COMPENSATION PLAN FOR TEMPORARY DAMAGES (CPTD)

FOR

T&D NETWORK IN LUNGLEI & LAWNGTLAI DISTRICTS UNDER NERPSIP TRANCHE-1, MIZORAM




Prepared By

Environment and Social Management

POWER GRID CORPORATION OF INDIA LTD.

For

POWER AND ELECTRICITY DEPARTMENT, GOVT. OF MIZORAM

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LIST OF ABBREVIATIONS

ADC	:	Autonomous District Council
AP	:	Affected Person
CADC	:	Chakma Autonomous District Council
CEA	:	Central Electricity Authority
Ckt-Km	:	Circuit-kilometer
CGWB	:	Central Ground Water Board
CP	:	Compensation Plan
CPTD	:	Compensation Plan for Temporary Damages
CPIU	:	Central Project Implementation Unit
CRM	:	Contractor Review Meeting
DC	:	District Collector
D/C	:	Double Circuit
DL	:	Distribution Line
DM	:	District Magistrate
DMS	:	Distribution Management System
EHV	:	Extra High Voltage
EHS	:	Environment Health & Safety
EMP	:	Environment Management Plan
E&S	:	Environmental & Social
ESPP	:	POWERGRID's Environmental and Social Policy & Procedures
ESPPF	:	PEDM's Environmental and Social Policy & Procedures Framework
GoI	:	Government of India
GRC	:	Grievance Redress Committee
GRM	:	Grievance Redress Mechanism
Ha	:	Hectare
HPC	:	High Powered Committee
IA	:	Implementing Agency
INRs	:	Indian National Rupees
IP	:	Indigenous People
IR	:	Involuntary Resettlement
JCC	:	Joint Coordination Committee
kV	:	Kilo volt
Km	:	Kilometer
LA	:	Land Acquisition
LADC	:	Lai Autonomous District Council
MCM	:	Million Cubic Meter
MoP	:	Ministry of Power
M&E	:	Monitoring and Evaluation
NOC	:	No Objection Certificate
NER	:	North Eastern Region
NERPSIP	:	North Eastern Region Power System Improvement Project
O&M	:	Operation and Maintenance
OP	:	Operational Policy
PAP	:	Project Affected Person
POWERGRID	:	Power Grid Corporation of India Limited
PPIU	:	PMC Project Implementation Unit
RFCTLARRA	:	The Right to Fair Compensation and Transparency in Land, Acquisition, Rehabilitation and Resettlement Act, 2013
RoW	:	Right of Way
RP	:	Resettlement Plan
R&R	:	Resettlement and Rehabilitation

S/C	:	Single Circuit
SC	:	Scheduled Caste
Sq. M.	:	Square Meters
SMF	:	Social Management Framework
SPCU	:	State Project Coordination Unit
ST	:	Scheduled Tribe
T & D	:	Transmission & Distribution
TL	:	Transmission Line
USD	:	United States Dollar
WB	:	The Word Bank

GLOSSARY

Autonomous District Council/ Village Council	:	An autonomous body/institution formed under the provisions of 6th Schedule of Constitution of India which provides tribal people freedom to exercise legislative, judicial, executive and financial powers.
Zila/ District	:	It is the first administrative division at the State level.
Sub-division	:	A revenue sub-division, within a district.
Block	:	An administrative sub-division within a district.
Panchayat		The third tier of decentralized governance.

EXECUTIVE SUMMARY

i. The Compensation Plan for Temporary Damages (CPTD) has been prepared for Transmission & Distribution (T & D) network in Lunglei & Lawngtlai Districts of Mizoram State under North Eastern Region Power System Improvement Project (NERPSIP) which is being funded by Govt. of India (GoI) and the World Bank (WB). The Implementing Agency (IA) is Power Grid Corporation of India Limited (POWERGRID). The present CPTD is based on the Environmental and Social Policy & Procedures Framework (ESPPF) of Power and Electricity Department, Govt. of Mizoram's (PEDM).

ii. The project components include construction of 2 no.132kV D/C lines of 65.985 km length along with associated 2 no. of 132/33kV substations (1 new + 1 augmentation) and 1 no. 33kV lines of 3.717 km length along with associated 1 no. 33/11kV substation located in Lunglei & Lawngtlai districts of Mizoram. The present CPTD has been prepared based on the detailed survey/investigation. However, the temporary impacts on land and loss of crops/ trees occurred only during the project implementation/ construction. Therefore, the CPTD remains as draft, as actual temporary impacts on crop/ tree including details of Affected Persons (AP) shall be ascertained during check survey and tower spotting once the construction contractor is mobilized for implementation. PEDM/ POWERGRID[1] provide compensation for actual damages after assessment by revenue authority. Check survey is done progressively during the construction of the transmission line. Normally the work is done in off season when there is no standing crop. The compensation for damage is assessed in actual after construction activities of transmission lines in three stages i.e. after completion of foundation, tower erection and stringing of conductor. The payment of compensation is also paid in three instances, if there are damages during all the above three stages. Assessment of damages at each stage and subsequent payment of compensation is a continuous process. Hence, CPTD updating will also be a continuous process during construction and updated data on APs shall be disclosed through semi-annual E & S monitoring report submitted by PEDM// POWERGRID.

iii. The project components under the scope of present CPTD include following transmission/ distribution lines and associated substations;

A. Transmission Scheme Component

Transmission Lines:

1. Lungsen - Chawngte 132 kV S/C line - 30.985 km
2. Chawngte -S. Bungtlang 132 kV S/C line - 35.00 km

[1] *For the purpose of CPTD, PEDM and POWERGRID may be referred as SPCU and PPIU, respectively. For further details, please refer Chapter - VII Institutional arrangements.*

Substations:

1. Establishment of 132/33kV substation at Lungsen
2. Augmentation of 132/33kV substation at Lunglei

B. Distribution Scheme Component

Distribution Lines:

1. 132/33 KV Lungsen (new) S/s - 33/11 kV Lungsen (existing) S/s 33kV line – 3.717 km

Substation:

1. Establishment of 33/11kV substation at South Bungtlang

iv. As per existing law, land for tower/ pole and right of way is not acquired2and agricultural activities are allowed to continue after construction activity. Land requirements for erecting tower for transmission lines are quite minimal and require placing of four legs which need an area of 4 to 6 sq.ft. Thereby, the actual impact is restricted to these 4 legs and some constraints in area coming in between these 4 legs of the tower. Further, line alignments are done in such a way so as to avoid settlements, structures etc. Hence, no relocation of affected persons on account of Transmission Line (TL) is envisaged. Most of the impacts are temporary in nature of loss of standing crops/ trees and other damages for which compensation will be paid to the affected persons including cost of land for tower base area to its owner without acquisition or transfer of title as per provisions of law and Entitlement matrix defined in ESPPF.

v. For the temporary loss of crops, only agricultural land and private plantation land are considered for estimation. Though Right of Way (RoW) for 132kV & 33kV lines are 27 meter & 15 meter respectively, but average affected width/ corridor would be limited to maximum 20 meter for 132kV & 10 meter for 33kV line. Accordingly, for construction of 132 kV transmission lines, actual impacted area for crops and other damages worked out to be approx. 353.28 acres. A total 10,914 trees likely to be affected during construction of lines. Private trees will be compensated as per the entitlement matrix. The total number of affected persons is estimated to be 3228.

vi. Public participation and community consultations have been taken up as an integral part of the project's social and environmental assessment process. Public is informed about the project at every stage of execution. During survey also PEDM & POWERGRID's site officials meet people and informed them about the routing of transmission/distribution line. During the construction, every individual, on whose land tower is erected and people affected by RoW, are consulted. There were many informal group and public consultation meetings conducted during survey of the entire routes

[2] *As per the present provision in the Electricity Act, 2003 read with relevant provisions of Indian Telegraph Act, 1885 all the damages without acquisition of subject land accrued to person while placing the tower and line are to be compensated.*

of transmission lines and substation sites. The process of such consultation will be continued during project implementation and even during Operation & Maintenance (O&M) stage. The draft/ summary CPTD will be disclosed to the affected households and other stakeholders by placing it on website. PEDM & POWERGRID's site officials visit construction sites frequently during construction and meet with APs and discuss about norms and practices of damages and compensation to be paid for them. The executive summary of the CPTD/ Entitlement Matrix in local language will be placed at construction offices/ sites.

vii. Grievance Redress Mechanism (GRM) is an integral part of project implementation, operation and maintenance stage of the project. For handling grievance, Grievance Redress Committee (GRC) has been established at two places, one at the project/ scheme level and another at corporate/ head quarter level. The GRC includes member from PEDM, POWERGRID, Local Administration, Village Panchayat Members, Affected Persons representative and reputed persons from the society and representative from the tribal autonomous district councils selected/decided on nomination basis under the chairmanship of project head. The composition of GRC has been disclosed in Panchayat/ village council office and concerned district headquarter for wider coverage. In case of any complaint, GRC meeting shall be convened within 15 days. If project level GRC is not able to take decision it may refer the complaint to corporate GRC for solution. GRC endeavors to pronounce its decision within 30-45 days of receiving grievances. In case complainant/ appellant is not satisfied with the decision of project level GRC they can make an appeal to corporate GRC for review. The proposed mechanism does not impede access to the country's judicial or administrative remedies at any stage. Further, grievance redressal is also has in-built tree/ crop compensation in the process where affected persons are given a chance to place their grievances after issuance of notice by revenue officials on the basis of assessment of actual damages. Grievances received towards compensation are generally addressed in open forum and in the presence of many witnesses. Process of spot verification and random checking by the district collector also provides forum for raising the grievance towards any irregularity/ complaint.

viii. The CPTD is based on PEDM's ESPPF. Being a transmission project, the relevant national laws applicable for this project are (i) The Electricity Act, 2003 and (ii) The Indian Telegraph Act, 1885. The compensation principles adopted for the project shall comply with applicable laws and regulations of the Government of India, PEDM's ESPPF as well as the World Bank Safeguard Policies.

ix. APs will be entitled for compensation for temporary damages to crops/ trees/ structures etc. as per the Entitlement Matrix (EM) given in **E-1**. Temporary damage will occur during construction of transmission lines for which compensation will be paid as per eligibility criteria of EM and other applicable norms. All APs are paid compensation for actual damages irrespective of their religion,

caste and their economic status including non-title holders. However vulnerable households are provided additional one time lump-sum assistance on recommendation of State/local Authorities. As per policy provision construction contractors shall be encouraged to hire local labor that has the necessary skills.

E-1: Entitlement Matrix

Sl.	Type of Issue/ Impact	Beneficiary	Entitlement Options
1.	Land area below tower base **(#)**	Owner	100% land cost at market value as ascertained by revenue authorities or based on negotiated settlement without actual acquisition/ title transfer.
2.	Loss/ damage to crops and trees in line corridor	Owner/ Tenant/ sharecropper/ leaseholder	Compensation to actual cultivator at market rate for crops and 8 years income for fruit bearing trees*. APs will be given advance notice to harvest their crops. All timber* will be allowed to retain by the owner.
3.	Other damages (if applicable)	All APs	Actual cost as assessed by the concerned authority.
4.	Loss of structure		
(i)	House	Titleholders	Cash compensation at replacement cost (without deduction for salvaged material and depreciation value) plus Rs. 25,000/- assistance (based on prevailing GOI norms for weaker section housing) for construction of house plus transition benefits as per category-5 below.
(ii)	Shop/ Institutions/ Cattle shed	Individual/ Titleholders	Cash compensation plus Rs. 10000/- for construction of working shed/shop plus transition benefits as per category-5 below
(iii)	Losses during transition under (i) & (ii) above for Shifting / Transport	Family/ unit	Provision of transport or equivalent cash for shifting of material/ cattle from existing place to alternate place
(iv)	Tribal/ Vulnerable APs	Vulnerable APs3	One time additional lump sum assistance not exceeding 25% of total compensation on recommendation of State Authority/ADC/VC.

(#) Provisions of 100% compensation for tower base and no compensation for corridor area as per Govt. of Mizoram notification 01.05.19.

* ***Assistance/ help of Forest department for timber yielding trees and Horticulture department for fruit bearing trees shall be taken for assessing the true value.***

x. Due to inherent flexibility in routing of line, no major damages to structures or physical displacement is envisaged in transmission/distribution line. Hence, there are no adverse impacts such as permanent loss of assets, livelihood loss or physical resettlement/relocation due to project intervention. However, in case it is completely unavoidable, compensation for structures as decided by committee based on government norms and entitlement matrix shall be provided. A notice for

[3] Vulnerable APs include scheduled tribes residing in scheduled areas/ physically handicapped/ disabled families etc.

damage is issued to APs and the joint measurement by PEDM / POWERGRID and and APs is carried out before start of construction and same is assessed and verified by revenue official during/after construction for estimation of compensation against actual damages. Hence, compensation is paid in parallel with the construction activity of transmission/distribution line. The cost estimate for the project includes eligible compensation for loss of crops, trees and support cost for implementation of CPTD, monitoring, other administrative cost etc. The budget estimation presented in CPTD is tentative and may get revised during the course of implementation. The total indicative cost is estimated to be INR 390.49 Lakhs equivalent to USD 0.602 million.

xi. The implementation and monitoring are critical activities which shall be followed as per Implementation Chart/ Schedule provided in Chapter X. POWERGRID will be the Implementing Agency (IA) for the Project. For the day to day implementation of Project activities, PMC Project Implementation Units (PPIUs) located in each participating State, has been formed including members of Utility on deputation, with its personnel being distributed over work site & working in close association with the State Project Coordination Unit (SPCU)/ Central Project Implementation Unit (CPIU). PPIU report to State level “Project Manager” nominated by the Project In-charge of IA. The IA will have a Core team stationed at the CPIU on permanent basis and other IA officers (with required skills) will visit as and when required by this core team. This team shall represent IA and shall be responsible for all coordination with SPCU, PIU, within IA and MoP, GoI. CPIU shall also assist MoP, GoI in monitoring project progress and in its coordination with The Bank.

xii. Monitoring will be the responsibility of both PEDM & IA. PEDM / POWERGRID will submit semi-annual monitoring reports on their implementation performance and submit the reports to The World Bank. If required, PEDM / POWERGRID will engage the services of an independent agency/ external monitoring for which necessary provisions have been kept in the budget.

I. INTRODUCTION AND PROJECT DESCRIPTION

1.1. Project Background

1. Recognizing that intrastate T & D systems in the North Eastern States (NER) states have remained very weak and that there is a critical need to improve the performance of these networks, the Central Electricity Authority (CEA) developed a comprehensive scheme for the NER in consultation with POWERGRID and the concerned state governments. This scheme is intended to (a) augment the existing T&D infrastructure to improve the reliability of service delivery across all the NER states and (b) build institutional capacity of the power utilities and departments in the NER. This scheme is part of the GoI's wider efforts to develop energy resources in the NER for electricity supply within the region, to strengthen transmission networks, expand and strengthen sub-transmission systems, and extend last mile electricity connectivity to household.

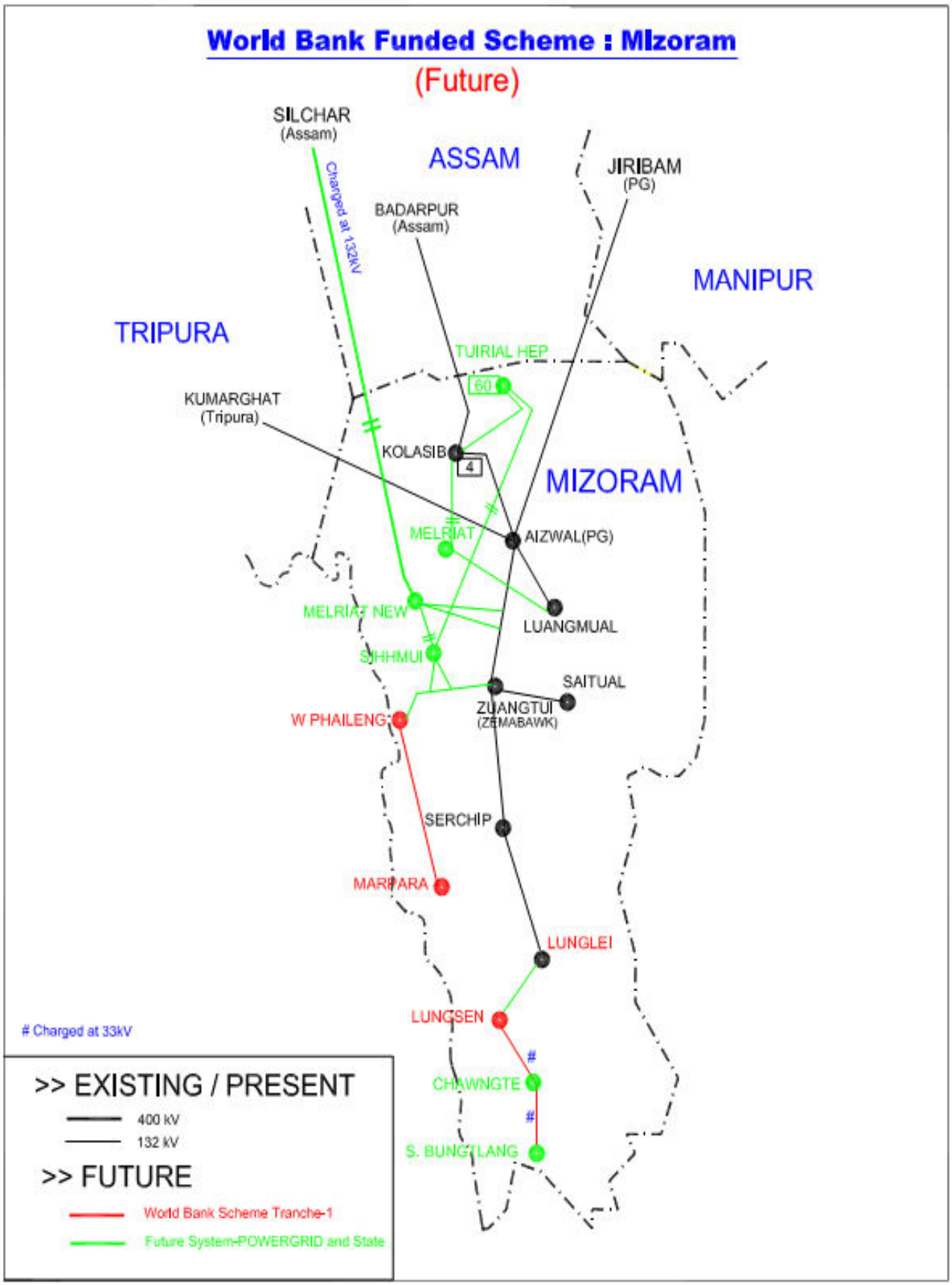
2. GoI requested for World Bank's support in implementing a set of priority investments in six NER states. In 2016, the World Bank (WB) has approved a loan (IBRD 470 USD Million) to the Government of India (GoI) for North Eastern Region Power System Improvement Project (NERPSIP) which aims to create a robust intrastate transmission and distribution network in all the six (6) North Eastern States including Mizoram. The project being funded on 50:50 (World Bank loan: GoI) basis except the component of capacity building for Rs.89 crore, which GoI will bear entirely. The scheme is to be taken up under a new Central Sector Plan Scheme of Ministry of Power (MoP).

3. Ministry of Power, GoI has appointed POWERGRID as Implementing Agency (IA) to six North Eastern States for the said project. However, the ownership of the assets shall be with the respective State Utilities/ State Government which upon progressive commissioning shall be handed over to them for taking care of Operation and Maintenance of assets.

4. The project will be implemented over a seven-year period and has two components, namely Component A: Priority Investments for Strengthening Intrastate Transmission, Sub-transmission, and Distribution Systems, and Component B: Technical Assistance for Capacity Building and Institutional Strengthening (CBIS) of Power Utilities and Departments of Participating States.

5. The scope of work under NERPSIP in the state of Mizoram includes construction of 143 km of 132 kV transmission lines & associated 4 Nos. (03 No. New & 01 No. augmentation) and 5.0 km of 33kV distribution lines & associated 1 No. new 33/11 kV substation spread across the State. The power map of Mizoram indicating the existing intra-state transmission network along with proposed project under Tranche-1 of NERPSIP is presented in **Figure-1.1**.

Figure-1.1: Power Map of Mizoram along with proposed project



1.2. Project Components

6. The project components under the scope of present CPTD include following transmission/ distribution lines and associated substations proposed in Lunglei & Lawngtlai districts of Mizoram State;

A. Transmission Scheme Component

Transmission Lines:

1. Lungsen - Chawngte 132 kV S/C line - 30.985 km
2. Chawngte - S. Bungtlang 132 kV S/C line - 35.00 km

Substations:

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B. Distribution Scheme Component

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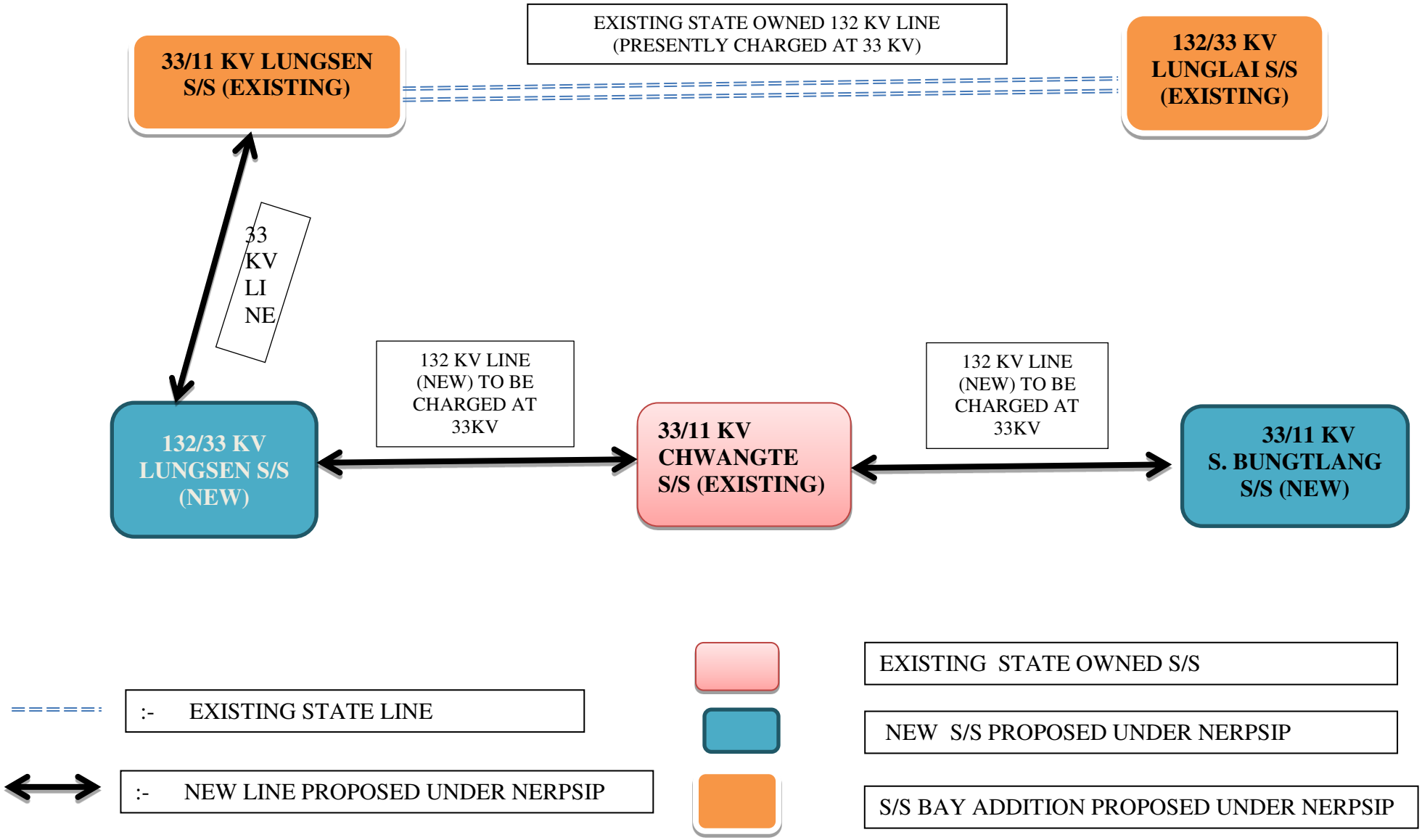
Substation:

1. Establishment of 33/11kV substation at South Bungtlang

7. The schematic diagram of proposed transmission/ distribution network under Tranche-1 of NERPSIP is shown in **Figure-1.2**.

Figure-1.2: Proposed Transmission Network in Lunglei & Lawngtlai Districts under NERPSIP



1.3. Objective of Compensation Plan for Temporary Damages (CPTD)

8. The primary objective of the CPTD is to identify impacts/damages and to plan measures to mitigate losses likely to be caused by the projects. The CPTD is based on the general findings of field visits, detailed survey and meetings with various project-affected persons in the project areas. The CPTD report includes (i) introduction and project description (ii) socio-economic information and profile (iii) legal & regulatory framework (iv) project impacts,(v) entitlement, assistance and benefit (vi) information disclosure, consultation and participation (vii) institutional arrangements (viii) grievance redress mechanism (ix) budget (x) implementation schedule & (xi) monitoring and reporting.

1.4. Scope and Limitation of the CPTD

9. Based on the assessment of proposed project components and intervention as well as provisions of existing law/regulations, it has been established that no permanent land acquisition is involved and only temporary impacts on land and loss of standing crops/ trees are anticipated. The present CPTD has been prepared based on the detailed survey/ investigation. However, the temporary impacts on land and loss of crops/ trees occurred only during the project implementation/ construction. Therefore, the CPTD remains as draft, as actual temporary impacts on crop/tree including details of Affected Persons (AP) shall be ascertained during check survey and tower spotting once the construction contractor is mobilized for implementation. PEDM/ POWERGRID[4] provide compensation for actual damages after assessment by revenue authority. Check survey is done progressively during the construction of the transmission/distribution line. Normally the work is done in off season when there is no standing crop. The compensation for damage is assessed in actual after construction activities of transmission lines in three stages i.e. after completion of foundation, tower erection and stringing of conductor. The payment of compensation is also paid in three instances, if there are damages during all the above three stages. Assessment of damages at each stage and subsequent payment of compensation is a continuous process. Hence, CPTD updating will also be a continuous process during construction and updated data on APs shall be disclosed through semi-annual E & S monitoring report submitted by PEDM/ POWERGRID.

[4] *For the purpose of CPTD, PEDM and POWERGRID may be referred as SPCU and PPIU respectively. For further details, please refer Chapter - VII institutional arrangements.*

1.5. Measures to Minimize Impact

10. In keeping with provisions of ESPPF and Bank's Safeguard Policies, PEDM/ POWERGRID has selected and finalized the routes of transmission line with due consideration of avoidance and minimization to the extent possible and same principles shall also be followed during construction stages of project to further restrict the possibility of temporary damages on crops/ trees/ structures etc. in the Right of Way (RoW). Similarly, the route of distribution lines are mostly selected/ finalized along the existing roads (PWD roads/ Village roads etc.) involving minimum habituated areas and also through barren lands wherever possible. Regular field visits and public consultations helped in developing the measures for further minimizing the possible social impacts.

11. For transmission line there is no permanent land acquisition involved as per applicable legal framework i.e. in exercise of the powers under Indian Telegraph Act-1885. Part 3, section 10 to 16 conferred under Section 164 of the Electricity Act, 2003 through Power & Electricity Dept., Govt. of Mizoram vide notification dated 3rd June 2016, PEDM have the mandate to place and maintain transmission lines under/ over/ along or across and posts in or upon, any immoveable property. However, clause 10 (d) of same act stipulates that the user agency shall pay full compensation to all interested for any damages sustained during the execution of said work. Therefore, PEDM/ POWERGRID have developed a procedure which is designed to minimize impacts, during the preliminary survey/ investigation (for screening & scoping of the project with at least 3 alternative route alignments), thereafter during detailed survey (spot)/ design followed by foundation work, tower erection and during the stringing of conductors.

12. All tower foundations and tower footings are dug and laid, including transportation of material and land clearance, generally at the end of a crop season to avoid impacts on cultivations and need for compensation. After construction of transmission towers, farmers are allowed to continue agricultural activity below tower.

13. Because the concrete needs time to dry and settle, all towers are erected normally three weeks after casting of foundation. Thus, both foundation and erection works are generally completed in one gap between two crop seasons.

14. Given the limited time needed for the stringing, the latter can be done right after the tower construction, before the following crop season.

15. For this reason no household is significantly affected due to the project. Thus, productive loss due to construction is negligible. However, due care shall be taken to avoid damages to crop/

trees by taking up the construction activities during lean period or post-harvest season. As per the prevailing norms farming activity shall be allowed after the construction work is completed. All affected farmers will be compensated for all sorts of damages during construction as per the laid down procedure.

1.6. Route Selection and Study of Alternatives

16. For selection of optimum route, the following points are taken into consideration:

(i) The route of the proposed transmission/ distribution lines does not involve any human displacement/ rehabilitation.
(ii) Any monument of cultural or historical importance is not affected by the route of the transmission/ distribution line.
(iii) The proposed line route does not create any threat to the survival of any community with special reference to Tribal Community.
(iv) The proposed line route does not affect any public utility services like playgrounds, schools, other establishments etc.
(v) The line route does not pass through any National Parks, Sanctuaries etc.
(vi) The line route does not infringe with area of natural resources.

17. In order to achieve this, PEDM/ POWERGRID undertake route selection for individual line in close consultation with representatives of concerned Forest Department and the Department of Revenue. Although under the law, PEDM has the right of eminent domain yet alternative alignments are considered, keeping in mind, the above-mentioned factors during site selection, with minor alterations often added to avoid environmentally sensitive areas and settlements at execution stage.

a. As a rule, alignments are generally cited away from major towns, whenever possible, to account for future urban expansion.
b. Similarly, forests are avoided to the extent possible, and when it is not possible, a route is selected in consultation with the local Divisional Forest Officer, that causes minimum damage to existing forest resources.
c. Alignments are selected to avoid wetlands and unstable areas for both financial and environmental reasons.

18. In addition, care is also taken to avoid National Parks and Wildlife Sanctuaries and any other forest area rich in wildlife. Keeping above in mind the route of proposed lines have been so aligned that it takes care of above factors. As such different alternatives were studied with the help

of Govt. published data like Forest atlas, Survey of India topo maps, satellite imageries etc. to arrive at most optimum sections of the route which can be taken up for detailed survey and assessment of environmental & social impacts for their proper management.

19. The comparative details of three alternatives in respect of proposed lines are presented in **Annexure-1**.

II. SOCIOECONOMIC INFORMATION AND PROFILE

2.1. General

20. The socio-economic profile of the project area is based on general information collected from various secondary sources. As the assets of any sorts will not be acquired but for temporary damage to crops/ trees or any other structures adequate compensation as per norms shall be paid to all APs. This chapter provides broad socio-economic profile in terms of demography, literacy, employment and other infrastructure etc. in the State of Mizoram and project districts in particular i.e. Lunglei & Lawngtlai through which the various lines will traverse. Following section briefly discuss socio-economic profile of the State and project area district in particular.

2.2. Socio-Economic Profile

2.2.1. Land Use

21. Mizoram is located in the north-eastern part of the country between 22°19' to 24°19' North latitudes and 92°16' to 93°26' East longitudes covering a geographical area of 21081 sq. km. It is a landlocked state surrounded by Myanmar in the east, Manipur and Assam in the north, Tripura and Bangladesh in the west and again Myanmar in the south. It has a total of 722 km international boundary with Myanmar (404 km) and Bangladesh (318 km). Geographically, it is 277 km from north to south, and 121 km from east to west with inter State boundary Assam (123 km), Tripura (277 km) and Manipur (95 km). The capital is Aizawl, in the north-central part of the state. Nearest railhead is Silchar, which is in Assam about 184 km away from the capital Aizwal. Besides Air service, at present through the gateway of N-E i.e. Guwahati, the State is connected to the Indian Road network through Silchar in Assam to the National Highway 54. Another highway, NH-150 connects the state's Seling Mizoram to Imphal Manipur and NH-40A links the State with Tripura. The general land use pattern of the State is given in **Table-2.1**.

Table-2.1: Land Use Pattern

Land Use	Area in '000 ha	Percentage
Total geographical area	2,108	
Reporting area for land utilization	2,075	100.00
Forests	1,585	76.39
Not available for cultivation	95	4.58
Permanent pastures and other grazing lands	05	0.24
Land under misc. tree crops & groves	41	1.98
Cultivable wasteland	07	0.34
Fallow lands other than current fallows	183	8.82
Current Fallows	61	2.94
Net area sown	97	4.97

Source: Land use statistics, Ministry of Agriculture, GOI, 2011-12

22. Lunglei district is located at 22.88°N & 92.73°E with an average elevation of 722 metres. Total geographical area of the district is 4,538 sq.km. Lawngtlai is located at 22.50°N 92.90°E and total geographic area of the district is 2,557 sq. km.

2.2.2. Climate

23. The climate of Mizoram can be classified as Moist Tropical to Moist Sub-tropical. The winter temperature varies from 11° C to 24° C, while summer temperature varies from 18° C to 29° C. The region is influenced by monsoons, raining heavily from May to September, while winters are relatively rain free. As per National Disaster Management Authority (NDMA), the state is located in a region, where Cyclones and Landslides can cause weather related emergencies. The average annual rainfall of the state ranges from 2,160 mm to 3,500 mm.

24. The climate of the Lunglei district is characterized by tropical humid climate with cool summer and cold winter. Winter temperature varies from 110 to 130 C in general. The winter season is however, without snow. The average annual rain fall is 2313.8 mm.

25. The Lawngtlai district experiences moderate climate with highest relative humidity of 85% occurring during south west monsoon. Heavy rainfall is usually received during the month from May to September. The temperature ranges from 15º C to 25º C during winter. The average annual rainfall of the district is 2850 mm. the rainfall is mainly due to the monsoons from early May to late September. The hottest period starts from the month of March up to August every year.

2.2.3. Water Resources

26. The most important and useful rivers of Mizoram are the Tlawng (also known as Dhaleswari or Katakhal), Tut (Gutur), Tuirial (Sonai) and Tuivawl which flow through the northern territory and eventually join river Barak in Cachar. The Koldoyne (Chhimtuipui) which originates in Myanmar, is an important river in the south Mizoram. It has four tributaries and the river is in patches. The Western part is drained by Karnaphuli (Khawthlang tuipui) and its tributaries.

27. The Lakes in the state are scattered all over the state. But the most important of them are Palak, Tamdil, Rungdil; and Rengdil. The Palak lake is situated in Chhimtuipui District in southern Mizoram and covers an area of 30 Ha. It is believed the lake was created as a result of an earthquake or a flood. The Tamdil lake is a natural lake situated 85 kms from Aizawal.

28. The main rivers flowing through project districts are Kaladan, Tuiphang Chhimtuipui, Ngengpui, Chawngte etc. However, the project activity is not going to impact these water bodies in any way as the route alignment of proposed transmission and distribution lines has only one river

crossing of normal span over Tuichang River.

2.2.4. Soil

29. Typical soils in the state are sandy loam and clay loam, which have been heavily leached due to the high slopes leaving it porous and lacking in minerals or humus. The soils in the state are near neutral to strongly acidic (pH 4.5 - 7.3).

2.2.5. Ecological Resources

30. The recorded forest area in the state is 16,717. sq. km which is around 79.30% of its geographical area. However, based on the interpretation of satellite data of January 2011, Forest cover of state is spread over an area of 19,054 sq.km. which is 90.38% of the State's geographical area. According to legal status, Reserve Forest constitutes 7909 sq. km, Protected Forests constitute 3568 sq. km and un-classed forests constitute 5240 sq. km of the total forest area. In terms of forest canopy density classes, the State has 138.00 sq.km. very dense forest, 5900 sq.km. moderately dense forest and 13,016 sq.km. open forest. Forest types occurring in the State are Tropical Semi Evergreen, Tropical Moist Deciduous, Subtropical Broadleaved Hill and Subtropical Pine Forests. Mizoram has two National Parks and eight Wildlife Sanctuaries covering an area of 1,240.75 Sq km which constitute 5.89% of the state's geographical area. Dampa Tiger Reserve is situated in the state covering an area of 500 sq km. Four protected areas are located in Lunglei and Lawngtlai districts. However, the proposed transmission and distribution lines don't pass through any forest area, protected area like national parks, sanctuaries, elephant reserves/corridors and biosphere reserves etc. and are sited at sufficient distance from these protected areas through careful route selection.

2.2.6. Crops

31. Jhum cultivation is still the most popular mode of cultivation carried out in the State. Paddy is the primary food crop of the state. Mandarin Orange, Hatkora, Lemon, Banana, Pineapple, Papaya, Grape, Avocado are the main fruits grown in the state. The major vegetables grown in the state include Squash, Potato, Cabbage, Brinjal, Tomato, French Bean, Lady's Finger, Pumpkin, French Mustard, Bitter gourd etc. Various spices like Turmeric, Chillies, Ginger and Chillies are also grown.

2.2.7. Human and Economic Development

32. Mizoram's gross state domestic product (GSDP) in 2012-2013 stood at Rs. 7714 crores. The state's gross state domestic product (GSDP) growth rate was nearly 10% annually over 2001-

2013 period. Both Agriculture and Industries contribute around 20% each in state's economy, while the contribution of tertiary/service sector stands at 60%. Though, the contribution of Agriculture in economy is around 20%, about 60% of state's population depends upon agriculture and allied sector.

33. Industrial sector in Mizoram is limited to Micro and Small Industries. Upto 2010-11, 8088 small scale industrial units were registered in the state. (Ref: Economic Survey, Mizoram 2012-13). However, there is good potential for development of Agri based and Forest product based industries in the state. Zoram Industrial Development Corporation (ZIDCO) has been established by the state Govt in collaboration with the Industrial Development Bank of India (IDBI). The purpose of ZIDCO is to set up industrial units of its own as well as to assist various enterprises. Another similar organization called Zoram Electronics Development Corporation has been established to promote electronics industry. Similarly, a State Government Undertaking called Mizoram Food and Allied Industries Corporation has been established to develop industries based on agro-horticulture products. With abundant scenic beauty and a pleasant climate, Mizoram has huge potential to develop its tourism related industries.

34. Lawngtlai district one-third of the total inhabitants of rely entirely on agriculture, which is mostly based on traditional method of shifting cultivation. Only a small fraction of urban population is involved in permanent employment, such as state government service, bank and schools, and few engaged in small-scale business. The economic status of the district is in fact the lowest among the districts in Mizoram. Similarly most of the indigenous local inhabitants of Lunglei district depends on agriculture and earn their livelihood from growing crops. The cash crops of coffee and rubber help the district to earn its revenue. The farmers of the district mostly practice the traditional method of shifting cultivation, which is popularly referred to as jhum. Rice is the principal crop in the agricultural economy. Cottage industries produce handloomed cloth, furniture, agricultural equipment, woven textiles, and bamboo and cane work.

2.2.8. Demography Features

2.2.8.1. Total Population

35. Total population in Mizoram stands at 10,97,206 of which 5,25,435 (47.89%) population belong to rural area and 5,71,771 (52.11%) population belong to urban area. The Lunglei district has a total population of 1,61,428 of which 57.41% resides in rural areas and 42.59% belongs to urban areas. The total population of Lawngtlai district stands at 1,17,894 of which 82.33% population resides at rural area and 17.67% belongs to urban area. Details are given in **Table-2.2**.

Table-2.2: Details on Total Population

Name	Total Population	Total (Rural)	Total (Urban)	Percentage (Rural)	Percentage (Urban)
Mizoram	10,97,206	5,25,435	5,71,771	47.89	52.11
Lunglei	1,61,428	92,676	68,752	57.41	42.59
Lawngtlai	1,17,894	97,064	20,830	82.33	17.67

Source: Census of India, 2011

2.2.8.2. Male and Female Population

36. Out of total population 10,97,206 of the State, male population constitutes 5,55,339 (50.61%) and female population is 5,41,867 (49.39%). Total population in Lunglei district stands at 1,61,428 of which male population stands at 82,891 (51.35%) and female population stands at 78,537 (48.65%) with sex ratio 947 which is lower than State's average of 976. Similarly the total population of Lawngtlai district is 1,17,894 in which 51.40% and 48.60% of total population belong to male and female respectively with a sex ratio of 945 which is lower than the State's Sex Ratio. Details are given in **Table-2.3**.

Table 2.3: Details on Male/ Female Population

Name /Particulars	Total Population	Total Male	Total Female	Percentage (Male)	Percentage (Female)	Sex Ratio
Mizoram	10,97,206	5,55,339	5,41,867	50.61	49.39	976
Lunglei	1,61,428	82,891	78,537	51.35	48.65	947
Lawngtlai	1,17,894	60,599	57,295	51.40	48.60	945

Source: Census of India, 2011

2.2.8.3. Scheduled Caste (SC) and Scheduled Tribe (ST) Population

37. As per census 2011, the Scheduled Caste (SC) & Scheduled Tribe (ST) population of the State stands at 1,218 (0.11%) and 10,36,115 (94.43%), respectively. The Lunglei district has a total SC population of 178 (0.11%) and ST population of 1,53,533 (95.11%). Similarly the SC and ST population of Lawngtlai district stand at 146 (0.12%) and 1,12,354 (95.30%) respectively. Details are given in **Table-2.4**.

Table-2.4: Details on Percentage SC/ ST

Name/ Particulars	Total Population	Total SC Population	Percentage of SC Population	Total ST Population	Percentage of ST Population
Mizoram	10,97,206	1,218	0.11	10,36,115	94.43
Lunglei	1,61,428	178	0.11	1,53,533	95.11
Lawngtlai	1,17,894	146	0.12	1,12,354	95.30

Source: Census of India, 2011

2.2.8.4. Literacy

38. The literacy rate of Lunglei district stands at 75.03% which is slightly less than State's

average (77.30%). However, the female literacy rate of the district is 46.74%. In Lawngtlai district literacy rate stands at 53.32% with female literacy rate of 42.02%. Details are given in **Table-2.5**.

Table-2.5: Literate and Illiterate Population

Name/Particulars	Total Population	Total Literate	Percentage of Literate	Percentage (Male)	Percentage (Female)
Mizoram	10,97,206	8,48,175	77.30	51.70	48.30
Lunglei	1,61,428	1,21,122	75.03	53.26	46.74
Lawngtlai	1,17,894	62,861	53.32	57.98	42.02

Source: Census of India, 2011

1.3.8.5. Total Workers (Male and Female)

39. Total population into work in Mizoram stands at 4,86,705 of which total Male (work) population stands at 2,90,740 (59.74%) and total female (Work) population stands at 1,95,965 (40.26%). The Lunglei district has a total work population of 78,292 of which total Male (work) population stands at 46,230 (59.05%) and total female (Work) population stands at 32,062 (40.95%). However in Lawngtlai district has a total work population of 45,566 of which total Male (work) population stands at 28,517 (62.58%) and total female (Work) population stands at 28,517 (37.42%). Details are given in **Table-2.6**.

Table-2.6: Details on Workers

Name/ Particulars	Total Population (Work)	Total Male (Work)	Total Female (Work)	Percentage (Male)	Percentage (Female)
Mizoram	4,86,705	2,90,740	1,95,965	59.74	40.26
Lunglei	78,292	46,230	32,062	59.05	40.95
Lawngtlai	45,566	28,517	17,049	62.58	37.42

Source: Census of India, 2011

2.3.8.6. Households

40. Total Households in Mizoram stands at 2,22,853 of which 1,05,812 (47.48%) households belong to rural area and 1,17,041 (52.52%) households belong to urban area. Lunglei district has a total of 33,058 households of which 18,943 (57.30%) households belong to rural area and 14,115 (42.70%) households belong to urban area. Similarly in Lunglei district the total number of households stands at 22,984 of which 19,074 (82.99%) households belong to rural area and 3,910 (17.01%) households belong to urban area. Details are given in **Table-2.7**.

Table-2.7: Details on Households

Name/ Particulars	Total Households	Total (Rural)	Total (Urban)	Percentage (Rural)	Percentage (Urban)
Mizoram	2,22,853	1,05,812	1,17,041	47.48	52.52
Lunglei	33,058	18,943	14,115	57.30	42.70
Lawngtlai	22,984	19,074	3,910	82.99	17.01

Source: Census of India, 2011

III. LEGAL & REGULATORY FRAMEWORK

3.1. Overview

41. In India, compensation for land acquisition (LA) and rehabilitation/resettlement of project affected persons/ families is governed by the National law i.e. “The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (hereafter RFCTLARR, 2013”), effective from 1st January 2014. Since in case of transmission line project, land for tower/pole and right of way is not acquired and ownership of land remains with the owner this act is not applicable. However, as per existing laws6 compensation for all damages is paid to the individual land owner. The relevant national laws applicable for transmission project are (i) The Electricity Act, 2003 and (ii) The Indian Telegraph Act, 1885. The compensation principles adopted in the Entitlement Matrix for this project comply with applicable laws /regulations of the GOI/ State Govt., World Bank’s Safeguard Policies and PEDM’s ESPPF.

3.2. Statutory Requirements

42. Transmission lines are constructed under the ambit of The Electricity Act, 2003. The provisions stipulated in section 67-68 of the Electricity Act, 2003 read with section 10 & 16 of the Indian Telegraph Act, 1885 governs the compensation as PEDM has been vested with the powers of Telegraph Authority vide Dept. of Power, Govt. of Mizoram notification dated 3rd June 2016, under Section - 164 of the Electricity Act. As per the provision of Indian Telegraph Act, 1885 under section 10 (b), PEDM is not authorized to acquire any land hence land under tower is not acquired. However, compensation for all damages is paid to the individual land owner as per the provision of Section-10 (d) of Indian Telegraph Act, 1885.

43. The provisions in the Electricity Act, 2003 and Indian Telegraph Act, 1885 regarding compensation for laying of transmission lines are as follows:

3.2.1. The Electricity Act, 2003, Part-VIII, Section 67 & 68

Quote:

Section 67 (3-5):

(3) A licensee shall, in exercise of any of the powers conferred by or under this section and the rules made there under, cause as little damage, detriment and inconvenience as may be, and shall make full compensation for any damage, detriment or inconvenience caused by him or by any one employed by him.

(4) Where any difference or dispute [including amount of compensation under sub-section (3)] arises under this section, the matter shall be determined by the Appropriate Commission.

(5) The Appropriate Commission, while determining any difference or dispute arising under this section in addition to any compensation under sub-section (3), may impose a penalty not exceeding the amount of compensation payable under that sub-section.

Section 68 (5 & 6):

(5) Where any ***tree standing or lying near an overhead line or where any structure or other object which has been placed or has fallen near an overhead line*** *subsequent to the placing of such line, interrupts or interferes with, or is likely to interrupt or interfere with, the conveyance or transmission of electricity or to interrupt or interfere with, the conveyance or transmission of electricity or the accessibility of any works, an Executive Magistrate or authority specified by the Appropriate Government may, on the application of the licensee, cause the tree, structure or object to be removed or otherwise dealt with as he or it thinks fit.*

(6) When disposing of an application under sub-section (5), an Executive Magistrate or authority specified under that sub-section shall, in the case of any tree in existence before the placing of the overhead line, ***award to the person interested in the tree such compensation as he thinks reasonable, and such person may recover the same from the licensee.***

Explanation - For purposes of this section, the expression "tree" shall be deemed to include any shrub, hedge, jungle growth or other plant.

Unquote

3.2.2. The Indian Telegraph Act, 1885, Part-III, Section 10:

Quote:

Section 10 – *The telegraph authority may, from time to time, place and maintain a telegraph line under, over, along, or across, and posts in or upon any immovable property, Provided that*

(a) the telegraph authority shall not exercise the powers conferred by this section except for the purposes of a telegraph established or maintained by the [Central Government], or to be so established or maintained;

(b) ***the [Central Government] shall not acquire any right other than that of user only*** *in the property under, over, along, across in or upon which the telegraph authority places any telegraph line or post; and*

(c) except as hereinafter provided, the telegraph authority shall not exercise those powers in respect of any property vested in or under the control or management of any local authority, without the permission of that authority; and

(d) in the exercise of the powers conferred by this section, the telegraph ***authority shall do as little damage as possible, and, when it has exercised those powers in respect of any***

property other than that referred to in clause (c), shall pay full compensation to all persons interested for any damage sustained by them *by reason of the exercise of those powers.*

Unquote

Section 16 of the Indian Telegraph Act, 1885 which stipulates as under:

16. Exercise of powers conferred by section 10, and disputes as to compensation, in case of property other than that of a local authority:

(1) If the exercise of the powers mentioned in Section 10 in respect of property referred to in clause (d) of that section is resisted or obstructed, the District Magistrate may, in his discretion, order that the telegraph authority shall be permitted to exercise them.

(2) If, after the making of an order under sub section (1), any person resists the exercise of those powers, or, having control over the property, does not give all facilities for this being exercised, he shall be deemed to have committed an offence under section 188 of the Indian Penal Code (45 of 1860).

3.3. MoP guidelines dated 15th October, 2015 for payment of compensation toward damages in regard to RoW

44. Ministry of Power (MoP) vide its order No. 3/7/2015-Trans dated 15th April'15 constituted a Committee comprising of representatives of various State Govt., MoP, Central Electricity Authority (CEA) & POWERGRID under the chairmanship of Special Secretary, MoP to analyze the issues relating to Right of Way for laying of transmission lines in the country and to suggest a uniform methodology for payment of compensation on this account. Based on recommendation of the Committee, Ministry of Power, Govt. of India vide its notification dated 15th Oct'15 has issued guidelines for payment of compensation for damages in regard to RoW Ministry of Power (MoP) has also written to all the States for taking suitable decisions regarding adoption of these guidelines considering that acquisition of land is a State subject. The said guidelines were adopted by Govt. of Mizoram vide its notification dated 1st May 2019 for implementation. The said guidelines stipulate compensation @ 100% of land value as determined by District Commissioner only.

3.4 PEDM's ESPPF

45. To address the environmental and social issues related to its power transmission and distribution projects under NERPSIP, PEDM has adopted an Environmental and Social Policy & Procedures Framework (ESPPF) in 2015 based on the principles of avoidance, minimization, and

mitigation. The ESPPF had been developed by POWERGRID on behalf of the State Utility based on ESPP of POWERGRID who has proven credentials in management of environmental and social issues of large number of power transmission projects both within and outside the country after a comprehensive review of Utility's existing policies/provisions and consultation with stakeholders.

46. ESPPF's outlines Utility's approach and commitment in dealing with the environmental and social issues relating to its transmission projects, lays down the management procedures and protocols for the purpose that includes the framework for identification, assessment, and management of environmental and social concerns at both organizational and project levels.

47. ESPPF's provides compensation to affected persons in respect of temporary damages like crop/tree/structure etc during construction of transmission line as per the eligibility criteria stipulated in Entitlement Matrix (EM) (**Table-5.1**). Accordingly, compensation is paid to eligible APs for actual damages including non-title holders such as squatter, encroacher etc. As regard land compensation for transmission line, as per prevailing practice only compensation @100% of land cost for tower base shall be paid to affected land owner.

48. Specifically on social, the following criteria and approach are considered in the ESPPF;

(i) Take due precautions to minimize disturbance to human habitations, tribal areas and places of cultural significance.
(ii) Take due care of Project Affected Persons (PAP).
(iii) Involve affected people from inception stage to operation and maintenance.
(iv) Consult affected people in issues of RoW, land acquisition or loss of livelihood.
(v) Encourage consultation with communities in identifying environmental and social implications of the project.
(vi) Guarantee entitlements and compensation to affected people as per entitlement matrix.
(vii) Share information with local communities about environmental and social implications.
(viii) Always maintain highest standards of health and safety and adequately compensate affected persons in case of any eventuality.

3.4. Basic Principles for the Project

49. The basic principles adopted for the Project are;

(i) Avoid negative impacts of land acquisition and involuntary resettlement on persons affected by the Project to the extent possible.

(ii) Where negative impacts cannot be avoided, assist affected persons (AP), in improving or at least regaining their standard of living and income.

(iii) Carry out meaningful consultations with affected persons and inform all displaced persons of their entitlements and resettlement options. Ensure their participation in planning, implementation and monitoring of the Project

(iv) Disclose all information related to, and ensure AP participation in resettlement planning and implementation.

(v) Provide compensation for acquired assets at replacement/market value in accordance with the RP/ CPTD.

(vi) Ensure that displaced persons without titles to land or any recognizable legal rights to land are eligible for resettlement assistance and compensation for loss of non-land assets.

(vii) Provide resettlement assistance and income restoration to APs.

(viii) Provide for APs not present during enumeration. However, anyone moving into the project area after will not be entitled to assistance.

(ix) Develop procedures in a transparent, consistent, and equitable manner if land acquisition is through negotiated settlement to ensure that those people who enter into negotiated settlements will maintain the same or better income and livelihood status.

(x) Provide compensation and resettlement assistance prior to taking possession of the acquired lands and properties.

(xi) Establish grievance redress mechanisms to ensure speedy resolution of disputes.

(xii) Ensure adequate budgetary support to cover implementation costs for CPTD.

(xiii) Monitoring of the implementation of CPTD.

50. Additionally, the issues related to the Right of Way (RoW) for the transmission/ distribution lines will be dealt with proper care especially for the temporary loss. For the loss of crops and trees and land cost for tower base area due compensation will be paid either by cheque/ through online transfer during construction works. Similarly, compensation (by cheque/ online transfer) to the APs for any temporary loss of crop and trees, if occurred, during the time of major maintenance and repair shall also be disbursed.

3.5. World Bank's Environmental & Social Safeguard Policies

51. The objective of Bank's policies is to prevent and mitigate undue harm to people and their environment in the development process. Safeguard policies provide a platform for the participation of stakeholders in project design, and act as an important instrument for building ownership among local populations. Operational Policies (OP) are the statement of policy

objectives and operational principles including the roles and obligations of the Borrower and the Bank, whereas Bank Procedures (BP) is the mandatory procedures to be followed by the Borrower and the Bank. Apart from these, World Bank Group Environmental, Health, and Safety (EHS) General Guidelines and EHS Guidelines for Electric Power Transmission and Distribution are also relevant for environmental protection and monitoring of transmission projects. The WB's relevant social safeguard policies and their objective are given in **Table-3.1**.

Table-3.1: World Bank's Operational Policies for Social Safeguard

Operational Policy (OP)	Policy Objectives
OP 4.11 - Physical Cultural Resources (PCR)	To preserve PCR and in avoiding their destruction or damage. PCR includes resources of archeological, paleontological, historical, architectural, and religious (including graveyards and burial sites), aesthetic, or other cultural significance.
OP 4.12 - Involuntary Resettlement	To avoid or minimize involuntary resettlement and, where this is not feasible, assist displaced persons in improving or at least restoring their livelihoods and standards of living in real terms relative to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher.
OP 4.10 - Indigenous Peoples	To ensure that the Indigenous Peoples receive social and economic benefits those are culturally appropriate and gender and inter generationally inclusive. The project shall ascertain broad community support for the project based on social assessment and free prior and informed consultation with the affected Tribal community, if any.

IV. PROJECT IMPACTS

4.1. General

52. The project does not require any private land acquisition for construction of transmission/distribution lines. Due to inherent flexibility in routing of line, no major damages to structures or physical displacement is envisaged. Hence, there are no adverse impacts such as permanent loss of assets, livelihood loss or physical resettlement/relocation due to project intervention. However, there are some social impacts due to construction of lines/ placing of towers & poles which are temporary in nature in terms of loss of standing crops/ trees/ structures in the RoW. Preliminary investigation/ survey has been carried out for transmission/distribution line to estimate/ arrive at the selection of one best feasible alignment route out of at least 3 alternative alignments studied, for detailed survey to be undertaken during execution of main contracts. The details of tower schedule depicting location & its coordinate including major crossings in proposed route alignments is placed as **Annexure-3**. The compensation for damage is assessed in actual after construction activities of transmission lines in three stages i.e. after completion of foundation, tower erection and stringing of conductor. The payment of compensation is also paid in three instances, if there are damages during all the above three stages. Assessment of damages at each stage and subsequent payment of compensation is a continuous process. Hence, CPTD updating will also be a continuous process during construction. The details of land use have been gathered to have an idea about the temporary damages that might occur during construction of the transmission lines. The RoW width is 27 and 15 meter for 132kV transmission line & 33 kV distribution line respectively.

53. Soil & Surface Geology: In plain areas impact on soil & geology will be almost negligible as the excavated pit material is stacked properly and back filled as well as used for resurfacing the area. On hill slopes where soil is disturbed will be prone to erosion is suitably protected by revetment, breast walls, and proper drainage. Besides extensive leg/ chimney extension shall be used to avoid benching or cutting of slopes to minimize the impact on slope stability.

54. The land requirement for erection of tower legs is very small i.e. for each leg of tower actual construction is done on a small square area with side length ranging from 0.20 to 0.30 meter depending on the types of tower. Four such square pieces of land will be required to place the legs of tower. The area that becomes unavailable because of the erection of tower legs for an average 132 kV D/C transmission tower ranges from 0.16-0.36 sq. m. of land. Thus, the actual impact is restricted to 4 legs of the tower and agriculture can continue as clearly depicted in the **Figure-4.1**.

In case of 33 kV distribution line area that becomes unavailable because of the erection of pole is insignificant as approx. 1 sq. ft. land area is occupied for one pole (refer **Figure. 4.2** depicting actual base area impact). Due diligence confirms that land is either agricultural or barren, and compensation (100%) towards land value in tower base areas as decided by the district authority is paid towards damages to the affected persons/land owners in addition to tree/crop damages. However, no payment will be paid for land compensation for RoW corridor as per Govt. of Mizoram notification dated 1st May 2019.

55. Crops: Construction of line in crop season is avoided as far as possible. During installation of towers, if there any impacts on agricultural activity, detailed assessment/ survey is conducted looking at existing crops, general crop patterns, seasonal particulars, nature and extent of yield. This data is compiled and analysed to study the extent and nature of impact. The compensation is in terms of yield/ hectare and rate/ quantity for prevailing crops in the area. Based on this, total compensation is calculated in consultation with revenue authorities. Compensation is paid to the owners and their acknowledgement obtained.

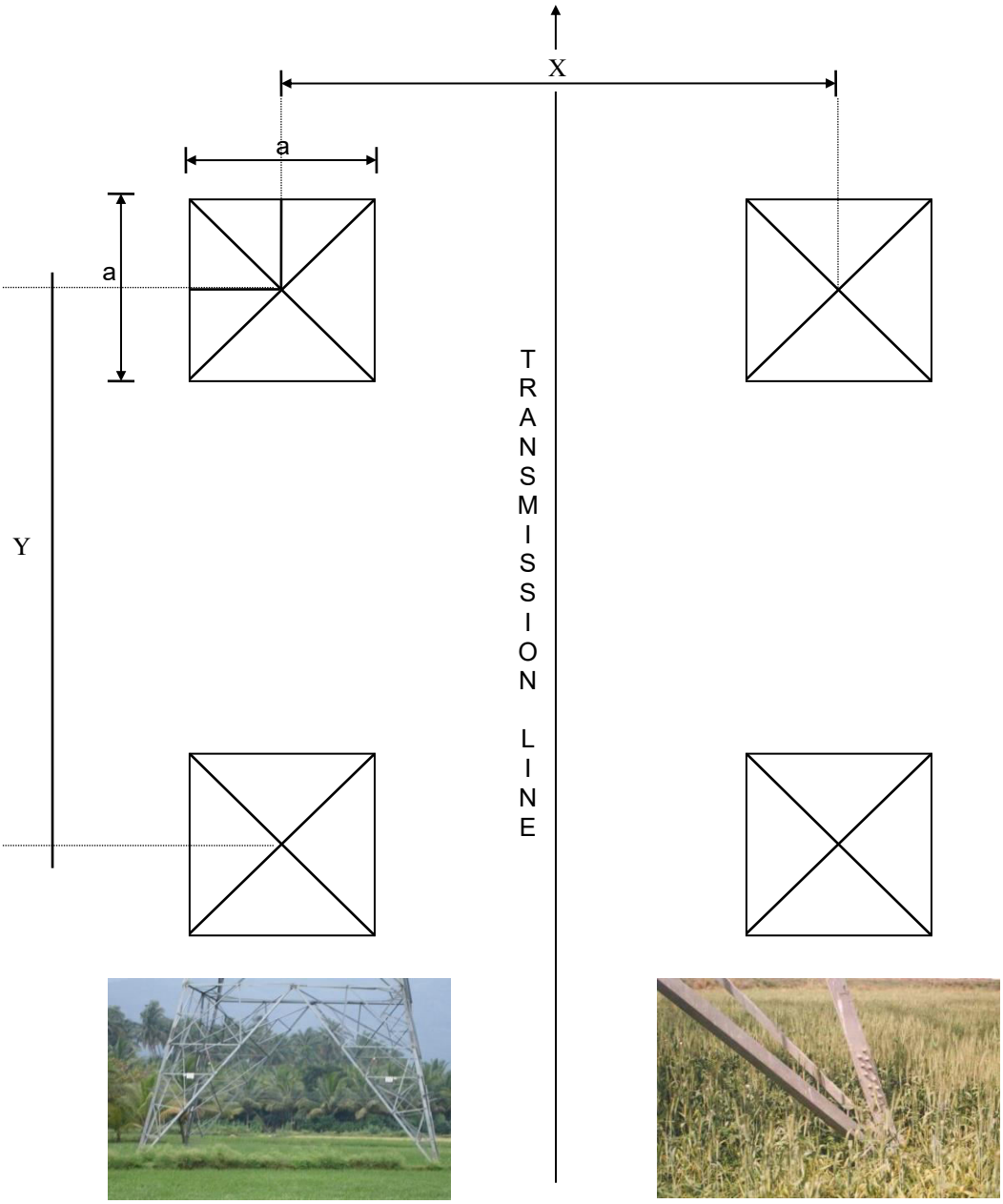
56. Trees: Construction of line in fruit bearing season is avoided as far as possible. Tree compensation is calculated on the basis of tree enumeration, tree species and an estimate of the compensation will be calculated on the basis of 8 years yield (assessed by revenue/ horticulture department). Market rates of compensation are assessed by the relevant government authorities. The total estimate is submitted for approval of the competent authority. Payments are made to owners in the presence of local revenue authorities or village head/ Sarpanch and respective acknowledgements are obtained.

57. Other Damages: Any other damages like bunds, water bodies, fish ponds, approach paths, drainage and irrigation canals etc. are at best avoided. However, if damaged the Revenue Department assess the cost of damage as per State Govt. norms. The total estimate is submitted for approval to the competent authority. Payments are made to owners in the presence of local revenue authorities or village head/ Sarpanch and respective acknowledgements are obtained and POWERGRID/ PEDM pay the compensation. Hindrances to power, telecom carrier & communication lines etc. shall be paid as per Govt. norms.

4.2. Impact due to construction of New Substation and Bay extension

The project component comprises of establishment of 2 no. of 132/33kV substations at Lungsen (new) and Lunglei (augmentation) and one 33/11kV new substation at South Bungtlang located in Lunglei and Lawngtlai districts of Mizoram. Land for all proposed substations are already

Figure-4.1: Typical Plan of Transmission Line Tower Footing



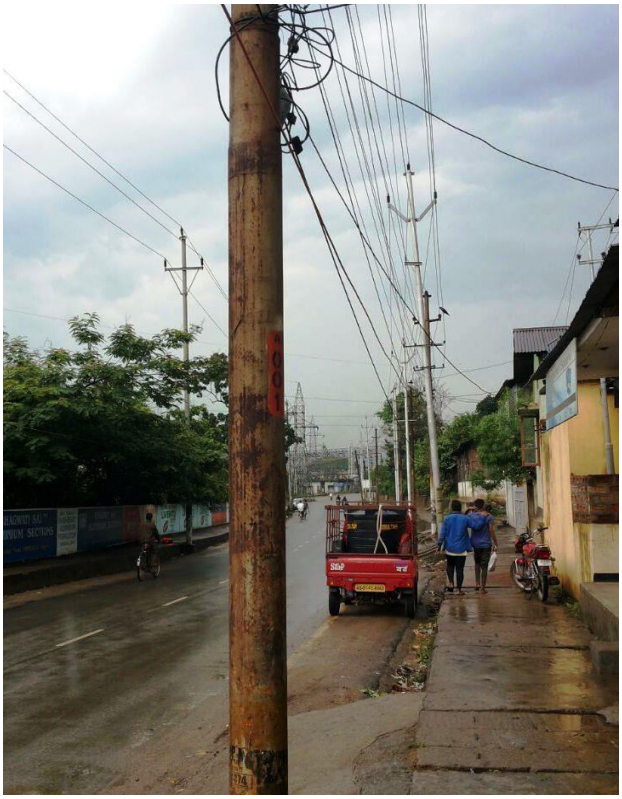
INDICATIVE MEASURES

X & Y = 5-10 METERS

a = 200- 300 mm

Figure-4.2: 33kV lines (Single & H pole) depicting base area impact

Actual Impact of 33kV Pole at Base Area



33kV line inside city area of Assam

33kV (H Pole) line inside substation

in possession with PEDM. Since no fresh land acquisition is involved, R&R will not be an issue in the instant project. The details are provided in **Table-4.1**.

Table-4.1: Details of Substation

Name of substation	Permanent Impact on Land Use	Temporary Impact on loss of crops	Impact on Loss of Trees	Details of Land			
				Land Area (acre)	No. of Land owner	Compensat-ion (Rs. Million)	Land Type/ Securing method
132/33kV Lungsen	No	Nil	Nil	3.16	NA	NA	PEDM land
Augmentation of 132/33kV Lunglei	No	Nil	Nil	NA	NA	NA	
33/11kV Bungtlang	No	Nil	Nil	0.58	NA	NA	

4.3. Temporary Impacts Caused due to Transmission Line (Right of Way)

4.3.1. Type and Use of Land within Corridor Right of Way

58. The lines corridor will pass through mixed land uses which are generally agricultural land, private plantation, forest land, govt. land etc. The calculations are based on detailed survey/ investigation carried out along the route of T & D lines and considering the total line length of the line and its right of way. The total line length of transmission line is 65.985 kilometres (km) passing through mostly in agricultural land which will impact an estimated of 440.23 acres[5] of land. However, the entire 3.717 km of distribution line corridor will also pass only through the agricultural land which will impact an estimated area of 13.78 acre. The calculations are based on detailed survey/ investigation carried out along the route of distribution lines and considering the total line length of the line and its right of way. A brief description about the type and use of land in the corridor is given in **Table-4.2.**

Table-4.2: Type and Use of Land within Corridor of RoW (in Km/Hectares)

Sl. No.	Name of the Line	RoW (in mtr)	Agricultural land	Private Plantation	Forest	Govt/ Barren	Total
A.	**Transmission Line**						
1.	Lungsen -Chawngte 132kV S/C	27	30.985 km (206.72 acre)	Nil	Nil	Nil	30.985 km (206.72 acre)
2.	Chawngte- S. Bungtlang 132kV S/C		35.00 km (233.5 acre)	Nil	Nil	Nil	35.00 km (233.51 acre)
Sub-Total			**65.985 km (440.23 acre)**	**Nil**	**Nil**	**Nil**	**65.985 km (440.23 acre)**
B.	**Distribution Line**						
1.	Lungsen – Lungsen 33kV	15	3.717 km (13.78 acre)	Nil	Nil	Nil	3.717 km (13.78 acre)

[5] Total Line Length (kilometers) X Right of Way (meters)X1000/4,047= Area in Acre

Sub-Total	**3.717 km (13.78 acre)**	**Nil**	**Nil**	**Nil**	**3.717 km (13.78 acre)**
Total		**Nil**	**Nil**	**Nil**	**69.702 km (454.01 acre)**

Source: Detailed Survey

4.3.2. Total loss of crop area (RoW Corridor & Tower/Pole)

59. For the temporary loss of crops, only agricultural land and private plantation land are considered for estimation. The damages are not done in complete RoW of line (27 m for 132kV S/C) but mostly restricted to tip to tip of the conductor and tower base area where average affected width/ corridor would be limited to 20 meter (maximum). In 33kV distribution lines, damages are minimal (mostly near bi-pole/ quad-pole structure) however, 10 meter corridor is considered for accessing the damages. Moreover, all efforts are made to reduce the damages to crops and to minimize the impacts whatsoever. One of the reasons is that schedule of construction activities are undertaken in lean season or post-harvest period. As the assets of any sorts will not be acquired but during construction, only temporary damages will occur for which the compensation shall be paid to affected persons as per entitlement matrix.

60. Based on the above estimation, the total land considered for crop compensation for the transmission/ distribution line corridor and tower/ pole foundation for the entire subproject covered under the scope of above CPTD is 353.28 acres. Details of estimated impacted area for crop damages are given in **Table-4.3.**

Table-4.3: Estimation on Loss of Land for Crop Damage due to Overhead Lines

Name of the line	Width Considered for Estimation of Loss of Crops &other impacts (Meter)	Total Agricultural Land (km)	Total Private Plantation (km)	Total Line Length Considered for Crop Compensation (km)	Total Land Area considered for Crop Compensation (Acre)
Lungsen - Chawngte132kV S/C	20	30.985	Nil	30.958	153.13
Chawngte- S. Bungtlang 132kV S/C		35.00	Nil	35.00	172.97
Lungsen– Lungsen 33kV	10	3.717	Nil	3.717	9.18
Total		**69.702**	**Nil**	**69.702**	**353.28**

Source: Detailed Survey

4.3.3. Actual loss of land for Tower Base

61. As already explained, the impact of transmission line is restricted to 4 legs of the tower and agriculture can continue after construction activity is over. The average land area will be

unavailable for erection of one 132kV T/L tower and one pole for 33kV D/L is approx. 0.25 sq. m & 0.092 sq. m. respectively. Based on above, total land lost for construction of 65.985 km of 132kV transmission lines and 3.717 km of 33kV distribution lines proposed under the present scheme are estimated to be 0.0148 acre and 0.0024 acre respectively. However, compensation toward loss of land shall be provided to APs which is part of RoW compensation. Detail of land loss for tower base & pole is given in **Table-4.4.**

Table 4.4: Estimation of Actual Loss of Land for Tower Base & Pole

Name of the line	Line length (km)	Total Tower (Nos.)	Land loss per tower/ pole base (sq.m.)	Total land loss area for tower & pole base (sq.m.)
A. Transmission line				
Lungsen - Chawngte132kV S/C	30.985	118	0.25	29.5
Chawngte – S. Bungtlang 132kV S/C	35.00	121	0.25	30.25
Total				**59.75≅ 0.0148 acre**
B. Distribution line				
Lungsen (new) S/s – Lungsen (existing) S/s 33kV	3.717	104	0.092	9.568
Total				**9.568 ≅ 0.0024 acre**

4.3.4. Land area for RoW compensation as per MoP Guidelines

62. Since Govt. of Mizoram has not approved the adoption of MoP guidelines dated 15.10.2015 no payment will be paid for land compensation for RoW corridor area. However, as per prevailing practice compensation @ 100% land value for tower base shall be paid to the affected persons/land owners Details of estimation of land areas to be considered for such compensation are given in **Table-4.5.**

Table-4.5 Land area for RoW/ Tower base Compensation

Name of the line	Line length (km)	Nos. of Tower	Land area for Tower base per km (in acre)	Total land area for tower base (In acre)
Lungsen - Chawngte132kV S/C	30.985	118	0.036	1.115
Chawngte – S. Bungtlang 132kV S/C	35.00	121	0.036	1.26
Total				**2.375**

4.3.5. Loss of Trees

63. Total numbers of trees likely to be affected due to construction of 65.985 km of 132kV line is approx. 10, 914 out of which 10,064 trees are in private area and 850 trees are in Govt. area. Additionally, 500 nos. private bamboo trees are likely to be affected. The major species to be

affected are Teak (*Tectona grandis*), Sal (*Shorea robusta*). Pine (*Pinus khasiana*), Champa (*Magnolia champaca*), Gulmohar (*Delonix regia*), Gamari (Gmelina arborea), Needlewood (*Skima wallichi)*, Bamboo (*Bambusa vulgaris*) etc. During construction, private trees will be compensated as per the entitlement matrix. Details on number of trees for each transmission line are given **Table-4.6**.

Table-4.6: Loss of Trees

Name of Line	Trees in Private Area (Numbers)	Trees in Govt. Area (Numbers)	Total Trees (Numbers)
Lungsen - Chawngte132kV S/C	**5250**	**250**	**5500**
Chawngte – S. Bungtlang 132kV S/C	**4800**	**600**	**5400**
Lungsen– Lungsen S/s 33kV	**14**	**Nil**	**14**
Total	**10,064**	**850**	**10914**

Source: Detailed Survey

4.3.6. Loss of Other Assets (Small Shed in Agriculture Fields)

64. It has been observed during survey that no permanent or temporary structures exist along the right of way of proposed 132kV and 33kV lines.

4.4. Details on Affected Persons

65. It is estimated that total 2614 persons likely be impacted temporarily by construction of proposed 132 kV and 33 kV lines. Details of line wise APS are given in **Table-4.7.** However, the number of APs in the table refers to the most conservative option. State Utilities/ POWERGRID will schedule civil works in such a way to minimize impacts and substantially reduce the damages to crops and therefore the number of affected persons and Agricultural Households (AHH).

Table-4.7: Number of Affected Persons

Name of Line	Total APs
Lungsen - Chawngte132kV S/C	1288
Chawngte – S. Bungtlang 132kV S/C	1321
Lungsen (new) S/s – Lungsen (existing) S/s 33kV	5
Total	**2614**

Source: Detailed Survey

4.5. Other Damages

66. As far as possible damage to bund, water body, fish pond, approach path, drainage & irrigation canal etc. are avoided. However, if damaged during construction activities, compensation as per practice is paid after assessment of the cost of damage by the State Govt. Revenue Department. The total estimate is submitted for approval to the competent authority. PEDM/

POWERGRID pay the compensation to owners in the presence of local revenue authorities or Village head/ Sarpanch and respective acknowledgements are obtained. Any hindrances to power, telecom carrier & communication lines etc. shall also be paid as per Govt. norms.

4.6. Impact on Indigenous People

67. Government of India, under Article-342 of the Constitution, considers the following characteristics to define indigenous peoples [Scheduled Tribes (ST)]

(i) tribes' primitive traits;
(ii) distinctive culture;
(iii) shyness with the public at large;
(iv) geographical isolation; &
(v) social and economic backwardness before notifying them as a Scheduled Tribe.

68. Essentially, indigenous people have a social and cultural identity distinct from the 'mainstream' society that makes them vulnerable to being overlooked or marginalized in the development processes. STs, who have no modern means of subsistence, with distinctive culture and are characterized by socio-economic backwardness, could be identified as Indigenous Peoples. Indigenous people are also characterized by cultural continuity. Constitution of India identifies schedule areas which are predominately inhabited by such people. The Sixth Schedule of the Constitution applies to a large part of the Mizoram state, which is under the jurisdiction of the "Chakma Autonomous District Council (CADC) and Lai Autonomous District Council" (LADC). The Sixth Schedule areas are governed through "Autonomous District Councils" (ADC) that has wide-ranging legislative and executive powers.

69. The instant project is being implemented in Lunglei and Lawngtlai districts which are also part of CADC and LADC area. Since, the project under NERPSIP is envisaged for economic uplifting of the NE region, hence, no indigenous population will be negatively impacted in the project area. However, It may be noted that all social issues shall be dealt separately in accordance with the provisions of Social Management Framework (SMF, A-C) placed in the PEDM's ESPPF.

4.7. Summary of Impacts

70. Based on the above assessment, temporary impacts on loss of crops, trees, other structures and number of APs are summarized below in **Table-4.8**.

Table-4.8 : Summary of Impacts

Particulars	Details	
	Transmission Lines	Distribution Lines
Length of Transmission/ Distribution line (km)	65.985	3.717
Number of Towers/ Poles (Nos.)	239	104
Total Area under Tower base (in acre)	2.375	Nil
Total APs (Nos.)	2609	05
Affected Structures (Small Sheds for agricultural purpose (Nos.)	Nil	Nil
Area of Temporary Damages for crop compensation (in acre)	344.10	9.18
Total Trees (Nos.)	10900	14

Source: Detailed Survey

V. ENTITLEMENTS, ASSISTANCE AND BENEFITS

5.1. Entitlements

71. There is no involuntary acquisition of land involved; only temporary damage will occur during construction of transmission lines for which compensation is paid as per relevant regulations/ norms. APs will be entitled for compensation for land loss and other towards temporary damages to crops/ trees/ structures etc. as per the Entitlement Matrix given in **Table-5.1**. Compensation towards temporary damages to all eligible APs including non-title holders is paid after assessment by relevant authorities of State Govt.

72. All APs are paid compensation for actual damages irrespective of their religion, caste and their economic status. One time additional lump sum assistance will be paid to vulnerable households not exceeding 25% of total compensation on recommendation of State Authority/ ADC/ VC. As an additional assistance, construction contractors are encouraged to hire local labour that has the necessary skills.

5.2. Entitlement Matrix

73. An Entitlement Matrix for the subprojects is given in **Table-5.1**.

Table-5.1: Entitlement Matrix

Sl.	Type of Issue/ Impact	Beneficiary	Entitlement Options
1.	Land area below tower base	Owner	100% land cost at market value as ascertained by revenue authorities or based on negotiated settlement without actual acquisition/title transfer.
2.	Loss/damage to crops and trees in line corridor	Owner/ Tenant/ sharecropper/ leaseholder	Compensation to actual cultivator at market rate for crops and 8 years income for fruit bearing trees*. APs will be given advance notice to harvest their crops. All timber* will be allowed to retain by the owner.
3.	Other damages (if applicable)	All APs	Actual cost as assessed by the concerned authority.
4.	Loss of structure		
(i)	House	Titleholders	Cash compensation at replacement cost (without deduction for salvaged material and depreciation value) plus Rs. 25,000/- assistance (based on prevailing GOI norms for weaker section housing) for construction of house plus transition benefits as per category-5 below.
(ii)	Shop/ Institutions/ Cattle shed	Individual/ Titleholders	Cash compensation plus Rs. 10000/- for construction of working shed/shop plus transition benefits as per category-5 below

Sl.	Type of Issue/ Impact	Beneficiary	Entitlement Options
(iii)	Losses during transition under (i) & (ii) above for Shifting / Transport	Family/unit	Provision of transport or equivalent cash for shifting of material/ cattle from existing place to alternate place
(iv)	Tribal/ Vulnerable APs	Vulnerable APs6	One time additional lump sum assistance not exceeding 25% of total compensation on recommendation of State Authority/ADC/VC.

(#)Provisions of 100% compensation for tower base and no compensation for corridor area as per Govt. of Mizoram notification 01.05.19.

* ***Assistance/ help of Forest department for timber yielding trees and Horticulture department for fruit bearing trees shall be taken for assessing the true value.***

5.3. Procedure of Tree/ crop compensation

74. In exercise of the powers conferred by section 164 of the Electricity Act, 2003, Dept. of Power, Govt. of Mizoram vide notification dated 3rd June 206, has authorized PEDM to exercise all the power vested in the Telegraph Authority under part-III of the Indian Telegraph Act, 1885, to place and maintain transmission lines under over along or across and posts in or upon, any immoveable property. However, the provisions of same act in Section 10 (d) stipulates that the user agency shall pay full compensation to all interested for any damages sustained during the execution of said work. Accordingly, PEDM / POWERGRID shall pay compensation to land owners towards damages, if any for tree, crop etc. during implementation of project as well as during operation and maintenance phase. The procedure followed for such compensation is as follows:

75. PEDM follows the principle of Avoidance, Minimization and Mitigation in the construction of line in agricultural field and cropping areas due to inherent flexibility in phasing the construction activity and tries to defer construction in cropped area to facilitate crop harvesting. However, if it is unavoidable and is likely to affect project schedule, compensation is given at market rate for standing crops. All efforts are also taken to minimize the crop damage to the extent possible in such cases:

76. As regard of trees coming in the Right of Way (RoW) following procedure is adopted for enumeration:

- All the trees which are coming within the clearance belt of RoW on either side of the centre line are identified and marked/numbered from one AP to the other and documented.
- Type, Girth (Measured 1 m. above ground level), approximate height of the tree is also noted for each tree
- Trees belonging to Govt., Forest, Highways and other local bodies may be separately noted

[6] Vulnerable APs include scheduled tribes residing in scheduled areas/ physically handicapped/ disabled families etc.

down or timely follow up with the concerned authorities for inspection and removal.

- Guava, Lemon, and other hybrid trees which are not of tall growing nature are not marked for cutting since these trees can be crossed using standard tower extensions if required.

77. A notice under Electricity Act, 2003/ Indian Telegraph Act, 1885 is served to the landowners informing that the proposed transmission line is being routed through the property of the individual concerned. The notice shall contain the particulars of the land, ownership details and the details of the trees/crops/land inevitability likely to be damaged during the course of the construction of the proposed transmission line and acknowledgement received from land owners. A copy of said notice is further issued to the Revenue Officer/ SDM, who has been authorized by the Mizoram Govt. for the purpose of assessment/valuation and disbursement of compensation to APs.

78. The revenue officer shall further issue a notice of intimation to the concerned land owner and inspect the site to verify the documents related to the proof of ownership and a detailed Mouja list is prepared for the identified trees/ crops/ land for tower footing inevitability damaged during the course of the construction. For assessing the true value of timber yielding trees help of forest officials is taken and for fruit bearing trees help of Horticulture department is taken.

79. The Mouja list contained the land owner details; type of tree/ crop, its present age, variety, yielding pattern etc. and the same is prepared at site in the presence of the land owner. These Mouja lists are further compiled and a random verification was conducted by the concerned DC or his authorized representative in order to ascertain the assessment carried out by the revenue office is genuine and correct. After this process the DC issue a tree cutting permission to PEDM to enable removal/ damage to the standing tree/crop identified in the line corridor.

80. Once the tree/ crop is removed/ damaged, PEDM shall issue a tree cutting/crop damaged notice to the land owner with a copy to the Revenue Officer to process the compensation payment. Based on the above the compensation payment is generated by means of a computerized programme developed by the National Informatics Centre exclusively for this purpose. The detailed Valuation statement thus generated using this programme is verified at various levels and approval of payment of compensation is accorded by the concerned District Collectors or Council Authority.

81. On approval of compensation, the revenue officer shall further intimate the amount payable to the different landowners and PEDM/ POWERGRID will arrange the payment by way Cheque/ online transfer to the affected parties. The payment is further disbursed at the local village office after due verification of the documents in presence of other witnesses. Process of tree/crop

compensation is depicted in **Figure-5.1**.

5.4. Land Compensation for Tower Footing & RoW Corridor

82. As per present practices, full compensation (100%) towards land value for tower base areas as decided by the district authority is paid to the affected persons/ land owners in addition to tree/crop damage compensation. Since State Govt./PEDM has decided that only land compensation for tower base shall be paid as per prevailing practice in the State , land compensation for corridor area as per MoP guidelines of Oct'15 shall not be applicable.

5.5. Compensation for Structure

83. No physical displacement is envisaged in the proposed project. Displacement of structures is normally not envisaged due to flexibility of routing of transmission line. However, whenever it is necessary, compensation for structures as per entitlement matrix shall be provided (refer **Table-5.1**). In the instant case, no such small structures likely to be encountered in the right of way of proposed transmission lines. In case it is encountered these are most likely small sheds/ small storage which are associated with the agricultural fields. People do not use these small structures/ sheds for residential purpose. A notice for damage is issued to APs and the joint measurement by PEDM/ POWERGRID and APs will be done and verified by revenue official for actual damages. The compensation will be paid to the APs as decided by committee based on state government norms. Hence, compensation is paid parallel with the construction activity of line.

5.6. Compensation Disbursement Module

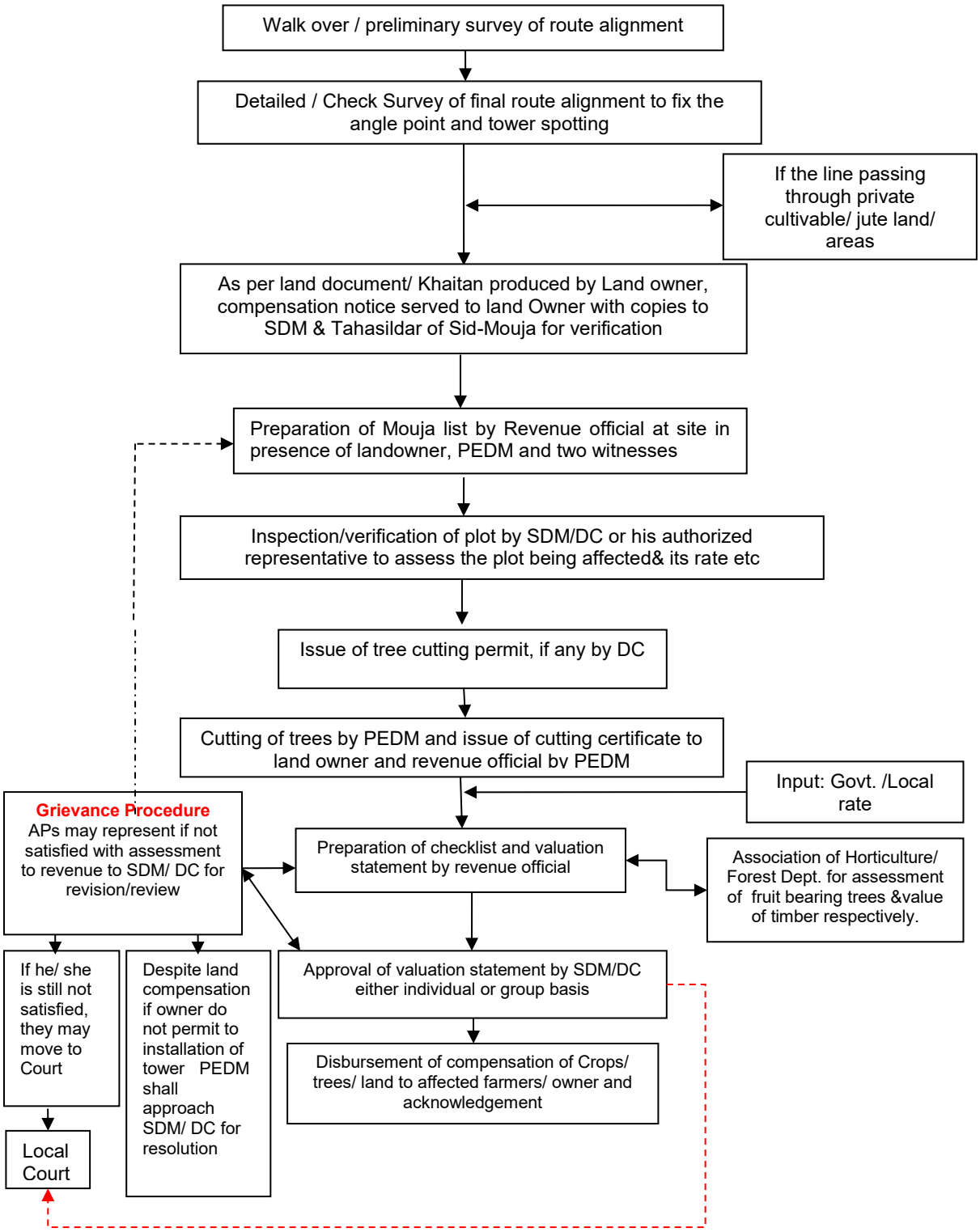
84. In order to streamline the compensation process, a disbursement module has been developed (**Table-5.2**) specifying the time period with respect to various process/ activities which will be implemented during the project execution.

Table-5.2: Compensation Disbursement Module

Activity/Stage	Process	Maximum Time Period from Cut-Off date
Tower Foundation/ Erection/ Stringing	Serving of Notice ***(Cut-off date)***	0 date
	Verification of Ownership by Revenue Dept.	15 days
	Assessment/Verification of damages by Revenue Dept.	45 days
	Online disbursement*	60 days**

**** Provision of advance payment up to 25% (Rs. 1 lakh maximum) of total estimated land compensation already made in the RoW guidelines of POWERGRID and may also be implemented in the NERPSIP after consent of concerned State Utilities.***
*****60 days is on maximum side. However, based on past experience it's normally concluded within 30-45 days.***

Figure-5.1: Tree/ Crop Compensation Process



VI. INFORMATION DISCLOSURE, CONSULTATION & PARTICIPATION

6.1. Consultations

85. Public consultation/ information is an integral part of the project implementation. Public is informed about the project at every stage of execution. During survey also PEDM & POWERGRID site officials meet people and inform them about the routing of transmission lines. During the construction, every individual, on whose land tower is erected and people affected by RoW, are consulted. Apart from this, Public consultation using different technique like Public Meeting, Small Group Meeting, informal Meeting shall also be carried out during different activities of project cycle. During such consultation the public are informed about the project in general and in particular about the following;

- Complete project plan (i.e. its route and terminating point and substations, if any, in between);
- Design standards in relation to approved international standards;
- Health impacts in relation to EMF;
- Measures taken to avoid public utilities such as school, hospitals, etc.;
- Other impacts associated with transmission lines and PEDM approach to minimizing and solving them; &
- Trees and crop compensation process etc.

86. In the instant project also, many group meetings were organized (informally and formally) in all villages where the interventions are likely to happen (**Table-6.1**). These meetings were attended by Village Panchayat members, senior/ respected person of village, interested villagers/ general public and representatives from PEDM & POWERGRID. Besides, gender issues have also been addressed to the extent possible during such consultation process (total 42 female out of 155 participants). To ensure maximum participation, prior intimation in local language was given and such notices were also displayed at prominent places/ panchayat office etc. Details of above public consultation meetings including minutes of meeting, list of participants and photographs are enclosed as **Annexure-3**.

Table-6.1 Details of Consultations

Date of meeting	Venue of Meeting	Persons attended	Persons Attended
Public Consultation Meeting			
09.09.2014	Village community Hall, South Bungtlang	29	SDO (Electrical) Lungsen and S. Bungtlang, POWERGRID officials,

11.09.2014	YMA Community Hall, Lungsen	56	Representatives of Panchayat including Chairman, Vice Chairman & Members and Village Pradhan etc, local villagers & public in general.
20.02.2019	Community Hall, South Bungtlang	37	
08.07.2019	YMA Hall, Lungsen Chhim Veng	33	

87. During consultations/ interaction processes with people of the localized areas, PEDM/ POWERGRID field staffs explained benefit of the project & impacts of transmission line. People more or less welcomed the construction of the proposed project.

88. Various issues inter alia raised by the people during public consultation and informal group meetings are as follows;

- The employment for local people & procedure for the same;
- Electrical Safety while working in Agricultural fields below line;
- Improvement in Power supply/availability in villages;
- The width of ROW for cutting trees & compensation for the same; &
- If these lines passes through heavily populated/ house area.

89. PEDM & POWERGRID representative replied their queries satisfactorily and it was assured that all the genuine issues would be dully taken care during the implementation of the project.

6.2. Plan for further Consultation and Community Participation during Project Implementation

90. The process of such consultation to be continued during project implementation and even during O&M stage. The progress and proposed plan for Public consultation is described in **Table-6.2**.

Table-6.2: Plan for Future Consultations

S. N.	Activity	Technique	Schedule
1.	Detailed/ Check survey	Formal/Informal Meeting at different places (20-50 km) en-route final route alignment of line	Public meeting during pre-construction stage
2.	Construction Phase	Localized group meeting, Pamphlet/ Information brochures, Public display etc.	During entire construction period.
3.	O&M Phase	Information brochures, Operating field offices, Response to public enquiries, Press release etc.	Continuous process as and when required.

6.3. Information Disclosure

91. The CPTD will be disclosed to the affected households and other stakeholders by placing it on website. To maintain the uninterrupted communication channel, PEDM & POWERGRID site officials are meeting APs and inform about norms and practices of damage assessment and compensation thereof. A notice also issued to APs after the detailed/ checks survey and finalization of tower location during the construction. Affected persons also visited site/construction offices of PEDM & POWERGRID to know about the compensation norms and policies and to discuss their grievances. For wider circulation, executive summary of the CPTD/ Entitlement Matrix will be translated in local language and placed at construction offices/ sites. The CPTD will also be disclosed on the World Bank website. PEDM & POWERGRID will organize further public consultation meetings with the stakeholders to share the views of public and all possible clarifications. This consultation process will continue throughout the project implementation and even during operation and maintenance (O&M) stage.

VII. INSTITUTIONAL ARRANGEMENTS

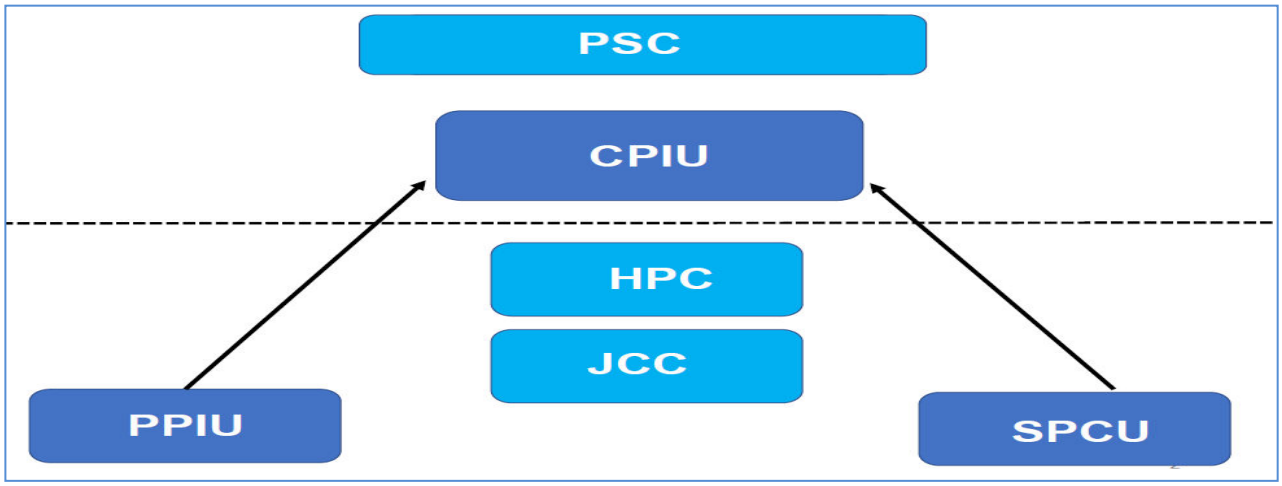
7.1. Administrative Arrangement for Project Implementation

92. Ministry of Power (MoP), GoI has appointed POWERGRID as Implementing Agency (IA) to implement the project in close coordination with the respective state power utilities and departments. POWERGRID will implement the project based on the Implementation/Participation agreements that were signed separately between POWERGRID and the power utilities. However, the ownership of the assets shall be with respective State government or State Utilities, which upon progressive commissioning shall be handed over to them for taking care of Operation and Maintenance of assets. The arrangement for monitoring and reviewing of project from the perspective of environment and social management will form part of overall arrangements for project management and implementation environment. Following implementation arrangement has been proposed at different levels for smooth implementation of this project;

Central Project Implementation Unit (CPIU) - A body responsible for coordinating the preparation and implementation of the project and shall be housed within the IA's offices at Guwahati. The "Project-In-Charge" of IA & Head of each of the SPCU shall be a member of CPIU.

State Project Coordination Unit (SPCU) – A body formed by the Utility and responsible for coordinating with IA in preparing and implementing the project at the State level. It consist of experts across different areas from the Utility and shall be headed by an officer of the rank not below Chief Engineer, from the Utility.

PMC Project Implementation Unit (PPIU) – A body formed by the IA, including members of Utility on deputation, and responsible for implementing the Project across the State, with its personnel being distributed over work site & working in close association with the SPCU/ CPIU. PIU report to State level "Project Manager" nominated by the Project-in-Charge of IA. The IA will have a Core team stationed at the CPIU on permanent basis and other IA officers (with required skills) will visit as and when required by this core team. This team shall represent IA and shall be responsible for all coordination with SPCU, PIU, within IA and MoP, GoI. CPIU shall also assist MoP, GoI in monitoring project progress and in its coordination with The Bank.



7.2. Review of Project Implementation Progress:

93. To enable timely implementation of the project/ subprojects, following committee has been setup to review the progress;

A. Joint Co-ordination Committee (JCC): IA and SPCU nominate their representatives in a body called JCC to review the project. IA shall specify quarterly milestones or targets, which shall be reviewed by JCC through a formal monthly review meeting. This meeting forum shall be called as Joint Co-ordination Committee Meeting (JCCM).The IA shall convene & keep a record of every meeting. MoP, GoI and The Bank may join as and when needed. Minutes of the meeting will be shared with all concerned and if required, with GoI and The Bank.

B. High Power Committee (HPC): The Utility in consultation with its State Government shall arrange to constitute a High Power Committee (HPC) consisting of high level officials from the Utility, State/ District Administration, Law enforcement agencies, Forest Department. etc. so that various permission/ approvals/ consents/ clearances etc. are processed expeditiously so as to reach the benefits of the Project to the end consumers. HPC shall meet on bimonthly basis or earlier, as per requirement. This forum shall be called as High Power Committee Meeting (HPCM) and the SPCU shall keep a record of every meeting. Minutes of the meeting will be shared with all concerned and if required, with GoI and The Bank.

C. Contractor's Review Meeting (CRM): Periodic Review Meeting will be held by officials of PIU with Contractors at field offices, State Head Quarters (PIU location) and if required with core team of IA at Guwahati. These shall be called "Contractor's Review Meeting" (CRM). PIU shall keep a record of all CRMs, which shall be shared with all concerned and if required, with GoI and The Bank.

D. A review will be held among MoP, GoI, The Bank, State Government., Utility and IA, at four (4) months interval or earlier if needed, primarily to maintain oversight at the top level and also to debottleneck issues that require intervention at GoI/ State Government level. Minutes of the meeting shall be prepared by IA and shared with all concerned.

7.3. Arrangement for Safeguard Implementation

94. At the central project implementation level (CPIU) based at Guwahati, POWERGRID has set up an Environmental and Social Management cell (ESMC) which is headed by Executive Director (ED) to oversee Environmental and Social issues of the projects and to coordinate the SPCU & Site Offices.

95. At the State level, POWERGRID has already set up PPIU at the capital of each participating State. The PPIU is staffed with dedicated multidisciplinary team headed by Project Manager who is also responsible for overseeing and implementing the environmental and social aspects of project in their respective state. The PPIU team is assisted by a dedicated Field Officer (Environment & Social Management) who has been specifically recruited for this purpose by POWERGRID. Moreover, State Utilities have constituted State Project Coordination Unit (SPCU) at each state and also designated their Environmental & Social Officer within SPCU to work in close co-ordination with the PMC Project Implementation Unit of POWERGRID and CPIU team at Guwahati. Major responsibilities of Environment and Social team at State level are conducting surveys on environmental and social aspects to finalize the route/substation land, implementation Environment Management Plan (EMP)/CPTD, co-ordination with the various statutory departments, monitoring EMP/CPTD implementation and producing periodic progress reports to CPIU.

96. In the instant subprojects, POWERGRID will implement the CPTD in close co-ordination with PEDM which includes overall coordination, planning, implementation, financing and maintaining all databases & also work closely with APs and other stakeholders. A central database will also be maintained for regular updating of social assessment & compensation data. State Utilities & POWERGRID will ensure that local governments are involved in the CPTD implementation to facilitate smooth settlement of compensation related activities. Roles and responsibilities of various agencies for CPTD implementation are presented in **Table-7.1.**

Table-7.1: Agencies Responsible for CPTD Implementation

Activity	Agency Responsible	
	Primary	Secondary
Implementing CPTD	Field staffs of POWERGRID & PEDM	
Updating the CPTD	POWERGRID	PEDM
Review and Approval of CPTD	PEDM	POWERGRID
Verification survey for identification of APs	POWERGRID, PEDM field staffs	Revenue Officials
Survey for identification of plots for Crop/Tree/ other damages Compensation	POWERGRID, PEDM	Revenue Officials
Consultation and disclosure of CPTD to APs	POWERGRID, PEDM	Revenue Officials
Compensation award and payment of compensation	Revenue Dept. / Competent Authority	POWERGRID, PEDM
Fixing of replace cost and assistance	Revenue Dept. / Competent Authority	POWERGRID, PEDM
Payment of replacement cost compensation	POWERGRID & PEDM	Revenue Dept.
Takeover temporary possession of land/houses	POWERGRID & PEDM	Revenue Dept.
Hand over temporary possession land to contractors for construction	POWERGRID & PEDM	Contractor
Notify construction starting date to APs	POWERGRID, PEDM Field Staff	Contractor
Restoration of temporarily acquired land to its original state including restoration of private or common property resources	Contractor	POWERGRID & PEDM
Development, maintenance and updating of Compensation database	POWERGRID & PEDM	
Development, maintenance and updating of central database	POWERGRID & PEDM	
Internal monitoring	POWERGRID & PEDM	
External monitoring, if required	POWERGRID & PEDM	

7.4. Responsibility Matrix to manage RoW Compensation

97. In order to manage the RoW compensation effectively, a Work Time Breakdown (WTB) matrix depicting sequence of activities, timing, agencies responsible have been drawn both for Tree/ Crop and Land compensation which will be implemented during project execution.

a) WTB for Tree/ Crop Compensation

Activities	Responsibility		Time Schedule
	Primary	Secondary	
Identification of APs (During Tower spotting & Check Survey)	Contractor	PEDM & IA field staffs	In 3 different Stages i.e. before start of Foundation, Erection & Stringing Works
Serving Notice to APs	PEDM & IA field staffs	Revenue Dept.	0 date
Verification of ownership	PEDM, IA & Revenue Dept.	ADC (if applicable)	0-15 days
Joint Assessment of damages	Revenue Dept. & APs	PEDM / IA	16-45 days
Payment (online/DD) of compensation to AP*	PEDM & IA		46-60 days

b) WTB for Land Compensation** for Tower base and RoW corridor

Activities	Responsibility		Time Schedule
	Primary	Secondary	
Identification of APs (During Tower spotting and Check Survey)	Contractors	PEDM & IA field staffs	Before start of Foundation/ Erection & Stringing Works
Fixation of land rate	DC, ADC/ Executive Committee (if applicable)	PEDM & IA	0 date
Serving Notice to APs	PEDM, IA field staffs	Revenue Dept.,	0-7 days
Assessment of compensation/ Verification of ownership	Revenue Dept./ ADC	PEDM & IA	8-15 days
Payment (online/DD) of compensation to AP*	PEDM & IA		16-30 days

* ***AP can approach to DC for any grievance on compensation.***

** ***Discussion for release of certain % as advance is also under progress with Utilities.***

Note: Both a and b activities shall run parallel

VIII. GRIEVANCE REDRESS MECHANISM

98. Grievance Redress Mechanism (GRM) is an integral and important mechanism for addressing/resolving the concern and grievances in a transparent and swift manner. Many minor concerns of peoples were addressed during public consultation process initiated at the beginning of the project. For handling grievance, a two tier GRM consisting of Grievance Redress Committee (GRC) at two levels, i.e. project/scheme level and Corporate/ HQ level have been constituted. The project level GRCs include members from PEDM, POWERGRID, Local Administration, Village Council/ Panchayat Members, Affected Persons representative and reputed persons from the society and representative from the autonomous districts council in case of tribal districts selected/decided on nomination basis under the chairmanship of project head. The composition of GRC also disclosed in Panchayat/ Village council offices and concerned district headquarter for wider coverage.

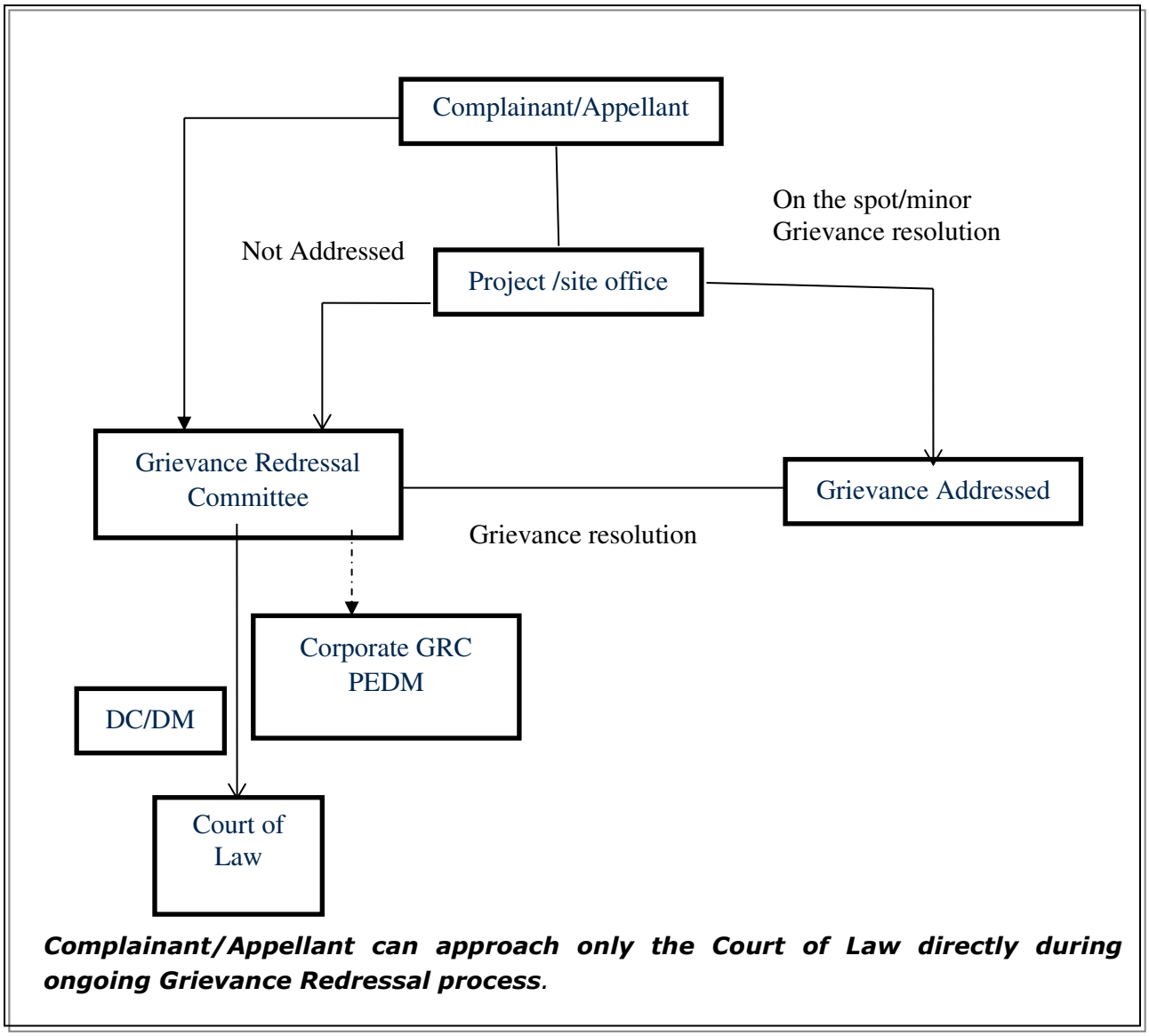
99. The complainant will also be allowed to submit its complaint to local project official who will pass it to GRC immediately but not more than 5 days of receiving such complaint. The first meeting of GRC will be organized within 15 days of its constitution/disclosure to formulate procedure and frequency of meeting. In case of any complaint, GRC meeting shall be convened within 15 days. If Project level GRC is not able to take decision it may refer the complaint to corporate GRC for solution. GRC endeavours to pronounce its decision within 30-45 days of receiving grievances. In case complainant/appellant is not satisfied with the decision of project level GRC they can make an appeal to corporate GRC for review. The proposed mechanism does not impede access to the country's judicial or administrative remedies at any stage.

100. The corporate level GRC shall function under the chairmanship of Engineer-In- Chief who will nominate other members of GRC including one representative from corporate ESMC who is conversant with the environment & social issues. The meeting of Corporate GRC shall be convened within 7-10 days of receiving the reference from project GRC or complainant directly and pronounce its decision within next 15 days.

101. Apart from above, grievance redressal is in built in crop/tree compensation process where affected persons are given a chance to place their grievances after issuance of notice by revenue officials on the basis of assessment of actual damages. Grievances received towards compensation are generally addressed in open forum and in the presence of many witnesses. Process of spot verification and random checking by the district collector/ its authorised

representative also provides forum for raising the grievance towards any irregularity/ complain. Moreover, PEDM & POWERGRID officials also address to the complaints of affected farmers and the same are forwarded to revenue official for doing the needful. Details are depicted below in **Figure-8.1**:

Figure-8.1: Flow Chart showing Grievance Redress Mechanism



IX. BUDGET

102. The CPTD Implementation cost estimate for the project includes eligible compensation for loss of crops/ trees/ huts and support cost for implementation of CPTD, monitoring, other administrative cost etc. Since Govt. of Mizoram has adopted MoP guidelines for RoW compensation for implementation vide its notification 1st May 2019, a budget provision has been made for compensation for Tower Base (@ 100% of the land cost and no compensation for RoW Corridor . Accordingly the cost has been estimated for proposed 132kV line only in the budget by including these provisions. However, this is a tentative budget which may change during the original course of implementation. The unit cost for the loss of crop has been derived through rapid field appraisal and based on PEDM & POWERGRID's previous experience of similar project implementation. Contingency provision equivalent to 3% of the total cost has also been made to accommodate any variations from this estimate. Sufficient Budget has been provided to cover all compensation towards land use restriction, crops losses, other damages etc. Structure will be avoided to the extent possible. However, if any structure is affected, budget provisions are available to cover all damages as per entitlement matrix. As detailed in above paras, initial study has confirmed that no residential structure shall be affected. Therefore, provisions of budget expenditure for implementation of CPTD for the subprojects considering corridor of 20 meter & 10 meter maximum for 132kV & 33kV line, respectively.

9.1 Compensation for Land under Tower Base

103. The land area for 132kV tower base is estimated as 0.036 acre per km. The cost of land is estimated @ Rs. 15 lakh/ acre considering the land use type as agriculture land in rural setting. As Govt. of Mizoram has not approved the adoption of MoP guidelines dated 15.10.2015 no payment shall be paid for land compensation for RoW corridor. However, as per prevailing practice only land compensation @ 100% land value for tower base will be paid. Further, no compensation is associated with 33kV lines. Accordingly, the cost of land compensation towards tower base for overhead line is thus estimated as Rs. 36 Lakhs. A detail of cost is given below in **Table-9.1**.

Table-9.1: Cost of Land Compensation for Tower Base

Name of Line	Line Length (Km)	Land Area for Tower Base (acre)	Avg. Cost of Land (Lakhs / acre)	Total in Lakhs (Tower base @ 100%)
Lungsen - Chawngte132kV S/C	30.985	1.115	15.00	16.73
Chawngte – S. Bungtlang 132kV S/C	35.00	1.26		18.9
Total				**35.63≅ 36**

**** Effective RoW corridor has been considered after excluding tower base area***

9.2 Compensation for Crops and Trees

104. The crop compensation is calculated in consultation with revenue authorities in terms of yield/ hectare and rate/ quantity for prevailing crops in the area. Similarly, tree compensation is calculated on basis of tree enumeration, tree species and an estimate of the yield. In case of fruit bearing trees compensation will be calculated on the basis of 8 years yield (assessed by revenue/horticulture department). Market rates of compensation are assessed by the relevant government authorities. The estimation of crop and tree damages are based on preliminary investigation and accordingly budgetary provisions are made which will be updated during implementation. Detail of line wise cost is given in **Table-9.2** below.

Table-9.2: Cost of Compensation for Crops and Trees

Sl. No	Name of the Line	Line Length in Non-forest area (Km)	Compensation /Km (In Lakh)	Total compensation cost for Crops & trees (Lakh)
1.	Lungsen - Chawngte132kV S/C	30.985	5.0	154.92
2.	Chawngte – S. Bungtlang 132kV S/C	35.00	5.0	175.00
3.	Lungsen (new) S/s – Lungsen (existing) S/s 33kV	3.717	0.5	1.86
Total				**331.78**

9.3. Summary of Budget

105. The total indicative cost is estimated to be **INR 390.49 Lakhs** equivalent to **USD 0.602 million**. Details are given in **Table-9.3**. The following estimated budget is part of complete project cost as on date. However, actual updating of the estimated cost shall be done during execution.

Table-9.3: Summary of Budget

Item	Amount in Lakh (INR)	Amount in (Million USD)
A. Compensation		
A-1: Loss of Crops and Trees	331.78	0.511
A-2: Land Compensation for Tower Base	35.63	0.055
Sub Total-A	**367.41**	**0.566**
B: Implementation Support Cost		
B-1: Man-power involved for CPTD Implem. & Monitoring	6.71	0.010
B-2: External Monitoring, if required	5.00	0.008
Sub Total- B	**11.71**	**0.018**
Total (A+B)	**379.12**	**0.584**
Contingency (3%)	**11.37**	**0.018**

Grand Total	**390.49**	**0.602**

X. IMPLEMENTATION SCHEDULE

106. Following work schedule has been drawn for implementation of CPTD considering letter of award for execution of work placed in end of 2016. Tentative implementation schedule for project including various sub tasks presented in **Table-10.1**.

107.

Table-10.1 Tentative Implementation Schedule

Sl. No.	Activity	1st Year		2nd Year				3rd Year				4th Year	
		Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 3	Q 4
1.	**Initial CPTD Matrix disclosure**												
2.	**Detailed Survey**												
3.	**Public Consultation**												
4.	**Compensation Plan Implementation**												
i)	Compilation of land record, ownership,												
ii)	Finalization of list of APs, fixing rate by DC												
iii)	Serving of Notice to APs												
iv)	Joint assessment &acknowledgement by APs												
v)	Validation of Compensation amount												
vi)	Compensation Payment												
5.	**Civil Works**												
6.	**Review/ Activity Monitoring**												
i)	Monthly												
ii)	Quarterly												
iii)	Half yearly												
iv)	Annual												
7.	**Grievance redress**												
8.	**CPTD Documentation**												
9.	**External Monitoring, if required**												

XI. MONITORING AND REPORTING

108. Monitoring is a continuous process at all stages of project. Monitoring of CPTD implementation will be the responsibility of POWERGRID as well as the State Utility.

109. Internal monitoring will include: (i) administrative monitoring: daily planning, implementation, feedback and troubleshooting, maintenance, and progress reports and (ii) socio-economic monitoring: compensation for land/crops/trees or any other damages, demolition if any, salvaging materials, dates for consultations and number of grievance/ complaints received etc. Monitoring and reports documenting progress on compensation/ implementation of CPTD will be provided by POWERGRID to World Bank for review semi-annually.

110. If required, POWERGRID/ State Utility will engage the services of an independent agency/ external monitoring and provisions for the same have been made in the budget component.

111. PEDM is well equipped to implement and monitor its environment and social management plan including CPTD. Organizational Support Structure of PEDM for monitoring of above is given in **Figure-11.1**.

11.1 Status of Compensation (Tree/ Crop / Land / Structures)

112. As explained in previous chapters, compensation for the loss of crops, trees, land, structure etc. are paid to Affected Persons (APs) based on actual damages in 3 different stages i.e. during foundation work, tower erection & stringing as per norms. Since construction works for both the lines are yet to be started no compensation in respect of tree/crop/land compensation has been paid till date.

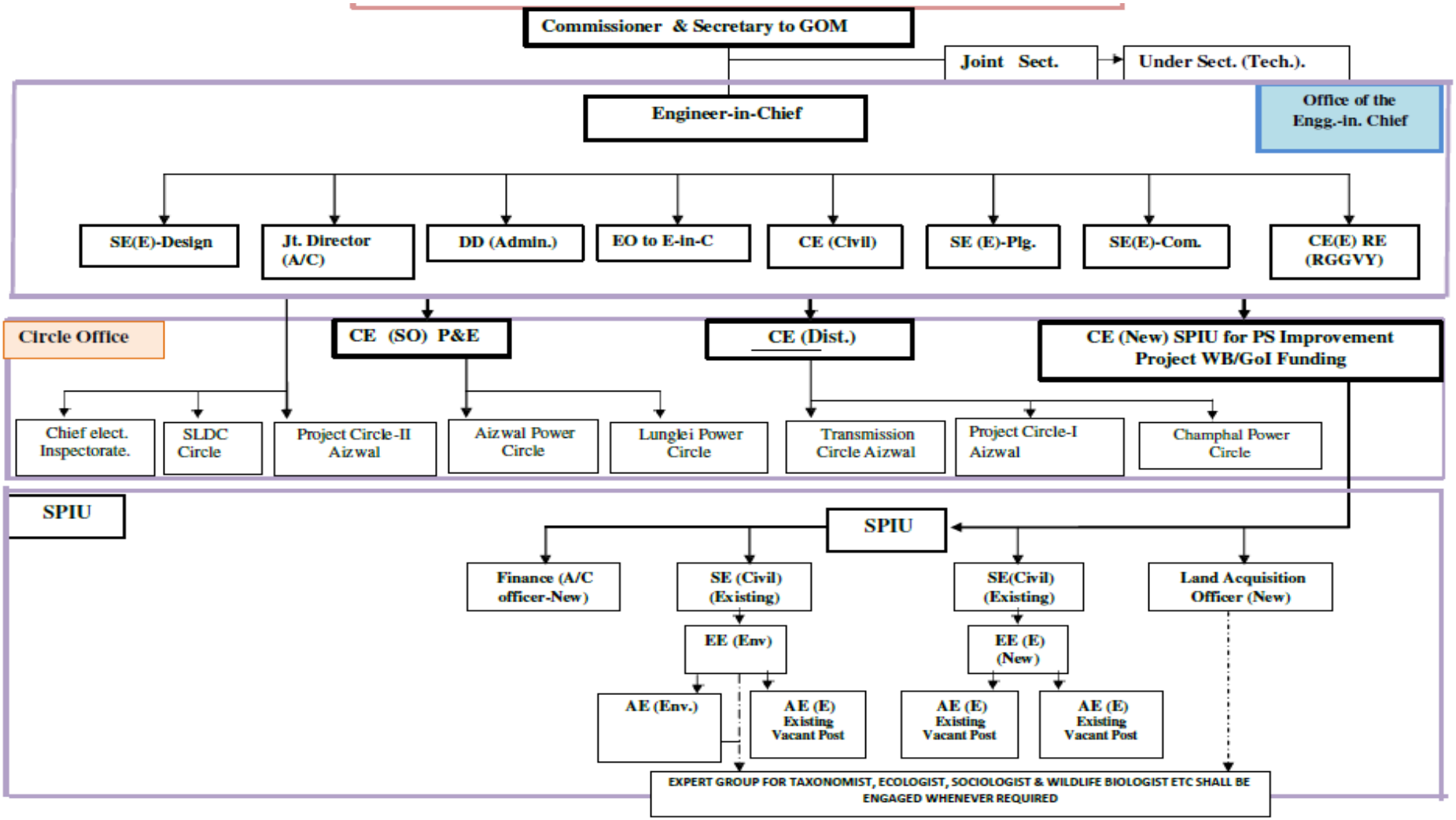
11.2 Status of Grievances

113. 2 verbal complaints have been registered till date against any of the subprojects covered under present CPTD, which have been resolved in due course of time.

Sl. No.	Name of the Subproject /State	Loc. No/ Village	Name of complainant	Date of complaints/ Court case	Main Issue of complaints	Status of complaint
1	132/33 kV Lunglei (Ext.) substation	Khawiva	Officials of Khawiva Power	06.03.19	Storage of soli near to Nala passes	**Resolved** on 13.03.19. SDO PMD- I, Khawiva

			Project		beside substation	suggested alternative location for storage/ disposal of excavated soil.
2	33 kV line Lungsen–Lungsen	Lungsen	Local Task Force	09.06.20	Not allowed to enter Outside Labourers in the village as part Covid-19 preventive measures	**Resolved** on 10.06.20. Matter discussed with local VCP, Lungsen relevant permission obtained

Figure 11.1: PEDM Support Structure for Safeguard Monitoring



ANNEXURE – 1

EVALUATION OF ALTERNATIVES ROUTE ALIGNMENT

EVALUATION OF ALTERNATIVES ROUTE ALIGNMENT

Three different alignments were studied with the help of Google Maps / published data such as Forest Atlas, Survey of India topographic sheets, etc. and walkover survey to arrive at the most optimum route to be considered for detailed survey. The comparative details of these three alternatives in respect of the proposed lines are as follows;

1. LUNGSEN - CHAWNGTE 132 kV S/C LINE - 30.985 km

S.N	Description	Alternative-I	Alternative-II	Alternative-III
1.	**Route particulars**			
i.	Route Length (km)	30.985	38.15	41.66
ii.	Terrain			
	Hilly/Undulated	100 %	100%	100%
	Plain	Nil	Nil	Nil
2.	**Environmental details**			
i.	Name of District through which the line passes	Lunglei & Lawgtlai	Lunglei & Lawgtlai	Lunglei & Lawgtlai
ii.	Town in alignment	Nil. Nearby Semi urban area are Lungsen, Ratlangg, Lalnutui, Lungrang, Rangta, Ruatlang Chwangte	Nil. Nearby Semi urban area are Lungsen, Ratlangg, Lalnutui, Lungrang, Rangta, Ruatlang Chwangte	Nil. Nearby Semi urban area are Lungsen, Ratlangg, Lalnutui, Lungrang, Rangta, Ruatlang Chwangte
iii.	House within ROW	Shall be ascertained after detailed survey	Shall be ascertained after detailed survey	Shall be ascertained after detailed survey
iv.	Forest involvement in Ha	Nil	Nil .	Nil
v.	Type of Forest (RF/PF/Mangrove/ Wildlife Area/ Elephant corridor/ Biodiversity Hotspots/Biosphere Reserve/Wetlands or any other environmentally sensitive area.)	N.A.	N.A.	N.A.
vi.	Density of Forests	N.A.	N.A.	N.A.
vii.	Others	Line is passing through Jhum cultivation land and private/ community owned land having some tree cover	Line is passing through Jhum cultivation land and private/ community owned land having some tree cover	Line is passing through Jhum cultivation land and private/ community owned land having some tree cover

S.N	Description	Alternative-I	Alternative-II	Alternative-III
viii.	Type of flora	Bamboo(Bambusa vulgaris), Gamari (Gmelina arborea), Champa(Magnolia champaca), Banyan(Ficus benghalensis) Gulmohar (Delonix regia) Needlewood (Skima wallichi)	Bamboo(Bambusa vulgaris), Gamari (Gmelina arborea), Champa(Magnolia champaca), Banyan(Ficus benghalensis) Gulmohar (Delonix regia) Needlewood (Skima wallichi)	Bamboo(Bambusa vulgaris), Gamari (Gmelina arborea), Champa(Magnolia champaca), Banyan(Ficus benghalensis) Gulmohar (Delonix regia) Needlewood (Skima wallichi)
ix.	Type of fauna	Porcupine (Hystrix indica), Mongoose (Herpestes edwardsii) and common fauna like Fox, Monkey, Sparrow etc.	Porcupine (Hystrix indica), Mongoose (Herpestes edwardsii) and common fauna like Fox, Monkey, Sparrow etc.	Porcupine (Hystrix indica), Mongoose (Herpestes edwardsii) and common fauna like Fox, Monkey, Sparrow etc.
x.	Endangered species, if any	Nil	Nil	Nil
xi.	Historical/cultural monuments	Nil	Nil	Nil
xii.	Any other relevant information	Line is mostly passing along the existing Lungsen-Chwngte state road (Portion from Chhumkhum-Chawngte appx. 42 km is being upgraded under scheme MSRP-II funded by World Bank)		
3	**Compensation Cost (in Lakhs)**			
i.	Crop (Non Forest)	Provision of 5 Lakhs/km kept in the budget	Provision of 5 Lakhs/km kept in the budget	Provision of 5 Lakhs/km kept in the budget
ii.	Forest (CA+NPV)	N.A.	N.A.	N.A.
4.	**No. of Crossings (Nos.)**			
i.	Highway (National/State)	Nil	Nil	Nil
ii.	Power line	Nil	Nil	Nil
iii.	Railway line	Nil	Nil	Nil
iv.	River crossing	1	1	1
5.	**Overall Remarks**	Easier access as it is routed along the Lungsen-Chawngte state road.	Line length is more in comparison to Alt-1.	Access is very difficult due to non existing roads and paths up to the route and line length is highest.

From the comparative analysis of three alternative routes, it is evident that Alternative-I is not only shorter in length than alternative II & III but also involve less tree felling as it passes mostly through Jhum cultivated areas with low density tree cover area.

Furthermore, Alternative- I is easily accessible due to its proximity to existing corridor of Lungsen-Chawngte road which is now being upgraded under scheme MSRP-II funded by World Bank.Hence, Alternative - I is considered as the most optimized route and recommended for detailed survey.

2. CHAWNGTE - S. BUNGTLANG 132 KV S/C LINE - 35.00 km

S.N	Description	Alternative-I	Alternative-II	Alternative-III
1.	**Route particulars**			
i.	Route Length (km)	35.00	44.59	45.11
ii.	Terrain			
	Hilly/Undulated	100 %	100%	100%
	Plain	Nil	Nil	Nil
2.	**Environmental details**			
i.	Name of District through which the line passes	Lawngtlai	Lawngtlai	Lawngtlai
ii.	Town in alignment	No major township. Nearby places are Chawngte, Mualbu, Cxawngtelhi, S. Bungtlang. Diltlang,	No major township. Nearby places are Chawngte, Mualbu, Cxawngtelhi, S. Bungtlang. Diltlang	No major township. Nearby places are Chawngte, Mualbu, Cxawngtelhi, S. Bungtlang. Diltlang
iii.	House within RoW	Shall be ascertained after detailed survey	Shall be ascertained after detailed survey	Shall be ascertained after detailed survey
iv.	Forest involvement in Ha	Nil	Nil .	Nil
v.	Type of Forest (RF/PF/Mangrove/Wildlife Area/ Elephant corridor/ Biodiversity Hotspots/Biosphere Reserve/Wetlands or any other environmentally sensitive area)	N.A.	N.A.	N.A.
vi.	Density of Forests	N.A.	N.A.	N.A.
vii.	Others	Line is passing through Jhum cultivation land and private/ community owned land having some tree cover	Line is passing through Jhum cultivation land and private/ community owned land having some tree cover	Line is passing through Jhum cultivation land and private/ community owned land having some tree cover
viii.	Type of flora	Bamboo(Bambusa vulgaris), Gamari (Gmelina arborea), Champa(Magnolia champaca), Gulmohar (Delonix regia) Needlewood (Skima wallichi)	Bamboo(Bambusa vulgaris), Gamari (Gmelina arborea), Champa(Magnolia champaca), Gulmohar (Delonix regia) Needlewood (Skima wallichi)	Bamboo(Bambusa vulgaris), Gamari (Gmelina arborea), Champa(Magnolia champaca), Gulmohar (Delonix regia) Needlewood (Skima wallichi)
ix.	Type of fauna	Porcupine (Hystrix indica), Mongoose (Herpestes edwardsii) and common fauna like Fox, Monkey, Sparrow etc.	Porcupine (Hystrix indica), Mongoose (Herpestes edwardsii) and common fauna like Fox, Monkey, Sparrow etc.	Porcupine (Hystrix indica), Mongoose (Herpestes edwardsii) and common fauna like Fox, Monkey, Sparrow etc.

S.N	Description	Alternative-I	Alternative-II	Alternative-III
x.	Endangered species, if any	Nil	Nil	Nil
xi.	Historical/cultural monuments	Nil	Nil	Nil
xii.	Any other relevant information	Line mostly passing along the existing Chwngte - S. Bungtlang road. ***(Portion from Chawngte to S.Bungtlang up to Multimodal Road Junction appx. 76 KM being upgraded under Bank funded scheme of MSRP-II).***		
3	**Compensation Cost (in Lakhs)**			
i.	Crop (Non Forest)	Provision of 5 Lakhs/km kept in the budget	Provision of 5 Lakhs/km kept in the budget	Provision of 5 Lakhs/km kept in the budget
ii.	Forest (CA+NPV)	N.A.	N.A.	N.A.
4.	**No. of Crossings (Nos.)**			
i.	Highway (National/State)	Nil	Nil	Nil
ii.	Power line	Nil	Nil	Nil
iii.	Railway line	Nil	Nil	Nil
iv.	River crossing	Nil	Nil	Nil
5.	**Overall Remarks**	Shorter in length and easier access as it is routed along Chawngte-S. Bungtlang state road.	Line length is more in comparison to Alt-1 and also difficulty in accessibility.	Access is very difficult due to non existing roads and paths up to the route and line length is highest

From the comparative analysis of three alternative routes, it is evident that Alternative-I is not only shorter in length than alternative II & III but also involve less tree felling as it passes mostly through Jhum cultivated areas with low density tree cover area. Moreover, protected areas have been completely avoided and Ngengpui Wildlife Sanctuary is at a distance of around 0.6 km. Furthermore, Alternative- I is easily accessible due to its proximity to existing corridor of Chawngte- S. Bungtlang roads which is now being upgraded under scheme MSRP-II funded by World Bank. Hence, Alternative - I is considered as the most optimized route and recommended for detailed survey.

ANNEXURE – 2

DETAILS OF TOWER SCHEDULE OF PROPOSED LINES ROUTE ALIGNMENT

NAME OF CLIENT :- M/S POWER GRID CORPORATION OF INDIA LIMITED

NAME OF PROJECT :- SUPPLY OF SERVICES CONTRACT FOR TOWER PACKAGE TW01 ASSOCIATED WITH NER POWER SYSTEM IMPROVEMENT PROJECT (INTERSTATE MIZORAM)

132KV TRANSMISSION LINE FROM CHAWNGTE TO SOUTH BUNGTLANG - TOWER SCHEDULE (AP 05 - AP 79)

S.NO	TOWER NO	TOWER TYPE	DEVIATION OF ANGLE	SPAN (m)	SECTION LENGTH (m)	CUM. CHAINAGE (m)	RL (m)	WIND SPAN (m)	ADJACENT SPAN			WEIGHT SPAN (COLD)			WEIGHT SPAN (HOT)			CROSSING DETAILS	UTM CO-ORDINATE		REMARKS
									LEFT	RIGHT	TOTAL	LEFT	RIGHT	TOTAL	LEFT	RIGHT	TOTAL		EASTING	NORTHING	
1	AP05/0	XXX	DD°MM'SS"			0	134.751	XY	X	305.00	Y	XX	370.318	YY	XXX	285.055	YYY		463881	2502012	
				305	305													ROAD			
2	AP06/0	SB+0	04°44'14"RT			305.00	106.705	325.00	305.00	345.00	650.00	-67.598	201.849	134.251	17.372	189.952	207.324		464079	2501782	
				345	345													River			
4	AP08/0	SC+6	14°56'21"RT			650.00	96.276	310.00	345.00	275.00	620.00	140.743	-211.136	-70.393	152.640	-75.612	77.028		464278	2501508	
				275	275													ROAD			
5	AP09/0	SC+0	17°47'05"RT			925.00	142.593	262.50	275.00	250.00	525.00	484.919	-80.649	404.270	349.395	-0.331	349.064		464367	2501250	
				250	250																
6	AP10/0	SC+0	09°5'48"LT			1175.00	164.518	267.50	250.00	285.00	535.00	331.870	253.939	585.809	251.552	210.154	461.706		464468	2501018	
				285	285																
7	AP11/0	SD+0	39°58'47"LT			1460.00	151.054	240.00	285.00	195.00	480.00	29.059	-70.214	-41.155	72.844	-5.247	67.597		464613	2500779	
				195	195																
8	AP12/0	SC+0	10°15'2"RT			1655.00	164.707	245.00	195.00	295.00	490.00	263.568	-145.309	118.259	198.574	-31.248	167.326		464798	2500722	
				295	295																
9	AP13/0	SC+0	13°31'05"RT			1950.00	201.294	297.50	295.00	300.00	595.00	440.513	87.391	527.904	326.452	111.660	438.112		465059	2500582	
				300	300																
10	AP14/0	SC+0	12°0'17"RT			2250.00	209.190	317.50	300.00	335.00	635.00	212.037	-245.815	-33.778	188.340	-85.486	102.854		465284	2500376	
				335	335																
11	AP15/0	SC+0	09°13'37"RT			2585.00	266.999	356.00	335.00	377.00	712.00	577.644	141.628	719.272	417.315	159.958	577.273		465477	2500111	
				377																	
12	AP16	SC+3	08°24'56" (RT)		377	2962.00	271.198	260.50	377.00	144.00	521.00	235.774	5.005	240.779	217.444	31.093	248.537		465694	2499805	
				144																	
13	AP16A	SB+3	03°47'48" (LT)		144	3106.00	275.280	274.00	144.00	404.00	548.00	138.995	-237.321	-98.326	112.907	-65.802	47.105		465764	2499670	
				404																	
14	AP17	SC+9	09°06'54" (LT)		404	3510.00	344.969	335.00	404.00	266.00	670.00	643.607	-444.101	199.506	472.088	-219.378	252.710		465975	2499334	
				266																	
15	AP18	SD+9	21°23'07" (RT)		266	3776.00	409.917	309.50	266.00	353.00	619.00	710.083	-160.234	549.849	485.360	-29.072	456.288		466143	2499128	D+12 Mtr extn or special tower is required for obtaining the required ground clearance.
				353																	
16	AP19	SC+9	18°00'22" (RT)		353	4129.00	460.253	319.50	353.00	286.00	639.00	513.420	-244.717	268.703	382.258	-93.810	288.448		466268	2498796	
				286																	
17	AP20	SD+9	21°06'57" (LT)		286	4415.00	507.089	333.00	286.00	380.00	666.00	530.317	154.338	684.655	379.440	168.225	547.665		466257	2498508	D type tower is selected based on adjacent span permissible limit eventhough its angle of deviation is within limit of C type
				380																	
18	AP21	SC+0	09°04'24" (RT)		380	4795.00	521.823	305.00	380.00	230.00	610.00	225.662	261.678	487.340	211.775	204.671	416.446	Proposed 132KV Tr.Line running parallel to Existing Church	466195	2498139	
				230																	
19	AP22	SC+9	12°03'58" (LT)		230	5025.00	498.541	226.00	230.00	222.00	452.00	-31.113	382.512	351.399	25.894	276.743	302.637		466193	2497907	
				222																	
20	AP23	SC+6	09°43'00" (LT)		222	5247.00	476.051	326.50	222.00	431.00	653.00	-160.720	90.566	-70.154	-54.951	139.305	84.354		466233	2497687	

S.NO	TOWER NO	TOWER TYPE	DEVIATION OF ANGLE	SPAN (m)	SECTION LENGTH (m)	CUM. CHAINAGE (m)	RL (m)	WIND SPAN (m)	ADJACENT SPAN			WEIGHT SPAN (COLD)			WEIGHT SPAN (HOT)			CROSSING DETAILS	UTM CO-ORDINATE		REMARKS
									LEFT	RIGHT	TOTAL	LEFT	RIGHT	TOTAL	LEFT	RIGHT	TOTAL		EASTING	NORTHING	
				431																	
21	AP23/1	**SC+6**	03°12'09" (LT)		431	5678.00	498.744	**355.00**	431.00	279.00	**710.00**	340.893	240.584	**581.477**	292.154	201.138	**493.292**		**466387**	**2497284**	C type tower is selected based on adjacent span permissible limit eventhough its angle of deviation is within limit of B type
				279																	
22	AP23/2	**SC+9**	03°27'35" (RT)		279	5957.00	483.804	**344.50**	279.00	410.00	**689.00**	37.991	-175.220	**-137.229**	77.437	-27.160	**50.277**		**466503**	**2497034**	C type tower is selected based on adjacent span permissible limit eventhough its angle of deviation is within limit of B type
				410																	
23	AP24/0	**SC+3**	09°07'24" (RT)		410	6367.00	555.765	**332.00**	410.00	254.00	**664.00**	585.220	-12.899	**572.321**	437.160	41.651	**478.811**		**466646**	**2496650**	
				254.0																	
24	AP24/1	**SC+3**	10°11'11" (RT)		254	6621.00	570.868	**322.50**	254.00	391.00	**645.00**	267.275	14.516	**281.791**	212.725	84.987	**297.712**		**466703**	**2496402**	
				391.0																	
25	AP24/2	**SC+9**	11°03'38" (RT)		391	7012.00	594.806	**345.00**	391.00	299.00	**690.00**	376.457	78.079	**454.536**	305.986	105.876	**411.862**		**466713**	**2496014**	
				299																	
26	AP24/3	**SD+6**	16°53'04" (RT)		299	7311.00	606.835	**352.00**	299.00	405.00	**704.00**	220.848	228.283	**449.131**	193.051	218.238	**411.289**		**466661**	**2495717**	D type tower is selected based on adjacent span permissible limit eventhough its angle of deviation is within limit of C type
				405																	
27	AP25	**SB+3**	01°35'39" (LT)		405	7716.00	605.415	**297.50**	405.00	190.00	**595.00**	176.694	-56.906	**119.788**	186.739	2.246	**188.985**		**466482**	**2495353**	
				190																	
28	AP26	**SC+0**	11°52'31" (LT)		190	7906.00	620.627	**207.00**	190.00	224.00	**414.00**	246.903	18.541	**265.444**	187.751	54.837	**242.588**		**466406**	**2495179**	
				224																	
29	AP26/1	**SC+0**	04°31'26" (LT)		224	8130.00	629.894	**328.00**	224.00	432.00	**656.00**	204.959	276.267	**481.226**	168.663	252.717	**421.380**		**466353**	**2494964**	C type tower is selected based on adjacent span permissible limit eventhough its angle of deviation is within limit of B type
				432																	
30	AP27/0	**SD+9**	30°24'20" (LT)		432	8562.00	609.207	**339.00**	432.00	246.00	**678.00**	155.479	-117.074	**38.405**	178.865	-23.578	**155.287**		**466291**	**2494542**	
				246																	
31	AP28/0	**SD+6**	31°44'39" LT		246	8808.00	636.808	**218.00**	246.00	190.00	**436.00**	363.126	241.712	**604.838**	269.630	184.727	**454.357**		**466378**	**2494310**	
				190																	
32	28/1	**SD+0**	30°20'07" LT		347	8998.00	630.997	**173.50**	190.00	157.00	**347.00**	-50.962	432.539	**381.577**	6.023	294.673	**300.696**		**466534**	**2494201**	
				157																	
33	AP29/0	**SB+0**	05°56'07" RT			9155.00	607.479	**203.50**	157.00	250.00	**407.00**	-275.548	404.950	**129.402**	-137.682	295.946	**158.264**		**466689**	**2494182**	
				250	250																
34	AP29/A	**SC+0**	19°46'26"LT			9405.00	577.862	**213.00**	250.00	176.00	**426.00**	-154.896	695.559	**540.663**	-45.892	459.018	**413.126**		**466936**	**2494129**	
				176	176													Road			
35	AP29/B	**SB+9**	02°30'39"LT			9581.00	526.221	**164.50**	176.00	153.00	**329.00**	-519.322	91.498	**-427.824**	-282.781	85.650	**-197.131**		**467106**	**2494157**	
				153	153																
36	AP30/0	**SD+3**	40°25'41"RT			9734.00	525.249	**199.00**	153.00	245.00	**398.00**	61.461	-25.119	**36.342**	67.309	32.208	**99.517**		**467260**	**2494199**	
				245	245													Road			
37	AP31/0	**SD+0**	29°49'38"RT			9979.00	549.460	**319.00**	245.00	393.00	**638.00**	269.313	204.744	**474.057**	211.986	201.556	**413.542**		**467473**	**2494078**	1000
				393														Road 2 Nos			

S.NO	TOWER NO	TOWER TYPE	DEVIATION OF ANGLE	SPAN (m)	SECTION LENGTH (m)	CUM. CHAINAGE (m)	RL (m)	WIND SPAN (m)	ADJACENT SPAN			WEIGHT SPAN (COLD)			WEIGHT SPAN (HOT)			CROSSING DETAILS	UTM CO-ORDINATE		REMARKS
									LEFT	RIGHT	TOTAL	LEFT	RIGHT	TOTAL	LEFT	RIGHT	TOTAL		EASTING	NORTHING	
38	AP32/0	SC+0	04°25'51"LT		393	10372.00	548.098	**354.00**	393.00	315.00	**708.00**	188.368	1184.544	**1372.912**	191.556	784.316	**975.872**		**467684**	**2493745**	Weight Span is more than 1000 so special tower is required. C type tower is selected based on adjacent span permissible limit eventhough its angle of deviation is within limit of B type
				315	315													Road & Nala			
39	AP33/0	SB+9	01°34'49"RT			10687.00	402.760	**217.50**	315.00	120.00	**435.00**	-871.040	909.839	**38.799**	-470.812	578.685	**107.873**		**467872**	**2493497**	
				120	120																
40	AP33/A	SC+6	17°36'26"RT			10807.00	359.991	**187.50**	120.00	255.00	**375.00**	-790.980	340.181	**-450.799**	-459.826	257.075	**-202.751**		**467936**	**2493398**	
				255	255													Nala			
41	AP33/B	SB+9	02°23'20"LT			11062.00	334.097	**229.00**	255.00	203.00	**458.00**	-86.655	-259.248	**-345.903**	-3.616	-118.914	**-122.530**		**468017**	**2493156**	
				203	203																
42	AP34/0	SC+0	20°30'58"LT			11265.00	373.940	**223.00**	203.00	243.00	**446.00**	461.515	15.761	**477.276**	318.914	56.886	**375.800**		**468086**	**2492967**	
				243	243																
43	AP34/A	SB+9	03°56'15"RT			11508.00	375.787	**256.50**	243.00	270.00	**513.00**	226.979	-196.027	**30.952**	185.854	-67.392	**118.462**		**468245**	**2492785**	
				270	270													Road			
44	AP35/0	SB+3	05°55'55"RT			11778.00	419.333	**285.00**	270.00	300.00	**570.00**	464.647	517.245	**981.892**	336.012	374.151	**710.163**		**468408**	**2492569**	
				300	300																
45	AP36/0	SC+0	07°21'48"RT			12078.00	375.757	**345.00**	300.00	390.00	**690.00**	-217.245	443.191	**225.946**	-74.599	346.465	**271.866**		**468562**	**2492315**	C type tower is selected based on adjacent span permissible limit eventhough its angle of deviation is within limit of B type
				390	390																
46	AP36/A	SC+0	04°37'49"RT			12468.00	334.810	**430.00**	390.00	470.00	**860.00**	-53.600	220.607	**167.007**	43.126	226.404	**269.530**		**468724**	**2491961**	C type tower is selected based on adjacent span permissible limit eventhough its angle of deviation is within limit of B type
				470	470													Road			
47	AP37/A	SC+0	13°56'41"LT			12938.00	337.777	**362.00**	470.00	254.00	**724.00**	250.383	684.548	**934.931**	244.586	467.553	**712.139**		**468883**	**2491519**	
				254	254													Road - 02 nos			
48	AP37/B	SB+9	00°52'24"RT			13192.00	268.746	**280.00**	254.00	306.00	**560.00**	-429.948	338.325	**-91.623**	-212.953	266.170	**53.217**		**469029**	**2491310**	
				306	306																
49	AP38/0	SC+9	07°29'04"RT			13498.00	244.750	**292.00**	306.00	278.00	**584.00**	-32.264	-59.395	**-91.659**	39.891	17.898	**57.789**		**469196**	**2491060**	
				278	278																
50	AP38/A	SD+9	18°39'53"LT			13776.00	268.114	**334.00**	278.00	390.00	**668.00**	337.584	467.410	**804.994**	260.291	361.074	**621.365**		**469324**	**2490808**	D type tower is selected based on adjacent span permissible limit eventhough its angle of deviation is within limit of C type
				390	390													CHAWNGTELUI RIVER			
51	AP39/0	SD+6	31°23'30"LT			14166.00	223.205	**332.50**	390.00	275.00	**665.00**	-96.974	-292.076	**-389.050**	16.464	-124.660	**-108.196**		**469599**	**2490535**	
				275	275													Nala,Road & 11KV line			
52	AP40/0	SC+3	08°51'43"LT			14441.00	276.359	**285.00**	275.00	295.00	**570.00**	567.779	-384.704	**183.075**	400.363	-177.428	**222.935**		**469867**	**2490467**	
				295	295																
53	AP41/0	SC+3	13°01'53"LT			14736.00	342.838	**243.50**	295.00	192.00	**487.00**	679.872	27.306	**707.178**	472.596	53.950	**526.546**		**470160**	**2490445**	
				192	192																
54	AP41/A	SD+0	23°39'18"RT			14928.00	351.381	**297.50**	192.00	403.00	**595.00**	164.152	41.684	**205.836**	137.508	103.935	**241.443**		**470353**	**2490474**	
				403														Road 4 Nos			

S.NO	TOWER NO	TOWER TYPE	DEVIATION OF ANGLE	SPAN (m)	SECTION LENGTH (m)	CUM. CHAINAGE (m)	RL (m)	WIND SPAN (m)	ADJACENT SPAN			WEIGHT SPAN (COLD)			WEIGHT SPAN (HOT)			CROSSING DETAILS	UTM CO-ORDINATE		REMARKS
									LEFT	RIGHT	TOTAL	LEFT	RIGHT	TOTAL	LEFT	RIGHT	TOTAL		EASTING	NORTHING	
55	AP42/0	SC+0	04°06'12"RT		403	15331.00	378.647	**364.50**	403.00	326.00	**729.00**	361.409	-341.996	**19.413**	299.158	-145.296	**153.862**		**470737**	**2490368**	C type tower is selected based on adjacent span permissible limit eventhough its angle of deviation is within limit of B type
				326	326													Road 2Nos			
56	AP44/0	SC+9	09°14'28"RT			15657.00	439.381	**358.00**	326.00	390.00	**716.00**	668.263	-157.725	**510.538**	471.563	-20.741	**450.822**		**471075**	**2490118**	
				390	390													Road - 2 nos			
57	AP45/0	SC+9	21°39'20"LT			16047.00	497.149	**288.50**	390.00	187.00	**577.00**	763.809	-440.007	**323.802**	522.867	-232.255	**290.612**		**471293**	**2489933**	
				187	187																
58	AP45/A	SD+0	26°17'14"RT			16234.00	548.364	**196.00**	187.00	205.00	**392.00**	627.613	90.055	**717.068**	419.261	94.987	**514.248**		**471467**	**2489860**	
				205	205																
59	AP45/B	SC+9	10°10'31"RT			16439.00	540.465	**287.50**	205.00	370.00	**575.00**	115.386	-167.232	**-51.846**	110.454	-30.303	**80.151**		**471605**	**2489705**	
				370	370																
60	AP46/0	SC+6	16°26'43"RT			16809.00	598.338	**285.50**	370.00	201.00	**571.00**	536.038	83.445	**619.483**	399.109	89.891	**489.000**		**471791**	**2489389**	
				201	415																
61	46/1	SB+0	00°00'00"			17010.00	605.715	**207.50**	201.00	214.00	**415.00**	116.555	187.633	**304.188**	110.109	156.476	**266.585**		**471845**	**2489187**	
				214														Cart Track			
62	AP46/A	SC+9	09°48'02"LT			17224.00	589.428	**260.50**	214.00	307.00	**521.00**	27.611	367.520	**395.131**	58.768	284.232	**343.000**		**471915**	**2488976**	
				307	307													Cart Track & Nala 2 Nos			
63	AP47/0	SC+3	06°15'41"RT			17531.00	567.620	**299.50**	307.00	292.00	**599.00**	-60.251	124.645	**64.394**	23.037	132.852	**155.889**		**472024**	**2488708**	C type tower is selected based on adjacent span permissible limit eventhough its angle of deviation is within limit of B type
				292	292																
64	AP48/0	SC+3	15°51'19"RT			17823.00	570.220	**296.00**	292.00	300.00	**592.00**	166.797	106.719	**273.516**	158.590	123.573	**282.163**		**472117**	**2488433**	
				300	746													Pond			
65	48/1	SB+3	00°00'00"			18123.00	575.714	**247.00**	300.00	194.00	**494.00**	193.281	120.803	**314.084**	176.427	111.534	**287.961**		**472126**	**2488135**	
				194																	
66	48/2	SB+0	00°00'00"			18317.00	576.860	**223.00**	194.00	252.00	**446.00**	73.197	46.983	**120.180**	82.466	77.718	**160.184**		**472133**	**2487940**	
				252																	
67	AP49/0	SB+3	1°15'19"RT			18569.00	582.170	**226.50**	252.00	201.00	**453.00**	204.838	-38.440	**166.398**	174.103	15.700	**189.803**		**472145**	**2487687**	
				201	201													Nala 2Nos			
68	AP50/0	SC+9	13°54'07"LT			18770.00	588.002	**256.00**	201.00	311.00	**512.00**	239.628	-424.570	**-184.942**	185.486	-198.724	**-13.238**		**472151**	**2487485**	
				311	311													11KV Line			
69	AP51/0	SD+9	23°04'07"LT			19081.00	664.276	**245.50**	311.00	180.00	**491.00**	735.382	-332.086	**403.296**	509.536	-167.724	**341.812**		**472237**	**2487185**	
				180	180													Road			
70	AP52/0	SB+3	07°36'57"RT			19261.00	702.391	**235.00**	180.00	290.00	**470.00**	512.086	96.693	**608.779**	347.724	115.343	**463.067**		**472347**	**2487050**	
				290	290													11 KV Line			
71	AP52/A	SC+9	09°37'41"RT			19551.00	702.251	**321.50**	290.00	353.00	**643.00**	192.479	-400.503	**-208.024**	173.829	-175.803	**-1.974**		**472498**	**2486801**	
				353	353																
72	AP53/0	SC+3	06°23'5"LT			19904.00	794.459	**301.50**	353.00	250.00	**603.00**	753.563	39.887	**793.450**	528.863	72.746	**601.609**		**472627**	**2486469**	C type tower is selected based on adjacent span permissible limit eventhough its angle of deviation is within limit of B type
				250	250																
73	AP54/0	SD+0	32°45'59"RT			20154.00	806.333	**315.50**	250.00	381.00	**631.00**	208.653	68.477	**277.130**	175.794	116.007	**291.801**		**472747**	**2486257**	
				381	381																
74	AP54/A	SB+0	1°14'15"LT			20535.00	826.152	**325.50**	381.00	270.00	**651.00**	312.595	361.133	**673.728**	265.065	273.130	**538.195**		**472713**	**2485876**	

S.NO	TOWER NO	TOWER TYPE	DEVIATION OF ANGLE	SPAN (m)	SECTION LENGTH (m)	CUM. CHAINAGE (m)	RL (m)	WIND SPAN (m)	ADJACENT SPAN			WEIGHT SPAN (COLD)			WEIGHT SPAN (HOT)			CROSSING DETAILS	UTM CO-ORDINATE		REMARKS
									LEFT	RIGHT	TOTAL	LEFT	RIGHT	TOTAL	LEFT	RIGHT	TOTAL		EASTING	NORTHING	
				270	270																
75	AP54/B	**SC+9**	9°2'56"RT			20805.00	791.307	**303.00**	270.00	336.00	**606.00**	-90.856	88.470	**-2.386**	-2.853	119.460	**116.607**		**472697**	**2485603**	
				336	336													Road 2 Nos & 33 KV line			
76	AP55/0	**SD+3**	23°32'47"LT			21141.00	808.625	**278.00**	336.00	220.00	**556.00**	247.637	-391.248	**-143.611**	216.647	-196.113	**20.534**		**472621**	**2485277**	
				220	220																
77	AP55/A	**SD+3**	18°05'52"LT			21361.00	855.223	**316.50**	220.00	413.00	**633.00**	610.970	141.645	**752.615**	415.835	166.827	**582.662**		**472666**	**2485062**	D type tower is selected based on adjacent span permissible limit eventhough its angle of deviation is within limit of C type
				413	413													Road 2 Nos			
78	AP56/0	**SC+3**	16°24'17"RT			21774.00	866.513	**283.50**	413.00	154.00	**567.00**	270.977	692.258	**963.235**	245.795	452.693	**698.488**		**472869**	**2484701**	
				154	154													Road & 11 KV Line			
79	AP57/0	**SC+3**	19°57'16"RT			21928.00	826.399	**226.00**	154.00	298.00	**452.00**	-538.157	95.308	**-442.849**	-298.592	116.272	**-182.320**		**472904**	**2484553**	
				298	298																
80	AP58/0	**SC+3**	07°43'51"LT			22226.00	833.194	**264.00**	298.00	230.00	**528.00**	202.982	-162.041	**40.941**	182.018	-54.234	**127.784**		**472868**	**2484254**	
				230	230													11 KV Line & Road			
81	AP59/0	**SD+3**	29°48'21"RT			22456.00	860.068	**250.00**	230.00	270.00	**500.00**	391.499	96.735	**488.234**	283.730	111.469	**395.199**		**472868**	**2484027**	
				270	270																
82	AP59/A	**SD+0**	26°12'56"LT			22726.00	867.460	**298.00**	270.00	326.00	**596.00**	172.410	401.707	**574.117**	157.679	308.796	**466.475**		**472738**	**2483800**	
				326	326													11 KV Line & Road			
83	AP59/B	**SC+0**	15°19'56"LT			23052.00	834.526	**264.50**	326.00	203.00	**529.00**	-75.485	20.429	**-55.056**	17.426	51.997	**69.423**		**472713**	**2483468**	
				203	203													Road - 2nos			
84	AP59/C	**SC+3**	17°18'07"LT			23255.00	838.489	**169.00**	203.00	135.00	**338.00**	182.564	-23.902	**158.662**	150.996	11.664	**162.660**		**472760**	**2483262**	
				135	135																
85	AP60/0	**SD+0**	21°02'57"LT			23390.00	846.701	**274.00**	135.00	413.00	**548.00**	158.767	413.630	**572.397**	123.201	332.958	**456.159**		**472817**	**2483147**	D type tower is selected based on adjacent span permissible limit eventhough its angle of deviation is within limit of C type
				413	413													2 no.of Road & 11 KV Line			
86	AP61/0	**SD+3**	29°51'37"RT			23803.00	807.505	**301.50**	413.00	190.00	**603.00**	-0.695	-335.920	**-336.615**	79.971	-168.096	**-88.125**		**473130**	**2482885**	
				190	190													11 KV Line & Road 3 Nos			
87	AP62/0	**SD+6**	21°11'52"RT			23993.00	839.173	**253.50**	190.00	317.00	**507.00**	526.031	384.058	**910.089**	358.207	294.644	**652.851**		**473202**	**2482707**	D type tower is selected based on adjacent span permissible limit eventhough its angle of deviation is within limit of C type
				317	317													11 KV Line & Road			
88	AP62/A	**SD+6**	30°57'09"LT			24310.00	808.921	**343.50**	317.00	370.00	**687.00**	-67.137	139.505	**72.368**	20.712	157.128	**177.840**		**473197**	**2482390**	
				370	370													11 KV Line & Road			
89	AP63/0	**SC+0**	09°34'03"LT			24680.00	821.997	**241.50**	370.00	113.00	**483.00**	230.017	120.332	**350.349**	212.394	95.355	**307.749**		**473381**	**2482071**	
				113	113																
90	AP64/0	**SD+0**	30°24'48"RT			24793.00	818.967	**263.00**	113.00	413.00	**526.00**	-7.948	382.670	**374.722**	17.029	314.110	**331.139**		**473448**	**2481981**	
				413	413													Road 4 Nos			
91	AP64/A	**SB+3**	03°00'40"LT			25206.00	785.184	**349.50**	413.00	286.00	**699.00**	30.545	35.975	**66.520**	99.105	77.682	**176.787**		**473513**	**2481575**	

S.NO	TOWER NO	TOWER TYPE	DEVIATION OF ANGLE	SPAN (m)	SECTION LENGTH (m)	CUM. CHAINAGE (m)	RL (m)	WIND SPAN (m)	ADJACENT SPAN			WEIGHT SPAN (COLD)			WEIGHT SPAN (HOT)			CROSSING DETAILS	UTM CO-ORDINATE		REMARKS
									LEFT	RIGHT	TOTAL	LEFT	RIGHT	TOTAL	LEFT	RIGHT	TOTAL		EASTING	NORTHING	
				286	286																
92	AP65/0	SD+0	24°30'00"LT			25492.00	801.152	318.00	286.00	350.00	636.00	250.181	60.369	310.550	208.474	104.814	313.288		473575	2481297	
				350	350																
93	AP65/A	SD+0	30°15'47"RT			25842.00	818.007	256.00	350.00	162.00	512.00	288.641	348.888	637.529	244.196	244.461	488.657		473784	2481015	
				162	162																
94	AP66/0	SC+6	05°17'44"LT			26004.00	793.689	284.00	162.00	406.00	568.00	-187.453	346.847	159.394	-83.026	207.754	124.728		473798	2480851	C type tower is selected based on adjacent span permissible limit eventhough its angle of deviation is within limit of B type
				406	406													Road			
95	AP67/0	SB+6	00°39'54"RT			26410.00	768.971	305.50	406.00	205.00	611.00	58.885	-115.087	-56.202	114.952	-30.284	84.668		473880	2480458	
				205	205													Road			
96	AP68/0	SB+0	01°27'17" LT			26615.00	793.896	232.50	205.00	260.00	465.00	320.466	139.100	459.566	235.663	135.305	370.968		473921	2480255	
				260	610													ROAD CHAWNGTE TO S.BUNGTLANG, 11 KV LINE			
97	AP69/0	SC+0	07°53'19" RT			26875.00	793.390	305.00	260.00	350.00	610.00	119.606	285.706	405.312	123.401	242.393	365.794		473975	2479999	C type tower is selected based on adjacent span permissible llmit eventhough its angle of devlation is within limit of B type
				350																	
98	AP69/A	SC+3	07°24'24" RT			27225.00	773.967	275.00	350.00	200.00	550.00	63.249	700.451	763.700	106.562	466.642	573.204	REVETMENT	474003	2479653	
				200	200																
99	AP70/0	SC+6	13°50'20" RT			27425.00	720.143	227.50	200.00	255.00	455.00	-500.400	318.728	-181.672	-266.591	244.512	-22.079	REVETMENT	473996	2479459	
				255																	
100	AP70/A	SC+3	13°27'31" LT			27680.00	702.476	308.50	255.00	362.00	617.00	-62.449	-29.644	-92.093	11.767	52.358	64.125	REVETMENT	473918	2479208	
				362														Road , S.BUNGTLANG TO CHAWNGTE, 11 KV LINE.... Proposed 132kv line running parallel to school.			
101	AP70/B	SD+0	20°48'35" LT		1037	28042.00	737.748	278.50	362.00	195.00	557.00	391.729	87.256	478.985	309.676	91.193	400.869		473899	2478846	D type tower is selected based on adjacent span permissible limit eventhough its angle of deviation is within limit of C type
				195																	
102	AP70/C	SC+6	17°02'49" LT			28237.00	732.581	210.00	195.00	225.00	420.00	107.476	-95.805	11.671	103.539	-14.891	88.648		473958	2478661	
				225																	
103	AP71/0	SD+0	30°11'22" RT			28462.00	758.272	313.50	225.00	402.00	627.00	319.770	440.868	760.638	238.856	347.419	586.275		474086	2478480	
				402														S.BUNGTLANG TO CHAWNGTE ROAD - 2nos, ,11 KV LINE			
104	AP71/A	SC+6	09°13'20" LT			28864.00	711.475	309.50	402.00	217.00	619.00	-39.089	-54.446	-93.535	54.360	8.951	63.311		474118	2478077	
				217																	
105	AP71/B	SB+6	00°45'25" RT		1156	29081.00	732.400	249.50	217.00	282.00	499.00	271.164	444.246	715.410	207.767	326.167	533.934		474173	2477867	
				282														11 KV LINE			
106	AP71/C	SD+0	32°00'45" LT			29363.00	696.218	268.50	282.00	255.00	537.00	-162.212	369.037	206.825	-44.133	275.102	230.969		474235	2477593	
				255														CHAWNGTE TO S.BUNGTLANG ROAD- 02nos			
107	AP72/0	SC+0	13°42'26" RT			29618.00	670.127	264.00	255.00	273.00	528.00	-113.415	-79.251	-192.666	-19.480	4.790	-14.690		474417	2477413	
				273																	

S.NO	TOWER NO	TOWER TYPE	DEVIATION OF ANGLE	SPAN (m)	SECTION LENGTH (m)	CUM. CHAINAGE (m)	RL (m)	WIND SPAN (m)	ADJACENT SPAN			WEIGHT SPAN (COLD)			WEIGHT SPAN (HOT)			CROSSING DETAILS	UTM CO-ORDINATE		REMARKS
									LEFT	RIGHT	TOTAL	LEFT	RIGHT	TOTAL	LEFT	RIGHT	TOTAL		EASTING	NORTHING	
108	AP72/A	SC+0	03°21'04" RT		694	29891.00	695.069	**347.00**	273.00	421.00	**694.00**	352.385	371.890	**724.275**	268.344	350.095	**618.439**		**474558**	**2477179**	C type tower is selected based on adjacent span permissible limit eventhough its angle of deviation is within limit of B type
				421														CHAWNGTE TO S.BUNGTLANG ROAD			
109	AP73/0	SD+3	20°36'42" RT			30312.00	663.312	**355.50**	421.00	290.00	**711.00**	48.110	191.490	**239.600**	111.655	173.254	**284.909**		**474753**	2476807	D type tower is selected based on adjacent span permissible limit eventhough its angle of deviation is within limit of C type
				290																	
110	AP73/A	SC+0	08°04'20" LT			30602.00	660.579	**290.00**	290.00	290.00	**580.00**	97.827	404.608	**502.435**	116.063	303.151	**419.214**		**474791**	2476523	
				290	290													S.BUNGTLANG TO CHAWNGTE ROAD, 11 KV LINE			
110	AP74/0	SD+0	32°18'15" RT			30892.00	628.815	**285.00**	290.00	280.00	**570.00**	-116.480	109.700	**-6.780**	-15.023	121.438	**106.415**		**474870**	2476246	
				280	280																
111	AP75/0	SC+0	20°49'14" LT			31172.00	632.382	**285.00**	280.00	290.00	**570.00**	169.984	301.286	**471.270**	158.246	240.498	**398.744**		**474786**	2475976	
				290	290													11 KV LINE			
112	AP76/0	SC+0	07°41'05" LT			31462.00	613.203	**225.00**	290.00	160.00	**450.00**	-10.926	98.744	**87.818**	49.862	91.445	**141.307**		**474806**	2475687	
				160														S.BUNGTLANG TO CHAWNGTE ROAD,			
113	AP77/0	SB+0	04°50'22" LT			31622.00	611.964	**157.50**	160.00	155.00	**315.00**	61.256	-92.054	**-30.798**	68.555	-25.743	**42.812**		**474840**	2475531	
				155	565																
114	AP77/A	SB+0	02°44'42" RT			31777.00	623.238	**202.50**	155.00	250.00	**405.00**	248.522	263.439	**511.961**	182.211	209.422	**391.633**		**474885**	2475381	
				250																	
115	AP78/0	SD+0	31°35'34" RT			32027.00	608.597	**231.00**	250.00	212.00	**462.00**	-13.995	251.886	**237.891**	40.022	194.947	**234.969**		**474943**	2475138	
				212	212																
116	AP78/A	SD+0	22°45'10" LT			32239.00	595.522	**204.50**	212.00	197.00	**409.00**	-40.553	165.440	**124.887**	16.386	138.790	**155.176**		**474875**	2474937	
				197	197																
117	AP79/0	XXX	DD°MM'SS"			32436.00	589.904	**Y**	197.00	XX	**YY**	28.562	XXX	**YYY**	55.212	XXX	**YYY**		**474892**	2474744	

NAME OF CLIENT :- M/S POWER GRID CORPORATION OF INDIA LIMITED

NAME OF PROJECT :- SUPPLY OF SERVICES CONTRACT FOR TOWER PACKAGE TW01 ASSOCIATED WITH NER POWER SYSTEM IMPROVEMENT PROJECT (INTERSTATE MIZORAM)

CHAWNGTE - SOUTH BUNGTLANG TR LINE TOWER SCHEDULE (AP 79/0 - GANTRY)

.NO	TOWER NO	TOWER TYPE	DEVIATION OF ANGLE	SPAN (m)	SECTION LENGTH (m)	CUM. CHAINAHE (m)	RL (m)	WIND SPAN (m)	ADJACENT SPAN			WEIGHT SPAN (COLD)			WEIGHT SPAN (HOT)			CROSSING DETAILS	UTM CO-ORDINATE	
									LEFT	RIGHT	TOTAL	LEFT	RIGHT	TOTAL	LEFT	RIGHT	TOTAL		EASTING	NORTHING
1	AP 79/0	SC+0	11°21'58"RT			32436	589.904	239	197.00	280.00	477	28.562	125.93	154.492	55.212	131.409	186.621		474892	2474744
				280	280															
2	AP80/0	SC+6	01°53'26"LT			32716.00	585.57	375	280.00	469.00	749	154.070	213.56	367.634	148.591	221.692	370.283		474865	2474465
				469	469															
3	AP81/0	SD+9	20°13'44"LT			33185.00	586.76	362	469.00	255.00	724	255.310	491.26	746.571	247.182	349.609	596.791		474836	2473997
				255	255															
	AP82/0 DE	SC+0	20°47'20"LT			33440.00	556.51	150	255.00	44.00	299	-236.268	76.10	-160.166	-94.616	55.074	-39.542		474909	2473753
				44	44															
5	BAY	BAY	DD°MM'SS"			33484.00	558.15	XXX	44.00	Y	X	-31.899	YY	XX	-10.871	YYY	XXX		474936	2473718

NAME OF CLIENT :- M/S POWER GRID CORPORATION OF INDIA LIMITED						
Tower Abstract of 132kV D/C TL						
Tower Type\Ext	+0	+3	+6	+9	+12	Total
SA	0	0	0	0	0	0
SB	0	0	0	0	0	0
SC	2	0	1	0	0	3
SD	0	0	0	1	0	1
Total	2	0	1	1	0	4
Net Total						4

M/S KSR POWER INFRA PVT. LTD CHENNAI

NAME OF CLIENT :- M/S POWER GRID CORPORATION OF INDIA LIMITED

DOC NO. PGCIL-KSA-TL-DOC-PRO-014

NAME OF PROJECT :- SUPPLY OF SERVICES CONTRACT FOR TOWER PACKAGE TW01 ASSOCIATED WITH NER POWER SYSTEM IMPROVEMENT PROJECT (INTERSTATE MIZORAM)

TOWER SCHEDULE (AP 83C/0 - AP 05/0) Chawngte- S.bunhtalang TR.Line

S.NO	TOWER NO	TOWER TYPE	DEVIATION OF ANGLE	SPAN (m)	SECTION LENGTH (m)	CUM. CHAINAHE (m)	RL (m)	WIND SPAN (m)	ADJACENT SPAN			WEIGHT SPAN (COLD)			WEIGHT SPAN (HOT)			CROSSING DETAILS	UTM CO-ORDINATE		Remarks
									LEFT	RIGHT	TOTAL	LEFT	RIGHT	TOTAL	LEFT	RIGHT	TOTAL		EASTING	NORTHING	
1	AP83/C	DD+9	42°27'29"RT			0	91.089	X	X	78.00	Y	XX	-161.41	YY	XXX	-83.430	YYY			2503018.574	This Tower Already has taken into account of Lungsen -Chawngte
				78	78																
2	AP03/0	SD+0	39°56'15"RT			78.00	106.67	132.50	78.00	187.00	265.0	239.078	-67.85	171.233	161.103	-4.952	156.151		465748.582	2502954.099	
				187	187													33 KV LINE			
3	AP04/0	SD+0	36°10'21"LT			265.00	119.47	205.00	187.00	223.00	410.0	255.176	-49.99	205.187	192.283	12.965	205.248	REVETMENT	465728.856	2502767.809	
				223	223													33 KV LINE			
4	AP05/0	SD+0	34°50'41"RT			488.00	134.75	Y	223.00	Y	X	273.347	YY	XX	210.393	YYY	XXX		465833.754	2502570.616	

NAME OF CLIENT :- M/S POWER GRID CORPORATION OF INDIA LIMITED

Tower Abstract of 132kV D/C TL

Tower Type\Extn	+0	+3	+6	+9	+12	Total
SA	0	0	0	0	0	0
SB	0	0	0	0	0	0
SC	0	0	0	0	0	0
SD	3	0	0	0	0	3
DD	0	0	0	0	0	0
Total	3	0	0	0	0	3
Net Total						3

B.SENTHIL KUMAR
St. Engineer

M/S KSA POWERINFRA PVT. LTD
CHENNAI

NAME OF PROJECT :- SUPPLY OF SERVICES CONTRACT FOR TOWER PACKAGE TW01 ASSOCIATED WITH NER POWER SYSTEM IMPROVEMENT PROJECT (INTERSTATE MIZORAM)

132KV Lungsen - Chawngte Transmission Line - TOWER SCHEDULE (AP12 - AP68)

SLNO	TOWER NO	TOWER TYPE	DEVIATION OF ANGLE	SPAN (m)	SECTION LENGTH (m)	CUM. CHAINAGE (m)	RL (m)	WIND SPAN (m)	ADJACENT SPAN			WEIGHT SPAN (COLD)			WEIGHT SPAN (HOT)			CROSSING DETAILS	UTM CO-ORDINATE		REMARKS
									LEFT	RIGHT	TOTAL	LEFT	RIGHT	TOTAL	LEFT	RIGHT	TOTAL		EASTING	NORTHING	
1	AP12	SD+0	DD°MM'SS"		0	0.00	429.924	XXX	X	288.00	YY	XX	104.997	YY	XXX	120.145	YYY		458247	2526848	Revetment Proposed
				288														Nala 4nos			
2	AP13	SD+0	27°44'35" (RT)		288	288.00	434.661	324	288.00	360.00	648.00	182.797	294.620	477.417	167.649	250.004	417.653		458465	2526660	Revetment Proposed
				360														Segun Garden, Nala 2nos			
3	AP14	SC+0	8°15'31" (LT)		360	648.00	417.287	282	360.00	204.00	564.00	65.380	54.497	119.877	110.087	72.954	183.041		458598	2526331	Revetment Proposed
				204														Nala			
4	AP15	SC+0	14°37'02" (RT)		204	852.00	421.374	201.00	204.00	198.00	402.00	149.292	52.776	202.068	130.835	70.776	201.611		458701	2526154	
				198														Cart Track			
5	15/1	SB+0	0°0'00"		198	1050.00	426.174	265.50	198.00	333.00	531.00	145.224	252.561	397.785	127.224	218.951	346.175		458758	2525964	
				333														Nala			
6	15/2	SB+0	0°0'00"		333	1383.00	413.161	314.50	333.00	296.00	629.00	79.939	11.275	91.214	113.549	64.567	178.116		458849	2525641	
				296														Nala, Cart Track			
7	AP15A	SB+0	3°35'12" (LT)		296	1679.00	430.259	274.00	296.00	252.00	548.00	284.985	370.246	655.231	231.693	275.122	506.815		458928	2525360	
				252																	
8	AP16	SB+9	5°36'46" (RT)		252	1931.00	395.219	224.00	252.00	196.00	448.00	-118.313	715.378	597.065	-23.189	474.998	451.809		459010	2525117	Weight span violation, sent for approval from Engg. Dept. Ghy
				196														Road			
9	AP16A	SB+9	5°09'15" (LT)		196	2127.00	343.984	261.50	196.00	327.00	523.00	-519.222	404.380	-114.842	-278.842	310.505	31.663		459055	2524931	
				327														Road 5nos			
10	AP17	SC+9	11°23'20" (LT)		327	2454.00	310.668	284.00	327.00	241.00	568.00	-77.763	366.878	289.115	16.112	271.000	287.112		459168	2524614	
				241														Road 2nos, 33kv Line, Nalah			
11	AP18	SB+3	4°47'05" (LT)		241	2695.00	291.527	256.50	241.00	272.00	513.00	-125.557	196.121	70.564	-29.679	172.778	143.099		459280	2524411	
				272														Nala 2nos			
12	AP19	SB+0	4°51'08" (LT)		272	2967.00	287.619	282.00	272.00	292.00	564.00	76.232	230.950	307.182	99.575	197.922	297.497		459438	2524190	
				292														Road 3nos, LT Line 2nos, 11kv Line- 01 No			
13	AP20	SC+0	16°59'54" LT		292	3259.00	277.124	302.50	292.00	313.00	605.00	61.080	27.538	88.618	94.154	77.749	171.903		459625	2523966	
				313														Road 2 nos			
14	AP20A	SC+0	11°26'07" (RT)		313	3572.00	294.199	303.00	313.00	293.00	606.00	285.425	7.130	292.555	235.214	61.614	296.828		459881	2523794	
				293														Road 2nos			
15	AP21	SC+0	14°07'48" (RT)		293	3865.00	311.531	245.50	293.00	198.00	491.00	286.347	145.411	431.758	232.009	127.182	359.191		460090	2523586	
				198														Road (Parallel to line)			
16	AP21A	SC+0	11°45'49" (RT)		198	4063.00	307.625	238.50	198.00	279.00	477.00	51.787	141.611	193.398	70.016	140.83	210.846		460198	2523420	
				279														33 KV Line, 11 KV Line, Road			
17	AP22	SC+3	13°37'12" (LT)		279	4342.00	304.388	324.50	279.00	370.00	649.00	137.599	174.519	312.118	138.38	178.652	317.032		460287	2523153	
				370																	
18	AP23	SC+3	06°39'53" (RT)		370	4712.00	306.051	324.00	370.00	278.00	648.00	195.748	60.985	256.733	191.615	91.429	283.044		460488	2522842	C type tower is selected based on adjacent span permissible limit eventhough its angle of deviation is within limit of B type
				278														Road			
19	AP24	SC+0	18°22'53" (RT)		278	4990.00	318.259	264.00	278.00	250.00	528.00	217.348	71.064	288.412	186.904	92.065	278.969		460612	2522595	
				250														Nala 2 nos			
20	AP24/1	SB+0	0°0'00"		250	5240.00	323.959	225.00	250.00	200.00	450.00	178.925	193.394	372.319	157.925	157.026	314.951		460646	2522347	
				200														Nala,Segun Garden,			
21	AP24/2	SB+9	0°0'00"		728	5440.00	307.057	248.50	200.00	297.00	497.00	6.606	-108.424	-101.818	42.984	-8.433	34.551		460673	2522151	
				297														Nala 3 nos ,Segun Garden			
22	AP25	SC+9	08°27'55" (LT)		297	5737.00	339.295	338.50	297.00	380.00	677.00	405.137	-102.633	302.504	305.146	11.344	316.49		460715	2521853	
				380														Road			

M/S KSAPOWERINFRA PVT. LTD. CHENNAI

For M/s KSA Pvt. Ltd.

5/11/2018

For Power Grid Corporation of India Ltd.

23	AP26	SC+0	06°43'38" (RT)	380	6117.00	395.464	304.00	380.00	228.00	608.00	482.633	362.553	845.186	368.778	265.846	634.624		460822	2521490	Revetment Proposed. C type tower is selected based on adjacent span permissible limit eventhough its angle of deviation is within limit of B type
				228													Nala			
24	AP27	SB+0	06°05'23" (RT)	228	6345.00	371.462	282.50	228.00	337.00	565.00	-134.141	214.613	80.472	-37.434	196.804	159.37		460858	2521262	
				337													Road,Nala, Play ground,11kV line			
25	AP28	SD+9	19°33'14" (LT)	337	6682.00	355.926	323.50	337.00	310.00	647.00	123.146	-34.664	88.482	140.955	39.192	180.147		460873	2520930	D type tower is selected based on adjacent span permissible limit eventhough its angle of deviation is within limit of C type
				310														460987	2520645	
26	AP28A	SB+9	00°43'49" (LT)	310	6992.00	380.804	284.00	310.00	258.00	568.00	344.664	-472.638	-127.974	270.808	-238.338	32.47		461093	2520403	Weight span violation, sent for approval from Engg. Dept. Ghy
				258														461157	2520325	Weight span violation, sent for approval from Engg. Dept. Ghy
27	AP29	SC+0	17°09'22" (LT)	258	7250.00	455.965	180.50	258.00	103.00	361.00	730.738	532.372	1263.11	496.438	344.956	841.394				
				103													Road			
28	AP30	SB+9	04°42'20" (LT)	103	7353.00	426.159	113.50	103.00	124.00	227.00	-430.204	1241.575	811.371	-242.788	782.273	539.485		461242	2520231	Weight span violation, sent for approval from Engg. Dept. Ghy
				124														461562	2520009	
29	AP30A/0	SC+9	10°22'41" (LT)	124	7477.00	364.17	258.00	124.00	392.00	516.00	-1117.415	352.685	-764.730	-658.113	291.619	-366.494		461776	2519879	
				392														461910	2519506	
30	AP31/0	SB+9	02°58'33" (LT)	392	7869.00	338.309	321.00	392.00	250.00	642.00	39.049	295.535	334.584	100.115	229.127	329.242		461845	2519184	
				250													Nala			
31	AP31A/0	SD+0	38°17'39" (RT)	250	8119.00	329.043	335.50	250.00	421.00	671.00	-45.541	251.152	205.611	20.867	235.245	256.112		461779	2518966	Levelling required for obtaining the required ground clearance.
				421														461671	2518586	
32	AP32/0	SD+0	30°35'52" (RT)	421	8540.00	321.773	375.00	421.00	329.00	750.00	169.452	-57.132	112.32	185.359	29.181	214.54		461639	2518458	
				329																
33	AP33/0	SB+0	06°02'19" (RT)	329	8869.00	352.633	276.50	329.00	224.00	553.00	386.175	-40.821	345.354	299.862	18.726	318.588				
				224																
34	AP34/0	SB+9	01°25'28" (LT)	387	9093.00	358.139	305.50	224.00	387.00	611.00	265.014	181.359	446.373	205.467	186.087	391.554				
				387													Road			
35	AP34A/0	SB+0	02°12'31" (LT)	143	9480.00	369.127	265.00	387.00	143.00	530.00	205.641	26.948	232.589	200.913	44.389	245.302				
				143																
36	AP35/0	SC+0	16°22'39" (RT)	410	9623.00	371.846	276.50	143.00	410.00	553.00	116.526	129.135	245.661	99.085	158.729	257.814				
				410													33KV LINE crossing from Left to Right with proposed 132KV Lungsen - Chawngte Line.			
37	AP35A/0	SC+0	06°12'03" (LT)	148	10033.00	385.039	279.00	410.00	148.00	558.00	281.133	-45.880	235.253	251.539	0.747	252.286		461437	2518104	C type tower is selected based on adjacent span permissible limit eventhough its angle of deviation is within limit of B type
				148														461373	2517972	
38	AP36/0	SC+0	15°46'14" (RT)	240	10181.00	392.523	194.00	148.00	240.00	388.00	193.597	167.632	361.229	146.97	149.084	296.054		461220	2517782	
				240																
39	AP36A/0	SC+6	14°36'43"(LT)	167	10421.00	387.676	203.50	240.00	167.00	407.00	72.368	-163.582	-91.214	90.916	-67.331	23.585				
				167													Old Road			

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40	AP36B/0	SD+0	41°10'41" (LT)		151	10588.00	411.161	159.00	167.00	151.00	318.00	330.766	174.490	505.256	234.515	135.95	370.465		461155	2517633	
				151														Old Road - 2 Nos.			
41	AP36C/0	SD+0	21°23'41" (LT)		365	10739.00	404.836	258.00	151.00	365.00	516.00	-23.454	36.053	12.599	-15.086	93.046	77.96		461197	2517488	D type tower is selected based on adjacent span permissible limit eventhough its angle of deviation is within limit of C type
				365														ROAD 2 NOS			
42	AP37/0	SD+9	21°15'05" RT		365	11104.00	418.429	268.50	365.00	172.00	537.00	328.772	567.088	895.860	271.779	379.75	651.529		461414	2517200	D type tower is selected based on adjacent span permissible limit eventhough its angle of deviation is within limit of C type
				172																	
43	AP37/1	SB+9	00°00'00"		172	11276.00	383.418	136.00	172.00	100.00	272.00	-395.088	854.100	459.012	-207.75	540.895	333.145		461465	2517029	Weight span violation, sent for approval from Engg. Dept. Ghy
				100																	
44	AP37A/0	SB+9	03°18'40" LT		100	11376.00	349.531	240.50	100.00	381.00	481.00	-754.532	241.858	-512.674	-441.327	221.831	-219.496		461492	2516935	Weight span violation, sent for approval from Engg. Dept. Ghy
				381																	
45	AP38/0	SD+9	22°19'59" RT		381	11757.00	341.243	302.00	381.00	223.00	604.00	138.997	-617.507	-478.510	159.024	-333.658	-174.634		461620	2516581	Weight span violation, sent for approval from Engg. Dept. Ghy
				223														ROAD 1 NOS,			
46	AP39/0	SD+9	30°27'48" RT		223	11980.00	409.974	263.50	223.00	304.00	527.00	840.35	-300.014	540.336	556.501	-124.016	432.485		461616	2516355	Weight span violation, sent for approval from Engg. Dept. Ghy
				304																	
47	AP40/0	SD+0	37°02'18" LT		304	12284.00	477.092	283.50	304.00	263.00	567.00	603.918	686.177	1290.095	427.92	470.175	898.095		461434	2516103	Weight span violation, sent for approval from Engg. Dept. Ghy
				263														ROAD 1 NOS & Play ground			
48	AP41/0	SC+9	12°01'46" LT		263	12547.00	406.374	246.50	263.00	230.00	493.00	-423.219	323.249	-99.970	-207.217	242.069	34.852		461451	2515842	
				230														33 KV LINE			
49	AP42/0	SB+6	02°20'43" LT		230	12777.00	389.125	264.00	230.00	298.00	528.00	-93.692	-10.382	-104.074	-12.512	51.709	39.197		461510	2515620	
				298														NALA			
50	AP43/0	SC+9	14°23'50" LT		298	13075.00	406.24	278.50	298.00	259.00	557.00	308.522	-20.618	287.904	246.431	37.776	284.207		461599	2515334	
				259														33 KV LINE			33KV LINE TO BE SHIFTED BY PED/PGCIL
51	AP43A/0	SB+9	07°42'07" LT		259	13334.00	422.653	227.00	259.00	195.00	454.00	279.294	95.406	374.700	220.9	96.222	317.122		461735	2515116	
				195														NALA			
52	AP43A/1	SB+3	00°00'00"		195	13529.00	428.826	214.50	195.00	234.00	429.00	99.594	-0.729	98.865	98.778	45.048	143.826		461861	2514964	
				234														NALA			
53	AP43B/0	SB+9	00°36'58" LT		234	13763.00	434.448	255.50	234.00	277.00	511.00	233.655	33.600	267.255	188.607	74.542	263.149		462002	2514782	
				277																	
54	AP44	SD+9	29°10'59" RT		277	14040.00	446.792	326.00	277.00	375.00	652.00	243.877	40.675	284.552	202.935	97.844	300.779		462185	2514568	
				375														NALA			
55	AP45/0	SC+9	08°23'08" RT		375	14415.00	470.085	348.50	375.00	322.00	697.00	334.297	-204.031	130.266	277.128	-61.844	215.284		462260	2514205	
				322														33 KV LINE, ROAD - 1 NO			
56	AP46/0	SC+9	10°01'03" LT		322	14737.00	519.867	238.00	322.00	154.00	476.00	526.246	-203.503	322.743	384.059	-94.365	289.694		462276	2513884	REVETMENT REQUIRED
				154														NALA			
57	AP 47	SB+0	0°00'00"		154	14891.00	546.638	121.75	154.00	89.50	243.50	357.031	28.944	385.975	247.893	35.196	283.089				
				89.5																	
58	AP48/0	SD+9	24°58'48" LT		89.5	14980.50	538.685	217.75	89.50	346.00	435.50	304.387	157.172	461.559	233.273	163.372	396.645		462326	2513647	
				346														ROAD 2 NOS, 33 KV LINE			
59	AP49/0	SC+3	14°35'04" LT		346	15326.50	547.017	291.75	346.00	237.50	583.50	189.013	267.447	456.460	182.813	209.545	392.358		462546	2513375	
				237.5																	
60	AP49A	SB+9	02°56'24"LT		237.5	15564.00	526.074	265.25	237.50	293.00	530.50	-29.941	19.152	-10.789	27.961	68.719	96.68		462734	2513232	

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				293																	
61	AP50/0	SC+9	05°37'39"LT		293	15857.00	541.848	314.25	293.00	335.50	628.50	273.727	81.142	354.869	224.16	114.856	339.016	ROAD, 2no. Of 33 KV LINE	462979	2513064	33KV LINE TO BE SHIFTED BY PED/PGCIL
				335.50														CART TRACK,33KV LINE			33KV LINE TO BE SHIFTED BY PED/PGCIL
62	AP51/0	SD+6	29°00'53"LT		335.50	16192.50	557.136	254.75	335.50	174.00	509.50	254.296	-73.022	181.274	220.582	-10.771	209.811		463270	2512905	
63	AP51A	SC+3	10°10'13"RT	174	174	16366.50	571.884	330.75	174.00	487.50	661.50	246.702	-50.432	196.270	184.451	64.074	248.525	CART TRACK	463445	2512906	
64	AP52A	SC+6	10°05'47"RT	487.5	487.5	16854.00	629.508	340.25	487.50	193.00	680.50	537.677	-36.417	501.260	423.171	15.425	438.596		463919	2512822	
65	AP53/0	SD+3	29°05'46"RT	193	193	17047.00	643.404	241.50	193.00	290.00	483.00	229.845	295.529	525.374	178.003	236.926	414.929		464104	2512756	
66	AP54/0	SC+9	08°39'30"RT	290	290	17337.00	618.933	315.25	290.00	340.50	630.50	-5.46	423.797	418.337	53.143	325.072	378.215	CART TRACK	464293	2512536	
67	AP54A	SC+9	17°29'16"RT	340.5	340.5	17677.50	582.402	330.75	340.50	321.00	661.50	-83.255	-272.912	-356.167	15.47	-104.088	-88.618	NALA	464474	2512252	
68	AP55/0	SC+9	10°16'56"LT	321	321	17998.50	641.335	330.50	321.00	340.00	661.00	594.173	220.810	814.983	425.349	201.027	626.376	CART TRACK	464559	2511942	
69	AP56/0	SC+3	11°40'35"LT	340	340	18338.50	640.026	266.50	340.00	193.00	533.00	119.204	277.806	397.010	138.987	207.281	346.268		464700	2511634	
70	AP57/0	SC+0	10°11'07"LT	193	193	18531.50	628.208	295.00	193.00	397.00	590.00	-84.394	333.684	249.290	-13.9	281.009	267.109		464815	2511478	
71	AP58/0	SD+3	26°56'05"RT	397	397	18928.50	602.495	379.50	397.00	362.00	759.00	63.141	73.208	136.349	115.816	115.052	230.868		465105	2511206	
72	AP59/0	SB+3	01°13'58"LT	362	362	19290.50	618.924	359.50	362.00	357.00	719.00	288.123	-131.037	157.086	246.279	-10.542	235.737		465227	2510866	
73	AP60/0	SC+9	13°58'02"RT	357	357	19647.50	659.676	282.50	357.00	208.00	565.00	487.832	-239.935	247.897	367.331	-105.939	261.392	CART TRACK	465356	2510533	
74	AP60A	SC+6	09°38'12"LT	208	208	19855.50	692.989	227.50	208.00	247.00	455.00	448.26	384.231	832.491	314.264	282.723	596.987		465381	2510326	
75	AP61/0	SD+9	24°52'55"RT	247	247	20102.50	662.733	306.50	247.00	366.00	613.00	-137.119	201.526	64.407	-35.611	194.254	158.643		465451	2510091	
76	AP62/0	SD+3	24°23'37"LT	366	366	20468.50	665.843	313.00	366.00	260.00	626.00	164.173	98.373	262.546	171.445	110.716	282.161	ROAD 2 NOS, 11 KV LINE NEAR	465393	2509729	
77	AP62A	SC+0	09°52'34"LT	260	260	20728.50	672.332	235.25	260.00	210.50	470.50	161.613	63.631	225.244	149.425	79.851	229.276	ROAD	465462	2509478	
78	AP63/0	SB+0	04°07'27"RT	210.5	210.5	20939.00	676.043	234.25	210.50	258.00	468.50	146.935	199.294	346.229	130.715	171.998	302.713	33 KV LINE, ROAD	465550	2509289	
79	AP64/0	SB+9	02°17'54"RT	258	258	21197.00	662.379	239.00	258.00	220.00	478.00	59.098	240.809	299.907	86.395	189.835	276.23	11 KV LINE	465640	2509045	
80	AP65/0	SC+9	14°13'42"LT	220	220	21417.00	647.204	218.00	220.00	216.00	436.00	-20.997	316.504	295.507	30.165	235.329	265.494	11 KV, 33KV LINE	465707	2508837	
81	AP65A	SC+9	10°11'45"LT	216	216	21633.00	628.144	265.00	216.00	314.00	530.00	-100.415	370.278	269.863	-19.24	287.322	268.082	CART TRACK	465324	2508653	
82	AP66/0	SC+9	15°41'23"RT	314	314	21947.00	599.796	323.50	314.00	333.00	647.00	-55.786	334.328	278.542	27.17	268.957	296.127		466033	2508419	
83	AP67/0	SC+9	04°43'57"RT	333	333	22280.00	576.149	339.00	333.00	345.00	678.00	-1.417	207.191	205.774	63.954	193.723	257.677		466181	2508121	C type tower is selected based on adjacent span permissible limit eventhough its angle of deviation is within limit of B type
84	AP67A	SC+9	18°29'18"LT	345	345	22625.00	571.097	287.50	345.00	230.00	575.00	138.017	100.297	238.314	151.485	106.03	257.515	ROAD, CART TRACK, 11 KV, 33KV LINE	466299	2507802	
85	AP68/0	SX+0	DD°MM'SS"	230	230	22855.00	581.53	115.00	230.00	Y	X	129.741	YY	XX	124.008	YYY	XXX		466444	2507618	

M/S KSAPOWERINFRA PVT. LTD. CHENNAI

For M/s KSA Pvt. Ltd.

5/11/2018

For Power Grid Corporation of India Ltd.

NAME OF CLIENT :- M/S POWER GRID CORPORATION OF INDIA LIMITED

NAME OF PROJECT :- SUPPLY OF SERVICES CONTRACT FOR TOWER PACKAGE TW01 ASSOCIATED WITH NER POWER SYSTEM IMPROVEMENT PROJECT (INTERSTATE MIZORAM)

132kV LUNGSEN - CHAWNGTE Tr.Line - TOWER SCHEDULE (AP 67A - AP83/C)

S.NO	TOWER NO	TOWER TYPE	DEVIATION OF ANGLE	SPAN (m)	SECTION LENGTH (m)	CUM. CHAINAGE (m)	RL (m)	WIND SPAN (m)	ADJACENT SPAN			WEIGHT SPAN (COLD)			WEIGHT SPAN (HOT)			CROSSING DETAILS	UTM CO-ORDINATE		REMARKS
									LEFT	RIGHT	TOTAL	LEFT	RIGHT	TOTAL	LEFT	RIGHT	TOTAL		EASTING	NORTHING	
1	AP67A/0	SC+9	18°29'18"LT			22630.500	571.097	287.500	375.000	230.000	605.000	138.017	7.832	145.849	151.485	49.571	201.056		466299	2507802	
				230	230																
2	AP68/0	SB+9	08°35'28"RT			22860.500	581.530	262.000	230.000	294.000	524.000	222.206	210.942	433.148	180.467	186.083	366.550		466444	2507618	
				294	294													ROAD , 33 KV LINE, OLD ROAD, 11 KV LINE			
3	AP69/0	SD+9	35°54'45"RT			23154.500	579.019	256.000	294.000	218.000	512.000	83.265	-55.308	27.957	108.124	8.345	116.469		466592	2507363	
				218	218													NALA, ROAD			
4	AP70/0	SC+9	09°28'56"RT			23372.500	594.275	360.500	218.000	503.000	721.000	274.303	422.191	696.494	210.001	355.720	565.721		466574	2507147	
				503	503													33 KV LINE			33KV LINE TO BE REROUTED / SHIFTED BY PED/PGCIL to obtain the required line ckearance
5	AP71/0	SC+9	04°11'58"RT			23875.500	557.946	421.500	503.000	340.000	843.000	80.793	386.577	467.370	147.264	302.069	449.333		466438	2506664	
				340	340													CART TRACK 2 NOS			
6	AP72/0	SC+3	15°30'10"RT			24215.500	532.806	232.500	340.000	125.000	465.000	-47.450	-90.960	-138.410	37.056	-31.092	5.964		466331	2506340	
				125	125													NALA			
7	AP73/0	SC+0	17°14'24"LT			24340.500	543.974	144.000	125.000	163.000	288.000	216.522	295.017	511.539	156.654	211.841	368.495		466262	2506236	
				163	163																
8	AP74/0	SD+9	14°18'16"LT			24503.500	520.257	329.500	163.000	496.000	659.000	-132.181	478.784	346.603	-49.005	408.907	359.902		466204	2506083	
				496	496													ROAD, 33 KV LINE, 11KV LINE			
9	AP75/0	SC+9	12°24'33"RT			24999.500	471.822	378.000	496.000	260.000	756.000	17.170	466.662	483.832	107.047	335.564	442.611		466186	2505585	
				260	260													33 KV LINE			33KV LINE TO BE REROUTED / SHIFTED BY PED/PGCIL to obtain the required line ckearance
10	AP75/A	SB+9	06°07'39"LT			25259.500	434.952	293.000	260.000	326.000	586.000	-206.662	278.381	71.719	-75.564	233.350	157.786		466123	2505338	
				326	326													CART TRACK, NALA			
11	AP76/0	SC+9	09°43'05"LT			25585.500	419.026	234.500	326.000	143.000	469.000	47.097	662.423	709.520	92.128	432.221	524.349		466065	2505015	
				143	143													33 KV LINE			
12	AP76/A	SD+9	22°45'16"RT			25728.500	383.376	294.000	143.000	445.000	588.000	-519.900	426.067	-93.833	-289.698	346.792	57.094		466070	2504873	
				445	445																
13	AP77/0	SD+9	23°08'07"RT			26173.500	345.046	438.500	445.000	432.000	877.000	18.905	-211.616	-192.711	98.180	-45.112	53.068		465904	2504461	REVETMENT
				432	432													CHAWNGTE TO CHHUMKHUM OLD ROAD, 33 KV LINE, 11 KV LINE			
14	AP78/0	SD+6	44°16'26"RT			26605.500	426.193	286.000	432.000	140.000	572.000	643.554	255.865	899.419	477.050	183.345	660.395		465594	2504160	
				140	140																
15	AP79/0	SD+6	15°22'28"LT			26745.500	415.219	174.000	140.000	208.000	348.000	-116.601	554.717	438.116	-44.081	378.567	334.486		465456	2504146	
				208	208													11 KV LINE			
16	AP80/0	SD+9	40°42'53"LT			26953.500	372.605	220.500	208.000	233.000	441.000	-347.082	334.300	-12.782	-171.499	249.554	78.055		465255	2504086	
				233	233													11 KV LINE, OLD ROAD, 33KV LINE paralle to line			

B.L
B. SES MUTHIL KUMA
Sr. Engineer

M/S ASAPOWERINFRA PVT.LTD

S.NO	TOWER NO	TOWER TYPE	DEVIATION OF ANGLE	SPAN (m)	SECTION LENGTH (m)	CUM. CHAINAGE (m)	RL (m)	WIND SPAN (m)	ADJACENT SPAN			WEIGHT SPAN (COLD)			WEIGHT SPAN (HOT)			CROSSING DETAILS	UTM CO-ORDINATE		REMARKS
									LEFT	RIGHT	TOTAL	LEFT	RIGHT	TOTAL	LEFT	RIGHT	TOTAL		EASTING	NORTHING	
17	AP80/A	SC+9	10°29'22"RT			27186.500	351.118	300.500	233.000	368.000	601.000	-100.961	511.622	410.661	-16.215	383.955	367.740		465138	2503880	REVETMENT
				368	368													OLD ROAD, 11 KV LINE, 33 KV LINE, NEW ROAD,			
18	AP81/0	SD+6	33°12'18"LT			27554.500	303.132	291.500	368.000	215.000	583.000	-144.082	412.077	267.995	-16.415	293.229	276.814		464902	2503605	REVETMENT
				215	215																
19	AP81/A	SC+6	09°28'35"RT			27769.500	275.529	350.000	215.000	485.000	700.000	-198.331	699.341	501.010	-79.483	521.154	441.671		464875	2503389	REVETMENT SUGGEST
				485	485																
20	AP81/B	SD+9	38°49'08"RT			28254.500	178.914	383.500	485.000	282.000	767.000	-215.835	446.326	230.491	-37.648	327.462	289.814		464731	2502933	
				282	282																
21	AP82/0	SC+3	20°44'36"RT			28536.500	148.471	254.000	282.000	226.000	508.000	-164.173	146.367	-17.806	-45.302	133.425	88.123		464495	2502772	
				226	226																
22	AP83/0	SD+0	19°48'33"LT			28762.500	148.289	313.000	226.000	400.000	626.000	79.894	44.501	124.395	92.836	104.771	197.607		464275	2502721	
				400	400																
23	AP83/A	SC+0	10°37'33"RT			29162.500	174.390	295.500	400.000	191.000	591.000	354.052	450.745	804.797	293.782	312.383	606.165		463940	2502502	
				191	191																
24	AP83/B	SC+9	12°33'01"LT			29353.500	136.696	281.000	191.000	371.000	562.000	-259.889	475.947	216.058	-121.527	362.902	241.375		463766	2502432	
				371	371																
25	AP83/C	DB+9	03°37'33"RT			29724.500	91.089	YY	371.000	YY	XX	-104.659	YY	XX	8.386	YY	XX		463463	2502218	

NAME OF CLIENT :- M/S POWER GRID CORPORATION OF INDIA LIMITED						
Tower Abstract of 132kV S/C TL						
Tower Type\Extn	+0	+3	+6	+9	+12	Total
SA	0	0	0	0	0	0
SB	0	0	0	2	0	2
SC	2	2	1	7	0	12
SD	1	0	3	6	0	10
Total	3	2	4	15	0	24
Net Total						24

M/S AKSAPOWERINFRA PVT. LTD. CHENNAI

NAME OF CLIENT :- M/S POWER GRID CORPORATION OF INDIA LIMITED

NAME OF PROJECT :- SUPPLY OF SERVICES CONTRACT FOR TOWER PACKAGE TW01 ASSOCIATED WITH NER POWER SYSTEM IMPROVEMENT PROJECT (INTERSTATE MIZORAM)

132kV LUNGSEN - CHAWNGTE Tr.Line - TOWER SCHEDULE (AP 83C - GANTRY)

S.NO	TOWER NO	TOWER TYPE	DEVIATION OF ANGLE	SPAN (m)	SECTION LENGTH (m)	CUM. CHAINAGE (m)	RL (m)	WIND SPAN (m)	ADJACENT SPAN			WEIGHT SPAN (COLD)			WEIGHT SPAN (HOT)			CROSSING DETAILS	UTM CO-ORDINATE		REMARKS
									LEFT	RIGHT	TOTAL	LEFT	RIGHT	TOTAL	LEFT	RIGHT	TOTAL		EASTING	NORTHING	
1	AP83/B	SC+9	12°33'01"LT			29353.500	136.696	281.000	191.000	371.000	562.000	-259.889	482.434	222.545	-121.527	366.858	245.331		463766	2502432	
				371	371																
2	AP83/C	DD+9	03°37'33"RT			29724.500	91.089	289.000	371.000	207.000	578.000	-111.241	267.630	156.389	4.335	203.988	208.323		463463	2502218	
				207	207													CART TRACK, LT LINE, PROPOSED LINE RUNNING PARALLEL TO HOUSE			
3	AP83/D	DC+3	18°54'00"LT			29931.500	85.631	196.000	207.000	185.000	392.000	-60.515	135.100	74.585	3.126	118.581	121.707		463288	2502100	
				185	185																
4	AP84/0	DD+0	33°49'47"LT			30116.500	85.973	134.000	185.000	83.000	268.000	49.927	115.500	165.427	66.446	86.798	153.244		463182	2501952	
				83	83													ROAD			
5	AP85/0	DC+0	19°46'48"LT			30199.500	83.901	53.000	83.000	23.000	106.000	-32.480	SLACK SPAN	XXX	-3.778	SLACK SPAN	YYY		463176	2501870	
				23	23																
6	TAPPING	DD+6	14°24'05"LT			30222.500	85.555	21.500	23.000	20.000	43.000	SLACK SPAN	SLACK SPAN	XXX	SLACK SPAN	SLACK SPAN	YYY		463181	2501846	
				20	20																
7	BAY	BAY	DD°MM'SS"			30242.500	91.943	YY	20.000	YY	XX	SLACK SPAN	SLACK SPAN	XXX	SLACK SPAN	SLACK SPAN	YYY				

NAME OF CLIENT :- M/S POWER GRID CORPORATION OF INDIA LIMITED					
132kV LUNGSEN - CHAWNGTE Tr.Line - Tower Abstract (AP 67A - GANTRY)					
Tower Type\Extn	+0	+3	+6	+9	Total
DA	0	0	0	0	0
DB	0	0	0	0	0
DC	1	1	0	0	2
DD	1	0	1	1	3
DX	0	0	0	0	0
Total	2	1	1	1	5
Net Total					5

M/S KSAPOWERINFRA PVT. LTD. CHENNAI

ANNEXURE – 3

DETAILS OF PUBLIC CONSULTATION

Informal Group Meetings with Villagers/PAPs en-route of Proposed Transmission Lines

Date of meeting	Venue of Meeting	Persons attended	Persons Attended
Public Consultation Meeting			
09.09.2014	Village community Hall, South Bungtlang	29	SDO (Electrical) Lungsen and S. Bungtlang, POWERGRID officials, Representatives of Panchayat including Chairman, Vice Chairman & Members and Village Pradhan etc, local villagers & public in general.
11.09.2014	YMA Community Hall, Lungsen	56	
20.02.2019	Community Hall, South Bungtlang	37	
08.07.2019	YMA Hall, Lungsen Chhim Veng	33	

पावर ग्रिड कारपोरेशन ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
POWER GRID CORPORATION OF INDIA LIMITED
(A Government of India Enterprise)

पावरग्रिड

NERPSIP Mizoram, Tuivamit, B.P.O.-Tanhril, Aizawl-796009
Mail : nerpsip.mizoram@powergrid.co.in, Contact No. : 9449599072

Ref: NERPSIP/Mizoram/Public Consultation/F- 119/223 दिनांक / Date:12.11.2018

To
The Executive Engineer,
Power & Electricity Department,
Lunglei, Mizoram

Sub: Conducting public consultation meeting pertaining to construction of 132 KV Lungsen to Chawngte T/L under North Eastern Region Power Improvement Project (NERPSIP) in Mizoram -reg

Dear Sir,

In connection with construction of 132 KV Lungsen to Chawngte T/L, it is required to hold public meeting at few locations near to the Transmission Line route.

In this regard, it is proposed to arrange a public consultation meeting at Lungsen, Rangte and Chawngte to appraise the public about the Project scope and benefits of the project for creating more awareness among the public about the project.

You are kindly requested to participate in the meeting/depute concerned officials of P&E dept. for the meeting. Also requested to convey necessary instructions to concerned officials for co-ordination in conducting the meeting and for making the meeting successful.

Thanking you,

Yours Sincerely,

D. Talukdar 12/11/18

D. Talukdar
DGM/NERPSIP/AIZAWL

Record notes of discussions held during Public Consultation Meeting for Construction of 33 kV Pole Line from proposed 132/33 kV S/S to existing 33/11 kV S/S at Lungsen.

Venue: Community YMA Hall, Lungsen

Date: 08/07/2019

Members Present:

a. Public (attendance sheet enclosed)
b. Mr. P. C. Vanlalruata, SDO, Lungsen (Power & Electricity Dept.)
c. Mr. P. B. Sharma, Chief Manager, POWERGRID
d. Mr. Sujeet Kumar, Engineer, POWERGRID
e. Mr. Buddha Das, Field Engineer, POWERGRID
f. Mr. Surendra Kumar, Field Supervisor, POWERGRID

1. SDO, (Lungsen Power Sub-Division), Govt. of Mizoram started the session with brief introduction about North Eastern Region Power System Improvement Project (NERPSIP) & POWERGRID.

2. POWERGRID explained to the public regarding its functioning and scope of works under NERPSIP-Mizoram specially for works under scope of Lungsen Site Office along with their necessity. The requirement of 33 kV Line from the proposed 132/33 kV S/S to the existing 33/11 kV S/S was explained to the public jointly with P&E Dept. & POWERGRID. Also it was informed to the public that as per Electricity Act, 2003 & Indian Telegraph Act 1885, there is no provision for payment of land & surface damage compensation for construction of 33 kV Pole lines.

3. The land owners demanded for erecting the new pole line along road side throughout its entire stretch. It was informed to them that POWERGRID has already finalized the alignment of route and as on date erected 17 poles along the road side up to a stretch. After this portion, the road is passing through populated areas at Lungsen, which is not suitable for erecting poles.

4. Some of the land owners attended the meeting demanded for resurvey and to optimize the line route to minimize tree & crop damage to the lowest possible. It was sought by them to show the alignment of the 33 kV line along their respective lands and also expressed their interest for witnessing pit excavation for erecting the 33 kV poles.

08/07/2019

5. The land owners also informed that this meeting shall not serve as a final solution to their issues. Hence the works are to be executed with their individual consent and approval. POWERGRID informed that even though individual consent is not required as per the existing laws of Govt. for laying of transmission line for public cause, maximum efforts within the possible solutions will be taken to avoid inconvenience to the land owners.

6. In response to all the opinions of the public, POWERGRID informed that approval of route alignment has already been obtained and pole erection has been done for 17 nos. of poles. Hence change of route alignment will face extreme difficulties. Also, in case of any realignment of any part of already identified route, an assurance/consent is needed that there will not be further objection in this regard. However, the opinion of the land owners shall be conveyed to the higher authorities.

(P. C. Vanlalruata)

(P. B. Sharma)

(Sujeet Kumar)

ATTENDANCE SHEET

PUBLIC CONSULTATION MEETING ON NERPSIP WORKS UNDER LUNGSEN POWER SUB-DIVISION

Time : 08.07.2019, 11:00 Am

Venue : YMA Hall, Lungsen Chhim Veng

Sl No	Hming	Veng/Khua	~~Designation~~ Signature
1	P. Hangmawia	Lungsen	[illegible]
2.	R Zalthianghlima	Vaylai	[illegible]
3.	K Zalsangliana	Venglai	[illegible]
4.	T. Lalmuanzuala	Venglai	[illegible]
5	B. Zohmingliana	Chhim Veng	B. Zhlang
6.	Lalmuanpuii	Lungsen "S"	[illegible]
7	Lalzuala Sailo	Lungsen 'S'	[illegible]
8	[illegible]	Lungsen - S	[illegible]
9	J. Döliana	Lungsen S	[illegible]
10	J. Liansailova	Lungsen 'N'	Lionsailva.
11	LG. Lalchuailova	Lunglei	[illegible]
12.	B. Vanlalhruaia.	Lungsen chhimveng.	[illegible]
13.	F. Ramfangzauva	Lungsen Chhim Veng	[illegible]
14.	VL Dhengpuiga	Lungsen C.	[illegible]
15	[illegible]	Lungsen Chhim Veng	[illegible]
16.	Lalremruata.	Lung Sen (Chhimveng)	[illegible]
17.	PC Vanlalruata	Lungsen (SDO, P&E)	[illegible]

PUBLIC CONSULTATION MEETING

VENUE: YMA Hall, Lungsen Chhim Veng.
DATE 08/09/2019 11:00 AM

SL. NO	NAME		SIGNATURE
1	ZD. Lalvuanga Sanga		
2	P. Lalhmingthanga		
3	ZO Lamawi		
4	K. Thangkhai		
5	PC. Lalthlamuanga		
6	ZD Lalhmasaa		
7	H Hmangaihzauva		
8	Zy Ngaihsangkima		
9	T. Lalmuanthuama		
10	ZD Rokamang		
11	Z.S Kolinglian		
12	J Kuanlalmia		
13	F. Rothanga		
14	P. Lalawmawma		
15	J. Lalchhuana		
16	L. Pachhuaklluana		
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Government of Mizoram
Office of the Sub-Divisional Officer,
Power and Electricity Department, Lungsen

No. A-28014/1/2014-SDO(LPSD)/9 Dated Lungsen the 5th July, 2019

To,

The Village Council Presidents (VCPs)
Lungsen, Lunglei District, Mizoram

Subject : Notice for Public consultation meeting with regard to construction of 132/33 kV Lungsen Sub-Station, 132 kV Lungsen-Chawngte Transmission Line and 33 kV line from new 132/33 kV Sub-Station to existing 33/11 kV Lungsen Sub-Station under North Eastern Region Power System Improvement Project (NERPSIP) in Mizoram.

Dear Sir,

This is for your kind information that, Dept. of Power and Electricity, Govt. of Mizoram has undertaken a project under NERPSIP (A project funded by World Bank and the Govt. of India) namely 132/33 kV Lungsen Sub-Station, 132 kV Lungsen-Chawngte Transmission Line and 33 kV line from new 132/33 kV Sub-Station to existing 33/11 kV Sub-Station at Lungsen in Lunglei District of Mizoram for improvement of power scenario in the state. Power Grid Corporation of India Ltd. is the executing agency of the project on behalf of P & E Dept. Mizoram.

In this regard, it is intended to arrange a public consultation meeting at Lungsen to discuss environmental / social / compensation related issues of the project and to apprise the public about the project detail and to ensure maximum participation for success of the project.

The meeting is proposed to be arranged as below:

Venue: YMA Hall, Lungsen South Branch
Date and Time: 08/07/2019, 11:00 AM

S.D.O Lungsen and POWERGRID representatives will deliberate the key issues in the meeting. You are, here by, requested to ensure the participation of villagers of Lungsen village in the meeting. As per Guidelines of World Bank female representatives are also to be present to share the meeting.

Yours faithfully,

(P.C. Vanlalruata)
SDO, P&E Dept.
Lungsen

GOVERNMENT OF MIZORAM
OFFICE OF THE SUB-DIVISIONAL OFFICER
LUNGSEN POWER SUB-DIVISION:LUNGSEN.

No A-28014/1/2014-SDO(LPSD)/ 7 Dated Lungsen, the 5th July, 2019

To,

The President/Secretary
Village Council - I
Lungsen

Subject : Public Consultation Meeting puanzar sak tura ngenna.

Ka Pu,

Power and Electricity aiawh in chibai ka buk a che, NERPSIP (World Bank Funded) hnuai a 132/33kV Lungsen Sub-Station, 132kV Lungsen to Chawngte Transmission Line leh 33kV Line 132kV Sub-Station atanga 33kV Sub-Station hlui (kan hman mek) thleng hna Power Grid Corporation of India Ltd. in an thawh mek hi kan hre tawh ang a.

He hnathawh chungchang ah hian Environment/Social/Compensation leh a kaihhnawih thilte sawiho turin a hnuai a hun leh hmun ruatah hian Public Consultation Meeting koh a ni a. He Meeting a mipui a tam thei ang ber an kal theih nan tlangau a min puan zar sak turin ka ngen a che.

A hun : Dt. 8. 7. 2019 (Mon) at 11:00Am
A hmun : YMA Hall, Lungsen South Branch

Ram tana i thawhpui,

(PC.VANLALRUATA)
Sub-Divisional Officer
Lungsen Power Sub-Division
Lungsen

Public Consultation Meeting at South Bungtlang Community Hall on dated 20.02.2019

PUBLIC CONSULTATION MEETING

VENUE: South Bungtlang Community Hall.

DATE: 20.02.2019.

SL. NO	NAME	SIGNATURE
1	David Chakma, SDO, S. Bungtlang, P&E Deptt.	[illegible]
2	Lianhuma VCP Bungtlang S.	[illegible]
3	R. Rozahaka VCP Bungtlang S. II	[illegible]
4	C. Zorathanga JE P&E Deptt	[illegible]
5	Lalthatlanga P&E Dpt	[illegible]
6	M. Lalromawia YLA Treasurer	M. [illegible]
7	T. Vanlalhanga P&E Dept	[illegible]
8	K. Lalrinpuia P&E Deptt	[illegible]
9	Bak Lalchungnunga P&E Dept	Baka
10	David Lalrinmawiatansanga P&E Deptt	David
11	N. Laltanpuia Secretary VC II	[illegible]
12	Danny K. Lalmuanthanga Info & Secretary YLA	[illegible]
13	Fanhmuaki M.H.I.P Bungtlang S. II Asst Secretary	[illegible]
14	C. Lalnunmawii Secretary Bungtlang	Secretary
15	Biakthanzami V/President Bungtlang S	V/President
16	Lalnunpari AT in Secretary Bungtlang	[illegible]
17	Lalpari M.H.I.P. Bungtlang South	[illegible]
18	Imawii LWA Bungtlang S. II	[illegible]
19	Thalziki L.W.A - Bungtlang S President	[illegible]
20	M. Hmingthansanga - V/C, Secy Bungtlang S	[illegible]
21	K. Chhandama V/C Member Bungtlang S	[illegible]
22	Zuamkimi, L.W.A. Vice-President Bungtlang S-II	[illegible]
23	Laltawngliana VCM, Pre.	[illegible]
24	Lalhunthlima President YLA Bungtlang S-II	[illegible]
25	Lalngaihawma Finance Sec YLA Bungtlang S-II	[illegible]
26	Lalvenhima Munkhin Secretary YLA Bungtlang S-II	[illegible]
27	H. Lalnuang VCM Bungtlang S.	[illegible]
28	HT. Lalmuansanga Village council Members	[illegible]
29	N Sungluang LWA	Sungi Vel
30	R. Lalvulmawii LWA	[illegible]
31	Dulupari LWA	[illegible]
32	K.C. Lalvuanchhungi LWA	Chhungi
33	C. Gopi, GM, POWERGRID	[illegible]
34	D. Talukdar, S. DGM, POWERGRID	[illegible]
35	Pritom Das, AE, Powergrid	
36	S. Tisso, FE, Powergrid	
37	K. Ligina, FO-FSM, Powergrid.	Ligina.
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PHOTOGRAPHS

Public Consultation at South Bungtlang on dated 20.02.2019

Public Consultation at Lungsen on dated 08.07.2019