal eizawna nghawngte
- In leh lo channa, a awm chuan

### Social Concerns

Environment leh Social kaihnawih pawimawh enkawl dan tur, a hnuai table 5 leh 6 a in dawl in tarlan a ni.

**Table 5: Social Management Measures**

| No | Harsatna awmthei   | Buaipui dan tur   |
|----|--|---|
| 1  | Ram hlauh/channa   | Tranche 1 hna a tan chuan ram lak emaw lei ngai dawn lo a ni <b>(Table -5-3 enrawh)</b> . Hna zawng zawng hi PEDM ram neihsa vek a thawh tur a nih avangin ram acquire ngai dawnlo a ni.  |
| 2  | Tower/poles bun tumna hmun atangin hmun dangah in sawn chhuah ngai | Dan awmsa angin tower/pole dah tumna hmun te hi acquired a nihlova mahse thlawhma erawhchu hna thawh zawh hunah chhunzawm leh theih a ni dawn a ni, PEDM chuan a tih chhiat thil leh tower hnuai ram chu acquire lovin zangnadawmna a pe dawn a ni. Hemi vang hian mipui sawn chhuah hi T&D hna bikah hian a ngai dawnlo a ni.  |
| 3  | Substation bun tumna ram atangin mihring cheng sawn chhuah ngai    | <p>A ram mamawh hi ram zim te chauh a nih avangin mi chhena ram ti buai lova hmun remchang danga tih dan ngaihtuah tum tir a ni</p> <p>Amaherawhchu tranche dangah te ram lei te a lo tul a ni pawhin hetiang hian acquire a tum tur a ni ;</p> <ul style="list-style-type: none"> <li>(i) A man ah chuan a leitu leh a hralhtu in remna zat ni ang;</li> <li>(ii) Ram neitu ang lak sak phalna) leh</li> <li>(iii) Dan anga lak.</li> </ul> <p>PEDM chuan mimal ram in leisak kawngah ram leilung man kum 2013 Land acquisition Act dan in a chhut aiin a tlem tur ani lo. PEDM chuan he dan hmang in state inrelbawlna a awm chuan hmagin ram neitu engkim tul pawimawhte a hrih fiah ang.</p> <p>Ram a thlawna pek nih chuan heng a hnuai mi te hi ngaipawimawh tur a ni:</p> <ul style="list-style-type: none"> <li>• A thlawna ram dawngtu hian a petu hnenah then vat theih turin a nawr chhen lovang;</li> </ul> |

| No | Harsatna awmthei                        | Buaipui dan tur   |
|----|---|---|
|    |   | <ul style="list-style-type: none"> <li>• A thlawna ram dawngtu hian a ram dawn atangin insawn chhuah ngailo turin theihtawp a chhuah ang;</li> <li>• PEDM chuan ram petute kiangah lawmthu a sawi a nga, chungte chu ziakin dah that tur a ni ang.</li> <li>• Ram a thlawnaa dawng leh lei ngai te ah pawh committee hnen atangin remtihna a la phawt zel thin ang chutiang bawkin IA leh GoM atangin;</li> </ul> <p>Dan anga ram lak hi Gol in dan thar RFCTLARR Act, 2013 hman a ni ang. Amaherawhchu siam that hnunah chauh(Sawi fiahna paragraph 24 ah awm)</p>                         |
| 4  | Hna thawhna kawng zawn zel              | Tower sak nan leh a hrui pawh nan hian ram acquired angai dawn lova, hna thawh zawh fel hnuah chuan thlawhna an nei leh thei dawn a ni, amaherawh hna thawh hun chungah mimal thil tih chhiat a awm chuan project hian zangnadawmna a pe full ang. Hemi a vang hian PEDM chuan hetiang thil buaipui turin plan that tak siam a plan hming a pawh Compensation Plan for Temporary Damge (CPTD) tih a ni. He plan hian hna thawh hun chungah thil ti chhiat man state sorkar, a tuartu emaw mipui te berawn in zangnadawmna leh tih tlem dan a ngaituah dawn a ni.                            |
| 5  | Tlangmi (Tribal te chungah nghawng)     | Kum 2011 census ah chuan state chungah mihring cheng zat hi 1,091,014 a ni. Hemi te zingah tam ber chu tlangmi (tribal) niin a pumpui ah 94% vel a ni. Project hi tlangmi (tribal area) (Constitution hnuiah Sixth Schedule in a venghimna hmun a ni) Mizoram awm te an ni a chuingin tlangmi (tribal) te tanna hamthatna tam zawk te pawh an dawng dawn a ni. Hemi avangin nghawng thalo tlangmi (tribal) te tan bik a awm dawnlo a ni. Amaherawhchu, nghawng thate entirnan, kawlphetha tha leh changtlung awm chuan ram hmasawna mai bakah mihring nunnah changkangna a thlen dawn a ni. |
| 6  | Intluktlana/Hmeichhiate tangkai theihna | Hmeichhia te projectah an tangkai theih na kawng ngaihtuah nan hian inrawntawna sawihona khunkhan tak leh mumal taka sawihona neihpui an ni ang.  |

| No | Harsatna awmthei   | Buaipui dan tur  |
|----|--|--|
| 7  | Hna thawh chhung a hmasawna dang theih na dang tih tel                     | PEDM hna te hun reilote chhung thawh thin a nih avangin thil dangah a in hnamhnawih thei lo a ni.  |
| 8  | Hriselna lakah leh hnathawkte/mipuite/ruaitute palh thila fimkhur/venhimna | Hna thawh hunah hriselna leh tih palh laka fimkhurna leh mipui cheng hnai vai te chu Contractors te kal tlangin fimkhur takin dan duan sa PEDM in a siam safety plan chu a kalpui ang, tin, PEDM safety plan tha ber leh awmchhun thir hrui hna atan a neih a ni a, taksa hrisel lohna leh tihpalh awm theilova ngaih a ni |
| 9  | Palh hlauh thila hmanlai thil, ro hlu etc. te laih chhuah chungchang       | T&D hna ah lei laih hi a thhuk lutuk leh a pan thin avangin tiang ro hlu hmuh chhuah hi awm khat khawp thin. Amaherawhchu, a lo awm palh chuan PEDM chuan Section-4 of Indian Treasure Trove Act. 1878 kum 1949 siam that leh tak dan chu a hmang ang.   |

**Table 6: Environment Management Measures**

| No | Harsatna awmthei  | Buaipui dan tur   |
|----|---|---|
| A  | Ramngaw a nghawng tur tih tlem  | PEDM hian environment a nghawng tih tlem dan te hi tunlai khawl changkang tak GIS/GPS leh khawl dang hmangin a hmunhma a hre lawk thei a, ramngaw nghawnglo thei tur ang berin a kalkawng tur pawh a thlang dawn a ni   |
|    | (Hnim sam fai/thingkung kih   | Tower te hi a bik in a tulna ah a zawm san belh theih a ni, hei hian a hrui inpawt te a ti tawi a nga, tin, thingkung a nghawng tur te pawh a tih tlem phah dawn a ni.  |
|    | <ul style="list-style-type: none"> <li>▪ Hnim sam fai.</li> <li>▪ Mihring chenna leh a chhehvel tih chhiat</li> </ul> | Thing leh mau leh mihring chenna leh a chhehvel te tih chhiat turte a tlem thei tur ang ber a ngaituah a nih dawn avangin PEDM chuan khawl hmang lovin mihring tha ruaiin hnimte a sam fai a nga, tin tower sakna bungrua te pawh mihring tha ruai in a theihna apiangah an thiar thin dawn a ni. |

| No       | Harsatna awmthei  | Buaipui dan tur  |
|----------|---|--|
|          | <ul style="list-style-type: none"> <li>▪ Chenna then darh</li> <li>▪ Ram hmul leh lei lung hausakna a nghawng awm thei</li> </ul> | <p>PEDM chuan meter 3 a hlai enkawl tur an nei dawn a chuchuan thing le mau tih chhiat transmission line pawh fel hnuah a hnuai lam ram a te phun leh tih chawr tir lamah hma la dawn a ni. Hetiang vang a nghawng awm thei te hi tlang ramah chuan a pumpelh thei a ni.</p>   |
|          | <p>Ban phun avangin sai lakah tihpalh awmthei</p>   | <p>Ahmasa berah chuan sai te hi Mizoram ah hian a awm lo a ni. Amaherawhchu, thu dawn dan in Bangladesh ram lam atang hian an rawn lut thin a sawi a ni. Engpawh nise hetiang hmun a lo awm ta a nih chuan ban te hi PEDM chuan a modify leh deuh thei turin a in huam a ni, tin, a bul vel hi barbed wire fencing ten hung that a thei dawn bawk a ni.</p>        |
| <b>B</b> | <p>Chemical atanga bawlhhlawh leh a kaihhnawih awm thei te</p>  | <p>PEDM does not use chemicals for forest clearance/ RoW maintenance. (PEDM chuan ramngaw / hna thawhna hmun te a enkawl na kawngah chemical a hmang ngailo a ni</p>   |
|          | <p>Poly-Chloro-Biphenyls (PCBs) in electrical equipment.</p>  | <p>PEDM use mineral oil in electrical equipment's. Specification of oil containing PCB less 2 mg/kg (non –detectable level) stated in the tender document.</p>   |
|          | <p>Tower/ ban sak vanga in sawn ngai</p>  | <p>PEDM chuan transmission tower sak nan ram a lei ngailo a ni. Hna thawh chung leh thlai tih chhiat man chauh ah te zangnadawmna a pe chhuak thin.</p>  |
| <b>C</b> | <p>Hna thawh chung a hmasawmna dang theih na dang tih tel</p>   | <p>PEDM hna te hun reilote chung thawh thin a nih avangin thil dangah a in hnamhnawih thei lo a ni.</p>  |
|          | <p>Leimin leh tuihawk in a hreuh chhiat tur kham pang laih thar ah te</p>   | <p>PEDM chuan kham panga lei laihthar te chu engineerte chhut dan ang thlap zel in laih a ni a nga, tin, a venhim na kawngah bio-engineering a remchan danin an buaipui tel bawk ang. Substation ram chungah tuihawk luan kawr tha tak siam a ni ang</p>   |
| <b>D</b> | <p>(Transmission/distribution hi sava thlawk tan a hlauhawm thei (Avian Harzards).</p>  | <p>Avian hazards (sava tana hlauhawm thei) hi sava awmna hmun humhalhna bik ah te hi chuan hmun danga an thlawh chhuah theihna turin kalkawng an zuah sak thin a ni. Hetiang harsatna hi sava tan a awm theih a rinawm lem loh, a chhan chu conductor te in kar te hi a zau tha tawk a ni. PEDM chuan a theih ang ang in heitang harsatna a awm dawn chuan hma</p> |

| No | Harsatna awmthei   | Buaipui dan tur  |
|----|--|--|
|    |  | a la ang, tin, a tul dan a zirin a hna kawng pawh sawn a in huam tel bawk a ni. Avian harzard laka venhim na chu siam tel tum a ni bawk).  |
|    | Thlawhtheihna atan hlauhawm awm thei                                       | PEDM chuan thlawhtheihna siamtu te hnenah IS 5613 of July 94 angin light ruahman sak a ni, he light hi zan thimah pawh awlsam te in heng tower te hi a hmu thei dawn a ni.   |
|    | Hriselna lakah leh hnathawkte/mipuite/ruaitute palh thila fimkhur/venhimna | Hna thawh hunah hriselna leh tih palh laka fimkhurna leh mipui cheng hnai vai te chu Contractors te kal tlangin fimkhur takin dan duan sa PEDM in a siam safety plan chu a kalpui ang, tin, PEDM safety plan tha ber leh awmchhun thir hrui hna atan a neih a ni a, taksa hrisel lohna leh tihpalh awm theilova ngaih a ni   |
|    | Kangmei (Fire Harzaeds)  | Ram kang hi a thleng fo thin a ni. Amaherawhchu, PEDM hian transmission/distribution leh substation ah te hian amah a (automatic) kawlpheha in off thei ang chi chu kangmei laka in vennan an vuah dawn a ni. Forest Department te pawh hian kangmei chhuak lak a in ven dante pawh an kalpui thin a ni<br>Kangmei tih mitna fire extinguisher te pawh hi dah tel a ni dawn bawk ang |
|    | Bawlhhlawh (Pollution )  | Transmission/distribution projects ah te hian bawlhhlawh siam chhuah hi a awm lemlo, mahse a tih tlem dan erawh a ngaipawimawh tel ang. Hna thawhna hmun hma te thawh zawh ah fel fai takin a chhuah san thin ang.   |
|    | GHG (SF <sub>6</sub> Gas)  | Gas SF <sub>6</sub> hi put mahse a hluahawm lutuk lo, amaherawhchu a put tih tlem dan kawng chu ngaituah tel a ni ang, a put dante endik nan gas pressure leh leak detector te hi Circuit Breaker ah te an vuah dawn a ni.   |

| No | Potential Issues  | Management Measures   |
|----|-------------------|---|
| A  | Ramngaw a nghawng | PEDM hian environment nghawngte tih tlem tulna hmun ramngaw (forest) leh hmun tangkai alsam tea |

| No | Potential Issues | Management Measures   |
|----|------------------|---|
|    | tur tih tlem     | chhe mai thei te hi tunlai khawl changkang tak GIS/GPS leh khawl dang hmangin a hre thei a ni chuan hna thawh na hmun tur pawh a hre lawk thei dawn a ni, |

33. Environment leh social ngaipawimawh dang te pawh EMP hian a huam tel vek a ni, tin, a enkawl chungchangte pawh dah tel vek a ni. EMP enchhinna hi he summary ah hian thil tel a ni. Hnathawh hunah hman a ni ang. EMP tih tura a tih tam zawk hi Contractor te tih tur leh hmalaktur a ni. An tih that ngei theihnan EMP hi an contract ah pawh telh a ni.

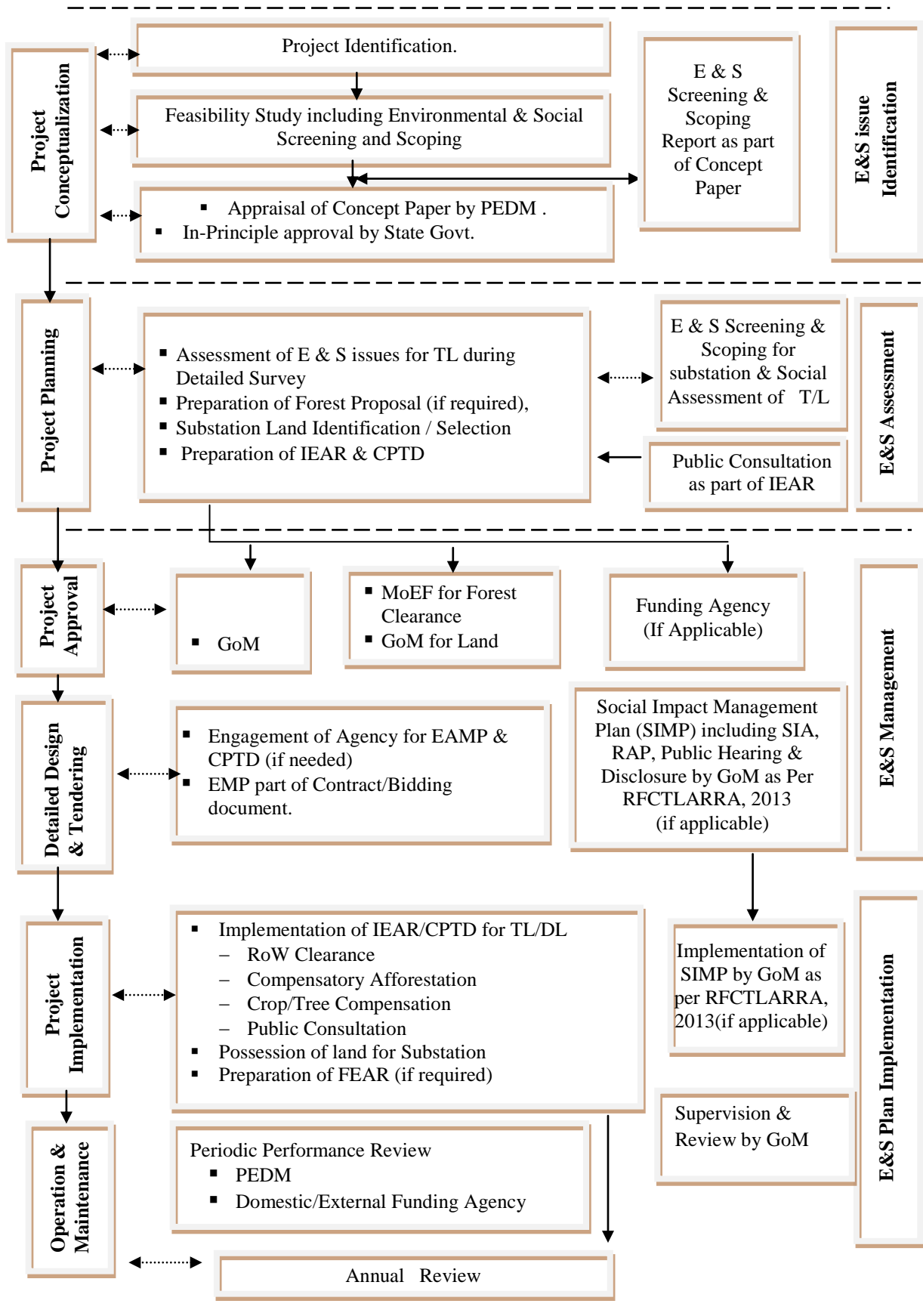
### **PEDM's Environment and Social Management Procedures (ESPP)**

34. PEDM hian environment leh social kaihhnawih enkawl chungchang ah te ziak tha tak a nei a ni, environment leh social kaihhnawih nghawngte a tih tlem theih nan heng chungchangte hi project cycle ah te a dah tel a ni. E&S enkawl dan te hian, kut thlak hma in harsatna awm thei tam zawk chu a hriat lawk tir thei a ni. Tin, hna thawktute hi thil pawimawh tak pathum harsatna/nghawng lakah tih tur a hriat tir thin a ni chungte chu pumpelh dan, tih tlem dan leh siam that dan. Heng pathum te hian a tirtte atangin project duan tan lai tanga ngaihpawimawh tur tam tak a hna thawh kawngah kawngraw a siam a ni entirnan, ramngaw forest ram kal kang tulte, hmun humhalh, mihring chenna, sava, ram sa etc. te a ni. Tul dan a zirin tower sang tak pawh a siam thei a ni. Hmun humhalh na hmun pal tlang ngei a tul chuan, mithiam te a ruai a nga chungte chuan ngun takin zirchiangin a chhe thei tur ang chi siam that leh dan pawh ngaituah telin kalpui tur a ni. Chutiang ang kalpui dan chipchiar zawk a hriat nan main report **Annexure 16** ah thil tel a ni.

35. Substation ram zawinna kawngah PEDM chuan checklist (Annexure 15 main report ah thil tel a ni) data dawn khawm danin hmun tam tak uluk takin zirin a en chhuak a ni. Hmun a thlan dan a pawh a hmun hma that dante a ni, entirnan, kalkawng awm leh awm loh, rail thlen leh thlen loh, eng ang ram /hmun, sokar ram nge mimal ram, mi a ti buai dawn leh dawnlo etc. te zirin a thlang thin a ni. Environment leh Social Management hi project cycle ah dah a nih rual hma lak dan tur a te pawh a kawhmun thin a ni. A kal phung hi Figure 2 ah hian tarlan a ni e:



**Figure: 2 Environmental and Social Management Procedures**



## Environment and social risk assessment

### Chhehvel leh Vantlang Mipui thil atana hlauhthawnawmna zirchianna leh chhutna

36. Kan chhehvel leh vantlang mipui thil tan a hlauhthawnawm tur thil te zir chian leh chhut chhuah hi PEDM in a Chhehvel leh Vantlang mipui thil enkawl dan atan a ruahmanna leh kaihruai dan an neih zinga poimawh be rte zing ami a ni a. An kalpui dan ah chuan, Kawlphetha hlan chhawng/pek chhuah projects ah thil hlauhthawnawm awm mek leh hunk al zeal lo awm thei tur te chu an lo thliar hrang lawk thin a ni. Scientific takin a man leh hlawkna te an lo endik thin a ni. He zirchianna/chhutna PEDM in a duan ah chuan heng thil hlauhthawnawm atanga chhitna thleng thei thil chu a that dan leh tam dan hutna chu chhut chhuakin a poimawh dan indawt in a siam a. a poimawh dan a zir chuan a enkawl dan tur a thlang thin a ni. PEDM in enkawl dan a duan in a ken tel te chu inrinna, chhawknah leh mawhphurtu in sem te an ni. Thil poi thleng thei thil a awma mawhphurna lak dan tur chu a hnuiah hian tarlan ani.

**Table 7: PEDM's Risk Responsibility Framework**

| Risk   | GoM /PEDM | Contractor | Insurers |
|--|-----------|------------|----------|
| Non compliance Regulatory <sup>1</sup>             | ✓         | ✓          | -        |
| Non compliance Contractual <sup>2</sup>            | -         | ✓          | -        |
| Major hazards, e.g. tower fall during construction | ✓         | ✓          | ✓        |
| During O&M   | ✓         | -          | -        |
| Impacts on health <sup>3</sup> etc.                | ✓         | -          | -        |
| Force Majeure(Insurable)                           | -         | -          | ✓        |
| Force Majeure( Non-Insurable)                      | ✓         | -          | -        |
| Inclusion/ Exclusion of concerned Communities/NGOs | ✓         | -          | -        |
| Public Interest Litigation                         | ✓         | -          | -        |

## Implementation Arrangements

### Hnathawh hlen kawnga inbuatsaihna

37. ESPP hi chak zawk a kalpui a nih theih nan, PEDM hian a hna kalphung leh kaldan hi a hnathawktute zawng zawngte inhnawmawih vek turin hma a la ang. A hlawhtlin theih nan hengte hi tihpuitlin a ni ang:

<sup>1</sup> Regulatory like working in forest/protected areas without statutory clearances.

<sup>2</sup> Contractual like noncompliance of condition of clearance like fuel supply to labourer to avoid tree felling, no-work during night times, etc.

<sup>3</sup> Impact of health like any case of prolonged exposure to Electro-Magnetic Field (EMF).

- a) PEDM Planning Department chu Engineer-in-Chief(PEDM)/ Sect. (Power) aiawha thusaitu anih angin inkungkaihna tha tak nen a thawhdunna a siam ang
- b) Uar taka department chhunga inhnaihna te, department hrang hrangte inkar a mawhphurhna thliar hrante leh thuneihna inpek te a ngaipawimawh anga, hei hian thil inthlaktheng te a awm in inrin dan leh inseam rem dan kawngah thui tak a pui ang.
- c) Engtik lai pawha a hun taka hnathawh tha ber thawk thei tur a inpekna.

38. PEDM in ESPP tha tak a tihlawhtling tura a inpekna a a chet dan dik a thlur bing tur te chu:

- Chhehvel leh vantlang mipui thil kaihnawih enkawl dan ah thawktu bik leh mithiam bik te a dah ang
- A chhungah hna thawktute mithiamte rawiik a zirtina pek
- Enkawltu sang zawk in zing tak/ a khat tawk in ennawna a nei ang
- A tul dan a zir in chhunglam leh pawn lam thawktu atanga ESPP hlen dan te leh rokhawlhna hmachhawnte ennawn.

Engg-in-Chief Office chu kawlphehtha hlan chhawng/ pek chhuahna siamtu, hnathawktu leh enkawltu mawhphurna a neih vek bakah tanpuina hna tul leh pawimawh a pe tel bawk ang.

39. NERPSIP atan hian POWERGRID hi a thawktu niin design a siam mai bakah hna kal lai te pawh a enkawl zui ang. State sorkar remtihna angin in rel dan indawtin a siam a ni. Chungte chu:

- Central Project Implementation Unit (CPIU) – Hemi hian neitu chan chang in Project hnathawh inkarah inkungkaihna siamin Pisa hi Guwahati ah a nei ang. He pisa a “Project-in-Charge” leh State tin a hotu lu ber (SPCU) te chu member an ni tel nghal bawk ang.
- State Project Coordination Unit (SPCU) - He Unit hian Project tangkai dan leh inkungkaihna tha tak thawktu te nen siam in hnathawh dan hi State level ah a enkawl ang. He unit ah hian hmun hrang hrang a mi mithiamte (Expert) an tel ang a, anni ho tur hian Chief Engineer (PEDM) leh a aia sang officer nihna nei te an ni ang.

- Project Implementation Unit (PIU) – He Unit hi State chhunga mawhphurtu leh hnathawktu anni in PEDM hian department hrang hrang atangin deputation in officer te a lakhawm ang. Tichuan, SPCU/CPIU ten en hian inpawhna tha tak nen hna hi an kalpui ang. Project-in-Charge of IA(SPCU) hian :Project Manager” a ruat anga, a hnenah hian PIU-in report a thehltut thin ang. IA (Implementing Agency) hian Pawl chhungril tak a thawktu a nei anga, heng mite hi CPIU ah a ngetin an awm anga, tin, PMC officers te hian he Pawl hi a tul dan a zirin a tlawh thin ang.

## **Grievance Redress Mechanism**

### **Lunngai mangang te buaipuina**

40. GRM hian Project duan tan tirh atanga a enkawl hna thleng ah hmun pawimawh tak a luah a ni. PEDM chuan project avanga mipui chung a harsatna a thlen chhawktu atan hian GRC hi CE hnuai ah din a ni. Project hna tantirh atanga hnathawh hun chhung leh a hnu a enkawl na kawngah te mipui ten harsatna an neih ang angte an thlen theihna tur a siam a ni. GRC ah hian Local Administration (VC), harsatna kan thlenate chhungkua leh vantlanga mi pawimawhte an tel ang.

41. Transmission/ distribution hna chungchangah thing leh thlai tan zangnadawmna te atul turte Revenue Officer ten an chhut chhuah tawh hnu lamah te GRC kal tlangin lungawilo tan hriattirna hun pek a ni ang. PEDM chuan ram lak dan mumal sorkar in a la neih loh avangin (RFCTLARRA 2013 dan siam that mek a nih avangin) substation tan ram lei a tul chuan ram neitu nen in dawr nghal remtihna angin in lei sak hi a kalpui rih dawn a ni, tin, mi in pe phalte laka atangin a dawng thei bawkw dawn a ni. Hemi avangin GRC hi a pawimawh lutuk dawn lo a ni. Amaherawchu, PEDM hian sorkar dan thar hi hman theiha chhawp chhuah a nih vele hman zui nghal a tum reng bawkw a ni.

### Annex - Environmental Management Plan

| Clause No.       | Project activity/ stage  | Potential impact   | Proposed mitigation measures  | Parameter to be monitored  | Measurement & frequency   | Institutional responsibility         | Implementation schedule   |
|------------------|--|--|---|--|---|--------------------------------------|---|
| Pre-construction |  |  |   |  |   |                                      |   |
| 1                | Location of overhead line towers/ poles/ underground distribution lines and alignment & design | Exposure to safety related risks                               | Setback of dwellings to overhead line route designed in accordance with permitted level of power frequency and the regulation of supervision at sites.  | Tower location and overhead/ underground alignment selection with respect to nearest dwellings | Setback distances to nearest houses – once                              | Implementing Agency (IA)             | Part of overhead lines tower/poles/ laying of underground cable sitting survey and detailed alignment survey and design |
| 2                | Equipment specifications and design parameters   | Release of chemicals and gases in receptors (air, water, land) | PCBs not used in substation transformers or other project facilities or equipment.  | Transformer design   | Exclusion of PCBs in transformers stated in tender specification - once | IA                                   | Part of tender specifications for the equipment   |
|                  |  |  | Processes, equipment and systems not to use chlorofluorocarbons (CFCs), including halon, and their use, if any, in existing processes and systems should be phased out and to be disposed of in a manner consistent with the requirements of the Government | Process, equipment and system design   | Exclusion of CFCs stated in tender specification -once                  |                                      | IA  |
|                  |  |  |   |  | Phase out schedule to be prepared in case still in use – once           | Part of equipment and process design |   |

| Clause No. | Project activity/ stage  | Potential impact                         | Proposed mitigation measures  | Parameter to be monitored   | Measurement & frequency   | Institutional responsibility | Implementation schedule   |
|------------|--|--|---|---|---|------------------------------|---|
| 3          | Transmission / Distribution line design  | Exposure to electromagnetic interference | Line design to comply with the limits of electromagnetic interference from overhead power lines   | Electromagnetic field strength for proposed line design   | Line design compliance with relevant standards – once                           | IA                           | Part of design parameters   |
| 4          | Substation location and design   | Exposure to noise                        | Design of plant enclosures to comply with noise regulations.  | Expected noise emissions based on substation design   | Compliance with regulations - once  | IA                           | Part of detailed siting survey and design   |
|            |  | Social inequities                        | Careful selection of site to avoid encroachment of socially, culturally and archaeological sensitive areas (i.g. sacred groves, graveyard, religious worship place, monuments etc.) | Selection of substation location (distance to sensitive area).  | Consultation with local authorities/ autonomous councils -once                  |                              | Part of detailed siting survey and design   |
| 5          | Location of overhead line towers/poles/ laying of underground distribution line & alignment and design | Impact on water bodies                   | Avoidance of such water bodies to the extent possible.<br><br>Avoidance of placement of tower inside water bodies to the extent of possible   | Tower/pole location and overhead/ underground line alignment selection (distance to water bodies)                             | Consultation with local authorities– once                                       | IA                           | Part of tower/pole sitting survey and detailed underground /overhead line alignment survey and design |
|            |  | Social inequities                        | Careful route selection to avoid existing settlements and sensitive locations   | Tower/pole location and overhead/ underground line alignment selection (distance to nearest dwellings or social institutions) | Consultation with local authorities/ autonomous councils and land owners – once | IA                           | Part of detailed tower/pole sitting and overhead/underground alignment survey and                     |

| Clause No. | Project activity/ stage   | Potential impact  | Proposed mitigation measures   | Parameter to be monitored   | Measurement & frequency   | Institutional responsibility | Implementation schedule                          |
|------------|---|-------------------|--|---|---|------------------------------|--|
|            |   |                   | Minimise impact on agricultural land   | Tower location and overhead/ underground line alignment selection (distance to agricultural land)   | Consultation with local authorities/ autonomous councils and land owners – once |                              | design   |
|            |   |                   | Careful selection of site and route alignment to avoid encroachment of socially, culturally and archaeological sensitive areas (i. g. sacred groves, graveyard, religious worship place, monuments etc.) | Tower/pole location and overhead/ underground line alignment selection (distance to sensitive area) | Consultation with local authorities/ autonomous councils -once                  |                              |  |
| 6          | Involuntary Acquisition or permanent land acquisition for substation. | Social inequities | Compensation and R&R measures as per provision of RFCTLARRA, 2013 <sup>4</sup>   | Compensation and monetary R&R measures implementation before possession.                            | As per provisions of Act.   | State Govt.                  | Prior to award/start of substation construction. |

<sup>4</sup> The new land acquisition act i.e RFCTLARRA,2013 is currently not applicable in the State as the State Legislative Assembly has not yet adopted the resolution regarding applicability of new act as per provision under article 371 G of the constitution of India. For acquisition of private land(if required), PEDM shall secure land through donations and/ or direct purchases on negotiated rate on willing buyer and willing seller basis till the applicability of the new act.

| Clause No. | Project activity/ stage                                    | Potential impact   | Proposed mitigation measures  | Parameter to be monitored   | Measurement & frequency  | Institutional responsibility | Implementation schedule  |
|------------|--|--|---|---|--|------------------------------|--|
| 7          | Encroachment into protected area/ precious ecological area | Loss of precious ecological values/ damage to precious species | Avoid encroachment into such areas by careful site and alignment selection (National Parks, Wildlife Sanctuary, Biosphere Reserves/ Biodiversity Hotspots)  | Tower/pole location and overhead/ underground line alignment selection (distance to nearest designated ecological protected/ sensitive areas) | Consultation with local forest authorities - once                                      | IA                           | Part of detailed siting and alignment survey /design               |
|            |  |  | Minimize the need by using RoW wherever possible  | Tower/pole location and overhead/ underground line alignment selection  | Consultation with local authorities and design engineers - once                        | IA                           | Part of detailed siting and alignment survey /design               |
| 8          | Line through identified Elephant corridor / Migratory bird | Damage to the Wildlife/ Birds and also to line                 | Study of earmarked elephant corridors to avoid such corridors, Adequate ground clearance, Fault clearing by Circuit Breaker, Barbed wire wrapping on towers, reduced spans etc., if applicable                                      | Tower/pole location and overhead/ underground line alignment selection.<br><br>Minimum/maximum ground clearance                               | Consultation with local forest authorities – once.<br><br>Monitoring – quarterly basis | IA                           | Part of detailed siting and alignment survey /design and Operation |
|            |  |  | Avoidance of established/ identified migration path (Birds & Bats). Provision of flight diverter/ reflectors, bird guard, elevated perches, insulating jumper loops, obstructive perch deterrents, raptor hoods etc., if applicable | Tower/pole location and overhead/ underground line alignment selection  | Consultation with local forest authorities - once                                      | IA                           | Part of detailed siting and alignment survey /design and Operation |
| 9          | Line through forestland                                    | Deforestation and loss of biodiversity                         | Avoid encroachment by careful site and alignment selection  | Tower/pole location and overhead/ underground line  | Consultation with local authorities – once   | IA                           | Part of detailed siting and alignment                              |



| Clause No. | Project activity/ stage | Potential impact  | Proposed mitigation measures   | Parameter to be monitored  | Measurement & frequency   | Institutional responsibility | Implementation schedule                               |
|------------|-------------------------|---|--|--|---|------------------------------|---|
|            |                         | edge effect   | Minimise the need by using existing towers, tall towers and RoW, wherever possible | alignment selection (distance to nearest protected or reserved forest) | Consultation with local authorities and design engineers – once     |                              | survey/design   |
|            |                         |   | Measures to avoid invasion of alien species  | Intrusion of invasive species  | Consultation with local forest authorities - once                   |                              |   |
|            |                         |   | Obtain statutory clearances from the Government                                    | Statutory approvals from Government                                    | Compliance with regulations – once for each subproject              |                              |   |
|            |                         |   | Consultation with autonomous councils wherever required                            | Permission/ NOC from autonomous councils                               | Consultation with autonomous councils – once during tower placement |                              |   |
| 10         | Lines through farmland  | Loss of agricultural production/ change in cropping pattern | Use existing tower or footings wherever possible                                   | Tower/pole location and overhead/ underground line alignment selection | Consultation with local authorities and design engineers – once     | IA                           | Part of detailed alignment survey and design          |
|            |                         |   | Avoid sitting new towers on farmland wherever feasible                             | Tower/pole location and overhead/ underground line alignment selection | Consultation with local authorities and design engineers – once     |                              | Part of detailed sitting and alignment survey /design |
| 11         | Noise related           | Nuisance to neighbouring properties                         | Substations sited and designed to ensure noise will not be a nuisance              | Noise levels   | Noise levels to be specified in tender documents – once             | IA                           | Part of detailed equipment design                     |
| 12         | Interference with       | Flooding hazards/ loss                                      | Appropriate sitting of towers to avoid channel                                     | Tower/pole location and overhead/                                      | Consultation with local authorities                                 | IA                           | Part of detailed alignment                            |

| Clause No.          | Project activity/ stage                | Potential impact           | Proposed mitigation measures   | Parameter to be monitored  | Measurement & frequency   | Institutional responsibility                | Implementation schedule                                 |
|---------------------|--|----------------------------|--|--|---|---|---|
|                     | drainage patterns/ irrigation channels | of agricultural production | interference   | underground line alignment selection (distance to nearest flood zone)          | and design engineers – once   |   | survey and design                                       |
| 13                  | Escape of polluting materials          | Environmental pollution    | Transformers designed with oil spill containment systems, and purpose-built oil, lubricant and fuel storage system, complete | Equipment specifications with respect to potential pollutants                  | Tender document to mention specifications – once                                | IA  | Part of detailed equipment design /drawings             |
|                     |  |                            | Substations to include drainage and sewage disposal systems to avoid offsite land and water pollution.                       | Substation sewage design   | Tender document to mention detailed specifications – once                       | IA  | Part of detailed substation layout and design /drawings |
|                     | Equipments submerged under flood       | Contamination of receptors | Substations constructed above the high flood level(HFL) by raising the foundation pad  | Substation design to account for HFL (elevation with respect to HFL elevation) | Base height as per flood design- once   | IA  | Part of detailed substation layout and design /drawings |
| 14                  | Explosions /Fire                       | Hazards to life            | Design of substations to include modern fire fighting equipment  | Substation design compliance with fire prevention and control codes            | Tender document to mention detailed specifications – once                       | IA  | Part of detailed substation layout and design /drawings |
|                     |  |                            | Provision of fire fighting equipment to be located close to transformers   |  |   |   |   |
| <b>Construction</b> |  |                            |  |  |   |   |   |
| 15                  | Equipment layout and installation      | Noise and vibrations       | Construction techniques and machinery selection seeking to minimize ground disturbance.                                      | Construction techniques and machinery  | Construction techniques and machinery creating minimal ground disturbance- once | IA (Contractor through contract provisions) | Construction period                                     |

| Clause No. | Project activity/ stage                 | Potential impact  | Proposed mitigation measures  | Parameter to be monitored   | Measurement & frequency  | Institutional responsibility                | Implementation schedule |
|------------|---|---|---|---|--|---|-------------------------|
|            |   |   |   |   | at the start of each construction phase  |   |                         |
| 16         | Physical construction                   | Disturbed farming activity                                | Construction activities on cropping land timed to avoid disturbance of field crops (within one month of harvest wherever possible). | Timing of start of construction   | Crop disturbance – Post harvest as soon as possible but before next crop – once per site | IA (Contractor through contract provisions) | Construction period     |
| 17         | Mechanized construction                 | Noise, vibration and operator safety, efficient operation | Construction equipment to be well maintained.   | Construction equipment – estimated noise emissions                            | Complaints received by local authorities – every 2 weeks                                 | IA (Contractor through contract provisions) | Construction period     |
|            |   | Noise, vibration, equipment wear and tear                 | Turning off plant not in use.   | Construction equipment – estimated noise emissions and operating schedules    | Complaints received by local authorities – every 2 weeks                                 | IA (Contractor through contract provisions) | Construction period     |
| 18         | Construction of roads for accessibility | Increase in airborne dust particles                       | Existing roads and tracks used for construction and maintenance access to the line wherever possible.                               | Access roads, routes (length and width of new access roads to be constructed) | Use of established roads wherever possible – every 2 weeks                               | IA (Contractor through contract provisions) | Construction period     |
|            |   | Increased land requirement for temporary accessibility    | New access ways restricted to a single carriageway width within the RoW.  | Access width (meters)   | Access restricted to single carriage – way width within RoW – every 2 weeks              | IA (Contractor through contract provisions) | Construction period     |

| Clause No. | Project activity/ stage               | Potential impact             | Proposed mitigation measures  | Parameter to be monitored  | Measurement & frequency  | Institutional responsibility                | Implementation schedule |
|------------|---------------------------------------|------------------------------|---|--|--|---|-------------------------|
| 19         | Construction activities               | Safety of local villagers    | Coordination with local communities for construction schedules, Barricading the construction area and spreading awareness among locals                  | Periodic and regular reporting /supervision of safety arrangement  | No. of incidents- once every week  | IA (Contractor through contract provisions) | Construction period     |
|            |                                       | Local traffic obstruction    | Coordination with local authority/ requisite permission for smooth flow of traffic  | Traffic flow (Interruption of traffic)   | Frequency (time span)- on daily basis  | IA (Contractor through contract provisions) | Construction period     |
| 20         | Temporary blockage of utilities       | Overflows, reduced discharge | Measure in place to avoid dumping of fill materials in sensitive drainage area  | Temporary fill placement (m <sup>3</sup> )   | Absence of fill in sensitive drainage areas – every 4 weeks                      | IA (Contractor through contract provisions) | Construction period     |
| 21         | Site clearance                        | Vegetation                   | Marking of vegetation to be removed prior to clearance, and strict control on clearing activities to ensure minimal clearance.                          | Vegetation marking and clearance control (area in m <sup>2</sup> )   | Clearance strictly limited to target vegetation – every 2 weeks                  | IA (Contractor through contract provisions) | Construction period     |
|            |                                       |                              | No use of herbicides and pesticides   |  |  |   |                         |
| 22         | Trimming /cutting of trees within RoW | Fire hazards                 | Trees allowed growing up to a height within the RoW by maintaining adequate clearance between the top of tree and the conductor as per the regulations. | Species-specific tree retention as approved by statutory authorities (average and max. tree height at maturity, in meters) | Presence of target species in RoW following vegetation clearance – once per site | IA (Contractor through contract provisions) | Construction period     |

| Clause No. | Project activity/ stage     | Potential impact                                      | Proposed mitigation measures   | Parameter to be monitored   | Measurement & frequency  | Institutional responsibility                   | Implementation schedule |
|------------|-----------------------------|---|--|---|--|--|-------------------------|
|            |                             | Loss of vegetation and deforestation                  | Trees that can survive pruning to comply should be pruned instead of cleared.  | Species-specific tree retention as approved by statutory authorities                                      | Presence of target species in RoW following vegetation clearance - once                    | IA<br>(Contractor through contract provisions) | Construction period     |
|            |                             |   | Felled trees and other cleared or pruned vegetation to be disposed of as authorized by the statutory bodies.   | Disposal of cleared vegetation as approved by the statutory authorities (area cleared in m <sup>2</sup> ) | Use or intended use of vegetation as approved by the statutory authorities – once per site | IA<br>(Contractor through contract provisions) | Construction period     |
| 23         | Wood/ vegetation harvesting | Loss of vegetation and deforestation                  | Construction workers prohibited from harvesting wood in the project area during their employment, (apart from locally employed staff continuing current legal activities)                  | Illegal wood /vegetation harvesting (area in m <sup>2</sup> , number of incidents reported)               | Complaints by local people or other evidence of illegal harvesting – every 2 weeks         | IA<br>(Contractor through contract provisions) | Construction period     |
| 24         | Surplus earthwork/soil      | Runoff to cause water pollution, solid waste disposal | Soil excavated from tower footings/ substation foundation disposed of by placement along roadsides, or at nearby house blocks if requested by landowners                                   | Soil disposal locations and volume (m <sup>3</sup> )  | Acceptable soil disposal sites – every 2 weeks   | IA<br>(Contractor through contract provisions) | Construction period     |
| 25         | Substation construction     | Loss of soil  | Loss of soil is not a major issue as excavated soil will be mostly reused for filling. However, in case of requirement of excess soil the same will be met from existing quarry or through | Borrow area sitting (area of site in m <sup>2</sup> and estimated volume in m <sup>3</sup> )              | Acceptable soil borrow areas that provide a benefit - every 2 weeks                        | IA<br>(Contractor through contract provisions) | Construction period     |

| Clause No. | Project activity/ stage   | Potential impact                              | Proposed mitigation measures   | Parameter to be monitored   | Measurement & frequency  | Institutional responsibility                | Implementation schedule |
|------------|---|---|--|---|--|---|-------------------------|
|            |   |   | deep excavation of existing pond or other nearby barren land with agreement of local communities   |   |  |   |                         |
|            |   | Water pollution                               | Construction activities involving significant ground disturbance (i.e. substation land forming) not undertaken during the monsoon season   | Seasonal start and finish of major earthworks(P <sup>H</sup> , BOD/ COD, Suspended solids, others ) | Timing of major disturbance activities –prior to start of construction activities                            | IA (Contractor through contract provisions) | Construction period     |
| 26         | Site clearance  | Vegetation                                    | Tree clearances for easement establishment to only involve cutting trees off at ground level or pruning as appropriate, with tree stumps and roots left in place and ground cover left undisturbed | Ground disturbance during vegetation clearance (area, m <sup>2</sup> )<br>Statutory approvals       | Amount of ground disturbance – every 2 weeks<br>Statutory approvals for tree clearances – once for each site | IA (Contractor through contract provisions) | Construction period     |
| 27         | Substation foundation/Tower erection disposal of surplus earthwork/fill | Waste disposal                                | Excess fill from substation/tower foundation excavation disposed of next to roads or around houses, in agreement with the local community or landowner.  | Location and amount (m <sup>3</sup> )of fill disposal   | Appropriate fill disposal locations – every 2 weeks  | IA (Contractor through contract provisions) | Construction period     |
| 28         | Storage of chemicals and materials                                      | Contamination of receptors (land, water, air) | Fuel and other hazardous materials securely stored above high flood level.   | Location of hazardous material storage; spill reports (type of material spilled, amount (kg or      | Fuel storage in appropriate locations and receptacles – every 2 weeks  | IA (Contractor through contract provisions) | Construction period     |

| Clause No. | Project activity/ stage                          | Potential impact  | Proposed mitigation measures  | Parameter to be monitored  | Measurement & frequency  | Institutional responsibility                | Implementation schedule |
|------------|--|---|---|--|--|---|-------------------------|
|            |  |   |   | m <sup>3</sup> ) and action taken to control and clean up spill)                           |  |   |                         |
| 29         | Construction schedules                           | Noise nuisance to neighbouring properties               | Construction activities only undertaken during the day and local communities informed of the construction schedule. | Timing of construction (noise emissions, [dB(A)])  | Daytime construction only – every 2 weeks  | IA (Contractor through contract provisions) | Construction period     |
| 30         | Provision of facilities for construction workers | Contamination of receptors (land, water, air)           | Construction workforce facilities to include proper sanitation, water supply and waste disposal facilities.         | Amenities for Workforce facilities   | Presence of proper sanitation, water supply and waste disposal facilities – once each new facility | IA (Contractor through contract provisions) | Construction period     |
| 31         | Influx of migratory workers                      | Conflict with local population to share local resources | Using local workers for appropriate asks  | Avoidance/reduction of conflict through enhancement/ augmentation of resource requirements | Observation & supervision – on weekly basis  | IA (Contractor through contract provisions) | Construction period     |
| 32         | Lines through farmland                           | Loss of agricultural productivity                       | Use existing access roads wherever possible   | Usage of existing utilities  | Complaints received by local people /authorities - every 4 weeks                                   | IA (Contractor through contract provisions) | Construction period     |
|            |  |   | Ensure existing irrigation facilities are maintained in working condition   | Status of existing facilities  |  |   |                         |
|            |  |   | Protect /preserve topsoil and reinstate after construction completed  | Status of facilities (earthwork in m <sup>3</sup> )  |  |   |                         |
|            |  |   | Repair /reinststate damaged bunds etc after construction  | Status of facilities (earthwork in m <sup>3</sup> )  |  |   |                         |

| Clause No. | Project activity/ stage          | Potential impact                         | Proposed mitigation measures  | Parameter to be monitored   | Measurement & frequency  | Institutional responsibility                | Implementation schedule |
|------------|----------------------------------|--|---|---|--|---|-------------------------|
|            |                                  | Social inequities                        | Land owners/ farmers compensated for any temporary loss of productive land as per existing regulation.  | Process of Crop/tree compensation in consultation with forest dept.(for timber yielding tree) and Horticulture deptt.(for fruit bearing tree)   | Consultation with affected land owner prior to implementation and during execution.  | IA  | During construction     |
| 33         | Uncontrolled erosion/silt runoff | Soil loss, downstream siltation          | <p>Need for access tracks minimised, use of existing roads.</p> <p>Limit site clearing to work areas</p> <p>Regeneration of vegetation to stabilise works areas on completion (where applicable)</p> <p>Avoidance of excavation in wet season</p> <p>Water courses protected from siltation through use of bunds and sediment ponds</p> | Design basis and construction procedures (suspended solids in receiving waters; area re-vegetated in m <sup>2</sup> ; amount of bunds constructed [length in meter, area in m <sup>2</sup> , or volume in m <sup>3</sup> ]) | Incorporating good design and construction management practices – once for each site | IA (Contractor through contract provisions) | Construction period     |
| 34         | Nuisance to nearby properties    | Losses to neighbouring land uses/ values | <p>Contract clauses specifying careful construction</p> <p>As much as possible existing access ways will be</p>   | <p>Contract clauses</p> <p>Design basis and layout</p>  | <p>Incorporating good construction</p> <p>Incorporating good design engineering</p>  | IA (Contractor through contract)            | Construction period     |



| Clause No. | Project activity/ stage  | Potential impact   | Proposed mitigation measures   | Parameter to be monitored   | Measurement & frequency   | Institutional responsibility                | Implementation schedule |
|------------|--|--|--|---|---|---|-------------------------|
|            |  |  | Productive land will be reinstated following completion of construction  | Reinstatement of land status (area affected, m <sup>2</sup> )           | Consultation with affected parties – twice – immediately after completion of construction and after the first harvest | provisions)                                 |                         |
|            |  | Social inequities  | Compensation will be paid for loss of production, if any.  | Implementation of Tree/Crop compensation (amount paid)                  | Consultation with affected parties – once in a quarter  | IA  | Prior to construction   |
| 35         | Flooding hazards due to construction impediments of natural drainage | Flooding and loss of soils, contamination of receptors (land, water) | Avoid natural drainage pattern/ facilities being disturbed/blocked/ diverted by ongoing construction activities  | Contract clauses (e.g. suspended solids and BOD/COD in receiving water) | Incorporating good construction management practices-once for each site   | IA (Contractor through contract provisions) | Construction period     |
| 36         | Equipment submerged under flood                                      | Contamination of receptors (land, water)                             | Equipment stored at secure place above the high flood level(HFL)   | Store room level to be above HFL (elevation difference in meters)       | Store room level as per flood design-once   | IA  | Construction period     |
| 37         | Inadequate siting of borrow areas (quarry areas)                     | Loss of land values  | Existing borrow sites will be used to source aggregates, therefore, no need to develop new sources of aggregates | Contract clauses  | Incorporating good construction management practices – once for each site   | IA (Contractor through contract provisions) | Construction period     |
| 38         | Health and safety  | Injury and sickness of   | Safety equipment's (PPEs) for construction workers   | Contract clauses (number of incidents                                   | Contract clauses compliance – once  | IA (Contractor                              | Construction period     |

| Clause No.                       | Project activity/ stage                                       | Potential impact                  | Proposed mitigation measures   | Parameter to be monitored   | Measurement & frequency   | Institutional responsibility | Implementation schedule                  |
|----------------------------------|---|-----------------------------------|--|---|---|------------------------------|--|
|                                  |   | workers and members of the public | Contract provisions specifying minimum requirements for construction camps   | and total lost-work days caused by injuries and sickness)           | every quarter   | through contract provisions) |  |
|                                  | Contractor to prepare and implement a health and safety plan. |                                   |  |   |   |                              |  |
|                                  | Contractor to arrange for health and safety training sessions |                                   |  |   |   |                              |  |
| 39                               | Inadequate construction stage monitoring                      | Likely to maximise damages        | Training of environmental monitoring personnel   | Training schedules  | Number of programs attended by each person – once a year                      | IA                           | Routinely throughout construction period |
|                                  |   |                                   | Implementation of effective environmental monitoring and reporting system using checklist of all contractual environmental requirements                | Respective contract checklists and remedial actions taken thereof.  | Submission of duly completed checklists of all contracts for each site - once |                              |  |
|                                  |   |                                   | Appropriate contract clauses to ensure satisfactory implementation of contractual environmental mitigation measures.                                   | Compliance report related to environmental aspects for the contract | Submission of duly completed compliance report for each contract – once       |                              |  |
| <b>Operation and Maintenance</b> |   |                                   |  |   |   |                              |  |
| 40                               | Location of line towers/poles and overhead/ underground line  | Exposure to safety related risks  | Setback of dwellings to overhead line route designed in accordance with permitted level of power frequency and the regulation of supervision at sites. | Compliance with setback distances (“as-built” diagrams)             | Setback distances to nearest houses – once in quarter                         | PEDM                         | During operations                        |

| Clause No. | Project activity/ stage                              | Potential impact  | Proposed mitigation measures  | Parameter to be monitored                                  | Measurement & frequency                             | Institutional responsibility | Implementation schedule  |
|------------|--|---|---|--|---|------------------------------|--|
|            | alignment & design                                   |   |   |  |   |                              |  |
| 41         | Line through identified bird flyways, migratory path | Injury/ mortality to birds, bats etc due to collision and electrocution | Avoidance of established/identified migration path (Birds & Bats). Provision of flight diverter/reflectors, elevated perches, insulating jumper loops, obstructive perch deterrents, raptor hoods etc., if applicable | Regular monitoring for any incident of injury/mortality    | No. of incidents- once every month                  | PEDM                         | Part of detailed siting and alignment survey /design and Operation |
| 42         | Equipment submerged under flood                      | Contamination of receptors (land, water)                                | Equipment installed above the high flood level (HFL) by raising the foundation pad.   | Substation design to account for HFL (“as-built” diagrams) | Base height as per flood design – once              | PEDM                         | During operations  |
| 43         | Oil spillage   | Contamination of land/nearby water bodies                               | Substation transformers located within secure and impervious sump areas with a storage capacity of at least 100% of the capacity of oil in transformers and associated reserve tanks.                                 | Substation bunding (Oil sump) (“as-built” diagrams)        | Bunding (Oil sump) capacity and permeability - once | PEDM                         | During operations  |
| 44         | SF6 management                                       | Emission of most potent GHG causing climate change                      | Reduction of SF6 emission through awareness, replacement of old seals, proper handling & storage by controlled inventory and use, enhance recovery and applying new technologies to reduce leakage                    | Leakage and gas density/level                              | Continuous monitoring                               | PEDM                         | During Operations  |

| Clause No. | Project activity/ stage   | Potential impact                      | Proposed mitigation measures  | Parameter to be monitored  | Measurement & frequency  | Institutional responsibility | Implementation schedule |
|------------|---|---------------------------------------|---|--|--|------------------------------|-------------------------|
| 45         | Inadequate provision of staff/workers health and safety during operations | Injury and sickness of staff /workers | Careful design using appropriate technologies to minimise hazards   | Usage of appropriate technologies (lost work days due to illness and injuries) | Preparedness level for using these technologies in crisis – once each year | PEDM                         | Design and operation    |
|            |   |                                       | Safety awareness raising for staff.   | Training/awareness programs and mock drills                                    | Number of programs and percent of staff /workers covered – once each year  |                              |                         |
|            |   |                                       | Preparation of fire emergency action plan and training given to staff on implementing emergency action plan |  |  |                              |                         |
|            |   |                                       | Provide adequate sanitation and water supply facilities   | Provision of facilities  | Complaints received from staff   |                              |                         |
| 46         | Electric Shock Hazards  | Injury/ mortality to staff and public | Careful design using appropriate technologies to minimise hazards   | Usage of appropriate technologies (number of injury incidents, lost work days) | Preparedness level for using these technology in crisis – once a month     | PEDM                         | Design and Operation    |
|            |   |                                       | Security fences around substations  | Maintenance of fences  | Report on maintenance – every 2 weeks                                      |                              |                         |
|            |   |                                       | Barriers to prevent climbing on/ dismantling of   | Maintenance of barriers  |  |                              |                         |
|            |   |                                       | Appropriate warning signs on facilities   | Maintenance of warning signs   |  |                              |                         |
|            |   |                                       | Electricity safety awareness raising in project areas   | Training /awareness programs and mock drills for all concerned parties         | Number of programs and percent of total persons covered – once each year   |                              |                         |

| Clause No. | Project activity/ stage                                      | Potential impact   | Proposed mitigation measures   | Parameter to be monitored  | Measurement & frequency  | Institutional responsibility | Implementation schedule |
|------------|--|--|--|--|--|------------------------------|-------------------------|
| 47         | Operations and maintenance staff skills less than acceptable | Unnecessary environmental losses of various types              | Adequate training in O&M to all relevant staff of substations & transmission/ distribution line maintenance crews.   | Training/awareness programs and mock drills for all relevant staff | Number of programs and percent of staff covered – once each year                   | PEDM                         | Operation               |
|            |  |  | Preparation and training in the use of O&M manuals and standard operating practices  |  |  |                              |                         |
| 48         | Inadequate periodic environmental monitoring.                | Diminished ecological and social values.                       | Staff to receive training in environmental monitoring of project operations and maintenance activities.  | Training/awareness programs and mock drills for all relevant staff | Number of programs and percent of staff covered – once each year                   | PEDM                         | Operation               |
| 49         | Equipment specifications and design parameters               | Release of chemicals and gases in receptors (air, water, land) | Processes, equipment and systems using chlorofluorocarbons (CFCs), including halon, should be phased out and to be disposed of in a manner consistent with the requirements of the Govt. | Process, equipment and system design                               | Phase out schedule to be prepared in case still in use – once in a quarter         | PEDM                         | Operations              |
| 50         | Transmission / distribution line maintenance                 | Exposure to electromagnetic interference                       | Transmission/ distribution line design to comply with the limits of electromagnetic interference from overhead power lines   | Required ground clearance (meters)                                 | Ground clearance - once  | PEDM                         | Operations              |
| 51         | Uncontrolled growth of vegetation                            | Fire hazard due to growth of tree/shrub /bamboo along RoW      | Periodic pruning of vegetation to maintain requisite electrical clearance.   | Requisite clearance (meters)                                       | Assessment in consultation with forest authorities - once a year(pre-monsoon/post- | PEDM                         | Operations              |

| Clause No. | Project activity/<br>stage | Potential impact                    | Proposed mitigation measures   | Parameter to be monitored | Measurement & frequency   | Institutional responsibility | Implementation schedule |
|------------|----------------------------|-------------------------------------|--|---------------------------|---|------------------------------|-------------------------|
|            |                            |                                     | No use of herbicides/pesticides  |                           | monsoon   |                              |                         |
| 52         | Noise related              | Nuisance to neighbouring properties | Substations sited and designed to ensure noise will not be a nuisance. | Noise levels {dB(A)}      | Noise levels at boundary nearest to properties and consultation with affected parties if any - once | PEDM                         | Operations              |

