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ENVIRONMENTAL & SOCIAL POLICY & PROCEDURES FRAMEWORK(ESPPF)

Assam Electricity Grid Corporation Limited (AEGCL)

&

Assam Power Distribution Company Limited (APDCL)

Contents

EXECUTIVE SUMMARY ..... i-xlii

1.0 Project Context 1

1.1 State Specific Details - Assam 2

2.0 Environment and Social Context – Assam 5

2.1 Approach/ Methodology 6

2.2 Consultation/ Participation 6

2.3 Structure of the Report 7

3.0 Assam - An overview 8

4.0 Stakeholder Analysis 26

5.0 Issues, Impacts and Management Measures - Social 29

5.1 Impacts – Social 29

5.2 Management Framework - Social 30

5.3 Principles 30

5.4 Definitions 30

5.5 Legal and Regulatory Framework 36

5.6 Mitigation Measures 40

6.0 Issues, Impacts and Management Measures - Environment 51

6.1 Environmental issues 51

6.2 Principles 54

6.3 Definitions 54

6.4 Legal and Regulatory Framework 55

6.5 Assessment of Environment Impact 59

6.6 Management Framework 60

7.0 Integration of environment and social management measures into overall project cycle 63

8.0 Implementation Arrangements 88

8.1 Administrative Arrangement for Project Implementation 88

8.2 Review of Project Implementation Progress: 88

8.3 Implementation Arrangement for Environment & Social Management by AEGCL/APDCL 89

9.0 Training & Capacity Building 96

10.0 Grievance Redressal Mechanism (GRM) 100

11.0 Monitoring & Evaluation 102

12.0 Budget 106

13.0 Stakeholders Consultation…… ..107

List of Tables

Table 1.1: Summary of subprojects in Tranche- I under NERPSIP 3

Table 3.1: Administrative Setup in Assam 9

Table 3.2: Demographic Profile 11

Table 3.3: District-wise Forest Cover 16

Table 3.4: List of Protected Area 17

Table 3.5 Allocation of Power to Assam 22

Table 3.6: Status of Electrification in Assam 25

Table 4.1: Key Stakeholders and their expectations/issues 26

Table 5.1: Management Measures to address potential Social issues 34

Table 5.2 : Legal and Regulatory Provisions - Social 37

Table 5.3: Comparison between WB Policy (OP 4.12) Requirements and RFCTLARR Act 2013……33

Table 5.4: Land Availability for Substations ……44

Table 5.5: Compensation and R&R Entitlement Framework for Land Acquisition 46

Table 6.1: RoW Clearance between Conductors and Trees 52

Table 6.2: Legal and Regulatory Provisions – Environment 55

Table 6.3: Potential Environmental Issues and its Management Measures 60

Table 7.1: Environmental and Social Assessment & Management Process of a Typical T & D Project 82

Table 7.2: AEGCL/APDCL' Risk Responsibility Framework 87

Table 8.1: Responsibility Allocation Framework for the E&S Assessment & Management Process 93

Table 9.1: AEGCL/APDCL's Skill Requirement 97

Table 9.2: Skill Development Program 99

Table 11.1: Monitoring of Mitigation Measures under ESPPF 102

List of Figures

Figure 1.1 : Power Map of the State Assam 4

Figure 3.1: Forest Cover Of Assam.....15

Figure 3.2: Forest and Wildlife Habitats of Assam.....20

Figure 5.1: Activity Chart RFCTLARRA, 2013.....48

Figure 6.1: Approval Process of Forest Clearance.....59

Figure 7.1: Project Cycle of a Typical Transmission/Distribution Project.....64

Figure 7.2: Environmental and Social Management Procedures 69

Figure 8.1: AEGCL/APDCL's Organization Chart with Arrangement for ESPPF Implementation 92

Figure 10.1: Flow chart showing Grievance Redressal Mechanism 101

List of Annexures

Annexure No.	Title
1	Comprehensive Details of Assam
2	Assam Investment Plan under NERPSIP (GoI & World Bank Funding)
3	Social Management Framework (SMF)
4	Salient Features of the Right to fair compensation and Transparency in Land Acquisition, Resettlement and Rehabilitation Act, 2013 (RFCTLARRA, 2013)
5	Salient Features of the Electricity Act, 2003
6	Tree/Crop/Tower Footing Compensation Process (other than Forest Land Compensation)
6a	Typical Plan of Transmission Line Tower Footings
7	Health and Safety Checklists
8	Regulations for measures relating to Safety and Electric Supply
9	Right of Way/Width (RoW) in Forest: 132 kV S/C Line during construction
10	Forest Clearance Process
10a	Online Submission and Monitoring of Forests Clearances Proposals (OSMFCP)
11	Environment Impact Assessment Notification, 2006
12	Form –8 for Disposal of Batteries
13	Hazardous Waste(Management, Handling & Trans-boundary Movement) Rule, 2008 notification dated 24th Sept.' 2008
14	Form-2 for Maintaining Records of E-Waste Handled / Generated
15	Pro-forma for Environment and Social details for Transmission Line and substations
16	Format for details of Sites identified for substations
17	Form of Safety Plan to be submitted by the Contractor
18	Checklist for Inspection of Transmission Lines and Substation
19	Sample ToR for Bio-diversity Assessment
20	Contents of Compensation Plan for Temporary Damages (CPTD)
20	Contents of Initial Environment Assessment Report (IEAR)
21	Contents of Compensation Plan for Temporary Damages (CPTD)
22	Contents of Final Environment Assessment Report (FEAR)
23	AEGCL/APDCL's Public Consultation Process

Abbreviations

ADB	:	Asian Development Bank
ADCs	:	Autonomous District Councils
AEGCL	:	Assam Electricity Grid Corporation Ltd
APGCL	:	Assam Power Generation Corporation Ltd.
APDCL	:	Assam Power Distribution Company Ltd
ASEB	:	Assam Electricity Board
BoD	:	Board of Directors
CA	:	Compensatory Afforestation
CBD	:	Convention on Biological Diversity
CEA	:	Central Electricity Authority
CEM	:	Chief Executive Member
CF	:	Conservator of Forests
CKM	:	Circuit Kilometers
CPCB	:	Central Pollution Control Board
CPTD	:	Compensation Plan for Temporary Damages
CSGS	:	Central Sector Generation Scheme
DFO	:	Divisional Forest Officer
DL	:	Distribution Line
DPR	:	Detail Project Report
EA	:	Environmental Assessment
EAMP	:	Environment Assessment Management Plan
E & F	:	Environment & Forests
E&S	:	Environmental and Social
EMF	:	Electro Magnetic Fields
EPA	:	Environment Protection Act
ESMP	:	Environmental and Social Management Plan
ESMC	:	Environmental and Social Management Cell
ESPPF	:	Environmental and Social Policy Procedures Framework
FEAR	:	Final Environmental Assessment Report
GDP	:	Gross Domestic Product
GHG	:	Green House Gas
GoA	:	Government of Assam
GRC	:	Grievance Redressal Committee
HT	:	High Tension
IEAR	:	Initial Environmental Assessment Report
kV	:	Kilo-volt

kWh	:	Kilo-watt hour
LT	:	Low Tension
MDONER	:	Ministry of Development of North Eastern Region
MoEF	:	Ministry of Environment& Forests
MU	:	Million Units
MVA	:	Million Volt Amperes
MW	:	Mega Watts
NBWL	:	National Board for Wildlife
NE	:	North East
NEC	:	North Eastern Council
NO	:	Nodal Officer
NOC	:	No Objection Certificate
NPV	:	Net Present Value
NSDP	:	Net State Domestic Product
OP	:	Operational Policy
O & M	:	Operation & Maintenance
PCB	:	Polychlorinated Biphenyl
PCCF	:	Principal Chief Conservator of Forests
PMU	:	Project Management Unit
RFCTLARRA	:	The Right to Fair Compensation and Transparency in Land Acquisition Rehabilitation and Resettlement Act, 2013
R & R	:	Rehabilitation & Resettlement
RoW	:	Right of Way
SIA	:	Social Impact Assessment
SF6	:	Sulfur Hexafluoride
SIMP	:	Social Impact Assessment and Management Plan
SMF	:	Social Management Framework
SPCB	:	State Pollution Control Board
T&D	:	Transmission and Distribution
TL	:	Transmission Line
TPDP	:	Tribal People Development Plan
WB	:	World Bank

EXECUTIVE SUMMARY

1 India's North East Region (NER) stretches across the eastern foothills of the Himalayan mountain range and is comprised of seven states including Assam, Manipur, Meghalaya, Mizoram, Nagaland, and Tripura. Geographically the region is connected to the other parts of the country through a small "chicken neck" corridor in the State of West Bengal. With a total population of 45.6 million (2011 census), the sparsely populated NER accounts for about 3.7 percent of India's total population and covers 7.9 percent of India's total geographical area. The vast majority of the region's population lives in rural areas, accounting for 82 percent of the total population as against compared to the national average of 69 percent (2011). A large part of the NER is hilly and, recognized as one of the globe's biodiversity hotspots. Forests cover over 2/3rd of the area, twice exceeding the policy target of 33%. This sparsely populated region is characterized by extraordinary ethnic, cultural, religious and linguistic diversity, with more than 160 Scheduled Tribes (out of 630 in the country) comprising over 400 distinct sub tribal groups, and a large and diverse non-tribal population as well.

2 **Regional Power Transmission and Distribution**. The North Eastern Region (NER) in India is endowed with rich energy resources but faces significant bottlenecks in electricity access and availability levels. The per capita power consumption in NER is one-third of the national average. The region has a shortfall of about 500 MW installed capacity against peak demand of about 1950 MW. No significant generation capacity has been added in the recent past. Therefore, inadequate power supply continues a critical constraint to sustainable growth and economic development in the NER. Some states are generally not able to draw even their allocated share of power from the Central Generating Stations (CGS) through the grid due to poor/ inadequate intra/ interstate transmission and distribution network and no capacity addition towards transmission/distribution power system not done due to fund constraints. The transmission and distribution (T&D) losses are also drastically high (up to 50%) across most of the States as a large number of remote hilly areas are connected through long low tension lines, resulting in low voltages and poor quality of power at consumer end. While generation capacity addition of about 4000 MW program over present installed capacity is already underway, adequate transmission and distribution infrastructure to transmit and distribute this power to consumers within the North-Eastern States is the need of the day.

Project Context

3 In order to create/ augment proper infrastructure of T&D in NER. Government of India (GoI) has formulated a "Composite scheme for transmission and distribution (T&D) in NER" capable of delivering adequate power to most consumers with reliability, aiming to improve the inter-state and intra-state transmission and sub-transmission infrastructure and reduce system losses in all the NER

states. The Govt. of India (GoI) has approached the World Bank to provide US$ 1500 million of IBRD funding support to portion of the scheme **"NER Power System Improvement Project (NERPSIP)"** in three investment tranches each being US$ 500 million for strengthening, augmentation of the intra-state and interstate transmission and distribution schemes (33kV and above and above) and undertake capacity building initiatives across six NER States of Assam, Manipur, Mizoram, Meghalaya, Tripura and Nagaland for World Bank & GoI funding. Ministry of Power (MoP), GoI has appointed POWERGRID, as the **Central Implementing Agency (IA)** to the six North East States for the Project. However, the ownership of the assets shall be with the respective State Governments/ State Utilities, which upon progressive commissioning shall be handed over to them for taking care of Operation and Maintenance of Assets at their own cost.

4 The project's first investment tranche would be implemented over a seven year period (2014-2021) and has two major components, namely:

a) Priority investments for strengthening of intra-state transmission and distribution systems;
b) Technical Assistance for Institutional Strengthening and Capacity Building of power utilities and departments.

5 In the above background, Assam state, one of the states in NER, is contemplating major expansion and augmentation of its transmission & distribution network in near future by implementing projects with the help/grant from GoI and other Multilateral Funding Agencies like the World Bank and ADB. Given the unique socio-economic, cultural and environmental resources, Assam Electricity Grid Corporation Ltd (AEGCL) and Assam Power Generation Corporation Ltd. (APDCL) in Assam is committed to manage them highly sustainably. Towards this, plans have been made by AEGCL/APDCL to prepare an Environment and Social Policy and Procedures Framework (ESPPF) to serve as a guiding instrument. AEGCL/APDCL assimilates environmental and social management procedures into its corporate functioning and also layout management procedures and protocol to address them. It outlines AEGCL/APDCL's commitment to deal with environmental and social issues relating to its transmission & distribution projects with a framework for identification, assessment and management of environmental and social concerns at both organizational as well as project levels. For this, POWERGRID, with proven credentials in management of environmental and social issues of large number of power transmission projects both within and outside the country has been mandated to prepare an ESPPF for AEGCL/APDCL. Thus, it enables AEGCL/APDCL;

- To establish clear procedures and methodologies for the environmental and social screening, planning, review, approval and implementation of subprojects to be financed under the Project;
- To specify appropriate roles and responsibilities, and outline the necessary reporting procedures, for managing and monitoring environmental and social concerns related to sub-projects;

- To determine the training, capacity building and technical assistance needed to successfully implement the provisions of the ESPPF;
- To ensure adequate financial provisions to meet the management measures to be undertaken to mitigate the impacts.

6 AEGCL/APDCL also believes that the ESPPF is dynamic and living document, which shall be further upgraded in light of the experiences gained from field implementation and other relevant factors while mainstreaming the environmental and social concerns in its corporate functioning.

AEGCL/APDCL's Environment & Social Policy Statement

*"AEGCL/APDCL considering the rich natural resources and diverse cultural, religious, social practice and customary laws of the region commits to achieve the goal of sustainable development and shall follow the principles of **avoidance**, **minimization** and **mitigation** during implementation of its projects with complete transparency and due social responsibility."*

7 The key principles of AEGCL/APDCL's Environmental and Social Policy are:

- Avoidance of environmentally and socially sensitive areas while planning project activities;
- Minimization of impacts when project activities occur in environmentally and socially sensitive areas;
- Mitigation of any unavoidable negative impacts arising out of its projects.

Methodology & Approach

8 The ESPPF has been prepared following a region/ state specific environmental and social assessments which involved generating information through both primary and secondary sources including consultations and library research. The methodology adopted to identify the potential environment and social impacts is based on experience gained from implementation of similar projects and baseline assessments of work activities anticipated in this proposed project. The methodology takes in to account wide range of receptors:

- Physical & chemical environment (e.g. water, soil, etc.);
- Biological environment (forest, animals, birds, etc.); and
- Communities, social groups and individuals (loss of land, loss of agricultural production, tribal, vulnerable groups (women and backward classes), socio-economic condition, health and safety risks).

9 The basic approach broadly involved following:

- Review of environment & social baseline information from secondary sources;
- Review of existing national & state specific legislations and policy and guidelines of multilateral agencies;

- Review of project related documents; and
- Stakeholders' consultations.

Consultation/ Participation

10 Consultations with key stakeholders including local, state, regional, central government entities and key ministries at the state level and central level as well as with World Bank officials were undertaken to know views and concerns about environmental and social issues/ concerns of the project. This activity ensured appropriate participation and gathering views from the environment and social perspective of all the stakeholders' which is integrated in this ESPPF to be adopted during different stages of the project implementation.

Assam at a Glance

11 ***Geography and Governance***. The State of Assam spreads over an area of 78,438 sq km. and lies between 89°5'- 96°1' East and 24°3'- 27°58' North. Assam is surrounded by six of the other Seven Sister States: Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura, and Meghalaya. Geographically Assam and these States are connected to the rest of India via a strip of land in West Bengal called the Siliguri Corridor or "Chicken's Neck". Assam shares international borders with Bhutan and Bangladesh.

12 The State of Assam is divided into 4 divisions (namely Upper Assam, Lower Assam, North Assam and Hills and Barak Valley Division) each headed by a Commissioner. The Commissioner oversees the activities of a number of districts. The State of Assam is divided into 27 districts. To further provide regional autonomy and better status within the constitutional framework from the tribes of Assam some of the areas have been incorporated within the sixth schedule of the Constitution of India. The Sixth Schedule provides for administration of certain tribal areas as autonomous entities. There are nine such autonomous regions which have been defined in the State of Assam. The administration of autonomous councils vested in a District Council and of an autonomous region, in a Regional Council. These Councils are endowed with legislative, judicial, executive and financial powers. Six schedule areas in Assam are Bodoland Territorial Council, Karbi Anglong Autonomous Council, Dima Hasao Autonomous District Council[1].

13 ***Demography.*** The Population of Assam according to the 2011 census stands at 3,12,05,576, making it the 14th most populated State in India. The State makes up about 2.5% of the country's

[1] Govt. of Assam has recently created 6 more Autonomous Councils viz. Rabha Hasong Autonomous Council (RHAC), Mishing Autonomous Council (MAC), Tiwa Autonomous Council (TAG), Deori Autonomous Council (DAC), Thengal Kachari Autonomous Council (TKAC) and Sonowal Kachari Autonomous Council (SKAC).

population. The State is spread over an area of about 78,400 sq. km. making it the 16th largest State in the country in terms of area. The density of population per sq km is about 398 and almost equal to the national average. The State has a population growth rate of about 17% which is again very close to the national growth rate. The literacy rate in the State is 72.19% (census 2011) where male and female literacy rates are 78.81% and 67.27% respectively. Sex Ratio in Assam is 958, which is above national average of 940 as per census 2011. The Scheduled Castes (SCs) and Scheduled Tribes (STs) population consists nearly 7.15% and 12.45 % of the total population in the State.

14 ***Forests and Protected Areas.*** The State of Assam is enriched with extensive forest area and also rich with different species and strains of floras and faunas along with valuable forest products. Forest cover constitutes 35.28% of total land area of this State. The recorded forest area of Assam is 26,832 sq. km. Also there are nearly 40 Sacred Groves are identified in Assam. Mostly Sacred Groves are found in Karbi Anglong district. However, some of the monasteries like Shankaradeva maths distributed all over the State also have Sacred Groves. These Sacred Groves are ecologically rich and play important role in the religious and sociocultural life of the local people and homes to many medicinal and aromatic plants. These sacred groves are protected by the community but do not have any legal protection.

15 In Assam 25 protected area networks consisting of 5 National Parks, and 20 Wildlife Sanctuaries (including 2 proposed WLS) are formed. All these National Parks and WLS hold a large number of endangered and local species (refer **Table - 1**). Assam has five Elephant Reserves (Sonitpur ER (1,420 sq km), Dehing-Patkai ER (937 sq km), Kaziranga-Karbi Anglong ER (3,270 sq km), Dhansiri-Lungding ER (2,740 sq km), and Chirang-Ripu ER (2,600 sq km) and Eight Elephant Corridors connects these Elephant Reserves, Protected Forest and nearby forests locating in the neighboring States (viz. Arunachal Pradesh and Meghalaya).

Table - 1: Protected Area Network in Assam

Sl. No.	National Park and Wildlife Sanctuaries	Location (District)	Main Habitat
1.	Kaziranga National Park	Golaghat, Nagaon & Sonitpur	One horned Rhino, Swamp Deer, Wild Buffalo, Tiger, Elephant, Hoolock Gibbon, Capped Langur, Home to 25 globally threatened and 21 near threatened species of birds
2.	Manas National Park	Chirang and Baksa	Rhino, Elephant, Tiger, Pygmy Hog, Hispid hare, Golden Langur, Assamese Macaque, Rhesus Macaque, Leopard, Golden Cat, Fishing Cat, Leopard Cat, Jungle Cat, Large Indian civet, Small Indian civet, Toddy Cat
3.	Orang National Park	Udalguri and	Rhino, Tiger, Maljuria Elephants (male elephants in

Sl. No.	National Park and Wildlife Sanctuaries	Location (District)	Main Habitat
		Sonitpur	group), Hog Deer, Wild Pig 222 species of Birds (Greater Adjutant Stork, Lesser Adjutant Stork, Brahminy Duck, Pintail Duck etc.)
4.	Nameri National Park	Sonitpur	Tiger, Leopard, Elephant, Gaur, Wild Pigs, Sambar, Barking Deer, Hispid hare, Slow Loris, Capped Langur, White Winged Wood duck, Palla's fish-eagle, Lesser Adjutant Stork, Greater spotted Eagle, White ramped vulture, Longo billed vulture, Black bellied Term, Rufous–necked Hornbill, Wreathed Hornbill, Great Pied Hornbill etc.
5.	Dibru-Saikhowa National Park	Dibrugarh and Tinsukia	Tiger, Elephant, Leopard, Jungle Cat, Bears, Small Indian Civet, Squirrels, Gangetic Dolphin, Slow Loris, Assamese Macaque, Rhesus Macaque, Capped Langur, Hoolock Gibbon. It is an identifies Important Bird Area (IBA)
6.	Bherjan-Borajan-Padumoni WLS	Tinsukia	Hoolock Gibbon, Capped Langur, Pig-tailed, Macaque, Macaque, Slow Loris and Rhesus Macaque
7.	Panidehing WLS	Sivasagar	Elephants, Lesser Adjutant Stork, Greater Adjutant, Swamp Francolin, Spot-billed Pelican, White-rumped Vulture, Greater Spotted Eagle, Slender-billed Vulture, Pallas's Fish-eagle
8.	Hollongpara Gibbon WLS	Jorhat	7 Primates (Hoolock Gibbon, Stump- tailed Macaque, Capped Langur, Pig-tailed Macaque, Assamese Macaque, Slow Loris and Rhesus Macaque)
9.	Nambor-Doigurung WLS	Golaghat	Gaur, Elephants, Hoolock Gibbon
10.	Garampani WLS	Karbi Anglong	Elephants, White-winged Duck, Lesser Adjutant Stork
11.	Nambor WLS	Karbi Anglong	Gaur , Elephants, Hoolock Gibbon
12.	East Karbi Anlong WLS	Karbi Anglong	Gaur, Elephants, Tiger, Hoolock Gibbon
13.	Marat Longri WLS	Karbi Anglong	Tigers, Leopards, Gaur, Elephants, Hoolock Gibbon
14.	Burhachapori WLS	Sonitpur	Elephants, Aquatic Birds, Tiger, Bengal Florican
15.	Laokhowa WLS	Nagaon	Elephant, Tiger, Asiatic Wild Buffalo, Bengal Florican
16.	Pabitora WLS	Morigaon	Rhino, Leopards, Barking Deer, Lesser Adjutant, Greater Adjutant, White-bellied Heron, Greater Spotted Eagle

Sl. No.	National Park and Wildlife Sanctuaries	Location (District)	Main Habitat
17.	Sonai-Rupai WLS	Sonitpur	White Winged wood duck, Elephant, Tiger, Gaur
18.	Barnadi WLS	Udalguri	Hispid Hare, Pygmy Hog, Elephants, Tiger
19.	Chakrasila WLS	Kokrajhar	Golden Langur, Gaur
20.	Dihing-Patkai WLS	Dibrugarh and Tinsukia	Hoolock Gibbon, Elephants, White Winqed wood duck, Tiqer
21.	Borail WLS	Cachar	Serow, Himalayan Black bear, Hoolock Gibbon
22.	Amchang WLS	Kamrup(Metro	Elephant, Gaur, Leopard
23.	Deepor Beel Wildlife Sanctuary	Kamrup (Metro)	Greater Adjutant Stork, Whistling Teal, Open Billed Stork, Shoveler, Pintail, Garganey, Pheasant tail jacanas
24	North Karbi Anglong Wildlife Sanctuaries (Proposed)	Karbi Anglong	Tiger, Lesser cats, Elephant, Gaur, Sambar, Bears, Barking deer, Rhesus macaque, Hoolock gibbon, Capped langur, Slow loris
25	Bordoibam Bilmukh Bird Sanctuaries (Proposed)	Dhemaji and Lakhimpur	Kingfishers, Large whistling Teal, Lesser Adjutant Stork, Spotted Dove, Pheasant tailed Jacana, Bronze winged Jacana, Indian River Tern, Black Headed Gull, White Wagtail, Black Headed Oriole, Purple Moorhen, Openbill Stork

16 ***Power Scenario.*** The peak demand of the State is 1430 MW. The State's own generation is about 260MW out of their installed capacity of 377 MW as hydel generation (ROR i. e. Run of the Rivers) is negligible due to insufficient rainfall. The allocation of power in the State is depicted in the table below:

Sl. No.	Particulars	Capacity MW	Allotment To Assam		Remarks
			%	MW	
1	Kathalguri (AGBPP)	291	56.5	164	Gas based
2	R C Nagar (AGTPP)	84	45.6	38	Gas based
3	Ranganadi (RHEP)	405	43.3	175	Run on River
4	Loktak (NHPC)	105	29.4	31	Reservoir
5	Khangdong (KHEP)	50	56.3	28	Reservoir
6	Kopili-I (KOP-I)	200	53.5	107	Reservoir
7	Kopili-II (KOP-II)	25	52.3	13	Reservoir
8	Doyang (DHEP)	75	43.8	33	Reservoir
A	**Total CSGS- NER**	**1235**		**589**	
B	**Total CSGS- ER**			**162**	

C	**TOTAL CSGS**			**751**	
1	Lakwa TPS	157	100	157	Gas based
2	Namrup TPS	120	100	120	Gas based
3	Karbi Langpi HEP	100	100	100	Run on River
D	**APGCL TOTAL**	**377**		**377**	
E	**OTHERS**	**31**	**100**	**31**	EIPL, AOD, Champamati HEP etc.
F	**TOTAL AVAILABILITY**			**1159**	

Source: http://www.apdcl.gov.in/irj/go/km/docs/internet/ASSAM/webpage/PDF/prespower.pdf:

17 ***Power Utilities***. Assam Electricity Grid Corporation Limited (AEGCL) responsible for transmission of electricity to the distribution network of Assam could handle hardly 720 MW only in the year 2004. After 2004, on the assistance of Govt. of India and Govt. of Assam, different projects like ADB funding, NLCPR, NEC, TDF were implemented and grid capacity enhanced to handle load in the tune of 1603 MW presently. Since then, AEGCL has incorporated 4949.374 circuit kms of EHV lines and has a transformation capacity of about 4565.80 MVA from existing 54 numbers of EHV (400kV, 220kV, 132kV level) substations. AEGCL has also anticipated for additional transmission lines (around 900 Ckms) and transformation capacities (about 1300 MVA) by constructing new EHV substations (220 kV, 132kV level) and augmenting existing substations with assistance of Govt. of India and other funding resources including ADB.

18 The distribution of power is carried out by APDCL in the whole State of Assam by its three main regions or zones viz. Upper Assam, Central Assam and Lower Assam.

- APDCL- Upper Assam Region: It caters to the consumers of the districts of Golaghat, Jorhat, Sibsagar, Dibrugarh, Tinsukia, in Upper Assam. It has over 6.62 lakhs of consumers connected through 1503.5 Ckt km. of 33 kV lines and 9270.5 Ckt km. of 11 kV lines & 106 nos. of 33/11 KV substations of 896 MVA Capacity.

- APDCL- Central Assam Region: Area of operation of this zone is spread across the Districts of. Cachar, Karimganj, Hailakandi, Nagaon, Sonitpur, North Lakhimpur Dhemaji Morigaon, N.C.Hills & Karbi Anglong. It has around 10.65 lakhs consumers distributed through 2539 Ckm of 33 KV lines and 22284.00 Ckm. of 11 KV network and 98 nos. of 33/11 KV substations with a total capacity of 814.00 MVA .

- APDCL- Lower Assam Region: This zone caters to the energy needs of the consumers of the districts located in lower Assam, namely, Kamrup, Nalbari, Barpeta, Kokrajhar, Bongaigaon, Goalpara and Darrang. It has over 11.94 Lakh consumers of different categories at present

connected through 2047 Ckt km 33 kV lines and 9950 Ckt. km of 11 kV network and 105 nos. of 33/11 kV substations with a total capacity of 978.95 MVA.

19 Efforts are underway not only to bridge the gap but also ensure that adequate power is made available to enable boosting of State economy. An abstract of subprojects for the tranche-1 under expansion/augmentation of power system network in the State of Assam is presented in **Table 2**.

Table 2: Summary of subprojects in Tranche- I under NERPSIP

Sl. No.	Name of the subproject	Quantity (Nos.)	Capacity Addition (Km/MVA)	Estimated Cost (in Millions) *
1.	220/132 kV Transmission lines	11	376 km.	10824.80
2.	220/132/33kV substations (New/Augmentation/Extension)	20	1644 MVA	
3.	33 kV Distribution lines (overhead/underground)	38	479.km.	3913.20
4.	33/11kV substations (New)	16	240 MVA	

***The estimated cost includes consultancy fees, contingencies and Interest During Construction (IDC)**

Stakeholder analysis

20 Stakeholder's analysis has been undertaken to identify the issues and the concerns of various stakeholders who are supposed to be either directly or indirectly impacted/benefited or assume a position wherein they can have a significant role to influence the project. The Stakeholder's analysis has been carried out to identify existing relationship and also to understand the roles, responsibilities and relations of these stakeholders in context of shaping the environment and social issues with respect to proposed project. Accordingly, key stakeholders at different levels starting from village/panchayat level up to national level have been mapped to know their issues & expectations with respect to proposed project. The process of consultation with stakeholders involves formal and informal discussion. A wide range of issues were discussed with various stakeholders that might have environmental / social concern. Some of the key issues are listed below:

1. **Environment Issues**

- Impact on forest and biodiversity area e.g. national parks, sanctuary, biosphere reserves, etc.
- Impact due to waste (Used Oil or E-waste), oil spills, sanitation;
- Occupational health and safety during implementation , operation and maintenance phase;
- Soil erosion and slope un-stability;
- Leakage of SF_6, a the potent greenhouse gas; and
- Any other adverse environment issues.

2. **Social and Institutional Issues**

- Securing land for substation;
- Temporary damages to land, crops, trees or structures during construction;
- Health and Safety risk including HIV/AIDS;
- Community participation during project cycle i.e. planning, implementation and operation
- Tribal/vulnerable groups;
- Locals, Women and Inter agency participation/coordination; and
- Ethnic and cultural conflicts.

Impacts – Social

21 This section identifies the potential social impacts of the proposed projects in terms of the nature, magnitude, extent and location, timing and duration of the anticipated impacts. These impacts are both positive or negative relating to the project design stage, construction stage or the project operation and decommissioning stage.

i. **Positive Impacts**

- Increased economic activity;
- Improved and reliable power supply;
- Employment creation;
- Improved road infrastructure;
- Gender - Access to electricity would improve the quality of life and also reduce the time consumption of women for household activities which will entail availability of more time for other activities.
- Reduced consumption/ reliance of/ on fossil fuels like firewood, charcoal etc.;
- Capacity Building.

ii. **Negative Impacts**

- Loss of land;
- Restriction on land use;
- Temporary loss of access to Common Property Resources; and
- Health and Safety risk including HIV/AIDS.

Impacts - Environment

22 This section identifies the potential environmental impacts of the proposed projects. These impacts are both positive or negative relating to the project design stage, construction stage or the project operation and decommissioning stage.

i. Positive Impacts

- Availability of power lessen the demand of natural resources like firewood, charcoal etc. resulting in conservation/protection of forest/vegetation.

ii. Negative Impacts

- Clearance of tree within RoW;
- Impacts on forest, wildlife habitats and migratory birds;
- Impacts on drainage, soil erosion & water resources;
- Impacts on traffic and road infrastructure;
- Aesthetic appeal of area;
- Impacts from likely oil spillage;
- Effect of electromagnetic (EMF) fields;
- Leakage SF6; and
- Health & Safety

The potential E & S issues identified shall be managed within the applicable regulatory framework and international best practices.

Policy, Legal and Regulatory Framework

23 AEGCL/APDCL undertakes its Transmission/ Distribution system (33 kV and above) activities within the purview of Constitutional provisions, Policy, Legal, and Regulatory Framework for environmental and social issues applicable to power transmission & distribution. In addition, the requirements of multilateral funding agencies are also considered in the management procedures for addressing environmental and social issues.

24 The Constitution of India provides for protection of the environment and its improvement as a fundamental duty and the Directive Principles of State Policy under Article 51 A (g) and Article 48 A respectively. The Apex Court has widened the scope of Article 21 (Right to Life) bringing environmental impacts under its ambit. Similarly, the constitutional provisions in regard to social safeguards are enshrined in the Preamble to the Constitution, such as justice, social, economic and political; liberty of thought, expression, belief, faith and worship; equality of status and of opportunity; fraternity assuring the dignity of the individual and the unity and integrity of the Nation. Fundamental Rights and Directive Principles guarantee the right to life and liberty. Health, safety and livelihood been interpreted as part of this larger framework. The provisions on social safeguards are contained in Articles 14, 15, 17, 23, 24, 25, 46, 330, 332, etc.

25 **Sixth Schedule:** In addition to basic fundamental rights, special provisions have been extended to the Tribal Areas of State under the 6th Schedule [Articles 244(2) and 244(A)]. The Sixth Schedule provides for administration of certain tribal areas as autonomous entities. There are nine such autonomous regions which have been defined in the State of Assam. The administration of autonomous councils vested in a District Council and of an autonomous region, in a Regional Council. These Councils are endowed with legislative, judicial, executive and financial powers. Most Council consists of up to 30 members including few nominated members. These constitutionally mandated Councils oversee the traditional bodies of the local tribes. The functions of the autonomous council are:

- Allotment, occupation use or setting apart of land other than reserved forest for agriculture;
- Management of forest (which is not a reserved forest);
- Regulation of jhum cultivation or any other form s of shifting agriculture;
- Village or town administration including public health & sanitation.
- Inheritance of property
- Social customs

The Sixth Schedule envisages establishment of Autonomous Councils (ACs) and gives them elaborate Legislative, Administrative and Judicial powers. The district councils are also empowered to constitute Village councils and Village courts. The Sixth Schedule empowers the Governor to determine the administrative areas of the councils. He is authorized to create new autonomous districts, change the area of existing districts, redefine the boundaries and alter the names of autonomous districts. In case of Sixth Schedule areas the transfer of land from tribal to non-tribal is not allowed without the prior permission of the District Commissioner. The district council has been empowered to make laws pertaining to land and forest (other than reserve forest). The compensation for the damage to land, property and forest would be governed by the provisions of the rules formulated by the District Councils.

26 **Environment :** Mandatory environmental requirements for AEGCL/APDCL at state level include: sanction of GoA under section 68(1) of the Electricity Act, 2003; Forest clearance under the Forest (Conservation) Act, 1980; During the currency of operations, Regulations on Batteries (Management and handling) Rules, 2001 regarding disposal of used batteries, Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008 regarding disposal of used transformer oil, Ozone Depleting Substances (Regulation and Control) Rules, 2000 putting restrictions on use of ozone depleting substances come into force and required voluntary enforcement and provisions under Biological Diversity Act, 2002, E-waste (Management and Handling) Rules,

2011 regarding maintaining records & handling of electronic wastes, the Scheduled Tribes & Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 and Assam Control of Tree Felling Rules, 2012.

27 The Forest (Conservation) Act, 1980 is the key legislation through which the environmental impacts of transmission projects are managed since the current regulation does not require an Environmental Impact Assessment for transmission lines. The legislation requires compensatory afforestation for any forest land diverted for non-forest use in twice the area diverted with afforestation undertaken by the respective state Forest Department. A national fund CAMPA has been created for this purpose. In case projects pass through or are located in designated protected areas, clearances from the Wildlife Board are also required. AEGCL/APDCL has decided to undertake assessment of environmental impacts even for cases where not statutorily mandated in order to confirm compliance with its own policy highlighted in paragraph 6 above.

28 **Social:** Mandatory Social requirements for AEGCL/APDCL at State level include provisions of section 67 & 68 (5 & 6) of the Electricity Act, 2003 for the calculation of compensation for any temporary damages. Involuntary land acquisitions, if any done, for securing private lands for construction of sub-stations, fall under the realm of The Right to Fair Compensation and Transparency in Land Acquisition Rehabilitation and Resettlement Act, 2013 (RFCTLARRA). The provisions of Indian Treasure Trove Act, 1878 as amended in 1949 covers chance finds. The Right to Information Act, 2005 (RTI) ensures citizens to access information under the control of public authorities.

29 **The World Bank** (WB) Operational Policies OP 4.01, 4.04, 4.11 & 4.36/ADB's Safeguard Policy Statement 2009 (SPS 2009) for Environmental and Social Considerations outline funding agencies policy and procedures for Environmental Assessment (EA) of different developmental projects. Depending upon the issues and impacts, the projects are categorized as A, B, and C warranting larger and specialized focus for A and the least for C. This project, as per the WB guidelines, is categorized as A. Likewise, OP 4.10 and 4.12 outlines policy guidelines for managing issues related to tribal people and involuntary resettlement.

30 **RFCTLARRA, 2013** has replaced the old Land Acquisition Act, 1894 and has come into force from 1st January 2014. The new act i.e. RFCTLARRA, 2013 authorizes State Govt. (i.e. GoA) or its authorized Government agency to complete the whole process of acquisition of private land including Social Impact Assessment (SIA), Action Plan for R&R (i.e. Rehabilitation and Resettlement) & its implementation and the AEGCL/APDCL's responsibility is limited to identification and selection of suitable land based on technical requirement and ensuring budget

allocation. Conducting Social Impact Assessments (SIA) has been made mandatory under this new act and results of these assessments are shared with all the stakeholders and public hearing held which makes the process transparent and informed. Subsequently, an entitlement package that includes both compensation (for land/structure and assets to land and structure) and R&R as necessary is prepared. Further to this, individual awards are passed and all documents are disclosed in the public domain through local administration and internet. The flow chart of the land acquisition process with schedule prescribed for various activities is illustrated in **Figure 1** below. The entitlements with regard to compensation and assistances towards land acquisition or loss of any assets or livelihood for all categories of people being affected due to land acquisition is briefly outlined in **Table 3**:

Table 3: Compensation and R&R Entitlement Framework for Land Acquisition

<table>
<tr><th colspan="2">A Comprehensive Compensation Package</th></tr>
<tr><th>Eligibility for Entitlement</th><th>Provisions</th></tr>
<tr><td>The affected families
• Land Owners: includes any person-

i) whose name is recorded as (he owner of the land or building or part thereof, in the records of the authority concerned;
or
ii) any person who is granted forest rights under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 or under any other law for the time being in force;
or
iii)who is entitled to be granted Patta rights on the land under any law of the State including assigned lands:
or
iv)any person who has been declared as such by an order of the court or Authority;</td><td>Determination of Compensation :
1. Market value of the land
• as specified in the Indian Stamp Act, 1899
or
• the average of the sale price for similar type of land situated in the village or vicinity,
or
• consented amount of compensation as agreed in case of acquisition of lands for private companies or for public private partnership project.
whichever is higher
Market value x Multiplier* between 1 to 2 in rural areas only (No multiplier in urban areas).
2. Value of the assets attached to land:
Building/Trees/Wells/Crop etc. as valued by relevant govt. authority;
Land compensation = 1+2
3. Solatium: 100% of total compensation
Total Compensation : 1+2+3</td></tr>
<tr><td colspan="2">(*) Precise scale shall be determined by the State Govt.
The indicative values of multiplier factor based on distance from urban areas as provided in the act.</td></tr>
<tr><td colspan="2"><table>
<tr><th>Radial Distance from Urban area (Km)</th><th>Multiplier Factor</th></tr>
<tr><td>0-10</td><td>1.00</td></tr>
<tr><td>10-20</td><td>1.20</td></tr>
<tr><td>20-30</td><td>1.40</td></tr>
<tr><td>30-40</td><td>1.80</td></tr>
<tr><td>40-50</td><td>2.00</td></tr>
</table></td></tr>
</table>

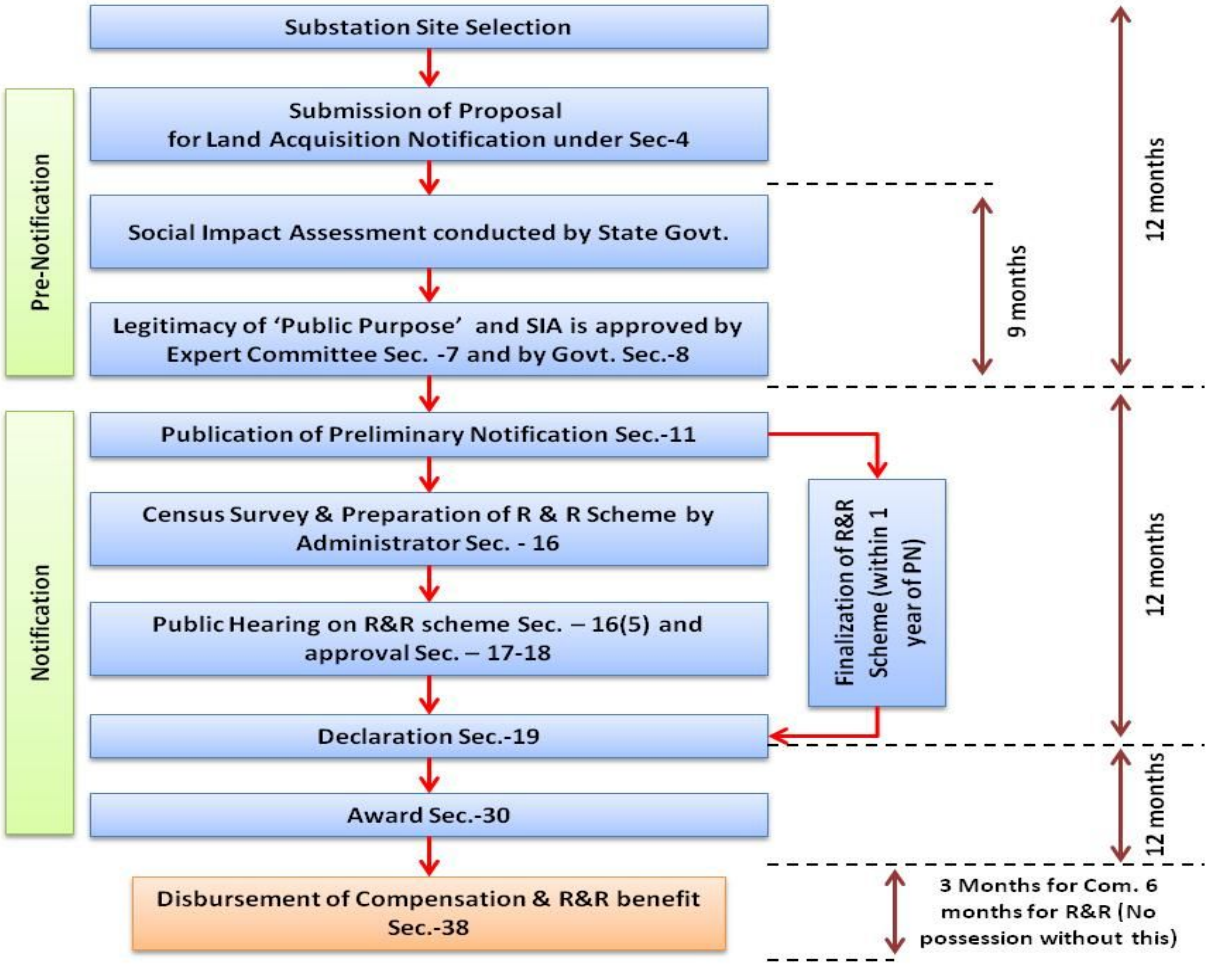
B. R&R Package Elements of Rehabilitation and Resettlement Entitlements for all the affected families (both land owners and the families whose livelihood is primarily dependent on land acquired) in addition to compensation provided above		
Sl. No.	**Elements of R& R Entitlements**	**Provision**
1.	Subsistence grant/allowance for displaced families	Rs. 3000 per month per family for 12 months
2.	The affected families shall be entitled to:	a. Where jobs are created through the project, mandatory employment for one member per affected family; **or** b. Rupees 5 lakhs per family; **or** c. Rupees 2000 per month per family as annuity for 20 years, with appropriate index for inflation; **The option of availing (a) or (b) or (c) shall be that of the affected family**
3.	Housing units for displacement: i) If a house is lost in rural areas: ii)If a house is lost in urban areas	i. A constructed house shall be provided as per the Indira Awas Yojana specifications. ii. A constructed house shall be provided, which will be not less than 50 sq. mts. in plinth area. **In either case the equivalent cost of the house may also be provided in lieu of the house as per the preference of the project affected family.** The stamp duty and other fees payable for registration of the house allotted to the affected families shall be borne by the Requiring Body.
4.	Transportation cost for displaced families	Rs 50,000/- per affected family
5.	Resettlement Allowance (for displaced families)	Onetime Rs 50,000/- per affected family
6.	Cattle shed/ petty shop cost	Onetime financial assistance as appropriate for construction as decided by St. Govt. subject to minimum of Rs.25,000/-
7.	Artisan/small traders/others (in case of displacement)	Onetime financial assistance as appropriate as decided by State Govt. subject to minimum of Rs.25,000/-

Special Provisions for SCs/STs

In addition to the R&R package, *SC/ST families will be entitled to the following additional benefits:*

1. One time financial assistance of Rs. 50,000 per family;
2. Families settled outside the district shall be entitled to an additional 25% R&R benefits;
3. Payment of one third of the compensation amount at very outset;
4. Preference in relocation and resettlement in area in same compact block;
5. Free land for community and social gatherings;
6. In case of displacement, a *Development Plan is to be prepared*
7. *Continuation of reservation and other Schedule V and Schedule VI area benefits from displaced area to resettlement area.*

Figure 1: Activity Chart RFCTLARRA, 2013



Project Cycle – Integrating Environment and Social Issues/ Concerns and Mitigatory Measures

31 Stakeholder analysis and impact assessments had enabled identifying issues. The same are now placed in the project cycle so as to draw management measures for addressing the same. Key milestones in AEGCL/APDCL's transmission/Distribution (33 kV and above) projects are;

i) Project Conceptualization
ii) Project Planning
iii) Approval
iv) Detailed Design and Tendering
v) Project Implementation
vi) Operation & Maintenance
vii) Review and Monitoring and Evaluation.

Environmental and Social Concerns

32 **Environmental Concerns.**

- Clearing/lopping of Trees within Right of Way (RoW);
- Clearing of Ground Vegetation for Movement of Machinery;
- Disposal of Used Transformer Oil;
- Disposal of Used Battery;
- Disposal of E-waste; and
- Leakage/use of SF_6 gas.

33 **Social Concerns**

- Loss to Standing Crop;
- Change in Land Prices;
- Temporary Loss of Access to Common Property Resources;
- Restriction on Land Use;
- Loss of livelihood due to acquisition of private agricultural land; and
- Loss of homestead, if any.

34 Management measures to address the issues/concerns in respect of social and environment are presented in **Tables 4 and 5** respectively.

Table 4: Social Management Measures

Sl.	Potential Issues	Management Measures
1	Loss of land	For Tranche-1, this is an issue as land for only 15 transmission substations out of 36 transmission & distribution substations is available with the Utility (for details refer **Table-5.4 in the main report)**. For remaining 5 transmission and 16 distribution substations, lands will have to be secured a fresh by AEGCL/APDCL through adopting any of the following three methods; i. Purchase of land on willing buyer & willing seller basis on negotiated rate; ii. Voluntary Donation; and iii. Involuntary Acquisition. In case of procurement of land through private purchase, AEGCL/APDCL shall ensure that compensation/rate for land is not less than the rate provided in the new land acquisition act, 2013. In order to comply with this provision AEGCL/APDCL may organize an awareness camp where provisions of new act in respect of basis/modalities of compensation calculation shall be explained to land owners with specific

Sl.	Potential Issues	Management Measures
		State provision if any. In the case of voluntary donation of land, it is to ascertained that the land owner/user(s) are not subjected to undue pressure for parting of land. Apart from this following shall also be ensured: • All out efforts shall be made to avoid any physical relocation/displacement due to loss of land; • The AEGCL/APDCL shall facilitate extending 'gratitude' to the land donor(s) in lieu of the 'contribution' if so agreed. The same shall be documented in the shape of MoU between donor and utility. • Subsequently title of land shall be transferred in the name of AEGCL/APDCL. All land donations (as well as purchases) will be subject to a review/ approval from a committee comprising representatives of different sections including those from the IA and GoA. In case of land acquired through involuntary acquisition, provisions of RFCTLARRA, 2013 shall be followed. (for details refer **Part – A** of Social Management Framework placed as **Annexure – 3**)
2	Change in land use and population relocation for substations	Due to inherent flexibility in locating substation and very small size of land, AEGCL/APDCL avoids habituated area completely hence no relocation of population on account of setting up of substation is envisaged.
		Although securing land for construction of substations proposed under tranche-1 is an issue, AEGCL/APDCL shall make all out efforts to secure such land wherein possibility of physical relocation/displacement is not envisaged.
3	Change in land use and population relocation due to towers/poles	As per existing law, land for tower/pole and right of way is not acquired and agricultural activities are allowed to continue after construction activity and AEGCL/APDCL pays compensation for all damages including cost of land below tower to its owner without acquiring it. Hence change in land use and resultant relocation of people is not envisaged in T&D projects.
4	Right of Way	Land for tower and right of way is not acquired as agricultural activities can continue. However, the project shall pay full compensation to all the affected persons/ community for any damages sustained during the execution of work. Accordingly, AEGCL/APDCL has formulated appropriate management plan in the form of Compensation Plan for Temporary Damage (CPTD) to minimize the damages and provide compensation plan for temporary damages in consultation with the state government and affected persons and/ or community (for details refer **Part – B** of Social Management Framework placed as **Annexure – 3**)

Sl.	Potential Issues	Management Measures
5	Impact on Tribals	The population of Assam as per census 2011 was 3,12,05,576. The Scheduled Tribes (STs) population is 38, 84,371 which constitutes 12.4 per cent of the total population of the State. In compliance with Bank's Operational Policy 4.10 (Indigenous Peoples) and special provision of RFCTLARRA, 2013, a Tribal People Development Framework has been prepared (refer **Part - C** of Social Management Framework placed as **Annexure – 3**)
6	Gender/ women participation	Women involvement will be planned through formal and informal group consultations so that their participation is ensured during preparation and implementation of the project.
7	Induced secondary development during construction	AEGCL/APDCL operations are short-lived and do not induce secondary developments during construction.
8	Health and safety of worker/employee/ community	During construction the health and safety aspects of workers and nearby community shall be implemented through contractors with due diligence and compliance of required regulation/guideline through a safety plan AEGCL/APDCL uses best available technology for lines and do not cause any hazards to health and safety.
9	"Chance finds" or discovery of any archaeological artifacts, treasure etc. during excavation	Possibilities of such phenomenon in T&D project are quite remote due to limited and shallow excavations. However, in case of such findings, AEGCL/APDCL will follow the laid down procedure in the Section-4 of Indian Treasure Trove Act, 1878 as amended in1949.
10	Inter Agency Coordination	Exclusive bodies will be set up at state/ district levels for over-seeing, reviewing and guiding the project

Table 5: Environment Management Measures

Sl. No	Potential Issues	Management Measures
1	Minimising adverse impact on forests	AEGCL/APDCL endeavors to circumvent / lessen environmentally sensitive areas such as forest and other ecologically fragile / sensitive areas through optimization of route including use of modern tools like GIS/GPS and other modern techniques.
2.	Clearing/Lopping of trees	Use of extended/special tower to reduce RoW and impact on trees
3.	▪ Vegetation damage ▪ Habited Loss	To minimise damage to vegetation and habitat fragmentation, AEGCL/APDCL utilises hand clearing and transportation of tower material by head loads into forestland and other land as well, wherever possible.

Sl. No	Potential Issues	Management Measures
4.	▪ Habitat fragmentation ▪ Edge effect on flora & fauna	AEGCL/APDCL maintains only a 3m wide strip for O&M and allows for regeneration of vegetation in the other one or two strips and beneath the transmission lines to avoid habitat fragmentation and edge effect. In hilly area this can possibly be totally avoided.
5.	Chances of accident involving elephant in the specified corridor due to placing of poles	APDCL shall try to avoid such area to the extent possible. However, in case avoidance is not possible, suitable design modification in the pole like provision of spike guards, barbed wire fencing or any other arrangement shall be incorporated in such location.
6.	Erosion of soil and drainage along the cut and fill slopes in hilly areas	AEGCL/APDCL would ensure that all cut and fill slopes in TL/DL are adequately protected using standard engineering practices including bio-engineering techniques wherever feasible. All drainage channels along or inside substations shall be trained and connected to main or existing drainage to avoid any erosion due to uncontrolled flow of water.
7.	Chemical contamination from chemical maintenance techniques	AEGCL/APDCL does not use chemicals for forest clearance/RoW maintenance
8.	Poly- Chloro-Biphenyls (PCBs) in electrical equipment	AEGCL/APDCL use mineral oil in electrical equipments. Specification of oil containing PCB less 2 mg/kg (non –detectable level) stated in the tender document
9.	Induced secondary development during construction	AEGCL/APDCL operations are short-lived and do not induce secondary developments during construction
10.	Avian hazards from transmission/distribution lines and towers	Avian hazards mostly encountered in bird sanctuaries area and fly path of migratory bird predominantly related to nesting site. Although the incidence of avian hazards is rare due to the distance between the conductors. AEGCL/APDCL shall take all possible precaution to avoid these areas by careful route selection. However, bird guards are provided to prevent any avian hazards.
11.	Air craft hazards from transmission lines and towers	AEGCL/APDCL as per the requirement of IS 5613 of July'94 provides aviation markers, night-lights for easy identification of towers in notified/selected areas.
12.	Health and safety of worker/employee/ community	During construction the health and safety aspects of workers and nearby community shall be implemented through contractors with due diligence and compliance of required regulation/guideline through a safety plan. AEGCL/APDCL uses best available technology for lines and do not cause any hazards to health and safety.
13.	Fire Hazards	Fire hazards are mostly occurred in forest area. However, AEGCL/APDCL uses state of art automatic tripping mechanism for its transmission/distribution and substation that disconnect the line in fraction of seconds to prevent fire hazards. The Forest Department also take precaution like maintaining fire line in the cleared forest

Sl. No	Potential Issues	Management Measures
		area to avoid spread of fire
		Firefighting instruments including fire extinguishers are kept in appropriate place for immediate action in case of any fire hazard.
14.	Pollution	Although pollution is not an issue with transmission/ distribution projects still AEGCL/APDCL will make efforts to further minimise it. Sites are cleared of all the leftover materials and debris to avoid any chance of pollution.
15.	GHG (SF_6 Gas)	Although leakage of SF6 is not a major issue, AEGCL/APDCL will make efforts to reduce the leakage through regular monitoring installing gas pressure monitor/ leak detectors in Circuit Breakers.

35 Other potential environmental and social issues/ concerns and their management measures are described in an EMP, a sample of which is in the Annex-A to the summary. It will be implemented during the execution of the project. Since many provisions of the EMP are to be implemented by the Contractor, to ensure its proper implementation and monitoring, the EMP forms a part of the contract document.

AEGCL/APDCL's Environment and Social Management Procedures

36 AEGCL/APDCL's has developed comprehensive Environment and Social (E&S) management procedures and incorporated them to its project cycle, to ensure that its operation eliminates or minimizes adverse environmental and social impacts. The E&S management procedures identify the relevant issues at early stage of project cycle and follow the basic philosophy of sustainable development along with Principles of Avoidance, Minimization and Mitigation. These three guiding principles are employed in a project right from very beginning i.e. at the time of Project conceptualization & Planning Stage by studying different alternatives line routes for selection of most optimum route to avoid involvement of forests/ biodiversity/Eco-sensitive zone including animal/bird path, protected areas, human habitations etc. to the extent possible. If necessary/required, tall towers are also provided to avoid/minimize the impact. In case it becomes unavoidable due to terrain and line route passes through protected areas additional studies would be conducted by independent agencies to ascertain the impacts and to plan management measures to minimize/mitigate such impacts. A Terms of Reference (ToR), for such assessment, which can be customized for a particular situation/ location/ concern has been prepared and is placed at **Annexure - 19** of the main report**.**

37 Likewise for substation land, AEGCL/APDCL identifies number of potential substation sites based on data collected as per the checklist **(Annexure -16** of the main report) and a comprehensive

analysis for each alternative site is carried out. The analysis considers various site specific parameters that includes infrastructure facilities such as access roads, railheads, type of land viz. Govt., revenue, private land, agricultural land; social impacts such as number of families getting affected; and cost of compensation and rehabilitation giving due weightage to each. Environmental & Social Management process dovetailed in project cycle for appropriate and timely action is outlined in **Figure 2**.

Environmental and Social Risk assessment

38 Environmental and Social Risk Assessment is a vital part of AEGCL/APDCL's environmental and social management strategies. The risk assessment process identifies existing risks, and forecast future potential risks in its power transmission/distribution projects. It is a scientific process that includes cost benefit analysis. The environment and social management procedures developed by AEGCL/APDCL evaluate these risks, both qualitatively and quantitatively, and prioritise them. Based on prioritisation, environment and social management options are selected. AEGCL/APDCL's Risk Management process involves risk preparedness, risk mitigation and the sharing of liabilities (via internal arrangements and insurance).Responsibilities in the event of occurrence of a risk have been illustrated in **Table 6**.

Table 6: AEGCL/APDCL's Risk Responsibility Framework

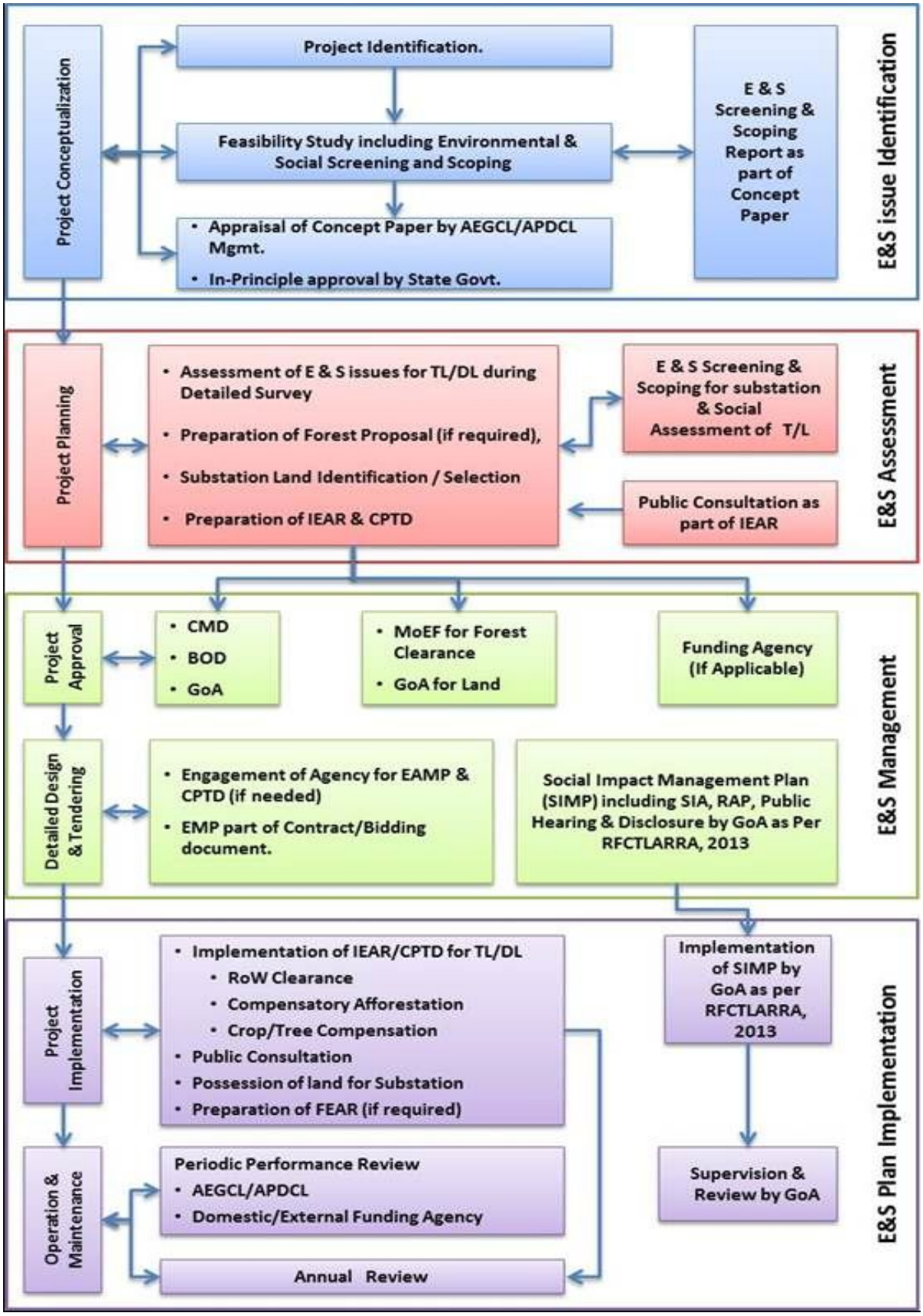
Risk	Key Role-players			
	GOA	*AEGCL/APDCL*	*Contractor*	*Insurers*
Non Compliance ➢ Regulatory[2] ➢ Contractual[3]	 ✓ -	 ✓ -	 ✓ ✓	 - -
Major hazards, e.g. tower fall during construction	-	✓	✓	✓
During O&M	-	✓	-	-
Impacts on health[4] etc.	-	✓	-	-
Force Majeure ➢ Insurable ➢ Non-Insurable	 - ✓	 - ✓	 - -	 ✓ -
Inclusion/ Exclusion of concerned Communities	✓	✓		
Public interest mitigation	✓	✓	-	-

[2] *Regulatory like working in forest/protected areas without statutory clearances.*

[3] *Contractual like noncompliance of condition of clearance like fuel supply to labourer to avoid tree felling, no-work during night times, etc.*

[4] *Impact of health like any case of prolonged exposure to Electro-Magnetic Field (EMF).*

Figure – 2: Environment and Social Management Procedures



Implementation Arrangements

39 To ensure quality and strengthen organizational systems to enable effective implementation of the ESPPF, AEGCL/APDCL shall have to set out procedures and work culture which will promote total involvement of all its personnel. To attain assigned goal following shall be ensured:

a) A synchronized system of functioning adopted by Corporate Planning and Corporate Monitoring group, which monitors all activities in the organization;

b) An emphasis on intradepartmental approach to all projects, delineation of departmental responsibilities and the delegation and decentralization of authority resulting in a fast response and quick adjustment to change;

c) A commitment to provide at all times the best possible time bound quality service in all areas of its operations.

40 AEGCL/APDCL's commitment to the ESPPF shall have to be developed with these principles. To ensure effective implementation of its ESPPF, AEGCL/APDCL's will focus on;

- Strengthening the implementation of the ESPPF by deployment of appropriately trained personnel at key levels;
- Reinforcing in-house capabilities by working with specialized external agencies;
- Placing dedicated manpower with specialization in the respective field to deal with and manage the environment and social issues;
- Reviewing progress of the ESPPF internally or through external agencies.

41 Corporate office will have overall responsibility for construction, operation, and maintenance of transmission/distribution systems apart from providing necessary support services.

42 For the NERPSIP, the implementing agency (IA) is POWERGRID with its mandate for design and implementation supervision for the project. In consultations with the states, it has put up a tiered structure as follows:

- **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 AEGCL/APDCL.
- **Project Implementation Unit (PIU)** – A body formed by the IA, including members of AEGCL/APDCL 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.

Grievance Redressal Mechanism (GRM)

43 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 are addressed during public consultation process initiated at the beginning of the project and broadly outlined in **Annexure-23**. For handling grievance, AEGCL/APDCL has already a framework in place. To ensure its implementation, Grievance Redress Committee (GRC) will be established at two places, one at the project/scheme level and another at Corporate/HQ level. The GRCs shall include members from AEGCL/APDCL, Local Administration, Village 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 shall be disclosed in Panchayat office and concerned district headquarter for wider coverage.

44 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. However, GRC meeting shall be convened within 15 days of receiving a grievance for its solution. GRC endeavor will be to pronounce its decision/ may also refer it to corporate GRC for solution within 30-45 days of receiving grievances. In case complainant/appellant is not satisfied with the decision of GRC they can approach AEGCL/APDCL Corporate level Committee /District Collector or Court of law for solution.

45 The corporate level GRC shall function under the chairmanship of Director (PMU) 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.

46 These GRCs shall act as supplement and in no way substitute the legal systems, especially embedded within RFCTLARR Act 2013, The Electricity Act, 2003, and Right to Information Act.

Monitoring & Evaluation

47 For environmental and social components of a project, environmental and social monitoring plan is developed, based on baseline data and impacts predicted during the environmental and social assessment process. The concerned forest department staffs, as part of their duties monitor impacts on ecological resources through which the transmission line traverses. AEGCL/APDCL in coordination with forest/revenue officials will monitor timely implementation of various activities such as compensatory afforestation, ROW maintenance, prevention of fire hazards, natural regeneration of vegetation etc. The environmental and social monitoring plan for each project will be integrated with construction, operation and maintenance and shall be monitored by the ESMC on a monthly basis.

48 Since regular and effective monitoring of implementation of EAMP/CPTD for Transmission/Distribution Line and SIMP for substations are crucial for desired result, AEGCL/APDCL shall designate one Manager each for Environment and Social related aspects who will be made responsible for all the activities related to implementation/monitoring of the EAMP and CPTD. Participation of PAPs in the monitoring of EAMP/CPTD/SIMP is also ensured through regular consultation and their active participation. Major monitoring indicator identified for regular monitoring of activities will be carried out by different department at field and will be reviewed by the Nodal Officer (ESMC) on monthly basis. CMD will review ongoing activities on quarterly including environment and social issues and corrective measures if required are implemented at site.

Annex-A: Sample Environmental Management Plan

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

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

Clause No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule
			Careful selection of site and route alignment to avoid encroachment of socially, culturally and archaeological sensitive areas (i. g. sacred groves, graveyard, religious worship place, monuments etc.)	Tower/pole location and overhead/ underground line alignment selection (distance to sensitive area)	Consultation with local authorities/ autonomous councils -once		
6	Securing lands for substations.	Loss of land/ income change in social status etc.	In the case of Involuntary Acquisitions, Compensation and R&R measures are extended as per provision of RFCTLARRA, 2013	Compensation and monetary R&R amounts/ facilities extended before possession of land.	As per provisions laid out in the act	State Govt.	Prior to award/start of substation construction.
7	Line through protected area/ precious ecological area	Loss of precious ecological values/ damage to precious species	Avoid siting of lines through such areas by careful site and alignment selection (National Parks, Wildlife Sanctuary, Biosphere Reserves/ Biodiversity Hotspots)	Tower/pole location and overhead/ underground line alignment selection (distance to nearest designated ecological protected/ sensitive areas)	Consultation with local forest authorities - once	IA	Part of detailed siting and alignment survey /design
			Minimize the need by using RoW wherever possible	Tower/pole location and overhead/ underground line alignment selection	Consultation with local authorities and design engineers - once	IA	Part of detailed sitting and alignment survey /design
8	Line through identified Elephant corridor / Migratory bird	Damage to the Wildlife/ Birds and also to line	Study of earmarked elephant corridors to avoid such corridors, Adequate ground clearance, Fault clearing by Circuit Breaker, Barbed wire wrapping on towers, reduced spans etc., if applicable	Tower/pole location and overhead/ underground line alignment selection. Minimum/maximum ground clearance	Consultation with local forest authorities – once. Monitoring – quarterly basis	IA	Part of detailed sitting and alignment survey /design and Operation

Clause No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule
			Avoidance of established/ identified migration path (Birds & Bats). Provision of flight diverter/ reflectors, bird guard, elevated perches, insulating jumper loops, obstructive perch deterrents, raptor hoods etc[5]., if applicable	Tower/pole location and overhead/ underground line alignment selection	Consultation with local forest authorities - once	IA	Part of detailed sitting and alignment survey /design and Operation
9	Line through forestland	Deforestation and loss of biodiversity edge effect	Avoid locating lines in forest land by careful site and alignment selection	Tower/pole location and overhead/ underground line alignment selection (distance to nearest protected or reserved forest)	Consultation with local authorities – once	IA	Part of detailed sitting and alignment survey/design
			Minimise the need by using existing towers, tall towers and RoW, wherever possible		Consultation with local authorities and design engineers – once		
			Measures to avoid invasion of alien species	Intrusion of invasive species	Consultation with local forest authorities - once		
			Obtain statutory clearances from the Government	Statutory approvals from Government	Compliance with regulations – once for each subproject		
			Consultation with autonomous councils wherever required	Permission/ NOC from autonomous councils	Consultation with autonomous councils – once during tower placement		

[5] As per International/National best practices and in consultation with concerned forest/wildlife Authority.

Clause No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule
10	Lines through farmland	Loss of agricultural production/ change in cropping pattern	Use existing tower or footings wherever possible.	Tower/pole location and overhead/ underground line alignment selection.	Consultation with local authorities and design engineers – once	IA	Part of detailed alignment survey and design
			Avoid sitting new towers on farmland wherever feasible	Tower/pole location and overhead/ underground line alignment selection	Consultation with local authorities and design engineers – once		Part of detailed sitting and alignment survey /design
11	Noise related	Nuisance to neighbouring properties	Substations sited and designed to ensure noise will not be a nuisance	Noise levels	Noise levels to be specified in tender documents – once	IA	Part of detailed equipment design
12	Interference with drainage patterns/ irrigation channels	Flooding hazards/ loss of agricultural production	Appropriate sitting of towers to avoid channel interference	Tower/pole location and overhead/ underground line alignment selection (distance to nearest flood zone)	Consultation with local authorities and design engineers – once	IA	Part of detailed alignment survey and design
13	Escape of polluting materials	Environmental pollution	Transformers designed with oil spill containment systems, and purpose-built oil, lubricant and fuel storage system, complete with spill clean up equipment.	Equipment specifications with respect to potential pollutants	Tender document to mention specifications – once	IA	Part of detailed equipment design /drawings
			Substations to include drainage and sewage disposal systems to avoid offsite land and water pollution.	Substation sewage design	Tender document to mention detailed specifications – once	IA	Part of detailed substation layout and design /drawings

Clause No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule
14	Equipments submerged under flood	Contamination of receptors	Substations constructed above the high flood level(HFL) by raising the foundation pad	Substation design to account for HFL (elevation with respect to HFL elevation)	Base height as per flood design- once	IA	Part of detailed substation layout and design /drawings
15	Explosions /Fire	Hazards to life	Design of substations to include modern fire fighting equipment Provision of fire fighting equipment to be located close to transformers	Substation design compliance with fire prevention and control codes	Tender document to mention detailed specifications – once	IA	Part of detailed substation layout and design /drawings
Construction							
16	Equipment layout and installation	Noise and vibrations	Construction techniques and machinery selection seeking to minimize ground disturbance.	Construction techniques and machinery	Construction techniques and machinery creating minimal ground disturbance- once at the start of each construction phase	IA (Contractor through contract provisions)	Construction period
17	Physical construction	Disturbed farming activity	Construction activities on cropping land timed to avoid disturbance of field crops (within one month of harvest wherever possible).	Timing of start of construction	Crop disturbance –Post harvest as soon as possible but before next crop – once per site	IA (Contractor through contract provisions)	Construction period
18	Mechanized construction	Noise, vibration and operator safety, efficient operation	Construction equipment to be well maintained.	Construction equipment – estimated noise emissions	Complaints received by local authorities – every 2 weeks	IA (Contractor through contract provisions)	Construction period

Clause No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule
		Noise, vibration, equipment wear and tear	Turning off plant not in use.	Construction equipment – estimated noise emissions and operating schedules	Complaints received by local authorities – every 2 weeks	IA (Contractor through contract provisions)	Construction period
19	Construction of roads for accessibility	Increase in airborne dust particles	Existing roads and tracks used for construction and maintenance access to the line wherever possible.	Access roads, routes (length and width of new access roads to be constructed)	Use of established roads wherever possible – every 2 weeks	IA (Contractor through contract	Construction period
		Increased land requirement for temporary accessibility	New access ways restricted to a single carriageway width within the RoW.	Access width (meters)	Access restricted to single carriage –way width within RoW – every 2 weeks	IA (Contractor through contract provisions)	Construction period
20	Construction activities	Safety of local villagers	Coordination with local communities for construction schedules, Barricading the construction area and spreading awareness among locals	Periodic and regular reporting /supervision of safety arrangement	No. of incidents- once every week	IA (Contractor through contract provisions)	Construction period
		Local traffic obstruction	Coordination with local authority/ requisite permission for smooth flow of traffic	Traffic flow (Interruption of traffic)	Frequency (time span)- on daily basis	IA (Contractor through contract provisions)	Construction period
21	Temporary blockage of utilities	Overflows, reduced discharge	Measure in place to avoid dumping of fill materials in sensitive drainage area	Temporary fill placement (m^3)	Absence of fill in sensitive drainage areas – every 4 weeks	IA (Contractor through contract provisions)	Construction period
22	Site clearance	Vegetation	Marking of vegetation to be removed prior to clearance, and	Vegetation marking and clearance	Clearance strictly limited to target	IA (Contractor	Construction period

Clause No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule
			strict control on clearing activities to ensure minimal clearance.	control (area in m^2)	vegetation – every 2 weeks	through contract provisions)	
			No use of herbicides and pesticides				
23	Trimming /cutting of trees within RoW	Fire hazards	Trees allowed growing up to a height within the RoW by maintaining adequate clearance between the top of tree and the conductor as per the regulations.	Species-specific tree retention as approved by statutory authorities (average and max. tree height at maturity, in meters)	Presence of target species in RoW following vegetation clearance – once per site	IA (Contractor through contract provisions)	Construction period
		Loss of vegetation and deforestation	Trees that can survive pruning to comply should be pruned instead of cleared.	Species-specific tree retention as approved by statutory authorities	Presence of target species in RoW following vegetation clearance - once	IA (Contractor through contract provisions)	Construction period
			Felled trees and other cleared or pruned vegetation to be disposed of as authorized by the statutory bodies.	Disposal of cleared vegetation as approved by the statutory authorities (area cleared in m^2)	Use or intended use of vegetation as approved by the statutory authorities – once per site	IA (Contractor through contract provisions)	Construction period
24	Wood/ vegetation harvesting	Loss of vegetation and deforestation	Construction workers prohibited from harvesting wood in the project area during their employment, (apart from locally employed staff continuing current legal activities)	Illegal wood /vegetation harvesting (area in m^2, number of incidents reported)	Complaints by local people or other evidence of illegal harvesting – every 2 weeks	IA (Contractor through contract provisions)	Construction period
25	Surplus earthwork/soil	Runoff to cause water pollution, solid waste disposal	Soil excavated from tower footings/ substation foundation disposed of by placement along roadsides, or at nearby house blocks if requested by landowners	Soil disposal locations and volume (m^3)	Acceptable soil disposal sites – every 2 weeks	IA (Contractor through contract provisions)	Construction period

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

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

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

Clause No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule
		Social inequities	Compensation will be paid for loss of production, if any.	Implementation of Tree/Crop compensation (amount paid)	Consultation with affected parties – once in a quarter	IA	Prior to construction
36	Flooding hazards due to construction impediments of natural drainage	Flooding and loss of soils, contamination of receptors (land, water)	Avoid natural drainage pattern/ facilities being disturbed/blocked/ diverted by on-going construction activities	Contract clauses (e.g. suspended solids and BOD/COD in receiving water)	Incorporating good construction management practices-once for each site	IA (Contractor through contract provisions)	Construction period
37	Equipment submerged under flood	Contamination of receptors (land, water)	Equipment stored at secure place above the high flood level(HFL)	Store room level to be above HFL (elevation difference in meters)	Store room level as per flood design-once	IA	Construction period
38	Inadequate siting of borrow areas (quarry areas)	Loss of land values	Existing borrow sites will be used to source aggregates, therefore, no need to develop new sources of aggregates	Contract clauses	Incorporating good construction management practices – once for each site	IA (Contractor through contract provisions)	Construction period
39	Health and safety	Injury and sickness of workers and members of the public	Safety equipment's (PPEs) for construction workers Contract provisions specifying minimum requirements for construction camps Contractor to prepare and implement a health and safety plan. Contractor to arrange for health and safety training sessions	Contract clauses (number of incidents and total lost-work days caused by injuries and sickness)	Contract clauses compliance – once every quarter	IA (Contractor through contract provisions)	Construction period
40	Inadequate construction stage monitoring	Likely to maximise damages	Training of environmental monitoring personnel	Training schedules	No. of programs attended by each person – once a year	IA	Routinely throughout construction period

Clause No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule
			Implementation of effective environmental monitoring and reporting system using checklist of all contractual environmental requirements	Respective contract checklists and remedial actions taken thereof.	Submission of duly completed checklists of all contracts for each site - once		
			Appropriate contact clauses to ensure satisfactory implementation of contractual environmental mitigation measures.	Compliance report related to environmental aspects for the contract	Submission of duly completed compliance report for each contract – once		
Operation and Maintenance							
41	Location of line towers/poles and overhead/ underground line alignment & design	Exposure to safety related risks	Setback of dwellings to overhead line route designed in accordance with permitted level of power frequency and the regulation of supervision at sites.	Compliance with setback distances ("as-built" diagrams)	Setback distances to nearest houses – once in quarter	AEGCL/ APDCL	During operations
42	Line through identified bird flyways, migratory path	Injury/ mortality to birds, bats etc due to collision and electrocution	Avoidance of established/identified migration path (Birds & Bats). Provision of flight diverter/reflectors, elevated perches, insulating jumper loops, obstructive perch deterrents, raptor hoods etc., if applicable	Regular monitoring for any incident of injury/mortality	No. of incidents- once every month	AEGCL/ APDCL	Part of detailed siting and alignment survey /design and Operation
43	Equipment submerged under flood	Contamination of receptors (land, water)	Equipment installed above the high flood level (HFL) by raising the foundation pad.	Substation design to account for HFL ("as-built" diagrams)	Base height as per flood design – once	AEGCL/ APDCL	During operations
44	Oil spillage	Contamination of land/nearby water bodies	Substation transformers located within secure and impervious sump areas with a storage capacity of at least 100% of the capacity of oil in	Substation bunding (Oil sump) ("as-built" diagrams)	Bunding (Oil sump) capacity and permeability - once	AEGCL/ APDCL	During operations

Clause No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule
			transformers and associated reserve tanks.				
45	SF_6 management	Emission of most potent GHG causing climate change	Reduction of SF6 emission through awareness, replacement of old seals, proper handling & storage by controlled inventory and use, enhance recovery and applying new technologies to reduce leakage	Leakage and gas density/level	Continuous monitoring	AEGCL/ APDCL	During Operations
46	Inadequate provision of staff/workers health and safety during operations	Injury and sickness of staff /workers	Careful design using appropriate technologies to minimise hazards	Usage of appropriate technologies (lost work days due to illness and injuries)	Preparedness level for using these technologies in crisis – once each year	AEGCL/ APDCL	Design and operation
			Safety awareness raising for staff.	Training/awareness programs and mock drills	Number of programs and percent of staff /workers covered – once each year		
			Preparation of fire emergency action plan and training given to staff on implementing emergency action plan				
			Provide adequate sanitation and water supply facilities	Provision of facilities	Complaints received from staff /workers		
47	Electric Shock Hazards	Injury/ mortality to staff and public	Careful design using appropriate technologies to minimise hazards	Usage of appropriate technologies (number of injury incidents, lost work days)	Preparedness level for using these technology in crisis – once a month	AEGCL/ APDCL	Design and Operation
			Security fences around substations	Maintenance of fences	Report on maintenance – every 2 weeks		
			Barriers to prevent climbing on/ dismantling of transmission towers	Maintenance of barriers			

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

Clause No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule
	vegetation	tree/shrub /bamboo along RoW	clearance. No use of herbicides/ pesticides		forest authorities - once a year(pre-monsoon/post-monsoon		
53	Noise related	Nuisance to neighbouring properties	Substations sited and designed to ensure noise will not be a nuisance.	Noise levels {dB(A)}	Noise levels at boundary nearest to properties and consultation with affected parties if any - once	AEGCL/ APDCL	Operations

1.0 Project Context

1 India's North East Region (NER) stretches across the eastern foothills of the Himalayan mountain range and is comprised of seven states including Assam, Manipur, Meghalaya, Mizoram, Nagaland, and Tripura. Geographically the region is connected to the other parts of the country through a small "chicken neck" corridor in the State of West Bengal. With a total population of 45.6 million (2011 census), the sparsely populated NER accounts for about 3.7 percent of India's total population and covers 7.9 percent of India's total geographical area. The vast majority of the region's population lives in rural areas, accounting for 82 percent of the total population as against compared to the national average of 69 percent (2011). A large part of the NER is hilly and, recognized as one of the globe's biodiversity hotspots. Forests cover over 2/3rd of the area, twice exceeding the policy target of 33%. This sparsely populated region is characterized by extraordinary ethnic, cultural, religious and linguistic diversity, with more than 160 Scheduled Tribes (out of 630 in the country) comprising over 400 distinct sub tribal groups, and a large and diverse non-tribal population as well.

2 The North Eastern Region (NER) in India is endowed with rich energy resources but faces significant bottlenecks in electricity access and availability levels. The per capita power consumption in NER is one-third of the national average. The region has a shortfall of about 500MW installed capacity against peak demand of about 1950 MW. No significant generation capacity has been added in the recent past. Therefore, inadequate power supply continues a critical constraint to sustainable growth and economic development in the NER. Some states are generally not able to draw even their allocated share of power from the Central Generating Stations (CGS) through the grid due to poor/inadequate intra/interstate transmission and distribution network and no capacity addition towards transmission/distribution power system not done due to fund constraints. The transmission and distribution (T&D) losses are also quite high (up to 50%) across most of the States as a large number of remote hilly areas are connected through long low tension lines, resulting in low voltages and poor quality of power at consumer end. While generation capacity addition of about 4000 MW program over present installed capacity is already underway, adequate transmission and distribution infrastructure to transmit and distribute this power to consumers within the North-Eastern States is the need of the day.

3 In order to create/ augment proper infrastructure of T&D in NER keeping in mind future requirement, the Government of India (GoI) has drawn a "Composite scheme for transmission and

distribution (T&D) in NER" capable of delivering adequate power to most consumers with reliability, aiming to improve the inter-state and intra-state transmission and sub-transmission infrastructure and reduce system losses in all the NER states. This in background, GoI has approached the World Bank to provide US$ 1500 million of IBRD funding support to a portion of the scheme christened: **"NER Power System Improvement Project (NERPSIP)"**. The investments are proposed to be made in three different tranches, each being US$ 500 million. The key objectives include strengthening, augmentation of the intra-state and interstate transmission and distribution schemes (up to 33kV) and undertake capacity building initiatives across six NER States of Assam, Manipur, Mizoram, Meghalaya, Tripura and Nagaland. Ministry of Power (MoP), GoI has appointed POWERGRID, the CTU, as Implementing Agency for the Project in six North Eastern States. However, the ownership of the assets shall be with the respective State Governments/State Utilities, which upon progressive commissioning shall be handed over to them for taking care of Operation and Maintenance of Assets at their own cost.

4 The first tranche under the NERPSIP would be implemented over a seven year period (2014-2021) and has two major components, namely:

(a) Priority investments for strengthening of intra-state transmission and distribution systems;
(b) Technical Assistance for Institutional Strengthening and Capacity Building of power utilities and departments.

1.1 State Specific Details – Assam

5 The State of Assam is spread over an area of about 78,438 sq. km with a population of 3,11,57, 436 (as per Census 2011). The State of Assam faces significant bottlenecks in electricity access and availability levels. The present per capita energy consumption is of the order of 205 units (kWh) against the regional per capita consumption of about 258 units and national per capita consumption of about 779 units. The peak demand of the State is 1430 MW. The State's own generation is about 260MW out of their installed capacity of 377 MW as hydel generation (ROR i. e. Run of the Rivers) is negligible due to insufficient rainfall. The total availability of power at present is around 800 MW including less than 500 MW from the CSGS during peak hours as against allocation of 751 MW. Future peak & energy demand in the State is likely to grow exponentially due to expansion industrialization/new industry/tea industry/ other infrastructure developments, 100% electrification rural households etc. by the end of 12th five year plan (2012-17).The State's electricity demand forecast is to reach 2,222 MW by 2019-20 widening the deficit by more than 500 MW. APDCL is making efforts to minimize this 400 MW deficit by procuring 100-150 MW from the open market at a much higher rate than the normal rate of procurement by the Company. Enhance

allocation of additional 490 MW i .e. 240 MW from Pallatana Power Project of ONGC in Tripura & 250 MW from Bongaigaon Thermal Power Station of NTPC at Bongaigaon would add up to some extent to minimize the demand-availability gap of power in Assam.

6 Besides this, the present Intra-State transmission system of the State is quite old & weak and is unable to cater to the growing power requirements of the State. Although the present T&D system covers many areas of the State, it is inadequate in its reach and due to non-availability of redundant T&D system, outage of any transmission system element results in long term power shortages making the system highly unreliable. Besides, some of the network elements have undergone long term outage due to break-down. Therefore, it has become essential to address the above situation through remedial measures in the transmission and distribution (T&D) system. Accordingly, phase-wise strengthening of transmission & sub-transmission system has been proposed. The Power Map of Assam indicating the existing and proposed T&D network is placed in **Figure 1.1**. Summary of subprojects to be implemented in the State in Tranche-1 under NERPSIP along with capacity addition and cost is shown in **Table 1.1** below.

TABLE 1.1: SUMMARY OF SUBPROJECTS IN TRANCHE- I UNDER NERPSIP

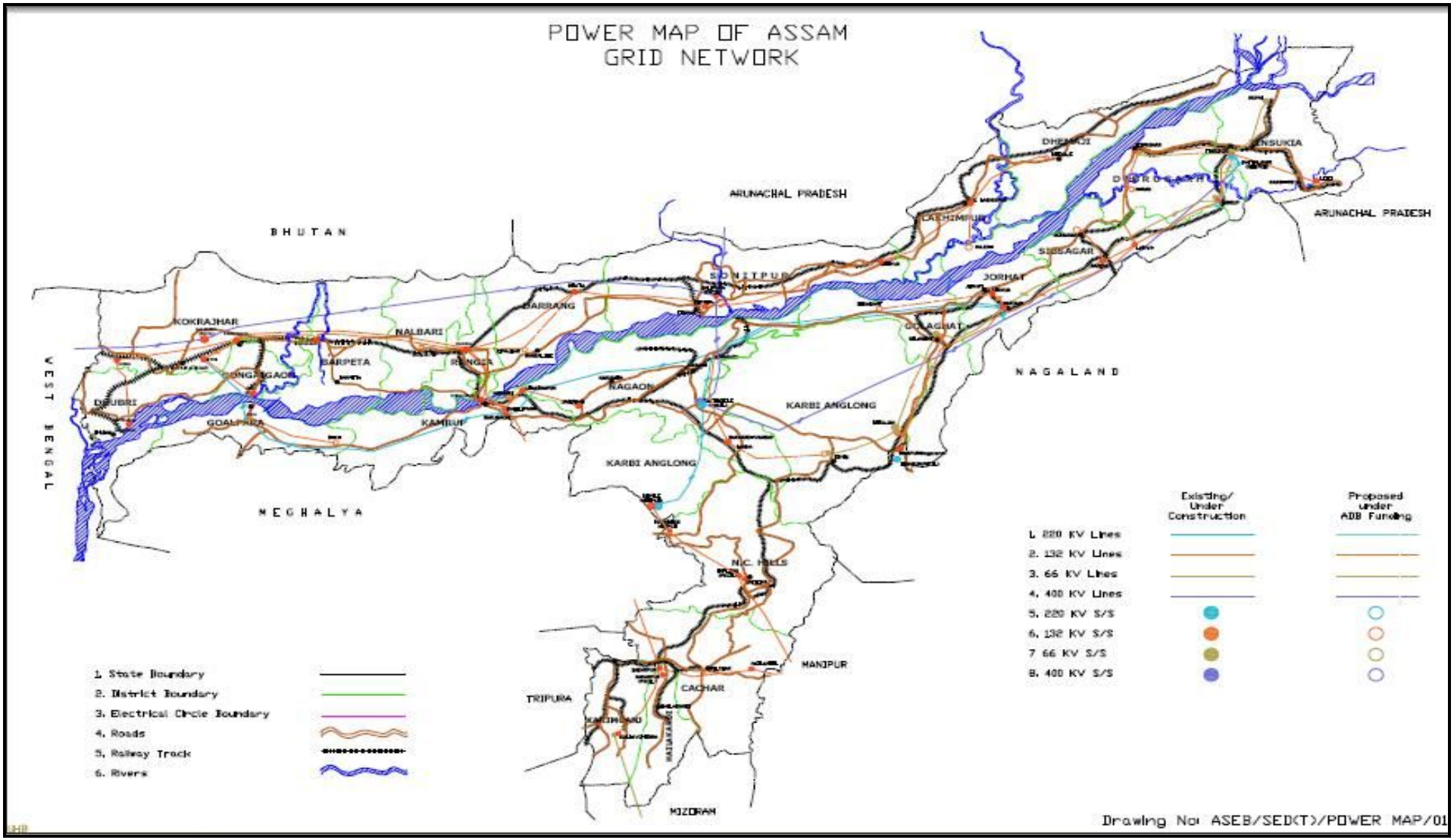
Sl. No.	Name of the subproject	Quantity (Nos.)	Capacity Addition (Km/MVA)	Estimated Cost (in Millions)*
1.	220/132 kV Transmission lines	11	376 km.	10824.80
2.	220/132/33kV substations (New/Augmentation/Extension)	20	1644 MVA	
3.	33 kV Distribution lines (overhead/underground)	38	479.km.	3913.20
4.	33/11kV substations[6] (New)	16	240 MVA	

***The estimated cost includes consultancy fees, contingencies and Interest During Construction (IDC)**

7 The prime objective of the project/subproject is to improve the power sector in the State of Assam and capacity building to achieve sustainable development in the long term. The Project is expected to facilitate connection to remote/virgin area, to enhance the capacity & reliability of the system, to improve voltage profile & to reduce losses and ultimately to enhance satisfaction for all categories of consumers which in turn will spur growth & overall development in the whole State.

[6] *The substation of 33/11 kV is installed for stepping down the voltage from 33 kV to 11 kV level to facilitate its further transmission to distribution network for its logical use by consumers after further stepping down to 433 V level. The electrical installations in the said substation comprises of transformers, breakers, capacitors etc. and other protection/controlling devices to ensure required power flow".*

FIGURE 1.1 : POWER MAP OF THE STATE ASSAM



2.0 Environment and Social Context – Assam

8 Environment and Social Policy and Procedures Framework (ESPPF): As the AEGCL/APDCL are contemplating major expansion and augmentation of their transmission & distribution network in near future by implementing projects with the help/grant from GoI and Multilateral Funding Agencies like the World Bank, ADB, it attaches high significance towards managing environment and social issues and the associated concerns. In this context, POWERGRID, with proven credentials in management of environmental and social issues of large number of power transmission projects both within and outside the country has been mandated to prepare Environment and Social Policy and Procedures Framework (ESPPF) for AEGCL/APDCL.

9 The AEGCL/APDCL's ESPPF is based on POWERGRID's ESPPF with updation/ incorporation of state specific requirements/processes including central legislations after extensive review and gap analysis with active participation/support of AEGCL/APDCL officials and field verifications. The ESPPF of AEGCL/APDCL assimilates environmental and social management procedures into its corporate functioning and also layout management procedures and protocol to address them. It outlines AEGCL/APDCL's commitment to deal with environmental and social issues relating to its transmission & distribution projects with a framework for identification, assessment and management of environmental and social concerns at both organizational as well as project levels. Thus, it enables AEGCL/APDCL:

- To establish clear procedures and methodologies for the environmental and social screening, planning, review, approval and implementation of subprojects to be financed under the Project;
- To specify appropriate roles and responsibilities, and outline the necessary reporting procedures, for managing and monitoring environmental and social concerns related to sub-projects;
- To determine the training, capacity building and technical assistance needed to successfully implement the provisions of the ESPPF;
- To ensure adequate financial provisions to meet the management measures to be undertaken to mitigate the impacts.

Environment & Social Policy Statement

"AEGCL/APDCL considering the rich natural resources and diverse cultural, religious, social practice and customary laws of the region commits to achieve the goal of sustainable development and shall follow the principle of ***avoidance****,* ***minimization*** *and* ***mitigation*** *during implementation of its projects with complete transparency and due social responsibility."*

10 AEGCL/APDCL also believes that the ESPPF is dynamic and living document, which shall be further upgraded in light of the experiences gained from field implementation and other relevant factors while mainstreaming the environmental and social concerns in its corporate functioning.

2.1 Approach/ Methodology

11 The ESPPF has been prepared following a region/ state specific environmental and social assessments which involved generating information through both primary and secondary sources including consultations and library research. The methodology adopted to identify the potential environment and social impacts is based on experience gained from implementation of similar projects and baseline assessments of work activities anticipated in this proposed project. The methodology takes in to account wide range of receptors:

- Physical & chemical environment (e.g. water, soil, etc.);
- Biological environment (forest, animals, birds, etc.); and
- Communities, social groups and individuals (loss of land, loss of agricultural production, tribal, vulnerable groups (women and backward classes), socio-economic condition, health and safety risks).

12 The basic approach broadly involved following:

- Review of environment & social baseline information from secondary sources;
- Review of existing national & state specific legislations and policy and guidelines of multilateral agencies;
- Review of project related documents; and
- Stakeholders' consultations.

2.2 Consultation/ Participation

13 Consultations with key stakeholders including local, state, regional, central government entities and key ministries at the state level and central level as well as with World Bank officials were undertaken to know views and concerns about environmental and social issues /concerns of the project. This activity ensured appropriate participation and gathering views from the environment and social perspective of all the stakeholders' which is integrated in this ESPPF to be adopted during different stages of the project implementation. A detailed analysis of stakeholder consultations is presented in **Section-4**.

2.3 Structure of the Report

14 **Chapter 1 & 2** provide the context from a regional, state and project level social and environmental scenarios as well as approach and methodology adopted for conducting assessments and preparing ESPPF. **Chapter 3** presents an overview of Assam State in respect of its social, economic, cultural, environment, infrastructure and administrative fronts. Stakeholder Analysis is presented in **Chapter-4**. While Chapters 1-3 lays foundation to both social and environmental front, subsequently, **Chapters 5 and 6** deal with issues, impacts and measures thereof in respect of social and environmental aspects. Integrating social and environmental management into the overall project cycle is made in the next chapter i.e. **Ch-7.** The remaining **chapters (8-12)** deal with implementation arrangements, capacity building, grievance redressal mechanism, monitoring & evaluation and budget.

3.0 Assam - An overview

15 Assam is one of the seven north-eastern states (together called as 'seven sisters'), which is situated just below the eastern Himalayan foothills. The State of Assam spreads over an area of 78,438 sq km. and lies between 89°5'- 96°1' East and 24°3'- 27°58' North. Assam is surrounded by six of the other Seven Sister States: Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura, and Meghalaya. Geographically Assam and these States are connected to the rest of India via a strip of land in West Bengal called the Siliguri Corridor or "Chicken's Neck". Assam shares international borders with Bhutan and Bangladesh. A significant geographical aspect of Assam is that it contains three of six physiographic divisions of India - The Northern Himalayas (Eastern Hills), The Northern Plains (Brahmaputra plain) and Deccan Plateau (Karbi Anglong). The River Brahmaputra, the life-line of Assam becomes a braided river (at times 10-16 km wide) and with tributaries, creates a flood plain. The hills of Karbi Anglong, North Cachar are now eroded and dissected are originally parts of the South Indian Plateau system. In the south, the River Barak originates in the Barail Range (Assam-Nagaland border) flows through the Cachar district with a 40–50 km wide valley and enters Bangladesh with the name Surma River. The Brahmaputra and the Barak rivers are part of the National Waterway 2 and 6 respectively and together cover almost 1000 Km across the State.

16 Due to the influence of Brahmaputra and Barak rivers the State is bestowed with vast alluvial plains and dense forests, tracts of paddy and tea. Assam is also endowed with petroleum, natural gas, coal, limestone and many other minor minerals such as magnetic quartzite, kaolin, clay and feldspar. A small quantity of iron ore is also available in western parts of Assam. The Upper Assam districts are major reserves of oil and gas. It is estimated that Assam and surrounding region possess around 150 million tonnes of petroleum reserves. Presently, Assam is the 3rd largest producer of petroleum (crude) and natural gas in the country accounting for 16% and 8% respectively of the total production of this mineral in the country. A Tertiary coal belt is located in Tinsukia, Dibrugarh, Sivasagar, Karbi Anglong and Dima Hasao districts with an estimated reserve of 370 million tonnes.

3.1 History

17 Assam State and adjoining regions have evidences of human settlements from all the periods of the Stone ages. More recently, the Assam Province was one among major eight provinces of British India. With the partition of India in 1947, Assam became a constituent State of India, but the district of Sylhet of Assam (excluding the Karimganj subdivision) gave up to Pakistan (which later became Bangladesh).

18 Further, the State has been divided several times since 1970 to satisfy national aspirations of the tribal populations living within the then borders of Assam. These are chronologically presented below:

- 1963: Nagaland (comprising of Naga Hill Districts);
- 1970: Meghalaya (Khasi Hills, Jantia Hills and Garo Hills);
- 1972: Aurunachal Pradesh (the North East Frontier Agency);
- 1972: Mizoram (Mizo Hills)

3.2 Governance and Administration

19 The State of Assam is divided into 4 divisions (namely Upper Assam, Lower Assam, North Assam and Hills and Barak Valley Division) each headed by a Commissioner. The Commissioner oversees the activities of a number of districts. In total the State of Assam is divided into 27 districts (refer **Table-3.1**).

TABLE 3.1: ADMINISTRATIVE SETUP IN ASSAM

Sl. No.	District	District Head Quarter	Sub- districts
1	Kokrajhar	Kpokrajhar	Gossaigaon, Bhowraguri, Dotoma, Kokrajhar Golokganj, Dhubri, Bagribari, Bilasipara Chapar
2	Dhubri	Dhubri	Gossaigaon,Agamoni, Golokganj, Dhubri Bagribari, Bilasipara, Chapar, South Mankachar
3	Goalpara	Goalpara	Lakhipur, Balijana, Matia, Dudhnai, Rangjuli
4	Barpeta	Barpeta	Barnagar, Kalgachia, Baghbor, Chenga, Barpeta, Sarthebari, Bajali, Sarupeta, Jalah
5	Morigaon	Morigaon	Mayong, Bhuragaon, Laharighat, Morigaon, Mikirbheta
6	Nagaon	Nagaon	Kaliabor, Samaguri, Rupahi, Dhing, Nagaon, Raha, Kampur, Hojai, Doboka, Lanka
7	Sonitpur	Tezpur	Dhekiajuli, Chariduar, Tezpur, Na-Duar, Biswanath, Helem, Gohpur
8	Lakhimpur	North Lakhimpur	Narayanpur, Bihpuria, Naobaicha, Kadam, North Lakhimpur, Dhakuakhana, Subansiri
9	Dhemaji	Dhemaji	Dhemaji, Sissibargaon, Jonai, Dhakuakhana Subansiri, Gogamukh
10	Tinsukia	Tinsukia	Sadiya, Doom Dooma, Tinsukia, Margherita
11	Dibrugarh	Dibrugharh	Dibrugarh West , Dibrugarh East, Chabua Tengakhat, Moran, Tingkhong, Naharkatiya
12	Sivasagar	Sivasagar	Dimow, Sivasagar, Amguri, Nazira, Sonari Mahmora
13	Jorhat	Jorhat	Majuli, Jorhat West, Jorhat East, Teok, Titabor Mariani
14	Golaghat	Golaghat	Bokakhat, Khumtai, Dergaon, Golaghat, Morangi,

Sl. No.	District	District Head Quarter	Sub- districts
			Sarupathar
15	Karbi Anglong	Diphu	Donka, Diphu, Phuloni, Silonijan
16	Dima Hasao	Haflong	Umrangso, Haflong, Mahur, Maibong
17	Cachar	Silchar	Katigora, Silchar, Udarbond, Sonai, Lakhipur
18	Karimganj	Karimghanj	Karimganj, Badarpur, Nilambazar, Ramkrishna Nagar, Patharkandi
19	Hailakandi	Halakandi	Algapur, Hailakandi, Lala, Katlichara
20	Bongaigaon	Bongaigon	Bongaigaon ,Boitamari, Srijangram, Bijni, Sidli
21	Chirang	Basugaon	Kokrajhar, Bengtal, Sidli, Bongaigaon, Bijni, Barnagar
22	Kamrup	Amingaon	Goreswar, Rangia ,Koya, Kamalpur, Hajo, Chhaygaon, Goroimari, Chamaria, Nagarbera, Boko, Palasbari, North Guwahati
23	Kamrup Metropolitan	Guwahati	Azara, North Guwahati, Guwahati M Corp, Dispur, Sonapur, Chandrapur
24	Nalbari	Nalbari	Barama, Tihu, Pachim NA;bari, Barkhetri, Barbhag, Nalbari, Banekuchi, Ghograpar, Baganpara
25	Baksa	Musalpur	Barnagar, Bajali, Sarupeta, Jalah, Goreswar. Rangia, Barama, Tihu, Ghograpar, Baksa, Baganpara, Tamulpur, Pathorighat
26	Darrang	Mangaldoi	Khoirabari, Pathorighat, Sipajhar, Mangaldoi, Kalaigaon, Dalgaon
27	Udalguri	Odalgalgiri	Khoirabari, Pathorighat, Mangaldoi, Kalaigaon, Dalgaon, Harisinga, Udalguri, Mazbat, Dhekiajuli

20 To further provide regional autonomy and improve status of the tribes within the constitutional framework some of the areas of Assam have been incorporated within the sixth schedule of the Constitution of India. This schedule provide for administration of tribal areas as autonomous areas. The administration of the autonomous areas is vested in the district council. These councils are endowed with legislative, judicial executive and financial powers. They are also expected to oversee the traditional bodies in local tribes. The following first 3 Autonomous Councils (ACs) in sixth schedule areas enjoy these privileges. Six schedule areas in Assam are Bodoland Territorial Council, Karbi Anglong Autonomous Council, Dima Hasao Autonomous District Council[7].

[7] Govt. of Assam has recently created 6 more Autonomous Councils viz. Rabha Hasong Autonomous Council (RHAC), Mishing Autonomous Council (MAC), Tiwa Autonomous Council (TAG), Deori Autonomous Council (DAC), Thengal Kachari Autonomous Council (TKAC) and Sonowal Kachari Autonomous Council (SKAC).

- **Bodoland Territorial Council:** the Bodoland Territorial Areas Districts comprising four 4 (four) Administrative Districts as- Udalguri, Baksa. Chirang, Kokrajhar;

- **Karbi Anglong Autonomous Council:** The Karbi Anglong came into being as a full fledged separate district The council covers the three sub-divisions of , Diphu, Bokajan and Hamren;

- **Dima Hasao Autonomous District Council:** The Dima Hasao Autonomous District Council is an autonomous council constituted to administer the district and to develope the Dimasa people. It covers the two sub divisions of Haflong and Maibang;

21 The Councils consists of thirty members, 26 are elected and not more than four persons are nominated by the Governor on the advice of the Chief Executive Member for a term of five years. Villages having more than 50% of the tribal population there shall be a Village Council. Each Village Council shall consist of 10 (Ten) elected members out of which 5 (Five) will be form Scheduled Tribe community. Out of 5 (Five) reserved seats 1 (One) shall be reserved for a women member.

3.3 Demographic Profile

22 The Population of Assam according to the 2011 census stands at 3,11,57,436, making it the 14th most populated State in India. The State makes up about 2.5% of the country's population. The State is spread over an area of about 78400 sq. km. making it the 16th largest State in the country in terms of area. The density of population per sq km is about 397 and almost equal to the national average. The State has a population growth rate of about 17% which is again very close to the national growth rate. The literacy rate in the State has increased from 63.25% (census 2001) to 72.19% (census 2011). The male and female literacy rates are 78.81% and 67.27% respectively. Sex Ratio in Assam is 958, which is above national average of 940 as per census 2011 compared to the sex ratio of 932 in 2001. In Assam 14.10% people live in urban regions. The total population living in urban areas is 43,98,542. However, still 85.90 percent of total population of Assam lives in the rural areas. The demographic profile is presented in **Table 3.2**.

TABLE 3.2: DEMOGRAPHIC PROFILE

Sl. No.	District	District Head Quarter	Geo. Area (Sq. k.m.)	Population (2011)	Male Population	Female Population	Growth Rate (%)	Sex Ratio	Literary (%)	Density /Sq. k.m.
1	Kokrajhar	Kpokrajhar	3296	887142	452905	434237	5.21	959	55.16	269
2	Dhubri	Dhubri	2176	1949258	997848	951410	24.44	953	47.32	896
3	Goalpara	Goalpara	1824	1008183	513292	494891	22.64	964	55.90	553
4	Barpeta	Barpeta	2282	1693622	867004	826618	21.43	953	52.97	742

5	Morigaon	Morigaon	1551	957423	486651	470772	23.34	967	56.39	617
6	Nagaon	Nagaon	3973	2823768	1439112	1384656	22.00	962	60.58	711
7	Sonitpur	Tezpur	5204	1924110	983904	940206	15.55	956	57.61	370
8	Lakhimpur	North Lakhimpur	2277	1042137	529674	512463	17.22	968	65.59	458
9	Dhemaji	Dhemaji	3237	686133	351249	334884	19.97	953	61.65	212
10	Tinsukia	Tinsukia	3790	1327929	680231	647698	15.47	952	60.12	350
11	Dibrugarh	Dibrugharh	3381	1326335	676434	649901	11.92	961	66.69	392
12	Sivasagar	Sivasagar	2668	1151050	589216	561834	9.44	954	70.68	431
13	Jorhat	Jorhat	2851	1092256	556805	535451	9.31	962	72.78	383
14	Golaghat	Golaghat	3502	1066888	543161	523727	12.75	964	67.65	305
15	Karbi Anglong	Diphu	10434	956313	490167	466146	17.58	951	58.27	92
16	Dima Hasao	Haflong	4888	214102	110802	103300	13.84	932	65.80	44
17	Cachar	Silchar	3786	1736617	886284	850333	20.19	959	67.61	459
18	Karimganj	Karimghanj	1809	1228686	625864	602822	21.90	963	64.73	679
19	Hailakandi	Halakandi	1327	611156	337890	321406	12.58	951	66.65	461
20	Bongaigaon	Bongaigon	1093	738804	375818	362986	20.59	966	58.75	676
21	Chirang	Basugaon	1923	482162	244860	237302	11.34	969	53.90	251
22	Kamrup	Amingaon	3105	1517542	778461	739081	15.69	949	65.59	489
23	Kamrup Metropolitan	Guwahati	955	1253938	647585	606353	18.34	936	79.84	1313
24	Nalbari	Nalbari	1052	771639	396006	375633	11.99	949	68.91	733
25	Baksa	Musalpur	2457	950075	481330	468745	10.74	974	60.29	387
26	Darrang	Mangaldoi	1585	928500	475273	453227	22.19	954	52.45	586
27	Udalguri	Odalgalgiri	2012	831668	421617	410051	9.61	973	56.50	413

Source: Census of India, 2011

23 As per census 2011, the total Scheduled Tribes (STs) population is 38,84,371 which constitute 12.4 per cent of the total population of the State. The State has registered 17.4 per cent decadal growth of ST population in 2001-2011. Only two districts viz. Karbi Analong & Dima Hasao are having ST population more than 50 %. Major tribes in the State are Boro (35.05%). Miri (17.51 %), Karbi (11.08%), Rabha (7.62 %), Kachari (6.52%) which are having 5 per cent or above of total ST population. The demographic status of ST Population is presented in table below.

Name of ST	**Number of house-holds**	**Total Population**			**Sex ratio**	**Literacy (%)**	**Main worker**	**Marginal worker**
		Total	**Male**	**Female**				
Chakma	430	2,032	1,043	989	948	28.0	79.7	20.3
Dimasa, Kachari	23,689	1,02,961	51,832	51,129	986	70.1	73.3	26.7

Garo	4,674	25,315	12,684	12,631	996	64.2	62.6	37.4
Hajong	152	436	223	213	955	66.5	82.4	17.6
Hmar	2,794	15,745	7,964	7,781	977	92.9	78.8	21.2
Khasi, Jaintia, Synteng, Pnar, War, Bhoi, Lyngngam	3,426	15,936	7,916	8,020	1013	42.9	83.5	16.5
Any Kuki Tribes	6,223	33,399	17,220	16,179	940	84.0	75.5	24.5
Lakher	36	37	20	17	850	42.9	66.7	33.3
Man (Tai speaking)	324	1,269	644	625	970	89.7	82.0	18.0
Any Mizo (Lus-hai) tribes	222	880	419	461	1100	94.4	91.4	8.6
Karbi	78,588	4,30,452	2,17,758	2,12,694	977	67.9	65.1	34.9
Any Naga tribes	5,390	29,767	14,905	14,862	997	80.7	73.6	26.4
Pawi	3	3	1	2	2000	100.0	100.0	0.0
Syntheng	5	5	2	3	1500	33.3		
Lalung	3,604	18,252	9,128	9,124	1000	52.9	69.0	31.0
Barmans in Cachar	2,405	6,716	3,398	3,318	976	76.0	73.4	26.6
Boro, Boro-kachari	2,90,517	13,61,735	6,82,931	6,78,804	994	70.6	68.6	31.4
Deori	8,612	43,750	21,938	21,812	994	83.3	61.7	38.3
Hojai	134	642	327	315	963	61.5	82.9	17.1
Kachari, Sonwal	60,002	2,53,344	1,27,692	1,25,652	984	85.4	62.6	37.4
Lalung	37,694	1,82,663	91,340	91,323	1000	73.3	63.6	36.4
Mech	2,380	9,883	4,968	4,915	989	87.7	63.9	36.1
Miri	1,17,825	6,80,424	3,45,786	3,34,638	968	69.3	60.8	39.2
Rabha	65,611	2,96,189	1,48,887	1,47,302	989	75.1	66.2	33.8
Dimasa	4,522	19,702	9,738	9,964	1023	84.6	66.1	33.9
Hajong	7,716	34,253	17,385	16,868	970	61.3	69.4	30.6
Singhpho	533	2,342	1,175	1,167	993	85.8	66.1	33.9
Khampti	251	1,106	566	540	954	85.9	62.1	37.9
Garo	25,870	1,36,077	68,594	67,483	984	76.6	66.0	34.0
Total	**7,94,768**	**38,84,371**	**19,57,005**	**19,27,366**	**985**	**72.1**	**65.9**	**34.1**

Source: Statistical Profile of scheduled Tribes in India, 2013 published by Ministry of Tribal Affaires

1.4 Land, Agriculture and Forests

24 Bestowed with the resources of two major rivers the economy of Assam continues to be predominantly agrarian. Over 70 percent of the State's population relies on agriculture as farmers, as agricultural laborers, or both for their livelihood. The principal food crops produced in the State are rice (paddy), maize (corn), pulses, potato, wheat, etc., while the principal cash crops are tea, jute, oilseeds, sugarcane, cotton, and tobacco. Tea is the most important cash crop in Assam and the State is well known world-wide for its tea. The total land area under tea cultivation (gardens) was estimated at over 229,000 hectares in 1989, employing an average of over half-a-million people per day.

25 There are two broad types of land tenure systems operate in the State:

- Revenue administration under government operates in the plains outside the areas under the Sixth Schedule;
- Customary land tenure system under Village level authority operates in the Autonomous Council Areas. Cadastral survey is not done in these areas and hence the land records are maintained by traditional means;

26 In the non-scheduled areas of Assam have three types of land – patta (individual ownership), Aksonia (temporary) patta and non-patta or khas land or CPRs. Patta land is owned in perpetuity on payment of a tax. Aksonia patta is usually for one year. Khas land is considered State property and its inhabitants are treated as encroachers.

27 In the six schedule areas of Assam traditional system of land tenure is practiced by some of the tribes. The Karbi villages communal ownership is the norm. They do not have a fixed boundary or name since they keep shifting. The Mikri tribes have are apportioned land to Household, each house being allotted its own fields. Male members of a household limit their labour to their own fields. However the Dimasa of North Cachar Hills has moved towards individual pattas from the community ownership. The families that have changed over to individual land have introduced also a share for women in its inheritances. Property is inherited through men but the clan and family name come from women. The Mishing tribes have shifted from the Jhum to settled agriculture.

28 Forest cover constitutes 35.28% of total land area of this State. The State of Assam is enriched with extensive forest area and also rich with different species and strains of floras and faunas along with valuable forest products. The recorded forest area of Assam is 26,832 sq. km. The Forest Cover Map and district wise forest cover of Assam is presented in **Figure 3.1** & **Table 3.3** respectively. **Figure 3.2** shows the Forest and Wildlife Habitats of Assam.

FIGURE 3.1: FOREST COVER OF ASSAM

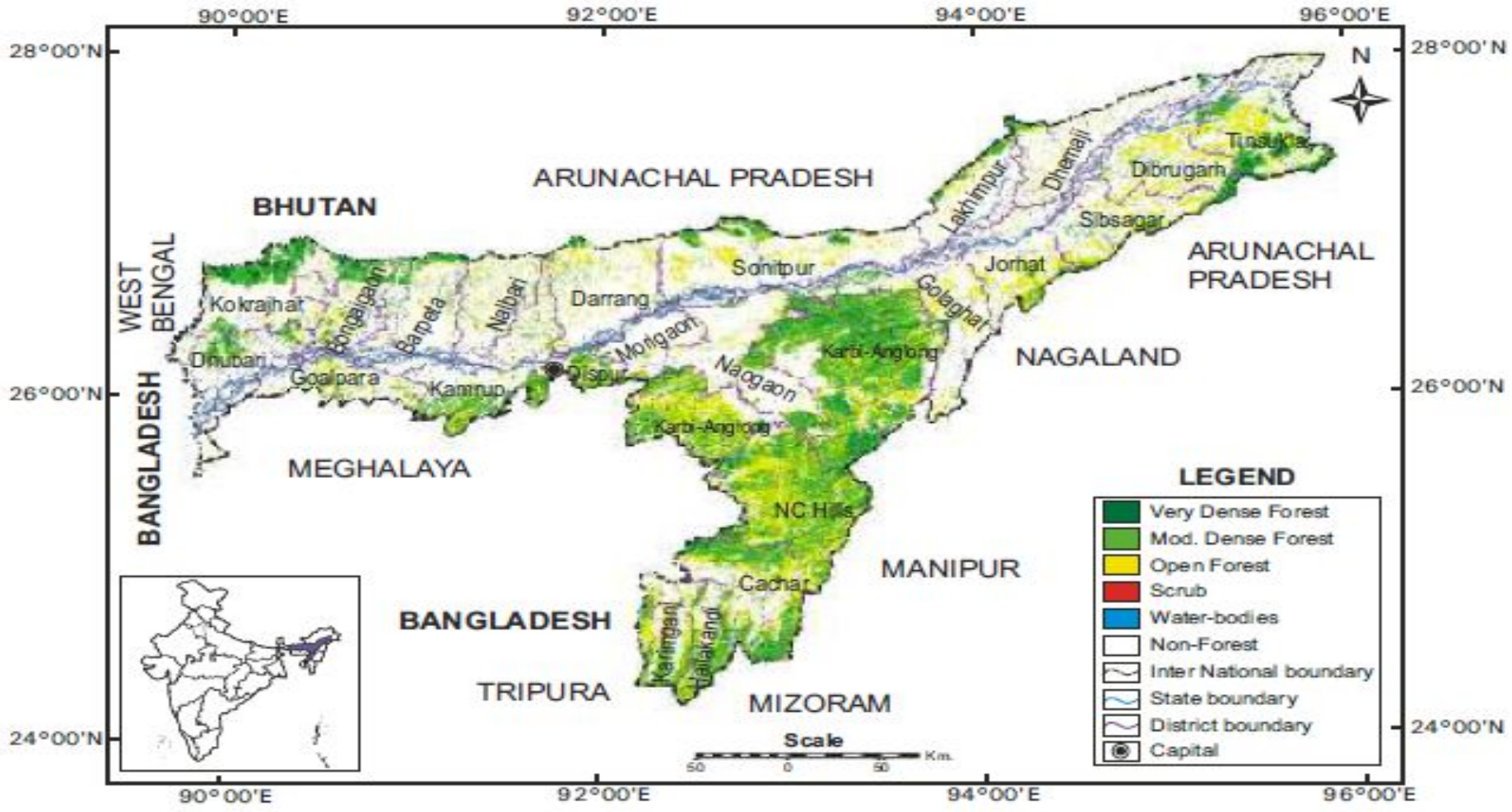


TABLE 3.3: DISTRICT-WISE FOREST COVER

District	Geographical Area (sq. km.)	Very Dense Forest (sq. km.)	Moderately Dense Forest (sq. km.)	Open Forest (sq. km.)	Total (sq. km.)	Percent of Geographic Area (%)
Barpeta	3,245	35	177	183	395	12.17
Bongaigaon	2,510	33	267	221	521	20.76
Cachar	3,786	81	974	1,186	2,241	59.19
Darrang	3,481	12	91	365	468	13.44
Dhemaji	3,237	7	124	161	292	9.02
Dhubari	2,798	21	197	194	412	14.72
Dibrugarh	3,381	29	165	561	755	22.33
Goalpara	1,824	1	71	265	337	18.48
Goalghat	3,502	6	122	397	525	14.99
Hailakandi	1,327	13	373	403	789gc	59.46
Jorhat	2,851	2	112	495	609	21.36
Kamrup	4,345	68	608	753	1,429	32.89
Karbi-Anglong	10,434	566	3,801	3,593	7,960	76.29
Karimganj	1,809	3	317	544	864	47.76
Kokrajhar	3,169	208	701	211	1,120	35.34
Lakhimpur	2,277	4	118	171	293	12.87
Morigaon	1,704	6	41	86	133	7.81
North Cachar Hills	4,888	135	1,543	2,592	4,270	87.36
Naogaon	3,831	40	352	402	794	20.73
Nalbari	2,257	4	70	208	282	12.49
Sibsagar	2,668	8	144	540	692	25.94
Sonitpur	5,324	56	279	621	956	17.96
Tinsukia	3,790	106	698	730	1,534	40.47
Grand Total	**78,438**	**1,444**	**11,345**	**14,882**	**27,671**	**35.28**

Source: State Forest Report, 2013

29 Sacred Groves are the small patches of forest, owned and protected by the community. So far 40 Sacred Groves are identified in Assam. These Sacred Groves locally called "Than" and "Madaico" in Assam. Mostly Sacred Groves are found in Karbi Anglong district. However some of the monasteries like Shankaradeva maths distributed all over the State also have Sacred Groves. These Sacred Groves are ecologically rich and play important role in the religious and sociocultural

life of the local people and homes to many medicinal and aromatic plants and also as repositories of several endemic and endangered plants.

3.5 Protected Areas & Wetlands

30 In Assam 25 protected area networks consisting of 5 National Parks, and 20 Wildlife Sanctuaries (including 2 proposed WLS) are formed. All these National Parks and WLS hold a large number of endangered and local species. The Protected Area Network is presented in **Figure 3.2.**

TABLE 3.4: LISTS OF PROTECTED AREA

Sl. No.	National Park / Wildlife Sanctuaries	Location (District)	Main Habitat
1.	Kaziranga National Park	Golaghat, Nagaon & Sonitpur	One horned Rhino, Swamp Deer, Wild Buffalo, Tiger, Elephant, Hoolock Gibbon, Capped Langur, Home to 25 globally threatened and 21 near threatened species of birds
2.	Manas National Park	Chirang and Baksa	Rhino, Elephant, Tiger, Pygmy Hog, Hispid hare, Golden Langur, Assamese Macaque, Rhesus Macaque, Leopard, Golden Cat, Fishing Cat, Leopard Cat, Jungle Cat, Large Indian civet, Small Indian civet, Toddy Cat
3.	Orang National Park	Udalguri and Sonitpur	Rhino, Tiger, Maljuria Elephants (male elephants in group), Hog Deer, Wild Pig 222 species of Birds (Greater Adjutant Stork, Lesser Adjutant Stork, Brahminy Duck, Pintail Duck etc.)
4.	Nameri National Park	Sonitpur	Tiger, Leopard, Elephant, Gaur, Wild Pigs, Sambar, Barking Deer, Hispid hare, Slow Loris, Capped Langur, White Winged Wood duck, Palla's fish-eagle, Lesser Adjutant Stork, Greater spotted Eagle, White ramped vulture, Longo billed vulture, Black bellied Term, Rufous–necked Hornbill, Wreathed Hornbill, Great Pied Hornbill etc.
5.	Dibru-Saikhowa National Park	Dibrugarh and Tinsukia	Tiger, Elephant, Leopard, Jungle Cat, Bears, Small Indian Civet, Squirrels, Gangetic Dolphin, Slow Loris, Assamese Macaque, Rhesus Macaque, Capped Langur, Hoolock Gibbon. It is an identifies Important Bird Area (IBA)
6.	Bherjan-Borajan-Padumoni WLS	Tinsukia	Hoolock Gibbon, Capped Langur, Pig-tailed, Macaque, Macaque, Slow Loris and Rhesus Macaque
7.	Panidehing WLS	Sivasagar	Elephants, Lesser Adjutant Stork, Greater Adjutant, Swamp Francolin, Spot-billed Pelican, White-rumped Vulture, Greater Spotted Eagle, Slender-billed Vulture, Pallas's Fish-eagle
8.	Hollongpara Gibbon WLS	Jorhat	7 Primates (Hoolock Gibbon, Stump- tailed Macaque, Capped Langur, Pig-tailed Macaque, Assamese Macaque, Slow Loris and Rhesus Macaque)

Sl. No.	National Park / Wildlife Sanctuaries	Location (District)	Main Habitat
9.	Nambor-Doigurung WLS	Golaghat	Gaur, Elephants, Hoolock Gibbon
10.	Garampani WLS	Karbi Anglong	Elephants, White-winged Duck, Lesser Adjutant Stork
11.	Nambor WLS	Karbi Anglong	Gaur , Elephants, Hoolock Gibbon
12.	East Karbi Anlong WLS	Karbi Anglong	Gaur, Elephants, Tiger, Hoolock Gibbon
13.	Marat Longri WLS	Karbi Anglong	Tigers, Leopards, Gaur , Elephants, Hoolock Gibbon
14.	Burhachapori WLS	Sonitpur	Elephants, Aquatic Birds, Tiger, Bengal Florican
15.	Laokhowa WLS	Nagaon	Elephant, Tiger, Asiatic Wild Buffalo, Bengal Florican
16.	Pabitora WLS	Morigaon	Rhino, Leopards, Barking Deer, Lesser Adjutant, Greater Adjutant, White-bellied Heron, Greater Spotted Eagle
17.	Sonai-Rupai WLS	Sonitpur	White Winged wood duck, Elephant, Tiger, Gaur
18.	Barnadi WLS	Udalguri	Hispid Hare, Pygmy Hog, Elephants, Tiger
19.	Chakrasila WLS	Kokrajhar	Golden Langur, Gaur
20.	Dihing-Patkai WLS	Dibrugarh and Tinsukia	Hoolock Gibbon, Elephants, White Winqed wood duck, Tiqer
21.	Borail WLS	Cachar	Serow, Himalayan Black bear, Hoolock Gibbon
22.	Amchang WLS	Kamrup (Metro)	Elephant, Gaur, Leopard
23.	Deepor Beel Wildlife Sanctuary	Kamrup (Metro)	Greater Adjutant Stork, Whistling Teal, Open Billed Stork, Shoveler, Pintail, Garganey, Pheasant tail jacanas
24	North Karbi Anglong Wildlife Sanctuaries (Proposed)	Karbi Anglong	Tiger, Lesser cats, Elephant, Gaur, Sambar, Bears, Barking deer, Rhesus macaque, Hoolock gibbon, Capped langur, Slow loris
25	Bordoibam Bilmukh Bird Sanctuaries (Proposed)	Dhemaji and Lakhimpur	Kingfishers, Large whistling Teal, Lesser Adjutant Stork, Spotted Dove, Pheasant tailed Jacana, Bronze winged Jacana, Indian River Tern, Black Headed Gull, White Wagtail, Black Headed Oriole, Purple Moorhen, Openbill Stork

31 Assam has 46 Important Bird Area (IBA) which are shown in **Figure 3.2** below. These bird areas inhabits a large number of avifauna (resident as well as migrates).

32 Assam has five Elephant Reserves (Sonitpur ER (1,420 sq km), Dehing-Patkai ER (937 sq km), Kaziranga-Karbi Anglong ER (3,270 sq km), Dhansiri-Lungding ER (2,740 sq km), and Chirang-Ripu ER (2,600 sq km) and Eight Elephant Corridors connects these Elephant Reserves, Protected Forest and nearby forests locating in the neighboring States (viz. Arunachal Pradesh and Meghalaya). Some of these corridors are 0.5 km wide and are proximity to or on the major

settlement. Brief description of these eight corridors in Assam is detailed below and also presented in **Figure 3.2**.

- **Kotha-Burhidihing:** This corridor connects the Kotha Reserve Forest (Digboi Forest Division) and adjacent elephant populations of Changlang district of Arunachal Pradesh with the Burhidihing Reserve Forest (Doom Dooma Forest Division) thereby maintaining the linkage with Tarai Reserve Forest, Kakojan Reserve Forest and Nalani Reserve Forest. Length of the corridor is 6 km. and width is 1 km. Major Settlements in the corridor are Monogaon and Takeli pathar.

- **Upper Dihing East-Upper Dihing West Block at Bogapani:** The corridor lies between the Upper Dihing East and West blocks of forestland and passes through Bogapani tea estate and a few settlements (viz. Bogapani and Panbari). This 3 km. long and 0.5 km. wide elephant corridor constitutes of Reserve Forest and some forest land which are leased to tea gardens and patta land.

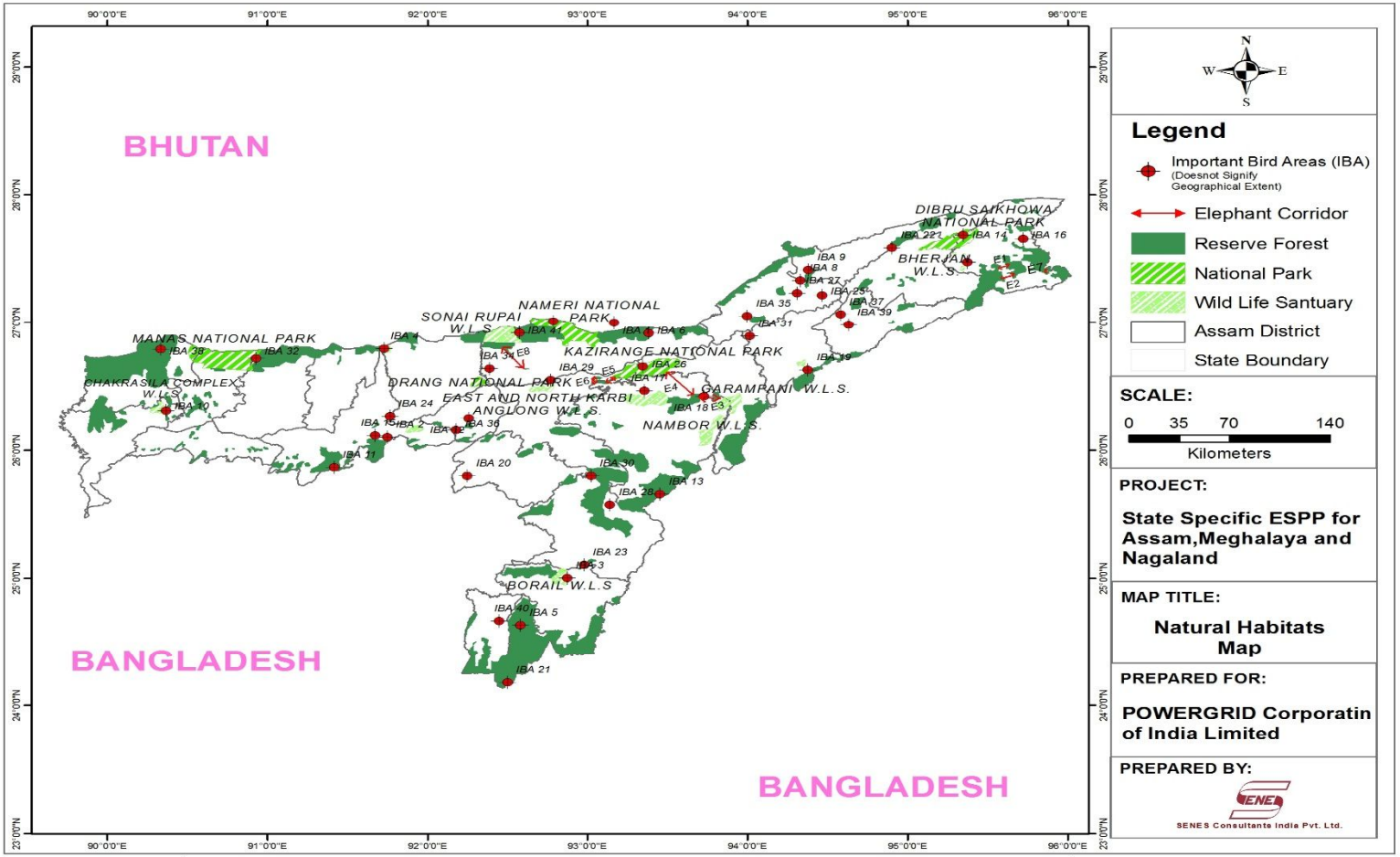
- **Upper Dihing East-Upper Dihing West Block between Golai-Pawai:** This corridor is primarily of Reserve Forest and patta land, connecting Upper Dihing East and West blocks for elephant movement. This corridor has witnessed crop depredation by elephant resulting discontinuation of cultivation by the adjacent villagers in 2000-2001. Again new settlements have started coming in the 6-7 km. long and 0.5 km. wide corridor.

- **Kalapahar-Daigurung:** This corridor, located about 22 km. from Silonijan (Karbi Anglong) on the Silonijan-Chokikhola road is a small patch forest located between Sotiona and Parolijan village (Parolijan River). It is encircled by two hills, namely Kalapahar and Risak on either side connecting Kaziranga National Park via Kalioni Reserve Forest. Length of the corridor is 2 km. and width is 2 km.

- **Kaziranga-Karbi Anglong at Panbari:** This 1 km. long and 0.85 km. wide corridor consisted of Reserve forest and Kaziranga National Park and connects elephant habitats of Kaziranga National Park with the Karbi Anglong forest.

- **Kaziranga-Karbi Anglong at Kanchanjuri:** This corridor connects the elephant habitats of Kaziranga National Park with Brahapahar and Karbi Anglong forests. Under Eastern Assam Wildlife Division this corridor area passes through tea gardens and is close to NH 37. Length of the corridor is 2km.and width is 0.5 km. consisting of Reserve forest and proposed addition (4rd addition) to Kaziranga National Park.

FIGURE 3.2: FOREST AND WILDLIFE HABITATS OF ASSAM



Elephant Corridor					
Sl_no	Name	Length / Width	Sl_no	Name	Length / Width
E1	Upper Dihing East-West Block At Bogapani	3km , 0.5km	E5	Kaziranga-Karbi Anglong at Kanchanjuri	2km , 0.5km
E2	Upper Dihing East-West Block Between Golai-Paeai	6-7km , 0.5km	E6	Kukurakata-Bagsar at Amguri	0.8km , 0.5km
E3	Kalpahar-Daigurung	2km , 2km	E7	Kotha-Burhidihing	6km , 1km
E4	Kaziranga-Karbi Anglong at Panbari	1km , 0.85km	E8	Charduar-Singri hill	30km , 1.5km

Sl_No	IBA Site	Area (Ha)
IBA1	Papum Reserve Forest	106300
IBA2	Amchang Hills	7400
IBA3	Barail Range	80000
IBA4	Barnadi Wildlife Sanctuary	2622
IBA5	Bauwwa Beel	70
IBA6	Behali Reserve Forest	14000
IBA7	Bherjan-Borajan-Podumoni Wildlife Sanctuary	774
IBA8	Bordoibam-Bilmukh Bird Sanctuary	1125
IBA9	Bordoloni: Sampora	3000
IBA10	Chakrashila Complex	5300
IBA11	Chandubi Lake and adjoining areas	2000
IBA12	Deobali Jalah, Sialmari, Haibargaon, Khutikatia (Nagaon)	1000
IBA13	Dhansiri Reserve Forest	77000
IBA14	Dibru: Saikhowa Complex	80000
IBA15	Deepor Beel Bird Sanctuary	414
IBA16	Dum Duma, Dangori and Kumsong Reserve Forests	6050
IBA17	East and North Karbi Anglong Wildlife Sanctuaries	31781
IBA18	Garampani, Nambor and Doigrung	15000
IBA19	Gibbon (Hollongapar) Sanctuary	2098
IBA20	Habang	1000
IBA21	Innerline, Katakal and Barak Reserve Forests	130000
IBA22	Jamjing and Sengajan	9500
IBA23	Jatinga	1000
IBA24	Jengdia Beel and Satgaon	500
IBA25	Jhanjimukh: Kokilamukh	2500
IBA26	Kaziranga National Park	84980
IBA27	Kuarbari Dalani	15
IBA28	Langting-Mupa Reserve Forest	49300
IBA29	Laokhowa and Burhachapori Sanctuaries	11417
IBA30	Lumding: Marat Longri	67400
IBA31	Majuli	88000
IBA32	Manas National Park	50000
IBA33	Nameri National Park	20000
IBA34	Orang National Park	7881
IBA35	Pabho Reserve Forest	4900
IBA36	Pabitora Wildlife Sanctuary	3883
IBA37	Pani-Dihing Bird Sanctuary	4000
IBA38	Ripu and Chirang Reserve Forests	120000
IBA39	Sibsagar Tanks	150
IBA40	Son Beel	1500
IBA41	Sonai-Rupai Wildlife Sanctuary	22000

- **Kukurakata-Bagser at Amguri:** This corridor falls under Eastern Assam Wildlife Division, connecting the elephant habitats of Kaziranga National Park and Kukurakata Reserve Forest with Bagser Reserve Forest and the forest of Karbi Anglong. Length of the corridor is 0.8 km.and width 0.5 km. Amguri is the major settlement in the corridor.

- **Charduar-Singri hill:** This corridor (Sonitpur West Forest Division) passes through tea gardens and settlements of Sonitpur district and is known to have very man-animal conflict. Several major settlements (viz. Posabasi, Panchnoi, Dipabasti, Rowmari basti etc.) lay in this 30 km. long and 1.5 km wide elephant corridor.

33 Wetland plays an important role in preserving biodiversity and wildlife and also support livelihood of indigenous people. Assam State has as many of 11178 wetlands. These wetlands are mainly of natural (Lakes/Ponds, Ox-bow lakes/ Cut-off meanders, High altitude wetlands, Riverine wetlands, Waterlogged, River/Stream) and manmade (Reservoirs/Barrages, Tanks/Ponds, Waterlogged). The Brahamputra and Barak are two important rivers of Assam. Deepor beel, Dhir beel, Sareswar beel, Sone beel, Tamaranga beel and Sonai beel are some of the important wetland sites of Assam.

- **Deepor Beel:** This is a fresh water lake, on the southern bank of the Brahmaputra River (Kamrup District), covering an area of about 900 ha. It is one of the largest natural wetland in Assam, has been notified as Wildlife Sanctuary. This WLS homes to Greater Adjutant Stork, Lesser Adjutant Stork, Baer's Pochard, Spot-billed Pelican, White-rumped Vulture, Greater Spotted Eagle, Slender-billed Vulture, Pallas's Fish-eagle and Spoon-billed Sandpiper;

- **Dhir Beel:** Situated 30 km from Kokrajhar town at the base of Chakrashila Wildlife Sanctuary. The wetland covering 1003 ha is rich in aquatic flora and fauna and is a breeding ground for fish. Adjacent to Dhir, there is another Lake- Diplai. These twin lakes attract a lot migratory birds in winter including Near Threatened Ferruginous Duck and the Vulnerable Baer's Pochard Aythya baeri. Swamp Francolin Francolinus gularis;

- **Sareswar Beel:** This is a shallow, freshwater lake on the floodplain to the north of the Brahmaputra River in lower Assam. The total area of the beel is about 1700 ha. A great diversity of resident and migratory waterfowl are found in the lake. Both the lesser adjutant (Leptoptilos javanicus) and greater adjutant (L. dubius) are regular in the winter months;

- **Sone Beel:** is the largest wetland in Assam. It is in Karimganj district of southern Assam. The lake is 12.5 km long and 3.9 km wide, with a 35.4 km shoreline. It is home to a large number of

resident bird species and more than 150 species of birds have been recorded. The lake attracts thousands of waterfowl;

- **Tamaranga Beel:** is actually a complex of wetlands known as Tamaranga -Dalani-Bhairab Complex, situated only 30 km south from Bongaigaon town. This is an important freshwater lake (beel) and has been listed as a Site of Global Importance in the Directory of Asian The beel attracts many migratory birds and is a good breeding ground for resident water birds.;

- **Sonai Beel** is a cluster of natural lakes namely Nandini, Mer, Sonai, Raumari, Dobarani, and Patiabandha beel in Marigaon district of Assam. The wetlands are important for a wide variety of resident and migratory waterfowl, The Bengal Florican Houbaropsis bengalensis occurs in the wetland site;

3.6 Economy

34 Among eight States of the North Eastern Region, Assam is most industrially advanced State. There are several large, medium and small scale industries based on the resources like agriculture, forest and mineral available here. Two main large scale industries are OIL and Natural Gas which make up 50% of India's on-shore production and Tea which make up 53% of all India production. Papers, cement, Petrochemical are some other industries of Assam. At current prices, Assam's net State domestic product (NSDP) is about INR 1461.99 billion in 2013-14. Agricultural sector accounts for about 27 percent of NSDP where industrial sector accounts only 14%. The comprehensive detail about Assam State is placed at **Annexure 1.**

3.7 Power Scenario

35 The peak demand of the State is 1430 MW. The State's own generation is about 260MW out of their installed capacity of 377 MW as hydel generation (ROR i. e. Run of the Rivers) is negligible due to insufficient rainfall. The allocation of power in the State is depicted in the table below:

TABLE 3.5 ALLOCATION OF POWER TO ASSAM

Sl. No.	Particulars	Capacity MW	Allotment To Assam		Remarks
			%	MW	
1	Kathalguri (AGBPP)	291	56.5	164	Gas based
2	R C Nagar (AGTPP)	84	45.6	38	Gas based
3	Ranganadi (RHEP)	405	43.3	175	Run on River
4	Loktak (NHPC)	105	29.4	31	Reservoir

5	Khangdong (KHEP)	50	56.3	28	Reservoir
6	Kopili-I (KOP-I)	200	53.5	107	Reservoir
7	Kopili-II (KOP-II)	25	52.3	13	Reservoir
8	Doyang (DHEP)	75	43.8	33	Reservoir
A	**Total CSGS- NER**	**1235**		**589**	
B	**Total CSGS- ER**			**162**	
C	**TOTAL CSGS**			**751**	
1	Lakwa TPS	157	100	157	Gas based
2	Namrup TPS	120	100	120	Gas based
3	Karbi Langpi HEP	100	100	100	Run on River
D	**APGCL TOTAL**	**377**		**377**	
E	**OTHERS**	**31**	**100**	**31**	EIPL, AOD, Champamati HEP etc.
F	**TOTAL AVAILABILITY**			**1159**	

Source: http://www.apdcl.gov.in/irj/go/km/docs/internet/ASSAM/webpage/PDF/prespower.pdf:

36 The gas based thermal power stations are generating far below their full capacity due to inadequate supply of gas etc. Under this situation, at present, Assam is receiving less than 500 MW from the CSGS during peak hours as against allocation of 751 MW. Total availability of power at present is around 800 MW including State's own generations of about 260 MW. APDCL is making efforts to minimize this 400 MW deficit by procuring 100-150 MW from the open market at a much higher rate than the normal rate of procurement by the Company. Enhance allocation of additional 490 MW i .e. 240 MW from Pallatana Power Project of ONGC in Tripura & 250 MW from Bongaigaon Thermal Power Station of NTPC at Bongaigaon would add up to some extent to minimize the demand-availability gap of power in Assam.

37 Assam Electricity Grid Corporation Limited (AEGCL) deals with transmission of electricity to the distribution network of Assam as well as it is also helping other States of the NE-Region to evacuate their share of power from Central Sectors by utilizing the grid network of AEGCL at different points. In the year 2004, the AEGCL could handle hardly 720 MW only. After 2004, on the assistance of Govt. of India and Govt. of Assam, different projects like ADB funding, NLCPR, NEC, TDF were implemented and grid capacity enhanced to handle load in the tune of 1603 MW presently. Since then, AEGCL has incorporated 4949.374 circuit kms of EHV lines and has a transformation capacity of about 4565.80 MVA from existing 54 numbers of EHV (400kV, 220kV, 132kV level) substations. AEGCL has also anticipated for additional transmission lines (around 900 Ckms) and transformation capacities (about 1300 MVA) by constructing new EHV substations (220

kV, 132kV level) and augmenting existing substations with assistance of Govt. of India and other funding resources including ADB. After completion of these projects at the end of 2014, AEGCL can handle 1694 MW power and at the end of 12th Plan, AEGCL could be able to handle 1998 MW. As per 18th EPS (Electric Power Survey) of CEA, the peak load demand of Assam is projected to be 1817 MW on March, 2017.

38 The distribution of power is carried out by APDCL in the whole State of Assam. There are three main regions or zones of APDCL.

- **APDCL- Upper Assam Region:** It caters to the consumers of the districts of Golaghat, Jorhat, Sibsagar, Dibrugarh, Tinsukia, in Upper Assam. It has over 6.62 lakhs of consumers connected through 1503.5 Ckt km. of 33 kV lines and 9270.5 Ckt km. of 11 kV lines & 106 nos. of 33/11 KV substations of 896 MVA Capacity.

- **APDCL- Central Assam Region:** Area of operation of this zone is spread across the Districts of. Cachar, Karimganj, Hailakandi, Nagaon, Sonitpur, North Lakhimpur Dhemaji Morigaon, N.C.Hills & Karbi Anglong. It has around 10.65 lakhs consumers distributed through 2539 Ckm of 33 KV lines and 22284.00 Ckm. of 11 KV network and 98 nos. of 33/11 KV substations with a total capacity of 814.00 MVA.

- **APDCL- Lower Assam Region:** This zone caters to the energy needs of the consumers of the districts located in lower Assam, namely, Kamrup, Nalbari, Barpeta, Kokrajhar, Bongaigaon, Goalpara and Darrang. It has over 11.94 Lakh consumers of different categories at present connected through 2047 Ckt km 33 kV lines and 9950 Ckt. km of 11 kV network and 105 nos. of 33/11 kV substations with a total capacity of 978.95 MVA.

39 APDCL has initiated many reforms in the distribution sector with the assistance of ADB under its flagship programme viz. Assam Power Sector Development Project (APSDP) resulting in strengthening of Distribution Sector in addition to improvement of Transmission system of Assam. The programme has also helped in improvement/ modernization of communication system, up gradation of SCADA (SLDC), installation of new SCADA (RTU) resulted in better management of the system. Execution of the works under APSDP results in T&D loss reduction from 42.5% in 2003 to 29.6% in 2009. Apart from above, many projects under APDRP and RAPDRP schemes are under implementation for distribution and sub-distribution level to boost the reliability of overall distribution network.

40 The State has taken major initiatives in rural electrification and as on March' 2014, a total of 24,404 (96.2%) villages have been electrified as presented in **Table 3.6**.

TABLE 3.6: STATUS OF ELECTRIFICATION IN ASSAM

Total inhabited villages as per 2011 census	Villages electrified as on 31-03-2014 (Provisional)(#)		%age of villages electrified as on 31-08-2014	Un-electrified villages as on 31-08-2014
	Numbers	%age		
24,372	24,404	96.2	96.8	824

Source: http://cea.nic.in/reports/monthly/dpd_div_rep/village_electrification.pdf

3.8 Road Ahead

41 Future peak & energy demand in the State is likely to grow exponentially due to expansion industrialization/new industry/tea industry/ other infrastructure developments, 100% electrification rural households etc. by the end of 12th five year plan (2012-17). The State's electricity demand forecast is to reach 2,222[8] MW by 2019-20 widening the deficit by more than 500 MW.

42 To cater to the fast growing load growth of the State, a comprehensive expansion program in generation capacity addition (which is already underway with public and private sector investment) needs to be supported with an adequate transmission/evacuation and distribution system also with a view to reduction in T&D loss. Therefore, augmentations/ construction/strengthening of an efficient and adequate Transmission/distribution infrastructure is of utmost necessity so that power can be efficiently and reliably distributed to the end-users. Assam needs significant investments for improving its transmission and distribution network. Under the proposed World Bank funding for NERPSIP in Assam, the investments envisaged for expansion and strengthening of transmission and distribution system are expected to facilitate bridge of gap between demand and supply. Details of proposed expansion/augmentation of power system network in the State of Assam with the financial support amounting to Rs. 1435.55 Crores from GoI and World Bank is placed at **Annexure 2**.

[8] as per 18th EPS survey report

4.0 Stakeholder Analysis

43 The prime objective of the proposed investment is to strengthen the power sector in the State of Assam and capacity building to achieve sustainable development in the long term. The implementations of schemes with proposed investments are expected to facilitate power delivery to remote/virgin areas, to enhance the capacity & reliability of the system, to improve voltage profile & to reduce losses and ultimately to enhance satisfaction for all categories of consumers which in turn will spur growth & overall development in the whole State. The schemes are designed / developed to fulfill the above objectives in the following way:

- To feed the remote or unconnected areas.
- To meet the growing demand, both in domestic & industrial segments.
- To improve reliability and quality of power through bi-furcation/trifurcation of existing 11kV very long overloaded feeders and connection of the different sections of 11 kV feeder/ line so formed to new substations.
- To improve availability of power by augmenting the capacity of existing overloaded power transformers.
- Reduction in technical losses due to improvement in voltage profile/power quality.

44 Stakeholder's analysis has been undertaken to identify the issues and the concerns of various stakeholders who are supposed to be either directly or indirectly impacted/benefited or assume a position wherein they can have a significant role to play on project implementation. The Stakeholder's analysis has been carried out to identify existing relationship and also to understand the roles, responsibilities and relations of these stakeholders in context of shaping the environment and social issues with respect to proposed project. The details of the key stakeholders identified at various levels from national level up to village/panchayat level and their issues & expectations with respect to proposed project has been provided in **Table 4.1.** The process of consultation with stakeholders involves formal and informal discussion. A wide range of issues were discussed with various stakeholders that might have environmental/ social concern. These are listed below.

TABLE 4.1: KEY STAKEHOLDERS AND THEIR EXPECTATIONS/ISSUES

No.	Levels	Key Stakeholders	Expectations and Issues
A	National Level	Government of India	Improvement of overall power scenario of State and timely implementation of project to achieve the intended objective i.e. power to all to facilitate inclusive growth, through enhanced access of

No.	Levels	Key Stakeholders	Expectations and Issues
		Ministry of Power	consumers to Grid connected power supply, besides improving its availability, adequacy, reliability and affordability.
		World Bank	Strengthening of T&D networks of State & Capacity development of Utility and ensuring implementation of environment and social safeguards.
		POWERGRID	Would expect active support from state utility and other stakeholders for timely implementation of project with intended benefits like providing electricity supply to remote or unconnected area.
B	Regional Level	DoNER	Economic development of the North Eastern region
		NEC	
C	State Level	Department of Power	Proper coordination for timely implementation of project with intended benefits.
		State Power Corporations	Availability of land and other clearances for timely implementation projects. Capacity building activities to enable undertaking such projects on their own in future.
		Tribal Welfare Department/ Autonomous District Council	Ensuring recognition and protection of tribal institutions, property and their social, cultural, religious values and practices due to proposed intervention Proper coordination and approvals for utilization/acquisition of land within ADC areas and for carrying out other physical interventions in these areas as necessary.
		State Forest Department	Protection of forest and protected areas, timely processing of approvals for utilization of forest land with minimum loss or implication to state forest
		Utilities like Water supply, PHE, Oil & Gas etc.	During implementation –coordination for timely shifting of utilities as necessary and secured power supply to enhance efficiency of their activities.
		Local NGOs	Proper information dissemination at the local community level and act as watch dog to oversee implementation as per applicable legal provisions.
		Media	Coordination for information dissemination
D	District Level	District Administration – Revenue Department	Project intervention would ensure requirement of minimum land area and affect minimum people as far as possible. Regular co-ordination/ consultation between implementation agency and projected affected persons for early resolution of grievances & conflict management.

No.	Levels	Key Stakeholders	Expectations and Issues
E	Village Level	Village council heads, members, etc.	Implementation of project in their area would create employment and increase business opportunity to local and development of area though better accessibility of quality and reliable supply of power. Protection of right of the affected persons and early resolution of grievances during project implementation. Proper coordination and approvals for utilization/ acquisition of land within ADC areas and for carrying out other physical interventions in these areas as necessary
		Informal groups	Local community leaders, elders, community groups, women groups etc. be involved and consulted to address issues related to compensation, employment opportunity due to project activity and coordination as necessary.
		SC	Mutually agreed measures to address any adverse issues due to project activity.
		ST	Tribal Groups heads, Council heads be consulted and involved in addressing all possible impact arisen due to project activity in the area.
		Women	Women groups – be included in all consultation and be made part of decision making process related to project in their domain.
F	Panchayat level	Panchayat members	Access to the communities in general and the affected families in particular. Secondly during implementation of the project activities for substations and especially the transmission/ distribution lines the permission and consultations with the panchayat is necessary as their role in accessing and convincing local communities is important.

5.0 Issues, Impacts and Management Measures – Social

45 Key social/ institutional issues emanating from stakeholder analysis relate to the following:

- Securing/Alienation of land for substation;
- Temporary damages to land, crops, trees or structures during construction;
- Community participation during project cycle i.e. planning, implementation and operation;
- Health and Safety risk including HIV/AIDS;
- Tribal/vulnerable groups;
- Locals, Women and Inter agency participation/coordination.

5.1 Impacts – Social

46 This section identifies the potential social impacts of the proposed projects in terms of the nature, magnitude, extent and location, timing and duration of the anticipated impacts. These impacts are both positive or negative relating to the project design stage, construction stage or the project operation and decommissioning stage.

i. Positive Impacts

- Increased economic activity;
- Improved and reliable power supply;
- Employment creation;
- Improved road infrastructure;
- Gender Issues - Access to electricity would improve the quality of life and also reduce the time consumption of women for household activities which will entail availability of more time for other activities.
- Less reliance of fossil fuels like firewood, charcoal etc.;
- Capacity Building.

ii. Negative Impacts

- Loss of land
- Restriction of land use and land rights
- Temporary loss of access to Common Property Resources and
- Health and Safety risk including HIV/AIDS

5.2 Management Framework – Social

47 Based on the issues to be addressed and impacts likely to occur, appropriate management measures have been drawn for implementation to mitigate the possible impacts due to proposed project interventions. While for positive impacts, enhancement measures are suggested; for negative impacts suitable mitigation measures has been included. Details of potential socials issues and its management framework and measures are outlined in ESPPF. Apart from this AEGCL/APDCL has developed a standard Environment Management Plan (Refer Annex.- A attached in ES) for its transmission and distribution projects which shall be made part of contract document for proper implementation by the Contractor. Summary of potential social issues and corresponding management measures is provided below in **Table 5.1**. Key principles governing the drawing of management measures and some 'definitions' are presented initially for a better reading of the measures.

5.3 Principles

48 The basic principles that guide this Social Management Framework (SMF) are:

- Avoidance socially sensitive areas while planning project activities;
- Minimisation of impacts when project activities occur in socially sensitive areas;
- Mitigation of any unavoidable negative impacts arising out of its projects;
- Optimization of land requirement; and
- Greater transparency through involvement of community and other stakeholders.

5.4 Definitions

49 Following definitions will be applicable unless otherwise stated specifically;

"Administrator" means an officer appointed for the purpose of rehabilitation and resettlement of affected families under sub-section *(l*) of section 43;

"Affected area" means such area as may be notified by the appropriate Government for the purposes of land acquisition;

"Affected family" includes;

i) a family whose land or other immovable property has been acquired;

ii) a family which does not own any land but a member or members of such family may be agricultural labourers, tenants including any form of tenancy or holding of usufruct right, share-croppers or artisans or who may be working in the affected area for three years prior to

the acquisition of the land, whose primary source of livelihood stand affected by the acquisition of land;

iii) the Scheduled Tribes and other traditional forest dwellers who have lost any of their forest rights recognised under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 due to acquisition of land;

iv) family whose primary source of livelihood for three years prior to the acquisition of the land is dependent on forests or water bodies and includes gatherers of forest produce, hunters, fisher folk and boatmen and such livelihood is affected due to acquisition of land;

v) a member of the family who has been assigned land by the State Government or the Central Government under any of its schemes and such land is under acquisition;

vi) a family residing on any land in the urban areas for preceding three years or more prior to the acquisition of the land or whose primary source of livelihood for three years prior to the acquisition of the land is affected by the acquisition of such land;

"Appropriate Government" means,—

i) in relation to acquisition of land situated within the territory of, a State, the State Government;

ii) in relation to acquisition of land situated within a Union territory (except Puducherry), the Central Government;

iii) in relation to acquisition of land situated within the Union territory of Puducherry, the Government of Union territory of Puducherry;

iv) in relation to acquisition of land for public purpose in more than one State, the Central Government, in consultation with the concerned State Governments or Union territories; and

v) in relation to the acquisition of land for the purpose of the Union as may be specified by notification, the Central Government:

Provided that in respect of a public purpose in a District for an area not exceeding such as may be notified by the appropriate Government, the Collector of such District shall be deemed to be the appropriate Government;

"Authority" means the Land Acquisition and Rehabilitation and Resettlement Authority established under section 51;

"Collector" means the Collector of a revenue district, and includes a Deputy Commissioner and any officer specially designated by the appropriate Government to perform the functions of a Collector under this Act;

"Commissioner" means the Commissioner for Rehabilitation and Resettlement appointed under sub-section (/) of section 44;

"Cost of acquisition" includes;

i) amount of compensation which includes solatium, any enhanced compensation ordered by the Land Acquisition and Rehabilitation and Resettlement Authority or the Court and interest payable thereon and any other amount determined as payable to the affected families by such Authority or Court;

ii) demurrage to be paid for damages caused to the land and standing crops in the process of acquisition;

iii) cost of acquisition of land and building for settlement of displaced or adversely affected families;

iv) cost of development of infrastructure and amenities at the resettlement areas;

v) cost of rehabilitation and resettlement as determined in accordance with the provisions of this Act;

vi) administrative cost,—

a) for acquisition of land, including both in the project site and out of project area lands, not exceeding such percentage of the cost of compensation as may be specified by the appropriate Government;

b) for rehabilitation and resettlement of the owners of the land and other affected families whose land has been acquired or proposed to be acquired or other families affected by such acquisition;

c) cost of undertaking 'Social Impact Assessment study':

"Displaced family" means any family, who on account of acquisition of land has to be relocated and resettled from the affected area to the resettlement area;

"Family" includes a person, his or her spouse, minor children, minor brothers and minor sisters dependent on him:

Provided that widows, divorcees and women deserted by families shall be considered separate families;

"Holding of land" means the total land held by a person as an owner, occupant or tenant or otherwise;

"Infrastructure project" shall include any one or more of the items specified in clause *(b)* of sub-section (7) of section 2:

"Land" includes benefits to arise out of land, and things attached to the earth or permanently fastened to anything attached to the earth;

"Landless" means such persons or class of persons who may be,—

i) considered or specified as such under any State law for the time being in force; or

ii) in a case of landless not being specified under sub-clause (0. as may be specified by the appropriate Government;

"Land owner" includes any person,—

i) whose name is recorded as (he owner of the land or building or part thereof, in the records of the authority concerned; or

ii) any person who is granted forest rights under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 or under any other law for the time being in force; or

iii) who is entitled to be granted Patta rights on the land under any law of the State including assigned lands: or

iv) any person who has been declared as such by an order of the court or Authority;

"Local authority" includes a town planning authority (by whatever name called) set up under any law for the time being in force, a Panchayat as defined in article 243 and a Municipality as defined in article 243P, of the Constitution;

"Marginal farmer" means a cultivator with an un-irrigated land holding up to one hectare or irrigated land holding up to one-half hectare:

"Market value" means the value of land determined in accordance with section 26;

"Notification" means a notification published in the Gazette of India or, as the case may be, the Gazette of a State and the expression "notify" shall be construed accordingly;

"Patta" shall have the same meaning as assigned to it in the relevant Central or State Acts or rules or regulations made thereunder;

"Person interested" means—

i) all persons claiming an interest in compensation to be made on account of the acquisition of land under this Act;

ii) the Scheduled Tribes and other traditional forest dwellers, who have lost any forest rights recognised under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006;

iii) a person interested in an easement affecting the land;

iv) persons having tenancy rights under the relevant State laws including share-croppers by whatever name they may be called; and

v) any person whose primary source of livelihood is likely to be adversely affected;

"Project" means a project for which land is being acquired, irrespective of the number of persons affected;

"Public purpose" means the activities specified under sub-section (/) of section 2;

"Requiring Body" means a company, a body corporate, an institution, or any other organisation or person for whom land is to be acquired by the appropriate Government, and includes the appropriate Government, if the acquisition of land is for such Government either for its own use or for subsequent transfer of such land is for public purpose to a company, body corporate, an institution, or any other organisation, as the case may be, under lease, licence or through any other mode of transfer of land;

"Resettlement Area" means an area where the affected families who have been displaced as a result of land acquisition are resettled by the appropriate Government;

"Scheduled Areas" means the Scheduled Areas as defined in section 2 of the Provisions of the Panchayats (Extension to the Scheduled Areas) Act, 1996;

"Small farmer" means a cultivator with an un-irrigated land holding up to two hectares or with an irrigated land holding up to one hectare, but more than the holding of a marginal fanner.

TABLE 5.1: MANAGEMENT MEASURES TO ADDRESS POTENTIAL SOCIAL ISSUES

Sl.	Potential Issues	Management Measures
1	Loss of land	For Tranche-1, this is an issue as land for only 15 transmission substations out of 36 transmission & distribution substations is available with the Utility (for details refer **Table-5.4)**. For remaining 5 transmission and 16 distribution substations, lands will have to be secured a fresh by AEGCL/APDCL through adopting any of the following three methods; i. Purchase of land on willing buyer & willing seller basis on negotiated rate; ii. Voluntary Donation; and

Sl.	Potential Issues	Management Measures
		iii. Involuntary Acquisition. In case of procurement of land through private purchase, AEGCL/APDCL shall ensure that compensation/rate for land is not less than the rate provided in the new land acquisition act, 2013. In order to comply with this provision AEGCL/APDCL may organize an awareness camp where provisions of new act in respect of basis/modalities of compensation calculation shall be explained to land owners with specific State provision if any. In the case of voluntary donation of land, it is to ascertained that the land owner/user(s) are not subjected to undue pressure for parting of land. Apart from this following shall also be ensured: • All out efforts shall be made to avoid any physical relocation/displacement due to loss of land; • The AEGCL/APDCL shall facilitate extending 'gratitude' to the land donor(s) in lieu of the 'contribution' if so agreed. The same shall be documented in the shape of MoU between donor and utility. • Subsequently title of land shall be transferred in the name of AEGCL/APDCL. All land donations (as well as purchases) will be subject to a review/ approval from a committee comprising representatives of different sections including those from the IA and GoA. In case of land acquired through involuntary acquisition, provisions of RFCTLARRA, 2013 shall be followed. (for details refer **Part – A** of Social Management Framework placed as **Annexure – 3**)
2	Change in land use and population relocation for substations	Due to inherent flexibility in locating substation and very small size of land, AEGCL/APDCL avoids habituated area completely hence no relocation of population on account of setting up of substation is envisaged.
		Although securing land for construction of substations proposed under tranche-1 is an issue, AEGCL/APDCL shall make all out efforts to secure such land wherein possibility of physical relocation/displacement is not envisaged.
3	Change in land use and population relocation due to towers/poles	As per existing law, land for tower/pole and right of way is not acquired and agricultural activities are allowed to continue after construction activity and AEGCL/APDCL pays compensation for all damages including cost of land below tower to its owner without acquiring it. Hence change in land use and resultant relocation of people is not envisaged in T&D projects.
4	Right of Way	Land for tower and right of way is not acquired as agricultural activities can continue. However, the project shall pay full compensation to all the affected persons/ community for any damages sustained during the execution of work. Accordingly, AEGCL/APDCL has formulated

Sl.	Potential Issues	Management Measures
		appropriate management plan in the form of Compensation Plan for Temporary Damage (CPTD) to minimize the damages and provide compensation plan for temporary damages in consultation with the state government and affected persons and/ or community (for details refer **Part – B** of Social Management Framework placed as **Annexure – 3**)
5	Impact on Tribal	The population of Assam as per census 2011 was 3,12,05,576. The Scheduled Tribes (STs) population is 38, 84,371 which constitutes 12.4 per cent of the total population of the State. In compliance with Bank's Operational Policy 4.10 (Indigenous Peoples) and special provision of RFCTLARRA, 2013, a Tribal People Development Framework has been prepared (refer **Part - C** of Social Management Framework placed as **Annexure – 3**).
6	Gender/ women participation	Women involvement will be planned through formal and informal group consultations so that their participation is ensured during preparation and implementation of the project.
7	Induced secondary development during construction	AEGCL/APDCL operations are short-lived and do not induce secondary developments during construction.
8	Health and safety of worker/employee /community	During construction the health and safety aspects of workers and nearby community shall be implemented through contractors with due diligence and compliance of required regulation/guideline through a safety plan AEGCL/APDCL uses best available technology for lines and do not cause any hazards to health and safety.
9	"Chance finds" or discovery of any archaeological artifacts, treasure etc. during excavation	Possibilities of such phenomenon in T&D project are quite remote due to limited and shallow excavations. However, in case of such findings, AEGCL/APDCL will follow the laid down procedure in the Section-4 of Indian Treasure Trove Act, 1878 as amended in1949.
10	Inter Agency Coordination	Exclusive bodies will be set up at state/ district levels for over-seeing, reviewing and guiding the project

50 Implementation viz., operationalization of the management measures necessarily needs to be done in the realm of regional/ national/ international legal and regulatory stipulations. The same is discussed below.

5.5 Legal and Regulatory Framework

51 The applicable acts, rules, and relevant policies in the context of the project are presented in **Table- 5.2**. The Project Authority will ensure that project implementation is consistent with provision of such legal framework

TABLE 5.2 : LEGAL AND REGULATORY PROVISIONS - SOCIAL

Sl. No.	Acts, Rules and Policies	Relevance/ Applicability to the project
1. Constitutional Provisions		
1	6th Schedule of the Constitution	Provisions provide Special Power to ADC Area for the support/ development of Tribal. Any activity sited in ADC area needs their consent. The Sixth Schedule provides for administration of tribal areas as autonomous entities. The administration of an autonomous district is vested in a District Council and of an autonomous region, in a Regional Council. These Councils are endowed with legislative, judicial, executive and financial powers. These institutions were expected to integrate these areas with the modern system of administration while preserving the traditional autonomy and local self-governing institutes of the tribal people.
II. Provisions Law of the Land/Rules		
2.	The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013	The Act provides for enhanced compensation and assistances measures and adopts a more consultative and participatory approach in dealing with the Project Affected Persons. As and when this Act becomes effective and adopted by the State of Assam then AEGCL/APDCL, too shall be bound by and would need to comply with relevant provisions of the Act. The salient features of the provisions of the new RFCTLARRA, 2013 are given in **Annexure- 4.**
3.	Electricity Act, 2003 (EA, 2003)	Transmission line projects are constructed under the ambit of Electricity Act, 2003 following the provisions of Section 67 & 68 of act. Under the provisions of **Section 68(1):-**Prior approval of the Govt. of Assam (GoA) is a mandatory requirement to undertake any new transmission project 66kV upward and for distribution project of 33kV system in the State which authorizes APDCL to plan and coordinate activities to commission a new Transmission/distribution project. The electricity act under Section 164 has a provision to grant licensee the power of Telegraph Authority as provided in the Indian Telegraph Act, 1885[9]. GoA on request of AEGCL may by order in writing/through notification authorize them for using powers of telegraph authority after fulfilling the requirement as laid down in the rules thereof. The salient features of the Electricity Act 2003 are given in **Annexure- 5**.
4.	Rights of Way (RoW) and Compensation	In case of agricultural or private land damages, Section-67 and or Section-68 (5 & 6) of the Electricity Act, 2003 and Section-10 of the Indian Telegraph Act, 1885 if vested with power under section 164 of the

[9] POWERGRID, the designated Implementing Agency has already been vested with powers of telegraph authority by GoI vide Gazette Notification dated Dec.24, 2003.

Sl. No.	Acts, Rules and Policies	Relevance/ Applicability to the project
		Electricity Act are followed for assessment and payment of compensation towards such damage.
5.	The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006	The act recognizes and vests the forest rights and occupation in forest land to forest dwelling. Scheduled Tribes and other traditional forest dwellers who have been residing in such forests for generations but whose rights could not be recorded, and provides for a framework for recording the forest rights so vested and the nature of evidence required for such recognition and vesting in respect of forest land. The definitions of forest dwelling Schedule Tribes, forestland, forest rights, forest villages, etc. have been included in Section 2 of the Act. The Union Ministry of Tribal Affairs is the nodal agency for implementation of the Act while field implementation is the responsibility of the government agencies. The applicability of the act linked with forest clearance process under Forest (Conservation) Act, 1980 w.e.f. August 2009 by MoEF shall be followed by AEGCL/APDCL.
6.	The Right to Information Act, 2005	The Act provides for setting out the practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, the constitution of a Central Information Commission and State Information Commissions and for matters connected therewith or incidental thereto.
7.	Indian Treasure Trove Act, 1878 as amended in 1949	The Act provides for procedures to be followed in case of finding of any treasure, archaeological artifacts etc. during excavation. Possibilities of such discoveries are quite remote due to limited and shallow excavations. However, in case of such findings AEGCL/APDCL will follow the laid down procedure in the Section-4 of Act.
8.	Ancient Monuments & Archaeological Sites and Remains Act, 1958	The act has been enacted to prevent damage to archaeological sites identified by Archaeological Survey of India. During route alignment, all possible efforts are made to avoid these areas. Wherever it becomes unavoidable AEGCL/APDCL will take necessary permission under this act.
9.	The Assam Ancient Monuments and Records Rule, 1964	This Act prevents construction of building or carrying out any activity e.g. Excavating, blasting or any operation of a like nature inside archaeological site. AEGCL/APDCL shall comply with the requirements of this rule.
III. World Bank OP (Operational Policy)		

Sl. No.	Acts, Rules and Policies	Relevance/ Applicability to the project
10.	OP 4.12 – Involuntary Resettlement	This policy covers direct economic and social impacts that both result from Bank-assisted investment projects, and are caused by the involuntary taking of land. 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. Comparison between World Bank Policy (OP 4.12) Requirements and RFCTLARR Act, 2013 is placed in **Table 5.3**
11.	OP 4.10 – Indigenous Peoples	This policy contributes to the Bank's mission of poverty reduction and sustainable development by ensuring that the development process fully respects the dignity, human rights, economies, and cultures of Indigenous Peoples. The Bank provides project financing only where free, prior, and informed consultation results in broad community support to the project by the affected Indigenous Peoples. Such Bank-financed projects include measures to (a) avoid potentially adverse effects on the Indigenous Peoples' communities; or (b) when avoidance is not feasible, minimize, mitigate, or compensate for such effects Bank-financed projects are also designed to ensure that the Indigenous Peoples receive social and economic benefits that 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.

TABLE 5.3: ANALYSIS OF REQUIREMENT UNDER WB POLICY (OP 4.12) AND RFCTLARR ACT 2013

S. No.	World Bank Involuntary Resettlement Requirement	RFCTLARRA, 2013	Remarks and provisions in RFCTLARR Act, 2013
Policy objectives			
1	Avoid involuntary resettlement (IR) wherever feasible	√	Social Impact assessment (SIA) should include: (i) whether the extent of land proposed for acquisition is the absolute bare minimum extent needed for the project; (ii) whether land acquisition at an alternate place has been considered and found not feasible. **[Section 4 sub-section 4(d) and 4(e)]**
2	Where resettlement cannot be avoided, resettlement activities should be conceived and executed as a development programme by providing sufficient resources to enable Affected Persons (APs) to	√	The cumulative outcome of compulsory acquisition should be that affected persons become partners in development leading **[Preamble of the RFCTLARR Act]**

	share in project benefits.		
3	APs should be meaningfully consulted and provided opportunities to participate in planning and implementing resettlement programs.	√	Whenever a SIA is required, the appropriate Government shall ensure that a public hearing is held at the affected area, after giving adequate publicity about the date, time and venue for the public hearing, to ascertain the views of the affected families to be recorded and included in the SIA Report. **[Section 4 (1), 5, 45 (2)]**
4	APs should be assisted in their efforts to improve their livelihoods and standards of living, or at least restore them, to pre-displacement levels or to pre-project levels.	√	The cumulative outcome of compulsory acquisition should be that affected persons become partners in development leading to an improvement in their post acquisition social and economic status and for matters connected therewith or incidental thereto. **[Preamble of the RFCTLARR Act]**
Coverage of Impacts			
5	Involuntary taking of land resulting in loss of income sources or means of livelihood, whether or not the affected persons must move to another place	√	Preamble of the said Act envisages restoration of livelihood as one of the guiding principle. In the definition of affected family in includes 'a family which does not own any land but a member or members of such family may be agricultural labourers, tenants including any form of tenancy or holding of usufruct right, sharecroppers or artisans or who may be working in the affected area for three years prior to the acquisition of the land, whose primary source of livelihood stand affected by the acquisition of land; and further, a distinction is made between affected family and displaced family in the definition (i.e) a displaced family means any family, who on account of acquisition of land has to be relocated and resettled from the affected area to the resettlement area. **[Section 3 sub-section c (ii) and k]**
	Involuntary taking of land resulting in loss of assets or access to assets		In the definition of affected family, it includes 'a family whose land or other immovable property has been acquired' **[Section 3 sub-section c (i)]**
6	Involuntary restriction of access to of access to legally designated parks and protected areas resulting in adverse impacts on the livelihoods of the displaced persons.	√	In the definition of affected family in includes 'family whose primary source of livelihood for three years prior to the acquisition of the land is dependent on forests or water bodies and includes gatherers of forest produce, hunters, fisher folk and boatmen and such livelihood is affected due to acquisition of land' **[Section 3 sub-section c (vi)]**
Eligibility Criteria			
7	Those who have formal legal rights to land (including customary and traditional rights recognized under the laws of the	√	In the definition of affected family, it includes 'a family whose land or other immovable property has been acquired' **[Section 3 sub-section c (i)]**

	country)		
8	Those who do not have formal legal rights to land **at the time the census begins but have a claim to such land or assets--provided that such claims are recognized under the laws of the country or become recognized through a process identified in the resettlement plan**	√	In the definition of affected family, it includes 'the Scheduled Tribes and other traditional forest dwellers who have lost any of their forest rights recognized under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 due to acquisition of land'; and also includes 'a member of the family who has been assigned land by the State Government or the Central Government under any of its schemes and such land is under acquisition'; a family which does not own any land but a member or members of such family may be agricultural laborers, tenants including any form of tenancy or holding of usufruct right, share-croppers or artisans or who may be working in the **affected area for three years prior to the acquisition of the land**; a family residing on any land in the urban areas for preceding three years or more prior to the acquisition of the land or whose primary source of livelihood **for three years prior to the acquisition** of the land is affected by the acquisition of such land **[Section 3 sub-section c (ii),(iii) and(v)]**
Measures/Entitlements			
9	Ensure APs are informed about their options and rights pertaining to resettlement	√	Whenever a SIA is required, the appropriate Government shall ensure that a public hearing is held at the affected area, after giving adequate publicity about the date, time and venue for the public hearing, to ascertain the views of the affected families to be recorded and included in the SIA report. **[Section 5]**
10	Ensure APs are provided prompt and effective compensation at full replacement cost for losses of assets attributable directly to the project.	√	Though explicitly not stated, the compensations are expected to be much more than replacement costs. Total compensation and monetary benefits under R & R have to paid to PAPs before possession of land is granted. **{Section -38 (1)}**
11	If there is physical relocation, provide APs with (i) assistance(such as moving allowances) during relocation; and (ii) residential housing, or housing sites, or, as required, agricultural sites for which a combination of productive potential, locational advantages and other factors is at least equivalent to the advantages	√	The Rehabilitation and Resettlement Award shall include all of the following..... (c) particulars of house site and house to be allotted, in case of displaced families; (d) particulars of land allotted to the displaced families; (e) particulars of one time subsistence allowance and transportation allowance in case of displaced families. **[Section 31 sub-section 2(c), (d) and (e)] and schedule-3**

	of the old site.		
12	Provide relocation assistance to displaced persons	√	Each affected family is to be given one time Resettlement Allowance of Rs. 50,000/-
13	Particular attention to be paid to the needs of vulnerable groups among those displaced, especially those below the poverty line, the landless, the elderly, women and children, indigenous peoples, ethnic minorities, or other displaced persons who may not be protected through national land compensation legislation	√	The act provides for special provisions and assistance for scheduled caste and scheduled tribe in scheduled area. **[Section 41]** Further the act recognizes widows, divorcees and women deserted by families as separate families **[Section sub-section (m)]**
14	Provision of compensation and of other assistance required for relocation, prior to displacement, and preparation and provision of resettlement sites with adequate facilities, where required. In particular, taking of land and related assets may take place only after compensation has been paid and, where applicable resettlement sites and moving allowances have been provided to the displaced persons.	√	Total compensation and monetary benefits under R & R have to paid to PAPs before possession of land is granted. **{Section -38 (1)}.**
15	Preference should be given to land- based resettlement strategies for displaced persons whose livelihoods are land-based.	√	Land for land is recommended in irrigation projects and in projects where SC/ST is involved equivalent land. [**Section 41 &Second Schedule S.No.2]**
16	Cash compensation levels should be sufficient to replace the lost land and other assets at full replacement cost in local markets.	√	Method of valuation of land and considering the higher value as base with multiplying factor of 1-2 and the 100 solatium with 12% interest comes out to be more than replacement cost for land. For structure, tree and crops, valuation by appropriate authority will be equivalent to replacement value with provision of expert assistance. **[Section 26 sub-section 1 and 2, Section 29 and Section 30]**
17	Appropriate and accessible grievance mechanisms are established for these groups.	√	For the purpose of providing speedy disposal of disputes relating to land acquisition, compensation, rehabilitation and resettlement, establish by notification. one or more Authorities to be known as

			"the Land Acquisition, Rehabilitation and Resettlement Authority" **[Section 51 sub-section 1]**
18	In new resettlement sites or host communities, infrastructure and public services are provided as necessary to improve, restore, or maintain accessibility and levels of service for the displaced persons and host communities.	√	In every resettlement area as defined under this Act, the Collector shall ensure the provision of all infrastructural facilities and basic minimum amenities specified in the Schedule-3 of the Act. **[Section 32]**
19	Disclose the resettlement plan, including documentation of the consultation in an accessible place and a form and language(s) understandable to affected persons and other stakeholders.	√	Discloser of R&R Scheme along with records of public hearing to be put in public domain by uploading on specified website as well as placement in Panchayat/ Municipality in **vernacular language**. **{ Sec. 19 (4)}**
20	Monitor and assess resettlement outcomes, their impacts on the standards of living of displaced persons.	√	Provision of post implementation social audit by R&R Commissioner Rehabilitation & Resettlement Committee to carry out post implementation social audit in consultation with Gram Sabha/ Municipality. **{ Sec. 44 (3) & 45}**

52. From the above analysis it may be noted that the only difference between the provisions of new act and World Bank policy is in respect of the cut-off date for determining eligibility for non-titleholders. As per the act such eligibility criteria is dependence on acquired land three years preceding the acquisition whereas same eligibility is the date of commencement of the survey. However, such strict criterion in the act is to safeguard the interest of genuine persons and to discourage influx of outsiders and people with vested interest. The same eligibility criteria of three years preceding land acquisition notification (Sec-4 under LAA) was accepted by Bank in case of POWERGRID's ESPP in 2005 and also during comprehensive analysis under UCS in 2009.

5.6 Mitigation Measures

53 The likely/associated social impact of transmission & distribution line projects are not far reaching and are mostly localized to near vicinity/ ROW. Many such impacts can be minimized through careful route selection and siting of substations. Sound design/ engineering variations also play a major role in planning effective mitigative measures depending upon the site

situation/location. The major social issues that need attention and proper care under this project are as follows;

a) Substation: Land for substations is an issue as fresh lands will be required for construction of substations. AEGCL/APDCL shall secure/acquire the required land either through direct purchase on willing buyer & willing seller basis on negotiated rate or by invoking provisions of RFCTLARRA, 2013. However, efforts will be made to secure such land wherein possibility of physical relocation/displacement is not envisaged. Details of land availability status of substations are provided in **Table – 5.4.**

TABLE 5.4: LAND AVAILABILITY FOR SUBSTATION

Sl. No.	Name of the substation	Scope of work	Land Status
A. Transmission Substations			
1	220/132 kV Amingaon (GIS)	New	Land for 5 new substations (i.e. *Behiating, Silapather, Guwahati Medical College, Paltanbazar, & Sarupather) and all extension substations* are available with AEGCL. For remaining 6 new substations, the required land shall be secured either through direct purchase on willing buyer & willing seller basis on negotiated rate or by invoking provisions of RFCTLARRA, 2013
2	220/132 kV Behiating (New Dibrugarh)	New	
3	132/33 kV Guwahati Medical College (GIS)	New	
4	132/33 kV Chapakhowa	New	
5	132/33 kV Silapather	New	
6	132/33 kV Hazo	New	
7	132/33 kV Paltanbazar (GIS)	New	
8	132/33 kV Tangla	New	
9	132/33 kV Sarupather	New	
10	132/33 kV Tezpur New	New	
11	132/33 kV Teok	New	
12	220/132 kV Rangia	Augmentation	
13	220/132 kV Tinsukia	Augmentation	
14	132/33 kV Dhemaji SS	Augmentation	
15	132/33 kV Sonabil	Augmentation	
16	132/33 kV Rupai	Augmentation	
17	132/33 kV Kahilipara	Augmentation	
18	132/33 kV Kamakhya (GIS)	Augmentation	
19	220/132 kV Samaguri	Augmentation	
20	132/33 kV Dhaligaon	Augmentation	
B. Distribution Substations			
1	33/11 kV substation (16 Nos.)	New	APDCL has identified land for these substations and the required lands shall be secured either through direct purchase on willing buyer & willing seller basis on negotiated rate or by invoking provisions of RFCTLARRA, 2013.

Thus Land for tranche-1 and subsequent investments under future tranches can be secured through three following methods;

i) Purchase of land on willing buyer & Willing Seller basis on negotiated rate;
ii) Voluntary Donation; and
iii) Involuntary Acquisition.

In case of procurement of land through private purchase, AEGCL/APDCL shall ensure that compensation/rate for land is not less than the rate provided in the new land acquisition act, 2013. The finalization of land price/negotiation shall be through a committee. In order to comply with this provision AEGCL/APDCL may organize an awareness camp where provisions of new act in respect of basis/modalities of compensation calculation shall be explained to land owners with specific State provision if any.

In case of voluntary donation of land the following shall be ensured:

- The land user(s) will not be subjected to undue pressure for parting of land;
- All out efforts shall be made to avoid any physical relocation/displacement due to loss of land;
- The AEGCL/APDCL shall facilitate in extending 'gratitude' to the land donor(s) in lieu of the 'contribution' if so agreed. The same shall be documented in the shape of MoU between donor and utility and subsequently title of land transferred in the name of AEGCL/APDCL
- All land donations (as well as purchases) will be subject to a review/ approval from a committee comprising representatives of different sections including those from the IA and GoA.

In case of land acquired through involuntary acquisition, provisions of RFCTLARRA, 2013 shall be adopted. RFCTLARRA, 2013 has replaced the old Land Acquisition Act, 1894 and has come into force from 1st January 2014. The new act i.e. RFCTLARRA, 2013 authorizes State Govt. (i.e. GoA) or its authorized Government agency to complete the whole process of acquisition of private land including Social Impact Assessment (SIA), Action Plan for R&R (i.e. Rehabilitation and Resettlement) & its implementation and the AEGCL/APDCL's responsibility is limited to identification and selection of suitable land based on technical requirement and ensuring budget allocation.

Safeguards against land acquisition

54 Conducting Social Impact Assessments (SIA) has been made mandatory under this new act and results of these assessments are shared with all the stakeholders and public hearing held which makes the process transparent and informed. Subsequently, an entitlement package that includes both compensation (for land/structure and assets to land and structure) and R&R as necessary is prepared. Further to this individual awards are passed and all documents are disclosed in the public domain through local administration and internet. The flow chart of the land acquisition process with schedule prescribed for various activities is illustrated in **Figure 5.1** below. The entitlements with regard to compensation and assistances towards land acquisition or loss of any assets or livelihood for all categories of people being affected due to land acquisition is briefly outlined in **Table – 5. 5** below.

TABLE 5.5: COMPENSATION AND R&R ENTITLEMENT FRAMEWORK FOR LAND ACQUISITION

A Comprehensive Compensation Package	
Eligibility for Entitlement	**Provisions**
The affected families • **<u>Land Owners: includes any person-</u>** v) whose name is recorded as (he owner of the land or building or part thereof, in the records of the authority concerned; or vi) any person who is granted forest rights under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 or under any other law for the time being in force; or vii) who is entitled to be granted Patta rights on the land under any law of the State including assigned lands: or viii) any person who has been declared as such by an order of the court or Authority;	**Determination of Compensation :** **4. Market value** of the land • as specified in the Indian Stamp Act, 1899 or • the average of the sale price for similar type of land situated in the village or vicinity, or • consented amount of compensation as agreed in case of acquisition of lands for private companies or for public private partnership project. **whichever is higher** Market value x **Multiplier* between 1 to 2 in rural areas only (No multiplier in urban areas).** **5.** Value of the assets attached to land: Building/Trees/Wells/Crop etc. as valued by relevant govt. authority; **Land compensation = 1+2** **6. Solatium:** 100% of total compensation **Total Compensation** : **1+2+3**
(*) Precise scale shall be determined by the State Govt. The indicative values of multiplier factor based on distance from urban areas as provided in the act.	

Radial Distance from Urban area (Km)	Multiplier Factor
0-10	1.00
10-20	1.20
20-30	1.40
30-40	1.80
40-50	2.00

B. R&R Package

Elements of Rehabilitation and Resettlement Entitlements for all the affected families (both land owners and the families whose livelihood is primarily dependent on land acquired) in addition to compensation provided above

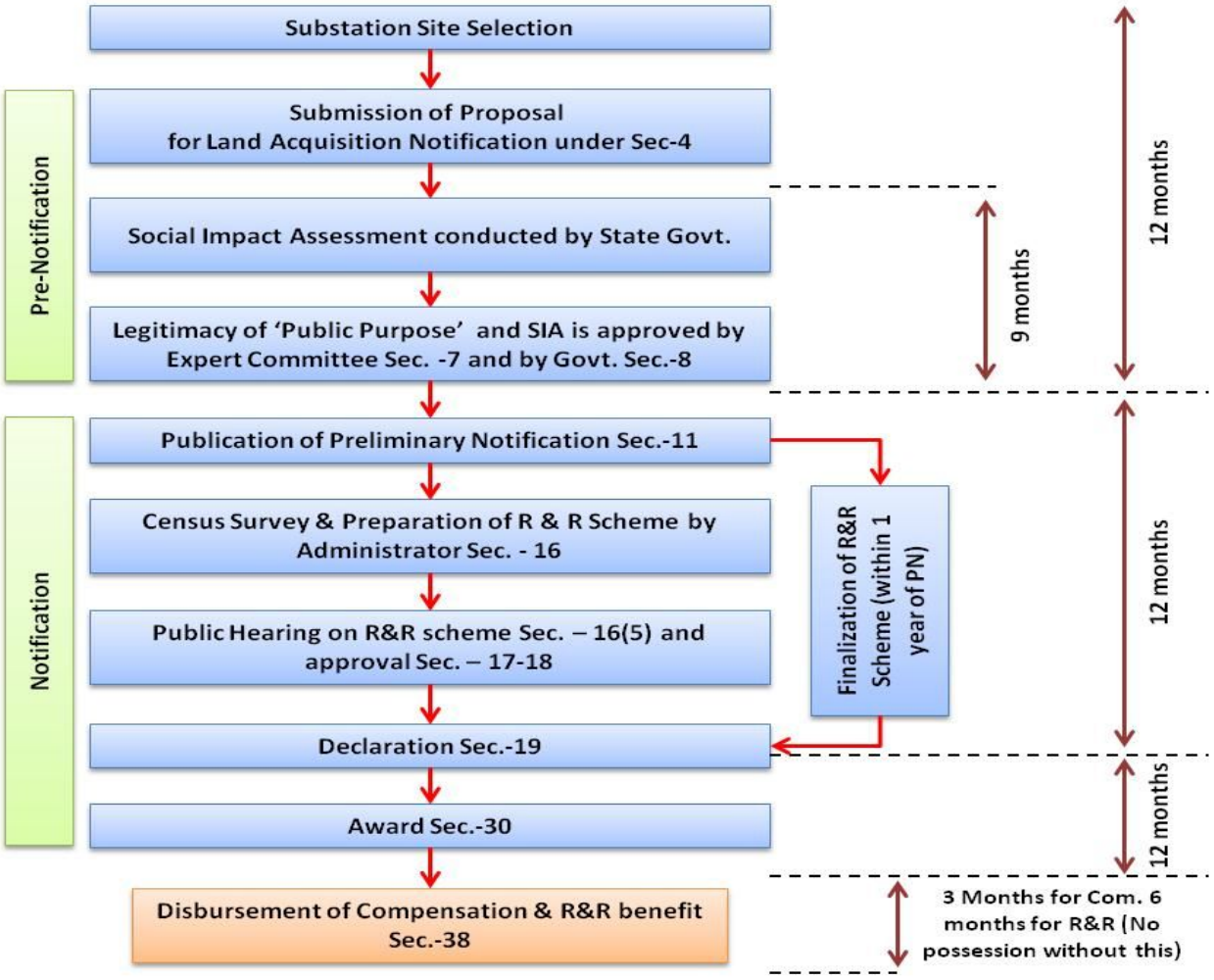
Sl. No.	Elements of R& R Entitlements	Provision
1.	Subsistence grant/allowance for displaced families	Rs. 3000 per month per family for 12 months
2.	The affected families shall be entitled to:	d. Where jobs are created through the project, mandatory employment for one member per affected family; **or** e. Rupees 5 lakhs per family; **or** f. Rupees 2000 per month per family as annuity for 20 years, with appropriate index for inflation; **The option of availing (a) or (b) or (c) shall be that of the affected family**
3.	Housing units for displacement: iii) If a house is lost in rural areas: iv) If a house is lost in urban areas	iii. A constructed house shall be provided as per the Indira Awas Yojana specifications. iv. A constructed house shall be provided, which will be not less than 50 sq. mts. in plinth area. **In either case the equivalent cost of the house may also be provided in lieu of the house as per the preference of the project affected family.** The stamp duty and other fees payable for registration of the house allotted to the affected families shall be borne by the Requiring Body.
4.	Transportation cost for displaced families	Rs 50,000/- per affected family
5.	Resettlement Allowance (for displaced families)	Onetime Rs 50,000/- per affected family
6.	Cattle shed/ petty shop cost	Onetime financial assistance as appropriate for construction as decided by St. Govt. subject to minimum of Rs.25,000/-
7.	Artisan/small traders/others (in case of displacement)	Onetime financial assistance as appropriate as decided by State Govt. subject to minimum of Rs.25,000/-

Special Provisions for SCs/STs

In addition to the R&R package, *SC/ST families will be entitled to the following additional benefits:*

8. One time financial assistance of Rs. 50,000 per family;
9. Families settled outside the district shall be entitled to an additional 25% R&R benefits;
10. Payment of one third of the compensation amount at very outset;
11. Preference in relocation and resettlement in area in same compact block;
12. Free land for community and social gatherings;
13. In case of displacement, a *Development Plan is to be prepared*
14. *Continuation of reservation and other Schedule V and Schedule VI area benefits from displaced area to resettlement area.*

FIGURE 5.1: ACTIVITY CHART RFCTLARRA, 2013



Right of Way: Land for tower and right of way is not acquired and agricultural activities are allowed to continue. However, the law stipulates that the licensee shall have to pay full compensation to all interested for any damages sustained during the execution of work. Accordingly, AEGCL has formulated appropriate management plan in the form of Compensation Plan for Temporary Damage (CPTD) to minimize the damages and provide compensation plan for temporary damages in consultation with revenue department and affected person based on assessment (refer Part - B of Social Management Framework placed as **Annexure – 3**). The detailed process for crop/tree compensation is placed at **Anexure 6 & Annexure 6a**. The entitlement matrix for planning compensation for possible impact is as follows:

Entitlement Matrix for CPTD

S. No	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) 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
5.	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

S. No	ISSUE/IMPACT	BENEFICIARY	ENTITLEMENT OPTIONS
6	Tribal/ Vulnerable APs	Vulnerable APs10	One time additional lump sum assistance not exceeding 25% of total compensation on recommendation of State Authority/ADC/VC.

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

b) Tribal People: The population of Assam as per census 2011 was 3,12,05,576. The Scheduled Tribes (STs) population is 38, 84,371 which constitutes 12.4 per cent of the total population of the State. In compliance with Bank's Operational Policy and special provision of RFCTLARRA, 2013, a Tribal People Development Framework has been prepared (refer Part - C of Social Management Framework placed as **Annexure – 3**).

d) Gender: Women will be involved through formal and informal consultations so that their participation is ensured during preparation and implementation of the project. To enable this, efforts will be made to deploy as many women community volunteers as possible and conduct gender sensitization capacity building programs for all the project staff.

5.7 Health and Safety Requirements

55 AEGCL/APDCL maintains safety as a top priority, apart from various labour laws dealing with workers' health and safety, such as the Workmen's Compensation Act. AEGCL/APDCL ensures the implementation of health and safety as per the norms the said act which is an integral part of the contractors' activities. EHS guidelines of AEGCL/APDCL (**Annexure-7** for detailed checklist) are developed on the basis of World Bank EHS guidelines to be adopted by AEGCL/APDCL.

5.8 Exposure to Electro Magnetic Fields (EMF)

56 There have been some concerns about the possibility of an increased risk of cancer from exposure to electromagnetic radiation from overhead transmission lines. However, a review by the World Health Organization (WHO) held as part of the International EMF Project (1996), concluded that: "From the current scientific literature there is no convincing evidence that exposure to radiation field shortens the life span of humans or induces or promotes cancer".

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

Currently no EMF exposure guidelines have been framed in the country. However, international guidelines in this regard are detailed below:

- State Transmission Lines Standards and Guidelines in the USA;
- International Commission on Non-Ionizing Radiation Protection (ICNIRP);
- US National Council on Radiation; and
- American Conference on Government and Industrial Hygiene (ACGIH).

The ICNIRP guideline for the general public (up to 24 hours a day) is a maximum exposure level of 1,000 mG or 100 μT. AEGCL/APDCL shall follow the best international practices while designing its system to maintain acceptable prescribed EMF level.

5.9 General Safety Standards

57 AEGCL/APDCL will follow all applicable standards concerned with safety for transmission, distribution and erection of Substation. These include IS: 5613 – recommendation on safety procedures and practices in electrical work as per CEA (Measures relating to Safety and Electric Supply) Regulation, 2010 notified in the Gazette on 20th Sept. 2010 (**Annexure- 8**).

6.0 Issues, Impacts and Management Measures - Environment

58 Environmental issues of T&D projects are manageable given the inherently small 'foot print' of towers and flexibility in siting facilities within a relatively large host area and are mostly localized to ROW. However, transmission line project may have some adverse effects on natural resources. These impacts can be minimized by careful route selection and siting of substations. In order to get latest information and further optimization of route, modern survey techniques/tools like GIS, GPS aerial photography are also applied. Introduction of GIS and GPS/Google earth/IBAT in route selection result in access to updated / latest information, through satellite images and further optimization of route having minimal environmental impact. Moreover, availability of various details, constraints like topographical and geotechnical details, forest and environmental details help in planning the effective mitigation measures including engineering variations depending upon the site situation / location. In the instant project also these techniques are to be used for minimizing/mitigating such issues.

6.1 Environmental issues

A) <u>Transmission/Distribution lines</u>

59 The key environmental issues associated with installation of transmission/distribution lines are:

1) Clearing of Trees within Right of Way

60 Right of Way (RoW) width for the transmission/distribution line depends on the line voltage. The maximum permissible width of RoW on forest land and minimum clearance between Trees and conductors as specified in IS: 5613 and by MoEF guidelines are given in **Table 6.1**.

61 At present, a width clearance of 3 m is allowed below each conductor for the movement of tension stringing equipment (**Annexure - 9)**. Trees on such strips are felled/lopped to facilitate stringing and maintenance of RoW. After completion of stringing, natural regeneration or dwarf tree/medicinal tree plantation is allowed to a certain height. Trimming or pruning is done with the permission from the local forest officer to maintain required electric clearance as necessary during operation and maintenance. In hilly areas where adequate clearance is already available, tree will not be cut/felled in 3 meter strip beneath for RoW except working clearance as stringing is done manually only. As compared to transmission line, distribution line requires only small right of way and therefore felling of trees is much less than that requires for laying of transmission lines. Generally stringing of distribution line is carried out manually and therefore trimming/pruning of tree branches are only required instead of large nos. tree cutting Felling, lopping of tree can open up forest canopy allowing more sunlight into under storey where it can lead to edge effect and allow for proliferation of socio-phytic weeds. This can have added repercussions within a semi evergreen or evergreen biotope.

TABLE 6.1: ROW CLEARANCE BETWEEN CONDUCTORS AND TREES

Transmission Voltage (In kV)	Max. ROW (In Meters)	Min^{m}. Clearance (in meters) between conductor & Trees *
11	7	2.6
33	15	2.8
66	18	3.4
110	22	3.7
132	27	4.0
220	35	4.6
400 D/C & S/C	46	5.5

**** As per IS: 5613 and MoEF guidelines finalized in consultation with CEA***

2) Clearing of Ground Vegetation for Movement of Machinery: Machinery and equipment is used for installation of transmission and distribution lines, towers/poles and construction of substations and may require clearing of ground vegetation for its movement. This activity causes temporary disturbance to the forest, orchards, plantation and agriculture etc. AEGCL/APDCL wherever possible utilises the existing path / access roads for the movement of man and machinery.

The existing roads which cannot support heavy machinery load are upgraded and thus the village infrastructure is improved. In areas where lines traverse agricultural land, compensation is paid to owners for any crop damage incurred as a result of construction activities. Agricultural activities are allowed to continue following the construction period. If bunds or other on-farm works are disturbed during construction or maintenance, they are restored to the owner's satisfaction following cessation of construction or maintenance activities. In the event that private trees are felled during construction or maintenance operations, compensation is paid to the owner as determined by the forest / horticulture departments.

3) Aesthetic appeal of an area: Erection of transmission/distribution towers and lines some time affects the aesthetics of the area. However, measures like painting of towers/poles in grey or green to merge with the background and planting trees along roads running parallel to transmission/distribution lines in consultation with Forest Department, if feasible would be undertaken by AEGCL/APDCL to buffer visual effect.

B) <u>Substations</u>

62 The key environmental issues associated with construction of substation are:

1) **Clearing of Ground Vegetation:** The land requirement for substations varies from 0.3 acres to 10 acres depending upon no. of bays. The ground vegetation needs to be cleared to enable construction activity.

2) **Used Transformer Oil:** As a part of routine maintenance, transformer oil is changed every 10-15 years. The used transformer oil is categorised as hazardous wastes as per Hazardous waste (Management, Handling and Trans-boundary) Rules, 2008 and its unscientific disposal in environment may lead to soil and water contamination.

3) **Used Battery:** Used lead acid battery is a pollutant and therefore its improper handing & disposal may lead to contamination of soil and water.

4) **E-waste:** The Electrical and Electronic Equipment (EEE) have hazardous / toxics substances in their components which may cause harm/pose risk to health and environment during handling after its expiry & full usage.

5) **SF_6 gas** is a highly potential Green House Gas (GHG) being used in Circuit Breaker. Mishandling and leakage etc can lead to its escape into the atmosphere causing global warming.

6.2 Principles

63 The basic principles that guide EMF are:

- Avoidance environmentally sensitive areas while planning project activities;
- Minimisation of impacts when project activities occur in environmentally sensitive areas;
- Mitigation of any unavoidable negative impacts arising out of its projects; and
- Greater transparency through involvement of community and other stakeholders through consultation

6.3 Definitions

"Adverse environmental effect" means any irreversible harmful affect on natural environment;

"Battery" means lead acid battery which is a source of electrical energy and contains lead metal;

"Central Pollution Control Board" means the Central Pollution Control Board constituted under sub-section (1) of section 3 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974);

"Forest" The word "forest" must be understood according to its dictionary meaning. This description covers all statutorily recognized forests, whether designated as reserved, protected or otherwise for the purpose of Section 2(i) of the Forest Conservation Act. The term "forest land", occurring in Section 2, will not only include "forest" as understood in the dictionary sense, but also any area recorded as forest in the Government record irrespective of the ownership;

"E-waste" means waste electrical and electronic Equipments, whole or in part or rejects from their manufacturing and repair process, which are intended to be discarded;

"Hazardous waste" means any waste which by reason of any of its physical, chemical, reactive, toxic, flammable, explosive or corrosive characteristics causes danger or is likely to cause danger to health or environment, whether alone or when in contact with other wastes or substances, and shall include- (i) waste specified under column (3) of Schedule-I, (ii) wastes having constituents specified in Schedule-II if their concentration is equal to or more than the limit indicated in the said Schedule, and (iii) wastes specified in Part A or Part B of the Schedule-III in respect of import or export of such wastes in accordance with rules 12, 13 and 14 or the wastes other than those specified in Part A or Part B if they possess any of the hazardous characteristics specified in Part C of that Schedule;

"**Environment"** means land, water, air, living organisms and interacting natural systems;

"Environmental assessment" means the process of assessing the environmental effects of a project in order to evaluate their significance, and may include identifying measures to prevent, minimize, mitigate or compensate for adverse environmental and social effects. Environmental and social assessment is the responsibility of the project sponsor;

"**Mitigation measures**" means methods to reduce, eliminate or compensate for adverse environmental and social effects;

"State Pollution Control Board" means the State Pollution Control Board or the Pollution Control Committee constituted under sub-section (1) of section 4 of the Water(Prevention and Control of Pollution) Act, 1974 (6 of 1974);

6.4 Legal and Regulatory Framework

64 The applicable acts, rules, and relevant policies in the context of the project are presented in **Table- 6.2.** The Project Authority will ensure that project activities implemented are consistent with provisions of such legal framework.

TABLE 6.2: LEGAL AND REGULATORY PROVISIONS – ENVIRONMENT

Sl. No.	Acts, Notifications and Policies	Relevance/ Applicability to the project
I.	**Constitutional Provisions (India)**	
a	Article 48 A	The State shall endeavor to protect and improve the environment and to safeguard the forests and wildlife of the country.
b	Article 51 A (g)	It shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures.
II.	**Provisions Law of the Land/Rules**	
1.	Electricity Act, 2003 (EA, 2003)	Transmission line projects are constructed under the ambit of Electricity Act, 2003 following the provisions of Section 67 & 68 of act. Under the provisions of **Section 68(1):-**Prior approval of the Govt. of Assam (GoA) is a mandatory requirement to undertake any new transmission project 66kV upward and for distribution project of 33kV system in the State which authorizes APDCL to plan and coordinate activities to commission a new Transmission/distribution project. The electricity act under Section 164 has a provision to grant licensee

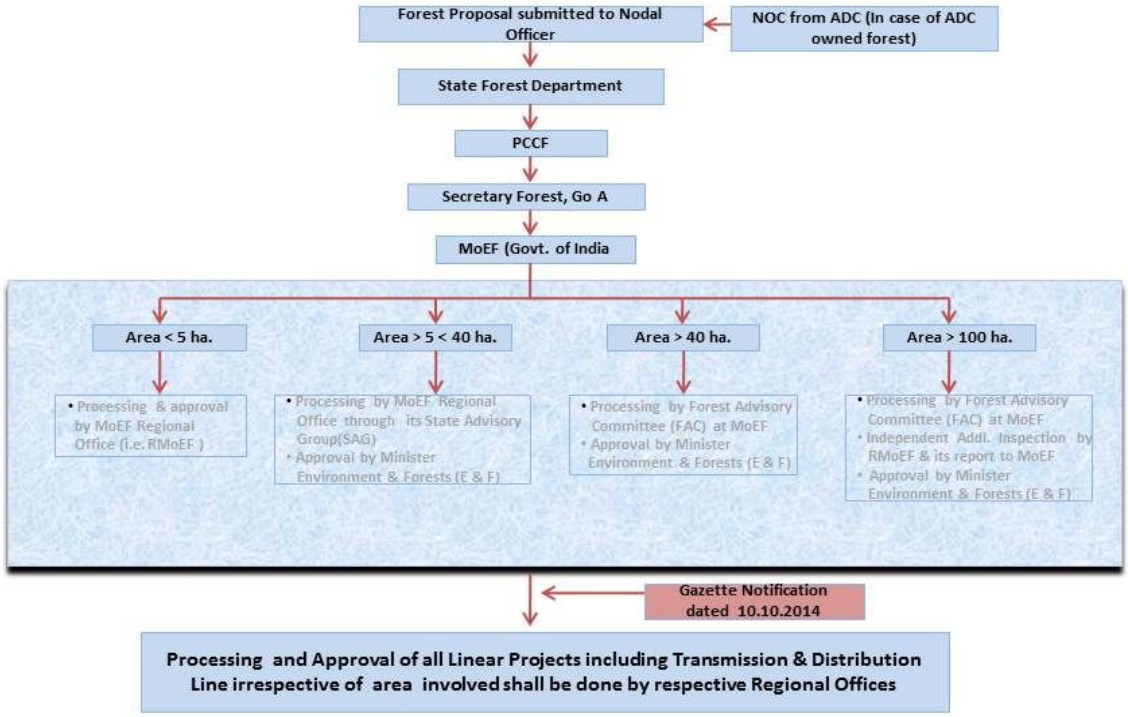
Sl. No.	Acts, Notifications and Policies	Relevance/ Applicability to the project
		the power of Telegraph Authority as provided in the Indian Telegraph Act, 1885[11]. GoA on request of AEGCL may by order in writing/through notification authorize them for using powers of telegraph authority after fulfilling the requirement as laid down in the rules thereof. The salient features of the Electricity Act 2003 are given in **Annexure- 5**.
2.	Forest (Conservation) Act, 1980	This Act provides for the conservation of forests and regulates the diversion of forest land to non-forestry purpose. When any transmission/distribution line traverses forest land, prior clearance is mandatorily required from Ministry of Environment and Forests (MoEF), GoI under the Forest (Conservation) Act, 1980. The approval process of forest clearance in brief, as per set procedure in the guideline under the act and rules is shown in **Figure 6.1** below. Flow charts for forest clearance process and procedure of online submission of application are provided in **Annexure- 10 & 10a** respectively**.**
3.	The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006	The act recognizes and vests the forest rights and occupation in forest land to forest dwelling. Scheduled Tribes and other traditional forest dwellers who have been residing in such forests for generations but whose rights could not be recorded, and provides for a framework for recording the forest rights so vested and the nature of evidence required for such recognition and vesting in respect of forest land. The definitions of forest dwelling Schedule Tribes, forestland, forest rights, forest villages, etc. have been included in Section 2 of the Act. The Union Ministry of Tribal Affairs is the nodal agency for implementation of the Act while field implementation is the responsibility of the government agencies. The applicability of this act has also been linked with forest clearance process under Forest (Conservation) Act, 1980 w. e. f. August 2009 by MoEF which AEGCL/APDCL needs to comply with.
4.	Environment (Protection) Act, 1986	It is umbrella legislation for the protection and improvement of environment. This Act as such is not applicable to transmission/ distribution projects of AEGCL/APDCL. Project categories specified under the schedule of the EIA notification is provided in **Annexure - 11**. Even then some limited compliance measures notified under this EPA, 1986 are to be adhered to relevant rules and regulations under the EPA, 1986 applicable to the operations of AEGCL/APDCL.

[11] POWERGRID, the designated Implementing Agency has already been vested with powers of telegraph authority by GoI vide Gazette Notification dated Dec.24, 2003.

Sl. No.	Acts, Notifications and Policies	Relevance/ Applicability to the project
i)	Ozone Depleting Substances (Regulation and Control) Rules, 2000	As per the notification, certain control and regulation has been imposed on manufacturing, import, export, and use of these compounds.
ii)	Batteries (Management and Handling) Rules, 2001	As per notification, Being a bulk consumer AEGCL/APDCL to ensure that the used batteries are disposed to dealers, manufacturer, registered recycler, re-conditioners or at the designated collection centers only. A half-yearly return is to be filed as per Form-8 (**Annexure - 12***)* to the Assam State Pollution Control Board
iii)	Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008	As per notification, used oil is categorized as hazardous waste and require proper handling, storage and disposed only to authorized disposal facility (registered recyclers/ reprosessors) Being a bulk user, AEGCL/APDCL shall comply with provision of said rules. AEGCL/APDCL, as bulk user of transformer oil which is categorized as Hazardous Waste, shall comply with the provisions of the said rules (refer **Annexure - 13** for MoEF notification dated 24th September 2008) if the practice of storing of used oil is maintained. In case it is decided to outsource the process of recycle of used oil to registered recycler as per the provisions of notification then AEGCL/APDCL shall submit the desired return in prescribed form to concerned State Pollution Control Board at the time of disposal of used oil.
iv)	E-waste (Management and Handling) Rules, 2011	As per notification, bulk consumers like AEGCL/APDCL is to dispose e-waste generated by them in environmentally sound manner by channelizing to authorized collection centers/ registered dismantler/ recyclers/return to producers. AEGCL/APDCL, being a bulk consumer of electrical and electronics equipments shall maintain record as per Form-2 (**Annexure-14**) for scrutiny by Assam State Pollution Control Board.
5.	Biological Diversity Act, 2002	This act is not directly applicable to transmission projects because it deals with the conservation of biological diversity, sustainable use of its components and fair and equitable sharing of the benefits arising out of the use of biological resources, knowledge and for matters connected therewith. AEGCL/APDCL abides by the provision of the act wherever applicable, and avoids Biosphere Reserves during route alignment.

Sl. No.	Acts, Notifications and Policies	Relevance/ Applicability to the project
6.	Assam control of Tree Felling rules, 2002	To control felling of trees, this Rules provide for registration of tree plantation raised on non-forest land with the Divisional Forest Officer except for trees including Aam, Jamun, Kathal, Eucalyptus, Poplar, a species of home grown Bamboo, Leteku, Paniol, Madhuriam which do not require felling permission. AEGCL/APDCL follows all provisions of this rule for felling of trees from non-forest land.
7.	The Right to Information Act, 2005	The Act provides for setting out the practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, the constitution of a Central Information Commission and State Information Commissions and for matters connected therewith or incidental thereto.
8.	Rights of Way(RoW) and Compensation	In case of agricultural or private land the provisions of section- 67 and or section-68 (5 & 6) of the Electricity Act, 2003 and section-10 of the Indian Telegraph Act, 1885 are followed for assessment and payment of compensation towards such damages
III	**World Bank OP (Operational Policy)**	
1	OP- 4.01: Environmental Assessment	To ensure the environmental and social soundness and sustainability of investment projects. Support integration of environmental and social aspects of projects in the decision-making process.
2	OP- 4.04: Natural Habitats	To promote sustainable development by supporting the protection, conservation, maintenance, and rehabilitation of natural habitats and their functions.
3	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.
4	OP-4.36: Forests	To realize the potential of forests to reduce poverty in a sustainable manner, integrate forests effectively into sustainable economic development, and protect the vital local and global environmental services and values of forests

FIGURE 6.1: APPROVAL PROCESS OF FOREST CLEARANCE



Note: MoEF has made online submission of application mandatory w.e.f. 15th August 2014 (refer Annexure- 10a).

6.5 Assessment of Environment Impact

65 This section identifies the potential environment impacts due to intervention of project in terms of the nature, magnitude, extent and location, timing and duration of the anticipated impacts. These impacts are both positive or negative relating to the project design stage, construction stage or the project operation and decommissioning stage;

i. Positive Impacts

- Availability of power lessen the demand of natural resources like firewood, charcoal etc. resulting in conservation/protection of forest/vegetation.

ii. Negative Impacts

- Clearance of tree within RoW;
- Impacts on forest, wildlife habitats and migratory birds;

- Impacts on drainage, soil erosion & water resources;
- Impacts on traffic and road infrastructure;
- Aesthetic appeal of area;
- Impacts from likely oil spillage;
- Effect of electromagnetic (EMF) fields;
- Leakage SF6; and
- Health & Safety

6.6 Management Framework

66 Based on the outcome of impact assessment appropriate management measures has been suggested in ESPPF for implementation to mitigate the possible impacts due to proposed project interventions. While for positive impacts enhancement measures are suggested; for negative impacts suitable mitigation measures has been included. Detailed of potential environment issues and its management measures are outlined in ESPPF. Apart from this, AEGCL/APDCL has developed an Environment Management Plan (EMP) (Refer Annex.- A attached in ES) which includes detail of anticipated impacts along with mitigation measures, monitoring and implementation schedule for its transmission and distribution projects. The EMP provisions shall be made part of bidding/contract document for proper implementation by the Contractor. Summary of key potential environmental issues and its management measures is presented below in **Table 6.3**.

TABLE 6.3: POTENTIAL ENVIRONMENTAL ISSUES AND ITS MANAGEMENT MEASURES

Sl. No	Potential Issues	Management Measures
1	Minimising adverse impact on forests	AEGCL/APDCL endeavors to circumvent / lessen environmentally sensitive areas such as forest and other ecologically fragile / sensitive areas through optimization of route including use of modern tools like GIS/GPS and other modern techniques.
2.	Clearing/Lopping of trees	Use of extended/special tower to reduce RoW and impact on trees
3.	▪ Vegetation damage ▪ Habited Loss	To minimise damage to vegetation and habitat fragmentation, AEGCL/APDCL utilises hand clearing and transportation of tower material by head loads into forestland and other land as well, wherever possible.

Sl. No	Potential Issues	Management Measures
4.	▪ Habitat fragmentation ▪ Edge effect on flora & fauna	AEGCL/APDCL maintains only a 3m wide strip for O&M and allows for regeneration of vegetation in the other one or two strips and beneath the transmission lines to avoid habitat fragmentation and edge effect. In hilly area this can possibly be totally avoided
5.	Chances of accident involving elephant in the specified corridor due to placing of poles	APDCL shall try to avoid such area to the extent possible. However, in case avoidance is not possible, suitable design modification in the pole like provision of spike guards, barbed wire fencing or any other arrangement shall be incorporated in such location
6.	Erosion of soil and drainage along the cut and fill slopes in hilly areas	AEGCL/APDCL would ensure that all cut and fill slopes in TL/DL are adequately protected using standard engineering practices including bio-engineering techniques wherever feasible. All drainage channels along or inside substations shall be trained and connected to main or existing drainage to avoid any erosion due to uncontrolled flow of water.
7.	Chemical contamination from chemical maintenance techniques	AEGCL/APDCL does not use chemicals for forest clearance/RoW maintenance
8.	Poly- Chloro-Biphenyls (PCBs) in electrical equipment	AEGCL/APDCL use mineral oil in electrical equipments. Specification of oil containing PCB less 2 mg/kg (non – detectable level) stated in the tender document
9.	Induced secondary development during construction	AEGCL/APDCL operations are short-lived and do not induce secondary developments during construction
10	Avian hazards from transmission/distribution lines and towers	Avian hazards mostly encountered in bird sanctuaries area and fly path of migratory bird predominantly related to nesting site. Although the incidence of avian hazards is rare due to the distance between the conductors. AEGCL/APDCL shall take all possible precaution to avoid these areas by careful route selection. However, bird guards are provided to prevent any avian hazards.
11	Air craft hazards from transmission lines and towers	AEGCL/APDCL as per the requirement of IS 5613 of July'94 provides aviation markers, night-lights for easy identification of towers in notified/selected areas.
12	Health and safety of worker/employee/community	During construction the health and safety aspects of workers and nearby community shall be implemented through contractors with due diligence and compliance of required regulation/guideline through a safety plan. AEGCL/APDCL uses best available technology for lines and do not cause any hazards to health and safety.

Sl. No	Potential Issues	Management Measures
13	Fire Hazards	Fire hazards are mostly occurred in forest area. However, AEGCL/APDCL uses state of art automatic tripping mechanism for its transmission/distribution and substation that disconnect the line in fraction of seconds to prevent fire hazards. The Forest Department also take precaution like maintaining fire line in the cleared forest area to avoid spread of fire
		Firefighting instruments including fire extinguishers are kept in appropriate place for immediate action in case of any fire hazard.
14.	Pollution	Although pollution is not an issue with transmission/ distribution projects still AEGCL/APDCL will make efforts to further minimise it. Sites are cleared of all the leftover materials and debris to avoid any chance of pollution.
15.	GHG (SF_6 Gas)	Although leakage of SF6 is not a major issue, AEGCL/APDCL will make efforts to reduce the leakage through regular monitoring installing gas pressure monitor/ leak detectors in Circuit Breakers.

7.0 Integration of environment and social management measures into overall project cycle

67 In the previous section, ESPPF outlines various management measures to address the potential environment and social impacts based on the outcome of identification and impact assessment process during different stages of project activities. In order to address identified environment and social issues due to proposed project interventions, the suggested management measures has been dovetailed in to the project cycle so that it can be taken care off at appropriate level and at appropriate time (refer ESPPF for detail management procedures). **Figure - 7.1 and 7.2** below illustrates link between different stages of project cycle and management measures to be undertaken to address the environment and social issues.

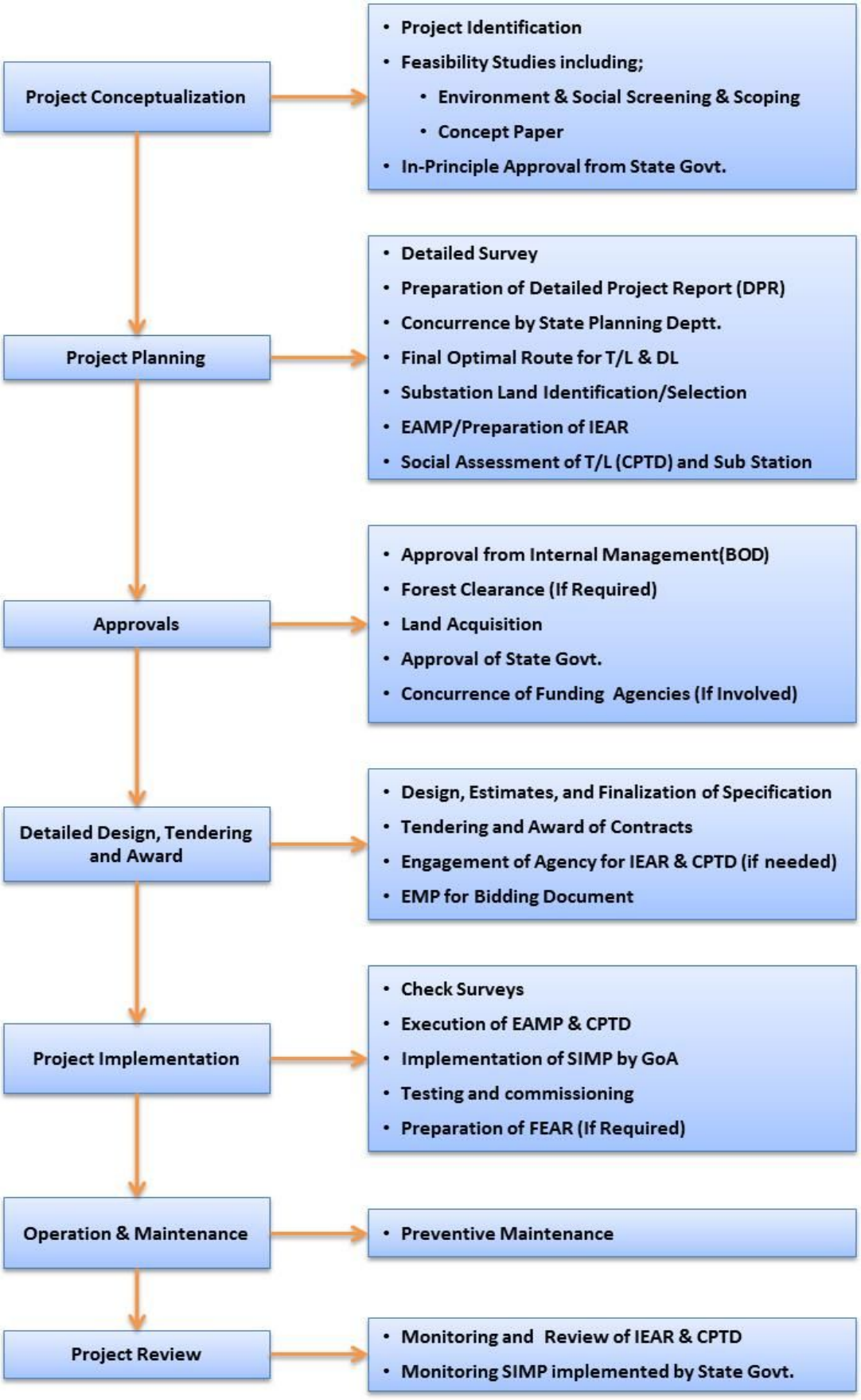
7.1 Project Cycle

68 In order to address environmental and social issues arising out of construction, operation and maintenance of transmission and distribution projects in the State of Mizoram, it become pertinent to review typical AEGCL/APDCL's project cycle so as such issues are attended at appropriate time. The key milestones of such projects cycle are:

- Project conceptualisation
- Project Planning
- Approval
- Detailed design and tendering
- Project Implementation
- Operation & maintenance
- Project review

Figure 7.1 outlines the detailed process of typical transmission outlines the detailed process for a typical transmission project and is summarized in subsequent sections.

FIGURE 7.1: PROJECT CYCLE OF A TYPICAL TRANSMISSION/DISTRIBUTION PROJECT



7.1.1 Project Conceptualisation

69 AEGCL/APDCL identifies the need for a new project in consultation with the Central Electricity Authority (CEA) and Regional Electricity Boards (REB). A power transmission project is identified according to the demand and supply of a given region based on generating companies.

70 After the need identification, feasibility studies are conducted that include environmental, social, economic, and financial assessments. The project is prioritized and implementation schedule is developed. As a part of the study, AEGCL/APDCL develops various options for the location of transmission lines that consider avoidance of environmentally and socially sensitive area. During desk study various options of line routes are plotted on a Forest Atlas map or SOI (Survey of India) map or Google Earth map using a "BEE Line" (the shortest distance between origin of proposed Transmission Line (TL)/Distribution Line (DL) and the substations sites) avoiding environmentally and socially sensitive area. At least 3 (three) alternative are marked subject to site verification. During the route alignment surveys/walkover surveys, all possible efforts are made to avoid forest, sacred grove, and archaeological sites, historical and cultural places etc.

71 Based on the above studies a concept paper is prepared indicating all the components environmental, social, techno-economic and cost estimate. Approval for the "Concept Paper" is obtained from the Board of Directors of the AEGCL/APDCL. Since financial approval of project may take longer time, certain critical project preparatory activities, such as preliminary or detailed survey, forest clearance, and land acquisition process are initiated with special permission of the Board of Directors (BoD). Such provisions/actions also facilitate more in-depth and timely assessment of environment & social issues due to availability of better lead time.

72 In case of transmission project this "Concept Paper" after the appraisal/ recommendation of AEGCL management, is forwarded to Planning Deptt., GoA for the in-principle approval and subsequent Budget allotment or posing to different funding agency.

7.1.2 Project Planning

73 During this stage, Detailed Surveys are carried out and two or three route alternatives are studied in detail. Field officers record all critical information such as rivers, hills, railway crossings, telephone, and power transmission lines. Additionally, environmental and social details are also noted in the prescribed pro-forma for evaluation of alternatives (**Annexure - 15**).

74 During such survey further attempt is made to minimize involvement of forestland and areas of significant natural resources, human habitation and areas of cultural importance by realigning the route for optimization, if possible. If forestland is unavoidable after completion of survey on the finalized route, environmental assessment limited to forest area is undertaken by AEGCL/APDCL with the help of authorized agencies (Forest Department/GoA) to formulate forest proposal including its assessment and management plan. Local forest authorities certify that the final route so selected involves the barest minimum of forestland. The complete forest proposal is processed and recommended/forwarded by GoA to MoEF for obtaining forest clearance with an undertaking from AEGCL/APDCL to bear the cost of compensatory afforestation, NPV etc. as per guidelines. In case of forest under Autonomous District Council, NOC of the Council is required. Similarly, in non-forest land under the Autonomous District Council area, it is important to obtain the consent of the village council and also the land owners. Consultations are held with the village council for identification of the landowner and obtaining their consent for the RoW. In case of community owned land the NOC is obtained from the village council only.

75 AEGCL/APDCL identifies number of potential substation sites suiting technical requirement based on data collected as per the checklist (refer **Annexure-16**) and a comprehensive analysis for each alternatives carried out. The analysis considers various site specific parameters that includes infrastructure facilities such as access roads, railheads, type of land viz. government private land, agricultural land; social impacts such as number of families getting cost of compensation and rehabilitation giving due weightage to each. An initial examination of the selected site is done to ascertain the scope and extent of social assessment.

76 A Map/Land Plan Proforma register is prepared in association with the Land Revenue Department, Government of Assam indicating the name of land owners, cultivator/planters , total area of the land required, no. of fruit bearing trees, non-fruit bearing trees, crops etc. in Once these documents are ready the same is sent to the District Collector concerned for initiating the acquisition proceedings as per the RFCTLARRA, 2013 Land acquisition for the selected site is generally carried out only after the approval of the project by GoA.

77 After identification and assessment of possible impacts, project specific Environment Assessment Management Plan (EAMP) is prepared including the Initial Environment Assessment Report (IEAR) to mitigate adverse impact arising due to project activity. Similarly Social Assessment of transmission line is also undertaken to develop a project specific Management Plan in the form of Compensation Plan for Temporary Damages (CPTD). The CPTD is a document prepared after social assessment of likely impacts on land by installing towers or poles during construction of

transmission/distribution lines. The CPTD also contains the compensation procedure for tree/crop/land damages as per the prevailing regulation/guidelines.

7.1.3 Project Approvals

78 The DPR so finalised and recommended by AEGCL/APDCL management (BoD) is forwarded to State Govt. and funding agency (if applicable) for concurrence and fund/budget allocation.

7.1.4 Detailed Design and Tendering

79 AEGCL/APDCL after detailed design, finalization of specifications for line and substation starts the tendering process and contracts are awarded to competent contractors through bidding process. Similarly engagement of agency (if required) for IEAR and CPTD implementation is also undertaken. During bidding process, project specific EMP is included in the contract document for implementation by the contractors/subcontractors.

7.1.5 Project Implementation

80 Before the start of implementation, AEGCL/APDCL informs the general public about the project and invites their suggestion, if any. When construction starts AEGCL/APDCL's field staff and contractors conduct check survey to authenticate tower spotting done in the profile based on detailed survey.

81 AEGCL/APDCL's field staff and contractors conduct check survey to verify the ground profile and make necessary changes wherever required. Field staff fixes tower spots and heights (extensions) wherever necessary for tension towers. Construction, erection, & stringing of towers and substations are then initiated. Due care is taken to minimize / mitigate environmental impacts. Health & Safety aspects are also given utmost importance. AEGCL/APDCL tests all lines and substations prior to commissioning of the project.

82 Once the check survey is completed, AEGCL approach District Administration for acquisition/procuring the land. Negotiations are held with the owners of the land for compensation towards locating the tower/pole. The payment of compensation has been made as per the rates assessed / fixed by the Deputy Commissioner / District Collector. The consultation with the land owners is primarily limited to their agreeing to part with their land and receiving compensation. In case there are any grievances regarding the tower location, consultation are held with the owner to resolve them and also convince them to part with their land. The District Administration also gets

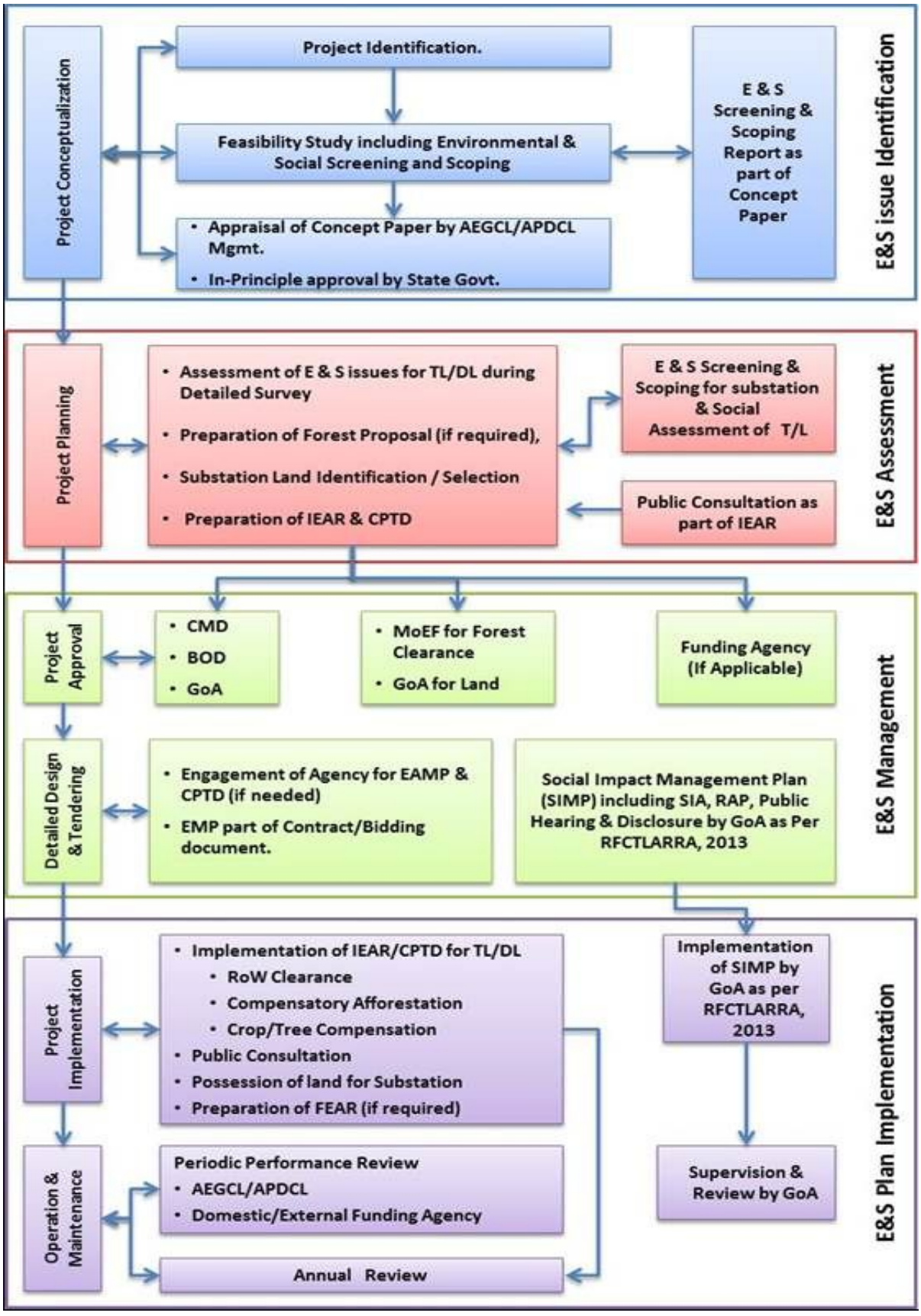
involved in the process. However, in case they fail to come to a consensus then the tower locations may be shifted meeting technical requirements.

83 If there is any changes necessary, site modification is done/noted in the profile/ datasheets, wherever required for final documentation and resubmission for reference/record. Civil Construction work is then initiated for transmission /distribution line followed by tower/pole erection & stringing. Simultaneously works of substation are also initiated. During the construction stage due care is taken to minimise / mitigate environmental impacts. AEGCL/APDCL also gives utmost importance to health & safety of workers, employees and nearby communities. During construction the health and safety of workers and nearby communities shall be taken care by contractors by compliance of required regulation/guideline through a "Safety Plan" (refer **Annexure - 7** for checklist for health & safety and **Annexure- 17** for Safety Plan). Before test charges both transmission/distribution lines and substations, pre-commissioning check and testing are rigorously done by AEGCL/APDCL to ensure safety of commissioning of the project/subproject. Implementation of IEAR and CPTD are also to be taken up in parallel to above work.

7.1.6 Operation and Maintenance

84 AEGCL/APDCL continuously monitors the transmission lines and substations. These lines and substations are patrolled regularly to identify faults and its rectification. The Divisional and Sub-Divisional offices carry out monitoring of line in accordance with the O & M checklists provided for inspection of transmission/sub-transmission lines and substations (**Annexure - 18).**

FIGURE 7.2: ENVIRONMENTAL AND SOCIAL MANAGEMENT PROCEDURES



7.2 Project Conceptualization

85 Conceptualization of projects/subprojects necessarily entails identification of potential E & S issues that may require evaluation in relation to its nature, magnitude and measures to address them. Screening and scoping process enable this evaluation.

86 The environmental screening and scoping report forms an integral part of project feasibility study i.e. 'Concept Paper', which is put up to State Govt. for in-principle approval of the project after appraisal/recommendation of AEGCL/APDCL management. The E & S issues identification process for any AEGCL/APDCL project will include the following:

- E & S screening and scoping for transmission/distribution lines;
- Appraisal/approval of Concept paper by Internal Management & State Govt;

87 The objectives, process and output of each of these steps are discussed below;

7.2.1 Environment & Social Screening and Scoping for Trans./Distribution Lines

A. Objectives

- Objective is to identify environmental and social sensitive areas, issues, and possible management measures for the entire alternatives route for comparative study and analysis, suggest any other alternative if necessary and to outline scope of environmental assessment and management planning after screening.

B. Process

- The AEGCL/APDCL would mark the BEE line and at least 3 alternatives on a topographic sheet, satellite imagery or any higher level map of 1:50,000 scale. The map should show the environmental and social sensitivities (e.g. settlements, forests, vegetated areas, terrain, water bodies and water courses, administrative boundaries etc.);

- AEGCL/APDCL will identify the environmental and social sensitivities along the BEE line based on secondary information (topographic sheet, forest atlas, satellite imagery and census record). Field Units would carry out spot verification or walk-over survey to confirm the environmental and social sensitivities identified during the desktop review. They would also identify alternatives to circumvent the environmental and social issues. Environmental and social details are also noted. (Refer **Annexure - 15** for alternative analysis format to gather relevant environment and social information for transmission lines and substations).

- During walkover survey/ spot verification views, consultations are held with the village council to obtain their consent and also the landowners for routing the line along the village. Views of public and any other related information (like public views and necessary inputs about surroundings/ villages/crops etc.) are noted for screening/scoping. After comparison and analysis of all E & S parameters so gathered for all alternatives and considering other significant economic benefit associated with the project/subproject, the most optimum route having minimum environment & social impact is selected for further investigation.

- Site office will consults with State forest departments if the line is passing through forest areas. Revenue authorities will be consulted for their views on revenue/other lands.

C. Output

- Environmental & social screening and scoping report as part of the Concept Paper detailing environmental and social issues, environmentally sensitive areas etc.

7.2.2 Approval

88 The Concept Paper is appraised by the internal management and forwarded to the State Government for approval.

7.3 Project Planning

89 At this stage detail study and survey of the route alignment is carried out and route alignment is finalised for transmission/distribution line. Also tentative locations of substation are identified and E&S screening is conducted. After screening and scoping exercise, specific management plan is prepared for the project. Following activities are conducted in this stage;

- Environment and Social Screening & Scoping for substation;
- Environmental Assessment and Management Planning (EAMP/IEAR);
- Social Assessment for TL (CPTD).

7.3.1 Environment and Social Screening for substation

A. Objectives

- Objective of this process is to identify environmental and social sensitivities associated with the project and to outline scope for land acquisition.

B. Process

- AEGCL/APDCL will identify tentative locations of the substation village/revenue map and collect information from secondary source as per checklist (**Annexure- 16**).

- Field office would carry out spot verification to confirm the environmental and social sensitivities identified during the desktop review. Based on the findings, detail analysis of each alternative consultation would also be initiated. In case of Autonomous District Council (ADC) areas consultation would be carried out with the council to obtain their approval. Efforts are also made to identify the owner of the land from the Revenue Department/Village Council (VC). Based on the findings, detail analysis of each alternative including no of PAP's, CPR religious and social utilities etc the analysis would be carried out.

- Field office will consult revenue authorities for their views on selected sites and shortlist the optimum site.

C. Output

- E&S screening and scoping document would detail the E & S issues etc. and views of revenue dept. & feasibility of land acquisition.

7.3.2 Environmental Assessment and Management Planning

A. Objectives

- The objective of the stage is to prepare IEAR along with the EAMP.

B. Process

- While finalizing the route alignment during detailed survey, the involvement of forest area is ascertained. If protected areas (Wildlife Sanctuaries, National Parks, Biosphere Reserves, etc.) or any notified/recognized migratory path/fly path is encountered in spite of utmost care/optimization, a separate biodiversity assessment study through an independent expert/agency shall be carried out as part of the Environment Assessment (EA) process. The Terms of Reference of the biodiversity assessment study is provided in **Annexure - 19**. In case of forest involvement, forest proposal is prepared for transmission/distribution line with the help of Forest Department which includes details of species and girth wise classification of trees to be felled, cost benefit analysis, identified degraded forest land, details of Compensatory Afforestation (CA) enumerated on a map and preparation of CA scheme. Various digitalized map of diverted and CA area, NOC/certificate from DC under FRA, 2006 etc. are submitted along with the forest proposal. In case of forest controlled by ADC AEGCL/APDCL shall obtain NOC from the Council before the formal process of forest clearance can be initiated.

- AEGCL/APDCL would prepare IEAR detailing significant E&S issues identified during screening and scoping and would formulate a project specific Environment Management Plan (EMP) (**Annexure - 20** for contents of IEAR).

- Public Consultations are carried out for the final route alignment/site to ascertain views/suggestion of, affected person and other stakeholders.

C. Output

- The IEAR details out potential E&S issues and associated with the specific transmission /distribution line. The management measures to overcome these are specified in the EAMP and Biodiversity Assessment Report (if applicable).

7.3.3 Social Assessment for Temporary Damages for TL (CPTD)

A. Objectives

- To prepare Compensation Plan for Temporary Damages (CPTD)

B. Process

- On identification of route for laying transmission line, AEGCL will access all likely damage to the land due to foundation, erection and stringing works.

- AEGCL will prepare management plan to minimize damage and compensation plan for temporary damages in consultation with revenue dept. and affected persons. The compensation plan will be periodically updated during check survey and finalization of tower location (refer **Annexure – 3 (B) &21** for contents of CPTD).

C. Output

- CPTD shall present assessment of temporary damages and associated management measures including compensation plan.

7.4 Project Approval

90 Environment and social management steps are initiated during approvals stage of project cycle. The Detail Project Report including the EAMP after recommendation of internal management is forwarded to State Govt. and funding agency (if applicable) for concurrence and budget allocation/funding. Procedure of forest clearance (If needed) is initiated by submitting forest proposal

to concerned authority. If land acquisition is involved, request/indent for the same is to be placed to State Government as per RFCTLARRA, 2013. During this stage, following activities are undertaken:

7.4.1 Forest Clearance

A. Objectives

- To obtain forest clearance from MoEF

B. Process

- AEGCL/APDCL submits a forest proposal request through online on MoEF forest clearance web portal (http://forestsclearance.nic.in)[12]. On receiving the request Nodal Officer (NO) after scrutiny forward the same to concerned Divisional Forest Officer (DFO) for assessment of the land proposed to be diverted for the transmission/distribution line and for formulation of proposal. In case of forest in the Six Schedule areas forest proposal is processed only after the NoC is obtained from the village/district council for lines passing through forest areas owned by them.

- After formulation, DFO recommend the proposal to CF (Conservator of Forests) and again send to CCF to NO and PCCF (Principal Chief Conservator of Forests) who will forward it to State Secretary of Forests and finally to MoEF.

- Forest clearance is issued in two stages Stage-I & Stage-II. Stage-I approval is conditional on AEGCL/APDCL on depositing the cost of compensatory afforestation and Net Present Value to forest Dept. and fulfilling any other stipulated conditions. Work in forest area can be undertaken after realizing the fund by MoEF deposited towards CA & NPV by AEGCL/APDCL. State Govt. informs MoEF about compliance of conditions and MoEF grant final approval.

C. Output

- Forest clearance from MoEF

7.4.2 State Government Approval

A. Objectives

- To obtain approvals from GoA for DPR for budget allocation/fund

[12] *For details refer* ***Annexure – 9a***

B. Process

- AEGCL/APDCL submits DPR including the environment and social component of the project to State Govt. through its State Planning Dept.

C. Output

- Approval of State Government for the project

7.4.3 Social Impact Management Plan (SIMP) for substation

A. Objective

- To prepare SIMP by State Government

B. Process

- On confirmation of the scheme the AEGCL/APDCL would submit a proposal for land acquisition detailing the extent of land and the affected area to be notified and acquired for the project by the State government. In accordance with the RFCTLARRA, 2013 the responsibility of preparation of the SIMP rests with GoA. The preparation of the SIMP including the SIA, RAP and the Public Disclosure would be carried out by the Rehabilitation and Resettlement Commissioner of the State Government. Procedures expected to be adopted by GoA is described below.

1. Establishment of Institutions

As per RFCTLARRA, 2013 the following bodies are to be established permanently in the state (to cater to all projects proposed in future):

- The State Social Impact Assessment Unit
- The office of the Commissioner Rehabilitation & Resettlement
- The State Level Monitoring Committee

For a particular project, the following bodies will be established:

- The Expert Group to appraise the SIA
- The office of the Administrator Rehabilitation & Resettlement
- Project Level Committees

2. *Social Impact Assessments*[13]

- State SIA Unit, after the receipt of a request from Government of Assam, will prepare a detailed project specific Terms of Reference (ToR) for each proposed case of land acquisition,
- Based on the nature and extent of the work involved, costs involved are decided and require depositing the same with the Unit.
- SIA Unit deploys an external professional agency (or individuals) for the conduction of SIA.
- The first step in the SIA will involve building up a detailed understanding of the proposed project and reviewing its stated public purpose. The project should be screened to ensure that it meets the cause of "public purpose".
- The SIA shall conduct a detailed land assessment, list out accurately the number of PAPs, socio-economic as well as cultural profile of the PAPs as well as that of their environ, and asses the nature and extent of impacts likely to occur as a result of the project intervention.
- Impacts are to be identified at different phases of the project cycle- planning, construction and O&M. Same time efforts are to be made on assessing: (i) direct/ indirect impacts; and (ii) differential impacts – on women, children, elderly and disabled. The latter can be done through gender impact assessments and/ or vulnerability and resilience mapping.
- Following the above assessment, a SIMP is prepared encompassing a comprehensive compensation as well as R&R entitlements in respect of each PAP.
- Formal public hearing/s will be held in the affected areas with the specific purpose of presenting the main findings of the SIA, seeking feedback on its contents, and making sure that any omissions or additional information and views are incorporated into the final documents. These hearings will be held in all the GPs and/ or Village Council whose lands are proposed to be acquired.
- Explicit consent will be required in the case of lands in respect of tribal areas from ADC and the Village Councils.
- Every Social Impact Assessment (SIA) conducted will be formally appraised by an Expert Group, which will then make a written recommendation to the Government on whether or not the proposed land acquisition should proceed. Final decision to accept or not, and go ahead or not, rests with Government of Assam.

[13] The responsibility to carry out SIA and preparation of R & R Plan , its disclosure, approval etc. is in the domain of State Government and not under Utility (AEGCL/APDCL)

3. Disclosure

The final SIA Report and SIMP will be published in the local language and made available:

- The Panchayat, Municipality or Municipal Corporation and the offices of the District Collector, Sub-Divisional Magistrate and the Tehsil;
- Published in the affected areas; and
- Uploaded on the websites of the government.

4. Compensation and Rehabilitation and Resettlement (R&R)

- Based on the SIMP, the Collector shall discuss the Package in a meeting with the Rehabilitation and Resettlement committee at project level, and submit the Package to Commissioner Rehabilitation and Resettlement along with his/ her remarks.
- The Commissioner Rehabilitation and Resettlement shall, after due vetting, accords approval to the scheme and make it available in public domain.
- After approval of R & R plan by Commissioner R & R, the Collector shall issue two awards one for land compensation based on procedures described in act & State's rules and second for R & R as per approved SIMP.

5. ***Special Provisions for SCs/STs***

As far as possible, no acquisition of land shall be made in the Scheduled Areas and where such acquisition take place it shall be done only as a demonstrable last resort. In addition to the R&R package, SC/ST families will be entitled to the following additional benefits;

- One time financial assistance of Rs. 50,000 per family;
- Families settled outside the district shall be entitled to an additional 25% R&R benefits;
- Payment of one third of the compensation amount at very outset;
- Preference in relocation and resettlement in area in same compact block;
- Free land for community and social gatherings;
- In case of displacement, a *Development Plan is to be prepared*
- Continuation of reservation and other benefits of Schedule V and Schedule VI area from displaced area to resettlement area

C. Output

- Social Impact Management Plan (SIMP) including SIA, RAP and Public Disclosure by GoA.
- Tribal People Development Plan (TPDP) (if applicable).

7.4.4 Funding Agency Concurrence/Acceptance (if applicable)

A. Objectives

- To obtain concurrence of funding agencies related to E & S components of the projects.

B. Process

- AEGCL/APDCL submits DPR and various reports on environment and social like IEAR, CPTD to funding agencies for appraisal and concurrence.

C. Output

- Acceptance/concurrence of funding agencies

7.5 Detailed Design & Tendering

91 During this stage, following environment & social management activities are undertaken;

- AEGCL/APDCL shall either implement IEAR/CPTD in-house or engage outside agencies that are capable of executing such task;
- Project specific EMP to be made part of contract/bidding document for implementation by contractors/subcontractors.

7.5.1 Project Implementation

92 During this phase various environment and social management plan prepared for the project are implemented and monitored. This includes

- Execution of EMP & EAMP
- Execution of CPTD

7.5.2 Execution of EMP & EAMP

A. Objectives

- To undertake environmental management works

B. Process

- EAMP (IEAR) is implemented taking into account appropriate working clearance & ROW (by cutting/ felling/pruning trees etc. and other measures identified in clearance). Forest dept. undertakes CA Scheme.

- Other mitigation measures enlisted in EMP are executed by AEGCL/APDCL and Contractor.
- AEGCL/APDCL shall initiate the process (for WB funded projects) and prepare a Final Environmental Assessment Report (FEAR) (refer **Annexure - 22** for contents of FEAR.)

C. Output

- Tangible proof execution of EMP/EAMP and preparation of FEAR containing compliance of mitigation measures as listed in IEAR, EMP implementation and details of forest clearance etc.

7.5.3 Execution of CPTD

A. Objectives

- To carryout social management works as prescribed in CPTD

B. Process

- AEGCL will pay the compensation in consultation with revenue authority and affected persons and execute any other measures as agreed and documented in the CPTD for transmission line.

C. Output

- Tangible proof of execution of social management measures and RoW free of encumbrance.

7.5.4 Execution of SIMP

A. Objectives

- SIMP to be executed by GoA as per RFCTLARRA, 2013

B. Process

93 The execution of the SIMP is the responsibility of the GoA. However, the following process is to be facilitated by AEGCL/APDCL:

- AEGCL/APDCL deposits cost for land and R & R measures as per award issued under RFCTLARRA, 2013 to concerned authority/State Government;
- Transfer of compensation and monetary R & R benefits to affected persons account by GoA;

- Possession of land by AEGCL/APDCL.

C. Output

- Possession of land

7.6 Operation and Maintenance (O&M)

94 The environment & social works undertaken in earlier phase of project cycle are monitored in this period. Besides this AEGCL/APDCL being a member of State R&R committee shall monitor implementation Social Impact Assessment Management Plan for acquisition of land (if involved) by GoA as per the provisions of RFCTLARRA, 2013 (Salient features are outlined in **Annexure - 4**). However, AEGCL/APDCL may also take part on implementation and monitoring, if called for as they are responsible for implementation of project.

7.6.1 Environmental Monitoring

A. Objectives

- To monitor work undertaken as part of EAMP

B. Process

- Regular patrolling of RoW and CA;
- Monitoring of substation on daily basis;
- Others mitigation measures outlined in EMP are monitored and supervised as per the plan;
- Periodic monitoring report would be prepared not only on the observation of the EAMP Implementation but also will include the corrective actions which have been proposed and the action plan for the implementation of such actions.

C. Output

- Periodic monitoring reports containing updates of execution of EAMP execution.

7.6.2 Social Monitoring

A. Objectives

- To monitor work undertaken as part of CPTD & SIMP

B. Process

- CPTD implementation during maintenance works monitored;

- If land acquisition is involved, AEGCL/APDCL (as member of State R & R committee) monitored SIMP implemented by GoA as per the provisions of RFCTLARRA 2013.

C. Output

- Periodic monitoring reports containing updates of execution of CPTD and SIMP execution.

7.7 Review

- Circle office of AEGCL/APDCL at Corporate office shall monitor and review of E&S activities of the Transmission and Distribution project on monthly basis along with field office.
- The implementation/performance of environmental and social management measures along with other project works shall be reviewed by AEGCL/APDCL management initially every quarter for a period of at least 1 (one) year as this ESPPF will be inducted in its corporate functioning first time in implementation of AEGCL/APDCL's Transmission/ Distribution Project.
- AEGCL/APDCL Management shall undertake annual review of ESPPF implementation to obtain feedback on problems/limitations/stakeholders expectations for deliberations and incorporating changes/improvement in the document for its smooth implementation.

95 A summary of the processes AEGCL/APDCL will follow for environmental and social management are summarized in **Table 7.1** below.

TABLE 7.1: ENVIRONMENTAL AND SOCIAL ASSESSMENT & MANAGEMENT PROCESS OF A TYPICAL T & D PROJECT

Milestones	Objectives	Process	Responsibility	Product/Decision
I. Project Conceptualisation				
1. Environmental and Social Screening & Scoping for Transmission /Distribution Lines	▪ To identify environmentally and socially sensitive areas, issues and possible management measures ▪ To suggest alternate transmission line routes, if necessary ▪ To outline the scope of Environmental Assessment (EA) and Social Assessment (SA) studies	▪ Screen and scope Transmission Lines from an environmental and social perspective ➢ Desk Review ➢ Spot Verification ➢ Informal Public Consultation ➢ Consultation with Forest Dept.& Revenue Authorities	▪ ESMC, PMU ▪ Engg. Dept.	▪ Environmental & Social screening and scoping documents as part of Concept Paper.
2. Environmental & Social approval	▪ To obtain environmental & social approvals from the AEGCL/APDCL management and In-principle approval by State Govt.	▪ Submit 'Concept Paper' (with E&S screening & scoping details) to AEGCL/APDCL Management	▪ Engg. Dept ▪ Field office ▪	▪ AEGCL/APDCL Management Appraisal.
		▪ Submit 'Concept Paper' (with E &S screening and scoping details) for In-principle approval by State Govt	▪ Engg. Dept ▪ Field Office	▪ In-Principle approval by State Govt.
II. Project Planning				
▪ Environmental and Social Screening and Scoping for substations	▪ To identify substation lands avoiding/ minimising environmentally and socially sensitive areas, ▪ Selection of proper site which has minimal impact ▪ To suggest alternate substation sites , if necessary ▪ To outline scope of land acquisition	▪ Screen and scope substation sites from an environmental and social perspective ➢ Desk Review ➢ Spot Verification ➢ Consultation with Revenue Authorities ➢ Informal Public view	▪ Engg. Dept. ▪ Field office	▪ Environmental & social screening and scoping documents for substations
▪ Environmental Assessment & Management Planning	▪ To prepare IEAR for the project/sub-projects.	a. Forest Areas ➢ Tree Enumeration ➢ Cost-benefit Analysis ➢ Compensatory Afforestation	▪ Circle office ▪ Field Office ▪ Auth. Agencies	▪ IEAR ➢ Environmental review ➢ Forest Proposal

Milestones	Objectives	Process	Responsibility	Product/Decision
		b. Other Areas ➢ Undertake environmental review and formulate appropriate management measures c. Public Consultation ➢ To inform/record public views for refinement / review if needed		➢ Environmental Management Measures ➢ Views of Public
▪ Social Assessment for Temporary Damages for TL	▪ To prepare Compensation Plan for Temporary Damages(CPTD)	▪ Undertake assessment of land area likely to be affected by putting up tower and line and extent of damages during foundation, erection & stringing works. ▪ Formulate appropriate management plan to minimize impact and prepare compensation plan	▪ Circle office ▪ Field office ▪ Authorised Agencies	▪ CPTD ➢ Social review ➢ Management measures ➢ Compensation plan
III. Project Approvals				
1. State Govt.	▪ To obtain project approval from GoA	▪ Submit DPR (with EAMP and Social Screening and Scoping details) to Planning Dept./GoA for their review	▪ Field Office ▪ PMU,ESMC ▪ Engg. Dept.	▪ Project approved by State Govt.
2. Financial Agency's Acceptance	▪ To obtain acceptance from FA for environmental & social components of Concept Paper or IEAR & CPTD	▪ Submit DPR along with IEAR and CPTD to Financial Agency for acceptance	▪ Field Office ▪ PMU,ESMC ▪ Engg. Dept.	▪ Acceptance/concurrence by FA
3. Forest Clearance	▪ To obtain Forest Clearance	▪ Submit forest proposal to concerned authority. ▪ Forest Proposal to MoEF for	▪ Field Office ▪ PMU,ESMC ▪ Engg. Dept.	▪ Final Forest Clearance by MoEF

Milestones	Objectives	Process	Responsibility	Product/Decision
		conditional approval after recommendation by GoM ▪ Forward Compliance report by GoM to MoEF for Final Forest Clearance	▪	
IV. Detailed Design & Award				
1. Environment Assessment and Social Management Measures	▪ To appoint a suitable agency to implement IEAR/CPTD , if required	▪ Select and appoint suitable agency for IEAR/CPTD implementation, if required	▪ Field office ▪ PMU,ESMC	▪ Agency appointed for IEAR/CPTD
	▪ To include EMP part of bidding/contract document for implementation by contractor	▪ EMP included in bidding /contract document	▪ Field Office ▪ PMU,ESMC	▪ EMP part of contract document
V. Project Implementation				
1. Execution of Environmental Management Works	▪ To undertake environmental management work as prescribed in environmental assessment management plan	▪ Execute environmental management works ➢ Appropriate clearance for transmission line ROW, etc. ➢ Compensatory Afforestation ➢ EMP by contractor	▪ Authorised Agency ▪ Field office	▪ Environmental management measures executed
	▪ Preparation of Final Environment Assessment Report(FEAR), If required (for WB funded project)	▪ Compliance to mitigation measures listed in ➢ IEAR ➢ EMP ➢ Forest clearance	▪ Field office ▪ Contractors	▪ FEAR for FA
2. Execution of CPTD for TL & SIMP for Substation	▪ To undertake social management work as prescribed in CPTD	▪ Transmission lines ➢ Pay compensation in consultation with Revenue Authority and affected persons as agreed & documented in	▪ PMU,ESMC ▪ External Agency ▪ Field Office	▪ Social management measures executed

Milestones	Objectives	Process	Responsibility	Product/Decision
		CPTD and execute other measures ▪ Substations ➢ Deposit cost for land and R & R measures as per award ➢ Transfer of compensation money to affected persons a/c ➢ Possession of land	▪ AEGCL/APDCL	▪ Possession of land
VI. Operation & Maintenance				
1. Environmental & Social Monitoring	▪ To monitor work being undertaken as part of EAMP, CPTD & SIMP	▪ Monitor EAMP measures ➢ Maintenance of ROWs ➢ Progress on compensatory afforestation ➢ Compliance to EMP as per schedule	▪ Field office	▪ Periodic monitoring reports
		▪ Monitor CPTD measures ➢ Appropriate compensation and other measures during maintenance of towers and lines ▪ Monitor SIMP measures undertaken by State Government as per RFCTLARRA, 2013(If land acquisition involved)	▪ Field office ▪ Field office	
VII. Project Review				
1. Annual Environmental & Social Review	▪ To review annually the EAMP and the CPTD of its projects	▪ Review and report on environmental and social performance of project during construction operation and maintenance	▪ Field Office ▪ Corporate office	▪ Annual environmental and social review report

7.8 Risk Management Framework

96 Environmental and Social Risk Assessment is a vital part of AEGCL/APDCL's environmental and social management strategies. The risk assessment process identifies existing risks, and forecast future potential risks in its power transmission/distribution projects. It is a scientific process that includes Cost Benefit Analysis. The environment and social management procedures developed by AEGCL/APDCL evaluate these risks, both qualitatively and quantitatively, and prioritize them. Based on prioritization, environment and social management options are selected.

97 AEGCL/APDCL's risk assessment process involves several, successive, interactive stages, which have been included in the environmental and social assessment and management procedures and are listed below;

- Risk Identification;
- Risk Assessment;
- Risk Characterisation;
- Risk Management;
- Risk Mitigation;
- Risk Preparedness.

98 AEGCL/APDCL, based on its environmental and social risk assessment process, decides on management options to eliminate or minimizes environmental and social impacts. The risk management process includes risk preparedness, risk mitigation and the sharing of liabilities (via Internal Arrangements and Insurance). Responsibilities in the event of occurrence of a risk have been illustrated **Table 7. 2.**

Internal Arrangement

99 To absorb the risk in the event of its occurrence AEGCL/APDCL will strengthen internal capacities. This would include creating funds or supplementing present funds to prepare for contingencies such as major ecological disasters adverse or health impact resulting in environmental human disease.

Insurance

100 To share risk, AEGCL/APDCL will maintain insurance schemes and supplement them to give it fuller coverage as regards environmental and social risks. The only legislation relevant to environmental insurance is the Public Liability Insurance Act, 1991. This Act makes it mandatory for any owner dealing with and handling hazardous substance to take out an insurance policy. In case of an industrial accident, payment to the victims will be made from the relief funds and insurance cover.

TABLE 7.2: AEGCL/APDCL' RISK RESPONSIBILITY FRAMEWORK

Risk	Key Role-players			
	GOA	*AEGCL/APDCL*	*Contractor*	*Insurers*
Non Compliance ➢ Regulatory[14] ➢ Contractual[15]	 ✓ -	 ✓ -	 ✓ ✓	 - -
Major hazards, e.g. tower fall during construction	-	✓	✓	✓
During O&M	-	✓	-	-
Impacts on health[16] etc.	-	✓	-	-
Force Majeure ➢ Insurable ➢ Non-Insurable	 - ✓	 - ✓	 - -	 ✓ -
Inclusion/ Exclusion of concerned Communities	✓	✓		
Public interest mitigation	✓	✓	-	-

[14] *Regulatory like working in forest/protected areas without statutory clearances.*

[15] *Contractual like noncompliance of condition of clearance like fuel supply to labourer to avoid tree felling, no-work during night times, etc.*

[16] *Impact of health like any case of prolonged exposure to Electro-Magnetic Field (EMF).*

8.0 Implementation Arrangements

101 Ministry of Power (MoP), GoI has appointed POWERGRID as Design cum Implementation Supervision Consultant (i.e. Project Management Consultant-PMC) now changed to Implementing Agency (IA). However, the ownership of the assets shall be with respective State Govt's /State Utilities, which upon progressive commissioning shall be handed over to them for taking care of Operation and Maintenance of assets.

101 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;

8.1 Administrative Arrangement for Project Implementation

- **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 AEGCL/APDCL.
- **Project Implementation Unit (PIU)** – A body formed by the IA, including members of AEGCL/APDCL 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.

8.2 Review of Project Implementation Progress:

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

- **Joint Co-ordination Committee (JCC):** IA and SPCU nominate their representatives in a body called JCC to review the project. PMC 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 PMC 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.

- **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.
- **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 PMC 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.

103 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 PMC and shared with all concerned

8.3 Implementation Arrangement for Environment & Social Management by AEGCL/APDCL

104 ESPPF implementation requires a robust and efficient institutional framework based on organizational requirements, training needs and information management system. This section captures these institutional arrangements for ESPPF implementation by its employees who collectively have experience of laying and maintaining substations, transmission and distribution lines. Moreover, services of leading environment/social institutes/individual experts specializing in the relevant discipline may be utilized in the initial stage, if needed. Independent specialist may also be engaged to deal with complex and technical issues like wildlife management. POWERGRID who has also been chosen as Project cum Design Consultant and now redesignated as Implementing Agency has vast experience of implementation of thousands of kilometers transmission lines in the country and abroad. POWERGRID is also leader in development and subsequent implementation of

ESPPF in the country. The service of POWERGRID's trained and experience personnel shall be utilised for training and establishment of institutional framework of AEGCL/APDCL. Moreover, successful implementation of provision of ESPPF requires involvement and support of higher officials of AEGCL/APDCL who shall regularly monitor/review E&S aspects of transmission and distribution project.

8.3.1 Organisational Requirements

105 To ensure quality and strengthen organizational systems to enable effective implementation of the ESPPF, AEGCL/APDCL shall have to set out procedures and work culture which will promote total involvement of all its personnel. To attain assigned goal following shall be ensured:

a) A synchronized system of functioning adopted by Corporate Planning and Corporate Monitoring group, which monitors all activities in the organization;

b) An emphasis on intradepartmental approach to all projects, delineation of departmental responsibilities and the delegation and decentralization of authority resulting in a fast response and quick adjustment to change;

c) A commitment to provide at all times the best possible time bound quality service in all areas of its operations.

106 AEGCL/APDCL's commitment to the ESPPF shall have to be developed with these principles. To ensure effective implementation of its ESPPF, AEGCL/APDCL's will focus on;

- Strengthening the implementation of the ESPPF by deployment of appropriately trained personnel at key levels;
- Reinforcing in-house capabilities by working with specialized external agencies;
- Placing dedicated manpower with specialization in the respective field to deal with and manage the environment and social issues;
- Reviewing progress of the ESPPF internally or through external agencies.

107 Corporate office will have overall responsibility for construction, operation, and maintenance of transmission/distribution systems apart from providing necessary support services (refer **Figure 8.1).**

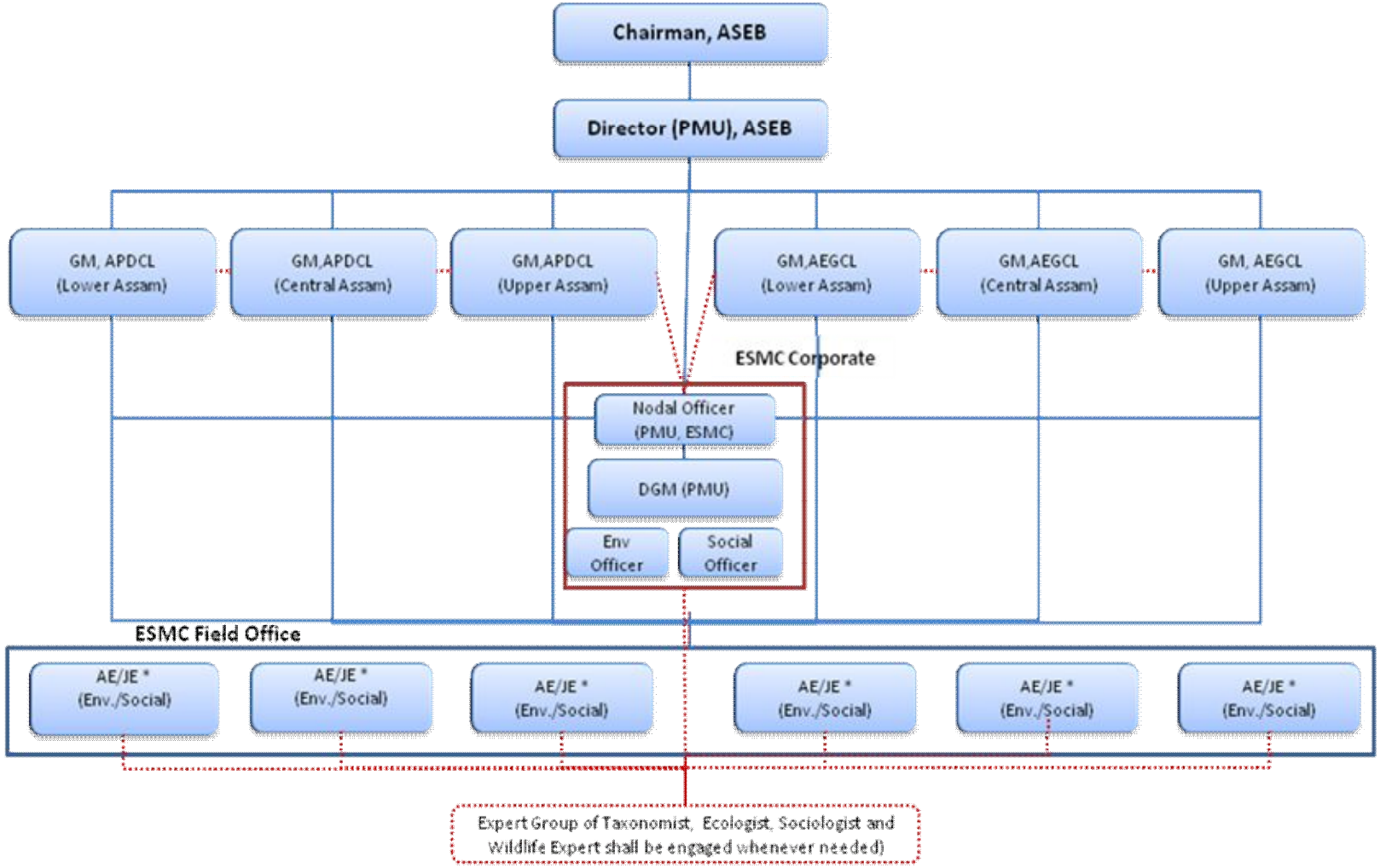
8.3.2 Organisational Structure and Responsibilities

108 An appropriate organizational structure has been developed at the corporate, ESMC and field level to help effective implementation of the ESPPF document. The organizational flowchart of

AEGCL/APDCL for the ESPPF is given in **Figure 8.1**. The key responsibilities of ESMC will include:

- Coordinating environmental and social commitments and initiatives with various multilateral agencies, GoA and MoEF.
- Coordination of all environmental activities related to a project from conceptualization to operation and maintenance stage.
- Advising and coordinating /Site office to carry out environmental and social surveys and route alignment for new projects.
- Advising site offices to follow-up with the state forest offices and other state departments for expediting forest clearances and other E&S issues of various projects.
- Providing a focal point for interaction with the MoEF for expediting forest clearances
- Training of Circle and Site officials on E&S issues arising out of Transmission/ Distribution projects and their management plan.
- Training of other departments to familiarize them with the ESPPF document.

FIGURE 8.1: AEGCL/APDCL'S ORGANIZATION CHART WITH ARRANGEMENT FOR ESPPF IMPLEMENTATION



* Through redeployment of personnel after due training with dual responsibility in the initial stage

TABLE 8.1: RESPONSIBILITY ALLOCATION FRAMEWORK FOR THE E&S ASSESSMENT & MANAGEMENT PROCESS

Milestones	Process	Output / Indicators	Responsibility			
			Internal			External
			Preparation /Execution	Review	Approval	Preparation
I. Project Conceptualisation						
Environmental & Social Screening and Scoping for Transmission/ Distribution Lines	Screen and scope Transmission/ Distribution Lines from an environmental & social perspective	E & S screening and scoping documents as part of Concept Paper	Circle (Site) office	Engg. Dept. ESMC	AEGCL/APDCL Management Appraisal	Pre-appraisal by Planning Deptt., GoA
Environmental & Social approval	Submit Concept paper (with E&S details) for Management Approval	AEGCL/APDCL Mgmnt. Appraisal	ESMC Corp.Plg.	ESMC Engg. Dept. Corp. Plg.	AEGCL/APDCL Management Appraisal	In-principle approval by GoA
II. Project Planning						
Environmental & Social Screening and Scoping for substations	Screen and scope substations sites from an environmental & social perspective Consultation with Revenue Authorities	E & S Screening and Scoping reports for substation sites Scope for land acquisition	Circle office ESMC	ESMC Engg. Dept. Corp. Plg.	AEGCL/APDCL Management Approval	Ext. agency like revenue, forest dept etc. for Social Screening & Scoping
Environmental Assessment and Management Planning	To prepare EAMP ▪ Trans./Distribution line ▪ Substations ▪ Public Consultation (line)	Environmental/ Assessment Management Plan	ESMC Circle office	ESMC	AEGCL/APDCL Management Approval	State Forest Dept
Social Assessment for Temporary Damages for TL	To prepare CPTD ▪ Assessment of temporary damages ▪ Compensation plan	Compensation Plan for Temporary Damages (CPTD)	ESMC Circle office	ESMC	AEGCL/APDCL Management Approval	Revenue Dept

Milestones	Process	Output / Indicators	Responsibility			
			Internal			External
			Preparation /Execution	Review	Approval	Preparation
	▪ Public consultation					
III. Project Approvals						
Forest Clearance	▪ Submit forest proposal to State Govt ▪ Forest Proposal to MoEF for 1st stage approval ▪ Compliance to MoEF for Final Forest Clearance	Final Forest Clearance by MOEF	ESMC Circle office	ESMC Finance Deptt.	AEGCL/APDCL Management Approval	RMoEF/MoEF
State Govt.	Submit DPR (with E & S details) to State Govt.	Project approval by State Govt.	Circle Office Corp. Plg.	ESMC Corp. Plg.	AEGCL/APDCL Management Approval	Budget/fund allocation
FA Acceptance	Submit IEAR and CPTD to Funding Agencies for appraisal	IEAR and CPTD concurrence by FA	ESMC Corp. Plg.	ESMC Corp. Plg. Dept.	Internal Management Approval	Detailed appraisal and concurrence
IV. Detailed Design & Award						
1. IEAR/CPTD Implementation	Engage authorised agencies for E & S management plan work	Authorised agencies engaged to execute management works	ESMC Circle office Engg. Dept.	Corp. Plg. ESMC /Circle office Engg. Dept.	Management Approval	Monitoring /Supervision
2.EMP part of bidding documents	Project specific EMP to be included in bidding document	EMP part of contract document	Circle office	ESMC	Management Approval	Monitoring /Supervision
V. Project Implementation						
Execution of Environmental	Execute environmental	Environmental management measures	Circle office	ESMC	Management	Environment management works

Milestones	Process	Output / Indicators	Responsibility			
			Internal			External
			Preparation /Execution	Review	Approval	Preparation
Management Works	management works(IEAR)	executed	Authorised agency	Circle office	Approval	executed
Execution of CPTD & SIMP	▪ Execute CPTD for TL ▪ SIMP for Substations (SIA/GoA)	CPTD (TL – by AEGCL) SIA/GoA (for substations)	Circle office SIA/GoA	ESMC Circle office Corp. Plg. SIA	Management Approval SIA/GoA	Social management works executed Possession of Land
VI. Operation & Maintenance						
Environmental & Social Monitoring	▪ Monitor EAMP & CPTD (TL) measures ▪ Monitor SIMP Measures by SIA/GoA	Periodic monitoring reports Periodic monitoring reports (SIA)	ESMC Circle Office Circle office SIA/GoA	ESMC Circle office O&M Circle office	Management Approval SIA/GoA	Periodic monitoring report Periodic monitoring reports
VII. Project Review						
Periodic Environmental & Social Review	Review and report on E & S performance of project during construction, O &M	Annual environmental and social review report	Circle office ESM/Circle office	Corp. Plg. Engg. Dept Fin. dept	Management Approval	FA appraisal GoA

9.0 Training & Capacity Building

109 Training and development of employees is an integral part for implementation of ESPPF. Training needs identification has been carried out at Corporate and Field level, based on which focused training modules have been developed for

- Strengthening in house corporate level capacity to implement the provision of ESPPF.
- Creating Awareness, providing the tools for implementation of Environmental and Social Policy, and accompanying set of management procedures to all departments
- Developing competence within key employees to provide training in their respective departments.

110 Based on the training needs identification ESMC and Field office are key organizational support groups identified, which need to have the required competence to integrate the ESPPF document within all departments. The skill requirement for these groups is depicted in **Table 9-1**. Based on skill requirement/improvement at all levels for proper implementation of ESPPF, a training programme focusing personnel from Corporate Office, ESMC and Field office is developed (**Table 9-2**) which will be implemented by the Human Resource Department. These training programs are to be conducted with the help of local and national training institutions and experts in various aspects of environmental and social management.

TABLE 9.1: AEGCL/APDCL'S SKILL REQUIREMENT

Milestones	Environment and Social Management Cell (ESMC) at Circle office	Engineering Department	Corporate Planning Department	Field office
Environmental & Social Screening and Scoping for Transmission Lines	ESPPF & Project Cycle Dom./Ext. FA Requirement EA & SA process Env. & Soc. issues identification & management technique Negotiation skills Mitigation techniques	E & S issues identification skills EA & SA process		EA & SA process Env. & Soc. issues identification & management technique Negotiation skills Mitigation techniques
Environmental & Social approval			EA & SA process ESPPF & project cycle FA requirement E&S mgmt. Techniques	
Environmental & Social Screening and Scoping for substation sites	Env. & Soc. issues identification skills EA & SA process	E & S issues identification skills EA & SA process		E & S issues identification skills EA & SA process
Environmental Assessment and Management Planning	EA process EM techniques Risk assessment Forest proposal process Comp. afforestation process	EA process EM techniques		EA process EM techniques Risk assessment Forest proposal process Comp. afforestation process
Forest Clearance	Forest proposal process Compensatory afforestation process	Forest clearance process		Forest proposal process Compensatory afforestation process

Milestones	Environment and Social Management Cell (ESMC) at Circle office	Engineering Department	Corporate Planning Department	Field office
GoA Approvals	FA requirements Awareness of Central/State laws, policies on environment and social aspects		Central and Ext. FA requirements Awareness of Central/State laws, policies on environment and social aspects	
FA acceptance	FA requirements Awareness of Central/State laws, policies on environment and social aspects		Central & Ext. FA requirements Awareness of Central laws, policies on E&S aspects	
Social Assessment for Temporary Damages	SA process, Public consult skills SM process	SA process SM techniques		SA process, Public consult skills SM process
Concurrence of FA for CPTD /SIMP			GoI/GoA & Ext. FA requirements Awareness of GoI/GoA laws, policies on environment and social aspects	
Consultation for IEAR/CPTD works	Skill to assess Consultation capabilities to meet IEAR/ CPTD			
Execution of EAMP works	EM techniques Compensatory Afforestation process	EM process		EM techniques Comp. Afforestation process
Execution of CPTD	SM process SM techniques	SM process		SM process SM techniques
Monitoring	Monitoring Techniques			Monitoring techniques
Annual E & S Review	Review process			

TABLE 9.2: SKILL DEVELOPMENT PROGRAM

Course	Training Schedule	Duration Of Programme	For Awareness/ Orientation and for Training of Staff	Department
• ESPPF • Policy • Contents of ESPPF • How AEGCL/APDCL will implement the ESPPF	Workshop	1/2 day or 1 day	All Senior staff (Dir., ED, GM, AGM and Proposed ESPPF Team at Circle office	All
• ESPPF • Policy • Project cycle • E&S assessment and Management process	Workshop	2 days	Proposed ESPPF Team and relevant staff	ESMC Engg. Dept. Corp. Plg. Legal Dept. Fin. Dept.
• RFCTLARRA, 2013 • SIA • R & R Planning • Public consultation	Workshop	2 days	Interface with State Govt. Agencies like SIA, R & R Commissioner and External Expert	
• ESPPF • Project cycle • EA&SA process • Env. & Soc. issue identification • Public consultation • Risk Assessment & Management • EAMP & CPTD	Training Programme	3 days	Proposed ESPPF Team and relevant staff	ESMC/Circle office Site/Field Officials

10.0 Grievance Redressal Mechanism (GRM)

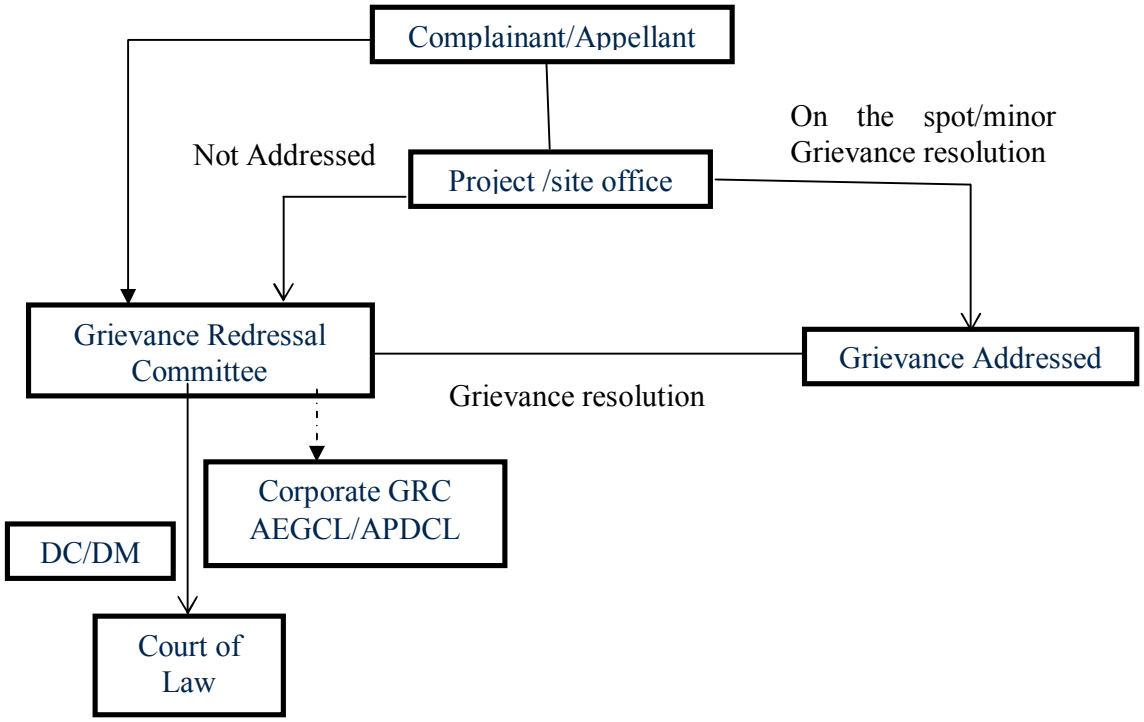
111 Grievance Redress Mechanism (GRM) is an integral and important mechanism for addressing/resolving the concern and grievances in a transparent and swift manner. Many minor concerns of peoples are addressed during public consultation process initiated at the beginning of the project and broadly outlined in Annexure-23. For handling grievance, AEGCL/APDCL has already a framework in place. To ensure its implementation, Grievance Redress Committee (GRC) will be established at two places, one at the project/scheme level and another at Corporate/HQ level. The GRCs shall include members from AEGCL/APDCL, Local Administration, Village 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 GRC is aimed to provide a trusted way to voice and resolve environment & social concerns of the project, and to address affected person/community concerns in a time bound manner without impacting project implementation. The composition of GRC shall be disclosed in Panchayat office and concerned district headquarter for wider coverage.

112 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. However, GRC meeting shall be convened within 15 days of receiving a grievance for its solution. GRC endeavor will be to pronounce its decision/ may also refer it to corporate GRC for solution within 30-45 days of receiving grievances. In case complainant/ appellant is not satisfied with the decision of GRC they can approach AEGCL/APDCL Corporate level Committee /District Collector or Court of law for solution.

113 The Field /Site Office shall keep records of all grievances received including: contact details of complainant, date that the complaint was received, nature of grievance, agreed corrective actions and the date these were effected, and final outcome.

114 The corporate level GRC shall function under the chairmanship of Director (PMU) who will nominate other members of GRC including one representative from corporate ESMC who is conversant with the environment & social issues. The composition of corporate GRC shall be communicated to all project head who is also the chairman of project level GRC. 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. The flow chart showing Grievance Redressal Mechanism is presented in **Figure 10.1**.

FIGURE 10.1: FLOW CHART SHOWING GRIEVANCE REDRESSAL MECHANISM



Complainant/Appellant can approach only the Court of Law directly during ongoing Grievance Redressal process.

115 The above referred GRCs are meant to act as supplement/ complement and in no way substitute the legal systems, especially embedded within RFCTLARR Act 2013, The Electricity Act, 2003, and Right to Information Act.

11.0 Monitoring & Evaluation

115 Vigorous and continuous monitoring of all its activities including environment and social aspects and its mitigation measures would be the key success of AEGCL/APDCL's project completion. Regular monitoring of activities will be carried out by different department at field and will be reviewed by the Nodal Officer (ESMC) on monthly basis. CMD will review ongoing activities on quarterly including environment and social issues and corrective measures if required are implemented at site.

116 For environmental and social components of a project, environmental and social monitoring plan is developed, based on baseline data and impacts predicted during the environmental and social assessment process. The concerned forest department staffs, as part of their duties monitor impacts on ecological resources through which the transmission line traverses. AEGCL/APDCL in coordination with forest/revenue officials will monitor timely implementation of various activities such as compensatory afforestation, ROW maintenance, prevention of fire hazards, natural regeneration of vegetation etc. The environmental and social monitoring plan for each project will be integrated with construction, operation and maintenance and shall be monitored by the ESMC on a monthly basis. The higher management shall apprise through on monthly/quarterly basis.

117 Since regular and effective monitoring of implementation of EAMP/CPTD for Transmission/Distribution Line and SIMP for substations are crucial for desired result, AEGCL/APDCL shall designate one Manager each for Environment and Social related aspects who will be made responsible for all the activities related to implementation/monitoring of the EAMP and CPTD. Further, for effective monitoring/implementation of mitigative measures, help of District Magistrate (DM) / Deputy Commissioner (DC) and other officials of local administration is solicited wherever required. Participation of PAPs in the monitoring of EAMP/CPTD/SIMP is also ensured through regular consultation and their active participation. Major monitoring indicator identified for effective monitoring is presented in **Table -11.1.**

TABLE 11.1: MONITORING INDICATORS

Sl. No.	Project Activity/ Stage	Monitoring Indicator	Frequency	Responsibility
1	Pre-Construction	Tower Location and Line alignment w.r.t. Distances from; • Set back from nearest dwellings or social institutions	Once - at time of detailed siting and alignment survey and design	AEGCL/APDCL

Sl. No.	Project Activity/ Stage	Monitoring Indicator	Frequency	Responsibility
		• Water bodies • Agricultural land • Ecological protected area • Reserved forests • Elephant corridors/Bird's Migratory Paths • Flood Zone		
		Exclusion of PCB in transformer	Once – As part of tender specification	AEGCL/APDCL
		Exclusion of CFC in electrical or other equipment	Once – As part of tender specification	AEGCL/APDCL
		EMF strength	Once – part of detailed alignment survey	AEGCL/APDCL
		Noise level from Substation	Once – built in design criteria and specified in tender	AEGCL/APDCL
		Sewage disposal system	Once – in tender specification	AEGCL/APDCL
		Oil spill containment provision & spill cleanup	Once – Built in product specification	AEGCL/APDCL
2.	Planning/Approval /Construction	Government Clearances	Once for each subproject	AEGCL/APDCL
		Fire prevention and fire protection equipment monitoring	Once – in tender specification	AEGCL/APDCL
		Crop/tree disturbance during construction	Periodically when required	AEGCL/APDCL
		Availability of land for Substation (New) ✓ Method of acquisition ✓ SIA start/ disclosure date ✓ Expert group recommendation ✓ No. of PAPs	Periodic monitoring as per provisions RFCTLARRA, 2013	GoA and AEGCL/APDCL

Sl. No.	Project Activity/ Stage	Monitoring Indicator	Frequency	Responsibility
		✓ Date of Award ➢ Compensation ➢ R & R ✓ Payment of Compensation ✓ Implementation of R&R plan (SIMP) Implementation of Tribal People Development Plan (if required)	Regular as per SMF (c) provisions	
		Compensation for temporary loss of, trees/ crops. Monitoring of CPTD ➢ Number of APs ➢ Date of issuance of Notice ➢ Determination of compensation ➢ Compensation Amount ➢ Compensation paid	Once a month/quarter – Based on consultation with PAP	AEGCL/APDCL
		Air borne dust emissions during construction	Every two weeks	AEGCL/APDCL assigned contractor
		Noise during construction	Once – during construction machinery specification or SOS	AEGCL/APDCL and assigned contractor
		Vegetation marking and clearance	Every two weeks – strictly limited to target vegetation	AEGCL/APDCL assigned contractor
		Trimming and cutting of trees in ROW	Once per site – Identification of presence of target species with height following vegetation clearance plan	AEGCL/APDCL assigned contractor
		Disposal of cleared vegetation	Once per site – as approved by statutory	AEGCL/APDCL assigned contractor

Sl. No.	Project Activity/ Stage	Monitoring Indicator	Frequency	Responsibility
			authorities	
		Health & safety of workers	Once in quarter	AEGCL/APDCL assigned contractor
		Disposal of excavated soil	Every 2 weeks	AEGCL/APDCL assigned contractor
		Disposal of excavated soil	Every 2 weeks	AEGCL/APDCL assigned contractor
3	Operation and Maintenance	Effectiveness of Training programs and plan	Once a year	AEGCL/APDCL
		Implementation of SIMP (other development works, infrastructure facilities etc.) within 15-18 months of possession of land.	Periodic monitoring as per provisions RFCTLARRA, 2013	GoA and AEGCL/APDCL(being a member of State R & R committee)
		Implementation of CPTD during maintenance work	Periodically when required	AEGCL/APDCL
		Compliance with transmission tower setback conditions	Once in quarter	AEGCL/APDCL
		Maintenance of ground clearance to comply with limits of EMF	Once	AEGCL/APDCL
		Noise levels at boundary nearest to substations	Once a year	AEGCL/APDCL

12.0 Budget

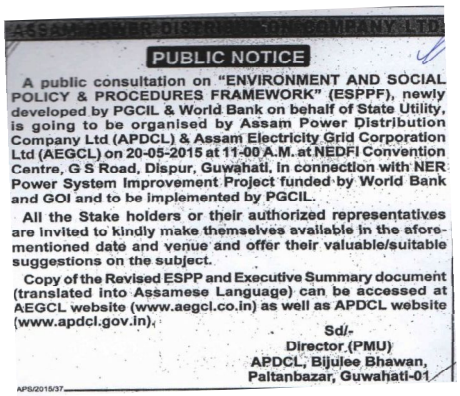
118 Adequate financial provision is required to meet the management measures to be undertaken to mitigate the impacts as underlined in ESPPF. Based on past experience of implementation of similar projects, AEGCL/APDCL estimates about 5-10 % overall project towards such measures for which necessary budget provisions shall be made during planning stage itself.

13.0 Stakeholders Consultation

119. Consultation is an integral part of development of any policy framework. Accordingly from the beginning this aspect is implemented in development of ESPPF. Apart from meeting with individuals, many consultations with other stockholders and utility were organized. Details of which are as follows;

Sl. No.	Date	Venue of Consultation	Participants	No. of Person of Attended
1.	9th & 10th Jan.'14	POWERGRID HVDC Office, Guwahati	Representatives from 6 State Utilities, POWERGRID & World Bank	26
2.	10th Jan.'14	Harisinga, Udalguri	Residents of Harisinga town	4
3.	26th Aug.'14	Silapathar, Dhemaji	Residents of Silapathar town	5
4	27th Aug.'14	Chabipool, Guwahati	Residents of Chabipool	3
5.	3rd Sept.'14	AEGCL Office, Guwahati	Representatives AEGCL, APDCL & POWERGRID	10
6.	5th Dec.'14	AEGCL Office, Guwahati	Representatives AEGCL APDCL, POWERGRID & World Bank	18
7.	24thMar.'15	Hotel Brahmaputra Ashok, Guwahati	Representatives from 6 State Utilities, POWERGRID & World Bank	40

The above consultations culminated to state level consultation held at Guwahati on 20th May 2015. In order to obtain valuable feedback and inputs from stakeholders, the Draft ESPPF along with translated copy of Executive Summary in local language(i.e. Assamese) was uploaded well in advance on the AEGCL/APDCL's website and hard copy of these documents were also made available in AEGCL/APDCL Office for reference purpose. The stakeholders and the general public were informed regarding the details of date, venue and timing of consultations in advance through public notice in both



PUBLIC NOTICE

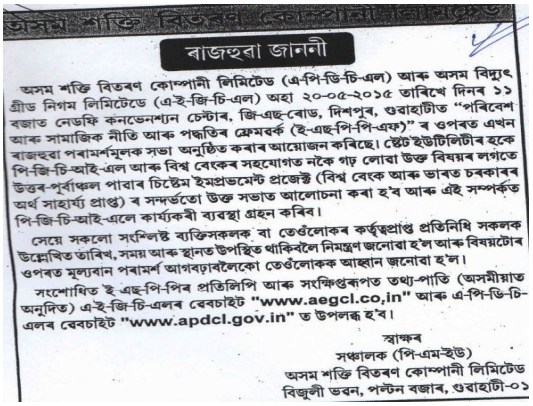
A public consultation on "ENVIRONMENT AND SOCIAL POLICY & PROCEDURES FRAMEWORK" (ESPPF), newly developed by PGCIL & World Bank on behalf of State Utility, is going to be organised by Assam Power Distribution Company Ltd (APDCL) & Assam Electricity Grid Corporation Ltd (AEGCL) on 20-05-2015 at 11-00 A.M. at NEDFI Convention Centre, G S Road, Dispur, Guwahati, in connection with NER Power System Improvement Project funded by World Bank and GOI and to be implemented by PGCIL.

All the Stake holders or their authorized representatives are invited to kindly make themselves available in the aforementioned date and venue and offer their valuable/suitable suggestions on the subject.

Copy of the Revised ESPP and Executive Summary document (translated into Assamese Language) can be accessed at AEGCL website (www.aegcl.co.in) as well as APDCL website (www.apdcl.gov.in).

Sd/-
Director (PMU)
APDCL, Bijulee Bhawan,
Paltanbazar, Guwahati-01

APS/2015/37



বাজহুৱা জাননী

অসম শক্তি বিতৰণ কোম্পানী লিমিটেড (এ-পি-ডি-চি-এল) আৰু অসম বিদ্যুৎ গ্ৰীড নিগম লিমিটেডে (এ-ই-জি-চি-এল) অহা ২০-০৫-২০১৫ তাৰিখে দিনৰ ১১ বজাত নেডফি কনভেনশ্যন চেণ্টাৰ, জি-এছ-ৰোড, দিশপুৰ, গুৱাহাটীত "পৰিবেশ আৰু সামাজিক নীতি আৰু পদ্ধতিৰ ফ্ৰেমৱৰ্ক (ই-এছ-পি-পি-এফ)" ৰ ওপৰত এখন বাজহুৱা পৰামৰ্শমূলক সভা অনুষ্ঠিত কৰাৰ আয়োজন কৰিছে। ষ্টেট ইউটিলিটীৰ হকে পি-জি-চি-আই-এল আৰু বিশ্ব বেংকৰ সহযোগত নকৈ গঢ় লোৱা উক্ত বিষয়ৰ লগতে উত্তৰ-পূৰ্বাঞ্চল পাবাৰ চিষ্টেম ইমপ্ৰভমেণ্ট প্ৰজেক্ট (বিশ্ব বেংক আৰু ভাৰত চৰকাৰৰ অৰ্থ সাহায্য প্ৰাপ্ত) ৰ সন্দৰ্ভতো উক্ত সভাত আলোচনা কৰা হ'ব আৰু এই সম্পৰ্কত পি-জি-চি-আই-এলে কাৰ্য্যকৰী ব্যবস্থা গ্ৰহন কৰিব।

সেয়ে সকলো সংশ্লিষ্ট ব্যক্তিসকলক বা তেওঁলোকৰ কৰ্তৃত্বপ্ৰাপ্ত প্ৰতিনিধি সকলক উল্লেখিত তাৰিখ, সময় আৰু স্থানত উপস্থিত থাকিবলৈ নিমন্ত্ৰণ জনোৱা হ'ল আৰু বিষয়টোৰ ওপৰত মূল্যবান পৰামৰ্শ আগবঢ়াবলৈকো তেওঁলোকক আহ্বান জনোৱা হ'ল।

সংশোধিত ই-এছ-পি-পিৰ প্ৰতিলিপি আৰু সংক্ষিপ্তকাপত তথ্য-পাতি (অসমীয়াত অনুদিত) এ-ই-জি-চি-এলৰ ৱেবচাইট "www.aegcl.co.in" আৰু এ-পি-ডি-চি-এলৰ ৱেবচাইট "www.apdcl.gov.in" ত উপলব্ধ হ'ব।

স্বাক্ষৰ
সঞ্চালক (পি-এম-ইউ)
অসম শক্তি বিতৰণ কোম্পানী লিমিটেড
বিজুলী ভবন, পল্টন বজাৰ, গুৱাহাটী-০১

English and Local language papers i.e. Assam Tribune & Ashomiya Khabar respectively on 7th May'15. Besides these, separate invitations were sent to selected government departments of the State, Academia/Institutions, prominent NGOs, media and Project Affected Persons.

The workshop was organized at NEDFI Convention Centre, Guwahati participated by 69 people from diversified fields including general public, PAPs, NGOs and representatives of Media (both print and electronic), Academia & Institutions, Govt. officials/ Local administrations State Pollution Control Board, Guwahati Metropolitan Development Authority etc. Representatives from the AEGCL, APDCL, POWERGRID & World Bank were also present and coordinated the activities of workshop and documentation. The Consultation programme was presided and coordinated by Sh. R L Barua, Managing Director (MD) of Assam Power Distribution Company Limited.

The workshop was started with welcome address by Mr. R L Barua, MD APDCL who coordinated the entire process of consultation. In his address, Mr. Barua highlighted the proposed project under NERPSIP and informed the audience that as part of this project Rs. 1473.80 crores would be invested to strengthen the power infrastructure in the State. He also stressed the importance of this project in fulfilling the Government of India's overall policy of making electricity available 24x7. He also informed that AEGCL & APDCL has already implemented similar project earlier with ADB funding to improve transmission infrastructure which has considerably improved the infrastructure in the state and this proposed project would help improve it further. He highlighted on the key principles of the ESPPF. He also informed the audience that the ESPPF prepared is still in the draft stage and that the inputs received from the stakeholders in this workshop would be used for the finalization of the ESPPF.

Mr. G K Das, MD AEGCL informed about the benefits of the project and said that this project would help improve the quality of power and facilitate uninterrupted power supply in the state. He stressed that AEGCL & APDCL recognizes the importance of protection of the environment and stressed on striking a balance between the protection of environment and sustainable development. He also pointed out that implementation of projects with proposed investments is expected to enhance

the capacity & reliability of the system, improve voltage profile & reduce losses and ultimately enhance satisfaction for all categories of consumers which in turn will spur growth & overall development in the whole State. He also informed the audience about the salient features of the project and need for development of ESPPF.

This was followed by technical session by Dr. R. K. Srivastava, Additional General Manager, Environment & Social Management, POWERGRID. He made a structured presentation explaining major features of ESPPF, potential environment and social issues/concerns associated with T & D Projects and how these can be mitigated through integration of suitable management measures into the project cycle. He also explained in details the various provisions of the environmental, health & safety safeguard measures suggested in the ESPPF and significance of these measures especially in the environmentally and socially sensitive areas which exist in the state. The provisions which have been incorporated in the document were explained to the audience in details. The institutional support for implementation of ESPPF, Grievance Redressal Mechanism (GRM) and the capacity building efforts which have been planned for proper implementation of the ESPPF were also highlighted during the presentation.

After completion of presentation, Chairperson invited participants for the feedback/suggestions. The discussion on feedback and suggestions has been summarized below;

Mr. Aswani Kumar Chowdhury, a PAP from Natun Nagar informed that transmission line construction quality is poor and as a result tower breaks and damages the houses of the people and the poor people has to suffer. He requested that it is essential to look into the construction related issues. Mr. A.K Shrivastava, General Manager, POWERGRID assured him that the quality of the construction is of paramount importance and the NERPSIP would consider these issues seriously and strict provisions shall be in place to monitor quality aspects.

Mr. S.K Kahati (AE) & Mr. P.K. Datta (AEE), Assam Pollution Control Board enquired about the handling of hazardous waste. He also informed that used transformer oil would be considered as a Hazardous Waste and annual returns have to be submitted for the hazardous waste. He also informed even for used batteries similar returns have to be submitted. It was informed by AEGCL/APDCL that the transformer oil is replaced only after 15 years and also the used transformer oil is recycled through the register recyclers. The representatives

of the pollution control board also elaborated on the provisions of the e-waste regulation. It was pointed out by PGCIL that as per the rules, there is no requirement of filling returns for e-waste and, as a bulk consumer only the inventory of the e-waste is required to be maintained by the Utility.

Mr. Sudipta Goswami, AGM, AEGCL enquired about the health and safety aspects of high voltage transmission lines and the activities that are restricted in such alignment. It was reaffirmed by the panel that agriculture and other activities are not restricted but planting of the tall trees are not allowed beneath the conductors for electrical safety.

The workshop concluded with a vote of thanks by Ms. Runima Rahman, DGM, APDCL. She thanked all the participants for their involvement, interaction and contribution throughout the workshop with a assurance that process of consultation/interaction with stakeholders will continue during different stages of project implementation.

Annexure-1

Comprehensive Details of Assam and its Environmental & Social Sensitivities

The environmental and social conditions in the state which can have any interaction with the project activities due to the construction operation and maintenance have been identified. These important aspects have been described in the sections below.

1.1 HISTORY

Assam state and adjoining regions have evidences of human settlements from all the periods of the Stone ages, but there are no archeological evidence of bronze- or iron-age culture. In the medivial ages Samudragupta's 4th century Pragya inscription mentions Kamarupa (Western Assam] and Davaka (Central Assam) as frontier kingdoms of the Gupta Empire. Davaka was later absorbed by Kamarupa, which grew into large kingdom that spanned from Karatoya river to Sadiya and covered the entire Brahmaputra valley, North Bengal, Northern Bangladesh and, at times Purnea and parts of West Bengal. Later the Ahoms and the Koch. The Ahoms, a Tai group, ruled Upper Assam for nearly 600 years (1228–1826 AD) and the Koch, a Tibeto-Burmese, established sovereignty in c. 1510 AD. During the colonial era initially Assam was made a part of the Bengal Presidency, then in 1906 it was a part of Eastern Bengal and Assam province, and in 1912 it was reconstituted into a chief commissioners' province. In 1913, a legislative council and, in 1937, the Assam Legislative Assembly, were formed in Shillong, the erstwhile capital of the region. At the turn of the 20th century, British India consisted of eight provinces that were administered either by a governor or a lieutenant-governor. The Assam Province was one among major eight provinces of British India. The table hereafter shows the major original provinces during British India covering the Assam Province under Administrative Office of Chief Commissioner

With the partition of India in 1947, Assam became a constituent state of India, but the district of Sylhet of Assam (excluding the Karimganj subdivision) gave up to Pakistan (which later became Bangladesh). Further, the state has been divided

several times since 1970 to satisfy national aspirations of the tribal populations living within the then borders of Assam. These are chronologically presented below:

- 1963: Nagaland (comprising of Naga Hill Districts)
- 1970: Meghalaya (Khasi Hills, Jantia Hills and Garo Hills)
- 1972: Aurunachal Pradesh (the North East Frontier Agency)
- 1972: Mizoram (Mizo Hills)

1.2 GOVERNANCE & ADMINISTRATION

Assam has four regional divisions**, (Table 1)** each comprising a number of districts. The administrator responsible for the administration of a division is called a Divisional Commissioner

TABLE 1:ADMINISTRATIVE DIVISION OF ASSAM

Division Name	Divisional Office	Districts
North Assam	Tezpur	Udalguri, Darrang, Sonitpur, Nagaon, Marigaon
Lower Assam	Panbazar	Dhubri, Kokrajhar, Bongaigaon, Goalpara, Baksa, Chirang, Barpeta, Nalbari, Kamrup Rural, Kamrup Metro
Upper Assam	Jorhat	Lakhimpur, Dibrugarh, Dhemaji, Tinsukia, Sibsagar, Jorhat, Golaghat
Hills and Barak Valley	Dispur	Dima Hasao, Karbi Anglong, Cachar, Hailakandi, Karimganj

Districts & Headquarters

A recent reorganization has resulted in a total of 23 districts. The head of a district's administration, the Deputy Commissioner, in Assam is unelected, appointed to the post by the State Government.

TABLE 2:: ADMINISTRATIVE SETUP IN MEGHALAYA

District	District H.Q.	Sub-division	Sub-division H.Q.
Udalguri	Odalguri	Odalguri	Odalguri
		Bhergaon	Bhergaon
Karimganj	Karimganj	Karimganj	Karimganj
Cachar	Silchar	Silchar	Silchar
		Lakhipur	Lakhipur
Kamrup	Amingaon	Rangia	Rangia
		Amingaon	Amingaon
Kamrup Metro	Guwahati	Guwahati	Guwahati
Karbi Anglong	Diphu	Diphu	Diphu
		Bokajan	Bokajan
		Hamren	Hamren
Kokrajhar	Kokrajhar	Kokrajhar	Kokrajhar
		Gossaigaon	Gossaigaon
Golaghat	Golaghat	Golaghat	Golaghat
		Bokakhat	Bokakhat
		Dansiri	Sarupathar
Goalpara	Goalpara	Goalpara	Goalpara

Chirang	Basugaon	Basugaon	Basugaon
		Bijni	Bijni
Dibrugarh	Dibrugarh	Dibrugarh	Dibrugarh
Dima Hasao (Formerly North Cachar Hills)	Haflong	Haflong	Haflong
		Maibong	Maibong
Tinsukia	Tinsukia	Tinsukia	Tinsukia
		Sadiya	Chapakhowa
Darrang	Mangaldoi	Mangaldoi	Mangaldoi
Dhubri	Dhubri	Dhubri	Dhubri
		Bilasipara	Bilasipara

		South Salmara	Hatsingimari
Dhemaji	Dhemaji	Dhemaji	Dhemaji
		Jonai	Jonai
Nagaon	Nagaon	Nagaon	Nagaon
		Hojai	Hojai
		Kaliabor	Hatbor
Nalbari	Nalbari	Nalbari	Nalbari
Bongaigaon	Bongaigaon	Bongaigaon	Bongaigaon
		North Salmari	Abhayapuri
Barpeta	Barpeta	Barpeta	Barpeta
		Bajali	Pathsala
Baksa	Musalpur	Musalpur	Musalpur
		Salbari	Salbari
		Tamulpur	Tamulpur
Morigaon	Morigaon	Morigaon	Morigaon

Jorhat	Jorhat	Jorhat	Jorhat
		Majuli	Garmurh
		Titabor	Titabor
Lakhimpur	North Lakhimpur	North Lakhimpur	North Lakhimpur
		Dhakuakhona	Dhakuakhona
Sivasagar	Sivasagar	Sivasagar	Sivasagar
		Charaideo	Sonari
		Nazira	Nazira
sonitpur	Tezpur	Tezpur	Tezpur
		Dhekiajuli	Dhekiajuli
		Biswnath	Biswanath Chariali
Hailakandi	Hailakandi	Hailakandi	Hailakandi

Source: http://meghalaya.gov.in:8080/megportal/stateprofile

Autonomous Councils

To further provide regional autonomy and better status within the constitutional framework from the tribes of Assam some of the areas have been incorporated within the sixth schedule of the Constitution of India. This schedule provide for administration of tribal areas as autonomous areas.. The administration of the

autonomous areas is vested in the district council. These councils are endowed with legislative, judicial executive and financial powers. They are also expected to oversee the traditional bodies in local tribes.The Councils is a corporate body by name of having perpetual succession and a common seal with the right to sue and be sued. These nine Autonomous District Councils (ADCs) in Assam are:

- **Bodoland Territorial Council**: the Bodoland Territorial Areas Districts comprising four 4(four) Administrative Districts as- Udalguri, Baksa. Chirang, Kokrajhar,
- **Karbi Anglong Autonomous Council**: The Karbi Anglong came into being as a full fledged separate district The council covers the three sub-divisions of , Diphu, Bokajan and Hamren.
- **Dima Hasao Autonomous District Council:** The Dima Hasao Autonomous District Council is an autonomous council constituted to administer the district and to develope the Dimasa people. It covers the two sub divisions of Haflong and Maibang.
- **Rabha Hasong Autonomous Council (RHAC):** The jurisdiction of this council extents upto Rani area of Kamrup district and except some parts of Matia, Balijana and Lakhipur revenue Circles, it embraces almost the entire district of Goalpara
- **Mishing Autonomous Council(MAC):** The council covers as 'Core Area' as well as 'Satellite Areas' in eight districts namely, Dhemaji, Lakhimpur, Sonitpur, Golaghat, Jorhat, Sibsagar, Dibrugarh and Tinsukia.
- **Tiwa Autonomous Council (TAG)**
- **Deori Autonomous Council (DAC):** The council area is scattered in medium/small villages/parts of villages/settlements in seven upper Assam Districts namely Dhemaji, Lakhimpur, Sonitpur, Jorhat, Sibsagar, Dibrugarh and Tinsukia where the Deori community is situated
- **Thengal Kachari Autonomous Council (TKAC)**
- **Sonowal Kachari Autonomous Council (SKAC):** The council covers 450 villages within the jurisdiction in seven districts of Upper Assam, viz. Dibrugarh, Tinsukia, Dhemaji, Lakhimpur, Sivsagar, Jorhat and Golaghat.

The Councils consists of thirty members, 26 are elected and not more than four persons are nominated by the Governor on the advice of the Chief Executive Member for a term of five years. Villages having more than 50% of the tribal population there shall be a Village Council. Each Village Council shall consist of 10 (Ten) elected members out of which 5 (Five) will be form Scheduled Tribe

community. Out of 5 (Five) reserved seats 1 (One) shall be reserved for a women member.

Council within their respective districts, shall have power to make laws with respect to—

(a) industries, subject to certain provisions
(b) communications, that is to say, roads, bridges, ferries and other means of communication which are allowable under the conditions mentioned
(c) preservation, protection and improvement of stock and prevention of animal diseases; veterinary training and practice; cattle pounds;
(d) primary and secondary education;
(e) agriculture, including agricultural education and research, protection against pests and prevention of plant diseases;
(f) fisheries;
(g) water, that is to say, water supplies, irrigation and canals, drainage and embankments, water storage and water power with restriction
(h) social security and social insurance; employment and unemployment;
(i) flood control schemes for protection of villages, paddy fields, markets, towns, etc. (not of technical nature);
(j) theatre and dramatic performances, cinemas subject to the provisions
(k) public health and sanitation, hospitals and dispensaries;
(l) minor irrigation;
(m) trade and commerce in, and the production supply and distribution of, food stuffs, cattle fodder, raw cotton and raw jute;
(n) libraries, museums and other similar institutions controlled or financed by the State; ancient and historical monuments and records other than those declared by or under any law made by Parliament to be of national importance;
(o) alienation of land

1.3 DEMOGRAPHIC PROFILE

The Population of Assam according to the 2011 census stands at 3,11,57,436, making it the 14th most populated state in India. The state makes up about 2.5% of the country's population. The state is spread over an area of about 78400 sq. km. making it the 16th largest state in the country in terms of area. The density of

population per sq km is about 397 and almost equal to the national average. The state has a population growth rate of about 17% which is again very close to the national growth rate. The literacy rate in the state has increased from 63.25% (census 2001) to 72.19% (census 2011). The male and female literacy rates are 78.81% and 67.27% respectively. Sex Ratio in Assam is 958, which is above national average of 940 as per census 2011 compared to the sex ratio of 932 in 2001.

In Assam 14.10% people live in urban regions. The total population living in urban areas is 43,98,542. However, still 85.90 percent of total population of Assam live in the rural areas. The demographic Profile is presented in **Table 3**

Table 3: Demographic Profile of Assam

Sl. No.	District	District Head Quarter	Geographical Area (Sq. k.m.)	Population (2011)	Male Population	Female Population	Growth Rate (%)	Sex Ratio	Literary (%)	Density/Sq. k.m.
1	Kokrajhar	Kpokrajhar	3296	887142	452905	434237	5.21	959	55.16	269
2	Dhubri	Dhubri	2176	1949258	997848	951410	24.44	953	47.32	896
3	GOALPARA	Goalpara	1824	1008183	513292	494891	22.64	964	55.90	553
4	BARPETA	Barpeta	2282	1693622	867004	826618	21.43	953	52.97	742
5	MORIGAON	Morigaon	1551	957423	486651	470772	23.34	967	56.39	617
6	NAGAON	Nagaon	3973	2823768	1439112	1384656	22.00	962	60.58	711
7	SONITPUR	Tezpur	5204	1924110	983904	940206	15.55	956	57.61	370
8	LAKHIMPUR	North Lakhimpur	2277	1042137	529674	512463	17.22	968	65.59	458
9	DHEMAJI	Dhemaji	3237	686133	351249	334884	19.97	953	61.65	212
10	TINSUKIA	Tinsukia	3790	1327929	680231	647698	15.47	952	60.12	350
11	DIBRUGARH	Dibrugharh	3381	1326335	676434	649901	11.92	961	66.69	392
12	SIVASAGAR	Sivasagar	2668	1151050	589216	561834	9.44	954	70.68	431
13	JORHAT	Jorhat	2851	1092256	556805	535451	9.31	962	72.78	383
14	GOLAGHAT	Golaghat	3502	1066888	543161	523727	12.75	964	67.65	305
15	KARBI ANGLONG	Diphu	10434	956313	490167	466146	17.58	951	58.27	92
16	DIMA HASAO	Haflong	4888	214102	110802	103300	13.84	932	65.80	44
17	CACHAR	Silchar	3786	1736617	886284	850333	20.19	959	67.61	459
18	KARIMGANJ	Karimghanj	1809	1228686	625864	602822	21.90	963	64.73	679

Sl. No.	District	District Head Quarter	Geographical Area (Sq. k.m.)	Population (2011)	Male Population	Female Population	Growth Rate (%)	Sex Ratio	Literary (%)	Density/Sq. k.m.
19	HAILAKANDI	Halakandi	1327	611156	337890	321406	12.58	951	66.65	461
20	BONGAIGAON	Bongaigon	1093	738804	375818	362986	20.59	966	58.75	676
21	CHIRANG	Basugaon	1923	482162	244860	237302	11.34	969	53.90	251
22	KAMRUP	Amingaon	3105	1517542	778461	739081	15.69	949	65.59	489
23	KAMRUP METROPOLITAN	Guwahati	955	1253938	647585	606353	18.34	936	79.84	1313
24	NALBARI	Nalbari	1052	771639	396006	375633	11.99	949	68.91	733
25	BAKSA	Musalpur	2457	950075	481330	468745	10.74	974	60.29	387
26	DARRANG	Mangaldoi	1585	928500	475273	453227	22.19	954	52.45	586
27	UDALGURI	Odalgalgiri	2012	831668	421617	410051	9.61	973	56.50	413

The Scheduled Tribes (STs), constitute 12.4 per cent of the total population of the state. The state has registered 17.4 per cent decadal growth of ST population in 1991-2001. There are total twenty three (23) notified STs in the state. Based on Census 2001[1] it was established that among STs, Boro represents nearly half of the total ST population of the state (40.9 per cent). Miri (17.8 per cent), Mikir (10.7 per cent), Rabha (8.4 per cent), Kachari (i.e. Sonowal Kachari) (7.1 per cent), and Lalung (5.2 per cent) are the other major STs each having 5 per cent or above of total STs. Along with Boro they constitute 90 per cent ST population of the state. Besides them, Dimasa constitutes 3.4 per cent and Deori 1.2 per cent of the total ST population of the state. The rest of the Scheduled Tribes are very small in their population size

1.4 LAND AGRICULTURE & FOREST

Bestowed with the resources of two major rivers the economy of Assam continues to be predominantly agrarian. Over 70 percent of the state's population relies on agriculture as farmers, as agricultural laborers, or both for their livelihood. The principal food crops produced in the state are rice (paddy), maize (corn), pulses, potato, wheat, etc., while the principal cash crops are tea, jute, oilseeds, sugarcane, cotton, and tobacco. Tea is the most important cash crop in Assam and the state is well known world-wide for its tea. The total land area under tea cultivation (gardens) was estimated at over 229,000 hectares in 1989, employing an average of over half-a-million people per day.

There are two broad types of land tenure systems operate in the state:

- Revenue administration under government operates in the plains outside the areas under the Sixth Schedule
- Customary land tenure system under Village level authority operates in the Autonomous District Council Areas. Cadastral survey is not done in these areas.

[1] The updation of information as per 2011 census is not yet notified/made public.

In the non-scheduled areas of Assam have three types of land – patta (individual ownership), Aksonia (temporary) patta and non-patta or khas land or CPRs. Patta land is owned in perpetuity on payment of a tax. Aksonia patta is usually for one year. Khas land is considered State property and its inhabitants are treated as encroachers.

In the six schedule areas of Assam traditional system of land tenure is practiced by some of the tribes. The Karbi villages communal ownership is the norm. They do not have a fixed boundary or name since they keep shifting.. The Boro however followed the Ahom custom of allotting about an acre of land to each family in return for free labour for about a third of the year. The Mikri tribes have are apportioned land to Household, each house being allotted its own fields. Male members of a household limit their labour to their own fields. However the Dimasa of North Cachar Hills has moved towards individual pattas from the community ownership. The families that have changed over to individual land have introduced also a share for women in its inheritances. Property is inherited through men but the clan and family name come from women. The Mishing tribes have shifted from the jum to settled agriculture.

1.5 ENVIRONMENTAL BASELINE

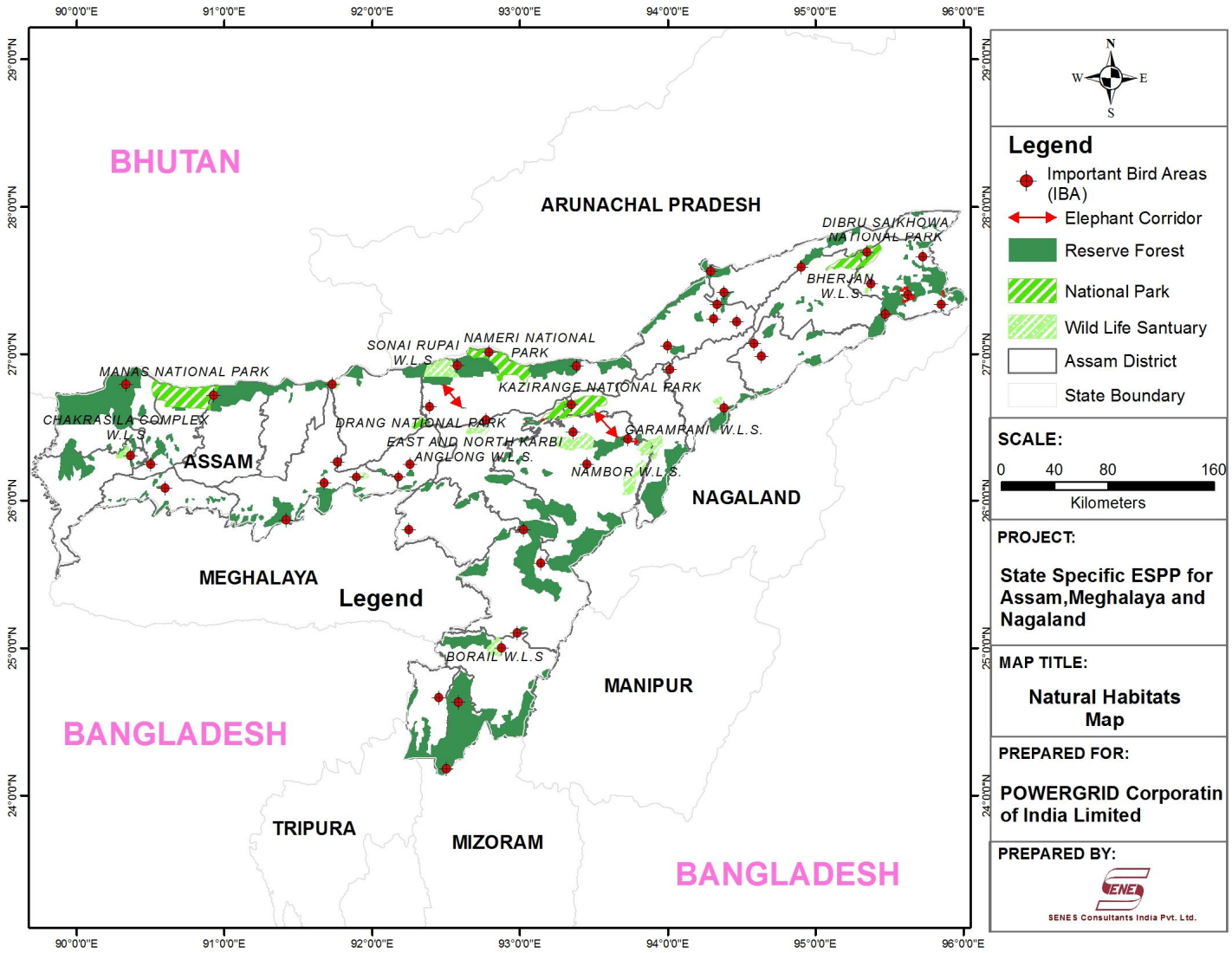
A significant geographical aspect of Assam is that it contains three of six physiographic divisions of India - The Northern Himalayas (Eastern Hills), The Northern Plains (Brahmaputra plain) and Deccan Plateau (Karbi Anglong). The River Brahmaputra, the life-line of Assam becomes a braided river (at times 10-16 km wide) and with tributaries, creates a flood plain. The hills of Karbi Anglong, North Cachar are now eroded and dissected are originally parts of the South Indian Plateau system. In the south, the River Barak originates in the Barail Range (Assam-Nagaland border) flows through the Cachar district with a 40–50 km wide valley and enters Bangladesh with the name Surma River The Brahmaputra and the Barak rivers are part of the National Waterway 2 and 6 respectively and together cover almost 1000 Km across the state.

Assam also has an extensive network of roads in terms of road density, however, in terms of density of surfaced road Assam is way behind India and the gap is increasing. Assam has a wide network of highways . The road network in Assam comprises of total 51,878 km of roads consisting of 2848 km National Highways, 3134 km State Highways, 4413 km Major district roads, 2496 km Urban roads, 36544 km Rural roads and 2443 km project & other non PWD Roads..

Due to the influence of Brahmaputra and Barak rivers the state is bestowed with vast alluvial plains and dense forests, tracts of paddy and tea. Assam is also endowed with petroleum, natural gas, coal, limestone and many other minor minerals such as magnetic quartzite, kaolin, sillimanites, clay and feldspar. A small quantity of iron ore is also available in western parts of Assam. The Upper Assam districts are major reserves of oil and gas. It is estimated that Assam and surrounding region possess around 150 million tonnes of petroleum reserves. Presently, Assam is the 3rd largest producer of petroleum (crude) and natural gas in the country accounting for 16% and 8% respectively of the total production of this mineral in the country. A Tertiary coal belt is located in Tinsukia, Dibrugarh, Sivasagar, Karbi Anglong and Dima Hasao districts with an estimated reserve of 370 million tonnes.

1.6 FOREST

Forest cover constitutes 35.28% of total land area of this state. The State of Assam is enriched with extensive forest area and also rich with different species and strains of floras and faunas along with valuable forest products. The recorded forest area of Assam is 26,832 sq. km. The Forest Map of Assam is presented in **Figure 2** and district wise forest cover is presented in Figure **2: FOREST AND WILDLIFE HABITATS OF ASSAM**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24°0'0"N
BHUTAN
ARUNACHAL PRADESH
DIBRU SAIKHOWA NATIONAL PARK
BHERJAN W.L.S.
SONAI RUPAI W.L.S.
NAMERI NATIONAL PARK
MANAS NATIONAL PARK
KAZIRANGE NATIONAL PARK
CHAKRASILA COMPLEX W.L.S.
DRANG NATIONAL PARK
EAST AND NORTH KARBI ANGLONG W.L.S.
GARAMPANI W.L.S.
NAMBOR W.L.S.
ASSAM
NAGALAND
MEGHALAYA
Legend
BORAIL W.L.S
MANIPUR
BANGLADESH
TRIPURA
MIZORAM
BANGLADESH
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Legend
Important Bird Areas (IBA)
Elephant Corridor
Reserve Forest
National Park
Wild Life Santuary
Assam District
State Boundary
SCALE:
0 40 80 160
Kilometers
PROJECT:
State Specific ESPP for Assam,Meghalaya and Nagaland
MAP TITLE:
Natural Habitats Map
PREPARED FOR:
POWERGRID Corporatin of India Limited
PREPARED BY:
SENES Consultants India Pvt. Ltd.

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FIGURE 1: FOREST COVER OF ASSAM

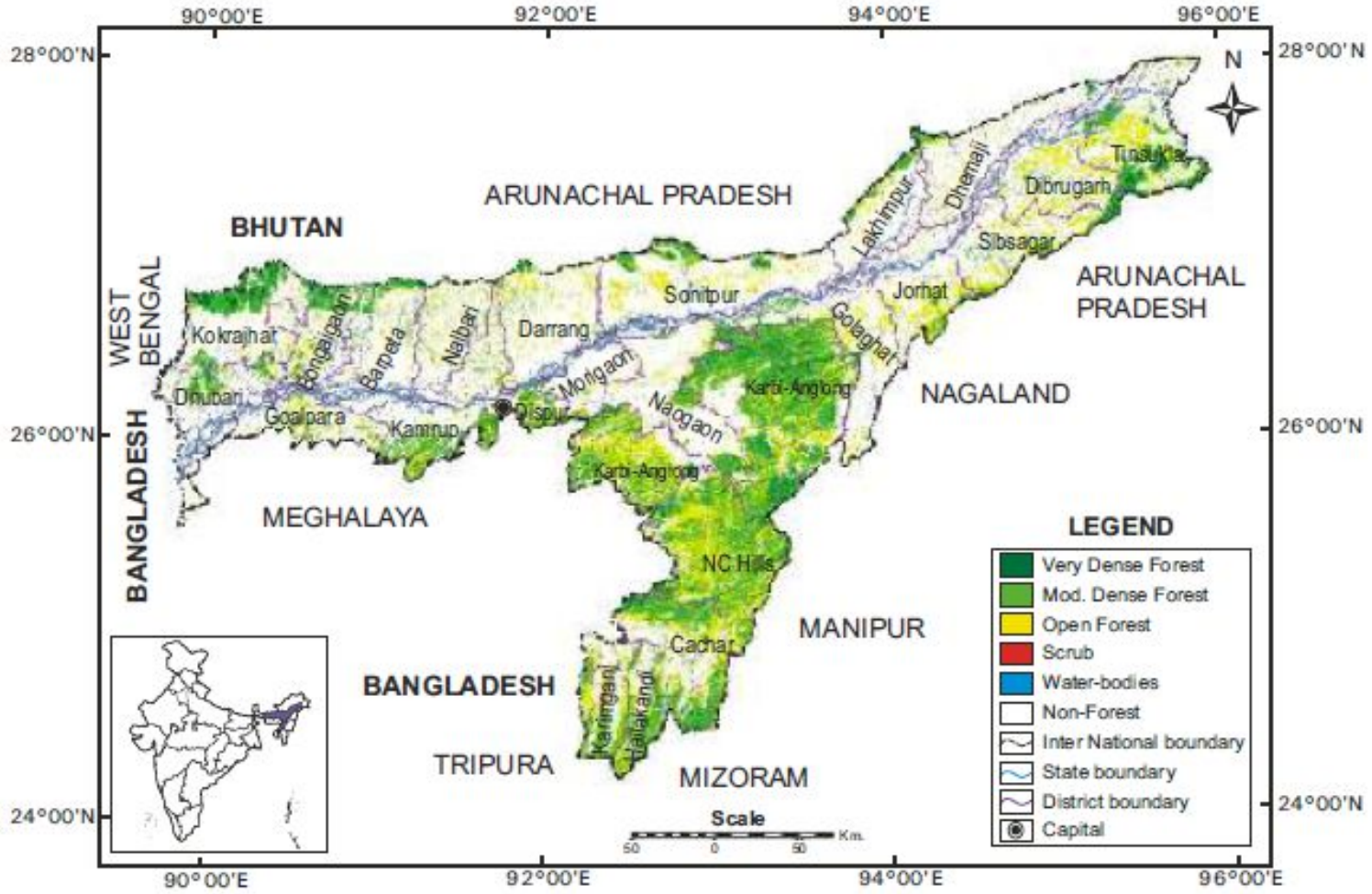

FIGURE 2: FOREST AND WILDLIFE HABITATS OF ASSAM

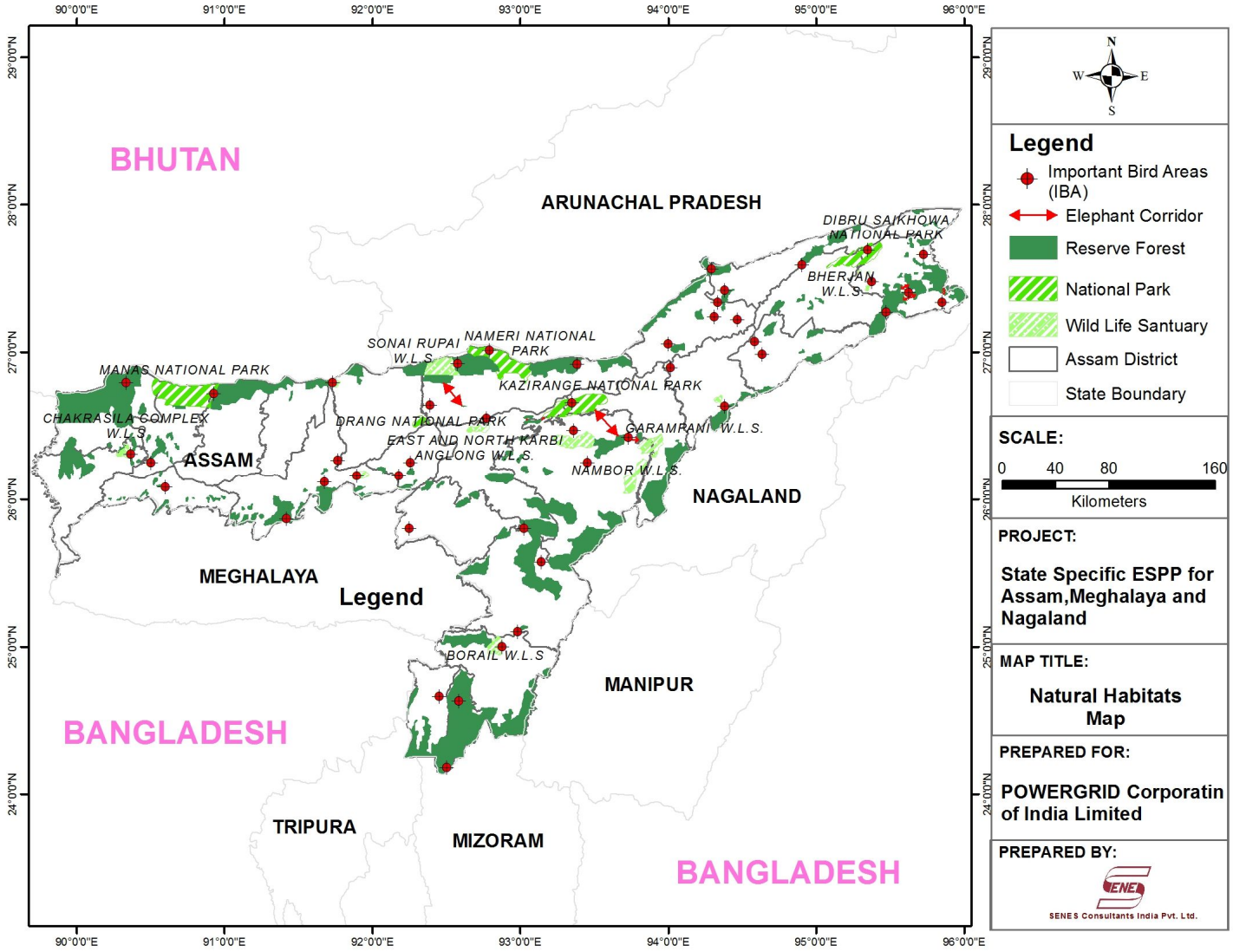

TABLE 4: FOREST IN ASSAM

District	Geographical Area (sq. km.)	Very Dense Forest (sq. km.)	Moderately Dense Forest (sq. km.)	Open Forest (sq. km.)	Total (sq. km.)	Percent of Geographic Area (%)
Area in sq. km.						
Barpeta	3,245	35	177	183	395	12.17
Bongaigaon	2,510	33	267	221	521	20.76
Cachar	3,786	81	974	1,186	2,241	59.19
Darrang	3,481	12	91	365	468	13.44
Dhemaji	3,237	7	124	161	292	9.02
Dhubari	2,798	21	197	194	412	14.72
Dibrugarh	3,381	29	165	561	755	22.33
Goalpara	1,824	1	71	265	337	18.48
Goalghat	3,502	6	122	397	525	14.99
Hailakandi	1,327	13	373	403	789gc	59.46
Jorhat	2,851	2	112	495	609	21.36
Kamrup	4,345	68	608	753	1,429	32.89
Karbi-Anglong	10,434	566	3,801	3,593	7,960	76.29
Karimganj	1,809	3	317	544	864	47.76
Kokrajhar	3,169	208	701	211	1,120	35.34
Lakhimpur	2,277	4	118	171	293	12.87
Morigaon	1,704	6	41	86	133	7.81
North Cachar Hills	4,888	135	1,543	2,592	4,270	87.36
Naogaon	3,831	40	352	402	794	20.73
Nalbari	2,257	4	70	208	282	12.49
Sibsagar	2,668	8	144	540	692	25.94
Sonitpur	5,324	56	279	621	956	17.96
Tinsukia	3,790	106	698	730	1,534	40.47
Grand Total	**78,438**	**1,444**	**11,345**	**14,882**	**27,671**	**35.28**

Source: State Forest Report, 2013

Sacred Groves are the small patches of forest, owned and protected by the community. So far 40 Sacred Groves are identified in Assam. These Sacred Groves locally called "Than" and "Madaico" in Assam. Mostly Sacred Groves are found in Karbi Anglong district. However some of the monasteries like Shankaradeva

maths distributed all over the state also have Sacred Groves. These Sacred Groves are ecologically rich and play important role in the religious and sociocultural life of the local people and homes to many medicinal and aromatic plants and also as repositories of several endemic and endangered plants.

1.7 PROTECTED AREA NETWORK

In Assam 25 protected area networks consisting of 5 National Parks, and 20 Wildlife Sanctuaries (including 2 proposed WLS) are formed. All these National Parks and WLS hold a large number of endangered and local species. These Protected Area Network is presented in **Error! No text of specified style in document.**-3

TABLE 5: PROTECTED FOREST IN ASSAM

Sl. No.	National Park and Wildlife Sanctuaries	Location (District)	Main Habitat
1.	Kaziranga National Park	Golaghat, Nagaon & Sonitpur	One horned Rhino, Swamp Deer, Wild Buffalo, Tiger, Elephant, Hoolock Gibbon, Capped Langur, Home to 25 globally threatened and 21 near threatened species of birds
2.	Manas National Park	Chirang and Baksa	Rhino, Elephant, Tiger, Pygmy Hog, Hispid hare, Golden Langur, Assamese Macaque, Rhesus Macaque, Leopard, Golden Cat, Fishing Cat, Leopard Cat, Jungle Cat, Large Indian civet, Small Indian civet, Toddy Cat
3.	**Orang National Park**	Udalguri and Sonitpur	Rhino, Tiger, Maljuria Elephants (male elephants in group), Hog Deer, Wild Pig 222 species of Birds (Greater Adjutant Stork, Lesser Adjutant Stork, Brahminy Duck, Pintail Duck etc.)
4.	Nameri National Park	Sonitpur	Tiger, Leopard, Elephant, Gaur, Wild Pigs, Sambar, Barking Deer, Hispid hare, Slow Loris, Capped Langur, White Winged Wood duck, Palla's fish-eagle, Lesser Adjutant Stork, Greater spotted Eagle, White ramped vulture, Longo billed vulture, Black bellied Term, Rufous–necked Hornbill, Wreathed Hornbill, Great Pied Hornbill etc.
5.	Dibru-Saikhowa National Park	Dibrugarh and Tinsukia	Tiger, Elephant, Leopard, Jungle Cat, Bears, Small Indian Civet, Squirrels, Gangetic Dolphin, Slow Loris, Assamese Macaque, Rhesus Macaque, Capped Langur, Hoolock Gibbon. It is an identifies Important Bird Area (IBA)

Sl. No.	National Park and Wildlife Sanctuaries	Location (District)	Main Habitat
6.	Bherjan-Borajan-Padumoni WLS	Tinsukia	Hoolock Gibbon, Capped Langur, Pig-tailed, Macaque, Macaque, Slow Loris and Rhesus Macaque
7.	Panidehing WLS	Sivasagar	Elephants, Lesser Adjutant Stork, Greater Adjutant, Swamp Francolin, Spot-billed Pelican, White-rumped Vulture, Greater Spotted Eagle, Slender-billed Vulture, Pallas's Fish-eagle
8.	Hollongpara Gibbon WLS	Jorhat	7 Primates (Hoolock Gibbon, Stump- tailed Macaque, Capped Langur, Pig-tailed Macaque, Assamese Macaque, Slow Loris and Rhesus Macaque)
9.	Nambor-Doigurung WLS	Golaghat	Gaur, Elephants, Hoolock Gibbon
10.	Garampani WLS	Karbi Anglong	Elephants, White-winged Duck, Lesser Adjutant Stork
11.	Nambor WLS	Karbi Anglong	Gaur , Elephants, Hoolock Gibbon
12.	East Karbi Anlong WLS	Karbi Anglong	Gaur, Elephants, Tiger, Hoolock Gibbon
13.	Marat Longri WLS	Karbi Anglong	Tigers, Leopards, Gaur , Elephants, Hoolock Gibbon
14.	Burhachapori WLS	Sonitpur	Elephants, Aquatic Birds, Tiger, Bengal Florican
15.	Laokhowa WLS	Nagaon	Elephant, Tiger, Asiatic Wild Buffalo, Bengal Florican
16.	Pabitora WLS	Morigaon	Rhino, Leopards, Barking Deer, Lesser Adjutant, Greater Adjutant, White-bellied Heron, Greater Spotted Eagle
17.	Sonai-Rupai WLS	Sonitpur	White Winged wood duck, Elephant, Tiger, Gaur
18.	Barnadi WLS	Udalguri	Hispid Hare, Pygmy Hog, Elephants, Tiger
19.	Chakrasila WLS	Kokrajhar	Golden Langur, Gaur
20.	Dihing-Patkai WLS	Dibrugarh and Tinsukia	Hoolock Gibbon, Elephants, White Winqed wood duck, Tiqer
21.	Borail WLS	Cachar	Serow, Himalayan Black bear, Hoolock Gibbon
22.	Amchang WLS	Kamrup (Metro)	Elephant, Gaur, Leopard
23.	Deepor Beel Wildlife Sanctuary	Kamrup (Metro)	Greater Adjutant Stork, Whistling Teal, Open Billed Stork, Shoveler, Pintail, Garganey, Pheasant tail jacanas
24	North Karbi Anglong Wildlife Sanctuaries (Proposed)	Karbi Anglong	Tiger, Lesser cats, Elephant, Gaur, Sambar, Bears, Barking deer, Rhesus macaque, Hoolock gibbon, Capped langur, Slow loris
25	Bordoibam Bilmukh Bird Sanctuaries (Proposed)	Dhemaji and Lakhimpur	Kingfishers, Large whistling Teal, Lesser Adjutant Stork, Spotted Dove, Pheasant tailed Jacana, Bronze winged Jacana, Indian River Tern, Black Headed Gull,

Sl. No.	National Park and Wildlife Sanctuaries	Location (District)	Main Habitat
			White Wagtail, Black Headed Oriole, Purple Moorhen, Openbill Stork

1.8 INTERNATIONAL BIRD AREAS

Assam has 46 International Bird Area (IBA) **Table 6**. These bird areas inhabits a large number of avifauna (resident as well as migrates). Wide winged birds and raptors like Lesser Adjutant Stork, Greater Adjutant Stork, Open bill Stork White-bellied Heron, Spot-billed Pelican, Greater Spotted Eagle, Eastern Imperial Eagle, White-rumped Vulture, Slender-billed Vulture, Pallas's Fish-eagle are species which are of concern while developing the transmission and distribution projects.

TABLE 6: IBA SITES IN ASSAM

IBA Site Identification	IBA Site	IBA Criteraia
IN-AS-01	Amchang Hills	A1
IN-AS-02	Barail Range	A1, A2, A3
IN-AS-03	Barnadi Wildlife Sanctuary	A1
IN-AS-04	Bauwwa *Beel*	A1
IN-AS-05	Behali Reserve Forest	A1, A3
IN-AS-06	Bherjan-Borajan-Podumoni	A1
IN-AS-07	Bordoibam-Bilmukh Bird Sanctuary	A1
IN-AS-08	Bordoloni-Sampora	A1, A2, A4i
IN-AS-09	Chakrasila Complex	A1, A4i, A4iii
IN-AS-10	Chandubi Lake and adjoining areas	A1
IN-AS-11	Deobali Jalah	A1, A4i
IN-AS-12	Dhansiri Reserve Forest	A1, A4i
IN-AS-13	Dibru-Saikhowa Complex	A1, A2
IN-AS-14	Dipor *Beel* Bird Sanctuary	A1, A4iii
IN-AS-15	Dum Duma-Dangori-Kumsong Reserve Forests	A1
IN-AS-16	East and North Karbi Anglong Wildlife Sanctuaries	A1
IN-AS-17	Garampani, Nambor and Doigrung	A1

IBA Site Identification	IBA Site	IBA Criteraia
IN-AS-18	Gibbon (Hollongapar) Sanctuary	A1
IN-AS-19	Habang	A4ii
IN-AS-20	Inner Line, Kathakal and Barak Reserve Forests	A1
IN-AS-21	Jamjing and Sengajan	A1
IN-AS-22	Jatinga	A1, A4iv
IN-AS-23	Jengdia *Beel* and Satgaon	A1
IN-AS-24	Jhanjimukh-Kokilamukh	A1, A4i
IN-AS-25	Kaziranga	NP A1, A2, A4i, A4iii
IN-AS-26	Kuarbari-Dalani	A1
IN-AS-27	Langting-Mupa Reserve Forest	A1
IN-AS-28	Laokhowa and Burhachapori Sanctuaries	A1, A2
IN-AS-29	Lumding-Marat Longri	A1
IN-AS-30	Majuli	A1, A4iii
IN-AS-31	Manas National Park	A1, A2
IN-AS-32	Nameri National Park	A1, A2
IN-AS-33	Orang National Park	A1, A4ii
IN-AS-34	Pabho Reserve Forest	A1, A2
IN-AS-35	Pabitora Wildlife Sanctuary	A1, A2, A4iii
IN-AS-36	Pani-Dihing Bird Sanctuary	A1, A4iii
IN-AS-37	Ripu and Chirang-Reserve Forest	A1, A2
IN-AS-38	Sibsagar Tanks	A1, A4i
IN-AS-39	Son *Beel*	A1
IN-AS-40	Sonai-Rupai Wildlife Sanctuary	A1
IN-AS-41	Subansiri	A1, A2
IN-AS-42	Tamaranga-Dalani-Bhairab Complex	A1, A4iii
IN-AS-43	Tirap-Burhidihing	A1
IN-AS-44	Upper Dihing (East) Complex	A1, A2
IN-AS-45	Upper Dihing (West) Complex	A1, A2
IN-AS-46	Urpod *Beel*	

A1= Threatened species; A2 = Restricted Range species; A3= Biome species; A4=Congregatory species

1.9 WETLAND

Wetland plays an important role in preserving biodiversity and wildlife and also support livelihood of indigenous people. Assam state has as many of 11178 wetlands. These wetlands are mainly of natural (Lakes/Ponds, Ox-bow lakes/ Cut-off meanders, High altitude wetlands, Riverine wetlands, Waterlogged, River/Stream) and manmade (Reservoirs/Barrages, Tanks/Ponds, Waterlogged).

The state has a large number of lakes/ponds, rivers, ox-bow lakes and waterlogged area. The Brahamputra and Barak are two important rivers of Assam. Deepor beel, Dhir beel, Sareswar beel, Sone beel, Tamaranga beel and Sonai beel are some of the important wetland sites of Assam .

- **Deepor Beel**: This is a fresh water lake, on the southern bank of the Brahmaputra River (Kamrup District), covering an area of about 900 ha. It is one of the largest natural wetland in Assam, has been notified as Wildlife Sanctuary. This WLS homes to Greater Adjutant Stork, Lesser Adjutant Stork, Baer's Pochard, Spot-billed Pelican, White-rumped Vulture, Greater Spotted Eagle, Slender-billed Vulture, Pallas's Fish-eagle and Spoon-billed Sandpiper.
- **Dhir Beel**: Situated 30 km from Kokrajhar town at the base of Chakrashila Wildlife Sanctuary. The wetland covering 1003 ha is rich in aquatic flora and fauna and is a breeding ground for fish. Adjacent to Dhir, there is another Lake- Diplai. These twin lakes attract a lot migratory birds in winter including Near Threatened Ferruginous Duck and the Vulnerable Baer's Pochard Aythya baeri. Swamp Francolin Francolinus gularis
- **Sareswar Beel**: This is a shallow, freshwater lake on the floodplain to the north of the Brahmaputra River in lower Assam. The total area of the beel is about 1700 ha. A great diversity of resident and migratory waterfowl are found in the lake. Both the lesser adjutant (Leptoptilos javanicus) and greater adjutant (L. dubius) are regular in the winter months
- **Sone Beel** : is the largest wetland in Assam. It is in Karimganj district of southern Assam. The lake is 12.5 km long and 3.9 km wide, with a 35.4 km shoreline. It is home to a large number of resident bird species and more

than 150 species of birds have been recorded. The lake attracts thousands of waterfowl.

- **Tamaranga Beel:** is actually a complex of wetlands known as Tamaranga - Dalani-Bhairab Complex, situated only 30 km south from Bongaigaon town. This is an important freshwater lake (beel) and has been listed as a Site of Global Importance in the Directory of Asian The beel attracts many migratory birds and is a good breeding ground for resident water birds.
- **Sonai Beel** is a cluster of natural lakes namely Nandini, Mer, Sonai, Raumari, Dobarani, and Patiabandha beel in Marigaon district of Assam. The wetlands are important for a wide variety of resident and migratory waterfowl, The Bengal Florican Houbaropsis bengalensis occurs in the wetland site.

1.10 WILDLIFE HABITATS / CORRIDORS

Assam has five Elephant Reserves (Sonitpur ER (1,420 sq km), Dehing-Patkai ER (937 sq km), Kaziranga-Karbi Anglong ER (3,270 sq km), Dhansiri-Lungding ER (2,740 sq km), and Chirang-Ripu ER (2,600 sq km) and Eight Elephant Corridors connects these Elephant Reserves, Protected Forest and nearby forests locating in the native states (viz. Arunachal Pradesh and Meghalaya). Some of these corridors are 0.5 km wide and are proximity to or on the major settlement. Brief description of these eight corridors in Assam is given below.

Kotha-Burhidihing: This corridor connects the Kotha Reserve Forest (Digboi Forest Division) and adjacent elephant populations of Changlang district of Arunachal Pradesh with the Burhidihing Reserve Forest (Doom Dooma Forest Division) thereby maintaining the linkage with Tarai Reserve Forest, Kakojan Reserve Forest and Nalani Reserve Forest. Length of the corridor is 6 km. and width is 1 km. Major Settlements in the corridor are Monogaon and Takeli pathar.

Upper Dihing East-Upper Dihing West Block at Bogapani: The corridor lies between the Upper Dihing East and West blocks of forestland and passes through Bogapani tea estate and a few settlements (viz. Bogapani and Panbari). This 3 km. long and 0.5 km. wide elephant corridor constitutes of Reserve Forest and some forest land which are leased to tea gardens and patta land.

Upper Dihing East-Upper Dihing West Block between Golai-Pawai: This corridor is primarily of Reserve Forest and patta land, connecting Upper Dihing East and West blocks for elephant movement. This corridor has witnessed crop depredation by elephant resulting

discontinuation of cultivation by the adjacent villagers in 2000-2001. Again new settlements have started coming in the 6-7 km. long and 0.5 km. wide corridor.

Kalapahar-Daigurung: This corridor, located about 22 km. from Silonijan (Karbi Anglong) on the Silonijan-Chokikhola road is a small patch forest located between Sotiona and Parolijan village (Parolijan River). It is encircled by two hills, namely Kalapahar and Risak on either side connecting Kaziranga National Park via Kalioni Reserve Forest. Length of the corridor is 2 km. and width is 2 km.

Kaziranga-Karbi Anglong at Panbari: This 1 km. long and 0.85 km. wide corridor consisted of Reserve forest and Kaziranga National Park and connects elephant habitats of Kaziranga National Park with the Karbi Anglong forest.

Kaziranga-Karbi Anglong at Kanchanjuri: This corridor connects the elephant habitats of Kaziranga National Park with Brahapahar and Karbi Anglong forests. Under Eastern Assam Wildlife Division this corridor area passes through tea gardens and is close to NH 37. Length of the corridor is 2km.and width is 0.5 km. consisting of Reserve forest and proposed addition (4rd addition) to Kaziranga National Park.

Kukurakata-Bagser at Amguri: This corridor falls under Eastern Assam Wildlife Division, connecting the elephant habitats of Kaziranga National Park and Kukurakata Reserve Forest with Bagser Reserve Forest and the forest of Karbi Anglong. Length of the corridor is 0.8 km.and width 0.5 km. Amguri is the major settlement in the corridor.

Charduar-Singri hill: This corridor (Sonitpur West Forest Division) passes through tea gardens and settlements of Sonitpur district and is known to have very man-animal conflict. Several major settlements (viz. Posabasi, Panchnoi, Dipabasti, Rowmari basti etc.) lay in this 30 km. long and 1.5 km wide elephant corridor.

ERROR! NO TEXT OF SPECIFIED STYLE IN DOCUMENT.**-3: FOREST AND ELEPHANT CORRIDORS IN MEGHALAYA**

The estimated cost of the project based on **October 2013 price level** is as follows

Considering 50% funding from World Bank and 50% funding as Grant from DONER/GOI

(Rupees in Crores)

	TRANSMISSION SYSTEM (Part A)	DISTRIBUTION SYSTEM (Part B)	TOTAL
NER POWER SYSTEM IMPROVEMENT PROJECT – TRANCHE –I : ASSAM			
TRANSMISSION / DISTRIBUTION SYSTEM COST	885.23	275.12	1160.35
CONTINGENCIES	26.56	8.25	34.81
IDC	60.47	18.79	79.26
CONSULTANCY FEES	122.93	38.20	161.13
TOTAL	**1095.19**	**340.36**	**1435.55**

ABSTRACT COST ESTIMATE

(BASE COST)

NER POWER SYSTEM IMPROVEMENT PROJECT - TRANCHE - I

ASSAM - PART A - TRANSMISSISON SYSTEM

(DEPOSIT WORK FOR DONER)

(Cost updated to OCTOBER 2013 price level)

Sr. No.	DESCRIPTION	AMOUNT (Rs. in Crs.)
A	Preliminary Survey & Soil Investigation (Annex.- 1.1)	1.67
B	Land Acquisition for Substation and R & R Compensation (Annex. - 1.1)	100.21
C	Cost of Compensation for Transmission Lines (Annex. - 1.1)	
	i) Compensation towards Crop, Tree & PTCC	11.29
	ii) Compensation towards Forest	8.73
D	Civil Works (Annex. - 1.1)	
	i) Infrastructure for substations	31.22
	ii) Non Residential Buildings	20.65
	iii) Colony for Trans. Lines & Substations	105.46
E	Equipment (Supply & Erection) Cost	
	a) Trans.Lines (Annex.-1.2)	168.25
	b) Sub-Stations (Annex.-1.3)	418.16
	c) Voice & Data Connectivity (Annex 1.4)	19.60
F	Sub Total (A to E)	885.23
G	Contingencies (@3% of F)	26.56
H	TOTAL COST EXCL. CONSULTANCY FEES	911.79
I	POWERGRID CONSULTANCY FEES @12% & SERVICE TAX THEREON	122.93
J	TOTAL PROJECT COST INCL CONSULTANCY FEES	1034.72
K	Interest During Construction(IDC)*	60.47
	GRAND TOTAL	1095.19

Note*

1. The Project is proposed to be partly funded by the World Bank (50%) and the balance through Grant from GOI(50%) .Hence IDC has been calculated for loan portion (50% of project cost incl consultancy fees) only

2. The above cost is INclusive of Voice & Data Connectivity amounting to Rs. 19.60 Cr

3. The above cost includes:

i) Land Acquisition for S/S and R & R Compensation Rs. 100.21 Cr

ii) Compensation towards Forest Rs. 8.73 Cr

ABSTRACT COST ESTIMATE
(BASE COST)

NER POWER SYSTEM IMPROVEMENT PROJECT - TRANCHE - I
ASSAM - PART B - DISTRIBUTION SYSTEM
(DEPOSIT WORK FOR DONER)

(Cost updated to NOV 2013 Indices)

Sr. No.	DESCRIPTION	AMOUNT (Rs. in Crs.)
A	Preliminary Survey & Soil Investigation	0.23
B	Land Acquisition for Substation and R & R Compensation	8.00
C	Cost of Compensation for Transmission Lines	
	i) Compensation towards Crop, Tree & PTCC	2.00
	ii) Compensation towards Forest	7.92
D	Civil Works	
	i) Infrastructure for substations	7.42
	ii) Non Residential Buildings	
	iii) Colony for Trans. Lines & Substations	
E	Equipment (Supply & Erection) Cost	
	a) Trans.Lines (Annex.-1.2 B)	140.12
	b) Sub-Stations (Annex.-1.3 B)	100.31
	c) Voice & Data Connectivity (Annex 1.4 B)	16.04
F	Sub Total (A to E)	282.04
G	Contingencies (@3% of F)	8.46
H	TOTAL COST EXCL. CONSULTANCY FEES	290.50
I	POWERGRID CONSULTANCY FEES @12% & SERVICE TAX THEREON	39.17
J	TOTAL PROJECT COST INCL CONSULTANCY FEES	329.67
K	Interest During Construction(IDC)*	18.79
	GRAND TOTAL	348.46

Note*
1. The Project is proposed to be partly funded by the World Bank (50%) and the balance through Grant from GOI(50%). Hence IDC has been calculated for loan portion (50% of project cost incl consultancy fees) only.

2. The above cost is INclusive of Voice & Data Connectivity amounting to Rs. 16.04 Cr

3. The above cost includes:

i) Land Acquisition for S/S and R & R Compensation Rs. 8.00 Cr

ii) Compensation towards Forest Rs. 7.92 Cr

Annexure -3

SOCIAL MANAGEMENT FRAMEWORK

Part A: Acquisition of Lands and Structures.

1. The availability of land for substations is an potential social issue as fresh lands will be required for construction of substations. AEGCL/APDCL shall secure/acquire the required land either through direct purchase on willing buyer & willing seller basis on negotiated rate or by invoking provisions of RFCTLARRA, 2013. The present land availability status of substations involved in tranche-1 is provided in**Table –1.**

Table – 1: Land Availability Status for Substation

Sl. No.	Name of the substation	Scope of work	Land Status
A. Transmission Substations			
1	220/132 kV Amingaon (GIS)	New	Land for 5 new substations (i.e. *Behiating, Guwahati Medical College, Silapather, Paltanbazar, & Sarupather) and all extension substations* are available with AEGCL. For remaining 6 new substations, the required land shall be secured either through direct purchase on willing buyer & willing seller basis on negotiated rate or by invoking provisions of RFCTLARRA, 2013
2	220/132 kV Behiating (New Dibrugarh)	New	
3	132/33 kV Guwahati Medical College (GIS)	New	
4	132/33 kV Chapakhowa	New	
5	132/33 kV Silapather	New	
6	132/33 kV Hazo	New	
7	132/33 kV Paltanbazar (GIS)	New	
8	132/33 kV Tangla	New	
9	132/33 kV Sarupather	New	
10	132/33 kV Tezpur New	New	
11	132/33 kV Teok	New	
12	220/132 kV Rangia	Augmentation	
13	220/132 kV Tinsukia	Augmentation	
14	132/33 kV Dhemaji SS	Augmentation	
15	132/33 kV Sonabil	Augmentation	
16	132/33 kV Rupai	Augmentation	
17	132/33 kV Kahilipara	Augmentation	
18	132/33 kV Kamakhya (GIS)	Augmentation	
19	220/132 kV Samaguri	Augmentation	
20	132/33 kV Dhaligaon	Augmentation	
B. Distribution Substations			
1	33/11 kV substation (16 Nos.)	New	APDCL has identified land for these substations and the required lands shall be secured either through direct purchase on willing buyer & willing seller basis on negotiated rate or by invoking provisions of RFCTLARRA, 2013.

2. As per the provisions of ESPP land for substations covered under tranche-1 can be secured through following three methods;

i) Purchase of land on willing buyer & Willing Seller basis on negotiated rate;

ii) Voluntary Donation; and

iii) Involuntary Acquisition. .

3. In case of procurement of land through private purchase, AEGCL/APDCL shall ensure that compensation/rate for land is not less than the rate provided in the new land acquisition act, 2013. The finalization of land price/negotiation shall be through a committee. In order to comply with this provision AEGCL/APDCL may organize an awareness camp where provisions of new act in respect of basis/modalities of compensation calculation shall be explained to land owners with specific State provision if any.

4. In case of voluntary donation of land the following shall be ensured:

   - The land user(s) will not be subjected to undue pressure for parting of land;
   - All out efforts shall be made to avoid any physical relocation/displacement due to loss of land;
   - The AEGCL/APDCL shall facilitate in extending 'gratitude' to the land donor(s) in lieu of the 'contribution' if so agreed. The same shall be documented in the shape of MoU between donor and utility and subsequently title of land transferred in the name of AEGCL/APDCL
   - All land donations (as well as purchases) will be subject to a review/ approval from a broad based committee comprising representatives of different sections including those from the IA and GoA.

5. In case of land acquired through involuntary acquisition, provisions of RFCTLARRA, 2013 shall be adopted. RFCTLARRA, 2013 has replaced the old Land Acquisition Act, 1894 and has come into force from 1st January 2014. The new act i.e. RFCTLARRA, 2013 authorizes State Govt. (i.e. GoA) or its authorized Government agency to complete the whole process of acquisition of private land by following the laid down procedures in the act/rules which include detailed Social Impact Assessment (SIA) and preparation/disclosure of Social Impact Assessment Plan (SIMP). Responsibility for SIA and R&R rests with the government of Assam and AEGCL/APDCL's responsibility is limited to identification and selection of suitable land based on technical requirement and ensuring budget allocation.

6. The provisions of new RFCTLARR Act, 2013 has brought about synergies with the World Bank policy and practices. These imply provisions like Social Impact Assessment; R&R Provisions and Entitlements; Focus on those losing livelihoods; Census surveys and R&R Plan; Providing options and choices; Replacement cost of Land and Assets (Net of Taxes); Additional provisions for disadvantaged groups; Full payment of compensation and R&R prior to taking over of land and assets and Consultations & Disclosures, Post implementation

social audit and impact evaluation etc that are also key to the World Bank Involuntary Resettlement Policy.

Safeguards against land acquisition:

7. The act has many provisions which will safeguard against indiscriminate acquisition of farm land and associated impacts like project specific SIA to conclude whether the proposed acquisition serves the public purpose; estimation of affected families and families likely to be displaced; extent of lands, public and private, houses, settlements and other CPRs likely to be affected; whether the extent of land proposed is absolutely bare minimum requirement; whether other alternative sites were considered and found not feasible and whether the social benefits outweigh social costs. Act has special provisions for land inhabited by SCs, STs; provisions restricting acquisition of land in excess of requirement. It discourages acquisition of multi-crop and irrigated land, and makes consent of land owners mandatory for private & PPP projects.

Entitlements:

8. The entitlements with regard to compensation and assistances towards land acquisition or loss of any assets or livelihood for all categories of people being affected due to land acquisition is briefly outlined in Table – 2.

TABLE-2. MINIMUM COMPENSATION & R&R ENTITLEMENTS FOR LAND ACQUISITION

A. Comprehensive Compensation Package	
Eligibility for Entitlement	**Provisions**
The affected families • **<u>Land Owners: includes any person</u>**- i) whose name is recorded as (he owner of the land or building or part thereof, in the records of the authority concerned; or ii) any person who is granted forest rights under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 or under any other law for the time being in force; or iii) who is entitled to be granted Patta rights on the land under any law of the State including assigned lands: or iv) any person who has been declared as such by an order of the court or Authority;	**Determination of Compensation :** **1. Market value** of the land • as specified in the Indian Stamp Act, 1899 or • the average of the sale price for similar type of land situated in the village or vicinity, or • consented amount of compensation as agreed in case of acquisition of lands for private companies or for public private partnership project. **whichever is higher** Market value x **Multiplier* between 1 to 2 in rural areas only (No multiplier in urban areas).** **2.** Value of the assets attached to land: Building/Trees/Wells/Crop etc. as valued by relevant govt. authority; **Land compensation = 1+2** **3. Solatium:** 100% of total compensation **Total Compensation** : **1+2+3**

(*) Precise scale shall be determined by the State Govt.
The indicative values of multiplier factor based on distance from urban areas as provided in the act.

Radial Distance from Urban area (Km)	Multiplier Factor
0-10	1.00
10-20	1.20
20-30	1.40
30-40	1.80
40-50	2.00

B. R&R Package

Elements of Rehabilitation and Resettlement Entitlements for all the affected families (both land owners and the families whose livelihood is primarily dependent on land acquired) in addition to compensation provided above

Sl. No.	Elements of R& R Entitlements	Provision
1.	Subsistence grant/allowance for displaced families	Rs. 3000 per month per family for 12 months
2.	The affected families shall be entitled to:	a. Where jobs are created through the project, mandatory employment for one member per affected family; **or** b. Rupees 5 lakhs per family; **or** c. Rupees 2000 per month per family as annuity for 20 years, with appropriate index for inflation; **The option of availing (a) or (b) or (c) shall be that of the affected family**
3.	Housing units for displacement: i) If a house is lost in rural areas: ii)If a house is lost in urban areas	i. A constructed house shall be provided as per the Indira Awas Yojana specifications. ii. A constructed house shall be provided, which will be not less than 50 sq. mts. in plinth area. **In either case the equivalent cost of the house may also be provided in lieu of the house as per the preference of the project affected family.** The stamp duty and other fees payable for registration of the house allotted to the affected families shall be borne by the Requiring Body.
4.	Transportation cost for displaced families	Rs 50,000/- per affected family
5.	Resettlement Allowance (for displaced families)	Onetime Rs 50,000/- per affected family
6.	Cattle shed/ petty shop cost	Onetime financial assistance as appropriate for construction as decided by St. Govt. subject to minimum of Rs.25,000/-
7.	Artisan/small traders/others (in case of displacement)	Onetime financial assistance as appropriate as decided by St. Govt. subject to minimum of Rs.25,000/-

Special Provisions for SCs/STs

In addition to the R&R package, *SC/ST families will be entitled to the following additional benefits:*

1. One time financial assistance of Rs. 50,000 per family;
2. Families settled outside the district shall be entitled to an additional 25% R&R benefits;
3. Payment of one third of the compensation amount at very outset;

4. Preference in relocation and resettlement in area in same compact block;
5. Free land for community and social gatherings;
6. In case of displacement, a *Development Plan is to be prepared*
7. *Continuation of reservation and other Schedule V and Schedule VI area benefits from displaced area to resettlement area.*

Social Impact Management Plan (SIMP):

Establishment of Institutions

9. The following bodies are to be established permanently in the state (to cater to all projects proposed in future):

- **The State Social Impact Assessment Unit;**
  - ✓ selecting the SIA team for each project from the individuals and institutions registered/empanelled in the State Database
  - ✓ To develop Project specific ToR
  - ✓ Ensuring no conflicts of interest involving the team members
- **Land Acquisition Rehabilitation and Resettlement Authority**
  - ✓ Appointment of Presiding Officer
- **The office of the Commissioner Rehabilitation & Resettlement**
  - ✓ Appointment of Commissioner Rehabilitation and Resettlement
  - ✓ Appointment of Project Specific Administrator for Rehabilitation and Resettlement
- **The State Level Monitoring Committee**
- **User-friendly website as a public platform to disclose entire work flow of each acquisition case.**
- **Formulation of Expert group to study SIA report and recommendation**
  - ✓ Commissioner, R&R to appoint the members of the Expert Group
  - ✓ Names of group members to be publically disclosed

10. On confirmation of the scheme and finalization of land after exploring alternative site, the AEGCL/APDCL's would submit a proposal for acquisition of private selected land detailing the extent of land and its exact location. After due process of approval the government shall notify the affected area where selected land is situated for conducting detailed social assessment.

Social Impact Assessments

- A detailed Social Impact Assessment (SIA) studies shall be undertaken by an Independent Agency/Institution on a project specific TOR. The SIA agency shall first consult the concerned Panchayat, Municipality, District/Village Council at village level or ward level in the affected area to carry out SIA study. SIA shall assess the purpose of acquisition and estimate the affected families, gender, social group carry out analysis regarding impact on community properties, assets and infrastructure particularly roads, public transport, drainage, sanitation, sources of drinking water, sources of water for cattle, community ponds grazing land, plantations, public utilities electricity supply and health care facilities. The SIA agency shall also prepare a Social Impact Management Plan (SIMP) listing ameliorative measures required for addressing the likely impact vis-à-vis intended benefit of the project. The SIA report and SIMP shall be subject to public hearing in the affected area after giving adequate publicity for the venue, time etc to ascertain the views of affected families/communities which shall be included in the SIA.

The final SIA report shall be published including its translation in local language and shall also be made available to Panchyats, District/Village Councils & Deputy Collector/District Magistrate office for wider circulation. Explicit consent will be required in the case of lands in respect of tribal areas from ADC and the Village Councils. The process flowchart of SIA is presented in Fig-1.

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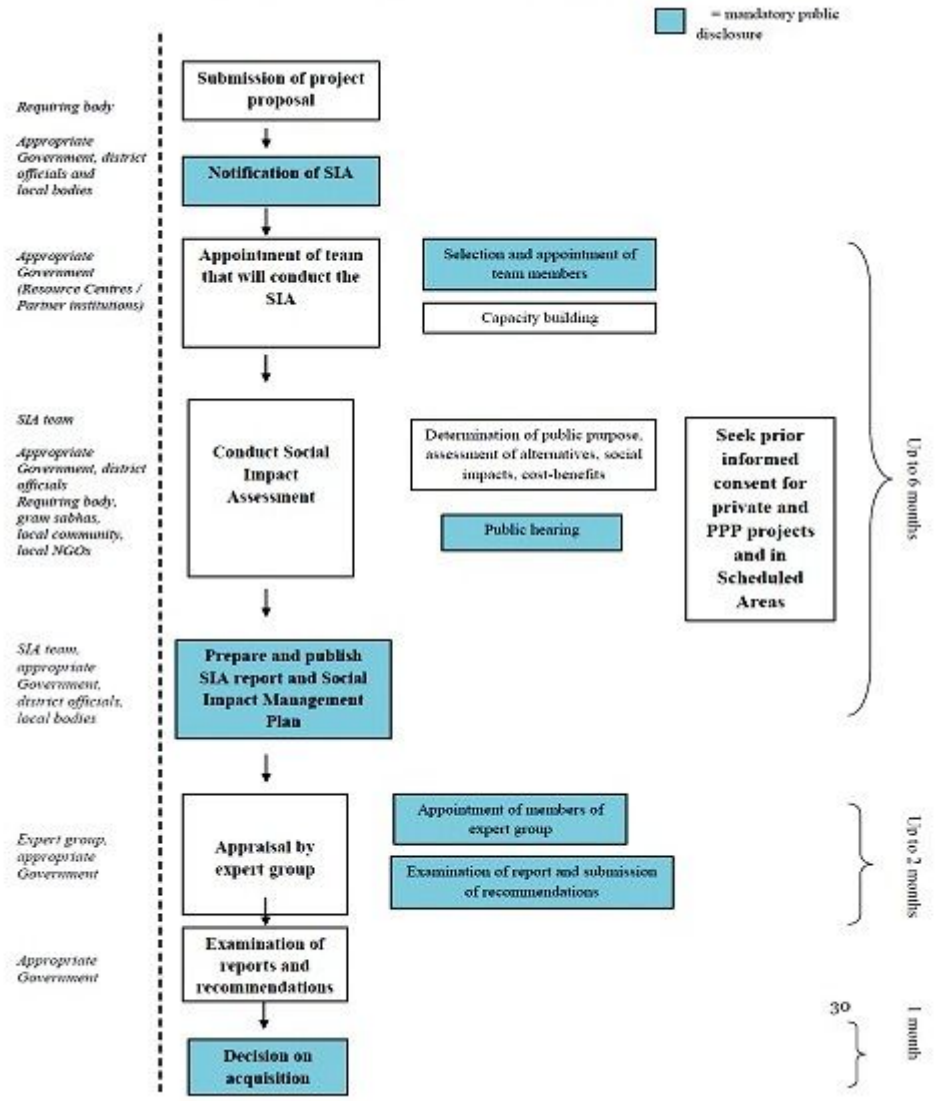
Fig-1 Process Flow chart of Social Impact assessment (SIA)



Compensation and Rehabilitation and Resettlement (R&R):

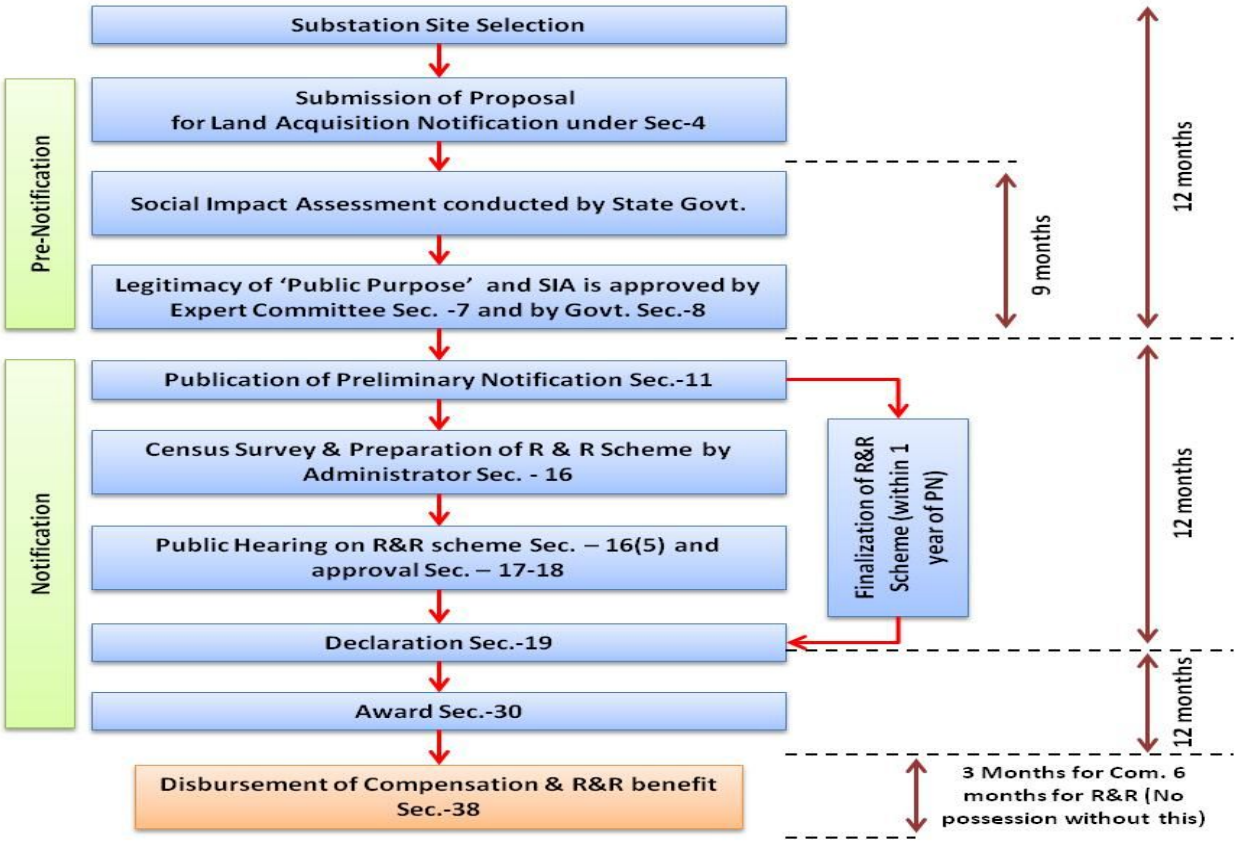
- Based on the SIMP, the Collector shall discuss the Package in a meeting with the Rehabilitation and Resettlement committee at project level, and submit the Package to Commissioner Rehabilitation and Resettlement along with his/ her remarks.
- The Commissioner Rehabilitation and Resettlement shall, after due vetting, accords approval to the scheme and make it available in public domain.
- After approval of R & R plan by Commissioner R & R , the Collector shall issue two awards one for land compensation based on procedures described in act & State's rules

and second for R & R as per approved SIMP .

- The Collector shall take possession of land after ensuring that full payment of compensation as well as rehabilitation and resettlement entitlements are paid or tendered to the entitled persons within a period of three months for the compensation and a period of six months for the monetary part of rehabilitation and resettlement entitlements as approved and commencing from the date of the award.
- The Collector shall be responsible for ensuring that the rehabilitation and resettlement process is completed in all its aspects before displacing the affected families.
- The Collector shall, as far as possible. not displace any family which has already been displaced by the appropriate Government for the purpose of acquisition under the provisions of this Act, and if so displaced, shall pay an additional compensation equivalent to that of the compensation determined under this Act for the second or successive displacements.

The complete activity flow chart is described in Fig -2 . It may take about three years to complete the processes. It is also mandatory that no construction can start without the full payment of the compensations.

FIGURE 2: ACTIVITY CHART RFCTLARRA, 2013



PART B:

Compensation Plan for Temporary Damages (CPTD) towards Erection of Tower/ Poles for Transmission/ Distribution lines

1. Land requirements for erecting tower/ poles for transmission/ distribution lines are just minimal. All it requires is to place the foot, four of which warrants an area of 4-6 sq- ft. Lands in respect of the right of way are not acquired as agricultural activities can continue beneath the tower. Further, line alignments are done in such a way so as to avoid settlements and / or structures. Due to inherent flexibility in locating the poles, AEGCL/APDCL's avoids habituated area completely hence no relocation of population on account of TL/DL lines are envisaged. Thus, the actual impact is restricted to 4 legs of the tower. Agriculture can continue, as clearly depicted in the figure-3 . As per existing law, land for tower/pole and right of way is not acquired and agricultural activities are allowed to continue after construction activity. However, AEGCL/APDCL pays compensation to the affected persons/ community for all damages including cost of land below tower to its owner without acquiring it. Thus, compensations are made for following::

(i) land cost of tower footings;

(ii) standing crops;

(iii) trees, if any;

(iv) other assets like well and

(v) any other damages/ effects.

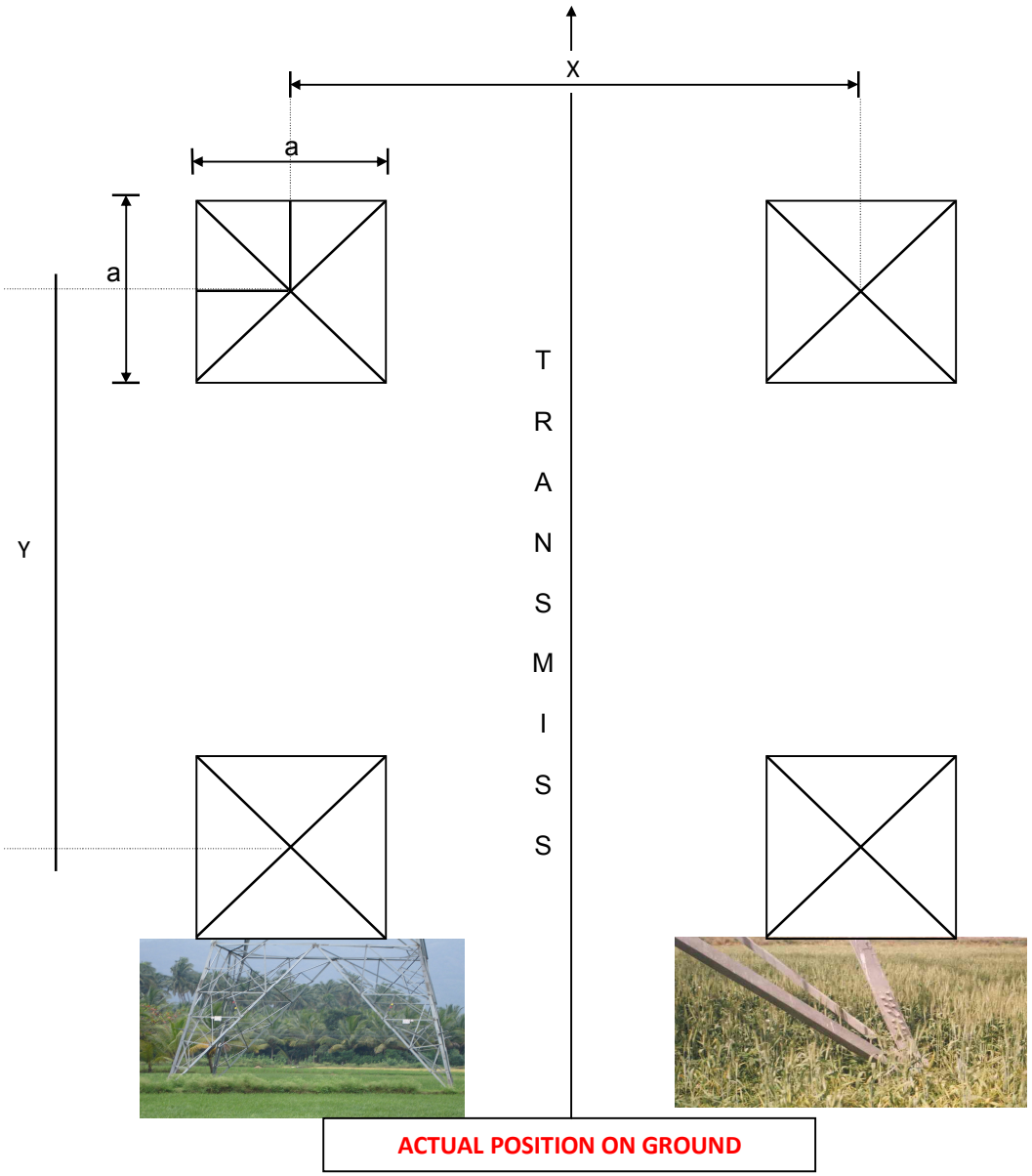
Capturing all these, the Implementing agency (IA) will prepare a Compensatory Plan for Temporary Damage (CPTD). The content/coverage of a typical CPTD is placed at the end.

2. **Process**. AEGCL/APDCL's through its "Bee" line survey (i.e. a desk review) on Survey of India (SOI) map (topo-sheets) preferably on 1:50,000 Scale, the Forest Atlas and or Google Earth map examine various route options at least 3 (Three) alternatives referring 'Bee' line as a guiding one between two or multiple origins of proposed transmission/distribution line avoiding/minimizing environmentally and socially sensitive areas based on base line data/information.

3. Taking reference to this desk review, a reconnaissance survey in-house or through other agency/ or walk-over survey is undertaken with hand-held GPS for on-site verifications to confirm findings of desk review survey or otherwise. During Recce or W/O survey it may also be possible to identify other better option of route following the criteria of avoidance & minimization, if so the same, after having collected/updated information/data may be considered as another alternative.

4. A Social (and Environmental) Assessment is conducted in respect of each of the chosen lines of alignment. The process involved extensive consultations with land owners/farmers and different stakeholders.

FIGURE-3 TYPICAL PLAN OF TRANSMISSION LINE TOWER FOOTINGS



INDICATIVE MEASURES

X & Y = 10-15 METERS

a = 300- 450 mm

5. During the process public views and necessary inputs about surroundings/ villages/crops etc. are also necessary and noted for screening/scoping. After comparison and analysis of all E & S parameters so gathered for all alternatives and considering other significant economic benefit associated with the project/subproject, the most optimum route having minimum environment & social impact is selected for further investigation.

6. Site office will consults with state forest departments if the line is passing through forest areas. Revenue authorities will be consulted for their views on revenue/other lands. Experts' assistance will be taken, as appropriate, on valuing crops, trees and other assets.

7. Social Assessment concludes with: (i) selection of an optimum line; and (ii) a Social Management Plan viz., CPTD. All these are disclosed widely among the stakeholders as well as on the internet and evince a feedback. Due approval will be sought from District/ Village Councils. In case the scheme/project is implemented in predominantly tribal area a separate and comprehensive analysis in respect of likely impact both positive and negative shall be carried out and will be incorporated in the CPTD.

8. Responsibility for the conduction of SA, preparation of CPTD rests with the IA The ultimate authority for vetting the affected persons and the nature and extent of compensations rests with the Collector. The entitlement matrix for planning compensation for possible impact is as follows:

Entitlement Matrix for CPTD

S. No	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) 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

S. No	ISSUE/IMPACT	BENEFICIARY	ENTITLEMENT OPTIONS
5.	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
6	Tribal/ Vulnerable APs	Vulnerable APs1	One time additional lump sum assistance not exceeding 25% of total compensation on recommendation of State Authority/ADC/VC.

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

9. A notice under Indian Telegraph Act/Electricity Act, 2003 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 inevitability likely to be damaged during the course of the construction of the proposed transmission line and acknowledgement received from land owner. A copy of said notice is further issued to the Revenue Officer, who has been authorized by the Tripura Govt. for the purpose of assessment/valuation and disbursement of compensation to the affected parties.

10. The revenue officer shall further issue a notice of intimation to the concerned landowner 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 and crops 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.

11. The Mouja list shall contain 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 is conducted by the concerned District Collector or his authorized representative in order to ascertain the assessment carried out by the revenue office is genuine and correct. After this process the District collector issues a tree cutting permit to AEGCL/APDCL to enable removal / damage to the standing tree/crop identified in the line corridor.

12. Once the tree/crop is removed / damaged, AEGCL/APDCL 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 Center 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.

13.On approval of compensation, the revenue officer shall further intimate the amount payable to the different landowners and AEGCL/APDCL arranges the payment by way of Demand Draft 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.

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

Content of Compensation Plan For Temporary Damages (CPTD)

Section - I: Project Description: Brief description of the background, benefits of the project, objective of compensation plan.

Section – II: Project Impacts : Minimization of impacts**,** description of alternative studies made for proposed route of transmission line including systematic analysis of different alternative studied with reference to particular environmental & social parameters like involvement of forest, protected areas, significant economic benefit associated with the project and without the project etc. and reason for selection of proposed route, analysis of impacts including numbers of affected persons/household, land use traversed etc.

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Section – III: Socio-economic and Environmental Analysis for CPTD: Description of the physical, physiographical, socio-economic condition of the project area including other demographic features of the project area, Preliminary Social assessment, Impact due to project location and design and Critical social review criteria

Section -IV: Compensation Framework: Description of compensation plan, Procedure for tree/crops/land compensation.

Section – V: Stakeholders Participation & Compensation: Public Consultation during Preliminary Survey and peoples reaction/suggestion if any, Plan for further consultation during implementation

Section – VI: Institutional Arrangements for Implementation and Monitoring: Describing the implementation schedule, Grievances Redressal Mechanism, Disclosure, Evaluation and monitoring plan. Budget provision for compensation

Part C: Tribal People Development Framework

The preliminary assessments made during the project preparation have established that there are tribal people in the project area. It is also ascertained that they do have a collective attachment to the project area particularly in the scheduled area and that they may get affected by the project interventions. Accordingly, to ensure focused and exclusive attention towards such tribals it is envisaged to develop a "Tribal People Development Plan" (TPDP). Since proposed investment programs involve many sub-projects/schemes linear in nature running in different geographical area of state due to which precise information about the tribal people likely to be impacted is not yet firmed up. In order to overcome this limitation, a Tribal People Development Framework (TPDF) is developed which sets out approach and methodology for the preparation of a TPDP.

TPDF Objectives and Policies

1. The objectives of the TPDF are to ensure that if indigenous peoples[2](referred to as tribal in India) tribal are affected by a project/scheme they:
   i) are adequately and fully consulted;
   ii) receive benefits and compensation equal to that of the mainstream population:
   iii) are provided with special assistance as per laws and policies because of their vulnerabilities vis-à-vis the mainstream population; and
   iv) receive adequate protection against project adverse impacts on their culture identities.

   There are several policies which provide a legal framework for ensuring dedicate attention to the tribals. Article 366(25) of the Indian constitution refers to Scheduled Tribes (STs) as those communities who are scheduled in accordance with Article 342 of the Constitution. According to Article 342 of the Constitution, STs are the tribes or tribal communities or part of or groups within these tribes and tribal communities which have been declared as such by the President through a public notification. Identification of tribes is a State subject. Thus, classification of a tribe would depend on the status of that tribe in the respective State. Further the Fifth and Sixth Schedule of the constitution provides special provision for tribals in selected regions of the country.

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[2] * ***Indigenous People (IP)*** *referred as tribal in India are the distinct groups identified based on their social, cultural, economic, and political traditions and institutions, which are distinct from the mainstream or dominant society and culture. Tribal with similar cultural characteristics are known as 'Adivasi' in Hindi and are recognized as Schedule Tribes (STs) as per the Indian Constitution.*
As per OP-4.10 definition these are Members of a distinct indigenous cultural group, Collective attachment to geographically distinct habitats or ancestral territories in the project area and to the natural resources in these habitats and territories, Customary cultural, economic, social, or political institutions that are separate from those of the dominant society or culture, An indigenous language, often different from the official language of the country or region

2. The World Bank's Operational Policy on Indigenous Peoples (OP 4.10) aims at ensuring that the development process fosters full respect for the dignity, human rights and cultures of indigenous peoples, thereby contributing to the Bank's mission of poverty reduction and sustainable development. It also recognizes that the identities, cultures, lands and resources of indigenous peoples are uniquely intertwined and especially vulnerable to changes caused by development programs hence require special measures to ensure that they are included in and benefit from these programs as appropriate.

Identification of Indigenous Peoples

3. The term "Indigenous Peoples" is used in a generic sense to refer to a distinct, vulnerable, social and cultural group possessing the following characteristics in varying degrees:
   (a) Self-identification as members of a distinct indigenous cultural group and recognition of this identity by others;
   (b) Collective attachment to geographically distinct habitats or ancestral territories in the project area and to the natural resources in these habitats and territories;
   (c) Customary cultural, economic, social, or political institutions that are separate from those of the dominant society and culture; and
   (d) An indigenous language, often different from the official language of the country or region.

4. In Assam, certain areas have been declared as scheduled area as Specified by the Scheduled Areas under the Sixth Schedule of Indian Constitutions. Six schedule areas in Assam are Bodoland Territorial Council, Karbi Anglong Autonomous Council, Dima Hasao Autonomous District Council[3].

Tribal People Development Framework (TPDF)

5. The TPDF seeks to ensure that tribal communities are informed, consulted, and mobilized to participate in the subproject preparation. The Framework is intended to guide selection and preparation of additional subprojects under the Project where impacts on tribal people are identified to ensure better distribution of the Project benefits and promote development of the indigenous peoples in the Project areas. The framework is prepared in accordance with both the Indian Constitution provisions, RFCTLARRA, 2013 and World Bank's OP-4.10 and serves the following purposes:

   (a) Identification of the tribal people likely to be impacted by the project interventions;

[3] Govt. of Assam has recently created 6 more Autonomous Councils viz. Rabha Hasong Autonomous Council (RHAC), Mishing Autonomous Council (MAC), Tiwa Autonomous Council (TAG), Deori Autonomous Council (DAC), Thengal Kachari Autonomous Council (TKAC) and Sonowal Kachari Autonomous Council (SKAC).

(b) Assess the nature and extent of impacts likely to occur as a result of the project interventions;

(c) Prepare a plan (TPDP) outlining measures towards avoiding/ minimizing the negative impacts as well as enhance positive impacts;

(d) Outlines an approach for the conduction of social assessment for ensuring free, prior, and informed consultation with the affected tribal communities at each stage of project preparation and implementation;

(e) Putting in place an implementation arrangements of the TPDP, its disclosure and mechanisms to address any grievances.

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TPDF – Land Acquisition and Resettlement

6. Whenever after initial screening it is found that some land belonging to tribal community /communities is being needed to be involuntary acquired for setting up of a substation demonstrating/substantiating such acquisition is done only as a last resort by completing the technical investigation including assessment of alternatives and detailed surveys. The detailed report along with land requirement is submitted to the Government of Assam (GoA) for further processing as per provisions of RFCTLARRA, 2013. GOA then initiates a SIA through an Independent Agency with a project specific terms of reference. The SIA agency shall first consult the concerned Panchayat, Municipality, District/Village Council at village level or ward level in the affected area to carry out SIA study. SIA shall assess the purpose of acquisition and estimate the affected families, gender, social group carry out analysis regarding impact on community properties, assets and infrastructure particularly roads, public transport, drainage, sanitation, sources of drinking water, sources of water for cattle, community ponds grazing land, plantations, public utilities electricity supply and health care facilities. The SIA agency shall also prepare a Social Impact Management Plan (SIMP) listing ameliorative measures required for addressing the likely impact vis-à-vis intended benefit of the project. The SIA report and SIMP shall be subject to public hearing in the affected area after giving adequate publicity for the venue, time etc to ascertain the views of affected families/communities which shall be included in the SIA. The final SIA report shall be published including its translation in local language and shall also be made available to Panchyats, District/Village Councils & Deputy Collector/District Magistrate office for wider circulation. Detailing of the same is provided below:

(i) the prior consent of the concerned Gram Sabha or the Panchayats or the autonomous District Councils at the appropriate level in Scheduled Areas under the Fifth Schedule to the Constitution, as the case may be, shall be obtained in all cases of land acquisition in such areas, before issue of a notification under this Act, or any other Central Act or a State Act for the time being in force.

(ii) Provided that the consent of the Panchayats or the Autonomous Districts Councils shall be obtained in cases where the Cram Sabha does not exist or has not been constituted.

(iii) In the case of a project involving land acquisition on behalf of a Requiring Body which

involves involuntary displacement of the Scheduled Castes or the Scheduled Tribes families, a Development Plan shall be prepared in such a form as may be prescribed. laying down the details of procedure for settling land rights due, but not settled and restoring titles of the Scheduled Tribes as well as the Scheduled Castes on the alienated land by undertaking a special drive together with land acquisition. This plan is targeted at both SCs and STs, but, for the current purpose, it is referred to as Tribal People Development Plan (TPDP) and contents of such a Development Plan are provided at the end.

(iv) the TPDP also contain a program for development of alternate fuel, fodder and non-timber forest produce resources on non-forest lands within a period of five years sufficient to meet the requirements of tribal communities as well as the Scheduled Castes.

(v) In the case of land being acquired from the members of the Scheduled Castes or the Scheduled Tribes, at least one-third of the compensation amount due shall be paid to the affected families initially as first instalment and the rest shall be paid after taking over of the possession of the land.

(vi) The affected families of' the Scheduled Tribes shall be resettled preferably in the same Scheduled Area in a compact block so that they can retain their ethnic, linguistic and cultural identity.

(vii) The resettlement areas predominantly inhabited by the Scheduled Castes and the Scheduled Tribes shall get land, to such extent as may be decided by the appropriate Government free of cost for community and social gatherings.

(viii) Any alienation of tribal lands or lands belonging to members of the Scheduled Castes in disregard of the laws and regulations for the time being in force shall be treated as Null and void. and in the case of acquisition of such lands, the rehabilitation and resettlement benefits shall be made available to the original tribal land owners or land owners belonging to the Scheduled Castes.

(ix) The affected Scheduled Tribes. other traditional forest dwellers and the Scheduled Castes having fishing rights in a river or pond or dam in the affected area shall be given fishing rights in the reservoir area of the irrigation or hydel projects.

(x) Where the affected families belonging to the Scheduled Castes and the Scheduled Tribes are relocated outside of the district. then they shall be paid an additional 25% rehabilitation and resettlement benefits to which they are entitled in monetary terms along with a one-time entitlement of Rs. 50,000/-.

(xi) All benefits, including the reservation benefits available to the Scheduled Tribes and the Scheduled Castes in the affected areas shall continue in the resettlement area.

(xii) Whenever the affected families belonging to the Scheduled Tribes who are residing in the Scheduled Areas referred to in the Fifth Schedule or the tribal areas referred to in the Sixth Schedule to the Constitution are relocated outside those areas, than, all the statutory safeguards. entitlements and benefits being enjoyed by them under this Act shall be extended to the area to which they are resettled regardless of whether the resettlement area is a scheduled Area referred to in the said Fifth Schedule or a tribal area referred to in the said Sixth Schedule. or not.

(xiii) Where the community rights have been settled under the provisions of the Scheduled 'tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006. The same shall be quantified in monetary amount and be paid to the individual conceded who has been displaced.

Following entitlement matrix shall be the basis for providing compensation and compatible R&R measures for tribal peoples:

MINIMUM COMPENSATION & R&R ENTITLEMENTS FOR LAND ACQUISITION

A. Comprehensive Compensation Package	
Eligibility for Entitlement	**Provisions**
The affected families • **Land Owners: includes any person-** v) whose name is recorded as (he owner of the land or building or part thereof, in the records of the authority concerned; or vi) any person who is granted forest rights under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 or under any other law for the time being in force; or vii) who is entitled to be granted Patta rights on the land under any law of the State including assigned lands: or viii) any person who has been declared as such by an order of the court or Authority;	**Determination of Compensation :** **4. Market value** of the land • as specified in the Indian Stamp Act, 1899 or • the average of the sale price for similar type of land situated in the village or vicinity, or • consented amount of compensation as agreed in case of acquisition of lands for private companies or for public private partnership project. **whichever is higher** Market value x **Multiplier* between 1 to 2 in rural areas only (No multiplier in urban areas).** **5.** Value of the assets attached to land: Building/Trees/Wells/Crop etc. as valued by relevant govt. authority; **Land compensation = 1+2** **6. Solatium:** 100% of total compensation **Total Compensation** : **1+2+3**

(*) Precise scale shall be determined by the State Govt.
The indicative values of multiplier factor based on distance from urban areas as provided in the act.

Radial Distance from Urban area (Km)	Multiplier Factor
0-10	1.00
10-20	1.20
20-30	1.40
30-40	1.80
40-50	2.00

B. R&R Package

Elements of Rehabilitation and Resettlement Entitlements for all the affected families (both land owners and the families whose livelihood is primarily dependent on land acquired) in addition to compensation provided above

Sl. No.	Elements of R& R Entitlements	Provision
1.	Subsistence grant/allowance for displaced families	Rs. 3000 per month per family for 12 months
2.	The affected families shall be entitled to:	d. Where jobs are created through the project, mandatory employment for one member per affected family; **or** e. Rupees 5 lakhs per family; **or**

		f. Rupees 2000 per month per family as annuity for 20 years, with appropriate index for inflation; **The option of availing (a) or (b) or (c) shall be that of the affected family**
3.	Housing units for displacement: iii) If a house is lost in rural areas: iv) If a house is lost in urban areas	iii. A constructed house shall be provided as per the Indira Awas Yojana specifications. iv. A constructed house shall be provided, which will be not less than 50 sq. mts. in plinth area. **In either case the equivalent cost of the house may also be provided in lieu of the house as per the preference of the project affected family.** The stamp duty and other fees payable for registration of the house allotted to the affected families shall be borne by the Requiring Body.
4.	Transportation cost for displaced families	Rs 50,000/- per affected family
5.	Resettlement Allowance (for displaced families)	Onetime Rs 50,000/- per affected family
6.	Cattle shed/ petty shop cost	Onetime financial assistance as appropriate for construction as decided by St. Govt. subject to minimum of Rs.25,000/-
7.	Artisan/small traders/others (in case of displacement)	Onetime financial assistance as appropriate as decided by St. Govt. subject to minimum of Rs.25,000/-

Special Provisions for SCs/STs

In addition to the R&R package, *SC/ST families will be entitled to the following additional benefits:*

8. One time financial assistance of Rs. 50,000 per family;
9. Families settled outside the district shall be entitled to an additional 25% R&R benefits;
10. Payment of one third of the compensation amount at very outset;
11. Preference in relocation and resettlement in area in same compact block;
12. Free land for community and social gatherings;
13. In case of displacement, a *Development Plan is to be prepared*
14. *Continuation of reservation and other Schedule V and Schedule VI area benefits from displaced area to resettlement area.*

Consultations and ParticipationFramework

7. The World Bank OP 4.10 on Indigenous Peoples too emphasizes "a process of free, prior, and informed consultation with the affected tribal People's communities at each stage of the project, and particularly during project preparation, to fully identify their views and ascertain their broad community support for the project. To ensure peoples participation in the planning phase and aiming at promotion of public understanding and fruitful solutions of developmental problems various sections of project affected persons and other stakeholders were and will be engaged in consultations throughout the project planning and implementation stages. In this project, however, it will go beyond consultations, as it is mandatory for the project to seek consent for all plans (SIMP and CPTD) from the Tribal Councils.

8. Public participation, consultation and information dissemination begins with initial phases of project preparation. Public consultation activities and information dissemination to PAPs and local authorities continues as the project preparation activities proceed in a project. Through respective local governments and civil society, PAPs are regularly provided with information on the project and the resettlement process prior to and during the project preparation and implementation stages. Information dissemination and consultations shall be a continuous process during preparation, implementation, Monitoring and Evaluation. The information dissemination and consultation with PAPs shall include but not be limited to the following:

    (i) project description and its likely impacts,
    (ii) objective of the surveys
    (iii) entitlement provisions for different impacts.
    (iv) Mechanisms and procedures for public participation and consultation
    (v) Resettlement options
    (vi) Grievance redress mechanisms and procedures
    (vii) Tentative implementation schedule
    (viii) Role and responsibilities of different actors
    (ix) Preferences for mode of compensating for affected fixed assets
    (x) Household consultations for skill improvement training, use of compensation amount and livelihood restoration

9. A detailed consultation and communication procedure placed at Annexure-23 shall be used for each sub-project as part of the TPDP. Some of the methods that can be used for the purpose of communication will include provisions of information boards, pamphlets distribution, wall paintings, drum beating, organizing meetings with key informants and village committees and opinion gathering through post cards, phones and Short Messaging services (SMSes). The GRM as detailed out in main document shall also be applicable without any discrimination for TPDF. The following information shall be included in the TPDP:

    - Description followed by analysis of the social structure of the population.
    - Inventory of the resources and analysis of the sources of income of the population
    - Information about the systems of production practiced by tribals
    - Relationship of tribal groups to the proposed project
    - Examination of land tenure issues including lands under customary rule and assurance of continued use of these resources by the groups involved.
    - Strategy for local participation including mechanisms defined with the assistance and in consultation with tribal peoples for their participation in decision making process throughout project planning, implementation and evaluation cycle.
    - Summary of Public Consultation process.
    - Identification of development interventions or mitigation activities including measures to enhance tribal participation in the activities proposed under the project
    - An implementation schedule with benchmarks to assess progress
    - Monitoring and evaluation, including specific indicators
    - Detailed cost estimates/budget and financing plan and sources of funds for the TPDP covering planned activities.

- Organisation support/ institutional capacity like the government institutions responsible for tribal development
- Maps

Tribal Land Acquisition Process:

10. Land acquisition processes that need to be completed in a sequence has already been discussed in main ESPP report and Annexure-4. However, special provisions as applicable to the lands acquisition in Tribal /scheduled areas are enumerated below:

S. No.	Aspects	Actions	Special provisions for tribal /Scheduled Areas
1	Preliminary Investigation for determination of Social Impact and public purpose.	Notification for the commencement of Social Impact assessment study to be made available in local language to concerned Panchayat/Municipality and to offices of district collector/sub-divisional magistrate/tehsil (hereinafter referred to as local bodies)	As far as possible, no acquisition of land shall be made in the Scheduled Areas Where such acquisition does take place it shall be done only as a demonstrable last resort
		Consultation with the concerned Panchayat, Municipality or Municipal Corporation, as the case may be and carry out a social impact assessment (SIA) study	Land for traditional tribal institutions and burial and cremation grounds taken into consideration while conducting the SIA
		SIA study to be made public in manner specified in the Act	
		Preparation of Social Impact Management Plan (SIMP)	In case of a project involving land acquisition /involuntary displacement of the Scheduled Castes or the Scheduled Tribes families, a Development Plan shall be prepared laying down the details of procedure for settling land rights due but not settled and restoring titles of the scheduled Tribes as well as the Scheduled Castes on the alienated land by undertaking a special drive together with land acquisition The Development Plan shall also contain a programme for development of alternate fuel, fodder and non-timber forest produce resources on non-forest lands within a period of five years sufficient to meet the requirements of tribal communities as well as the Scheduled Castes.

		Public hearing for Social Impact Assessment (when prepared under section-4 of the act)	
2	Appraisal of SIA by expert group	SIA report is evaluated by an independent multi-disciplinary Expert Group, as may be constituted by appropriate Govt.	
		Recommendations of the expert group made available to the local bodies and in the affected areas in local language	
		The appropriate govt. would recommend the such area for acquisition after examining the expert group report (and report from the collector if any)	
3	Publication of preliminary notification	Notification (hereinafter referred to as preliminary notification) to that effect along with details of the land to be acquired in rural and urban areas shall be published (Notification to be issued within 12 months from DoA of SIA)	ln case of acquisition or alienation of any land in the Scheduled Areas, the prior consent of the concerned Gram Sabha or the Panchayats or the autonomous District Councils, at the appropriate level in Scheduled Areas under the Fifth Schedule to the Constitution, as the case may be, shall be obtained. in all cases of land acquisition in such areas, including acquisition in case of urgency, before issue of a notification under this Act, or any other Central Act or a State Act for the time being in force.
		Immediately after issuance of the notification, the concerned Gram Sabhas at the village level, municipalities in case of municipal areas and the Autonomous Councils in case of the areas referred to in the Sixth Schedule to the Constitution, shall be informed of the contents of the notification issued under the said sub-section in all cases of land acquisition at a meeting called especially for this purpose.	
		After issuance of notice, the Collector shall, before the issue of a declaration under section 19, undertake and complete the exercise of updating of land records as prescribed within a period of two months.	

		Preliminary survey of land	
		Payment for damage (if any) during survey	
4	Preparation of Rehabilitation and Resettlement Scheme by the Administrator	Upon the publication of the preliminary notification by the Collector, the Administrator for Rehabilitation and Resettlement shall conduct a survey and undertake a census of the affected families	
		The Administrator shall, based on the survey and census prepare a draft Rehabilitation and Resettlement Scheme (including time limit)	The affected families of the Scheduled Tribes shall be resettled preferably in the same Scheduled Area in a compact block so that they can retain their ethnic, linguistic and cultural identity. The resettlement areas predominantly inhabited by the Scheduled Castes and the Scheduled Tribes shall get land, to such extent as may be decided by the appropriate Government free of cost for community and social gatherings. The affected Scheduled Tribes, other traditional forest dwellers and the Scheduled Castes having fishing rights in a river or pond or dam in the affected area shall be given fishing rights in the reservoir area of the irrigation or hydel projects.
		The draft Rehabilitation and Resettlement scheme referred to in sub-section (2) shall be made known locally by wide publicity in the affected area and discussed in the concerned Gram Sabhas or Municipalities	
		A public hearing shall be conducted in such manner as may be prescribed, after giving adequate publicity about the date, time and venue for the public hearing at the affected area:	Provided further that the consultation with the Gram Sabha in Scheduled Areas shall be in accordance with the provisions of the Provisions of the Panchayats (Extension to the Scheduled Areas) Act, 1996.
		The Administrator shall, on	

		completion of public hearing submit the draft Scheme for Rehabilitation and Resettlement along with a specific report on the claims and objections raised in the public hearing to the Collector.	
		The Collector shall review the draft Scheme submitted by the Administrator with the Rehabilitation and Resettlement Committee at the Rehabilitation project level constituted under section 45:	
		The Collector shall submit the draft Rehabilitation and Resettlement Scheme with his suggestions to the Commissioner Rehabilitation and Resettlement for approval of the Scheme.	
		Approved Rehabilitation and Resettlement Scheme to be made public	
		Publication of declaration and summary of Rehabilitation and Resettlement.	
5	Land to be marked out, measured and planned including marking of specific areas	The Collector shall thereupon cause the land to be marked out and measured, and a plan to be made of the same.	
6	Notice to persons interested and making of statements	The Collector to publish the public notice on his website and cause public notice to be given at convenient places, to stating that the Government intends to take possession of the land, and that claims to compensations and rehabilitation and resettlement for all interests in such land may be made to him	
		The collector may require a statement containing the name of every person possessing any interest in the land and nature of interest for three years preceding the date of statement	
7	Enquiry and land acquisi-tion award by Collector	the Collector shall proceed to enquire into the objections (if any) which any person interested has stated	

		The Collector shall make an award within a period of twelve months from the date of publication of the declaration under section 19	
8	Determination of amount of compensation	Determination of market value of the land by the collector	In case of land being acquired from members of the Scheduled Castes or the Scheduled Tribes, at least one-third of the compensation amount due shall be paid to the affected families initially as first instalment and the rest shall be paid after taking over of the possession of the land.
		The market value is multiplied by a factor as described in the first schedule of the Act	
		Determination of value of things attached to land or building	
		Determination of value of things attached to land or building	
9	Rehabilitation and Resettle-ment Award for affected families	The Collector shall pass Rehabilitation and Resettlement Awards for each affected family in tenns of the entitlements provided in the Second Schedule	Where the affected families belonging to the Scheduled Castes and the Scheduled Tribes are relocated outside of the district, then, they shall be paid an additional twenty-five per cent R&R benefits to which they are entitled in monetary terms along with a one-time entitlement of fifty thousand rupees. Where the community rights have been settled under the provisions of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, the same shall be quantified in monetary amount and be paid to the individual concerned who has been displaced due to the acquisition of land in proportion with his share in such community rights.
		Provision of infrastructural amenities in resettlement area	All benefits, including the reservation benefits available to the Scheduled Tribes and the Scheduled Castes in the

			affected areas shall continue in the resettlement area Whenever the affected families belonging to the Scheduled Tribes who are residing in the Scheduled Areas referred to in the Fifth Schedule or the tribal areas referred to in the Sixth Schedule to the Constitution are relocated outside those areas, than, all the statutory safeguards. Entitlements and benefits being enjoyed by them under this Act shall be extended to the area to which they are resettled regardless of whether the resettlement area is a Scheduled Area referred to in the said Fifth Schedule or a tribal area referred to in the said Sixth Schedule or not.

SALIENT FEATURES OF THE RIGHT TO FAIR COMPENSATION AND TRANSPARENCY IN LAND ACQUISITION, RESETTLEMENT AND REHABILITATION ACT, 2013 (RFCTLARRA, 2013)

Scope of the LARRA, 2013: Both LA and R&R Provisions will apply when:

1. Government acquires land for its own use, hold and control
2. Government acquires land with the ultimate purpose to transfer it for the use of private companies for stated public purpose
3. Government acquires land for Public Private Partnership Projects

Note I: Public purpose for 2. & 3. above, once stated, cannot be changed

Note II:

- ***Land Acquisition under 2. can take place provided that the consent of 80% of the affected families is obtained.***
- ***Land Acquisition under 3. can take place provided consent of 70 % of affected families is obtained.***

Only R&R provisions will apply when:

- Private companies purchase land for a project, and the same exceeds the area thresholds set by the State Governments for such purchase

Salient Features of LA, R & R, 2013

Definition of Public Purpose

1. Land for strategic purposes relating to armed forces, national security or defense, police, safety of the people;
2. Land for infrastructure:(i)items listed in circular of Government of India, Department of Economic Affairs (Infrastructure Section) number 13/6/2009-INF dated the 27th March, 2012 excluding private hospitals, private educational institutions and private hotels (ii)projects involving agro-processing, supply of inputs to agriculture, warehousing, cold storage facilities, marketing infrastructure for agriculture and allied activities such dairy, fisheries, and meat processing as set up or owned by the appropriate(iii)project for industrial corridors or mining activities, national investment and manufacturing zones as designated in the national manufacturing Policy;(iv)project for water harvesting and water conservation structures, sanitation;(v)project for Government administered and government aided educational and research schemes or institutions;(vi)project for sports, health care, tourism, transportation, space programme, (vii) Any

infrastructure facility as may be notified in this regard by the Central Government and after tabling of such notification in Parliament;

3. Land for the project affected people
4. Land for planned development or improvement of village or urban sites or for residential purpose to weaker sections;
5. Land for persons residing in areas affected by natural calamities or displaced

Urgency Clause:

The Urgency Clause can only be invoked in the following cases:

1. National defense and security purposes
2. Resettlement & Rehabilitation needs in the event of natural calamities such as floods or earthquakes

In case there is doubled is placement of any individual they will receive an **additional compensation of up to 75% of the compensation already provided for under the new law.**

Definition of 'Affected Families'

- **Land Owners:**
  1. Family or company whose land/other immovable properties have been acquired;
  2. Those who are assigned land by the Governments under various schemes;
  3. Right holders under the Forest Rights Act, 2006
- Livelihood Losers:
  1. Over the last three years, a family whose livelihood is primarily dependent on the land being acquired, including agriculture labourers, tenants or sharecroppers
  2. Over the last three years, families which are dependent on forests or waterbodies for their livelihoods when these are acquired; including forest gatherers, hunters, fisher folk and boatmen
  3. Over the last three years, any family whose livelihood is dependent primarily on the land being acquired in the urban areas or any family who is residing on the land being acquired in the urban areas

Safeguarding Food Security

1. Multi-crop irrigated land will not be acquired except as a demonstrably last resort measure, which in no case should lead to acquisition of more than such limits as have been set by the State Government under this law.
2. Wherever multi-crop irrigated land is acquired an equivalent area of cultivable wasteland shall be developed for agricultural purposes (or an amount equivalent to the value of the land acquired shall be deposited with the appropriate Government for investment in agriculture for enhancing food-security).
3. States are also required to set a limit on the area of agricultural land that can be acquired in any given district.

1. and 2. above shall not apply in the case of linear projects (such as railways, highways, major district roads, power lines, and irrigation canals)

Minimum Compensation for Land Acquisition

A Comprehensive Compensation Package **(First Schedule)**

1. **Market value of the land:**
   a) the minimum land value, if any, specified in the Indian Stamp Act, 1899 for the registration of sale deeds in the area, where the land is situated; or
   b) the average of the sale price for similar type of land situated in the immediate areas adjoining the land being acquired, ascertained from fifty per cent of the sale deeds registered during the preceding three years, where higher price has been paid; or **whichever is higher: provided that the market value so calculated for rural areas shall be multiplied by a multiplier factor of up to 'two'.**
2. **Value of the assets attached to land:** Building/Trees/Wells/Crop etc as valued by relevant govt. authority;

   Total compensation = 1+2. ,
3. Solatium: 100% of total compensation
4. Where land is acquired for urbanisation, 20% of the developed land will be reserved and offered to land owning project affected families, in proportion to their land acquired and at a price equal to cost of acquisition and the cost of development.

   In case the project affected family wishes to avail of this offer, an equivalent amount will be deducted from the land acquisition compensation package payable to it .

5. The Company for whom land is being acquired may offer shares limited to 25% of the Compensation amount.

In case the project affected family wishes to avail of this offer, an equivalent amount will be deducted from the land acquisition compensation package payable to it.

Minimum Compensation for Land

Illustrative Sliding Scale:

The multiplier factor will gradually rise from 1 to 2 as we move away from Urban locations into Rural areas

The Precise slabs will be left to respective St. Govts.

Illustrative Sliding Scale

(Precise Scale to be determined by each State Government)

Radial Distance from Urban area (in Km)	**Multiplier Factor**
0 -10	1.00
10-20	1.20
20-30	1.40
30-40	1.80
40-50	2.00

MINIMUM R&R ENTITLEMENTS

A Comprehensive R&R Package (Second Schedule)

1. Subsistence allowance at Rs. 3000 per month per family for 12 months;
2. The affected families shall be entitled to:

(a) Where jobs are created through the project, mandatory employment for one member per affected family **or**

(b) Rupees 5 lakhs per family; or

(c) Rupees 2000 per month per family as annuity for 20 years, with appropriate index for inflation;

The option of availing (a) or (b) or (c) shall be that of the affected family

3. If a house is lost in rural areas, a constructed house shall be provided as per the Indira Awas Yojana specifications.

   If a house is lost in urban areas, a constructed house shall be provided, which will be not less than 50sqmts in plinth area.

   In either case the equivalent cost of the house may also be provided in lieu of the house as per the preference of the project affected family;

4. *One acre of land to each family in the command area, if land is acquired for an irrigation project if possible BUT the same shall be in lieu of Compensation;*
5. *Rs 50,000 for transportation;*
6. *A one-time „Resettlement Allowance" of Rs 50,000;*

Special Provisions for SCs/STs

In addition to the R&R package, *SC/ST families will be entitled to the following additional benefits:*

1. Land to be given to each family in every project even in the case of irrigation projects;
2. One time financial assistance of Rs. 50,000 per family;
3. Families settled outside the district shall be entitled to an additional 25% R&R benefits;
4. Payment of one third of the compensation amount at very outset;
5. Preference in relocation and resettlement in area in same compact block;
6. Free land for community and social gatherings;
7. In case of displacement, a *Development Plan is to be prepared*
8. *Continuation of reservation and other Schedule V and Schedule VI area benefits from displaced area to resettlement area.*

Enhanced role for Panchayati Raj Insitutions especially Gram sabhas

SIA in consultation with PRIs:

The Social Impact Assessment (SIA) has to be carried out in consultation with the representatives of the Panchayati Raj Institutions (PRI)

SIA Reports To Be Shared:

Reports prepared under the Social Impact Assessment are to be shared with these individuals in their local language along with a summary.

Representation in Expert Group:

The Expert Group has to have two members belonging to the Panchayati Raj Institutions. This is a powerful body that has the power to reject a project. Hearings in All Gram Sabhas: In case where an affected area involves more than one Gram Panchayat or Municipality, public hearings shall be conducted in every Gram Sabha where more than twenty five per cent of land belonging to that Gram Sabha is being acquired. Consent of Gram Sabha : The Consent of Gram Sabha is mandatory for acquisitions in Scheduled Areas under the Fifth Schedule referred to in the Constitution Representation of Panchayat Chairpersons on R&R Committee at

Project Level: The Rehabilitation and Resettlement Committee at Project Level has to have the Chairpersons of the Panchayats located in the affected area or their nominees as representatives. Panchayat Ghars have to be provided as per the list of Infrastructural amenities given in the Third Schedule.

Special Provisions for Farmers:

Acquisition only if necessary: The Collector has to make sure that no other unutilised lands are available before he moves to acquire farm land. Enhanced Compensation: All farmers in rural areas will get up to 4 times the highest sales prices in a given area. Strict Restrictions on Multi-Crop Acquisition: The acquisition of agricultural land and multi-crop land has to be carried out as a last resort. Consent: shall be prior-consent required from 70 per cent of land losers and those working on government assigned lands only in the case of Public-Private Partnership projects and 80 per cent in the case of private companies. This consent also includes consent to the amount of compensation that shall be paid. Return of Unutilized land: Land not used can now be returned to the original owners if the State so decides. Share in Sale of Acquired Land Increased: The share that has to be distributed amongst farmers in the increased land value (when the acquired land is sold off to another party) has been set at 40%.Income Tax Exemption: All amounts accruing under this act have been exempted from Income tax and from Stamp duty.

Special Safeguards for Farmers:

Damage to crops to be included in price:

The final award has to include damage to any standing crops which might have been harmed due to the process of acquisition (including the preliminary inspection).

Share in Developed Land: In case their land is acquired for urbanization purposes twenty per cent of the developed land will be reserved and offered to these farmers in proportion to the area of their land acquired and at a price equal to the cost of acquisition and the cost of development.

Fishing Rights: In the case of irrigation or hydel projects, affected families may be allowed fishing rights in the reservoirs, in such manner as may be prescribed by the appropriate Government.

Reduced Role for Collector

There has been a significant reduction of the powers that the Collector enjoyed under the 1894 Act: Under the 1894 Act, the Collector had complete authority to decide what activity constituted 'public purpose'. Under the new law he has been completely stripped of this function. Public purpose must fall strictly within the

parameters prescribed under this law. The Collector cannot add or subtract to the list given. Under the 1894 Act, the Collector could decide what quantum of compensation could be paid to those displaced. Under the new law, there is a formula that does not require the Collector to exercise any discretion. All he has to do is make sure that the rate is calculated as directed. Under the 1894 Act; the Collector could decide when to take possession. He could dispossess any family by giving a moment's notice. Now possession can only be taken once all the requirements under the law relating to the payment of compensation, rehabilitation and resettlement have been discharged. Under the 1894 Act, the Collector had sweeping powers to invoke the urgency clause. What constituted an urgent situation was entirely af unction of the Collector's interpretation. This loop hole has been plugged conclusively by limiting urgency to only two cases-natural disasters and national defence. The Collector can no longer acquire land citing 'urgent' reasons.

Benefits for Tenants and Sharecroppers:

The Law also covers all **Tenants** who may not own any land but are engaged in any form of tenancy or holding a usufructury right and;

Share-croppers Artisans who have been working in the affected area for three years prior to the acquisition and whose primary source of livelihood stands affected by the acquisition of land . They will receive not just the Rehabilitation and Resettlement Benefits but also a share in the compensation to be provided.

Infrastructural Amenities under R&R (Third Schedule)

25 infrastructural amenities to be provided in the Resettlement area, including:

- Schools and playgrounds;
- Health Centres;
- Roads and electric connections;
- Assured sources of safe drinking water for each family as per Govt. norms;
- Panchayat Ghars as appropriate;
- Anganwadi‟s providing child and mother supplemental nutritional services as per Govt. norms;
- Places of worship and burial and/or cremation ground depending on the caste-communities at the site and their practices;
- Village level Post Offices, as appropriate, with facilities for opening saving accounts;
- Fair price shops and seed-cum-fertilizer storage facilities if needed

Retrospective Effect Clause

Retrospective operation:

- Where no award under Section 11 of the 1894 Act has been made, the new law will apply with regard to compensation;
- Where an award has been made but the affected individuals have not accepted compensation or have not yet given up possession, and the proceedings have been pending for 5years or more, provisions of the new law will apply.
- Where a majority of individuals in an affected area have not received compensation then the new law will apply.

Compliance with other Laws

The Provisions of the New Law shall be fully compliant with other laws such as:

- The Panchayats (Extension to the Scheduled Areas) Act, 1996;
- The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006;
- Land Transfer Regulations in Schedule V Areas. *In fact, while the above legislations provide for 'consultation' with Gram Sabhas, the new law goes one step ahead and provides for 'consent'*.

Safeguards against indiscriminate acquisition

Social Impact Assessment made mandatory except for Irrigation Projects. To be concluded in 6 months;

- **Draft Notification** to include:
    - Summary of SIA
    - Particulars of Administrator for R&R who prepares R&R scheme
- **Draft Declaration** to include:
    - Summary of R&R package
- **No Change of Purpose:** No change from the purposes specified in the Land Use Plan submitted at the time of land acquisition will be allowed.
- **Change of Ownership:** No change of ownership without specific permission of Appropriate Government is allowed;
- **Land not Used:** Land that is not used within 5 years in accordance with the purposes for which it was acquired at the time of acquisition, shall be transferred to the State Government‟s Land Bank OR to the original land owner**.**

- **Sharing appreciated value:** Upon every transfer of land without development, 40% of the appreciated land value shall be mandatorily shared with the original owner whose land has been acquired

Transparency Provisions

Social Impact Assessment

- Gram Sabha to be consulted
- Summary of SIA notified along with Draft Notification
- SIA document made available for public scrutiny

R&R Scheme

- Summary notified along with Draft declaration
- Made available for public scrutiny
- **Individual Awards passed**
- **Public Disclosure**
    - All documents mandatorily to be made available in the public domain and on the website

Penalties:

Stringent and Comprehensive Penalties Regime for Companies and Government:

- Punishment for false information, mala fide action, etc.
- Penalty for contravention of provisions of Act.

Awards:

Collector passes 2 types of Awards:

1. **Award for Land Acquisition**
    - Award made in respect of every affected family whose land is being acquired (this will include landless tenants as well) and containing details of LA compensation as listed in the First Schedule;

2. Award for R&R

- Award made in respect of every affected family, regardless of whether they may be losing land or not, containing details of R&R entitlements as listed in the Second Schedule.

Timelines:

1. Compensation will be given within a period of **three months** from the date of the award;

2. Monetary R&R entitlements will be provided within a period of **six months** from the date of the award;
3. Infrastructure R&R entitlements will be provided within a period of **eighteen months** from the date of the award;
4. **No involuntary displacement will take place without completion of R&R;**
5. In irrigation or hydel projects, R&R shall be completed **six months** prior to submergence

Impact of the new law on Existing Legislations related to Land Acquisition

1. There are 13 Acts of the Central Government in force that allow for land acquisition. These are listed in the Fourth Schedule of the Act (and include legislations relating to National Defence, National Highways, Railways etc).The new law does not apply to the activities covered under these Acts.
2. However, within one year, the provisions of the new Law which relate to compensation, rehabilitation and resettlement will be applied to the 13 Acts by a notification of the Central Government.

Flexibility given to States:

1. The sliding scale on the basis of which compensation is to be calculated (2-4 times market value) has been left to the discretion of the State Governments
2. Thresholds for multi-crop irrigated lands
3. Thresholds at which R&R provisions apply to private purchases
4. States are encouraged to adopt the option of "lease" instead of acquisition.
5. States are also empowered by this law to provide for benefits and safeguards that go over and above the provisions of this law.

ANNEXURE-5

SALIENT FEATURES OF THE ELECTRICITY ACT, 2003

Objective: An Act to consolidate the laws relating to generation, transmission, distribution, trading and use of electricity and generally for taking measures conducive to development of electricity industry, promoting competition therein, protecting interest of consumers and supply of electricity to all areas, rationalization of electricity tariff, ensuring transparent policies regarding subsidies, promotion of efficient and environmentally benign policies, constitution of Central Electricity Authority, Regulatory Commissions and establishment of Appellate Tribunal and for matters connected therewith or incidental thereto

PART-I: This part deals with the jurisdiction of the law and important definitions

PART-II: This part deals about National Policy and Plan to be prepared by Central Govt. in consultation with state Govt. National Policy and National Electricity plan needs to be published in Gazette / News paper once in 5 years.

PART-III: This part deals about generation of electricity

1. Generating company and requirement for setting up of generating station
2. Hydro-electric generation
3. Captive generation
4. Duties of generating companies
5. Directions to generating companies

PART-IV: This part deals licensing for transmission of electricity, distribution and undertaking trading in electricity.

1. Authorised persons to transmit, supply, etc. electricity
2. Power to exempt
3. Grant of license
4. Procedure for grant of license
5. Conditions of license
6. Licensee not to do certain things
7. Amendment lf license
8. Revocation of license

9. Sale of utilities of licensees
10. Vesting of utility in purchaser
11. Provisions where no purchase takes place
12. Directions to licensees
13. Suspension of distribution license and sale of utility

PART V: This part deals transmission of electricity including inter-state, regional and inter-regional transmission system.

1. Inter-State, regional and inter-regional transmission
2. National Load Despatch Centre
3. Constitution of Regional Load Despatch Centre
4. Functions of Regional Load Despatch Centre
5. Compliance of directions
6. Intra-State transmission
7. Transmission within a State
8. Constitution of State Load Despatch Centres
9. Functions of State Load Despatch Centres
10. Compliance of directions
11. Grid Standards
12. Intervening transmission facilities
13. Charges for intervening transmission facilities
14. Directions by Appropriate Government
15. Central Transmission Utility and functions
16. State Transmission Utility and functions
17. Duties of transmission licensees
18. Other business of transmission licensee

PART-VI: This deals with provisions of distribution of electricity with respect to distribution licensee

1. Duties of distribution licensee and open access
2. Duty to supply on request

3. Exceptions from duty to supply electricity
4. Power to recover charges
5. Power to recover expenditure
6. Power to require security
7. Additional terms of supply
8. Agreements with respect to supply or purchase of electricity
9. The Electricity Supply Code
10. Other businesses of distribution licensees
11. Provisions with respect to electricity trader
12. Control of transmission and use of electricity
13. Use, etc. of meters
14. Disconnection of supply in default of payment
15. Standards of performance of licensee
16. Different standards of performance by licensee
17. Information with respect to levels of performance
18. Market domination

PART-VII: This chapter deals about terms and conditions for the determination of tariff.

1. Tariff regulations
2. Determination of tariff
3. Determination of tariff by bidding process
4. Procedure for tariff order
5. Provision of subsidy by State Government
6. Development of market

PART-VIII: This part deals work of licensees includes provision as to opening up of streets, railways etc., overhead lines, notice to telegraph authority.

1. Provision as to opening up of streets, railways, etc
2. Overhead lines
3. Notice to telegraph authority

PART-IX: This part deals about constitution and functions of Central Electricity Authority

PART-X: This part deals about Regulatory Commissions and its constitution, power and functions of central commission

PART-XI: This part deals about appellate tribunal for electricity

PART XII: This part deals about investigation, enforcement of assessment for electricity consumed by consumer by State Govt. or board or licensee.

PART XIII: This part deals about reorganization of Electricity Board

PART XIV: This part deals mainly about offences and penalties for misusing/theft of electricity.

PART XV: This part deals constitution of special courts for the purpose of providing speedy trial of offences referred to in sections 135 to 139

PART XVI: This part deals mainly resolution of dispute by arbitration under this Act.

PART XVII: This part deals mainly protection of railways, highways, airports and canals, docks, wharfs and piers, protection of telegraphic, telephonic and electric signalling lines, amendment of sections 40 and 41 of Act 1 of 1894

PART XVIII: This part mainly deals miscellaneous matter includes following:

1. Coordination Forum
2. Exemption of electric lines or electrical plants from attachment in certain cases
3. Protection of action taken in good faith
4. Members, officers, etc., of Appellate Tribunal, Appropriate Commission to be public servants
5. Recovery of penalty payable under this Act
6. Services of notices, orders or documents

7. Transitional provisions
8. Inconsistency in laws
9. Act to have overriding effect
10. Provisions of this Act to be in addition to and not in derogation of other laws
11. Power of Central Government to make rules
12. Powers of Authority to make regulations
13. Powers of Central Commission to make regulations
14. Rules and regulations to be laid before Parliament
15. Powers of State Governments to make rules
16. Powers of State Commissions to make regulations
17. Rules and regulations to be laid before State Legislature
18. Power to remove difficulties
19. Provisions of Act not to apply in certain cases
20. Repeal and saving

The Electricity Act, 2003 does not explicitly deal with environmental/social implications of activities related to power transmission/distribution project other than, section 68 (5 & 6) and or Section 67 of the Electricity Act 2003 which provides the basis for compensation to be paid for any damages.

However, the applicable legal provisions under Section 68 of EA, 2003

i) Prior approval of the Govt. of Meghalaya (GoM) u/s 68(1) of EA, 2003 is a mandatory requirement to undertake any new transmission project (66kV & upward-in Meghalaya)

ii) For distribution project, Sec-68(1) shall not apply to 11kV and downward but for 33kV system (distribution project in Meghalaya), section 68(1) is applicable as (i) above and under Section 164 EA Act, 2003 is desirable as MePTCL/\MePDCL are deemed licensee after corporatization

Annexure-6

TREE / CROP/ TOWER FOOTING COMPENSATION PROCESS
(OTHER THAN FOREST LAND COMPENSATION)

As per the provisions of Electricity Act, 2003 and Indian Telegraph Act1885, land for tower and right of way is not acquired and agricultural activities are allowed to continue. However, the acts also stipulate that licensee shall pay full compensation to all interested for any damages sustained during the execution of said work. Accordingly, AEGCL/APDCL pays compensation to land owners towards damages if any during implementation of transmission project as well as during operation and maintenance phase.

AEGCL/APDCL follows the principle of avoidance, minimization and mitigation in the construction of line in agricultural field having crop 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.

As regards 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 center line are identified and marked/numbered from one AP (Affected Person) to the other and documented. Type, Girth (Measured 1 m. above ground level), approximate height o the tree is also noted for each tree. Trees belonging to Govt., Forest, Highways and other local bodies may be separately noted down or timely follow up with the concerned authorities for inspection and removal. Cashew, 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.

AEGCL also pay compensation to affected land owners for utilization of their land for tower footing. To arrive compensation rate mechanism of negotiated settlement is followed. The association of local authorities like Dy. Commissioner/Addl. Dy Commissioner (Revenue) of concerned district and concerned Circle officers is also ensured during such negotiation. The circle value for the land price fixation as per the Department of Registration for different categories of land for the villages along the transmission line corridor will be obtained from the district registrars. This guidance value will be referred to by the negotiation committee. Once the negotiated rate is finalised & consent is received from land owners, the same is approved by Dy. Commissioner of concerned district for payment of compensation to land owners by AEGCL. All efforts are made to release such payment before construction activities.

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 Assam Govt. for the purpose of assessment/valuation and disbursement of compensation to the affected parties.

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.

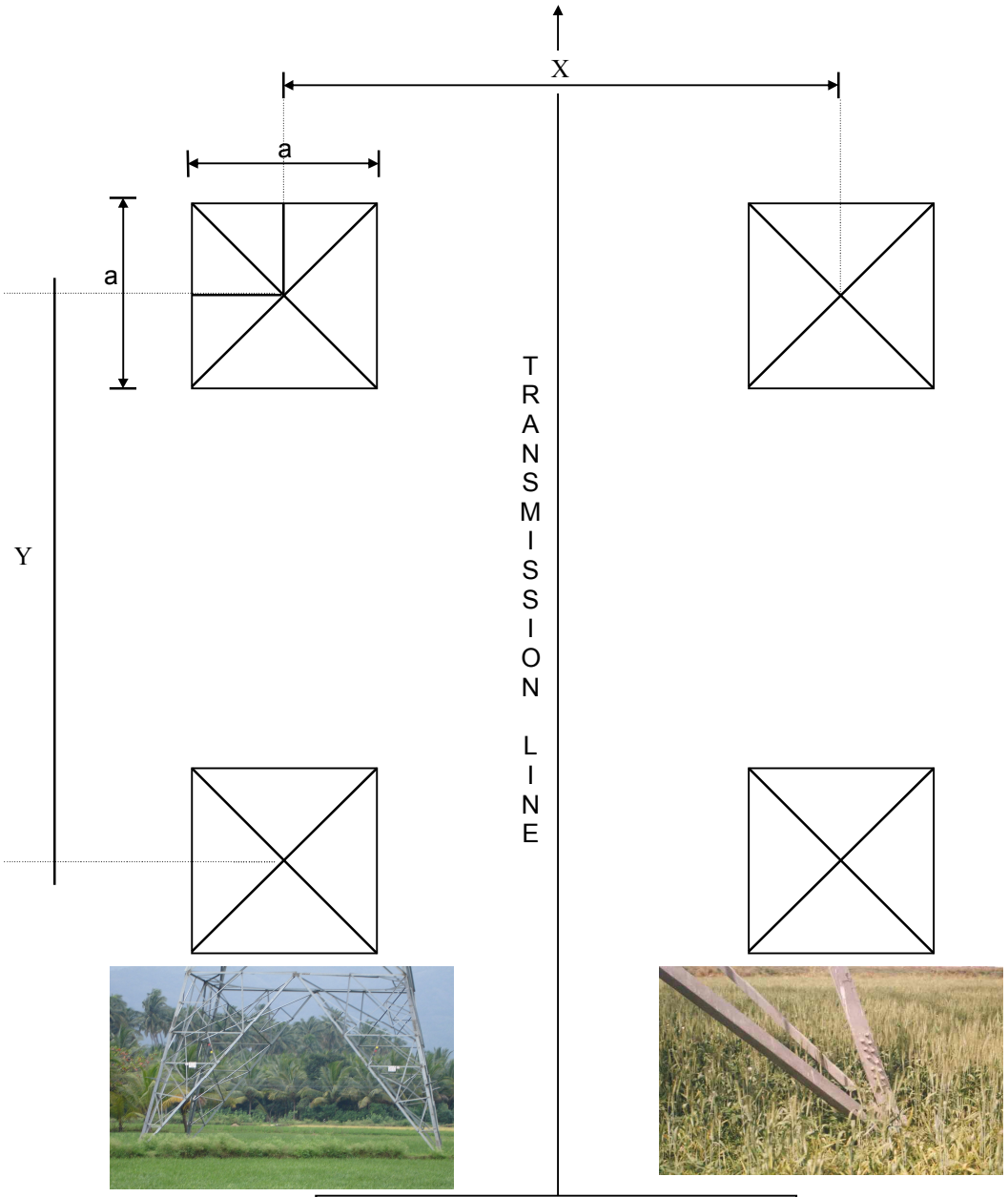
The Mouja list shall contain the land owner details including extent land area utilization for tower footing, type of tree/crop, its present age, variety, yielding pattern etc. and the same is prepared at site in the presence of the land owner. These Mouja lists are further compiled and a random verification is 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 District Collector/ a tree cutting permit to AEGCL to enable removal / damage to the standing tree/crop identified in the line corridor. Similarly on the basis of enqiry report received from concerned Tehsildar, SDM issue land valuation certificate to AEGCL for payment of compensation to land owner.

Once the tree/crop is removed / damaged, AEGCL 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 Center 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.

On approval of compensation, the revenue officer shall further intimate the amount payable to the different landowners and AEGCL arranges the payment by way of Demand Draft/Cheque 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.

Annexure-6 a

TYPICAL PLAN OF TRANSMISSION LINE TOWER FOOTINGS



INDICATIVE MEASURES

X & Y = 5-10 METERS

a = 200- 300 mm

ANNEXURE 7

HEALTH AND SAFETY CHECKLIST

Safety Related Check List during Construction of Transmission Lines/Distribution Lines

Region: ..... Date of Safety Audit:.....

Name of Transmission/Distribution Line:
.....

Loc. No: .....Voltage Level: .....

Name of Contractor: .....

Contractor License / Registration No.:.....Validity.....

Name of Sub Contractor : .....

Sub-Contractor License / Registration No.:.....Validity.....

I. DURING TOWER FOUNDATION :

SN	Description of Activity	Feed back	Remarks
i)	**Excavation :**		
1.	Dumping of Excavated soil. (Minimum 1.5 Mts. or half the depth of the pit which ever is more)	Yes / No.	
2.	Whether angle of repose of soil as per design in the foundation is maintained or not.	Yes / No.	
3.	De watering arrangement is available (If necessary)	Yes / No.	
4.	Working area has been protected properly to avoid against fall of passerby or animal in the excavated pit.	Yes / No.	
5	Shoring & Shuttering to protect the loose rock / soil against fall exists.	Yes / No.	
6	Arrangement of illumination at construction site is available. (if required)	Yes / No.	
7	Check proper/adequate arrangement is made for extension of electric supply. (Proper size of cable, Use of fuse, No loose connection for De-watering Pumps/ Illumination / Electric compressors etc. if applicable).	Yes / No.	
8	Check for damage / Uneven settlement of foundation.	Yes / No.	
9	Ensure Life saver arrangements have been made during construction of well foundation in river bed. (Where necessary)	Yes / No.	
10	Check that the adequate arrangement is made for the storage of blasting material at safe place. (if required)	Yes / No.	
11	Check that the blasting materials is handled with due care at site. (If required)	Yes / No.	
12	Check that during blasting operation, Labour / Workmen / Passerby are at safe places and arrangement is made to inform public by caution markings (Red Flag) / Public Notices.	Yes / No.	

SN	Description of Activity	Feed back	Remarks
13	Check that the Blaster is holding the proper license issued by the appropriate authority. as per the Indian Explosive Act.	Yes / No.	
14	Check that the length of the fuse wire used during blasting operation is adequate.	Yes / No.	
15	Ensure Laying of temporary cable used for operation of Machines used during construction should not cause any danger for electrocution of workmen.	Yes / No.	
16	Check that PPEs i.e. Safety helmets, Safety Shoes, is used by blaster and their gang members during blasting.	Yes / No.	
17	Ensure that Shuttering and timbering has been made as detailed in I:S: 3764.	Yes / No.	
18	Ensure that before undertaking excavation, the soil has been tested and in case of availability of any explosive / dangerous gas, necessary arrangement must be made to remove / dilute such gases.	Yes / No.	
19	The positions of underground installations such as sewers, water pipes and electrical cables have been verified and in case of their existence, they must be isolated.	Yes / No.	
20	Arrangement shall be made to prevent external vibrations due to rail / road traffic (If required).	Yes / No.	
21	Safety is ensured during the construction of Tr. Lines for buildings, structures etc. which are coming in the vicinity of the excavated area from collapse. (If required)	Yes / No.	
22	Check that sufficient strong ladder of suitable length is available for ingress / outgress of persons in the pit	Yes / No.	
23	Lone worker should not be allowed to work in the excavated area beyond shoulder level.	Yes / No.	
24	Check for any possibility of seepage of water from nearby pond / river should be estimated and taken care of.	Yes / No.	
25	After excavation the work has been completed speedily and back filling done at the earliest.	Yes / No.	
ii) Casting of Foundation / Concreting :			
1	Check construction materials are stacked at safe place and also does not cause any danger. (Away from pit by 1.5 Mtrs. Or half the depth of pit, which ever is more.)	Yes / No.	
2	Check arrangement of illumination at Construction Site. (If required).	Yes / No.	
3	Ensure life saver arrangements have been made during construction of Well foundation in River Bed.	Yes / No.	
4	Check that the Concreting Mixer machine is placed at a safe place. (Not very near to pit.)	Yes / No.	
5	Check proper / adequate arrangement is made for extension of electric supply. (Proper size of cable, Use of fuse, No loose connection for De watering Pumps / Illumination / Electric compressors etc. if applicable).	Yes / No.	
6	Check that laying of temporary cables used during construction activities should not cause any danger for electrocution to workmen.	Yes / No.	
7	Inspection of excavations shall be made by a Competent Person every day. In case, possible cave in or slide is apparent, all working in the excavation shall be seized until the necessary precautions have been taken to safeguard the possible cave in or slide.	Yes / No.	

SN	Description of Activity	Feed back	Remarks
8	Jacks and vertical supports shall be positioned in such a manner that the vertical loads are distributed equally and do not exceed the capacity of the jacks and the jacks are placed away from pit edge etc.	Yes / No.	
9	Proper Jacking arrangement is made to take the entire load of template.	Yes / No.	
10	In case of long template in stub setting, more jacks have been provided and check that the Jacks are placed on levelled and hard surface to avoid the unbalancing and fallen.	Yes / No.	
11	Wire mesh rolls shall be secured in order to prevent dangerous recoiling action.	Yes / No.	
12	Lone worker should not be allowed to work in the excavated area.	Yes / No.	
13	Check that sufficient strong ladder of suitable length is available for ingress / outgress of persons in the pit	Yes / No.	

II. TOWER ERECTION :

SN	Description of Activity	Feed back	Remarks
1	Check proper communication facility is available at site during Tower erection. (If required)	Yes / No.	
2.	Check damages or uneven settlement of foundation.	Yes / No.	
3.	Ensure the derrick used before tower erection has been checked for adequate strength/ size. Ensure for copy of test certificate for all the lifting machines and tackles.	Yes / No.	
4.	Ensure that the pulleys used before tower erection has been checked for adequate strength / proper size (diameter). Also in case of open type pulleys proper locking arrangements like providing of Safety Pin is made. Ensure for copy of test certificate for all the lifting machines and tackles.	Yes / No.	
5.	Ensure that the ropes used before tower erection has been checked for adequate strength / physical condition (Free from break of strands and knots etc.	Yes / No.	
6.	Check that the lifting tools and tackles i.e. Winch Machine, Chain Pulley Block, Trifor, D - Shackle etc. are in healthy condition and has been tested periodically. (Attach copy of test certificate).	Yes / No.	
7.	Ensure that permission has been obtained from Aviation Authority for erection of special towers. (Where necessary).	Yes / No.	
8.	Ensure that permission has been obtained form Aviation Authority for erection of towers which comes in the vicinity of flying zone. (Where necessary)	Yes / No.	
9.	Check that the safety measures has been taken before undertaking for the Road / Rail / River Xing jobs involving like wise stretches.	Yes / No.	
10.	For rail or road crossing check whether written working plan is available at site with specific reference to safety e.g. local earthing, skilled & experience manpower, proper T&P, strength and height of scaffolding to maintain the required clearance etc.	Yes / No.	
11.	Ensure that all the members and proper size of Nuts and Bolts of lower section are fitted properly before erection of the upper section of tower is taken up.	Yes / No.	

SN	Description of Activity	Feed back	Remarks
12.	Check that the anti climbing devices are provided in the tower after erection job.	Yes / No.	
13.	Check that the danger plates have been provided.	Yes / No.	
14.	Check that only erection team members are allowed to stand near the tower while erection is in process and should wear the safety helmet / Safety Shoes.	Yes / No.	
15.	Working area of the tower has been demarcated during erection.	Yes / No.	
16	Check that proper guying arrangement has been made. And also to see that proper size of the crow bars has been used which has been fixed at hard surface in case of sandy soil or loose soil.	Yes / No.	
17	Check that proper arrangement is made while lifting the tower members and fixing them at height i.e. Proper size and strength of the hook used for lifting the tower members.	Yes / No.	
18	Check sufficient numbers of guys are made while lifting the assembled cross arm and also avoiding use of single sheeve pulleys while lifting the assembled cross arm / heavy load.	Yes / No.	

III. CONDUCTOR STRINGING:

SN	Description of Activity	Feed back	Remarks
1.	All drivers and plant operators are holding the valid driving license.	Yes / No.	
2.	Check that the permit has been obtained from the Competent Authority for stringing of conductor while crossing through Road / Rail / River / Venerable areas etc. (Where necessary)	Yes / No.	
3.	Check that required painting has been made on tower falling in the vicinity of aviation zones. (Where necessary.)	Yes / No.	
4.	Check that all safety measures have been taken during stringing of conductor crossing the EHV / HV / LT lines (Earthing of existing lines etc.)	Yes / No.	
5.	Ensure that proper size of Nuts and Bolts is rigidly tightened and punching / tacking / tack welding is done in towers before undertaking stringing job.	Yes / No.	
6.	Ensure that proper scaffolding arrangements made during stringing of conductor(While Road Xing / Power Line Xing etc.	Yes / No.	
7.	Ensure that all members are fitted in tower before undertaking conductor stringing work.	Yes / No.	
8.	Check that the back filling of the foundation has been done as per specification.	Yes / No.	
9.	Ensure that the discharge rod is electrically tested before use.	Yes / No.	
10.	Stringing Machine / Tension pullor Machine are properly earthed.	Yes / No.	
11.	Check the brake arrangement of the TSE Machines is working.	Yes / No.	
12.	Ensure that the pulleys used before conductor stringing has been checked for adequate strength / proper size (diameter), also in case of open type pulleys proper locking arrangements like providing of Safety Pin is made Ensure for copy of test certificate for all the lifting machines and tackles.	Yes / No.	
13.	Ensure the ropes used before conductor stringing has been checked for adequate strength / physical condition (Free from break of strands and knots etc.	Yes / No.	

SN	Description of Activity	Feed back	Remarks
14.	Check that the lifting tools and tackles i.e. Winch Machine, Chain Pulley Block, Trifor, D - Shackle etc. are in healthy condition and has been tested periodically. (Attach copy of test certificate).	Yes / No.	
15.	Check for the brake arrangement of the Drum reel of conductor during laying / paying out of conductor.	Yes / No.	
16.	Check that proper communication facility is available at site during of stringing of conductor (If required)	Yes / No.	
17.	Whether the tower has been permanently earthed.	Yes / No.	
18.	Check that Sag Board is provided at two locations.	Yes / No.	
19.	Check that the Sag Board arrangement is made by the experienced / trained persons.	Yes / No.	
20.	Check approved Sag tension chart is available and followed at site.	Yes / No.	
21.	While clamping of conductor / EW to be done, check for earthing.	Yes / No.	
22.	Ensure sending signal to puller to stop when last layer of conductor / EW being pulled.	Yes / No.	
23.	Check tension applied on the dynamo meter dial and check values with approved data.	Yes / No.	
24.	Before stringing starts check that the villagers do not come underneath the job of the concerned section.	Yes / No.	
25.	Only nylon or polypropylene ropes should be used during conductor stringing in vicinity of live overhead lines.	Yes / No.	
26.	Ensure that PTW has been taken from the concerned authority.	Yes / No.	
27.	Ensure that Winch, Pulleys etc. are properly earthed.	Yes / No.	
28.	For LT lines, whether special persons are posted at each point of isolation till return of permit (PTW).	Yes / No.	
29.	Whether the network of LT lines has been thoroughly checked and precautions taken Against inadvertent charging.	Yes / No.	
30.	Check that proper arrangement is made / available for development and use of a Portable Earthing and Short – Circuiting Devices which can be engaged and disengaged to and from the LT lines, keeping away from the LT lines, until all operations on the same are completed and all men and materials are removed from LT lines.	Yes / No.	
31.	Check the provision and proper positioning for the guying and back staying (Where necessary).	Yes / No.	
32.	Check demarcation of feeder is done for D/c Line.	Yes / No.	
33.	Ensure that all the insulator strings are thoroughly checked for availability and proper fixing of cotter / split pins before hoisting the same.	Yes / No.	

General Points common for all activities during Excavation, Casting of Foundation

I. ERECTION OF TOWER AND STRINGING OF CONDUCTOR :

SN	Description of Activity	Feed back	Remarks
1.	Check whether the contractor had procured required quantity of PPEs considering maximum numbers of erection gangs deployed at one time.	Yes / No.	
2.	Supervisors/ Workmen have been provided with required healthy PPEs, like Safety helmet / Safety Belts / Safety Shoes / Gum Boot etc. as applicable.	Yes / No.	
3.	Availability of First Aid Box with required medicines at site.	Yes / No.	
4.	Instruction register is available at site.	Yes / No.	
5.	Ensure that Supervisor / Gang Leader always issues instruction to the Workmen before start of work.	Yes / No.	
6.	Ensure that supervisory staff from Power Grid is available at site during construction.	Yes / No.	
7.	All driver and plant operators are holding valid driving license.	Yes / No.	
8.	Check the vehicle for rescue is available at site.	Yes / No.	
9.	Ensure engaged labour are aware of the job.	Yes / No.	
10.	Check that the unskilled labourers are not engaged in skilled job.	Yes / No.	
11.	Ensure that supervisor / workmen engaged in the field are aware of First Aid Techniques (Such as in case of Electric Shock, Fall from the height, Snake bite and the person rescued from buried under the debris etc.	Yes / No.	
12.	Check for nearby Hospital / Doctor in case of emergencies arises.	Yes / No.	
13.	While transporting heavy consignment of conductor / EW drums from central store to site by the use of Cranes, Truck, and Tractor. The safety aspect for construction and failure of brake system of moving machinery is to be checked.	Yes / No.	
14.	At least one dry powder type of portable fire extinguisher shall be provided especially where explosive or blasting agents are used for excavation.	Yes / No.	
15.	Check the competence (Qualification / Experience) of supervisor / gang leader of contractor.	Yes / No.	

REMARKS IF ANY:

Signature	**Signature**	**Signature**
Name : **Designation :** **Representative of Contractor**	**Name :** **Designation:** **AEGCL/APDCL from Site.**	**Name :** **Designation:** **AEGCL/APDCL from Circle Office**

Safety Related Check List during Construction of Substation

Region: ..... Date of Safety Audit:.....

Name of Sub Stn. / Switching Stn.: .....

Name of Contractor: .....

Contractor License / Registration No.:.....Validity.....

Name of Sub Contractor : .....

Sub-Contractor License / Registration No.:.....Validity.....

I. SUB STATION CIVIL WORKS :

SN	Description of Activity	Feed back	Remarks
i): Safety during Excavation :			
1.	Check Sub station area has been protected by constructing boundary wall all around the sub station to avoid entry of passerby / unauthorized person or animal in the sub station.	Yes / No.	
2.	De watering arrangement is available (If necessary)	Yes / No.	
3.	Check proper / adequate arrangement is made for extension of electric supply. (Proper size of cable, Use of fuse, No loose connection and no naked wire connection to Pumps / Illumination / Electric compressors etc. if applicable).	Yes / No.	
4.	Check arrangement of illumination at construction site is available.	Yes / No.	
5.	Check dumping of Excavated soil (Minimum 1.5 Mts. Or half the depth of the pit which ever is more from the edge of the pit.)	Yes / No.	
6.	Check Shoring & Shuttering to protect the loose rock / soil against fall. (if required).	Yes / No.	
7.	Check lone worker is not be allowed to work in the excavated area.	Yes / No.	
8.	Ensure Laying of temporary cables used for operation of Machines used during construction should not cause any danger for electrocution of persons / animals.	Yes / No.	
9.	Ensure that before undertaking excavation, the soil has been tested and in case of availability of any explosive / dangerous gas, necessary arrangement must be made to remove / dilute such gases.	Yes / No.	
10.	The positions of underground installations such as sewers, water pipes and electrical cables has been verified and in case of their existence, they must be isolated before further excavation works to ensure Human Safety.	Yes / No.	
11.	Check that the scaffolds are not overloaded in any case. Scaffolds are to be erected and supported properly.	Yes / No.	
12.	Stability of the soil of the excavated pit for safe working is to be checked and certified by a competent person daily before start of work. A register at site is maintained where competent person can certify accordingly. No manhole should remain uncovered during night & off days.	Yes / No.	
13.	Check the provision of sufficient strong ladder of suitable length is available near the working place during excavation.	Yes / No.	

SN	Description of Activity	Feed back	Remarks
14.	Check if any permission is required from local statutory body before excavation.	Yes / No.	
15.	Check for No undercutting / toe cutting in soil.	Yes / No.	
16.	Check after excavation the work should be speedily completed without delay and back filling done at the earliest.	Yes / No.	
17.	Check for any possibility of seepage of water from nearby pond / river has been estimated and taken care of.	Yes / No	
18.	Check to avoid slide / collaps of side walls of excavated pit, the excavation is to be done in trapezoidal cross – section.	Yes / No.	
ii): Safety precaution during Storage, Handling and Use of Blasting Material:			
1	Check that the adequate arrangement is made for the storage of blasting material at safe place. (Temporary Magazine is to be installed observing all norms) as per Indian Explosive Act.	Yes / No.	
2.	Check that the blasting materials is handled by licensed blaster with due care at site. (If applicable)	Yes / No.	
3.	Check smoking is prohibited in the vehicle carrying explosives.	Yes / No.	
4.	Check that the Blaster is holding proper license issued by the appropriate authority. As per Indian Explosive Act.	Yes / No.	
5.	Check that the length of the fuse wire used during blasting operation is adequate.	Yes / No.	
6.	Check while transportation, no unauthorized person is allowed in vehicle carrying explosives.	Yes / No.	
7.	Check that the loading and unloading of explosives is being done carefully.	Yes / No.	
8.	Check explosives and detonators or blasting caps is not being transported in the same vehicle.	Yes / No.	
9.	Check while transportation the detonators and explosives are not carried loose or mixed with other materials.	Yes / No.	
10	Check surplus explosives shall not be stacked near working area during loading / unloading.	Yes / No.	
11.	Check explosives shall not be held in hands when lightening the fuse.	Yes / No.	
12.	Check that blasting in the open has been carried out during the fixed hours every day or on fixed days in the week so that the public at large should know about this.	Yes / No.	
13.	Check that arrangement has been made to display sufficient warnings / sign board to enable the people to get out of the blasting area to get off the danger zone	Yes / No.	
14.	Check that the danger zone has been suitably cordoned off.	Yes / No.	
15.	Check during blasting operations begin / after the firing of explosives shall follow the loud siren.	Yes / No.	
16.	Check that during blasting operation, Labour / Workmen / Passerby are at safe places and arrangement is made to inform public by caution markings (Red Flag) / Public Notices etc.	Yes / No.	
17.	Check that PPEs i.e. Safety helmets, Safety Shoes, is used by blaster and their gang members during blasting and also the persons supervising the blasting operations.	Yes / No.	
18.	For covered blasting ensure placement of cover plates of proper thickness and sufficient numbers of sand filled bags.	Yes / No.	
19.	Ensure that permission for blasting has been obtained from the appropriate authority.	Yes / No.	
iii) Safety during casting of Foundation / Concreting :			

SN	Description of Activity	Feed back	Remarks
1.	Check construction materials are stacked at safe place and also does not cause any danger. (Away from pit) i.e. 1.5 Mtrs. or half the depth of the pit which ever is more.)	Yes / No.	
2.	Check proper arrangement of illumination at Construction Site of Sub station is available.	Yes / No.	
3.	Check that the Concreting Mixer/ Vibrator machines etc are placed at a safe place (Not very near to any pit at least 1.5 Mtr. from the edge of the pit) to avoid transfer of vibrations and should be operated by skilled persons.	Yes / No.	
4.	Check proper / adequate arrangement is made for extension of electric supply. (Proper size of cable, Use of fuse, No loose connection for De watering Pumps / Illumination / Electric compressors etc. if applicable).	Yes / No.	
5.	Check for laying of temporary cables used during construction activities should not cause any danger for electrocution to persons / animals.	Yes / No.	
6.	All bracing, struts and shuttering in excavations shall be adequately secured so as to prevent their accidental displacement.	Yes / No.	
7.	Ensure Shuttering and timbering has been made as detailed in I:S: 3764 for protecting the loose rock / soil against fall.	Yes / No.	
8.	Check for proper placing of Hydraulic jacks with stability and constant watch of these instruments (which are continuously loaded) to avoid any danger of displacement causing sever accident.	Yes / No.	

II. SAFETY DURING STRUCTURE, EQUIPMENT ERECTION & CABLE LAYING ETC. :

SN	Description of Activity	Feedback	Remarks
1.	Check Back filling done prior to erection activity.	Yes / No.	
2.	Check the derrick used before structure erection has been checked for adequate strength / size and no joints are permitted.	Yes / No.	Test certificate is required apart from visual inspection.
3.	Check that the pulleys used before structure erection / Equipment Erection has been checked for adequate strength / proper size (diameter), also in case of open type pulleys proper locking arrangements like providing of Safety Pin is made Safe working load should be punched.	Yes / No.	Test certificate is required apart from visual inspection.
4.	Check the ropes used before structure erection / Equipment Erection has been checked for adequate strength / physical condition (free from break of strands and knots etc.	Yes / No.	Test certificate is required apart from visual inspection.
5.	Check that the lifting tools and tackles are in healthy condition and has been tested periodically.	Yes / No.	Test certificate is required apart from visual inspection.
6.	Check permission has been obtained from Aviation Authority for erection of Lightning Mast which comes in the vicinity of flying zone. (Where necessary)	Yes / No.	
7.	Check that all Nuts and Bolts are fitted in the structure before undertaking the job of other section of the structure and are tightened.	Yes / No.	
8.	Check area has been cordoned off to prevent injuries to unauthorized persons from hitting against structural component or falling in the excavated pits.	Yes / No.	

SN	Description of Activity	Feedback	Remarks
9.	Check that danger plates are available on all the equipment & structures in the switchyard.	Yes / No.	
10.	Check demarcation of feeder is done for Double Circuit Line.	Yes / No.	
11.	Check only erection team members are allowed to stand near the structure / Equipment while erection is in process and should wear the safety helmet / Safety Shoes.	Yes / No.	
12.	Check proper guying arrangement has been made while lifting structure / Equipment, if necessary.	Yes / No.	
13.	Check that proper arrangement is made while lifting the structure members and fixing them at height i.e. Proper size and strength of the hook used for lifting the structure members.	Yes / No.	
14.	Check sufficient numbers of guys are made while lifting the assembled structure / heavy loads and also avoiding use of single sheeve pulleys while lifting the assembled structure / heavy load.	Yes / No.	
15.	Check arrangement has been made for equipment identification.	Yes / No.	
16.	Check that required painting made on tower falling in the vicinity of aviation zones. (Where necessary.)	Yes / No.	
17	Check no live wires nearby. Take shut down if necessary.	Yes / No.	
18.	Check the structure has been permanently earthed.	Yes / No.	
19.	Check crane are preferably be used for erection of pipe structure in the sub station building works (if required.)	Yes / No.	
20.	Check all safety procedures for erection work like use of safety helmets, Safety belts, use of guy wires, lowering / lifting of tools by rope etc. are strictly adhered to during structure erection works is in progress in the switchyard.	Yes / No.	
21.	Check that correct size of spanner (Box or ring type) as well as DE spanners is being used.	Yes / No.	
22.	Check working area of the structure has been demarcated during erection.	Yes / No.	
23.	Check heavy structures are lifted with crane with proper safety.	Yes / No.	
24.	Only polypropylene ropes are to be used to tie the aluminium tube / Bus bar since this is soft material and will not damage aluminium tube / Bus bar during erection.	Yes / No.	
25.	Ensure that R clips in insulator caps are fixed properly to avoid disconnection of insulator discs.	Yes / No.	
26.	Ensure that all the necessary security pins (split pins) are fixed.	Yes / No.	
27.	Check all nuts of jumper fittings are properly tightened and live metal clearance have been maintained as per AEGCL/APDCL specification.	Yes / No.	
28.	In case of tension fitting dead end joint dimensions before & after the compression are checked and recorded.	Yes / No.	
29.	No damaged component of any hardware fitting should be used on works.	Yes / No.	
30.	Length of jumpers has been measured properly to give it a parabolic shape. No sharp bend should exist.	Yes / No.	
31.	Check surge counter erection facilitates proper reading and that earthing is done with minimum bends.	Yes / No.	
32.	Check Surge monitor has been earthed by connecting it to main		

SN	Description of Activity	Feedback	Remarks
	earth mat with (G I Flat 75 x 12 mm) and earth pit separately as per drawing.	Yes / No.	
33.	Check the alignment of earth switch with isolator, earth switch of isolator is put into operation and the contacts are cleaned. After completion of pre commissioning checks and formats are dully filled and signed.	Yes / No.	
34.	Ensure that the rubber beedings are kept in good condition.	Yes / No.	
35.	Check CT has been placed on the support structure very carefully and all nuts have been tightened. Earthing is done as per drawing.	Yes / No.	
36.	Ensure the lattice structure of CT has been earthed at two points.	Yes / No.	
37.	Check the marshalling box in the switchyard has proper illumination arrangement.	Yes / No.	
38.	Check the capacitor unit is short circuited & earthed, until erection and commissioning works are being done on CVT. (The capacitor get charged by the electrical fields in the vicinity and they keep these charges for a long time, which can be dangerous to human life. Hence the shorting of capacitor unit is necessary). It should be removed before tests / use.	Yes / No.	
39.	Check Fuses in the marshaling box are OK.	Yes / No.	
40.	Check proper earthing of CVT tank has been done.	Yes / No.	
41.	Check all housing accessories, mounting stools including bolts / Nuts for fixing Line Trap and insulators are of non magnetic material.	Yes / No.	
42.	Check H.F. point of CVTs on which the coupling device is not mounted has been earthed.	Yes / No.	
43.	Check the remaining CVTs have been earthed thro' coupling device.	Yes / No.	
44.	Cable drums after visual inspection should be stored preferably in the covered area. Cable ends should be clamped.	Yes / No.	
45.	Ensure each cable and conduit run should be tagged with cable identity numbering as per the approved that appear in the cable and conduit schedule.	Yes / No.	
46.	The tag should be of aluminium plate with ID number punched on it and securely attached to the cable conduit by not less than two turns. Cable tags should of rectangular shape for power cables and of circular shape for control cables.	Yes / No.	
47.	Check underground cable markers should project 150 mm above ground and spaced at an interval of 30 Mts. They shall be located on both sides of road and drain crossing and also at every change in direction.	Yes / No.	
48.	Check cable tags should be provided inside the switchgear, motor control centres, control and relay panels etc. wherever required for cable identification, where a number of cables enter together through a gland plate.	Yes / No.	

SN	Description of Activity	Feedback	Remarks
49.	The cable (power and control) between LT stations, Control room, DG set building and fire fighting pump house should be laid in the buried cable trenches. In addition to the above, for lighting purpose also, buried cable trench can be used in outdoor area.(as per Technical specification of specific contract)	Yes / No.	
50.	Cable route and joint markers and RCC warning covers should be provided wherever required. The voltage grade of cables should be engraved on the marker.	Yes / No.	
51.	Tray Identification Number on each run of trays at an interval of 10 Mtrs should be painted.	Yes / No.	
52.	In case the outer sheath of a cable is damaged during handling / installation, the same should be repaired to the satisfaction of the site. In case any other part of a cable is damaged, the same should be replaced by a healthy cable. Power cables should be at the top most layers. The armor of control cable is to be earthed.	Yes / No.	
53.	All cable termination should be appropriately tightened to ensure secure and reliable connections. All the exposed parts of cable lugs should be covered with tape, sleeve or paint.	Yes / No.	
54.	Power and control cables are laid on separate cable trays	Yes / No.	
55.	Co-axial cable is laid separately from power cable.	Yes / No.	
56.	All cable trays, racks and metallic ducts have been grounded by connecting each to earth / mat. (As per Scheme)	Yes / No.	
57.	Check sections of cable trays have been bridged by copper jumpers/ G I to retain continuity of earthing. (As per Scheme)	Yes / No.	
58.	Check earthing of panel is done by the erection contractor for connecting it with switchyard earth mat. (As per Scheme)	Yes / No.	
59.	Auxiliary bus wiring for AC and DC supplies, Voltage Transformer circuits, annunciation circuits and other common services is provided near the top of the panels running through out the entire length of the panels.	Yes / No.	
60.	All internal wiring to be connected to external equipment is terminated on terminal blocks, preferably vertically mounted on the side of each panel.	Yes / No.	
61.	Check whether Mimic Diagram is available preferably made of anodized aluminium or plastic of approved fast colour material and screwed on to the panel that can be easily cleaned.	Yes / No.	
62.	Check the panels all equipment mounted on front and rear side as well as equipment mounted inside are provided with individual name plates with equipment designated engraved.	Yes / No.	
63.	Check on top of each panel on front as well as rear side, large and bold name plates are provided for circuit / feeder designation.	Yes / No.	
64.	Check all front mounted equipments are provided at the rear with individual name plates engraved with tag numbers corresponding to panel internal wiring to facilitate easy tracing of the wiring.	Yes / No.	
65.	Check the name plates mounted directly by the side of the respective equipments should not be hidden by equipment wiring.	Yes / No.	
66.	Check availability of 240V single phase 50 HZ, AC socket with switch suitable to accept 5 Amps and !5 Amps pin round	Yes / No.	

SN	Description of Activity	Feedback	Remarks
	standard plug, is provided in the interior of each cubicle with ON-OFF switch for connection of hand lamps.		
67.	Check that panels are provided with a fluorescent lighting fixture rated with 240 Volts single phase, 50 Hz supply for the interior illumination of the panel during maintenance. The fittings are complete with switch fuse unit and switching of the lighting is controlled by the respective panel door switch. Adequate lighting with fuse unit is also provided for the corridor in control panels.	Yes / No.	
68.	Check control panels are provided with necessary arrangements for receiving, distributing, isolating and fusing of DC and AC supplies for various control, signalling, lighting and space heater circuits. The incoming and sub circuits are separately with switch fuse units.	Yes / No.	
69.	Check panels are provided with a space heater rated for 240 V, single phase, 50 Hz, AC supply for the internal heating of the panel to prevent condensation of moisture.	Yes / No.	
70.	Check all panels are equipped with an earth bus securely fixed	Yes / No.	
71.	Check when several panels are mounted adjoining each other, the earth bus is made continuous with necessary connectors and clamps for this purpose.	Yes / No.	
72.	Check provision is made for extending the earth bus bars to adjoining panels on either side.	Yes / No.	
73.	Check provision is made on each bus bar of the end panels for connecting earthing grid.	Yes / No.	
74.	Check all metallic cases of relays, instruments and panel mounted equipment including gland plates are connected to the earth bus by copper wires of specified size.	Yes / No.	
75.	Check the colour code of the earthing wire is green.	Yes / No.	
76.	Check that earthing made with equipment is with Nuts and Bolts i.e. For such connection lugs should be pressed and tightened to the terminals through Nuts and Bolts.	Yes / No.	
77.	Check that no equipment is mounted on the panel doors.	Yes / No.	
78.	Check each switch should bear clear inscription identifying its function.	Yes / No.	
79.	Check those who have sufficient knowledge of steel structural job have been employed in steel structural works only.	Yes / No.	
80.	Check necessary instruction has been communicated by supervisor before start of the day's works to workmen under his control.	Yes / No.	
81.	Storing of equipments is to be made properly to avoid any accident during handling.	Yes / No.	
82.	Check all Nuts and bolts are properly raised or lowered preferably using closed loop pulleys and gully bags / hand bags tied at the end for carrying nuts and bolts.	Yes / No.	
83.	Check that Fire resistant sheets are used before entrance of control cable in control room.	Yes / No.	
84.	Check air compressor tubing properly tightened.	Yes / No.	
85.	Check all carrying connectors / clamps properly tightened.	Yes / No.	

III. CONDUCTOR LAYOUT DURING CONSTRUCTION STAGE :

SN	Description of Activity	Feed back	Remarks
1.	Check all members are fixed in structure and ensure proper size of Nuts and Bolts are rigidly tightened and punching / tacking / tack welding is done in towers / structures before undertaking conductor laying job.	Yes / No.	
2.	Ensure proper scaffolding arrangements made during laying of conductor (While Power Line crossing etc).	Yes / No.	
3.	Ensure that all members are fitted in structure before undertaking conductor laying work.	Yes / No.	
4.	Ensure that the discharge rod is electrically tested before use.	Yes / No.	
5.	Ensure whether the structure is properly earthed.	Yes / No.	
6.	Only nylon or polypropylene ropes should be used during conductor laying in vicinity of live overhead lines.	Yes / No.	
7.	Ensure that PTW has been taken from the concerned authority when extension of existing sub station is under execution.	Yes / No.	
8.	Ensure that Winch, Pulleys etc. are properly earthed.	Yes / No.	
9.	For LT lines, check whether special persons are posted at each point of isolation till return of permit (PTW) if positioning of person is not possible then it is to be seen that all the point of isolation has been kept in the locked position till the work is in progress.	Yes / No.	
10.	Whether the network of LT lines has been thoroughly checked and precautions taken against inadvertent charging.	Yes / No.	
11.	Check that proper arrangement is made / available for grounding LT lines coming across during conductor laying. (This can be done by way of portable earthing and short circuiting devices which cab be engaged to and disengaged from LT lines, keeping away from the LT lines until all operations on the same are completed and all man and materials are removed from the LT lines).	Yes / No.	
12.	Check the provision and proper positioning for the guying and back staying (Where necessary).	Yes / No.	
13.	Check working of hydraulic crimping machine.	Yes / No.	
14.	Check before and after crimping, dimensional changes in clamps and are in accordance with the drawings and specifications.	Yes / No.	

IV. SWITCHYARD EARTHING DURING CONSTRUCTION STAGE:

SN	Description of Activity	Feed back	Remarks
1.	Check that while earthing conductor crossing the road is laid 300 mm below the road or at greater depth depending upon the site conditions.	Yes / No.	
2.	Check that while laying the Earthing conductor in outside area is buried at least 600 mm below the furnished ground level.	Yes / No.	
3.	Check that the earthing pads have been provided for the apparatus / equipments at accessible position.	Yes / No.	
4.	Check all steel columns, metallic stairs are connected to nearby earthing grid conductor by two earthing leads.	Yes / No.	
5.	Check of earthing of lightening fixtures, receptacles switches, junction boxes lighting conduits has been done by a separate earthing conductor.	Yes / No.	
6.	Check that the railway tracks within switchyard area has been	Yes / No.	

SN	Description of Activity	Feed back	Remarks
	earthed at a spacing of 30 Mts. / specified distance and also at both ends.		
7.	Check cable trays has been connected to earthing flat of 50X6 mm / specified sized earthing flat at intervals specified in approved drawing.	Yes / No.	
8.	Check that this earthed flat is earthed at about 30 Mts. distance.	Yes / No.	
9.	All accessories in transformer and reactor like radiators tank, cooling banks etc are connected to the earthing grid at minimum two points.	Yes / No.	
10.	Check metallic conduits are not used as earth continuity conductor.	Yes / No.	
11.	Check flexible earthing connectors should be provided for the moving parts.	Yes / No.	
12.	Check sheath and armor of single core power cable is earthed at switchgear end and equipment side.	Yes / No.	
13.	Check contact surface of earthing pads for jointing free from scale, paint, enamel, grease, rust or dust.	Yes / No.	
14.	Check that light poles, junction boxes on the poles, cable and cable boxes / glands, lockout switches etc. are connected to the earthing conductor running along with the supply cable which intern is connected to the earthing grid conductor at a minimum two points.	Yes / No.	
15.	Check earthing conductor which is generally buried 2000 mm outside the switchyard fence. All the gates and every alternate post of the fence are to be connected to earthing grid.	Yes / No.	
16.	Check megger used for measuring soil resistivity is calibrated with desired accuracy.	Yes / No.	
17.	The earth resistivity has been measured in dry weather condition.	Yes / No.	
18.	Check the earthing of Transformers and Shunt reactor, earth pits are constructed as per relevant standard / approved drawing.	Yes / No.	
19.	Check that the measured value of combined earth resistance should be less than 1 Ohm.	Yes / No.	
20.	Check that for earth electrode and individual earth pits, this value should not be more than one Ohm.	Yes / No.	
21.	Check all non current carrying metal parts shall be effectively earthed by two separate and distinct earth connections (Indian Electricity Rule 61,67)	Yes / No.	
22.	Check that all pylon supports in the Fire Fighting HVSW system has been earthed to the earthmat.	Yes / No.	

V. GENERAL POINTS COMMON FOR ALL ACTIVITIES DURING EXCAVATION, CASTING OF FOUNDATION

Erection of structures, laying of conductor, storage and transportation of material:

SN	Description of Activity	Feed back	Remarks
1.	Check Supervisors / Workmen have been provided with required healthy PPEs. Like (Safety helmet / Safety Belts / Safety Shoes / Gum Boot etc. as applicable)	Yes / No.	
2.	Check availability of First Aid Box with required medicines at site.	Yes / No.	
3.	Check Site Instruction register is available at site.	Yes / No.	
4.	Ensure Supervisor / Gang Leader always issues instruction to the Workmen including contractor labour before start of work.	Yes / No.	
5.	Ensure supervisory staff from Power Grid is available at site	Yes / No.	

SN	Description of Activity	Feed back	Remarks
	during construction.		
6.	Check all driver and plant operators are holding valid driving license.	Yes / No.	
7.	Check the vehicle for rescue is available at site.	Yes / No.	
8.	Ensure engaged labour are aware of the job.	Yes / No	
9.	Ensure supervisor / workmen engaged in the field are aware of First Aid Techniques (Such as in case of Electric Shock, Fall from the height, Snake bite and the person rescued from buried under the debris, rescue of person from drowning etc.	Yes / No.	
10.	Check for availability and to keep a record of nearby Hospital / Doctor in case of emergencies arises.	Yes / No.	
11.	While transporting heavy consignment of conductor / EW drums from central store to site by the use of Cranes, Truck, Tractor. The safety aspect for construction and failure of brake system of moving machinery is to be checked.	Yes / No.	
12.	At least one dry powder type of portable fire extinguisher shall be provided especially where explosive or blasting agents are used for excavation. (If applicable)	Yes / No.	
13.	Check the competence (Qualification / experience) of supervisor / gang leader of contractor.	Yes / No.	
14.	Wire mesh rolls shall be secured in order to prevent dangerous recoiling action.	Yes / No.	
15.	Proper unloading arrangement has been made at site (Preferably with crane) to unload the material.	Yes / No.	
16.	After unloading the material visual inspection of the materials has been carried out along with the erection contractor to check that the material has not been damaged or not (Galvanizing is proper or not) As per approved Field Quality Plan etc.	Yes / No.	
17.	While transporting the heavy laden equipment like transformer / Reactor by road from Rly Stn to Sub station check whether for all safety precaution taken. Like safe lifting capacity of crane, safe load on culvert / Bridge / Nala / Drain etc.and working plan is available at site with specific reference to safety e.g. local earthing, skilled & experience manpower, proper T&P, strength and LT wires / HT wires interrupting the height of equipment and the required clearance maintained etc. Permission to be obtained from concerned authority if required. "Impact recorder on the equipment like Reactor / Transformer must be installed during transportation"	Yes / No.	
18.	Check that the adequate and safe means of access and aggress has been provided for all work places as far as reasonably practicable and is being used by the workers.	Yes / No.	
19.	Check proper illumination is provided at the work places and their approaches including passage ways.	Yes / No.	
20.	Check that the lamps have been protected by suitable guards where necessary to prevent danger, in case the lamp breaks.	Yes / No.	
21.	Check loose materials which are not required for use shall not be placed or left so as dangerously to obstruct work places or passage ways.	Yes / No.	
22.	Check all projected nails has been removed or bent over to prevent injury.	Yes / No.	
23.	Check scrap, waste and rubbish has not been allowed to	Yes / No.	

SN	Description of Activity	Feed back	Remarks
	accommodate on the site or the scrap materials has been stored at the isolated place.		
24.	Check that the worker while working at height scaffold materials, waste materials and tools are not being thrown by them to cause injury to any person.	Yes / No.	
25.	Check whether contractor has procured required quantity of PPE considering maximum number of erection gangs deployed at one time. Check the quantity of PPEs.	Yes / No.	
26.	Check that the PPEs required by the workmen are being utilized by them always.	Yes / No.	
27.	Check the worker is under constant surveillance by the other person while working at height.	Yes / No.	
28.	Check construction site has been barricaded for unauthorized persons / animals.	Yes / No.	
29.	Check that lifting appliances and machines and vehicles used on the construction site is of sound material and good quality and is free from patent defects and is strong enough to with safely the load and stresses to which they will be subjected.	Yes / No.	
30.	Check structures and equipment is being used only for the purpose for which they were intended.	Yes / No.	
31.	Check equipment has been operated by the competent person.	Yes / No.	
32.	Check portable ladders shall not exceed 9 Mts. in length, other wise may cause danger while climbing of person and back legs shall be equally braced.	Yes / No.	
33.	Check unskilled labour are not utilized for skilled jobs and only experience persons are deployed for erection.	Yes / No.	
34.	Check a well planed and documented procedure for the entire Construction works of Sub station shall be prepared by contractor and get approved from Power Grid for distribution to Contractors' field staff and Power Grid for follow up.	Yes / No.	
35.	Check no metallic measuring tapes are being used during expansion of charged bays.	Yes / No.	
36.	Check metal ladders are not being used in the vicinity of exposed live electrical equipment.	Yes / No.	
37.	Check one bore well is available for water supply in case Municipal Construction supply is not available	Yes / No.	
38.	Check charged area of a yard should be properly fenced off.	Yes / No.	
39.	Check ladders / lengthy articles / lengthy equipments etc. should always be carried in horizontal position.	Yes / No.	
40.	Check insurance by contractor for the labour to provide adequate coverage for any accident etc.	Yes / No.	

Signature	**Signature**	**Signature**
Name : **Designation :** **Representative of Contractor**	**Name :** **Designation:** **AEGCL/APDCL from Site.**	**Name :** **Designation:** **AEGCL/APDCL from Circle Office**

ks if any:

CENTRAL ELECTRICITY AUTHORITY

NOTIFICATION

New Delhi, the 20th September, 2010

No. CEI/1/59/CEA/EI.—In exercise of the powers conferred by section 177 of the Electricity Act, 2003 (36 of 2003), the Central Electricity Authority hereby makes the following regulations for Measures relating to Safety and Electric Supply, namely:-

Chapter I

1. **Short title and Commencement.-** (1) These regulations may be called the Central Electricity Authority (Measures relating to Safety and Electric Supply) Regulations, 2010.

(2) They shall come into force on the date of their final publication in the Official Gazette.

2. **Definitions.-** (1) In these regulations, unless the context otherwise requires,

(a) "Act" means the Electricity Act,2003;

(b) "accessible" means within physical reach without the use of any appliance or special effort;

(c) "ampere" means a unit of electric current and is a constant current which, flowing in two parallel straight conductors of infinite length of negligible cross section and placed at a distance of one meter apart in a vacuum will produce a force of $2x10^{-7}$ Newton per meter length between the conductors;

(d) "apparatus "means electrical apparatus and includes all machines, fittings, accessories and appliances in which conductors are used;

(e) "bare" means not covered with insulating materials;

(f) "cable" means a length of insulated single conductor(solid or stranded) or of two or more such conductors each provided with its own insulation, which are laid up together. Such insulated conductor or conductors may or may not be provided with an overall mechanical protective covering;

(g) "circuit" means an arrangement of conductor or conductors for the purpose of conveying electricity and forming a system or a branch of a system;

(h) "circuit breaker" means a device, capable of making and breaking the circuit under all conditions, and unless otherwise specified, so designed as to break the current automatically under abnormal conditions;

(i) "concentric cable" means a composite cable comprising an inner conductor which is insulated and one or more outer conductors which are

insulated from one another and are disposed over the insulation of, and more or less around, the inner conductor;

(j) "conductor" means any wire, cable, bar, tube, rail or plate used for conducting electricity and so arranged as to be electrically connected to a system;

(k) "conduit" means rigid or flexible metallic tubing or mechanically strong and fire resisting non-metallic tubing into which a cable or cables may be drawn for the purpose of affording it or them mechanical protection;

(l) "connected load" means the sum of the ratings of the electricity consuming apparatus connected to a consumer's installation;

(m) "covered with insulating material" means adequately covered with insulating material of such quality and thickness as to prevent danger;

(n) "cut out" means any appliance for automatically interrupting the transmission of electricity through the conductor when the current rises above a pre-determined amount, and shall also include fusible cut-out;

(o) "danger" means danger to health or danger to life or any part of body from shock, burn or other injury to persons, or property, or from fire or explosion, attendant upon the generation, transmission, transformation, conversion, distribution or use of electricity;

(p) "dead" means at or about earth potential and disconnected from any live system. It is used only with reference to current carrying parts when these parts are not live.

(q) "designated person" means a person designated under regulation 3;

(r) "earthed" or "connected with earth" means connected with the general mass of earth in such manner as to ensure at all times an immediate discharge of electricity without danger;

(s) "earthing system" means an electrical system in which all the conductors and appliances are earthed;

(t) "enclosed sub-station" means any premises or enclosure or part thereof, being large enough to admit the entrance of a person after the apparatus therein is in position, containing apparatus for transforming or converting electricity to or from a voltage at or exceeding 650 V (other than transforming or converting solely for the operation of switch gear or instruments) with or without any other apparatus for switching, controlling or otherwise regulating the electricity, and includes the apparatus therein;

(u) "enclosed switch-station" means any premises or enclosure or part thereof, being large enough to admit the entrance of a person after the apparatus therein is in position, containing apparatus for switching, controlling or otherwise regulating electricity at or exceeding 650 V but not for transforming or converting electricity(other than for transforming or converting solely for the operation of switchgear or instruments)and includes the apparatus therein,

(v) "flameproof enclosure" means an enclosure for electrical machinery or apparatus that will withstand, when the covers, or other access doors are properly secured, an internal explosion of the inflammable gas or vapour which may enter or originate inside the enclosure, without suffering damage and without communicating the internal flammation (or explosion) to the external inflammable gas or vapour in which it is designed to be used, through any joints or other structural openings in the enclosure;

(w) "flexible cable" means a cable consisting of one or more cores each formed of a group of wires, the diameter and the physical properties of the wires and insulating material being such as to afford flexibility.

(x) "guarded" means covered, shielded, fenced or otherwise protected by means of suitable casings, barrier, rails or metal screens to remove the possibility of dangerous contact or approach by persons or objects to a point of danger;

(y) "hand-held portable apparatus" means an apparatus which is so designed as to be capable of being held in the hands and moved while connected to a supply of electricity;

(z) "High Voltage Direct Current (HVDC)" means Direct Current (DC) voltage above 100000 Volts used for transmission of power.

(za) "inspector of mines" means an Inspector appointed under the Mines Act,1952 (35 of 1952);

(zb) "installation" means any composite electrical unit used for the purpose of generating, transforming, transmitting, converting, distributing or utilizing electricity;

(zc) "intrinsically safe" as applied to apparatus or associated circuits shall denote that any sparking that may occur in normal working is incapable of causing explosion of inflammable gas or vapour;

(zd) "increased safety type 'e' " means a method of protection by which additional measures are applied so as to give increased security against the possibility of excessive temperatures and of occurrence of arcs and sparks in apparatus which does not produce arcs or sparks in normal service;

(ze) "lightning arrestor" means a device which has the property of diverting to earth any electrical surge of excessively high amplitude applied to its terminals and is capable of interrupting flow current if present and restoring itself thereafter to its original operating conditions;

(zf) "linked switch" means a switch with all the poles mechanically linked so as to operate simultaneously;

(zg) "live" means electrically charged;

(zh) "metallic covering" means mechanically strong metal covering surrounding one or more conductors;

(zi) "meter" means a device suitable for measuring, indicating and recording consumption of electricity or any other quantity related with electrical system and shall include, wherever applicable, other equipment such as Current Transformer (CT), Voltage Transformer (VT) or Capacitor Voltage Transformer (CVT) with necessary wiring and accessories;

(zj) "mine" has the same meaning as defined in the Mines Act, 1952 (35 of 1952);

(zk) "neutral conductor" means that conductor of a multi-wire system, the voltage of which is normally intermediate between the voltages of the other conductors of the system and shall also include return wire of the single phase system;

(zl) "occupier" means the owner or person in occupation of the premises where electricity is used or proposed to be used;

(zm) "ohm" means a unit of electrical resistance and is the electrical resistance between two points of a conductor when a constant potential difference of one volt, applied to these points produces a current of one ampere in the conductor, provided no electromotive force is generated in the conductor;

(zn) "open sparking" means sparking which owing to the lack of adequate provisions for preventing the ignition of inflammable gas external to the apparatus would ignite such inflammable gas;

(zo) "overhead line" means any electric supply line which is placed above ground and in the open air but excluding live rails of a traction system;
(zp) "owner" means the company or body corporate or association or body of individuals, whether incorporated or not or artificial juridical person which owns or operates or maintains Electric Plants and Lines;
(zq) "owner", "agent" and "manager" of a mine have the same meanings as are assigned to them in the Mines Act,1952(35 of 1952);
(zr) "poles" means the phase terminals of a Switch.
(zs) "portable apparatus" means an apparatus which is so designed as to be capable of being moved while in operation;
(zt) "portable hand lamp" means a portable light-fitting provided with suitable handle, guard and flexible cord connected to a plug;
(zu) "Schedule" means a schedule to these regulations.
(zw) "section" means a Section of the Act;
(zv) "span" means the horizontal distance between two adjacent supporting points of an overhead conductor;
(zw) "street box" means a totally enclosed structure, either above or below ground containing apparatus for transforming, switching, controlling or otherwise regulating electricity;
(zx) "supplier" means any generating company or licensee from whose system electricity flows into the system of another generating company or licensee or consumer;
(zy) "switch" means a manually operated device for opening and closing or for changing the connection of a circuit;
(zz) "switchboard" means an assembly including the switchgear for the control of electrical circuits, electric connections and the supporting frame;
(zza) "switchgear" shall denote switches, circuit breakers, cut-outs and other apparatus used for the operation, regulation and control of circuits;
(zzb) "system" means an electrical system in which all the conductors and apparatus are electrically connected to a common source of electric supply;
(zzc) "transportable apparatus" means apparatus which is operated in a fixed position but which is so designed as to be capable of being moved readily from one place to another;
(zzd) "volt" means a unit of potential difference of electro-motive force and is the difference of electric potential which exists between two points of a conductor carrying a constant current of one ampere, when the power dissipated between these points is one watt;
(zze) "voltage" means the difference of electric potential measured in Volts between any two conductors or between any part of either conductor and the earth as measured by a voltmeter meeting Indian Standards;
(zzf) "watt" is a unit of active power and "MW" means megawatt and is equal to 10^6 watts.

(2) Words and expressions used and not defined in these regulations but defined in the Act shall have the meanings respectively assigned to them in the Act.

Chapter II

3. **Designating person(s) to operate and carry out the work on electrical lines and apparatus.-** (1) A supplier or a consumer, or the owner, agent or manager of a mine, or the agent of any company operating in an oil-field or the owner of a drilled well in an oil field or a contractor who has entered into a contract with a supplier or a consumer to carry out duties incidental to the generation, transformation, transmission, conversion, distribution or use of electricity shall designate persons for the purpose to operate and carry out the work on electrical lines and apparatus.

(2) The supplier or consumer, or the owner, agent or manager of a mine, or the agent of any company operating in an oil-field or the owner of a drilled well in an oil field or a contractor referred to on sub-regulation (1) shall maintain a register wherein the names of the designated persons and the purpose for which they are engaged, shall be entered.

(3) No person shall be designated under sub-regulation (1) unless,-

(i) he possesses a certificate of competency or electrical work permit, issued by the Appropriate Government.

(ii) his name is entered in the register referred to in sub-relgulation (2).

4. **Inspection of designated officers and other safety measures.-** (1) The register maintained under sub-regulation (2) of regulation 3 shall be produced before the Electrical Inspector when required by him.

(2) If on inspection, the Electrical Inspector finds that the designated person does not fulfill the required qualification, he shall recommend the removal of the name of such persons from the register.

5. **Electrical Safety Officer.-** (1) All suppliers of electricity including generating companies, transmission companies and distribution companies shall designate an Electrical Safety Officer for ensuring observance of safety measures specified under these regulations in their organisation for construction, operation and maintenance of power stations, sub-stations, transmission and distribution lines.

(2) The Electrical Safety Officer shall be an Electrical Engineering degree holder with at least ten years of experience in operation and maintenance of electricity plants or an Electrical Engineering Diploma holder with at least fifteen years of experience in operation and maintenance of electric plant.

(3) The Electrical Safety Officer designated under sub-regulation (1), shall ensure periodic inspection of such installations, get them tested and keep a record thereof and such records shall be made available to the Electrical Inspector if and when required.

(4) For every factory registered under Factory Act, 1948, where more than 250 kW of electrical load is connected, the management of the factory shall designate a person having qualification specified in sub-regulation (2), for ensuring the

observance of the safety provisions laid under the Act and the regulations made thereunder, who shall periodically inspect such installation, get them tested and keep a record thereof and such records shall be made available to the Electrical Inspector if and when required.

6. **Safety measures for operation and maintenance of electric plants.-** (1) Engineers and supervisors appointed to operate or undertake maintenance of any part or whole of a thermal power generating station and a hydro power plant together with the associated sub-station shall hold diploma in Engineering from a recognized institute, or a degree in Engineering from a university.

(2) The Technicians to assist engineers or supervisors shall possess a certificate in appropriate trade, preferably with a two years course from a Industrial Training Institute recognized by the Central Government or the State Government.

(3) Engineers, supervisors and Technicians engaged for operation and maintenance of electric plants should have successfully undergone the type of training as specified in Schedule-I.

Provided that the existing employees shall have to undergo the training mentioned in sub-regulation (3) within three years from the date of coming into force of these regulations.

(4) The owner of every thermal power generating station and hydro power plant together with their associated sub-station shall arrange for training of personnel engaged in the operation and maintenance of his generating station along with associated sub-station in his own institute or any other institute recognized by the Central Government or the State Government.

Provided that separate training shall be given to the persons engaged in operation and maintenance of thermal power stations and hydro power stations including associated sub-stations.

7. **Safety measures for operation and maintenance of transmission, distribution systems.-** (1) Engineers or supervisors engaged in operation and maintenance of transmission and distribution systems shall hold diploma in electrical, mechanical, electronics and instrumentation Engineering from a recognized institute or university.

(2) The Technicians to assist engineers or supervisors shall possess a certificate in appropriate trade, preferably with a two years course from a Industrial Training Institute recognized by the Central Government or State Government.

(3) Engineers, supervisors and Technicians engaged for operation and maintenance of transmission and distribution systems electric plants should have successfully undergone the type of training as specified in Schedule-II.

Provided that the existing employees shall have to undergo the training mentioned in sub-regulation (3) within three years from the date of coming into force of these regulations.

(4) Owner of every transmission or distribution system shall arrange for training of their personnel engaged in the operation and maintenance of transmission and distribution system in his own institute or any other institute recognized by the Central Government or State Government.

8. **Keeping of records and inspection thereof.-** (1) The generating company or licensee shall maintain records of the maps, plans and sections relating to supply or transmission of electricity and submit the same to the Electrical Inspector for inspection as and when required by him.

(2) The Electrical Inspector shall supply a copy of the report of inspection referred to in sub-regulation (1), to the generating company or licensee, as the case may be.

9. **Deposit of maps.** – When a license has been granted, two sets of maps showing, as regards such licensee, the particulars specified in application for license shall be signed and dated to correspond with the date of notification of the grant of the license by an officer designated by the Appropriate Commission in this behalf, one set of such maps shall be retained by the said officer and the other one shall be furnished to the licensee.

10. **Deposit of printed copies.-** (1) Every person who is granted a license, shall, within thirty days of the grant thereof, have copies of the license and maps, showing the area of supply as specified in the license to Exhibit I same for public inspection at all reasonable times at his head office, his local offices, if any, and at the office of every local authority within the area of supply.

(2) Every such licensee shall, within the aforesaid period of thirty days, supply free of charge one copy of the license along with the relevant maps to every local authority within the area of supply and shall also make necessary arrangement for the sale of printed copies of the license and maps to all persons applying for the same, at a price to be notified by the Appropriate Government from time to time.

11. **Plan for area of supply to be made and kept open for inspection.-** (1) The licensee shall, after commencing to supply electricity, forthwith cause a plan, to be made in electronic form, of the area of supply, and shall cause to be marked thereon the alignment and in the case of underground works, the approximate depth below the surface of all the existing electric supply lines, street distributing boxes and other works, and shall once in every year cause that plan to be duly corrected so as to show the electric supply lines, street distributing boxes and other works for the time being in position and shall also, if so required by an Electrical Inspector, cause to be made sections showing the approximate level of all his existing underground works other than service lines.

(2) Every plan shall be drawn to such horizontal and vertical scale as the Appropriate Commission may require.

Provided that no scale shall be required unless maps of the locality on that scale are for the time being available to the public.

(3) Every plan and section so made or corrected, or a copy thereof, marked with the date when it was made or corrected, shall be kept by the licensee at his

principal office or place of business within the area of supply, and shall at all reasonable times be open to the inspection of all applicants, and copies thereof shall be supplied.

Provided that existing and old plans and sections and underground distribution network shall be converted to electronic form within three years from the date of commencement of these regulations.

(4) Global Positioning System (GPS) mapping or mapping through any other latest technology, of existing and old plans and sections shall be completed within five years from the date of commencement of these regulations and new plans and sections shall be compatible to the Global Positioning System mapping or mapping through any other latest technology.

(5) The licensee shall, if required by an Electrical Inspector, and, where the licensee is not a local authority, by the local authority, if any, concerned, supply free of charge to such Electrical Inspector or local authority a duplicate copy of every such plan or section or a part of the same duly corrected.

(6) The copies of plans and sections under this regulation shall be supplied by the licensee to every applicant on the payment of such fee as the Appropriate Commission may, by regulation, specify.

Chapter III

General safety requirements

12. **General safety requirements pertaining to construction, installation, protection, operation and maintenance of electric supply lines and apparatus.-** (1) All electric supply lines and apparatus shall be of sufficient rating for power, insulation and estimated fault current and of sufficient mechanical strength, for the duty cycle which they may be required to perform under the environmental conditions of installation, and shall be constructed, installed, protected, worked and maintained in such a manner as to ensure safety of human beings, animals and property.

(2) Save as otherwise provided in these regulations, the relevant code of practice of the Bureau of Indian Standards or National Electrical Code, if any, may be followed to carry out the purposes of this regulation and in the event of any inconsistency, the provisions of these regulaions shall prevail.

(3) The material and apparatus used shall conform to the relevant specifications of the Bureau of Indian Standards or International Elelctro-Technical Commission where such specifications have already been laid down.

(4) All electrical equipment shall be installed above the Mean Sea Level (MSL) as declared by local Municiple Authorities and where such equipment is to be installed in the basement, consumer shall ensure that the design of the basement

should be such that there is no seapage or leakage or logging of water in the basement.

13. **Service lines and apparatus on consumer's premises.-** (1) The supplier shall ensure that all electric supply lines, wires, fittings and apparatus belonging to him or under his control, which are on a consumer's premises, are in a safe-condition and in all respects fit for supplying electricity and the supplier shall take precautions to avoid danger arising on such premises from such supply lines, wires, fittings and apparatus.

(2) Service lines placed by the supplier on the premises of a consumer which are underground or which are accessible shall be so insulated and protected by the supplier as to be secured under all ordinary conditions against electrical, mechanical, chemical or other injury to the insulation.

(3) The consumer shall, as far as circumstances permit, take precautions for the safe custody of the equipment on his premises belonging to the supplier.

(4) The consumer shall also ensure that the installation under his control is maintained in a safe condition.

14. **Switchgear on consumer's premises.-** (1) The supplier shall provide a suitable switchgear in each conductor of every service line other than an earthed or earthed neutral conductor or the earthed external conductor of a concentric cable within a consumer's premises, in an accessible position and such switchgear shall be contained within an adequately enclosed fireproof receptacle:

Provided that where more than one consumer is supplied through a common service line, each such consumer shall be provided with an independent switchgear at the point of rigid junction to the common service.

(2) Every electric supply line other than the earthed or earthed neutral conductor of any system or the earthed external conductor of a concentric cable shall be protected by a suitable switchgear by its owner.

15. **Identification of earthed and earthed neutral conductors and position of switches and switchgear therein.-** Where the conductors include an earthed conductor of a two-wire system or an earthed neutral conductor of a multi-wire system or a conductor which is to be connected thereto, the following conditions shall be complied with:-

(i) an indication of a permanent nature shall be provided by the owner of the earthed or earthed neutral conductor, or the conductor which is to be connected thereto, to enable such conductor to be distinguished from any live conductor and such indication shall be provided-

(a) where the earthed or earthed neutral conductor is the property of the supplier, at or near the point of commencement of supply;

(b) where a conductor forming part of a consumer's system is to be connected to the supplier's earthed or earthed neutral conductor, at the point where such connection is to be made;

(c) in all other cases, at a point corresponding to the point of commencement of supply or at such other points as may be approved by an Electrical Inspector.

(ii) no cut-out, link or switch other than a linked switch arranged to operate simultaneously on the earthed or earthed neutral conductor and live conductors shall be inserted or remain inserted in any earthed or earthed neutral conductor of a two wire-system or in any earthed or earthed neutral conductor of a multi-wire system or in any conductor connected thereto.

Provided that the above requirement shall not apply in case of-

(a) a link for testing purposes, or

(b) a switch for use in controlling a generator or transformer.

16. Earthed terminal on consumer's premises.- (1) The supplier shall provide and maintain on the consumer's premises for the consumer's use, a suitable earthed terminal in an accessible position at or near the point of commencement of supply.

Provided that in the case of installation of voltage exceeding 250 V the consumer shall, in addition to the aforementioned earthing arrangement, provide his own earthing system with an independent electrode.

Provided further that the supplier may not provide any earthed terminal in the case of installations already connected to his system on or before the date to be specified by the State Government in this behalf if he is satisfied that the consumer's earthing arrangement is efficient.

(2) The consumer shall take all reasonable precautions to prevent mechanical damage to the earthed terminal and its lead belonging to the supplier.

(3) The supplier may recover from the consumer the cost of installation on the basis of schedule of charges published by him in advance and where such schedule of charges is not published, the procedure laid down, in regulation 63 shall apply.

Explanation.- For the purposes of sub-regulation (1), the expression "point of commencement of supply of electricity" shall mean the point at the incoming terminal of the switchgear installed by the consumer.

17. Accessibility of bare conductors.- Where bare conductors are used in a building, the owner of such conductors shall,-

(a) ensure that they are inaccessible;

(b) provide in readily accessible position switches for rendering them dead whenever necessary; and

(c) take such other safety measures as are specified in the relevant Indian Standards.

18. **Danger Notices**.- The owner of every installation of voltage exceeding 250 V shall affix permanently in a conspicious position a danger notice in Hindi or English and the local language of the District, with a sign of skull and bones of a design as per IS -2551 on-

(a) every motor, generator, transformer and other electrical plant and equipment together with apparatus used for controlling or regulating the same;

(b) all supports of overhead lines of voltage exceeding 650 V which can be easily climbed upon without the aid of ladder or special appliances;

(c) luminous tube sign requiring supply, X-ray and similar high frequency installations of voltage exceeding 650 V but not exceeding 33 kV:

Provided that where it is not possible to affix such notices on any generator, motor, transformer or other apparatus, they shall be affixed as near as possible thereto, or the word 'danger' and the voltage of the apparatus concerned shall be permanently painted on it:

Provided further that where the generator, motor, transformer or other apparatus is within an enclosure one notice affixed to the said enclosure shall be sufficient for the purposes of this regulation.

Explanation- For the purpose of clause (b) rails, tubular poles, wooden supports, reinforced cement concrete poles without steps, I-sections and channels, shall be deemed as supports which cannot be easily climbed upon

19. **Handling of electric supply lines and apparatus.**- (1) Before any conductor or apparatus is handled, adequate precautions shall be taken, by earthing or other suitable means, to discharge electrically such conductor or apparatus, and any adjacent conductor or apparatus if there is danger therefrom, and to prevent any conductor or apparatus from being accidentally or inadvertently electrically charged when persons are working thereon.

(2) Every person who is working on an electric supply line or apparatus or both shall be provided with tools and devices such as gloves, rubber shoes, safety belts, ladders, earthing devices, helmets, line testers, hand lines and the like for protecting him from mechanical and electrical injury and such tools and devices shall always be maintained in sound and efficient working condition.

(3) No person shall work on any live electric supply line or apparatus and no person shall assist such person on such work, unless he is designated in that behalf, and takes the safety precautions given in Schedule-III.

(4) Every telecommunication line on supports carrying a line of voltage exceeding 650 V but not exceeding 33 kV shall, for the purpose of working thereon, be deemed to be a line of voltage exceeding 650 V.

(5) All non-current carrying metal parts of switchgear and control panels shall be properly earthed and insulating floors or mat conforming to IS-15652: 2006, of appropriate voltage level shall be provided in front of the panels for the safety of operating personnel.

(6) All panels shall be painted with the description of its identification at front and at the rear.

20. **Supply to vehicles and cranes.-** Every person owning a vehicle, travelling crane, or the like to which electricity is supplied from an external source shall ensure that it is efficiently controlled by a suitable switch enabling all voltage to be cut off in one operation and, where such vehicle, travelling crane or the like runs on metal rails, the owner shall ensure that the rails are electrically continuous and earthed.

21. **Cables for portable or transportable apparatus.-** (1) Flexible cables shall not be used for portable or transportable motors, generators, transformers, rectifiers, electric drills, electric sprayers, welding sets or any other portable or transportable apparatus unless they are heavily insulated and adequately protected from mechanical injury.

(2) Where the protection is by means of metallic covering, the covering shall be in metallic connection with the frame of any such apparatus and earthed.

(3) The cables shall be three core type and four core type for portable and transportable apparatus working on single phase and three phase supply respectively and the wire meant to be used for ground connection shall be easily identifiable.

22. **Cables protected by bituminous materials.-** (1) Where the supplier or the owner has brought into use an electric supply line, other than an overhead line, which is not completely enclosed in a continuous metallic covering connected with earth and is insulated or protected *in situ* by composition or material of a bituminous character,-

(i) any pipe, conduit, or the like into which such electric supply line may have been drawn or placed shall, unless other arrangements are approved by the Electrical Inspector in any particular case, be effectively sealed at its point of entry into any street box so as to prevent any flow of gas to or from the street box, and;

(ii) such electric supply line shall be periodically inspected and tested where accessible, and the result of each such inspection and test shall be duly recorded by the supplier or the owner.

(2) The supplier or the owner after the coming into force of these regulations, shall not bring into use any further electric supply line as aforesaid which is insulated or

protected *in situ* by any composition or material known to be liable to produce noxious or explosive gases on excessive heating.

23. **Street boxes.**- (1) Street boxes shall not contain gas pipes, and precautions shall be taken to prevent, as far as reasonably possible, any influx of water or gas.

(2) Where electric supply lines forming part of different systems pass through the same street box, they shall be readily distinguishable from one another and all electric supply lines of voltage exceeding 650 V at or in street boxes shall be adequately supported and protected so as to prevent risk of damage to or danger from adjacent electric supply lines.

(3) All street boxes shall be regularly inspected for the purpose of detecting the presence of gas and if any influx or accumulation is discovered, the owner shall give immediate notice to any authority or company who have gas mains in the neighbourhood of the street box and in cases where a street box is large enough to admit the entrance of a person after the electric supply lines or apparatus therein have been placed in position, ample provision shall be made-

(i) to ensure that any gas which may by accident have obtained access to the box shall escape before a person is allowed to enter; and

(ii) for the prevention of danger from sparking.

(4) The owners of all street boxes or pillars containing circuits or apparatus shall ensure that their covers and doors are kept closed and locked and are so provided that they can be opened only by means of a key or a special appliance.

24. **Distinction of different circuits.**- The owner of every generating station, sub-station, junction-box or pillar in which there are any circuits or apparatus, whether intended for operation at different voltages or at the same voltage, shall ensure by means of indication of a permanent nature that the respective circuits are readily distinguishable from one another.

25. **Distinction of the installations having more than one feed.**- The owner of every installation including sub-station, double pole structure, four pole structure or any other structure having more than one feed, shall ensure by means of indication of a permanent nature, that the installation is readily distinguishable from other installations

26. **Accidental charging.**- (1) The owners of all circuits and apparatus shall so arrange them that there shall be no danger of any part thereof becoming accidentally charged to any voltage beyond the limits of voltage for which they are intended.

(2) Where alternating current and direct current circuits are installed on the same box or support, they shall be so arranged and protected that they shall not come into contact with each other when live.

27. **Provisions applicable to protective equipment.**- (1) Fire buckets filled with clean dry sand and ready for immediate use for extinguishing fires, in addition to fire extinguishers suitable for dealing with fires, shall be conspicuously marked

and kept in all generating stations, enclosed sub-stations and switching-stations in convenient location.

(2) The fire extinguishers shall be tested for satisfactory operation as per relevant Indian Standard at least once a year and record of such tests shall be maintained.

(3) First-aid boxes or cupboards conspicuously marked and equipped with such contents as the State Government may specify, shall be provided and maintained in every generating station, enclosed sub-station, enclosed switching station and in vehicles used for maintenance of lines so as to be readily accessible during all working hours and all such boxes and cupboards shall, except in the case of unattended sub-stations and switching stations, be kept in charge of responsible persons who are trained in first-aid treatment and one of such persons shall be available during working hours.

(4) Two or more gas masks shall be provided conspicuously and installed and maintained at accessible places in every generating station with capacity of 5 MW and above and enclosed sub-station with transformation capacity of 5 MVA and above for use in the event of fire or smoke:

Provided that where more than one generator with capacity of 5 MW and above is installed in a power station, each generator shall be provided with at least two separate gas masks in an accessible and conspicuous place:

Provided further that adequate number of gas masks shall be provided by the owner at every generating station and enlosed sub-station with capacity less than 5 MW and 5 MVA respectively.

28. **Display of instructions for resuscitation of persons suffering from electric shock.-** (1) Instructions, in English or Hindi and the local language of the District and where Hindi is the local language, in English and Hindi for the resuscitation of persons suffering from electric shock, shall be affixed by the owner in a conspicuous place in every generating station, enclosed sub-station, enclosed switching station, mines and in every factory as defined in clause (m) of section 2 of the Factory Act,1948 (63 of 1948) in which electricity is used and in such other premises where electricity is used as the Electrical Inspector may, by notice in writing served on the owner, direct.

(2) The owner of every generating station, enclosed sub-station, enclosed switching station and every factory or other premises to which these regulations apply, shall ensure that all designated persons employed by him are acquainted with and are competent to apply the instructions referred to in sub-regulation (1).

(3) In every manned generating station, sub-station or switching station of voltage exceeding 650 V, an artificial respirator shall be provided and kept in good working condition.

29. **Precautions to be adopted by consumers, owners, occupiers, electrical contractors, electrical workmen and suppliers.-** (1) No electrical installation work, including additions, alterations, repairs and adjustments to existing installations, except such replacement of lamps, fans, fuses, switches, domestic

appliances of voltage not exceeding 250V and fittings as in no way alters its capacity or character, shall be carried out upon the premises of or on behalf of any consumer, supplier, owner or occupier for the purpose of supply to such consumer, supplier, owner or occupier except by an electrical contractor licensed in this behalf by the State Government and under the direct supervision of a person holding a certificate of competency and by a person holding a permit issued or recognised by the State Government.

Provided that in the case of works executed for or on behalf of the Central Government and in the case of installations in mines, oil fields and railways, the Central Government and in other cases the State Government, may, by notification in the Official Gazette, exempt on such conditions as it may impose, any such work described therein either generally or in the case of any specified class of consumers, suppliers, owners or occupiers.

(2) No electrical installation work which has been carried out in contravention of sub-regulation (1) shall either be energised or connected to the works of any supplier.

30. **Periodical inspection and testing of installations.**- (1) Where an installation is already connected to the supply system of the supplier or trader, every such installation shall be periodically inspected and tested at intervals not exceeding five years either by the Electrical Inspector or by the supplier as may be directed by the State Government in this behalf or in the case of installations belonging to, or under the control of the Central Government, and in the case of installation in mines, oilfields and railways, by the Central Government.

(2) The periodical inspection and testing of installations of voltage above 650 V belonging to the supplier, shall also be carried out at intervals not exceeding five years by the Electrical Inspector;

(3) Where the supplier is directed by the Central or the State Government, as the case may be, to inspect and test the installation, he shall report on the condition of the installation to the consumer concerned in the Forms I, II and III as specified in Schedule-IV and shall submit a copy of such report to the Electrical Inspector;

(4) The Electrical Inspector may, on receipt of such report, accept the report submitted by the supplier or record variations as the circumstances of each case may require and may recommend that the defects may be ractified as per report;

(5) In the event of the failure of the owner of any installation to rectify the defects in his installation pointed out by the Electrical Inspector in his report and within the time indicated therein, such installation shall be liable to be disconnected under the directions of the Electrical Inspector after serving the owner of such installation with a notice for not less than forty eight hours.

Provided that the installation shall not be disconnected in case an appeal is made under sub-rule (1) of rule (8) of "Qualifications, Powers and Functions of Chief Electrical Inspector and Electrical Inspectors issued by Central Government vide GSR 481 (E) dated 17.08.2006 and the appellate authority has stayed the orders of disconnection.

Chapter VI

Safety provisions for electrical installations and apparatus of voltage exceeding 650 volts

43. **Approval by Electrical Inspector.** – (1) Voltage above which electrical installations will be required to be inspected by the Electrical Inspector before commencement of supply or recommencement after shutdown for six months and above shall be as per the notification to be issued by the Appropriate Government, under clause (x) of sub-section (2) of section 176 and sub-section (1) of section 162 of the Act.

(2) Before making an application to the Electrical Inspector for permission to commence or recommence supply after an installation has been disconnected for six months and above at voltage exceeding 650 V to any person, the supplier shall ensure that electric supply lines or apparatus of voltage exceeding 650 V belonging to him are placed in position, properly joined and duly completed and examined and the supply of electricity shall not be commenced by the supplier for installations of voltage needing inspection under these regulations unless the provisions of regulations 12 to 29, 33 to 35, 44 to 51 and 55 to 77 have been complied with and the approval in writing of the Electrical Inspector has been obtained by him:

Provided that the supplier may energise the aforesaid electric supply lines or apparatus for the purpose of tests specified in regulation 46.

(3) The owner of any installation of voltage exceeding 650 V shall, before making application to the Electrical Inspector for approval of his installation or additions thereto, test every circuit of voltage exceeding 650 V or additions thereto, other than an overhead line, and satisfy himself that they withstand the application of the testing voltage set out in sub-regulation (1) of regulation 46 and shall duly record the results of such tests and forward them to the Electrical Inspector:

Provided that an Electrical Inspector may direct such owner to carry out such tests as he deems necessary or accept the manufacturer's certified tests in respect of any particular apparatus in place of the tests required by this regulation

(4) The owner of any installation of voltage exceeding 650 V who makes any addition or alteration to his installation shall not connect to the supply his apparatus or electric supply lines, comprising the said alterations or additions unless and until such alteration or addition has been approved in writing by the Electrical Inspector.

44. **Use of electricity at voltage exceeding 650 Volts.** - (1) The Electrical Inspector shall not authorise the supplier to commence supply or where the supply has been discontinued for a period of six months and above, to recommence the supply at voltage exceeding 650 V to any consumer unless-

(i) all conductors and apparatus situated on the premises of the consumer are so placed as to be inaccessible except to a designated person

and all operations in connection with the said conductors and apparatus are carried out by a designated person;

(ii) the consumer has provided and agrees to maintain a separate building or a locked weather proof and fire proof enclosure of agreed design and location, to which the supplier at all times shall have access for the purpose of housing his apparatus and metering equipment, or where the provision for a separate building or enclosure is impracticable, the consumer has segregated the aforesaid apparatus of the supplier from any other part of his own apparatus:

Provided that such segregation shall be by the provision of fire proof walls, if the Electrical Inspector considers it to be necessary:

Provided further that in the case of an outdoor installation the consumer shall suitably segregate the aforesaid apparatus belonging to the supplier from his own;

(iii) all pole type sub-stations are constructed and maintained in accordance with regulation 50.

(2) The owner shall observe the following conditions, where electricity at voltage exceeding 650 V is supplied, converted, transformed or used,-

(i) he shall maintain safety clearances for electrical apparatus as per Bureau of Indian Standard specification so that sufficient space is available for easy operation and maintenance without any hazard to the operating and maintenance personnel working near the equipment and for ensuring adequate ventilation;

(ii) he shall not allow any encroachment below such installation:

Provided that where the Electrical Inspector comes across any such encroachment, he shall direct the owner to remove such encroachments;

(iii) the minimum safety working clearances specified in Schedule-VII shall be maintained for the bare conductors or live parts of any apparatus in outdoor sub-stations excluding overhead lines of installations of voltage exceeding 650 V;

(iv) he shall ensure that the windings of motors or other apparatus within reach from any position in which a person may require to be, are suitably protected so as to prevent danger;

(v) he shall ensure that where a transformer or transformers are used, suitable provision shall be made, either by connecting with earth, a point of the circuit at the lower voltage or otherwise, to guard against danger by reason of the said circuit becoming accidentally charged above its normal voltage by leakage from or contact with the circuit at the higher voltage;

(vi) a sub-station or a switching station with apparatus having more than 2000 litres of oil shall not be located in the basement where proper oil draining arrangement cannot be provided;

(vii) where a sub-station or a switching station with apparatus having more than 2000 litres of oil is installed, whether indoor or outdoors, he shall take the following measures, namely:-

(a) the baffle walls of four hours fire rating shall be provided between the apparatus,-

(i) where there is a single phase transformer banks in the switch-yards of generating stations and sub-stations;

(ii) on the consumer premises;

(iii) where adequate clearance between the units is not available.

(b) provisions shall be made for suitable oil soakpit and where use of more than 9000 litres of oil in any one oil tank, receptacle or chamber is involved, provision shall be made for the draining away or removal of any oil which may leak or escape from the tank, receptacle or chamber containing the same, and special precautions shall be taken to prevent the spread of any fire resulting from the ignition of the oil from any cause and adequate provision shall be made for extinguishing any fire which may occur;

(c) spare oil shall not be stored in the vicinity of any oil filled equipment in any such sub-station or switching station;

(d) all the transformers and switchgears shall be maintained in accordance with the maintenance schedules prepared in accordance with the relevant codes of practice of Bureau of Indian Standards;

(e) dry type of transformers only shall be used for installations inside the residential and commercial buildings;

(viii) without prejudice to the above measures, he shall take adequate fire protection arrangement for quenching the fire in the apparatus;

(ix) he shall ensure that the transformers of 10 MVA and above rating or in case of oil filled transformers with oil capacity of more than 2000 liters are provided with fire fighting system as per IS - 3034: 1993 or with Nitrogen Injection Fire Protection system;

(x) where it is necessary to locate the sub-station, or switching station in the basement, he shall take the following measures, namely:-

(a) the room shall necessarily be in the first basement at the periphery of the basement;

(b) the entrances to the room shall be provided with fire resisting doors of 2 hour fire rating and the door shall always be kept closed and a notice of this effect shall be affixed on outer side of the door;

(c) a curb (sill) of a suitable height shall be provided at the entrance in order to prevent the flow of oil from a ruptured transformer into other parts of the basement;

(d) direct access to the transformer room shall be provided from outside and the surrounding walls shall be lined with fire bricks;

(e) the cables to primary side and secondary side shall have sealing at all floors and wall opening of atleast two hours rating;

(f) fire Retardent Low Smoke (FRLS) cable of two hours rating shall be used.

(xi) he shall ensure that oil filled transformers installed indoors in other than residential or commercial buildings are placed at the ground floor or not below the first basement;

(xii) he shall ensure that cable trenches inside the sub-stations and switching stations containing cables are filled with sand, pebbles or similar non-inflammable materials or completely covered with non-inflammable slabs;

(xiii) he shall ensure that unless the conditions are such that all the conductors and apparatus may be made dead at the same time for the purpose of cleaning or for other work, the said conductors and apparatus shall be so arranged that these may be made dead in sections, and that work on any such section may be carried on by a designated person without danger;

(xiv) only persons designated under sub-regulation (1) of regulation 3, shall carry out the work on live lines and apparatus.

(3) All apparatus shall be protected against lightning and apparatus exceeding 220 kV shall also be protected against switching over voltages.

(4) The equipment used for protection and switching shall be adequately co-ordinated with the protected apparatus to ensure safe operation and to maintain the stability of the inter-connected units of the power system.

(5) The minimum clearances specified in Schedule-VIII shall be maintained for bare conductors or live parts of any apparatus in outdoor sub-stations, excluding overhead lines of High Voltage Direct Current installations.

(6) There shall not be tapping of another transmission line from the main line for 66 kV and above class of lines.

45. Inter-locks and protection for use of electricity at voltage exceeding 650 Volts.- (1) The owner shall ensure the following, namley:-

(i) isolators and the controlling circuit breakers shall be inter-locked so that the isolators cannot be operated unless the corresponding breaker is in open position;

(ii) isolators and the corresponding earthing switches shall be inter-locked so that no earthing switch can be closed unless and until the corresponding isolator is in open position;

(iii) where two or more supplies are not intended to be operated in parallel, the respective circuit breakers or linked switches controlling the supplies shall be inter-locked to prevent possibility of any inadvertent paralleling or feedback;

(iv) when two or more transformers are operated in parallel, the system shall be so arranged as to trip the secondary breaker of a transformer in case the primary breaker of that transformer trips;

(v) all gates or doors which give access to live parts of an installation shall be inter-locked in such a way that these cannot be opened unless the live parts are made dead and proper discharging and earthing of these parts should be ensured before any person comes in close proximity of such parts;

(vi) where two or more generators operate in parallel and neutral switching is adopted, inter-lock shall be provided to ensure that generator breaker cannot be closed unless one of the neutrals is connected to the earthing system.

(2) The following protection shall be provided in all systems and circuits to automatically disconnect the supply under abnormal conditions, namly:-

(i) over current protection to disconnect the supply automatically if the rated current of the equipment, cable or supply line is exceeded for a time which the equipment, cable or supply line is not designed to withstand;

(ii) earth fault or earth leakage protection to disconnect the supply automatically if the earth fault current exceeds the limit of current for keeping the contact potential within the reasonable values;

(iii) gas pressure type and winding and oil temperature protection to give alarm and tripping shall be provided on all transformers of ratings 1000 KVA and above;

(iv) transformers of capacity 10 MVA and above shall be protected against incipient faults by differential protection;

(v) all generators with rating of 100 KVA and above shall be protected against earth fault or leakage;

(vi) all generators of rating 1000 KVA and above shall be protected against faults within the generator winding using restricted earth fault protection or differential protection or by both;

(vii) high speed bus bar differential protection along with local breaker back up protection shall be commissioned and shall always be available at all 132 kV and above voltage sub-stations and switching stations and generating stations connected with the grid:

Provided that in respect of existing 132 kV sub-stations and switching stations having more than one incoming feeders, the high speed bus bar differential protection along with local breaker back up protection, shall be commissioned and shall always be available;

(viii) every generating station and sub-station connected to the grid at 220 kV and above shall be provided with disturbance recording and event logging facilities and all such equipment shall be provided with time synchronization facility for global common time reference but wherever numerical relays with provision of recording fault data are installed, disturbance recorder and event logger may not be installed;

(ix) distance protection and carrier communication protection shall be provided for all lines connecting to 400/220 kV substation.

46. **Testing, Operation and Maintenance.-** (1) Before approval is accorded by the Electrical Inspector under regulation 43 the manufacturer's test certificates shall, if required, be produced for all the routine tests as required under the relevant Indian Standards.

(2) No new apparatus, cable or supply line of voltage exceeding 650 Volts shall be commissioned unless such apparatus, cable or supply line are subjected to site tests as per relevant code of practice of the Bureau of Indian Standards.

(3) No apparatus, cable or supply line of voltage exceeding 650 V which has been kept disconnected, for a period of six months or more, from the system for alterations or repair, shall be connected to the system until such apparatus, cable or supply line are subjected to the relevant tests as per code of practice of Bureau of Indian Standards.

(4) Notwithstanding the provisions of this regulation, the Electrical Inspector may require certain tests to be carried out before or after charging the installations.

(5) All apparatus, cables and supply lines shall be maintained in healthy conditions and tests shall be carried out periodically as per the relevant code of practice of the Bureau of Indian Standards.

(6) Records of all tests, trippings, maintenance works and repairs of all equipments cables and supply lines shall be duly kept in such a way that these records can be compared with earlier ones.

(7) It shall be the responsibility of the owner of all installations of voltage exceeding 650 V to maintain and operate the installations in a condition free from danger and as recommended by the manufacturer or by the relevant codes of practice of the Bureau of Indian Standards.

(8) Failures of transformers and reactors of 20 MVA or MVAR and higher capacity shall be reported by the consumer and the suppliers of electricity, within forty eight hours of the occurrence of the failure, to the Central Electricity Authority and the reasons for failure and measures to be taken to avoid recurrence of failure shall be sent to the Central Electricity Authority within one month of the occurrence in the format given in Schedule-IX.

47. **Precautions to be taken against excess leakage in case of metal sheathed electric supply lines.-** The following precautions shall be taken in case of electric supply lines other than overhead lines, for use at voltage exceeding 650 V; namely:-

(i) the conductors of the cable except the cable with thermoplastic insulation without any metallic screen or armour shall be enclosed in metal sheathing which shall be electrically continuous and connected with earth, and the conductivity of the metal sheathing shall be maintained and reasonable precautions taken where necessary to avoid corrosion of the sheathing;

(ii) the resistance of the earth connection with metallic sheath shall be kept low enough to permit the controlling circuit breaker or cut-out to operate in the event of any failure of insulation between the metallic sheath and the conductor.

Explanation- For the purpose of this regulation;

(a) in the case of thermoplastic insulated and sheathed cables with metallic armour the metallic wire or tape armour, shall be considered as metal sheathing.

(b) where an electric supply line as aforesaid has concentric cables and the external conductor is insulated from an outer metal sheathing and connected with earth, the external conductor may be regarded as the metal sheathing for the purposes of this regulation provided that the foregoing provisions as to conductivity are complied with.

48. **Connection with earth for apparatus exceeding 650V.-** (1) All non-current carrying metal parts associated with an installation of voltage exceeding 650 V shall be effectively earthed to a grounding system or mat which shall,-

(i) limit the touch and step potential to tolerable values;

(ii) limit the ground potential rise to tolerable values so as to prevent danger due to transfer of potential through ground, earth wires, cable sheath, fences, pipe lines, etc.;

(iii) maintain the resistance of the earth connection to such a value as to make operation of the protective device effective;

(2) In the case of star connected system with earthed neutrals or delta connected system with earthed artificial neutral point,-

(i) the neutral point of every generator and transformer shall be earthed by connecting it to the earthing system not by less than two separate and distinct connections:

Provided that the neutral point of a generator may be connected to the earthing system through an impedance to limit the fault current to the earth:

Provided further that in the case of multi-machine systems neutral switching may be resorted to, for limiting the injurious effect of harmonic current circulation in the system;

(ii) the generator or transformer neutral shall be earthed through a suitable impedance where an appreciable harmonic current flowing in the neutral connection causes interference, with communication circuits;

(iii) in case of the delta connected system the neutral point shall be obtained by the insertion of a grounding transformer and current limiting resistance or impedance wherever considered necessary at the commencement of such a system.

(3) In case of generating stations, sub-stations and industrial installations of voltage exceeding 33 kV, the system neutral earthing and protective frame earthing may be, if system design so warrants, integrated into common earthing grid provided the resistance to earth of combined mat does not cause the step and touch potential to exceed its permissible values.

(4) Single phase systems of voltage exceeding 650 V shall be effectively earthed.

(5) In the case of a system comprising electric supply lines having concentric cables, the external conductor shall be connected with earth.

(6) Where a supplier proposes to connect with earth an existing system for use at voltage exceeding 650 V which has not hitherto been so connected with earth, he shall give not less than fourteen days notice in writing together with particulars of the proposed connection with earth to the telegraph-authority established under the Indian Telegraph Act, 1885 (13 of 1885).

(7) Where the earthing lead and earth connection are used only in connection with earthing guards erected under overhead lines of voltage exceeding 650 V where they cross a telecommunication line or a railway line, and where such lines are equipped with earth leakage, the earth resistance shall not exceed twenty five

ohms and the project authorities shall obtain No Objection Certificate (NOC) from Railway Authorities and Power and Telecommunication Co-ordination Committee before energisation of the facilities.

(8) Every earthing system belonging to either the supplier or the consumer shall be tested for its resistance to earth on a dry day during dry season not less than once a year and records of such tests shall be maintained and produced, if so required, before the Electrical Inspector.

49. **General conditions as to transformation and control of electricity.-** (1) Where electricity of voltage exceeding 650 V is transformed, converted, regulated or otherwise controlled in sub-stations or switching stations including outdoor sub-stations and outdoor switching stations to be transformed or in street boxes constructed underground, the following provisions shall be observed, namely:-

(i) sub-stations and switching stations shall preferably be erected above ground, but where necessarily constructed underground due provisions for ventilation and drainage shall be made and any space housing switchgear shall not be used for storage of any materials especially inflammable and combustible materials or refuse;

(ii) outdoor sub-stations except pole type sub-stations and outdoor switching stations shall, unless the apparatus is completely enclosed in a metal covering connected with earth, the said apparatus also being connected with the system by armoured cables, be efficiently protected by fencing not less than 1.8 metres in height or other means so as to prevent access to the electric supply lines and apparatus therein by an undesignated person and the fencing of such area shall be earthed efficiently;

(iii) underground street boxes, other than sub-stations, which contain transformers shall not contain switches or other apparatus, and switches, cut-outs or other apparatus required for controlling or other purposes shall be fixed in separate receptacle above ground wherever practicable.

(2) Where electricity is transformed, suitable connection shall be made by connecting with earth a point of the system at the lower voltage and also to guard against danger by reason of the said system becoming accidentally charged above its normal voltage by leakage from a contact with the system at the higher voltage.

50. **Pole type sub-stations.-** Where platform type construction is used for a pole type sub-station and sufficient space for a person to stand on the platform is provided, a substantial hand rail shall be built around the said platform and if the hand rail is of metal, it shall be connected with earth:

Provided that in the case of pole type sub-station on wooden supports and wooden platform the metal hand-rail shall not be connected with earth.

51. **Condensers.-** Suitable arrangement shall be made for immediate and automatic or manual discharge of every static condenser on disconnection of supply.

52. Supply to luminous tube sign installations of voltage exceeding 650 Volts but not exceeding 33 kV.- (1) Any person who proposes to use or who is using electricity for the purpose of operating a luminous tube sign installation, or who proposes to transform or is transforming electricity to a voltage exceeding 650 V but not exceeding 33 kV for any such purpose shall comply with the following conditions, namely:-.

(i) all live parts of the installation, including all apparatus and live conductors in the secondary circuit, but excluding the tubes except in the neighbourhood of their terminals, shall be inaccessible to undesignated persons and such parts shall be effectively screened;

(ii) irrespective of the method of obtaining the voltage of the circuit which feeds the luminous discharge tube sign, no part of any conductor of such circuit shall be in metallic connection, except in respect of its connection with earth, with any conductor of the supply system or with the primary winding of the transformer;

(iii) all live parts of an exterior installation shall be so disposed as to protect them against the effects of the weather and such installation shall be so arranged and separated from the surroundings as to limit, as far as possible, the spreading of fire;

(iv) the secondary circuit shall be permanently earthed at the transformer and the core of every transformer shall be earthed;

(v) where the conductors of the primary circuit are not in metallic connection with the supply conductors, one phase of such primary circuit shall be permanently earthed at the motor generator or convertor, or at the transformer and an earth leakage circuit breaker of sufficient rating shall be provided on the side of voltage not exceeding 250 V to detect the leakage in such luminous tube sign installations;

(vi) a sub-circuit which forms the primary circuit of a fixed luminous discharge tube sign installation shall be reserved solely for such purpose;

(vii) a separate primary final sub-circuit shall be provided for each transformer or each group of transformers having an aggregate input not exceeding 1,000 volt-amperes, of a fixed luminous discharge tube sign installation;

(viii) an interior installation shall be provided with suitable adjacent means for disconnecting all phases of the supply except the "neutral" in a 3-phase, 4-wire circuit;

(ix) for installations on the exterior of a building a suitable emergency fire-proof linked switch to operate on all phases except the neutral in a 3-phase, 4-wire circuit shall be provided and fixed in a conspicuous position at not more than 1.70 metres above the ground;

(x) a special "caution" notice shall be affixed in a conspicuous place on the door of every enclosure of voltage exceeding 650 V but not exceeding 33 kV to the effect that the supply must be cut off before the enclosure is opened;

(xi) where static condensers are used, they shall be installed on the load side of the fuses and the primary side of the transformers where the voltage does not exceed 250 V;

(xii) where static condensers are used on primary side, provision shall be made for automatic or manual discharging of the condensers when the supply is cut off;

(xiii) before using the static condensers or any interrupting device on the voltage exceeding 650 V, the executing agencies shall test and ensure that automatic discharging device is functional thereon.

(2) The owner or user of any luminous tube sign or similar installation of voltage exceeding 650 V but not exceeding 33 kV shall not bring the same into use without giving to the Electrical Inspector not less than fourteen days notice in writing of his intention so to do.

53. **Supply to electrode boilers of voltage exceeding 650 Volt but not exceeding 33 kV.**- (1) Where a system having a point connected with earth is used for supply of electricity to an electrode boiler of voltage exceeding 650 V which is also connected with earth, the owner or user of electrode boiler shall comply with the following conditions, namely:-

(i) the metal work of the electrode boiler shall be efficiently connected to the metal sheathing and metallic armouring, if any, of the electric supply line of voltage exceeding 650 V but not exceeding 33 kV whereby electricity is suppied to the electrode boiler;

(ii) the supply of electricity at voltage exceeding 650 V to the electrode boiler shall be controlled by a suitable circuit-breaker so set as to operate in the event of the phase currents becoming unbalanced to the extent of ten per cent of the rated current consumption of the electrode boiler under normal conditions of operation:

Provided that if in any case a higher setting is essential to ensure stability of operation of the electrode boiler, the setting may be increased so as not to exceed fifteen per cent of the rated current consumption of the electrode boiler under normal conditions of operation;

(iii) an inverse time element device may be used in conjuction with the aforesaid circuit breaker to prevent the operation thereof unnecessarily on the occurrence of unbalanced phase currents of momentary or short duration;

(iv) the supplier or owner shall serve a notice in writing on the telegraph-authority at least seven days prior to the date on which such supply of electricity is to be afforded specifying the location of every point, including

the earth connection of the electrode boiler, at which the system is connected with earth.

(2) The owner or user of any electrode boiler of voltage exceeding 650 V shall not bring the same into use without giving the Electrical Inspector not less than fourteen days notice in writing of his intention so to do.

54. **Supply to X-ray and high frequency installations.**- (1) Any person, who proposes to use or who is using electricity for the purpose of operating an X-ray or similar high-frequency installation, other than portable units or shock-proof self contained and stationary units shall comply the following conditions, namely:-

(i) mechanical barriers shall be provided to prevent too close an approach to any parts of the X-ray apparatus of voltage exceeding 650 V but not exceeding 33 kV, except the X-ray tube and its leads, unless such parts of voltage exceeding 650 V but not exceeding 33 kV have been rendered shock proof by being shielded by earthed metal or adequate insulating material;

(ii) where generators operating at 300 kV peak or more are used, such generators shall be installed in rooms separate from those containing the other equipment and any step-up transformer employed shall be so installed and protected as to prevent danger;

(iii) a suitable switch shall be provided to control the circuit supplying a generator, and shall be so arranged as to be open except while the door of the room housing the generator is locked from the outside;

(iv) X-ray tubes used in therapy shall be mounted in an earthed metal enclosure;

(v) every X-ray machine shall be provided with a milliammeter or other suitable measuring instrument, readily visible from the control position and connected, if practicable, in the earthed lead, but guarded if connected in the lead of voltage exceeding 650 V but not exceeding 33 kV:

Provided that earth leakage circuit breaker of sufficient rating shall be provided on the side wherein voltage does not exceed 250 V to detect the leakage in such X-ray installations.

Explanation:- For the purpose of this regulation "shock proof", as applied to X-ray and high-frequency equipment, shall mean that such equipment is guarded with earthed metal so that no person may come into contact with any live part.

(2) (i) in the case of nonshock proof equipment, overhead conductors of voltage exceeding 650 V but not exceeding 33 kV, unless suitably guarded against personal contact, shall be adequately spaced and high voltage leads on tilting tables and fluroscopes shall be adequately insulated or so surrounded by barriers as to prevent inadvertent contact;

(ii) the circuit of voltage not exceeding 250 V of the step up transformer shall contain a manually operated control device having overload protection, in addition to the over current device for circuit protection, and these devices shall have no exposed live parts and for diagnostic work there shall be an additional switch in the said circuit, which shall be of one of the following types:-

(a) a switch with a spring or other mechanism that will open automatically except while held close by the operator, or;

(b) a time switch which will open automatically after a definite period of time for which it has been set;

(iii) if more than one piece of apparatus be operated from the same source of voltage exceeding 650 V, each shall be provided with a switch of voltage exceeding 650 V to give independent control;

(iv) low frequency current-carrying parts of a machine of the quenched-gap or open gap type shall be so insulated or guarded that they cannot be touched during operation but the high frequency circuit-proper which delivers high-frequency current normally for the therapeutic purposes shall be exempt from such insulation;

(v) all X-ray generators having capacitors shall have suitable means for discharging the capacitors manually;

(vi) except in the case of self-contained units, all 200 kV peak or higher X-ray generators shall have a sphere gap installed in the system of voltage exceeding 650 V but not exceeding 33 kV adjusted so that it will break down on over voltage surges.

(3) (i) all non-current carrying metal parts of tube stands, fluroscopes and other apparatus shall be properly earthed and insulating floors, mats or platforms shall be provided for operators in proximity to parts of voltage exceeding 650V unless such parts have been rendered shock proof;

(ii) where short wave therapy machines are used, the treatment tables and examining chairs shall be wholly non-metallic.

(4) The owner of any X-ray installation or similar high frequency apparatus shall not bring the same into use without giving to the Electrical Inspector not less than fourteen days notice in writing of his intention to do so:

Provided that the aforesaid notice shall not be necessary in the case of shock-proof portable X-ray and high-frequency equipment which have been inspected before the commencement of their use and periodically thereafter.

Chapter VII

Safety requirements for overhead lines, underground cables and generating stations

55. Material and strength.- (1) All conductors of overhead lines other than those specified in regulation 68 shall have a breaking strength of not less than 350 kg.

(2) Where the voltage does not exceed 250 V and the span is of less than fifteen metres and is drawn through the owner's or consumer's premises, a conductor having an actual breaking strength of not less than 150 kg may be used.

56. Joints.- (1) No conductor of an overhead line shall have more than one joint in a span and joints between conductors of overhead lines shall be mechanically and electrically secure under the conditions of operation.

(2) The ultimate strength and the electrical conductivity of the joint shall be as per relevant Indian Standards.

57. Maximum stresses and factors of safety.- (1) The load and permissible stresses on the structural members, conductors and ground wire of self supporting steel lattice towers for overhead transmission lines shall be in accordance with the specifications laid down, from time to time, by the Bureau of Indian Standards.

(2) Overhead lines not covered in sub-regulation (1) shall have the following minimum factors of safety, namely:-

(i)	for metal supports	-	1.5
(ii)	for mechanically processed concrete supports	-	2.0
(iii)	for hand-moulded concrete supports	-	2.5
(iv)	for wood supports	-	3.0

(3) The minimum factors of safety shall be based on such load as may cause failure of the support to perform its function, assuming that the foundation and other components of the structure are intact.

(4) The load shall be equivalent to the yield point stress or the modulus of rupture, as the case may be, for supports subject to bending and vertical loads and the crippling load for supports used as strut.

(5) The strength of the supports of the overhead lines in the direction of the line shall not be less than one-fourth of the strength required in the direction transverse to the line.

(6) The minimum factor of safety for stay-wires, guard-wires or bearer-wires shall be 2.5 based on the ultimate tensile strength of the wire.

(7) The minimum factor of safety for conductors shall be two, based on their ultimate tensile strength, in addition, the conductor's tension at 32^0 C, without external load, shall not exceed the following percentages of the ultimate tensile strength of the conductor:- .

(i)	Initial unloaded tension	.....	35 per cent
(ii)	Final unloaded tension	.....	25 per cent

Provided that for the conductors having a cross section of a generally triangular shape, such as conductors composed of 3-wires, the final unloaded tension at 32^0 C shall not exceed thirty per cent of the ultimate tensile strength of such conductor.

(8) For the purpose of calculating the factors of safety in sub-regulation (2), the following conditions shall be observed, namely:-

(i) the maximum wind pressure shall be as specified in the relevant Indian Standards;

(ii) for cylindrical bodies the effective area shall be taken as full projected area exposed to wind pressure; and

(iii) the maximum and minimum temperatures shall be such as specified in the relevant Indian Standards.

(9) Notwithstanding anything contained in sub-regulation (2) to (8) in localities where overhead lines are liable to accumulations of ice or snow, the load and permissible stresses on the structural members, conductors and ground wire of self supporting steel lattice towers for overhead transmission lines shall be in accordance with the specifications laid down, from time to time, by the Bureau of Indian Standards or as specified by Appropriate Government, by order in writing.

58. **Clearance above ground of the lowest conductor of overhead lines.-** (1) No conductor of an overhead line, including service lines, erected across a street shall at any part thereof be at a height of less than-

(i)	for lines of voltage not exceeding 650 Volts	-	5.8 metres
(ii)	for lines of voltage exceeding 650 Volts but not exceeding 33 kV	-	6.1 metres

(2) No conductor of an overhead line, including service lines, erected along any street shall at any part thereof be at a height less than-

(i)	for lines of voltage not exceeding 650 Volts	-	5.5 metres
(ii)	for lines of voltage exceeding 650 Volts but not exceeding 33 kV	-	5.8 metres

(3) No conductor of an overhead line including service lines, erected elsewhere than along or across any street shall be at a height less than -

(i)	for lines of voltage upto and including 11,000 Volts,if bare	-	4.6 metres
(ii)	for lines of voltage upto and including 11,000 Volts, if insulated	-	4.0 metres
(iii)	for lines of voltage exceeding 11,000 Volts but not exceeding 33 kV	-	5.2 metres

(4) For lines of voltage exceeding 33 kV the clearance above ground shall not be less than 5.2 metres plus 0.3 metre for every 33,000 Volts or part thereof by which the voltage of the line exceeds 33,000 Volts;

Provided that the minimum clearance along or across any street shall not be less than 6.1 metres.

(5) For High Voltage Direct Current (HVDC) lines, the clearance above ground shall not be less than:-

Sl.No.	DC Voltage(kV)	Ground Clearance (mtrs.)
1.	100 kV	6.1
2.	200 kV	7.3
3.	300 kV	8.5
4.	400 kV	9.4
5.	500 kV	10.6
6.	600 kV	11.8
7.	800 kV	13.9

(6) Ground clearances shall be as specified in schedule-X.

59. **Clearance between conductors and trolley wires.-** (1) No conductor of an overhead line crossing a tramway or trolley bus route using trolley wires shall have less than the following clearances above any trolley wire-

(i) lines of voltage not exceeding 650 Volts - 1.2 metres

Provided that where an insulated conductor suspended from a bearer wire crosses over a trolley wire the minimum clearance for such insulated conductor shall be 0.6 metre.

(ii) lines of voltage exceeding 650 Volts up to and including 11,000 Volts - 1.8 metres

(iii) lines of voltage exceeding 11,000 Volts but not exceeding33,000 Volts - 2.5 metres

(iv) lines of voltage exceeding 33 kV - 3.0 metres

(2) In any case of a crossing specified in sub-regulation (1), whoever lays his line later in time, shall provide the clearance between his own line and the line which will be crossed in accordance with the provisions of the said sub-regulation:

Provided that if the later entrant is the owner of the lower line and is not able to provide adequate clearance, he shall bear the cost for modification of the upper line so as to comply with this sub-regulation.

60. **Clearance from buildings of lines of voltage and service lines not exceeding 650 Volts.-** (1) An overhead line shall not cross over an existing building as far as possible and no building shall be constructed under an existing overhead line.

(2) Where an overhead line of voltage not exceeding 650 V passes above or adjacent to or terminates on any building, the following minimum clearances from any accessible point, on the basis of maximum sag, shall be observed, namely:-

(i) for any flat roof, open balcony, varandah roof and lean-to-roof-

(a) when the line passes above the building a vertical clearance of 2.5 metres from the highest point, and

(b) when the line passes adjacent to the building a horizontal clearance of 1.2 metres from the nearest point, and

(ii) for pitched roof-

(a) when the line passes above the building a vertical clearance of 2.5 metres immediately under the line, and

(b) when the line passes adjacent to the building a horizontal clearance of 1.2 metres.

(3) Any conductor so situated as to have a clearance less than that specified above shall be adequately insulated and shall be attached at suitable intervals to a bare earthed bearer wire having a breaking strength of not less than 350 kg.

(4) The horizontal clearance shall be measured when the line is at a maximum deflection from the vertical due to wind pressure.

(5) Vertical and horizontal clearances shall be as specified in schedule-X.

Explanation:- For the purpose of this regulation, the expression "building" shall be deemed to include any structure, whether permanent or temporary.

61. **Clearances from buildings of lines of voltage exceeding 650 V.-** (1) An overhead line shall not cross over an existing building as far as possible and no building shall be constructed under an existing overhead line.

(2) Where an overhead line of voltage exceeding 650 V passes above or adjacent to any building or part of a building it shall have on the basis of maximum sag a vertical clearance above the highest part of the building immediately under such line, of not less than-

(i) for lines of voltages exceeding 650 Volts upto and including 33,000 Volts	- 3.7 metres
(ii)for lines of voltages exceeding 33 kV	- 3.7 metres plus 0.30 metre for every additional 33,000 Volts or part thereof.

(3) The horizontal clearance between the nearest conductor and any part of such building shall, on the basis of maximum deflection due to wind pressure, be not less than-

(i)	for lines of voltages exceeding 650 V upto and including 11,000 Volts	- 1.2 metres
(ii)	for lines of voltages exceeding 11,000 V and up to and including 33,000 V	- 2.0 metres
(iii)	for lines of voltages exceeding 33 kV	- 2.0 metres plus 0.3 metre fore every additional 33kV or part thereof.

(4) For High Voltage Direct Current (HVDC) systems, vertical clearance and horizontal clearance, on the basis of maximum deflection due to wind pressure, from buildings shall be maintained as below:

Sl.No	DC Voltage (kV)	Vertical Clearance (mtrs.)	Horizontal Clearance (mtrs.)
1.	100 kV	4.6	2.9
2.	200 kV	5.8	4.1
3.	300 kV	7.0	5.3
4.	400 kV	7.9	6.2
5.	500 kV	9.1	7.4
6.	600 kV	10.3	8.6
7.	800 kV	12.4	10.7

(5) Vertical and horizontal clearances shall be as specified in schedule-X.

Explanation:- For the purpose of this regulation the expresssion "building" shall be deemed to include any structure, whether permanent or temporary.

62. **Conductors at different voltages on same supports.-** Where conductors forming parts of systems at different voltages are erected on the same supports, the owner shall make adequate provision to guard against danger to linemen and others, from the lower voltage system being charged above its normal working voltage, by leakage from or contact with the higher voltage system and the methods of construction and the applicable minimum clearances between the conductors of the two systems shall be as specified in regulation 69 for lines crossing each other.

63. Erection or alteration of buildings, structures, flood banks and elevation of roads.- (1) If at any time subsequent to the erection of an overhead line, whether covered with insulating material or not, any person proposes to erect a new building or structure or flood bank or to raise any road level or to carry out any other type of work whether permanent or temporary or to make in or upon any building, or structure or flood bank or road, any permanent or temporary addition or alteration, he and the contractor whom he employs to carry out the erection, addition or alteration, shall, give intimation in writing of his intention to do so, to the supplier or owner and to the Electrical Inspector and shall furnish therewith a scale drawing showing the proposed building, structure, flood bank, road or any addition or alteration and scaffolding thereof required during the construction.

(2) On receipt of such intimation, the supplier or owner shall examine,-

(i) whether the line under reference was laid in acordance with the provisions of these regulations and any other law;

(ii) whether it is technically feasible;

(iii) whether it meets the requirement of Right of Way (ROW);

(iv) whether such person was liable to pay the cost of alteration of the overhead line and if so, send a notice without undue delay, to such person together with an estimate of the cost of the expenditure likely to be incurred to so alter the overhead line and require him to deposit, within thirty days of the receipt of the notice, with the supplier or owner, the amount of the estimated cost.

(3) If such person disputes the cost of alteration of the overhead line estimated by the supplier or owner or even the responsibility to pay such cost, the dispute may be referred to the Electrical Inspector whose decision thereof shall be final.

(4) The Electrical Inspector shall estimate the cost of alteration of overhead line on the following basis, namely:-

(i) the cost of material used on the alteration after crediting the depreciated cost of the material which shall be available from the existing line;

(ii) the wages of labour employed in affecting the alteration;

(iii) supervision charges to the extent of fifteen per cent of the wages mentioned in sub clause (ii); and charges incurred by the supplier or owner in complying with the provisions of section 67 of the Act, in respect of such alterations.

(5) Any addition or alteration to the building or structure shall be allowed only after the deposite of such estimated cost to the supplier or owner.

(6) No work upon such building, structure, flood bank, road and addition or alteration thereto shall be commenced or continued until the Electrical Inspector

has certified that the provisions of regulation 58, 60 and 61 should not be contravened either during or after the aforesaid construction:

Provided that the Electrical Inspector may, if he is satisfied that the overhead line has been so guarded as to secure the protection of persons or property from injury, certify that the work may be executed prior to the alteration of the overhead line or in the case of temporary addition or alteration, without alteration of the overhead line.

(7) The supplier or owner shall, on receipt of such deposit, alter the overhead line in such a way that it does not contravene the provisions regulation 58, 60 and 61 either during or after such construction within two months from the date of such deposit or within such longer period as the Electrical Inspector may allow.

64. **Transporting and storing of material near overhead lines.**- (1) No rods, pipes or similar materials shall be taken below, or in the vicinity of, any bare overhead conductors or lines if these contravene the provisions of regulations 60 and 61 unless such materials are transported under the direct supervision of a person designated in this behalf by the owner of such overhead conductors or lines.

(2) No rods, pipes or other similar materials shall be brought within the flash over distance of bare live conductors or lines.

(3) No material or earth work or agricultural produce shall be dumped or stored, no trees grown below or in the vicinity of, bare overhead conductors, or lines to contravene the provision of regulations 60 and 61.

(4) No flammable material shall be stored under the electric supply line.

(5) No fire shall be allowed above underground cables.

(6) Firing of any material below electric lines shall be prohibited.

65. **General clearances.**- (1) For the purpose of computing the vertical clearance of an overhead line, the maximum sag of any conductor shall be calculated on the basis of the maximum sag in still air and the maximum temperature as specified under regulations 57 and computing any horizontal clearance of an overhead line the maximum deflection of any conductor shall be calculated on the basis of the wind pressure specified under regulations 57.

(2) No blasting for any purpose shall be done within 300 metres from the boundary of a sub-station or from the electric supply lines of voltage exceeding 650 V or tower structure thereof without the written permission of the owner of such sub-station or electric supply lines or tower structures and in case of mining lease hold area, without the written permission of the Inspector of Mines.

(3) No cutting of soil within ten meters from the tower structure of 132 kV and above voltage level shall be permitted without the written permission of the owner of tower structure.

(4) No person shall construct brick kiln or other polluting units near the installations or transmission lines of 220 kV and above within a distance of 500 metres.

66. **Routes proximity to aerodromes.**- Overhead lines shall not be erected in the vicinity of aerodromes unless the Airport Authorities have approved in writing the route of the proposed lines as per relevant Indian Standards.

67. **Maximum interval between supports.**- All conductors shall be attached to supports at intervals not exceeding the safe limits based on the ultimate tensile strength of the conductor and the factor of safety specified under regulations 57.

Provided that in the case of overhead lines carrying conductors of voltage not exceeding 650 V when erected in, over, along or across any street, the interval shall not, without the consent in writing of the Electrical Inspector, exceed 65 metres.

68. **Conditions to apply where telecommunication lines and power lines are carried on same supports.**- (1) Every overhead telecommunication line erected on supports carrying a power line shall consist of conductors each having a breaking strength of not less than 270 kg.

(2) Every telephone used on a telecommunication line erected on supports carrying a power line shall be suitably guarded against lightning and shall be protected by cut-outs.

(3) Where a telecommunication line is erected on supports carrying a power line of voltage exceeding 650 V, arrangement shall be made to safeguard any person against injury resulting from contact, leakage or induction between such power and telecommunication lines.

69. **Lines crossing or approaching each other and lines crossing street and road.**- Where an overhead line crosses or is in proximity to any telecommunication line, the owner of either the overhead line or the telecommunication line, whoever lays his line later, shall arrange to provide for protective devices or guarding arrangement and shall observe the following provisions, namely:-

(i) when it is intended to erect a telecommunication line or an overhead line which will cross or be in proximity to an overhead line or a telecommunication line, as the case may be, the person proposing to erect such line shall give one month's notice of his intention so to do along with the relevant details of protection and drawings to the owner of the existing line;

(ii) guarding shall be provided where lines of voltage not exceeding 33 kV cross a road or street;

(iii) where an overhead line crosses or is in proximity to another overhead line, guarding arrangements shall be provided so to guard against the possibility of their coming into contact with each other;

(iv) where an overhead line crosses another overhead line, clearances shall be as under:-

(Minimum clearances in metres between lines crossing each other)

Sl. No	Nominal System Voltage	11-66 kV	110-132 kV	220 kV	400 kV	800 kV
1.	Low and Medium	2.44	3.05	4.58	5.49	7.94
2.	11-66 kV	2.44	3.05	4.58	5.49	7.94
3.	110-132 kV	3.05	3.05	4.58	5.49	7.94
4.	220 kV	4.58	4.58	4.58	5.49	7.94
5.	400 kV	5.49	5.49	5.49	5.49	7.94
6.	800 kV	7.94	7.94	7.94	7.94	7.94

Provided that no guardings are required when line of voltage exceeding 33 kV crosses over another line of 250 V and above voltage or a road or a tram subject to the condition that adequate clearances are provided between the lowest conductor of the line of voltage exceeding 33 kV and the top most conductor of the overhead line crossing underneath the line of voltage exceeding 33 kV and the clearances as stipulated in regulation 58 from the topmost surface of the road maintained;

(v) where an overhead direct current (DC) line crosses another overhead line, clearances shall be as under:-

(Minimum clearances in metres between AC and DC lines crossing each other)

Sl. No.	Sysytem Voltage AC/DC	100 kV DC	200 kV DC	300 kV DC	400 kV DC	500 kV DC	600 kV DC
1.	Low and Medium AC	3.05	4.71	5.32	6.04	6.79	7.54
2.	11-66 kV AC	3.05	4.71	5.32	6.04	6.79	7.54
3.	110-132 kV AC	3.05	4.71	5.32	6.04	6.79	7.54
4.	220 kV AC	4.58	4.71	5.32	6.04	6.79	7.54
5.	200 kV DC	4.71	4.71	5.32	6.04	6.79	7.54

6.	300 kV AC	5.32	5.32	5.32	6.04	6.79	7.54
7.	400 kV AC	5.49	5.49	5.49	6.04	6.79	7.54
8.	400 kV DC	6.04	6.04	6.04	6.04	6.79	7.54
9.	500 kV DC	6.79	6.79	6.79	6.79	6.79	7.54
10.	600 kV DC	7.54	7.54	7.54	7.54	7.54	7.54
11.	800 kV DC	7.94	7.94	7.94	7.94	7.94	7.94

(vi) a person erecting or proposing to erect a line which may cross or be in proximity with an existing line, shall provide arrangements on his own line or require the owner of the other overhead line to provide guarding arrangements as referred to in clause (iii) and (iv);

(vii) in all cases referred to in this regulation the expenses of providing the guarding arrangements or protective devices shall be borne by the person whose line was last erected;

(viii) where two lines cross, the crossing shall be made as nearly at right angles as the nature of the case admits and as near the support of the line as practicable, and the support of the lower line shall not be erected below the upper line;

(ix) the guarding arrangements shall ordinarily be carried out by the owner of the supports on which it is made and he shall be responsible for its efficient maintenace.

70. **Guarding.**- (1) Where guarding is required under these regulations the following shall be observed , namely:-

(i) every guard-wire shall be connected with earth at each point at which its electrical continuity is broken;

(ii) every guard-wire shall have an actual breaking strength of not less than 635 kg and if made of iron or steel , shall be galvanised;

(iii) every guard-wire or cross-connected systems of guard-wires shall have sufficient current-carrying capacity to ensure them rendering dead, without risk of fusing of the guard-wire or wires, till the contact of any live wire has been removed.

(2) In the case of a line crossing over a trolley-wire the guarding shall be subjected to the following conditions, namely:-.

(i) where there is only one trolley-wire, two guard-wires shall be erected as in DIAGRAM-A;

(ii) where there are two trolley –wires and the distance between them does not exceed 40 cms, two guard-wires shall be erected as in DIAGRAM-B;

(iii) where there are two trolley wires and the distance between them exceeds 40 cms but does not exceed 1.2 metres, three guard-wires shall be erected as in DIAGRAM-C;

(iv) where there are two trolley-wires and the distance between them exceeds 1.2 metres, each trolley-wire shall be separately guarded as in DIAGRAM-D;

(v) the rise of trolley boom shall be so limited that when the trolley leaves the trolley-wire, it shall not foul the guard-wires; and

(vi) where a telegraph-line is liable to fall or be blown down upon an arm, stay-wire or span-wire and so slide-down upon a trolley-wire, guard hooks shall be provided to prevent such sliding.

DIAGRAM-A

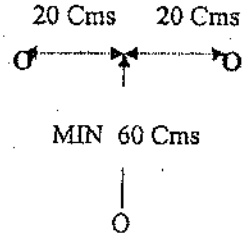
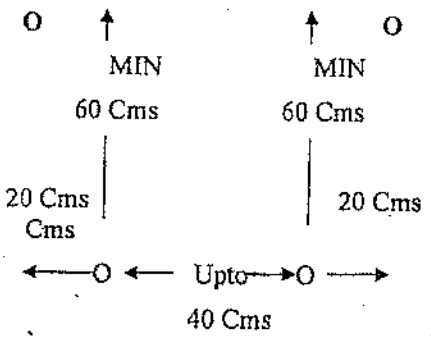


DIAGRAM-B



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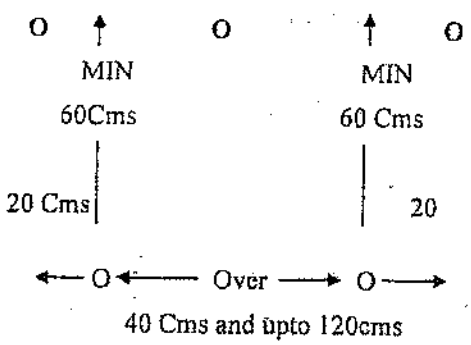

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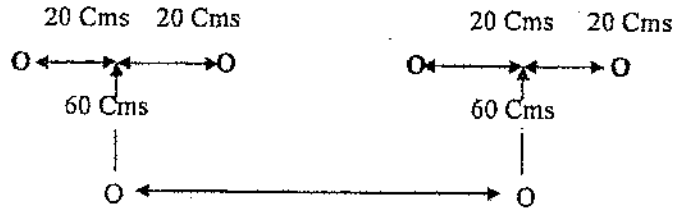


OVER 120cms.

71. **Service lines from overhead lines.-** No service-line or tapping shall be taken off an overhead line except at a point of support:

Provided that the number of tappings per conductor shall not be more than four in case of connections at voltage not exceeding 650 V.

72. **Earthing.-** (1) All metal supports and all reinforced and prestressed cement concrete supports of overhead lines and metallic fittings attached thereto, shall be either permanently and efficiently earthed by providing a continuous earth wire and securely fastening to each pole and connecting with earth ordinarily at three points in every km. with the spacing between the points being as nearly equidistant as possible or each support and the metallic fitting attached thereto shall be efficiently earthed.

(2) Metallic bearer wire used for supporting insulated wire of overhead service lines of voltage not exceeding 650 V shall be efficiently earthed or insulated.

(3) Each stay-wire shall be similarly earthed unless insulator has been placed in it at a height not less than 3.0 metres from the ground.

73. **Safety and protective devices.-** (1) Every overhead line which is not being suspended from a dead bearer wire, not being covered with insulating material and not being a trolley-wire, is erected over any part of a street or other public place

or in any factory or mine or on any consumer's premises shall be protected with earth gaurding for rendering the line electrically harmless in case it breaks.

(2) An Electrical Inspector may, by notice in writing, require the owner of any such overhead line, wherever it may be erected, to protect it in the manner specified in sub-regulation (1).

(3) The owner of every overhead line of voltage exceeding 650 V shall make adequate arrangements as per relevant Indian Standards to prevent undesignated persons from ascending any of the supports of such overhead lines which can be easily climbed upon without the help of a ladder or special appliances.

Explanation.- For the purpose of this relgulation, rails, reinforced cement concrete poles and pre-stressed cement concrete poles without steps, tubular poles, wooden supports without steps, I-sections and channels' shall be deemed as supports which cannot be easily climbed upon.

74. **Protection against lightning.**- (1) The owner of every overhead line, sub-station or generating station which is exposed to lightning shall adopt efficient means for diverting to earth any electrical surges due to lightning which may result into injuries.

(2) The earthing lead for any lightning arrestor shall not pass through any iron or steel pipe, but shall be taken as directly as possible from the lightning arrestor without touching any metal part to a separate vertical ground electrode or junction of the earth mat already provided for the sub-station of voltage exceeding 650 V subject to the avoidance of bends wherever practicable.

75. **Unused overhead lines.**- Where an overhead line ceases to be used as an electric supply line:

(i) the owner shall maintain it in a safe mechanical condition in accordance with regulation 57 or remove it.

(ii) the Electrical Inspector shall, by a notice in writing served on the owner, require him to maintain it in a safe mechanical condition or to remove it within thirty days of the receipt of the notice.

76. **Laying of cables.**- (1) No underground power cable of voltage exceeding 33 kV shall be laid without a minimum underground depth of 1.2 meters.

(2) No underground telecommunication cable shall be laid without a minimum separation distance of 0.6 meters to the underground power cable of voltage exceeding 33 kV.

77. **Protection against electromagnetic interference.**- The owner of every overhead power line of voltage level 11 kV or higher shall submit proposal for obtaining Power Telecommunication Co-ordination Committee clearance to ensure safety of the personnel and telecom equipment.

Schedule-II

Safety measures for operation and maintenance of transmission and distribution system

[See sub-regulation (3) of regulation (7)]

Part I

(1). Duration and content of training shall be as specified below:

(i) Engineers and supervisors – The time allocation and various components of the training course for engineers and supervisors who would be engaged on operation and maintenance of transmission system shall be as given in Part II of this Schedule.

(ii) Technicians – The time allocation and various components of the training course for technicians who would assist the engineers and supervisors in operation and maintenance of transmission system shall be as given in Part III of this Schedule.

(iii) Engineers, Supervisors and Technicians – The time allocation and various components of the training course for engineers, supervisors and Technicians in operation and maintenance of sub-transmission and distribution system shall be as given in Part IV, V and VI of this Scedule.

(iv) Refresher course - The duration and contents of the refresher courses shall be determined jointly by the owner of the said system and training institute.

(v) Visits to factories- As part of practical training the trainees may be taken to factories manufacturing equipments used in transmission and distribution installations.

(vi) Performance of the trainee(s) – The training institutes shall group the syllabus in modules for organising the training. The pass percentage in each module for theory and for project work shall be 50% whereas for on job training and for viva voce it shall be 75%. The sponsor(s) of the trainees may consider the institution of incentives and awards for excellent performance during the training and also for suitable action for sub-standard performance.

(2). Creation of the Institute:

(i) The existing training institutes established for training of personnel engaged in operation and maintenance of generating stations and substations associated with generating stations can create additional facilities for training in transmission and distribution systems.

(ii) Guidelines for such institutes specified under Schedule-I (Item 2) under the heading "Facilities for Creation of training institute" shall also be applicable for institutes which would impart training in transmission and distribution systems.

(3). Assessment forms for engineers and supervisors and for Technicians to assist the engineers and supervisors are given at Part XXVII of Schedule I .

Part II

SYLLABUS FOR ENGINEERS AND SUPERVISORS FOR OPERATION AND MAINTENANCE OF TRANSMISSION SYSTEM

Item No.	Particulars	Number of Hours
1	2	3
I.	General Introduction: (i) World Power Scenario (ii) Growth of Power Industry in India (iii) Generation Scenario in India (iv) Transmission and Distribution Scenario in India (v) Role of Private Power Participants in India (vi) Organisation/Power Sector set up (vii) Introduction to Indian Standard specifications for Electrical wiring (viii) Energy Conversation	6
II.	Power Generation: (i) Types of generation: conventional and non-conventional; Thermal Power Plant: components/ equipments and their brief details and uses, features and characteristics of boiler, turbine, generator, excitation, etc. Brief operational aspects, captive power plants (ii) Hydro Power Plant: components/ equipments and their brief details; features and characteristics of turbine generator, excitation, etc. Brief operational aspects (iii) Gas Power Plant: concept of open cycle and combined cycle; components, characteristics of gas turbines, brief operational aspects, captive power plants (iv) Nuclear Power Plant: salient features (v) Non-Conventional Energy : various sources, working principle, electricity generation (vi) Co-generation, optimal mix of different types of generation, base load and peak load operation	18
III.	Power Transmission: (1) HVAC and HVDC Transmission System (i) Brief history of EHV transmission system in India (ii) Tower types A, B, C, D and special towers (iii) Conductors/Earthwire and their accessories, types, configuration, transposition, selection criteria (iv) Insulators and hardware fittings: types, strength, details (v) Right of way, CEA (Measures relating to Safety and Electric Supply) Regulations, 2010 and Acts, statutory clearances from other agencies, compensation, etc. (vi) Surveying, route alignment, profiling, tower spotting (vii) Benching and soil classification, soil investigation and soil resistivity measurement. (viii) Tower design and testing, quality checks	30

(ix) Tower erection hardware and accessories, fitting procedures, stringing, clearances, commissioning

(x) Operation and Maintenance of Transmission Line : line patrolling, routine checks, filling log books, T & P, thermovision scanning, fault failure analysis, hot line maintenance, case studies

(xi) Development of HVDC technology, economics, comparison with HVAC systems, principles of HVDC conversion, HVDC lines, HVDC sub-stations - converters, reactive power considerations, HVDC system, operation and control, maintenance, AC and DC harmonics and filtering, protection system, insulation, coordination, emergencies and case studies.

(xii) FACTS (Flexible AC Transmission System)

(2) Sub - Stations (765kV/400 kV/220kV/132kV) 75

(i) Types : generation sub-station, grid sub-station, mobile sub-station, gas insulated sub-station, HVDC sub-station, indoor/outdoor, etc., general comparison

(ii) General arrangement and layout of switchyard, switching schemes, single line diagram

(iii) Power Transformers and Reactors

(a) Types : major components, constructional details, functions

(b) Design and selection, specification and rating

(c) Bushings, On Load Tap Changers (OLTC), Buchholz relay, conservator, breather, thermo syphon filter, indicators, etc.

(d) Cooling arrangements - methods of cooling, pumps, fans, radiators, etc.

(e) Transformer tests

(f) Introduction to relevant Indian Standards

(iv) Switchgears and Introduction to relevant Indian Standard

(a) Circuit Breaker: types (MOCB, ABCB, VCB, SF_6), constructional details, layout arrangement, connection to bus, design, selection parameters, ratings/ specifications, interlocks and introduction to relevant Indian Standard

(b) Isolator: types (Vertical, Horizontal, Pantography Breaks, constructional details, Earth switch, interlocks, design/selection, ratings/specifications

(c) Bus bar types, construction, supports, insulators, connectors, jumpers, safety clearances, design/selection, ratings/specifications

(d) CT/CVT/Lightning Arrestor/Lightning Mast: Types, constructional details, use, location, selection/design, ratings/specifications

(e) Power Line Carrier Communication (PLCC): principle, purpose, types of coupling and choice of components, use and operation of PLCC system, modules of PLCC panels, ratings/specifications

(f) Meters, Indicators, and Recorders: types and functional description of all types of meters, indicators and recorders-Voltmeter, Ammeter, Frequency Meter, Wattmeter, Energy meter, Event logger (EL), Disturbance Recorder (DR), Fault Locator (FL), indicators and knowledge of relevant Indian Standard

(g) Relays: types, functions, constructional details, selection, ratings/ specifications, testing and setting of relays and knowledge of relevant Indian Standard

(h) Protection System Philosophy: types, design, protection schemes, tripping schemes, protection of transformers/reactors, motors, feeders, generator bus, etc.

(v) Grounding: types of grounding, earth testing and treatment, earth mat design, step potential, touch potentials, transfer potentials, neutral grounding factor.

(vi) Auxiliary facilities

(a) DG set

(b) Fire fighting system - types of fire, extinguisher, Emulsifier system, deluge system, fire fighting system for transformer/reactor, oil storage system, control room, office building, etc.

(c) Station Battery System

(d) LT supply

(e) Air Conditioning System

(f) Compressed Air System (service air system, instrument air system)

(vii) Control Room: layout, arrangement of equipments/panels, false ceiling and flooring, fire safety measures, Air-conditioning, Uninterrupted Power Supply (UPS), computer and its peripherals, lighting /emergency lighting

(viii) Cables: types, control cables, power cables, layout, trench/gallery arrangement, cable ratings, selection, and cable termination and jointing.

(ix) Compensating devices: shunt reactor/capacitor, series reactor/ capacitor, static var compensators (SVC)

(x) Sub-station operation: operational aspects of all equipments/systems, salient features and parameters, limiting values, control room operation, local/remote operation, operational guidelines/procedures, and synchronisation, grid operation, communication with RLDC/ SLDC, etc., permit to work, line clear procedure, maintenance of log books, records , tripping reports, shift procedures, monitoring, duties /responsibilities of sub-station staff, interlocks and sequential operation, operational problems, operation under emergency, case studies.

(xi) Sub-station Maintenance:

(a) Need, philosophy, types- routine, preventive, planned, predictive, break-down, emergency maintenance, comparisons, life expectancy curves

(bathtub curves), tools and tackles, testing instruments, safety devices, sampling equipments, test kits, visual checks, condition monitoring techniques, on-line maintenance, daily/weekly/ monthly/quarterly/half yearly/annual maintenance of different equipments, planning the maintenance activities, preparation of maintenance estimates, budgeting for control, maintenance records, history

(b) spare parts management

(c) Transformer and Reactor Maintenance-factors affecting the life of transformer/reactor, types of faults that can occur, reasons for breakdown, visual checks/ inspection/ preliminary testing of various components- oil sampling and testing, oil filtration, Dissolved Gas Analysis (DGA), maintenance Schedule, fault rectification, need for major overhaul and methods

(d) Switchgear and Protection Maintenance : maintenance of CB, isolator, earthswitch, support insulators, CT/CVT, LA. Lightning Mast (LM), meters/ recorders, PLCC, protective relay maintenance, protection system maintenance

(e) Maintenance of auxiliaries and other systems- battery and charging system, DG set, air conditioning plant, compressed air system, fire fighting system, switchyard – lighting, control room, earth resistance testing, cables, compensating devices.

(xii) Erection and commissioning of sub-station, Project Evaluation and Review Technique (PERT), Critical Path Method (CPM), charts, project monitoring, erection, pre-commissioning checks/tests, commissioning, synchronisation.

(xiii) Civil works – surveying, site selection, soil investigation, general layout and architectural drawing, switchyard foundation, cable trench design, oil pit, control room building, DG set building, Fire fighting system and AC system- design, design and construction of roads, drains, water supply pipe lines, fencing/compound wall.

3. Load Dispatch and Communication 18

(i) Load Dispatch Centres- functions, SLDC/RLDC, NLDC, pre-dispatch, during-dispatch, post dispatch functions

(ii) Supervisory Control and Data Acquisition (SCADA) System, RTU, front end computers, main computers, visual display units, mimic boards

(iii) Energy Management System- functions

(iv) Load forecasting, generation scheduling, load management, load shedding

(v) Hydro - thermal scheduling

(vi) Voltage/frequency control

(vii) Reactive Power Management

(viii) Grid Management - problems/solutions
(ix) Operational co-operation, import/export of energy, role of tariff in system operation
(x) Maintenance, on-line maintenance
(xi) Grid disturbances- case studies
(xii) Software tools

Communication System: types- PLCC, microwave, leased lines, fibre optics, satellite, V-SAT Communication, comparison, characteristics, modules, planning criteria, selection criteria , RTUs, modems, baud rate, communication protocols, data exchange, system noise and interference, integrated communication system, O&M of communication system, protocol details, telemetry, tele-control and tele-protection.

IV. Commercial Aspects And Contracts 24

(1) Commercial Aspects

(i) Introduction to commercial aspects of power system/distribution system
(ii) Tariff Structure, types, components, methods of working out, revenue realization
(iii) Energy accounting, Availability Based Tariff (ABT), inter-utility tariff, commercial disputes and solutions
(iv) Inventory planning and control, bill of materials, purchase procedures, standardization and codification of stores
(v) Resource mobilisation through bonds/ debentures/shares.
(vi) Cost Engineering, costing and control, estimation, estimates for providing service (LT/HT) connections, street lighting.
(vii) Electricity Rules and Regulations, Enactment
(viii) Budget types, budgeting procedure, appropriation, budget control.
(ix) Accounting, auditing.

(2) Contracts 12

(i) Contract basics, terminology
(ii) Qualification- requirement, pre-qualification, bids, evaluation
(iii) Notice Inviting Tender (NIT), Notice Inviting Quotation
(iv) Preparation of bid documents, tendering/ bidding
(v) Bid opening, bid evaluation, award of contract, monitoring of contract.
(vi) Contractual obligations/liquidation, guarantee /warranty
(vii) Vendor - qualification, development
(viii) Contractual problems and solutions
(ix) Revised cost estimation, justification for cost/time over-run, substitute items
(x) Handing/taking over procedures, closing of contract
(xi) Legal issues of contracts, arbitration

V. Management: 12

(i) Principles of management, leadership, effective

	communication, motivation, decision making, strategic management (ii) Management Information System (iii) Project Management (iv) Finance Management (v) Construction Management (vi) Materials Management (vii) Total Quality Management	
VI.	System Planning and New Technologies: (1) System Planning (i) Introduction to power system planning requirements and methods (ii) Load forecasting and techniques (iii) Load flow studies for planning (iv) Preparation of feasibility report (FR), Detailed Project Report (DPR) (v) Approval/clearance of projects	6
	(2) New Technologies: (i) Latest development in transmission system design, material, component, system, tariff, operation, maintenance (ii) Latest developments in distribution system design, components, meters, system, tariff, operation, maintenance (iii) Latest developments in power system, communication, application of computers to power system.	6
	Total	207 Hours ≡ 7 Weeks
VII.	On Job Training: (1) System Operation (On job) (A) Sub-Station (Generating/Grid/Distribution) (i) Layout, equipment familiarisation (ii) Details, functioning, specification and different parameters of switchyard, control room, auxiliary system equipments (iii) Shift handing/taking over, logging of parameters, routine checks on equipments/ systems (iv) Operational aspects of equipments /systems, synchronization, grid operation, charging procedure (v) Line/feeder connections, protection schemes, loading aspects, etc. (vi) Salient features and operational aspects of HVDC sub-station.	3 Weeks
	(B) Load Dispatch and Communication (i) Load Dispatch Centre (NLDC/RLDC/SLDC): set up, functioning (ii) Supervisory Control and Data Acquisition (SCADA) and Energy Management System (EMS) functioning (iii) Load forecasting	

(iv) Generation scheduling
(v) Voltage and frequency control activities
(vi) Communication system operation
(vii) System Software
(viii) Shift operation

(2) System Maintenance (On job) **3 Weeks**

(A) Sub-Station Maintenance
(i) Visual checks, routine, preventive, planned, break-down maintenance of equipments/system
(ii) Transformer, reactor, switchgear, relays, protection system and auxiliary facilities.
(iii) Maintenance schedules
(iv) Referring log books/history records for maintenance.
(v) Testing Lab facilities, testing and commissioning.
(vi) Procedure for permit to work/line clear.
(vii) Safety devices and practices.

(B) T&D Line/Cable Maintenance
(i) Line patrolling, thermovision scanning, hot spots, hardware replacement procedure, T&P.
(ii) Emergency Restoration System (ERS)
(iii) Hot Line Maintenance.
(iv) Industrial visits and evaluation

Part III

SYLLABUS FOR TECHNICIANS TO ASSIST ENGINEERS AND SUPERVISORS IN OPERATION AND MAINTENANCE OF TRANSMISSION SYSTEM

Item No.	Particulars	Number of Hours
1	2	3
I	General introduction: (i) Functions of State Electricity Board/Utility (ii) Introduction to Electricity Act, 2003, and CEA (Measures relating to Safety and Electric Supply) Regulations, 2010.	6
II	Substation and Equipments: (i) Substations (a) Sub-stations, selection of site, clearances and control room (b) Sub-stations 33 kV to 765 kV (c) Selection of voltage level for sub-station and layouts (ii) Equipments: (a) Control/relay panels and meters (b) Switch gear, breakers (c) Isolators (d) Cables-types, construction and jointing (e) Power capacitors (f) Lightning arrestors (g) CT, PT and carrier communication.	12

III	Transformers (Power and Distribution) (i) Types of transformers and parallel operations (ii) Cooling and drying out of transformers (iii) Testing of transformers (iv) Maintenance of transformers (v) Protection of transformers (vi) Failures of transformers	12
IV	Circuit Breakers, Isolators and Relays (i) Principle and construction (ii) Types of circuit breakers (iii) Maintenance of circuit breakers (iv) Relays - various types and functions (v) Maintenance of isolators	12
V	Storage Batteries: Need, Functions, commissioning and maintenance	6
VI	Earthing: Sub-station earthing, equipment earthing and Consumer earthing and procedure for improving quality of earth resistance	3
VII	Safety and fire fighting (1) Safety (i) Basic principle of safety, importance of safety rules and their observation (ii) List of safety equipment, their use and maintenance thereof (iii) Permit procedure (iv) Self permit, permit on phone and procedures to be observed (v) Electric shock and safety. (vi) Causes of accident, precautions to be taken to avoid accidents while working. (2) Fire fighting: (i) Principle and causes of fire, class of fires, ie., A, B, C. Precautions to be taken to avoid fire (ii) Fire fighting equipments, their type and use, their periodical maintenance	6
VIII	Transmission and Distribution (Line-Construction and Maintenance) (1) Construction (i) Survey of HT, LT Lines and service lines and cables, crossing such as road, railway, river, etc. (ii) Selection of materials and poles for lines and handling of materials (iii) Pole erection, size of pit, concreting, pole alignment, etc.	18

(iv) Types of stays, their marking, grouting, stay insulator binding, etc.
(v) Types of conductors and their parameters such as current carrying capacity, etc., cables-types and joints.
(vi) Type of guarding and clearances, anticlimbing devices, danger board, etc.
(vii) Erection of transformer DP structure
(viii) Patrolling, line meggering and commissioning of power lines

(2) Line Maintenance
(i) Fuse grading necessity and its benefits
(ii) Patrolling, tree cutting and safe clearances
(iii) Guarding of lines, clearances and maintenance, attending to breakdowns.
(iv) Importance and maintenance of air-break switch, dropout fuse set, dist. box etc.
(v) Pre-monsoon maintenance - necessity and procedure thereof
(vi) Balancing of load using tong tester

(3) Service Connection, theft of energy
(i) Types of service connections (overhead, underground, High Tension/ Low Tension, Single phase, Three phase)
(ii) Point of supply, testing of Consumers' wiring and earthing terminals
(iii) Materials required for service connection, fuse grading, underground cable connections (feeder pillar, mini pillar, junction box.)
(iv) Theft of energy, preventive measures, unauthorized extensions
(v) Consumer relations and dealing with Consumer problems

IX	Duties of staff Duties of staff, assisting supervisory an operating staff and maintenance of records	6
X	Human Resource Development (i) Personal development and motivation (ii) Communication skill and its importance (iii) Attitudinal training	9
	Total	90 Hours ≅ **3 Weeks**
XI	On Job Training, industrial visits and evaluation: (1) Study Visits - after introduction (i) 1st visit :11 kV and 33 kV sub-station (ii) 2nd visit : 66 kV and 132 kV sub-station (iii) 3rd visit : 220 kV and 400 kV sub-station	**3 Weeks**

(2) Study and practicals

(i) Measurement of current, voltage, power, energy, frequency and power factor
(ii) Testing and connection of relays
(iii) Study of Buchholz relays
(iv) Measurement of earth resistivity
(v) Meggering of installation and equipments
(vi) Study and maintenance of breathers
(vii) Study of "on load tap changer" for transformer
(viii) Study of line construction materials and hardware
(ix) Demonstration of conductor jointing
(x) Demonstration of cable jointing.
(xi) Study of various type of power fuses, control fuses, kitkat and horn gaps.
(xii) Use of safety equipments and practicals followed for permit on works
(xiii) First aid and fire fighting drills

Part IV

SYLLABUS FOR ENGINEERS ENGAGED IN THE OPERATION AND MAINTENANCE OF SUB-TRANSMISSION AND DISTRIBUTION SYSTEM

Item No.	Particulars	Number of Hours
1	2	3
I	Overview of Power Sector Scenario: (i) Growth of Power Industry in India (ii) Organisation/ Power Sector set-up in India (iii) Electricity Distribution in India (iv) Private Participation in Distribution (v) Distribution Reforms in India.	3
II	Regulatory Environment – Rules and Regulations: (i) Electricity Act,2003 – Provisions relating to electricity distribution (ii) Role of Regulatory Commissions (iii) CEA(Measures relating to Safety and Electric Supply) Regulations, 2010 – Relating to electricity distribution. (iv) Energy Conservation Act	3
III	Distribution planning and optimization: (i) Philosophy of distribution planning. (ii) Acquaintance with software for distribution planning and optimisation. (iii) Operation of software. (iv) Data entry formats and report generation. (v) Case study.	30
IV	Sub-transmission and Distribution Lines: (i) Supports-towers/ poles: (a) Types and selection criteria (b) Surveying and erection	15

(ii) Line conductor/ cables:
(a) Classification
(b) Selection criteria
(c) Conductor stringing, jointing/ binding, sagging and tensioning, clipping and jumpering
(d) Earthing arrangements

(iii) Cable – types, selection, cable trenches, cable routing and laying, cable jointing and junction box

(iv) Earth wire/ neutral wire, guarding, etc.

(v) Selection and fixing of control devices, viz. Gang Operating Switches, fuses, isolators and earthing switches, lightning arrestors, and distribution box, etc.

(vi) Installation of service lines.

(vii) Street Lighting – design and layout methods.

(viii) Statutory clearances, viz. Environment and forest, local bodies, railway and telegraph crossings, river crossings, clearances under CEA (Measures relating to Safety and Electric Supply) Regulations, 2010, Acts.

(ix) Line/ cable maintenance including hot line maintenance – line patrolling, inspection, periodicity, work permit, line clear and authorisation, erection of temporary earth and restoration of supply, maintenance T&P and safety devices, thermo vision scanning, hot spots, etc.

V Electric Sub-Stations (33 kV and below): 15

(i) Type, site selection , layout and civil Engineering requirements.

(ii) Bus bar arrangement, sub-station equipment, viz. transformers, circuit breakers, etc.

(iii) Auxiliary systems, viz. DG set, battery system and fire fighting system, etc.

(iv) Control panel, meters, indicators and recorders and relays, etc.

(v) Erection, testing and commissioning of equipments/systems

(vi) Earthing of sub-stations equipments and soil testing

(vii) Transformer oil and its testing

(viii) Operation and maintenance of all equipments, protective relays and auxiliaries.

VI Metering Requirements: 6

(i) Type of metering, viz. DT metering, feeder metering and Consumer metering.

(ii) Regulations on installation of meters and technical standards

(iii) Meter types, their settings and operation, testing and sealing.

(iv) Selection of meter and metering equipment

(v) Familiarity with hardware (CMRI) and software for meter data download, analysis and detection of meter tampering

(vi) Role of advanced metering system in controlling commercial losses

VII	Concept of Losses and Loss Reduction Measures: (i) Concept of AT& C losses (ii) Segregation of losses. (iii) Technical loss reduction measures. (iv) Reactive power management. (v) Detection of thefts, tampering, unauthorized loads (vi) Anti-theft measures and case studies (vii) Commercial loss reduction measures. (viii) Penalties under the Act for theft and misuse of power. (ix) Energy audit and accounting. (x) Demand side management.	9
VIII	Reliability Issues, Quality of Power Supply, Customer Awareness and Satisfaction: (i) Reliability and quality of power supply and reliability indices. (ii) Causes and cures for breakdowns, tripping and voltage and frequency fluctuation. (iii) Creating customer awareness (iv) Prompt attendance to faults. (v) Overview of the Electricity Supply Codes of Regulatory Commissions.	6
IX	IT Intervention: (i) Familiarisation with distribution software packages and latest software tools and use thereof for billing and revenue realisation, GIS mapping and Consumer indexing, inventory control, keeping track of equipments failure rate, quick fault location, attendance, staff salary, energy accountability and MIS etc. (ii) SCADA – RTU, communication and distribution automation. (iii) Customer care and call centres.	12
X	Rural Electrification: (i) Outsourcing of distribution activities, appointment of franchisees and self load management by villagers and Gram Panchayats (ii) Maintenance of complaint centres and fault removal, etc., by village Panchayats etc. (iii) Separation of rural and urban supply system (iv) Fixation of responsibility for energy receipt and supply balance. (v) Rajiv Gandhi Grameen Vidyutikaran Yojana. (vi) Distributed generation.	9
XI	Project Management: Contracts: (i) Contract basics and terminology (ii) Qualification – requirement, pre-qualification (iii) Bids – Technical and Commercial	9

	(iv) Vendors – qualification, development	
	(v) Notice Inviting Tenders(NIT)/ Notice Inviting Quotations(NIQ)	
	(vi) Preparation of Bid Documents, tendering/ bidding	
	(vii) Bid opening and evaluation, Award of contracts, monitoring of contracts	
	(viii) Contractual obligations/ liquidation, guarantee/ warranty	
	(ix) Contractual problems and solutions	
	(x) Revision of cost estimates, justification of cost/ time overrun and substitute items	
	(xi) Handling/taking over procedures, closing of contracts	
	(xii) Legal issues of contracts and arbitration	
	(xiii) CVC Guidelines.	
XII	Disaster Management:	3
	(i) Institutional set-up for disaster Management	
	(ii) Impact of different types of disasters	
	(iii) Trigger mechanism and warning system	
	(iv) Check list and preparedness to address disasters.	
	(v) First aid techniques.	
XIII	Electrical Safety Aspects:	9
	(i) Basic principles of safety, importance of safety rules and their observance.	
	(ii) List of safety equipment, their use and maintenance thereof.	
	(iii) Permit procedure - self permit, permit on phone and procedures to be observed.	
	(iv) Electric shock, safety and procedure for recovery/ resuscitation.	
	(v) Causes of accidents, safe working procedures to avoid accidents.	
	(vi) Principle and causes of fire, and precautions to be taken to avoid fires.	
XIV	Field Visits and on-job training:	66
	(i) Familiarisation with layout of sub-stations and equipments	
	(ii) Operational aspects of equipments/ systems and synchronization	
	(iii) Line/ feeder connections, protection schemes, loading aspects, balancing of loads	
	(iv) Planning shift operations.	
	(v) Maintenance schedules	
	(vi) Procedures for permit to work/ line clear	
	(vii) Testing lab facilities, testing and commissioning	
	(viii) Maintenance of Log Books/ history records and adherence to the timely recording.	
	(ix) Familiarisation with IT tools.	
	Total	195 Hours ≅ 6 ½ Weeks

Part V

SYLLABUS FOR SUPERVISORS ENGAGED IN THE OPERATION AND MAINTENANCE OF SUB-TRANSMISSION AND DISTRIBUTION SYSTEM

Item No.	Particulars	Number of Hours
1	2	3
I	Overview of Power Sector Scenario (i) Growth of Power Industry in India. (ii) Organisation/ Power Sector set-up in India. (iii) Electricity Distribution in India (iv) Private Participation in Distribution. (v) Distribution Reforms in India.	3
II	Distribution Planning and Optimisation: (i) Philosophy of distribution planning. (ii) Acquaintance with software for distribution planning and optimisation. (iii) Operation of software. (iv) Data entry formats and report generation. (v) Case study.	6
III	Sub-transmission and Distribution Lines: (i) Supports-towers/ poles (a) Types and selection criteria (b) Surveying and erection (ii) Line Conductor/ Cables – (a) Classification (b) Selection criteria (c) Conductor stringing, jointing/ binding, sagging and tensioning, clipping and jumpering (d) Earthing arrangements (iii) Cables – types, selection, cable trenches, cable routing and laying, cable jointing and junction box (iv) Earth wire/ neutral wire, guarding, etc. (v) Selection and fixing of control devices, viz. Gang Operating switches, fuses, isolators and earthing switches, lightning arrestors, and distribution box, etc. (vi) Installation of service lines. (vii) Street Lighting – design and layout methods. (viii) Statutory clearances, viz. environment and forest, local bodies, railway and telegraph crossings, river crossings, clearances under Safety and Electric Supply Regulations/Acts. (ix) Line/ cable maintenance including hot line maintenance – line patrolling, inspection, periodicity, work permit, line clear and authorisation, erection of temporary earth and restoration of supply, maintenance T&P and safety devices, Thermo vision scanning, hot spots, etc.	9

IV	Electric Sub-Stations (33 kV and below): (i) Type, site selection , layout and civil Engineering requirements. (ii) Bus bar arrangement, sub-station equipment, viz. transformers, circuit breakers, etc. (iii) Auxiliary systems, viz. DG set, battery system and fire fighting system, etc. (iv) Control panel, meters, indicators and recorders and relays, etc. (v) Erection, testing and commissioning of equipments/systems (vi) Earthing of sub-stations equipments and soil testing (vii) Transformer oil and its testing (viii) Operation and maintenance of all equipments, protective relays and auxiliaries.	9
V	Metering Requirements: (i) Type of metering, viz. DT metering, feeder metering and Consumer metering. (ii) Regulations on installation of meters and technical standards (iii) Meter types, their settings and operation, testing and sealing.	3
VI	Concept of Losses and Loss Reduction Measures: (i) Concept of AT&C losses (ii) Segregation of losses. (iii) Technical loss reduction measures. (iv) Reactive power management. (v) Detection of thefts, tampering, unauthorized loads (vi) Anti-theft measures and case studies (vii) Commercial loss reduction measures. (viii) Penalties under the Act for theft and misuse of power. (ix) Energy audit and accounting. (x) Demand side management.	6
VII	Reliability Issues, Quality of Power Supply, Customer Awareness and Satisfaction: (i) Reliability quality of power supply and reliability indices. (ii) Causes and cures for breakdowns, tripping and voltage and frequency fluctuation. (iii) Creating customer awareness (iv) Prompt attendance to faults. (v) Overview of the Electricity Supply codes of Regulatory Commissions.	3
VIII	IT Intervention: (i) Familiarisation with distribution software packages and latest software tools and use thereof for billing and	6

revenue realisation, GIS mapping and Consumer indexing, Inventory control, keeping track of equipments failure rate, quick fault location, attendance, staff salary, Energy accountability and MIS, etc.

(ii) SCADA – RTU, communication and distribution automation.

(iii) Customer care and call centres.

(iv) Enterprise resource planning-
- (a) Maintenance Management
- (b) Asset Management
- (c) Training Management
- (d) Financial Accounting
- (e) Material Management
- (f) Outage Management
- (g) Time Management

IX Rural Electrification: 3
- (i) Outsourcing of distribution activities, appointment of franchisees and self load management by villagers and Gram Panchayats.
- (ii) Maintenance of complaint centres and fault removal, etc., by Village Panchayats, etc.
- (iii) Separation of rural and urban supply system
- (iv) Fixation of responsibility for energy receipt and supply balance.
- (v) Rajiv Gandhi Grameen Vidyutikaran Yojana.
- (vi) Distributed generation.

X Project Management: Contracts: 3
- (i) Contract basics and terminology
- (ii) Qualification – requirement, pre-qualification
- (iii) Bids – technical and commercial
- (iv) Vendors – qualification, development
- (v) Notice Inviting Tenders(NIT)/ Notice Inviting Quotations(NIQ)
- (vi) Preparation of bid documents, tendering/ bidding
- (vii) Bid opening and evaluation, award of contracts, monitoring of contracts
- (viii) Contractual obligations/ liquidation, guarantee/ warranty
- (ix) Contractual problems and solutions
- (x) Revision of cost estimates, justification of cost/ time overrun and substitute items
- (xi) Handling/taking over procedures, closing of contracts
- (xii) Legal issues of contracts and arbitration
- (xiii) CVC Guidelines.

XI Disaster Management: 3
- (i) Institutional set-up for disaster management
- (ii) Impact of different types of disasters

(iii) Trigger mechanism and warning system
(iv) Check list and preparedness to address disasters.
(v) First aid techniques.

XII	Electrical Safety Aspects: (i) Basic principles of safety, importance of safety rules and their observance. (ii) List of safety equipment, their use and maintenance thereof. (iii) Permit procedure- self permit, permit on phone and procedures to be observed. (iv) Electric shock, safety and procedure for recovery/ resuscitation. (v) Causes of accidents, safe working procedures to avoid accidents. (vi) Principle and causes of fire, and precautions to be taken to avoid fires.	6
XIII	Field Visits and On-Job Training: (i) Familiarisation with layout of sub-stations and equipments (ii) Operational aspects of equipments/ systems and synchronization (iii) Line/ feeder connections, protection schemes, loading aspects, balancing of loads (iv) Planning shift operations. (v) Maintenance schedules (vi) Procedures for permit to work/ line clear (vii) Testing lab facilities, testing and commissioning. (viii) Maintenance of Log Books/ history records and adherence to the timely recording. (ix) Familiarization with IT tools.	60
	Total	120 Hours ≅ 4 Weeks

Part VI

SYLLABUS FOR TECHNICIANS ENGAGED IN THE OPERATION AND MAINTENANCE OF SUB-TRANSMISSION AND DISTRIBUTION SYSTEM

Item No.	Particulars	Number of Hours
1	2	3
I	Overview of Power Sector Scenario: (i) Growth of Power Industry in India. (ii) Organisation/ Power Sector set-up in India. (iii) Electricity Distribution in India (iv) Private Participation in Distribution. (v) Distribution Reforms in India.	3
II	Sub-transmission and Distribution Lines: (i) Survey for lines at voltage upto 250 V, lines at voltage above 650 Volts but less than 33kV and for service lines and cables and crossings such as road, railway, river and other power and telecom lines. (ii) Selection of line materials and towers/ poles and safe handling of the same. (iii) Erection of towers/ poles – size of pit, concreting and pole/tower alignment, etc. (iv) Line Conductors – types, selection criteria, conductor stringing, jointing/ binding, sagging and tensioning, clipping and jumpering and earthing arrangements. (v) Types of stays, its marking, grouting, stay insulator, binding, etc. (vi) Cable – types, selection, cable trenches, cable routing and laying, cable jointing and junction box, etc. (vii) Types of guarding and clearances, earth wire/ neutral wire, anti-climbing devices and danger boards and their erection. (viii) Selection and fixing of control devices, viz. Gang Operating Switches, fuses, Isolators and earthing switches, lightning arrestors, and distribution box, etc. (ix) Installation of service lines. (x) Street lighting – layout methods. (xi) Line meggering and commissioning of distribution lines. (xii) Line patrolling, inspection, periodicity, work permit, line clear and authorisation, tree cutting and safe clearances, erection of temporary earth, attending to breakdowns and restoration of supply. (xiii) Maintenance T&P and safety devices, Thermo vision scanning, hot spots, etc. (xiv) Hot line maintenance.	9
III	Electric Sub-Stations (33 kV and below): (i) Type, site selection, layout and civil Engineering requirements.	9

(ii) Bus bar arrangement, sub-station equipment, viz. transformers, circuit breakers, isolator, lightning arrestors, CTs, PTs and power capacitors, etc.,
(iii) Types of transformers, their erection and parallel operation, testing, maintenance, protection and failure.
(iv) Auxiliary systems, viz. DG set, battery system and fire fighting system, etc. – need, functions, commissioning and maintenance.
(v) Control panels, meters, indicators, recorders and relays, etc. – operation, maintenance and recording readings, etc.
(vi) Control and power cables – types, laying of and jointing.
(vii) Installation , operation and maintenance of all equipments.
(viii) Cooling and drying out of transformers, transformer oil and its testing.
(ix) Erection of DP structure for transformer.
(x) High Voltage Distribution System (HVDS) – erection and connecting the Consumers.
(xi) Sub-station earthing, equipment earthing and Consumer's earthing, and use of Megger and procedure and materials for improving quality of earth resistance.
(xii) Fire fighting equipment, their type, use and periodical maintenance, indicators and recorders and relays, etc.

IV Metering Requirements: 3
(i) Type of metering, viz. DT metering, feeder metering and Consumer metering.
(ii) Regulations on installation of meters and technical standards
(iii) Meter types, their settings and operation, testing and sealing.
(iv) Computerised billing.

V Concept of Losses and Loss Reduction Measures: 3
(i) Concept of AT&C losses.
(ii) Detection of thefts, tampering, unauthorized loads.
(iii) Anti-theft measures and case studies.

VI Reliability issues, Quality of Power Supply, Customer Awareness and Satisfaction: 3
(i) Introduction to reliability and quality of power supply.
(ii) Causes and cures for breakdowns, tripping and voltage and frequency fluctuation.
(iii) Prompt attention to faults and customer care.

VII Electrical Safety Aspects: 12
(i) Basic principles of safety, importance of safety rules and their observance.

	(ii) List of safety equipment, their use and maintenance thereof.	
	(iii) Permit procedure- self permit, permit on phone and procedures to be observed.	
	(iv) Electric shock, safety and procedure for recovery/ resuscitation.	
	(v) Causes of accidents, safe working procedures to avoid accidents.	
	(vi) Principle and causes of fire, and precautions to be taken to avoid fires.	
VIII	Rural Electrification:	3
	(i) Separation of rural and urban supply systems.	
	(ii) Rajiv Gandhi Grameen Vidyutikaran Yojana.	
IX	Disaster Management:	3
	(i) Impact of different types of disasters.	
	(ii) Check list and preparedness to address disasters.	
	(iii) First aid techniques.	
X	Field Visits and On Job Training:	60
	(i) Familiarisation with layout of sub-stations and equipments.	
	(ii) Operational aspects of equipments/ systems and synchronization.	
	(iii) Line/ feeder connections, protection schemes, loading aspects, balancing of loads.	
	(iv) Adherence to shift system.	
	(v) Maintenance schedules.	
	(vi) Procedures for permit to work/ line clear.	
	(vii) Testing lab facilities, testing and commissioning.	
	(viii) Safety aspects and safety drill.	
	(ix) Hot line maintenance.	
	(x) Maintenance of Log Books/ history records and adherence to the timely recording.	
	(xi) Familiarisation with Tools and Plants (T&P).	
	(xii) Familiarisation with IT tools.	
	Total	108 Hours ≅ 4 Weeks

Schedule-III

Handling of electric supply lines and apparatus

[See sub-regulation (3) of regulation (19)]

Precautions to be observed

(1) Hotline Maintenance trained personnel only are designated to do work on line.

(2) Work permit will be taken from the terminal substations at each end of the line.

(3) Work shall be performed with proper planning and prior understanding and clarity.

(4) Favourable climatic condition for hotline operations is sunny weather. If the weather forecasts rain or thunderstorms work will not begin.
(5) Organisation of work shall be discussed among the members and responsibility of each team member fixed.
(6) Before going to the work site all equipment and tools shall be inspected and checked for correct operation.
(7) Auto re-closure shall be in 'OFF' position for the line at both ends.
(8) The work procedure shall be discussed with the team member at the tower location and the responsibility of each member shall be properly defined.
(9) The land in close vicinity to the tower shall be cleared to provide a site area for the required tools.
(10) All cleaned hot sticks, strain carrier and other assemblies shall be kept on the hotline tool rack to avoid ground contact.
(11) Wear helmet, safety shoes and safety belt shall compulsorily be used.
(12) All hot sticks and ladders shall be cleaned and checked for integrity by the hot sticks Tester.
(13) All linemen in the hotline team shall be equipped with personal protective equipment during the work.
(14) No live-line team members on the tower and conductor shall wear any metallic chain, wristwatch or ring to avoid any circulating current.
(15) The team linemen will wear conductive socks, boots, helmets and hand gloves. The 'hot-end' lineman shall wear complete bare hand suit.
(16) Tarpaulin sheet should be laid on the work area.
(17) A light vehicle shall be kept nearby during entire work period.

<u>Tools normally required for hot line maintenance operation</u> :

The following tools conforming to relevant Indian Standard or equivalent specifications shall be used in on-line working.

(1) Wire tongs
(2) Wire tongs saddle
(3) Tie sticks
(4) Strain link sticks
(5) Roller link sticks
(6) Suspension link sticks
(7) Auxiliary arms
(8) Strain carrier
(9) Gin poles
(10) Cum-a-along clamp
(11) Safety equipment like conductor guards, X-arm guards, insulator covers, hand gloves etc.
(12) Hot sticks

Schedule-VII

Minimum safety working clearances where electricity at voltage exceeding 650 V is supplied, converted, transformed or used

[See sub-regulation (2)(iii) of regulation (44)]

Highest System Voltage (kV)	Safety Working Clearance (Metres)
12	2.6
36	2.8
72.5	3.1
145	3.7
245	4.3
420	6.4
800	10.3

(1) The above values are valid for altitude not exceeding 1000 m. A correction factor of 1.25 per cent per 100 m is to be applied for increasing the clearance for altitude more than 1000 m and upto 3000 m;

(2) The above safety working clearances are based on an insulation height of 2.44 m which is the height of lowest point on the insulator, where it meets the earthed metal, from the ground;

(3) "Safety Working Clearance" is the minimum clearance to be maintained in air between the live part of the equipment on one hand and earth or another piece of equipment or conductor on which it is necessary to carry out the work, on the other;

(4) The "Highest System Voltage" is defined as the highest rms phase to phase voltage which occurs under normal operating conditions at any time and at any point of the system. It excludes voltage transients (such as those due to system switching) and temporary voltage variations due to abnormal system conditions (such as those due to fault conditions or the sudden disconnection of large loads).

Schedule-VIII

Minimum safety clearances to be maintained for bare conductors or live parts of any apparatus in out-door sub-stations, excluding overhead lines of HVDC installations

[See sub-regulation (5) of regulation (44)]

S.No.	DC Voltage (kV)	Pole to Earth Clearance (Metres)	Ground Clearance (Metres)
1.	100 kV	1.17	4.55
2.	200 kV	1.80	5.65
3.	300 kV	2.45	6.75
4.	400 kV.	3.04	8.00
5.	500 kV	3.65	9.00
6.	600 kV	3.98	10.1
7.	800 kV	5.3	11.2

(1) The above ground clearances are not applicable to equipment that are housed within fence or a building and where access is prevented under energised condition through a suitable safety interlocking scheme;

(2) The above pole to earth clearances are for conductor-structure electrode configuration using gap factor k equal to 1.35.

(3) It is recognised that within a substation many different types of electrode configurations shall be there with different values of k, therefore, the above clearance shall be modified based upon the values of gap factor for a particular electrode configuration subjected to the minimum ground clearance.

(4) Clearance shall be provided for electrical apparatus so that sufficient space is available for easy operation and maintenance without any hazard to the operating and maintenance personnel working near the equipment and for ensuring adequate ventilation.

Schedule-IX

Form for reporting failure of Transformers or Reactors of rating 20 MVA/MVAR and above

[See sub-regulation (8) of regulation (46)]

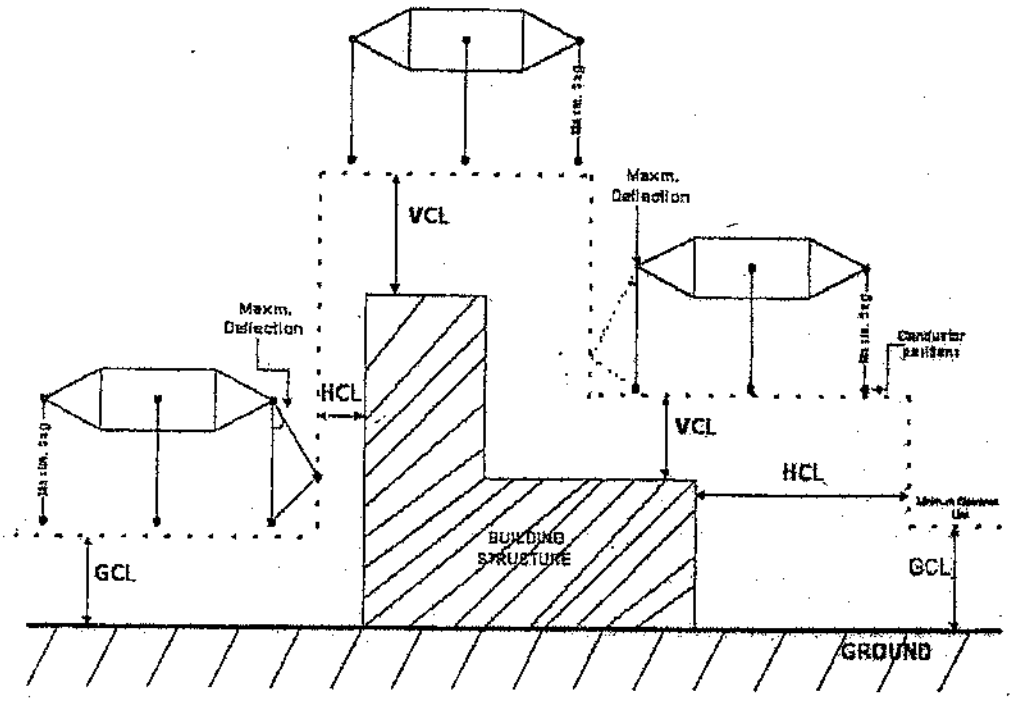
(1) Type of Equipment (Transformer or Reactor)
(2) Capacity (MVA/MVAR)
(3) Location (Address)
(4) Owner and address of owner
(5) Date of failure
(6) Year of manufacture
(7) Date of Installation
(8) Make
(9) Reasons for failure
(10) Measures being taken to avoid recurrence of failure

Date :

(Signature and name of Manager/Executive Engineer of the installation)

Schedule-X

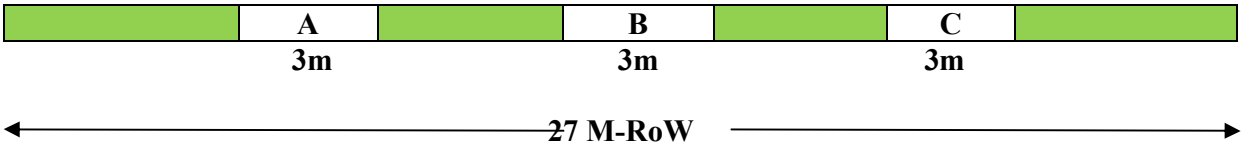
Ground, Vertical and Horizontal clearances
[See sub-regulation (6) of regulation 58, sub-regulation (5) of regulation (60) and sub-regulation (5) of regulation 61]



GCL: Clearances as per Regulation 59
VCL: Clearances as per Regulation 60 & 61
HCL: Clearances as per Regulation 60 & 61

RIGHT OF WAY/WIDTH (ROW) IN FOREST: 132 KV S/C LINE

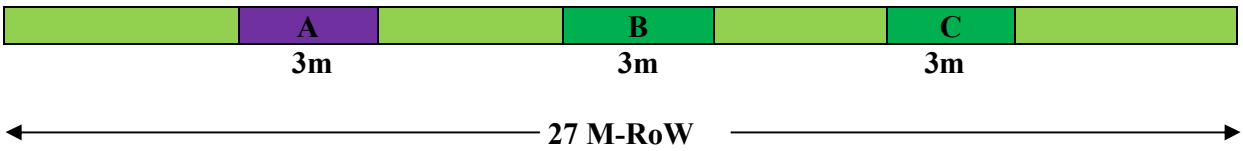
DURING CONSTRUCTION



Area where trees are lopped/pruned/pollarded.

Area where trees are completely felled.

AFTER CONSTRUCTION



Area where trees are lopped/pruned/pollarded.

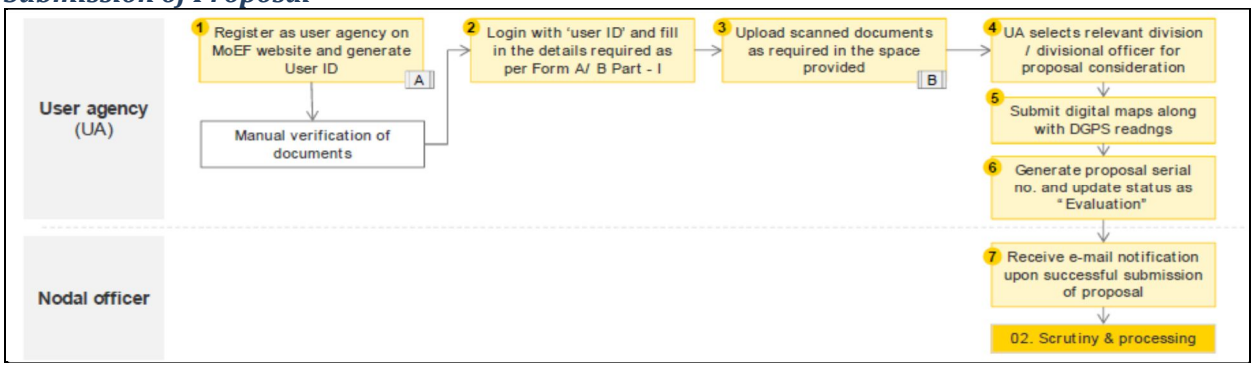
Area kept clear of trees for O & M

Area left for natural generation

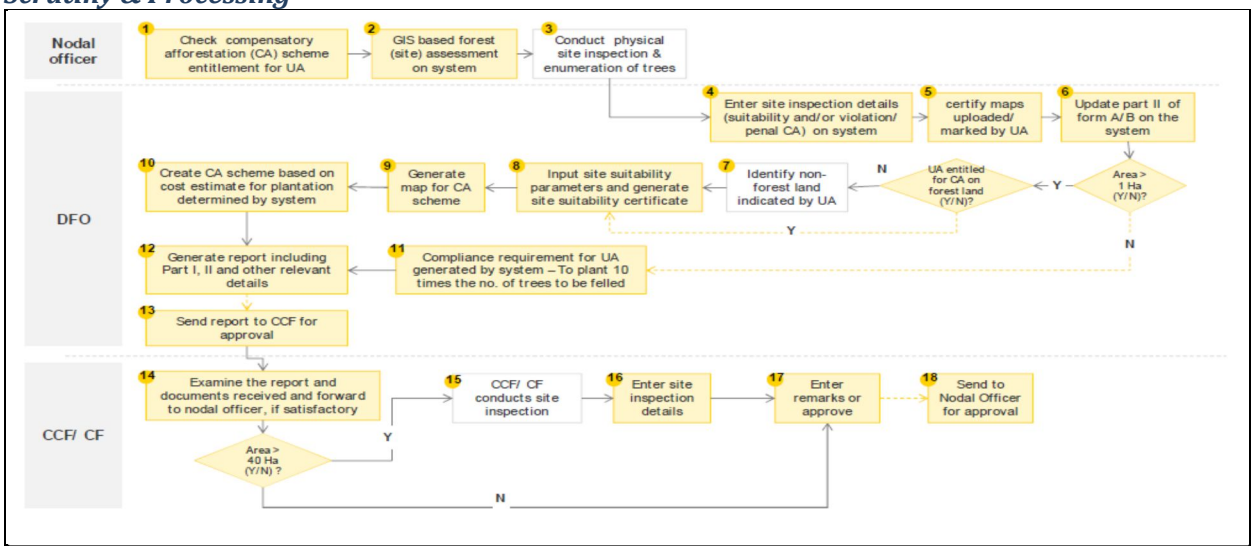
Note: RoW for : 132 kV-27M 220 kV-35M, 400kV S/C-52M, 400kV D/C-46M

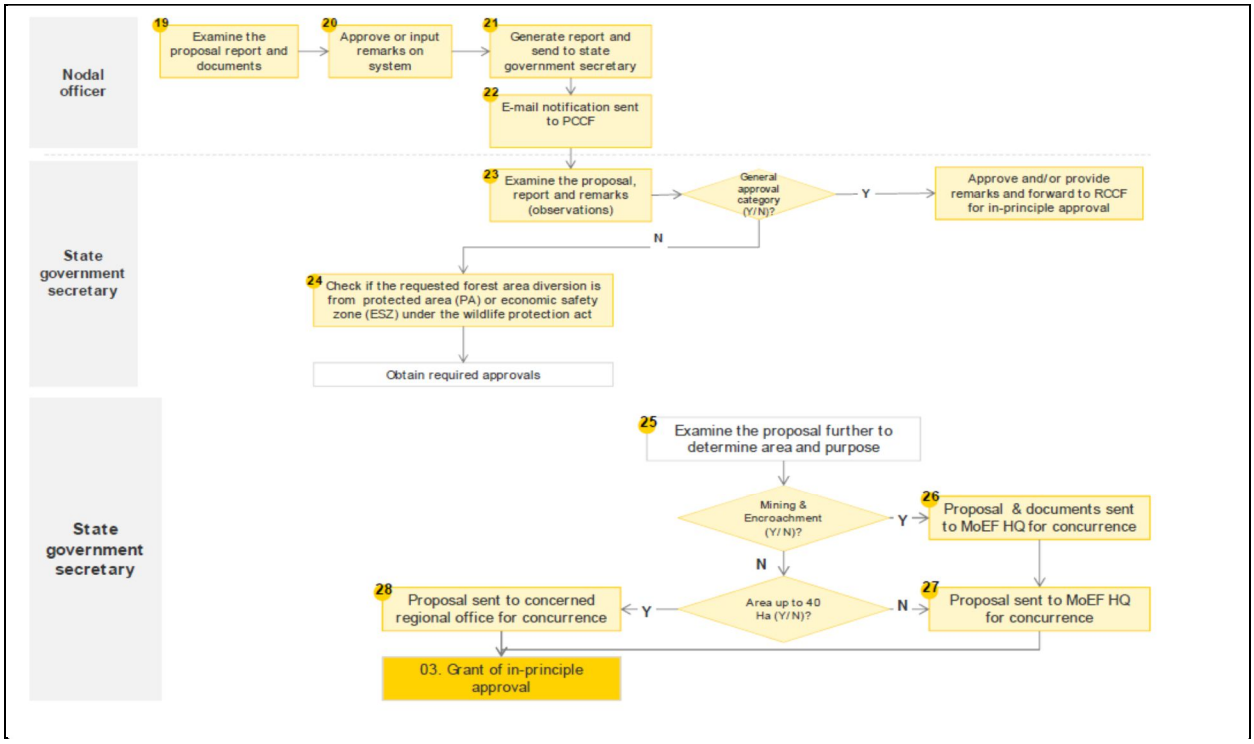
FOREST CLEARANCE PROCESS

Submission of Proposal



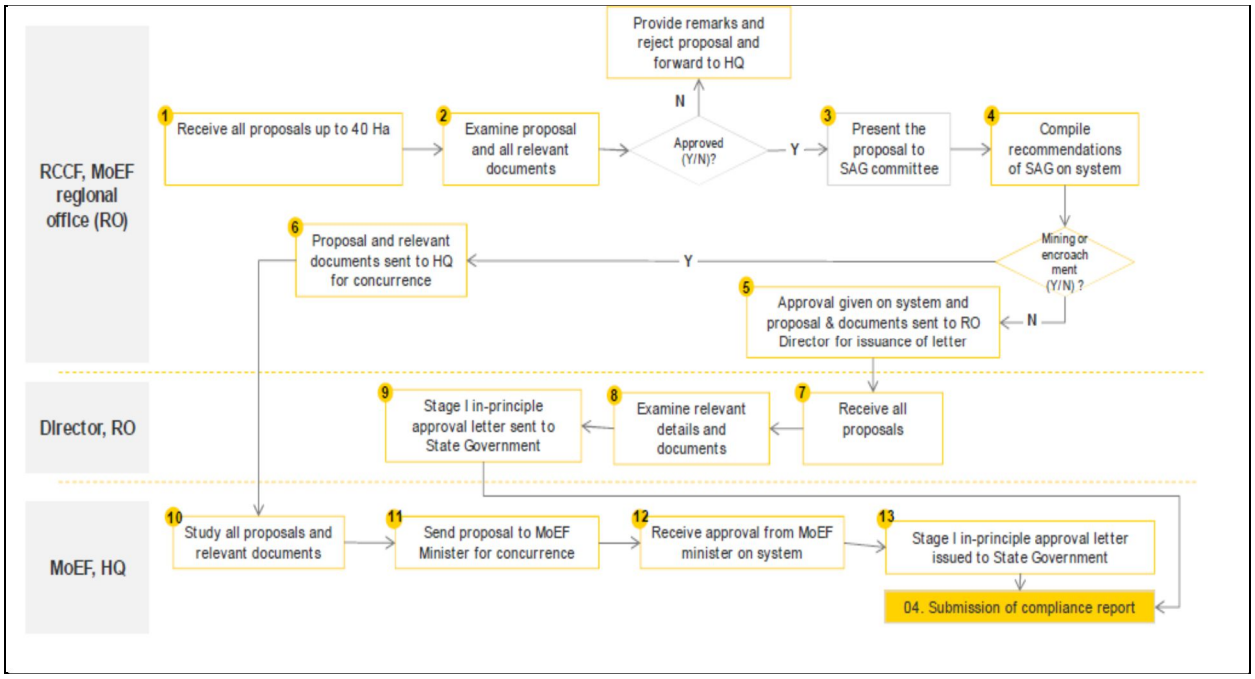
Scrutiny & Processing



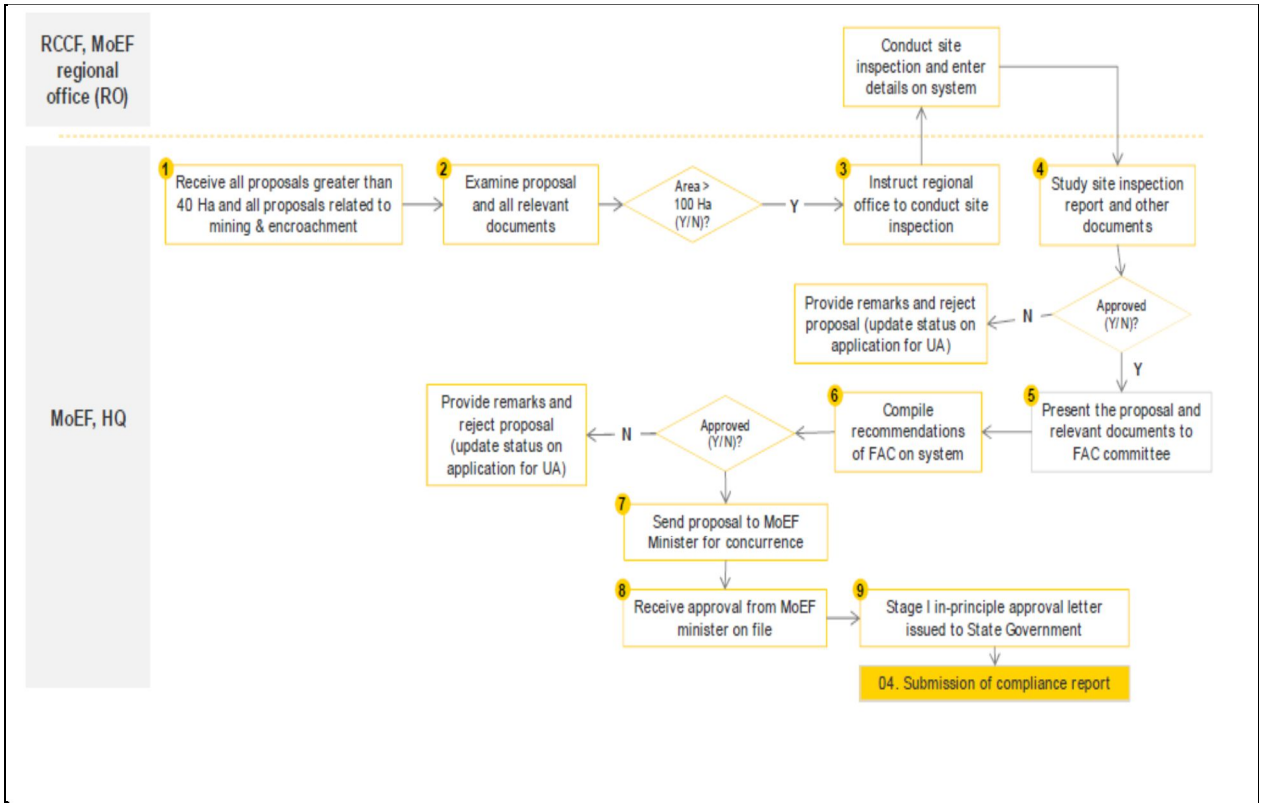


Grant in Principal Approval

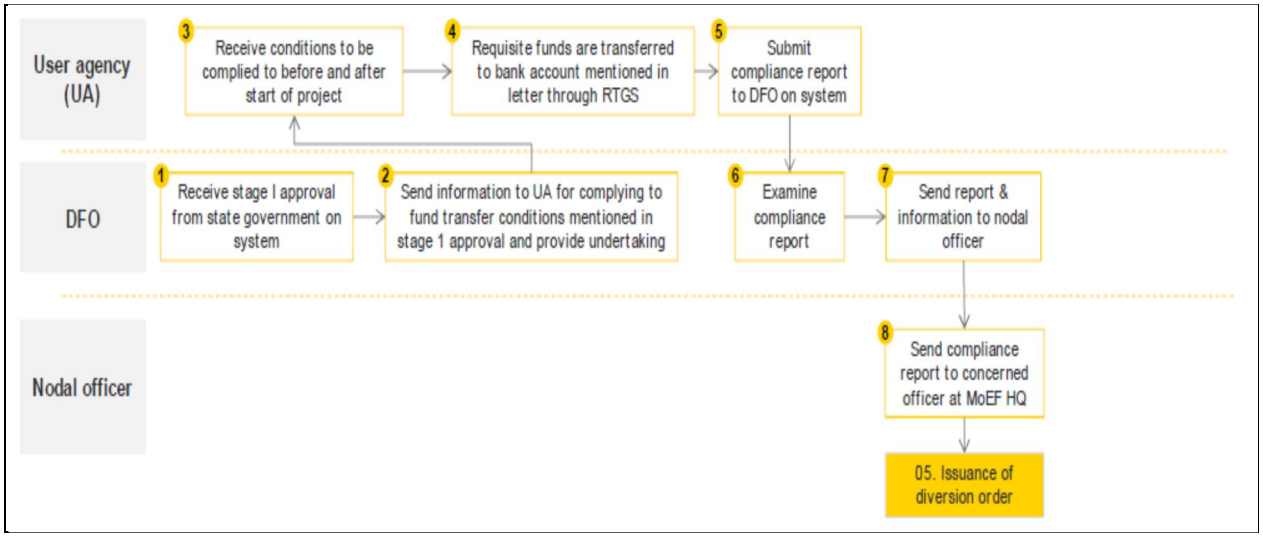
Case I Forest Proposal upto 40 ha



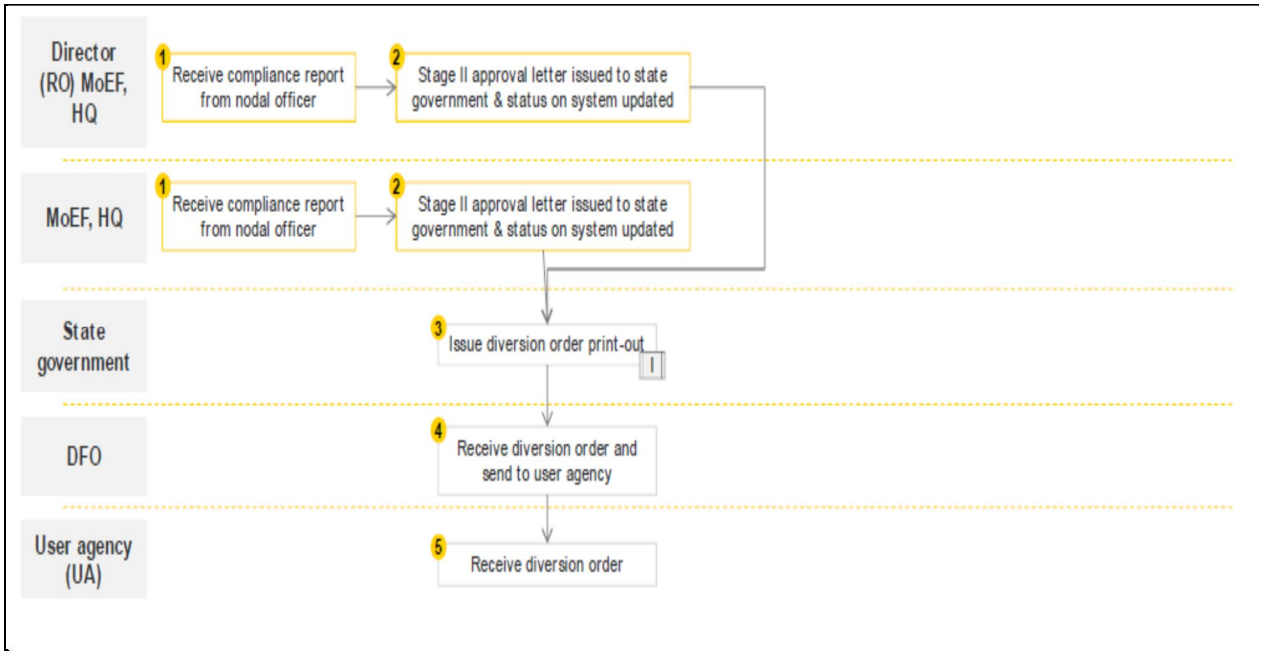
Case II : More than 40 ha



Submission of Compliance Report



Issuance of Diversion Order



ABOUT THE MANUAL

Audience

This manual is meant for User Agencies/Stake Holders that are supposed to submit application for seeking prior forests clearances for diverting forest land for non-forestry purposes.

Purpose

The purpose of this document is to provide an interface between user and OSMFC, an "Online Submission and Monitoring of Forest Clearances Proposals". It will help the user to understand major features, benefits and workflow of the system. It will also help to submit the details of the proposal along with all annexures and later on status of the proposal can be tracked.

Authorship

This manual has been prepared by Ministry of Environment, Forests and Climate Change, Government of India, New Delhi – 110003.

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• ABOUT FORESTS CLEARANCE PORTAL

- INTRODUCTION

In order to bring more transparency and accountability in the forests clearance process, Ministry of Environment, Forests and Climate change, Government of India has rolled out a portal named "**Online Submission and Monitoring of Forests Clearances Proposals"(OSMFCP)**.

OSMFC is a web based, role based, G2C and G2G workflow application that are developed for online submission and monitoring of the proposals submitted by the user agencies for seeking forests clearances, for diverting forest land for non- forestry purposes. It automates the entire tracking of proposals which includes online submissions of a new proposal, editing/updating the details of proposals and displays status of the proposals at each stage of the workflow. The system is based on the Web Architecture. It uses dotNET as an application server and SQL as a database server.

- OBJECTIVE

The following are the main objectives of the SYSTEM:

- Enhance efficiency, transparency and accountability in the forest clearance process.
- Reduction in turnaround time for activity.
- Enhance responsiveness through workflows automation and availability of real time information.
- Enhance ease and convenience of citizens and businesses in accessing information and services.
- Achieve standardization in processes across regional and state level.

- CORE FEATURES OF PORTAL

  - A role based workflow application that helps User Agencies in online submission of the proposals seeking forest clearances for non-forestry purposes and tracking the proposals.
  - Facilitate management in effective monitoring.
  - Delays in the clearance process can be ascertained
  - Accessible from any PC having internet facility
  - 24x7 Online

- ROLES

The following Roles have been defined as per the responsibility:

- **USER AGENCY**

Any user Agency have to register with the FC portal before submitting any proposal for seeking prior approval of Central Government for the diversion of forests land for non-forestry purposes. When, UA register with the portal an acknowledgement slip containing user-id and password would be sent by the system automatically to UA's registered email id. UA can login into FC portal by using user-id and password communicated through email and then UA can upload Form-A online along with all relevant documents. The User Agency can track the status of the proposal after submitting it online.

- **NODAL OFFICER (STATE FOREST DEPTT)**

After receiving the proposal online, Nodal Officer can examine the proposal for its completeness and the same will be forwarded (after assigning State Serial No.) by him/her to the divisions affected with the diversion of forest land. If proposal is not complete, Nodal Officer can raise query and may ask UA to submit the complete proposal.

The proposal will come again to Nodal Officer after the completion of process from Circle Office. After receiving the proposal from CF/CCF, the concerned Nodal Officer would process it and will upload his/her recommendations/SIR. When, Nodal officer upload these details, the proposal would be forwarded automatically to State Secretary.

- **DFO/DCF**

After receiving the proposal online from Nodal Officer, the concerned DFO can view the proposal (Form-A submitted by UA) and then may upload his/her Recommendations and Site Inspection Report. DFO level user does not have privileges to make any modification in the proposal, they can only fill up Part II of Form-A. When, DFO upload recommendation and SIR, the proposal would be forwarded to concerned Circle Officer (CF/CCF).

- **CF/CCF**

After receiving the proposal online from DFO/DCF, the concerned CF/CCF can view the proposal (Form-A submitted by UA) and recommendations of DFO and then may upload his/her Recommendations and Site Inspection Report. CF/CCF level user does not have privileges to make any modification in the proposal, they can only fill up Part III of Form-A. Or he/she may raise any query to concerned division, if required. When, Circle Officer uploads his/her recommendation and SIR, the proposal would be forwarded to concerned Nodal Officer.

- **STATE SECRETARY (STATE GOVT)**

After receiving the proposal online from Nodal Officer, the concerned State Secretary can view the proposal (Form-A submitted by UA) and recommendations of DFO, Circle and Nodal Officer and then may upload his/her Recommendations. When, State Secretary uploads these details, the proposal would be forwarded to either Regional Office or Head Office of Ministry depending upon the category and area of the project.

- **REGIONAL OFFICE**

After receiving the proposal online from State Secretary, the concerned RO can view the proposal (Form-A submitted by UA) and recommendations of DFO, Circle, Nodal Officer and State Secretary. RO level user may upload the State Advisory Group agenda, minutes on portal and then can send SAG approved

proposals to RO (HQ), Delhi for the recommendation of the Competent Authority of the Ministry of Environment, Forests & Climate Change (MoEFCC).

- **REGIONAL OFFICE (HQ), NEW DELHI**

After receiving the proposal online from RO, the RO (HQ) level user can view the proposal (Form-A submitted by UA) and recommendations of DFO, Circle, Nodal Officer, State Secretary and RO. RO(HQ) level user then process the file and process it for the approval for the Competent Authority of the MoEFCC. After taking approval of the Competent Authority, the status is updated on the portal and the proposal is forwarded to RO for issuing the Stage-I clearance.

- **MoEF HEAD OFFICE, NEW DELHI**

After receiving the proposal online from RO, the MoEFCC (HO) level user can view the proposal (Form-A submitted by UA) and recommendations of DFO, Circle, Nodal Officer, State Secretary and RO. MoEFCC (HO) level user then process the file and process it for the approval of the Competent Authority of MoEF CC. After taking approval of the Competent Authority, he/she has to update the status of the proposal and upload the approval letter on the portal.

- **District Collector (DC)**

After viewing the proposal, DC may upload FRA document. The same could be uploaded by Nodal Officer also.

- ## WORK FLOW

User Agency can register to get the login credentials from http://forestsclearance.nic.in. Thereafter, project details can be submitted along with all required documents [Form-A (Part-I) etc.]. When UA submits all these details, an acknowledgement letter would be sent (by System) to email-id of User Agency. Acknowledgement letter may contain some information including unique proposal number. UA may refer this unique proposal number for future reference.

Nodal Officer scrutinizes the proposal (within 10 days) and sends an acceptance letter to User Agency, if all relevant documents are uploaded properly by UA. If any document is missing or any other information is needed, Nodal Officer may ask UA to upload those missing information. Timeline will start only, if Nodal officer accepts the proposal.

When, Nodal Officer sends the acceptance letter to UA, proposal details are forwarded automatically to concerned DFOs and DCs for their necessary action.

DFO can view the proposal after logging in to portal and can take print out (if needed) of the entire details and then process it. After that, he/she uploads the part-II of Form-A on the portal along with his/her recommendation and Site Inspection report.

When, DFO uploads his/her recommendation and Site Inspection Reports on the portal, proposal details are forwarded automatically to concerned CF/CCF for the necessary action.

District Collector (DC) can view the proposal after logging in to portal. He/she may upload FRA document (that must include Forest rights settlement details) on the portal. This document can be uploaded by Nodal Officer also when proposal reaches to him after processing by Circle office.

CF/CCF can view the proposal and recommendation of DFO after logging in to portal and can take print out (if needed) of the entire details and then process it. After that, he/she uploads the part-III of Form-A on the portal along with his/her recommendation and Site Inspection report (if site inspection done).

When, CF/CCF uploads his/her recommendation and Site Inspection Reports on the portal, proposal details are forwarded automatically to concerned Nodal Officer for the necessary action.

Nodal Officer can view the proposal and recommendations of DFO and CF/CCF after logging in to portal and can take print out (if needed) of the entire details and then process it. After that, he/she uploads the part-IV of Form-A on the portal along with his/her recommendation and Site Inspection report (if site inspection done).

When, Nodal Officer uploads his/her recommendation and Site Inspection Reports on the portal, proposal details are forwarded automatically to concerned State Secretary for the necessary action.

State Secretary can view the proposal and recommendations of DFO, CF/CCF and Nodal Officer after logging in to portal and can take print out (if needed) of the entire details and then process it. After that, he/she uploads the part-V of Form-A on the portal along with his/her recommendation.

When, State Secretary uploads his/her recommendation on the portal, proposal details are forwarded automatically to concerned Regional Office or Head Office, Delhi as per the flow defined in the system.

Note:

- All proposals related with diversion of forest land from 0 to 40 ha are forwarded to Regional Office.

- All proposals related with diversion of forest land for more than 40 ha are forwarded directly to Head Office, Delhi for the processing at Head Office (MoEF, Delhi).

Regional Office can view the proposal and recommendations of DFO, CF/CCF, Nodal Officer and State Secretary after logging in to portal and can take print out (if needed) of the entire details and then process it.

- The fate of the proposals related with diversion of forest land up to 5 ha (except mining and regularization of encroachments) is decided at RO (without any State Advisory Group/Regional Empowered Committee meeting).

- RO conducts SAG/REC meetings for the proposals related with diversion of forest land up to 5 ha (Mining and regularization of encroachments only) and all other projects related with diversion of forest land from 5 to 40 ha. Then, RO forwards these proposals (along with recommendation of SAG/REC) to RO(HQ), Delhi for the approval of Competent Authority of Ministry of Environment, Forests & Climate Change.

Regional Office (HQ), Delhi can view the proposal and recommendations of DFO, CF/CCF, Nodal Officer, State Secretary and Regional Office after logging in to portal and can take print out (if needed) of the entire details and then process it for the approval of the Competent Authority of the MoEFCC.

HO (Delhi)can view the proposal and recommendations of DFO, CF/CCF, Nodal Officer, State Secretary and Regional Office after logging in to portal and

can take print out (if needed) of the entire details and then conducts FAC meetings.

- HO may ask Regional Office to upload site inspection reports in cases in which area is more than 100 ha.

- FAC recommendations (along with decision of Competent Authority) and agenda and minutes of the meeting are uploaded on portal.

Automatic mailer notifications will be triggered for each and every transaction committed in the OSMFC System.

The status of proposal will be updated at each transaction and the same would be reflected automatically in the reports available in public domain.

• NEW USER AGENCY REGISTRATION AND LOGIN

- NEW REGISTRATION

User Agency: For submitting the proposal, a user agency has to register Online at FC portal. Registration can be done in the following manner:

- Type http://forestsclearance.nic.in in the address bar of the web browser i.e. Internet Explorer, Mozilla Firefox, Google Chrome etc. and press Enter.

A **Home** page of OSMFCP portal will appear as shown in Figure-2.1.

- Click on Register New User Agency as shown in the Figure-2.1.

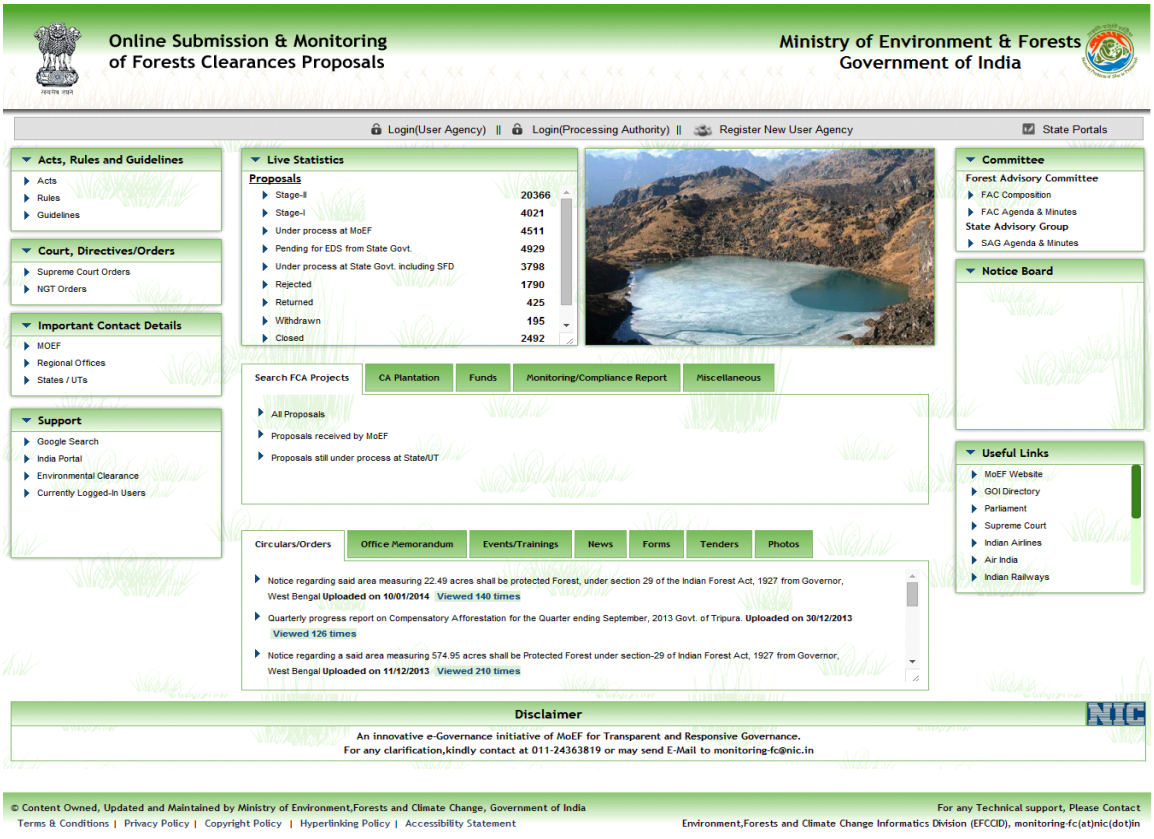

Figure-2.1: Home Page of OSMFCP portal

New User Registration Form of the **Online Submission and Monitoring of Forests Clearances Proposals** portal will appear as shown in Figure-2.2.

Figure-2.2 : New User Registration Form of OSMFCP

- Fill-in the data in the above mentioned form and then press '**SUBMIT**' button.

After successful registration, new user will get the notification on registered email-id.

- LOGIN

To login into the FC portal, do the following:

- Click on the Login (User Agency) as shown in figure 2.3.

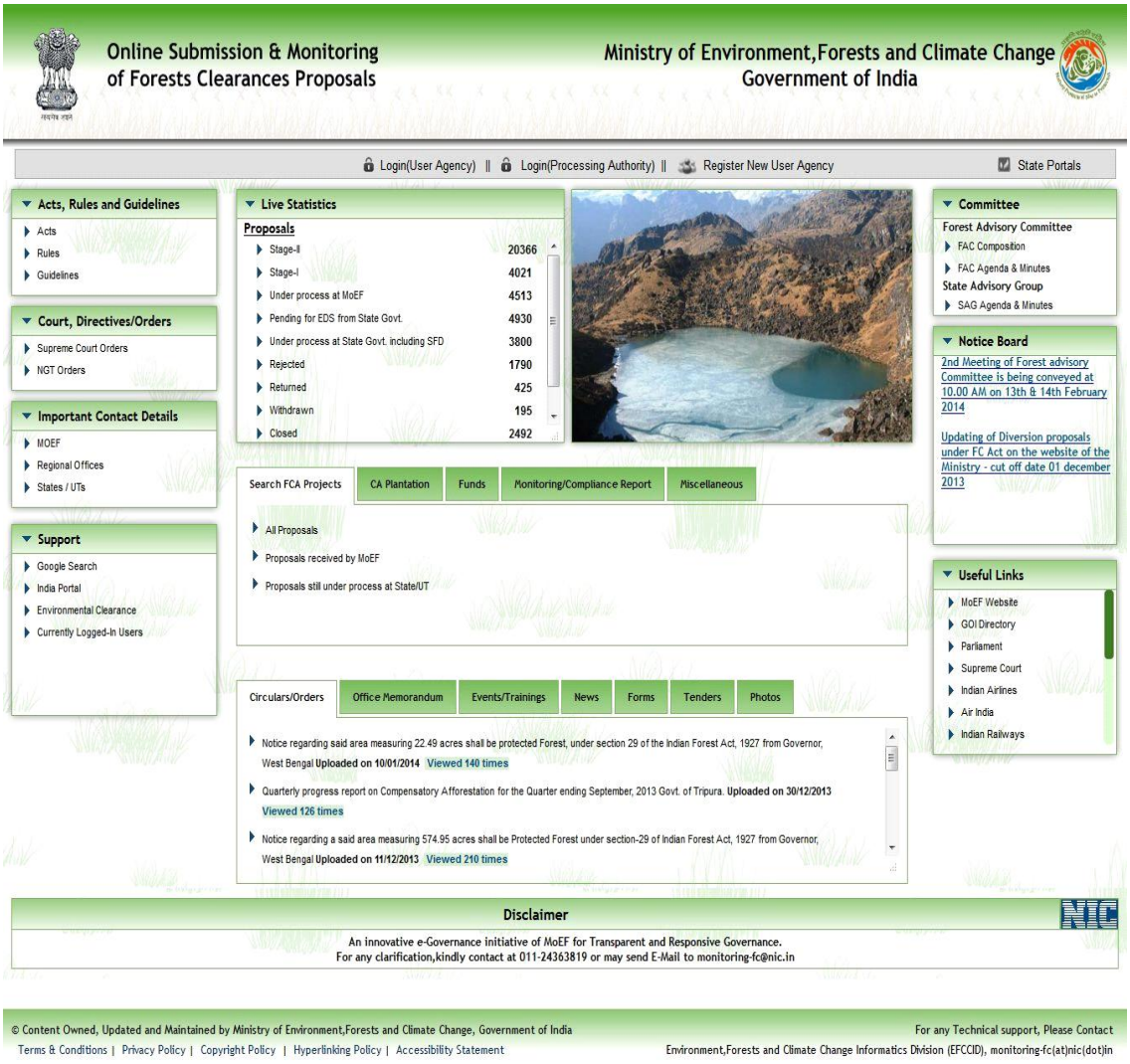

Figure-2.3: Home Page of OSMFCP

Login Form of FC portal will appear as shown in the figure 2.4

Figure-2.4: Login Page of OSMFCP

- Type the user id in the text box.
- Type the password in the **Password** text box.
- Type the code in the text box shown in the **Captcha** image below it.
- Click on **Login** button as shown in Figure-2.4.

After successful login, Change password page will be displayed as shown in figure 2.5

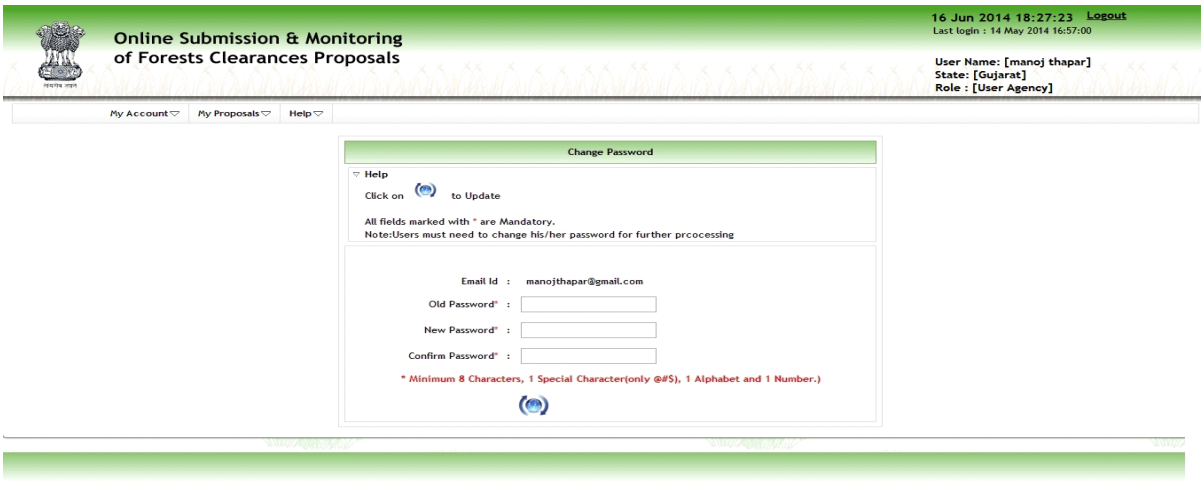

Figure- 2.5: Change password screen

User Agency has to change password assigned through email generated after registration. When User Agency changes the password, the following page (Figure-2.6) would be displayed on screen.

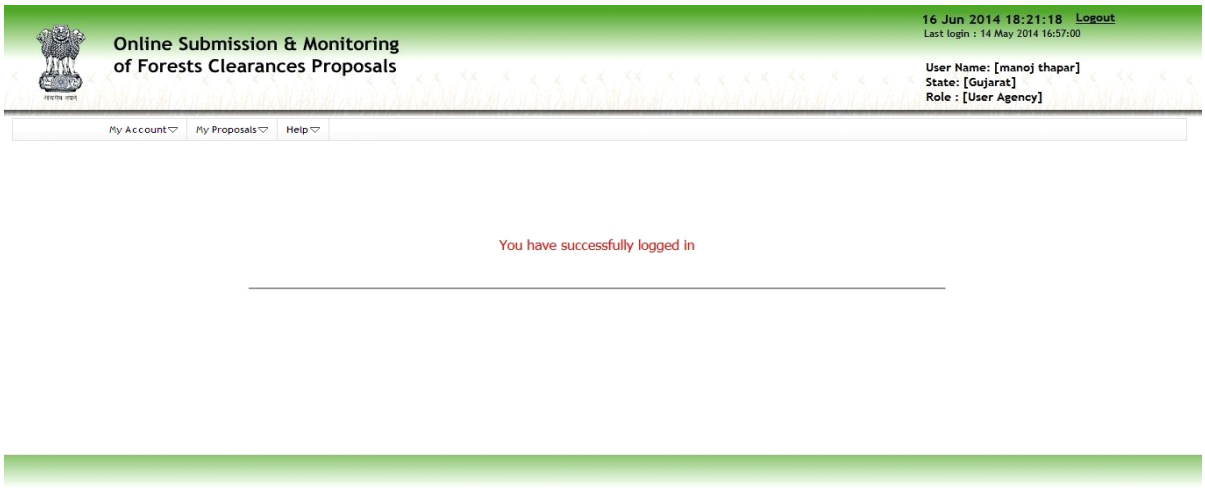

Figure- 2.6: First time logged in page for the UA

The option for changing password is available under '**My Account'** tab also as shown in the figure 2.7.

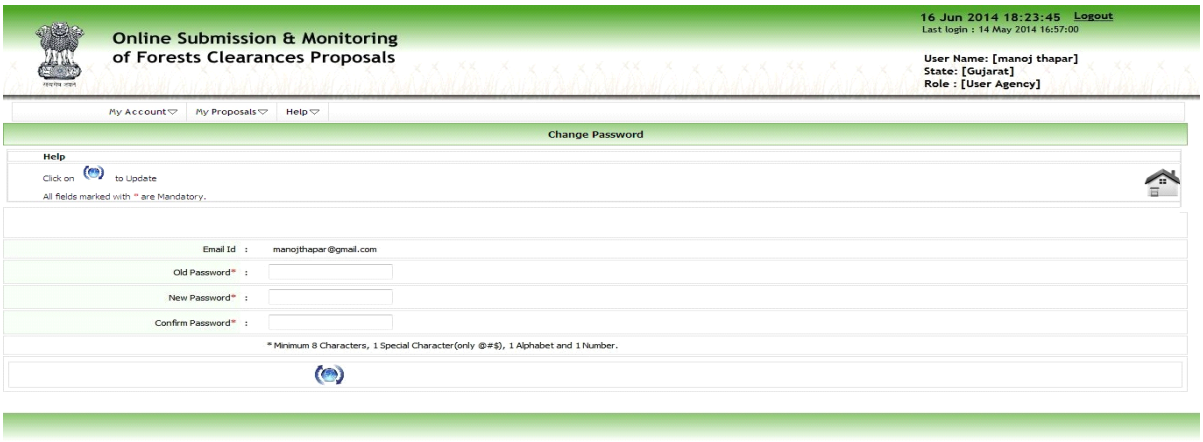

Figure- 2.7: Change password screen

- LOGOUT

To logout from OSMFCP portal, click on the option **"Logout"** at the right corner of the screen as shown in the figure 2.6.

• ADDING, EDITING &TRACKING PROPOSALS

- ADD NEW PROPOSAL

User Agency can submit details of the proposals (Form-A, Part-I) seeking prior forests clearance for the diversion of forests land to be diverted for non-forestry purposes. After submitting the proposal details, UA can track the status of the proposal submitted as per the flow defined in the system. They are supposed to check their emails and SMSs for further action at their end. To submit a new proposal, following procedure may be adopted:

- To add a new proposal, click on '**My Proposals**' tab. Then click on the **Allocation of Fresh Forest land (Form-A)** link available under '**Add New Proposal'** link as shown in Figure 3.1.

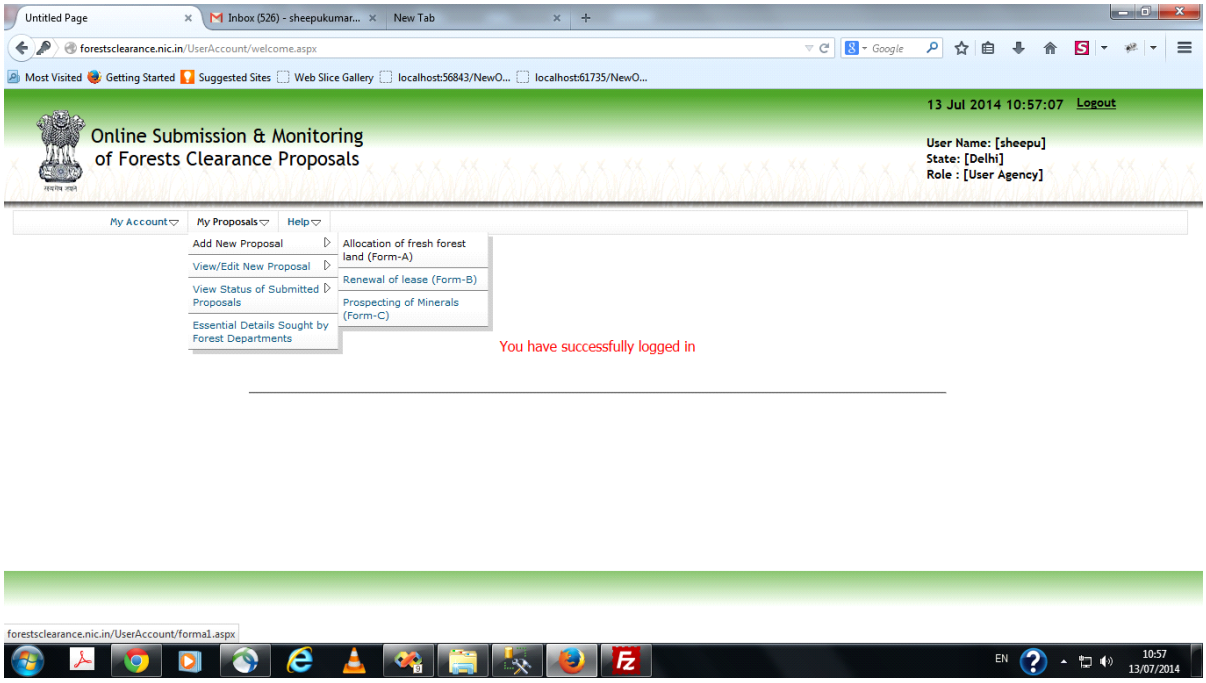

Figure 3.1: First screen for Adding New Proposal

- After clicking on '**Allocation of Fresh Forest land (Form-A)**', Form-A will be displayed on screen as shown in figure-3.2.

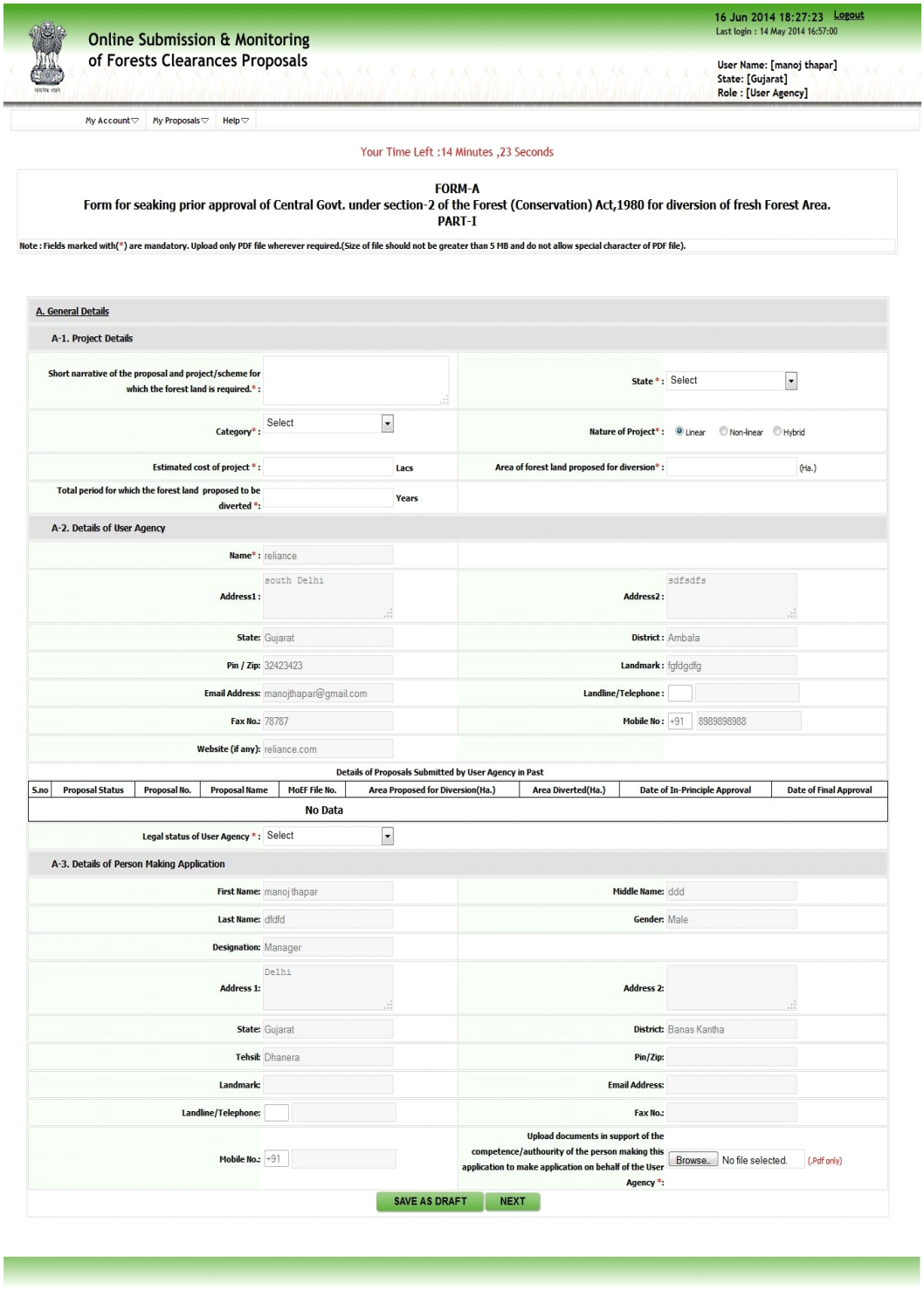

Figure: 3.2 Details of Form-A, Part-I to be filled in by UA

- Fill up the form (Form-A, Part-I) displayed at Figure 3.2.

Note: Form-A contains four (7) pages for the proposals for all categories except Mining sector. Form-A for Mining cases contains Five (9) pages. User Agency is advised to follow all the instructions given on the pages. The parameters marked with * are mandatory.

- User Agency can save the proposal in Draft mode by clicking on '**Save as Draft**' button available on first page of Form-A, Part-I or they may click on '**Next**' button for filling up other pages. If '**Save as Draft**' button is clicked, a Unique proposal no. will be generated automatically by the system and the same would be communicated to the user through pop-up message. If user clicks on '**OK**' of pop-up message, control will come back to the first page. Then UA may fill up other pages by clicking on '**Next**' button.

- User Agency has to click on '**Save as Draft**' or '**Save and lock'** button available on last page for saving the entire form.

Note: Modifications can be made in the proposal, if it is saved by clicking on '**Save in Draft'** button. No change can be made in the proposal, if it is saved by clicking on '**Save & lock**' button. Please ensure that all details have been uploaded properly before saving in **lock** mode.

- After successfully addition of proposal, an acknowledgement letter is emailed automatically to the email-id of User Agency and the proposal is sent to the concerned Nodal Officer for further necessary action. Concerned Nodal Officer will get the email notification alert. User Agency can submit original proposal to Nodal Officer along with acknowledgement letter and other relevant documents. Similarly, other proposals (Form-B and Form-C) can be submitted through the portal.

- UPDATE NEW PROPOSAL

The details of the proposals can be updated by User Agency if these details have been submitted by clicking on '**Save as Draft**' button. No change can be made if proposal is **saved and locked**. To update the submitted proposal, the following procedure may be adopted:

Step 1: To update a proposal, click on '**My Proposals**' tab. Then click on the **View/Edit Form-A** link available under '**View/Edit New Proposal**' link as shown in Figure 3.4.

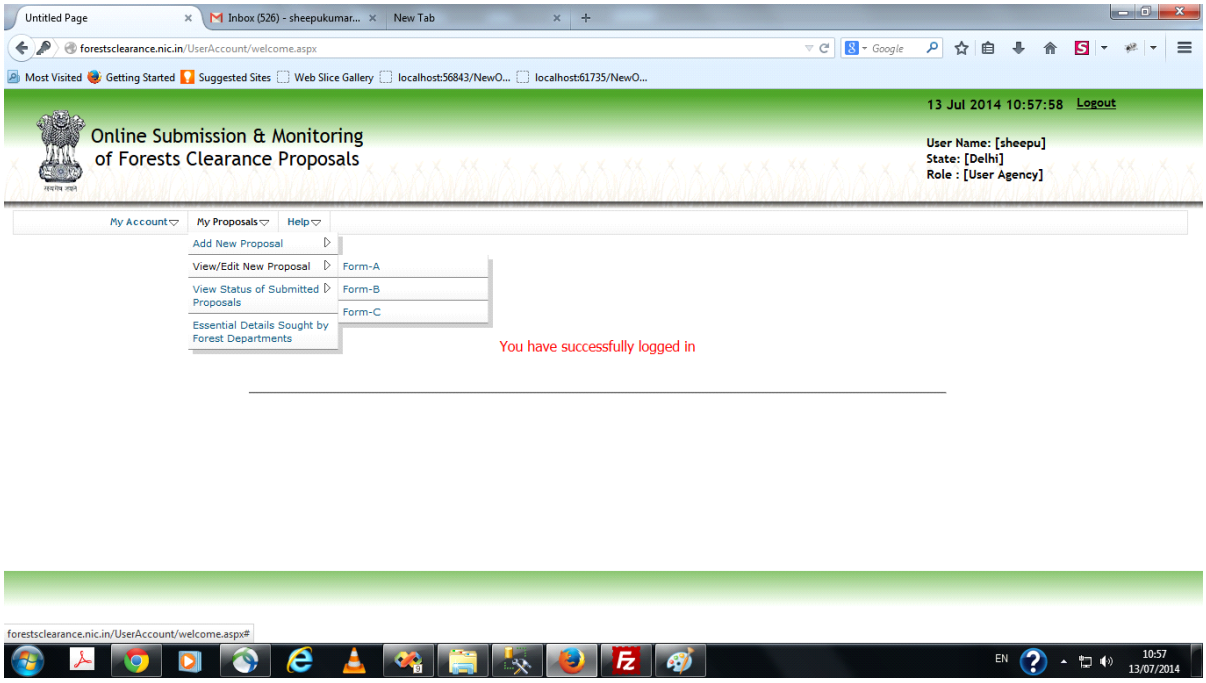

Figure 3.4: First screen for viewing/editing new proposal

Step 2: After clicking on '**View/Edit Form-A**' link, the following will be displayed on screen as shown in figure-3.5

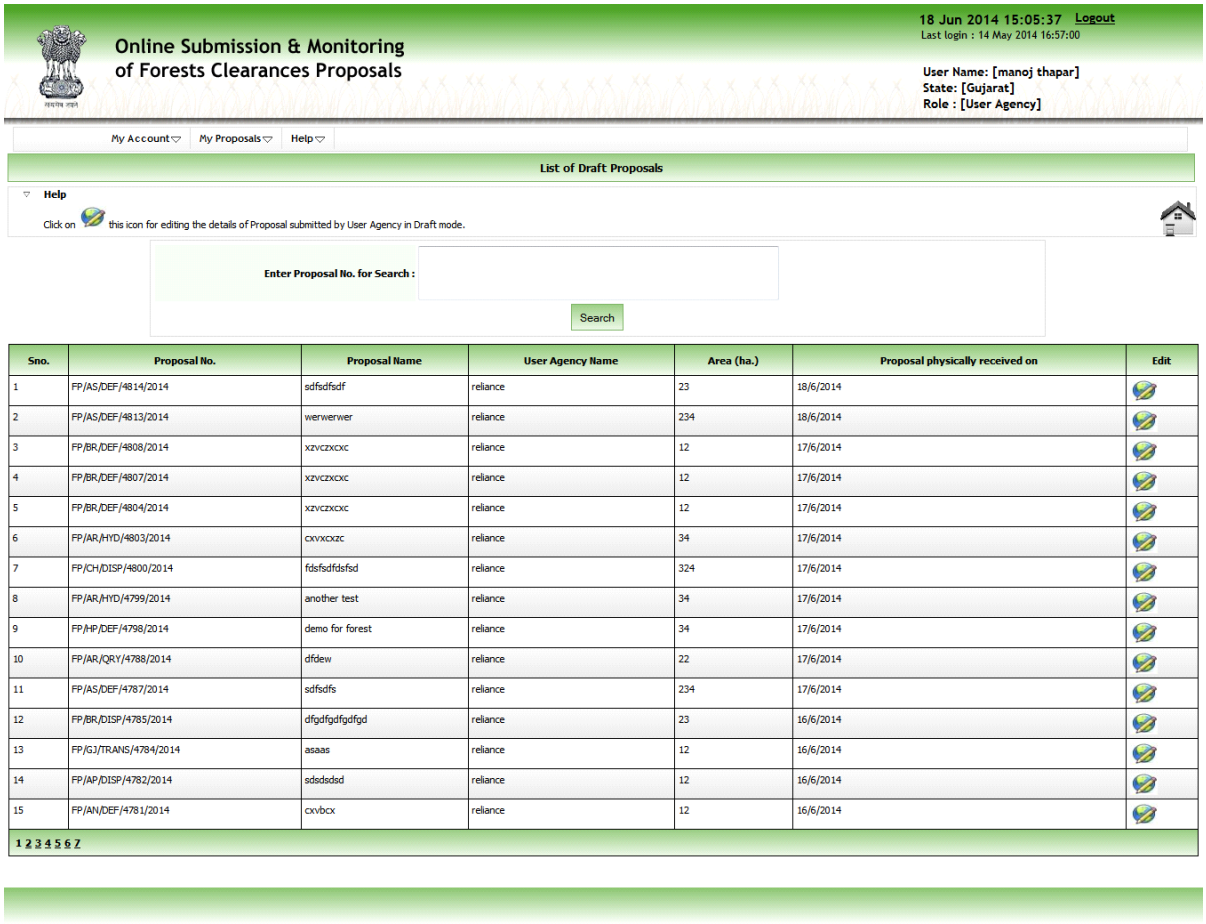

Figure 3.5: Second screen for viewing/editing new proposal

- Step 3: Click on Edit icon displayed against proposal no. to view/edit the proposal details. After clicking on Edit icon, Edit/View form will be displayed as shown in Figure-3.6. User Agency can update the information and then may submit it by clicking on '**Save & lock**' button. Once application is saved by using this option, no further changes can be made in the proposal. Similarly, other proposals (Form-B and Form-C) can be edited on the portal.

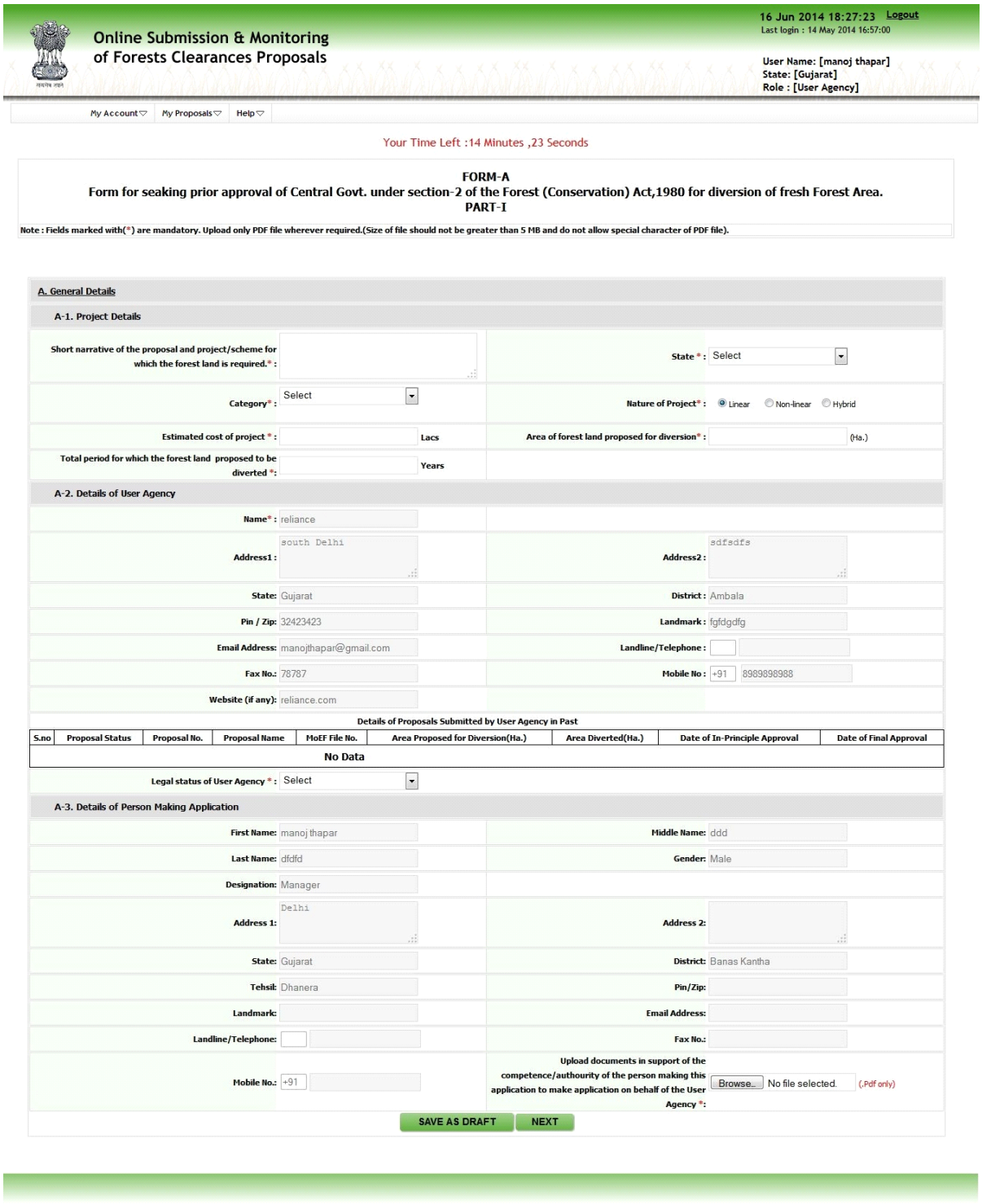

Figure 3.6: Second screen for viewing/editing new proposal

- VIEW STATUS OF SUBMITTED PROPOSALS

User Agency can see online decision and status of concerned submitted proposals by clicking on the **View Status of Submitted Proposals** link under **My Project** option as shown in the Figure 3.7. Similarly, status of other proposals (Form-B and Form-C) can also be viewed on portal.

Figure-3.7: Status of Submitted Proposals

- ESSENTAIL DETAILS SOUGHT BY FOREST DEPARTMENT

After submission of proposal successfully, Forest department may sought essential details from User Agency at any level (Nodal Officer/DFO/Circle etc) during processing of proposal. An email/sms alert will be sent by Forest department to User Agency for the same. User Agency can view the details needed by forest department for further processing. The following steps could be followed for the same.

- Click on **Essential Details Sought by Forest Department** link under **My Proposals**. Then, the following details will be displayed on screen.

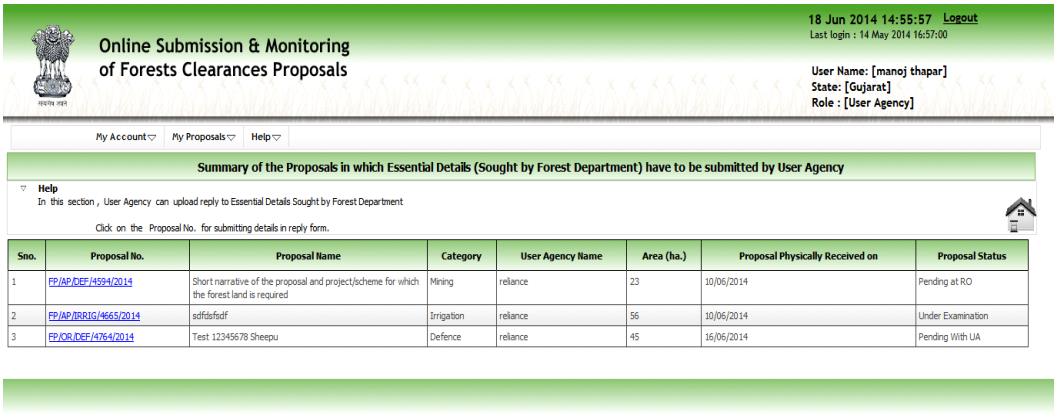

Figure-3.8 Screen showing summary of proposals in which essential details have to be submitted by UA

- User Agency can view the Essential Details Sought (EDS) by Forest department as shown in figure 3.9 and then may reply to the query. The system will show the status of the proposal as '**Pending at UA**" till the reply is uploaded on portal.

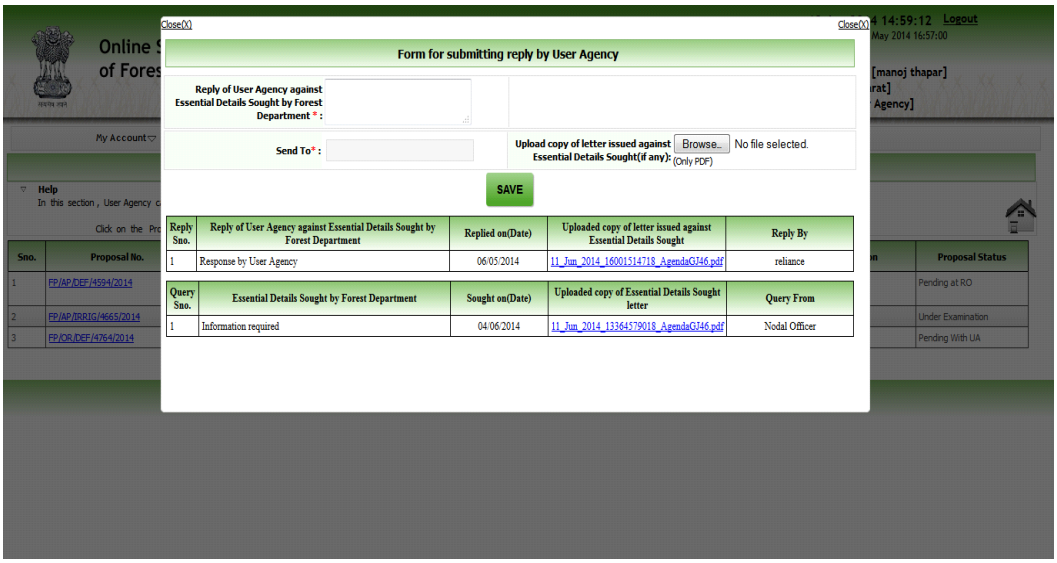

Figure-3.9Form for submitting reply by UA

This completes the process at User Agency.

• ANNEXURE A

Frequently Asked Questions (FAQs)

- **What does OSMFCP stand for?**

Ans. Online Submission and Monitoring of Forests Clearances Proposals.

- **What does UA stand for?**

Ans. User Agency.

- **How UA can register and login on the OMSFCP portal?**

Ans. User Agency can click on Register (New User Agency) tab available on main page of the portal (http://forestsclearance.nic.in). Then a registration form will be displayed on the screen. When UA submits Registration form, then a user-id (email of UA) and password will be emailed automatically to UA's email-id. UA can login with these credentials.

- **Where is all the information regarding the OSMFCP residing?**

Ans. All the proposal information is available on Forests Clearance portal. Click here to visit.

- **What are the key benefits for the department adopting the Online Submission and Monitoring of Forests Clearances Proposals?**

Ans. It provides transparency and efficiency in the working environment, minimizes the processing delay, helps in timely disposal of important issues, enables one to work from anywhere, anytime, leads to a paperless working and provides ease and flexibility in the retrieval of various reports.

- **Are all the necessary fields required to be filled while submitting the proposal online?**

Ans. All the required field should be filled otherwise system will not allow submitting the proposal.

- **Is it possible to add more proposals after the acceptance for consideration of the proposal submitted by UA?**

Ans. Yes, the UA can add more proposals after acceptance of a proposal by forest department.

- **How Forest department will inform UAs if any additional information is sought from them?**

Ans.UA will receive an email if any additional information is sought by forest department. The same could be viewed by UA by clicking on **Essential Details sought by Forest department** under **My proposals.**

- **Is it possible to see the contact detail of Ministry Nodal Officer for Private Entrepreneur?**

Ans. Yes, List of Nodal Officers is available on the website.

- **Can Private Entrepreneur/UA track the progress of their proposal?**

Ans. Yes, they can see the progress as well as the decisions.

- **Is Captcha code necessary?**

Ans. Yes, due to the Security Guidelines, it is necessary to insert the code at every transaction.

- **Is it mandatory to change the password from default given password?**

Ans. Yes, it is mandatory to change the password on first login after receiving the default password.

- **Is it possible to see the list of all the proposals submitted by UA?**

Ans. Yes, the list of projects considered by PMG is available on the website.

- **Can more than one proposal be added by one user agency?**

Ans. Yes, more than one proposal can be added by one user agency.

(Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii)
MINISTRY OF ENVIRONMENT AND FORESTS

New Delhi 14th September, 2006

Notification

S.O. 1533 Whereas, a draft notification **under sub-rule (3) of Rule 5 of the Environment (Protection) Rules, 1986 for imposing** certain restrictions and prohibitions on new projects or activities, or on the expansion or modernization of existing projects or activities based on their potential environmental impacts as indicated in the Schedule to the notification, being undertaken in any part of India[1], unless prior environmental clearance has been accorded in accordance with the objectives of National Environment Policy **as approved by the Union Cabinet on 18th May, 2006** and the procedure specified in the notification, by the Central Government or the State or Union territory Level Environment Impact Assessment Authority (SEIAA), to be constituted by the Central Government in consultation with the State Government or the Union territory Administration concerned under sub-section (3) of section 3 of the Environment (Protection) Act, 1986 for the purpose of this notification, was published in the Gazette of India ,Extraordinary, Part II, section 3, sub-section (ii) vide number S.O. 1324 (E) dated the 15th September ,2005 inviting objections and suggestions from all persons likely to be affected thereby within a period of sixty days from the date on which copies of Gazette containing the said notification were made available to the public;

And whereas, copies of the said notification were made available to the public on 15th September, 2005;

And whereas, all objections and suggestions received in response to the above mentioned draft notification have been duly considered by the Central Government;

Now, therefore, in exercise of the powers conferred by sub-section (1) and clause (v) of sub-section (2) of section 3 of the Environment (Protection) Act, 1986, read with clause (d) of sub-rule (3) of rule 5 of the Environment (Protection) Rules, 1986 and in supersession of the notification number S.O. 60 (E) dated the 27th January, 1994, except in respect of things done or omitted to be done before such supersession, the Central Government hereby directs that on and from the date of its publication the required construction of new projects or activities or the expansion or modernization of existing projects or activities listed in the Schedule to this notification entailing capacity addition with change in process and or technology shall be undertaken in any part of India only after the prior environmental clearance from the Central Government or as the case may be, by the State Level Environment Impact Assessment Authority, duly constituted by the Central Government under sub-section (3) of section 3 of the said Act, in accordance with the procedure specified hereinafter in this notification.

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[1]Includes the territorial waters

2. Requirements of prior Environmental Clearance (EC):- The following projects or activities shall require prior environmental clearance from the concerned regulatory authority, which shall hereinafter referred to be as the Central Government in the Ministry of Environment and Forests for matters falling under Category 'A' in the Schedule and at State level the State Environment Impact Assessment Authority (SEIAA) for matters falling under Category 'B' in the said Schedule, before any construction work, or preparation of land by the project management except for securing the land, is started on the project or activity:

(i) All new projects or activities listed in the Schedule to this notification;

(ii) Expansion and modernization of existing projects or activities listed in the Schedule to this notification with addition of capacity beyond the limits specified for the concerned sector, that is, projects or activities which cross the threshold limits given in the Schedule, after expansion or modernization;

(iii) Any change in product - mix in an existing manufacturing unit included in Schedule beyond the specified range.

3. State Level Environment Impact Assessment Authority:- (1) A State Level Environment Impact Assessment Authority hereinafter referred to as the SEIAA shall be constituted by the Central Government under sub-section (3) of section 3 of the Environment (Protection) Act, 1986 comprising of three Members including a Chairman and a Member – Secretary to be nominated by the State Government or the Union territory Administration concerned.

(2) The Member-Secretary shall be a serving officer of the concerned State Government or Union territory administration familiar with environmental laws.

(3) The other two Members shall be either a professional or expert fulfilling the eligibility criteria given in Appendix VI to this notification.

(4) One of the specified Members in sub-paragraph (3) above who is an expert in the Environmental Impact Assessment process shall be the Chairman of the SEIAA.

(5) The State Government or Union territory Administration shall forward the names of the Members and the Chairman referred in sub- paragraph 3 to 4 above to the Central Government and the Central Government shall constitute the SEIAA as an authority for the purposes of this notification within thirty days of the date of receipt of the names.

(6) The non-official Member and the Chairman shall have a fixed term of three years (from the date of the publication of the notification by the Central Government constituting the authority).

(7) All decisions of the SEIAA shall be unanimous and taken in a meeting.

4. Categorization of projects and activities:-

(i) All projects and activities are broadly categorized in to two categories - Category A and Category B, based on the spatial extent of potential impacts and potential impacts on human health and natural and man made resources.

(ii) All projects or activities included as Category 'A' in the Schedule, including expansion and modernization of existing projects or activities and change in product mix, shall require prior environmental clearance from the Central Government in the Ministry of Environment and Forests (MoEF) on the recommendations of an Expert Appraisal Committee (EAC) to be constituted by the Central Government for the purposes of this notification;

(iii) All projects or activities included as Category 'B' in the Schedule, including expansion and modernization of existing projects or activities as specified in sub paragraph (ii) of paragraph 2, or change in product mix as specified in sub paragraph (iii) of paragraph 2, but excluding those which fulfill the General Conditions (GC) stipulated in the Schedule, *will* require prior environmental clearance from the State/Union territory Environment Impact Assessment Authority (SEIAA). The SEIAA shall base its decision on the recommendations of a State or Union territory level Expert Appraisal Committee (SEAC) as to be constituted for in this notification. In the absence of a duly constituted SEIAA or SEAC, a Category 'B' project shall be treated as a Category 'A' project;

5. Screening, Scoping and Appraisal Committees:-

The same Expert Appraisal Committees (EACs) at the Central Government and SEACs (hereinafter referred to as the (EAC) and (SEAC) at the State or the Union territory level shall screen, scope and appraise projects or activities in Category 'A' and Category 'B' respectively. EAC and SEAC's shall meet at least once every month.

(a) The composition of the EAC shall be as given in Appendix VI. The SEAC at the State or the Union territory level shall be constituted by the Central Government in consultation with the concerned State Government or the Union territory Administration with identical composition;

(b) The Central Government may, with the prior concurrence of the concerned State Governments or the Union territory Administrations, constitutes one SEAC for more than one State or Union territory for reasons of administrative convenience and cost;

(c) The EAC and SEAC shall be reconstituted after every three years;

(d) The authorised members of the EAC and SEAC, concerned, may inspect any site(s) connected with the project or activity in respect of which the prior environmental clearance is sought, for the purposes of screening or scoping or appraisal, with prior notice of at least seven days to the applicant, who shall provide necessary facilities for the inspection;

(e) The EAC and SEACs shall function on the principle of collective responsibility. The Chairperson shall endeavour to reach a consensus in each case, and if consensus cannot be reached, the view of the majority shall prevail.

6. Application for Prior Environmental Clearance (EC):-

An application seeking prior environmental clearance in all cases shall be made in the prescribed Form 1 annexed herewith and Supplementary Form 1A, if applicable, as given in Appendix II, after the identification of prospective site(s) for the project and/or activities to which the application relates, before commencing any construction activity, or preparation of land, at the site by the applicant. The applicant shall furnish, along with the application, a copy of the pre-feasibility project report except that, in case of construction projects or activities (item 8 of the Schedule) in addition to Form 1 and the Supplementary Form 1A, a copy of the conceptual plan shall be provided, instead of the pre-feasibility report.

7. Stages in the Prior Environmental Clearance (EC) Process for New Projects:-

7(i) The environmental clearance process for new projects will comprise of a maximum of four stages, all of which may not apply to particular cases as set forth below in this notification. These four stages in sequential order are:-

- Stage (1) Screening (Only for Category 'B' projects and activities)
- Stage (2) Scoping
- Stage (3) Public Consultation
- Stage (4) Appraisal

I. **Stage (1) - Screening**:

In case of Category 'B' projects or activities, this stage will entail the scrutiny of an application seeking prior environmental clearance made in Form 1 by the concerned State level Expert Appraisal Committee (SEAC) for determining whether or not the project or activity requires further environmental studies for preparation of an Environmental Impact Assessment (EIA) for its appraisal prior to the grant of environmental clearance depending up on the nature and location specificity of the project . The projects requiring an Environmental Impact Assessment report shall be termed Category 'B1' and remaining projects shall be termed Category 'B2' and will not require an Environment Impact Assessment report. For categorization of projects into B1 or B2 except item 8 (b), the Ministry of Environment and Forests shall issue appropriate guidelines from time to time.

II. **Stage (2) - Scoping**:

(i) "Scoping": refers to the process by which the Expert Appraisal Committee in the case of Category 'A' projects or activities, and State level Expert Appraisal Committee in the case of Category 'B1' projects or activities, including applications for expansion and/or modernization and/or change in product mix of existing projects or activities, determine detailed and comprehensive Terms Of Reference (TOR) addressing all relevant environmental concerns for the preparation of an Environment Impact Assessment (EIA) Report in respect of the project or activity for which prior environmental clearance is sought. The Expert Appraisal Committee or State level Expert Appraisal Committee concerned shall determine the Terms of Reference on the basis of the information furnished in the prescribed application Form1/Form 1A including Terns of Reference proposed by the applicant, a site visit by a sub- group of Expert Appraisal Committee or State level Expert Appraisal Committee concerned only if considered necessary by the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned, Terms of Reference suggested by the applicant if furnished and other information that may be available with the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned. All projects and activities listed as Category 'B' in Item 8 of the Schedule (Construction/Township/Commercial Complexes /Housing) shall not require Scoping and will be appraised on the basis of Form 1/ Form 1A and the conceptual plan.

(ii) The Terms of Reference (TOR) shall be conveyed to the applicant by the Expert Appraisal Committee or State Level Expert Appraisal Committee as concerned within sixty days of the receipt of Form 1. In the case of Category A Hydroelectric projects Item 1(c) (i) of the Schedule the Terms of Reference shall be conveyed along with the clearance for pre-construction activities .If the Terms of Reference are not finalized and conveyed to the applicant within sixty days of the receipt of Form 1, the Terms of Reference suggested by the applicant shall be deemed as the final Terms of Reference approved for the EIA studies**.** The approved Terms of

Reference shall be displayed on the website of the Ministry of Environment and Forests and the concerned State Level Environment Impact Assessment Authority.

(iii) Applications for prior environmental clearance may be rejected by the regulatory authority concerned on the recommendation of the EAC or SEAC concerned at this stage itself. In case of such rejection, the decision together with reasons for the same shall be communicated to the applicant in writing within sixty days of the receipt of the application.

III. **Stage (3) - Public Consultation**:

(i) "Public Consultation" refers to the process by which the concerns of local affected persons and others who have plausible stake in the environmental impacts of the project or activity are ascertained with a view to taking into account all the material concerns in the project or activity design as appropriate. All Category 'A' and Category B1 projects or activities shall undertake Public Consultation, except the following:-

(a) modernization of irrigation projects (item 1(c) (ii) of the Schedule).

(b) all projects or activities located within industrial estates or parks (item 7(c) of the Schedule) approved by the concerned authorities, and which are not disallowed in such approvals.

(c) expansion of Roads and Highways (item 7 (f) of the Schedule) which do not involve any further acquisition of land.

(d) all Building /Construction projects/Area Development projects and Townships (item 8).

(e) all Category 'B2' projects and activities.

(f) all projects or activities concerning national defence and security or involving other strategic considerations as determined by the Central Government.

(ii) The Public Consultation shall ordinarily have two components comprising of:-

(a) a public hearing at the site or in its close proximity- district wise, to be carried out in the manner prescribed in Appendix IV, for ascertaining concerns of local affected persons;

(b) obtain responses in writing from other concerned persons having a plausible stake in the environmental aspects of the project or activity.

(iii) the public hearing at, or in close proximity to, the site(s) in all cases shall be conducted by the State Pollution Control Board (SPCB) or the Union territory Pollution Control Committee (UTPCC) concerned in the specified manner and forward the proceedings to the regulatory authority concerned within 45(forty five) of a request to the effect from the applicant.

(iv) in case the State Pollution Control Board or the Union territory Pollution Control Committee concerned does not undertake and complete the public hearing within the specified period, and/or does not convey the proceedings of the public hearing within the prescribed period

directly to the regulatory authority concerned as above, the regulatory authority shall engage another public agency or authority which is not subordinate to the regulatory authority, to complete the process within a further period of forty five days,.

(v) If the public agency or authority nominated under the sub paragraph (iii) above reports to the regulatory authority concerned that owing to the local situation, it is not possible to conduct the public hearing in a manner which will enable the views of the concerned local persons to be freely expressed, it shall report the facts in detail to the concerned regulatory authority, which may, after due consideration of the report and other reliable information that it may have, decide that the public consultation in the case need not include the public hearing.

(vi) For obtaining responses in writing from other concerned persons having a plausible stake in the environmental aspects of the project or activity, the concerned regulatory authority and the State Pollution Control Board (SPCB) or the Union territory Pollution Control Committee (UTPCC) shall invite responses from such concerned persons by placing on their website the Summary EIA report prepared in the format given in Appendix IIIA by the applicant along with a copy of the application in the prescribed form , within seven days of the receipt of a written request for arranging the public hearing . Confidential information including non-disclosable or legally privileged information involving Intellectual Property Right, source specified in the application shall not be placed on the web site**.** The regulatory authority concerned may also use other appropriate media for ensuring wide publicity about the project or activity. The regulatory authority shall, however, make available on a written request from any concerned person the Draft EIA report for inspection at a notified place during normal office hours till the date of the public hearing. All the responses received as part of this public consultation process shall be forwarded to the applicant through the quickest available means.

(vii) After completion of the public consultation, the applicant shall address all the material environmental concerns expressed during this process, and make appropriate changes in the draft EIA and EMP. The final EIA report, so prepared, shall be submitted by the applicant to the concerned regulatory authority for appraisal. The applicant may alternatively submit a supplementary report to draft EIA and EMP addressing all the concerns expressed during the public consultation.

IV. Stage (4) - Appraisal:

(i) Appraisal means the detailed scrutiny by the Expert Appraisal Committee or State Level Expert Appraisal Committee of the application and other documents like the Final EIA report, outcome of the public consultations including public hearing proceedings, submitted by the applicant to the regulatory authority concerned for grant of environmental clearance. This appraisal shall be made by Expert Appraisal Committee or State Level Expert Appraisal Committee concerned in a transparent manner in a proceeding to which the applicant shall be invited for furnishing necessary clarifications in person or through an authorized representative. On conclusion of this proceeding, the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned shall make categorical recommendations to the regulatory authority concerned either for grant of prior environmental clearance on stipulated terms and conditions, or rejection of the application for prior environmental clearance, together with reasons for the same.

(ii) The appraisal of all projects or activities which are not required to undergo public consultation, or submit an Environment Impact Assessment report, shall be carried out on the basis of the prescribed application Form 1 and Form 1A as applicable, any other relevant

validated information available and the site visit wherever the same is considered as necessary by the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned.

(iii) The appraisal of an application be shall be completed by the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned within sixty days of the receipt of the final Environment Impact Assessment report and other documents or the receipt of Form 1 and Form 1 A, where public consultation is not necessary and the recommendations of the Expert Appraisal Committee or State Level Expert Appraisal Committee shall be placed before the competent authority for a final decision within the next fifteen days .The prescribed procedure for appraisal is given in Appendix V ;

7(ii). Prior Environmental Clearance (EC) process for Expansion or Modernization or Change of product mix in existing projects:

All applications seeking prior environmental clearance for expansion with increase in the production capacity beyond the capacity for which prior environmental clearance has been granted under this notification or with increase in either lease area or production capacity in the case of mining projects or for the modernization of an existing unit with increase in the total production capacity beyond the threshold limit prescribed in the Schedule to this notification through change in process and or technology or involving a change in the product –mix shall be made in Form I and they shall be considered by the concerned Expert Appraisal Committee or State Level Expert Appraisal Committee within sixty days, who will decide on the due diligence necessary including preparation of EIA and public consultations and the application shall be appraised accordingly for grant of environmental clearance.

8.Grant or Rejection of Prior Environmental Clearance (EC):

(i) The regulatory authority shall consider the recommendations of the EAC or SEAC concerned and convey its decision to the applicant within forty five days of the receipt of the recommendations of the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned or in other words within one hundred and five days of the receipt of the final Environment Impact Assessment Report, and where Environment Impact Assessment is not required, within one hundred and five days of the receipt of the complete application with requisite documents, except as provided below.

(ii) The regulatory authority shall normally accept the recommendations of the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned. In cases where it disagrees with the recommendations of the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned, the regulatory authority shall request reconsideration by the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned within forty five days of the receipt of the recommendations of the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned while stating the reasons for the disagreement. An intimation of this decision shall be simultaneously conveyed to the applicant. The Expert Appraisal Committee or State Level Expert Appraisal Committee concerned, in turn, shall consider the observations of the regulatory authority and furnish its views on the same within a further period of sixty days. The decision of the regulatory authority after considering the views of the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned shall be final and conveyed to the applicant by the regulatory authority concerned within the next thirty days.

(iii) In the event that the decision of the regulatory authority is not communicated to the applicant within the period specified in sub-paragraphs (i) or (ii) above, as applicable, the

applicant may proceed as if the environment clearance sought for has been granted or denied by the regulatory authority in terms of the final recommendations of the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned.

(iv) On expiry of the period specified for decision by the regulatory authority under paragraph (i) and (ii) above, as applicable, the decision of the regulatory authority, and the final recommendations of the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned shall be public documents.

(v) Clearances from other regulatory bodies or authorities shall not be required prior to receipt of applications for prior environmental clearance of projects or activities, or screening, or scoping, or appraisal, or decision by the regulatory authority concerned, unless any of these is sequentially dependent on such clearance either due to a requirement of law, or for necessary technical reasons.

(vi) Deliberate concealment and/or submission of false or misleading information or data which is material to screening or scoping or appraisal or decision on the application shall make the application liable for rejection, and cancellation of prior environmental clearance granted on that basis. Rejection of an application or cancellation of a prior environmental clearance already granted, on such ground, shall be decided by the regulatory authority, after giving a personal hearing to the applicant, and following the principles of natural justice.

9. Validity of Environmental Clearance (EC):

The "Validity of Environmental Clearance" is meant the period from which a prior environmental clearance is granted by the regulatory authority, or may be presumed by the applicant to have been granted under sub paragraph (iv) of paragraph 7 above, to the start of production operations by the project or activity, or completion of all construction operations in case of construction projects (item 8 of the Schedule), to which the application for prior environmental clearance refers. The prior environmental clearance granted for a project or activity shall be valid for a period of ten years in the case of River Valley projects (item 1(c) of the Schedule), project life as estimated by Expert Appraisal Committee or State Level Expert Appraisal Committee subject to a maximum of thirty years for mining projects and five years in the case of all other projects and activities. However, in the case of Area Development projects and Townships [item 8(b)], the validity period shall be limited only to such activities as may be the responsibility of the applicant as a developer. This period of validity may be extended by the regulatory authority concerned by a maximum period of five years provided an application is made to the regulatory authority by the applicant within the validity period, together with an updated Form 1, and Supplementary Form 1A, for Construction projects or activities (item 8 of the Schedule). In this regard the regulatory authority may also consult the Expert Appraisal Committee or State Level Expert Appraisal Committee as the case may be.

10. Post Environmental Clearance Monitoring:

(i) It shall be mandatory for the project management to submit half-yearly compliance reports in respect of the stipulated prior environmental clearance terms and conditions in hard and soft copies to the regulatory authority concerned, on 1st June and 1st December of each calendar year.

(ii) All such compliance reports submitted by the project management shall be public documents. Copies of the same shall be given to any person on application to the concerned regulatory authority. The latest such compliance report shall also be displayed on the web site of the concerned regulatory authority.

11. Transferability of Environmental Clearance (EC):

A prior environmental clearance granted for a specific project or activity to an applicant may be transferred during its validity to another legal person entitled to undertake the project or activity on application by the transferor, or by the transferee with a written "no objection" by the transferor, to, and by the regulatory authority concerned, on the same terms and conditions under which the prior environmental clearance was initially granted, and for the same validity period. No reference to the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned is necessary in such cases.

12. Operation of EIA Notification, 1994, till disposal of pending cases:

From the date of final publication of this notification the Environment Impact Assessment (EIA) notification number S.O.60 (E) dated 27th January, 1994 is hereby superseded, except in suppression of the things done or omitted to be done before such suppression to the extent that in case of all or some types of applications made for prior environmental clearance and pending on the date of final publication of this notification, the Central Government may relax any one or all provisions of this notification except the list of the projects or activities requiring prior environmental clearance in Schedule I , or continue operation of some or all provisions of the said notification, for a period not exceeding one year from the date of issue of this notification.

[No. J-11013/56/2004-IA-II (I)]

(R.CHANDRAMOHAN)
JOINT SECRETARY TO THE GOVERNMENT OF INDIA

SCHEDULE

(See paragraph 2 and 7)

LIST OF PROJECTS OR ACTIVITIES REQUIRING PRIOR ENVIRONMENTAL CLEARANCE

Project or Activity		**Category with threshold limit**		**Conditions if any**
		A	**B**	
1		**Mining, extraction of natural resources and power generation (for a specified production capacity)**		
(1)	(2)	(3)	(4)	(5)
1(a)	Mining of minerals	≥ 50 ha. of mining lease area Asbestos mining irrespective of mining area	<50 ha ≥ 5 ha .of mining lease area.	General Condition shall apply Note Mineral prospecting (not involving drilling) are exempted provided the concession areas have got previous clearance for physical survey
1(b)	Offshore and onshore oil and gas exploration, development & production	All projects		Note Exploration Surveys (not involving drilling) are exempted provided the concession areas have got previous clearance for physical survey
1(c)	River Valley projects	(i) ≥ 50 MW hydroelectric power generation; (ii) ≥ 10,000 ha. of culturable command area	(i) < 50 MW ≥ 25 MW hydroelectric power generation; (ii) < 10,000 ha. of culturable command area	General Condition shall apply
1(d)	Thermal Power Plants	≥ 500 MW (coal/lignite/naphta & gas based); ≥ 50 MW (Pet coke diesel and all other fuels -)	< 500 MW (coal/lignite/naptha & gas based); <50 MW ≥ 5MW (Pet coke ,diesel and all other fuels)	General Condition shall apply

(1)	(2)	(3)	(4)	(5)
1(e)	Nuclear power projects and processing of nuclear fuel	All projects	-	
2		**Primary Processing**		
2(a)	Coal washeries	≥ 1 million ton/annum throughput of coal	<1million ton/annum throughput of coal	General Condition shall apply (If located within mining area the proposal shall be appraised together with the mining proposal)
2 (b)	Mineral beneficiation	≥ 0.1million ton/annum mineral throughput	< 0.1million ton/annum mineral throughput	General Condition shall apply (Mining proposal with Mineral beneficiation shall be appraised together for grant of clearance)

3		**Materials Production**		
(1)	**(2)**	**(3)**	**(4)**	**(5)**
3(a)	Metallurgical industries (ferrous & non ferrous)	a)Primary metallurgical industry All projects b) Sponge iron manufacturing ≥ 200TPD c)Secondary metallurgical processing industry All toxic and heavy metal producing units ≥ 20,000 tonnes /annum -	Sponge iron manufacturing <200TPD Secondary metallurgical processing industry i.)All toxic andheavymetal producing units <20,000 tonnes /annum ii.)All other non –toxic secondary metallurgical processing industries >5000 tonnes/annum	General Condition shall apply for Sponge iron manufacturing
3(b)	Cement plants	≥ 1.0 million tonnes/annum production capacity	<1.0 million tonnes/annum production capacity. All Stand alone grinding units	General Condition shall apply

4		**Materials Processing**		
(1)	**(2)**	**(3)**	**(4)**	**(5)**
4(a)	Petroleum refining industry	All projects	-	-
4(b)	Coke oven plants	≥2,50,000 tonnes/annum -	<2,50,000 & ≥25,000 tonnes/annum	-
4(c)	Asbestos milling and asbestos based products	All projects	-	-
4(d)	Chlor-alkali industry	≥300 TPD production capacityor a unit located out side the notified industrial area/ estate	<300 TPD production capacity and located within a notified industrial area/ estate	Specific Condition shall apply No new Mercury Cell based plants will be permitted and existing units converting to membrane cell technology are exempted from this Notification
4(e)	Soda ash Industry	All projects	-	-
4(f)	Leather/skin/hide processing industry	New projects outside the industrial area or expansion of existing units out side the industrial area	All new or expansion of projects located within a notified industrial area/ estate	Specific condition shall apply
5		**Manufacturing/Fabrication**		
5(a)	Chemical fertilizers	All projects	-	-
5(b)	Pesticides industry and pesticide specific intermediates (excluding formulations)	All units producing technical grade pesticides	-	-

(1)	(2)	(3)	(4)	(5)
5(c)	Petro-chemical complexes (industries based on processing of petroleum fractions & natural gas and/or reforming to aromatics)	All projects -	-	-
5(d)	Manmade fibres manufacturing	Rayon	Others	General Condition shall apply
5(e)	Petrochemical based processing (processes other than cracking & reformation and not covered under the complexes)	Located out side the notified industrial area/ estate -	Located in a notified industrial area/ estate	Specific Condition shall apply
5(f)	Synthetic organic chemicals industry (dyes & dye intermediates; bulk drugs and intermediates excluding drug formulations; synthetic rubbers; basic organic chemicals, other synthetic organic chemicals and chemical intermediates)	Located out side the notified industrial area/ estate	Located in a notified industrial area/ estate	Specific Condition shall apply
5(g)	Distilleries	(i)All Molasses based distilleries (ii) All Cane juice/ non-molasses based distilleries ≥30 KLD	All Cane juice/non-molasses based distilleries – <30 KLD	General Condition shall apply
5(h)	Integrated paint industry	-	All projects	General Condition shall apply

(1)	(2)	(3)	(4)	(5)
5(i)	Pulp & paper industry excluding manufacturing of paper from waste paper and manufacture of paper from ready pulp with out bleaching	Pulp manufacturing and Pulp& Paper manufacturing industry -	Paper manufacturing industry without pulp manufacturing	General Condition shall apply
5(j)	Sugar Industry	- -	≥ 5000 tcd cane crushing capacity	General Condition shall apply
5(k)	Induction/arc furnaces/cupola furnaces 5TPH or more	- -	All projects	General Condition shall apply
6		**Service Sectors**		
6(a)	Oil & gas transportation pipe line (crude and refinery/ petrochemical products)**,** passing through national parks /sanctuaries/coral reefs /ecologically sensitive areas including LNG Terminal	All projects -		-

(1)	(2)	(3)	(4)	(5)
6(b)	Isolated storage & handling of hazardous chemicals (As per threshold planning quantity indicated in column 3 of schedule 2 & 3 of MSIHC Rules 1989 amended 2000)	-	All projects	General Condition shall apply
7		**Physical Infrastructure including Environmental Services**		
7(a)	Air ports	All projects	-	-
7(b)	All ship breaking yards including ship breaking units	All projects	-	-
7(c)	Industrial estates/ parks/ complexes/ areas, export processing Zones (EPZs), Special Economic Zones (SEZs), Biotech Parks, Leather Complexes.	If at least one industry in the proposed industrial estate falls under the Category A, entire industrial area shall be treated as Category A, irrespective of the area**.** Industrial estates with area greater than 500 ha. and housing at least one Category B industry.	-Industrial estates housing at least one Category B industry and area <500 ha. Industrial estates of area> 500 ha. and not housing any industry belonging to Category A or B.	Special condition shall apply Note: Industrial Estate of area below 500 ha. and not housing any industry of category A or B does not require clearance**.**
7(d)	Common hazardous waste treatment, storage and disposal facilities (TSDFs)	All integrated facilities having incineration &landfill or incineration alone	All facilities having land fill only	General Condition shall apply

(1)	(2)	(3)	(4)	(5)
7(e)	Ports, Harbours	≥ 5 million TPA of cargo handling capacity (excluding fishing harbours)	< 5 million TPA of cargo handling capacity and/or ports/ harbours ≥10,000 TPA of fish handling capacity	General Condition shall apply
7(f)	Highways	i) New National High ways; and ii) Expansion of National High ways greater than 30 KM, involving additional right of way greater than 20m involving land acquisition and passing through more than one State.	i) New State High ways; and ii) Expansion of National / State Highways greater than 30 km involving additional right of way greater than 20m involving land acquisition.	General Condition shall apply
7(g)	Aerial ropeways		All projects	General Condition shall apply
7(h)	Common Effluent Treatment Plants (CETPs)		All projects	General Condition shall apply
7(i)	Common Municipal Solid Waste Management Facility (CMSWMF)		All projects	General Condition shall apply

(1)	(2)	~~(3)~~	(4)	(5)
8		**Building /Construction projects/Area Development projects and Townships**		
8(a)	Building and Construction projects		≥20000 sq.mtrs and <1,50,000 sq.mtrs. of built-up area#	#(built up area for covered construction; in the case of facilities open to the sky, it will be the activity area)
8(b)	Townships and Area Development projects.		Covering an area ≥ 50 ha and or built up area ≥1,50,000 sq .mtrs ++	++All projects under Item 8(b) shall be appraised as Category B1

Note:-

General Condition (GC):

Any project or activity specified in Category 'B' will be treated as Category A, if located in whole or in part within 10 km from the boundary of: (i) Protected Areas notified under the Wild Life (Protection) Act, 1972, (ii) Critically Polluted areas as notified by the Central Pollution Control Board from time to time, (iii) Notified Eco-sensitive areas, (iv) inter-State boundaries and international boundaries.

Specific Condition (SC):

If any Industrial Estate/Complex / Export processing Zones /Special Economic Zones/Biotech Parks / Leather Complex with homogeneous type of industries such as Items 4(d), 4(f), 5(e), 5(f), or those Industrial estates with pre –defined set of activities (not necessarily homogeneous, obtains prior environmental clearance, individual industries including proposed industrial housing within such estates /complexes will not be required to take prior environmental clearance, so long as the Terms and Conditions for the industrial estate/complex are complied with (Such estates/complexes must have a clearly identified management with the legal responsibility of ensuring adherence to the Terms and Conditions of prior environmental clearance, who may be held responsible for violation of the same throughout the life of the complex/estate).

APPENDIX I

(See paragraph – 6)

FORM 1

(I) Basic Information

Name of the Project:

Location / site alternatives under consideration:

Size of the Project: *

Expected cost of the project:

Contact Information:

Screening Category:

- *Capacity corresponding to sectoral activity (such as production capacity for manufacturing, mining lease area and production capacity for mineral production, area for mineral exploration, length for linear transport infrastructure, generation capacity for power generation etc.,)*

(II) Activity

1. **Construction, operation or decommissioning of the Project involving actions, which will cause physical changes in the locality (topography, land use, changes in water bodies, etc.)**

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities /rates, wherever possible) with source of information data
1.1	Permanent or temporary change in land use, land cover or topography including increase in intensity of land use (with respect to local land use plan)		
1.2	Clearance of existing land, vegetation and buildings?		
1.3	Creation of new land uses?		
1.4	Pre-construction investigations e.g. bore houses, soil testing?		
1.5	Construction works?		

1.6	Demolition works?		
1.7	Temporary sites used for construction works or housing of construction workers?		
1.8	Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations		
1.9	Underground works including mining or tunneling?		
1.10	Reclamation works?		
1.11	Dredging?		
1.12	Offshore structures?		
1.13	Production and manufacturing processes?		
1.14	Facilities for storage of goods or materials?		
1.15	Facilities for treatment or disposal of solid waste or liquid effluents?		
1.16	Facilities for long term housing of operational workers?		
1.17	New road, rail or sea traffic during construction or operation?		
1.18	New road, rail, air waterborne or other transport infrastructure including new or altered routes and stations, ports, airports etc?		
1.19	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?		
1.20	New or diverted transmission lines or pipelines?		
1.21	Impoundment, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers?		
1.22	Stream crossings?		
1.23	Abstraction or transfers of water form ground or surface waters?		
1.24	Changes in water bodies or the land surface affecting drainage or run-off?		

1.25	Transport of personnel or materials for construction, operation or decommissioning?		
1.26	Long-term dismantling or decommissioning or restoration works?		
1.27	Ongoing activity during decommissioning which could have an impact on the environment?		
1.28	Influx of people to an area in either temporarily or permanently?		
1.29	Introduction of alien species?		
1.30	Loss of native species or genetic diversity?		
1.31	Any other actions?		

2. **Use of Natural resources for construction or operation of the Project (such as land, water, materials or energy, especially any resources which are non-renewable or in short supply):**

S.No.	**Information/checklist confirmation**	**Yes/No**	**Details thereof (with approximate quantities /rates, wherever possible) with source of information data**
2.1	Land especially undeveloped or agricultural land (ha)		
2.2	Water (expected source & competing users) unit: KLD		
2.3	Minerals (MT)		
2.4	Construction material – stone, aggregates, and / soil (expected source – MT)		
2.5	Forests and timber (source – MT)		
2.6	Energy including electricity and fuels (source, competing users) Unit: fuel (MT), energy (MW)		
2.7	Any other natural resources (use appropriate standard units)		

3. Use, storage, transport, handling or production of substances or materials, which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health.

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
3.1	Use of substances or materials, which are hazardous (as per MSIHC rules) to human health or the environment (flora, fauna, and water supplies)		
3.2	Changes in occurrence of disease or affect disease vectors (e.g. insect or water borne diseases)		
3.3	Affect the welfare of people e.g. by changing living conditions?		
3.4	Vulnerable groups of people who could be affected by the project e.g. hospital patients, children, the elderly etc.,		
3.5	Any other causes		

4. Production of solid wastes during construction or operation or decommissioning (MT/month)

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
4.1	Spoil, overburden or mine wastes		
4.2	Municipal waste (domestic and or commercial wastes)		
4.3	Hazardous wastes (as per Hazardous Waste Management Rules)		

4.4	Other industrial process wastes		
4.5	Surplus product		
4.6	Sewage sludge or other sludge from effluent treatment		
4.7	Construction or demolition wastes		
4.8	Redundant machinery or equipment		
4.9	Contaminated soils or other materials		
4.10	Agricultural wastes		
4.11	Other solid wastes		

5. Release of pollutants or any hazardous, toxic or noxious substances to air (Kg/hr)

S.No.	**Information/Checklist confirmation**	**Yes/No**	**Details thereof (with approximate quantities/rates, wherever possible) with source of information data**
5.1	Emissions from combustion of fossil fuels from stationary or mobile sources		
5.2	Emissions from production processes		
5.3	Emissions from materials handling including storage or transport		
5.4	Emissions from construction activities including plant and equipment		
5.5	Dust or odours from handling of materials including construction materials, sewage and waste		

5.6	Emissions from incineration of waste		
5.7	Emissions from burning of waste in open air (e.g. slash materials, construction debris)		
5.8	Emissions from any other sources		

6. Generation of Noise and Vibration, and Emissions of Light and Heat:

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data with source of information data
6.1	From operation of equipment e.g. engines, ventilation plant, crushers		
6.2	From industrial or similar processes		
6.3	From construction or demolition		
6.4	From blasting or piling		
6.5	From construction or operational traffic		
6.6	From lighting or cooling systems		
6.7	From any other sources		

7. Risks of contamination of land or water from releases of pollutants into the ground or into sewers, surface waters, groundwater, coastal waters or the sea:

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
7.1	From handling, storage, use or spillage of hazardous materials		
7.2	From discharge of sewage or other effluents to water or the land (expected mode and place of discharge)		
7.3	By deposition of pollutants emitted to air into the land or into water		
7.4	From any other sources		
7.5	Is there a risk of long term build up of pollutants in the environment from these sources?		

8. Risk of accidents during construction or operation of the Project, which could affect human health or the environment

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
8.1	From explosions, spillages, fires etc from storage, handling, use or production of hazardous substances		
8.2	From any other causes		
8.3	Could the project be affected by natural disasters causing environmental damage (e.g. floods, earthquakes, landslides, cloudburst etc)?		

9. Factors which should be considered (such as consequential development) which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality

S. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
9.1	Lead to development of supporting. lities, ancillary development or development stimulated by the project which could have impact on the environment e.g.: • Supporting infrastructure (roads, power supply, waste or waste water treatment, etc.) • housing development • extractive industries • supply industries • other		
9.2	Lead to after-use of the site, which could havean impact on the environment		
9.3	Set a precedent for later developments		
9.4	Have cumulative effects due to proximity to other existing or planned projects with similar effects		

(III) Environmental Sensitivity

S.No.	Areas	Name/ Identity	Aerial distance (within 15 km.) Proposed project location boundary
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value		

2	Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests		
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration		
4	Inland, coastal, marine or underground waters		
5	State, National boundaries		
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas		
7	Defence installations		
8	Densely populated or built-up area		
9	Areas occupied by sensitive man-made land uses *(hospitals, schools, places of worship, community facilities)*		
10	Areas containing important, high quality or scarce resources *(ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)*		
11	Areas already subjected to pollution or environmental damage. *(those where existing legal environmental standards are exceeded)*		
12	Areas susceptible to natural hazard which could cause the project to present environmental problems (*earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions*)		

(IV). Proposed Terms of Reference for EIA studies

APPENDIX II

(See paragraph 6)

FORM-1 A (only for construction projects listed under item 8 of the Schedule)

CHECK LIST OF ENVIRONMENTAL IMPACTS

(Project proponents are required to provide full information and wherever necessary attach explanatory notes with the Form and submit along with proposed environmental management plan & monitoring programme)

1. LAND ENVIRONMENT

(Attach panoramic view of the project site and the vicinity)

1.1. Will the existing landuse get significantly altered from the project that is not consistent with the surroundings? (Proposed landuse must conform to the approved Master Plan / Development Plan of the area. Change of landuse if any and the statutory approval from the competent authority be submitted). Attach Maps of (i) site location, (ii) surrounding features of the proposed site (within 500 meters) and (iii)the site (indicating levels & contours) to appropriate scales. If not available attach only conceptual plans.

1.2. List out all the major project requirements in terms of the land area, built up area, water consumption, power requirement, connectivity, community facilities, parking needs etc.

1.3. What are the likely impacts of the proposed activity on the existing facilities adjacent to the proposed site? (Such as open spaces, community facilities, details of the existing landuse, disturbance to the local ecology).

1.4. Will there be any significant land disturbance resulting in erosion, subsidence & instability? (Details of soil type, slope analysis, vulnerability to subsidence, seismicity etc may be given).

1.5. Will the proposal involve alteration of natural drainage systems? (Give details on a contour map showing the natural drainage near the proposed project site)

1.6. What are the quantities of earthwork involved in the construction activity-cutting, filling, reclamation etc. (Give details of the quantities of earthwork involved, transport of fill materials from outside the site etc.)

1.7. Give details regarding water supply, waste handling etc during the construction period.

1.8. Will the low lying areas & wetlands get altered? (Provide details of how low lying and wetlands are getting modified from the proposed activity)

1.9. Whether construction debris & waste during construction cause health hazard? (Give quantities of various types of wastes generated during construction including the construction labour and the means of disposal)

2. WATER ENVIRONMENT

2.1. Give the total quantity of water requirement for the proposed project with the breakup of requirements for various uses. How will the water requirement met? State the sources & quantities and furnish a water balance statement.

2.2. What is the capacity (dependable flow or yield) of the proposed source of water?

2.3. What is the quality of water required, in case, the supply is not from a municipal source? (Provide physical, chemical, biological characteristics with class of water quality)

2.4. How much of the water requirement can be met from the recycling of treated wastewater? (Give the details of quantities, sources and usage)

2.5. Will there be diversion of water from other users? (Please assess the impacts of the project on other existing uses and quantities of consumption)

2.6. What is the incremental pollution load from wastewater generated from the proposed activity? (Give details of the quantities and composition of wastewater generated from the proposed activity)

2.7. Give details of the water requirements met from water harvesting? Furnish details of the facilities created.

2.8. What would be the impact of the land use changes occurring due to the proposed project on the runoff characteristics (quantitative as well as qualitative) of the area in the post construction phase on a long term basis? Would it aggravate the problems of flooding or water logging in any way?

2.9. What are the impacts of the proposal on the ground water? (Will there be tapping of ground water; give the details of ground water table, recharging capacity, and approvals obtained from competent authority, if any)

2.10. What precautions/measures are taken to prevent the run-off from construction activities polluting land & aquifers? (Give details of quantities and the measures taken to avoid the adverse impacts)

2.11. How is the storm water from within the site managed?(State the provisions made to avoid flooding of the area, details of the drainage facilities provided along with a site layout indication contour levels)

2.12. Will the deployment of construction labourers particularly in the peak period lead to unsanitary conditions around the project site (Justify with proper explanation)

2.13. What on-site facilities are provided for the collection, treatment & safe disposal of sewage? (Give details of the quantities of wastewater generation, treatment capacities with technology & facilities for recycling and disposal)

2.14. Give details of dual plumbing system if treated waste used is used for flushing of toilets or any other use.

3. VEGETATION

3.1. Is there any threat of the project to the biodiversity? (Give a description of the local ecosystem with it's unique features, if any)

3.2. Will the construction involve extensive clearing or modification of vegetation? (Provide a detailed account of the trees & vegetation affected by the project)

3.3. What are the measures proposed to be taken to minimize the likely impacts on important site features (Give details of proposal for tree plantation, landscaping, creation of water bodies etc along with a layout plan to an appropriate scale)

4. FAUNA

4.1. Is there likely to be any displacement of fauna- both terrestrial and aquatic or creation of barriers for their movement? Provide the details.

4.2. Any direct or indirect impacts on the avifauna of the area? Provide details.

4.3. Prescribe measures such as corridors, fish ladders etc to mitigate adverse impacts on fauna

5. AIR ENVIRONMENT

5.1. Will the project increase atmospheric concentration of gases & result in heat islands? (Give details of background air quality levels with predicted values based on dispersion models taking into account the increased traffic generation as a result of the proposed constructions)

5.2. What are the impacts on generation of dust, smoke, odorous fumes or other hazardous gases? Give details in relation to all the meteorological parameters.

5.3. Will the proposal create shortage of parking space for vehicles? Furnish details of the present level of transport infrastructure and measures proposed for improvement including the traffic management at the entry & exit to the project site.

5.4. Provide details of the movement patterns with internal roads, bicycle tracks, pedestrian pathways, footpaths etc., with areas under each category.

5.5. Will there be significant increase in traffic noise & vibrations? Give details of the sources and the measures proposed for mitigation of the above.

5.6. What will be the impact of DG sets & other equipment on noise levels & vibration in & ambient air quality around the project site? Provide details.

6. AESTHETICS

6.1. Will the proposed constructions in any way result in the obstruction of a view, scenic amenity or landscapes? Are these considerations taken into account by the proponents?

6.2. Will there be any adverse impacts from new constructions on the existing structures? What are the considerations taken into account?

6.3. Whether there are any local considerations of urban form & urban design influencing the design criteria? They may be explicitly spelt out.

6.4. Are there any anthropological or archaeological sites or artefacts nearby? State if any other significant features in the vicinity of the proposed site have been considered.

7. SOCIO-ECONOMIC ASPECTS

7.1. Will the proposal result in any changes to the demographic structure of local population? Provide the details.

7.2. Give details of the existing social infrastructure around the proposed project.

7.3. Will the project cause adverse effects on local communities, disturbance to sacred sites or other cultural values? What are the safeguards proposed?

8. BUILDING MATERIALS

8.1. May involve the use of building materials with high-embodied energy. Are the construction materials produced with energy efficient processes? (Give details of energy conservation measures in the selection of building materials and their energy efficiency)

8.2. Transport and handling of materials during construction may result in pollution, noise & public nuisance. What measures are taken to minimize the impacts?

8.3. Are recycled materials used in roads and structures? State the extent of savings achieved?

8.4. Give details of the methods of collection, segregation & disposal of the garbage generated during the operation phases of the project.

9. ENERGY CONSERVATION

9.1. Give details of the power requirements, source of supply, backup source etc. What is the energy consumption assumed per square foot of built-up area? How have you tried to minimize energy consumption?

9.2. What type of, and capacity of, power back-up to you plan to provide?

9.3. What are the characteristics of the glass you plan to use? Provide specifications of its characteristics related to both short wave and long wave radiation?

9.4. What passive solar architectural features are being used in the building? Illustrate the applications made in the proposed project.

9.5. Does the layout of streets & buildings maximise the potential for solar energy devices? Have you considered the use of street lighting, emergency lighting and solar hot water systems for use in the building complex? Substantiate with details.

9.6. Is shading effectively used to reduce cooling/heating loads? What principles have been used to maximize the shading of Walls on the East and the West and the Roof? How much energy saving has been effected?

9.7. Do the structures use energy-efficient space conditioning, lighting and mechanical systems? Provide technical details. Provide details of the transformers and motor efficiencies, lighting intensity and air-conditioning load assumptions? Are you using CFC and HCFC free chillers? Provide specifications.

9.8. What are the likely effects of the building activity in altering the micro-climates? Provide a self assessment on the likely impacts of the proposed construction on creation of heat island & inversion effects?

9.9. What are the thermal characteristics of the building envelope? (a) roof; (b) external walls; and (c) fenestration? Give details of the material used and the U-values or the R values of the individual components.

9.10. What precautions & safety measures are proposed against fire hazards? Furnish details of emergency plans.

9.11. If you are using glass as wall material provides details and specifications including emissivity and thermal characteristics.

9.12. What is the rate of air infiltration into the building? Provide details of how you are mitigating the effects of infiltration.

9.13. To what extent the non-conventional energy technologies are utilised in the overall energy consumption? Provide details of the renewable energy technologies used.

10. Environment Management Plan

The Environment Management Plan would consist of all mitigation measures for each item wise activity to be undertaken during the construction, operation and the entire life cycle to minimize adverse environmental impacts as a result of the activities of the project. It would also delineate the environmental monitoring plan for compliance of various environmental regulations. It will state the steps to be taken in case of emergency such as accidents at the site including fire.

APPENDIX III

(See paragraph 7

GENERIC STRUCTURE OF ENVIRONMENTAL IMPACT ASSESSENT DOCUMENT

S.NO	EIA STRUCTURE	CONTENTS
1.	Introduction	• Purpose of the report • Identification of project & project proponent • Brief description of nature, size, location of the project and its importance to the country, region • Scope of the study – details of regulatory scoping carried out (As per Terms of Reference)
2.	Project Description	• Condensed description of those aspects of the project (based on project feasibility study), likely to cause environmental effects. Details should be provided to give clear picture of the following: • Type of project • Need for the project • Location (maps showing general location, specific location, project boundary & project site layout) • Size or magnitude of operation (incl. Associated activities required by or for the project • Proposed schedule for approval and implementation • Technology and process description • Project description. Including drawings showing project layout, components of project etc. Schematic representations of the feasibility drawings which give information important for EIA purpose • Description of mitigation measures incorporated into the project to meet environmental standards, environmental operating conditions, or other EIA requirements (as required by the scope) • Assessment of New & untested technology for the risk of technological failure

3.	Description of the Environment	• Study area, period, components & methodology • Establishment of baseline for valued environmental components, as identified in the scope • Base maps of all environmental components
4.	Anticipated Environmental Impacts & Mitigation Measures	• Details of Investigated Environmental impacts due to project location, possible accidents, project design, project construction, regular operations, final decommissioning or rehabilitation of a completed project • Measures for minimizing and / or offsetting adverse impacts identified • Irreversible and Irretrievable commitments of environmental components • Assessment of significance of impacts (Criteria for determining significance, Assigning significance) • Mitigation measures
5.	Analysis of Alternatives (Technology & Site)	• In case, the scoping exercise results in need for alternatives: • Description of each alternative • Summary of adverse impacts of each alternative • Mitigation measures proposed for each alternative and • Selection of alternative
6.	Environmental Monitoring Program	• Technical aspects of monitoring the effectiveness of mitigation measures (incl. Measurement methodologies, frequency, location, data analysis, reporting schedules, emergency procedures, detailed budget & procurement schedules)
7.	Additional Studies	• Public Consultation • Risk assessment • Social Impact Assessment. R&R Action Plans
8.	Project Benefits	• Improvements in the physical infrastructure • Improvements in the social infrastructure • Employment potential –skilled; semi-skilled and unskilled • Other tangible benefits

9.	Environmental Cost Benefit Analysis	If recommended at the Scoping stage
10.	EMP	• Description of the administrative aspects of ensuring that mitigative measures are implemented and their effectiveness monitored, after approval of the EIA
11	Summary & Conclusion (This will constitute the summary of the EIA Report)	• Overall justification for implementation of the project • Explanation of how, adverse effects have been mitigated
12.	Disclosure of Consultants engaged	• The names of the Consultants engaged with their brief resume and nature of Consultancy rendered

APPENDIX III A
(See paragraph 7)

CONTENTS OF SUMMARY ENVIRONMENTAL IMPACT ASSESSMENT

The Summary EIA shall be a summary of the full EIA Report condensed to ten A-4 size pages at the maximum. It should necessarily cover in brief the following Chapters of the full EIA Report: -

1. Project Description
2. Description of the Environment
3. Anticipated Environmental impacts and mitigation measures
4. Environmental Monitoring Programme
5. Additional Studies
6. Project Benefits
7. Environment Management Plan

APPENDIX IV

(See paragraph 7)

PROCEDURE FOR CONDUCT OF PUBLIC HEARING

1.0 The Public Hearing shall be arranged in a systematic, time bound and transparent manner ensuring widest possible public participation at the project site(s) or in its close proximity District -wise, by the concerned State Pollution Control Board (SPCB) or the Union Territory Pollution Control Committee (UTPCC).

2. 0 **The Process:**

2.1 The Applicant shall make a request through a simple letter to the Member Secretary of the SPCB or Union Territory Pollution Control Committee, in whose jurisdiction the project is located, to arrange the public hearing within the prescribed statutory period. In case the project site is extending beyond a State or Union Territory, the public hearing is mandated in each State or Union Territory in which the project is sited and the Applicant shall make separate requests to each concerned SPCB or UTPCC for holding the public hearing as per this procedure.

2.2 The Applicant shall enclose with the letter of request, at least 10 hard copies and an equivalent number of soft (electronic) copies of the draft EIA Report with the generic structure given in Appendix III including the Summary Environment Impact Assessment report in English and in the local language, prepared strictly in accordance with the Terms of Reference communicated after Scoping (Stage-2). Simultaneously the applicant shall arrange to forward copies, one hard and one soft, of the above draft EIA Report along with the Summary EIA report to the Ministry of Environment and Forests and to the following authorities or offices, within whose jurisdiction the project will be located:

(a) District Magistrate/s
(b) Zila Parishad or Municipal Corporation
(c) District Industries Office
(d) Concerned Regional Office of the Ministry of Environment and Forests

2.3 On receiving the draft Environmental Impact Assessment report, the above-mentioned authorities except the MoEF, shall arrange to widely publicize it within their respective jurisdictions requesting the interested persons to send their comments to the concerned regulatory authorities. They shall also make available the draft EIA Report for inspection electronically or otherwise to the public during normal office hours till the Public Hearing is over. The Ministry of Environment and Forests shall promptly display the Summary of the draft Environmental Impact Assessment report on its website, and also make the full draft EIA available for reference at a notified place during normal office hours in the Ministry at Delhi.

2.4 The SPCB or UTPCC concerned shall also make similar arrangements for giving publicity about the project within the State/Union Territory and make available the Summary of the draft Environmental Impact Assessment report (Appendix III A) for inspection in select offices or public libraries or panchayats etc. They shall also additionally

make available a copy of the draft Environmental Impact Assessment report to the above five authorities/offices viz, Ministry of Environment and Forests, District Magistrate etc.

3.0 Notice of Public Hearing:

3.1 The Member-Secretary of the concerned SPCB or UTPCC shall finalize the date, time and exact venue for the conduct of public hearing within 7(seven) days of the date of receipt of the draft Environmental Impact Assessment report from the project proponent, and advertise the same in one major National Daily and one Regional vernacular Daily. A minimum notice period of 30(thirty) days shall be provided to the public for furnishing their responses;

3.2 The advertisement shall also inform the public about the places or offices where the public could access the draft Environmental Impact Assessment report and the Summary Environmental Impact Assessment report before the public hearing**.**

3.3 No postponement of the date, time, venue of the public hearing shall be undertaken, unless some untoward emergency situation occurs and only on the recommendation of the concerned District Magistrate the postponement shall be notified to the public through the same National and Regional vernacular dailies and also prominently displayed at all the identified offices by the concerned SPCB or Union Territory Pollution Control Committee;

3.4 In the above exceptional circumstances fresh date, time and venue for the public consultation shall be decided by the Member –Secretary of the concerned SPCB or UTPCC only in consultation with the District Magistrate and notified afresh as per procedure under 3.1 above.

4.0 The Panel

~~4.1~~ The District Magistrate or his or her representative not below the rank of an Additional District Magistrate assisted by a representative of SPCB or UTPCC**,** shall supervise and preside over the entire public hearing process.

5.0 Videography

5.1 The SPCB or UTPCC shall arrange to video film the entire proceedings. A copy of the videotape or a CD shall be enclosed with the public hearing proceedings while forwarding it to the Regulatory Authority concerned.

6.0 Proceedings

6.1 The attendance of all those who are present at the venue shall be noted and annexed with the final proceedings.

6.2 There shall be no quorum required for attendance for starting the proceedings.

6.3 A representative of the applicant shall initiate the proceedings with a presentation on the project and the Summary EIA report.

6.4 Every person present at the venue shall be granted the opportunity to seek information or clarifications on the project from the Applicant. The summary of the public

hearing proceedings accurately reflecting all the views and concerns expressed shall be recorded by the representative of the SPCB or UTPCC and read over to the audience at the end of the proceedings explaining the contents in the vernacular language and the agreed minutes shall be signed by the District Magistrate or his or her representative on the same day and forwarded to the SPCB/UTPCC concerned**.**

6.5 A Statement of the issues raised by the public and the comments of the Applicant shall also be prepared in the local language and in English and annexed to the proceedings~~:~~

6.6 The proceedings of the public hearing shall be conspicuously displayed at the office of the Panchyats within whose jurisdiction the project is located, office of the concerned Zila Parishad, District Magistrate ,and the SPCB or UTPCC . The SPCB or UTPCC shall also display the proceedings on its website for general information. Comments, if any, on the proceedings which may be sent directly to the concerned regulatory authorities and the Applicant concerned.

7.0 Time period for completion of public hearing

7.1 The public hearing shall be completed within a period of 45 (forty five) days from date of receipt of the request letter from the Applicant. Therefore the SPCB or UTPCC concerned shall sent the public hearing proceedings to the concerned regulatory authority within 8(eight) days of the completion of the public hearing .The applicant may also directly forward a copy of the approved public hearing proceedings to the regulatory authority concerned along with the final Environmental Impact Assessment report or supplementary report to the draft EIA report prepared after the public hearing and public consultations.

7.2 If the SPCB or UTPCC fails to hold the public hearing within the stipulated 45(forty five) days, the Central Government in Ministry of Environment and Forests for Category 'A' project or activity and the State Government or Union Territory Administration for Category 'B' project or activity at the request of the SEIAA, shall engage any other agency or authority to complete the process, as per procedure laid down in this notification.

APPENDIX –V
(See paragraph 7)

PROCEDURE PRESCRIBED FOR APPRAISAL

1. The applicant shall apply to the concerned regulatory authority through a simple communication enclosing the following documents where public consultations are mandatory: -

- Final Environment Impact Assessment Report [20(twenty) hard copies and 1 (one) soft copy)]
- A copy of the video tape or CD of the public hearing proceedings
- A copy of final layout plan (20 copies)
- A copy of the project feasibility report (1 copy)

2. The Final EIA Report and the other relevant documents submitted by the applicant shall be scrutinized in office within 30 days from the date of its receipt by the concerned Regulatory Authority strictly with reference to the TOR and the inadequacies noted shall be communicated electronically or otherwise in a single set to the Members of the EAC /SEAC enclosing a copy each of the Final EIA Report including the public hearing proceedings and other public responses received along with a copy of Form -1or Form 1A and scheduled date of the EAC /SEAC meeting for considering the proposal .

3. Where a public consultation is not mandatory and therefore a formal EIA study is not required, the appraisal shall be made on the basis of the prescribed application Form 1 and a pre-feasibility report in the case of all projects and activities other than Item 8 of the Schedule .In the case of Item 8 of the Schedule, considering its unique project cycle , the EAC or SEAC concerned shall appraise all Category B projects or activities on the basis of Form 1, Form 1A and the conceptual plan and stipulate the conditions for environmental clearance . As and when the applicant submits the approved scheme /building plans complying with the stipulated environmental clearance conditions with all other necessary statutory approvals, the EAC /SEAC shall recommend the grant of environmental clearance to the competent authority.

4. Every application shall be placed before the EAC /SEAC and its appraisal completed within 60 days of its receipt with requisite documents / details in the prescribed manner.

5. The applicant shall be informed at least 15 (fifteen) days prior to the scheduled date of the EAC /SEAC meeting for considering the project proposal.

6. The minutes of the EAC /SEAC meeting shall be finalised within 5 working days of the meeting and displayed on the website of the concerned regulatory authority. In case the project or activity is recommended for grant of EC, then the minutes shall clearly list out the specific environmental safeguards and conditions. In case the recommendations are for rejection, the reasons for the same shall also be explicitly stated.

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APPENDIX VI

(See paragraph 5)

COMPOSITION OF THE SECTOR/ PROJECT SPECIFIC EXPERT APPRAISAL COMMITTEE (EAC) FOR CATEGORY A PROJECTS AND THE STATE/UT LEVEL EXPERT APPRAISAL COMMITTEES (SEACs) FOR CATEGORY B PROJECTS TO BE CONSTITUTED BY THE CENTRAL GOVERNMENT `

1. The Expert Appraisal Committees (EAC(s) and the State/UT Level Expert Appraisal Committees (SEACs) shall consist of only professionals and experts fulfilling the following eligibility criteria:

Professional: The person should have at least (i) 5 years of formal University training in the concerned discipline leading to a MA/MSc Degree, or (ii) in case of Engineering /Technology/Architecture disciplines, 4 years formal training in a professional training course together with prescribed practical training in the field leading to a B.Tech/B.E./B.Arch. Degree, or (iii) Other professional degree (e.g. Law) involving a total of 5 years of formal University training and prescribed practical training, or (iv) Prescribed apprenticeship/article ship and pass examinations conducted by the concerned professional association (e.g. Chartered Accountancy),or (v) a University degree , followed by 2 years of formal training in a University or Service Academy (e.g. MBA/IAS/IFS). In selecting the individual professionals, experience gained by them in their respective fields will be taken note of.

Expert: A professional fulfilling the above eligibility criteria with at least 15 years of relevant experience in the field, or with an advanced degree (e.g. Ph.D.) in a concerned field and at least 10 years of relevant experience.

Age: Below 70 years. However, in the event of the non-availability of /paucity of experts in a given field, the maximum age of a member of the Expert Appraisal Committee may be allowed up to 75 years

2. The Members of the EAC shall be Experts with the requisite expertise and experience in the following fields /disciplines. In the event that persons fulfilling the criteria of "Experts" are not available, Professionals in the same field with sufficient experience may be considered:

- **Environment Quality Experts**: Experts in measurement/monitoring, analysis and interpretation of data in relation to environmental quality

- **Sectoral Experts in Project Management**: Experts in Project Management or Management of Process/Operations/Facilities in the relevant sectors.

- **Environmental Impact Assessment Process Experts**: Experts in conducting and carrying out Environmental Impact Assessments (EIAs) and preparation of Environmental Management Plans (EMPs) and other Management plans and who have wide expertise and knowledge of predictive techniques and tools used in the EIA process

- **Risk Assessment Experts**

- **Life Science Experts in floral and faunal management**
- **Forestry and Wildlife Experts**

- **Environmental Economics Expert with experience in project appraisal**

3. The Membership of the EAC shall not exceed 15 (fifteen) regular Members. However the Chairperson may co-opt an expert as a Member in a relevant field for a particular meeting of the Committee.

4. The Chairperson shall be an outstanding and experienced environmental policy expert or expert in management or public administration with wide experience in the relevant development sector.

5. The Chairperson shall nominate one of the Members as the Vice Chairperson who shall preside over the EAC in the absence of the Chairman /Chairperson.

6. A representative of the Ministry of Environment and Forests shall assist the Committee as its Secretary.

7. The maximum tenure of a Member, including Chairperson, shall be for 2 (two) terms of 3 (three) years each.

8. The Chairman / Members may not be removed prior to expiry of the tenure without cause and proper enquiry.

Annexure-12

FORM –8 FOR DISPOSAL OF BATTERIES
MINISTRY OF ENVIRONMENT AND FORESTS
NOTIFICATION
New Delhi, the 16th May, 2001

FORM – VIII

[see rule 10 (2)(ii)]

FORM FOR FILING RETURNS OF USED BATTERIES

[To be submitted by the bulk consumer to the State Pollution Control Board (SPCB) by 30th June (for the period October-March) and 31st December (for the period April-September) every year]

1.	Name and address of the bulk consumer	
2.	Name of the Authorised person and full address with telephone and fax number	
3.	Number of new batteries of different categories purchased from the manufacturer / importer / dealer or any other agency during October-March and April-September Category : Automotives Four wheeler Two wheeler Industrial UPS Motive Power Stand-by Others	(i) No. of Batteries (ii) Approximate weight (in Metric Tonnes)
4.	Number or used batteries of categories mentioned in Sl. No. 3 and Tonnage of scrap sent to manufacturer / dealer / importer / registered recycler / or any other agency to whom the used batteries scrap was sent	

Place _____ Signature of the authorised person

Date _____

Enclose list of manufacture / dealer / importer / registered recyclers / or any other agency to whom the used batteries scrap was sent.

MINISTRY OF ENVIRONMENT AND FORESTS

NOTIFICATION

New Delhi, the 24th September, 2008

S. O. 2265(E).—Whereas the draft rules, namely, the Hazardous Material (Management, Handling and Transboundary Movement) Rules 2007 was published by the Government of India in the Ministry of Environment and Forest vide number S.O.1676(E),dated 28th September,2007 in the Gazette of India, Extraordinary of the same date inviting objection and suggestions from all persons likely to be affected thereby, before the expiry of the period of sixty days from the date on which copies of the Gazette containing the said notification were made available to the public;

AND WHEREAS copies of the said Gazette were made available to the public on the 28th day of September,2007;

AND WHEREAS the objections and suggestions received within the said period from the public in respect of the said draft rules have been duly considered by the Central Government;

NOW, THEREFORE, in exercise of the powers conferred by sections 6, 8 and 25 of the Environment (Protection) Act, 1986 (29 of 1986), and in supersession of the Hazardous Wastes (Management and Handling) Rules, 1989, excepts in respect of things done or omitted to be done before such supersession, the Central Government hereby makes the following rules, namely:-

CHAPTER – I
PRELIMINARY

1. Short title and commencement: - (1) These rules may be called the Hazardous Wastes(Management, Handling and Transboundary Movement) Rules, 2008.

(2) They shall come into force on the date of their publication in the official Gazette.

2. Application: - These rules shall apply to the handling of hazardous wastes as specified in Schedules and shall not apply to -

(a) waste-water and exhaust gases as covered under the provisions of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974) and the Air (Prevention and Control of Pollution) Act, 1981 (14 of 1981) and the rules made thereunder;

(b) wastes arising out of the operation from ships beyond five kilometres of the relevant baseline as covered under the provisions of the Merchant Shipping Act, 1958 (44 of 1958) and the rules made thereunder;

(c) radio-active wastes as covered under the provisions of the Atomic Energy Act, 1962 (33 of 1962) and the rules made thereunder;

(d) bio-medical wastes covered under the Bio-Medical Wastes (Management and Handling) Rules, 1998 made under the Act; and

(e) wastes covered under the Municipal Solid Wastes (Management and Handling) Rules, 2000 made under the Act;

3. Definitions: - (1) In these rules, unless the context otherwise requires, -

(a) "Act" means the Environment (Protection) Act, 1986 (29 of 1986);

(b)"authorisation" means permission for generation, handling, collection, reception, treatment, transport, storage, recycling, reprocessing, recovery, reuse and disposal of hazardous wastes granted under sub-rule (4) of rule 5;

(c) "Basel Convention" is the United Nations Environment Programme Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal;

(d) "Central Pollution Control Board" means the Central Pollution Control Board constituted under sub-section (1) of section 3 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974);

(e) "disposal" means any operation which does not lead to recycling, recovery or reuse and includes physico chemical, biological treatment, incineration and disposal in secured landfill;

(f) "export" with its grammatical variations and cognate expressions, means taking out of India to a place outside India;

(g) "exporter" means any person under the jurisdiction of the exporting country who exports hazardous waste including the country, which exports hazardous waste;

(h) "environmentally sound management of hazardous wastes" means taking all steps required to ensure that the hazardous wastes are managed in a manner which shall protect health and the environment against the adverse effects which may result from such waste;

(i) "environmentally sound technologies" means any technology approved by the Central Government from time to time;

(j) "facility" means any establishment wherein the processes incidental to the handling, collection, reception, treatment, storage, recycling, recovery, reuse and disposal of hazardous wastes are carried out;

(k) "Form" means a form appended to these rules;

(l) "hazardous waste" means any waste which by reason of any of its physical, chemical, reactive, toxic, flammable, explosive or corrosive characteristics causes danger or is likely to cause danger to health or environment, whether alone or when in contact with other wastes or substances, and shall include –

(i) waste specified under column (3) of Schedule-I,

(ii) wastes having constituents specified in Schedule-II if their concentration is equal to or more than the limit indicated in the said Schedule, and

(iii) wastes specified in Part A or Part B of the Schedule-III in respect of import or export of such wastes in accordance with rules 12,13 and 14 or the wastes other than those specified in Part A or Part B if they possess any of the hazardous characteristics specified in Part C of that Schedule;

(m) "hazardous waste site" means a place of collection, reception, treatment, storage of hazardous wastes and its disposal to the environment which is approved by the competent authority;

(n) "import" with its grammatical variations and cognate expressions, means bringing into India from a place outside India;

(o) "importer" means an occupier or any person who imports hazardous waste;

(p) "manifest" means transporting document prepared and signed by the occupier or his representative authorized in accordance with the provisions of these rules.

(q) "occupier" in relation to any factory or premises, means a person who has, control over the affairs of the factory or the premises and includes in relation to any hazardous waste the person in possession of the hazardous waste;

(r) "operator of disposal facility" means a person who owns or operates a facility for collection, reception, treatment, storage or disposal of hazardous wastes;

(s) "recycler or reprocessor or actual user " means an occupier who procures and processes hazardous waste for recycling or recovery or re-use;

(t) "recycling" means reclamation and reprocessing of hazardous waste in an environmentally sound manner for the original purpose or for other purposes;

(u) "reuse" means use of hazardous waste for the purpose of its original use or other use;

(v) "recovery" means any operation in the recycling activity wherein specific materials are recovered;

(w) "Schedule" means a Schedule appended to these rules;

(x) "State Government" in relation to a Union territory means, the Administrator thereof appointed under article 239 of the Constitution;

(y) "State Pollution Control Board means the State Pollution Control Board or the Pollution Control Committee constituted under sub-section (1) of section 4 of the Water(Prevention and Control of Pollution) Act, 1974 (6 of 1974);

(z) "storage" means storing any hazardous waste for a temporary period, at the end of which such waste is processed or disposed of;

(za) "transboundary movement" means any movement of hazardous wastes from an area under the jurisdiction of one country to or through an area under the jurisdiction of another country or to or through an area not under the jurisdiction of any country, provided at least two countries are involved in the movement;

(zb) "transport" means off-site movement of hazardous wastes by air, rail, road or water;

(zc) "transporter" means a person engaged in the off-site transportation of hazardous waste by air, rail, road or water;

(zd) "treatment" means a method, technique or process, designed to modify the physical, chemical or biological characteristics or composition of any hazardous waste so as to reduce its potential to cause harm;

(ze) "used oil" means any oil -

(a) derived from crude oil or mixtures containing synthetic oil including used engine oil, gear oil, hydraulic oil, turbine oil, compressor oil, industrial gear oil, heat transfer oil, transformer oil, spent oil and their tank bottom sludges; and
(b) suitable for reprocessing, if it meets the specification laid down in Part-A of Schedule -V but does not include waste oil;

(zf) "waste oil" means any oil which includes spills of crude oil, emulsions, tank bottom sludge and slop oil generated from petroleum refineries, installations or ships and can be used as fuel in furnaces for energy recovery, if it meets the specifications laid down in Part – B of Schedule-5 either as such or after reprocessing.

Words and expressions used in these rules and not defined but defined in the Act shall have the meanings respectively assigned to them in the Act.

CHAPTER II
PROCEDURE FOR HANDLING HAZARDOUS WASTES

4. Responsibilities of the occupier for handling of hazardous wastes.–

(1) The occupier shall be responsible for safe and environmentally sound handling of hazardous wastes generated in his establishment.

(2) The hazardous wastes generated in the establishment of an occupier shall be sent or sold to a recycler or re-processor or re-user registered or authorized under these rules or shall be disposed of in an authorized disposal facility.

(3) The hazardous wastes transported from an occupier's establishment to a recycler for recycling or reuse or reprocessing or to an authorized facility for disposal shall be transported in accordance with the provisions of these rules.

(4) The occupier or any other person acting on his behalf who intends to get his hazardous wastes treated and disposed of by the operator of a Treatment, Storage and Disposal Facility shall give to the operator of a facility, such information as may be determined by the State Pollution Control Board.

(5) The occupier shall take all adequate steps while handling hazardous wastes to:

(i) contain contaminants and prevent accidents and limit their consequences on human beings and the environment; and

(ii) provide persons working on the site with the training, equipment and the information necessary to ensure their safety.

5. Grant of authorization for handling hazardous wastes.

(1) Every person who is engaged in generation, processing, treatment, package, storage, transportation, use, collection, destruction, conversion, offering for sale, transfer or the like of the hazardous waste shall require to obtain an authorization from the State Pollution Control Board.

(2) The hazardous waste shall be collected, treated, re-cycled, re-processed, stored or disposed of only in such facilities as may be authorized by the State Pollution Control Board for the purpose.

(3) Every person engaged in generation, processing, treatment, package, storage, transportation, use, collection, destruction, conversion, offering for sale, transfer or the like of the hazardous waste or occupier of the facility shall make an application in **Form 1** to the State Pollution Control Board for authorization within a period of sixty days from the date of commencement of these rules:

Provided that any person authorized under the provisions of the Hazardous Waste (Management and Handling) Rules , 1989, prior to the date of coming into force of these rules, shall not require to make an application for authorization till the period of expiry of such authorization.

(4) On receipt of the application complete in all respects for the authorization, the State Pollution Control Board may, after such inquiry as it considers necessary and on being satisfied that the applicant possesses appropriate facilities, technical capabilities and equipment to handle hazardous waste safely, grant within a period of one hundred and twenty days an authorization in **Form 2** to the applicant which shall be valid for a period of five years and shall be subject to such conditions as may be laid down therein.

(5) The State Pollution Control Board may after giving reasonable opportunity of being heard to the applicant refuse to grant any authorization.

(6) Every person authorized under these rules shall maintain the record of hazardous wastes handled by him in **Form 3** and prepare and submit to the State Pollution Control Board, an annual return containing the details specified in **Form 4** on or before the 30th day of June following to the financial year to which that return relates.

(7) An application for the renewal of an authorization shall be made in **Form 1**, before its expiry and the State Pollution Control Board may renew the authorization after examining each case on merit subject to the condition that there has been no report of violation of the provisions of the Act or the rules made thereunder or conditions specified in the authorization.

(8)The occupier or operator of the facility shall take all the steps, wherever required, for reduction and prevention of the waste generated or for recycling or reuse and comply the conditions specified in the authorization.

(9) The State Pollution Control Board shall maintain a register containing particulars of the conditions imposed under these rules for management of hazardous waste, and it shall be open for inspection during office hours to any person interested or affected or a person authorized by him on his behalf.

6. Power to suspend or cancel an authorization.

(1) The State Pollution Control Board, may, if in its opinion the holder of the authorization has failed to comply with any of the conditions of the authorization or with any provisions of the Act or these rules and after giving him a reasonable opportunity of being heard and after recording reasons thereof in writing cancel or suspend the authorization issued under rule – 4 for such period as it considers necessary in the public interest.

(2) Upon suspension or cancellation of the authorization the State Pollution Control Board may give directions to the person whose authorization has been suspended or cancelled for the safe storage of the hazardous wastes, and such person shall comply with such directions.

7. Storage of Hazardous Waste.

(1) The occupiers, recyclers, re-processors, re-users, and operators of facilities may store the hazardous wastes for a period not exceeding ninety days and shall maintain a record of sale, transfer, storage, recycling and reprocessing of such wastes and make these records available for inspection:
Provided that the State Pollution Control Board may extend the said period in following cases, namely:-

(i) small generators up to ten tones per annum;
(ii) recyclers, re-processors and facility operators up to six months of their annual capacity;
(iii) generators who do not have access to any Treatment, Storage, Disposal Facility in the concerned State; or
(iv) the waste which needs to be specifically stored for development of a process for its recycling, reuse.

CHAPTER – III

PROCEDURE FOR RECYCLING , REPROCESSING OR REUSE OF HAZARDOUS WASTES

8. Procedure for grant of registration :

(1) Every person desirous of recycling or reprocessing the hazardous waste specified in Schedule –IV may make an application in **Form 5** accompanied with a copy each of the following documents for the grant or renewal of the registration:-

(a) consent to establish granted by the State Pollution Control Board under the Water (Prevention and Control of Pollution) Act, 1974 (25 of 1974) and the Air (Prevention and Control of Pollution) Act, 1981(21 of 1981);

(b) certificate of registration issued by the District Industries Centre or any other government agency authorised in this regard;

(c) proof of installed capacity of plant and machinery issued by the District Industries Centre or any other government agency authorised in this behalf; and

(d) in case of renewal, certificate of compliance of effluent, emission standards and treatment and disposal of hazardous wastes, as applicable, from the State Pollution Control Board or the Concerned Zonal Office of Central Pollution Control Board.

(2) The Central Pollution Control Board, on being satisfied that the applicant is utilizing environmentally sound technologies and possesses adequate technical capabilities, requisite facilities, and equipment to recycle, reprocess or reuse hazardous wastes, may grant registration to such applicants stipulating therein necessary conditions for carrying out safe operations in the authorized place only.

(3) The Central Pollution Control Board shall dispose of the application for registration within a period of one hundred twenty days from the date of the receipt of such application complete in all respects.

(4) The registration, issued under sub-rule (2) shall be valid for a period of five years from the date of its issue, unless the operation is discontinued by the unit or the registration is suspended or cancelled by the Central Pollution Control Board.

(5) The Central Pollution Control Board may cancel or suspend the registration granted under these rules, if it has reasons to believe that the recycler or re-processor has failed to comply with any of the conditions of the registration, or with any provision of the Act or rules made thereunder.

(6) The Central Pollution Control Board may after giving a reasonable opportunity of being heard to the applicant, by order, refuse to grant or renew the registration.

(7) The recycler or re-processor shall maintain records of hazardous wastes purchased and processed and shall file an annual return of its activities of previous year in Form 6 to the State Pollution Control Board, on or before the 30th day of June of every year.

9. Conditions for sale or transfer of Hazardous Wastes for recycling.-

The occupier generating the hazardous wastes specified in Schedule-IV may sell it only to the recycler having a valid registration from the Central Pollution Control Board for recycling or recovery.

10. Standards for recycling.-

The Central Government and Central Pollution Control Board may issue the guidelines for standards of performance for recycling processes from time to time.

11. Utilization of hazardous wastes.-

The utilisation of hazardous wastes as a supplementary resource or for energy recovery, or after processing shall be carried out by the units only after obtaining approval from the Central Pollution Control Board.

CHAPTER IV
IMPORT AND EXPORT OF HAZARDOUS WASTES

12. Import and export (transboundary movement) of hazardous wastes.-

The Ministry of Environment and Forests shall be the nodal Ministry to deal with the trans-boundary movement of the hazardous wastes and to grant permission for transit of the hazardous wastes through any part of India.

13. Import and export of hazardous wastes. –

(1) No import of the hazardous wastes from any country to India for disposal shall be permitted.

(2) The import of Hazardous Waste from any country shall be permitted only for the recycling or recovery or reuse.

(3) The export of hazardous wastes from India may be allowed to an actual user of the wastes or operator of a disposal facility with the Prior Informed Consent of the importing country to ensure environmentally sound management of the hazardous waste in question.

(4) No import or export of the hazardous wastes specified in Schedule –VI shall be permitted.

14. Import or export of Hazardous Waste for recycling, recovery and reuses.-

(1) The import and export of the hazardous wastes specified in Schedule – III, shall be regulated in accordance with the conditions laid down in the said schedule:

(2) Subject to the provisions contained in sub-rule (1), -

(i) the import or export of the Hazardous wastes specified in Part A of Schedule – III shall require Prior Informed Consent of the country from where it is imported or exported to, and shall require the license from the Directorate General of Foreign Trade and the prior written permission of the Central Government;

(ii) the import of the hazardous wastes specified in Part B of Schedule III shall not require Prior Informed Consent of the country from where it is imported;.

(iii) the import and export of the hazardous wastes not specified in Part A and Part B of Schedule III but having the hazardous characteristics outlined in Part C of the said Schedule shall require the prior written permission of the Central Government, before it is imported into or exported from India, as the case may be.

15. Procedure for export of Hazardous Wastes from India.–

(1) Any person intending to export hazardous wastes specified in Schedule-III shall apply in **Form 7** and **Form 8** along with full cover insurance policy for consignment to the Central Government for the proposed transboundary movement of the hazardous wastes together with the Prior Informed Consent in writing from the importing country.

(2) On receipt of such application, the Central Government may give a 'No Objection Certificate' for the proposed export within a period of sixty days from the date of submission of the application and may impose conditions as it may consider necessary.

(3) The Central Government, shall forward a copy of the 'No Objection Certificate' granted under sub-rule (2), to the Central Pollution Control Board, the concerned State Pollution Control Board and the concerned Port and Customs authorities for ensuring compliance of the conditions, if any, of the export and to take appropriate steps for the safe handling of the waste shipment.

(4) The exporter shall ensure that no consignment is shipped before the 'No Objection Certificate' is received from the importing country.

(5) The exporter shall also ensure that the shipment is accompanied with the Movement Document in **Form 9.**

(6) The exporter shall inform the Ministry of Environment and Forest upon completion of the trans-boundary movement.

(7) The exporter of the hazardous wastes shall maintain the records of the hazardous wastes exported by him in **Form 10** and the record so maintained shall be available for inspection..

16. **Procedure for import of Hazardous Waste –**

(1) A person intending to import or transit for trans-boundary movement of hazardous wastes specified in Schedule-III shall apply in **Form 7** and **Form 8** to the Central Government of the proposed import wherever applicable, together with the Prior Informed Consent, which ever applicable and shall send a copy of the application, simultaneously, to the concerned State Pollution Control Board to enable them to send their comments and observations, if any, to the Ministry of Environment and Forests within a period of thirty days.

(2) On receipt of the application in complete, the Ministry of Environment and Forests shall examine the application considering the comments and observations, if any, received from the State Pollution Control Boards, and may grant the permission for import within a period of sixty days subject to the condition that the importer has -

(i) the environmentally sound recycling, recovery or reuse facilities;
(ii) adequate facilities and arrangement for treatment and disposal of wastes generated; and
(iii) a valid registration from the Central Pollution Control Board and a proof of being an actual user, if required under these rules.

(3) The Ministry of Environment and Forests shall forward a copy of the permission granted under sub-rule (2) to the Central Pollution Control Board, the concerned State Pollution Control Board and the concerned Port and Customs authorities for ensuring compliance of the conditions of imports and safe handling of the hazardous waste.

(4) The Ministry of Environment and Forests shall communicate the permission to the importer.

(5) The Port and Customs authorities shall ensure that shipment is accompanied by the Movement Document in **Form 9** and the test report of analysis of the hazardous waste consignment in question, from a laboratory accredited by the exporting country.

(6) The Customs authority shall collect three randomly drawn samples of the consignment (prior to clearing the consignment as per the provisions laid down under the Customs Act, 1962) for analysis and retain the report for a period of two years, in order to ensure that in the event of any dispute, as to whether the consignment conforms or not to the declaration made in the application and Movement Document.

(7) The importer of the hazardous waste shall maintain records of the hazardous waste imported by him in **Form 10** and the record so maintained shall be available for inspection.

(8) The importer shall also inform the concerned State Pollution Control Board and the Central Pollution Control Board, the date and time of the arrival of the consignment of the hazardous waste ten days in advance.

17. **Illegal Traffic.–**

(1) The export and import of hazardous wastes from and into India shall be deemed illegal if-

(i) it is without permission of the Central Government in accordance with these rules, or

(ii) the permission has been obtained through falsification, mis-representation or fraud; or

(iii) it does not conform to the shipping details provided in the movement documents; or

(iv) it results in deliberate disposal (i.e., dumping) of hazardous wastes in contravention of the Basel Convention and of general principles of International or National Law.

(2). In case of illegal import of the hazardous wastes, the importer shall re-export the waste in question at his cost within a period of ninety days from the date of its arrival into India and its implementation will be ensured by the concerned State Pollution Control Board.

CHAPTER – V

TREATMENT, STORAGE AND DISPOSAL FACILITY FOR HAZARDOUS WASTES

18. **Treatment, Storage and Disposal Facility for hazardous wastes.-**

(1) The State Government, occupier, operator of a facility or any association of occupiers shall individually or jointly or severally be responsible for, and identify sites for establishing the facility for treatment, storage and disposal of the hazardous wastes in the State.

(2) The operator of common facility or occupier of a captive facility, shall design and set up the Treatment, Storage and Disposal Facility as per technical guidelines issued by the Central Pollution Control Board in this regard from time to time and shall obtain approval from the State Pollution Control Board for design and layout in this regard from time to time.

(3) The State Pollution Control Board shall monitor the setting up and operation of the Treatment, Storage and Disposal Facilities regularly.

(4) The operator of the Treatment, Storage and Disposal Facility shall be responsible for safe and environmentally sound operation of the Treatment, the Storage and Disposal Facility and its closure and post closure phase, as per guidelines issued by the Central Pollution Control Board from time to time.

(5) The operator of the Treatment, Storage and Disposal Facility shall maintain records of hazardous wastes handled by him in **Form 10.**

CHAPTER – VI

PACKAGING, LABELLING, AND TRANSPORT OF HAZARDOUS WASTE .

19. Packaging and labeling.-

(1) The occupier or operator of the Treatment, Storage and Disposal Facility or recycler shall ensure that the hazardous waste are packaged and labeled, based on the composition in a manner suitable for safe handling, storage and transport as per the guidelines issued by the Central Pollution Control Board from time to time.

(2) The labeling and packaging shall be easily visible and be able to withstand physical conditions and climatic factors.

20. Transportation of Hazardous waste.-

(1) The transport of the hazardous wastes shall be in accordance with the provisions of these rules and the rules made by the Central Government under the Motor Vehicles Act, 1988 and other guidelines issued from time to time in this regard.

(2) The occupier shall provide the transporter with the relevant information in **Form 11,** regarding the hazardous nature of the wastes and measures to be taken in case of an emergency and shall mark the hazardous wastes containers as per **Form 12.**

(3) In case of transport of hazardous wastes for final disposal to a facility for treatment, storage and disposal existing in a State other than the State where the hazardous waste is generated, the occupier shall obtain 'No Objection Certificate' from the State Pollution Control Board of both the States.

(4) In case of transportation of hazardous wastes through a State other than the State of origin or destination, the occupier shall intimate the concerned State Pollution Control Boards before he hands over the hazardous wastes to the transporter.

21. Manifest system (Movement Document to be used within the country only).-

(1) The occupier shall prepare six copies of the manifest in **Form 13** comprising of colour code indicated below and all six copies shall be signed by the transporter:

Copy number with colour code (1)	Purpose (2)
Copy 1 (White)	To be forwarded by the occupier to the State Pollution Control Board or Committee.
Copy 2 (Yellow)	To be carried by the occupier after taking signature on it form the transporter and the rest of the four copies to be carried by the transporter.
Copy 3 (pink)	To be retained by the operator of the facility after signature.
Copy 4 (orange)	To be returned to the transporter by the operator of facility/recycler after accepting waste.
Copy5(green)	To be returned by the operator of the facility to State Pollution Control Board/Committee after treatment and disposal of wastes.
Copy6(blue)	To be returned by the operator of the facility to the occupier after treatment and disposal of hazardous materials/wastes.

(2) The occupier shall forward copy 1 (white) to the State Pollution Control Board, and in case the hazardous wastes is likely to be transported through any transit State, the occupier shall prepare an additional copy each for intimation to such State and forward the same to the concerned State Pollution Control Board before he hands over the hazardous wastes to the transporter.

(3) No transporter shall accept hazardous wastes from an occupier for transport unless it is accompanied by copies 3 to 6 of the manifest.

(4) The transporter shall submit copies 3 to 6 of the manifest duly signed with date to the operator of the facility along with the waste consignment.

(5) Operator of the facility upon completion of treatment and disposal operations of the hazardous wastes shall forward copy 5 (green) to the State Pollution Control Board and copy 6 (blue) to the occupier and the copy 3 (pink) shall be retained by the operator of the facility.

CHAPTER VII
MISCELLANIOUS

22. Records and returns.-

(1) The occupier generating hazardous wastes and operator of the facility for disposal of hazardous waste shall maintain records of such operations in **Form 3.**

(2) The occupier and operator of a facility shall send annual returns to the State Pollution Control Board in **Form 4.**

(3) The State Pollution Control Board shall prepare an inventory of the hazardous wastes within its jurisdiction and compile other related information like recycling of the hazardous wastes and treatment and disposal of the hazardous wastes based on the returns filed by respective occupier and operator of the facility .

23. Responsibility of Authorities.-The Authority specified in column 2 of the Schedule VII shall perform the duties as specified in column 3 of the Schedule subject to the provisions of these rules.

24. Accident reporting and follow-up.- Where an accident occurs at the facility or on a hazardous waste site or during transportation of the hazardous waste, the occupier or operator of the facility or the transporter, as the case may be, shall report immediately to the State Pollution Control Board about the accident in **Form14.**

25. Liability of occupier, transporter, operator of a facility and importer.-

(1) The occupier, importer, transporter and operator of the facility shall be liable for all damages caused to the environment or third party due to improper handling of the hazardous wastes or disposal of the hazardous wastes.

(2) The occupier and the operator of the facility shall be liable to pay financial penalties as levied for any violation of the provisions under these rules by the State Pollution Control Board with the prior approval of the Central Pollution Control Board.

26. Appeal. –

(1) Any person aggrieved by an order of suspension or cancellation or refusal of authorization or its renewal passed by the State Pollution Control Board, may, within a period of thirty days from the date on which the order is communicated to him, prefer an appeal in **Form 15** to the Appellate Authority comprising of the Environment Secretary of the State.

(2) Any person aggrieved by an order of suspension or cancellation or refusal of registration or its renewal passed by the Central Pollution Control Board, may, within a period of thirty days from the date on which the order is communicated to him, prefer an appeal in **Form 15** to the Appellate Authority comprising of the Secretary, to the Government of India in the Ministry of Environment and Forests.

(3) The Appellate Authority may entertain the appeal after the expiry of the said period of thirty days if it is satisfied that the appellant was prevented by sufficient cause from filing the appeal in time.

(4) Every appeal filed under this rule shall be disposed of within a period of sixty days from the date of its filing.

Schedule 1

[See rules 3 (l)]

List of processes generating hazardous wastes

S.No.	Processes	Hazardous Waste *
1.	Petrochemical processes and pyrolytic operations	1.1 Furnace/reactor residue and debris 1.2 Tarry residues 1.3 Oily sludge emulsion 1.4 Organic residues 1.5 Residues from alkali wash of fuels 1.6 Still bottoms from distillation process 1.7 Spent catalyst and molecular sieves 1.8 Slop oil from wastewater
2.	Drilling operation for oil and gas production	2.1 Drill cuttings containing oil 2.2 Sludge containing oil 2.3 Drilling mud and other drilling wastes

3.	Cleaning, emptying and maintenance of petroleum oil storage tanks including ships	3.1 Oil-containing cargo residue, washing water and sludge 3.2 Chemical-containing cargo residue and sludge 3.3 Sludge and filters contaminated with oil 3.4 Ballast water containing oil from ships.
4.	Petroleum refining/re-processing of used oil/recycling of waste oil	4.1 Oily sludge/emulsion 4.2 Spent catalyst 4.3 Slop oil 4.4 Organic residues from process 4.5 Spent clay containing oil
5.	Industrial operations using mineral/synthetic oil as lubricant in hydraulic systems or other applications	5.1 Used/spent oil 5.2 Wastes/residues containing oil
6.	Secondary production and/or industrial use of zinc	6.1 Sludge and filter press cake arising out of production of Zinc Sulphate and other Zinc Compounds. 6.2 Zinc fines/dust/ash/skimmings (dispersible form) 6.3 Other residues from processing of zinc ash/skimmings 6.4 Flue gas dust and other particulates
7.	Primary production of zinc/lead/copper and other non-ferrous metals except aluminium	7.1 Flue gas dust from roasting 7.2 Process residues 7.3 Arsenic-bearing sludge 7.4 Non ferrous metal bearing sludge and residue. 7.5 Sludge from scrubbers
8.	Secondary production of copper	8.1 Spent electrolytic solutions 8.2 Sludges and filter cakes 8.3 Flue gas dust and other particulates
9.	Secondary production of lead	9.1 Lead bearing residues 9.2 Lead ash/particulate from flue gas
10.	Production and/or industrial use of cadmium and arsenic and their compounds	10.1 Residues containing cadmium and arsenic

11.	Production of primary and secondary aluminium	11.1. Sludges from off-gas treatment 11.2. Cathode residues including pot lining wastes 11.3. Tar containing wastes 11.4. Flue gas dust and other particulates 11.5. Wastes from treatment of salt slags and black drosses
12.	Metal surface treatment, such as etching, staining, polishing, galvanising, cleaning, degreasing, plating, etc.	12.1 Acid residues 12.2 Alkali residues 12.3 Spent bath/sludge containing sulphide, cyanide and toxic metals 12.4 Sludge from bath containing organic solvents 12.5 Phosphate sludge 12.6 Sludge from staining bath 12.7 Copper etching residues 12.8 Plating metal sludge
13.	Production of iron and steel including other ferrous alloys (electric furnaces; steel rolling and finishing mills; Coke oven and by product plant)	13.1 Sludge from acid recovery unit 13.2 Benzol acid sludge 13.3 Decanter tank tar sludge 13.4 Tar storage tank residue
14.	Hardening of steel	14.1 Cyanide-, nitrate-, or nitrite-containing sludge 14.2 Spent hardening salt
15.	Production of asbestos or asbestos-containing materials	15.1 Asbestos-containing residues 15.2 Discarded asbestos 15.3 Dust/particulates from exhaust gas treatment.
16.	Production of caustic soda and chlorine	16.1 Mercury bearing sludge 16.2 Residue/sludges and filter cakes 16.3 Brine sludge containing mercury
17.	Production of mineral acids	17.1 Residues, dusts or filter cakes 17.2 Spent catalyst
18.	Production of nitrogenous and complex fertilizers	18.1 Spent catalyst 18.2 Spent carbon 18.3 Sludge/residue containing arsenic 18.4 Chromium sludge from water cooling tower
19.	Production of phenol	19.1 Residue/sludge containing phenol

20.	Production and/or industrial use of solvents	20.1 Contaminated aromatic, aliphatic or napthenic solvents may or may not be fit for reuse. 20.2 Spent solvents 20.3 Distillation residues
21.	Production and/or industrial use of paints, pigments, lacquers, varnishes, plastics and inks	21.1 Process wastes, residues & sludges 21.2 Fillers residues
22.	Production of plastic raw materials	22.1 Residues of additives used in plastics manufacture like dyestuffs, stabilizers, flame retardants, etc. 22.2 Residues and waste of platicisers 22.3 Residues from vinylchloride monomer production 22.4 Residues from acrylonitrile production 22.5 Non-polymerised residues
23.	Production and/or industrial use of glues, cements, adhesive and resins	23.1 Wastes/residues (not made with vegetable or animal materials)
24.	Production of canvas and textiles	24.1 Chemical residues
25.	Industrial production and formulation of wood preservatives	25.1 Chemical residues 25.2 Residues from wood alkali bath
26.	Production or industrial use of synthetic dyes, dye-intermediates and pigments	26.1 Process waste sludge/residues containing acid or other toxic metals or organic complexes 26.2 Dust from air filtration system
27.	Production of organo-silicone compounds	27.1 process residues
28.	Production/formulation of drugs/ pharmaceuticals & health care product	28.1. Process Residues and wastes 28.2 Spent catalyst / spent carbon 28.3 Off specification products 28.4 Date-expired, discarded and off-specification drugs/ medicines 28.5. Spent organic solvents
29.	Production, and formulation of pesticides including stock-piles	29.1 Process wastes/residues 29.2 Chemical sludge containing residue pesticides 29.3 Date-expired and off-specification pesticides

30.	Leather tanneries	30.1 Chromium bearing residues and sludges
31.	Electronic Industry	31.1 Process residues and wastes 31.2 Spent etching chemicals and solvents
32.	Pulp & Paper Industry	32.1 Spent chemicals 32.2 Corrosive wastes arising from use of strong acid and bases 32.3 Process sludge containing adsorbable organic halides [AOx]
33.	Disposal of barrels / containers used for handling of hazardous wastes / chemicals	33.1 Chemical-containing residue arising from decontamination. 33.2 Sludge from treatment of waste water arising out of cleaning / disposal of barrels / containers 33.3 Discarded containers / barrels / liners contaminated with hazardous wastes/chemicals
34.	Purification and treatment of exhaust air, water & waste water from the processes in this schedule and common industrial effluent treatment plants (CETP's)	34.1 Flue gas cleaning residue 34.2 Spent ion exchange resin containing toxic metals 34.3 Chemical sludge from waste water treatment 34.4 Oil and grease skimming residues 34.5 Chromium sludge from cooling water
35.	Purification process for organic compounds/solvents	35.1 Filters and filter material which have organic liquids in them, e.g. mineral oil, synthetic oil and organic chlorine compounds 35.2 Spent catalyst 35.3 Spent carbon
36.	Hazardous waste treatment processes, e.g. incineration, distillation, separation and concentration techniques	36.1 Sludge from wet scrubbers 36.2 Ash from incineration of hazardous waste, flue gas cleaning residues 36.3 Spent acid from batteries 36.4 Distillation residues from contaminated organic solvents

* **The inclusion of wastes contained in this Schedule does not preclude the use of Schedule 2 to demonstrate that the waste is not hazardous. In case of dispute, the matter would be referred to the Technical Review Committee constituted by MoEF.**

Note: *The high volume low effect wastes such as fly ash, phosphogypsum, red mud, slags from pyrometallurgical operations, mine tailings and ore beneficiation rejects are excluded from the category of hazardous wastes. Separate guidelines on the management of these wastes shall be issued by CPCB.*

Schedule II

[*See* rule 3(l)]

List of Waste Constituents with Concentration Limits*

Class A

Concentration limit: □ 50 mg/kg

A1 Antimony and antimony compounds
A2 Arsenic and arsenic compounds
A3 Beryllium and beryllium compounds
A4 Cadmium and cadmium compounds
A5 Chromium (VI) compounds
A6 Mercury and mercury compounds
A7 Selenium and selenium compounds
A8 Tellurium and tellurium compounds
A9 Thallium and thallium compounds
A10 Inorganic cyanide compounds
A11 Metal carbonyls
A12 Napthalene
A13 Anthracene
A14 Phenanthrene
A15 Chrysene, benzo (a) anthracene, fluoranthene, benzo (a) pyrene, benzo (K) fluoranthene, indeno (1, 2, 3-cd) pyrene and benzo (ghi) perylene
A16 halogenated compounds of aromatic rings, e.g. polychlorinated biphenyls, polychloroterphenyls and their derivatives
A17 Halogenated aromatic compounds
A18 Benzene
A19 Organo-chlorine pesticides
A20 Organo-tin Compounds

Class B

Concentration limit: □ 5, 000 mg/kg

B1 Chromium (III) compounds
B2 Cobalt compounds
B3 Copper compounds
B4 Lead and lead compounds
B5 Molybdenum compounds
B6 Nickel compounds
B7 Inorganic Tin compounds
B8 Vanadium compounds
B9 Tungsten compounds
B10 Silver compounds
B11 Halogenated aliphatic compounds
B12 Organo phosphorus compounds

B13 Organic peroxides
B14 Organic nitro-and nitroso-compounds
B15 Organic azo-and azooxy compounds
B16 Nitriles
B17 Amines
B18 (Iso-and thio-) cyanates
B19 Phenol and phenolic compounds
B20 Mercaptans
B21 Asbestos
B22 Halogen-silanes
B23 Hydrazine (s)
B24 Flourine
B25 Chlorine
B26 Bromine
B27 White and red phosphorus
B28 Ferro-silicate and alloys
B29 Manganese-silicate
B30 Halogen-containing compounds which produce acidic vapours on contact with humid air or water, e.g. silicon tetrachloride, aluminium chloride, titanium tetrachloride

Class C
Concentration limit; □ 20, 000 mg/kg

C1 Ammonia and ammonium compounds
C2 Inorganic peroxides
C3 Barium compounds except barium sulphate
C4 Fluorine compounds
C5 Phosphate compounds except phosphates of aluminium, calcium and iron
C6 Bromates, (hypo-bromites)
C7 Chlorates, (hypo-chlorites) ,
C8 Aromatic compounds other than those listed under A12 to A18
C9 Organic silicone compounds
C10 Organic sulphur compounds
C11 Iodates
C12 Nitrates, nitrites
C13 Sulphides
C14 Zinc compounds
C15 Salts of per-acids
C16 Acid amides
C17 Acid anhydrides

Class D
Concentration limit: □ 50, 000 mg/kg

D1 Total Sulphur
D2 Inorganic acids

D3 Metal hydrogen sulphates
D4 Oxides and hydroxides except those of hydrogen, carbon, silicon, iron, aluminum, titanium, manganese, magnesium, calcium
D5 Total hydrocarbons other than those listed under A12 to A18
D6 Organic oxygen compounds
D7 Organic nitrogen compounds expressed as nitrogen
D8 Nitrides
D9 Hydrides

Class E

Regardless of concentration limit, Classified as hazardous wastes if the waste exhibits any of the following Characteristics.

E1 Flammable
Flammable wastes with flash point 65.6°c or below.

E2 Explosive
Wastes which may explode under the effect of flame, heat or photochemical conditions. Any other waste of explosive materials included in the Indian Explosive Act.

E3 Corrosive
Wastes which may be corrosive, by chemical action, will cause severe damage when in contact with living tissue.

E4 Toxic
Wastes containing or contaminated with established toxic and or eco- toxic constituents.

E5 Carcinogenicity, Mutagenecity and Endocrine disruptivity
Wastes contaminated or containing established carcinogens, mutagens and endocrine disruptors.

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*Waste constituents and their concentration limits given in this list are based on erstwhile BAGA (the Netherlands Environment Protection Agency) List of Hazardous Substances. In order to decide whether specific wastes listed above is hazardous or not, following points be taken into consideration:

(i) If a component of the waste appears in one of the five risk classes listed above (A,B,C,D or E) and the concentration of the component is equal to or more than the limit for the relevant risks class, the material is then classified as hazardous waste.
(ii) If a chemical compound containing a hazardous constituent is present in the waste, the concentration limit does not apply to the compound, but only to the hazardous constituent itself.
(iii) If multiple hazardous constituents from the same class are present in the waste, the concentrations are added together.
(iv) If multiple hazardous constituents from different classes are present in the waste, the lowest concentration limit corresponding to the constituent(s) applies.
(v) For determining the concentration of the hazardous constituents in the waste "Toxicity Characteristics Leaching Procedure (TCLP) as per ASTM-D5233-92 should be adopted.

Schedule III

[*See* rules 3(l),14(1),14(2) (i) ,(iii) and 15(1)]

PART A

Part A: List of Hazardous Wastes Applicable for Import with Prior Informed Consent [Annexure VIII of the Basel Convention*]

Basel No.	Description of Hazardous Wastes
AI	**Metal and Metal bearing wastes**
A1010	Metal wastes and waste consisting of alloys of any of the following
	- Antimony
	- Cadmium
	- Tellurium - Lead
A1020	Waste having as constituents or contaminants, excluding metal wastes in massive form as listed in B1020, any of the following:
	- Cadmium, cadmium compounds.
	- Antimony, antimony compounds.
	- Tellurium, tellurium compounds.
	- Lead, lead compounds.
A1040	Wastes having metal carbonyls as constituents
A1050	Galvanic sludges
A1060	Wastes Liquors from the pickling of metals.
A1070	Leaching residues from zinc processing, dusts and sludges such as jarosite, hematite etc.,
A1080	Waste Zinc residues not included on list B containing lead and cadmium in concentrations sufficient to exhibit hazard characteristics indicated in Part C of Schedule - 3
A1090	Ashes from the incineration of insulated copper wire
A1100	Dusts and residues from gas cleaning systems of copper smelters.
A1110	Spent electrolytic solutions from copper electrorefining and electrowinning operations
A1120	Waste sludges, excluding anode slimes, from electrolytic purification systems in copper electrorefining and electrowinning operations.
A1130	Spent etching solutions containing dissolved copper.
A1150	Precious metal ash from incineration of printed circuit boards not included in list' B'
A1160	Waste Lead acid batteries whole or crushed.
A1170	Unsorted waste batteries excluding mixtures of List B batteries.
A1180	Waste Electrical and electronic assembles or scrap containing, components such

	as accumulators and other batteries included on list A, mercury-switches, activated glass cullets from cathode-ray tubes and other activated glass and PCB-capacitors, or contaminated with Schedule 2 constituents (e.g. cadmium, mercury, lead, polychlorinated biphenyl) to an extent that they exhibit hazard characteristics indicated in part C of this Schedule (refer B1110)
A2	**Wastes containing principally inorganic constituents, which may contain metals and organic materials**
A2010	Activated Glass cullets from cathode ray tubes and other activated glasses
A2030	Waste catalysts but excluding such wastes specified on List B of Schedule 3
A3	**Wastes containing principally organic constituents which may contain metals and inorganic materials**
A3010	Waste from the production or processing of petroleum coke and bitumen
A3020	Waste mineral oils unfit for their originally intended use
A3050	Wastes from production, formulation and use of resins, latex, plasticisers, glues/adhesives excluding such wastes specified in List B (B4020)
A3070	Waste phenol, phenol compounds including chlorophenol in the form of liquids or sludges
A3080	Waste ethers not including those specified in List B
A3120	Fluff: light fraction from shredding
A3130	Waste organic phosphorus compounds
A3140	Waste non-halogenated organic solvents but excluding such wastes specified on List B
A3160	Waste halogenated or unhalogenated non-aqueous distillation residues arising from organic solvent recovery operations
A3170	Waste arising from the production of aliphatic halogenated hydrocarbons (such as chloromethanes, dichloroethane, vinylchloride, vinylidene chloride, allyl chloride and epichlorhydrin)
A4	**Wastes which may contain either inorganic or organic constituents**
A4010	Wastes from the production and preparation and use of pharmaceutical products but excluding such wastes specified on List B
A4040	Wastes from the manufacture formulation and use of wood preserving chemicals
A4070	Waste from the production, formulation and use of inks, dyes, pigments, paints, lacquers, varnish excluding those specified in List B (B4010)
A4080	Wastes of an explosive nature excluding such wastes specified on List B
A4090	Waste acidic or basic solutions excluding those specified in List B (B2120)
A4100	Wastes from industrial pollution control devices for cleaning of industrial off-gases excluding such wastes specified on List B
A4120	Wastes that contain, consist of or are contaminated with peroxides.
A4130	Waste packages and containers containing any of the constituents mentioned in Schedule 2 to the extent of concentration limits specified therein.
A4140	Waste consisting of or containing off specification or out-dated chemicals containing any of the constituents mentioned in Schedule 2 to the extent of concentration limits specified therein.
A4150	Waste chemical substances arising from research and development or teaching activities which are not identified and/or are new and whose effects on human health and/or the environment are not known
A4160	Spent activated carbon not included on List B (B2060)

*This List is based on Annex.VIII of the Basel Convention on Transboundary Movement of Hazardous Wastes and comprises of wastes characterized as hazardous under Article 1, paragraph 1(a) of the Convention. Inclusion of wastes on this list does not preclude the use of hazard

characteristics given in Annex.VIII of the Basel Convention (Part C of this Schedule) to demonstrate that the wastes are not hazardous. **Certain waste categories listed in the Schedule - 3 (Part–A) have been prohibited for import. Hazardous wastes in the Schedule – 3 (Part –A) are restricted and cannot be allowed to be imported without permission from Ministry of Environment & Forests and DGFT license.**

PART B

List of Hazardous Wastes applicable for Import and Export not Requiring Prior Informed Consent

[Annex IX of the Basel Convention*]

Basel No.	Description of Wastes
B1	**Metal and metal-bearing wastes**
B1010	Metal and metal-alloy wastes in metallic, non-dispersible form:
	- Precious metals (gold, silver, platinum)**
	- Iron and steel scrap**
	- Nickel scrap**
	- Aluminum scrap**
	- Zinc scrap**
	- Tin scrap**
	- Tungsten scrap**
	- Molybdenum scrap**
	- Tantalum scrap**
	- Cobalt scrap**
	- Bismuth scrap**
	- Titanium scrap**
	- Zirconium scrap**
	- Manganese scrap**
	- Germanium scrap**
	- Vanadium scrap **
	- Hafnium scrap**
	- Indium scrap**
	- Niobium scrap**
	- Rhenium scrap**
	- Gallium scrap**
	- Magnesium scrap**
	- Copper scrap**
	- Thorium scrap
	- Rare earths scrap
	- Chromium scrap**
B1020	Clean, uncontaminated metal scrap, including alloys, in bulk finished form (sheet, plates, beams, rods, etc.) , of:
	- Antimony scrap****
	- Cadmium scrap
	- Lead scrap (excluding lead acid batteries)
	- Tellurium scrap****

B1030	Refractory metals containing residues****
B1031	Molybdenum, tungsten, titanium, tantalum, niobium and rhenium metal and metal alloy wastes in metallic dispersible form (metal powder), excluding such wastes as specified in list A under entry A1050, Galvanic sludges****
B1040	Scrap assemblies from electrical power generation not contaminated with lubricating oil, PCB or PCT to an extent to render them hazardous**
B1050	Mixed non-ferrous metal, heavy fraction scrap, not containing any of the constituents mentioned in Schedule 2 to the extent of concentration limits specified therein**
B1060	Waste selenium and tellurium in metallic elemental form including powder****
B1070	Waste of copper and copper alloys in dispersible form, unless they contain any of the constituents mentioned in Schedule 2 to the extent of concentration limits specified therein***
B1080	Zinc ash and residues including zinc alloys residues in dispersible form unless they contain any of the constituents mentioned in Schedule 2 to the extent of concentration limits specified therein***
B1090	Waste batteries conforming to a standard battery specification, excluding those made with lead, cadmium or mercury.****
B1100	Metal bearing wastes arising from melting, smelting and refining of metals:
	- Hard Zinc Spelter**
	- Zinc-containing drosses: ** ~ Galvanizing slab zinc top dross (>90% Zn) ~ Galvanizing slab zinc bottom dross (>92% Zn) ~ Zinc die casting dross (>85% Zn) ~ Hot dip galvanizers slab zinc dross (batch) (>92% Zn ~ Zinc skimmings (>90%Zn)
	-Slags from copper processing for further processing or refining containing arsenic, lead or cadmium***
	- Slags from precious metals processing for further refining**
	- Wastes of refractory linings, including crucibles, originating from copper smelting
	- Aluminum skimmings (or skims) excluding salt slag**
	-Tantalum-bearing tin slags with less than 0.5% tin****
B1110	Electrical and electronic assemblies
	- Electronic assemblies consisting only of metals or alloys****

	- Waste electrical and electronic assemblies scrap (including printed circuit boards) not containing components such as accumulators and other batteries included on list A, mercury-switches, glass from cathode-ray tubes and other activated glass and PCB-capacitors, or not contaminated with constituents such as cadmium, mercury, lead, polychlorinated biphenyl) or from which these have been removed, to an extent that they do not possess any of the constituents mentioned in Schedule 2 to the extent of concentration limits specified therein ****
	- Electrical and electronic assemblies (including printed circuit boards, electronic components and wires) destined for direct reuse and not for recycling or final disposal.
B1120	Spent catalysts excluding liquids used as catalysts, containing any of: Transition metals, excluding waste catalysts (spent catalysts, liquid used catalysts or other catalysts) on list A: Scandium Titanium Vanadium Chromium Manganese Iron Cobalt Nickel Copper Zinc Yttrium Zirconium Niobium Molybdenum Hafnium Tantalum Tungsten Rhenium Lanthanaides (rare earth metals): Lanthanum Cerium Praseodymium Neody Samarium Europium Gadolinium Terbium Dysprosium Holmium Erbium Thulium Ytterbium Lutetium
B1130	Cleaned spent precious metal bearing catalysts
B1140	Precious metal bearing residues in solid form which contain traces of inorganic cyanides
B1150	Precious metals and alloy wastes (gold , silver, the platinum group) in a dispersible form
B1160	Precious-metal ash from the incineration of printed circuit boards (note the related entry on list A A1150)
B1170	Precious metal ash from the incineration of photographic film

B1180	Waste photographic film containing silver halides and metallic silver
B1190	Waste photographic paper containing silver halides and metallic silver
B1200	Granulated slag arising from the manufacture of iron and steel
B1210	Slag arising from the manufacture of iron and steel including slag as a source of Titanium dioxide and Vanadium
B1220	Slag from zinc production, chemically stabilized, having a high iron content (above 20%) and processed according to industrial specifications mainly for construction
B1230	Mill scaling arising from manufacture of iron and steel**
B1240	Copper Oxide mill-scale***
B2	**Wastes containing principally inorganic constituents, which may contain metals and organic materials**
B2010	Wastes from mining operations in non-dispersible form:
	- Natural graphite waste
	- Slate wastes
	- Mica wastes
	- Leucite, nepheline and nepheline syenite waste
	- Feldspar waste
	- Fluorspar waste
	- Silica wastes in solid from excluding those used in foundry operations
B2020	Glass wastes in non-dispersible from: - Glass Cullets and other wastes and scrap of glass except activated glass cullets from cathode ray tubes and other activated glasses
B2030	Ceramic wastes in non-dispersible form:
	Cermet wastes and scrap (metal ceramic composites) - Ceramic based fibres
B2040	Other wastes containing principally inorganic constituents:
	- Partially refined calcium sulphate produced from flue gas desulphurisation (FGD) - Waste gypsum wallboard or plasterboard arising from the demolition of buildings - Sulphur in solid form

	- Limestone from production of calcium cyanamide (pH<9) - Sodium, potassium, calcium chlorides - Carborundum (silicon carbide) - Broken concrete - Lithium tantalum & Lillium-niobium containing glass scraps
B2060	Spent activated carbon resulting from the treatment of potable water and processes of the food industry and vitamin production (note the related entry on list A A4160)
B2070	Calcium fluoride sludge
B2080	Waste gypsum arising from chemical industry processes unless it contains any of the constituents mentioned in Schedule 2 to the extent of concentration limits specified therein
B2090	Waste anode butts from steel or aluminium production made of petroleum coke or bitumen and cleaned to normal industry specifications (excluding anode butts from chlor alkali electrolyses and from other metallurgical industry)
B2100	Waste hydrates of aluminum and waste alumina and residues from alumina production, arising from gas cleaning, flocculation or filtration process
B2110	Bauxite residue ("red mud") (pH moderated to less than 11.5)
B2120	Waste acidic or basic solutions with a pH greater than 2 and less than 11.5, which are not corrosive or otherwise hazardous (note the related entry on list A A4090)
B3	**Wastes containing principally organic constituents, which may contain metals and inorganic materials**
B3010	Solid plastic waste The following plastic or mixed plastic waste, provided they are not mixed with other wastes and are prepared to a specification: - Scrap plastic of non-halogenated polymers and copolymers, including but not limited to the following:
	Ethylene
	Styrene
	Polypropylene
	polyethylene terephthalate
	Acrylonitrile
	Butadiene
	Polyacetals
	Polyamides

	polybutylene tere-phthalate
	Polycarbonates
	Polyethers
	polyphenylene sulphides
	acrylic polymers
	alkanes C10-C13 (plasticiser)
	polyurethane (not containing CFC's)
	Polysiloxanes
	polymethyl methacrylate
	polyvinyl alcohol
	polyvinyl butyral
	Polyvinyl acetate
	- Cured waste resins or condensation products including the following:
	urea formaldehyde resins
	phenol formaldehyde resins
	melamine formaldehyde resins
	epoxy resins
	alkyd resins
	polyamides
	- The following fluorinated polymer wastes (excluding post-consumer wastes):
	Perfluoroethylene/ propylene
	Perfluoroalkoxy alkane
	Metafluoroalkoxy alkane
	polyvinylfluoride
	polyvinylidenefluoride
B3020	Paper, paperboard and paper product wastes**** The following materials, provided they are not mixed with hazardous wastes: Waste and scrap of paper or paperboard of: • unbleached paper or paperboard or of corrugated paper or paperboard • other paper or paperboard, made mainly of bleached chemical pulp, not coloured in the mass • paper or paperboard made mainly of mechanical pulp (for example, newspapers, journals and similar printed matter) • other, including but no t limited to 1) laminated paperboard 2) unsorted scrap.
B3130	Waste polymer ethers and waste non-hazardous monomer ethers incapable of forming peroxides
B3140	Waste pneumatic tyres, excluding those which do not lead to resource recovery, recycling, reclamation or direct reuse

B4	**Wastes which may contain either inorganic or organic constituents**
B4010	Wastes consisting mainly of water-based/latex paints, inks and hardened varnishes not containing organic solvents, heavy metals or biocides to an extent to render them hazardous (note the related entry on list A A4070)
B4020	Wastes from production, formulation and use of resins, latex, plasticizers, glues/adhesives, not listed on list A, free of solvents and other contaminants to an extent that they do not exhibit Part C of Schedule 3 characteristics
B4030	Used single-use cameras, with batteries not included on list A

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* This List is based on Annex. IX of the Basel Convention on Transboundary Movement of Hazardous Wastes and comprises of wastes not characterized as hazardous under Article – I of the Basel Convention.

** Import permitted in the country without any license or restriction.

*** Import permitted in the country for recycling/reprocessing by units registered with MoEF/CPCB and having DGFT license .

**** Import permitted in the country by the actual users with MoEF permission and DGFT license.

All other wastes listed in this Schedule -3 (Par – B) having no ' Star/s'(*...) can only be imported in to the country with the permission of MoEF.

Note:

(1) **Copper dross containing copper greater than 65% and lead and cadmium equal to or less than 1.25% and 0.1% respectively; spent cleaned metal catalyst containing copper; and Copper reverts, cake and residues containing lead and cadmium equal to or less than 1.25% and 0.1% respectively are allowed for import without DGFT licence to units (actual users) registered with MoEF upto an annual quantity limit indicated in the Registration letter. Copper reverts, cake and residues containing lead and cadmium greater than 1.25% and 0.1% respectively are under restricted category for which import is permitted only against DGFT licence for the purpose of processing or reuse by units registered with MoEF (actual users).**

(2) **Zinc ash/skimmings in dispersible form containing zinc more than 65% and lead and cadmium equal to or less than 1.25% and 0.1% respectively and spent cleaned metal catalyst containing zinc are allowed for import without DGFT licence to units registered with MoEF (actual users) upto an annual quantity limit indicated in Registration Letter. Zinc ash and skimmings containing less than 65% zinc and lead and cadmium equal to or more than 1.25% and 0.1% respectively and hard zinc spelter and brass dross containing lead greater than 1.25% are under restricted category for which import is permitted against DGFT licence and only for purpose of processing or reuse by units registered with MoEF (actual users).**

PART C
List of Hazardous Characteristics

Code	Characteristic
H 1	**Explosive** An explosive substance or waste is a solid or liquid substance or waste (or mixture of substances or wastes) which is in itself capable by chemical reaction of producing gas at such a temperature and pressure and at such speed as to cause damage to the surroundings (UN Class 1; III)
H 3	**Flammable Liquids** The word "flammable" has the same meaning as "inflammable". Flammable liquids are liquids, or mixtures of liquids, or liquids containing solids in solution or suspension (for example, paints, varnishes, lacquers, etc. but not including substances or wastes otherwise classified on account of their dangerous characteristics) which give off a flammable vapour at temperatures of not more than 60.5°C, closed-cup test, or not more than 65.5°C, open-cup test. (Since the results of open-cup tests and of closed-cup tests are not strictly comparable and even individual results by the same test are often variable, regulations varying from the above figures to make allowance for such differences would be within the spirit of this definition).
H 4.1	**Flammable Solids** Solids, or waste solids, other than those classed as explosives, which under conditions encountered in transport are readily combustible, or may cause or contribute to fire through friction.
H 4.2.	**Substances or wastes liable to spontaneous combustion** Substances or wastes which are liable to spontaneous heating under normal conditions encountered in transport, or to heating up on contact with air, and being then liable to catch fire.
H 4.3	**Substances or wastes which, in contact with water emit flammable gases** Substances or wastes which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities.

H 5.1	**Oxidizing** Substances or wastes which, while in themselves not necessarily combustible, may, generally by yielding oxygen cause, or contribute to, the combustion of other materials.
H 5.2	**Organic Peroxides** Organic substances or wastes which contain the bivalent-O-O- structure are thermally unstable substances which may undergo exothermic self-accelerating decomposition.
H 6.1	**Poisons (Acute)** Substances or wastes liable either to cause death or serious injury or to harm health if swallowed or inhaled or by skin contact.
H 6.2	**Infectious substances** Substances or wastes containing viable micro organisms or their toxins which are known or suspected to cause disease in animals or humans.
H 8	**Corrosives** Substances or wastes which, by chemical action, will cause severe damage when in contact with living tissue, or, in the case of leakage, will materially damage, or even destroy, other goods or the means of transport; they may also cause other hazards.
H 10	**Liberation of toxic gases in contact with air or water** Substances or wastes which, by interaction with air or water, are liable to give off toxic gases in dangerous quantities.
H 11	**Toxic (Delayed or chronic)** Substances or wastes which, if they are inhaled or ingested or if they penetrate the skin, may involve delayed or chronic effects, including carcinogenicity).
H 12	**Ecotoxic** Substances or wastes which if released present or may present immediate or delayed adverse impacts to the environment by means of bioaccumulation and/or toxic effects upon biotic systems.
H 13	**Capable** by any means, after disposal, of yielding another material, e.g., Leachate, which possesses any of the characteristics listed above.

Schedule IV

[(See rules), 8 (1)and 9]

List of Hazardous Wastes requiring Registration for Recycling/Reprocessing

Sl. No.	Wastes
1	Brass Dross
2	Copper Dross
3	Copper Oxide mill scale
4	Copper reverts, cake and residue
5	Waste Copper and copper alloys in dispersible form.
6	Slags from copper processing for further processing or refining
7	Insulated Copper Wire Scrap/copper with PVC sheathing including ISRI-code material namely "Druid"
8	Jelly filled copper cables
9	Spent cleared metal catalyst containing copper
10	Spent catalyst containing nickel, cadmium, zinc, copper, arsenic, vanadium and cobalt
11	Zinc Dross-Hot dip Galvanizers SLAB
12	Zinc Dross-Bottom Dross
13	Zinc ash/skimmings arising from galvanizing and die casting operations
14	Zinc ash/skimming/other zinc bearing wastes arising from smelting and refining
15	Zinc ash and residues including zinc alloy residues in dispersible form
16	Spent cleared metal catalyst containing zinc
17	Lead acid battery plates and other lead scrap/ashes/residues not covered under Batteries (Management and Handling)Rules, 2001. [*Battery scrap, namely: Lead battery plates covered by ISRI, Code word "Rails" Battery lugs covered by ISRI, Code word "Rakes". Scrap drained/dry while intact, lead batteries covered by ISRI, Code word "Rains".
18	Components of waste electrical and electronic assembles comprising accumulators and other batteries included on list A, mercury-switches, activated glass cullets from cathode-ray tubes and other activated glass and PCB-capacitors, or any other component contaminated with Schedule 2 constituents (e.g. cadmium, mercury, lead, polychlorinated biphenyl) to an extent that they exhibit hazard characteristics indicated in part C of this Schedule.
19	Paint and ink Sludge/residues
20	Used Oil and Waste Oil - As per specifications prescribed from time to time .

Schedule V

[See rule 3 (ze)and (zf)]

PART A

Specifications of used oil suitable for reprocessing / recycling

S. No.	Parameter	Maximum permissible Limits
(1)	(2)	(3)
1.	Polychlorinated biphenyls (PCBs)	<2 ppm *
2.	Lead	100 ppm
3.	Arsenic	5 ppm
4.	Cadmium+Chromium+Nickel	500 ppm
5	Polyaromatic hydrocarbons (PAH)	6%

PART B

Specifications of fuel derived from Waste Oil

S. No.	Parameter	Maximum permissible Limits
(1)	(2)	(3)
1.	Sediment	0.25 %
2.	Lead	100 ppm
3.	Arsenic	5 ppm
4.	Cadmium+Chromium+Nickel	500 ppm
5.	Polyaromatic hydrocarbons (PAH)	6%
6.	Total halogens	4000 ppm
7.	Polychlorinated biphenyls (PCBs)	<2 ppm *
8.	Sulfur	4.5 %
9.	Water Content	1 %

The detection limit is 2 ppm by Gas Liquid Chromatography (GLC) using Electron Capture detector (ECD)

Schedule VI

[See rule 13(4)]

Hazardous Wastes Prohibited for Import and Export

S.No.	Basel No	Description of Hazardous Wastes
1.	A1010	Mercury bearing wastes
2.	A1030	Waste having Mercury: Mercury Compounds as constituents or contaminants
3.	A1010	Beryllium bearing wastes
4.	A1020	Waste having Beryllium: Beryllium Compounds as constituents or contaminants
5.	A1010	Arsenic bearing wastes
6.	A1030	Waste having Arsenic: Arsenic compounds as constituents or contaminants
7.	A1010	Selenium bearing wastes
8.	A1020	Waste having Selenium; Selenium Compounds as constituents or contaminants
9.	A1010	Thallium bearing wastes
10.	A1030	Waste having Thallium; Thallium Compounds as constituents or contaminants
11.	A1040	Hexavalent Chromium Compounds bearing wastes
12.	A1140	Wastes Cupric Chloride and Copper Cyanide Catalysts bearing wastes
13	A1190	Waste metal cables coated or insulated with plastics containing or contaminated with coal tar, PCB", lead, cadmium, other organohalogen compounds or other constituents as mentioned in schedule 2 to the extent of concentration limits specified therein.
14.	A2020	Waste inorganic fluorine compounds in the form of liquids or sludge but excluding calcium fluoride sludge
15.	A2040	Waste gypsum arising from chemical industry processes if it contains any of the constituents mentioned in Schedule 2 to the extent of concentration limits specified therein
16.	A2050	Waste Asbestos (Dust and Fibres)
17.	A3030	Wastes that consist of or are contaminated with leaded anti-knock compound sludge or leaded petrol (gasoline) sludges.
18.	A3040	Waste Thermal (heat transfer) fluids
19.	A3060	Waste Nitrocellulose
20.	A3090	Waste Leather dust, ash, sludges or flours when containing hexavalent chromium compounds or biocides

21.	A3100	Waste paring and other wastes of leather or of composition leather not suitable for the manufacture of leather articles, containing hexavalent chromium compounds and biocides
22.	A3110	Fellmongery wastes containing hexavalent chromium compounds or biocides or infectious substances
23.	A3150	Halogenated organic solvents
24.	A3180	Waste, Substances and articles containing, consisting of or contaminated with polychlorinated biphenyles (PCB) and/or polychlorinated terphenyls, (PCT) and/or polychlorinated naphthalenes (PCN) and/or polybrominated biphyenyles (PBB) or any other polybrominated analogues of these compounds
25.	A3190	Waste tarry residues (excluding asphalt cements) arising from refining, distillation and pyrolitic treatment of organic materials)
26.	A4020	Clinical and related wastes; that is wastes arising from medical, nursing, dental, veterinary, or similar practices and wastes generated in hospital or other facilities during the investigation or treatment of patients, or research projects.
27.	A4030	Waste from the production, formulation and use of biocides and phyto-pharmaceuticals, including waste pesticides and hebicides which are off-specification, out-dated, and/or unfit for their originally intended use.
28.	A4050	Waste that contain, consist of, or are contaminated with any of the following; Inorganic cyanides, excepting precious metal bearing residues in solid form containing traces of inorganic cyanides. Organic cyanides
29.	A4060	Waste oil/water, hydrocarbons/water mixtures, emulsions
30.	A4110	Wastes that contain, consist of or are contaminated with any of the following : • Any congenor of polychlorinated dibenzofuran • Any congenor of polychlorinated dibenzo-dioxin.

Schedule VII
[See rule 23]

List of Authorities and Corresponding Duties

S.No.	Authority	Corresponding Duties
1.	Ministry of Environment and Forests under the Environment (Protection) Act, 1986	i. Identification of hazardous wastes ii. Permission to exporters of hazardous wastes iii. Permission to importers of hazardous wastes iv. Permission for transit of hazardous wastes through India v. Sponsoring of training and Awareness programme on Hazardous Waste Management related activities.
2.	Central Pollution Control Board constituted under the Water (Prevention and Control of Pollution) Act, 1974	i. Co-ordination of activities of State Pollution control Boards/ Committees ii. Conduct training courses for authorities dealing with management of hazardous wastes iii. Recommend standards and specifications for treatment and disposal of wastes and leachates Recommend procedures for characterization of hazardous wastes. iv. Sector specific documentation to identify waste for inclusion in Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008. v. Prepare guidelines to prevent/reduce/ minimize the generation and handling of hazardous wastes vi. Registration and renewal of registration of Recyclers/Re-processors vii. Any other function under Rules delegated by the Ministry of Environment & Forests.
3.	State Government/Union Territory Government/Administration	i. Identification of site(s) for common Hazardous Waste Treatment Storage and Disposal Facility (TSDF) ii. Assess EIA reports and convey the decision of approval of site or otherwise iii. Acquire the site or inform operator of

		facility or occupier or association of occupiers to acquire the site iv. Notification of sites v. Publish periodically an inventory of all disposal sites in the State/Union Territory
4.	State Pollution Control Boards or Pollution Control Committees constituted under the Water (Prevention and Control of Pollution) Act, 1974	i. Inventorisation of hazardous wastes ii. Grant and renewal of authorization iii. Monitoring of compliance of various provisions and conditions of authorization including conditions of permission for issued by MoEF exports and imports iv. Examining the applications for imports submitted by the importers and forwarding the same to Ministry of Environment and Forests v. Implementation of programmes to prevent/reduce/minimize the generation of hazardous wastes vi. Action against violations of Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008 vii. Any other function under these Rules assigned by MoEF from time to time.
5.	Directorate General of Foreign Trade constituted under the Foreign Trade (Development and Regulation) Act, 1992	i. Grant of licence for import of hazardous wastes ii. Refusal of licence for hazardous wastes prohibited for imports and export
6.	Port Authority under Indian Ports Act, 1908 (15 of 1908) and Customs Authority under the Customs Act, 1962 (52 of 1962)	i. Verify the documents ii. Inform the Ministry of Environment and Forests of any illegal traffic iii. Analyse wastes permitted for imports and exports iv. Train officials on the provisions of the (Management, Handling and Transboundary Movement) Rules, 2008 and in the analysis of hazardous wastes v. Take action against exporter/importer for violations under the Indian Ports Act, 1908/Customs Act, 1962

FORM 1

[See rules 5(3) and (7)]

APPLICATION FOR OBTAINING AUTHORISTION FOR COLLECTION/RECEPTION/TREATMENT/TRANSPORT/STORAGE /DISPSOAL OF HAZARDOUS WASTE*

From: .....
.....

To

The Member Secretary,
..... Pollution Control Board/.....Pollution Control Committee,
.....

Sir,

I / We hereby apply for authorisation/renewal of authorisation under sub-rule (3) of Rule 5 of the Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008 for collection/reception/treatment/ transport/storage/disposal of hazardous wastes.

For Office Use Only

5. Code No. :

6. Whether the unit is situated in a critically polluted area as identified by Ministry of Environment and Forests;

To be filled in by Applicant

Part A: General

3. (a) Name and address of the unit and location of activity :

(b) Authorisation required for (Please tick mark appropriate activity / activities :
- (i) collection
- (ii) reception
- (iii) treatment
- (iv) transport
- (v) storage
- (vi) disposal

(c) In case of renewal of authorisation previous authorisation number and date

* delete whichever is not applicable

4. (a) Whether the unit is generating hazardous waste as defined in these Rules:
(b) If so the type and quantity of wastes (in Tonnes/KL) :

5. (a) Total capital invested on the project (in Rupees) :
(b) Year of commencement of production :
(c) Whether the industry works general/ 2 shifts/ round the clock :

6. (a) List and quantum of products and by-products (in Tonnes/KL) :
(b) List and quantum of raw material used (in Tonnes/KL) :

7. Furnish a flow diagram of manufacturing process showing input and output in terms of products, waste generated including for captive power generation and demineralised water.

Part B: Hazardous Waste

8. Hazardous Wastes:
(a) Type of hazardous wastes generated as defined under these Rules :
(b) Quantum of hazardous waste generated :
(c) Sources and waste characteristics : (Also indicate wastes amenable to recycling, re-processing and reuse)
(d) Mode of storage within the plant, method of disposal and capacity: (provide details).

9. Hazardous Wastes generated as per these Rules from storage of hazardous chemicals as defined under the Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989

Part C: Treatment, Storage and Disposal Facility

10. Detailed proposal of the facility (to be attached) to include :
(i) Location of site (provide map) :
(ii) Name of waste processing technology :
(iii) Details of processing technology :
(iv) Type and Quantity of waste to be processed per day :
(v) Site clearance (from local authority, if any) :
(vi) Utilization programme for waste processed (Product Utilization) :
(vii) Method of disposal (details in brief be given) :
(viii) Quantity of waste to be disposed per day :
(ix) Nature and composition of waste :
(x) Methodology and operational details of land filling/ incineration :
(xi) Measures to be taken for prevention and control of environmental pollution including treatment of leachate :
(xii) Investment on Project and expected returns :
(xiii) Measures to be taken for safety of workers working in the plant :

Place :
Date :

Signature : .....
Designation : .....

FORM 2

[See rule 5(4)]

FORM FOR GRANT/RENEWAL OF AUTHORISATION BY SPCB/PCC FOR OCCUPIERS, REPROCESSORS, REUSERS AND OPERATORS OF FACILITIES FOR COLLECTION, RECEPTION, TREATMENT, STORAGE, TRANSPORT, AND DISPOSAL OF HAZARDOUS WASTE

1. Number of authorisation and date of issue :

2. .....of.....is hereby granted an authorisation to operate a facility for collection, reception, treatment, storage, transport and disposal of hazardous waste on the premises situated at.....

3. The authorisation granted to operate a facility for generation, collection, reception, treatment, storage, transport and disposal of hazardous wastes.

4. The authorisation shall be in force for a period of .....

5 The authorisation is subject to the conditions stated below and the such conditions as may be specified in the rules for the time being in force under the Environment (Protection) Act, 1986.

Date :

Signature of Issuing Authority
Designation and Seal

Terms and conditions of authorisation

1. The authorisation shall comply with the provisions of the Environment (Protection) Act, 1986, and the rules made there under.

2. The authorisation or its renewal shall be produced for inspection at the request of an officer authorised by the SPCB/PCC.

3. The person authorised shall not rent, lend, sell, transfer or otherwise transport the hazardous wastes without obtaining prior permission of the SPCB/PCC.

4. Any unauthorized change in personnel, equipment as working conditions as mentioned in the application by the person authorised shall constitute a breach of his authorisation.

5. It is the duty of the authorised person to take prior permission of the SPCB/PCC to close down the facility.

6. An application for the renewal of an authorisation shall be made as laid down under these Rules.

7. Any other conditions for compliance as per the Guidelines issued by the MoEF or CPCB.

FORM 3

[See rule 5 (6), and 22 (1)]

FORMAT FOR MAINTAINING RECORDS OF HAZARDOUS WASTES BY THE OCCUPIER OR OPERATOR OF A FACILITY

1. Name and address of the occupier or operator of a facility :

2. Date of issuance of authorisation and its reference number :

3. Description of hazardous waste :

Physical form with description	Chemical form	Total volume (m^3) and weight (in kg.)

4. Description of storage and treatment of hazardous waste :

Date	Method of storage of hazardous wastes	Date	Method of treatment of hazardous wastes

5. Details of transportation of hazardous waste

Name and address of the consignee of package	Mode of packing of the waste for transportation	Mode of transportation to site of disposal	Date of transportation

6. Details of disposal of hazardous waste :

Date of disposal	Concentration of hazardous constituents in the final waste form	Site Of disposal (identify the location on the relevant layout drawing for reference)	Method of disposal	Persons involved in disposal

7. Data on environmental surveillance :

Date of measu-rement	Analysis of ground water			Analysis of soil samples			Analysis of air samples		Analysis of any other samples (give details)
	Locatin of sampling	Depth of sampling	Data	Location of sampling	Depth of sampling	Data	Location of sampling	Data	

8. Details of hazardous waste sold/auctioned to the recyclers or reprocessors or re-users:

9. Details of hazardous waste reused or recycled :

Date	Total Quantity of Hazardous Wastes generated	Details of hazardous waste minimization activity	Materials received	Final Quantity of waste generated	Net reduction in waste generation quantity and percentage

Date: Name and signature of the Head of facility

Place:

FORM 4

[See rules 5(6) and 22 (2)]

FORM FOR FILING ANNUAL RETURNS BY THE OCCUPIER OR OPERATOR OF FACILITY

[To be submitted by occupier/operator of disposal facility to State Pollution Control Board/ Pollution Control Committee by 30th June of every year for the preceding period April to March]

1.	Name and address of the generator/ operator of facility	:				
2.	Name of the authorised person and full address with telephone and fax number	:				
3.	Description of hazardous waste	:	Physical form with description		Chemical form	
4.	Quantity of hazardous wastes (in MTA)	:	**Type of hazardous waste**		**Quantity (in Tonnes /KL)**	
			(a)			
			(b)			
			(c)			
			.....		.....	
5.	Description of Storage	:				
6.	Description of Treatment	:				
7.	Details of transportation	:	Name & address of consignee	Mode of packing	Mode of transportation	Date of transportation
8.	Details of disposal of hazardous waste	:	Name & address of consignee	Mode of packing	Mode of transportation	Date of transportation
9.	Quantity of useful materials sent back to the manufacturers* and others#	:	**Name and type of material sent back to**		**Quantity in Tonnes/KL**	
			Manufacturers*			
			Others#			

* *delete whichever is not applicable*

\# *enclose list of other agencies.*

Signature :

Designation :

Date : .....

Place : .....

FORM 5

[See rule 8(1)]

FORM OF APPLICATION FOR GRANT/RENEWAL OF REGISTRATION OF INDUSTRIAL UNITS POSSESSING ENVIRONMENTALLY SOUND MANAGEMENT FACILITIES FOR REPROCESSING/RECYCLING

{To be submitted to the Central Pollution Control Board in triplicate by the Reprocessor/Recycler}

<table>
<tr><td>1</td><td>Name and Address of the unit :</td><td></td></tr>
<tr><td>2</td><td>Name of the occupier or owner of the unit with designation, Tel / Fax:</td><td></td></tr>
<tr><td>3</td><td>Date of commissioning of the unit :</td><td></td></tr>
<tr><td>4.</td><td>No. of workers (including contract labourers) :</td><td></td></tr>
<tr><td>5</td><td>Consent Validity</td><td>a) Water (Prevention & Control of Pollution) Act, 1974 valid up to.....

b) Air (Prevention & Control of Pollution) Act, 1981 valid up to.....</td></tr>
<tr><td>6.</td><td>Product Manufactured during the last three years (Tonnes / Year)</td><td><table><tr><th>Year</th><th>Name of the Product</th><th>Quantity in Metric Tonnes or KL</th></tr><tr><td rowspan="3"></td><td>a)</td><td></td></tr><tr><td>b)</td><td></td></tr><tr><td>c)</td><td></td></tr></table></td></tr>
<tr><td>7.</td><td>Raw material consumption during last three years (Tonnes/ year)</td><td><table><tr><th>Year</th><th>Name of the Raw Material consumed</th><th>Quantity in Metric Tonnes or KL</th></tr><tr><td rowspan="3"></td><td>a)</td><td></td></tr><tr><td>b)</td><td></td></tr><tr><td>c)</td><td></td></tr></table></td></tr>
<tr><td>8.</td><td>Manufacturing Process</td><td>Please attach manufacturing process flow diagram for each product (s)</td></tr>
<tr><td>9.</td><td>Water Consumption</td><td>Industrial .....m^3/ day
Domestic.....m^3/day</td></tr>
<tr><td>10</td><td>Water Cess paid up to (date)</td><td>.....</td></tr>
<tr><td>11</td><td>Waste water generation as per consent.....m^3/day</td><td>Industrial/Domestic
Actual.....m^3/day (avg. of last 3 months)</td></tr>
<tr><td>12</td><td>Waste water treatment (provide flow diagram of the treatment scheme)</td><td>Industrial
Domestic</td></tr>
</table>

13	Waste water discharge	Quantity..... m^3/day Location..... Analysis of treated waste water for parameters such as pH, BOD, COD, SS, O&G and any other as stipulated by the SPCB/PCC (attach details)
14.	Air Pollution Control	
	a. Flow diagram for emission control system (s) installed for each process unit, utilities etc.	
	b. Details of facilities provided control of fugitive emission due to material handling, process, utilities etc.	
	c. Fuel consumption	**Name of fuel** / **Quantity per Day/Month :** a) b)
	d. Stack emission monitoring results	**Stack attached to:** / **Emissions (for SPM, SO_2, NO_x and Metals (like Pb etc.) in particulates in mg/Nm^3**
	e. Ambient air quality	**Ambient air quality location:** / **Parameters (SPM, SO_2, NO_x, Pb, any other) in $\mu g/ m^3$**
15.	Hazardous waste management :	
	a. Waste generation :	**S. No.** / **Name** / **Category** / **Quantity (last 3 years)**
	b. Details on collection , treatment and transport :	
	c. Disposal	
	(i) Please attach Details of the disposal facilities	
	(ii) Please attach analysis report of characterisation of hazardous waste generated (including leachate test if applicable)	
16.	Details of hazardous wastes proposed to be acquired through sale/negotiation/ contract or import as the case may be for use as raw material.	1. Name 2. Quantity required per year 3. Waste listing & No. in Annex VIII (List A)/ Annex IX (List B) of Basel Convention (BC) 4. Hazard Characteristic as per Annex III of BC

17	Occupational safety and Health aspects	Please provide details of facilities provided
18	Remarks	
	(i) whether industry has provided adequate pollution control system/ equipment to meet the standards of emission/effluent.	Yes / No
	(ii) whether HW collection and Treatment , Storage and Disposal Facility (TSDF) are operating satisfactorily.	Yes / No
	(iii)Whether conditions exists or likely to exists of the hazardous waste being handled /processed of posing immediate or delayed adverse impacts on the Environment.	Yes / No
	(iv) Whether conditions exists or is likely to exists of the wastes being handled / processed by any means capable of yielding another material eg , leachate which may possess eco-toxicity.	Yes / No
19	Any other Information i) ii) iii)	
20	List of enclosures as per rule	

Signature :
Designation :

Date:.....
Place:.....

FORM 6

[see rules 8 (7)]

FORM FOR FILING ANNUAL RETURNS AND RECORDS ON RECYCLABLE HAZARDOUS WASTES BY THE RECYCLERS

[To be submitted by recyclers to State Pollution Control Board/Pollution Control Committee by 30th June of every year for the preceding period April to March]

1.	Name and address of the recycler :			
2.	Name of the authorized person and full address with telephone and fax number :			
3.	Installed annual capacity to recycle or dispose the hazardous waste (in MTA) :			
4.	Quantity hazardous waste (in MTA) purchased/sold	Type of wastes	Source of purchase/sold	Quantity (in MTA)
5.	Quantity of hazardous wastes processed :	Type of wastes processed		Quantity (in MTA)
6.	Quantity and type of material recovered (in MTA)	Type of material recovered		Quantity (in MTA)
7.	Quantity of useful materials sent back to the generators/ manufacturers* and others#	Name and type of material sent back to		Quantity in Tonnes/KL
		Manufacturers*		
		Others#		
8.	Quantity of hazardous waste generated (in MTA) and its disposal methods.	Type of wastes	Quantity (in MTA)	Method of Dispsoal

* delete whichever is not applicable

\# enclose list of other agencies

Signature :

Designation :

Place : .....

Date : .....

FORM 7

[See rule 15 (1) and 16 (1)]

APPLICATION FOR IMPORT OR EXPORT OF HAZARDOUS WASTE FOR REPROCESSING/RECYCLING/REUSE

From

.....

.....

TO BE MAILED BY IMPORTER

To

The Member Secretary,
.....State Pollution Control Board/.....Pollution Control Committee
.....

Sir,

I/we apply for permission for import of recyclable hazardous wastes.

FOR OFFICE USE ONLY

1. Code No. :

2. Whether the unit is situated in a critically polluted area as identified by the Ministry of Environment and Forests : If yes provide details.

TO BE FILLED IN BY APPLICANT

1. Name and Address of the Exporter with telephone number :
2. Details of hazardous waste to be exported/imported for recycling/reprocessing/reuse:

S.No.	Particulars of hazardous wastes	Six digit Code No.*	Constituent (s) expected	Quantity MT/KL	Any special handling requirement?

* *(Here enter as reference nomenclature, the equivalent six digit code no. from European Waste Catalogue EWC, issued pursuant to the Article 1 (a) of Council Directive 75/442/EEC on waste or its equivalent as the case may be).*

3. The hazardous waste permitted shall be fully insured for transit as well as for any accidental occurrence and its cleanup operation.

4. The exported wastes shall be taken back, if it creates a genuine environmental hazard or shall take all such measures to treat and dispose in an environmentally benign manner upto the satisfaction of concerned SPCB/PCC. All such costs involved in such operation shall be borne by Exporter and/or Importer

5. Name and Address of the importer with telephone number :

6. Whether authorization obtained : (Enclose the copy).

7. Whether you have received such imported hazardous waste in the past and if yes give details.

S.No	Description of hazardous wastes	Country of Export	Year	Quantity in tones

8. Whether the importer has :

(a) Adequate facility to handle imported hazardous waste :(If yes furnish details).

(b) Adequate facility to handle the hazardous wastes generated by the use of such imported hazardous wastes :(Provide details)

9. Break-up of the imported wastes :

a. The total quantity applied for :..... **Tonnes**

b. Out of (a) above, how much quantity after initial in-situ purification, will be available as raw material :..... **Tonnes**

c. Out of (b) above, how much quantity will be converted into the useful product or co-product :..... **Tonnes**

10. Means of Transport (Road, Rail, inland waterway, sea, air) including country of export, transit and import, also point of entry and exit where these have been designated.

11. Information on special handling requirements including emergency provision in case of accident : **(Attach details)**

12. Undertaking :

I hereby solemnly undertake that

(i) The full consignment shall be cleared in one lot by arranging authorised transporter under my supervision with due prior intimation to the SPCB/PCC, District Collector and Police Station and the imported waste shall be admitted in an enclosure especially provided in the premises.

(ii) The waste permitted shall be fully insured for transit as well as for any accidental occurrence and its clean-up operation.

(iii) The record of consumption and fate of the imported waste shall be monitored and report sent to the SPCB/PCC every fortnight.

(iv) At every step of consumption of 25, 50, 75 and 100% of the imported waste, the situation in the store shall be shown to the SPCB/PCC at our cost.

(v) The hazardous waste which gets generated in our premises by the use of imported hazardous wastes in the form of raw material shall be treated and disposed of and only as per conditions of authorisation.

(vi) I agree to bear the cost of export and mitigation of damages if any.

(vii) I am aware that there are significant penalties for submitting a false certificate/ undertaking/ disobedience of the rules and lawful orders including the possibility of fine and imprisonment.

Signature of the Applicant

Date.....

Designation

Place.....

Form 8

[See rules 15 (1) and 16 (1)]

APPLICATION FOR TRANSBOUNDARY MOVEMENT OF HAZARDOUS WASTE

S. No.	Description	Details to be furnished by the Exporter/Importer
1.	Exporter (Name & Address) :	
	Contact person :	
	Tel/fax :	
	Reason for export :	
2.	Importer/Recycler (Name & Address) :	
	Contact person :	
	Tel/fax :	
3.	Application concerning [1] :	
	Applicants reference number :	
	A. Single / Multiple movement : B. Recovery/Reprocessing Operation : C. Pre-authorized recovery/reprocessing facility [1] :	
4.	Total intended number of shipments :	
5.	Estimated quantity [3] in Kg/Liters :	
6.	Intended date(s) or period of time for shipment(s) :	
7.	Intended carrier(s) (name, address) [2] :	
	Contact person: Tel/fax. :	
8.	Waste generator (s) (Name, address) [2] :	
	Contact Person Tel/fax :	
	Site of generation & Process :	
9.	Method(s) of recycling [4] :	
	R Code :	
	Technology employed :	
10.	Means of transport [4] :	
11.	Packaging type(s) [4] :	
12.	(i) Designation and complete chemical composition of waste *(attach details)* :	

	(ii) Special handling requirements :	
13.	Physical characteristics [4] :	
14.	Waste identification code :	
	Basel No :	
	OECD No. :	
	UN No. :	
	ITC (HS) :	
	Customs Code (H.S.) :	
	Other (specify) :	
15	OECD classification [1] *(attach details)*	
	(a) amber/red/other :	
	(b) Number :	
16.	Y- Number [4] :	
17.	H-Number [4] :	
18.	(a) UN identification Number :	
	(b) UN shipping name :	
	(c) UN class [4] :	
	(d) Other :	
19.	Concerned states, code number of competent authoritics, and specific points of entry and exit :	
	State of export :	
	States of transit :	
	State of import :	
20.	Customs offices of entry and/or departure **Entry:** / **Departure :**	
21.	Exporter's / Generator's declaration: I certify that the information is complete and correct to my best knowledge. I also certify that Legally-enforceable written contractual obligations have been entered into and that any applicable insurance or other financial guarantees are or shall be in force covering the transboundary movement. **Name:** **Signature:** **Date:**	
22.	Number of annexes attached	

	FOR USE BY COMPETENT AUTHORITIES	
23.	To be completed by competent authority of Import :	
	Notification Received on :	
	Transit (Basel) :	
	a) Acknowledgement sent on :	
	b) Name of Competent authority, Stamp and/or signature	
24	Consent to the movement provided by the competent authority of (Country) :	
	a) Consent given on :	
	b) Consent expires on :	
	c) Specific condition :	(Yes/No) (Please attach)
	d)Name of Competent authority, Stamp and/or signature :	
	FOR USE BY CUSTOMS OFFICES	
25	COUNTRY OF EXPORT/DISPATCH OR CUSTOMS OFFICE OF EIXIT	
	The waste described overleaf has left the country on :	
	Stamp :	
	Signature :	
26.	COUNTRY OF IMPORT/DESTINATION :	
	The waste described overleaf has entered the country on :	
	Stamp :	
	Signature :	
27.	STAMPS OF CUSTOMS OFFICES OF TRANSIT COUNTRIES	

Name of Country	Entry	Departure

Notes: (1) Enter X in appropriate box ; (2) Attach list if more than one ; (3) Attach detailed list of multiple shipment ; (4) See following codes

List of abbreviations used in the Movement Document

RECOVERY OPERATIONS (S.No. 9)	
R 1	Use as a fuel (other than in direct incineration) or other means to generate energy
R 2	Solvent reclamation/regeneration
R 3	Recycling/reclamation of organic substances which are not used as solvents
R 4	Recycling/reclamation of metals and metal compounds
R 5	Recycling/reclamation *of* other inorganic materials
R 6	Regeneration *of* acids or bases
R 7	Recovery of components used for pollution abatement
R 8	Recovery *of* components from catalyst
R 9	Used oil re-refining or other reuses of previously used oil
R 10	Land treatment resulting in benefit to agriculture or ecological improvement
R 11	Uses of residual materials obtained from any of the operations numbered R 1 to 10
R 12	Exchange of wastes for submission to any of the operations numbered R 1 to R 11
R 13	Accumulation of material intended for any operation numbered R 1 to R 12

MEANS OF TRANSPORT (S.No.10)	PACKAGING TYPES (S.No.11)	H NUMBER (S.No.17) AND UN CLASS (S.No. 18)		
		UN Class	H Number	Designation
R= Road	1. Drum	1	H 1	Explosive
T= Train/Rail	2.Wooden barrel	3	H 3	Inflammable liquids
S=Sea	3. Jerrican	4.1	H 4.1	Inflammable solids
A= Air	4. Box	4.2	H 4.2	Constituents or wastes liable to spontaneous combustion
W=Inland Waterways	5. Bag	4.3	H 4.3	Constituents or wastes which, in contact with Water emit inflammable gases
	6.Composite packaging	5.1	H 5.1	Oxidizing
	7.Pressure receptacle	5.2	H 5.2	Organic peroxides
	8. Bulk	6.1	H 6.1	Poisonous (acute)
	9.Other (specify)	6.2	H 6.2	Infectious wastes
		8	H 8	Corrosives
		9	H 10	Liberation of toxic gases in contact with air or water
		9	H 11	Toxic (delayed or chronic)
		9	H 12	Ecotoxic
		9	H 13	Capable, by any means, after disposal *of* yielding another material e.g. leachate, which Possesses any *of* the characteristics listed above

PHYSICAL CHARACTERISTICS (Sl. No. 13)	1. Powdery/powder
	2. Solid
	3. Viscous/paste
	4. Sludge
	5. Liquid
	6. Gaseous
	7.Other (specify)

FORM 9

[See rules 15 (5) and 16 (5)]

TRANSBOUNDARY MOVEMENT - MOVEMENT DOCUMENT

S. No	Description	Details to be furnished by the Exporter/Importer
1.	(i) Exporter (Name & Address) :	
	Contact person :	
	Tel./Fax :	
	(ii) Waste Generator (name and address) [1] :	
	Contact person with Tel./Fax :	
	Site of generation :	
2	Importer/recycler (name & address) :	
	Contact person with Tel./Fax :	
3.	Corresponding to applicant Ref. No. :	
	Movement subject to single/multiple.	
4.	Serial number of shipment :	
5.	(a) 1st Carrier (Name, address) : Registration number : Tel/fax Identity of Means of Transport [3] : Date of Transfer : Signature of Carrier's representative :	
	(b) 2nd Carrier (name, address) : Registration number : Tel/fax : Identity of Means of Transport [3] : Date of Transfer : Signature of Carrier's representative :	
	(c) Last Carrier (name, address) [4] : Registration number : Tel/fax : Identity of Means of Transport [3] : Date of Transfer : Signature of Carrier's representative :	
6.	Disposer (name, address) :	

	Contact person :	
	Actual site of disposal	
	Tel/fax :	
7.	Method(s) of recovery :	
	R code :	
	Technology employed* *(Attach details if necessary).	
8.	Designation and chemical composition of the waste :	
9.	Physical characteristics [3],	
10.	Actual quantity Kg/litre	
11.	Waste identification code :	
	Basel No :	
	OECD No. :	
	UN No. :	
	ITC (HS) :	
	Customs Code (H.S.) :	
	Other (specify) :	
12.	OECD Classification [2] (a)amber/red/other[attach details] (b) number	
13.	Packaging Type[3] :	
	Number :	
14.	UN Classification :	
	UN shipping name :	
	UN identification No. :	
	UN Class [3] :	
	H Number [3] :	
	Y Number :	
15.	Special handling requirements :	
16.	Actual date of shipment :	
17.	Exporter's declaration: I certify that the information in Sl No.1 of 16 above is complete and correct to my best knowledge. I also certify that legally-enforceable written contractual obligations have been entered into, that any applicable insurance or other financial guarantees are in force covering the transboundary movement and that all necessary authorizations have been received from the competent authorities of the States concerned. Date: Signature: Name:	

TO BE COMPLETED BY IMPORTER/RECYCLER		
18.	Shipment received by Importer/Recycler	
	Quantity received .... Kg/litres Date: Name: Signature	
19.	Shipment received at recycler :	
	Quantity received at recycler: Kg/litres	
	Quantity received and accepted: Kg/litres Date: Name: Signature	
20.	Approximate date of recycling :	
21	Method of recycling :	
22.	I certify that the Recycling of the wastes described above will be completed as per HW (M, H and TM) Rules **Signature:** **Date:**	
23.	SPECIFIC CONDITIONS ON CONSENTING TO THE MOVEMENT :	*(attach details)*

Notes:- (1) Attach list, if more than one; (2) Enter X in appropriate box; (3) See codes on the reverse (x) Immediately contact Competent Authority; (4) if more than three carriers, attach information as required in Sl.No. 5.

List of abbreviations used in the Movement Document

RECOVERY OPERATIONS (S.No. 7)	
R 1	Use as a fuel (other than in direct incineration) or other means to generate energy
R 2	Solvent reclamation/regeneration
R 3	Recycling/reclamation of organic substances which are not used as solvents
R 4	Recycling/reclamation of metals and metal compounds
R 5	Recycling/reclamation *of* other inorganic materials
R 6	Regeneration *of* acids or bases
R 7	Recovery of components used for pollution abatement
R 8	Recovery *of* components from catalysts
R 9	Used oil re-refining or other reuses of previously used oil
R 10	Land treatment resulting in benefit to agriculture or ecological improvement
R 11	Uses of residual materials obtained from any of the operations numbered R 1 to 10
R 12	Exchange of wastes for submission to any of the operations numbered R 1 to R 11
R 13	Accumulation of material intended for any operation numbered R 1 to R 12

MEANS OF TRANSPORT (S.No.5)	PACKAGING TYPES (S.No.13)
R= Road	1. Drum
T= Train/Rail	2. Wooden barrel
S=Sea	3. Jerrican
A= Air	4. Box
W=Inland Waterways	5. Bag
	6.Composite packaging
	7.Pressure receptacle
	8. Bulk
	9. Other (specify)

H NUMBER (S.No.14) AND UN CLASS (S.No. 14)

UN Class	H Number	Designation
1	H 1	Explosive
3	H 3	Inflammable liquids
4.1	H 4.1	Inflammable solids
4.2	H 4.2	Constituents or wastes liable to spontaneous combustion
4.3	H 4.3	Constituents or wastes which, in contact with Water emit inflammable gases
5.1	H 5.1	Oxidizing
5.2	H 5.2	Organic peroxides
6.1	H 6.1	Poisonous (acute)
6.2	H 6.2	Infectious wastes
8	H 8	Corrosives
9	H 10	Liberation of toxic gases in contact with air or water
9	H 11	Toxic (delayed or chronic)
9	H 12	Ecotoxic
9	H 13	Capable, by any means, after disposal *of* yielding another material e.g. leachate, which Possesses any *of* the characteristics listed above

PHYSICAL CHARACTERISTICS (Sl. No. 09)	1. Powdery/powder
	2. Solid
	3. Viscous/paste
	4. Sludge
	5. Liquid
	6. Gaseous
	7.Other (specify)

Y Number (S.No.13) refer to categories of waste listed in Annexure I and II of the Basel Convention as well as more detailed information can be found in an instruction manual available from the Secretariat of the Basel Convention

FORM 10

[See rule 15 (7) and 16 (7)]

FORMAT FOR MAINTAINING RECORDS OF HAZARDOUS WASTE IMPORTED AND EXPORTED

1. Name and address of the importer/exporter :

2. Date and reference number of issuance of permission to import/export hazardous wastes :

3. Description of hazardous waste :

S.No	Dates of import/export and relevant consignment numbers	Origin /destination of waste	Total volume and weight (in kilograms)	Physical form	Chemical form	Test report

4. Description of storage, treatment and reuse of hazardous waste :

S.No	Dates of import/export and relevant consignment numbers	Total volume and weight (in kilograms)	Test report	Method of Storage	Method of treatment and reuse (give details)

FORM 11

[See rule 20 (2)]

TRANSPORT EMERGENCY (TREM) CARD

[To be carried by the transporter during transportation of hazardous wastes, provided by the Occupier or Operator of a Facility]

1. Characteristics of hazardous wastes :

S. No.	Type of Waste	Physical Properties/	Chemical Constituents	Exposure Hazards	First Aid Requirements

2. Procedure to be followed in case of fire :

3. Procedure to be followed in case of spillage/accident/explosion :

4. For expert services, please contact :

   i) Name & Address :

   ii) Telephone No. :

(Name and Signature of Occupier/authorized representative)

FORM 12

[See rule 20(2)]

MARKING OF HAZARDOUS WASTE CONTAINER

HAZARDOUS WASTE *

Handle with Care

Waste Category No	Compatible Group .....
Total Quantity	Date of Storage
Contents and State of the Waste :	
Sender's Name & Address	Receiver's Name & Address
Phone	Phone .....
E-mail.....	E-mail .....
Tel. & Fax No	Tel.& Fax No .....
Contact Person	Contact Person .....
In case of emergency please contact	

Note :

1. *Background colour of lab I fluorescent yellow.*
2. *The words 'HAZARDOUS WASTES' & 'HANDLE WITH CARE' to be prominent and written in red in Hindi, English and in Vernacular Language*
3. *Label should be of non-washable material.*

* *delete which ever is not applicable*

FORM 13

[See rule 21 (1)]

HAZARDOUS WASTE MANIFEST

1.	Occupier's Name & Mailing Address (including Phone No.) :	
2.	Occupier's Registration No. :	
3.	Manifest Document No. :	
4.	Transporter's Name & Address :(including Phone No.)	
5.	Type of Vehicle :	(Truck/Tanker/Special Vehicle)
6.	Transporter's Registration No. :	
7.	Vehicle Registration No. :	
8.	Designated Facility Name &Site Address :	
9.	Facility's Registration No. :	
10.	Facility's Phone :	
11.	Waste Description :	
12.	Total Quantity :	.....m^3 or MT
13.	Consistency :	(Solid/Semi-Solid/Sludge /Oily /Tarry /Slurry)
14.	Transport Description of Wastes :	
15.	Containers :	Number | Type
16.	Total Quantity :	.....m^3 or MT
17.	Unit Wt/Vol. :	..... m^3 or MT
18.	Waste Category Number :	
19.	Special Handling Instructions & Additional Information :	
20.	OCCUPIER'S CERTIFICATE :	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labeled, and are in all respects in proper condition for transport by road according to applicable national government regulations.
	Typed Name & Stamp : Signature :	Month Day Year
21.	Transporter Acknowledgement of Receipt of Wastes	
	Typed Name & Stamp : Signature :	Month Day Year
22.	Discrepancy Note Space	
23.	Facility Owner or Operator's Certification of Receipt of Hazardous Waste	
	Typed Name & Stamp : Signature :	Month Day Year

FORM 14

(See rule 24)

FORMAT OF ACCIDENT REPORT

[To be submitted by the occupier or operator of a facility and the transporter to the SPCB/PCC]

1.	The date and time of the accident	:
2.	Sequence of events leading to accident	:
3.	The hazardous waste involvement in accident	:
4.	The date for assessing the effects of the accident on health or the environment	:
5.	The emergency measures taken	:
6.	The steps taken to alleviate the effects of accidents	:
7.	The steps taken to prevent the recurrence of such an accident	:

[Place: **Signature:**

Date: **Designation]**

FORM 15

[see rule 26 (1) and (2)]

APPLICATION FOR FILING APPEAL AGAINST THE ORDER PASSED BY CPCB/SPCB/PCC OF THE UNION TERRITORY

1.	Name and address of the person making the appeal	:
2.	Number, date of order and address of the authority to which passed the order, against which appeal is being made	: (certified copy of the order be attached).
3.	Ground on which the appeal is being made	:
4.	Relief sought for	:
5.	List of enclosures other than the order referred in para 2 against which the appeal is being filed.	:

Signature.....

Date: **Name and address .....**

[F. No. 23-17/2006-HSMD]

R. K. VAISH, Jt. Secy.

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Annexure-14

FORM – 2
[See rule 4(8), 5(5) and 9 (5)]

Form for Maintaining Records of E-Waste Handled / Generated Quantity in Metric Tonnes (MT) or Kilograms (Kg) per year

1.	Name & Address: Producer /Collection Centre/Dismantler? Recycler/ Bulk consumer *		
2.	Date of Issue of Authorization* Registration *		
3.	Validity of Authorization* /Registration*		
4.	Types & Quantity of e-waste handled/ generated	Category	Quantity
		Item Description	
5.	Types & Quantity of e-waste stored	Category	Quantity
		Item Description	
6.	Types & Quantity of e-waste sent to authorized collection centre/ registered dismantler or recycler	Category	Quantity
		Item Description	
7.	Types & Quantity of e-waste transported*	Category	Quantity
		Quantity	
	Name, address and contact details of the destination		
8.	Types & Quantity of e-waste refurbished*	Category	Quantity
		Item Description	
	Name, address and contact details of the destination of refurbished materials		
9.	Types & Quantity of e-waste dismantled*	Category	Quantity
		Item Description	
	Name, address and contact details of the destination		
10.	Types & Quantity of e-waste recycled*	Category	Quantity
	Types & Quantity of materials recovered	Item Description	
		Quantity	
	Name, address and contact details of the destination		
11.	Types & Quantity of waste treated & disposed	Category	Quantity
		Item Description	

* Strike off whichever is not applicable

FORM 3
[See rule 4(9), 5(4), 6(2), 7 (7), 8 (5) and 9 (5)]

FORM FOR FILING ANNUAL RETURNS
[To be submitted by producer/collection centre/dismantler/recycler by 30th June following to the financial year to which that return relates].
Quantity in Metric Tonnes (MT) or Kilograms (Kg) per year

1.	Name and address of the producer/collection centre/dismantler/recycler		
2.	Name of the authorized person and complete address with telephone and fax numbers and e-mail address		
3.	Total quantity e-waste sold/purchased / sent for processing during the year of electrical and electronic equipment listed in the Schedule I (Attach list)		
	Details of the above	Type	Quantity
3(A)*	**DISMANTLERS:** Quantity of e-waste in MT purchased & sent to (category wise):		
3(B)*	**RECYCLERS:** Quantity of e-waste in MT purchased/processed (category wise):		
4.	Name and full address of the destination with respect to 3 (A-B) above		
5.	Type and quantity of materials segregated/recovered form e-waste of different categories as applicable to 3(A) & 3(B)	Type	Quantity

Note: The applicant shall provide details of funds received (if any) from producers and its utility with an audited certificate.

- ✓ Enclose the list of recyclers to whom e-waste have been sent for recycling.

* Strike off whichever is not applicable

Place _____

Date _____ Signature of the authorized person

ANNEXURE - 15

PRO-FORMA FOR ENVIRONMENT AND SOCIAL DETAILS FOR TRANSMISSION LINE AND SUB-STATIONS

Environmental and Social details for Transmission Lines				
SN	**DESCRIPTION**	**ALIGNMENT-I**	**ALIGNMENT-II**	**ALIGNMENT-III**
1.	Route particulars			
i)	Length			
ii)	Terrain			
2.	Environmental Details			
i)	Town in) Alignment (Near By)			
ii)	House within ROW			
iii)	Forest In Km / Ha			
a)	Type of forest			
b)	Density of forest			
c)	Type of Fauna & Flora			
d)	Endangered species if any			
e)	Historical/Cultural monument			
f)	Any other relevant information			
3. i) ii)	Compensation cost Crop Forest			
4. i) ii) iii)	No. of Crossing Railway Transmission line River Xing etc			
5.	Construction Problem			
6.	O & M Problem			
7.	Overall Remarks			
8.	Reasons for selection of final route:			

Environment and Social details for Sub-station					
Sl. No.	**Study Point**	**Alt. I**	**Alt. II**	**Alt. III**	**Remarks**
01.	Location				
02.	Village Name				
03.	Size of Land				
04.	Type of Land (Govt./Pvt./others)				
05.	General Geography of Area				
06.	Agricultural/Cropping Pattern				
	Main types of crops Irrigation Facility				
07. i)	Socio-economic condition of area : Profession of existing population Agricultural (Self employment, Merchants, manufacturer, Transporters & Handicrafts etc.)				
ii)	Wage Earner (Skilled/Unskilled Labour)				
iii)	Others if any				
iv)	Natural Resource base				
v)	Political Influence				
08.	No./Name of villages effected I. Partly II. Fully				
09.	Total No. of families likely to be effected				
10.	No. of families whose part holding likely to be acquired				
11.	No. of families whose total holding likely to be acquired Land + Home Land Only Home only				
12.	Caste of PAPs/PAFs a) GC b) OBC c) SC/ST				
13.	General Pattern of Cultivation i.e. By owner On lease (Registered/ Un-				

	registered)				
14.	Loss of Structure House/Shop along with the status of occupants (Owner/Tenant/ Lease holder/squatter)				
15.	Others a) Common property resources like School, Ponds Grazing Ground, Religious Places b) Drainage facility				
16.	Tree/Plantation/Orchards (Approx.)				
17.	Cost of Land				
18.	Reasons for selection/rejection				

ANNEXURE 16

STATEMENT FOR DETAILS OF SITES IDENTIFIED FOR SUB-STATIONS

Sl. No.	Criteria	Site-I	Site-II	Site-III
1.0	**Land**			
1.1	Size (Acre) (M x M)			
1.2	Govt./Private/Forest land			
1.3	Agriculture/Wasteland			
1.4	Development			
1.5	Approximate cost			
1.6	Type of soil			
1.7	No. of owners			
1.8	Environment/Pollution in the vicinity			
1.9	Location with reference to nearest town			
1.10	H.F.L. Data			
1.11	Diversion of Nallah/Canal required			
1.12	Slope			
1.13	Extent of levelling required			
1.14	Land acquisition feasibility			
1.15	Rate of Govt. land			
1.16	No. of owners			
1.17	Exten. of approach			
1.18	Planned/unplanned development			
1.19	Size of sites			
1.20	No. of families displaced			
1.21	Required Government value			
1.22	Level of site with ref. to road level			
1.23	Distance from sea shore			
2.0	**Approach**			
2.1	What are the Obstacles in reaching site			

Sl. No.	Criteria	Site-I	Site-II	Site-III
2.2	Approach road			
2.3	Length of approach road			
2.4	Distance from main road			
2.5	Unloading facility at Railway Station			
2.6	No. of Culverts required			
3.0	**Community Facilities**			
3.1	Drinking Water			
3.2	Drainage			
3.3	a) Post Office			
	b) Telephone			
	c) Telex			
3.4	Market			
3.5	Security			
3.6	Amendability			
3.7	Availability of construction water			
3.8	Availability of water			
3.9	Nearest EHC line			
3.10	Length of line between this site & nearest substation			
3.11	Length of line estimate			
3.12	Additional crossings			
3.13	Frontage for line take off			
3.14	Telephone/Telegraph line			
4.0	**Others**			

ANNEXURE- 17

13.FORM OF SAFETY PLAN TO BE SUBMITTED BY THE CONTRACTOR WITHIN SIXTY DAYS OF AWARD OF CONTRACT

[TO BE EXECUTED ON A NON JUDICIAL STAMP PAPER WORTH RS. TWENTY ONLY]

SAFETY PLAN

THIS SAFETY PLAN is made this ……..…….... day of ……..…..... 20..... by ……..…… a Company registered under the Companies Act, 1956/Partnership firm/proprietary concern having its Registered Office at …….....[*to be modified suitably for JV Contractor*] (hereinafter called as 'Contractor' which expression shall include its successors and permitted assigns) for approval of .....*(insert name of the Employer)*....., a company incorporated under the Companies Act, 1956 having its Registered Office at .....*(insert registered address of the Employer)*..... for its Contract for …….....
.....*(insert package name, project name alongwith Specification number of the Contract)*.....

WHEREAS .....*(abbreviated name of the Employer)*..... has awarded to the Contractor the aforesaid Contract vide its Notification of Award/Contract No. ……..……..... dated ...……..and Amendment No. ..... (applicable when amendments have been issued) (hereinafter called the "Contract") in terms of which the Contractor is required to submit 'Safety Plan' alongwith certain documents to the Engineer In-Charge/Project Manager of the Employer within Sixty (60) days of Notification of Award for its approval.

NOW THEREFORE, the Contractor undertakes to execute the Contract as per the safety plan as follows:

1. THAT the Contractor shall execute the works as per provisions of Bidding Documents including those in regard to Safety Precautions / provisions as per statutory requirements.

2. THAT the Contractor shall execute the works in a well planned manner from the commencement of Contract as per agreed mile stones of work completion schedule so that planning and execution of construction works goes smoothly and consistently through out the contract duration without handling pressure in last quarter of the financial year/last months of the Contract and the shall be finalized in association with EMPLOYER Engineer In-charge/Project Manager from time to time as required.

3. THAT the Contractor has prepared the safe work procedure for each activity i.e. foundation works including civil works, erection, stringing (as applicable), testing & commissioning, disposal of materials at site / store etc. to be executed at site, which is enclosed at **Annexure – 1A (SP)** for acceptance and approval of Engineer In-charge/Project Manager. The Contractor shall ensure that on approval of the same from Engineer In-charge/Project Manager , the approved copies will be circulated to Employer's personnel at site [Supervisor(s)/Executive(s)] and Contractor's personnel at site [Gang leader, supervisor(s) etc.] in their local language / language understood by gang.

THAT the Contractor has prepared minimum manpower deployment plan, activity wise as stated above, which is enclosed at **Annexure – 1B (SP)** for approval of Engineer In-charge/Project Manager.

4. THAT the Contractor shall ensure while executing works that they will deploy minimum 25% of their own experienced work force who are on the permanent roll of the company and balance 75% can be a suitable mixed with the hired gangs / local workers / casual workers if required. The above balance 75% work force should be provided with at least 10 days training by the construction agencies at sites and shall be issued with a certificate. No worker shall be engaged without a valid certificate. Hired gang workers shall also follow safe working procedures and safety norms as is being followed by company's workmen. It should also be ensured by the contractor that certified fitters who are climbing towers / doing stringing operations can be easily identifiable with a system like issue of Badge / Identification cards (ID cards) etc. Colour identification batches should be worn by the workers. Contractor has to ensure that inexperience workers / unskilled workers should not be deployed for skilled job.

5. THAT the Contractor's Gang leader / Supervisor / Senior most member available at every construction site shall brief to each worker daily before start of work about safety requirement and warn about imminent dangers and precautions to be taken against the imminent dangers (Daily Safety Drill). This is to be ensured without fail by Contractor and maintain record of each gang about daily safety instructions issued to workers and put up to EMPLOYER site In-charge for his review and record.

6. THAT the Contractor shall ensure that working Gangs at site should not be left at the discretion of their Gang Leaders who are generally hired and having little knowledge about safety. Gang leader should be experienced and well versed with the safe working procedures applicable for transmission line/ Sub Station works. In case gang is having Gang leader not on permanent roll of the company then additional Supervisor from company's own roll having thorough knowledge about the works would be deployed so as to percolate safety instructions upto the grass root level in healthy spirits. Contractor has to ensure close supervision while executing critical locations of transmission lines / sub stations and ensures that all safety instructions are in place and are being followed.

7. THAT the Contractor shall maintain in healthy and working condition all kind of Equipments / Machineries / Lifting tools / Lifting tackles / Lifting gears / All kind of Ropes including wire ropes / Polypropylene ropes etc. used for Lifting purpose during execution of the project and get them periodically examined and load tested for safe working load in accordance with relevant provisions and requirement of Building & other construction workers Regulation of Employment and Conditions of Services Act and Central Rule 1998, Factories Act 1948, Indian Electricity Act 2003 before start of the project. A register of such examinations and tests shall be properly maintained by the contractor and will be promptly produced as and when desired by the Engineer In-charge/Project Manager or by the person authorised by him. The Contractor has to ensure to give special attention on the formation / condition of eye splices of wire rope slings as per requirement of IS 2762 Specification for wire rope slings and sling legs.

THAT the Contractor has prepared a list of all Lifting machines, lifting Tools / Lifting Tackles / Lifting Gears etc. / All types of ropes and Slings which are subject to safe working load is enclosed at **Annexure – 2 (SP)** for review and approval of Engineer In-charge/Project Manager.

8. THAT the Contractor has to procure sufficient quantity of Personal Protective Equipment (PPE)conforming to Indian / International standards and provide these equipment to every workman at site as per need and to the satisfaction of Engineer-in-charge/Project Manager of EMPLOYER. The Contractor's Site Supervisor/ Project Manager has to ensure that all workmen must use Personal Protective Equipment at site. The Contractor shall also ensure that Industrial Safety helmets are being used by all workmen at site irrespective of their working (at height or on ground). The Contractor shall further ensure use of safety shoes by all ground level workers and canvas shoes for all workers working at height, Rubber Gum Boots for workers working in rainy season and concreting job, Use of Twin Lanyard Full body Safety Harness with attachment of light weight such as aluminium alloy etc. and having features of automatic locking arrangement of snap hook, by all workers working at height for more than three meters and also for horizontal movement on tower shall be ensured by contractor. The Contractor shall not use ordinary half body safety harness at site. The Contractor has to ensure use of Retractable type fall arrestors by workers for ascending / descending on suspension insulator string and other similar works etc., Use of Mobile fall arrestor for ascending / descending from tower by all workers. The contractor has to provide cotton / leather hand gloves as per requirement, Electrical Resistance Hand gloves for operating electrical installations / switches, Face shield for protecting eyes while doing welding works and Dust masks to workers as per requirement. The Contractor will have to take action against the workers not using Personal Protective Equipment at site and those workers shall be asked to rest for that day and also their Salary be deducted for that day. EMPLOYER may issue warning letter to Project Manager of contractor in violation of above norms.

   THAT the Contractor shall prepare a detailed list of PPEs, activity wise, to commensurate with manpower deployed, which is enclosed at **Annexure – 3 (SP)** for review and approval of Engineer In-charge/Project Manager. It shall also be ensured that the sample of these equipment shall be got approved from EMPLOYER supervisory staff before being distributed to workers. The contractor shall submit relevant test certificates as per IS / International Standard as applicable to PPEs used during execution of work. All the PPE's to be distributed to the workers shall be checked by EMPLOYER supervisory staff before its usage.

   The Contractor also agrees for addition / modification to the list of PPE, if any, as advised by Engineer In-Charge/Project Manager.

9. THAT the Contractor shall procure, if required sufficient quantity of Earthing Equipment / Earthing Devices complying with requirements of relevant IEC standards (Generally IECs standards for Earthing Equipments / Earthing Devices are – 855, 1230, 1235 etc.) and to the satisfaction of Engineer In-Charge/ Project Manager and contractor to ensures to maintained them in healthy condition.

   THAT the Contractor has prepared / worked out minimum number of healthy Earthing Equipments with Earthing lead confirming to relevant IS / European standards per gang

wise during stringing activity/as per requirement, which is enclosed herewith at **Annexure – 4 (SP)** for review and acceptance of Engineer In-Charge/ Project Manager prior to execution of work.

10. THAT the Contractor shall provide communication facilities i.e. Walky – Talkie / Mobile Phone, Display of Flags / whistles for easy communication among workers during Tower erection / stringing activity, as per requirement.

11. THAT the Contractor undertakes to deploy qualified safety personnel responsible for safety as per requirements of Employer/Statutory Authorities.

    THAT the Contractor employing more than 250 workmen whether temporary, casual, probationer, regular or permanent or on contract, shall employ at least one full time officer exclusively as qualified safety officer having diploma in safety to supervise safety aspects of the equipment and workmen who will coordinate with Engineer In-charge /Project Manager/Safety Co-ordinator of the Employer. In case of work being carried out through sub contractors the sub – contractor's workmen / employees will also be considered as the contractor's employees / workmen for the above purpose. If the number of workers are less than 250 then one qualified safety officer is to be deployed for each contract. He will report directly to his head of organization and not the Project Manager of contractor He shall also not be assigned any other work except assigning the work of safety. The curriculum vitae of such person shall be got cleared from EMPLOYER Project Manager / Construction staff.

    The name and address of such safety officers of contractor will be promptly informed in writing to Engineer In-charge with a copy to safety officer - In-charge before start of work or immediately after any change of the incumbent is made during the currency of the contract. The list is enclosed at **Annexure – 5A (SP)**.

    THAT the Contractor has also prepared a list including details of Explosive Operator (if required), Safety officer / Safety supervisor / nominated person for safety for each erection / stringing gang, list of personnel trained in First Aid Techniques as well as copy of organisation structure of the Contractor in regard to safety. The list is enclosed at **Annexure – 5B (SP)**.

12. The Project Manager shall have the right at his sole discretion to stop the work, if in his opinion the work is being carried out in such a way that it may cause accidents and endanger the safety of the persons and/or property, and/or equipment. In such cases, the Contractor shall be informed in writing about the nature of hazards and possible injury/accident and he shall comply to remove shortcomings promptly. The Contractor after stopping the specific work can, if felt necessary, appeal against the order of stoppage of work to the Project Manager within 3 days of such stoppage of work and decision of the Project Manager in this respect shall be conclusive and binding on the Contractor.

13. THAT, if, any Employer's Engineer/ supervisor at site observes that the Contractor is failing to provide safe working environment at site as per agreed Safety Plan / EMPLOYER Safety Rule/ Safety Instructions / Statutory safety requirement and creates hazardous conditions at site and there is possibility of an accident to workmen or workmen of the other contractor or public or the work is being carried out in an un safe manner or

he continues to work even after being instructed to stop the work by Engineer / Supervisor at site / RHQ / Corp. Centre, the Contractor shall be bound to pay a penalty of Rs. 10,000/ - per incident per day till the instructions are complied and as certified by Engineer / Supervisor of Employer at site. The work will remain suspended and no activity will take place without compliance and obtaining clearance / certification of the Site Engineer / Supervisor of the Employer to start the work.

14. THAT, if the investigation committee of Employer observes any accident or the Engineer In-charge/Project Manager of the Employer based on the report of the Engineer/Supervisor of the Employer at site observes any failure on the Contractor's part to comply with safety requirement / safety rules/ safety standards/ safety instruction as prescribed by the Employer or as prescribed under the applicable law for the safety of the equipment, plant and personnel and the Contractor does not take adequate steps to prevent hazardous conditions which may cause injury to its own Contractor's employees or employee of any other Contractors or Employer or any other person at site or adjacent thereto, or public involvement because of the Contractor's negligence of safety norms, the Contractor shall be liable to pay a compensation of Rs. 10,00,000/- (Rupees Ten Lakh only) per person affected causing death and Rs. 1,00,000/- (Rupees One Lakh only) per person for serious injuries / 25% or more permanent disability to the Employer for further disbursement to the deceased family/ Injured persons. The permanent disability has the same meaning as indicated in Workmen's Compensation Act 1923. The above stipulations is in addition to all other compensation payable to sufferer as per workmen compensation Act / Rules

    THAT as per the Employer's instructions, the Contractor agrees that this amount shall be deducted from their running bill(s) immediately after the accident, That the Contractor understands that this amount shall be over and above the compensation amount liable to be paid as per the Workmen's Compensation Act /other statutory requirement/ provisions of the Bidding Documents.

15. THAT the Contractor shall submit Near-Miss-Accident report alongwith action plan for avoidance such incidence /accidents to Engineer – In-charge/ Project Manager. Contractor shall also submit Monthly Safety Activities report to Engineer – In-charge/ Project Manager and copy of the Monthly Safety Activities report also to be sent to Safety In-charge at RHQ of the Employer for his review record and instructions.

16. THAT the Contractor is submitting a copy of Safety Policy/ Safety Documents of its Company which is enclosed at **Annexure – 6 (SP)** and ensure that the safety Policy and safety documents are implemented in healthy spirit.

17. THAT the Contractor shall make available of First Aid Box [Contents of which shall be as per Building & other construction workers (Regulation of Employment and Conditions of Services Act and Central Rule 1998 / EMPLOYER Guidelines)] to the satisfaction of Engineer In-Charge/ Project Manager with each gang at site and not at camp and ensures that trained persons in First Aid Techniques with each gang before execution of work.

18. THAT the Contractor shall submit an 'Emergency Preparedness Plan' for different incidences i.e. Fall from height, Electrocution, Sun Stroke, Collapse of pit, Collapse of Tower, Snake bite, Fire in camp / Store, Flood, Storm, Earthquake, Militancy etc. while

carrying out different activities under execution i.e. foundation works including civil works, erection, stringing (as applicable), testing & commissioning, disposal of materials at site / store etc. which is enclosed at **Annexure – 7 (SP)** for approval of the Engineer In-Charge/ Project Manager before start of work.

19. THAT the Contractor shall organise Safety Training Programs on Safety, Health and Environment and for safe execution of different activities of works i.e. foundation works including civil works, erection, stringing (as applicable), testing & commissioning, disposal of materials at site / store etc. for their own employees including sub contractor workers on regular basis.

    The Contractor, therefore, submits copy of the module of training program, enclosed at **Annexure – 9 (SP)**, to Engineer In-charge/Project Manager for its acceptance and approval and records maintained.

20. THAT the Contractor shall conduct safety audit, as per Safety Audit Check Lists enclosed at **Annexure – 8 (SP)**, by his Safety Officer(s) every month during construction of Transmission Lines / Sub Stations / any other work and copy of the safety audit report will be forwarded to the Employer's Engineer In-charge / Site In-charge/Project Manager for his comments and feedback. During safety audit, healthiness of all Personal Protective Equipments (PPEs) shall be checked individually by safety officer of contractor and issue a certificate of its healthiness or rejection of faulty PPEs and contractor has to ensure that all faulty PPEs and all faulty lifting tools and tackles should be destroyed in the presence of EMPLOYER construction staff. Contractor has to ensure that each gang be safety audited at least once in two months. During safety audit by the contractor, Safety officer's feedback from EMPLOYER concerned shall be taken and recorded. The Employer's site officials shall also conduct safety audit at their own from time to time when construction activities are under progress. Apart from above, the Employer may also conduct surveillance safety audits. The Employer may take action against the person / persons as deemed fit under various statutory acts/provisions under the Contract for any violation of safety norms / safety standards.

21. THAT the Contractor shall develop and display Safety Posters of construction activity at site and also at camp where workers are generally residing.

22. THAT the Contractor shall ensure to provide potable and safe drinking water for workers at site / at camp.

23. THAT the Contractor shall do health check up of all workers from competent agencies and reports will be submitted to Engineer In-Charge within fifteen (15) days of health check up of workers as per statutory requirement.

24. THAT the Contractor shall submit information alongwith documentary evidences in regard to compliance to various statutory requirements as applicable which are enclosed at **Annexure – 10A (SP)**.

    The Contractor shall also submit details of Insurance Policies taken by the Contractor for insurance coverage against accident for all employees are enclosed at **Annexure – 10B (SP)**.

25. THAT a check-list in respect of aforesaid enclosures alongwith the Contractor's remarks, wherever required, is attached as **Annexure – Check List** herewith.

THE CONTRACTOR shall incorporate modifications/changes in this 'Safety Plan' necessitated on the basis of review/comments of the Engineer In-Charge/Project Manager within fourteen (14) days of receipt of review/comments and on final approval of the Engineer In-Charge/Project Manager of this 'Safety Plan', the Contractor shall execute the works under the Contract as per approved 'Safety Plan'. Further, the Contractor has also noted that the first progressive payment towards Services Contract shall be made on submission of 'Safety Plan' alongwith all requisite documents and approval of the same by the Engineer In-Charge/Project Manager.

IN WITNESS WHEREOF, the Contractor has hereunto set its hand through its authorised representative under the common seal of the Company, the day, month and year first above mentioned.

For and on behalf of

M/s.....…….....

WITNESS

1. Signature..... Signature.....

   Name..... Name.....

   Address..... Address.....

2. Signature..... Authorised representative

   Name..... (Common Seal)

   Address..... (In case of Company)

Note:
All the annexure referred to in this "Safety Plan"are required to be enclosed by the contractor as per the attached "Check List "

1. Safety Plan is to be executed by the authorised person and (i) in case of contracting Company under common seal of the Company or (ii) having the power of attorney issued under common seal of the company with authority to execute such contract documents etc., (iii) In case of (ii), the original Power of Attorney if it is specifically for this Contract or a Photostat copy of the Power of Attorney if it is General Power of Attorney and such documents should be attached to this Safety Plan.

2. For all safety monitoring/ documentation, Engineer In-charge / Regional In-charge of safety at RHQ will be the nodal Officers for communication.

CHECK LIST FOR SEFETY PLAN

S. N.	Details of Enclosure	Status of Submission of information/ documents	Remarks
1.	**Annexure – 1A (SP)** Safe work procedure for each activity i.e. foundation works including civil works, erection, stringing (as applicable), testing & commissioning, disposal of materials at site / store etc. to be executed at site.	Yes/No	
2.	**Annexure – 1B (SP)** Manpower deployment plan, activity wise foundation works including civil works, erection, stringing (as applicable), testing & commissioning, disposal of materials at site / store etc.	Yes/No	
3.	**Annexure – 2 (SP)** List of Lifting Machines i.e. Crane, Hoist, Triffor, Chain Pulley Blocks etc. and Lifting Tools and Tackles i.e. D shackle, Pulleys, come along clamps, wire rope slings etc. and all types of ropes i.e. Wire ropes, Poly propylene Rope etc. used for lifting purposes along with test certificates.	Yes/No	
4.	**Annexure – 3 (SP)** List of Personal Protective Equipment (PPE), activity wise including the following along with test certificate of each as applicable: 1. Industrial Safety Helmet to all workmen at site. (EN 397 / IS 2925) with chin strap and back stay arrangement. 2. Safety shoes without steel toe to all ground level workers and canvas shoes for workers working on tower. 3. Rubber Gum Boot to workers working in rainy season / concreting job. 4. Twin lanyard Full Body Safety harness with shock absorber and leg strap arrangement	Yes/No	

S. N.	Details of Enclosure	Status of Submission of information/ documents	Remarks
	for all workers working at height for more than three meters. Safety Harness should be with attachments of light weight such as of aluminium alloy etc. and having a feature of automatic locking arrangement of snap hook and comply with EN 361 / IS 3521 standards. 5. Mobile fall arrestors for safety of workers during their ascending / descending from tower / on tower. EN 353 -2 (Guided type fall arresters on a flexible anchorage line.) 6. Retractable type fall arrestor (EN360: 2002) for ascending / descending on suspension insulator string etc. 7. Providing of good quality cotton hand gloves / leather hand gloves for workers engaged in handling of tower parts or as per requirement at site. 8. Electrical Resistance hand gloves to workers for handling electrical equipment / Electrical connections. IS : 4770 9. Dust masks to workers handling cement as per requirement. 10. Face shield for welder and Grinders. IS : 1179 / IS : 2553 11. Other PPEs, if any, as per requirement etc.		
5.	**Annexure – 4 (SP)** List of Earthing Equipment / Earthing devices with Earthing lead conforming to IECs for earthing equipments are – (855, 1230, 1235 etc.) gang wise for stringing activity/as per requirement	Yes/No	
6.	**Annexure – 5A (SP)** List of Qualified Safety Officer(s) alongwith their contact details	Yes/No	
7.	**Annexure – 5B (SP)** Details of Explosive Operator (if required), Safety officer / Safety supervisor for every erection / stinging gang, any other person nominated for safety, list of personnel trained in First Aid as well as brief information about safety set up by the	Yes/No	

S. N.	Details of Enclosure	Status of Submission of information/ documents	Remarks
	Contractor alongwith copy of organisation of the Contractor in regard to safety		
8.	**Annexure – 6 (SP)** Copy of Safety Policy/ Safety Document of the Contractor's company	Yes/No	
9.	**Annexure – 7 (SP)** 'Emergency Preparedness Plan' for different incidences i.e. Fall from height, Electrocution, Sun Stroke, Collapse of pit, Collapse of Tower, Snake bite, Fire in camp / Store, Flood, Storm, Earthquake, Militancy etc. while carrying out different activities under execution i.e. foundation works including civil works, erection, stringing (as applicable), testing & commissioning, disposal of materials at site / store etc.	Yes/No	
10.	**Annexure – 8 (SP)** Safety Audit Check Lists (Formats to be enclosed)	Yes/No	
11.	**Annexure – 9 (SP)** Copy of the module of Safety Training Programs on Safety, Health and Environment, safe execution of different activities of works for Contractor's own employees on regular basis and sub contractor employees.	Yes/No	
12.	**Annexure – 10A (SP)** Information alongwith documentary evidences in regard to the Contractor's compliance to various statutory requirements including the following:		
(i)	Electricity Act 2003 _____ [*Name of Documentary evidence in support of compliance*]	Yes/No	
(ii)	Factories Act 1948	Yes/No	

S. N.	Details of Enclosure	Status of Submission of information/ documents	Remarks
	_____ [*Name of Documentary evidence in support of compliance*]		
(iii)	Building & other construction workers (Regulation of Employment and Conditions of Services Act and Central Act 1996) and Welfare Cess Act 1996 with Rules. _____ [*Name of Documentary evidence in support of compliance*]	Yes/No	
(iv)	Workmen Compensation Act 1923 and Rules. _____ [*Name of Documentary evidence in support of compliance*]	Yes/No	
(v)	Public Insurance Liabilities Act 1991 and Rules. _____ [*Name of Documentary evidence in support of compliance*]	Yes/No	
(vi)	Indian Explosive Act 1948 and Rules. _____ [*Name of Documentary evidence in support of compliance*]	Yes/No	
(vii)	Indian Petroleum Act 1934 and Rules. _____ [*Name of Documentary evidence in support of compliance*]	Yes/No	
(viii)	License under the contract Labour (Regulation & Abolition) Act 1970 and Rules. _____ [*Name of Documentary evidence in support of compliance*]	Yes/No	
(ix)	Indian Electricity Rule 1956 and amendments if	Yes/No	

S. N.	Details of Enclosure	Status of Submission of information/ documents	Remarks
	any, from time to time. _____ [*Name of Documentary evidence in support of compliance*]		
(x)	The Environment (Protection) Act 1986 and Rules. _____ [*Name of Documentary evidence in support of compliance*]	Yes/No	
(xi)	Child Labour (Prohibition & Regulation) Act 1986. _____ [*Name of Documentary evidence in support of compliance*]	Yes/No	
(xii)	National Building Code of India 2005 (NBC 2005). _____ [*Name of Documentary evidence in support of compliance*]	Yes/No	
(xiii)	Indian standards for construction of Low/ Medium/ High/ Extra High Voltage Transmission Line _____ [*Name of Documentary evidence in support of compliance*]	Yes/No	
(iv)	Any other statutory requirement(s) [*please specify*] _____ [*Name of Documentary evidence in support of compliance*]	Yes/No	
13.	**Annexure – 10B (SP)** Details of Insurance Policies alongwith documentary evidences taken by the Contractor for the insurance coverage against accident for all employees as below:		

S. N.	Details of Enclosure	Status of Submission of information/ documents	Remarks
(i)	Under Workmen Compensation Act 1923 and Rules. _____ [*Name of Documentary evidence in support of insurance taken*]	Yes/No	
(ii)	Public Insurance Liabilities Act 1991 _____ [*Name of Documentary evidence in support of insurance taken*]	Yes/No	
(iii)	Any Other Insurance Policies _____ [*Name of Documentary evidence in support of insurance taken*]	Yes/No	

EMPLOYER

ANNEXURE 18

CHECKLIST FOR INSPECTION OF TRANSMISSION/DISTRIBUTION LINES AND SUBSTATIONS

TRANSMISSION LINES			
NON-SHUT DOWN	**SHUT DOWN**	**DEFECT**	**MONTH DATE**
		A. FOUNDATION	
A 1		Soil erosion/uneven settlement	
A 2		Any crack/damage to foundation	
A 3		Any crack/damage to retaining wall/revetment	
A 4		Missing/Damage/Earthwire/Strip	
A 5		Earth Cutting from vicinity of foundation	
		B. TOWER	
B 1		Damaged/Missing Member BWL	
	B 2	Damaged/Missing Member AWL	
B 3		Damaged/Missing nuts &bolts BWL	
	B 4	Damaged/Missing nuts &bolts AWL	
B 5		Danger plate missing	
B 6		Number plate missing	
B 7		Phase plate missing	
B 8		Protective coating disappeared	
B 9		Step bolts missing	
B 10		Foreign material on Tower *viz* birds nest	
		C. HARDWARE FITTINGS & INSULATORS	
	C 1	Surface pollution	
	C 2	Unusual deflection of string	
	C 3	Flash over/Burning mark	
	C 4	No. of fitting damage	
	C 5	No. of disc damage	
		D. CONDUCTOR AND EARTHWIRE	
	D 1	Strands cut and open	
	D 2	Loose jumpers of conductor	
	D 3	Hanging earthwire	
	D 4	Dislocated/Loose VD of conductor	
	D 5	Missing VD of Conductor	
	D 6	Dislocated/Loose VD of earthwire	
	D 7	Missing VD of earthwire	
	D 8	Spacers Missing	
	D 9	Spacers Dislocated/Loose	
	D 10	Jumper/Hard Spacer missing	

TRANSMISSION LINES			
NON-SHUT DOWN	**SHUT DOWN**	**DEFECT**	**MONTH DATE**
	D 11	Jumper/Hard spacer loose/dislocated	
	D 12	Copper bonds missing	
	D 13	Copper bonds dislocated	
		E. ELECTRICAL CLEARANCE	
E 1		Details of trees causing/may cause problems	
	E 2	Infringement in clearance of bottom conductors to ground	
	E 3	Infringement in clearance of earthwire to conductor	
E 4		Any new construction seen within the line	
E 5		Well blasting below the line	
		Patrolling done by	
		Signature	
		Counter Signature by Line Section I/C	
1) Comments with signature of Line Section In-charge Date			

SUB-STATION			
SL. NO	**ACTIVITY**	**TEST RESULTS TO BE APPROVED BY**	**S/D PERIOD**
1	**AC PLANT**		
1.1	AHU		
1.2	Compressors		
1.3	Condenser Unit		
1.4	Cooling Towers		
1.5	Electrical Motor		
1.6	LT Panels		
1.7	Water Treatment		
2	**BATTERY SYSTEMS**		
3	**BUSBARS**		
4	**CAPACITANCE VOLTAGE TRANSFORMER**		
5	**CIRCUIT BREAKERS**		
5.1	Air Blast CB		
5.2	CB Operation		
5.3	Control Cabinet		
5.4	Measurement		
5.5	SF_6 CB		

SUB-STATION			
SL. NO	**ACTIVITY**	**TEST RESULTS TO BE APPROVED BY**	**S/D PERIOD**
6	**CURRENT TRANSFORMER**		
7	**DG SET**		
8	**FIRE PROTECTION**		
8.1	Compressor		
8.2	Deluge System		
8.3	Diesel Engine		
8.4	Electrical Panel		
8.5	Fire Alarm System		
8.6	Fire Extinguish		
8.7	General		
8.8	Hydrant System		
8.9	Jockey Pump		
8.10	Motors		
8.11	Pumps		
8.12	Strainers		
9	**ISOLATORS & E/S**		
9.1	Earth Switch		
9.2	Main Contacts		
9.3	Marshalling Box		
9.4	Operating mech.		
10	**LIGHTNING ARRESTORS**		
11	**CT SW. GEARS (ACDB)**		
12	**PLCC SYSTEM**		
13	**PROTECTION SYSTEMS**		
14	**SHUNT REACTORS**		
15	**TELEPHONE EXCHANGE**		
16	**WAVE TRAPS**		

ANNEXURE- 19

SAMPLE TERMS OF REFERENCE (TOR) FOR BIODIVERSITY ASSESSMENT STUDY

1.0 Background :

Power transmission is a less intrusive activity. Its operational activities are totally different from other linear transportation corridors. However, it may have some negative impacts on area it traverses and affect any sensitive receptors in its vicinity. In order to ensure that there is minimum impact on any important biodiversity area encountered along the routes, if any, a specific Biodiversity Assessment Study for this stretch shall be undertaken by independent agency to provide necessary mitigation measures that can be incorporated into overall Environment Management Plan (EMP) of the project.

2.0 Objectives & Scope of the Study:

The above study aims in identifying potential impacts on flora and fauna and to suggest relevant compensatory and mitigatory measures to protect/conserve biodiversity in the likely impacted area along RoW of transmission line due to the project activity. To achieve this agency/consultant shall carry out a comprehensive study on biological, socio-economic aspects along the proposed routes (RoW) limited to affected biodiversity area and assess the potential impacts and risks (direct as well as indirect/ induced) due to the project activities and shall suggest appropriate measures for compensating & mitigating measures for managing the same. This study will describe the biodiversity values present on the development site and the impact of the project activity on these values and also identify reasonable measures and strategies that can be taken to avoid and minimise impacts on biodiversity.

3.0 Approach and Methodology of the Study:

The study will essentially carried out in two parts:

i) Baseline study in order to determine what flora & fauna species of concern might be found along the route in such sensitive areas through review of data from secondary sources like important data base (IBAT Business), using Satellite imaginary like GIS and GPS technique, IUCN Red data lists, other literatures/publications, various notifications/ gazette, forest/wildlife management plans and other studies, if available

ii) Field study and collection of primary data along the route in protected/sensitive areas on key parameters like
   a) Details of flora & fauna with special reference to endemic/threatened species population reported from the study area.
   b) Description of habitat for such endemic/threatened species, , ecology and like threat including the breeding, foraging pattern and its conservation plan/biodiversity action plan undertaken, if any
   c) Socio-economic values of the affected area vis-à-vis biodiversity values.

d) Consultations with forest/wildlife officials, local communities, technical & managerial staff of Utility and survey team.

4.0 Output:

The agency will submit biodiversity assessment report including management plan broadly covering following aspects:

1) ***Baseline status of diversity values project affected area***: Biodiversity assessment shall include details on forest/ tree cover with species and girth distribution, density/crown, description of understory and middle storey flora & fauna, if any, survey of fauna including species abundance, major habitats, current distribution etc. The study also cover distribution of species in terms of seasonal issues related to breeding and feeding ecology and geographical issues related with the movement of wild species including species from cryptic habitats. This study also identify any rare, endangered, threatened, and endemic species of flora and fauna present along the route. If such species are present, the assessment shall also include geographical features and other associations important for survival of these species and their role in community ecology.

2) ***Study of ecological, environmental and socio-economic impacts***: The study should concentrate on the likely impacts on flora & fauna including their role in community ecology due to project activities. The study shall include impact on socio-economic aspect and also impact on ancillary activities such as provision of access roads to site, on other resources on biodiversity value in the affected area.

3) ***Management Plan for bio-diversity conservation***: Based on the assessment, suitable management plan shall be prepared describing adequate compensation, mitigation and management measures with respect to identified impacts, if any. It should focus on measures for conserving important resources, recommending avoidance of impacts by modifying design of specific activities/components if practical, minimum compensatory measures required by GoI/State government for mitigation and/or management measures for indirect or induced impacts, institutional arrangements including co-ordination mechanisms that need strengthening, description of roles and responsibilities, and budgetary resources required.

5.0 Resource Requirements:

It is anticipated that the assignment will require a Biodiversity Expert assisted by a field team of support professionals including Ecologist, Wildlife Biologist, and Zoologist & Environmental Management/Planning Specialist etc.

6.0 Completion Schedule & Final Deliverables:

It is expected that the above study will be completed within 8-14 weeks from the date of issuance of Work Order. The agency will submit final report in both hard & soft copy with within 2 weeks of acceptance of report.

ANNEXURE-20

TABLE OF CONTENT FOR INITIAL ENVIRONMENT ASSESSMENT REPORT (IEAR) FOR SUB PROJECT

Section - I: Project Description: Brief description of the background, objective of the project, resultant benefit and scope of the work

Section – II: Base line data: Description of the relevant physical, physiographical, and socio-economic condition of the project area including description of natural resources base like forest resources or any other environment sensitive areas like National Park sanctuary etc. along with description of climatic condition, population and other demographic features of the project area.

Section -III: Policy, Legal and Regulatory framework: Description of the policy, Legal and Regulatory framework applicable to transmission project and the environmental requirement under which environment assessment has been carried out.

Section – IV: TSECL Approach for Route Selection: Brief description of the environmental criteria for selection of route and sub-station(if applicable) description of alternative studies made for proposed route of transmission line including systematic analysis of different alternative studied with reference to particular environmental & social parameters like involvement of forest, protected areas, significant economic benefit associated with the project and without the project etc. and reason for selection of proposed route.

Section – V: Screening of potential Environmental impact, evaluation and mitigation measures: Description of the criteria for identification of potential impact due to project location, construction and operation on the environment (clearing of forest/vegetation) public health, landscape etc. its extent magnitude, duration and significance. The section will also list different measures like design modification, variation in alignment compensation etc. to either completely avoid or to mitigate such impact to the extent possible. Section also details out process of public consultation for the given project and peoples reaction/suggestion if any and a conclusion regarding further studies required for selected impacts if any.

Section – VI: Monitoring and organization support structure: Describing of the monitoring plan reporting pattern/frequency, cost estimate, external monitoring requirement/timing for potential environment & social issues with detailed Environment Management Plan (EMP) and proposed organization support structure for the same including training needs if so felt.

Enclosures:

1) Original Topo map (SOI) with alternative route marked
2) Public Consultation details like list of participants, photos etc.

3) Any other supporting documents.

ANNEXURE 21

TABLE OF CONTENT FOR COMPENSATION PLAN FOR TEMPORARY DAMAGES (CPTD) FOR SUB PROJECT

Section - I: Project Description: Brief description of the background, benefits of the project, objective of compensation plan.

Section – II: Project Impacts : Minimization of impacts, description of alternative studies made for proposed route of transmission line including systematic analysis of different alternative studied with reference to particular environmental & social parameters like involvement of forest, protected areas, significant economic benefit associated with the project and without the project etc. and reason for selection of proposed route, analysis of impacts including numbers of affected persons/household, land use traversed etc.

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Section – III: Socio-economic and Environmental Analysis for CPTD: Description of the physical, physiographical, socio-economic condition of the project area including other demographic features of the project area, Preliminary Social assessment, Impact due to project location and design and Critical social review criteria

Section -IV: Compensation Framework: Description of compensation plan, Procedure for tree/crops/land compensation.

Section – V: Stakeholders Participation & Compensation: Public Consultation during Preliminary Survey and peoples reaction/suggestion if any, Plan for further consultation during implementation

Section – VI: Institutional Arrangements for Implementation and Monitoring: Describing the implementation schedule, Grievances Redressal Mechanism, Disclosure, Evaluation and monitoring plan. Budget provision for compensation

ANNEXURE-22

TABLE OF CONTENT FOR FINAL ENVIRONMENT ASSESSMENT REPORT (FEAR) FOR TRANSMISSION AND DISTRIBUTION PROJECT

Section - I: Project Description: Brief description of the background, objective of the project, resultant benefit and scope of the work

Section – II: Base line data: Description of the relevant physical, physiographical, and socio-economic condition of the project area including description of natural resources base like forest resources or any other environment sensitive areas like National Park sanctuary etc. along with description of climatic condition, population and other demographic features of the project area.

Section -III: Policy, Legal and Regulatory framework: Description of the policy, Legal and Regulatory framework applicable to transmission project and the environmental requirement under which environment assessment has been carried out.

Section – IV: Major Features of Final Route & Environment Impact: Brief description of the environmental criteria for selection of route and major features of final route alignment , details of forest involvement including number of trees and species of the trees likely to be effected. The details of forest clearance and environmental impact matrix describing in brief the extent of impact of transmission line.

Section – V: Potential Environmental Impact, Evaluation and its Management: Description of the measures adopted and under implementation for identified impact due to project location, design, construction, O&M details of public consultation and its documentation, details of contractual conditions regarding safeguard issues under scope of contract for compliance and conclusion listing the category of the project based on the impact and analysis.

Section – VI: Monitoring and Organization Support Structure: Description of the monitoring plan, reporting pattern/frequency, external monitoring requirement/timing for potential environment & social issues with compliance status of Environment Management Plan (EMP) and organization support structure.

Enclosures:

1) Original Topo / GIS map with Final route marked
2) Public Consultation details like list of participants, photos etc.
3) Copy of Forest proposal and Compensatory Afforstation plan.
4) Forest approval letters
5) Tree, crop/tower footing compensation details
6) Contract conditions regarding safeguard issues.
7) Budget/Expenditure
8) Compliance details of safety checklist/measures

ANNEXURE-23

AEGCL/APDCL'S PUBLIC CONSULTATION PROCESS

Public consultation forms an integral part of AEGCL/APDCL'S project cycle, and will be carried out in local language for wider/better understanding. The process of consultation and its documentation shall be as follows:

TRANSMISSION LINES

1. When planning a transmission line, public consultation is used as an integral tool for screening, assessment and finalisation of route alignment. During initial screening and walkover survey, AEGCL/APDCL staffs meet the public in the route of proposed transmission line. Observations and problems arising from these discussions are given due consideration while finalising the route.

2. During the survey for tower spotting, AEGCL/APDCL site officials meet the public i.e. people coming in the route of the line. This enables AEGCL/APDCL to gauge public opinion. At the time of construction, every individual on whose land a tower is to be erected is met with. People coming in the way of the ROW are consulted and their views and suggestions are incorporated thus allowing for public participation.

3. During construction AEGCL/APDCL pays the compensation for any damages to each land owner and obtains their final acknowledgement.

4. During maintenance, AEGCL/APDCL consults the individual landowners, obtains their approval and pays compensation for any damage to property.

Substations:

1. AEGCL/APDCL identifies locations of the substation. If it is private/panchayat land AEGCL/APDCL shall request GoA for acquisition for their purpose after selecting suitable one as per RFCTLARRA, 2013. Preliminary Social Assessment shall be done by AEGCL/APDCL as per funding agency requirement and public views shall be recorded too, till this point.

2. Further processing shall be done by concerned dept. of GoA as per RFCTLARRA, 2013and after acquisition GoA will give possession to AEGCL/APDCL.

In order to further streamline the consultation process for transmission/distribution line and to facilitate documentation of the same, the followings aspects may be shared during public discussion:

- 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 TL/DL and AEGCL/APDCL'S approach to minimising and solving them;

AEGCL/APDCL shall practise to use one or more of the following consultation techniques at various stages. These include:

(1) Public meetings: AEGCL/APDCL will hold public meetings during its EAMP process at appropriate locations along the length of the transmission line. Public meetings will include one to one meetings with land owners during transmission tower spotting. Larger group meetings will be organised at strategic distances along the length of the transmission line. These will consist of all or at least most of the people to be directly affected by the concerned project and their local Gram Panchayat leaders.

(2) Informal small group meetings: Informal small group meetings will be conducted during walkover survey to find out local environmental and social issues along the proposed transmission line route. These meetings will be conducted by Site staff at appropriate intervals.

(3) Information brochures and Pamphlets: AEGCL/APDCL will make available information and project specific details to the public through Information brochures and Pamphlets. These brochures and pamphlets will contain information on: the overall project plan; design and construction standards; prudent deviations from design standards from transmission towers near schools, hospitals, human habitation; potential impacts and generic mitigation measures; resettlement and rehabilitation; and, compensation.

(4) Operating field offices: Information regarding the proposed transmission line can be accessed by the public from operating field offices. Information will be provided through brochures and pamphlets and any further queries will be responded by AEGCL/APDCL's staff.

(5) Local planning visits and site visits: AEGCL/APDCL's staff will visit field sites. During this time informal contacts will be established with the local people. Reactions of the public to the project will be informally gauged.

(6) Response to public Enquires: Circle office will respond to public enquiries by post or through notices in local news papers.

7) ***Press release inviting comments:*** AEGCL/APDCL will publish details of proposed transmission routes in two local newspapers. Public will be invited to comment in writing or by meeting concerned AEGCL/APDCL officials within a specified period. AEGCL/APDCL will then incorporate relevant objections and suggestions.

(8) ***Project coordination committees:*** AEGCL/APDCL will set up grievance redressal committees to address the complaints and objections that PAP's may have regarding the project, its impacts or mitigation measures.

(9) ***Ombudsman or representative:*** For building a consensus on the project its impacts and mitigation measures, the PAPs will be encouraged to elect or appoint a trusted ombudsman or representative.

(10) ***Public Displays:*** AEGCL/APDCL will show their model projects to public/small representative groups.

DOCUMENTATION

The proceedings of the above consultation shall be documented. Details recorded will include date of the meeting, venue, number and possibly the names of the people attended, issues discussed and the outcome of the meeting.

The manager at Circle office/site will apply combinations of the appropriate techniques at various activities of a project depending upon the field conditions as shown below:

Milestones	Process	Techniques
1. Environmental & social screening & scoping for TL/DL	▪ Screen &scope TL/DLs from an environmental and social perspective - spot verification	Informal small group meetings, local planning visits and site visits
2. Environmental & social screening & scoping for SS	▪ Screen &scope SS from an environmental and social perspective - spot verification	Informal small group meetings, Local planning visits and site visits
3. EAMP	▪ TL/DLs & SS - undertake environmental review and formulate appropriate management measures	Public meetings, Press release inviting comments
4. CPTD	▪ TL - negotiate compensation packages with revenue authorities and Affected person (APs) - finalise and document compensation and other management measures	Informal small group meetings, local planning visits and site visits, Response to public enquiries
5. Execution of Environmental management works	▪ Execute environmental management works - Appropriate clearance for Transmission line ROW, etc.	Information brochures and pamphlets, Operating field offices, Response to public enquiries

Milestones	Process	Techniques
	- compensatory afforestation	
6. Execution of Social management works	▪ TL - pay compensation as agreed and documented in CPTD and execute other measures ▪ SS - deposit compensation and take possession of land -	Information brochures and pamphlets, Operating field offices, Response to public enquiries Information brochures and pamphlets, Operating field offices, Response to public enquiries
7. Environmental and Social monitoring	▪ Monitor EAMP measures - maintenance of ROW - progress on compensatory afforestation ▪ Monitor CPTD measures - appropriate compensation and other measures during maintenance of towers and lines	Information brochures and pamphlets, Operating field offices, Response to public enquiries Informal small group meetings