

**FINAL**  
**ENVIRONMENTAL ASSESSMENT REPORT (FEAR)**  
**For**  
**TRANSMISSION AND DISTRIBUTION NETWORK**  
**In**  
**Dhemaji District Under “North Eastern Region Power System Improvement Project” NERPSIP**  
**Tranche-1, Assam**



*GCI/R6/2019-20/EIA , May 2021*



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**For**  
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**&**  
**ASSAM POWER DISTRIBUTION COMPANY LIMITED (APDCL)**  
**(A Government of Assam Enterprise)**



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**For: GREEN CIRCLE, INC.**



**AUTHORISED SIGNATORY**

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FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam



### QUALITY CONTROL SHEET

Draft Report Release Date- 29<sup>th</sup> April 2020

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### ABBREVIATIONS

<b>ADC</b>	Autonomous District Council
<b>AEGCL</b>	Assam Electricity Grid Corporation Ltd
<b>APDCL</b>	Assam Power Distribution Corporation Ltd
<b>APs</b>	Affected Persons
<b>AP</b>	Angle Point
<b>CBIS</b>	Capacity Building & Institutional Strengthening
<b>CEA</b>	Central Electricity Authority
<b>CPTD</b>	Compensation Plan for Temporary Damages
<b>CPIU</b>	Central Project Implementation Unit
<b>dB</b>	Decibel
<b>DC</b>	District Collector
<b>DL</b>	Distribution Line
<b>E&amp;S</b>	Environmental and Social
<b>EHS</b>	Environment, Health & Safety
<b>EMF</b>	Electro Magnetic Field
<b>ESMC</b>	Environment & Social Management Cell
<b>ESPPF</b>	Environment and Social Policy & Procedures Framework
<b>EMP</b>	Environmental Management Plan
<b>FCA,1980</b>	Forest (Conservation) Act, 1980
<b>FEAR</b>	Final Environment Assessment Report
<b>GCI</b>	Green Circle Inc
<b>GIS</b>	Global Information System
<b>GPS</b>	Global Positioning System
<b>GOI</b>	Government of India
<b>GRM</b>	Grievances Redressal Mechanism
<b>GRC</b>	Grievance Redressal Committee
<b>HFL</b>	High Flood Level
<b>IA</b>	Implementing Agency
<b>IBA</b>	Important Bird Areas
<b>IEAR</b>	Initial Environmental Assessment Report
<b>MoEF &amp; CC</b>	Ministry of Environment, Forest and Climate Change

	<b>FEAR for T&amp;D subprojects in Dhemaji district under NERPSIP in Assam</b>	
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<b>LOA</b>	Letter of Award
<b>NOC</b>	No Objection Certificate
<b>NER</b>	North Eastern Region
<b>NERPSIP</b>	North Eastern Region Power System Improvement Project
<b>O &amp; M</b>	Operation & Maintenance
<b>OPs</b>	Operational Policies
<b>PCB</b>	Poly Chlorinated Biphenyl
<b>PIU</b>	Project Implementation Unit
<b>POWERGRID</b>	Power Grid Corporation of India Ltd.
<b>PPEs</b>	Personal Protective Equipments
<b>PMU</b>	Project Management Unit
<b>RoW</b>	Right of Way
<b>R &amp; R</b>	Rehabilitation and Resettlement
<b>RRM</b>	Random Rubble Masonry
<b>S/S</b>	Substation
<b>SPCU</b>	State Project Coordination Unit
<b>T &amp; D</b>	Transmission & Distribution (T&D)
<b>TL</b>	Transmission Line
<b>WB</b>	World Bank

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## **Executive Summary**

North Eastern Region Power Supply Improvement Project (NERPSIP) is a World Bank funded project aimed at improving the impoverished power transmission and distribution system in the North Eastern states of India with Power Grid Corporation of India Ltd. (POWERGRID), the single transmission utility of the country as the implementing agency (IA). The present Final Environmental Assessment Report (FEAR) is for the Dhemaji - Silapathar transmission and distribution system, and has been undertaken to verify the actual location details of the project elements, to report any impacts on the biodiversity and protected area and the project affected people, and to assess the compliance of the Initial Environmental Assessment Report (IEAR) /Environment Management Plan (EMP) prepared and submitted by the IA for the instant project.

The elements of the present project include,

- a. 132 kV D/C transmission line from Dhemaji to Silapathar
- b. 33 kV distribution line from Silapathar (New) to Silapathar-II (New)
- c. 33 kV distribution line from Silapathar (New) to Silapathar (Existing) substation.

As per IEAR, the transmission length is 32.55 km which after finalization of survey increased by 3.33 km and the final transmission route length is 35.88 km. The increase in length is because of avoidance of habituated and eco sensitive areas. The total distribution line length as per IEAR is 21.502 km. The final distribution line length calculated after detailed survey is 14.91 km. The line length is reduced by 6.59 km due to further optimization during survey considering construction difficulties and RoW issues.

The Final route of the transmission line from the project area are mostly passing through the paddy area as the route alignment has been selected in such a way that it successfully avoid all reserve forests and protected areas which is evident from the satellite imagery with superimposed transmission alignments. Similarly, the distribution lines too have been aligned by avoiding forest areas. Here, the RoW corridor being narrower (15m) will further reduce the necessity of tree felling. Much of the line would only need lopping of branches for unhindered passage. The land requirement and excavation for tower footing has been adequately addressed. Soil excavated for tower footing has been backfilled, and the remaining soil has been optimally managed through even spreading and compaction. Since the excavation operations are undertaken during the dry season, no hindrances to cropping operations are envisaged. However, as per procedures compensation to all affected persons/land owners for any damage to crops/ felling of trees and cost for use of the land for tower base area with 100% land cost as per prevailing rates are being provided to affected land owners by IA/Utility.

As the transmission and distribution lines avoid ecologically sensitive areas, there is no evidence to suggest threats to biodiversity neither any endangered species of flora nor fauna species have been reported.

The substations are located away from human habitation and are mostly on high ground so as to avoid instances of flooding or noise pollution. All tower footings are of equal leg distribution, and the excavated soils are being backfilled, the excess being evenly spread

out within the boundary of the substations. Appropriate drainage has been provided, and management of transformer oil spillage has been adequately addressed through provisions for collection and storage for either recycling or disposal.

During visit to site it has been observed that excavated pits and all accident prone areas are appropriately barricaded for safety. Issues relating to operational health and safety have also been adequately addressed. The labours are provided with safety gear and provisions for first-aid and arrangement for shifting of affected persons to nearby hospitals are also in place. Compensation for injury and death has been ensured through provisions in Safety Plan & Contract condition. Proper sanitation facilities and safe drinking water are being provided in the project locations. The site managers have been advised to ensure that there are no instances of open defecation.

The IA has a continuous monitoring mechanism of the project w.r.t. compliance of the mandatory requirements as stipulated in the IEAR. Thus the adherences to the clauses by the contractors are regularly monitored especially in respect of EMP implementation, OHS compliance. The project has thus far had zero fatality which is indicative of the strict vigil of the IA.

The Capacity building and Institutional Strengthening program of the IA is held intermittently to enhance the skills of the project officials. Further, meetings between IA and AEGCL/APDCL are held on a monthly/ bimonthly basis to assess the work progress and difficulties encountered in respect of land acquisition, RoW and compensation if any.

It emerged from the survey that the PAP were appreciative of the project and hoped that the power scenario would improve after commissioning of the project. Local people also benefited through project related employment that was being generated so overall, the planning and layout of the project elements have been undertaken in a judicious manner so as to ensure minimum environmental impact. However, during the implementation phase, especially in respect of the construction, strict monitoring by the IA should be undertaken so as to ensure proper compliance by the contractors with reference to the IEAR and especially with regard to compliance of the health and safety measures.



## 1 PROJECT DESCRIPTION

### 1.1 Background

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. No significant generation capacity has been added between 2004 and 2011 as a result of which inadequate power supply remains a critical constraint to sustainable and inclusive growth, and to scaling up private investment and economic competitiveness in the NER.

The power-starved North-Eastern (NE) Region, comprising Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura, is blessed with a huge hydro potential. The region also has abundant resource of coal, oil and gas for thermal power generation. According to the estimates of the North Eastern Electric Power Corporation (NEEPCO), the north-eastern region has the potential of about 58971 MW hydro power i.e. almost 40% of the country's total hydro potential; but out of this only less than 2% (1095MW) has so far been harnessed. As per the report status of hydroelectric power potential listed by Central Electricity Authority (CEA) out of the total capacity of 58971MW, only 4029 MW has been tapped, which amounts to less than 7%. The region has a reserve of 151.68 billion cubic feet natural gas, which is capable of generating 7500 MW for 10 years. The region is also blessed with 864.78 million tons of coal against 186 billion tons of reserves in the country. With this reserve in the NE Region, approximately 240 MW/day can be generated for a period of 100 years.

But, in spite of such huge potential, the region ranks lowest in the country in terms of power generation and per capita energy consumption mainly due to lack of proper planning, inhospitable climatic conditions, remote location and inaccessibility. However, with continual improvement of infrastructure and communication facilities, the Northeast stands to become the power house of India by utilizing its surplus power potential, especially in hydel sector. The region offers a large potential in renewable energy, which is also yet to be exploited. There is also an imbalance between hydel and thermal power, both in terms of generation and availability. The transmission and distribution sector is the weakest link of the electricity industry in the NE region. Huge transmission and distribution losses, estimated to be at over 40 per cent, lower tariffs as compared to costs of generation and transmission and mounting losses of the state electricity boards, are crippling the electricity sector of the region.

The road-map for development of power sector specifying the need for strengthening of overall Transmission, Sub-transmission and Distribution system of NER was brought out in the "Pasighat Proclamation on Power" released during the first Sectorial Summit of North Eastern Council at Pasighat in Arunachal Pradesh in January 2007.

Accordingly, Government of India (GoI) with the financial assistance of the World Bank (WB) has planned a composite scheme viz. "North Eastern Region Power System Improvement Project" (NERPSIP) to create/augment proper infrastructure/network of Transmission & Distribution (T&D) in the region. The scheme covers six North Eastern

States (Assam, Meghalaya, Manipur, Tripura, Nagaland & Mizoram) to create a robust power network by improving the intra-state transmission & distribution (33kV and above) network with required capacity building initiatives for effective utilization of assets. The Ministry of Power (MOP), GoI appointed Power Grid Corporation of India Limited (POWERGRID), the Central Transmission Utility of the country as the “Implementing Agency” (IA) to implement the project under Tranche-1 in close coordination with the respective State Governments/Utilities. However, the ownership of the assets shall be with the respective State Governments/ State Utilities, who will be responsible for operation and maintenance of assets once they are handed over to them upon progressive commissioning. POWERGRID is also facilitating in building the institutional capacity of the state departments and utilities to continue managing the rehabilitated networks in an efficient manner. The state wise scope of works proposed under Tranche-1 is given below:

**Table 1-1 State wise Work Scope**

Sr. No.	State	Transmission/ Sub-transmission (132kV & above)			Distribution (33kV)		
		Line (KM)	New S/s (No.)	Total MVA (New & Aug.)	Line (KM)	New S/s (No.)	Total MVA (New & Aug.)
1	Assam	233	11	1644	479	16	240
2	Manipur	254	2	160	131	13	229.4
3	Meghalaya	225	4	940	263	11	135
4	Mizoram	143	3	125	5	1	6.3
5	Nagaland	285	5	245	76.5	10	190
6	Tripura	261	9	1306.5	1096	34	450.5
	<b>TOTAL</b>	<b>1401</b>	<b>34</b>	<b>4420.5</b>	<b>2051</b>	<b>85</b>	<b>1251.2</b>

**Table 1-2 Details of State Wise Funding**

State	World Bank	Government of India		Total
	Project Cost (Rs. in Cr.)	Project Cost (Rs. in Cr.)	Capacity Building (Rs. in Cr.)	Total (Rs. in Cr.)
<b>Assam</b>	729.485	729.485	14.83	<b>1473.803</b>
<b>Manipur</b>	213.690	213.690	14.83	<b>442.213</b>
<b>Meghalaya</b>	381.050	381.050	14.83	<b>776.933</b>
<b>Mizoram</b>	150.965	150.965	14.83	<b>316.763</b>
<b>Nagaland</b>	357.290	357.290	14.83	<b>729.413</b>
<b>Tripura</b>	678.685	678.685	14.83	<b>1372.203</b>
Total	<b>2511.165</b>	<b>2511.165</b>	<b>89.00</b>	<b>5111.33</b>

## 1.2 Project Justification

The present intra-state transmission system of the Assam state is quite old & weak and inadequate to meet the growing power requirements of the State. Although the present

Transmission & Distribution (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, breakdown of any transmission system element results in long term power shortages making the system highly unreliable. Moreover, 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 proposed transmission & distribution system.

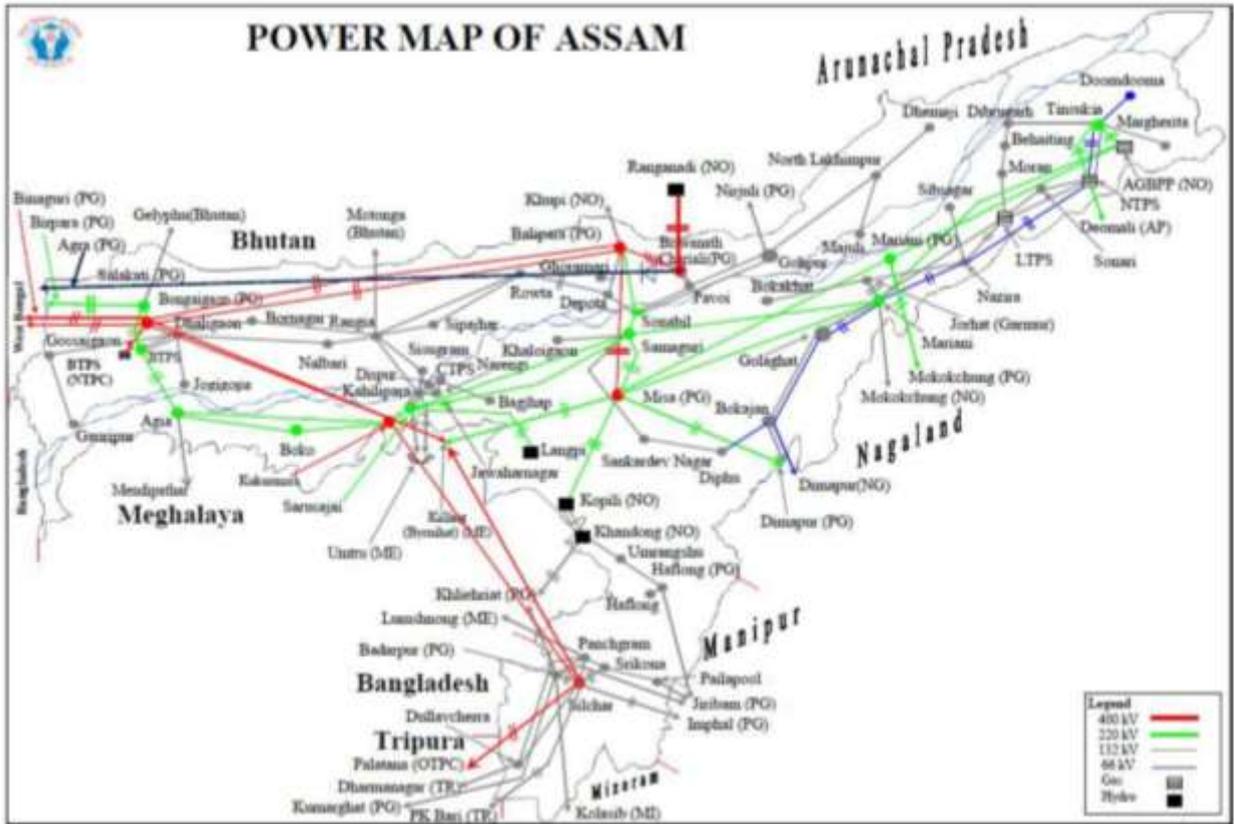


Figure 1-1: Present Power Map of Assam

### 1.3 Benefits of the project

The present transmission and distribution schemes not only improve overall power supply situation but also improve reliability, quality, security and enhancement of power supply in the Assam state.

### 1.4 Scope of the project

The scope of the present study include of 132 kV transmission line and associated 132/33 kV substations & 33 kV distribution lines and 33/11 kV substations being implemented in Dhemaji district of Assam. Details of T & D components are as follows;

Table 1-3 Details of Transmission & Distribution work

Sr. No.	Name of the Line	Name of New/Existing Substation
<b>A. Transmission Scheme</b>		
1.	Dhemaji – Silapathar 132 kV S/C on D/C Line– 35.883km	Establishment of 2 x 31.5 MVA, 132/33 kV new substation at <b>Silapathar</b>

Sr. No.	Name of the Line	Name of New/Existing Substation
		Extension of 132/33 kV substation (Existing) Dhemaji.
<b>B. Distribution Scheme</b>		
2.	Silapathar (New) to Silapathar-II (New) substation 33 kV line – 11.098 km	Establishment of 2 x 5 MVA, 33/11 kV new substation at <b>Silapathar- II</b>
3.	33 KV LILO from Silapathar (New) to Silapathar (Existing) Substation– <b>3.302 km</b>	Strengthening of 33/11kV <b>Silapathar (Existing) substation</b>

The schematic diagram of proposed transmission and distribution network in Dhemaji District is shown below

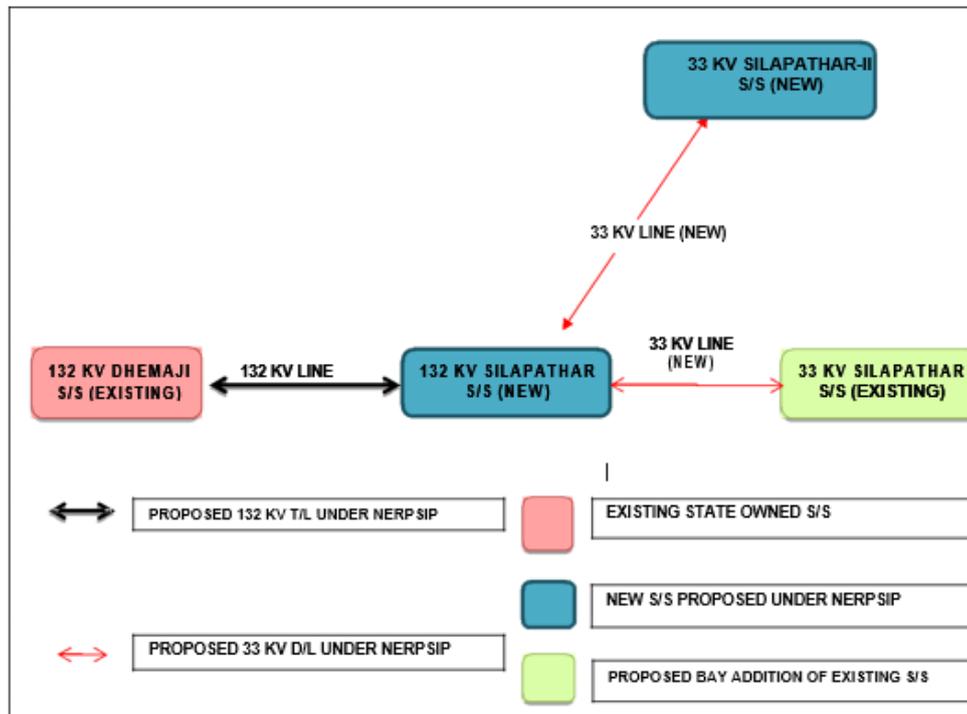


Figure 1-2: Schematic diagram of proposed transmission and distribution network in Dhemaji District

### 1.5 Overall Project Progress

A brief status on project implementation progress of various transmission & distribution components till November, 2019 is presented below;

**Table 1-4 Status of the Project**

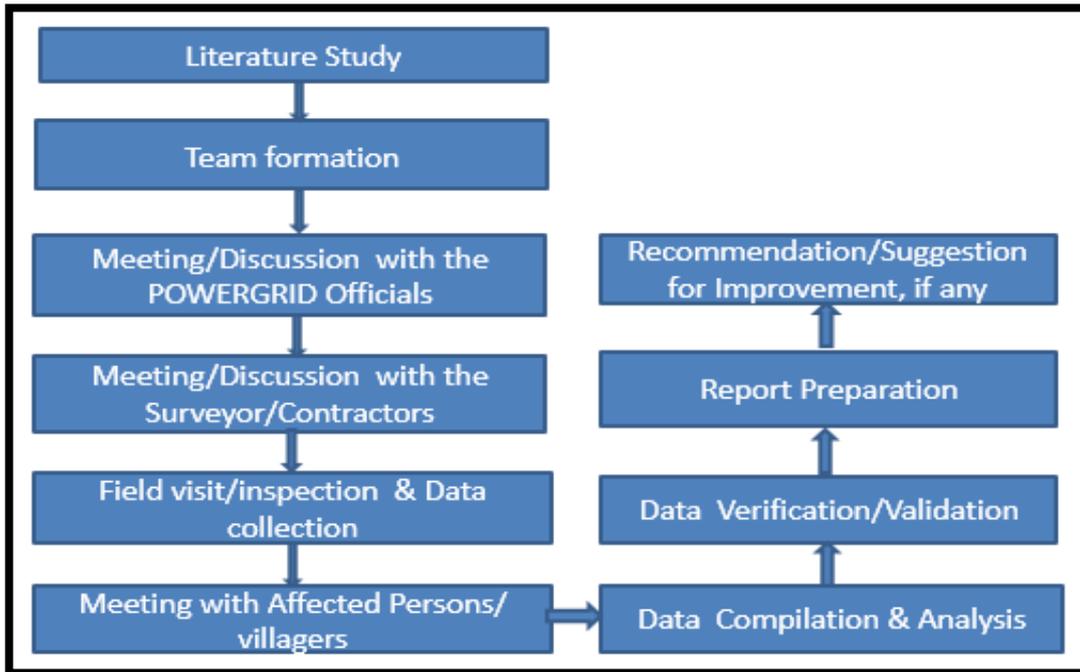
Name of the T & D Component	Progress as on September, 2020
<b>A. Transmission Line</b>	
Dhemaji – Silapathar 132 kV S/C on D/C Line – <b>35.883 KM</b>	Foundation of 63 out of 123 towers completed. Erection of 28 out of 123 towers completed.
<b>B. Distribution Line</b>	
33 kV line from Silapathar (New) to Silapathar II substation– <b>11.098 KM</b>	144 out of 301 poles installed till September 2020
33 KV LILO from Silapathar (New) to Silapathar (Existing) Substation– <b>5 KM</b>	18 out of 113 poles installed till September 2020
<b>C. Substations</b>	
132/33kV Silapathar (new) S/s -2x31.5 MVA	Site levelling 100% completed. Control room work 22% completed. FF Pump house work 32% completed. 35 towers out of 37 erected. Foundation of 44 equipments out of 196 foundations has completed. Transit camp building work completed 10 % till September 2020. Expected completion March 2021.
Extension of 132/33 kV substation Dhemaji (Existing) substation.	Line Bay commissioned on 27.03.2019
Establishment of 2 x 5 MVA, 33/11 kV new substation at Silapathar – II	Land area measuring 0.66 acre secured from single landowner through private purchase on willing buyer willing seller based on negotiated/market rate. Site leveling work under progress.
Strengthening of 33/11kV Silapathar (Existing) substation	Commissioned on 29.06.2019.

## 1.6 Study Methodology

The main objectives of the FEAR study is to assess the mitigative measures as suggested in IEAR and/or EMP are effectively implemented/addressed at the ground during pre-construction & construction stages of project cycles. The study will also help in establishing the status of compliance of various mitigation/management measures provided in the IEAR/EMP and suggests gaps or weaknesses, if any. The project methodology flow chart is given below:

**The methodology for the proposed study is inclusive of but not limited to following steps:**

- 1. Review of existing reports:** Review of existing reports and data prepared and generated by POWERGRID such as Initial Environment Assessment Report (IEAR), Environment and Social Policy & Procedures Framework (ESPPF), Compensatory Plan for Temporary Damage (CPTD) etc. was undertaken and suitably incorporated in the present report.



**Figure 1-3 Flow Chart project methodology**

2. **Literature review:** Review of existing literature are undertaken for collection of secondary baseline data related to physiography, climatic conditions, demography, natural resources including forest/wildlife and socio-economic features of the study area. Sources and data so collected have been mentioned below:
  - Literature from various research papers was reviewed for study biodiversity of the project site
  - A Revised Survey of the Forest Types of India’ by Champion and Seth (1968) was used for forest type classification of forests in the study area.
  - Conservation status of flora and fauna of the study area as per Indian Wildlife (Protection) Act (1972), threatened status according to IUCN Red List 2020.1, Red Data Book of Indian Plants by Botanical Survey of India, Kolkata.
  - Census of India 2011 for demography of the study area.
3. **Collection & collation of primary data:** The data was collected by extensive field visits and interaction with various stakeholders such as POWERGRID, Contractor, forest officials of Dhemaji office, Project Affected People (PAPs) and public at large. The environmental primary data other than vegetation profile is verified and ascertained through the discussion with local people and stakeholders, Site visits and IEAR carried out for the proposed T&D alignment and substations and final alignment schedule. In order to, collect data with respect to final route alignment with important feature & maps, forest involvement/forest clearances, other applicable statutory clearances/consent/ exact number of trees to be filled / damaged both in forest as well as non-forest area, number and profile of PAP along with details of compensation provided to PAPs. This includes collection of

any other primary data, which, in the opinion of agency, is required for ascertaining the compliance of the mitigating measures as enlisted in IEAR/EMP. Besides, photographs of important events such as interaction with various stakeholders, safe working practices, borrow area management, top soil management and construction during lean period etc. was taken as evidence.

- 4. Collection of primary data and Physical verification of construction elements:** To gather primary data/ physical verification, a field visit/ survey of the project area along with IA and Contractor staff was made in February 2019 and January 2020. The data which has been collected from field visit are implementation status of proposed environmental management plan and mitigation measures as suggested in IEAR.

Ground truthing/physical verification was made with photographic evidence and verification of record maintained by IA and Contracts for various activities for monitoring the compliance of mitigation measures like Health and Safety measures, Solid waste and sanitation, construction of protection wall/ retaining walls, status of labour camps location of proposed substations, towers, and Transmission & Distribution Lines alignments. Findings of field survey were consolidated along with secondary data for interpretation and finding the gaps for immediate necessary action.

- 5. Ascertaining the compliance:** Analysis and interpretation of secondary and primary data to ascertain the compliance of the measures as discussed in EMP.
- 6. Survey of flora and fauna:** Phyto-sociological survey is necessary as this is a transmission line project. Being a transmission line project, phyto-sociological surveys for assessment of vegetation structure/ profile in the proximity of the proposed transmission lines, corridors of transmission line routes, sub-stations, etc. were conducted wherein line transect methodology has been followed. Faunal surveys were also conducted. During the surveys, at least 10% route was covered to collect baseline data, because entire route is not accessible at present. **Please Refer Annexure 13.**
- 7. Consultation:** During assessment consultation was done with various field officers of consulting team such as Central Project Implementation Unit (CPIU)/ State Project Coordination Unit (SPCU) in organizing stakeholder consultation during assessment process/wherever needed.
- 8. Development of Maps:** Geo-referenced and Google maps with superimposed coordinates of project elements were generated to verify locational details and details of physical features of terrain of the project locations.

## 2 BASELINE DATA

### 2.1 Introduction

Impact assessment is necessary to address possible physical, biological and socio-economic impacts of a project and helps in formulating management and mitigation measures to minimize the impacts to a great extent. This chapter deals with baseline survey of physical, biological and socio-economic environment of the project site.

### 2.2 Project Location

The proposed subprojects comprising of both transmission and linked distribution networks are located in Dhemaji district in the State of Assam. The basic environmental setting of the State and sub-project area is given below:

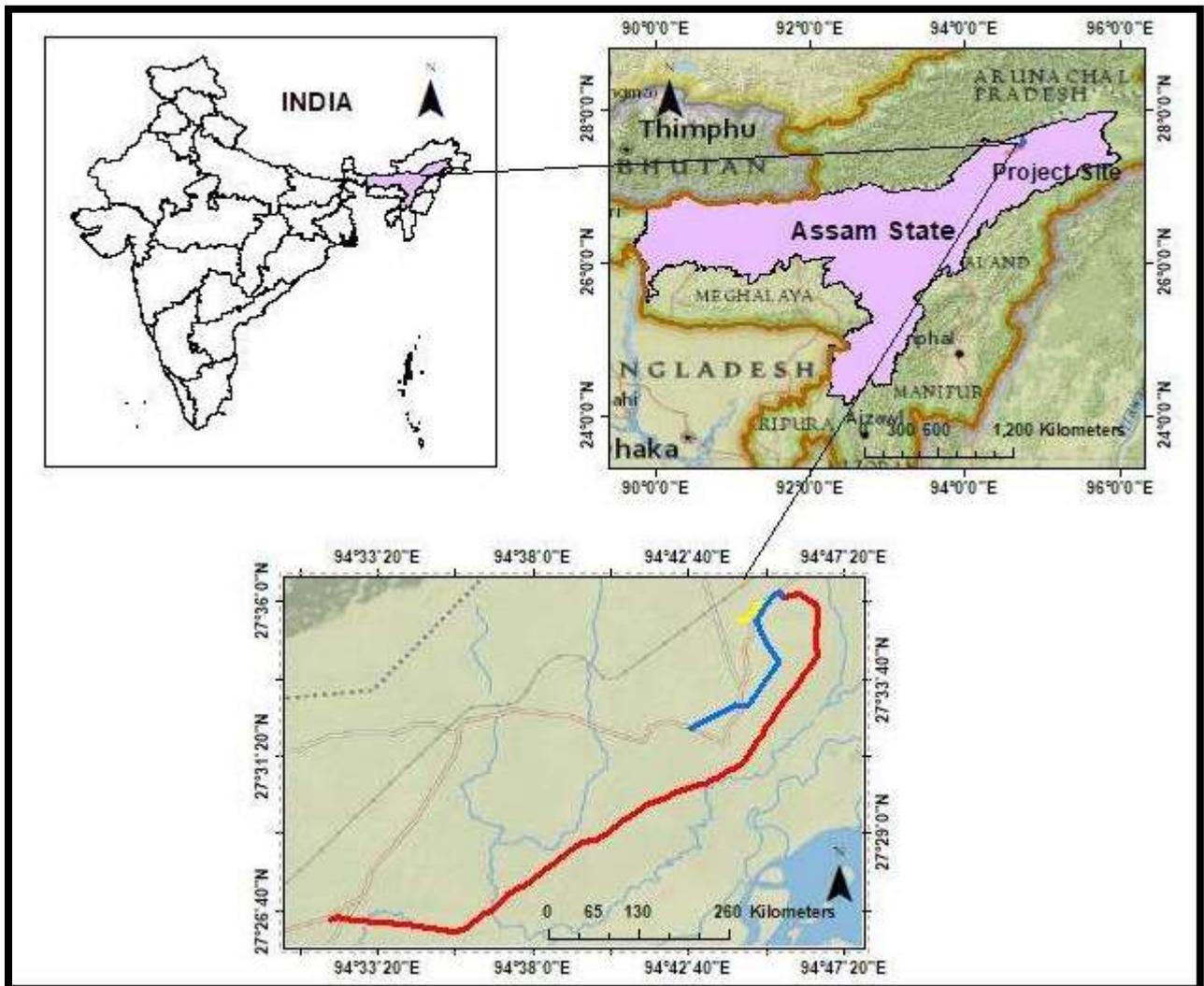
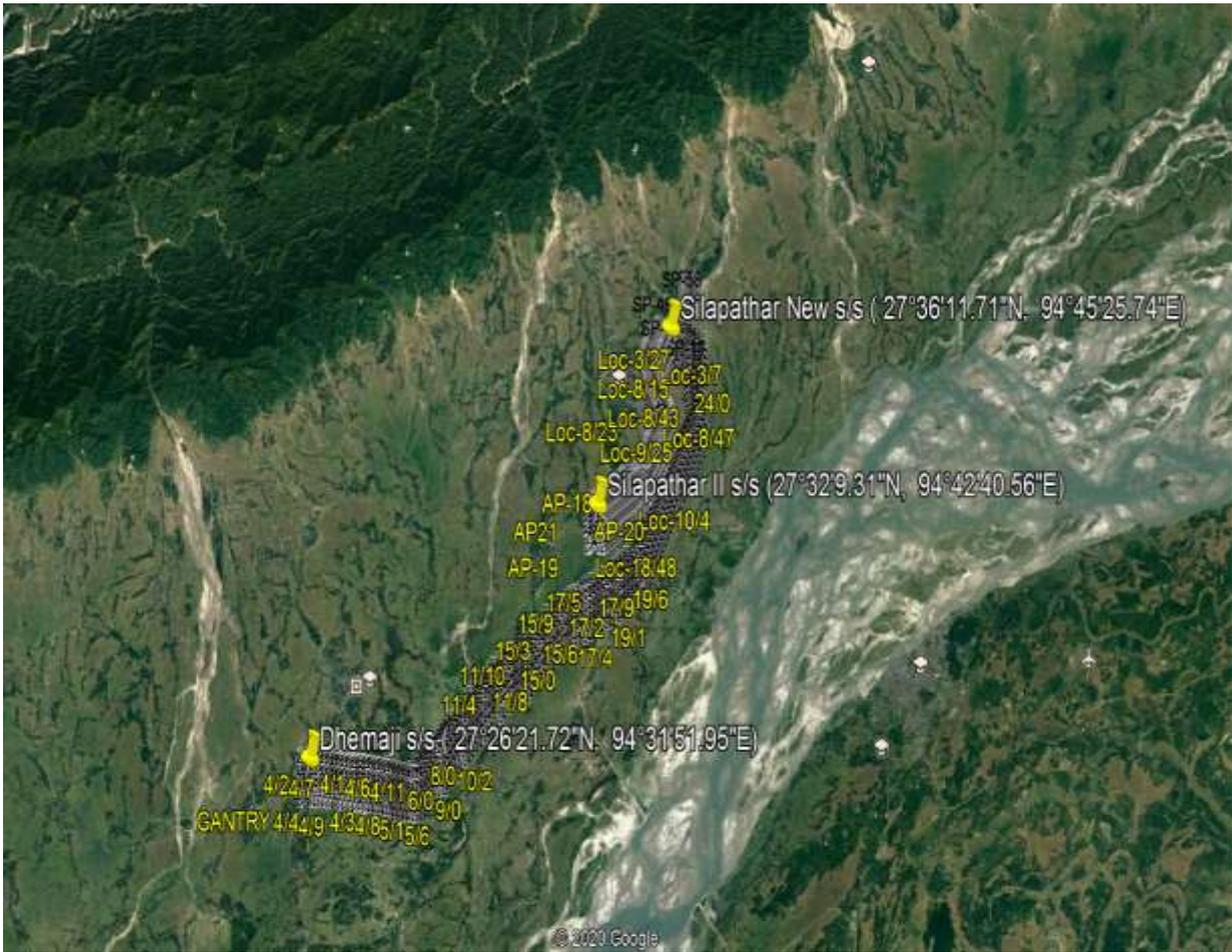


Figure 2-1 Project Location



T&D Sub Stations (Existing and Proposed)

- 132/33 kV substation Dhemaji – **Existing**
- 2 x 31.5 MVA, 132/33 kV new substation at **Silapathar - Proposed**
- 2 x 5 MVA, 33/11 kV new substation at **Silapathar – II - Proposed**
- 33/11kV Silapathar substation - **Existing**

2.3 Assam State

2.3.1 Physiography of Assam State

Assam has a geographic area of 7.84 million ha, which constitutes 2.39% of the country’s total area. It is situated between latitude 24°07'28°00' N and longitude 89°42'96°02'E. Topographically the State can be divided into three parts, viz. the Brahmaputra valley, the Surma valley and the Assam range. The first two parts are plain areas, while the Assam range is a mountainous region.

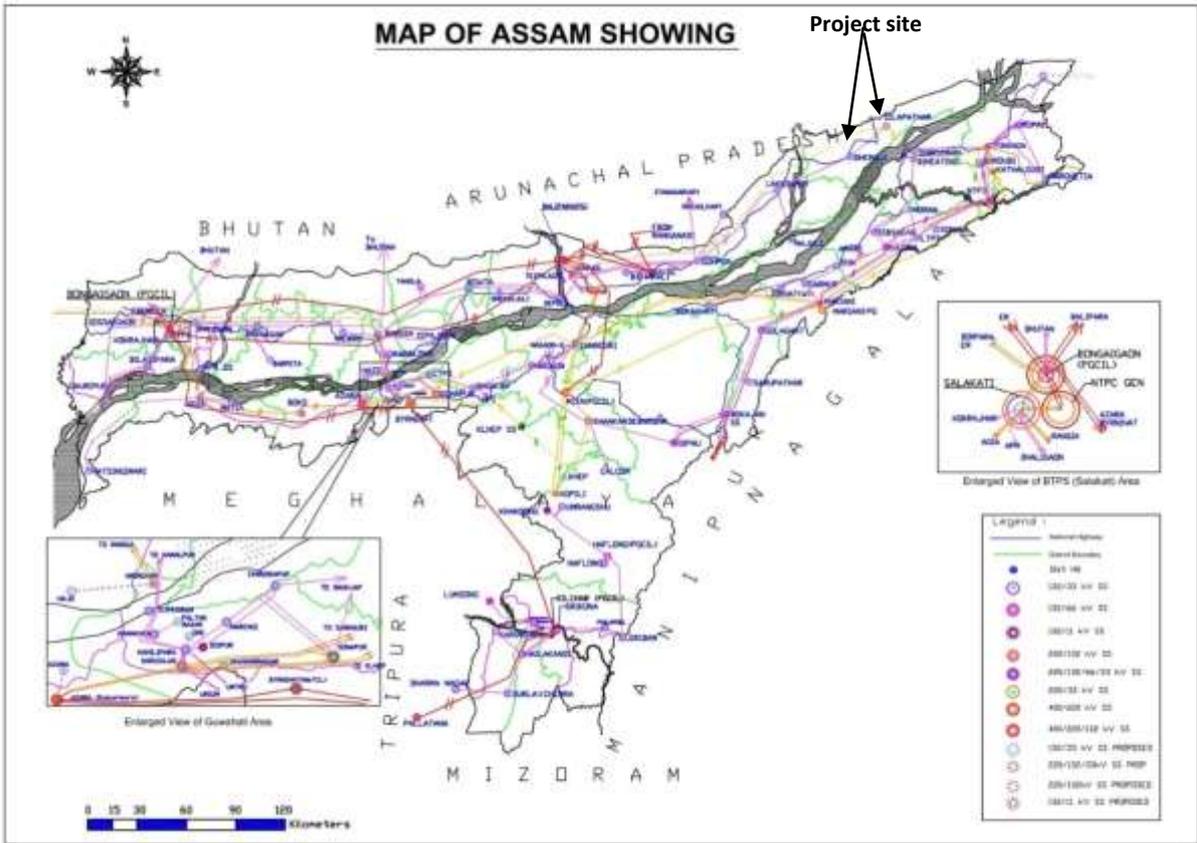


Figure 2-2 Project Site Location (Map of Assam)

**2.3.2 Physiography of Dhemaji District**

The district is in a strategic location where steep slope of Eastern Himalayas abruptly drop forming a narrow valley, which widens towards the western side. Numerous drainage systems originating from the hills of Arunachal Pradesh flow through this narrow valley ending at the mighty river Brahmaputra. In general, the slope of the triangular district drops from northern and eastern corners towards south and western sides.

The Dhemaji district came into existence in 1989. The district emerges from the foot hills and stretches to the Brahmaputra River with Subansiri one side and the river Siang on the other. Geographically situated between the 94° 12' 18" E and 95° 41' 32" E longitudes and 27° 05' 27" N and 27° 57' 16" N latitudes, the district covers an area of 3237 Sq. KM and is a basically undulated plain area lying at an altitude of 104 m above the Mean Sea Level.

**2.3.3 Land use pattern of Assam**

The terms land use and land cover is often used interchangeably, but each term has its own unique meaning. Land cover refers to the surface cover on the ground like vegetation, urban infrastructure, water, bare soil etc. Identification of land cover establishes the baseline information for activities like thematic mapping and change

detection analysis. Land use refers to the purpose the land serves, for example, recreation, wildlife habitat, or agriculture.

When used together with the phrase Land Use / Land Cover (LULC) generally refers to the categorization or classification of human activities and natural elements on the landscape within a specific time frame based on established scientific and statistical methods of analysis of appropriate source materials. Land cover is the physical material at the surface of the earth. Land use is the description of how people utilize the land for the socio-economic activities.

The general land use pattern of the Assam State is given on the following figure.

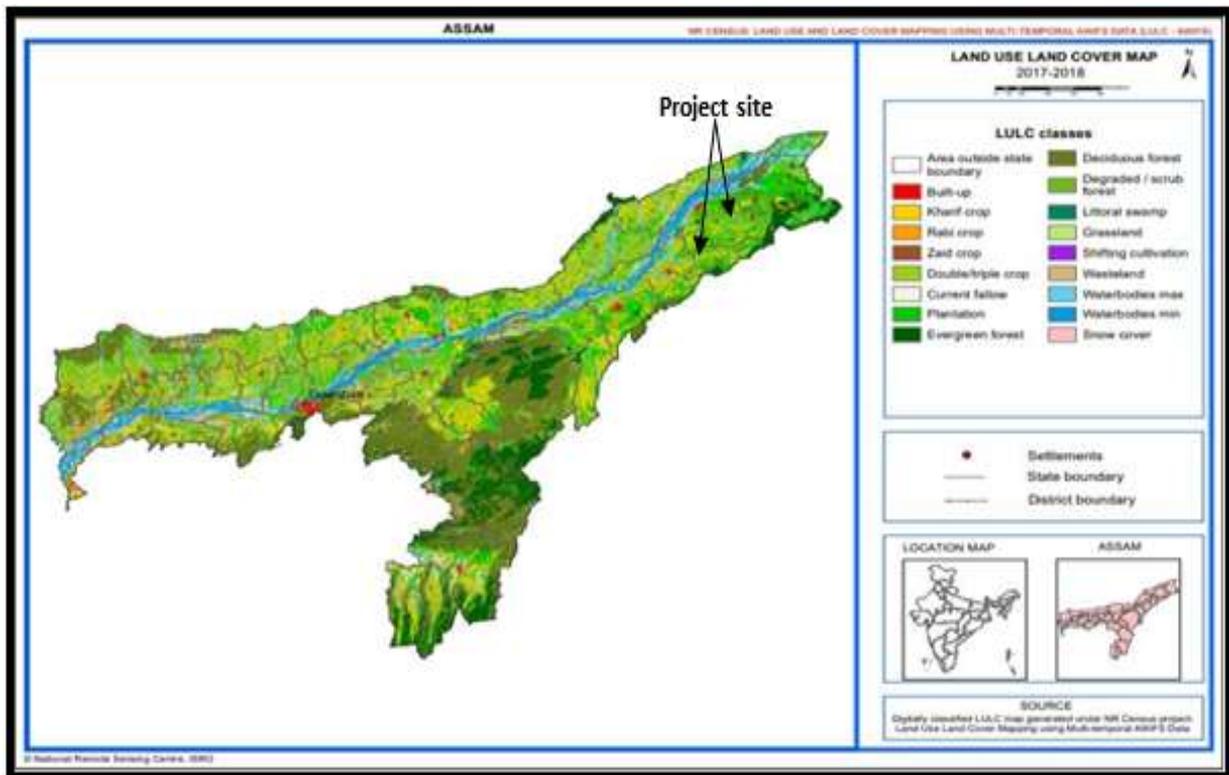


Figure 2-3 Project Site

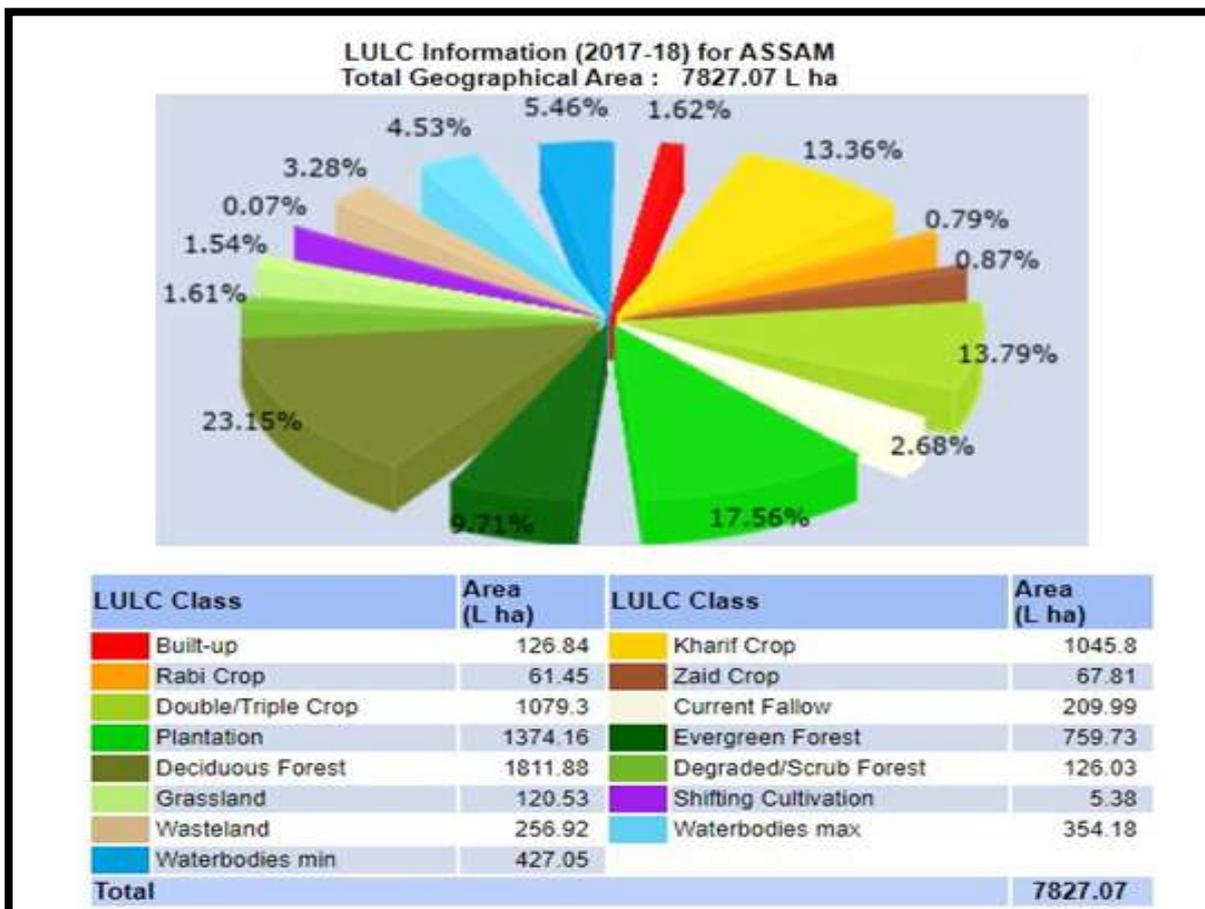


Figure 2-4 LULC of the Assam State

(Source- BhuvanISRO)

### 2.3.4 Land use pattern of Dhemaji district

Dhemaji district have extensive plain areas, suitable for cultivation but due to improper land use planning and unplanned constructions a huge chunk of land becomes water logged due to rain water as well as excessive flood water. Some of these areas dry out during winter while some remain as ditches, cesspools or waterlogged ‘beel’ areas. Dhemaji district has a good number of ‘beels’ and marshes covered with thick and dense population of weeds, water hyacinth, water lily etc. ranging in height from ten to twenty feet. In addition, some areas are sand casted by flash floods caused by embankment breaches.

The land use pattern of the district is reflected in the table below: -

Table 2-1 Land use pattern of Dhemaji district

Sr. No.	Category	Area (Hectare)	Percentage
1	Total geographical area	3,23,700.00	
2	Built up land	208.00	6.43
3	Total cultivable land	124,819.00	38.56
4	Area under plantation		
(i)	Horticulture	2534.00	0.78
(ii)	Sericulture	513.14	0.16

Sr. No.	Category	Area (Hectare)	Percentage
(iii)	Social forestry	1098.00	0.33
5	Forest	53,224.71	16.44
6	Water bodies	44,136.00	13.63
7	Waste land/grass land	97,167.15	30.01

(Source: <http://dhemaji.nic.in/Land Utilisation.htm>)

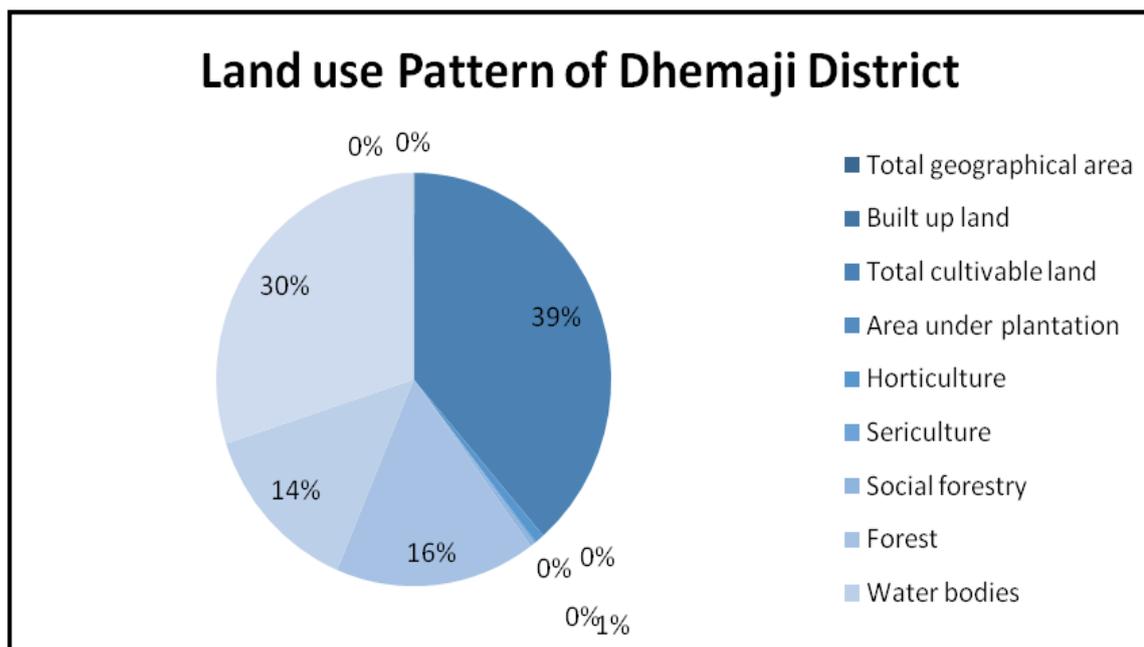


Figure 2-5 Land use pattern of Dhemaji District

### 2.3.5 Demography

The Population of Assam according to the 2011 census stands at about 31 million, making it the 14th most populated state in India. The state is spread over an area of about 78000 sq. km making it the 16<sup>th</sup> largest state in the country in terms of area. The density of population per sq. KM is about 397 and is fairly equal to the national average. The state has a growth rate of about 17% which is again very close to the national growth rate of about 17%. The population of the state is rising considerably due to rapid efforts towards development and progress. The literacy rate in the state is about 73% a figure that has improved tremendously in the last few years due to the consistent efforts of the government. The sex ratio in Assam exceeds the national average by a good 30 points and is one of the better states in the country with respect to the sex ratio.

In general there is a huge chunk of Other Backward Classes (OBC) population comprising of Ahoms, Konches etc. The Schedule tribes include Mishings, Sonowal Kacharis Bodos, Deoris, Lalungs, Hazongs, Tea garden community makes up only a negligible part of the total population. The principal languages of the region are Assamese, Mishing, Bodo and Bengali. The principal religion is Hinduism. However, Christianity and Islam are also practiced to a limited extent. There is almost no record of communal violence.

### 2.3.6 Climate

Assam has four well defined seasons in a year viz. summer, monsoon, winter and spring. October to April offer a mild and moderate climate. Assam is never extremely cold or hot. Climate of Assam is subtropical.

### 2.3.7 Rainfall & flood of Dhemaji District

The annual rainfall of the district ranges from 2600 mm to 3200 mm. Rainfall generally begins from April and continues till the end of September. The rainfall generally increases from south east to northeast. July is the rainiest month. After the confluence the three mighty rivers i.e. Dihing, Dibang and Lohit from their hilly course to the valley, these rivers exert tremendous impact by way of runoff at the eastern most corner of Dhemaji district, making the district vulnerable to annual flooding.

### 2.3.8 Temperature & Humidity

The average temperature in January ranges from 10°C to 23°C and in July it ranges from 26°C to 32°C. The relative humidity varies from 90% to 73%. The average annual temperature varies between 39.9°C in summer and 5.9°C in winter.

### 2.3.9 Soils

Mainly three types of soil found in Assam State viz. Alluvial, Red Loam, and Lateritic Soil. Alluvial Soil covers entire Darrang, Kamrup, Lakhimpur, Goalpara, Sibsagar and part of Garo Hills. Red Loam Soil is found in Garo Hills, Mizo Hills, Khasi-Jaintia Hills and part of Cachar & Sibsagar. Lateritic soil found in part of Shibsagar, Jaintia Hills, Khasi Hills, Cachar, Nowgaon area. The most typical characteristics of Assam soil is acidity, where pH of the soils generally ranges between 4.2 - 5.8.

#### 2.3.9.1 Soil characteristics of Dhemaji district

The general and average soil character of cultivable land in Dhemaji districts is mainly alluvial and composed of mixture of sand (coarse to fine) and clay in varying proportions. The general geochemical characteristic of the soil is highly acidic. However, new alluvial soils formed due to inundation of land by river at intervals contain more percentages of fine sand fine silt and are less acidic. Such soils are often neutral and even alkaline. Large expanse of low-lying land characterized by heavy clayish soil with a high percentage of nitrogen is good for rice cultivation. Abundant rainfall and excessive humidity throughout the year also greatly favor cultivation of rice in the district. The soil around the Subansiri and Ranganadi Rivers are sandy coated with silt which is good for cultivation of winter crops, such as ragi, and mustard, potato etc.

The soil of the district is broadly classified into four groups, namely new alluvial, old alluvial, red loams and Laterite. Soil texture of the area mostly constitutes sandy loam- 46% of total cultivable land, Loamy - 44% of the total cultivable land & Clayey- 10% of the total cultivable land.

The soils of this district can be broadly classified into three different zones viz. The foothill soils, active flood plain soils near the river Bramhaputra and the low-lying marshy lands. A more detailed description is given below:

*Table 2-2 Soil Classification of Dhemaji District*

ZONES	DESCRIPTION	Taxonomic Name
<b>Piedmont</b>	Deep, well drained, loamy sand/sandy loam soils occurring on very gently sloping piedmont plain having loamy surface with moderate erosion and slight flood hazard. Associated with deep, well drained, coarse silty soils occurring on very gently sloping concave plains having loamy surface with slight erosion and moderate flood hazard.	Coarse loamy, typic fluvaquents  Coarse silt, Typic Haplaquents
<b>Flood plain</b>	Deep, well drained, loamy sand/sandy loam soils occurring on very gently sloping flood plain, having loamy surface with moderate erosion and moderate flood hazard. Associated with very deep, moderately well drained, clay loam or sandy clay loam soils occurring on level to nearly level flood plains with slight erosion and moderate flood hazard.	Coarse loamy, Aericfluvaquents  Fine loamy, TypicHaplaquepts

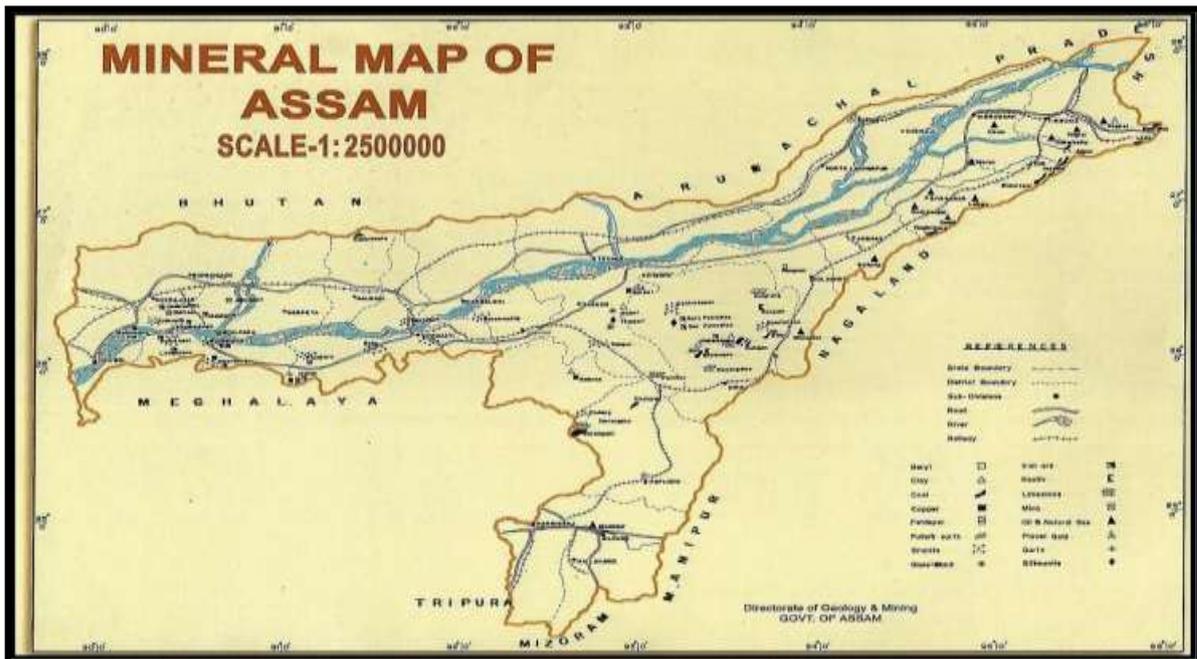
(Source: <http://dhemaji.nic.in/Soil.htm>)

### 2.3.10 Minerals

Coal, petroleum and natural gas, limestone and minor minerals are produced in Assam. Coal occurs in Tinsukia, Dibrugarh, North Cachar Hills, Sivasagar and Lakhimpur districts. Assam coal is friable in nature and has high sulphur content. Deposits of banded magnetic quartzite occurs in Kamrup and Goalpara districts, Limestone occurs in Lakhimpur, North Cachar Hills, Karbi Anglong, Nagaon and Sivasagar districts.

Kaolin is found in KarbiAnglong and Lakhimpur district. The Digboy oil fields in Lakhimpur district and Moran and Rudrasagar oil fields in Sivasagar district are the major source of oil and gas. Hydrocarbons are struck in Borsilla, Changmaigaon, Kurgaon and Rajgarh in the past. Sillimanite bearing rocks occur in KarbiAnglong district.

Assam continued to be the 3<sup>rd</sup> 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.



(Source: <https://mines.gov.in/writereaddata/UploadFile/Assam.pdf>)

Figure 2-6 Mineral map of Assam

The district wise distribution of minerals in Assam is given in the following figure.

<b>DISTRIBUTION OF MINERALS IN ASSAM</b>		
SL.NO	MINERAL	DISTRICT
1.	Oil and Natural Gas	Tinsukia, Dibrugarh, Sivsagar, Jorhat, Golaghat and Cachar
2	Coal	Tinsukia, Karbi Anglong, Dima-Hasao.
3	Lime Stone	Karbi Anglong, Dima Hasao
4	Iron Ore	Kamrup(R), Goalpara, Dhubri
5	Granite	Goalpara, Kamrup, Morigaon, Nagaon, Karbi Anglong
6	Sillimanite	Karbi Anglong
7	China Clay	Karbi Anglong
8	Glass Sand	Nagaon
9	Fuller's earth	Nalbari, Baksa
10	Placer Gold	Lakhimpur



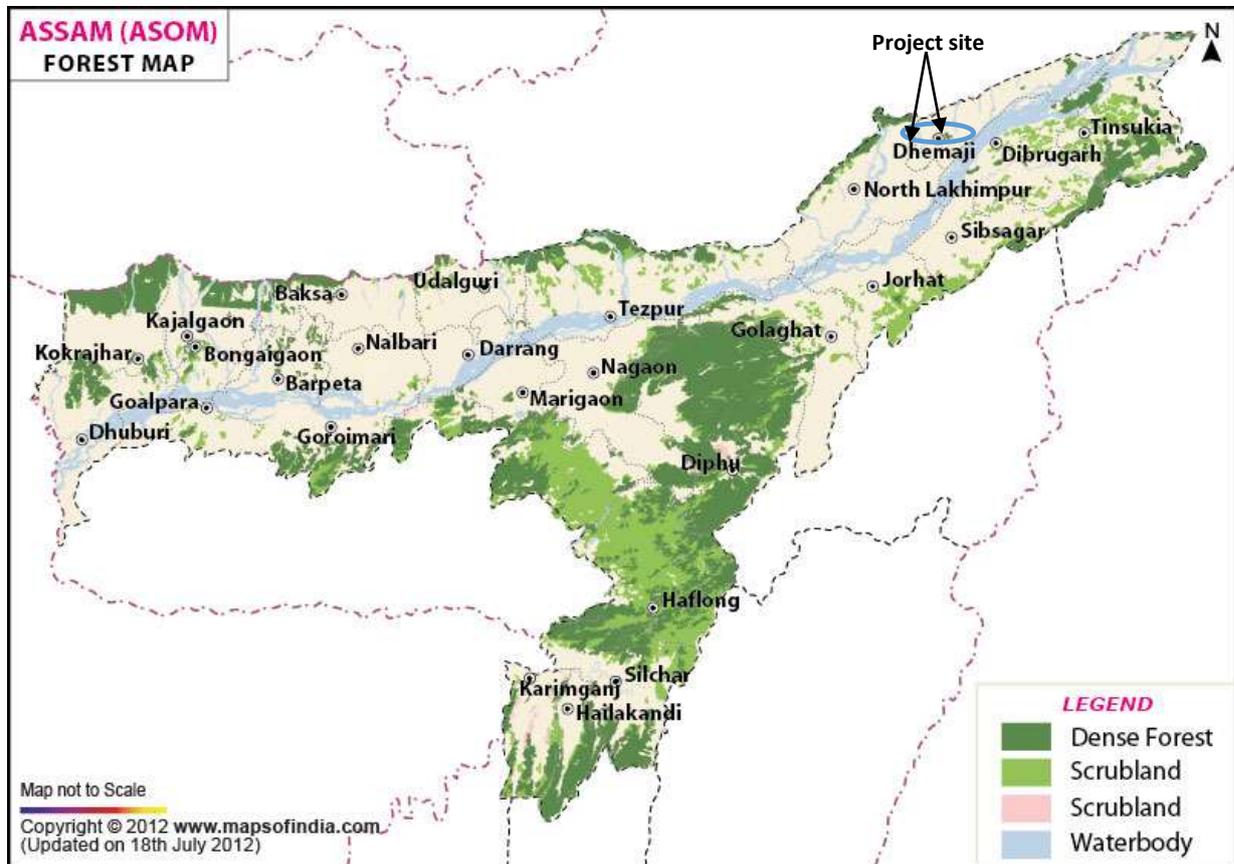
(Source: <https://mines.gov.in/writereaddata/UploadFile/Assam.pdf>)

Figure 2-7 Minerals distribution of Assam

### 2.3.11 Forest

Based on interpretation of satellite data pertaining to Oct-Dec 2015, the forest cover in the state is 28,105 sq. KM which is 35.83% of the state's geographical area. In terms of

forest canopy density classes, the state has 2797 sq. KM under very dense forest, 10192 under moderately dense forest & 15,116 sq. KM under open forest.



(Source: <http://fsi.nic.in/isfr2017/assam-isfr-2017.pdf>)

Figure 2-8 Forest Cover of Assam

### 2.3.11.1 Forest details of Dhemaji

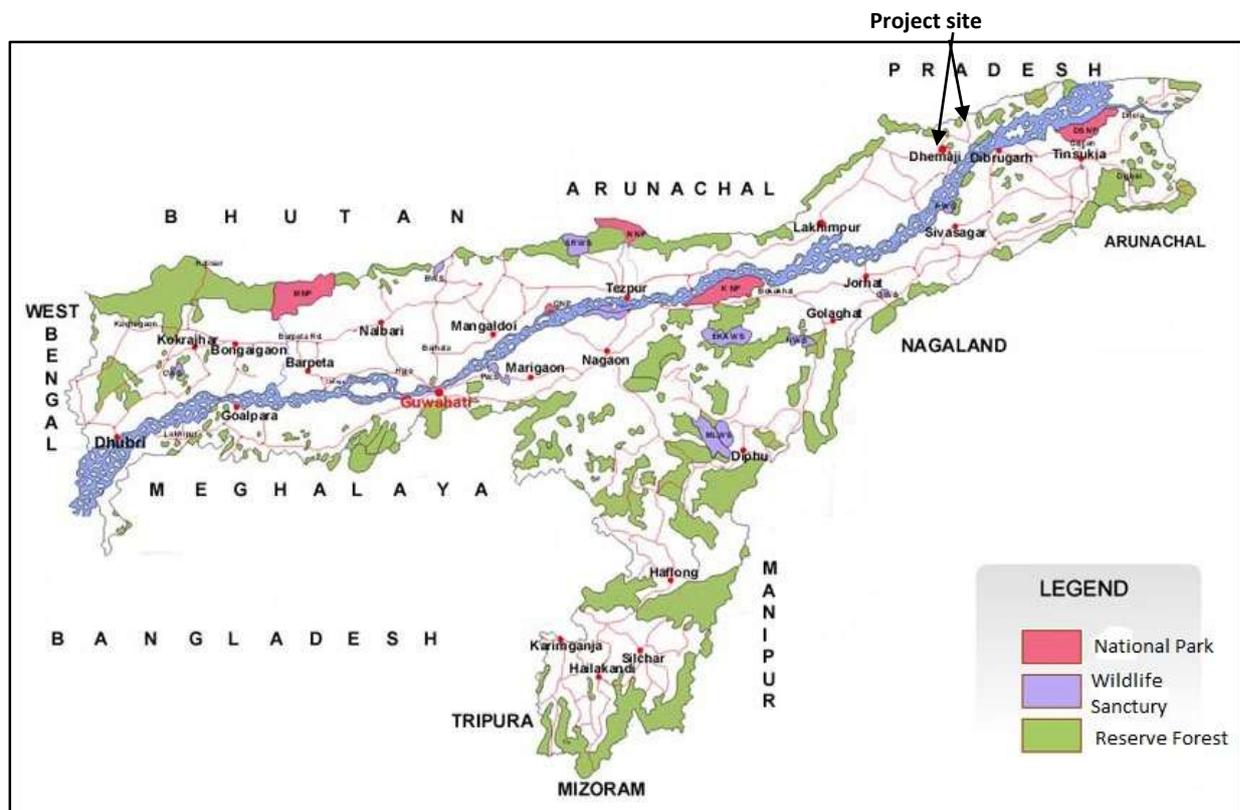
Botanically the forest of Dhemaji districts can be divided into three divisions viz. mixed, deciduous and mixed deciduous. The forest in the district is either deciduous or mixed evergreen seen scattered in the foothill areas. The forest resources are timber, bamboo and cane with swamps covered with grass and reeds. There are 9 reserved forests covering an area of 53,224.11 hectares which is works out to be just 16% of the total area of the district. These forests contribute annual revenue of Rs.8.14 Lac to the district's coffers. In Dhemaji district, there are nine reserve forests, namely, Jiadhal, Subansiri, Sissi, Simen, Archiac, Jamjing, Senga, Gali and Pova, about which some data are available. These are given in the following table.

*Table 2-3 Reserve forest details of Dhemaji district*

Sr. No.	Reserve Forest	Area (in hectare)
1	Subansiri	17465.26
2	Jiadhal	1816.00
3	Sissi	906.26
4	Simen	881.26
5	Archiac (Dimow)	606.25
6	Jamjing	1618.71
7	Sengajan	9060.00
8	Gali	10647.24
9	Poba	10521.75

(Source:<http://dhemaji.nic.in/Forest.htm>)

It has been observed that through careful route section and siting of substation location during planning stage itself, the project proponent could be able to avoid forest area completely for all project components covered under the instant study.



*Figure 2-9 Map showing Reserved forests & protected areas in Assam*

The proposed transmission and distribution lines shall pass through Dhemaji district. The entire Dhemaji district is having forest cover of 9.02% only. However, by adopting careful route selection technique, forest area involvements along routes of all

transmission and distribution lines under the subject scheme have been completely avoided thereby minimizing ecological disturbance. The details of forest resources available in the project are as follows:

**Table 2-4: Geographic area**

District	Geographic area	(Area in Sq. m.)					% Forest cover	
		Very Forest	Dense	Mod. forest	Dense	Open forest		Total
<b>Dhemaji</b>	3.237	7		124		161	292	9.02

(Source: Indian State of Forest Report 2013)

There is no recorded forest (reserved forest/protected forest etc.) and Protected areas (NP/WS/Tiger Reserve etc.) involved in the sub-project sites. The nearest recorded forest i.e. Dulung Rain Forest is located approximately 38 km from the nearest project.

### 2.3.11.2 Protected Areas of Assam

As per data of ENVIS Centre, WLI, Dehraun (Uttarakhand) there are 5 National Parks and 20 Wildlife Sanctuaries in the State. Total protected area is 0.40 million hector which constitutes 4.98% of the total geographic area of the State.

The State has three Tiger Reserves namely Kaziranga, Manas and Nameri. Manas Tiger Reserves has also been declared as a Biosphere Reserve. Kaziranga National Park and Manas Wildlife Sanctuary are also included in the World Heritage sites. Besides, the State also one Ramsar Site & 46 Important Bird Areas (IBA).

**Table 2-5 List of Protected area**

Sr. No.	Protected area	Location	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,

Sr. No.	Protected area	Location	Main Habitat
			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
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

Sr. No.	Protected area	Location	Main Habitat
20.	Dihing-Patkai WLS	Dibrugarh and Tinsukia	Hoolock Gibbon, Elephants, White Winged wood duck, Tiger
21.	Borail WLS	Cachar	Serow, Himalayan Black bear, Hoolock Gibbon
22.	Amchang WLS	Kamrup (Metro)	Elephant, Gaur, Leopard
23.	Deepor Wildlife Sanctuary	Beel 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 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

*\*Proposed sanctuaries*

The State is famous for One Horned Rhino & Elephant. There are five Elephant Reserves and Eight Elephant Corridors connecting 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. It has been found that **none** of the proposed transmission and distribution lines or substations located/passing through any protected area like national parks, sanctuaries, biosphere reserves or any designated wildlife corridors etc.

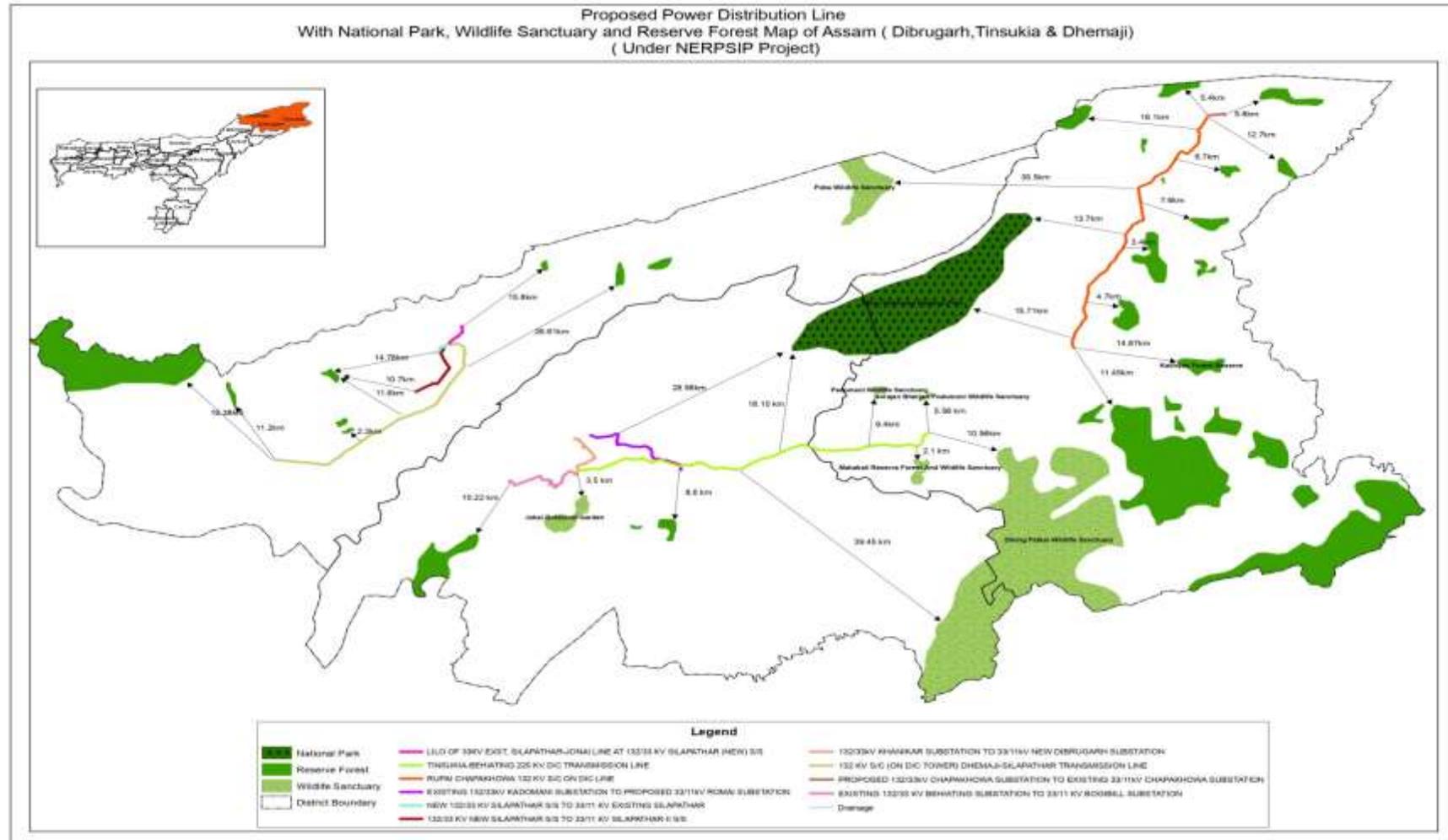


Figure 2-10 Distance of subproject areas from national parks/protected areas

### 2.3.11.3 Man-Elephant Conflict:

The entire north was at one time jungle from the northern hills to the Brahmaputra. At that time, there were no settlements or agriculture, and elephants could find all their necessities – from food to social interactions. Gradually, human settlements and opening of tea plantations led to disturbance to movements of elephants. They then began to use specific routes to the Brahmaputra through the tea estates or along rivers.

Route become blocked by new human settlements, the Laimekuri corridor in Dhemaji from West Siang to Brahmaputra; and the Poba RF – Kobo PRF corridor between Arunachal Pradesh and Dibru - Saikhowa NP have been compromised.

Due to new human settlements these corridors also recorded man-elephant conflict due to forest degradation and encroachment of corridor land by settlement and agricultural land.

Till date no such Man-Elephant conflict has been reported nearby project site at Silapathar. However at a distance of approx. 100 km at Kerkoni village a conflict was reported in September 2018 that a herd of elephant came out of Sissi Reserve forest (under Dhemaji District) and destroyed four dwelling houses.

**Table 2-6 Elephant Reserves**

Sr. No	Name of Elephant Reserves	Area in Sq. km
1.	Sonitpur	1420
2.	Dehing-Patkai	937
3.	Kaziranga-KarbiAnglong	3270
4.	Dhansiri-Lungding	2740
5.	Chirang-Ripu	2600

### 2.3.11.4 Elephant Corridors

**Table 2-7: Elephant Reserves and Elephant Corridors in Assam**

Sr. No	Name of Elephant Reserves
1.	Kotha-Burhidihing
2.	Upper Dihing East-Upper Dihing West Block at Bogapani
3.	Upper Dihing East-Upper Dihing West Block between Golai-Pawai
4.	Kalapahar-Daigurung
5.	Kaziranga-KarbiAnglong at Panbari
6.	Kaziranga-KarbiAnglong at Kanchanjuri
7.	Kukurakata-Bagser at Amguri
8.	Charduar-Singri hill

1. **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 Takelipathar.
2. **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.
3. **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.
4. **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.
5. **Kaziranga-KarbiAnglong 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.
6. **Kaziranga-KarbiAnglong 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 2 km and width is 0.5 km consisting of Reserve forest and proposed addition (4rd addition) to Kaziranga National Park.
7. **Kukurakata-Bagsar at Amguri:** This corridor falls under Eastern Assam Wildlife Division, connecting the elephant habitats of Kaziranga National Park and Kukurakata Reserve Forest with Bagsar 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.
8. **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, Rowmaribasti etc.) lay in this 30 km long and 1.5 km wide elephant corridor.

No any of the project area interferes with the elephant corridors. While designing the project necessary care was taken to avoid elephant corridors in Assam. The following figure shows details about elephant reserves, and it clearly shows the project site which proves that elephant corridor is not affected.

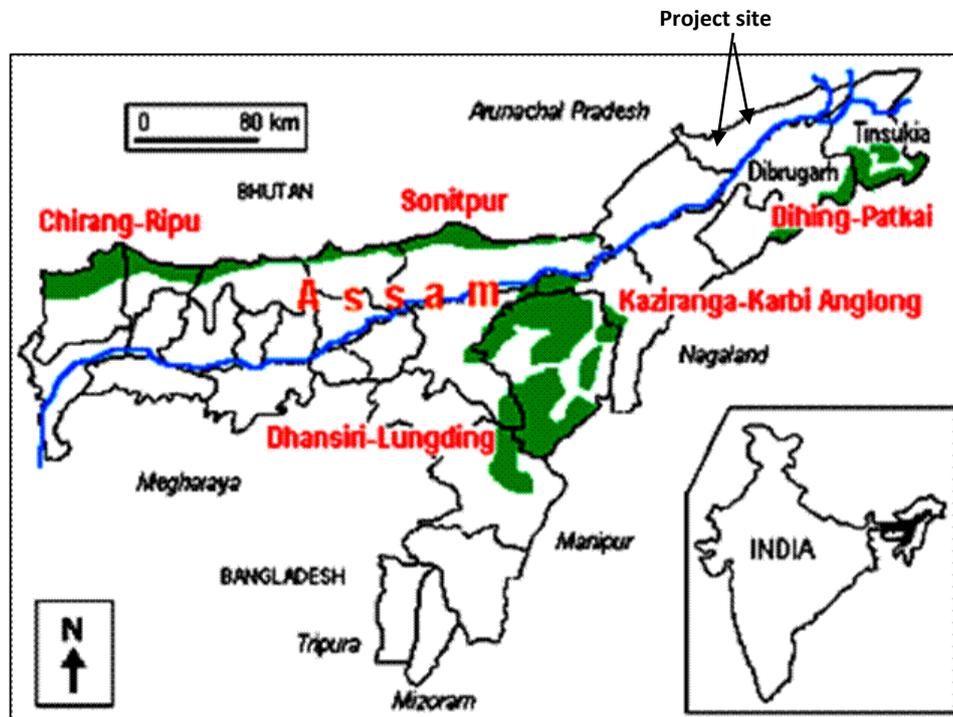


Figure 2-11 Elephant reserve in Assam

### 2.3.11.5 Important Bird and Biodiversity area (IBA):

The geographical locations of the Dhemaji District have enhanced the entire area as a suitable location for a large number of residential as well as migratory birds. The riverine sand bars and islands of the River Brahmaputra and its numerous tributaries like Giadhal, Subansiri, Ranganadi and dikrong and its innumerable fresh water lakes (locally called beel), or ox-bow lakes (era suti), marshy tracts and seasonally flooded plains creates an ideal wetland eco-system, which serve as a rare refuge for a large number of water birds. While designing the project, care was taken to avoid IBA sites to prevent harm to the wildlife in the state.

### 2.3.11.6 IBA Sites:

**Bordoibam- Bilmukh Bird Sanctuary:** It is located in Dhemaji and Lakhimpur district covering an area of 1,124 ha.

**Jamjing and Senganjan:** It is located in Dhemaji District covering an area of 9,500 ha. This large grassland-wetland complex in Dhemaji district in eastern Assam is located northwest of Dibru-Saikhowa National Park, on the north bank of the Brahmaputra River. The site comprises two reserve forests, Jamjing (8,000 ha) and

Sengajan (1,200 ha). It is accessible from Jonai and Dhemaji towns. The main Jamjing beel (300 ha) is outside the reserve forest.

**Subansiri:** It is located in Dhemaji and Lakhimpur district covering an area of 451 ha. Subansiri is an extremely important habitat for bird life. This site includes two reserve forests, Subansiri in Dhemaji district and Dulung in Lakhimpur district in northeastern Assam. More than 200 bird species have been identified.

There are number of wetlands at Dhemaji district in various Reserve forests:

- Pobha Reserve forest : 9 Wetlands
- Singajan Reserve Forest : 24 Wetlands
- Subansiri Reserve Forest : 9 Wetlands

### 2.3.12 Water Resources

Assam is dominated by the Brahmaputra river (length: 2900 KM). Its drainage area is roughly 935,500 sq. km which is the main river which flows from east to west in the southern part of the district is the Brahmaputra River. Different tributaries viz. Dihingia, Jiadhal, Miridhal, Telijan, Kaitongjan, Laipulia Nadi, kapurdhua, Sissi, Gai, Tangani & Guttong originating from Arunachal Pradesh in the north, flow southwest carrying enormous amount of alluvium through the district before meeting the river Brahmaputra. The district is vulnerable to floods and occurrences of flood are a regular feature which causes a lot of damage to the crops.

#### **Brahmaputra River**

The Brahmaputra enters India in the state of Arunachal Pradesh, where it is called Siang. It makes a very rapid descent from its original height in Tibet and finally appears in the plains, where it is called Dihang. It flows for about 35 km (22 mi) and is joined by the Dibang River and the Lohit River at the head of the Assam Valley.

#### **Subansiri River**

Subansiri River is a tributary of the Brahmaputra River in the Indian states of Assam and Arunachal Pradesh, and the Tibet Autonomous Region of China. The Subansiri is 442 kilometres (275 mi) long, with a drainage basin 32,640 square kilometres (12,600 sq m) large. The Subansiri is the largest tributary of the Brahmaputra.

#### **Sissi River**

There are two Sissi rivers in Dhemaji district, the one that originates in the plain area of Assam has been described in the previous paragraph. The second one originates at Arunachal Pradesh and assumes different names, viz., Kapurdhowa, Laipulia, Charikaria or Charikora etc. in its lower reaches before finally joining the Korha River.

### **Moridhal River**

This is the main river west of Sissi. Though Kanibil River looks larger and broader but it is only a tributary to River Moridhal. Jiadhhal or Kumatiya originates almost at the same location in Arunachal Pradesh. These rivers are, in fact, the triangular configuration of rivers in a swampy and comparatively flat area at the foothills of Himalayas (alluvial fan). In such geomorphological setting rivers do not follow the same course for a long time and frequently change their course and the older courses become either misfit, dry or marginalized channels. Moridhal is an example of such phenomenon and the new course that it follows now as the main channel is Jiadhhal. Flash floods are common features of these rivers.

### **Gai River**

A distributary emerges from Sissi River along southward direction at 2 KM north of Sissiborgaon near Tokoubari village. This branch, known as Gai River, flows 2 KM downstream and crosses the NH 52. From this point Gai River continues through Salahanibeel for another 4 KM in the same direction. Gai River flows leaving aside Chakamora and Chumanibeel on its left side. Near Chumanibeel, River Gai changes its course towards SW and travels 3 KM downstream, merges into Kukurabeel and combines with Kapurdhowa River after flowing across the beel. After 1970, a drastic change in the course of this river is recorded, which requires a detailed scientific study to understand the root cause.

### **Jiadhhal River**

The river Jiadhhal, a Northern Sub-tributary of the river Brahmaputra originates in the sub-Himalayan Mountains of Arunachal Pradesh at an altitude of 1247m above the M.S.L. After passing through a narrow gorge in Arunachal Pradesh, the river enters the plains of Assam in Dhemaji district where it flows in braided channels. The river is known as 'Kumotiya' from the Railway line to the Gogamukh – Ghilamara P.W.D. road where from it is known as the river 'Sampara'. The river finally debouches into the river Brahmaputra near Selamukh. But after construction of the embankment over the Kherkutiyasuti of the Brahmaputra, the river falls into the Subansiri River.

#### **2.3.19.1 River network of Dhemaji district**

The major river under its jurisdiction is the river Brahmaputra which is flowing along the Southern boundary of Dhemaji District and its tributaries flowing in Southern direction control the entire drainage system of the district and plays an important role in occurrence of flood and erosion in the district. The major tributaries in Dhemaji district are Jiadhhal / Kumatiya, Gainadi, Na-Nadi, Moridhal, Dimow, Simen, Depi, Deka, Dekhari, Jalakiasuti, Rajakhana, Rayan, Tangani, Silley.

Moreover, there are innumerable nos. of streams and rivulets which originate from the hills of Arunachal Pradesh, join these Tributaries and add additional discharge to them.

The river Brahmaputra is causing problem of flood in Assam since the major earthquake of 1950 as the river bed has risen considerably after the earthquake reducing water carrying capacity of the river. Apart from the main reason of rise in water bed level due to comparative young geology of the Himalayan mountain range from where the river Brahmaputra and most of its tributaries are originated carry a huge amount of silt load during the monsoon season and create innumerable sand chars within the river course. The sand chars have reduced the peak discharge carrying capacity for which every year the river erodes the banks in order to accommodate the unbearable discharge during monsoon.

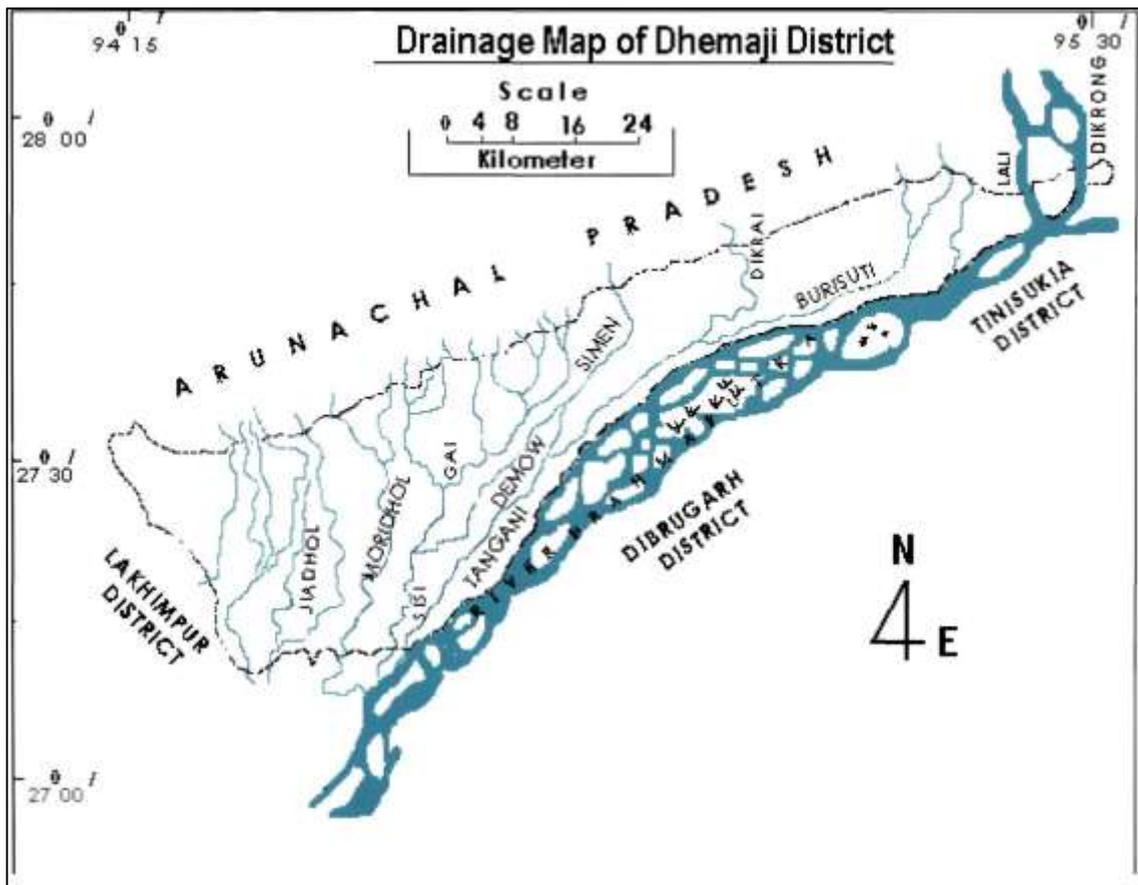


Figure 2-12 Drainage map of Dhemaji District

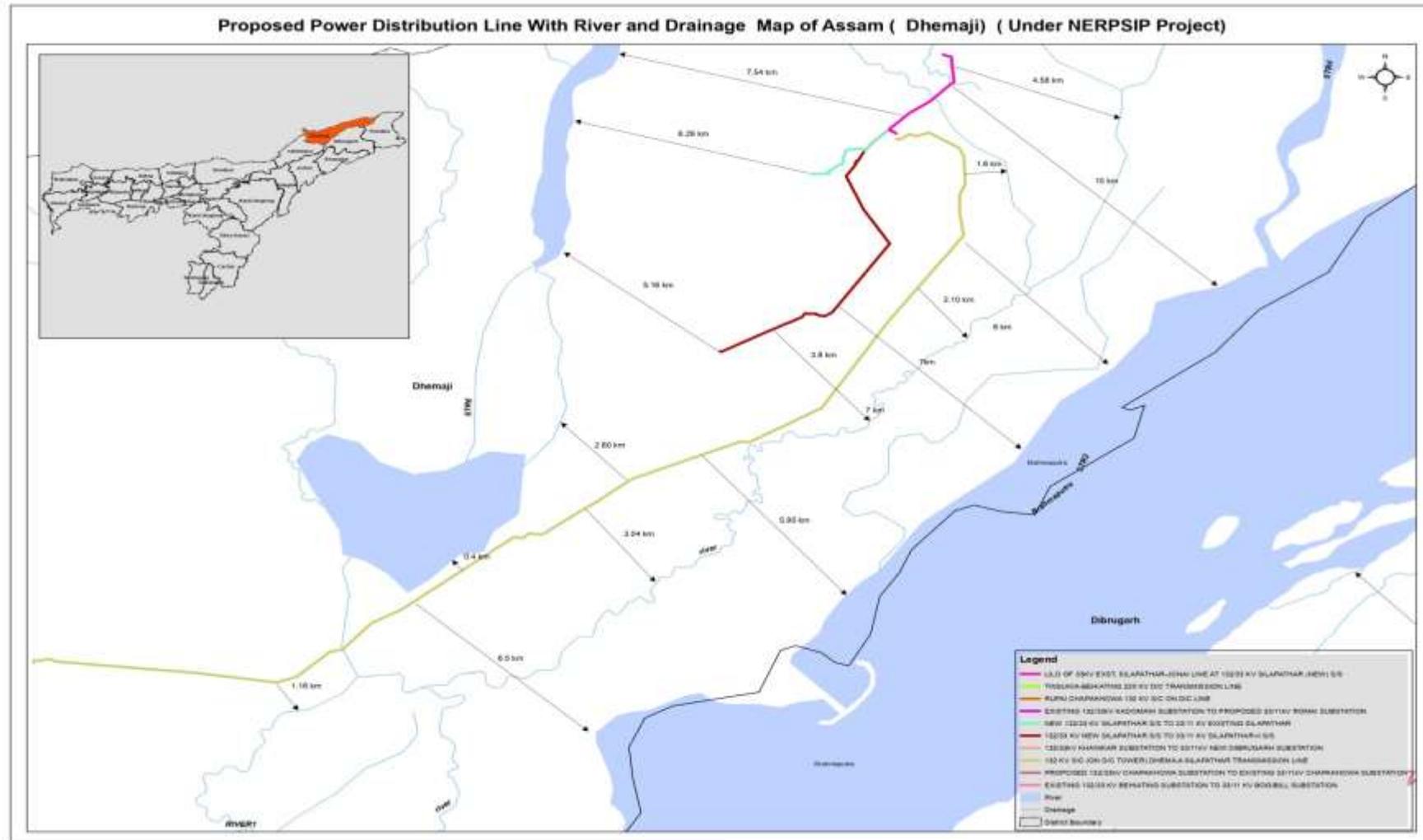


Figure 2-13 Map Of Dhemaji Showing T & D Subproject Area with respect to Rivers

### 2.3.13 Biodiversity of Assam

#### 2.3.13.1 Plant diversity of Assam

Favorable geographical location, diversified topography and ideal climatic conditions have made Assam very rich in biodiversity. A series of transects were identified along the routes of transmission line covering corridors between ROW and transmission line and substations. The vegetation of Assam is primarily of tropical type covering areas of evergreen, semi-evergreen, grasslands, deciduous forests, grasslands and riverside forests. Some important tree species found in Assam are Hooong (*Dipterocarpus macrocarpus*), Gurjan (*Dipterocarpus turbinatus*), Mekai (*Shorea assamica*), Kurta (*Palaquium polyanthum*), Nahar (*Mesua ferrea*), Sia-nahar (*Kayea assamica*), Sissoo (*Dalbergia sissoo*), Khair (*Acacia catechu*) etc.

The large scale exploitation of forests both in legally and illegally and the encroachment of forest land for the settlement, agricultural use and others the productivity as well as the area under forest is decreasing at an alarming rate in the state. Many dense forest area of the state have already come to the list of degraded forest. Another important cause of forest degradation in the state is the shifting agricultural practices especially in the Karbi-Anglong and North Cachar Hill districts. Many of the environmental problems facing by the people such as flood, soil erosion etc. are directly related to the reckless exploitation of forest resources of the state. It also leads to the serious ecological crisis in the state.

**Table 2-8 Plant diversity of Assam**

Flora		Details
Angiosperm		3854 Species 236 Families
Dicotyledons		2752
Monocotyledons		1080
Gymnosperm		22
Orchids		328
Bamboo		42
Cane		14
Medicinal diversity	Plant	About 952 plants species have been identified which have uses in medical practices in some form or other.
Plants of different Conservational Status		871
Endemic		167
Critically Endangered/ Endangered/ Vulnerable		318
Rare for Assam		386
Type of Vegetation		Percentage
Herbs		47%
Shrubs		22%
Trees/Small Trees		20%
Climbers/lianas		8%
Undershrub		3%

Flora	Details
Extinct:	<i>Bambusa Mastersii, Cleisostoma Arietinum, Cyperus Corymbosus, Dendrobium assamicum, Dendrobium aurantiacum, Hetaeria anomala, Liparis Stachyurus and Sapria Himalayana. Paphiopedilum Spicerianum</i> etc. are reported to be extinct in wild.

(Source: [http://asmenvs.nic.in/Database/Plant\\_Diversity\\_833.aspx](http://asmenvs.nic.in/Database/Plant_Diversity_833.aspx))

**Gymnosperms:** Assam has 22 species of Gymnosperms. These species have restricted distribution but represent plants of high economic importance as source of timber, pulpwood, resins and turpentine and their seed as source of food and medicine and leaves as vegetables. Common species of gymnosperms in Assam are as follows:

*Table 2-9 Common Gymnosperms of Assam*

Sr. No.	Name of plant	Family
1.	<i>Cycas pectinata</i>	Cycadaceae
2.	<i>Podocarpus neriifolia</i>	Podocarpaceae
3.	<i>P. wallichianus</i>	Podocarpaceae
4.	<i>Genetum gnemon</i>	Gnetaceae
5.	<i>G. montanum</i>	Gnetaceae
6.	<i>Juniperus recurva</i>	Cupressaceae
7.	<i>Juniperus squamata</i>	Cupressaceae
8.	<i>Larix griffithii</i>	Pinaceae
9.	<i>Nageia wallichiana</i>	Cupressaceae
10.	<i>Pinus kesiya</i>	Pinaceae



*Figure 2-14 Common Gymnosperms of Assam*

**Angiosperms:** Angiosperms form the largest category of plants in Assam with 3832 species. Assam has also 154 species of primitive Angiosperms better known as “Living fossils” belonging to following families:

*Table 2-10 Common angiosperm families in Assam*

Sr. No.	Name of Family	No. of genera reported in Assam
1.	Magnoliaceae	19
2.	Schizandraceae	01
3.	Annonaceae	45
4.	Myristicaceae	07
5.	Chloranthaceae	02
6.	Lauraceae	80

The important species are *Magnolia* species, *Pachylarnax pleiocarpa*, *Fissistigma* species, *Alseodaphne* species, *Cinnamomum* species, *Litsea* species, *Michelia* species etc. Plants belonging to this category are the most economically important plants of Assam and meet the demand for timber, plywood, pulpwood, furniture, agricultural implements.

**The orchids of Assam:** In Assam as many as 293 species of Orchids are reported which represent 44.39% of North East species and 24.42% of species occurring in India. Orchids as a group of flowering plants exhibit wide range of habits and have specific macro climatic requirements for their growth, development and regeneration. Assam orchids show all the habits and growth forms found in orchidaceous taxa. Mostly they are epiphytes. *Goodyera procera* and *Spiranthis sinesis* are adapted to aquatic habitat whereas *Vanilla pilifera* and *Galeola altissima* are climbers. Orchids grow to their magnificent best in the Evergreen and Semi- Evergreen forest and to some extent in Moist Deciduous forests. Following is list of some common orchids reported in Assam:

*Table 2-11 Common orchids in Assam*

Sr. No.	Name of Orchid	Family
1.	<i>Acanthephippium</i>	Orchidaceae
2.	<i>Anoectochilus</i>	Orchidaceae
3.	<i>Apostasia</i>	Orchidaceae
4.	<i>Agrostophyllum</i>	Orchidaceae
5.	<i>Coelogyne</i>	Orchidaceae
6.	<i>Cymbidium</i>	Orchidaceae
7.	<i>Dendrobium</i>	Orchidaceae
8.	<i>Eria</i>	Orchidaceae
9.	<i>Oberonia</i>	Orchidaceae
10.	<i>Calanthe</i>	Orchidaceae
11.	<i>Eulophia</i>	Orchidaceae
12.	<i>Geodorum</i>	Orchidaceae
13.	<i>Habenaria</i>	Orchidaceae
14.	<i>Malaxis</i>	Orchidaceae

Sr. No.	Name of Orchid	Family
15.	<i>Nephelaphyllum</i>	Orchidaceae
16.	<i>Vanilla</i>	Orchidaceae
17.	<i>Zeuxine</i>	Orchidaceae
18.	<i>Didymoplexis</i>	Orchidaceae
19.	<i>Galeola</i>	Orchidaceae
20.	<i>Bulbophyllum</i>	Orchidaceae
21.	<i>Camarotis</i>	Orchidaceae

Photos of some common orchids



*Bulbophyllum*



*Vanilla*



*Haberonia*



*Camarotis*

*Figure 2-15 Common Orchids of Assam*

**Medicinal Plant diversity:** Assam is home to a good number of plants having medicinal uses traditional village practitioners, Ayurvedic, Unani, Homeopathic and even modern medical practices. Altogether, 952 plants species have been identified which have uses in medical practices. List of some common medicinal plants is as follows:

Table 2-12 Common Medicinal Plants in Assam

Sr. No.	Name of plant	Family	Common Name
1.	<i>Asparagus racemosus</i>	Asparagaceae	Satmul
2.	<i>Curcuma aromatic</i>	Zingiberaceae	Banhaldi
3.	<i>Emblica officinalis</i>	Phyllanthaceae	Amla
4.	<i>Terminalia species</i>	Combretaceae	Hilikha, Bahera
5.	<i>Eugenia jambolana</i>	Myrataceae	Lohajam
6.	<i>Garcinia species</i>	Guttiferae	Thekera
7.	<i>Holarrhina antidysentrica</i>	Apocynaceae	Dudhkuri
8.	<i>Hydnocarpus kurzii</i>	Achariaceae	Chalmugra
9.	<i>Litsea cubeba</i>	Lauraceae	Mejankuri
10.	<i>Ocimum sanctum</i>	Lamiaceae	Tulsi
11.	<i>Phlogocanthus thyrsoiflorus</i>	Lamiaceae	Titaphul
12.	<i>Piper longum</i>	Piperaceae	Pipoli
13.	<i>Saraca indica</i>	Fabaceae	Asoka
14.	<i>Wedelia calandulacea</i>	Asteraceae	Mahabhingraj
15.	<i>Zinziber officinalis</i>	Zinziberaceae	Ada

**Bamboos and Cane Diversity in Assam:** Bamboos have gained considerable importance in the socio-economic life of people in Assam for the variety of uses. Altogether 42 naturally growing species of bamboo are recorded in Assam of which *Bamboo samartersei* is restricted in distribution to Dibrugarh district. *Bamboosa cacharensis*, *Dinochloa compactiflora*, *D. india* are restricted to Barak Valley. *Chimnobabusa griffithiana* and *Oxetenanthera parviflora* are restricted in distribution to N.C.Hills. *Bambusa rangaensis* grows wild in the Ranga R.F. of Lakhimpur district. *Bamboosa vulgaris* is the introduced species cultivated throughout Assam as ornamental plant. *Bambusa jaintiana* and *Melocanna arundiana* are the species reported only from Assam. There are no exclusive bamboo forests in the plains of Assam, bamboo grooves are found mostly along the edge of Reserve Forests. But pure bamboo forests occur in N.C Hills and Karbi Anglong districts predominated with *Melocanna baccifera* and *Chimno Bambusa griffithiana*. Bamboo is cultivated widely in Assam and every household grows bamboo in its bari land. Commonly cultivated species are *Bambusa balcooa* (Bhaluka bamboo), *Bambusa tulda* (Jati bamboo), *Melocanna baccifera* (Muli bamboo), *Dendrocalamus hamiltonii* (Koko bamboo) and *Dendrocalamus giganteus* (Mokalm bamboo).

Total 14 species of cane grow in cane brakes in forests of Assam. *Calamus flagellum*, *Calamus floribundus*, *Calamus latifolius* are found widely distributed throughout Assam. *Plectocomia assamica* and *Plectomyces* are endemic species.

**Wetlands and Aquatic Plant Diversity:** Assam has more fresh water wetlands than any other state in the North Eastern Region. The two major drainage systems of Assam-the Brahmaputra and the Barak and in the flood plains of these river systems exist patches of marshy depressions and swamps as well as perennial water bodies of varying

shape, size and depth called locally as beels, haors, jalah, doloni, hola, pitoni etc. Manmade tanks like *Joysagar, Sibsagar, Dighalipukhuri, Jorpukhuri, Hazarapukhuri, Rajhuwa Borpukhuri* etc. were also dug by ancient Rulers of Assam. Deeporbeel near Guwahati is a Ramsar site. Besides Deeporbeel and some others mentioned above wetlands of importance are Chandubi, Rata, Sohola, Taralipather, Phokolai, Mer, Sonbeel, Jamjing, Sagunpara, Motapung, Sarlane, Sareswar, Roumari, Khalihamari, Goranga, Sapekhati, Koladuar etc.

The aquatic plants species of Assam belongs to diverse habitats and have distinctive characteristics. More than 100 such aquatic species have been identified and they can be described into following broad categories.

**Table 2-13 Aquatic Plants in Assam**

Sr. No.	Name of aquatic plant group	Commonly found species
1.	Free floating hydrophytes	<i>Eichhornia crassipes, Pistia stratiotes, Lemna minor, etc</i>
2.	Suspended submerged hydrophytes	<i>Ceratophyllum demersum, Utricularia gibba, etc</i>
3.	Anchored submerged hydrophytes	<i>Hydrilla, Potamogeton, Vallisnaria, etc</i>
4.	Anchored hydrophytes with floating leaves	<i>Nelumbo, Euryale etc</i>
5.	Anchored hydrophytes with floating shoots	<i>Ludwigia, Ipomea etc.</i>
6.	Emergent amphibious hydrophytes	<i>Sagittaria, Scirpus etc.</i>
7.	Wetland hydrophytes	<i>Cyperus, Hygrophylla etc.</i>

**Endemic flora:** Endemic floras are plants which occur in a restricted area. Altogether 165 species of plants have been recorded which are restricted in distribution to certain pockets in Assam, though some of them show extended distribution in the N.E. Region and elsewhere in India. However, more than 100 such species have distribution restricted to Assam only. These include following commonly reported trees:

**Table 2-14 Endemic flora of Assam**

Sr. No.	Name of plant	Family
1.	<i>Acacia gageana</i>	Mimosaceae
2.	<i>Adiantum assamicum</i>	Pteridaceae
3.	<i>Alseodaphne andersonii</i>	Lauraceae
4.	<i>Alseodaphne khasyana</i>	Lauraceae
5.	<i>Angiopteris assamica</i>	Marattiaceae
6.	<i>Cedrela fabrifuga</i>	Meliaceae
7.	<i>Cinnamomum cacharensis</i>	Lauraceae
8.	<i>Coelogyne assamica</i>	Orchidaceae

Sr. No.	Name of plant	Family
9.	<i>Combretum wallichii</i>	Combretaceae
10.	<i>Dinochloa indica</i>	Poaceae
11.	<i>Diospyros cacharensis</i>	Ebenaceae
12.	<i>Dipterocarpus mannii</i>	Dipterocarpaceae
13.	<i>Eugenia cyanophylla</i>	Myrataceae
14.	<i>Bambusa cacharensis</i>	Poaceae
15.	<i>Bambusa mastersii</i>	Poaceae
16.	<i>Chimnobambusa griffitheana</i>	Poaceae
17.	<i>Bulbophyllum elassonotum</i>	Orchidaceae
18.	<i>Bulbophyllum vireus</i>	Orchidaceae
19.	<i>Dendrobium assamicum</i>	Orchidaceae

**Invasive Flora:** Like any other part of India, Assam has invasive plants growing widely and interfering the original vegetation. Following are some common plants which are alien to Assam state:

*Table 2-15 Invasive flora of Assam*

Sr. No.	Name of Plant	Family
1.	<i>Mimosa invisa</i>	Mimosaceae
2.	<i>Mikania micrantha</i>	Asteraceae
3.	<i>Chromolaena odorata</i>	Asteraceae
4.	<i>Ipomoea carnea</i>	Ipomeaceae

**Rare and endangered species:** In Assam, 284 species of plants are observed to be critically endangered, 149 species as endangered, 58 species as vulnerable, 13 species as near threatened. Following categories of threatened plants recognized by the IUCN have been reported from Assam.

*Table 2-16 Rare and Endangered Plant in Assam*

No.	Name of Plant	Family	IUCN status
1.	<i>Acampe papillosa</i>	Orchidaceae	Vulnerable
2.	<i>Acampe rigida</i>	Orchidaceae	Vulnerable
3.	<i>Acanthephippium striatum</i>	Orchidaceae	Critically Endangered
4.	<i>Aerides odorata</i>	Orchidaceae	Vulnerable
5.	<i>Aerides rosea</i>	Orchidaceae	Vulnerable
6.	<i>Anoectochilus brevilabris</i>	Orchidaceae	Critically Endangered
7.	<i>Anoectochilus roxburghii</i>	Orchidaceae	Critically Endangered
8.	<i>Biermannia bimaculata</i>	Orchidaceae	Critically Endangered
9.	<i>Bulbophyllum andersonii</i>	Orchidaceae	Vulnerable
10.	<i>Vanilla borneensis</i>	Orchidaceae	Rare
11.	<i>Calamus nambariensis</i>	Arecaceae	Endemic and Threatened
12.	<i>Brucea mollis</i>	Simaroubaceae	Endangered

(Source: <http://article.sapub.org/10.5923.j.ijmb.20120202.02.html>, & Baruah, et. Al. 2017)

### 2.3.14 Collection of Baseline Data of flora and Fauna at the subproject locations:

The baseline data is collected nearby the T & D lines. The team visited various locations along the T & D lines to collect flora and fauna details. The identification of flora was done using available standard literature e.g. Flora of Assam, and fauna was identified using different online and offline sources. Necessary care was taken to avoid loss of biodiversity while survey of flora and fauna.

#### 2.3.14.1 Methodology and Sample Size Adopted for Primary Survey

The study area for the floristic surveys is defined as area in the proximity of the proposed transmission lines on both left and right sides, corridors of transmission line routes and substations. The description of the vegetation is based upon these observations and data collected around each site collected through transects method.

In general, the vegetation in and areas around sampling sites is comprised of tropical wet evergreen and semi-evergreen floral elements. Therefore, field surveys for the assessment and composition of vegetation were conducted to assess the floral wealth in the proximity to the towers, sub-station and along the routes of transmission line.

A series of transects were identified along the routes of transmission line covering the corridors between the ROW of transmission line and substations. The basis of data collection is along the route of the transmission/distribution lines considering a RoW of 35 meters for 220 kV line, 27 meters for 132 kV line and 15 meters for 33 kV line. For homogenous stretches/sections of the route like along paddy field, along tea garden etc. data collected is carried out section wise. 10% of project lines are

Line transect methodology has been followed for vegetation sampling. Faunal surveys were also conducted during vegetation survey. During the surveys, 10% of total route length was covered to collect baseline data, because entire route is not accessible at present. **Please Refer Annexure 13.** Details of transmission line and locations (transects) selected for phytosociological survey / vegetation sampling are as given in **Table 2.17.**

**Table 2-17 Transmission Lines and Transects Locations for Vegetation Sampling**

Sr. No.	Name of Line and Locations of samplings	Stretch Covered	Section Length	Number of trees likely to be impacted
<b>A</b>	<b>132 KV S/C (ON D/C TOWER) DHEMAJI-SILAPATHAR TRANSMISSION LINE</b>			
1	Hatigarh	AP-1 to AP 4/11 15 Towers / poles		152
2	Telijan	AP 5 to AP 5/4 5 Towers / poles	3.647 km	2
3	Kapahua Pathar	AP 5/5 to AP 7/3 8 Towers / poles	3.246 km	21
4	Owani gaon	AP 10 to AP 11/11 15 Towers / Poles	4.731 km	4
5	Dhunagiri	AP 12 to AP 15/9 13 Towers / Poles	3.831 km	293

Sr. No.	Name of Line and Locations of samplings	Stretch Covered	Section Length	Number of trees likely to be impacted
6	Udmara	AP 16 to AP 17/9 15 Towers / Poles	3.068 km	78
7	Kulajan pathar	AP 18/0 to AP 20/10 19 Towers / Poles	5.929 km	88
8	Bargayadeuri	AP 22/0 to AP 22/2 3 Towers / Poles	0.809 km	15
9	Jariguri	AP 23/0 to AP 25/2 6 Towers / Poles	1.917 km	49
10	Likabali	AP 26/0 to AP 27/2 4 Towers / Poles	1.282 km	-
11	Silapali Gaon	AP 28/0 to Gantry 8 Towers / Poles	1.0	18
<b>B 33KV S/C line from 132/33 KV New Silapathar s/s to 33/11 KV Silapathar II s/s line</b>				
1	Silagaon	AP 1 to AP 4 35 Towers / poles	1.658 km	37
2	Teparisuk	AP 5 to AP 8 13 Towers / poles	0.674 km	25
3	Misingpur	AP 8 to AP 9 52 Towers / poles	2.595 km	2
4	Jungaonmiri	AP 9 to AP 14 66 Towers / poles	3.278 km	4
5	Dablang Patri	AP 15 to AP 18/20 29 Towers / poles	1.483 km	16
6	Ayegia Patri	AP 18/20 to AP 21 31 Towers / poles	1.460 km	-
<b>C 33 KV line from new Shilapathar s/s to existing Shilapathar s/s</b>				
1	Silagaon	AP 01 to AP 12 61 Towers / poles	3.302 km	10

### 2.3.14.2 Flora at project site of Dhemaji district

The primary data and secondary data were collected by field survey and literature survey, respectively. The details of flora found at the project sites are as follows:

*Table 2-18 Details of Flora at the project Site*

Sr. No.	Name of Plant	Family	Common Name	Conservation Status
1.	<i>Bambusa vulgaris</i>	Bamboo	Poaceae	LC
2.	<i>Musa acuminata</i>	Banana	Musaceae	LC
3.	<i>Annanus cosmosus</i>	Pineapple	Bromeliaceae	LC
4.	<i>Areca catechu</i>	Areca	Betel Nut	LC
5.	<i>Hibiscus rosa-sinensis</i>	Malvaceae	China Rose	LC
6.	<i>Plumbago zeylanica</i>	Plumbaginaceae	Indian Leadwort	LC

Sr. No.	Name of Plant	Family	Common Name	Conservation Status
7.	<i>Lagerstroemia speciose</i>	Lytheraceae	Azar	Not evaluated
8.	<i>Averrhoa bilimbi</i>	Oxalidaceae	Satyianpuli	Not evaluated
9.	<i>Shorea robusta</i>	Dipterocarpaceae	Sakan	LC
10.	<i>Bombax ceiba</i>	Bomaceae	Simolu	LC
11.	<i>Pithecellobium dulce</i>	Fabaceae	Bhalupuli	LC
12.	<i>Alstonia scholaris</i>	Apocynaceae	Jatuli	LC
13.	<i>Tectona grandis</i>	Lamiaceae	Segun	LC
14.	<i>Acacia catechu</i>	Fabaceae	Khayar	LC
15.	<i>Prosopiss picigera</i>	Fabaceae	Pouja	Not evaluated
16.	<i>Copaifera langsdorffii</i>	Fabaceae	Pitha gas	LC
17.	<i>Millettia pinnata</i>	Fabaceae	Mojh	LC
18.	<i>Cassia fistula</i>	Fabaceae	Sikamojola	LC
19.	<i>Syzygium cumini</i>	Myrtaceae	Jamu	LC
20.	<i>Terminalia catappa</i>	Combretaceae	Badam	LC
21.	<i>Albizia lebbeck</i>	Fabaceae	Sirish	LC
22.	<i>Dillenia indica</i>	Dilleniaceae	Chalta	LC
23.	<i>Mangifera indica</i>	Anacardiaceae	Mango	LC
24.	<i>Ziziphus mauritiana</i>	Boraginaceae	Kul	LC

### 2.3.14.3 Animal diversity of Assam

Assam is part of the transitional zone between the Indian, Indo- Malayan and Indo-Chinese Biographical regions which provides the gateway for spread of both oriental and Palearctic fauna to other parts of the country. Favorable climate, topographic and edaphic factors support luxuriant growth of diverse plant communities and create varied habitats. The forest as well as extensive network of river systems and swamps, marshes and wetlands provides ideal conditions and suitable habitat for sustenance of wide variety of fauna with existence of one of the most diverse faunal population mammals, primates, reptiles, amphibians, fishes, molluscs, birds, butterflies, moths etc.

*Table 2-19: Animal diversity of Assam*

Fauna	No. of Species
<b>Mammals</b>	193
<b>Primates</b>	9 (Out of 15 Indian primate species 9 are found in Assam)
<b>Birds</b>	950 (State is home to 53.5% of the bird species found in the Indian Sub-Continent, 17 species of birds are endemic to Assam) 45 species of birds from Assam find mention in the Indian Red Data Book.
<b>Migratory birds</b>	280
<b>Amphibians</b>	Assam and other parts of the N.E. region have 70 species of Amphibians reported from the region which 60+ species are found in Assam. <i>Gangenophis fulleri</i> and <i>Ichthyphis garoensis</i> are endemic to Assam.
<b>Butterflies</b>	Around 1500 species of butterflies are reported from India of which nearly half are reported from Assam and N.E. India.
<b>Moths</b>	About 387 species of moths are reported in the state.
<b>Reptiles</b>	116 (19 species of tortoises and 77 species of snakes and lizards are found in the state)
<b>Molluscans</b>	39 species of freshwater snails have been reported from Assam of which 10

Fauna	No. of Species
	species are used as food.
<b>Fish</b>	185 (25 species are identified as Threatened)
<b>Mosquito</b>	156

(Source: [http://asmenvs.nic.in/Database/Animal\\_Diversity\\_844.aspx](http://asmenvs.nic.in/Database/Animal_Diversity_844.aspx))

### A. Mammals

Assam forms the western most boundary for the Indo-Chinese species including primates and the easternmost limit of several peninsular mammalian fauna.

The distributional extent of several Indian species including clawless otter, the spotted deer, the swamp deer, the stone marlin, the hispid hare, the great Indian one horned rhinoceros, the pigmy hog etc. have terminated in Assam plains. The distributional range of several Indo-Chinese fauna gets its sustenance from this region.

Mention can be made of its sustenance from this region. Mention can be made of such species like clouded leopard, the marbled cat, the golden cat, the spotted linsang, the large Indian civet, the binturong, the crab eating mongoose, the ferret badger, the hog badger, the hoary bamboo rat, the bay bamboo rat etc.

Assam's mammalian diversity is represented by 193 species which are widely distributed in this region. But of late some of the species like one horned rhinoceros, water buffalo, pigmy hog, swamp deer, golden langur, and hillock gibbon have their distribution limited to isolated pockets and protected areas.

### B. Primates

Out of 15 Indian primate species 9 are found in Assam. Hoolock gibbon is the only ape found in India. The other primate species are golden langur, capped monkey, rhesus macaque, pigtail macaque, stump tailed macaque, Assamese macaque, and slow Lorries. Golden langur or "Sonali Bandar" as it is known locally is confined between Sankosh river in the west; Manas in the east; Brhmaputra in the south and mountains in Bhutan in the north.

Pigtail macaque and stumped tailed macaque locally known as Gahorinejia Bandar and "Senduiria Bandar" respectively are distributed in the Eastern, central and southern part of the state. Rhesus macaque, capped monkey and Assamese macaque are more or less distributed through the State. Assamese macaque and Rhesus monkeys are also found in villages and in urban areas. Most of the primates are predominately arboreal in nature but Rhesus monkey, Assamese macaque and stump tailed macaque are partly terrestrial also.

Slow Lorries is the only prosimian found in Assam and the N.E. region. Locally known as "Lajuki Bandar" they are solitary animals and obligate canopy dwellers. Because of the habitant loss and fragmentation the primates are facing serious threat to their survival.

### C. Birds

Assam is one of the "endemic bird areas" in the world. With 950 bird species the State is home to 53.5% of the bird species found in the Indian Sub- Continent, 17 species of birds

are endemic to Assam and include Manipur Bush Quail, Marsh Babbler, Snowy throated Babbler, Tawny breasted Wren Babbler, Blyth’s Tragopan, Beautiful Sibia, Grey sibia, Black breasted Parrotbill, Chestnut breasted partridge, Rusty breasted shortwing etc.

45 species of birds from Assam find mention in the Indian Red Data Book and include white winged wood duck (Assam’s State Bird), Blyth’s Tragopan, Greater Adjutant, lesser Adjutant, Lesser white fronted Goose, Mottled Teal, Beer’s Pochard, Pallas’s Sea Eagle, Greater spotted Eagle, Green Peafowl, White rumped vulture, long billed vulture etc.

**D. Reptiles**

Assam’s varied physiography and habitat conditions support a rich variety of reptilian population. Gangetic gharial, 19 species of tortoises and 77 species of snakes and lizards are found in the state.

**E. Amphibians**

Assam and other parts of the N.E. region have 70 species of Amphibians reported from the region. *Gangonophis fulleri* and *Ichthyophis garoensis* are endemic to Assam.

**F. Fish Diversity**

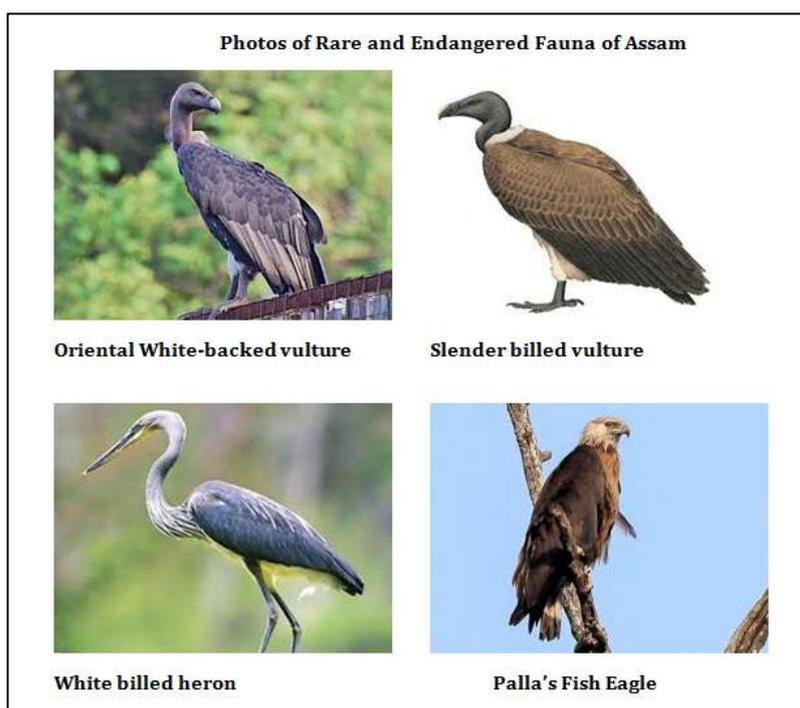
The Brahmaputra and Barak river system along with their tributaries and flood plain wetlands locally known as beels provide very conducive habitat for an array of fish species, Assam and other parts of N.E. region is recognized as one of the hot spots of fresh water fish biodiversity.

197 food, sports and ornamental fish species are reported from the region of which 185 are reported from Assam.

The important ornamental fish species are colisa, Nemacheilus, Danio, Botia and Chaca. Commercially important fish species include, Rohu, Ktla, Pabha, Pabda Chital, Magur, Singi, Sol, etc. Over exploitation is posing serious threats to fish diversity and 25 species are identified as threatened. Following are details of endangered and rare fauna in Assam:

**Table 2-20: Rare and Endangered Fauna in Assam**

Sr. No.	Common Name	Generic Name	Vulnerability status
1.	Oriental White-backed vulture	<i>Gyps bengalensis</i>	Critically Endangered
2.	Slender billed vulture	<i>Gyps tenuirostris</i>	Critically Endangered
3.	White billed heron	<i>Adrea insignis</i>	Critically Endangered
4.	Pallas’s Fish Eagle	<i>Haliaeetus leucoryphus</i>	Vulnerable
5.	Lesser Adjutant	<i>Leptoptilos javanicus</i>	Vulnerable
6.	Spot billed pelican	<i>Pelecanus philippensis</i>	Vulnerable



*Figure 2-16 Endangered and rare fauna of Assam*

#### 2.3.14.4 Fauna details at project site of Dhemaji –Silapathar district

The details of fauna found at the project sites are as follows:

**Table 2-21: Fauna of Dhemaji district**

Sr. No.	Common Name	Generic Name	Conservation Status
1.	Assamese Macaque	<i>Macaca assamensis</i>	<i>Near Threatened</i>
2.	Grey Peacock Pheasant	<i>Polyplectron bicalcaratum</i>	<i>LC</i>
3.	Asian Toad	<i>Bufo melano stictus</i>	<i>LC</i>
4.	Oriental White Black Vulture	<i>Gyps bengalensis</i>	<i>Critically Endangered</i>
5.	Slender Billed vulture	<i>Gyps tenuirostris</i>	<i>Critically endangered</i>
6.	White Bellied heron	<i>Ardrea insignis</i>	<i>Critically Endangered</i>
7.	White Winged Duck	<i>Cairina scutulata</i>	<i>Endangered</i>
8.	Spot Billed Pelican	<i>Pelecanus philippinensis</i>	<i>Near Threatened</i>
9.	Lesser Adjunct	<i>Leptoptilos javanicus</i>	<i>vulnerable</i>
10.	Pallas's fish Eagle	<i>Aquila clanga</i>	<i>endangered</i>
11.	Swamp Francolin	<i>Francolinus gularis</i>	<i>vulnerable</i>
12.	Wild Buffalo	<i>Bubalus arnee</i>	<i>Endangered</i>

(Source: Choudhury, A. (2000) *Birds of Assam*, Gibbon Books & WWF-India NE Region, Guwahati)

#### 2.3.15 Socio -Economy

The economy of Dhemaji-Silapathar is generally agro-based. Sericulture, fishing and driftwood business are practiced in smaller scale. However, sand deposition and other adverse effects of chronic floods on fertile agricultural land have made even affluent farmers land-less. Therefore a large number of such people shift to greener pastures within the district to carry out horticultural practices. Lack of good communication



system, shortage of power and lack of proper irrigation & marketing facilities add to the poverty of the district. Dearth of any major and small industry worth the name is also responsible for multiplying the problem of unemployment while galloping explosion in the rate of population growth has already shown signs of negative impacts. The local economy is thus characterized by subsistence level of production and consumption.

### **Agriculture**

Agriculture is the principal occupation and more than 85% of the total population depends on it. Irrigation is largely rain-fed, with mechanized shallow tube wells. Kharif rice (Sali) occupies an area of about 54000 ha of which 16878 ha is under HYV. Ahu rice covers an area of 14000 ha. Around 6000 ha of the district is under Bao rice that is mainly grown in the low lying alluvial belts. In Rabi season toria and wheat covers an area of 13200 ha and 2000 ha respectively. Out of the total cropped area around 20155 ha is double cropped. The major cropping systems are Sali rice followed by Ahu rice, rice followed by toria, rice followed by vegetables and rice-fallow. In addition, sugarcane and mustard are also grown in some places of the district. The principal mustard growing areas are Gohaingaon, Talahi, and Narayanpurmuzas of Dhakuakhana. Pulses are mostly grown in alluvial flat lands on the riverbanks. The commonly grown pulses are Matimah (*Phaseolus mango*), Magumah (*Phaseolus aureus*), Arhar (*Cajanuscajon*), Masurmah (*Pisum sativum*).

### **Cattle rearing**

Most families rear pigs, goats and poultry, however lack of adequate veterinary facility and knowledge of scientific breeding has left the livestock with poor gene pool. People continuously lose their cattle and poultry to the scourge of floodwaters. In spite of the existence of Government infrastructure the people have not benefited from the services as most of the time, veterinary personnel and medicines are not to be found.

### **Sericulture**

In Assam, Sericulture is an age-old traditional cottage industry. Next to agriculture, Sericulture is the major agro-based industry generating large number of employment in the rural areas of Assam with minimum investment cost. It plays a very vital role in the socio-economic development of the weaker section of the rural population especially, Review during their off-agricultural season. Dhemaji and Lakhimpur districts occupy a unique place in the production of the three different kinds of silks - Pat, Muga and Eri - which have a very high demand in the national and international markets. Muga silk (*Antheraea assamensis*) and Eri Silk worm rearing (*Samiacynthia ricini*) and production of silk yarn and fabric is wide spread amongst the people of Dhemaji and Dhakuakhana. However due to lack of proper infrastructure and appropriate marketing facility this industry has not been exploited to its full potential.

### **Fish drying**

Fish drying is another practice carried out during the monsoon season, mainly by the people living near the rivers. The market value of the produce is high, but poor communication facilities in the district, especially during the monsoon months, result in

high transportation costs. Another factor that affects the trade adversely is the lack of storage facility so that the producers can wait till the roads are repaired.

### Industries, Trade & Commerce

There are no significant small-scale industries and not a single big industry in the entire Dhemaji-Silapathar district. Some of the small-scale units are registered as weaving or cane and bamboo industries, however the actual production does not have any market value due to competition from highly finished machine goods that are cheap and maintenance free.

#### 2.3.16 Total Population

Total population in Assam stands at 3,12,05,576 of which 2,68,07,034 (85.90%) population belong to rural area and 43,98,542 (14.10%) population belong to urban area. Dhemaji district has a total of 6, 86,133 populations of which is 2.20% of state population. The rural and urban population constitutes 92.06% and 7.04% of total populations of the district. Details are given in **Table 2.20**;

**Table 2-22: Details on Total Population**

Name/ Particulars	Total Population	Total (Rural)	Total (Urban)	Percentage (Rural)	Percentage (Urban)
<b>Assam</b>	3,12,05,576	2,68,07,034	43,98,542	85.90	14.10
<b>Dhemaji</b>	6, 86,133	6,37,848	48,285	92.96	7.04

Source: Census of India, 2011

### Male and Female Population

Out of total population 3,12,05,576 of the State, male population constitutes 15,939,443 (51.08%) and female population is 15,266,133 (48.92%). Total population in Dhemaji stands at 6, 86,133 of which male population stands at 3,51,249 (51.19%) and female population stands at 3,34,884 (48.81%). The sex ratio of the district stands at 953 females per thousand male which is lower than state average of 958. Details are given in table below:

**Table 2-23 Details on Male/ Female Population**

Name /Particulars	Total Population	Total Male	Total Female	Percentage (Male)	Percentage (Female)	Sex Ratio
<b>Assam</b>	3,12,05,576	15,939,443	15,266,133	51.08	48.92	958
<b>Dhemaji</b>	6, 86,133	3,51,249	3,34,884	51.19	48.81	953

(Source: Census of India, 2011)

## Scheduled Caste (SC) and Scheduled Tribe (ST) Population

As per census 2011, the Scheduled Caste (SC) & Scheduled Tribe (ST) population of the State stands at 4,074,447 (7%) and 8,917,174 (15%) respectively. Dhemaji district has a total SC population of 44,225 (6.44%) & ST population of 325560 (47.44%). Details are given in table below:

**Table 2-24 Details on Percentage SC/ST**

Name/ Particulars	Total Population	Total SC Population	Percentage of SC Population	Total ST Population	Percentage of ST Population
<b>Assam</b>	3,12,05,576	22,31,321	7.15	38,84,371	12.4
<b>Dhemaji</b>	6, 86,133	44,225	6.44	3,25,560	47.44

Source: Census of India, 2011

## Literacy

The literacy rate of Dhemaji district stands at 79.84 % which is slightly higher than State's average. However, the female literacy rate of the district is lower than State's literacy rate. Details are given in table below:

**Table 2-25 Literate and Illiterate Population**

Name/Particulars	Total Population	Total Literate	Percentage of Literate	Percentage (Male)	Percentage (Female)
<b>Assam</b>	3,12,05,576	19,177,977	72.19	77.85	66.27
<b>Dhemaji</b>	6, 86,133	423,028	72.70	79.84	65.21

Source: Census of India, 2011

## Total Workers (Male and Female)

Total population into work in Assam stands at 1,19,69,690 of which total Male (work) population stands at 85,41,560 (71.36%) and total female (Work) population stands at 34,28,130 (28.64%). Dhemaji district has a total work population of 3,16,800 of which total Male (work) population stands at 1,86,577 (58.90%) and total female (Work) population stands at 1,30,223 (41.10%). Details are given in table below:

**Table 2-26 Details on Workers**

Name/ Particulars	Total Population (Work)	Total Male (Work)	Total Female (Work)	Percentage (Male)	Percentage (Female)
<b>Assam</b>	1,19,69,690	85,41,560	34,28,130	71.36	28.64
<b>Dhemaji</b>	3,16,800	1,86,577	1,30,223	58.90	41.10

Source: Census of India, 2011

## Households

Total Households in Assam stands at 64, 06,471 of which 54, 20,877 (84.61%) households belong to rural area and 9, 85,594 (15.39%) households belong to urban area. Dhemaji district has a total of 1, 29,869 households of which 1, 19,368 (91.91%) households



belong to rural area and 10,231 (18.09%) households belong to urban area. Details are given in table below:

*Table 2-27 Details on Households*

Name/ Particulars	Total Households	Total (Rural)	Total (Urban)	Percentage (Rural)	Percentage (Urban)
<b>Assam</b>	64,06,471	54,20,877	9,85,594	84.61	15.39
<b>Dhemaji</b>	1,29,869	1,19,368	10,231	91.91	18.09

*(Source: Census of India, 2011)*

## 2.4 Baseline Description of the Subproject areas:

The baseline data around the sub-project sites is broadly in conformity with the data of the Dhemaji district. However, the topography encountered around the transmission and distribution line route alignment is mostly low lying plain land. All the substations are located in plain area.

The transmission line corridor are mostly pass through paddy cultivation and some private land with sparse tree cover dominated by fruit bearing trees like Badam, Mango, Supari and various other plants. The distribution lines mainly pass nearby government roads. So, there is no chance No invasive species reported from the project area. The details of Socio-economic Primary assessment and Vegetation Sampling are depicted in **Annexure 13**.

Electricity is one of the basic needs of 21<sup>st</sup> century. The subproject area is overall backward in terms of economic activities and lacks good communication system, shortage of power and lack of proper irrigation & marketing facilities add to the poverty of the district. The current project will be helpful for the local people of Dhemaji district to uplift their economic condition. After improvement of the power supply, the socio-economic status of this area will be improved this will possibly attract industrial & commercial investments in this area. While discussing with local people of project area, it was observed that they are very helpful and cooperating contractors and Power Grid personnel for completion of this project. In conclusion, local people feel that their socio-economic condition will upgrade because of this project. Following are the details of electric substations involved in this project:



**Dhemaji Substation (27° 26' 21.56" N, 94° 31' 52.20" E)**



**Silapathar New Substation (27° 36' 10.30" N, 94° 45' 26.39"E)**



**Silapathar II Substation (27°32'9.66"N, 94°42'40.77"E)**

*Figure 2-17 Google depicting location of Existing and proposed Substations*

### 3 LEGAL & REGULATORY FRAMEWORKS

#### 3.1 Introduction

Power transmission and distribution project activities by their inherent nature and flexibility have negligible impacts on environmental and social attributes. The IA & Assam Electricity Grid Corporation Ltd (AEGCL) & Assam Power Distribution Corporation Ltd (APDCL) are undertaking its activities within the ambit of Indian and State specific laws with considering appropriate international obligations and directives and guidelines with respect to environmental and social considerations of Bank's Operational Policy. The regulatory frameworks applicable for this project and its status of compliance are given below,

#### 3.2 Constitutional Provisions

Subsequent to the first United Nations Conference on Human Environment at Stockholm in June, 1972, which emphasized the need to preserve and protect the natural environment, the Constitution of India was amended through the historical 42<sup>nd</sup> Amendment Act, 1976 by inserting Article 48-A and 51-A (g) for protection and promotion of the environment under the Directive Principles of State Policy and the Fundamental Duties respectively. The amendment, inter alia provides:

"The State shall endeavor to protect and improve the environment and to safeguard the forests and wildlife of the country" (New Article 48A).

"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" [New Article 51 A (g)].

Article 21 of the constitution provides, "no person shall be deprived of his life or personal liberty except according to procedure established by law".

**Article 21** is the heart of the fundamental rights and has received expanded meaning from time to time after the decision of the Supreme Court in 1978. The Article 21 guarantee fundamental right to life – a life of dignity to be lived in a proper environment, free of danger of disease and infection. The right to live in a healthy environment as part of Article 21 of the Constitution. Recently, Supreme Court has broadly and liberally interpreted the Article 21, transgressed into the area of protection of environment, and held that the protection of environment and citizen's right to live in eco-friendly atmosphere interpreted as the basic right guaranteed under Article 21.

Thus the Indian Constitution has now two fold provision:

- On the one hand, it gives directive to the State for the protection and improvement of environment.
- On the other hand the citizens owe a constitutional duty to protect and improve natural environment.

Constitutional provisions in regard to social safeguards are well enshrined in the preamble 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 have been interpreted as part of this larger right. Social safeguards provisions are dealt in detail in different Article such as Article-14, 15, 17, 23, 24, 25, 46, 330, 332 etc. POWERGRID have implemented the said constitutional provision in true spirit to fulfill its environmental and social obligations and responsibilities.

### 3.3 Environmental Provisions

*Table 3-1: Project compliance status against applicable environmental provisions*

Sr No.	Acts, Notification & Policies	Relevance/Applicability to the project	Status of compliance
National/ State requirement			
1.1	Forest (Conservation) Act, 1980	When transmission projects pass through forest land, prior clearance has to be obtained from Ministry of Environment Forest & Climate Change (MoEF & CC), GoI under the Forest (Conservation) Act, 1980 before starting any construction activity in designated forest area	Since no notified forest area is involved in any of the line routes or substations location. forest clearance under FC Act 1980 is not applicable in instant case
1.2	Environment (Protection) Act, 1986/ Environment Impact Assessment Notification, 2006	Transmission line projects are exempted from of Environment (Protection) Act, 1986 EIA Notification, 2006. However, amendment in the Environment (Protection) Act, 1986 on 7th May' 1992 made it necessary to obtain clearance from MoEF&CC for power transmission projects in three districts in the Aravalis (viz., Alwar in Rajasthan and Gurgaon & Nuh- Mewat in Haryana).	Not applicable
1.3	The Scheduled Tribes & Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006	When transmission projects pass through forest land, NoC from DC has to be obtained before Stage-II approval in compliance to FRA as per MoEF&CC circular dated 5th February 2013	Not applicable as there is no forest land involvement
1.4	Ozone Depleting Substances (Regulation and	Regulate and control manufacturing, import, export and use of Ozone Depleting Substances under Montreal Protocol adopted on 16 <sup>th</sup> September	Only CFC free equipment are being procured/specified

Sr No.	Acts, Notification & Policies	Relevance/Applicability to the project	Status of compliance
	Control) Rules, 2000	1987	intender document
1.5	Batteries (Management and Handling) Rules, 2001	Provides certain restriction on disposal of used batteries and its handling and to file half yearly returning prescribed form to the concerned State Pollution Control Board.	Batteries will be used during operational phase. Hence, the issue of proper handling and disposal of batteries as per the rules is not an issue during the construction phase.
1.6	Hazardous Wastes (Management, Handling and Trans boundary Movement) Rules, 2016	Provides for environmentally sound management of hazardous wastes so as to ensure no adverse effects that may result from such waste. Used transformer oil is categorized as hazardous waste which has to be disposed of only through auctioned/sold to registered recyclers only and file annual return on prescribed form to the concerned State Pollution Control Board.	Generally Used oil is generated after 10-15 years of operation of transformers and therefore, the handling and disposal of hazardous transformer oil is not an issue at this stage.
1.7	E-waste (Management and Handling) Rules, 2016	The main objective of this rule is channelizing the E-waste towards authorized dismantlers and recyclers or is returned to the pick-up of take back services provided by the producer in order to formalize the e-waste recycling sector & protect the environment.	Not applicable during construction phase
1.8	Biological Diversity Act, 2002	Provide for conservation of the biological diversity, sustainable use of its components and fair and equitable sharing of the benefits arising out of use of the biological resources, knowledge and for matters connected therewith.	Not applicable as the project does not involve any biosphere reserves
1.9	Ancient Monuments & Archaeological Sites and Remains Act, 1958	The act has been enacted to prevent the damage to the archaeological sites identified by Archaeological Survey of India.	All such areas have been completely avoided.
1.10	Assam control of Tree Felling	This rule specify which plantations need to be registered, which tree species do	The route has been selected in such a

Sr No.	Acts, Notification & Policies	Relevance/Applicability to the project	Status of compliance
	Rules, 2002	not require felling permission, what process is to be followed in order to fell trees outside non recorded forest areas, how is the transit of timber originating from non-recorded forest areas regulated and how and why timber can be confiscated to Government. AEGCL/APDCL follows all provisions of this rule for felling of trees from non-forest land.	way that it has minimum obstructions under its alignment & majority of the trees have been trimmed. Only such trees are felled which create hindrance to electrical safety after due compliance of applicable tree felling provisions.
<b>World Bank Operational Policy</b>			
2.1	OP 4.01: Environmental Assessment	To ensure the environmental and social and sustainability of investment projects. Support integration of environmental and social aspects of projects in the decision-making process.	E & S aspects of the project have already been integrated into the management procedures based on comprehensive environment assessment undertaken by IA during 2015.
2.2	OP-4.04: Natural Habitats	To promote sustainable development by supporting the protection, conservation, maintenance, and rehabilitation of natural habitats and their functions	The present project does not involve any natural habitats such as biodiversity area, forest area, protected area etc.
2.3	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.	The present project does not encroach upon any such resources
2.4	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	All line routes and substation locations have been selected in such a

Sr No.	Acts, Notification & Policies	Relevance/Applicability to the project	Status of compliance
		protect the vital local and global environmental services and values of forests	way that it successfully avoids any kind of protected area and reserve forests.
2.5	WB EHS Guidelines for Electric power Transmission and Distribution	The Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry specific examples of Good International Industry Practice. The EHS Guidelines contains the performance levels & measures that are generally considered to be achievable in new facilities by existing technology at reasonable costs.	Applicable provisions of EHS guidelines have been followed during the implementation of the project

### 3.4 Social provisions

Sr. No.	Acts, Notification & Policies	Relevance/Applicability to the project	Status of compliance
1	Sixth schedule of the constitution	Special provisions also have been extended to the Tribal Areas under the 6th Schedule [Articles 244(2) and 275(1) of the constitution] in addition to basic fundamental rights. 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.	Not applicable as the subproject district doesn't fall under six schedule areas.
2	The Right to fair compensation and transparency in land acquisition, rehabilitation & resettlement act, 2013	Act ensures appropriate identification of the affected families/households, fair compensation and rehabilitation of titleholders and nontitle holders	No involuntary acquisition involved. The required lands for construction of new 132/33 KV substation at Silapathar and extension work at existing Dhemaji substation are already available with AEGCL. In

Sr. No.	Acts, Notification & Policies	Relevance/Applicability to the project	Status of compliance
			<p>case of 33/11 kV new substation at Silapathar-II the required land measuring 0.66 acre was secured from 1 land owner through Willing Buyer Willing Seller basis on negotiated market rate whereas land for strengthening of existing Silapathar 33/11 kV is already available in the existing substation premise.</p>
3	Electricity Act, 2003 (EA, 2003)	Sanction of Ministry of Power (MOP), GoI/State Govt. is a mandatory requirement for taking up any new transmission project under the section 68(1) of The Electricity Act, 2003. The sanction authorizes to plan and coordinate activities to commission the new projects	MOP, GoI approved the NERPSIP comprehensive scheme for six North Eastern States including Assam vide its Office Memorandum dated 1st December 2014.
4	Right of Way (RoW) & compensation	In case of agricultural or private land, the provision of section- 67 and or section-68 (5 & 6) of Electricity act, 2003 and section-10 of the Indian Telegraph act, 1885 are followed for assessment and payment of composition towards such damages.	<p>As per the guidelines following compensation shall be paid to all affected farmers/land owners in addition to normal tree and crop damage compensation;</p> <p>i) Tower base: Compensation @ 85% of land value as determined by District Commissioner/Bodoland Territorial Council (BTC) or any other competent authority based on Circle rate/ Guideline value/ Stamp Act for tower base area (between four legs).</p> <p>ii) Line corridor: Compensation @ maximum 15% of land value towards diminution</p>

Sr. No.	Acts, Notification & Policies	Relevance/Applicability to the project	Status of compliance
			of land value in the width of RoW corridor as determined by District Commissioner or any other competent authority based on Circle rate/ Guideline value/ Stamp Act.(Details are attached in the <b>(Annexure 1.)</b> )
5	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	The required mechanism to comply with the provisions of the act including designated officers at various levels are already in place in AEGCL & APDCL.
6	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.	No such instances reported in instant case till date. Moreover, very less possibilities of such discoveries because of limited and shallow excavations
<b>7. World Bank Operational Policy</b>			
7.1	OP 4.12 - Involuntary Resettlement	These policies covers direct economic and social impact both resulting 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,	Not applicable as there is no involuntary acquisition invoked for securing land for proposed substations.

Sr. No.	Acts, Notification & Policies	Relevance/Applicability to the project	Status of compliance
		whichever is higher.	
7.2	OP Indigenous Peoples	4.10- 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 objective is to design and implement projects in a way that fosters full respect for indigenous peoples so that they receive culturally compatible social and economic benefits, and do not suffer adverse effects during the development process. 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.	Explicit consent from ADC and the Village Councils is required in the case of acquisition of lands which is not applicable in the project.

### 3.5. Statutory Permissions/NoC's:

The applicability of acts, notifications and policies has already been described in above paragraphs and table. As per the applicability, necessary permission/ licenses/ NOC so far obtained by IA or contractor are:

- Under the provisions of Section 68(1) of Electricity Act, 2003, prior approval GoA is a mandatory requirement to undertake any new transmission project 66kV upward and for distribution project of 33kV system in the State. As a part of permission/ approval, GoI approved the NERPSIP comprehensive scheme for six North Eastern States including Assam under vide its Office Memorandum dated 1st December 2014. In addition, Implementation/ Participation agreement between DoP and PGCIL has been signed on 26<sup>th</sup> March, 2015.
- All the contractors are operating with valid labour license as per provision under section – 12(1) of the Contract Labour (Regulation & Abolition) Act, 1970 and also certified under Section- 7(3) of the Building and Other Construction Workers (Regulation of Employment and Condition of Service) Act, 1996 from Ministry of Labour & Employment.
- All the contractors have obtained requisite insurance policy as per provisions of Employee Compensation Act, 1923 for its employed workforce.



FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam



- Since the tower locations are coming under various villages of Dhemaji district, No Objection Certificates (NoC) from concerned land owner/ Headman /Village Council are being obtained as per the progress of work.

Details of NOCs are shown as annexure and details of NOCs are summarized as below;

**Table 3-2 Details of NOC's**

S. No.	NOCs	Application ID
1.	Railway Line crossing	NFR-TSK-201842 dated 04/10/2018 & NFR-TSK-2019-62 DATED 07/12/2019
2.	Application for clearance from Aviation Authority	NERPSIP/DBR/1011/06c/1053 dated 14/09/2018
3.	Compensation amount of land value & surface damage	NERPSIP/CHAPA/TL-03/354 DATED 30.01.2020

The applications reference mentioned above are still waiting for permissions granted by the concerned authorities.

## **4 MAJOR FEATURES OF FINAL ROUTE & ENVIRONMENTAL IMPACTS**

### **4.1 Introduction**

Environmental impact of transmission and distribution (T&D) line projects are not far reaching and are mostly localized to RoW. However, T&D project has some effects on natural and socio-culture resources. These impacts can be minimized by careful route selection. To minimize these possible impacts, DPN & IA at the system planning stage itself try to avoid ecological sensitive areas like forest. Wherever such infringements are substantial, different alternative options are considered to select most viable route alignment. For further optimization of route modern survey techniques/tools like GIS, GPS aerial photography is also applied. Introduction of GIS and GPS 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 etc. help in planning the effective mitigate measures including engineering variations depending upon the site situation/location. The route/site selection criteria followed is detailed below in the ensuing paragraphs.

### **4.2 Route selection**

Environmental impact of transmission and distribution (T & D) line projects are within limited space and are mostly localized within the Row. However, T & D project has some effects on natural and socio-culture resources. These impacts can be minimized by careful route selection. To minimize possible impacts, AEGCL, APDCL & IA considered the route alignment which does not pass through any sanctuaries, eco sensitive zones and forest at the primary stage itself. In case of unavoidable condition, different alternative options are considered to minimize the environmental impact and to establish effective planning with the help of modern survey techniques like GIS & GPS aerial photography etc.

However, to mitigate or minimize the environmental impacts, following environmental criteria are considered:

- The route of the proposed lines does not involve any human rehabilitation.
- Any monument of cultural or historical importance is not affected by the route of the line.
- The proposed route does not create any threat to the survival of any community with special reference to Tribal Community
- The proposed route does not affect any public utility services like playgrounds, schools, other establishments etc.
- The line route does not pass through any sanctuaries, National Park etc.
- The line route does not infringe with area of natural resources



In order to achieve this, AEGCL/APDCL undertook route selection for individual transmission & distribution lines in close consultation with representatives from the Ministry of Environment and Forests and the Department of Revenue. Although under National law, POWERGRID has the right of eminent domain, yet alternative alignments are considered keeping in mind the above-mentioned factors during site selection, ***with minor alterations often added to avoid environmentally sensitive areas and settlements during the execution stage.***

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

In addition, care is also taken to avoid National parks, Sanctuaries, Eco-sensitive zones etc. Keeping the above in mind the routes of proposed lines under the project have been so aligned that it addresses the above factors. As such, different alternatives for transmission lines were studied with the help of Govt. published data like Forest atlas, Survey of India etc. and Google Maps to arrive at the most optimum route, which can be taken up for detailed survey and assessment of environmental & social impacts for their proper management.

Similarly the TOR for detailed survey using modern tool like GIS/GPS also contained parameters to avoid/reduce environmental impact while deciding the final route alignment. The major objectives for detailed survey that are part of contract are summarized below:

The alignment of transmission line shall be most economical from the point of view of construction and maintenance. Routing of transmission line through protected and reserved forest area should be avoided. In case it is not possible to avoid the forest or areas having large trees completely, and then keeping in view of the overall economy, the route should be aligned in such a way that cutting of trees is minimum. The route should have minimum crossing of major rivers, railway lines, and national/state high ways, overhead EHP power lines and communication lines. The number of angle point shall be kept to a minimum. The distance between the terminal points specified shall be kept shortest possible, consistent with the terrain that is encountered. Marshy and low lying areas, river beds and earth slip zones shall be avoided to minimum risk to the foundations. It would be preferable to utilize level ground for the alignment. Crossing of power line shall be minimal. Alignment will be kept at a minimum distance of 300 meters from power lines to avoid induction problems on the lower voltage lines. Crossings of communication lines shall be minimized and it shall be preferably at right angle. Proximity and Parallelity with telecom lines shall be eliminated to avoid danger of induction to them. Area subjected to flooding such as streams shall be avoided. Restricted areas such as civil and military airfield shall be avoided. Care shall also be taken to avoid



the aircraft landing approaches. All alignment should be easily accessible both during dry and rainy seasons to enable maintenance throughout the year.

Angle point should be selected such that shifting of the point within 100 m radius is possible at the time of construction of the line. The line routing should avoid large habitation densely and populated areas to the extent possible. The area that requires special foundations and those prone to flooding should be avoided. For examination of the alternatives and identification of the most appropriate route, besides making use of information/data/details available/extracted through survey of India topographical maps and computer aided processing of NRSA satellite imagery. The contractor shall also carry out reconnaissance/preliminary survey as may be required for the verification and collection of additional information/data/details.

The contractor shall submit his preliminary observation and suggestion along with various information/data/details collected and also processed satellite imagery data, topographical map data marked with alternative routes etc. The final evaluation of the alternative routes shall be conducted by the contractor in consultation with owners' representatives and optimal route alignment shall be proposed by the contractor. Digital terrain modeling using contour data from topographical maps as well as processed satellite data shall be done by the contractor for the selected route. A fly through perspective using suitable software(s) shall be developed or further refinement of the selected route. If required, site visit and field verification shall be conducted by the contractor jointly with the owners' representatives for the proposed route alignment.

Final digitized route alignment drawing with the latest topographical and other details/features including all rivers railway lines, canals, roads etc. up to 8 KM on both sides of selected route alignment shall be submitted by the contractors for owner's approval along with report containing other information / details as mentioned above.

In the instant project also, criteria for route selection as mentioned above, has been duly adhered to and the present project include a 132 kV D/C line transmission line from Dhemaji to Silapathar, 33/11 kV from Silapathar (New) to Silapathar-II (New) & LILO of existing 33kV Silapathar- Jonai line at 132/33kV Silapathar new S/s) Substation have been selected from analysis of three (03) alternatives routes as described in the IEAR. Subsequently, the proposed route was considered for detail survey by Contractor Agency (after awarding of contract). During detailed survey minor alterations as well as geometrical corrections of the route have been carried out which seems inevitable due to actual ground conditions with prime objective of avoiding dense forest/private plantation areas, settlements, CPR, and also considering the technical feasibility of the route from operation and maintenance point of view in consultation with the local prevalent in the project area. Therefore, following minor change in scope of work has been observed with respect to IEAR scope which resulted due to the best effort of IA/AEGCL & APDCL in effectively integrating safeguard and engineering measures in successful minimization of environmental and social impacts. Details of tower & pole

schedule of final alignment describing important features of line route are placed as **Annexure -2**.

*Table 4-1 Change in Scope of Work w.r.t IEAR*

Sr. No.	Scope as per IEAR	Change in Scope/Location of substation	Remarks
<b>Transmission Line</b>			
	<b>Line</b>	<b>Length/Location</b>	
1.	Dhemaji-Silapathar 132 kV S/C on D/C line-	<b>32.55 km</b>	Finalized Transmission line route is <b>35.883 km</b> and there is an increase of around 3.33 km. so that environment & social sensitive areas are avoided/minimized. Complete avoidance of habitation areas. <ul style="list-style-type: none"> <li>• Avoidance of Reserved Forest areas.</li> <li>• CPR are not impacted.</li> <li>• It does not pass through any protected area and monuments of archaeological importance.</li> <li>• Tree cutting also minimized.</li> </ul>
<b>Distribution Line</b>			
1.	Silapathar (New) to Silapathar-II substation 33 kV line -	<b>18.2 km</b>	Final route is <b>11.098 km</b> and line length is reduced by around 7.11 km due to further optimization during ground truthing survey Considering construction difficulties and RoW issues. Meticulous realignment during ground truthing Survey has reduced line length further.
2.	Silapathar (New) to existing Silapathar substation 33 kV line -	<b>3.302 km</b>	Scope changed as LILO of existing 33kV Silapathar- Jonai line at 132/33kV Silapathar new S/s) Substation of <b>length 3.82 km</b> 18 nos. out of 113 nos. Pole installed at 15/81 locations till date.

 <b>पावरग्रिड</b> <b>POWERGRID</b>	<b>FEAR for T&amp;D subprojects in Dhemaji district under NERPSIP in Assam</b>	 <b>MEMBER GREEN GROUP</b> <b>THE GREEN PEOPLE</b>
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Sr. No.	Scope as per IEAR	Change in Scope/Location of substation	Remarks	
<b>Substations</b>				
<b>1.</b>	Extension of 132/33 kV substation (Existing) <b>Dhemaji.</b>	27°26'21.56"N, 94°31'52.20"E	<b>No change</b>	
<b>2.</b>	Establishment of 2 x 31.5 MVA, 132/33 kV <b>new Silapathar substation.</b>	27°36'10.30"N, 94°45'26.39"E	<b>No change</b>	
<b>3.</b>	Establishment of 2x5 MVA, 33/11 kV new substation at <b>Silapathar II.</b>	Previous location not mentioned in IEAR	27°32'9.66"N, 94°42'40.77"E	Location of Silapathar II substation Changed by AEGCL due to non-finalization earlier identified land. New location (27°32'9.99"N, 94°42'40.82"E) is approx. 900 m from earlier location.
<b>4.</b>	Strengthening of 33/11kV <b>Silapathar (Existing) substation</b>		<b>No change</b>	

#### 4.3 Feature Details of T & D lines:

##### 4.3.1 Feature Details of Dhemaji – Silapathar 132 kV line: 35.88 km

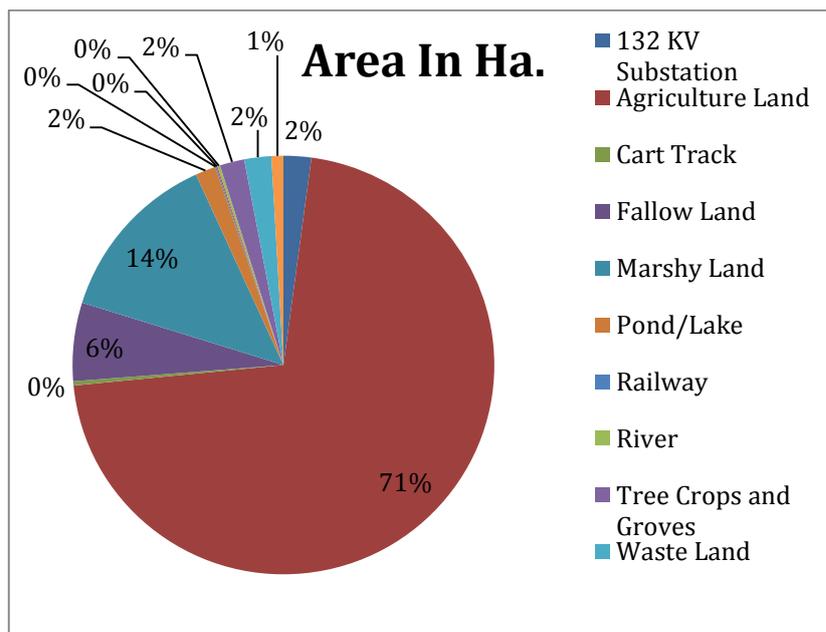
The total length of line is 35.883 km and it is found to be shortest route. It is easily approachable as it passes parallel to the NH 52. This line majorly passes through agricultural land. The TL is crossing railway line between AP16 to AP17. The application (vide ID NFR – TSK – 2019 – 62 dated 07.12.2019) for necessary clearances from Department of Railways has been submitted by IA. There is no residential or commercial establishment, its barren land on the both sides. The transmission line routes don't involve any notified forest land which would necessitate forest clearance under Forest (Conservation) Act, 1980. Besides all protected areas like National parks, Wildlife sanctuaries and designated wildlife/elephant have been completely avoided.

As per GIS imagery data water bodies such as pond, drain & nala are in the buffer zone of 27 m. Transmission towers constructed well above the flood line will help to keep the people and animals away from EMF contact and prevent the structure getting damaged during flood like situation. As the TL lines are not located in the area of natural drainage or close proximity to the water bodies, there will not be immediate impact during floods. GIS route survey map and electric line feature details are provided in **Annexure A1 & B1**. Major features of the line details are as follows:

**Table 4-2: Dhemaji – Silapathar 132 kV S/C on D/C line features**

**Electric Line Feature Details-27m Buffer Area**

Feature Class Details	Area In Ha.	% of Area	No of Features in Study Area
132 KV Substation	4.13	2.09%	2
Agriculture Land	138.44	70.15%	93
Cart Track	0.64	0.33%	1
Fallow Land	11.75	5.96%	5
Marshy Land	25.98	13.17%	18
Pond/Lake	3.02	1.53%	1
Railway	0.18	0.09%	1
River	0.38	0.19%	1
Tree Crops and Groves	3.65	1.85%	2
Waste Land	4.02	2.04%	2
Water Logged Area	1.77	0.90%	1



**Figure 4-1 Features of Dhemaji – Silapathar 132 kV S/C on D/C line**

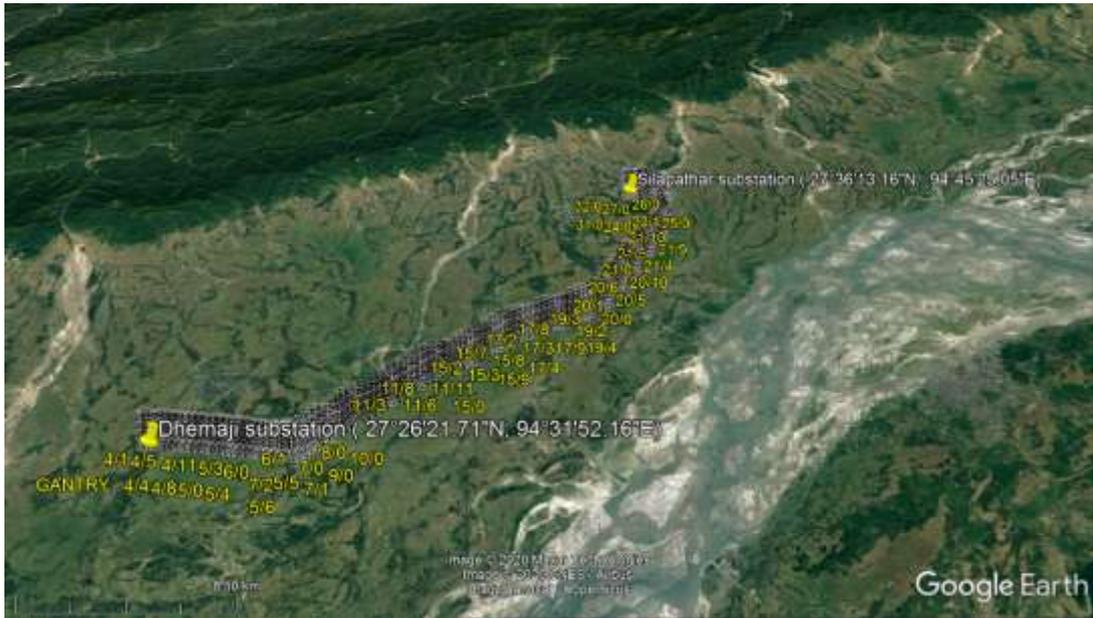


Figure 4-2 Dhemaji Silapathar 132 KV Transmission Line



Dhemaji Sub- station photographs



Railway crossing



Mud Road



**Substation construction**



**Highway crossing**

*Figure 4-3 Photographs of Dhemaji – Silapathar 132 kV S/C on D/C line*

#### 4.3.2 Feature details of 33 kV Silapathar New to Silapathar II Distribution Line: 18.2 km

Total 230 poles have been involved in this route. In which 191 are Single pole, 23 Double pole & 16 four poles involved. Majority part of line pass from agricultural field, road site fallow land etc. Other features crossed by this line are vacant land, trees, crops and groves etc. Details of pole schedule of final route of various lines are placed as **Annexure-3**. GIS route survey map and electric line feature details are provided in **Annexure A2 & B2**. Major features of these lines are as follows:

##### **Electric Line Feature Details-15m Buffer Area**

*Table 4-3: Silapathar (New) to Silapathar - II (New) substation 33 kV line*

Feature Class	Area in Ha.	% of Area	No of Feature Cross in Study Area
Agriculture Land	24.45	65.49%	170
Bricks Road	0.39	1.05%	1
Drain	0.05	0.15%	2
Electric Substation	3.53	9.44%	2
Fallow Land	0.66	1.76%	6
Mud Road	0.02	0.06%	1
Road Side Fallow Land	1.34	3.60%	10
Tree Crops and Groves	1.86	4.97%	13
Vacant Land	3.36	9.00%	22

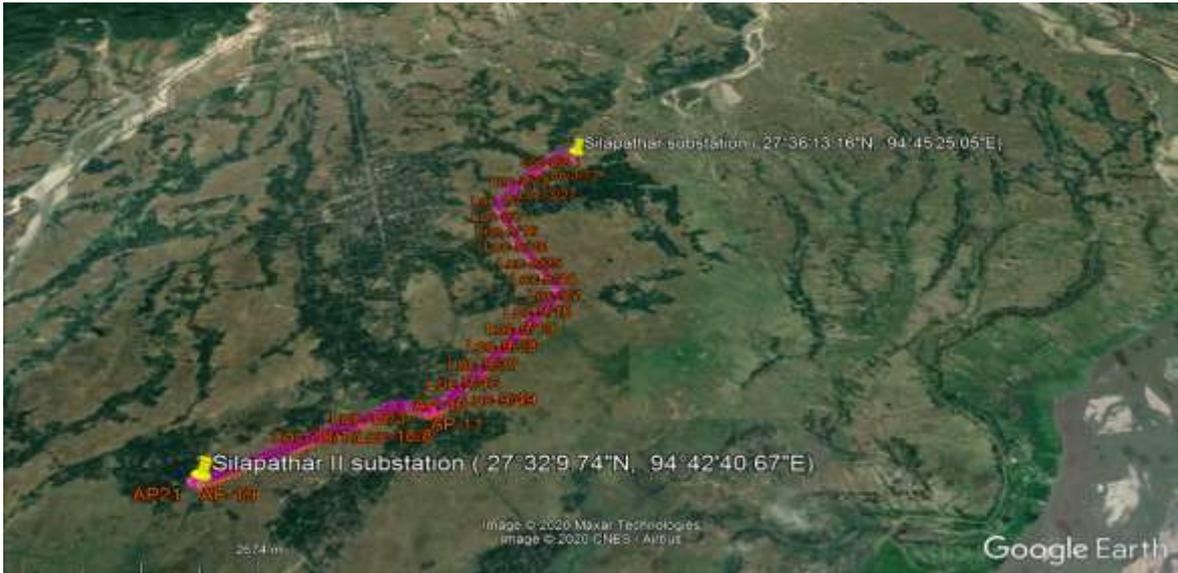
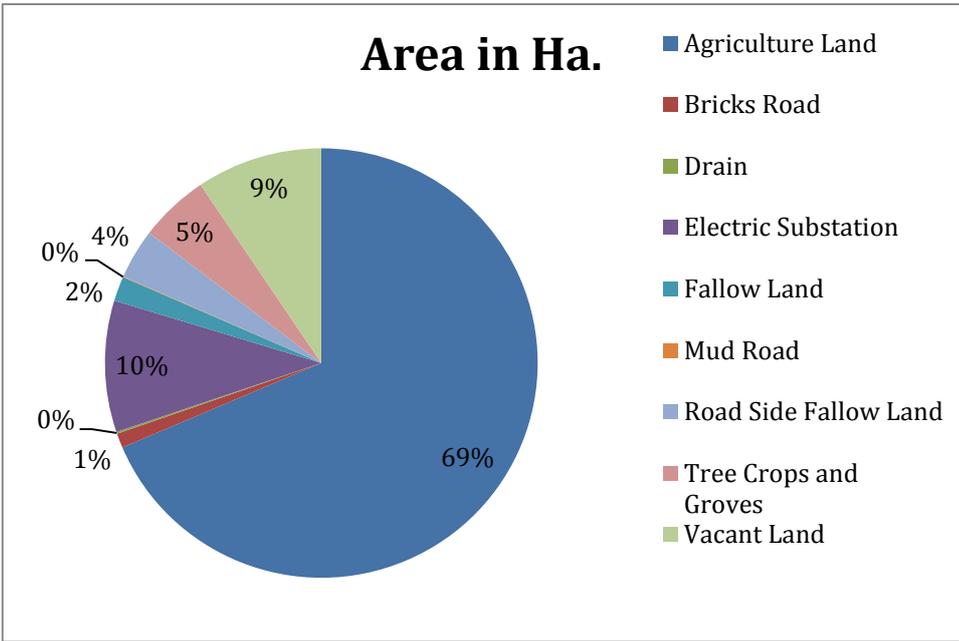


Figure 4-4 Silapathar New to Silapathar II 33 kV line



**Earth filling work at the Silapathar New substation**



**Temporary path for movement**



**Boundary wall of Silapathar II substation**

**Photographs of Silapathar II substation**

**4.3.3 LILO of existing 33kV Silapathar- Jonai line at 132/33kV Silapathar new substation: 3.82 km**

LILO of 33 kV existing Silapathar-Jonai line at 132/33 kV Silapathar (new) substation has total length of 3.82 km. Most of the line passes from paddy field, groves etc. This line has 61 single poles, 14 double poles and 07 four poles. This line crosses a tributary river between pole no. DP-6 & 7, DP-8 & SP-34, DP-10 & 11. This line crosses nala at pole no. DP-13 & 14. GIS route survey map and electric line feature details are provided in Annexure A3 & B3. Major features of this line are as follows:

*Table 4-4 Line features of LILO of existing 33 kV Silapathar Jonai line at 132/33 kV Silapathar new substation*

Feature Class	Area in ha.	% of Area	Feature Count
Agriculture Land	2.18	11.26%	10
Bricks Road	0.34	1.76%	3
Bridge	0.05	0.26%	1
Canal	0.03	0.17%	1
Cart Track	0.05	0.26%	2
Dhaba	0.05	0.28%	2
Electric Substation	5.41	27.96%	1
Groves (bamboo)	1.39	7.18%	6
Hut	0.02	0.10%	2
Nala	0.04	0.21%	2
Pond	0.24	1.25%	6
River	0.37	1.91%	3
Road Side Fallow Land	7.58	39.15%	47
Scrub land	0.20	1.04%	2
Vacant Land	0.55	2.86%	2

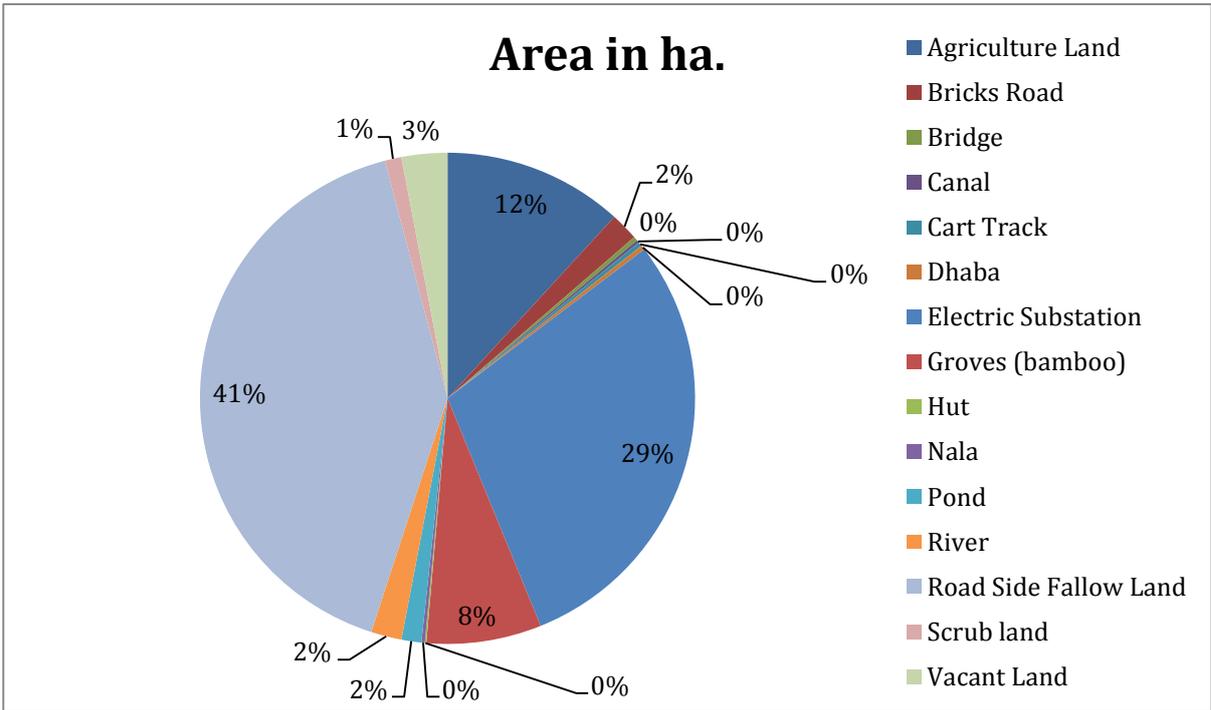


Figure 4-5 Feature details of LILO of existing 33 kV Silapathar Jonai line at 132/33 kV Silapathar new substation

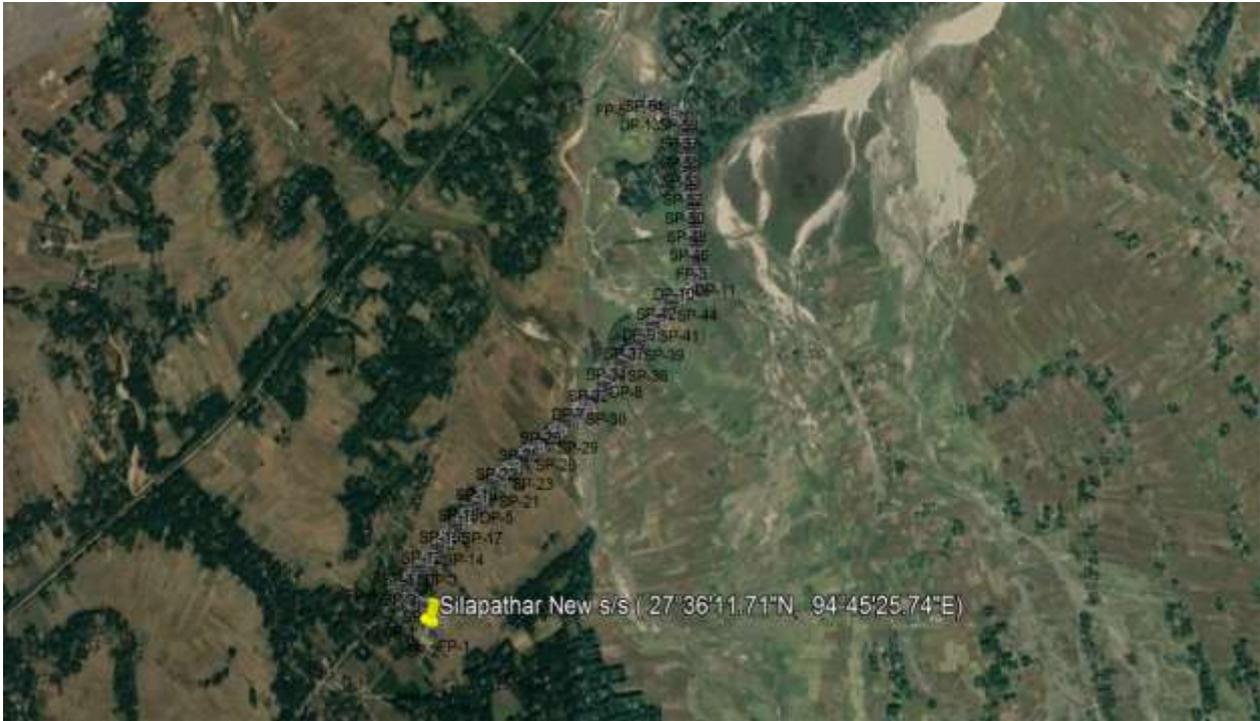
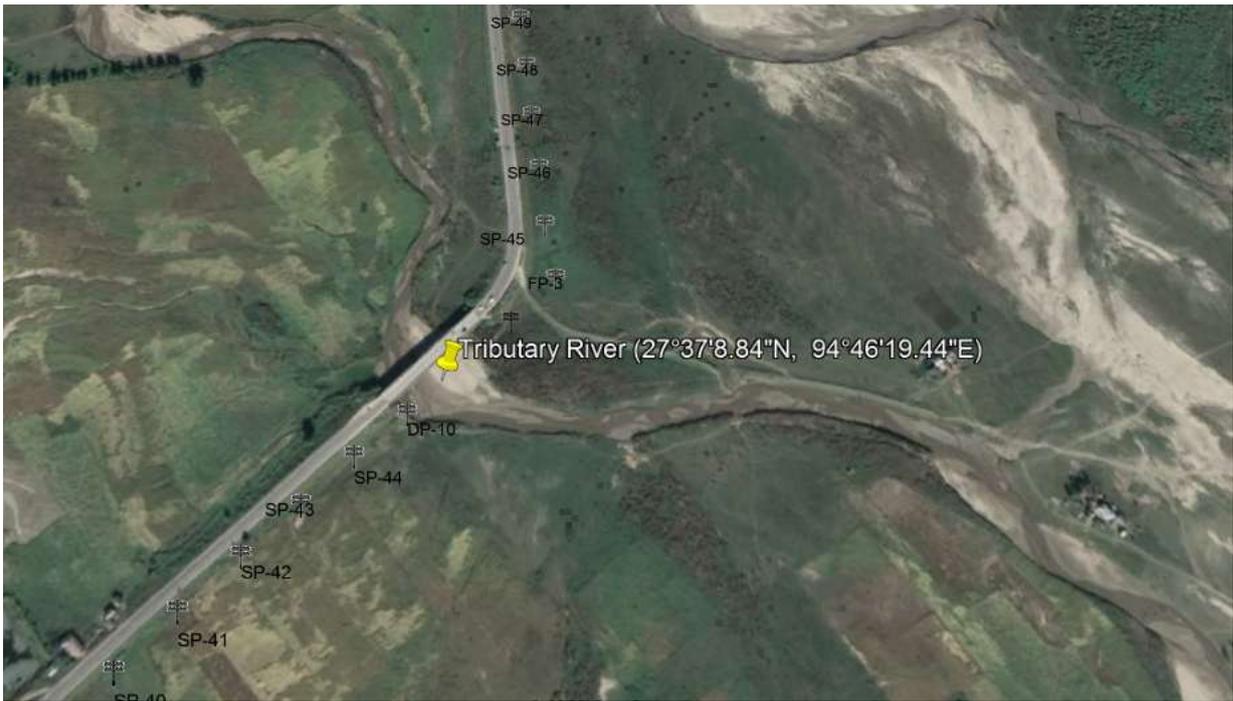
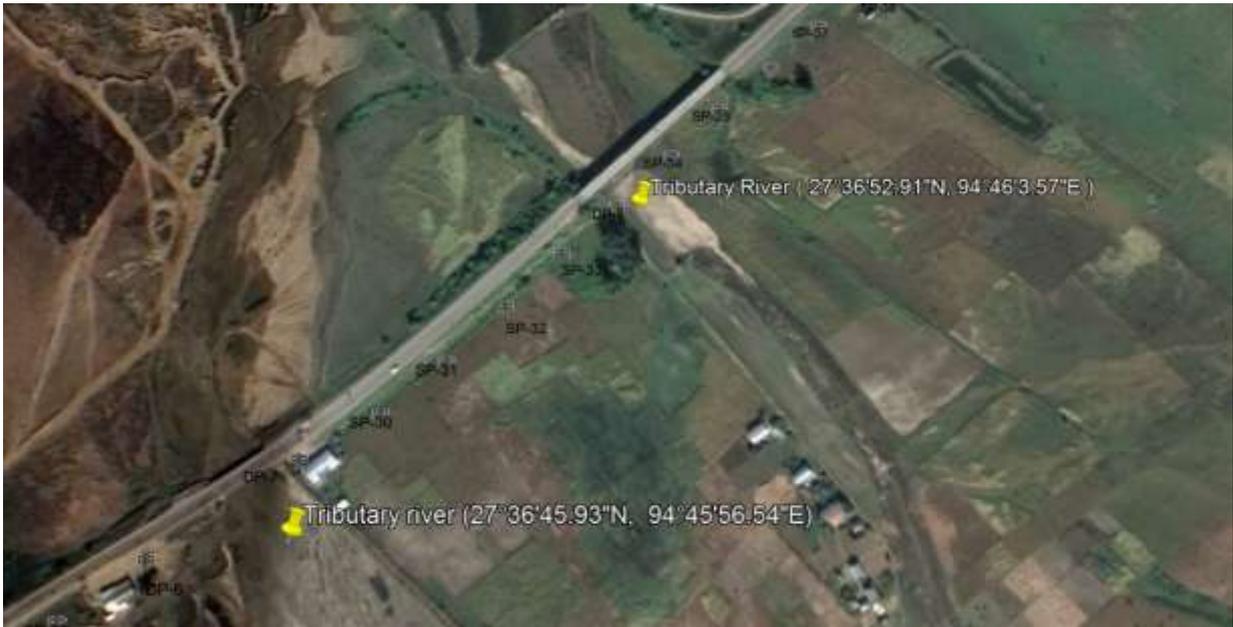


Figure 4-6 LILO of existing 33 kV Silapathar Jonai line at 132/33 kV Silapathar new substation



*Figure 4-7 Tributary river crossing of LILO of existing 33 kV Silapathar Jonai line at 132/33 kV Silapathar new substation*

**4.4 Summary of project impacts:**

Based on the analysis of final route of transmission and distribution lines and location of EHV and DMS sub-stations, the summarized environmental & social impact matrix is presented below in Table:

**Table 4-5: Summary of Impacts**

Sr. No.	Parameters	Extent of Impact
<b>1.</b>	Total Line Length	Transmission line: <b>35.883 km</b> Distribution line: <b>22.02 km</b>
<b>2.</b>	Terrain:	100% Plain
<b>3.</b>	Forest land transversed	NA
<b>4.</b>	Forest Type	NA
<b>5.</b>	Forest Density	NA
<b>6.</b>	Rare/Endangered flora	No rare/endangered flora found in project area
<b>7.</b>	Rare/ endangered fauna	No rare/endangered fauna habitat found in project area
<b>8.</b>	Migrating Wildlife/ breeding ground	NA
<b>9.</b>	National Park / sanctuaries	No protected areas involved
<b>10.</b>	Wet land traversed	None
<b>11.</b>	Soil Erosion vulnerability	NA
<b>12.</b>	Historical / Cultural monuments	None
<b>13.</b>	Relocation of villagers	None
<b>14.</b>	Affected Structures	NA
<b>15.</b>	Temporary Damage to Crop	Temporary loss is observed during construction time. It can be recovered later
<b>16.</b>	Loss/ Hindrance to Public Utilities	Negligible, restricted to construction phase only

## **5 POTENTIAL ENVIRONMENTAL IMPACTS, EVALUATION & ITS MANAGEMENT**

### **5.1 Introduction**

Although, all possible measures have been taken during the finalization of route alignment as described in the earlier chapters for the proposed transmission/distribution system but due to peculiarity of terrain and demography of the area where project is being implemented, some environmental impacts may be there. The explanations of possible environmental impacts vis-a-vis mitigation measures incorporated to minimize or overcome identified impacts are as follows:

**Table 5-1: RoW Width & Clearance between Conductors and Trees**

Transmission Voltage	Max. RoW (m)	Min. Clearance (m) between conductor & Trees
132 kV	27	4.0
33 kV	15	2.8

### **5.2 Impacts due to project location**

#### **5.2.1 Change in line alignment & change in land use pattern**

In finalization of route alignment precautions are taken to avoid residential, commercial area, water bodies etc. in order to protect and low interference in social life. There will be no significant change in land use pattern due to route alignment as along the entire length of the T/L & D/L the topography of land was observed to be plain.

#### **5.2.2 Impact on habitation and Resettlement**

As explained in previous chapter during line routing stage itself all measures have been undertaken by IA to avoid settlements such as cities, villages etc. in line with the guiding principle of avoidance as per ESPPF. During detail survey modern techniques/tools like GIS, GPS, and aerial photography were utilized to further optimization the final route alignment avoiding human habitation and other ecological and socially sensitive areas.

The area of two new substations is as follow:

132/33 kV (New) substation at Silapathar: 11.58 acre

33/11 kV (New) substation at Silapathar-II: 0.66 acre

As per existing law construction of transmission/distribution line does not require any resettlement of villagers as no land is acquired for tower/pole foundation. It may be noted that land required for construction of new 132/33 kV Silapathar II substation at



Silapathar, new proposed Silapathar 33/11 kV substation and extension work at existing Dhemaji substation are already available with AEGCL.

It is proven fact that electric power being an enabler sector acts as a catalyst for the growth and development of areas having accessibility to it. It has also been observed that land prices are generally expected to rise in the areas receiving power. Moreover, the final route of 132 kV line of Dhemaji-Silapathar line is passing mostly through Paddy fields and uninhabited areas where the land-use is not going to change in foreseeable future. Therefore, the value of land is not adversely affected to a significant degree. In case of distribution lines which are basically intended to provide power supply to populated area will boost the economic status as well as land price of the area, thus, outweighing possible negative impacts, if any.

No major adverse impacts of distribution line passing through agriculture area and adjacent to residential area were observed. The agriculture area is along with the transmission and distribution line and the setback area are more than 18 m so, other agriculture activities such as plough, agriculture vehicles will not be affected by the line. There is no need of any resettlement plan in this project as for a D/L & T/L route doesn't need any permanent acquisition of land.

### 5.2.3 Encroachment into Monuments of Historical/cultural value

No presence of any archaeological, historical and cultural site has been observed in the final routes of transmission and distribution line. The Ghuguha Douli is a historical site and is located in the south western of the district and is approximately **45 km** from Silapathar.

### 5.2.4 Encroachment to ecological or environmentally sensitive areas

In compliance with route selection criterion of ESPPF, all ecological or environmentally sensitive areas have been completely avoided during planning process itself through study of 3 alternative routes and selecting the final route that avoids such areas. It is also observed that there is no ecologically sensitive area crossed by the transmission and distribution lines proposed under this scheme (refer map below).

### 5.2.5 Encroachment into other valuable lands

It has been observed that final route of proposed transmission line is passing mostly through paddy cultivated agricultural land (138.44 Ha, 70.15%) and the remaining 29.85%, of line passes through Fallow/ waste land and other areas. In case of distribution line, the land use involved is either agricultural land or Govt. land (along existing road).

Due to the realignment of the transmission lines by avoiding residential, commercial area, water bodies etc. the impact severity and probability is reduced, overall the TL/DL



lines, S/S, won't affect the natural movement of animals, social life of people and environmental conditions of the project area.

The tower locations will require small land area of which is generally less than 10% of the land area owned by any of the land owners along the transmission route. This is termed as insignificant impact under both the Government of India norms. The impact also indicates that the total area required for the tower is scattered, thus, justifying the fact that there will be insignificant impact on the local population due to the project development.

As per existing law, land for tower/pole & right of way is not acquired and ownership of land remains with the owner and agricultural activities are allowed to continue after construction activity. However, compensation for tree and crop damages is paid/ being paid to the individual land owners as per compensation procedures laid in As per ESPPF Annexure - 6. Further, in line with the MOP guidelines of October 2015 and subsequent notification by Govt. of Assam adopted the MOP guidelines of Oct.' 2015 on land compensation for tower footing and RoW Corridor on 10<sup>th</sup> March 2017 which provides for payment of 85% and 15% of land value towards compensation for land coming under tower base and line corridor respectively. Accordingly, compensation towards damage to tree/crop and land diminution value have been paid to affected persons after assessment of actual damage based on market rate and verification by concerned revenue authorities. A sample case of compensation payment including notice to land owner, assessment and verification by revenue authority and payment to affected person etc. is enclosed as **Annexure-4**.

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 program developed by the National Informatics Center exclusively for this purpose. The detailed valuation statement thus generated using this program 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 land owners 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.

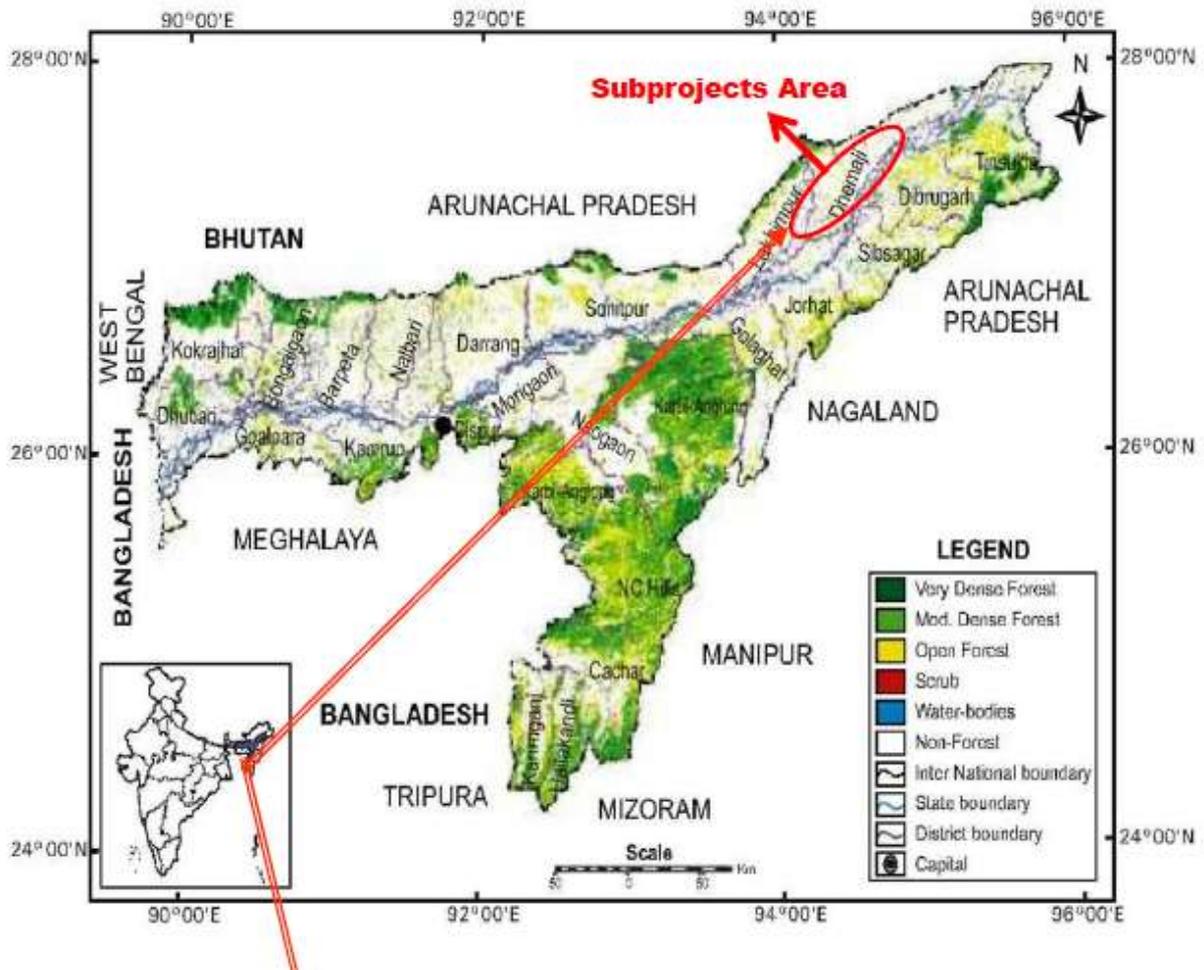
The compensation details are enclosed here for ready reference as per **Annexure - I**. It was observed that the local people are satisfied with the compensation given by the Power Grid Corporation Ltd.

#### 5.2.6 Interference with other utilities & traffic

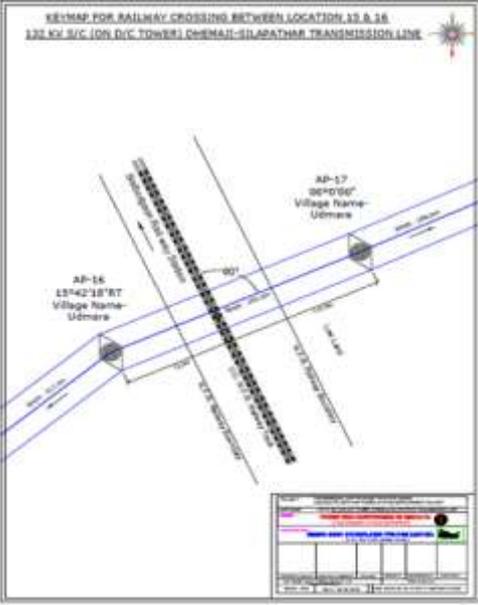
As per regulations, it is mandatory for IA/Utility to seek clearance prior to construction from department of Railways, Telecommunications and wherever necessary from

aviation authorities that are likely to be affected by the construction of transmission lines.

The transmission and distribution lines do not interfere with telecommunication towers. But between tower no. 16/0 & 17/0, Dhemaji-Silapathar transmission line crosses the railway lines, and application (vide ID NFR – TSK – 2019 – 62 dated 07.12.2019) for necessary clearances from Department of Railways has been submitted by IA (**Annexure 5**).



**Figure 5-1 Project Location**



**Figure 5-2 Key Map, Google Earth Image & Actual photographs of BG Railway crossing point of 132 kV Dhemaji Silapathar Line**



The transmission & distribution lines do not interfere any aviation routes. Therefore, not required to avail clearances from the Ministry of Aviation. As regard inference with traffic, it may be noted that the project area has very low vehicular/traffic density due to low economic base prevalent in the area. Further, the instant project activities require very less vehicular movement and that too restricted to construction period only and hence, no steep rise in traffic volume is has been observed.

### 5.2.7 Interference with drainage pattern

#### **Towers/ Poles and drainage:**

Assam faces high precipitation, so drainage provision is required to avoid loss of crops of the local people. To avoid flooding near the towers and poles, precaution has been taken while construction. The excavated material is leveled off after construction work which prevented water logging. Other measures already suggested in EMP and in place are to avoid dumping of fill materials in sensitive drainage area.

#### **Substations and drainage:**

Substations of this project are located in plane terrain. No effect on drainage of the area is envisaged particularly with adequate arrangement of drainage built in all substation design. All drainage channels along or inside substations are being trained and connected to main or existing drainage to avoid any erosion due to uncontrolled flow of water.

### 5.2.8 Impact on nearby pond/lake and streams

During construction limited quantity of excavated material generated from tower/pole foundations and substation foundation. However, adequate measures taken to store excavated materials properly for refilling after construction is over. Further, excavation in the undulated areas avoided in rainy-day. Hence, uncontrolled silt run off is not anticipated. As per the survey done according to tower/pole schedule, details of water bodies in the RoW of T & D lines are as follows:

*Table 5-2 Details of water bodies in the RoW of T & D lines*

Sr. No.	Water Body in RoW	Details of Tower/Pole No.
<b>A</b>	<b>132 kV Dhemaji to Silapathar Transmission Line</b>	
1.	Nala	In between AP 1 to 2, AP 6 to 7, AP 10 to 11, AP 15 to 16, AP 17 to 18, AP 19 to 20, AP 21 to 22
2.	Pond	In between AP-5 to 6, AP 11 to 12, AP 15 to 16
3.	Drain	In between AP 9 to 10, AP 11 to 12, AP 20 to 21, AP 21 to 22, AP 22 to 23
<b>B</b>	<b>33 kV Distribution Line from Silapathar new to Silapathar II substation</b>	
1.	Pond	AP 11 to 12
2.	Nala	AP 8 to 9
<b>C</b>	<b>LILLO of 33 kV existing Silapathar-Jonai Distribution line at 132/33 kV</b>	

Sr. No.	Water Body in RoW	Details of Tower/Pole No.
<b>Silapathar (new) substation</b>		
1.	Pond	NIL
2.	Nala	DP-13 to DP-14
3.	Drain	NIL
4.	Tributary River	In between DP-6 to DP-7, DP-8 to SP-34, DP-10 to DP-11

### 5.3 Environmental Problems Due to Design

#### 5.3.1 Escape of polluting materials

The equipment installed on lines and substations are static in nature and do not generate any fumes or waste materials. However, detailed specification with respect to equipment design and substation sewage design has been included in tender document to avoid any incidence of land and water contamination. There is minor impact of soil such as mixing cement in the soil, which is temporary, but it did not lead to the pollution of soil.

#### 5.3.2 Explosion/fire hazards

During the survey and site selection for lines and sub-stations, it has been ensured that these are kept away from oil/gas pipelines and other sites with potential for creating explosions or fires. In the instant case also the route line routes and substations are not located close to the vicinity of oil/gas pipelines or other installations with potential fire/explosion hazard. Apart from this, states of art safety instruments, fire safety equipment and firefighting design have been included in the design in the substations on both the ends, so that, the line gets tripped within milliseconds in case of any fault.

#### 5.3.3 Soil erosion & contamination

Construction of each 132kV tower and 33 kV pole foundations involve generation of approx. 108 m<sup>3</sup> and 0.72 m<sup>3</sup> excavated earth respectively. Similarly, each 132/33 kV & 33/11 kV would generate approx. 7500 m<sup>3</sup> and 2000 m<sup>3</sup> excavated earth respectively. Accordingly, it is estimated that a total of approx. 23,068 m<sup>3</sup> (123 X108 + 395 x 0.72 + 7500 x 1 + 1 X 2000) of excavated materials will be generated for construction of 123 nos. of tower, 395 nos. of pole, 1 no of 132/33 kV substation, and 1 no. of 33/11 kV substation. Borrow area was used for the earthing or ground truthing process. For Silapathar substation, a borrow area was used which is located at 27°32'18.67"N, 94°42'39.49"E, which is developed as a pond after due consent of land owner. It has been observed that soil excavated for tower/pole footings and substations construction are optimally utilized for backfilling and the remaining soil being spread evenly and

compacted. Top soil disturbed during the development of sites are used to restore the surface of the platform. Infertile and rocky material are dumped at carefully selected dumping areas and used as fill for substation/ and tower/pole foundations. Additional soil will be used to maintain plain area. Moreover, the project is being implemented in plain area only and hence, possibility of erosion hazard is not anticipated from any of the project site.



**Borrow Site for Silapathar substation**



**Google Earth Image of Borrow site for Silapathar substation.**

***Figure 5-3 Photograph and Google earth image of Borrow site used for Silapathar Substation***



### 5.3.4 Environmental aesthetics

Towers and poles for 132 kV transmission & 33 kV distribution lines are being placed wide apart at a maximum interval of approx. 340 meters and 50 meters and therefore, will not create any significant impact on aesthetic value of project area. While survey of route, it is ensured that the lines should be as far away from the localities as possible. AEGCL / APDCL takes up plantation of trees to buffer the visual effect around its substations and to provide better living conditions.

### 5.3.5 Noise/vibration nuisances

As mentioned earlier, the equipment installed at substation are mostly static and are so designed that the noise level always remains within permissible limits. In line with the above in the technical specification of transformer maximum noise level of 75 dB has been specified. Similarly, DG sets installed in substations standby power are having sound proof enclosures. However, some noise is unavoidable during construction phase like noise generated by concrete mixing equipment and excavators which are temporary and confined to day time only. However, regular monitoring by IA/Contractors and due maintenance of equipment are ensured to keep the noise level well within the prescribed limit. Noise level measured during site visits to all active sites found to be within permissible limits (<75 dBA).

### 5.3.6 Blockage of wildlife passage/ impact on avifauna

As explained earlier, there is no involvement of forest or protected areas including migration path of wildlife corridors /bird in any of the line routes of substation location. Hence, possibility of blockage of wildlife passage or impact on avifauna due to this project is not anticipated. However, as an additional measures bird guard/ anti perch devise has been included in part of BoQ and also made integral part of tower design (drawing attached as **Annexure 7**). There will not be any impact due to sub- station, T &D lines on wildlife as there is no elephant corridor & animal pass in between the lines.

## 5.4 Environmental Problems during Construction Phase

### 5.4.1 Loss of Tree & Crop

During construction of lines loss of trees/vegetation coming under RoW is inevitable to maintain safe electrical clearance. However, trees are only felled that cause hindrance to electrical safety and remaining trees coming under RoW are pruned /looped to maintain adequate safety clearance. For construction of Dhemaji-Silapathar line approx. 267 trees are likely to be felled and compensation against the same shall be paid after evaluation of actual damage by the relevant authority. The project authority has been taking all

possible measures including scheduling of construction activity in post-harvest period to minimize the crop damage to the extent possible. In case of any crop damages compensation is paid to affected land owners/farmers as decided by revenue authority. As per the record, IA/Utility has already provided compensation for land.

**5.4.2 Uncontrolled silt runoff**

To prevent the soil erosion during construction phase, balanced cutting & filling practice has been observed to minimize risk of soil erosion & topsoil is restored immediately after construction activity is over.

It has been observed that all tower/pole and substations are located on flat land. Hence, the excavated material from tower foundations have been backfilled and any remaining earth, if any have been spread around the base and compacted. In case of distribution lines all the excavated soil is backfilled and compacted after erection of tubular poles. So far there are no instances with potential of erosion during construction of above said lines.

Similarly, the substation towers are all of equal leg footing. All the substations have been provided with boundary walls and backfilling /and or spreading and compaction within the boundary walls have been done to take care of excavated materials. There are no instances of erosion/losses of soils into adjoining area as all the overburden are being backfilled within the substation boundary walls and properly managed. The substations are not located in the vicinity of water bodies or ecologically sensitive areas. As a site specific measures, construction of RRM Wall is under construction at 33/11 kV Silapather-II substations. Random Rubble Masonry is slightly superior to uncaused rubble masonry. In this form the stones used in the work are hammer or chisel-dressed. One of the major advantages of using masonry is that there is no other material that is as strong, durable, and weather resistant as stone. It is barely affected by normal events that would cause wear and tear on other types of materials. Photographs of RRM Wall are shown below;



*Figure 5-4 Photographs of RRM wall at Silapathar II substation*

### 5.4.3 Nuisance to nearby properties

It has been observed that all major settlements/habitation areas have been avoided completely in all proposed transmission/distribution line route and substations though careful route and site selection. Further, construction activities are mostly undertaken through the use of small mechanical devices e.g. tractors and manual labour therefore nuisance to the nearby properties if any, is not expected. All active substations sites are prohibited for general public both due to its separation/demarcation by boundary wall and also due to statutory provision and therefore, no adverse impact to nearby habitat/property or health & safety of neighboring community is envisaged soil erosion & contamination.



*Figure 5-5 Boundary wall at Silapathar II substation to avoid nuisance to nearby properties*

### 5.4.4 Dust emission due to construction activities & vehicular movements

For prevention of dust emission due to construction activities, exposed soils are compacted immediately after construction is over. Sprinkling of water spray vulnerable area and covering transporting vehicles to avoid spillage of materials along with controlled speed measures have been observed in project site. Use of personal protective equipment and proper scheduling of transportation of materials are being undertaken to minimize and mitigate any adverse impact of construction materials.



#### 5.4.5 Traffic and Blockage of Local Access way during construction activities

The project will lead to an increase in vehicles movements on existing road routes and waterways during construction due to the transportation of construction equipment, personnel, construction materials and excavated material.

The proposed construction locations are well connected through road network and hence construction of approach roads for transport is not necessary either during construction or as a part of maintenance procedures. The T&D lines do not interfere with telecommunication towers. Where transmission line crosses any road/ railways line, adequate precautions is taken so as not to cause any hindrance to the movement of traffic. As explained in earlier section, the total length of line is 35.883 km and it is found to be shortest route. It is easily approachable as it passes parallel to the NH 52. This line majorly passes through agricultural land. The TL is crossing railway line between AP16 to AP17. The application (vide ID NFR – TSK – 2019 – 62 dated 07.12.2019) for necessary clearances from Department of Railways has been submitted by IA.

Stringing at the construction stage is planned to carry out during lean traffic period in consultation with the concerned authorities and angle towers are planted to facilitate execution of work in different stages. Apart from this, safety precaution like barricading of work area and placement of visible signage is undertaken to avoid any unforeseen incident.

#### 5.4.6 Noise from construction activities

Noise is generated during construction activity are mostly from machineries and vehicular movements. It has been observed that construction works at substation are potential to generate noise levels higher than the noise generated in construction activity of lines. Since construction sites are quite far from settlement/other sensitive receptors like school, hospitals, possibility of any direct impact to surrounding community is not anticipated. Moreover, all these activities are being undertaken during day time only. To prevent any adverse impact, staffs/workers engaged in construction activity are equipped with personal protective equipments like earmuffs/ earplugs Besides; construction techniques like use of low noise producing equipments /machinery selection and their proper maintenance of equipments/machinery are practiced by construction contractors which is also evident from the fact that noise levels reported/ measured during site visit are well within the prescribed limits.

#### 5.4.7 Inadequate resurfacing for erosion control

As explained in earlier sections, major portion of lines are passing through plain area. Hence, no major impacts with respect to soil erosion & slope protection like revetment/ retaining/ toe wall etc. are required/ anticipated. Similarly, the substation towers are all of equal leg footing. All the substations have been provided with boundary walls and



backfilling /and or spreading and compaction within the boundary walls have been done to take care of excavated materials. There are no instances of erosion/losses of soils into adjoining area as all the overburden are being backfilled within the substation boundary walls and properly managed. The substations are not located in the vicinity of water bodies or ecologically sensitive areas. As a site specific measures, construction of RRM Wall is under construction at 33/11 kV Silapather-II substations. (refer Figure 5.4 and 5-5) based on site requirement/conditions and subsequent technical approval.

Excavated material and sites are stored and covered immediately to prevent washout and erosion. Designated areas for stockpiling are provided with silt traps are in the surface drainage system. To prevent the soil erosion during construction phase, balanced cutting & filling practice has been observed to minimize risk of soil erosion & topsoil is restored immediately after construction activity is over.

#### **5.4.8 Inadequate disposition of borrow area**

The tower/pole foundations involve excavation on small scale basis and the excavated soil is being optimally utilized for back filling. In case of 132/33 kV Silapathar substation approximately 13396 m<sup>3</sup> excess/additional earth was necessitated for maintain HFL level which was managed from private land after due consent/ agreement (photos have been provided in the previous section 5.3.3). In other substation the volume of cutting is equal to volume of filling avoiding borrowing of the area. Besides, only existing borrow sites are being used to source construction aggregates required for the project.

In case of s/s the excess earth will be used for leveling the surrounding area to the extent possible and the excavated part for the poles & towers will be entirely used for refilling. By implementing these mitigation measures all the statutory requirements will be complied.

#### **5.4.9 Protection of Worker's health/safety**

The health and safety issues and its management aspects related contract workers/labours have been made integral part of project through contract specific safety plan. Accordingly, construction contractors have submitted their Safety Plan duly signed before award of each contract under the project. A sample copy of Safety Plan submitted by M/s Power Mech Projects Limited is enclosed as **Annexure-8**. The Project is being executed as per the approved plan and is regularly monitored by dedicated Safety personnel. Moreover, for strict compliance of safety standard/plan a special provision as a deterrent has been added in the contract which provides for a heavy penalty of Rs.10 lakhs for each accidental death and Rs1.0 lakh/each for any injury and is deducted from the contractor's payment and paid to the deceased/affected family. Additionally, work and safety regulations, workmen's compensation, insurance are adequately covered under the General Conditions of Contract (GCC), a part of bidding documents. The project

authority ensures that all contractors are operating with valid labour license as per provision under section – 12(1) of the Contract Labours (Regulation & Abolition) Act, 1970 and also certified under Section- 7(3) of the Building and Other Construction Workers (Regulation of Employment and Condition of Service) Act, 1996 from Ministry of Labour & Employment. Besides, the contractors have obtained requisite insurance policy as per provisions of Employee Compensation Act, 1923 for its employed workforce. Sample copy of labour license and insurance policy for workers is attached as **Annexure-10**.

It has been observed that construction contractors are following the safety guidelines/checklists including work permits and safety precautions during construction stage which are also being regularly monitored strictly by site in-charge. Sample copy of filled in checklist is enclosed in **Annexure-11**.

Most of the unskilled labours engaged in construction activity are from local whereas skilled workers are from nearby states. The workers have been provided with PPEs such as boots and helmets. Mock drill such as fire safety, first aid etc. are conducted periodically to enhance the preparedness level of the workforce. Safety induction & awareness program including HIV/AIDS are also conducted at every active site. Safety film for transmission project in local language has been shown to workers for better awareness. Proper drinking water has also been provided. First aid boxes and provisions for treatment in case of emergencies were arranged locally/ nearby towns.



**Workers wearing safety equipments at a worksite in Dhemaji.**

*Figure 5-6 Safety measures taken by the contractors at worksite*

**Disinfection at the residence of workers & use of sanitizers by workers**



**Covid-19 measures taken at the worksites for workers health and safety**

*Figure 5-7 Special measures taken by the contractor w. r. t. Covid 19*

**5.4.10 Damage to community & private/individual property during construction activities**

Due care has been undertaken by project authority to avoid or minimize of impacts of temporary damages on crops/ trees/ structures, if any coming in the Right of Way (RoW) during construction. Since most of the line route passes through paddy field measures like phasing construction activity in lean period or rescheduling the construction activity in cropped area for some period to facilitate crop harvesting etc. has significantly reduced damage to crop.



As per existing law, land for tower and right of way is not acquired and agricultural activities are allowed to continue after construction activity. POWERGRID pays compensation for all damages as per the law of the land and applicable/prevaling guidelines. In addition to tree crop compensation, land compensation towards diminishing land is also applicable in the instant project Govt. of Assam has already adopted the MOP guidelines of Oct. 2015 vide its notification dated 10<sup>th</sup> March 2017 which provides for payment of 85% and 15% of land value towards compensation for land coming under tower base and line corridor respectively. Accordingly, POWERGRID/Utility has been paying the compensation to all land owners/farmers affected due to placing of tower/line after due process of assessment and evaluation in co-ordination of revenue authority.

## **5.5 Environmental Problems during operational phase**

### **5.5.1 O & M Staff/Skills less than acceptable resulting in variety of adverse effects**

As informed by project officials, O & M program will be implemented by substation personnel for both the lines as well as substations. Monitoring measures employed include patrolling and thermo-vision scanning. The supervisors and managers entrusted with O & M responsibilities are intensively trained for necessary skills and expertise for handling these aspects. A monthly preventive maintenance program will be carried out to disclose problems related to cooling oil, gaskets, circuit breakers, vibration measurements, contact resistance, condensers, air handling units, electrical panels and compressors. Any sign of soil erosion is also reported and rectified. Monitoring results are published monthly, including a report of corrective action taken and a schedule for future action.

Especially at sub-station sites vulnerability to flooding and adequacy of design measures have been considered and taken care of and is adequate to address potential impacts. Raising the plinth level of S/S with proper storm water distribution layout reduces flood risk to the structures. The S/S will have adequate height from the ground and proper storm water distribution system or layout will help to dispose-off the storm water collected in the S/S premises, further creating recharge or percolation pits will help to recharge the ground water table.

### **5.5.2 Risk to public from operation of high voltage transmission line/substation**

To reduce the risk to public from operation of high voltage transmission line, the designs have been complied with the national and international limits of electromagnetic interference from overhead power lines. As regard effect of Electro Magnetic Field (EMF), the project official informed the transmission system are absolutely safe and are designed based on approved international standards following ICNIRP guidelines. Besides, all electrical safety measures/clearances as per CEA (Measures relating to Safety and Electric Supply) Regulation, 2010 notified in the Gazette on 20<sup>th</sup> Sept. 2010 are also



being strictly followed. After establishment of tower, permanent warning plates will be fixed and fixing of anti-climbing devices on all faces of tower.

It has been observed that no Poly Chlorinated Biphenyl (PCB) containing equipments are being procured as PCB level of less than 2 mg/kg (ppm) which is non-detectable has been stated in tender specification. Hence, any contamination/hazard due to PCB is not envisaged in instant project. Boards displaying electrical hazards in case of road (Village or Kachha & metal road crossing) will help to avoid any accident.

### **5.5.5 Vulnerability of flooding at substations and adequate measures**

Since all proposed substations are located in plane terrain no effect on drainage of the area is envisaged particularly with adequate arrangement of drainage built in all substation design.

## **5.6 Critical environmental review criteria**

### **5.6.1 Loss of irreplaceable resources**

The project doesn't involve any forest area, protected areas, and ecologically sensitive areas and hence, problem of losing natural resources is not envisaged due to present intervention. The agriculture area is along with the transmission and distribution line and the setback area are more than 18 m.

The S/S and T & D lines including poles & tower locations are so planned that there will be no or minimal interference in environmental conditions as by avoiding protected forest area and ecological sensitive area, residential & commercial area, agricultural area, water bodies as pond. Lake, river and animal pass or corridors, wherever possible realignment of the route has been considered to minimize the environmental impacts and maintaining social and economic aspects.

The wildlife is not affected because of this project as ecologically sensitive areas have been avoided while alignment of this project. Additional measures have been taken while construction phase such as avoiding works during night time to save wildlife of the project sites. The tree cutting is very minimal in this project and care was taken to avoid losses of crops. Soil contamination is avoided as much as possible but the contamination such as mixing cement material is temporary in nature and it can automatically heal with time.

### **5.6.2 Accelerated use of resources for short-term gains**

There will be no significant impact on the natural resources occurring due to proposed transmission/distribution lines and substations. The construction material such as tower members, cement etc. come from factories while the excavated soil finally reused for backfilling to restore the surface. The aggregates used for construction are sourced



locally existing borrow sites only without creating any new borrow area. Small quantity of water is required for construction activity and domestic use which is being met from nearby existing source or bore well. Thus the project shall not cause any accelerated use of resources for short-term gains.

### 5.6.3 Endangering of species

As described earlier, no endangered species of flora and fauna exist in the subprojects area is getting affected thus there is no possibility of endangering/causing extinction of any species. As per wildlife act, 1972 schedule – I species of flora & fauna do exist however this project has proper environmental management plan including ecology and biodiversity conservation. The wild life is not affected due to this project as no elephant corridors are crossed nor any animal pass in the alignment route.

### 5.6.4 Promoting undesirable rural-to urban migration

The subprojects will not cause any submergence or loss of land holdings that normally trigger migration. It also does not involve acquisition of any private land holdings. Hence, there is no possibility of any migration.

There will be major positive impact on socio economic environment of the project area due to T&D Sub-projects in Dhemaji district under NERPSIP in Assam as the project will bring many developments in this region as:

- Facilitate increased power transfers to accommodate increased demand and economic growth;
- Improve supply sided energy efficiency by system de-bottlenecking and reducing technical losses;
- Reduce the intensity of greenhouse gases (GHG) and other emission via improved system efficiency;
- Support expanded private sector participation in distribution system operations and other energy services; and
- Facilitate poverty reduction via improved electricity services and economic growth

### 5.7 Public Consultation:

Public consultation/information is an integral part of the project implementation. Public is informed about the project at every stage of execution. During survey also AEGCL/APDCL site officials meet people and inform them about the routing of transmission and distribution lines. During the construction, every individual, on whose land; tower is erected and people affected by RoW, are consulted. Apart from this, Public consultation using different technique like Public Meeting, Small Group Meeting, informal Meeting has also been carried out by Green Circle Inc. during different activities of project cycle.



During such consultation the public are informed about the project in general and in particularly about the following:

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

**Major findings of the consultations are summarized below:**

- People are well aware about the project, its various components and confirmed that IA & DPN informed about the project at every stage of execution
- People confirmed that IA & DPN are taking every step possible to avoid/ minimize the environmental and social impacts along the route of transmission lines and at site of sub stations
- People confirmed that community reserves, sacred groves and community conserved areas are completely avoided while finalizing the route of lines
- People also confirmed that their common property resources such as cemetery, school, community hall, habitation areas etc. have been completely avoided while finalizing the route of lines
- People informed that staff of IA/ contractor are easily approachable and are very open to address their grievances. As a result, no written grievance has been received till date
- People are very much happy with the rate of compensation being given to them and they are being involved in the process of deciding the rate of compensation
- People confirmed that there is no disturbance of any sort to their life/ livelihood due to the construction or various other activities being carried out under the project
- Execution of project work provides opportunities to local contractors to get involved in construction, fabrication, transportation etc. activities
- Most of the sub-contracts are awarded/being awarded to local peoples
- Contractor prefer and engage local peoples for skilled and unskilled works
- Local villagers rented out their buildings to contractor and IA for temporary offices and staff quarters in local that helps in income generation
- Wherever possible contractor and IA purchase daily need requirements from local vendors and shopkeepers that helps in economic upliftment of the area
- The contractor labour informed that they have been provided with PPEs such as boots and helmets
- Mock drills such as fire safety, first aid etc. are conducted periodically to enhance the preparedness level. Safety induction & awareness program including HIV/AIDS



are also conducted. Safety film for transmission project in local language is shown for better awareness

- First aid boxes and provisions for treatment in case of emergencies are arranged locally/ nearby towns
- It was revealed that contractor and IA work with close coordination with village heads and community to avoid any misunderstanding during work
- Details of formal and informal consultation organized for the project including photographs of the meeting and minutes of meeting are placed as **Annexure-12**.

## 5.8 Compliance of EMP

As already mentioned, the project is being implemented as per provisions of approved Initial Environmental Assessment Report including Environment Management Plans (EMP) to minimize/mitigate the identified impacts to the extent possible. The EMP contains mitigation measures including monitoring indicators with responsibility allocation in different stages of project cycle. For ensuring proper and effective implementation of various measures by contractors/sub-contractors engaged in construction, provisions of EMP was made part of contract condition/bidding document and its regular monitoring is ensured by IA during construction period. Any incidence of deviation/non-compliance of the applicable contract conditions result in issuance of notice/letter to concerned contractor/ subcontractor for necessary compliance and further improvement. During the present study, our team has critically assessed/evaluated the compliance measures with respect to Environment, health and safety aspects through physical inspection, verification of record/documents/drawing, checklists, interaction with project officials/contractor/ villagers/construction workers etc.

As impacts from project development are unavoidable, all approaches of mitigation measures are essential and needed in order to protect the affected environmental quality. Thus, this part's structure aiming to specified necessary mitigation measures that impacts are potentially contributed from project implementation during design, planning, construction and operation periods.

### Following recommendations made for improving compliance:

- The civil contractors should take care that the workers are using safety equipments while working.
- While erection of towers/poles, care should be taken about the farmland soil. Soil should not be contaminated because of line work.
- The construction waste should be disposed in a proper way to avoid its nuisance to native people.
- Based on above, a detailed compliance status w.r.t. each identified impacts enlisted in EMP have been prepared and is presented in **Table - 5.1**

**Table 5-3: Compliance of EMP**

Sr. No.	Project Activity/Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Compliance status
<b>Pre-Construction Phase</b>						
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	<b>Complied with</b> Route alignment criterion is part of survey contract wherein all statutory Electrical clearance as stipulated under CEA’s regulations, 2010 (Measures related to safety & Electric supply) is considered/ ensured.
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	<b>Complied with</b> Part of technical specification of transformer. PCB is not used or non-detectable level (i.e. less than 2mg/kg) as per IEC 61619 or ASTM4059
			Processes, equipment and systems not to use chlorofluorocarbons (CFCs), including Halon, and their use, if any, in existing	Process, equipment and system design	Exclusion of CFCs stated in tender specification – once	Complied with CFC Free equipment is part of tender specifications
					Phase out schedule to be prepared in case still in use – once	Not Applicable

Sr. No.	Project Activity/Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Compliance status
			processes and systems should be phased out and to be disposed of in a manner consistent with the requirements of the Government			
3	Transmission/ Distribution line design	Exposure to electromagnetic interference	Line design to comply with the limits of electromagnetic interference from overhead power lines	Electromagnetic field strength for proposed line design	Line design compliance with relevant standards - once	<b>Complied with</b> Design parameters have been complied with. Field testing should be done after energization.
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	<b>Complied with</b> Transformers with maximum noise level of 75 dB specified in tender specification. Sound proof enclosures used for D.G sets
		Social inequities	Careful selection of site to avoid encroachment of socially, culturally and archaeologically 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	Complied with. No involvement of any socially/culturally sensitive, areas.

Sr. No.	Project Activity/Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Compliance status
		Soil erosion	By proper excavation method no excess earth will be disposed-off outside the area	Excavated earth quantity	Contractor	<b>Complied with</b>
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 to possible	Tower/pole location and overhead/ underground line alignment selection (distance to water bodies)	Consultation with local authorities- once	<b>Complied with</b>  No tower/pole located in water bodies.
		Flood Risk	Adequate height of the plinth level and structures	-	-	Completed
			Storm water distribution network, percolation and recharging pits	Storm water	Every week	In progress
		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	Complied with. All major settlements & socially sensitive areas like school, hospitals etc. are avoided completely.



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Sr. No.	Project Activity/Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Compliance status
			Minimize impact on agricultural land Careful selection of site and route alignment to avoid encroachment of socially, culturally and archaeological sensitive areas (i.e. graveyard, religious worship place, monuments etc.)	Tower location and overhead underground line alignment selection (distance to agricultural land) Tower/pole location and overhead/ underground line alignment selection (distance to sensitive area)	Consultation with local authorities/ autonomous councils and land owners - Once Consultation with local authorities/ autonomous councils - once	As major sections of proposed line are routed through agricultural land, construction activity is being undertaken in lean or post-harvest period to minimize impacts on agricultural production/crop damage land.
6	Securing lands for substations.	Loss of land/ income change in social status etc.	Compensation and R&R measures are extended as per provision of <b>RFCT LARR Act, 2013</b> (Right to Fair Compensation and Transparency in Land Acquisition, Resettlement and Rehabilitation Act, 2013)	Compensation and monetary R&R amounts/ facilities extended before possession of land.	As per provisions laid out in the act	Complied with. Fresh land required for construction of 33 kV substation at Silapathar which was secured through private purchase on willing-buyer and willing-seller basis on negotiated/market rate. The required lands for 132 kV Silapathar and extension of Dhemaji Substation are already available with Utility. Since no involuntary



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Sr. No.	Project Activity/Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Compliance status
						acquisition of land is involved, there is no R&R issue
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	<b>Complied with.</b> NA as such areas are completely avoided  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	
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	<b>Complied with</b> NA as there is no presence of any elephant corridor.



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Sr. No.	Project Activity/Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Compliance status
			Avoidance of established/ identified migration path (Birds & Bats). Provision of flight diverter/ reflectors, bird guard, elevated perches, insulating jumper loops, obstructive perch deterrents, raptor hoods etc., if applicable	Tower/pole location and overhead/ underground line alignment selection	Consultation with local forest authorities - once	<b>Complied with.</b> No migratory/fly path reported. However, bird guard/ anti perch devise is part of BoQ and also integral part of tower design. We do not foresee any difficulties for the endangered avifauna because of the transmission lines, because these birds do not fly to such heights. If necessary, the threat to avifauna may be addressed in conservation plan.
9	Line through forestland	Deforestation and loss of biodiversity edge effect	Avoid locating lines in forest land by careful site and alignment selection Minimize the need by using existing towers, tall towers and RoW, wherever possible Measures to avoid	Tower/pole location and overhead/ underground line alignment selection (distance to nearest protected or reserved forest) Intrusion of invasive	Consultation with local authorities - once Consultation with local authorities and design engineers - once Consultation with local	<b>Complied with</b>  Forest areas have been completely avoided.  Part of detailed siting and alignment survey/design Invasion of alien species



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Sr. No.	Project Activity/Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Compliance status
			invasion of alien species	species	forest authorities - once	not anticipated
			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	Not applicable as there is no involvement of forest land
10	Lines through farmland	Loss of agricultural production/ change in cropping pattern	Use existing tower	Tower/pole location and overhead/ underground line alignment selection.	Consultation with local authorities and design engineers - once	<b>Complied with</b> NA
			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. Though it is unavoidable but effort are being made to minimized the impact/loss of production
11	Noise related	Nuisance to neighboring properties	Substations sited	Noise levels	Noise levels to be specified in tender documents - once	<b>Complied with</b> Part of detailed equipment design. Substations are appropriately sited and away from settlement area. Transformers with maximum noise emitting



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Sr. No.	Project Activity/Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Compliance status
						level of 75 dBA and DG set with proper enclosures are part of equipment specification/ design criteria
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	<b>Complied with.</b> Part of detailed alignment survey and alignment survey, Interference with drainage patterns/ irrigation channels not anticipated
13	Escape of polluting materials	Environmental pollution	Transformers designed with oil spill containment systems, and purpose-built oil, lubricant and fuel storage system, complete	Equipment specifications with respect to potential pollutants	Tender document to mention specifications – once	<b>Complied with.</b> Part of detailed equipment design /drawings. Secondary containment with sump of capacity of 200% of oil volume of largest transformer is part of detailed design.
			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	<b>Complied with.</b> Proper drainage and sewage system are part of detailed substation layout and design /drawings based on site condition



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Sr. No.	Project Activity/Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Compliance status
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	<b>Complied with.</b> Part of detailed substation layout and design/drawings. All substations are being constructed above HFL (High Flood Level)
15	Explosions /Fire	Hazards to life	Design of substations to include modern firefighting equipment Provision of firefighting equipment to be located close to transformers	Substation design compliance with fire prevention and control codes	Tender document to mention detailed specifications - once	<b>Complied with.</b> Part of detailed substation layout and design/drawings. Compliance assured by site manager
<b>Construction Phase</b>						
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	<b>Complied with.</b> Noise level monitored/reported is well within prescribed level. No ground disturbance observed.
17	Physical construction	Disturbed farming activity	Construction activities on cropping land timed to avoid disturbance of field crops (within one month of	Timing of start of construction	Crop disturbance - Post harvest as soon as possible but before next crop - once per site	<b>Complied with.</b> Scheduling of Construction activity in lean period/ post-harvest period to has minimized agricultural/crop damage.



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Sr. No.	Project Activity/Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Compliance status
			Harvest wherever possible).			In spite of all efforts if damage is unavoidable, full compensation as per assessment of revenue authorities is being paid to land owner/farmer by IA/Utility.
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	<b>Complied with.</b> No complaints w.r.t noise recorded so far. Noise level measured during site visits to all active sites found to be within the permissible limits (<75dBA).
		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	
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	<b>Complied with.</b> Existing road/path are being utilized with minor improvement/strengthening, wherever necessary for transportation of construction materials/equipments. Sprinkling of water being undertaken,



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Sr. No.	Project Activity/Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Compliance status
		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	whenever needed. Already explained above, new access road required/constructed for this project.
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	<b>Complied with.</b> Barricading of excavated areas and restriction to enter construction site for general public being followed strictly in all active sites.
		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	<b>Complied with.</b> As most of the tower/pole foundation is located in farm/barren land. No traffic obstructionist observed due to construction activity. However, in case of substation, smooth traffic flow is ensured by project authorities/contractor in close co-ordination with local authority wherever necessary



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Sr. No.	Project Activity/Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Compliance status
21	Temporary blockage of utilities	Overflows, reduced discharge	Measure in place to avoid dumping of fill materials in sensitive drainage area	Temporary fill placement	Absence of fill in sensitive drainage areas - every 4 weeks	<b>Complied with</b> No dumping of waste material apart from designated storage location observed. All overburden managed optimally by reutilizing it as fill materials.
22	Site clearance	Vegetation	Marking of vegetation to be removed prior to clearance, and strict control on clearing activities to ensure minimal clearance.	Vegetation marking and clearance control	Clearance strictly limited to target vegetation - every 2 weeks	<b>Complied with</b> Only controlled clearing of vegetation is being undertaken, wherever necessary.
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	<b>Complied with</b> As explained above Actual damage/tree felling is minuscule and limited 3m strip below each conductor and not in entire RoW In remaining RoW area, only pruning/ pollarding is done to maintain safe electrical as per applicable norms.
		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 per site	
			Felled trees and other cleared or pruned vegetation to be	Disposal of cleared vegetation as approved by the	Use or intended use of vegetation as approved by the statutory authorities -	All felled trees are handed over to concerned author/owner for disposal.



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Sr. No.	Project Activity/Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Compliance status
			disposed of as authorized by the statutory bodies.	statutory authorities	once per site	IA/State Utilities have no role in storage or disposal of felled trees/wood.
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	Complaints by local people or other evidence of illegal harvesting - every 2 weeks	<b>Complied with.</b> Supply of cooking Gas/ fuel wood to construction workers by the Contractor is ensured through regular monitoring by IA.
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	Acceptable soil disposal sites - every 2 weeks	<b>Complied with.</b> Excavated soil from foundations is backfilled and excess spread out evenly and compacted. In most cases volume of cutting is equal to volume of filling and hence no dumping of materials in other sites/locations required.
26	Substation construction	Loss of soil	Loss of soil is not a major issue as excavated soil is to be mostly reused for filling. However, in case	Borrow area sitting	Acceptable soil borrow areas that provide a benefit - every 2 weeks	<b>Complied with</b> All excavated soil optimally used for backfilling. However. incase 132/33 kV Silapathar substation

Sr. No.	Project Activity/Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Compliance status
			of requirement of excess soil the same is to be met from existing quarry or through deep excavation of existing pond or other nearby barren land with agreement of local communities			approximately 13396 m <sup>3</sup> excess/additional earth was necessitated which was managed from private land after due consent/agreement and borrow site has been developed as pond.
		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(PH, BOD /COD, Suspended solids, others )	Timing of major disturbance activities – prior to start of construction activities	<b>Complied</b> Civil works avoided during monsoon period as far as possible.
		Solid Waste	Recycle packaging wastes from electrical equipment as much as possible otherwise dispose of in designated waste disposal areas,  Remove all surplus materials and left in a clean and tidy	Solid waste disposal		



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Sr. No.	Project Activity/Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Compliance status
			condition after erection, Identify disposal site for wastes that can cause adverse effects on human health and environment.			
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	Amount of ground disturbance – every 2 weeks	<b>Complied with.</b> Already explained against sr. no 23.
28	Substation foundation/ Tower erection disposal of surplus earthwork/fill	Waste disposal	Excessfill from substation/tower foundation excavation disposed of next to roads or around houses, in agreement with the local community or landowner.	Location and amount of fill disposal	Appropriate fill disposal locations – every 2 weeks	<b>Complied with.</b> Already explained against sr. no 26.



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Sr. No.	Project Activity/Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Compliance status
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 spilled, amount and action taken to control and clean up spill)	Fuel storage in appropriate locations and receptacles - every 2 weeks	<b>Partially complied</b> In some places construction waste are laying haphazardly and required proper storage/disposal. Project authority was informed about the same for improvement.
30	Construction schedules	Noise nuisance to neighboring properties	<ul style="list-style-type: none"> <li>Construction activities only undertaken during the day and local communities informed of the construction schedule</li> <li>Minimized transportation activities from 7:00 pm to 6:00 am,</li> <li>Vehicles to be maintained in good condition to minimize exhaust emissions,</li> <li>A speed limit of 20KM/hour imposed</li> </ul>	Timing of construction (noise emissions, [dB(A)])	Daytime construction only - every 2 weeks	<b>Complied with.</b> Proper scheduling of construction activity is observed and activity is confined to day time only



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Sr. No.	Project Activity/Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Compliance status
			<p>on construction traffic</p> <ul style="list-style-type: none"> <li>• through the villages;</li> <li>• Share knowledge on regulations of traffic and traffic police directives among drivers.</li> </ul> <p>Careful design using appropriate technologies to minimize hazards</p> <p>Safety awareness raising for staff.</p> <p>Preparation of fire emergency action plan and training given to staff on implementing emergency action plan</p> <p>Provide adequate sanitation and water supply facilities</p> <ul style="list-style-type: none"> <li>- Install suitable sign boards to make people aware about</li> </ul>			



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Sr. No.	Project Activity/Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Compliance status
			potential construction hazard at construction site, <ul style="list-style-type: none"> <li>Provide training and appropriate personal protection equipment for Contractor's employ</li> </ul>			
31	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	<b>Complied with.</b> Already explained against sr. no 19. No complaint observed/reported.
32	Influx of migratory workers	Conflict with local population to share local resources	Using local workers	Avoidance/reduction of conflict through enhancement/augmentation of resource requirements	Observation & supervision- on weekly basis	<b>Complied with.</b> Most of the workers engaged in construction activity are local. No such conflict is reported/recorded.
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	<b>Complied with.</b>
			Ensure existing irrigation facilities are maintained in working	Status of existing facilities		



FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam



Sr. No.	Project Activity/Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Compliance status
			condition			Repair/restoration done immediately wherever required. No complaint recorded/reported.
			Protect /preserve topsoil and reinstate after construction completed	Status of facilities		
			Repair /reinstate damaged bunds etc. after construction	Status of facilities		
		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 dept. (for fruit bearing tree).		<b>Complied with.</b> In addition crop and tree damages, compensation towards land diminution value as per MOP guidelines being paid to affected land owner/ farmer after assessment by revenue authority.
34	Uncontrolled erosion/silt runoff	Soil loss, downstream siltation	Need for access tracks minimized, use of existing roads. Limit site clearing to work areas Regeneration of vegetation to stabilize works areas on completion (where	Design basis and construction procedures	Incorporating good design and construction management practices – once for each site	<b>Complied with.</b> As explained in clause no 19 23 and 26 adequate prudence has been practiced with respect to use of existing road/path, site clearance and construction schedule



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Sr. No.	Project Activity/Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Compliance status
			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 neighboring land uses/values	Contract clauses specifying careful construction As much as possible existing access ways Is to be Productive land is to be reinstated following completion of construction	Contract clauses Design basis and layout Reinstatement of land status	Incorporating good construction Incorporating good design engineering Consultation with affected parties - twice - immediately	<b>Complied with</b> Standard construction practices with proper scheduling of construction activities observed in all active sites. No major deviation with respect to contract conditions by the contractor found/reported
		Social inequities	Compensation is to be paid for loss of production, if any.	Implementation of Tree/Crop Compensation (amount paid)	Consultation with affected parties - once in a quarter	Already explained against sr. no 33.34above
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	<b>Complied with.</b> No such issue reported/ recorded.
37	Equipment	Contamination	Equipment stored at	Store room level to be	Store room level as per flood	<b>Complied with.</b>



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Sr. No.	Project Activity/Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Compliance status
	submerged under flood	of receptors (land, water)	secure place above the high flood level(HFL)	above HFL (elevation difference in meters)	design-once	All substations are designed and constructed above HFL (High Flood Level)
38	Inadequate siting of borrow areas (quarry areas)	Loss of land values	Existing borrow sites is to 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	<b>Complied with.</b>  <b>Already explained against sr. no 26.</b>
39	Health and safety	Injury and sickness of workers and members of the public	Safety equipment's (PPEs) for construction workers	Contract clauses (number of incidents and total lost-work days caused by injuries and sickness)	Contract clauses compliance – once every quarter	<b>Partially Complied</b> Safety equipment available but often not used by workers. More training to be conducted to create awareness on use of PPEs /safety gear. Worker facilities/camp found in good condition. Health &safety plan in place and properly implemented. No major accident/incident reported for any site till date.
40	Inadequate construction stage monitoring	Likely to maximize damages	Training of environmental monitoring personnel	Training schedules	No. of programs attended by each person – once a year	<b>Complied with</b> Dedicated safeguard personal in place for proper monitoring and



FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam



Sr. No.	Project Activity/Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Compliance status
			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	implementation of E & S measures. However, officials directly involved in construction activities need to be provided with more specific awareness/training on IEAR,ESPPF etc. requirements for effective implementation/
			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	monitoring of provisions of IEAR, ESPPF and contract conditions to achieve 100% compliance
<b>Operation &amp; Maintenance</b>						
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	Not applicable at present will be applicable to Operation & Maintenance period only
42	Line through identified bird flyways, migratory path	Injury/ mortality to birds, bats etc. due to collision	Avoidance of established/ identified migration path (Birds & Bats). Provision of	Regular monitoring for any incident of injury/mortality	No. of incidents- once every month	



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Sr. No.	Project Activity/Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Compliance status
		and electrocution	flight diverter/reflectors, elevated perches, insulating jumper loops, obstructive perch deterrents, raptor hoods etc., if applicable			
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	
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 transformers and associated reserve tanks.	Substation bunding (Oil sump) (“as-built” diagrams)	Bunding (Oil sump) capacity and permeability - once	
45	SF6 management	Emission of most potent GHG causing climate change	Reduction of SF6 emission through awareness, replacement of old seals, proper handling & storage by controlled	Leakage and gas density/level	Continuous monitoring	



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Sr. No.	Project Activity/Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Compliance status
			inventory and use, enhance recovery and applying new technologies to reduce leakage			
46	Inadequate provision of staff/workers health and safety during operations	Injury and sickness of staff /workers	Ensuring that live-wire maintenance works are conducted by trained workers with strict adherence to specific safety and insulation standards Where maintenance and operation is required within minimum set back distances, specific training, safety measures, personal safety devices, and other precautions should be defined in a health and safety plan. Scheduling for maintenance activities.	Usage of appropriate technologies (lost work days due to illness and injuries) Training/awareness programs and mock drills Provision of facilities	Preparedness level for using these technologies in crisis – once each year Number of programs and percent of staff / workers covered – once each year Complaints received from staff /workers every 2 weeks	
47	Electric Shock	Injury/	Careful design using	Usage of appropriate	Preparedness level for using	



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Sr. No.	Project Activity/Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Compliance status
	Hazards	mortality to staff and public	appropriate technologies to minimize hazards	technologies (no. of injury incidents, lost work days)	these technology in crisis - once a month	
			Security fences around substations	Maintenance of fences	Report on maintenance - every 2 weeks	
			Barriers to prevent climbing on/ dismantling of towers	Maintenance of barriers		
			Appropriate warning signs on facilities	Maintenance of warning signs		
			Electricity safety awareness raising in project areas	Training /awareness programs and mock drills for all concerned parties	Number of programs and percent of total persons covered - once each year	
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 & T&D line maintenance crews.	Training/awareness programs and mock drills for all relevant staff	Number of programs and percent of staff covered - once each year	
			Preparation and training in the use of O&M manuals and standard operating practices			
49	Inadequate periodic Environmental monitoring.	Diminished ecological & 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	



FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam



Sr. No.	Project Activity/Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Compliance status
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 off 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	
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	Ground clearance - once	
52	Uncontrolled growth of vegetation	Fire hazard due to growth of tree/shrub /bamboo along RoW	Regular maintenance of vegetation within the rights-of-way is necessary to avoid disruption to overhead power distribution lines and poles. No herbicides used in the control of vegetation within the rights-of-way.	Requisite clearance	Assessment in consultation with forest authorities - once a year (pre- monsoon/post- monsoon)	

Sr. No.	Project Activity/Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Compliance status
			<p>Tree plantation and crops with higher than 3 metres will not be allowed. Rather, local people living along the distribution line route also will be participated under mutual contract to trim or cut vegetation along right-of-way. Scheduling activities for right-of-way maintenance.</p>			
53	Noise related	Nuisance to neighboring properties	Substations sited and designed to ensure noise is to not be a nuisance.	Noise levels {dB(A)}	Noise levels at boundary nearest to properties and consultation with affected parties if any - once	

## 5.9 Conclusion

As it is clear from the above discussion through careful route selection following the cardinal principle of avoidance, forest & ecologically sensitive areas like National Park / Wildlife Sanctuaries have been avoided completely. The present study has also revealed that there is no change in the transmission line alignment as envisaged in IEAR. However, substantial reduction/optimization of line length from earlier i. e. final length of transmission line is 35.88 km and final length of distribution line is 14.91km (approx. 35% reduction) is observed in case of distribution lines thus further minimizing the overall environmental impacts. Reasons of change in alignment are to avoid possible agriculture fields, habituated areas, protected areas, rivers, areas prone to floods etc. Change in alignment helped to save many villages/households from resettlement, and thus the circumstances of public agitation/objection avoided as far as possible.

As per the framework agreed between The World, IA & State Utility, the instant project is being implemented in compliance to the provisions of approved IEAR/EMP and other contractual provisions related to EHS. This could be possible due to regular monitoring by IA/Utility ensuring strict compliance by construction contractors through. Further, all applicable laws/rules/regulations of the country & funding agencies are being complied with and till date no violation/ penalty with respect to contravention of any regulations has been reported. During assessment, it has also been observed that the project has achieved zero fatality with no major non-compliance of EMP/Contract provisions as stipulated in IEAR, which is an indicative of the strict monitoring of the IA. However, some improvement with respect to storage and handling of materials and health & safety particularly mandatory use of PPEs by workers which are found to be partially complied need to be ensured to achieve full compliance.

During interaction with PAPs and general public, it has also been noticed that local people positive about the project and some way benefited through project related employment. No written complaint or court case has been registered against any subprojects under implementation. Project staff of the implementation agency should be well versed with the contents of the IEAR so as to ensure proper compliance by the contractors.

Based on our site visits of proposed D/L, T/L & S/S route inspections & existing S/S it was observed that the Power grid along with the contractors are working in accordance to the guidelines agreed towards the project executions and in line with the EMP ,activities planned under pre construction & construction are

 <p>पावरग्रिड POWERGRID</p>	<p>FEAR for T&amp;D subprojects in Dhemaji district under NERPSIP in Assam</p>	 <p>GREEN MEMBER CIRCLE 2010 THE GREEN PEOPLE</p>
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observed to be following the instructions as team meetings, awareness meetings, project review meetings, site HSE best practices, vehicle movements ,clearances ,soil & water conservation, drinking water supply & safety, personal safety, fire safety, emergency response preparations, training & regular project monitoring w.r.t. contractual terms has been followed sincerely.

## 6 MONITORING & ORGANIZATIONAL SUPPORT STRUCTURE

For smooth implementation of this project, following administrative and functional set up have been institutionalized for project implementation, review and monitoring etc.

### 6.1 Administrative arrangement for project implementation

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

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

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

### 6.2 Review of project implementation progress

To enable timely implementation of the project/subprojects, following committee has been set up to review the progress.

**Joint Co-ordination Committee (JCC):** IA and SPCU nominate their representatives in a body called JCC to review the project. IA specifies quarterly milestones or targets, which are reviewed by JCC through formal monthly review meetings. This meeting forum is called as Joint Co-ordination Committee

Meeting (JCCM). The IA convenes & keeps record of every meeting. MOP, GoI and The Bank join in as and when needed.

**High Power Committee (HPC):** The Utility in consultation with its State Government has constituted 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 meets on bimonthly basis or earlier, as per requirement. This forum is called as High Power Committee Meeting (HPCM) and the SPCU keeps records 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 is held by officials of PIU with Contractors at field offices, State Head Quarters (PIU location) and if required with core team of IA at Guwahati. These meetings are 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.

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

The scheduled meetings were conducted by PGCL with the stakeholders including contractors and surrounding people and no complaints are received till now.

### **6.3 E & S Monitoring**

The arrangement for monitoring and reviewing of project from the perspective of environment and social management forms part of overall arrangements for project management and implementation environment. Environmental monitoring is a continuous process throughout the Project life cycle starting from site selection to construction and maintenance stage. As Implementing Agency (IA) POWERGRID endeavors to implement the project in close coordination with the respective state power utilities and departments. POWERGRID has been implementing the project based on the Implementation/Participation agreements that were signed separately between POWERGRID and the Power utilities.

The IA has appointed dedicated Environment Officer in Assam to oversee the E & S management. Besides, AEGCL / APDCL also has a separate cell at the Corporate office namely Environment and Social Management Cell (ESMC) headed by Director (PMU) for proper implementation and monitoring of environmental & social management measures. Apart from day to day E & S monitoring other major responsibilities are;

- Coordinating environmental and social commitments and initiatives with various multilateral agencies, MoEF&CC and Govt. of Assam.
- Coordination of all environmental activities related to a project from conceptualization to operation and maintenance stage. 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&CC 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.

Additionally, Field In-Charge reviews the progress on daily basis and periodic review by higher management including review by Heads of SPCU and CPIU undertaken wherein apart from construction issues the environmental aspects of the projects are discussed and remedial measures taken wherever required. Besides, Periodic Contractor's Review Meeting (CRM) are being held by officials of PIU with Contractors at field offices, State Head Quarters (PIU location) and with CPIU at Guwahati for better coordination and resolution any pending issues. The World Bank mission team also visits various sites every six months to review the progress status including ground level implementation of safeguard measures. Any observation/agreed action plan suggested by the Bank in the Aide Memoire is religiously complied in time bound manner. Additionally, review meeting among MOP, GoI, The Bank, State Governments., Utility and IA being held periodically to maintain oversight at the top level and also to debottleneck issues that require intervention at GoI/ State Government level.

The Capacity building and Institutional Strengthening program of the IA is held intermittently to enhance the skills of the project officials. Besides, separate E & S training are also organized for Official of State Utility under Capacity Building & Institutional Strengthening (CBIS) program. Further, State utility meetings between IA and AEGCL/APDCL are held on a monthly/ bi-monthly basis to

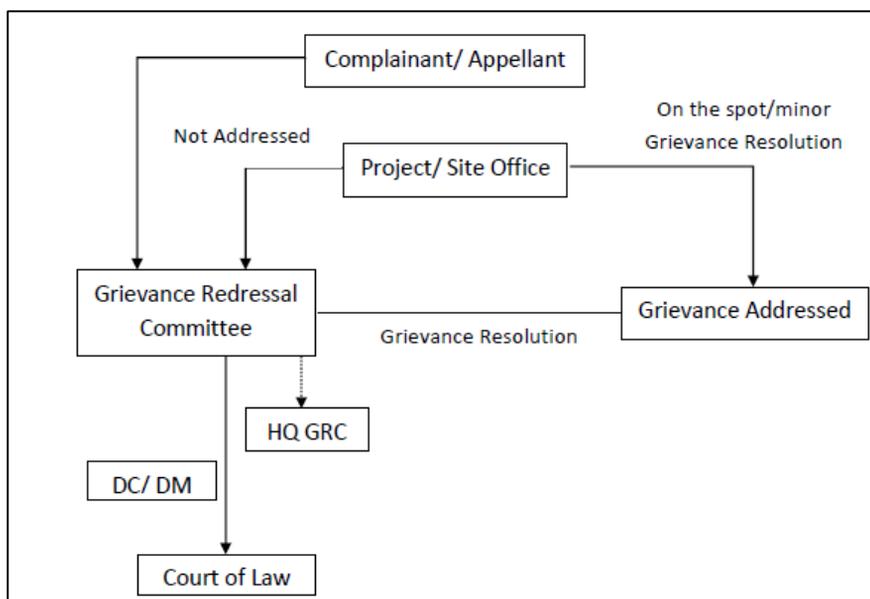
assess the work progress and difficulties encountered in respect of land acquisition, RoW and compensation if any.

The IA has a continuous monitoring mechanism of the project w.r.t. compliance of the mitigation measures as stipulated in the IEAR. Thus, the adherence to the clauses by the contractors is regularly monitored especially in respect of various implementation E & S measures including health and safety aspects. Due to such strong institutional support structure coupled with monitoring mechanism in place, no major non-compliance were observed/reported during the implementation of projects till date. The project has so far had zero fatality which is indicative of the strict vigil of the IA. During the present study, our team also observed mitigation measures as suggested in IEAR are mostly complied with even though some gaps were found with respect proper to documentation.

It has been observed during field visit and interactions with local people, contractors and contract workers that PGCL has adequately taken all precautions and importance to environmental & social aspects. The stakeholders are satisfied with the various measures taken by PGCL its proven fact from the interactions that no complaints are received from the project area.

Design realignment, consultation i.e. PAP, Environment & safety awareness training and regular interactions with all the stakeholders has led to sustainability of the project.

#### 6.4 Grievance Redressal Mechanism (GRM)





Apart from above, grievance redresses in built in crop/tree compensation process where affected persons are given a chance to place their grievances after issuance of notice by revenue officials on the basis of assessment of actual damages. Grievances received towards compensation are generally addressed in open forum and in the presence of many witnesses. Process of spot verification and random checking by the district collector/ its authorized representative also provides forum for raising the grievance towards any irregularity/complain. Moreover, AEGCL/APDCL & POWERGRID officials also address to the complaints of affected farmers and the same are forwarded to revenue official for doing the needful, if required.

It has been observed that concerns of public are addressed regularly through public consultation process which started from project planning to construction and will be continued in operation and maintenance also. As per record available, no written complaint or court case is registered till study period against any of the sub projects in instant case. However, we have been informed that only some minor complaints of verbal nature were received by site officials which were also resolved instantly and amicably by site Officials after discussion & deliberation with affected person in consultation of revenue/district officials.

The present transmission and distribution schemes not only improve overall power supply situation but also improve reliability, quality, security and enhancement of power supply in the Assam state.

From the above discussion, it would seem that the area is rich in physical resources. But careful route selection has minimized involvement of forest area to the extent possible but could not be completely avoided due to terrain and other physiographical reasons. Thus, routes selected for detailed survey are the most optimum alignment and involved minimum forest.

**Table 6-1: Public Grievances**

Sr. No.	Name of the Subproject /State	Location	Name of complainants	Date of complaints	Main Issue of Complaints	Status of complaint
A.	Court Cases					
No Court Case has been registered so far against any subprojects under NERPSIP						
B.	Written Complaints					
No written complaint has been received so far						
C.	Verbal Complaints					
No verbal complaints has been received so far						



FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam



# *Annexures*



FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam



***ANNEXURE – 1***  
***MOP GUIDELINES DATED***  
***15TH OCT.'15 FOR PAYMENT***  
***OF COMPENSATION FOR***  
***TRANSMISSION LINE***

No.3/7/2015-Trans  
Government of India  
Ministry of Power  
Shram Shakti Bhawan  
Rafi Marg, New Delhi - 110001

Dated, 15<sup>th</sup> October, 2015

To

1. Chief Secretaries/Administrators of all the States/UTs  
(As per list attached)
2. Chairperson, CEA, New Delhi with the request to disseminate the above  
guidelines to all the stakeholders.
3. CMD, PGCIL, Gurgaon.
4. CEO, POSOCO, New Delhi.
5. Secretary, CERC, New Delhi.
6. CMD of State Power Utilities/SEBs.

Subject: Guidelines for payment of compensation towards damages in regard to  
Right of Way for transmission lines.

During the Power Ministers Conference held on April 9-10, 2015 at Guwahati with States/UTs, it has, *inter alia*, been decided to constitute a Committee under the chairmanship of Special Secretary, Ministry of Power to analyse the issues related to Right of Way for laying of transmission lines in the country and to suggest a uniform methodology for payment of compensation on this count. Subsequently, this Ministry had constituted a Committee with representatives from various State Governments and others. The Committee held several meetings to obtain the views of State Governments on the issue and submitted its Report along with the recommendations (copy of the Report is at Annex-1).

2. The Recommendations made by the Committee are hereby formulated in the form of following guidelines for determining the compensation towards "damages" as stipulated in section 67 and 68 of the Electricity Act, 2003 read with Section 10 and 16 of Indian Telegraph Act, 1885 which will be in addition to the compensation towards normal crop and tree damages. This amount will be payable only for transmission lines supported by a tower base of 66 KV and above, and not for sub-transmission and distribution lines below 66 KV:-

- (i) Compensation @ 85% of land value as determined by District Magistrate or any other authority based on Circle rate/ Guideline value/ Stamp Act rates for tower base area (between four legs) impacted severely due to installation of tower/pylon structure;

—/—

- (ii) Compensation towards diminution of land value in the width of Right of Way (RoW) Corridor due to laying of transmission line and imposing certain restriction would be decided by the States as per categorization/type of land in different places of States, subject to a maximum of 15% of land value as determined based on Circle rate/ Guideline value/ Stamp Act rates;
- (iii) In areas where land owner/owners have been offered/ accepted alternate mode of compensation by concerned corporation/ Municipality under Transfer Development Rights (TDR) policy of State, the licensee /Utility shall deposit compensation amount as per (i) & (ii) above with the concerned Corporation/ Municipality/ Local Body or the State Government.
- (iv) For this purpose, the width of RoW corridor shall not be more than that prescribed in the table at Annex-2 and shall not be less than the width directly below the conductors.
3. Necessary action may kindly be taken accordingly. These guidelines may not only facilitate an early resolution of RoW issues and also facilitate completion of the vital transmission lines through active support of State/ UT administration.
4. All the States/UTs etc. are requested to take suitable decision regarding adoption of the guidelines considering that acquisition of land is a State subject.

Yours faithfully,

  
(Jyoti Arora)  
Joint Secretary (Trans.)  
Tele: 011-2371 0389

Copy, along with enclosure, forwarded to the following:

1. Secretaries of Government of India (Infrastructure Ministries/Deptt including MoEF - As per attached list)
2. Prime Minister's Office (Kind Attn: Shri Nripendra Mishra, Principal Secretary to PM).
3. Technical Director, NIC, Ministry of Power with the request to host on the website of Ministry of Power.

Copy to PS to Hon'ble MoSP (IC) / Secretary (Power) / AS (BNS) / AS (BPP) / All Joint Secretaries/EA/ All Directors/DSs, Ministry of Power.

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FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam



**COMPENSATION NOTICE**

ASSAM ELECTRICITY GRID CORPORATION LIMITED (AEGCL)



Sl. No. **01**

Project : Construction of 132 KV line from .....to.....under NERPSIP  
(A project funded by Govt. of India and the World Bank)

Implementing Agency : Power Grid Corporation of India Limited (A Govt. of India Enterprise)

To, Sri/Smt..... Location/Span: .....

Dear Sir/Madam,  
AEGCL has undertaken the construction of a 132 KV line from.....to..... under the scope of *North Eastern Region Power System Improvement Project (NERPSIP)*, a project founded by Govt. of India and the World Bank, whereas, *Power Grid Corporation of India Limited (A Govt. of India Enterprise)* is the Implementing Agency of the project. In this regard, this is to inform you that the aforesaid 132 KV transmission line will pass through your land noted as under. The standing crops/plants/vegetables etc. on the said plot of land will be unavoidably damaged/cut during *foundation/erection/stringing (tick appropriate)* of the said line and you will be compensated by POWERGRID for the damages as per the assessment of District/Revenue Authority. The crops/plants/vegetables, so cut, will be handed over to you at site after cutting.

Name of the Land Owner:..... Revenue Circle:.....  
Father's Name:..... District:.....  
Village: Mauza ..... Dag No/Patta No:.....

**Description of CROPS/VEGETABLES etc.**

S N	Details of crops/vegetables etc.	Affected Area in sq. m	Remarks

Signature of Land owner ..... For POWERGRID ..... FOR AEGCL .....

Witness:  
1. ....  
2. ....

**Verification by Revenue Authority**

Certified that the land under Dag. No ..... Patta No. .... Village ..... Mauza ..... Under ..... Revenue Circle, belongs to Sri/Smt .....

The above mentioned crops/plants/vegetables etc. will be damaged during construction of the said line. Necessary compensation towards the damages may be released to the affected land owner.

**Compensation Notice**





FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam



\* Sample case of compensation payment :

PROPOSAL NO. LAND-02								
Bank account details								
Sl. No.	Notice No.	Location no.	Name of land owner	Bank a/c no.	IFSC no.	Bank name	Net amount to be paid (INR)	Remarks
1	106	20/6	Aliram Pegu	0586010390132	UTBI0SLP387	United Bank of India Silapathar branch	21409.00	
2	110	20/7	Dileswar Pegu	7004029018256	UTBI0RRBAGB	Assam Gramin Vikash Bank Silapathar branch	32501.00	
3	111	20/8	Ganesh Pegu	0586010174077	UTBI0SLP387	United Bank of India Silapathar branch	21409.00	Affidavit enclosed
4	112	20/9	Mathura Deori	0586010216371	UTBI0SLP387	United Bank of India Silapathar branch	26667.00	
6	113	21/0	Atul Deori	33452973797	SBIN0008506	State Bank of India Kulajan Branch	40800.00	Affidavit enclosed
	114		Sidheswar Deori	0586010190497	UTBI0SLP387	United Bank of India Silapathar branch	10200.00	Affidavit enclosed
7	116	21/1	Ramen Deori	11869201233	SBIN0008506	State Bank of India Kulajan Branch	26667.00	
8	117	21/2	Anup Deori	31473995723	SBIN0006012	State Bank of India Lekabali Branch	21409.00	
Total compensation amount payable (INR)=							201062.00	

*math*  
31/10/19  
जल नाथ/UJAL NATH  
अभियंता/ENGINEER  
I/D/POWERGRID (NERPSIP)  
सिलापथार/SILAPATHAR

*B. R. Azad*  
31.10.19  
बी.आर. आजाद/B.R. AZAD  
महानिरीक्षक/GM (NERPSIP)  
पावरग्रिड/POWERGRID  
सिलापथार/Silapathar

*By Manager*  
132 KJ Grid Sub-Station  
Hauga, Dhemaji ARCC

*Circle Officer*  
Sissiborgaon Rev. Circle

Payment Slip for Compensation



पावरग्रिड  
POWERGRID

FEAR for T&D subprojects in Dhemaji  
district under NERPSIP in Assam



***ANNEXURE – 2***  
***DETAILS OF TOWER SCHEDULE OF***  
***PROPOSED LINES ROUTE***  
***ALIGNMENT***



FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam



PROJECT: TRANSMISSION LINE PACKAGE TW-84 FOR ASSAM ASSOCIATED WITH NER POWER SYSTEM IMPROVEMENT PROJECT  
 CLIENT: POWER GRID CORPORATION OF INDIA LIMITED  
 LINE NAME: 132 KV SSC (ON D/C TOWER) DHEMAJI-SILAPATHAR TRANSMISSION LINE  
 CONTRACTOR: TSEMS INDIA TOWERLINES PRIVATE LIMITED  
 DETAILED SURVEY TOWER SCHEDULE FOR SECTION OF DHEMAJI GANTRY - SILAPATHAR GANTRY

Sl. No.	APNO	LOCATION NO.	Tower Type				RL	Deviation Angle	span in m	Section Length in m	Cable Length in m	Wind Span in m	Weight Span						Size of adjacent span	GPS Co-ordinate		Crossings/Remarks
			Type	Extra	BC	BBBV							Left	Right	Total	Left	Right	Total		LATITUDE	LONGITUDE	
1	BAF	GANTRY	GAN	0	0	0	101.74	90°00'00"	72	72	72	36.0	0	40	40	0	44	44	72	27°26'24.00"N	94°33'51.18"E	Village Name- HAUGARIH SS FENCING BOUNDARY
2	BDN	DEN	DE	0	0	0	101.72	11°57'47.81"	94	92	72	67.0	32	22	55	28	14	47	116	27°26'24.27"N	94°34'03.92"E	Village Name- HAUGARIH SS BOUNDARY WALL
3	AP-1	18	DD	0	0	0	101.76	87°21'16.81"	200	86	120	142.0	31	65	96	30	14	84	284	27°26'26.99"N	94°34'24.47"E	Additional Cross Arm Required Village Name- HAUGARIH
4	AP-2	24	DC	0	0	0	101.66	21°46'59.51"	300	104	156	204.0	160	135	291	211	107	300	309	27°26'28.53"N	94°34'43.97"E	PINDI 2NOS MED ROAD NALA KV 2NOS.
5	AP-3	30	DD	0	0	0	101.79	49°42'13.81"	310	158	115	193.0	23	104	133	128	64	76	300	27°26'30.61"N	94°34'58.29"E	Village Name- HAUGARIH 2NOS MED ROAD, 3 KV-2NOS, 11 KV-2NOS, 11 LINE-1 NOS.
6	AP-4	40	DC	0	0	0	101.83	18°04'25.51"	347	231	146	236.0	122	92	215	117	62	180	478	27°26'28.85"N	94°35'04.57"E	Village Name- HAUGARIH SH-22 (DHEMAJI-GHILANOKA)
7		41	DA	10	1	0	99.85		310		140	278.0	122	103	231	101	137	341	857			11 KV LINE-1 NOS & 23KV LINE-1 NOS
8		42	DA	16	1	0	99.75		310		150	310.0	124	104	240	113	150	412	870			
9		43	DA	1	1	0	99.65		310		160	310.0	100	132	254	51	150	287	920			
10		44	DA	1	1	0	99.49		310		190	310.0	143	141	314	114	150	474	970			
11		45	DA	4	1	1	99.45		310		200	310.0	174	174	348	154	150	574	970			2 NOS MED NALA
12		46	DA	1	1	0	100.14		310		250	310.0	149	147	297	127	150	294	920			
13		47	DA	1	1	0	100.00		310		280	310.0	133	134	316	111	161	312	920			
14		48	DA	1	1	0	99.99		310		310	310.0	132	134	302	149	144	303	920			MUD ROAD
15		49	DA	1	1	0	99.65		310		340	310.0	124	154	316	150	157	313	920			
16		410	DA	1	1	0	99.45		310		310	310.0	124	154	309	143	155	304	920			
17		411	DA	1	1	0	99.41		310		400	310.0	135	143	294	140	137	280	910			
18	AP-5	50	DD	2	2	0	99.55	60°55'53.91"	300	347	450	302.0	137	132	289	163	133	375	910	27°26'13.85"N	94°34'26.17"E	Village Name- TELUAN HIGH ROAD (DHEMAJI- BICHMURIGARD)
19		51	DA	5	2	3	100.00		312		400	310.0	173	178	351	190	186	389	920			
20		52	DA	2	2	0	99.81		312		500	310.0	135	137	284	110	158	273	930			11 KV LINE

8

Amit Kumar  
 F.E.I (Civil)

P.A. Kumar  
 Sr. Surveyor  
 TOWERLINES PRIVATE LIMITED

B.R. Aced  
 Assistant General Manager (NERPSIP)  
 POWERGRID, Silapathar



FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam



**PROJECT: TRANSMISSION LINE PACKAGE TW 04 FOR ASSAM ASSOCIATED WITH NER POWER SYSTEM IMPROVEMENT PROJECT**

**CLIENT: POWER GRID CORPORATION OF INDIA LIMITED**

**LINE NAME: 132 KV SC (ON DC TOWER) DHEMAJI-SILAPATHAR TRANSMISSION LINE**

**CONTRACTOR: TERMS INDIA TOWERLINES PRIVATE LIMITED**

**DETAILED SURVEY TOWER SCHEDULE FOR SECTION OF DHEMAJI GANTRY - SILAPATHAR GANTRY**

Sl. No.	AP NO	LOCATION NO.	Tower Type				HL	Deviation Angle	Span in m	Structural Length in m	Cable Length in m	Wind Span in m	Weight Span						Area of adjacent span	GPS Co-ordinate		Crossing/Remarks
			Type	Ests	HC	BOBY							Hot			Cold				LATITUDE	LONGITUDE	
													Left	Right	Total	Left	Right	Total				
21		31	DA	2	2	0	89.74			533	311.0	138	138	276	152	138	290	638				
22		34	DA	2	2	0	95.68			543	311.0	137	139	276	152	132	279	638				
23		35	DA	5	2	2	99.83			558	311.0	170	172	342	193	183	376	638				
24		36	DA	2	2	0	101.42			573	377.5	143	138	280	138	132	262	573			MUD ROAD, POND, POND BUND-2 NOS	
25	AP-6	69	DD	0	2	0	100.97	30°22'53"E	210	451	340.0	124	132	246	128	165	233	520	27°26'23"N	94°04'23"E	Village Name: KAPAHUA PATHAR TORNAD, TEKY, NALA	
26		61	DA	8	3	0	100.78			570	381.3	138	143	281	135	179	354	571				
27	AP-7	74	DC	2	2	0	100.88	27°05'53"E	271	704	281.3	128	148	274	112	151	263	571	27°26'08"N	94°05'16"E	Village Name: KAPAHUA PATHAR	
28		73	DA	3	2	0	104.12			704	281.3	134	148	281	129	148	277	583			MUD ROAD	
29		72	DA	2	2	0	104.25			704	330.0	151	138	288	152	139	291	620				
30		71	DA	2	2	0	106.38			744	330.0	161	136	297	161	131	292	624				
31	AP-8	80	DD	8	2	2	106.66	27°41'00"E	330	1300	624	138.2	170	362	332	180	364	633	27°26'36"N	94°06'34"E	Village Name: PATI DADI CUTTALU, MUD ROAD, POND BUND, RIVER	
32	AP-9	89	DD	4	2	2	100.85	37°17'45"E	330	867	314.3	164	171	340	164	198	367	633	27°26'36"N	94°06'34"E	Village Name: PATI DADI	
33		91	DA	1	1	0	100.78			867	260.0	125	130	249	137	137	299	581				
34		92	DA	1	1	0	100.89			867	260.0	141	149	247	143	141	284	580				
35		93	DA	1	1	0	101.72			947	300.0	164	160	324	158	162	325	616			MUD ROAD, DRAIN	
36	AP-10	100	DD	1	1	0	101.25	36°35'22"E	330	1108	381.3	158	171	347	154	171	325	616	27°27'06"N	94°07'12"E	Village Name: GWANIGADIN	
37		101	DA	1	1	0	101.23			1113	360.0	149	150	299	148	149	298	600				
38		102	DA	1	1	0	101.52			1043	307.0	159	157	317	151	155	317	614				
39	AP-11	110	DC	1	1	0	101.35	27°03'03"E	335	914	1073	310.5	157	164	323	158	163	323	639	27°27'33"N	94°07'26"E	Village Name: GWANIGADIN MUD ROAD
40		111	DA	1	1	0	101.39			1103	325.0	161	161	322	160	160	320	634				

*S. Sankar*

*V. P. Sankar*

*Active copy REC (1/12)*

*P.A. Kumar*  
 Sr. Engineer (T&D) Manager  
 North Lachimpur  
 POWERGRID, Silapathar

*B. R. Acad*  
 Assistant General Manager (NERPSIP)  
 POWERGRID, Silapathar  
 Assistant General Manager  
 T&T Division, AEGCL  
 North Lachimpur





FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam



PROJECT: TRANSMISSION LINE PACKAGE TW 04 FOR ASSAM ASSOCIATED WITH NER POWER SYSTEM IMPROVEMENT PROJECT																						
CLIENT: POWER GRID CORPORATION OF INDIA LIMITED																						
LINE NAME: 132KV S/C (ON D/C TOWER) DHEMAJI-SILAPATHAR TRANSMISSION LINE																						
CONTRACTOR: TEEMS INDIA TOWERLINES PRIVATE LIMITED																						
DETAILED SURVEY TOWER SCHEDULE FOR SECTION OF DHEMAJI GANTRY - SILAPATHAR GANTRY																						
SL. No.	AP NO	LOCATION NO.	Tower Type				HL	Deviation Angle	span in m	Section Length in m	Crown Length in m	Wind Span in m	Weight Span						Size of conductor mm <sup>2</sup>	GPS Coordinates		Crossing/Roads
			Type	Emc	RC	BODY							Hot			Cold				LATITUDE	LONGITUDE	
													Left	Right	Total	Left	Right	Total				
64	AP-06	160	DB	38	2	18	101.25	137028761	381.3	107.9	247.8	232	36	318	162	82	383	404	27°29'40.12"N	94°41'18.37"E	Village Name- Ukhara NER Railway Line, Low Land, NFR RAILWAY LINE (RIGHT SIDE MILE STONE 380 LEFT SIDE 380)	
65	AP-07	170	DB	28	2	18	111.72	893096°	182	182.7	235.8	95	228	324	108	206	430	470	27°29'51.60"N	94°42'24.24"E	Village Name- Ukhara Tal Road	
66		151	DB	7	1	6	105.45		284	185.2	268.5	60	188	318	38	228	319	377			Mad Road	
67		152	DA	8	0	0	103.31		288	191.24	288.8	101	122	223	61	101	362	377				
68		153	DA	2	0	2	102.81		288	194.22	288.8	106	103	209	107	180	322	376				
69		154	DA	4	0	0	105.89		289	197.19	288.8	126	108	233	108	71	314	377				
70		155	DA	6	0	0	102.89		289	188.94	288.8	185	182	365	218	222	433	377				
71		156	DA	6	0	0	102.88		288	202.7	288.8	186	121	307	71	184	377	378				
72		157	DA	2	0	2	102.34		288	202.75	288.8	185	163	348	184	189	364	378				
73		158	DA	6	0	0	105.38		289	208.3	288.8	125	177	302	108	110	249	377			Dist. N/A	
74		159	DA	2	0	2	102.18		289	211.2	288.8	182	166	348	178	70	308	380				
75	AP-18	163	DB	8	0	0	103.48	104251762	292	284	212.1	212.0	185	107	297	221	88	399	374	27°30'34.22"N	94°42'59.91"E	Village Name- Kujan Pahar NH- 523, Stone 11 on Line, Tal Road
76	AP-19	160	DB	11	2	9	102.30	104578171	323	235	236.76	289.0	131	208	339	145	248	380	368	27°30'28.63"N	94°43'20.2"E	Village Name- Kujan Pahar Cuttup Land
77		161	DA	3	0	3	103.40		325	220.9	227.0	119	162	281	76	168	289	694			Cuttup Land	
78		162	DA	3	0	3	102.78		314	223.0	220.4	185	161	346	187	168	332	681				
79		163	DA	3	0	3	102.00		314	224.4	214.0	122	172	294	189	189	334	628			Mad Road	
80		164	DA	9	0	0	103.46		314	229.8	214.0	182	181	363	129	127	356	628			Cuttup Land	
81		165	DA	3	0	3	102.18		314	222.2	214.0	173	188	361	187	176	365	628				
82		168	DA	9	0	0	103.25		315	238.6	214.5	148	125	270	138	63	229	620				
83	AP-20	200	DC	6	0	0	103.00	104930173	315	229	239.1	210.0	181	180	361	222	221	443	630	27°31'53"N	94°42'1.83"E	Tab. CART TRACK - 11kv Line Village Name- Kujan Ghat 11 KV LINE

*S. S. Choudhary*  
CHENNAI

*V. P. Das*  
CHENNAI

*Asst. Genl. Mgr. T&D*  
*F&E (Civil)*

*P. A. Kumar*  
Asst. General Manager,  
T&D Division, AEGCI,  
North Lakhimpur

*B. S. Azad*  
Asst. General Manager (NERPSIP)  
POWERGRID, Silapathar



FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam



PROJECT: TRANSMISSION LINE PACKAGE TW 04 FOR ASSAM ASSOCIATED WITH NER POWER SYSTEM IMPROVEMENT PROJECT  
 CLIENT : POWER GRID CORPORATION OF INDIA LIMITED  
 LINE NAME: 132 KV S/C (ON D/C TOWER) DHEMAJI-SILAPATHAR TRANSMISSION LINE  
 CONTRACTOR : TEEMS INDIA TOWERLINES PRIVATE LIMITED  
 DETAILED SURVEY TOWER SCHEDULE FOR SECTION OF DHEMAJI GANTRY - SILAPATHAR GANTRY

Sl. No.	AP NO.	LOCATION NO.	Tower Type				RL	Deviation Angle	span in m	Section Length in m	Camber Length in m	Wind Span in m	Weight Span						Span of adjacent span	GPS Co-ordinates		Crossing/Remarks
			Type	Extra	RC	BODY							Bar			Cable				LATITUDE	LONGITUDE	
													Left	High	Total	Left	Right	Total				
84		201	BA	8	0	0	103.55			25138	318.2	103	144	246	92	132	214	831				
85		202	BA	3	0	3	103.80		310	25332	319.2	175	118	333	161	139	134	831			DRAIN	
86		205	BA	3	0	3	103.34		310	25847	319.0	157	129	332	138	191	141	630			MUD ROAD	
87		204	BS	6	0	0	103.35		312	25162	318.0	140	140	289	174	124	249	830				
88		205	BA	6	0	0	103.31		318	25677	318.0	170	170	308	191	180	181	631				
89		206	BS	0	0	0	103.24		316	25769	316.0	141	132	263	176	186	216	632			UNWIND 11 KV LINE, TAR ROAD, DRAIN, LOW LOAD	
90		207	BA	6	0	0	103.43		313	26109	317.5	194	182	398	226	122	429	631				
91		208	DA	0	0	0	103.59		316	26404	317.5	122	140	263	92	134	216	631				
92		209	BA	3	0	3	103.48		312	26740	317.5	176	174	330	162	198	382	631				
93		210	DA	0	0	0	103.71		317	27955	316.0	141	141	242	125	124	189	631				
94	AP-21	210	DB	0	0	3	103.4	02°25'57.93"	310	2971	317.0	176	137	323	143	136	152	627	27°32'40.12"N	94°45'26.90"E	Village Name: Ashurim, 11 KV LINE, TAR ROAD	
95		211	BA	3	0	3	103.89		310	27840	318.0	153	174	327	131	161	142	620				
96		212	BA	8	0	0	103.26		310	27982	318.0	126	118	246	119	122	141	620			2 NOS DRAIN, NA/A	
97		212	BA	3	0	3	103.2		322	28232	318.0	172	171	349	184	142	188	632			NA/A	
98		214	BA	8	0	0	103.37		321	28224	317.2	141	114	296	131	121	219	642				
99		215	BA	3	0	3	103.26		322	28645	318.0	177	177	264	142	182	184	643				
100		219	BA	0	0	0	103.39		323	29037	318.0	141	144	288	120	134	260	643				
101		217	BA	8	0	3	103.2		322	29588	318.0	177	178	311	191	185	284	643				
102		218	BA	0	0	0	103.26		322	29910	317.6	144	144	268	129	127	216	644			MUD ROAD	
103		219	BA	8	0	3	103.34		321	30212	318.0	178	177	351	185	192	387	643				
104		2110	DA	0	0	0	103.48		322	30552	317.5	144	144	288	129	128	227	643				
105	AP-22	220	DB	0	0	3	103.56	47°22'11.71"	270	3505	30879	306.0	178	155	311	164	173	167	593	27°34'15.88"N	94°46'33.24"E	Village Name: Bonyahat
106		223	BA	8	0	0	103.5		270	31145	310.0	119	113	248	97	130	227	640			DRAIN, TAR ROAD	
107		222	DA	0	0	0	103.99		309	31815	309.0	137	138	307	143	125	165	530			11 LINE, DRAIN, TREES	
108	AP-23	220	DB	0	0	0	104.07	08°21'08.70"	314	894	31984	311.5	139	124	273	144	118	163	583	27°34'46.63"N	94°46'27.28"E	Village Name: Jolpa, DRAIN, TREES
109		221	BA	3	0	3	104.2		314	31988	314.0	178	157	333	194	132	148	628			11 KV LINE, MED ROAD	

*[Signature]*  
CHENNAI

*[Signature]*  
CHENNAI

*Aashirwad Gupta*  
FE (Civil)

*[Signature]*  
P.A. Kumar  
Assistant General Manager  
T&D Division, AEGCL  
North Lakhimpur

*[Signature]*  
B. R. Azad  
Assistant General Manager (NERPSIP)  
POWERGRID, Silapathar

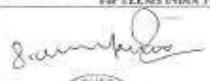
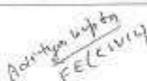
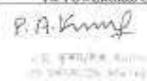
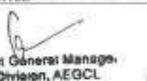
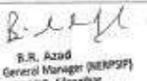


FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam



PROJECT: TRANSMISSION LINE PACKAGE TW 04 FOR ASSAM ASSOCIATED WITH NER POWER SYSTEM IMPROVEMENT PROJECT  
 CLIENT - POWER GRID CORPORATION OF INDIA LIMITED  
 LINE NAME- 132 KV S/C (ON D/C TOWER) DHEMAJI-SILAPATHAR TRANSMISSION LINE  
 CONTRACTOR | TEEMS INDIA TOWERLINES PRIVATE LIMITED  
 DETAILED SURVEY TOWER SCHEDULE FOR SECTION OF DHEMAJI GANTRY - SILAPATHAR GANTRY.

SL. No.	AP/NO	LOCATION NO.	Tower Type				RL	Deviation angle	span in m	Setback Length in m	Trans. Length in m	Wind Span in m	Weight Span						Sum of selected span	GPS Co-ordinate		Crossing/Remarks
			Type	Extra	RC	BIBBY							Hut			Cable				LATITUDE	LONGITUDE	
													Left	Right	Total	Left	Right	Total				
110	AP-24	248	DC	3	0	1	105.61	27°08'19"E	305	828	3212	323.0	138	178	317	162	188	351	347	27°08'48"N	92°46'27.80"E	Village Name- Jangal MED ROAD
111	AP-25	249	DC	1	1	0	105.51	26°47'39"E	218	233	2243	325.0	138	138	311	144	118	30	451	27°08'15.26"N	92°46'35.47"E	Village Name- Jangal
112		251	DA	1	1	0	105.82		319		2281	318.5	168	150	316	100	132	112	627			MED ROAD
113		152	DA	1	1	0	106.29		299		2282	319.0	163	141	304	167	124	291	638			
114	AP-26	160	DC	4	1	0	106.54	16°48'57"E	318	998	3181	328.5	178	182	360	135	194	289	657	27°08'26.75"N	92°46'31.44"E	Village Name- Laksh LOW LAND 11 KV L.S.NE. TOWER ROAD DRAM
115	AP-27	270	DD	1	1	0	107.51	35°25'18"E	334	338	3539	326.0	156	154	310	144	139	284	652	27°08'57.88"N	92°46'27.12"E	Village Name- Laksh
116		271	DA	1	1	0	107.54		334		3433	314.0	160	153	313	162	148	332	630			MED ROAD
117		272	DA	1	1	0	108.13		318		3458	313.0	162	142	304	165	128	282	631			MED ROAD
118	AP-28	283	DD	3	0	1	109.51	7°43'51"E	356	946	3483	324.5	172	178	351	187	188	373	633	27°08'14.21"N	92°46'58.51"E	Village Name- Silapathar 3 NOS. DRAIN 2 NOS. MED ROAD 1 NOS. LT LINE, TRUSS
119	AP-29	240	DD	0	0	0	110.54	24°41'29"E	322	336	29219	276.0	158	48	206	148	-6	142	349	27°08'18.46"N	92°46'47.18"E	Village Name- Silapathar MED ROAD
120	AP-30	240	DD	6	0	0	111.16	33°48'24"E	251	213	28432	255.0	163	164	329	219	167	416	471	27°08'12.48"N	92°46'38.69"E	Village Name- Silapathar 11 KV L.S.NE. TOWER ROAD
121	AP-31	319	DC	0	0	0	112.94	18°22'56"E	32	298	3596	175.0	94	44	118	65	45	103	451	27°08'23.15"N	92°46'52.15"E	Village Name- Silapathar
122	AP-32	320	DD	0	0	0	112.3	33°39'28"E	30	93	5783	171.0	48	23	72	31	21	72	142	27°08'46"N	92°46'29.21"E	Village Name- Silapathar
123	AP-34	329	DD	0	0	0	112.29	39°30'47"E	25	94	3903	171.0	27	17	42	28	18	67	50	27°08'47"N	92°46'27.46"E	Village Name- Silapathar
124	DEN	DEN	DC	0	0	0	112.51	32°25'08"E	22	24	3584	153.0	10	-34	-44	7	-115	-186	81	27°08'14"N	92°46'27.46"E	Village Name- Silapathar SS BOUNDARY WALL
125	DAY	GANTRY	GAN	0	0	0	113.25		22	24	3683	123.0	30	0	76	141	0	141	25	27°08'52"N	92°46'21.44"E	Village Name- Silapathar

For TEEMS INDIA TOWERLINES PRIVATE LIMITED		For POWERGRID CORPORATION LIMITED			
					
DESIGNED & PREPARED BY	CHECKED & SUBMITTED BY	CHECKED BY	RECOMMENDED BY	Assistant General Manager, T&T Division, AEGCL North Lakhimpur	Assistant General Manager (NERPSIP) POWERGRID, Silapathar
					



FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam



## ***ANNEXURE – 3***

### ***POLE SCHEDULE***



FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam



Annexure-1

POLE SCHEDULE													
33kV S/C Line From 132/33kV New Silapathar S/S TO 33/11kV Silapathar-II S/S													
CLIENT: POWER GRID CORPORATION OF INDIA LIMITED													
CONTRACTOR: NECCON POWER & INFRA LIMITED													
LOA Ref.No: 1.CC-CS/94-NER/REW-3079/1/G10/CA-I/7036-Supply													
PACKAGE:ASM- ASM-DMS-01													
2.CC-CS/94-NER/REW-3079/1/G10/CA-II/7037-Services													
Sl. No.	Angle Point	Loc. No	Pole Type	Extra.	Angle of Deviation	Span Length (m)	Cumm. Span (m)	Co-Ordinates		Description of Land	Crossing Details	Village Name	Remarks
								Latitude	Longitude				
1		1	Four Pole			45		27.603550	94.757710	S/S Boundary wall		Silapathar	
2		Loc-1/1	Single Pole		1°37'57"	49	45	27.603820	94.757370	S/S Boundary wall		Silapathar	
3		Loc-1/2	Single Pole		0°49'71"	39	84	27.604120	94.757010	S/S Boundary wall		Silapathar	
4	AP-1	AP-1	Four Pole		88°60'81"	26	133	27.604392	94.756761	S/S Boundary wall		Silapathar	
5	AP-2	AP-2	Four Pole		79°32'03"	50	189	27.604767	94.756562	S/S Boundary wall		Silapathar	
6		Loc-2/1	Single Pole		0°74'06"	50	209	27.604591	94.756180	Vacant Land-Pvt		Silapathar	
7	AP-3	AP-3	Four Pole	0.837m	74°04'30"	43	250	27.604880	94.755790	Vacant Land-Pvt	Over 11kV, Kaibha Road-4m	Silapathar	SP-76 Pole Required Guarding Required
8		Loc-3/1	Double Pole	1.118m	10°00'00"	50	302	27.604660	94.755436	Along the road (Govt.)		Silapathar	SP-76 Pole Required
9		Loc-3/2	Single Pole		2°29'58"	50	352	27.604310	94.755070	Along the road (Govt.)		Silapathar	
10		Loc-3/3	Single Pole		4°06'36"	50	402	27.604030	94.754710	Along the road (Govt.)		Silapathar	
11		Loc-3/4	Single Pole		4°22'06"	50	452	27.603690	94.754356	Along the road (Govt.)		Silapathar	
12		Loc-3/5	Single Pole		4°29'38"	50	502	27.603414	94.754017	Along the road (Govt.)		Silapathar	Guarding Required [Hut-1 No (Temporary encroachment of Govt. land)]
13		Loc-3/6	Single Pole		0°40'04"	48	552	27.603029	94.753640	Along the road (Govt.)		Silapathar	
14		Loc-3/7	Single Pole		0°38'06"	48	600	27.602744	94.753313	Along the road (Govt.)		Silapathar	
15		Loc-3/8	Single Pole		7°41'89"	50	648	27.602426	94.752986	Along the road (Govt.)		Silapathar	
16		Loc-3/9	Single Pole		0°30'64"	48	698	27.602090	94.752640	Along the road (Govt.)		Silapathar	
17		Loc-3/10	Single Pole		1°70'72"	50	746	27.601810	94.752300	Along the road (Govt.)		Silapathar	
18		Loc-3/11	Single Pole		1°56'64"	49	796	27.601450	94.751950	Along the road (Govt.)		Silapathar	
19		Loc-3/12	Single Pole		2°74'89"	44	845	27.601130	94.751620	Along the road (Govt.)		Silapathar	
20		Loc-3/13	Double Pole		0°81'87"	43	899	27.600820	94.751340	Along the road (Govt.)		Silapathar	Guarding Required [Hut-1 No (Temporary encroachment of Govt. land)]
21		Loc-3/14	Double Pole		0°38'62"	30	934	27.600501	94.751060	Along the road (Govt.)	Bhumin Road(4m)	Silapathar	Guarding Required [Hut-1 No (Temporary encroachment of Govt. land)]
22		Loc-3/15	Single Pole		1°60'01"	49	984	27.600151	94.750747	Along the road (Govt.)		Silapathar	
23		Loc-3/16	Single Pole		1°58'88"	50	1033	27.599781	94.750433	Along the road (Govt.)		Silapathar	
24		Loc-3/17	Single Pole		1°77'19"	50	1083	27.599421	94.750153	Along the road (Govt.)		Silapathar	

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FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam



POLE SCHEDULE													
33kV S/C Line From 132/33kV New Silapathar S/s TO 33/11kV Silapathar-II S/s													
CLIENT: POWER GRID CORPORATION OF INDIA LIMITED										CONTRACTOR: NECCON POWER & INFRA LIMITED			
LOA Ref.No: LCC-CS/94-NER/REW-3079/1/G10/CA-1/7026 -Supply										PACKAGE:ASM- ASM-DMS-01			
2.CC-CS/94-NER/REW-3079/1/G10/CA-II/7027-Services													
SL. No.	Angle Point	Loc. No	Pole Type	Extra.	Angle of Deviation	Span Length (m)	Cumm. Span (m)	Co-Ordinates		Description of Land	Crossing Details	Village Name	Remarks
								Latitude	Longitude				
25		Loc-3/18	Single Pole		5°37'59"	50	1133	27.599030	94.749878	Along the road (Govt.)		Silapathar	
26		Loc-3/19	Single Pole		7°03'41"	45	1183	27.598648	94.749623	Along the road (Govt.)		Silapathar	
27		Loc-3/20	Single Pole		8°21'33"	50	1228	27.598330	94.749340	Along the road (Govt.)		Silapathar	
28		Loc-3/21	Single Pole		1°08'56"	45	1278	27.597930	94.749080	Along the road (Govt.)		Silapathar	
29		Loc-3/22	Single Pole		0°14'41"	50	1323	27.597580	94.748880	Along the road (Govt.)		Silapathar	
30		Loc-3/23	Single Pole		0°56'32"	50	1373	27.597180	94.748650	Along the road (Govt.)		Silapathar	
31		Loc-3/24	Single Pole		1°59'37"	50	1423	27.596770	94.748420	Along the road (Govt.)		Silapathar	
32		Loc-3/25	Single Pole		1°28'21"	50	1473	27.596380	94.748200	Along the road (Govt.)		Silapathar	
33		Loc-3/26	Single Pole		0°25'05"	50	1523	27.595950	94.747980	Along the road (Govt.)		Silapathar	
34		Loc-3/27	Single Pole		1°23'55"	50	1573	27.595520	94.747750	Along the road (Govt.)		Silapathar	
35	AP-4	AP-4	Four Pole	2.50m	90°06'18"	33	1623	27.595140	94.747580	Along the road (Govt.)	Over 11kV, NH, Over 11kV	Silapathar	SP-76 Pole Required Guarding Required
36	AP-5	AP-5	Four Pole	2.50m	90°00'00"	30	1658	27.595260	94.747250	Along the road (Govt.)	Over 11kV	Teparisuk	SP-76 Pole Required Guarding Required
37		Loc-3/31	Double Pole	2.30m	3°11'02"	50	1708	27.594840	94.747010	Along the road (Govt.)		Teparisuk	SP-76 Pole Required
38	AP-6	AP-6	Four Pole	2.30m	90°00'00"	31	1758	27.594440	94.746830	Along the road (Govt.)	Over LT, NH, Over 11kV	Teparisuk	SP-76 Pole Required Guarding Required
39	AP-7	AP-7	Four Pole	2.30m	90°00'00"	45	1789	27.594300	94.746100	Along the road (Govt.)		Teparisuk	SP-76 Pole Required
40		Loc-3/34	Single Pole		0°51'08"	50	1834	27.593940	94.746890	Along the road (Govt.)		Teparisuk	
41		Loc-3/32	Single Pole		0°51'08"	48	1884	27.593570	94.746610	Along the road (Govt.)		Teparisuk	Guarding Required (But No Temporary encroachment of Govt. land)
42		Loc-3/33	Single Pole		7°02'47"	50	1932	27.593120	94.746340	Along the road (Govt.)		Teparisuk	
43		Loc-3/35	Single Pole		7°41'39"	50	1982	27.592810	94.746110	Along the road (Govt.)		Teparisuk	
44		Loc-3/36	Single Pole		0°23'73"	50	2032	27.592440	94.745830	Along the road (Govt.)		Teparisuk	
45		Loc-3/37	Single Pole		4°26'29"	50	2082	27.592080	94.745530	Along the road (Govt.)		Teparisuk	
46		Loc-3/38	Single Pole		4°26'29"	50	2132	27.591640	94.745280	Along the road (Govt.)		Teparisuk	
47		Loc-3/39	Single Pole		1°09'21"	50	2182	27.591280	94.745010	Along the road (Govt.)		Teparisuk	
48		Loc-3/40	Single Pole		5°43'51"	50	2232	27.590910	94.744730	Along the road (Govt.)		Teparisuk	
49	AP-8	AP-8	Four Pole		90°04'59"	30	2282	27.590550	94.744440	Along the road (Govt.)		Teparisuk	
50		Loc-3/41	Single Pole		0°10'46"	50	2332	27.590190	94.744124	Paddy Field-Pvt		Atching Pur	

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FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam



POLE SCHEDULE														
33kV S/C Line From 132/33kV New Silapathar S/S TO 33/11kV Silapathar-II S/S														
CLIENT: POWER GRID CORPORATION OF INDIA LIMITED										CONTRACTOR: NECCON POWER & INFRA LIMITED				
LOA Ref.No: L.CC-CS/94-NER/REW-3079/I/G10/CA-I/7026 -Supply										PACKAGE:ASM- ASM-DMS-01				
3.CC-CS/94-NER/REW-3079/I/G10/CA-II/7027-Services														
SL. No.	Angle Point	Loc. No	Pole Type	Estrn.	Angle of Deviation	Span Length (m)	Cumm. Span (m)	Co-Ordinates		Description of Land	Crossing Details	Village Name	Remarks	
								Latitude	Longitude					
51		Loc-8/2	Single Pole		0°11'73"		2382	27.589721	94.744810	Paddy Field-Pvt.		Mishang Pur		
52		Loc-8/3	Single Pole		0°6'54"	49	0	2431	27.589308	94.744994	Paddy Field-Pvt.		Mishang Pur	
53		Loc-8/4	Single Pole		0°9'162"	50	0	2481	27.588893	94.745184	Paddy Field-Pvt.		Mishang Pur	
54		Loc-8/5	Single Pole		0°0'208"	50	0	2531	27.588476	94.745368	Paddy Field-Pvt.		Mishang Pur	
55		Loc-8/6	Single Pole		0°7'0'30"	49	0	2580	27.588060	94.745550	Paddy Field-Pvt.		Mishang Pur	
56		Loc-8/7	Single Pole		0°4'903"	50	0	2630	27.587643	94.745740	Paddy Field-Pvt.		Mishang Pur	
57		Loc-8/8	Single Pole		0°25'97"	50	0	2680	27.587231	94.745924	Paddy Field-Pvt.		Mishang Pur	
58		Loc-8/9	Single Pole		0°0'105"	49	0	2729	27.586818	94.746110	Paddy Field-Pvt.		Mishang Pur	
59		Loc-8/10	Single Pole		0°27'02"	50	0	2779	27.586403	94.746297	Paddy Field-Pvt.		Mishang Pur	
60		Loc-8/11	Double Pole		0°12'84"	49	0	2828	27.585989	94.746481	Paddy Field-Pvt.		Mishang Pur	
61		Loc-8/12	Single Pole		0°22'24"	50	0	2878	27.585571	94.746668	Paddy Field-Pvt.		Mishang Pur	
62		Loc-8/13	Single Pole		0°47'95"	50	0	2928	27.585153	94.746852	Paddy Field-Pvt.		Mishang Pur	
63		Loc-8/14	Single Pole		0°16'28"	50	0	2978	27.584738	94.747041	Paddy Field-Pvt.		Mishang Pur	
64		Loc-8/15	Single Pole		0°02'15"	50	0	3028	27.584322	94.747228	Paddy Field-Pvt.		Mishang Pur	
65		Loc-8/16	Single Pole		0°59'97"	49	0	3077	27.583910	94.747413	Paddy Field-Pvt.		Mishang Pur	
66		Loc-8/17	Single Pole		0°50'45"	50	0	3127	27.583493	94.747595	Paddy Field-Pvt.		Mishang Pur	
67		Loc-8/18	Single Pole		0°10'00"	50	0	3177	27.583078	94.747780	Paddy Field-Pvt.		Mishang Pur	
68		Loc-8/19	Single Pole		0°13'05"	50	0	3227	27.582664	94.747966	Paddy Field-Pvt.		Mishang Pur	
69		Loc-8/20	Single Pole		0°30'72"	50	0	3277	27.582245	94.748153	Paddy Field-Pvt.		Mishang Pur	
70		Loc-8/21	Single Pole		0°70'66"	49	0	3326	27.581831	94.748334	Paddy Field-Pvt.		Mishang Pur	
71		Loc-8/22	Single Pole		0°15'25"	50	0	3376	27.581418	94.748523	Paddy Field-Pvt.		Mishang Pur	
72		Loc-8/23	Single Pole		0°36'71"	50	0	3426	27.581000	94.748710	Paddy Field-Pvt.		Mishang Pur	
73		Loc-8/24	Single Pole		0°55'31"	49	0	3475	27.580580	94.748899	Paddy Field-Pvt.		Mishang Pur	
74		Loc-8/25	Double Pole		8°08'10"	45	0	3525	27.580163	94.749058	Paddy Field-Pvt.	Nala (Width:3m)	Mishang Pur	Clearing Required
75		Loc-8/26	Single Pole		0°00'00"	50	0	3570	27.579749	94.749311	Paddy Field-Pvt.		Mishang Pur	
76		Loc-8/27	Single Pole		0°22'35"	50	0	3620	27.579334	94.749564	Paddy Field-Pvt.		Mishang Pur	
77		Loc-8/28	Single Pole		0°54'76"	50	0	3670	27.578910	94.749818	Paddy Field-Pvt.		Mishang Pur	

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*P.A.Kmyl 20/11/19*

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*B. S. S. S.*



FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam



POLE SCHEDULE													
33kV S/C Line From 132/33kV New Silapathar S/S TO 33/11kV Silapathar-II S/S													
CLIENT: POWER GRID CORPORATION OF INDIA LIMITED										CONTRACTOR: NECCON POWER & INFRA LIMITED			
LOA Ref.No: L.CC-CS/94-NER/REW-3079/I/G10/CA-I/7026 -Supply										PACKAGE:ASM- ASM-DMS-01			
J.CC-CS/94-NER/REW-3079/I/G10/CA-II/7027-Service													
SL. No.	Angle Point	Loc. No	Pole Type	Estrn.	Angle of Deviation	Span Length (m)	Cumm. Span (m)	Co-Ordinates		Description of Land	Crossing Details	Village Name	Remarks
								Latitude	Longitude				
51		Loc-8/2	Single Pole		0°11'73"	49	2382	27.589721	94.744810	Paddy Field-Pvt.		Mishang Pur	
52		Loc-8/3	Single Pole		0°6'54"	50	2431	27.589308	94.744994	Paddy Field-Pvt.		Mishang Pur	
53		Loc-8/4	Single Pole		0°9'162"	50	2481	27.588893	94.745184	Paddy Field-Pvt.		Mishang Pur	
54		Loc-8/5	Single Pole		0°0'208"	49	2531	27.588476	94.745368	Paddy Field-Pvt.		Mishang Pur	
55		Loc-8/6	Single Pole		0°7'0'30"	50	2580	27.588060	94.745550	Paddy Field-Pvt.		Mishang Pur	
56		Loc-8/7	Single Pole		0°4'903"	50	2630	27.587643	94.745740	Paddy Field-Pvt.		Mishang Pur	
57		Loc-8/8	Single Pole		0°2'597"	49	2680	27.587231	94.745924	Paddy Field-Pvt.		Mishang Pur	
58		Loc-8/9	Single Pole		0°0'105"	50	2729	27.586818	94.746110	Paddy Field-Pvt.		Mishang Pur	
59		Loc-8/10	Single Pole		0°2'702"	49	2779	27.586403	94.746297	Paddy Field-Pvt.		Mishang Pur	
60		Loc-8/11	Double Pole		0°1'284"	50	2828	27.585989	94.746481	Paddy Field-Pvt.		Mishang Pur	
61		Loc-8/12	Single Pole		0°2'224"	50	2878	27.585571	94.746668	Paddy Field-Pvt.		Mishang Pur	
62		Loc-8/13	Single Pole		0°4'795"	50	2928	27.585153	94.746852	Paddy Field-Pvt.		Mishang Pur	
63		Loc-8/14	Single Pole		0°1'628"	50	2978	27.584738	94.747041	Paddy Field-Pvt.		Mishang Pur	
64		Loc-8/15	Single Pole		0°0'215"	49	3028	27.584322	94.747228	Paddy Field-Pvt.		Mishang Pur	
65		Loc-8/16	Single Pole		0°5'997"	50	3077	27.583910	94.747413	Paddy Field-Pvt.		Mishang Pur	
66		Loc-8/17	Single Pole		0°5'045"	50	3127	27.583493	94.747595	Paddy Field-Pvt.		Mishang Pur	
67		Loc-8/18	Single Pole		0°1'090"	50	3177	27.583078	94.747780	Paddy Field-Pvt.		Mishang Pur	
68		Loc-8/19	Single Pole		0°1'305"	50	3227	27.582664	94.747966	Paddy Field-Pvt.		Mishang Pur	
69		Loc-8/20	Single Pole		0°3'072"	49	3277	27.582245	94.748153	Paddy Field-Pvt.		Mishang Pur	
70		Loc-8/21	Single Pole		0°7'066"	50	3326	27.581831	94.748334	Paddy Field-Pvt.		Mishang Pur	
71		Loc-8/22	Single Pole		0°1'525"	50	3376	27.581418	94.748523	Paddy Field-Pvt.		Mishang Pur	
72		Loc-8/23	Single Pole		0°3'871"	49	3426	27.581000	94.748710	Paddy Field-Pvt.		Mishang Pur	
73		Loc-8/24	Single Pole		0°5'511"	45	3475	27.580580	94.748899	Paddy Field-Pvt.		Mishang Pur	
74		Loc-8/25	Double Pole		8°08'10"	50	3525	27.580168	94.749058	Paddy Field-Pvt.	Nala (Width: 3m)	Mishang Pur	Clearing Required
75		Loc-8/26	Single Pole		0°0'000"	50	3575	27.579750	94.749211	Paddy Field-Pvt.		Mishang Pur	
76		Loc-8/27	Single Pole		0°2'235"	50	3625	27.579344	94.749364	Paddy Field-Pvt.		Mishang Pur	
77		Loc-8/28	Single Pole		0°5'476"	50	3675	27.578930	94.749518	Paddy Field-Pvt.		Mishang Pur	

*Signature*

*Unath 20/11/19*

*P.A.Kmyl 20/11/19*

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*B. S. S. S.*



FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam



POLE SCHEDULE													
33kV S/C Line From 132/33kV New Silapathar S/s TO 33/11KV Silapathar-II S/s													
CLIENT: POWER GRID CORPORATION OF INDIA LIMITED										CONTRACTOR: NECCON POWER & INFRA LIMITED			
LOA RefNo: I.CC-CS/94-NER/REW-3079/1/G10/CA-1/7026 -Supply										PACKAGE:ASM- ASM-DMS-01			
2.CC-CS/94-NER/REW-3079/1/G10/CA-11/7027-Service													
SL. No.	Angle Point	Loc. No	Pole Type	Elev.	Angle of Deviation	Span Length (m)	Cumm. Span (m)	Co-Ordinate		Description of Land	Crossing Details	Village Name	Remarks
								Latitude	Longitude				
132		Loc-9/30	Single Pole		0°28'20"	50	6373	27.538278	94.747628	Paddy Field-Pvt		Jungamuri Pathar	
133		Loc-9/31	Single Pole		0°08'05"	49	6423	27.537898	94.747559	Paddy Field-Pvt		Jungamuri Pathar	
134		Loc-9/32	Single Pole		0°02'81"	49	6472	27.537322	94.747292	Paddy Field-Pvt		Jungamuri Pathar	
135		Loc-9/33	Single Pole		0°16'63"	50	6521	27.537147	94.747026	Paddy Field-Pvt		Jungamuri Pathar	
136		Loc-9/34	Single Pole		0°13'82"	50	6571	27.536766	94.746754	Paddy Field-Pvt		Jungamuri Pathar	
137		Loc-9/35	Single Pole		0°08'34"	50	6621	27.536390	94.746487	Paddy Field-Pvt		Jungamuri Pathar	
138		Loc-9/36	Single Pole		0°08'14"	49	6671	27.536011	94.746217	Paddy Field-Pvt		Jungamuri Pathar	
139		Loc-9/37	Double Pole		0°00'00"	49	6720	27.535633	94.745950	Paddy Field-Pvt		Jungamuri Pathar	
140		Loc-9/38	Single Pole		0°30'15"	50	6769	27.535259	94.745683	Paddy Field-Pvt		Jungamuri Pathar	
141		Loc-9/39	Single Pole		0°54'17"	50	6819	27.534879	94.745410	Paddy Field-Pvt		Jungamuri Pathar	
142		Loc-9/40	Single Pole		0°39'60"	50	6869	27.534498	94.745141	Paddy Field-Pvt		Jungamuri Pathar	
143		Loc-9/41	Single Pole		0°03'51"	50	6919	27.534120	94.744874	Paddy Field-Pvt		Jungamuri Pathar	
144		Loc-9/42	Single Pole		0°13'90"	49	6969	27.533740	94.744603	Paddy Field-Pvt		Jungamuri Pathar	
145		Loc-9/43	Single Pole		0°31'75"	50	7018	27.533365	94.744337	Paddy Field-Pvt		Jungamuri Pathar	
146		Loc-9/44	Single Pole		0°27'41"	50	7068	27.532989	94.744067	Paddy Field-Pvt		Jungamuri Pathar	
147		Loc-9/45	Single Pole		0°06'14"	50	7118	27.532609	94.743797	Paddy Field-Pvt		Jungamuri Pathar	
148		Loc-9/46	Single Pole		0°10'02"	50	7168	27.532233	94.743520	Paddy Field-Pvt		Jungamuri Pathar	
149		Loc-9/47	Single Pole		0°02'29"	50	7218	27.531854	94.743260	Paddy Field-Pvt		Jungamuri Pathar	
150		Loc-9/48	Single Pole		0°19'22"	50	7268	27.531476	94.742992	Paddy Field-Pvt		Jungamuri Pathar	
151		Loc-9/49	Single Pole		0°13'65"	50	7318	27.531098	94.742722	Paddy Field-Pvt		Jungamuri Pathar	
152		Loc-9/50	Single Pole		0°02'78"	50	7368	27.530718	94.742452	Paddy Field-Pvt		Jungamuri Pathar	
153		Loc-9/51	Single Pole		0°03'34"	50	7418	27.530339	94.742183	Paddy Field-Pvt		Jungamuri Pathar	
154		Loc-9/52	Single Pole		0°16'31"	50	7468	27.529958	94.741912	Paddy Field-Pvt		Jungamuri Pathar	
155		Loc-9/53	Single Pole		0°09'56"	50	7518	27.529576	94.741642	Paddy Field-Pvt		Jungamuri Pathar	
156		Loc-9/54	Single Pole		0°06'10"	50	7568	27.529194	94.741373	Paddy Field-Pvt		Jungamuri Pathar	
157		Loc-9/55	Single Pole		0°09'17"	50	7618	27.528818	94.741101	Paddy Field-Pvt		Jungamuri Pathar	
158	AP-10	AP-10	Double Pole		2°28'30"	50	7668	27.528439	94.740832	Paddy Field-Pvt		Jungamuri Pathar	

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B. K. Jyoti



FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam



POLE SCHEDULE													
33kV S/C Line From 132/33kV New Silapathar S/s TO 33/11kV Silapathar-II S/s											CONTRACTOR: NECCON POWER & INFRA LIMITED		
CLIENT: POWER GRID CORPORATION OF INDIA LIMITED											PACKAGE: ASM- ASM-DMS-01		
LOA Ref.No: L.CC-CS/94-NER/REW-3079/1/G10/CA-1/7026 -Supply													
2.CC-CS/94-NER/REW-3079/1/G10/CA-11/7027-Services													
SL. No.	Angle Point	Loc. No	Pole Type	Elev.	Angle of Deviation	Span Length (m)	Cumm. Span (m)	Co-Ordinates		Description of Land	Crossing Details	Village Name	Remarks
								Latitude	Longitude				
159		Loc-10/1	Single Pole		0°30'22"	50	7718	27.348176	94.740420	Paddy Field-Pst		Jungamouri Pathar	
160		Loc-10/2	Double Pole		0°28'24"	45	7768	27.347912	94.740011	Paddy Field-Pst	Over-11kV	Jungamouri Pathar	Guarding Required
161		Loc-10/3	Double Pole		0°18'00"	45	7813	27.347675	94.739640	Paddy Field-Pst	Over-11kV	Jungamouri Pathar	SP-76 Pole Required Guarding Required
162		Loc-10/4	Double Pole		0°11'46"	45	7858	27.347437	94.739270	Paddy Field-Pst		Jungamouri Pathar	SP-76 Pole Required
163	AP-11	AP-11	Double Pole		46°07'54"	50	7903	27.347200	94.738900	Paddy Field-Pst	Pond	Jungamouri Pathar	
164		Loc-11/1	Single Pole		1°50'76"	38	7953	27.347280	94.738400	Paddy Field-Pst		Jungamouri Pathar	
165		Loc-11/2	Single Pole		2°47'13"	50	7991	27.347150	94.738020	Paddy Field-Pst		Jungamouri Pathar	
166		Loc-11/3	Single Pole		1°53'38"	31	8031	27.347460	94.737530	Paddy Field-Pst		Jungamouri Pathar	
167	AP-12	AP-12	Double Pole	2.500m	38°38'45"	29	8074	27.347340	94.737210	Temple-boundary	Over-11kV, Kachha Road (4m)	Jungamouri Pathar	SP-76 Pole Required Guarding Required
168	AP-13	AP-13	Double Pole	2.500m	34°33'13"	31	8103	27.347750	94.737040	Temple-boundary	NH, Over-11kV	Jungamouri Pathar	SP-76 Pole Required Guarding Required
169	AP-14	AP-14	Four Pole	2.500m	89°42'70"	21	8134	27.347750	94.736730	Along the road (Govt.)		Jungamouri Pathar	SP-76 Pole Required
170	AP-15	AP-15	Four Pole		76°84'38"	49	8155	27.347940	94.736690	Along the road (Govt.)		Dablang Patra	
171		Loc-15/1	Single Pole		1°28'33"	49	8204	27.347960	94.736190	Along the road (Govt.)		Dablang Patra	
172		Loc-15/2	Single Pole		3°13'36"	50	8233	27.347990	94.735690	Paddy Field-Pst		Dablang Patra	
173		Loc-15/3	Single Pole		1°42'37"	48	8303	27.347980	94.735180	Paddy Field-Pst		Dablang Patra	
174	AP-16	AP-16	Double Pole		15°05'31"	50	8351	27.347960	94.734700	Paddy Field-Pst		Dablang Patra	
175		Loc-16/1	Single Pole		4°16'26"	50	8401	27.348060	94.734210	Paddy Field-Pst		Dablang Patra	
176	AP-17	AP-17	Four Pole		65°17'73"	48	8451	27.348130	94.733700	Paddy Field-Pst		Dablang Patra	
177		Loc-17/1	Single Pole		4°37'30"	48	8499	27.347770	94.733430	Paddy Field-Pst		Dablang Patra	
178		Loc-17/2	Single Pole		3°25'18"	49	8547	27.347390	94.733190	Paddy Field-Pst		Dablang Patra	
179	AP-18	AP-18	Double Pole		34°01'28"	50	8596	27.346990	94.732970	Paddy Field-Pst		Dablang Patra	
180		Loc-18/1	Single Pole		0°28'13"	50	8646	27.346773	94.732528	Paddy Field-Pst		Dablang Patra	
181		Loc-18/2	Single Pole		0°30'36"	50	8696	27.346557	94.732087	Paddy Field-Pst		Dablang Patra	
182		Loc-18/3	Single Pole		0°06'05"	50	8746	27.346338	94.731647	Paddy Field-Pst		Dablang Patra	
183		Loc-18/4	Single Pole		0°50'08"	49	8796	27.346120	94.731208	Paddy Field-Pst		Dablang Patra	
184		Loc-18/5	Single Pole		0°23'02"	50	8845	27.345907	94.730772	Paddy Field-Pst		Dablang Patra	
185		Loc-18/6	Single Pole		0°00'18"	50	8895	27.345690	94.730331	Paddy Field-Pst		Dablang Patra	

*Summary*

*Unalok 20/7/19*

*P. A. Karmal 20/7/19*

*B. S. S. S.*



FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam



POLE SCHEDULE													
33kV S/C Line From 132/33kV New Silapathar S/S TO 33/11kV Silapathar-II S/S													
CLIENT: POWER GRID CORPORATION OF INDIA LIMITED										CONTRACTOR: NECCON POWER & INFRA LIMITED			
LOA RefNo: LCC-CS/94-NER/REW-3079/1/G10/CA-I/7026 -Supply										PACKAGE:ASM-ASM-DMIS-01			
2_CC-CS/94-NER/REW-3079/1/G10/CA-I/7027-Services													
Sl. No.	Angle Point	Loc. No	Pole Type	Extn.	Angle of Deviation	Span Length (m)	Const. Span (m)	Co-Ordinates		Description of Land	Crossing Details	Village Name	Remarks
								Latitude	Longitude				
186		Loc-18/7	Double Pole		0°00'00"		8945	27 545474	94 729892	Paddy Field-Pvt.		Dablang Patri	
187		Loc-18/8	Single Pole		0°11'63"	49	8994	27 545238	94 729451	Paddy Field-Pvt.		Dablang Patri	
188		Loc-18/9	Single Pole		0°11'75"	50	9044	27 545038	94 729008	Paddy Field-Pvt.		Dablang Patri	
189		Loc-18/10	Single Pole		0°27'99"	50	9094	27 544822	94 728568	Paddy Field-Pvt.		Dablang Patri	
190		Loc-18/11	Single Pole		0°27'99"	50	9144	27 544604	94 728129	Paddy Field-Pvt.		Dablang Patri	
191		Loc-18/12	Single Pole		0°11'38"	50	9194	27 544388	94 727689	Paddy Field-Pvt.		Dablang Patri	
192		Loc-18/13	Single Pole		0°27'77"	49	9244	27 544170	94 727247	Paddy Field-Pvt.		Dablang Patri	
193		Loc-18/14	Single Pole		0°33'45"	50	9293	27 543952	94 726810	Paddy Field-Pvt.		Dablang Patri	
194		Loc-18/15	Single Pole		0°00'18"	50	9343	27 543735	94 726369	Paddy Field-Pvt.		Dablang Patri	
195		Loc-18/16	Single Pole		0°05'35"	50	9393	27 543517	94 725926	Paddy Field-Pvt.		Dablang Patri	
196		Loc-18/17	Single Pole		0°27'98"	50	9443	27 543300	94 725486	Paddy Field-Pvt.		Dablang Patri	
197		Loc-18/18	Single Pole		0°6'37"	50	9493	27 543083	94 725045	Paddy Field-Pvt.		Dablang Patri	
198		Loc-18/19	Double Pole		0°36'32"	45	9543	27 542866	94 724604	Paddy Field-Pvt.	Kachha Road (3m)	Dablang Patri	
199		Loc-18/20	Double Pole		0°27'99"	50	9593	27 542648	94 724163	Paddy Field-Pvt.		Dablang Patri	
200		Loc-18/21	Single Pole		0°22'14"	50	9643	27 542431	94 723721	Paddy Field-Pvt.		Ayega Patri	
201		Loc-18/22	Single Pole		0°16'10"	49	9693	27 542214	94 723280	Paddy Field-Pvt.		Ayega Patri	
202		Loc-18/23	Single Pole		0°10'00"	50	9743	27 541997	94 722839	Paddy Field-Pvt.		Ayega Patri	
203		Loc-18/24	Single Pole		0°11'38"	50	9793	27 541780	94 722398	Paddy Field-Pvt.		Ayega Patri	
204		Loc-18/25	Single Pole		0°22'50"	50	9843	27 541563	94 721957	Paddy Field-Pvt.		Ayega Patri	
205		Loc-18/26	Single Pole		0°17'24"	50	9893	27 541346	94 721516	Paddy Field-Pvt.		Ayega Patri	
206		Loc-18/27	Single Pole		0°29'03"	50	9943	27 541129	94 721075	Paddy Field-Pvt.		Ayega Patri	
207		Loc-18/28	Single Pole		0°15'33"	50	9993	27 540912	94 720634	Paddy Field-Pvt.		Ayega Patri	
208		Loc-18/29	Single Pole		0°21'99"	50	10043	27 540695	94 720193	Paddy Field-Pvt.		Ayega Patri	
209		Loc-18/30	Single Pole		0°00'35"	50	10093	27 540478	94 719752	Paddy Field-Pvt.		Ayega Patri	
210		Loc-18/31	Single Pole		0°05'72"	50	10143	27 540261	94 719311	Paddy Field-Pvt.		Ayega Patri	
211		Loc-18/32	Single Pole		0°16'81"	50	10193	27 540044	94 718870	Paddy Field-Pvt.		Ayega Patri	
212		Loc-18/33	Single Pole		0°27'45"	50	10243	27 539827	94 718429	Paddy Field-Pvt.		Ayega Patri	

Unath  
20/12/19

P.A. Karmali  
20/12/19

B. J. K. J.



FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam



POLE SCHEDULE													
33kV S/C Line From 132/33kV New Silapathar S& TO 33/11kV Silapathar-II S&													
CLIENT: POWER GRID CORPORATION OF INDIA LIMITED										CONTRACTOR: NECCON POWER & INFRA LIMITED			
LOA Ref.No: I.CC-CS/94-NER/REW-3079/1/G10/CA-4/7026-Supply										PACKAGE: ASM- ASM-DMS-01			
2.CC-CS/94-NER/REW-3079/1/G10/CA-II/7027-Services													
Sl. No.	Angle Point	Loc. No	Pole Type	Elev.	Angle of Deviation	Span Length (m)	Cams. Spce (m)	Co-Ordinates		Description of Land	Crossing Details	Village Name	Remarks
								Latitude	Longitude				
213		Loc-18/34	Single Pole		0°28'04"	50	10287	27.539512	94.718096	Paddy Field-Pvt		Ayegia Patri	
214		Loc-18/35	Double Pole		0°07'20"	50	10337	27.539287	94.717660	Paddy Field-Pvt		Ayegia Patri	
215		Loc-18/36	Single Pole		0°11'10"	50	10387	27.539063	94.717225	Paddy Field-Pvt		Ayegia Patri	
216		Loc-18/37	Single Pole		0°06'08"	50	10437	27.538838	94.716790	Paddy Field-Pvt		Ayegia Patri	
217		Loc-18/38	Single Pole		0°05'32"	50	10487	27.538612	94.716355	Paddy Field-Pvt		Ayegia Patri	
218		Loc-18/39	Single Pole		0°15'74"	49	10537	27.538385	94.715913	Paddy Field-Pvt		Ayegia Patri	
219		Loc-18/40	Single Pole		0°00'31"	49	10586	27.538162	94.715479	Paddy Field-Pvt		Ayegia Patri	
220		Loc-18/41	Single Pole		0°44'07"	50	10635	27.537940	94.715047	Paddy Field-Pvt		Ayegia Patri	
221		Loc-18/42	Single Pole		0°33'96"	50	10685	27.537713	94.714613	Paddy Field-Pvt		Ayegia Patri	
222		Loc-18/43	Single Pole		0°05'70"	50	10735	27.537487	94.714175	Paddy Field-Pvt		Ayegia Patri	
223		Loc-18/44	Single Pole		0°05'70"	50	10785	27.537261	94.713738	Paddy Field-Pvt		Ayegia Patri	
224		Loc-18/45	Single Pole		0°22'00"	50	10835	27.537035	94.713300	Paddy Field-Pvt		Ayegia Patri	
225		Loc-18/46	Single Pole		0°33'32"	49	10885	27.536809	94.712866	Paddy Field-Pvt		Ayegia Patri	
226		Loc-18/47	Single Pole		0°28'77"	43	10934	27.536586	94.712432	Paddy Field-Pvt		Ayegia Patri	
227		Loc-18/48	Single Pole		0°6'334"	42	10977	27.536389	94.712053	Paddy Field-Pvt		Ayegia Patri	
228	AP-19	AP-19	Four Pole		65°12'25"	31	11019	27.536200	94.711680	Along Sub-station Boundary		Ayegia Patri	
229	AP-20	AP-20	Four Pole		85°19'65"	31	11052	27.536370	94.711410	Along Sub-station Boundary		Ayegia Patri	
230	AP-21	AP-21	Four Pole		92°12'34"	15	11092	27.536160	94.711210	Along Sub-station Boundary		Ayegia Patri	
							11098			Sub-station		Ayegia Patri	

Sanyal

*Umath*  
20/2/19  
উজ্জ্বল নাথ/UJJAL NATH  
অ-ইঞ্জিনিয়ার/ENGINEER  
পাওয়ারগ্রিড/POWERGRID (NERPSIP)

P.A. Kumar  
20/2/19  
শ্রী এ. কুমার/P.A. Kumar  
সংশোধক/MANAGER  
পাওয়ারগ্রিড/POWERGRID  
সিলাপাথর/Silapathar

*B. A. L. C.*  
20.02.19  
শ্রী অরুণ কুমার/ARUN KUMAR  
সংশোধক/ENGINEER  
পাওয়ারগ্রিড/POWERGRID  
সিলাপাথর/Silapathar



FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam



Annexure-

POLE SCHEDULE											
LILO of 33kV Exst. Silapathar-Jonai Line at 132/33 kV Silapathar (New) S/S .											
CLIENT: POWER GRID CORPORATION OF INDIA LIMITED						CONTRACTOR: NECCON POWER & INFRA LIMITED					
LOA Ref.No: I.CC-CS/94-NER/REW-3079/I/G10/CA-I/7026 -Supply						PACKAGE:ASM- ASM-DMS-01					
2.CC-CS/94-NER/REW-3079/I/G10/CA-II/7027-Services											
SL. No.	Loc. No	Pole Type	Angle of Deviation	Span Length (m)	Cumm. Span (m)	Co-Ordinates		Description of Land	Crossing Details	Village Name	Remarks
						Latitude	Longitude				
0	Ganty Location							Sub-station			
				36							
1	FP-1	Four Pole	83°25'63"		36	27.60352	94.75788	Sub-station			Composite Pole
				23							
2	SP-1	Single Pole	0°18'59"		59	27.603647	94.757695	Sub-station			Composite Pole
				23	0						
3	SP-2	Single Pole	0°52'69"		82	27.603779	94.757504	Sub-station			Composite Pole
				23	0						
4	SP-3	Single Pole	0°01'07"		105	27.60391	94.757318	Sub-station			Composite Pole
				23	0						
5	SP-4	Single Pole	0°58'21"		128	27.604037	94.757131	Sub-station			Composite Pole
				23	0						
6	SP-5	Single Pole	0°58'21"		151	27.604166	94.756945	Sub-station			Composite Pole
				23	0						
7	SP-6	Single Pole	0°54'96"		174	27.604293	94.756758	Sub-station			Composite Pole
				22	0						
8	SP-7	Single Pole	0°48'56"		196	27.604417	94.756579	Sub-station			Composite Pole
				23	0						
9	SP-8	Single Pole	0°41'87"		219	27.604546	94.756396	Sub-station			Composite Pole
				23	0						
10	SP-9	Single Pole	0°67'17"		242	27.604672	94.756209	Sub-station			Composite Pole
				23	0						
11	SP-10	Single Pole	0°77'27"		265	27.6048	94.756027	Sub-station			Composite Pole

*Pranjay*  
05/03/20  
for NECCON

*Umesh*  
06/03/20  
NECCON

*[Signature]*  
Project Manager

*[Signature]*  
B. R. A. S. S. S.  
B. R. A. S. S. S.  
NERPSIP  
POWERGRID  
SILAPATHAR



FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam



				23	0						
12	FP-2	Four Pole	79°31'17"		288	27.604928	94.755838	Along the Road-Govt.			Composite Pole(SP-76 Required)
				50	0						
13	DP-1	Double Pole	16°48'71"		338	27.605298	94.756048	Along the Road-Govt.			
				48	0						
14	SP-11	Single Pole	1°13'90"		386	27.605585	94.756352	Along the Road-Govt.		LT Line	
				50	0						
15	DP-2	Double Pole	1°50'26"		436	27.605922	94.756695	Along the Road-Govt.			
				45	0					11KV & LT Line	
16	DP-3	Double Pole	0°53'12"		481	27.606238	94.757034	Along the Road-Govt.			
				50	0						
17	SP-12	Single Pole	1°65'53"		531	27.606561	94.757387	Along the Road-Govt.			
				50	0					LT Line	
18	SP-13	Single Pole	1°52'04"		581	27.606865	94.757739	Along the Road-Govt.			
				50	0						
19	SP-14	Single Pole	0°91'49"		631	27.607171	94.758075	Along the Road-Govt.			
				50	0						
20	SP-15	Single Pole	1°75'61"		681	27.607486	94.75841	Along the Road-Govt.			
				50	0						
21	SP-16	Single Pole	2°35'24"		731	27.60783	94.758754	Along the Road-Govt.			
				50	0						
22	SP-17	Single Pole	0°41'86"		781	27.608156	94.759108	Along the Road-Govt.			
				50	0						
23	SP-18	Single Pole	5°46'81"		831	27.608484	94.759459	Along the Road-Govt.			
				50	0						
24	DP-4	Double Pole	8°46'26"		881	27.608768	94.759827	Along the Road-Govt.			SP-76 Pole Required
				45	0					11KV Line	
25	DP-5	Double Pole	0°54'26"		926	27.609095	94.760142	Along the Road-Govt.			SP-76 Pole Required
				50	0						
26	SP-19	Single Pole	0°99'39"		976	27.609427	94.760468	Along the Road-Govt.			
				50	0						
27	SP-20	Single Pole	5°78'67"		1026	27.609783	94.76083	Along the Road-Govt.			
				50	0						
28	SP-21	Single Pole	1°87'41"		1076	27.610077	94.761196	Along the Road-Govt.			

Prepared by  
07/05/23  
for NECLON

06/03/20  
OC/USAL NATH  
PROJECT ENGINEER

Joint Control Manager

06/03/20  
B. R. AZAD  
JGM (NERPSIP)



FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam



29	SP-22	Single Pole	2°51'89"	50	0	1126	27.610362	94.761575	Along the Road-Govt.		
30	SP-23	Single Pole	4°31'92"	50	0	1176	27.610628	94.761962	Along the Road-Govt.		
31	SP-24	Single Pole	9°33'09"	56	0	1232	27.610893	94.762491	Along the Road-Govt.		
32	SP-25	Single Pole	5°96'05"	50	0	1282	27.611247	94.762866	Along the Road-Govt.		
33	SP-26	Single Pole	0°76'07"	50	0	1332	27.611514	94.763283	Along the Road-Govt.		
34	SP-27	Single Pole	0°84'84"	50	0	1382	27.611768	94.763691	Along the Road-Govt.		
35	SP-28	Single Pole	0°25'47"	50	0	1432	27.612041	94.764116	Along the Road-Govt.		
36	SP-29	Single Pole	4°07'56"	50	0	1482	27.612314	94.764545	Along the Road-Govt.		SP-76 Pole Required
37	DP-6	Double Pole	2°09'18"	50	0	1532	27.612617	94.764956	Along the Road-Govt.	Dhaba	SP-76 Pole Required
38	DP-7	Double Pole	5°30'02"	95	0	1627	27.613141	94.765722	Along the Road-Govt.	Tributary River	SP-76 Pole Required
39	SP-30	Single Pole	7°77'68"	50	0	1677	27.613387	94.76616	Along the Road-Govt.	Dhaba	SP-76 Pole Required
40	SP-31	Single Pole	4°72'88"	50	0	1727	27.613687	94.766521	Along the Road-Govt.		
41	SP-32	Single Pole	0°59'65"	50	0	1777	27.614018	94.766857	Along the Road-Govt.		
42	SP-33	Single Pole	3°12'45"	50	0	1827	27.614354	94.767191	Along the Road-Govt.		
43	DP-8	Double Pole	2°14'55"	50	0	1877	27.614666	94.767537	Along the Road-Govt.		
44	SP-34	Single Pole	1°66'17"	50	0	1927	27.615013	94.767894	Along the Road-Govt.	Tributary River	
45	SP-35	Single Pole	5°50'87"	50	0	1977	27.615351	94.768222	Along the Road-Govt.		

Powergrid  
07/08/20  
for NECCON

Umath  
06/08/20  
SRIJAY NATH  
Sr. Engg/ENGINEER

Asst. General Manager

06/08/20  
B. R. NATH  
Sr. Engg/B.R. NATH  
MEMBER/GM (NERPSIP)  
POWERGRID  
Dispur



FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam



				50	0							
46	SP-36	Single Pole	2°47'25"		2027	27.615662	94.768588	Along the Road-Govt.				
				50	0							
47	SP-37	Single Pole	3°37'63"		2077	27.615989	94.768941	Along the Road-Govt.				
				50	0							
48	SP-38	Single Pole	3°78'66"		2127	27.616329	94.769267	Along the Road-Govt.				
				43	0							
49	SP-39	Single Pole	6°70'15"		2170	27.616642	94.769529	Along the Road-Govt.				
				45	0							
50	DP-9	Double Pole	3°79'79"		2215	27.616883	94.769785	Along the Road-Govt.			Composite Pole (SP-76 Pole Required)	
				45	0							
51	SP-40	Single Pole	1°91'44"		2260	27.617194	94.770074	Along the Road-Govt.				
				50	0							
52	SP-41	Single Pole	2°75'15"		2310	27.617548	94.770426	Along the Road-Govt.				
				50	0							
53	SP-42	Single Pole	0°63'83"		2360	27.617885	94.770795	Along the Road-Govt.				
				50	0							
54	SP-43	Single Pole	2°08'69"		2410	27.618211	94.77116	Along the Road-Govt.				
				48	0							
55	SP-44	Single Pole	4°26'95"		2458	27.618529	94.771491	Along the Road-Govt.				
				48	0							
56	DP-10	Double Pole	3°41'68"		2506	27.618817	94.771839	Along the Road-Govt.				
				102	0					Tributary River		
57	DP-11	Double Pole	2°08'33"		2608	27.61948	94.77255	Along the Road-Govt.				SP-76 Pole Required
				50	0					Road Crossing		
58	FP-3	Four Pole	51°64'18"		2658	27.619801	94.77287	Along the Road-Govt.				SP-76 Pole Required
				50	0							
59	SP-45	Single Pole	4°39'67"		2708	27.620225	94.772784	Along the Road-Govt.				
				50	0							
60	SP-46	Single Pole	1°65'82"		2758	27.620688	94.772731	Along the Road-Govt.				
				50	0							
61	SP-47	Single Pole	1°68'99"		2808	27.621142	94.772664	Along the Road-Govt.				
				50	0							

Power in sil  
01/04/20  
for NECCON

U. NATH  
04/09/20  
REGIONAL NATH  
अ-मंडल/ENGINEER  
अ-मंडल/REGIONAL (NERPSIP)

Asstt. General Manager

06.03.20  
बी.आर. आज़ाद/B.R. AZAD  
महानिरीक्षक/GM (NERPSIP)  
POWERGRID



FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam



62	SP-48	Single Pole	1°09'87"	2858	27.62159	94.772613	Along the Road-Govt.		
				50	0				
63	SP-49	Single Pole	1°79'50"	2908	27.622032	94.772553	Along the Road-Govt.		
				50	0				
64	SP-50	Single Pole	0°06'66"	2958	27.622482	94.772508	Along the Road-Govt.		
				50	0				
65	SP-51	Single Pole	2°56'55"	3008	27.622936	94.772462	Along the Road-Govt.		
				50	0				
66	SP-52	Single Pole	2°71'82"	3058	27.623395	94.772392	Along the Road-Govt.		
				50	0				
67	DP-12	Double Pole	0°18'89"	3108	27.623863	94.772346	Along the Road-Govt.		
				50	0				
68	SP-53	Single Pole	0°05'89"	3158	27.624304	94.772301	Along the Road-Govt.		
				50	0				
69	SP-54	Single Pole	2°99'95"	3208	27.62474	94.772256	Along the Road-Govt.		
				50	0				
70	SP-55	Single Pole	1°26'36"	3258	27.625196	94.772236	Along the Road-Govt.		
				50	0				
71	SP-56	Single Pole	0°44'21"	3308	27.625671	94.772227	Along the Road-Govt.		
				50	0				
72	SP-57	Single Pole	1°47'15"	3358	27.626141	94.772214	Along the Road-Govt.		
				50	0				
73	SP-58	Single Pole	3°45'74"	3408	27.626582	94.772189	Along the Road-Govt.		
				50	0				
74	SP-59	Single Pole	2°58'85"	3458	27.627061	94.772129	Along the Road-Govt.		
				50	0				
75	FP-4	Four Pole	70°64'42"	3508	27.627413	94.772103	Along the Road-Govt.		SP-76 Pole Required
				50	0			NH & 11KV Line	
76	DP-13	Double Pole	5°77'15"	3558	27.62754	94.77159	Along the Road-Govt.		SP-76 Pole Required
				49	0			11KV Line, Road & Nala -	

*Pranjit*  
*07/12/20*  
 AT HELLOH

*Umath*  
 10/12/20  
 JIJAL NATH  
 SUPERVISOR/ENGINEER  
 POWERGRID (NERPSIP)

*[Signature]*  
 Central Engineer  
 Electrical Division

*[Signature]*  
 08-02-2021  
 B. J. S. S. S.  
 MEMBER/CM (NERPSIP)  
 GREEN GROUP



FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam



77	DP-14	Double Pole	14°69'18"		3607	27.62763	94.7711	Along the Road-Govt.			SP-76 Pole Required
				50	0						
78	SP-60	Single Pole	2°72'18"		3657	27.627831	94.770643	Along the Road-Govt.			
				55	0						
79	SP-61	Single Pole	1°97'94"		3712	27.628014	94.770172	Paddy Field -Pvt.			
				58	0						
80	FP-5	Four Pole			3770	27.62826	94.769594	Paddy Field -Pvt.			
				0	0						
	FP-2	Four Pole			3770	27.604928	94.755838	Along the Road-Govt.			SP-76 Pole Required
									NH & 11KV Line		
81	FP-6	Four Pole		55	3825	27.605301	94.755457	Along the Road-Govt.			SP-76 Pole Required
				3825	0						

Powergrid  
07/03/20  
for NECLW

*Ujjal Nath*  
06/03/2020  
উজাল নাথ/UJJAL NATH  
জিএসই/ENGINEER  
পাওয়ার/POWERGRID (NERPSIP)  
Dhemaji, Assam

*[Signature]*  
Asst. General Manager  
Chilapathar, Electrical Division  
APDCI, Chilapathar

*B. R. Azad*  
06-03-20  
বী.আর. আজাদ/B.R. AZAD  
মহাপরিচালক/GM (NERPSIP)  
পাওয়ার/POWERGRID  
চিলাপথার/Chilapathar

 <p>पावरग्रिड POWERGRID</p>	<p>FEAR for T&amp;D subprojects in Dhemaji district under NERPSIP in Assam</p>	 <p>MEMBER GREEN GROUP THE GREEN PEOPLE</p>
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***ANNEXURE – 4***  
***DETAILS OF PUBLIC***  
***CONSULTATION***

 <b>पावरग्रिड POWERGRID</b>	<b>FEAR for T&amp;D subprojects in Dhemaji district under NERPSIP in Assam</b>	 <small>MEMBER GREEN GROUP THE GREEN PEOPLE</small>
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## PUBLIC AWARENESS MEETING

**Subject: Construction of 33 KV line from 132 KV Silapathar (new) S/S to 33 KV Silapathar (existing) S/S under North Eastern Region Power System Improvement Project (NERPSIP), a world bank funded scheme.**

Venue: Jonai Link Road (Near NH-15)

Date and time: 05/05/2017, 1:30 pm onwards

A public meeting was held at a public place on Jonai Link Road, Dist- Dhemaji, Assam on 05/05/2017 from 1:30 pm onwards to appraise the public about construction of new 33 KV line from 132 KV Silapathar (new) S/S to 33 KV Silapathar (existing) S/S under North Eastern Region Power System Improvement Project (NERPSIP), a world bank funded scheme and also to discuss various issues associated with the proposed 33 KV line. The meeting was held in presence of representative from Assam Power Distribution Company Limited (APDCL) along with officers of Power Grid Corporation of India Limited (PGCIL) and public of the nearby areas.

The meeting started with a detailed overview by Power Grid Officials on the necessity of the NERPSIP Project for the general public, various environment and socio-economic issues, various compensation related issues etc. A leaflet termed "PROJECT SUMMARY" was also handed over to all the attendees of the meeting. Subsequently, after the brief from Power Grid and APDCL officials, it was requested to raise project related issues from public so that appropriate clarification can be provided from the project proponent.

In this regard various issues were raised by the public for proper execution of the project in their locality. The various issues raised were:

- Whether land acquisition from public will be required for construction of this line.
- Whether compensation will be provided for damages caused during execution of this project.
- Public enquired about the estimated time for the completion of construction of this line.

Officials from Power Grid Corporation of India Ltd and Assam Power Distribution Company Limited (APDCL) have clarified all the genuine issues raised by the public and also assured to take during execution of the project. Further it was also informed to the public that suitable compensation will be paid damages caused during implementation of the project. Subsequently, all the attendees unanimously accepted the need for implementation of the project and assured their full support during construction which will benefit the common public.

The meeting concluded with a request to all for providing full support while implementation of the project and a vote of thanks to the public and other officials for attending the meeting.



**ATTENDANCE SHEET OF PUBLIC CONSULTATION IN DHEMAJI DSTRIC UNDER NERPSIP, ASSAM**

Public awareness meeting in connection with construction of 33KV line from 132KV Silapathar (new) S/S to 33KV Silapathar existing S/S:

Venue: Jorai Link road (New NH, 15), Dhemaji, Assam

Date: 05/05/2017

List of participants attended in the meeting:

- 1) S.F. SHAH, Asst. G.M., POWERGRID
- 2) Lukeswar Patil SDE, APDCI, Silapathar.
- 3) Sri Paban Deka Boruah *Boruah*
- 4) *স্বপ্না সন্দিকৈ*
- 5) Sri Jantu Sonowal.
- 6) Sri Aditya Gogoi
- 7) *বক*
- 8) *সুমনতা সন্দিকৈ*
- 9) *অপরিকা সন্দিকৈ*
- 10) Sri Duni Sonowal.
- 11) *বিজয় সন্দিকৈ*
- 12) *মোহন দেব বরুয়া*
- 13) Dipali Basumatary
- 14) *সন্দ পাপু ভাসুমতী*
- 15) *মিস জয়ন্তী সন্দিকৈ*
- 16) Ujjal Nath (AET), Powergrid *Ujjal*
- 17) Bhulunga Haachary (FE) PGCL *Bhulunga*



**Details of Informal Group meetings held along the route of 33 KV line from 132 KV Silapathar (New) S/s to Silapathar-II (New) sub-station associated with NERPSIP, Assam**

<b>Distribution Line</b>	<b>Date of Meeting</b>	<b>No. of villagers present</b>	<b>Location of Public Consultation</b>	<b>District</b>	<b>Remarks</b>
33 kV line from 132 kV Silapathar (new) s/s to 33 kV Silapathar II (new) s/s	5/5/2017	34	Akajan Gaon Panchayat Office	Dhemaji	Panchayat representatives/village headman, farmers, project affected persons etc. attended the meeting. Discussion about crop compensation, utilization of roads/paths was the main subjects of concern.





Survey and PRA interaction with villagers at near Dhemaji Substation of 132 kV Dhamaji –





Survey and PRA interaction with villagers at AP 03 of 132 kV Dhamaji – Silapathar line



Interaction with POWERGRID Officials at Dhemaji



## MINUTES OF MEETING OF PUBLIC CONSULTATION IN DHEMAJI DISTRICT UNDER NERPSIP, ASSAM

### PUBLIC AWARENESS MEETING

**Subject: Construction of 33 KV line from 132 KV Silapathar (new) S/S to 33 KV Silapathar-II S/S under North Eastern Region Power System Improvement Project (NERPSIP), a world bank funded scheme.**

Venue: Akajan Gaon Panchayat Office

Date and time: 05/05/2017, 3:30 pm onwards.

A public meeting was held at Akajan Gaon Panchayat Office, Dist- Dhemaji, Assam on 05/05/2017 from 3:30 pm onwards to appraise the public about construction of new 33 KV line from 132 KV Silapathar (new) S/S to 33 KV Silapathar-II (new) S/S under North Eastern Region Power System Improvement Project (NERPSIP), a world bank funded scheme and also to discuss various issues associated with the proposed 33 KV line. The meeting was held in presence of representative from Assam Power Distribution Company Limited (APDCL) along with officers of Power Grid Corporation of India Limited (PGCIL), Secretary and members of Akajan Gaon Panchayat, Gaon Burha (Village Head) and public of the nearby areas.

The meeting started with a detailed overview by Power Grid Officials on the necessity of the NERPSIP Project for the general public, various environment and socio-economic issues, various compensation related issues etc. A leaflet termed "PROJECT SUMMARY" was also handed over to all the attendees of the meeting. Subsequently, after the brief from Power Grid and APDCL officials, it was requested to raise project related issues from public so that appropriate clarification can be provided from the project proponent.

In this regard various issues were raised by the public for proper execution of the project in their locality. The various issues raised were:

- What type of poles will be used in the proposed line construction (whether 4 legged big towers or single poles) and how much land will be required for the poles.
- Public also informed about their hardship due to frequent power cuts and theft of power in their area.

Officials from Power Grid Corporation of India Ltd and Assam Power Distribution Company Limited (APDCL) have clarified all the genuine issues raised by the public and also assured to take during execution of the project. Further it was also informed to the public that suitable compensation will be paid damages caused during implementation of the project. Steel tubular poles will be used in the proposed line construction which will require very small amount of land and no permanent land acquisition will be required for the construction of the proposed line. Subsequently, all the attendees unanimously accepted the need for implementation of the project and assured their full support during construction which will benefit the common public.

The meeting concluded with a request to all for providing full support while implementation of the project and a vote of thanks to the public and other officials for attending the meeting.



Public awareness meeting in connection with construction of 33 KV line from Silapathar 132KV (new) S/S to 33KV Silapathar-II S/S at Golegaon.

Venue: Akafan CRP office, Assam, Dhemaji, Assam  
Date: 05/05/17

List of participants attended in the meeting:

- 1) S.P. Saha, POWERGRID,
- 2) L. Paif, SDE, APCL, Silapathar,
- 3) Dr. Anand Kumar, Assam State Council for Women & Child
- 4) A Anup K. Barua
- 5) B Tilgagan, Member, AM (APCL)
- 6) Sri Anand Kumar Barua
- 7) Sri Lalit Barua
- 8) Sri Naba Barua
- 9) Sri Nityananda Barua
- 10) Sri Babbar, Basumat etc.
- 11)
- 12) Sri Yashraj Barua
- 13) Sri Nayanmoni Barua (Member, Assam State Council for Women & Child)
- 14) Sri Namergaon Barua (Member)
- 15) Sri Bhuvanath Barua, G.P. Assam G.P. - Golegaon
- 16) Sri Anand Kumar Barua, Assam CRP, Member
- 17) Sri Anand Kumar Barua, Assam CRP, Member
- 18) Sri Anand Kumar Barua, Assam CRP, Member
- 19) Sri Anand Kumar Barua, Assam CRP, Member
- 20) Sri Anand Kumar Barua, Assam CRP, Member
- 21) Anona Patgiri
- 22) Salyaboli Barua
- 23) Daulata Patgiri
- 24)
- 25) Radha Patgiri
- 26) Ganu Khamari
- 27) Bishnu Chandra Patgiri
- 28) Rangana Patgiri
- 29) Nita Mani Patgiri Barua
- 30) Doya Wati Taya, Nili
- 31) Shilpa Choudhary Barua
- 32) Anona Nili
- 33) Ujjal Nili (A.C.), Assam CRP, Member
- 34) Shilpa Choudhary Barua

***ANNEXURE - 5***  
***Clearances from***  
***Department of***  
***Railways***



**Application  
For Crossing Railway Line**

Reporting Date: 07/12/2019

Application ID : NFR-TSK-2019-62      Date : 07/12/2019

- 1. Applied to : DRM/Engg., Tinsukia, Northeast Frontier Railway
- 2. Purpose : Power Lines/Transmission Lines
- 3. Applicant : State Electricity Board
  - 3.1 Applicant Name : Assam Electricity Grid Corporation Ltd
  - 3.2 Auth. Signatory : Subodh Kr. Deka
  - 3.3 Designation : Assistant General Manager
  - 3.4 Address : The AGM, 132/33kV GSS, T&T Division, AEGCL, Nalkata, North Lakhimpur, 787031, North Lakhimpur, Assam 787031
  - 3.5 Landline No. :
  - 3.6 Mobile : 98xxxxxx85
  - 3.7 Email : tid\*\*\*\*\*@gmail.com
- 4. Location
  - 4.1 Between Stations : TANGANI and NEW SISIBARGAON
  - 4.2 Railway KM/TP : 38/0 and 38/1
  - 4.3 Revenue Village : Udmara
  - 4.4 Tehsil : Sissiborgaon
  - 4.5 District : Dhemaji
  - 4.6 State : Assam
- 5. Method of work execution
  - 5.1 Work to be executed by : Applicant Party
- 6. Detail of crossing : Above 66 kV and upto 132 kV
- 7. Fee Mode(Rs.2000/-) : DD/Banker's Cheque
  - 7.1 No. : 538438
  - 7.2 Date : 24/09/2019
  - 7.3 Issuing Bank/Name of Station : State Bank of India Kulajan

**Note**

- 1. Duly filled Application form should be downloaded, signed, and enclosing a copy of rough sketch and draft agreement duly signed (on each page) by the applicant should be sent to DRM/Engg. of the Division within one week of online registration by speed post / registered post.
- 2. The formal registration will be done after receipt of duly signed application form.
- 3. Application form without rough sketch, draft agreement duly signed by applicant (on each page) and registration fee shall be considered incomplete and be summarily rejected.
- 4. The demand draft(DD) should be prepared in favour of Senior Divisional Finance Manager of the concerned Division payable at the divisional head quarter's station.

(Subodh Kr. Deka)  
(Signature of the Applicant)  
**Assistant General Manager**  
**T&T Division, AEGCL**  
**North Lakhimpur**

Seal(In case other than individual)

Date: 07.12.19

Name of TL : 132 KV S/C (on D/C tower) Dhemaji-Silapathar TL  
Name of pkg. : TWO4 under NERPSIP.



पावरग्रिड  
POWERGRID

FEAR for T&D subprojects in Dhemaji  
district under NERPSIP in Assam



***ANNEXURE – 6***  
***Impact on Drainage***  
***of the Area &***  
***prevention of oil***  
***spillage***



*Drainage provisions at Dhemaji substation.*

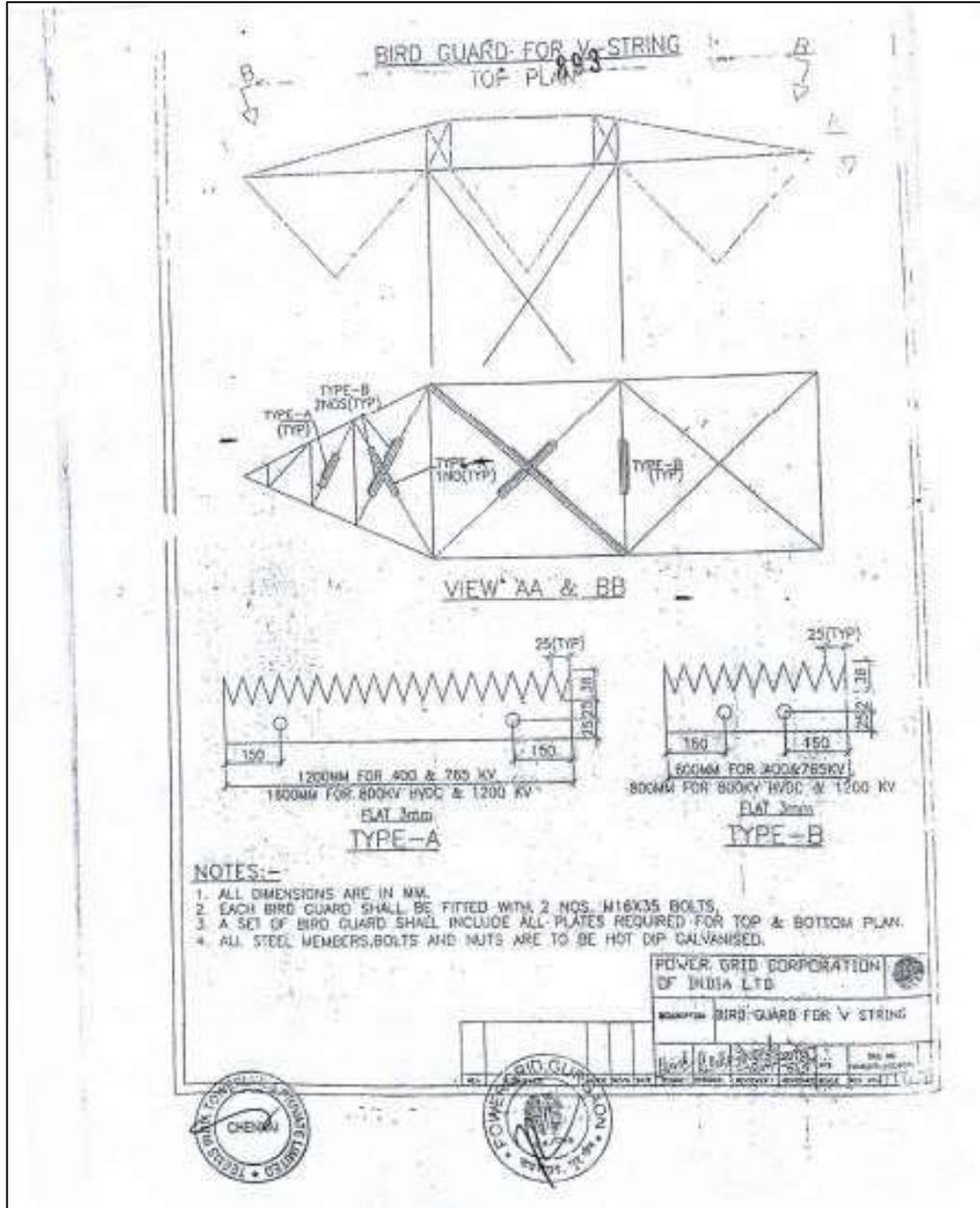


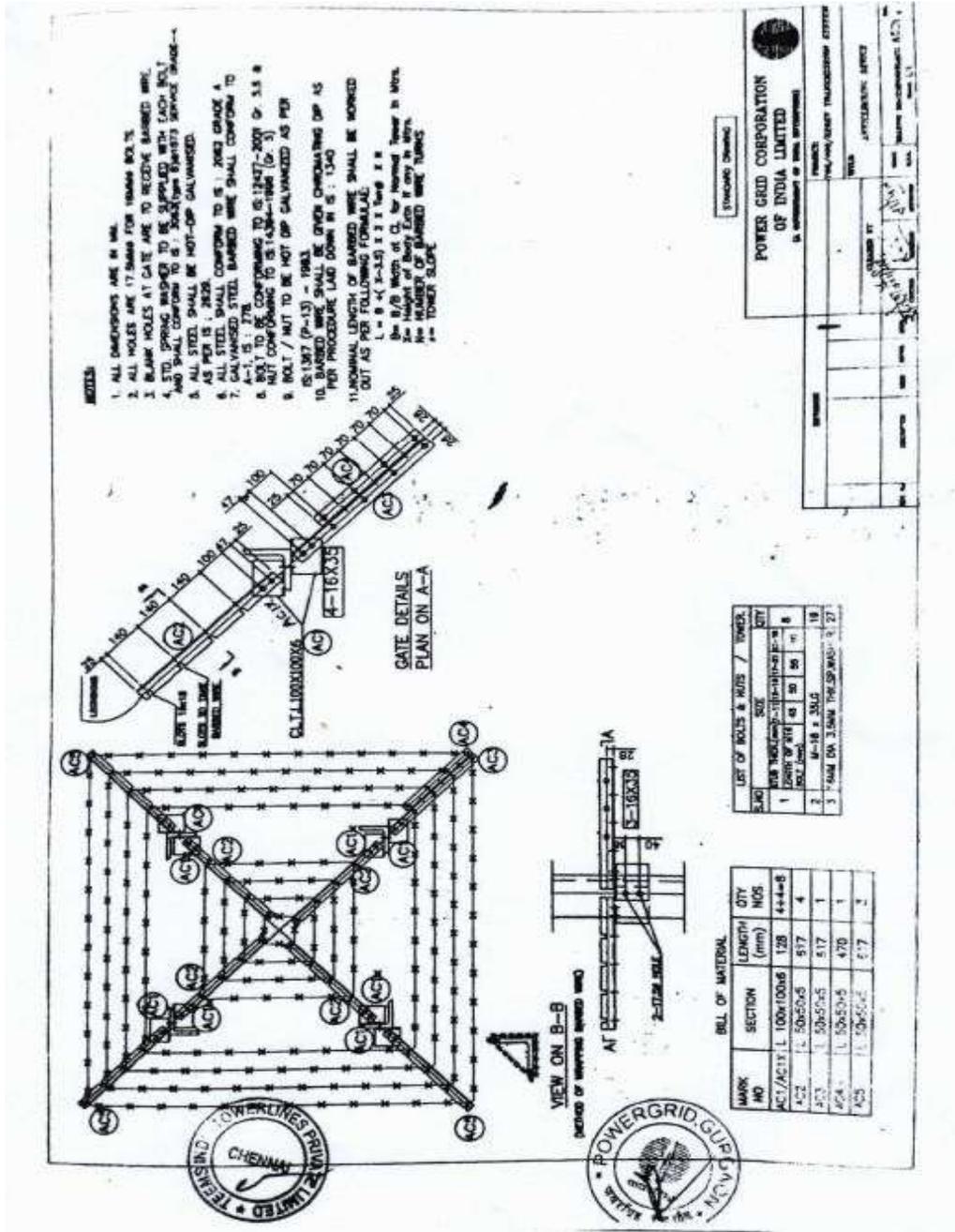


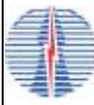
*Provision for oil spillage prevention at Silapathar New substation*



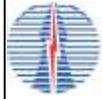
***ANNEXURE – 7***  
***Bird Guard/ Anti***  
***Perch***





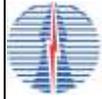
 पावरग्रिड POWERGRID	FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam	 GREEN MEMBER GROUP THE GREEN PEOPLE
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***ANNEXURE - 8***  
***Sample Copy of Safety***  
***Plan***

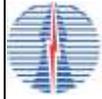


**CHECK LIST FOR SEFETY PLAN**

S. N.	Details of Enclosure	Status of Submission of information/ documents	Remarks
1.	<b>Annexure – 1A (SP)</b> 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.	<b>Annexure – 1B (SP)</b> 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.	<b>Annexure – 2 (SP)</b> 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.	<b>Annexure – 3 (SP)</b> 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	

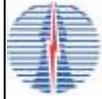


S. N.	Details of Enclosure	Status of Submission of information/ documents	Remarks
	<p>for all workers working at height for more than three meters. Safety Harness should be with attachments of light weight such as of aluminium alloy etc. and having a feature of automatic locking arrangement of snap hook and comply with EN 361 / IS 3521 standards.</p> <p>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.)</p> <p>6. Retractable type fall arrestor (EN380: 2002) for ascending / descending on suspension insulator string etc.</p> <p>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.</p> <p>8. Electrical Resistance hand gloves to workers for handling electrical equipment / Electrical connections. IS : 4770</p> <p>9. Dust masks to workers handling cement as per requirement.</p> <p>10. Face shield for welder and Grinders. IS : 1179 / IS : 2553</p> <p>11. Other PPEs, if any, as per requirement etc.</p>		
5.	<p><b>Annexure – 4 (SP)</b></p> <p>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</p>	Yes/No	
6.	<p><b>Annexure – 5A (SP)</b></p> <p>List of Qualified Safety Officer(s) along with their contact details</p>	Yes/No	
7.	<p><b>Annexure – 5B (SP)</b></p> <p>Details of Explosive Operator (if required), Safety officer / Safety supervisor for every erection / stringing 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</p>	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.	<b>Annexure – 6 (SP)</b> Copy of Safety Policy/ Safety Document of the Contractor's company	Yes/No	
9.	<b>Annexure – 7 (SP)</b> Emergency Preparedness Plan' for different incidences i.e. Fall from height, Electrocutation, 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.	<b>Annexure – 8 (SP)</b> Safety Audit Check Lists ( Formats to be enclosed)	Yes/No	
11.	<b>Annexure – 9 (SP)</b> 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.	<b>Annexure – 10A (SP)</b> Information along with 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
	<u>[Name of Documentary evidence in support of compliance]</u>		
(iii)	Building & other construction workers (Regulation of Employment and Conditions of Services Act and Central Act 1996) and Welfare Cess Act 1996 with Rules. <u>[Name of Documentary evidence in support of compliance]</u>	Yes/No	
(iv)	Workmen Compensation Act 1923 and Rules. <u>[Name of Documentary evidence in support of compliance]</u>	Yes/No	
(v)	Public Insurance Liabilities Act 1991 and Rules. <u>[Name of Documentary evidence in support of compliance]</u>	Yes/No	
(vi)	Indian Explosive Act 1948 and Rules. <u>[Name of Documentary evidence in support of compliance]</u>	Yes/No	
(vii)	Indian Petroleum Act 1934 and Rules. <u>[Name of Documentary evidence in support of compliance]</u>	Yes/No	
(viii)	License under the contract Labour (Regulation & Abolition) Act 1970 and Rules. <u>[Name of Documentary evidence in support of compliance]</u>	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:		



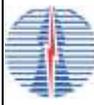
**पावरग्रिड**  
**POWERGRID**

FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam



S. N.	Details of Enclosure	Status of Submission of information/ documents	Remarks
(i)	Under Workmen Compensation Act 1923 and Rules.  <u>[Name of Documentary evidence in support of insurance taken]</u>	Yes/No	
(ii)	Public Insurance Liabilities Act 1991  <u>[Name of Documentary evidence in support of insurance taken]</u>	Yes/No	
(iii)	Any Other Insurance Policies  <u>[Name of Documentary evidence in support of insurance taken]</u>	Yes/No	

EMPLOYER

 पावरग्रिड POWERGRID	FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam	 GREEN MEMBER GROUP THE GREEN PEOPLE
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***ANNEXURE – 9***  
***Compliance of safety  
standard/plan***



पश्चिम बंगाल WEST BENGAL  
SAFETY PLAN

20AA 952109

THIS SAFETY PLAN is made this 10<sup>th</sup> day of January, 2017 by Sterling & Wilson Pvt. Ltd., a company registered under Companies Act, 2013 having its Registered Office at 9<sup>th</sup> Floor, Universal Majestic P.L. Lokhande Marg, Chembur (West), Mumbai-400043 (herein after called as 'Contractor' which expression shall include its successors and permitted assigns) for approval of Power Grid Corporation of India Ltd. a company incorporated under the Companies Act, 1956 having its Registered office at B-9 Qutab Institutional Area, Katwaria Sarai, New Delhi - 110 016 for its Contract for CC-CS/94-NER/REW - 3080/1/G10/CA-I/7117 & CC - CS/94-NER/REW - 3080/1/G10/CA-II/7118

Whereas PGCIL has awarded to the Contractor aforesaid Contract vide its Notification of Award/ Contract No. CC-CS/94-NER/REW - 3080/1/G10/CA-I/7117 & CC - CS/94-NER/REW - 3080/1/G10/CA-II/7118 (hereinafter called the Contract) in terms of which the contractor is required to submit 'Safety Plan' along with 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 regarding 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 throughout the contract duration without handling pressure in last quarter of the financial

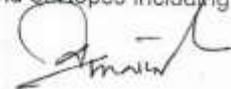


year/last months of the Contract and the shall be finalized in association with POWERGRID Engineer In-charge/Project Manager from time to time as required.

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 POWERGRID 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 up to 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 Equipment / 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 POWERGRID. 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 shall also provide Reflective Jackets to all workmen working on the site including differently coloured such Jackets to the persons working at height.** 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. POWERGRID 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 POWERGRID 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 POWERGRID 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 Equipment 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 POWERGRID Project Manager / Construction staff.

**The Contractor shall deploy one dedicated Safety Staff(s) for every 200 kms of a Transmission Line Project.**

The name and address of such safety officers/staff(s) 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 Staff/ Safety supervisor / nominated person for safety for each erection / stringing gang, list of personnel trained in First Aid Techniques as well as



The block contains a handwritten signature in black ink and a circular official stamp. The stamp is from the Assam State Electricity Board, with the word 'Koraga' visible in the center.

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 / POWERGRID 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. 15,00,000/- (Rupees Fifteen Lakh only) per person affected causing death and Rs. 5,00,000/- (Rupees Five 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

Notwithstanding above, the Contractor shall also be responsible for payment of sum as indicated below additionally which shall be deposited in Safety Corpus Fund pursuant to GCC Sub-Clause 18.3.3.26:

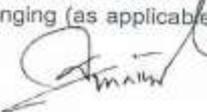
a.	Upon 1 <sup>st</sup> Fatal Accident due to negligence by the Contractor	Rs. 50,00,000/-
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b.	Upon 2 <sup>nd</sup> Fatal Accident due to negligence by the Contractor	Rs. 75,00,000/-
c.	Upon 3 <sup>rd</sup> Fatal Accident due to negligence by the Contractor	Rs. 1,00,00,000/-
d.	Re-occurrence of Fatal Accident even after 3 <sup>rd</sup> Fatal Accident due to negligence by the Contractor	Rs. 1,00,00,000/- per fatal accident
e.	Tower Collapse leading to more than one (01) death attributable to the Contractor as per the Accident Enquiry Committee Report	Rs. 1,00,00,000/- per fatal accident in addition to a, b, c or d above, as applicable

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 along with 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 / POWERGRID 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.

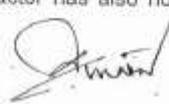
The Contractor, therefore, submits copy of the module of training program, enclosed at **Annexure – 9 (SP)**, to Engineer In-charge/Project Manager for its acceptance and approval and records maintained.

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 POWERGRID 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 POWERGRID 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 along with 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 along with 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

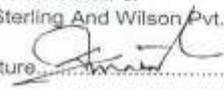


S. K. WILSON FIELD  
K. B. K. K.

Services Contract shall be made on submission of 'Safety Plan' along with 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. Sterling And Wilson Pvt. Ltd.

Signature 

Name.....

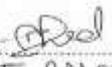
Address: 31 G. N. Block, Benfish IT Building  
3<sup>rd</sup> Floor, Sector - V, Salt Lake City,  
Kolkata - 700 091

Authorised representative

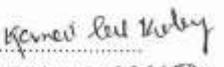
Common Seal



WITNESS

1. Signature   
Name... J. APPI MED  
Address... 31 G.N. Block  
Salt Lake, Kol-91



2. Signature   
Name... KANAJ LAL KOLEY  
Address... 31-G.N. Block, Salt Lake  
Note: 3<sup>rd</sup> floor, Benfish,  
Sce-V, Kol-91



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.





पश्चिम बंगाल WEST BENGAL  
SAFETY PLAN

20AA 952109

THIS SAFETY PLAN is made this 10<sup>th</sup> day of January, 2017 by Sterling & Wilson Pvt. Ltd., a company registered under Companies Act, 2013 having its Registered Office at 9<sup>th</sup> Floor, Universal Majestic P.L. Lokhande Marg, Chembur (West), Mumbai-400043 (herein after called as 'Contractor' which expression shall include its successors and permitted assigns) for approval of Power Grid Corporation of India Ltd. a company incorporated under the Companies Act, 1956 having its Registered office at B-9 Qutab Institutional Area, Katwaria Sarai, New Delhi - 110 016 for its Contract for CC-CS/94-NER/REW - 3080/1/G10/CA-I/7117 & CC - CS/94-NER/REW - 3080/1/G10/CA-II/7118

Whereas PGCIL has awarded to the Contractor aforesaid Contract vide its Notification of Award/ Contract No. CC-CS/94-NER/REW - 3080/1/G10/CA-I/7117 & CC - CS/94-NER/REW - 3080/1/G10/CA-II/7118 (hereinafter called the Contract) in terms of which the contractor is required to submit 'Safety Plan' along with 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 regarding 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 throughout 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 POWERGRID 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 inexperienced 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 POWERGRID 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 up to 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 Equipment / Machineries / Lifting tools / Lifting tackles / Lifting gears / All kind of Ropes including wire



*[Handwritten signature]*

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 POWERGRID. 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 shall also provide Reflective Jackets to all workmen working on the site including differently coloured such Jackets to the persons working at height.** 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. POWERGRID 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 POWERGRID 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 POWERGRID 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 Equipment 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 POWERGRID Project Manager / Construction staff.

**The Contractor shall deploy one dedicated Safety Staff(s) for every 200 kms of a Transmission Line Project.**

The name and address of such safety officers/staff(s) 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 Staff/ Safety supervisor / nominated person for safety for each erection / stringing gang, list of personnel trained in First Aid Techniques as well as



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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 / POWERGRID 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. 15,00,000/- (Rupees Fifteen Lakh only) per person affected causing death and Rs. 5,00,000/- (Rupees Five 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

**Notwithstanding above, the Contractor shall also be responsible for payment of sum as indicated below additionally which shall be deposited in Safety Corpus Fund pursuant to GCC Sub-Clause 18.3.3.26:**

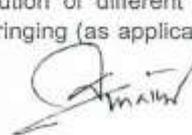
a.	Upon 1 <sup>st</sup> Fatal Accident due to negligence by the Contractor	Rs. 50,00,000/-
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b.	Upon 2 <sup>nd</sup> Fatal Accident due to negligence by the Contractor	Rs. 75,00,000/-
c.	Upon 3 <sup>rd</sup> Fatal Accident due to negligence by the Contractor	Rs. 1,00,00,000/-
d.	Re-occurrence of Fatal Accident even after 3 <sup>rd</sup> Fatal Accident due to negligence by the Contractor	Rs. 1,00,00,000/- per fatal accident
e.	Tower Collapse leading to more than one (01) death attributable to the Contractor as per the Accident Enquiry Committee Report	Rs. 1,00,00,000/- per fatal accident in addition to a, b, c or d above, as applicable

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 along with 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 / POWERGRID 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 POWERGRID 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 POWERGRID 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.

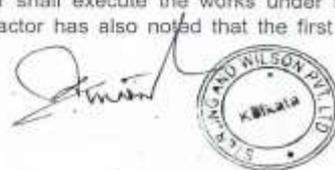
23. THAT the Contractor shall do health check up of all workers from competent agencies and reports will be submitted to Engineer In-Charge within fifteen (15) days of health check up of workers as per statutory requirement.

24. THAT the Contractor shall submit information along with 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 along with 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



Handwritten signature and circular stamp of S. K. Bhatia, Engineer In-Charge/Project Manager.

Services Contract shall be made on submission of 'Safety Plan' along with 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. Sterling And Wilson Pvt. Ltd.



Signature *[Handwritten Signature]*

Name.....

Address: 31 G. N. Block, Benfish IT Building  
3<sup>rd</sup> Floor, Sector - V, Salt Lake City,  
Kolkata -700 091

Authorised representative

Common Seal

WITNESS

1. Signature *[Handwritten Signature]*  
Name: J AHMED  
Address: 31 G.N. Block  
Salt Lake, Kol-91



2. Signature *[Handwritten Signature]*  
Name: KANAJ LAL SOLEY  
Address: 31 G.N. Block, Salt Lake  
Note: 3<sup>rd</sup> floor, Benfish,  
Sce-V, Kol-91



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.



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	
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	
3.	Annexure - 2 (SP) List of Lifting Machines i.e. Crane, Hoist, Triflor, 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	
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 for all workers working at height for more than three meters. Safety Harness should be with attachments of light weight such as of aluminum alloy etc. and having a feature of automatic locking arrangement of snap hook anti 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	Yes	



	<p>arresters on a flexible anchorage line.) ...</p> <p>6. Retractable type fall arrestor (EN360: 2002) for ascending / descending on suspension insulator string etc.</p> <p>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.</p> <p>8. Electrical Resistance hand gloves to Workers for handling _ electrical equipment / Electrical -connections. IS: 4770. ' -</p> <p>9. Dust masks to workers handling cement as per requirement.</p> <p>10. Face shield for welder and Grinders. IS: 1179/IS: 2553</p> <p>11. Other PPEs, if any, as per requirement etc.</p>		
5	Annexure – 4 (SP) List of Earthing Equipment / Earthing Devices with earthing lead conforming to IECs for earthing equipment are (855, 1230, 1235 etc.) gang wise for stringing activity as per requirement.	Yes	
6	Annexure – 5A (SP) List of Qualified safety Officer (s) along with their contact details.	Yes	
7	Annexure – 5B (SP) Details of explosive Operator (If Required), Safety officer / stringing 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 contractor along with copy of organization of the contractor in regard to safety.	Yes	
8	Annexure – 6 (SP) Copy of Safety Policy/ Safety Document of the contractor's company.	Yes	
9	Annexure – 7 (SP) 'Emergency Preparedness Plan' for different incidences i.e. Fall from height, Electrocutation, 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	
10	Annexure – 8 (SP) Safety Audit Check Lists	Yes	
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-	Yes	



	contractors employees.		
12	Annexure – 10A (SP) Information along with documentary evidences in regard to the Contractor's compliance to various statutory requirements including the following:		
i)	Electricity Act 2003	Yes	
ii)	Factories Act 1948	Yes	
iii)	Building and other construction workers (Regulation of employment & conditions of Services act and Central act 1996) and Welfare Cess Act 1996 with rules.	Yes	
iv)	Workmen Compensation Act 1923 and Rules.	Yes	
v)	Public Insurance Liabilities Act 1991 and Rules	Yes	
vi)	Indian Explosive Act 1948 and Rules	NA	
vii)	Indian Petroleum Act 1934 and Rules	NA	
viii)	License under the contract Labour (Regulation & Abolition) Act 1970 and Rules.	Yes	
ix)	Indian Electricity Rule 1956 and amendments if any, from Time to Time.	Yes	
x)	The Environment (Protection) act 1986 and Rules.	Yes	
xi)	Child Labour (Prohibition & Regulation) Act 1986	Yes	
xii)	National Building code of India 2005 (NBC 2005)	NA	
xiii)	Indian Standards for construction of Low/ Medium/ High/ Extra High voltage Transmission Line.	Yes	
xiv)	Any other statutory requirement (s)	No	
13.	Annexure - 10B (SP) Details of Insurance Policies along with documentary evidences taken by the Contractor for the insurance coverage against accident for all employees as below:		
i)	Under Workmen Compensation Act 1923 and Rules.	Yes	
ii)	Public Insurance Liabilities Act 1991	Yes	
iii)	Any Other Insurance policies	No	



ANNEXURE-1A(SP)

**STORE** - In store material is to be keep (indoor & outdoor) in such segregated way so that, no material get damaged. Housekeeping and proper illumination to be maintain at store. Updated inventory record, material receive record, material issue record to be maintain at store. Proper PPE's to be provide during material handling to avoid any unwanted incident.

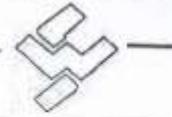
**DISPOSAL** – Unserviceable materials to be disposed at a suitable place as per Engineer-in-charge. A scrap yard to be procure at a suitable place to dispose waste material.



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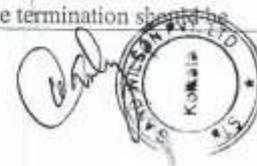


**STERLING AND WILSON**

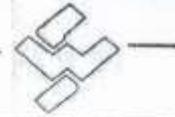


**JOB SAFETY ANALYSIS REPORT**

Title: Projects: Analyst/ Reviewer: K.L. KOLEY / TIRTHA		Date of Job Analysis: Reference No: JOB NO:
Description of Job: Sub Station		
Sequence of job steps	Risks identified	Precautions advised
Survey	<ol style="list-style-type: none"> <li>1. Electrocutation</li> <li>2. Fire</li> <li>3. Machineries</li> <li>4. Fall of material,</li> <li>5. Traffic</li> <li>6. Heat stress</li> </ol>	<ol style="list-style-type: none"> <li>1. Proper access to be followed.</li> <li>2. Carbohic acid to be sprayed.</li> <li>3. PPE'S like gum boot, safety helmet, Ref. H.V. Vest, to be wear.</li> <li>4. Safety harness to wear as required.</li> <li>5. Safe distance to be maintained from any kind of electrical installation, machineries etc.</li> <li>6. No smoking except in smoking zone.</li> <li>7. Should not stand under any suspended load.</li> <li>8. Drink more water to cope heat stress.</li> <li>9. Rain coat as required to be used</li> </ol>
Excavation Job	<ol style="list-style-type: none"> <li>1. Failure of excavator /jcb</li> <li>2. Toppling of excavator/jcb</li> <li>3. Swing hazards</li> <li>4. Collapsing of earth</li> <li>5. Dust</li> <li>6. Slip &amp; trip</li> <li>7. Fall of persons.</li> <li>8. Traffic hazards</li> <li>9. Illumination</li> </ol>	<ol style="list-style-type: none"> <li>1. Excavator's/JCB fitness to be checked on regular basis.</li> <li>2. Certified operator to be deployed.</li> <li>3. Slope to be maintained for movement of excavator around the excavation.</li> <li>4. Area to be barricaded.</li> <li>5. Flagman to be deployed.</li> <li>6. Unauthorized entry to be restricted.</li> <li>7. Slope to be maintained for excavation.</li> <li>8. Housekeeping to be maintained around the excavation.</li> <li>9. Excavated area to be barricaded.</li> <li>10. Proper access/ ladder/ramp to be provided to get entry in to the excavation.</li> <li>11. Speed limit and other warning signage to be provided at strategic location.</li> <li>12. Proper illumination to be provided at site</li> </ol>
	<ol style="list-style-type: none"> <li>1. Electrocutation</li> <li>2. Spark/ flying particle</li> <li>3. Brusting of Abrasive wheel</li> </ol>	<ol style="list-style-type: none"> <li>1. Power should be taken through ELCB.</li> <li>2. Double insulated power tool or body earthing provision must be there.</li> <li>3. All the cable termination should be</li> </ol>



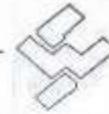
**STERLING AND WILSON**



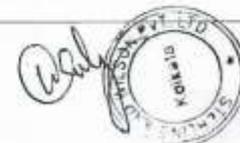
		<ul style="list-style-type: none"> <li>6. All the electrical connection to be taken through ELCB/RCB.</li> <li>7. PP rope should be use for materials lifting at height and also hang the tool &amp; tackles.</li> <li>8. Proper PPE's to be wearing at site</li> <li>9. Close supervision at site.</li> <li>10. And also all around the working area should be barricaded properly by caution tap to protect the unauthorized entry</li> </ul>
Welding Job	<ul style="list-style-type: none"> <li>1. Electrocution</li> <li>2. Fire</li> <li>3. Radiation of IR/UV rays</li> <li>4. Heat</li> <li>5. Toxic gases</li> <li>6. Slip &amp; trip</li> <li>7. Fall of person</li> </ul>	<ul style="list-style-type: none"> <li>1. Power should be taken through ELCB.</li> <li>2. Double body earthing to Welding m/c to provided.</li> <li>3. All the cable termination should be Insulated properly.</li> <li>4. Authorized electrician should be deployed.</li> <li>5. Rated cable to be used.</li> <li>6. Hand gloves to be used.</li> <li>7. Return path should be directly fixed on the job by using welding holder.</li> <li>8. Fire extinguisher to be kept at site.</li> <li>9. UV/IR Protected-Welding screen to be wearing.</li> <li>10. Welder's apron, hand gloves, safety shoes, leg guard to be wearing.</li> <li>11. Welding should be done along the wind direction (natural ventilation)</li> <li>12. Housekeeping to maintained.</li> <li>13. Proper access (A-Type ladder/portable scaffolding) to be used.</li> </ul>
Gas cutting job	<ul style="list-style-type: none"> <li>1. Fire &amp; explosion</li> <li>2. Radiation of IR/UV rays</li> <li>3. Heat</li> <li>4. Toxic metal fumes</li> </ul>	<ul style="list-style-type: none"> <li>2. First aid Fire extinguishers, sand, water must be kept near cylinder shed &amp; near gas cutting area.</li> <li>3. No inflammable /combustible substances like paints, lubricants Papers etc. Should be kept near gas cutting area.</li> <li>4. Cutting torch/nozzle to be clean regularly.</li> <li>5. Flash back arrestor/NRV to be used and checked regularly.</li> <li>6. Sparker igniter to be used to produce the flame</li> <li>7. Color coded hose to be used (Red for</li> </ul>

*W. Wilson*  

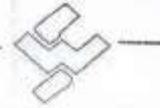

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<p><b>Reinforcement cutting by Chop saw machine at yard</b></p>	<ol style="list-style-type: none"> <li>4. Failure of power tool</li> <li>5. Entanglement in moving parts.</li> <li>6. Noise</li> </ol>	<p>insulated properly.</p> <ol style="list-style-type: none"> <li>4. Authorized electrician should be deployed.</li> <li>5. Rated cable to be used.</li> <li>6. Standard cable management practice must be adopted</li> <li>7. Expired dated abrasive wheel must not be used.</li> <li>8. RPM of the grinding wheel must be matched with machines RPM.</li> <li>9. Weekly inspection for all power tools to be done and recorded as per checklist.</li> </ol> <p>Ear plug, nose mask, safety goggles to be wear.</p>
<p><b>Reinforcement job</b></p>	<ol style="list-style-type: none"> <li>1. Inhalation, skin absorption or ingestion of</li> <li>2. Harmful substances/recon Zinc.</li> <li>3. Access &amp; egress.</li> <li>4. Slips on spillages.</li> <li>5. Falls from height.</li> <li>6. Falling materials.</li> <li>7. Fire or explosion.</li> <li>8. Electrocutation.</li> <li>9. Cut injury and eye injury</li> </ol>	<ol style="list-style-type: none"> <li>1. While working at height, proper access ladder, scaffolding with handrail, mid rail toe guard to be provided.</li> <li>2. Proper equipment /power tool and facilities should be provided and their condition should be checked before use.</li> <li>3. All the electrical connection to be taken through ELCB/RCB.</li> <li>4. Proper PPE'S to be wearing at site</li> <li>5. Fire extinguisher should be at site</li> <li>6. Housekeeping should be maintained timely.</li> <li>7. Working area should be barricaded properly to protect unauthorized entry</li> </ol>
<p><b>Shuttering work (Raft, Column Etc.)</b></p>	<ol style="list-style-type: none"> <li>1. Slip &amp; trip</li> <li>2. Fall of person</li> <li>3. Fall of materials</li> <li>4. Electrocutation</li> <li>5. Nonstandard tools &amp; tackles (power &amp; hand tools)</li> <li>6. Untrained worker.</li> <li>7. Improper support</li> </ol>	<ol style="list-style-type: none"> <li>1. Housekeeping should be maintained timely.</li> <li>2. Only trained worker should be engaged.</li> <li>3. Proper scaffold with proper platform, Top guard railing, middle railing, toe guard &amp; Proper access to be provided.</li> <li>4. Before start the shuttering job TBT must be conducted by safety person and also competent person of form work department/site engg. And after completion the shuttering supports both (safety and form work engg. /site engg.) will inspect that.</li> <li>5. Only standard (power &amp; hand) tools and tackles should be use at site, which will be inspected by competent person before start the job.</li> </ol>



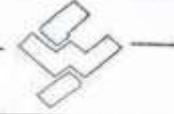
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		<ul style="list-style-type: none"> <li>6. All the electrical connection to be taken through ELCB/RCB.</li> <li>7. PP rope should be use for materials lifting at height and also hang the tool &amp; tackles.</li> <li>8. Proper PPE's to be wearing at site</li> <li>9. Close supervision at site.</li> <li>10. And also all around the working area should be barricaded properly by caution tap to protect the unauthorized entry</li> </ul>
Welding Job	<ul style="list-style-type: none"> <li>1. Electrocutation</li> <li>2. Fire</li> <li>3. Radiation of IR/UV rays</li> <li>4. Heat</li> <li>5. Toxic gases</li> <li>6. Slip &amp; trip</li> <li>7. Fall of person</li> </ul>	<ul style="list-style-type: none"> <li>1. Power should be taken through ELCB.</li> <li>2. Double body earthing to Welding m/c to provided.</li> <li>3. All the cable termination should be Insulated properly.</li> <li>4. Authorized electrician should be deployed.</li> <li>5. Rated cable to be used.</li> <li>6. Hand gloves to be used.</li> <li>7. Return path should be directly fixed on the job by using welding holder.</li> <li>8. Fire extinguisher to be kept at site.</li> <li>9. UV/IR Protected-Welding screen to be wearing.</li> <li>10. Welder's apron, hand gloves, safety shoes, leg guard to be wearing.</li> <li>11. Welding should be done along the wind direction (natural ventilation)</li> <li>12. Housekeeping to maintained.</li> <li>13. Proper access (A-Type ladder/portable scaffolding) to be used.</li> </ul>
Gas cutting job	<ul style="list-style-type: none"> <li>1. Fire &amp; explosion</li> <li>2. Radiation of IR/UV rays</li> <li>3. Heat</li> <li>4. Toxic metal fumes</li> </ul>	<ul style="list-style-type: none"> <li>2. First aid Fire extinguishers, sand, water must be kept near cylinder shed &amp; near gas cutting area.</li> <li>3. No inflammable /combustible substances like paints, lubricants Papers etc. Should be kept near gas cutting area.</li> <li>4. Cutting torch/nozzle to be clean regularly.</li> <li>5. Flash back arrestor/NRV to be used and checked regularly.</li> <li>6. Sparker igniter to be used to produce the flame</li> <li>7. Color coded hose to be used (Red for</li> </ul>

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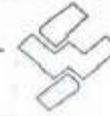

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		DA/LPG and Blue/Green) 8. The Pressure gauge to be used for both the gasses. 9. Cotton dress, safety goggles (UV/IR rated), leg guard etc must be used. 10. Hot Work permit is to be taken
Starting of Concrete pump	1. Noise 2. Spillage of oil to environment 3. Vibrator 4. Exposure to chemical	1. Only trained worker should be engaged 2. All the lose parts of the pumps to be tightened properly, 3. Contained tray to be used at the source of spill. 4. Machine to be placed on level surface with proper packing. 5. PPE'S like Hand gloves, safety glass and others to be used. 6. Rotating parts to be covered
Pouring concrete	1. Exposure to concrete 2. S lip & trip 3. Fall of person from height. 4. Fall of materials	1. PPE'S like Hand gloves, safety glass and others to be used. 2. Housekeeping to be maintained 3. Before start the concreting job shuttering supports clearance to be taken from site in charge / Engg. 4. Only trained worker should be engaged for casting job.
Use of concrete vibrator & plate vibrator fuel operated	1. Rotating parts 2. Noise & vibration 3. Fire hazard.	1. Only trained worker should be engaged. 2. Working are should be barricaded properly (protective barricading) 3. Proper PPE's to be wearing at site. 4. Smoking should be prohibited there. 5. Fire extinguisher should be kept there. 6. Close supervision must 7. Rotating parts should be covered of plate vibrator
De-shuttering work	1. Slip & trip 2. Fall of person 3. Fall of materials 4. Cut injury 5. Eye injury 6. Poor housekeeping 7. Electrocution 8. Projected rod 9. Fire	1. Only trained worker should be engaged. 2. Job should be started from one side. 3. Housekeeping should be maintained timely. 4. All electrical cable should be covered or opened, if not in use that time. 5. Proper PPE's to be wearing at site 6. Access to be provided at site 7. Ply with projected nail kept at safe

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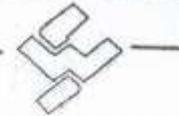

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	10. Poor supervision	place. 8. Area should be barricaded properly to protect the unauthorized entry. 9. Smoking should be prohibited at site. 10. Fire extinguisher should be kept at site. 11. Close supervision must. 12. Before start the job ,TBT must be conducted by concern engineer and safety
Lattice steel tower erection.	1. Fall of person 2. Fall of materials 3. Slip & trip 4. Nonstandard tools & tackles.	.1. Only trained worker should be engage with close supervision. 2. Materials should be lifting by pp rope during tower erection. 3. Housekeeping should be maintained timely. 4. During electric storm & storm cloud job to be stopped. 5. Standard Tools & tackles should be use. 6. Proper PPE's to be wearred at site 7. Vertical life line with fall arrestor to be used 8. Working area should be barricaded to stop the unauthorized entry 9. All tools and tackles should be in proper condition and also during height job total tools and tackles should be fixed with separate pp rope to stop the fall of tools from height.
Lattice steel tower & gantry erection - manually	1. Fall of person 2. Fall of materials 3. Slip & trip 4. Nonstandard tools & tackles.	.1. Only trained worker should be engaged with close supervision. 2. Materials should be lifting by pp rope during tower erection. 3. Housekeeping should be maintained timely. 4. During electric storm & storm cloud job to be stopped. 5. Standard Tools & tackles should be use. 6. Proper PPE's to be wearing at site 7. Vertical life line with fall arrestor to be used 8. Working area should be barricaded to stop the unauthorized entry 9. All tools and tackles should be in proper condition and also during height job total tools and tackles should be fixed with separate pp rope to stop the fall of tools



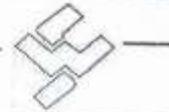
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		from height.
<b>Reactor erection</b>	<ol style="list-style-type: none"> <li>1. Failure of crane / hydra</li> <li>2. Failure of lifting tackles</li> <li>3. Fall of lose material</li> <li>4. Fall of persons</li> <li>5. Wrong slinging</li> <li>6. Swing of load</li> <li>7. Projected items</li> <li>8. Snapping of sling while de slinging.</li> <li>9. Lack of knowledge</li> </ol>	<ol style="list-style-type: none"> <li>1. Third party tested crane to be used.</li> <li>2. Third party tested lifting tackles to be used.</li> <li>3. Weekly inspection to be carried out for all lifting tools &amp; tackles and to be recorded as per checklist</li> <li>4. Load to be assessed as per items design.</li> <li>5. Proper slinging to be done as per CG.</li> <li>6. Guy rope to be used.</li> <li>7. Proper access ladder, full body harness as required to be used.</li> <li>8. De slinging to be done after complete release of load.</li> <li>9. Hand gloves, safety helmet, safety shoes to be wear.</li> <li>10. Competent operator to be deployed</li> </ol>
<b>CB - erection</b>	<ol style="list-style-type: none"> <li>1. Failure of crane / hydra</li> <li>2. Failure of lifting tackles</li> <li>3. Fall of lose material</li> <li>4. Fall of persons</li> <li>5. Wrong slinging</li> <li>6. Swing of load</li> <li>7. Projected items</li> <li>8. Snapping of sling while deslinging.</li> <li>9. Lack of knowledge</li> </ol>	<ol style="list-style-type: none"> <li>1. Third party tested crane to be used.</li> <li>2. Third party tested lifting tackles to be used.</li> <li>3. Weekly inspection to be carried out for all lifting tools &amp; tackles and to be recorded as per checklist</li> <li>4. Load to be assessed as per items design.</li> <li>5. Proper slinging to be done as per CG.</li> <li>6. Guy rope to be used.</li> <li>7. Proper access ladder, full body harness as required to be used.</li> <li>8. Deslinging to be done after complete release of load.</li> <li>9. Hand gloves, safety helmet, safety shoes to be wear.</li> <li>10. Competent operator to be deployed</li> </ol>
<b>LA - erection</b>	<ol style="list-style-type: none"> <li>1. Failure of crane / hydra</li> <li>2. Failure of lifting tackles</li> <li>3. Fall of lose material</li> <li>4. Fall of persons</li> <li>5. Wrong slinging</li> <li>6. Swing of load</li> <li>7. Projected items</li> <li>8. Snapping of sling while deslinging.</li> <li>9. Lack of knowledge</li> </ol>	<ol style="list-style-type: none"> <li>1. Third party tested crane to be used.</li> <li>2. Third party tested lifting tackles to be used.</li> <li>3. Weekly inspection to be carried out for all lifting tools &amp; tackles and to be recorded as per checklist</li> <li>4. Load to be assessed as per items design.</li> <li>5. Proper slinging to be done as per CG.</li> <li>6. Guy rope to be used.</li> <li>7. Proper access ladder, full body harness</li> </ol>



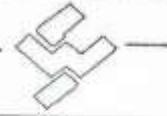
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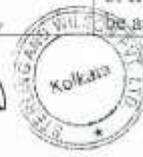
		<p>as required to be used.</p> <p>8. Deslinging to be done after complete release of load.</p> <p>9. Hand gloves, safety helmet, safety shoes to be worn.</p> <p>10. Competent operator to be deployed</p>
Stringing of bus & cable.	<ol style="list-style-type: none"> <li>1. Fall of person</li> <li>2. Untrained worker</li> <li>3. Slip trip</li> <li>4. Traffic hazard</li> <li>5. Damaged tools and tackles.</li> </ol>	<ol style="list-style-type: none"> <li>1. Proper ppe's to be worn at site.</li> <li>2. Only trained worker should be engaged with close supervision.</li> <li>3. Proper access to be provided</li> <li>4. Proper pp rope to be used for pulling the line.</li> <li>5. Area should be barricaded properly, to protect the unauthorized entry.</li> <li>6. One flag man to be deployed there for minimize the traffic hazard.</li> </ol> <p>Tested tools and tackles should be used</p>
Cable laying	<ol style="list-style-type: none"> <li>1. Wrong placing of cable Drum jack</li> <li>2. Wrong placing of cable roller.</li> <li>3. Untrained workers</li> <li>4. Over warden soil in the excavation edge and undercut soil.</li> </ol>	<ol style="list-style-type: none"> <li>1. Before start the cable laying first solves the problem of soil over warden and undercut.</li> <li>2. Cable drum jack should be fix properly by trained worker or staff.</li> <li>3. Cable roller should be fix properly by trained worker.</li> <li>4. Only trained worker should be engaged for cable laying</li> </ol>
Cable Meggering	<ol style="list-style-type: none"> <li>1). Electrocutation</li> </ol>	<ol style="list-style-type: none"> <li>1. All equipment under test MUST be disconnected and isolated.</li> <li>2. Equipment should be discharged (shunted or shorted out) for at least as long as the test voltage was applied in order to be absolutely safe for the person conducting the test.</li> <li>3. Never use Megger in an explosive atmosphere.</li> <li>4. Make sure all switches are blocked out and cable ends marked properly for safety.</li> <li>5. Cable ends to be isolated shall be disconnected from the supply and protected from contact to supply, or ground, or accidental contact.</li> <li>6. Erection of safety barriers with warning</li> </ol>



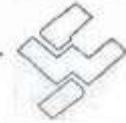
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		<p>signs, and an open communication channel between testing personnel.</p> <p>7. Do not megger when humidity is more than 70 %.</p> <p>8. Good Insulation: Megger reading increases first then remain constant.</p> <p>9. Bad Insulation: Megger reading increases first and then decreases.</p> <p>10. Expected IR value gets on Temp. 20 to 30 degree centigrade.</p> <p>11. If above temperature reduces by 10 degree centigrade, IR values will increased by two times.</p> <p>12. If above temperature increased by 70 degree centigrade IR values decreases by 700 times.</p>
<p>Circuit Breaker testing – tripping time test.</p>	<ol style="list-style-type: none"> <li>1. Electrocutation.</li> <li>2. Nip hazards.</li> <li>3. Cut Injury.</li> <li>4. Flash burn injury.</li> </ol>	<ol style="list-style-type: none"> <li>1. Tacking Proper precaution before and during the work, put a standard rubber mat in front of panel.</li> <li>2. Use proper PPE's like hand gloves, helmet, safety shoe.</li> <li>3. Tools and tackles used must be tested and test certificate should be available.</li> <li>4. Testing device should be grounded properly.</li> <li>5. Do not use of Metallic jewelry, metallic ladder, loose garments.</li> <li>6. Only skilled and competent persons should be engage for the job.</li> <li>7. Job to be perform under strong supervision and TBT should be given before starting the job.</li> <li>8. Ensuring of LOTO SYSTEM.</li> </ol>
<p>Panel testing. Hipot test</p>	<ol style="list-style-type: none"> <li>1. Electrocutation</li> <li>2. Cut Injury.</li> <li>3. Flash burn injury</li> </ol>	<ol style="list-style-type: none"> <li>1. Follow all of the manufacturer's instructions and safety guidelines.</li> <li>2. Don't touch the cable during hipot testing.</li> <li>3. Allow the hipot testing to complete before removing the cable.</li> <li>4. Wear insulating gloves and all necessary PPE's</li> <li>5. If you have any health condition that can be angry by being startled then don't use</li> </ol>

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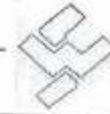
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		<p>the equipment.</p> <p>6. Don't allow children to use the equipment. Only trained and license holder worker should be engage for that job with close supervision</p> <p>7. If you have any electronic implants then don't use the equipment</p> <p>8. Tacking Proper precaution before and during the work, put a standard rubber mat in front of panel. Testing device should be grounding properly. Tested tools and tackles should be used.</p>
ARC Fuses-tripping test.	<ol style="list-style-type: none"> <li>1. Electrocution.</li> <li>2. Nip hazards.</li> <li>3. Cut Injury.</li> <li>4. Flash burn injury.</li> </ol>	<ol style="list-style-type: none"> <li>1. Tacking Proper precaution before and during the work, put a standard rubber mat in front of panel.</li> <li>2. Use proper PPE's like hand gloves, helmet, safety shoe.</li> <li>3. Tools and tackles used must be tested and test certificate should be available.</li> <li>4. Testing device should be grounded properly.</li> <li>5. Do not use of Metallic jewelry, metallic ladder, loose garments.</li> <li>6. Only skilled and competent persons should be engage for the job.</li> <li>7. Job to be performed under strong supervision and TBT should be given before starting the job.</li> <li>8. Ensuring of LOTO SYSTEM.</li> </ol>
Current Transformer & Potential Transformer-Testing.	<ol style="list-style-type: none"> <li>1. Electrocution.</li> <li>2. Nip hazards.</li> <li>3. Cut Injury.</li> <li>4. Flash burn injury.</li> </ol>	<ol style="list-style-type: none"> <li>1. Tacking Proper precaution before and during the work, put a standard rubber mat in front of panel.</li> <li>2. Use proper PPE's like hand gloves, helmet, safety shoe.</li> <li>3. Tools and tackles used must be tested and test certificate should be available.</li> <li>4. Testing device should be grounded properly.</li> <li>5. Do not use of Metallic jewelry, metallic ladder, loose garments.</li> <li>6. Only skilled and competent persons should be engaged for the job.</li> <li>7. Job to be perform under strong supervision and TBT should be given before starting the job.</li> </ol>



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		8. Ensuring of LOTO SYSTEM.
Measurement of Tightness Bus Bar joint & Colour coding Identification	<ol style="list-style-type: none"> <li>1. Electrocutation.</li> <li>2. Cut Injury.</li> <li>3. Flash burn injury</li> </ol>	<ol style="list-style-type: none"> <li>1. Tacking Proper precaution before and during the work, put a standard rubber mat in front of panel..</li> <li>2. Use proper PPE's like hand gloves, helmet, safety shoe.</li> <li>3. Tools and tackles used must be tested and test certificate should be available.</li> <li>4. Testing device should be grounded properly.</li> <li>5. Do not use of Metallic jewelry, metallic ladder, loose garments etc.</li> <li>6. Ensuring of LOTO SYSTEM</li> </ol>
RELAY TESTING	<ol style="list-style-type: none"> <li>1. Electrocutation.</li> <li>2. Nip hazards.</li> <li>3. Cut Injury.</li> <li>4. Flash burn injury</li> </ol>	<ol style="list-style-type: none"> <li>1. Tacking Proper precaution before and during the work, put a standard rubber mat in front of panel.</li> <li>2. Use proper PPE's like hand gloves, helmet, safety shoe.</li> <li>3. Tools and tackles used must be tested and test certificate should be available.</li> <li>4. Testing device should be grounded properly.</li> <li>5. Do not use of Metallic jewelry, metallic ladder, loose garments.</li> <li>6. Only skilled and competent persons should be engage for the job.</li> <li>7. Job to be perform under strong supervision and TBT should be given before starting the job.</li> <li>8. Ensuring of LOTO SYSTEM.</li> </ol>
HV TEST - on Power and control circuit.	<ol style="list-style-type: none"> <li>1. Electrocutation.</li> <li>2. Nip hazards.</li> <li>3. Cut Injury.</li> <li>4. Flash burn injury</li> </ol>	<ol style="list-style-type: none"> <li>1. Tacking Proper precaution before and during the work, put a standard rubber mat in front of panel..</li> <li>2. Use proper PPE's like hand gloves, helmet, safety shoe.</li> <li>3. Tools and tackles used must be tested and test certificate should be available.</li> <li>4. Testing device should be grounded properly.</li> <li>5. Keep the wearing and PPE's extremely dry.</li> <li>6. Using of Metallic jewelry, metallic ladder, nail inserted in shoe, loose</li> </ol>



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		garments prohibited. 7. Ensuring of LOTO SYSTEM
<b>INDICATING INSTRUMENT-Testing</b>	1. Electrocutation.	1. Tacking Proper precaution before and during the work, put a standard rubber mat in front of panel. 2. Use proper PPE's like hand gloves, helmet, safety shoe. 3. Tools and tackles used must be tested and test certificate should be available. 4. Testing device should be grounded properly. 5. Do not use of Metallic jewelry, metallic ladder, loose garments etc. 6. Ensuring of LOTO SYSTEM
<p>Suggested safe system of work: Plan for safe movement of crane at work place.</p> <ul style="list-style-type: none"> <li>• Check the access condition, electrical connections &amp; tool condition prior to use.</li> <li>• Ascend / descend cautiously.</li> <li>• Use properly hooked safety belt if you require working at more than 2M of height.</li> <li>• Ensure Electrical &amp; Fire safety.</li> <li>• Ensure proper PPEs &amp; strict supervision</li> </ul> <p>Only trained worker gang will be engaged with close supervision for tower erection, stringing and materials handling</p>		
<p>Suggested Review date: (if required) As and when required</p>		
<p>Suggested further job safety instructions: (if required)</p> <ul style="list-style-type: none"> <li>• Take utmost care during height tower erection work, wire stringing, heavy material shifting &amp; lifting etc</li> </ul> <p>Ensure all the safety measures suggested during panel Charging &amp; Testing</p>		
<p>Suggested training programmes: (Tool Box Talks)</p> <p>Working at height,          Safe Working with tools,          Safe material handling          Working with live electrical equipment</p>		
Signed By:		Approved By : Tirtha Chattopadhyay



Ref. No:	SW/EHV/SOP/01	<b>SAFE OPERATING PROCEDURE</b>	<b>STERLING &amp; WILSON</b> 
Revision No.	00		
Date		Excavation Work	

1.0	OBJECTIVE	To ensure safe working during Excavation Work
2.0	RESPONSIBILITY	Operator, Supervisor & Engineers

S. No	Description
<b>Excavation for Foundation –</b>	
1	Appoint physically fit, safety inducted, well experienced & trained operator/ supervisor / engineer for this activity,
2	Provide required PPE, (Safety shoes, goggles, hand gloves)
3	Take the required work permit prior to start the work,
4	Trench deeper than 1.5mtr to be benched, shored or slope to prevent cave in,
5	Excavated Material stacking from the edge mini 1.5 M away, providing barricading and display warning signs.
6	Carrying anti-venom in First Aid box.
7	Provide proper access.
8	Ensure TPI of excavated m/c
9	Close the work permit,
<b>Bar bending &amp; form Work: -</b>	
1	Appoint physically fit, safety inducted, well experienced & trained workmen/ supervisor / engineer for this activity,
2	Provide required PPE (Safety shoes/ gum boots, goggles, hand gloves etc.)
3	Use proper tools & tackles,
4	Use of shoulder pad during manually handling.
5	Maintain proper and good housekeeping.
<b>Concreting Work by Mixer m/c :-</b>	
1	Appoint physically fit, safety inducted, well experienced & trained workmen/ supervisor / engineer for this activity,
2	Provide required PPE (Safety shoes/ gum boots, goggles, hand gloves, rubber hand gloves, nose mask etc.)
3	Only authorized operator will be allowed to operate the Mixer machine/Batching plant
4	Mixer M/C must be checked in proper before casting.
5	Provision of access either by proper Ladder/ Scaffold tower with proper platform/ramp/ staircase/steps etc.
6	Use of good condition Industrial type plug top and DB
7	Ensure RCCB 30mA
8	

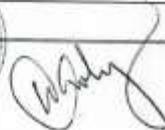
  




Ref. No:	SW/EHV/SOP/01	<b>SAFE OPERATING PROCEDURE</b>	<b>STERLING &amp; WILSON</b> 
Revision No.	00		
Date	09.06.2017		
<b>Augmentation for old conductor</b>			

1.0	<b>OBJECTIVE</b>	To ensure safe working during Augmentation for old conductor Work
2.0	<b>RESPONSIBILITY</b>	Supervisor & Engineers

S. No	Description
<b>Material shifting by Manual/ Mechanical/ –</b>	
1	Appoint physically fit, safety inducted, well experienced & trained operator/ supervisor / engineer for this activity.
2	Provide required PPE, (Safety shoes, goggles, hand gloves)
3	Prior Written work permit from competent authority is mandatory for every activity
4	Through proper planning and assistant with CLIENT the shutdown is to be taken systematically
5	For monitoring every activity engaging of qualified engineer/supervisor is must
6	After getting shutdown from CLIENT discharge and ground the bus bar, outgoing cable and incomer cable by discharge rod for avoiding induction effect or back feed
7	Ensure for standard hand gloves, apron, goggles and safety shoe to the person who will be engage to perform the activity
8	Without valid Testing Certificate of lifting tools and tackles, Hydra or crane is not to be allowed to operate
9	Restrict use of Mobile Phone while working top of the pole
10	Only the skilled worker to be engaged to perform the activity
11	No one can work above 2-meter height without safety Full Body Harness, Helmet, waste Belt etc.
12	Do not throw any material or tools and tackles from elevated height to downwards or vice versa – Use tools bag or kit, rope etc.
13	Ensure Standard tool & tackles
14	Before withdrawal of shut down the discharge rods, groundings to be removed
15	Ensure all the tools and tackles used must be taken off - maintain a check list of tools and tackles
16	Ensure no existence of any loose material like nut, bolt, amour etc. inside the panel or about any live part like Bus bar, lug etc. before withdrawal of shutdown
17	Follow LOTO system.
18	Ensure for First-Aid Box with necessary medicine
19	Display MEN AT WORK, CAUTION, DANGER BOARD, NO ENTRY etc. notice while working; restrict public movement and vehicle movement if necessary with the assistant of local administration
20	Restrict use of Mobile phone while working top of the pole

Ref. No:	SW/EHV/SOP/01	<b>SAFE OPERATING PROCEDURE</b>	<b>STERLING &amp; WILSON</b> 
Revision No.	00		
Date	09.06.2017	<b>Augmentation for old conductor</b>	

21	Stop activity during the time of lightening and rain
22	Use standard wooden ladder for ascending and descending. Lay the ladder properly. Tie the ladder with pole properly
23	Ensure proper grouting of pole earthing and tightness of jumpering or termination
24	Ensure Discharge rod taken out that, inserted at line during shut down for grounding purpose, ensure every point is clear which were shorted
25	Depute a trained and experienced person for proper supervision.



*Waf*

Ref. No:	SW/EHV/SOP/01	<b>SAFE OPERATING PROCEDURE</b>	<b>STERLING &amp; WILSON</b> 
Revision No.	00		
Date	09.06.2017		

1.0	<b>OBJECTIVE</b>	To ensure safe working during Tower erection Work
2.0	<b>RESPONSIBILITY</b>	Worker, Supervisor & Engineers

S. No	Description
<b>Material shifting by Manual/ Mechanical/ -</b>	
1	Appoint physically fit, safety inducted, well experienced & trained operator/ supervisor / engineer for this activity.
2	Provide required PPE, (Safety shoes, goggles, hand gloves)
3	Beyond the over loading working with safe working load (SWL).
4	Inspect by CP before start the Crane job & barricading the area & display cautionary board.
5	All lifting tools & tackles (Slings, D-shackles, pulley, wire rope, horns, limit switch & hydra itself) shall be inspected visually for safe use.
6	Access should be free from obstacles to avoid toppling of hydra
7	Sling capacity should be maintain
8	Before placement of Crane checked base land properly
9	Trained and experience rigger to be provide as a signal man
10	Tag line/ Guide rope to be provided
11	Avoid oil spillage of crane and hydra
12	Supervisor shall ensure that no person is coming / standing in the vicinity of the hydra shifting the structure elements
13	Ensure proper illumination if it's required
<b>Erection Work: -</b>	
1	Appoint physically fit, safety inducted, well experienced & trained workmen/ supervisor / engineer for this activity.
2	Provide required PPE (Safety shoes/ gum boots, goggles, hand gloves etc.)
3	Take the required work permit prior to start the work
4	Activity done by through proper planning and strict supervision
5	Ensure that Derrick planned to use shall be of Heavy duty GI pipe with minimum 3" diameter.
6	Ensure that derrick is fixed with sufficient number of anchoring. Guy ropes are tied with derrick.
7	Ensure that pulley is locked & secured with the derrick
8	Lifting of structure elements shall be done with suitable capacity rope & pulley fixed on the derrick.




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Revision No.	00		
Date	09.06.2017	<b>ERECTION WORK</b>	

	Use a trolley & properly locked by chain
<b>Positioning / Alignment of job:-</b>	
1	Appoint physically fit, safety inducted, well experienced & trained workmen/ supervisor / engineer for this activity,
2	Provide required PPE (Safety shoes/ gum boots, goggles, hand gloves etc.)
3	Ensure proper access, Life line, fall arrester, safety belt & working platform. (provide safety net & Swam boat chair where ever required)
4	Use rope and sheave pulley arrangement for shifting miscellaneous materials to the higher elevation.
5	All tools and tackles shall be secured in a bag suitably tied with body


**ANNEXURE IB (SB)**

**MANPOWER DEVELOPMENT PLAN ASM-DMS-2 PACKAGE**

NAME OF THE PROJECT MANAGER – Mr. JALALUDDIN AHMED.

NAME OF SITE-IN-CHARGE – MR. ABHIJIT GANGOPADHYAY

NAME OF SAFETY MANAGER (CORPORATE) – MR. KANAI LAL KOLEY

NAME OF SAFETY OFFICER – MR. ANANT KUMAR

NAME OF SITE ELECTRICAL ENGINEER – MR. KARTICK BERA

NAME OF SITE CIVIL ENGINEER – MR.

STERLING AND WILSON PVT. LYD.					
SL. NO.	WORK ACTIVITY	MAN POWER	LOCATION	TILL MONTH	TYPE OF WORKMEN
1	CIVIL, EXCAVATION	10	NEW SUB STATION & BAY EXTENTION	FEB-2019	02 SKILLED, 08 UNSKILLED
2	PCC	25	NEW SUB STATION & BAY EXTENTION	MAR-2019	04 SKILLED, 21 UNSKILLED
3	RCC	25	NEW SUB STATION & BAY EXTENTION	MAR-2019	04 SKILLED, 21 UNSKILLED
4	ELECTRICAL EXECUTION	50	NEW SUB STATION / BAY EXTENTION & 33KV TRANSMISSION LINE	30.09.2019	10 SKILLED, 40 UNSKILLED





SIGNATURE ON BEHALF OF STERLING AND WILSON PVT. LIMITED

ANNEXURE – 3(SP)

Standard PPE's as per requirement for the project execution is to be implemented as and when it is to be required.



A handwritten signature in black ink.

.....  
SIGNATURE ON BEHALF OF STERLING AND WILSON PVT. LTD.

ANNEXURE – 4 (SP)

LIST OF EARTHING MATERIAL

Earthing material – Discharge rod as per required specification to be procured and shall be made available at site as and when it is to be required.



SIGNATURE OF BEHALF OF SERLING & WILSON PVT. LIMITED.



STERLING AND WILSON PVT LTD

31 -G.N BLOCK, BENFISH IT BUILDING, 3<sup>RD</sup> FLOOR, SALT LAKE CITY SECTOR-V, KOLKATA-700091

TEL:033-30118100 FAX : 03330118159

LIST OF LIFTING MACHINE

SR NO	ITEN DECRPTION	QTY	UNIT	REMARK
01	CRANE	NOT AVAILABLE		AS PER REQUIRMENT AT SITE SHALL BE MADE AVAILABLE
02	HOIST	NOT AVAILABLE		AS PER REQUIRMENT AT SITE SHALL BE MADE AVAILABLE
03	TRIFFOR	NOT AVAILABLE		AS PER REQUIRMENT AT SITE SHALL BE MADE AVAILABLE
04	CHAIN PULLEY	NOT AVAILABLE		AS PER REQUIRMENT AT SITE SHALL BE MADE AVAILABLE

LIST OF LIFTING TOOLS AND TACKLES

SR NO	ITEM DESCRIPTION	QTY	UNITE	REMARK
01	D SHACKLE	NOT AVAILABLE		AS PER REQUIRMENT SHALL BE MADE AVAILABLE WITH TEST CERTIFICATE
02	WIRE ROPES	NOT AVAILBLEY		AS PER REQUIRMENT SHALL BE MADE AVAILABLE WITH TEST CERTIFICATE





<b>3<sup>rd</sup> Latest</b>	-	<b>ABB India Pvt. Ltd.</b>
Period	-	June 2008 to Jan 2010
Client	-	Tata Steel, Jamshedpur
Project	-	AIS Project
Position	-	Safety Engineer
<b>4<sup>rd</sup> Latest</b>	-	<b>Ray Construction Pvt. Ltd.</b>
Period	-	Feb 2004 to June 2008
Client	-	Tata Steel, Praxair India Pvt. Ltd.
Award	-	Awarded "Best Site Safety Performer" by Praxair India Pvt. Ltd.
Project	-	New Rebar Mill, 875 TPD Air Separation Plant, Rerouting of Over head pipe line work
Position	-	Safety Engineer
<b>5<sup>th</sup> Latest</b>	-	<b>Precision &amp; Standard Products Company Ltd.</b>
Period	-	From Feb 2002 to Feb 2004
Client	-	Tata Steel, Jamshedpur
Project	-	Civil Construction work
Position	-	Safety Officer

**Details of Exposure & Responsibilities :-**

- Advice and assist site management for Safety related issues.
- Formation and implementation of site Safety plan.
- Co-Ordination on Safety meeting.
- Liaison with client and contractors on day to day activity.
- Accident investigation and preparation of report.
- Safety audit & inspection.

**PERSONAL DETAILS**

**Date of Birth** : 08<sup>th</sup> Jan. 1974  
**Father's Name** : Shri Kapildeo Prasad Singh  
**Sex** : Male  
**Nationality** : Indian  
**Marital Status** : Unmarried  
**Language known** : English & Hindi  
**Permanent Add** : Rampur Sindai, Ward No. - 13 Nagar Pachanyat  
 Brabigha Dist – Sheikhpura (Bihar)  
 Contact No. - +91-9431212764



**Declaration**

I hereby declare that all the above details given by me are true to the best of my knowledge.

Place :

Date :

Signature

## **STERLING & WILSON**



### HEALTH, SAFETY & ENVIRONMENTAL (HSE) POLICY

We, at Sterling and Wilson Pvt. Ltd., are committed to provide safe & healthy workplace and to take adequate measures to prevent Environmental pollution for its activities & services, so far as reasonably practical.

To prevent any untoward incident / accident and ill-health to all employees, contractors and other stakeholders, Sterling & Wilson Top Management recognize HSE management as one of the top priority for sustainable organisational growth.

To achieve these the company will,

- Incorporate HSE consideration in all business decisions and operations of the organisation
- Promote awareness among its employees & contractors to develop a positive HSE culture
- Provide information; impart training & instruction to its employees and contractors to ensure HSE requirements at job-sites including emergency & crisis management
- Maintain equipment, office & job- site condition through optimal utilisation of resource that minimise or (and) eliminate occupational Health Safety & Environmental risk.
- Ensure contractors/suppliers are meeting the Sterling & Wilson's health and safety standards
- Optimise Waste generation and encourage resource conservation and/or recycling
- Offer energy efficient / renewable energy solutions to the client where possible
- Periodically review health and safety performance of the organisation by business heads and ensure corrective actions are initiated.

We believe, communication, consultation & collaboration with all employees and stakeholders and accountability at different level, shall uphold the principles of this policy.

All employees shall support the implementation of this management policy through – using the safety equipment issued to them, familiarising them with the safety rules/ procedures of the organization and by enforcing appropriate corrective measures if violations are reported at site.

The company with the coordination of all employees will endeavor for continual improvement in implementing HSE management & performance.

Sterling & Wilson Pvt. Ltd, will implement this policy, in combination with Safety, Health Regulations, standards and codes of practice of our customers, in accordance with the applicable statutory requirements.

Date: 5<sup>th</sup> June 2015

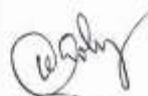


  
Managing Director

Ref. No:	OHS/ERP/01	<b>EMERGENCY RESPONSE PLAN</b>	<b>STERLING &amp; WILSON</b> 
Revision No.	00		
Date	01.12.2016		

### INDEX

Sr. No.	Content	Page no.
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2	What is an Emergency condition?	1
3	Nature of Emergency	1
4	Objectives of the Plan	1
5	Declaration of Emergency	2
6	Assembly Point	2
7	All Clear	2
8	Emergency Response Team	2
9	Facilities at Site Office	2
10	Emergency Communication	3
11	Action to be taken during Emergency	3-6
	Annexure 1 – List of Important Telephone numbers	7
	Annexure 2 – Emergency Contact numbers	7


Ref. No:	OHS/ERP/01	<b>EMERGENCY RESPONSE PLAN</b>	<b>STERLING &amp; WILSON</b> 
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**1. Introduction**

This Emergency Plan explains the code of conduct of all personnel on the site along with the actions to be carried out in case of an Emergency. This plan gives the guidelines for employees, contractors etc. It not only defines responsibilities but also informs about prompt rescue operations, evacuations, and rehabilitation, co-ordination communication. Emergency Response Team is constituted which will respond to an emergency and to help in restoration of normal site condition.

**2. EMERGENCY:**

An Emergency is a situation, which may lead to or cause large-scale damage or destruction of life, property or environment within or outside the site. Such an unexpected situation may be too difficult to handle for the normal work force within the site.

**3. NATURE OF EMERGENCY:**

The emergency specified in the Plan refers to occurrence of one or more of the following events: -

- Fire
- Work at Height (Fall of person)
- Electrocution
- Collapse of Pit
- Collapse of Tower.
- Snake bite.
- Natural Disaster
- Militancy

**4. OBJECTIVES OF THE PLAN:**

- To control the emergency, localize it and if possible eliminate it.
- To avoid confusion, panic and to handle the emergency with clear cut actions.
- To minimize loss of life and property to the plant as well as to the neighborhood.
- To make head count and carry out rescue operations.
- To treat the injured persons.
- To preserve records and to take steps to prevent recurrence.
- To restore normalcy.

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**5. Declaration of Emergency:**

In case of an emergency Project in-charge is responsible to declare the emergency. During the period of absence of Project in-charge, the person designated (Deputy) by Project in-charge to perform his duties is responsible to declare the emergency. Evacuation Team members will guide Workers & employees to move out.

**6. Assembly Point:**

Assembly point for S&W Workers & Employees is identified with assembly point sign. Rescue Team Leader will ensure all persons remain at assembly point until all clear is not declared.

**7. All Clear**

For All Clear situation rescue Leader to be incorporate will declare All Clear with short briefing to all persons at assembly point. After declaration of All Clear all employees & Workers shall return back to the Work Location/Site.

**8. Emergency Response Team**

Emergency Response Team constitutes of Site Personnel & Safety Supervisor. ERT Leader may seek guidance and resources Safety & Security team to moderate emergency.

**Contact details of key persons to guide ERT**

Sr No	Function	Name of employee	Contact number
1	Site Personnel		

**9. Facilities at Site Office:**

The List of emergency management facilities available at Site are as follows:

1. First Aid Box
2. Fire extinguisher placed at several locations.
3. Emergency Assembly Points.



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**10. Emergency Communication:**

An effective communication system through telephone / mobile is established and maintained to allow instant contact between staff, safety department, and contractor employees.

The list includes emergency contact numbers of Police, Fire and ambulance services, nearby to Site.

An emergency telephone list which includes important personnel from HR and administration, Safety Department is displayed in Site office.

**11. Action to be taken in event of Emergency:**

**a) Fire:**

- Shout for help.
- Turn off the electricity to the building from the mains.
- Call the fire brigade. Inform fire brigade about the nature of fire (solid / Liquid / gas) and location of the accident with any prominent landmark.
- In the event of small fire, attempt to put off the fire with fire extinguishers, water or any other available facility.
- Call the nearest hospital and ambulance services for transport and treatment of the injured personnel, if any.
- Inform Site in charge & Safety Department at the earliest.

**b) Fall of personnel:**

- Shout for help.
- In the event of a minor injury, provide immediate first aid to the victim.
- In the event of a major injury, do not move the victim, as there could be possibility of a fracture or dislocation. Just try to make them in position in which they feel ease.
- Request for ambulance if needed and rush victims to the nearest hospital.
- Inform Site in charge & Safety Department at the earliest.

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c) Electrocution:

- Shout for help.
- Do not endanger, if the victim is still in contact with the electrical current, one must be careful to avoid being shocked.
- Do not touch the victim directly. The current can pass through rescuer also.
- Do not touch the source of electricity.
- Break the current. Before one can do anything else, first must get the victim free from the current.
- If the victim is not breathing, begin rescue breathing.



- If it is needed, begin CPR (Cardiopulmonary Resuscitation)



- Do not attempt to move the victim unless he/she is in further danger. Other injuries may have occurred that you are unaware of.
- Cover the victim in a blanket and stay with him/her until help arrives. Do not leave him/her alone. Take steps to prevent or lessen the severity of shock.
- Inform Site in-charge & Safety Department at the earliest.

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**d) Collapse of pit:**

- In the event of collapse of pit first inform to site in charge, dept. head and environmental officer.
- Proper barricading and sign board to be provided around the pit.
- All the loose material stacking minimum 1.5mtr edge of pit.
- Proper access should be provided.

**e) Collapse of Tower:**

- In the event of collapse of pit first inform to site in charge, dept. head
- Proper barricading and sign board to be provided working area.
- Restrict to unauthorized entry

**f) Snake Bite:**

- Be aware of snakes that may be swimming in the water to get to higher ground and those that may be hiding under debris or other objects.
- If you see a snake, back away from it slowly and do not touch it.
- If you or someone you know are bitten, try to see and remember the color and shape of the snake, which can help with treatment of the snake bite.
- Keep the bitten person still and calm. This can slow down the spread of venom if the snake is poisonous.
- Seek medical attention as soon as possible.
- Apply first aid if you cannot get the person to the hospital right away.
- Lay or sit the person down with the bite below the level of the heart.
- Tell him/her to stay calm and still.
- Cover the bite with a clean, dry dressing.

**g) Natural Disaster:**

**1. Earthquake**

**During Earthquake: -**

- Take cover under a piece of heavy furniture or against an inside wall and hold on.
- Stay inside.
- The most dangerous thing to do during the shaking of an earthquake is to try to leave the building because objects can fall on you.

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**After Earthquake: -**

- Be prepared for aftershocks. Although smaller than the main shock, aftershocks cause additional damage and may bring weakened structures down. Aftershocks can occur in the first hours, days, weeks, or even months after the quake.
- Help injured or trapped persons.
- Give first aid where appropriate.
- Do not move seriously injured persons unless they are in immediate danger of further injury.
- Call for help.

**2. Flood**

- At the start of the flood situation (on receipt of warning of floods/release of water) the property manager shall take a call to evacuate building.
- After safe shutdown of all the system evacuate the building.

**h) Militancy:**

- Don't talk too much with any unknown person.
- Leaving Simply
- Don't go any problematic area
- If any type of problem arise than & than their informed concern dept.
- not talk with unknown person.
- Do not come out side at night



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**ANNEXURE-1: LIST OF IMPORTANT TELEPHONE NUMBERS**

Sr. No.	Name	Designation	Contact No.
1			
2			
3			
4			
5			
6			
7			
8			
9			

**ANNEXURE-2 EMERGENCY CONTACT NUMBERS**

Sr.No	Name	Contact No.
1	Hospital	
2	Fire Station	
3	Ambulance Service	
4	Occupational Health Center	
5	Police Station	


Ref. No: SW/HSE/1/0/	<b>HSE AUDIT REPORT</b>	<b>STEELING &amp; WILSON</b>
Revision No. 00		
Date 01.12.2016		

**Audit Date:** \_\_\_\_\_

**Project Manager/Project In Charge:** \_\_\_\_\_

**Audit Team:** \_\_\_\_\_

**Site Safety In Charge:** \_\_\_\_\_

**Project / Site Name:** \_\_\_\_\_

**Job No. :** \_\_\_\_\_

**Cc to :** \_\_\_\_\_

S.N	Audit point	Audit evidence ( Photographs, Records, Documents)	Action Required	Completion Date	Status / Remarks
1.	<b>Housekeeping &amp; General condition</b> a) Scrap placed in proper scrap bins b) Working areas are free from clutter & unwanted materials c) Working area is free from water logging d) Work area illumination & lighting arrangement e) Platforms and gratings are free from unwanted material. f) Dry vegetation growth removed g) Condition of Store & Site office h) Material stacking in an orderly arrangement and with proper stopper etc. i) Height limitation for stacking is maintained j) Proper access to reach the stack for taking the material for installation k) Clear access for fire extinguisher & emergency assembly points				

  
 Kollata  
 15.12.16  
 STEELING & WILSON  
 CIVIL ENGINEERS

REF. NO: SW/HSE/T/01	
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Date	01.12.2016
<b>HSE AUDIT REPORT</b>	
<b>STEVENSON &amp; WILSON</b>	

S.N	Audit point	Audit evidence (Photographs, Records, Documents)	Action Required	Completion Date	Status / Remarks
2.	<b>Work permit system</b> a) Work permit system being followed for critical activities b) Duly filled permit handing over in the work area by authorized person c) All the requirements are being fulfilled as per permit during work execution d) Display of work permit at the work location e) Extension / closure of work permit duly maintained				
3.	<b>Visual Safety management:</b> a) Display of warning signs & instruction near hazardous area b) Adequate posters & instructions and promotional material displayed to communicate the safety requirements to execute the job. c) Caution sign displayed at work area as required d) Risk assessment / other instruction & work permit displayed at work area e) Emergency Contact - displayed at prominent location				



Ref. No: | SW /HSE/F/07  
 Revision No. | 00  
 Date | 01.12.2016

HSE AUDIT REPORT

STEELE JING & WILSON

S.N	Audit point	Audit evidence (Photographs, Records, Documents)	Action Required	Completion Date	Status / Remarks
4.	<p><b>Training &amp; Awareness</b></p> <p>a) Induction training for all workmen, engineering &amp; supervisory staffs.</p> <p>b) Regular tool box talks</p> <p>c) First- Aid trained person</p> <p>d) All concerned are aware of:</p> <ul style="list-style-type: none"> <li>• Site safety rules</li> <li>• To whom to contact in case of emergency</li> <li>• First aid arrangement at site</li> </ul> <p>e) Other site Specific safety training for critical activities</p>				
5.	<p><b>PPE/ Safety equipment</b></p> <p>a) Are every workmen use safety shoes, helmet &amp; jacket</p> <p>b) Use of hand gloves while on job</p> <p>c) Use of safety belt during working at height</p> <p>d) Use of leather gloves, apron, leggings &amp; welding visor during welding</p> <p>e) PPE's as required are being used</p> <p>f) Condition of PPEs being used</p>				



**HSE AUDIT REPORT**

**STEP NG & WILSON**

Revision No. <b>00</b>	
Date <b>01.12.2016</b>	

S.N	Audit point	Audit evidence (Photographs, Records, Documents)	Action Required	Completion Date	Status / Remarks
6.	<b>Working at Height</b> a) Risk assessment / ISA availability b) Approved methodology availability c) Communication of hazards involved of the specific job through STA / TBT d) Safety harness with double lanyard being used at height e) Other required PPE's being used f) Arrangement of proper anchorage g) Condition of safety harness h) Proper positioning of height access work platform / no overreaching				
7.	<b>Lifting tools and Tackles</b> a) Adequate lifting plan <ul style="list-style-type: none"> <li>• General Condition, any Hydraulic oil leakage etc.</li> <li>• Crane capacity</li> <li>• Access for crane</li> <li>• Overhead power line etc.</li> </ul> b) Crane positioning - firm and level surface free from clutters c) Tire condition, hook latch, Head & tail light, Load indicator, Limit switch, etc. d) SWL, Operators competency, Signal man etc. e) Sling Condition f) Test certificate, Inspection records etc.				


Ref. No: | SW /HSE/F/07

Revision No. 00

Date 01.12.2016

HSE AUDIT REPORT



S.N	Audit point	Audit evidence (Photographs, Records, Documents)	Action Required	Completion Date	Status / Remarks
8.	<b>Scissor Lift / Man lift</b> a) Overall condition b) No oil leaking from hydraulic system c) Maximum load restriction followed d) Remote operation by workman / authorized operator e) Condition of hand rails & guards f) Banks man for movement Site safety rules being followed				
9.	<b>Hand tools &amp; Power tools</b> a) General condition of tools b) Right tools for the right job c) Periodic checking for all the tools being used d) Quarantine / red tagging of faulty tools e) Electrical connections for the power tools f) Electrical cable routing for the power tools g) Isolation of electrical tools within the reach of workman h) Earthing provisions for metal body power tools i) Cutting wheel / grinding wheel condition & RPM				




  
**STE, JING & WILSON**

**HSE AUDIT REPORT**

Revision No.	00
Date	01.12.2016

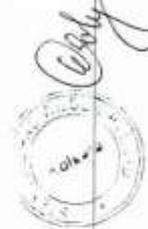
S.N	Audit point	Audit evidence (Photographs, Records, Documents)	Action Required	Completion Date	Status / Remarks
10.	<b>Safety in Piping, Structural &amp; Fabrication</b> a) Piping are properly laid over pipe support / pipe rack and fixed to prevent roll over b) Material handling - condition & necessary authorization of crane, sling and accessories c) Safe erection methodology adopted including road blocking d) Tag-line / guide rope provided to prevent swaying of suspended rope e) Erection under experienced supervision f) Area barricading / restricted entry at erection area g) Required PPEs & height access provision h) Fabrication - Welding & gas cutting safety requirements being met i) In case of hot work - Hot work related requirements is being met j) Other relevant points				



MET. NO: | SW / HSC / P / U /  
 Revision No. | 00  
 Date | 01.12.2016

**HSE AUDIT REPORT**  


S.N	Audit point	Audit evidence (Photographs, Records, Documents)	Action Required	Completion Date	Status / Remarks
11.	<b>Electrical safety</b> a) General arrangement and condition of temporary electrical Panels, DBs, SDBs, Extension boards and its accessories b) Electrical cable /wire condition, connection, joining & plug top c) Earthing arrangement for equipment's and DBs d) No damaged cable and loose wirings e) Work Permit, LOTO & Isolation tags are provided on the de-energized equipment's for shut down work. f) No work on energized panel g) ELCB testing h) Records for Periodical Electrical safety Checklist i) Availability of HT rubber hand gloves for HT charging & Isolation				



REV. NO. | SW / MSZ / T / U /

Revision No. 00

Date 01.12.2016

HSE AUDIT REPORT

STEELE NG & WILSON

S.N	Audit point	Audit evidence (Photographs, Records, Documents)	Action Required	Completion Date	Status / Remarks
12.	<p><b>Welding &amp; Cutting</b></p> <p><b>Welding</b></p> <p>a) Condition of welding machine body,</p> <p>b) Condition of welding and power cable</p> <p>c) ON / OFF knob is provided(Check for damage and un insulated knob)</p> <p>d) Welding cable lugs and incoming cable terminal box cover provided</p> <p>e) Body earthing given</p> <p>f) Electrode rod holder and earthing holder are without damage</p> <p>g) Proper return earthing given, no loose connection</p> <p>h) Using all relevant ppe's for welding work</p> <p>i) Flammable materials kept away from welding area and area barricaded</p> <p><b>Cutting</b></p> <p>a) Condition and colour coding of hose pipes</p> <p>b) Cylinders kept upright position in trolley and secured with chain</p> <p>c) Flash back arrestor/NRV provide at bottle and torch ends</p> <p>d) Cutting nozzle cleaned regularly and kept clean to prevent flash back.</p> <p>e) Empty cylinders having valve protection cap in place</p> <p>f) Pressure gauge in place</p> <p>g) Flammable materials kept away from cutting area and area barricaded</p>				

*(Signature)*

STEELE NG & WILSON PVT. LTD.  
Kolkata

Met. No: | SW /HSE/F/D/

Revision No. 00

Date 01.12.2016

HSE AUDIT REPORT

STEERING & WILSON

S.N	Audit point	Audit evidence (Photographs, Records, Documents)	Action Required	Completion Date	Status / Remarks
13.	<b>Holists, Cranes &amp; Derricks</b> a) Inspect cables and sheaves b) Check slings and chains, hooks and eyes c) Equipment firmly supported d) Outriggers used if needed e) Power lines inactivated, removed, or at safe distance f) Proper Loading for capacity at lifting radius g) All equipment properly lubricated and maintained h) Signalmen where needed i) Hoisting plan				
14	<b>Excavation &amp; Shoring</b> a) Shoring of adjacent structures b) Shoring and sheathing as needed for soil and depth c) Public roads and sidewalks supported and protected d) Materials not too close to the edge of excavation e) Lighting at night f) Water controlled g) Equipment at safe distance from edge				

*Handwritten signature*



**HSE AUDIT REPORT**

**STEVENSON & WILSON**

Revision No.	00
Date	01.12.2016

S.N	Audit point	Audit evidence (Photographs, Records, Documents)	Action Required	Completion Date	Status / Remarks
	<p><b>Concrete Construction</b></p> <ul style="list-style-type: none"> <li>a) Forms properly installed and braced</li> <li>b) Adequate shoring, plumbed and cross braced</li> <li>c) Shoring remains in place until strength is attained</li> <li>d) Proper curing period and procedures</li> <li>e) Check heating devices</li> <li>f) Adequate runways</li> <li>g) Protection from cement dust</li> <li>h) Hard-hats, safety shoes, shirts covering skin</li> <li>i) Nails and stripped form material removed from area</li> </ul> <p><b>Masonry</b></p> <ul style="list-style-type: none"> <li>a) Proper scaffolding</li> <li>b) Masonry saws properly equipped, dust protection provided</li> <li>c) Safe hoisting equipment</li> </ul> <p><b>Motor Vehicles</b></p> <ul style="list-style-type: none"> <li>a) Brakes, lights, warning devices or barricaded</li> <li>b) Weight limits and load sizes controlled</li> <li>c) Personnel carried in safe manner.</li> <li>d) Seat belts provided and used.</li> </ul>				
15					


HSE AUDIT REPORT		STEELING & WILSON	
Rev. No.   00	Revision No.   00		
Date   01.12.2016	Date   01.12.2016		

S.N	Audit point	Audit evidence (Photographs, Records, Documents)	Action Required	Completion Date	Status / Remarks
16	<b>Fire &amp; Emergency</b> a) Fire extinguishers are in designated place and inspection tags attached. b) Sand bucket to be kept filled with dry loose sand c) Trained personnel for fire extinguisher operation d) Nearest exit route to be known to all the personnel working at a particular location e) Display of emergency contact no at prominent location f) Fire watch for hot work at critical area g) Prevention against lone working in hot work activity				
17.	<b>Contractors</b> a) Safety induction training given to all contractors. b) Compliance for PPEs is adequate c) Safety representative for contractor has been identified d) Toolbox talks being conducted regularly. e) Contractors attitude				



Ref. No:   SW / HSE / F / 0 /			
Revision No.	00		
Date	01.12.2016		

S.N	Audit point	Audit evidence ( Photographs, Records, Documents)	Action Required	Completion Date	Status / Remarks
18	<b>Mandatory Records</b> a) All the applicable S&W/Client checklists maintained as per HSE assurance plan or client requirement. b) Work permit obtained/maintained c) First aid register maintained d) Site safety manual (S&W/CLIENT) available e) Incidents reported and records maintained				

(Auditee)



(Auditor)



ANNEXURE 10A (SP) – (I)

We are fully compliance to Act and Rule – Electricity Act – 2003



SIGNATURE ON BEHALF OF STERLING AND WILSON PVT. LTD.



ANNEXURE 10A (SP) – (IX)

We are fully compliance to Act and Rule – Electricity Act – 1956



SIGNATURE ON BEHALF OF STERLING AND WILSON PVT. LTD.



ANNEXURE 10A (SP) – (X)

We are fully compliance to Act and Rule – Environment Protection Act - 1986



.....  
SIGNATURE ON BEHALF OF STERLING AND WILSON PVT. LTD.



ANNEXURE 10A (SP) – (XII)

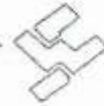
We are fully compliance to Act and Rule – National Building code of India - 2005



.....  
SIGNATURE ON BEHALF OF STERLING AND WILSON PVT. LTD.



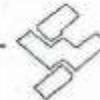
STERLING AND WILSON



**ENVIRONMENT**  
**PLAN**



## STERLING AND WILSON



### 1. Introduction

Though Environmental Impact due to our nature of job is minimal, we are committed to reduce the adverse environmental aspects may arise from our job through this "Outline Environmental Management Plan", which provides guideline for procedure to be followed for achieving the environmental performance required for the project. It will provide the framework for the requirements and thus to outline Sterling Wilson approach to environmental management throughout the construction phases with the primary aim of reducing any adverse impacts from our activities during execution of the project.

### 2. Environmental Management Plan – approach

The EMP will identify and define the areas of interface between project management & environmental management during the execution of project.

An Environmental Risk assessment will be carried out along with Job specific JSA to develop the plan for environmental management. The environmental risk assessment will identify all aspects of job which Sterling & Wilson will be executed and could have an adverse impact over the environment. Controls are then devised to minimize those identified impacts.

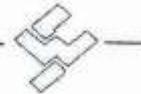
Specific environmental issues would be addressed in the EMP and strategic details on how these would be controlled across our job would be devised. Lists of potential issues that will need to be addressed in the plan are provided below:

- Construction Noise and vibration management
- Air quality including Dust management
- Waste management & disposal
- Water management



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**STERLING AND WILSON**



3.2 PROJECT MANAGER

- Assist EHS manager in developing and maintaining the environmental plan, method statement & work instructions
- Monitor construction activities to ensure that identified and appropriate control measures are effective and in compliance
- Undertake site inspection, initiate actions
- Provide instruction and assistance to site personnel on environmental matters
- Arrange environmental monitoring when required
- Ensure correct procedures are followed in the event of an environmental incident
- Dissemination of waste reduction and waste management procedures to all relevant personnel on site

3.3 ENGINEERS/SUPERVISORS

- The engineers/supervisors will report on environmental activities to the site EHS Manager
- Implement and maintain environmental controls on site
- Attend to any spills or environmental incident that may occur on site
- Report any activity that has resulted, or has the potential to result, in an environmental incident immediately to the EHS Manager
- Maintain waste register and ensure correct waste management procedures are being implemented



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STERLING AND WILSON



5. Air quality management:

- All necessary precautions shall be taken to minimize fugitive dust emissions from S&W operations
- The use of construction equipments shall be designed and equipped to minimize air pollution
- In order to develop remedial air pollution control measures it shall be inspected and reviewed that all dust sources that may be contributing to air pollution
- Construction transport vehicles and other equipments to conform statutory emission norms, periodical checks and maintenance will be carried out for the same; records should be maintained
- Disposal of scraps and waste shall comply the legislative requirements and other requirements described in the contract
- Scrap yard at site shall be maintained in proper condition to the satisfaction level of the client

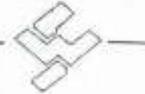
6. Water management:

- Sterling & Wilson will comply all the legislative requirements of central government and other local authorities as required
- Optimal use of water during pressure testing activity to be ensured and possibility of the recycling of the water shall be explored
- Spill over of construction spoils into nearby public areas to be prevented
- Waste water arising out from site office, canteen or toilet facilities shall be connected into sewers after obtaining prior approval of client
- Discharge of oil and grease during spillage into the drainage system and water body shall be prevented



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## STERLING AND WILSON



### 7.2 PROCEDURE:

The wastes are generated mainly from the following site activities/operations/services:

- Maintenance/lubrication activities.
- Changing Batteries once the life is exhausted.
- Welding & fabrication Operations.
- Conducting, Ducting & cabling activities
- Insulation work
- Painting

### 8. COLLECTION OF WASTES:

#### 8.1 For Spent Oil:

Reusable drums are used for spent oil collection. Before collection the drums are checked for their integrity to avoid any leakage/spillage during storage. The drums are marked as "Spent Oil Drums" and after collection of spent oil they are shifted to the designated spent oil storage yard area. While collection drums are placed on metallic trays to prevent any soil contamination.

#### 8.2 For Waste Batteries:

Waste Batteries are generated during maintenance activities. The waste Batteries just after replacement with new one, are shifted to the designated storage area. While transferring it is ensured that acid spillage does not take place. The personnel involved always shall put their gloves on during charging and handling activities. The



## STERLING AND WILSON



barricade to avoid any unsafe occurrences and transferred to scrap dealer time to time for recycling.

### 8.7 Insulation Material:

Proactive measure to be taken for reducing scrap generation. Whenever the insulation scrap generated, they are temporarily stored in an identified area within barricade and transferred to scrap dealer time to time.

### 8.8 Waste paint:

Reusable drums used for storage of waste paint. Before collection drums are checked for their integrity to avoid any leakage/spillage during storage. The drums are marked as "Waste paint drum" and after collection of waste paint shifted to the designated area for storage of waste paint. While collection drums are placed on metallic trays to prevent any soil contamination. In storage area "NO SMOKING" marking shall be displayed and fire extinguisher shall be placed.

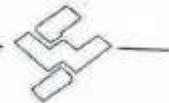
### 9. STORAGE OF WASTES:

The storage of different types of wastes identified as above can be done by:



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## STERLING AND WILSON



### 9.3 Storage of Waste Batteries/Empty Chemical Drums:

Waste Battery storage areas shall be acids proof to prevent any soil contamination because of acid leak/spill from the waste batteries. Empty chemical drums are also stored within containment and while provisioning for the storage facility; the precautions shall be taken based on the characteristics/precautions mentioned in the MSDS of those chemicals.

Material Safety Data Sheet (MSDS) of the chemicals are maintained in the areas where the chemicals are stored as well as used.

All the Storage areas are identified by name and nature of Material being stored. All the storage areas of Wastes are inspected once in fortnight to ensure no leakage is taking place.

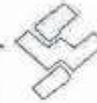
### 9.4 Non ferrous Metal (copper & aluminium) Scrap:

Nonferrous metal scrap like copper & aluminium is generated from cable cuttings & earth strips. The same will be segregated properly and be kept in their designated place for disposal to the vendor for recycling time to time.



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STERLING AND WILSON



10.2 Oily cotton Wastes:

First preference shall be given if the oily cotton wastes can be given to authorized spent oil contractor, otherwise these shall be disposed off in environmentally benign manner ensuring that seepage of oil into the grounds is avoided.



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HDFC ERGO General Insurance Company Limited



September 30, 2015  
 STERLING & WILSON PVT. LIMITED  
 UNIVERSAL II,  
 MAJESTIC BLDG,  
 9TH Floor, P. L. LONKARDE MARG,  
 SHIVAJI NAGAR(CHEMBUR),  
 MUMBAI,  
 MAHARASHTRA, 400043.

Dear Customer,

Sub: Employee Compensation Insurance Policy No: 3114201912524600000

We thank you for having preferred us for your insurance requirements. We at HDFC ERGO General Insurance believe "insurance" is not only to be an assurance to indemnify in the event of unfortunate circumstances, but one that signifies protection and support, which you can count on when you need it most.

The insurance Policy enclosed herewith is a written agreement providing confirmation of our responsibility towards you that puts insurance coverage into effect against stipulated perils.

Please note that the policy has been issued based on the information contained in the proposal form and / or documents received from you or your representative / broker. Where the proposal form is not received, information obtained from you or your representative / broker, whether orally or otherwise, is captured in the policy document.

If you wish to contact us in reference to your existing policy and for other general insurance solutions offered by us, you may write to our correspondence address as mentioned below. Alternatively, you may visit our website [www.hdfcergo.com](http://www.hdfcergo.com). To enable us to serve you better, you are requested to quote your Policy Number in all correspondences.

Thanking you once again for choosing HDFC ERGO General Insurance Company Limited and looking forward to many more years of association.

Yours sincerely,

  
 Authorised Signatory



3114201912524600000

Page 1 of 12

Apollinar & Partners Office: 1st Floor, 102-103 Sterling Expressway, H. T. Park, Chembur, Mumbai - 400055. Customer Service Address: 101, Park, Laxmi Building, 2nd, 3rd & 4th Floor, Anand (C), Mumbai - 400 053 (Tel: No. 2220 2750-212) (Fax: 22 4130 2594) [csr@hdfcergo.com](mailto:csr@hdfcergo.com) [www.hdfcergo.com](http://www.hdfcergo.com)

***ANNEXURE – 9***  
***Compliance of***  
***safety***  
***standard/plan***



Safety Officers:- Mr. Sakti Patnayak

  
Sakti Patnayak  
Power Mech  
TY05 / Talap





*[Signature]*  
In-charge  
District Panchayat  
Power Koch  
Tivoli / Talso





FEAR for T&D subprojects in Dhemaji  
district under NERPSIP in Assam



***ANNEXURE – 10***  
***Sample copy of***  
***labour license***  
***and insurance***  
***policy***



GOVERNMENT OF INDIA  
MINISTRY OF LABOUR & EMPLOYMENT  
OFFICE OF THE ASSISTANT LABOUR COMMISSIONER(CENTRAL)  
KENDRIYA SHRAM SADAN, R.K.MISSION. ROAD, BIRUBARI, GUWAHATTI-16

No.GH.46(303)/2016-L

dated:-11.10.1919

To  
M/s.Necon Power & Infra Ltd.,  
(Rep. by Shri J.P.Khetan, Director)  
Seuni All, A.T.Road,  
Jorhat-785001.

Subject:-Contract Labour(Regulation & Abolition)Act,1970 and Contract Labour  
(Regulation & Abolition) Central Rules,1971- Renewal of labour licence No.  
GH.46/303/2016-L dated 25.11.16.

Dear Sir,

Please refer to your application dtd.03.10.19 received by the office on  
10.10.19 for renewal of Labour Licence under Contract Labour (Regulation & Abolition)  
Act,1970.

In this connection please find enclose herewith the original copy of  
Licence duly renewed upto 24.11.20.

Please acknowledge receipt.

Yours faithfully,

Encl:-Original Licence

(Hari Om Gautam)  
Assistant Labour Commissioner(Central)  
& Licencing Officer Under Contract Labour Act 1970.  
& Licencing & Registering Officer under  
Contract Labour (R&A) Act. 1970

FORM-VI  
(See Rule 25(1))  
Government of India  
Ministry of Labour & Employment  
Office of the Licensing Officer & Assistant Labour Commissioner  
KENDRIYA SHRAM SADAN, R.K. Mission Road, Guwahati-781006



License No. GH 46/303/2016-L      Dated: 25.11.16

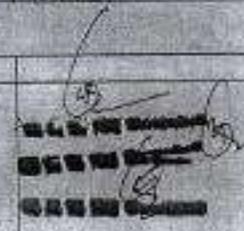
1) Licence is hereby granted to M/s Neeson Power & Infra Ltd (Rep. by Shri Seunil A/L, A.T. Road, Jorhat-785001, ASSAM) under section 12(1) of the Contract Labour (Regulation and Abolition) Act, 1970 subject to the conditions specified in the Annexure

2) This licence is for doing the work of Construction of 132/03KV Siapathar (New) s/s & 132/03 KV Dhemaji s/s (Extra) under Substation Package ASM-SS-01 for Assam Associated with NER Power System Improvement Project vide No. O.C/CS&A/MFR/SS-2670/1/13/ND4-0/6903 dt 12.8.16 in the east of .....  
The Dy Manager, PGCIL, House No.91, Nigom Path, Mising gaon, Siapathar, Assam 787059

3) The licence shall remain in force till **24.11.2017**

  
 (HARIPRIYA TAM)  
 Assistant Labour Commissioner (Central)  
 and Licensing & Registering Officer under  
 Contract Labour (Regulation) Act, 1970

Date: 25.11.16

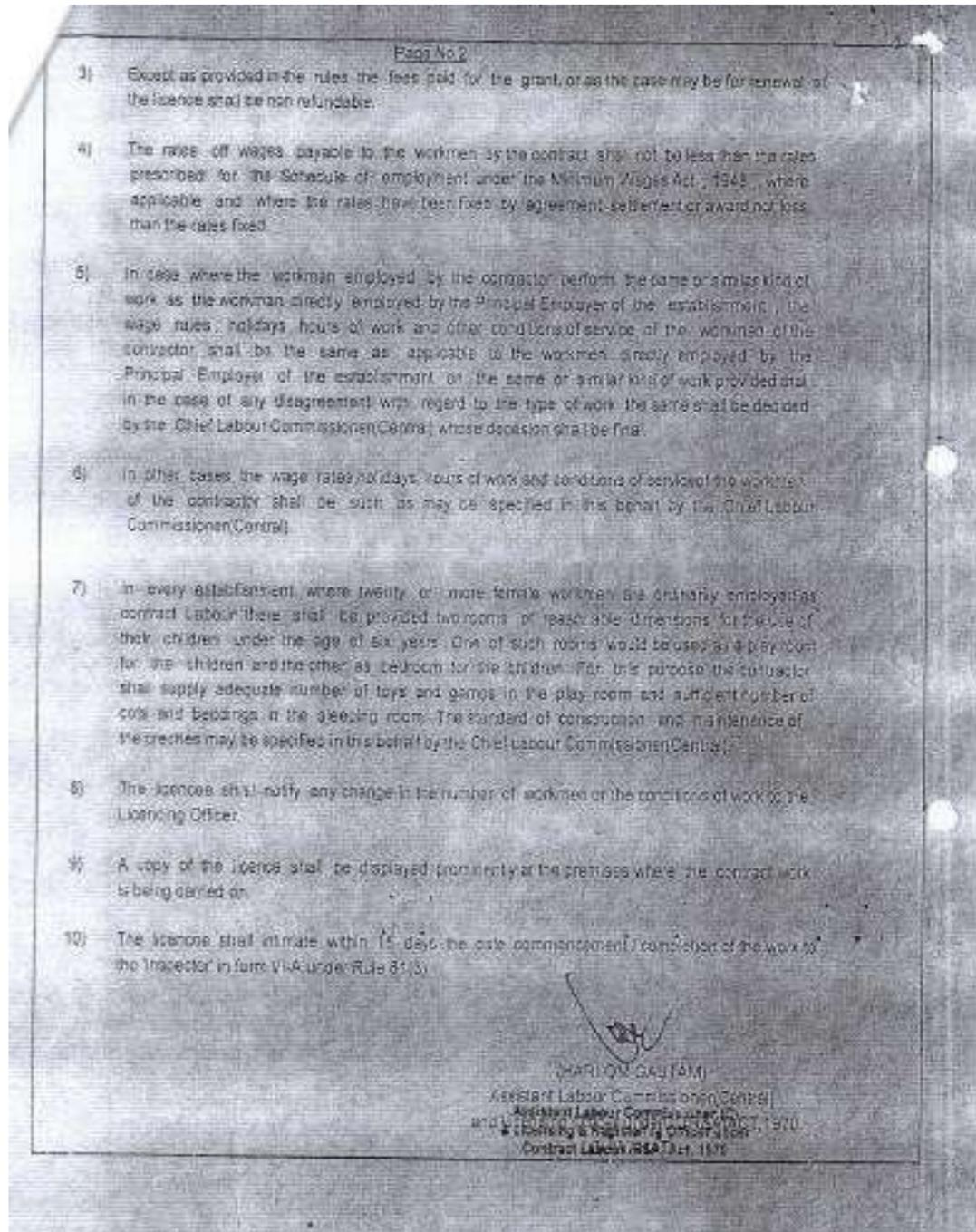
(RENEWAL) (See Rule 26)			
Date of Renewal	Fee Paid for renewal	Date of expiry	
02.11.2017	Rs.95.00 (Ninety five only)	24.11.2018	
<del>25.10.2018</del>	<del>Rs. 100.00</del>	<del>24.11.2019</del>	
<del>11.10.2019</del>	<del>Rs. 100.00</del>	<del>24.11.2020</del>	

Date: \_\_\_\_\_ ANNEXURE

The Licence is subject to the following conditions:-

- 1) The Licence shall be non transferable
- 2) The number of workmen employed as contract labour in the establishment shall not, on any day exceed **35** (THIRTY FIVE) only

Contd. Page 2



ASM-SS-01 (W.C.Pol-14)

THE NEW INDIA ASSURANCE CO. LTD.  
Government of India Undertaking

**POLICY SCHEDULE FOR EMPLOYEES COMPENSATION INSURANCE**

Insured's No.	INDOON POWER & INFRA LIMITED	
Insured's Details	Issuing Office Details	
Customer ID	PC03672462	Office Code
Address	50 SUN ALTA T. ROAD, JORHAT, ASSAM	Address
Phone No.		Phone No.
E-mail/Fax	INDOON@powergrid.com /	E-mail/Fax
PAN No.	AARCN1603J	S. Tax Regn. No.
GSTIN/HSN	INDOON1603JAZM/NA	GSTIN
		SAC

Policy Details	
Policy Number	53070236180100000026
Period of Insur.	From: 12/10/2019 05:52:21 PM To: 16/10/2020 11:59:59 PM
Date of Prop.	17-Oct-19
Pror. Policy	53070236180100000026
Client Type	Corporate
Business Source Code	MR. HRADIP BISHAI - (DE7796252)
Div./Off level/Enrol/Corp. / Ins/Off/Work/Class/Category	
Agent/Broker/Insurance/Registered Person	Mrs. DOLLY SINGH (NAA030116340) DOLLY SINGH (500135230)
Phone No.	NA / 8884032188
E-mail/Fax	2018dollyg@gmail.com / pradip.bishai@powergrid.co.in /

Regn. Amt.	GST(%)	Total (₹)	Total (₹ in words)	Receipt No. & Date
401	8830	57863	RUPPEES FIFTY-SEVEN THOUSAND EIGHT HUNDRED EIGHTY-THREE ONLY	5307023618000000310 6-17/10/19

Details of Employees with monthly wages upto ₹ 8000:				
Categories	Sub Categories	No of Employees	Cash Total Wages	
Details of Employees with monthly wages above ₹ 8000:				
Categories	Sub Categories	No of Employees	Cash Total Wages	
Electr.	Wired and/or Power Supply	SKILLED	25	560000
Electr.	Wired and/or Power Supply	UNSKILLED	60	702000
Description	Particular of Works	Location Details	Included All Sub-Contractors	
CONSTRUCTION	CONSTRUCTION WORKS OF CIVIL & SUB-STATION/USE-STATION EXTENSIONS 132KV & 22KV 32KV AS PER WORK ORDER.	AT SEARATHER, TEZPUR, DHEMJI, SONABIL & SAMAGURI IN ASSAM UNDER SCHEME ASM-SS-01.		

Contractor/Sub-Contractor Details:					
Cont. No.	Name of CONTRACTOR	Description	Category	No. of Workers	Amount Wages
				Skilled / Unskilled / Others	

Extensions at the Police Street		
Name of the Extension	Sub Limit of the Extension	Deductibles of the Extension
Medical Extension	₹10000	NA
Special Conditions	NA	
Special Remarks	NA	

Policy No. : 53070236180100000026 Document generated by 34503 at 17/10/2019 16:36:53

THE NEW INDIA ASSURANCE CO. LTD.  
Chhapur Branch Office-530702  
Nilgiri Mansion, Opp. - Namcare Hospital, Bhangagarh, G.S. Road Guwahati-781005  
Phone : 0361-2525483



FEAR for T&D subprojects in Dhemaji district under NERPSIP in Assam



THE NEW INDIA ASSURANCE CO. LTD.  
(Government of India Undertaking)

530702

Special Endorsement / Addendum  
The Policy shall be subject to EMPLOYEES COMPENSATION INSURANCE Policy clauses attached herewith.

Classes	Description
Premium and GST Details	
Premium	Rate of Tax
RGST	Amount in INR
CST	₹ 49053.00
RGST	₹ 4415
	₹ 9810
	₹ 2

In witness whereof the undersigned being duly authorized by the Insurers and on behalf of the Insurers has (have) hereunder set his (their) hand(s) on this 17th day of October, 2019.

For and on behalf of

General Manager / Representative  
The New India Assurance Co. Limited  
Duly Constituted Attorney(s)

Stamp Duty under the Policy is ₹1

Mutual \_\_\_\_\_ by \_\_\_\_\_ consolidated Stamp Fees Paid by Pay Order Number \_\_\_\_\_ vide receipt number \_\_\_\_\_ @ \_\_\_\_\_

Tax Invoice No : 53070219E0003677

IRDA Registration Number: 190

NEW INDIA ASSURANCE CO. LTD.  
Jorhat Branch Office-530702  
Virgin Mansions, Opp- Nomicare Hospital, Bhengaganh, G.S. Road, Guwahati-781005  
Phone : 0361-2528483

Policy No. : 530702380210698005 Document generated by 34205 at 17/10/2019 18:36:33 Hours.  
Reg. & Head Office: New India Assurance Bldg., 47 M.G. Road, Fort, Mumbai - 400 021. TOLL FREE No. 1 800 200 5415.

THE NEW INDIA ASSURANCE CO. LTD.  
(Government of India Undertaking)

**COLLECTION RECEIPT CUM ADJUSTMENT VOUCHER**

Issuing Office : DISPUR BRANCH (330702)  
Address : 66, FOLGIN MANSION, OPPOSITE TO NEMCARE HOSPITAL, BHANGAGERH, G.S. ROAD, JORHAT, GUWAHATI  
Phone : 03612529463  
Email : [na.assam@newindia.co.in](mailto:na.assam@newindia.co.in)  
Fax :  
Collection Banker : 5307020118000002108  
Collection Date : 17/10/2019  
Business Cycle Code : 101780002  
PAN No. of Firm : AACCA1983J

Reserved with Finance Deptt. POWER & DE-RA LTD.

The amount hereby adjusted is towards :-

Policy No.	A/C Description	Amount	A/C Code	Sub-A/C Code
5307020118000002108	FAIR-544702	52883.00	9104538702	346682661-320702-9104
Total = ₹ 2116322.00				

Tax Invoice No. 53070218E0003877

Month	Amount ₹	Check No.	Check Date	Drawee Bank	Drawee Branch	Reference No.	Balance B/D Balance
Oct-19	111.00	729696	17-OCT-19	INDIAN BANK	JORHAT	5307020118000002108	N/A
Total = ₹ 2116322.00							

Utilisation of (100% of the Collected Amount)

Premium	Stamp Duty	Excess Amount
2883.00	11.00	0

State	Agency Code	Agency Name	Designated Code
1	05AN08110142	DOLLY SINGH	NA

For The New India Assurance Company Limited  
Revenue Stamp

Date of Issue : 17/10/2019

Cashier's Initial Authorized Signatory

Notes:  
1. Please note the Policy Number, Collection Number and date in all future correspondence. This Receipt is subject to Realisation of Premium.  
2. This will not be held liable for any claim arising out of sales made during the period between the due date and date of payment of the premium if the premium paid has been exhausted by turnover declaration if there is insufficient premium balance.

Tax Invoice No : 53070218E0003877

IRDA Registration Number: 190

THE NEW INDIA ASSURANCE CO. LTD.  
Dispur Branch Office - 530702  
Folgin Mansion, Opp.- Nemcare Hospital, Bhangagerh, G.S. Road, Jorhhat-781005  
Phone : 0361-2529463

Policy No. : 5307020118000002108 Document generated by 34506 at 12/10/2019 10:36:53 Hours.  
Head Office: New India Assurance Bldg., 67 M.G. Road, Fort, Mumbai - 400 001. TOLL FREE No. 1 800 209 1415.



पावरग्रिड  
POWERGRID

FEAR for T&D subprojects in Dhemaji  
district under NERPSIP in Assam



***ANNEXURE – 11***  
***Sample Copy of***  
***Filled Checklist***



NECCON POWER & INFRA LTD.

Form NEC/HSE/F/05, Rev 0, dt. 01.01.2017

Safety Check List During Foundation Work

Name of line/Location: 132/132V Silapathar C/S.		Client: Power Grid		Location No. where applicable:	
Name of person filling the check list Basanta Das				Date: 06/03/17	
Contractor: CHANDANANTA MILLY					
Sl No	Description	Observation	Remarks		
1	Check whether supervisor/ gang leader has provided safety guidelines (Tool box talk) /instructions to workers before start of work on that day.	Yes			
2	a) All workers are using PPEs at site i.e. safety shoes, helmets, gum boots, hand gloves, safety harness etc. as per job requirement b) BEL officials are using PPEs at site	Yes/ No Yes/ No			
3	Distance of dumped excavated soil of all four sides from edge of the pit (At least 1.5m from the edge of the pit excavation)	1.5 Mtrs.			
4	Slope of cutting edge of all four sides.	Yes/ No	Yes		
5	a) Dewatering arrangement, if reqd. b) If yes, distance of water disposal	Yes/ No/NA Yes/ No/ NA			
6	Installation of shoring & shuttering, if reqd.	Yes/ No/ NA	Yes		
7	Adequate warning & barricading of the pit for protection have been made.	Yes/ No	Yes		
8	The blaster has valid license. Adequate arrangement made to inform public by caution marking (red flag/ public notice) and signal man posted.	Yes/ No/ NA Yes/ No	N/A		
9	Strong ladder provided in the pit.	Yes/ No	Yes		
10	Jacks for supporting the template is placed at safe distance.		Yes		
11	Distance of construction materials, concrete mixer/ compressor placed from edge of the pit is as per norms.	Yes/ No	Yes		
12	Whether arrangements for electrical loose joints and barricading of electrical panels have been made.	Yes/ No/ NA	Yes		
13	Whether all safety aspects taken care of for concreting.	Yes/ No	Yes		
14	Cement or concrete is not in contact of field (except pit).	Yes/ No	Yes		
15	First aid box with required items are available at site and no of persons (with name) trained.	Yes/No ? Nos	Names		
16	Action taken for violation for safety norms, if any (give details)				
17	Any other points specific to location.				
Contractor, Manager/Supervisor/Gangman			NECCON Power & Infra Ltd.		
Name	Designation	Signature	Name	Designation	Signature
Sanjiv Choudhary	Supervisor	[Signature]	Pranab Das	Electrical Engg	[Signature]

## ***ANNEXURE - 12***

### ***Details of the PAP & Photographs of Public Meeting***

***Details of PAP***

	<p>FEAR for T&amp;D subprojects in Dhemaji district under NERPSIP in Assam</p>	
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Project	Place of Consultation	Stakeholders Consulted
Dhemaji-Silapathar 132 kV S/C on D/C line	<b>Transmission Line</b>	Contractor, Contractor labour IA Staff and Villagers
	Construction Site and Power Grid office	
Silapathar (New) to Silapathar-II (New) substation 33 kV line –	<b>Distribution Line</b>	Contractor, Contractor labour IA Staff and Villagers
	Construction Site	

Project	Date of Meeting	Venue of Meeting	No. of Persons Attended
Dhemaji-Silapathar 132 kV S/C on D/C line- 32.55 km	February 14, 2019	Hatigarh, Dist. Dhemaji, Assam	08
		Telijan, Dist. Dhemaji	02
		Kapahua Pathar	03
		Pati Daini	03
33kV Line From 132/33kV New Silapathar S/s to 33/11kV Silapathar II S/s	February 14, 2019	Silagaon	04
		Teparisuk	03
		Mishing Pur	02
		Dablang Patri	03





*Public meeting held at Silapathar, Dist. Dhemaji, Assam on 14<sup>th</sup> February 2019*



Photographs of Public Consultation held on 10<sup>th</sup> Oct'2014 at Kanamukh village of Silapather Mandal,  
District-Dhemaji



*Public meeting held at Power Grid Office Silapathar on 14<sup>th</sup> February 2019*



*Public meeting held at Power Grid Office Silapathar on 14<sup>th</sup> February 2019*

"Public Meeting"

Subject : Construction of 132 kv v/c Dhemaji - Silapathar Transmission Line (Under World Bank) assistance under NER Power System Improvement project.

Venue : 2 No. Khamamukh (Village Community Hall) Silapathar, Dhemaji District, Assam.

Dated : 10-10-2014.

Today dated the 10th October 2014 at <sup>around</sup> 100 PM, a public meeting has been convened at - 2 NO. Khamamukh, (Village Community Hall) Silapathar, Dist - Dhemaji to discuss the various issues associated with the proposed 132 kv DHEMAJI-SILAPATHAR 7/2 and to apprise the general public about the World Bank funded North Eastern Region Power System Improvement Project, (NERPSIP) line of Assam Electricity Grid Corporation Ltd (AEGCL)/Assam Power Distribution Corporation Ltd (APDCL) along with officers of Powergrid Corporation of India Ltd and the village headman/Graduates of the nearby areas are present in the aforesaid meeting.

From AEGCL and POWERGRID side, a brief <sup>overview</sup> on the proposed NERPSIP in various districts of Assam to be implemented under World Bank assistance has been given to the general public attending the meeting. The necessity of the project, necessity of upgradation of the present transmission & distribution network of Assam, various environment & socio-economic issues, benefit of the project; compensation issues <sup>etc</sup> have been discussed at length in the meeting. Subsequently, after deliberation from AEGCL/POWERGRID side, it is requested to raise project related issues from the attendees so that appropriate clarification can be provided from the Project Proponent.

Contd. ....

Various concerns have been raised by the public with regard to the project. However, all have unanimously agreed to the necessity of the power system Improvement Project which will <sup>ultimately</sup> benefit the common public. The various issues inter-alia raised by the attending public areas follows:

- \* To associate the village Headmen/Gra. Burhas during the transmission line survey works and finalisation of the Line Corridor.
- \* To engage local people in various works associated with construction of tower and if required proper training may be provided to engage them.
- \* To provide flexibility in the disbursement of compensation. Direct payment of compensation to the affected landowners & expedient disbursement of compensation.

AGRI/POWERGRID representative have assured that all the genuine issues raised by the public will be taken care of during implementation of the project. Adequate provisions have been kept in the NERPSIP for payment of compensation for any damage caused during implementation of the project.

The meeting has been concluded with the anticipation request to all the public for ~~participation~~ providing a helping hand for successful completion of the project and with vote of thanks to the concerned participants.



উন্নীত বাহীৰ পৰা বিত্তিৰ জনে ধৰি যত প্ৰকাশ কৰে  
আৰু প্ৰকল্পটোৰ আৱশ্যকতাৰ লৈ সকলোৰে সহায়ত  
প্ৰকাশ কৰে। উন্নীত বাহীৰ পৰা পোতা বিত্তিৰ সহায়ত  
বোৰ চলিত দিয়া যিবলত

\* পৰিষ্কাৰ নাইনক জৰীপকাৰ্য্যৰ সহায়ত গাওঁখন  
সকলৰ সহায়ত লৈ নাইনক কৰিবলৈ সম্বন্ধ কৰা।

\* নিৰ্দ্ধাৰণ কাৰ্য্যৰ সহায়ত স্থানীয় লোকক তথ্যৰ নিৰ্দ্ধাৰণ  
কাৰ্য্যত নিয়োগ কৰা আৰু স্থানীয় লোকক উপযুক্ত প্ৰশিক্ষণ  
কৰা।

\* উন্নীত বাহীৰ ব্যৱহাৰ সাৱলীলকৰণ আৰু উন্নীত  
লোকক প্ৰত্যক্ষ ভাবে উন্নীত দিয়াত কৰা। ইয়াৰে

সাৱলীলকৰণ আৰু বিদ্যুত নিগম কৰ্মচাৰীৰ তৰফত পতা  
বাহীৰ সহায়ত অহা গুণসহকাৰে বিবেচনা কৰা হ'ব বুলি  
প্ৰতিশ্ৰুতি দিয়া হয়।

সকলৰ উক্ত আৰ্জনৰ অহাৰ কামচলত বাবে সকলোৰে  
সহায় প্ৰয়োজন কামনা কৰি উক্ত গুণত সহায় কৰা হয়।

***ANNEXURE - 13***  
**Example of 10% Transect Survey**



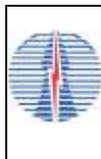
The “*Terms of Reference*” of the FEAR assignment envisages for field level data collection as described below.

**Collection of Primary Data:** *This will require extensive field visits and interaction with various stakeholders such as POWERGRID/ State Utilities Officials, Contractor, forest officials, district/revenue officials, autonomous district council, Projects Affected People (PAPs) and members of public, in order to, collect data with respect to final route alignment with important features & maps, forest involvement/forest clearance, other applicable statutory clearances/consent, exact number of trees to be felled/damaged both in forest as well as non-forest area, number and profile of PAP along with details of compensation provided to PAPs. This will also include collection of any other primary data, which, in the opinion of agency, is required for ascertaining the compliance of the mitigation measures as enlisted in IEAR/EMP. Besides, photographs of important events such as interaction with various stakeholders, special features of the selected route (e.g. forest/vegetation area, major crossing, use of special tower, soil erosion & slope management practices etc.), safe working practices, borrow area management, top soil management and construction during lean period etc. should be taken as evidence.*

Based on the above, the **field data collection format** is developed for enabling NEHU to generate a data base required for actual environment assessment of the projects by the Specialist.

**Basis of data collection:-** *The basis of data collection is along the route of the transmission/distribution lines (Considering a RoW of 35 meter for 220 kV line, 27 meter for 132 kV line and 15 meter for 33 kV line).*

**NOTE:** *For homogenous stretches/sections of the route (like along paddy field, along tea garden etc.) data collection may be carried out section wise which will synchronize the data collection process.*

 <b>पावरग्रिड</b> <b>POWERGRID</b>	<b>FEAR for T&amp;D subprojects in Dhemaji district under NERPSIP in Assam</b>	
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## **FIELD DATA COLLECTION FORMAT** **(FEAR, ASSAM)**

### **DETAILS OF LAND/TOPOGRAPHY/VEGETATION**

**Name of the Line:** - 132 KV S/C (ON D/C TOWER) DHEMAJI-SILAPATHAR TRANSMISSION LINE

**Section of Route:** AP-1 to AP 4/11

**Number of Tower/Poles:** 15 Nos

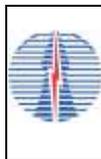
**Section Length:** Km

DESCRIPTION	REMARKS
Status of Land	<i>Private land</i>
General topography of the area	<i>Plains</i>
Nature of vegetation in the study area	<i>Agricultural Field/Naturally grown trees</i>
Density of vegetation	<i>Medium</i>
Number of trees likely to be felled in that stretch	152 Nos (Bamboo, azar, badam etc.)
Any specific observation with respect to ecological sensitivity in the study area	

### **DETAILS ON BIODIVERSITY OF THE STUDY AREA AND LIKEY IMPACTS**

*(It is desired that the assessment team to do a prior desk review or literature review on biodiversity of the Project areas/ districts based on secondary data)*

DESCRIPTION	STATUS/AVAILABILITY	LIKELY IMPACT
<b><u>FLORA</u></b>		
(a) Common flora in the study area	Bamboo, badam	
(b) Endemic flora		
(c) Endangered flora		
(d) Vulnerable		
(e) Threatened		
(f) Any specific observation		

 <b>पावरग्रिड POWERGRID</b>	<b>FEAR for T&amp;D subprojects in Dhemaji district under NERPSIP in Assam</b>	
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<b><u>FLORA</u></b>		
a) Common Fauna in the study area	Cattle, fowl	
(b) Endemic flora		
(c) Endangered flora		
(d) Vulnerable		
<b>Special emphasis on Elephant habitat/corridor</b>		
a) Presence of Elephant habitat/corridor in the study area		
<b>Special emphasis on electrocution of birds/monkey/primate species</b>		
a) Availability of large winged birds		
b) Availability of monkey/primate species and chances of electrocution		
c) Any specific nesting sites of birds which may be impacted		

**IMPACT OF PROJECT ACTIVITY (TOWER FOUNDATION/ERECTION/STRINGING)**

DESCRIPTION	REMARKS
Disposal of excavated soil/Excess soil	Refilled in the tower trench
Any major issue of soil erosion at project site/tower locations	No
Whether benching carried at tower locations	No
Number of trees felled/required to be felled at tower location	152 Nos
Leg extension /extended tower provided/requirement	No
Impact on nearby water bodies due to project activity	No
Whether location is vulnerable to soil erosion /slope failure	No
Any specific requirement of slope protection measures like revetment/retaining/toe wall etc. at project locations	No
Impact of approach road construction <i>(If required)</i>	No
Transportation of tower materials	Mechanical

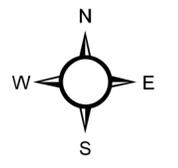
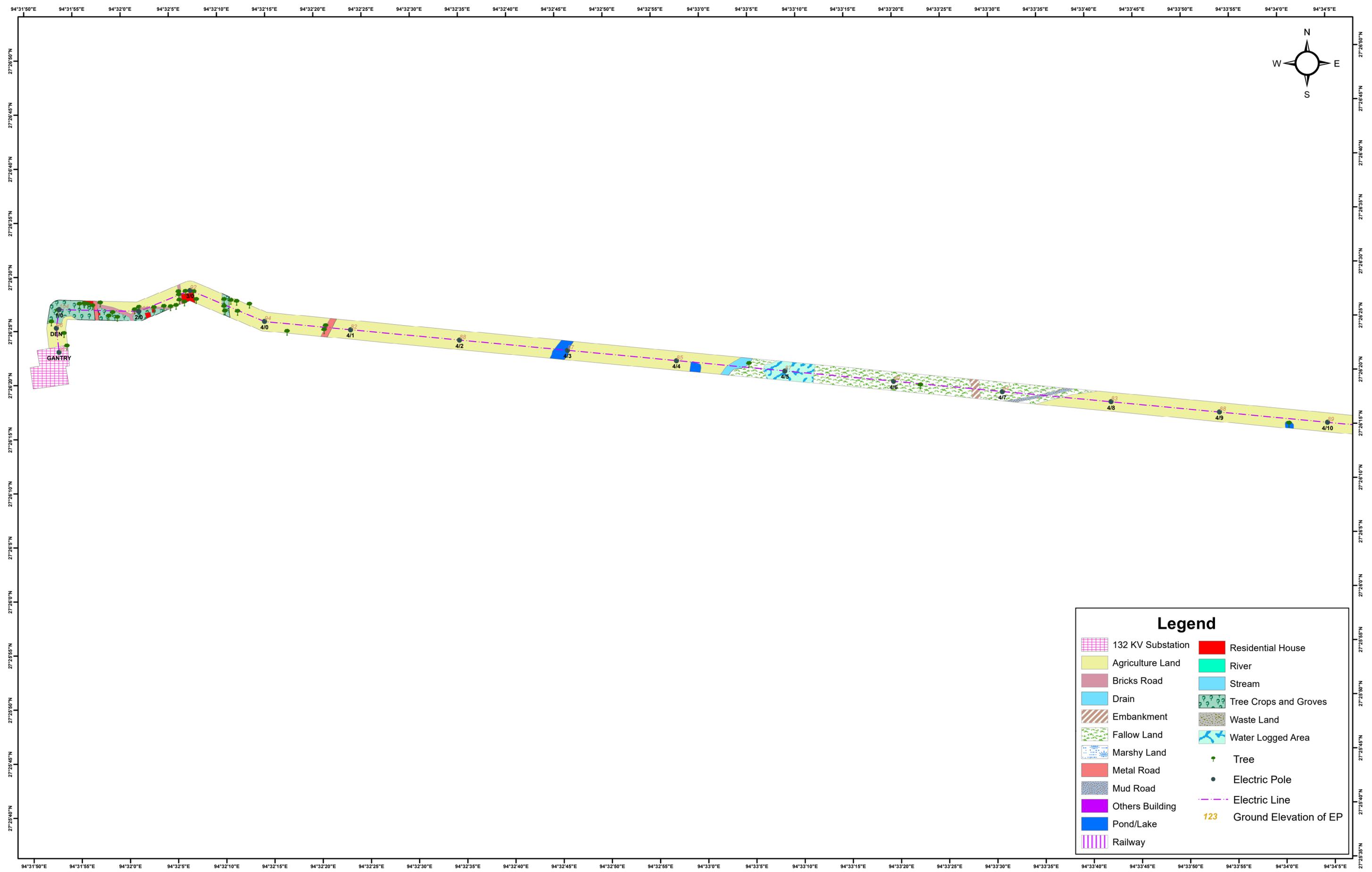
	<p>FEAR for T&amp;D subprojects in Dhemaji district under NERPSIP in Assam</p>	
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**SOCIO ECONOMIC ASSESSMENT OF THE STUDY AREA.**

DESCRIPTION	REMARKS
Name of the village/village council	Hatigarh
General socio economic profile of PAP in project area	Service, agriculture
Nature of land affected due to project activity	Private land, agricultural field
Any resettlement issue	No
Any negative impact on livelihood of the PAP	No
Any impact on archaeological structure ( <i>if, available in the vicinity</i> )	No
Any impact on common property resources/religious area /sacred groves etc.	No
Consultation with PAP/ Village council ( <i>As per TOR, public consultation is required to be done by Consultant in association with POWERGRID and property documented</i> )	Photographs and details of issues raised.

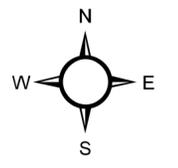
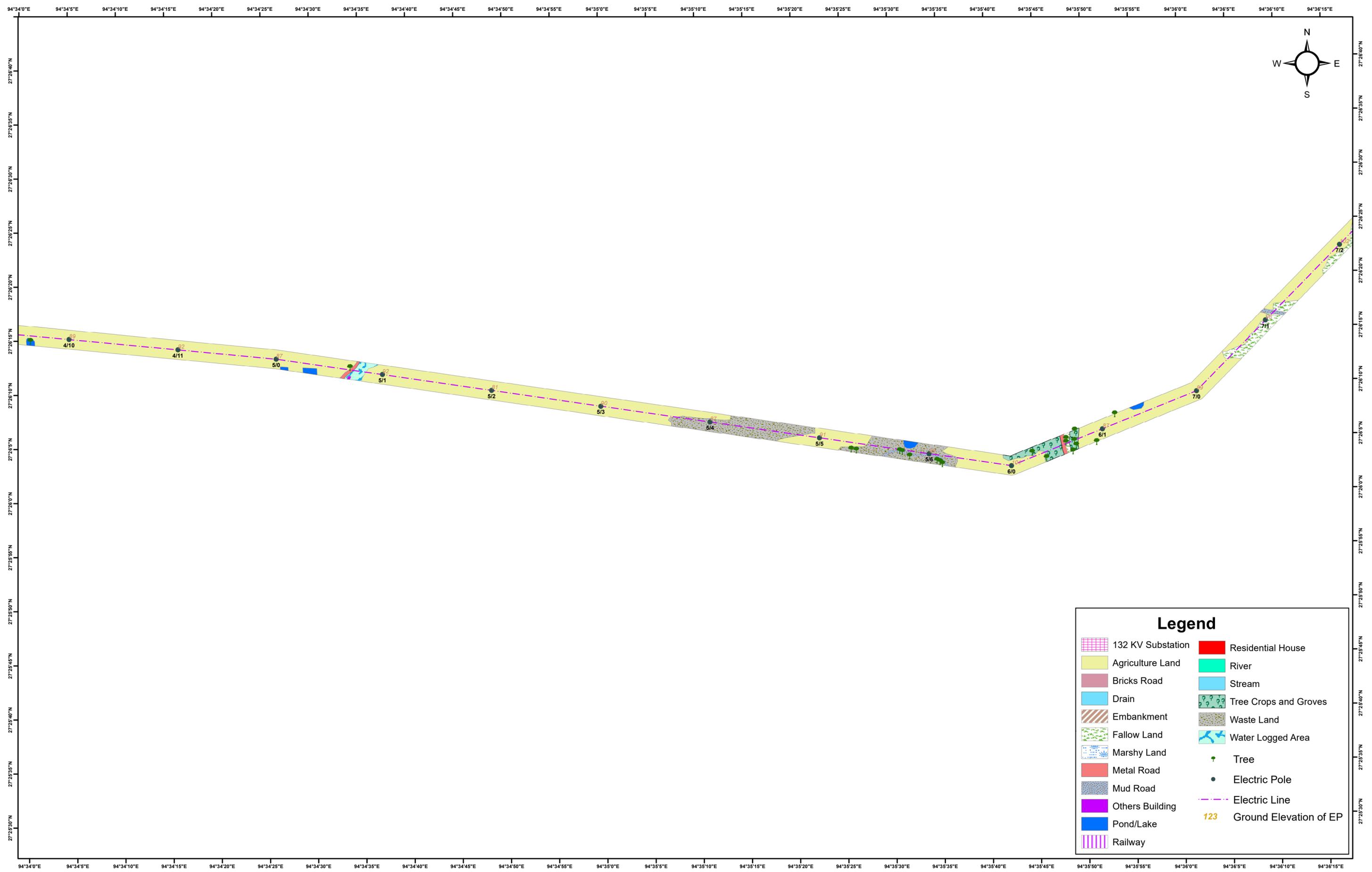
# **ANNEXURE A-1**

**LAND USE/LAND COVER DETAILS OF 132 KV S/C (ON D/C TOWER) DHEMAJI-SILAPATHAR TRANSMISSION LINE**  
**CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)**  
**PREPARED BY GREEN CIRCLE INC,**



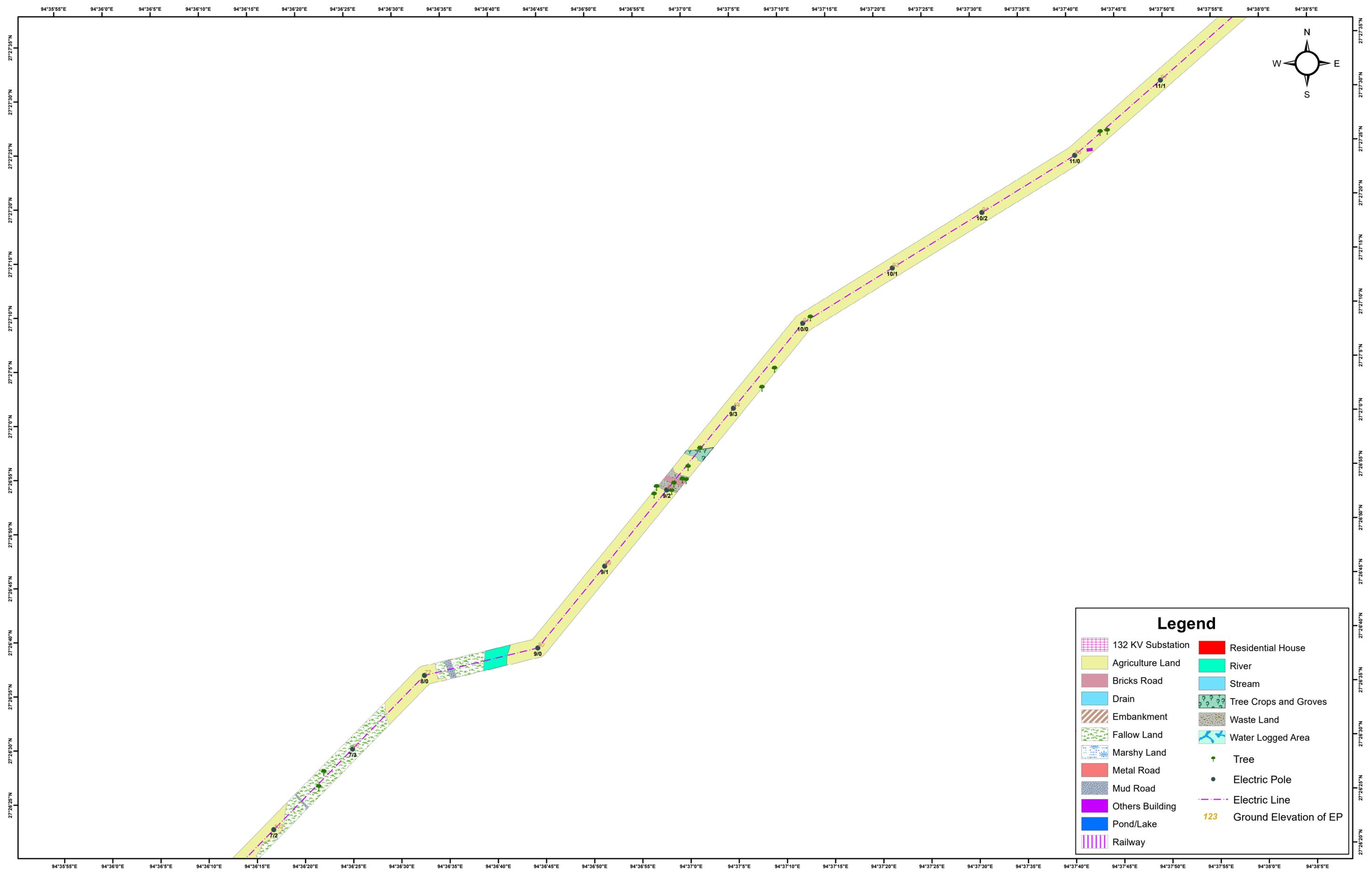
Legend			
	132 KV Substation		Residential House
	Agriculture Land		River
	Bricks Road		Stream
	Drain		Tree Crops and Groves
	Embankment		Waste Land
	Fallow Land		Water Logged Area
	Marshy Land		Tree
	Metal Road		Electric Pole
	Mud Road		Electric Line
	Others Building		Ground Elevation of EP
	Pond/Lake		
	Railway		

**LAND USE/LAND COVER DETAILS OF 132 KV S/C (ON D/C TOWER) DHEMAJI-SILAPATHAR TRANSMISSION LINE**  
**CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)**  
**PREPARED BY GREEN CIRCLE INC,**



Legend			
	132 KV Substation		Residential House
	Agriculture Land		River
	Bricks Road		Stream
	Drain		Tree Crops and Groves
	Embankment		Waste Land
	Fallow Land		Water Logged Area
	Marshy Land		Tree
	Metal Road		Electric Pole
	Mud Road		Electric Line
	Others Building		Ground Elevation of EP
	Pond/Lake		
	Railway		

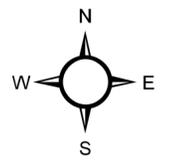
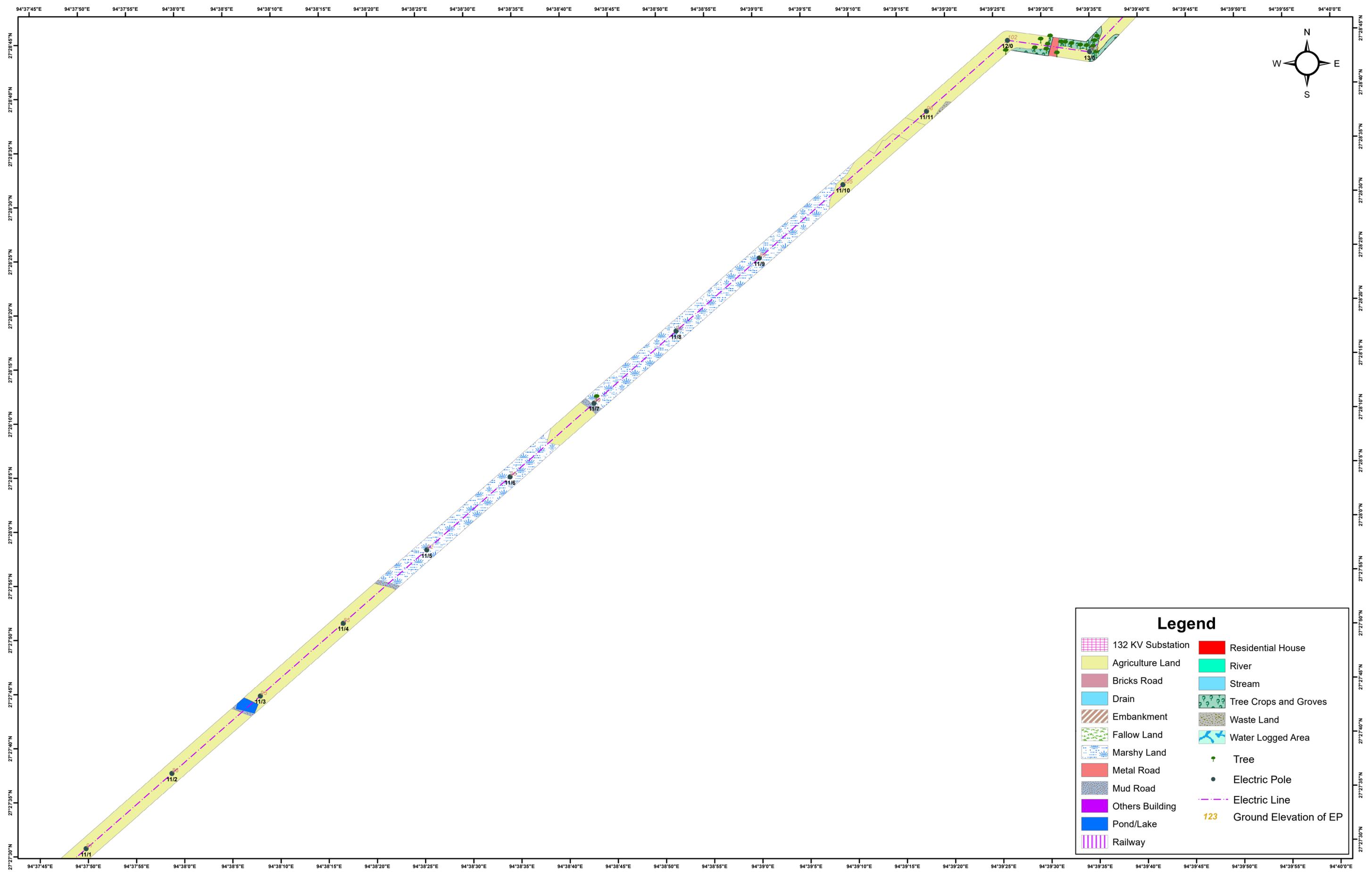
**LAND USE/LAND COVER DETAILS OF 132 KV S/C (ON D/C TOWER) DHEMAJI-SILAPATHAR TRANSMISSION LINE**  
**CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)**  
**PREPARED BY GREEN CIRCLE INC,**



### Legend

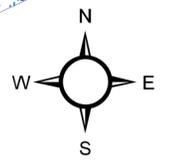
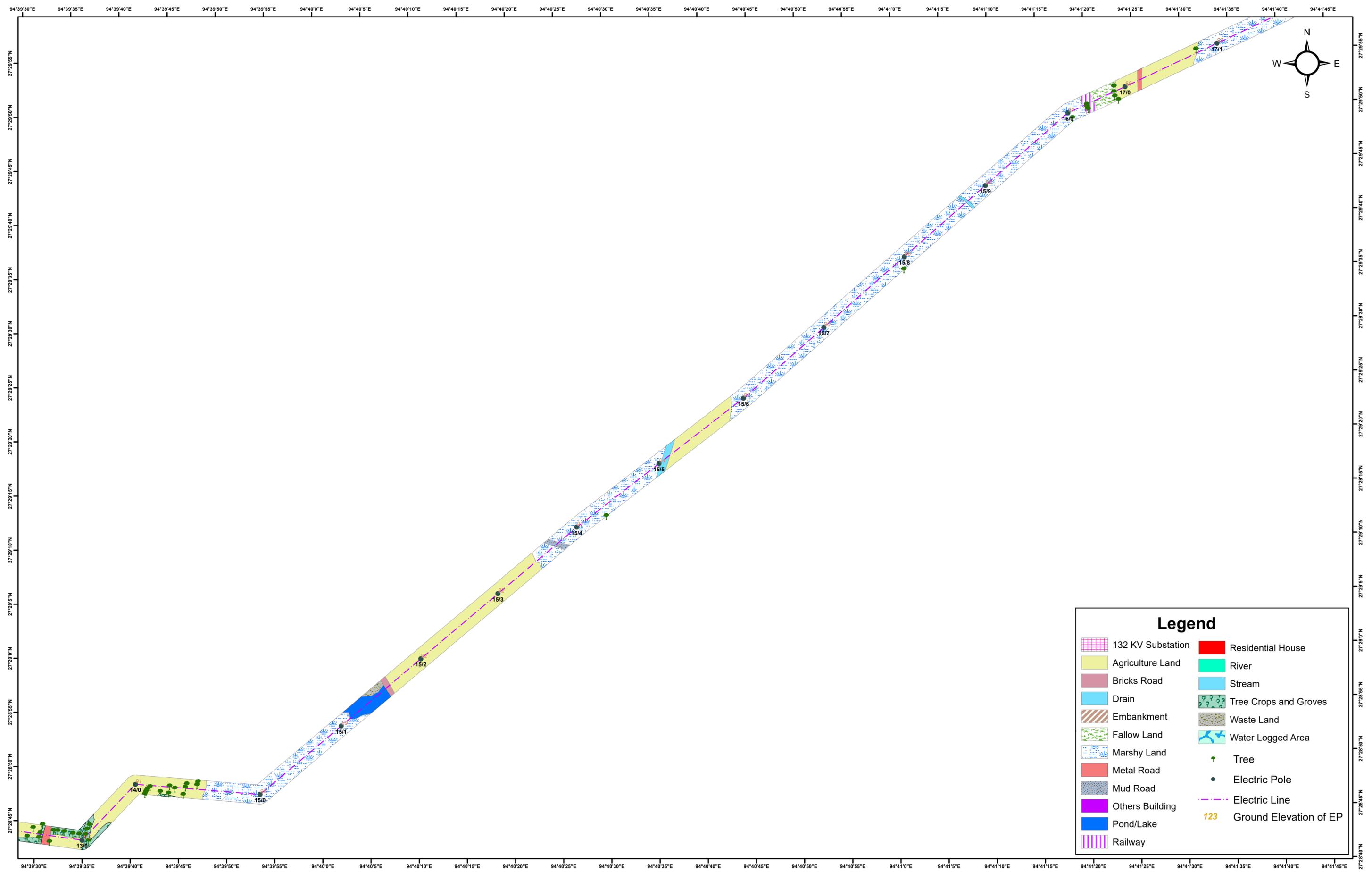
	132 KV Substation		Residential House
	Agriculture Land		River
	Bricks Road		Stream
	Drain		Tree Crops and Groves
	Embankment		Waste Land
	Fallow Land		Water Logged Area
	Marshy Land		Tree
	Metal Road		Electric Pole
	Mud Road		Electric Line
	Others Building		Ground Elevation of EP
	Pond/Lake		
	Railway		

**LAND USE/LAND COVER DETAILS OF 132 KV S/C (ON D/C TOWER) DHEMAJI-SILAPATHAR TRANSMISSION LINE**  
**CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)**  
**PREPARED BY GREEN CIRCLE INC,**



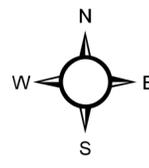
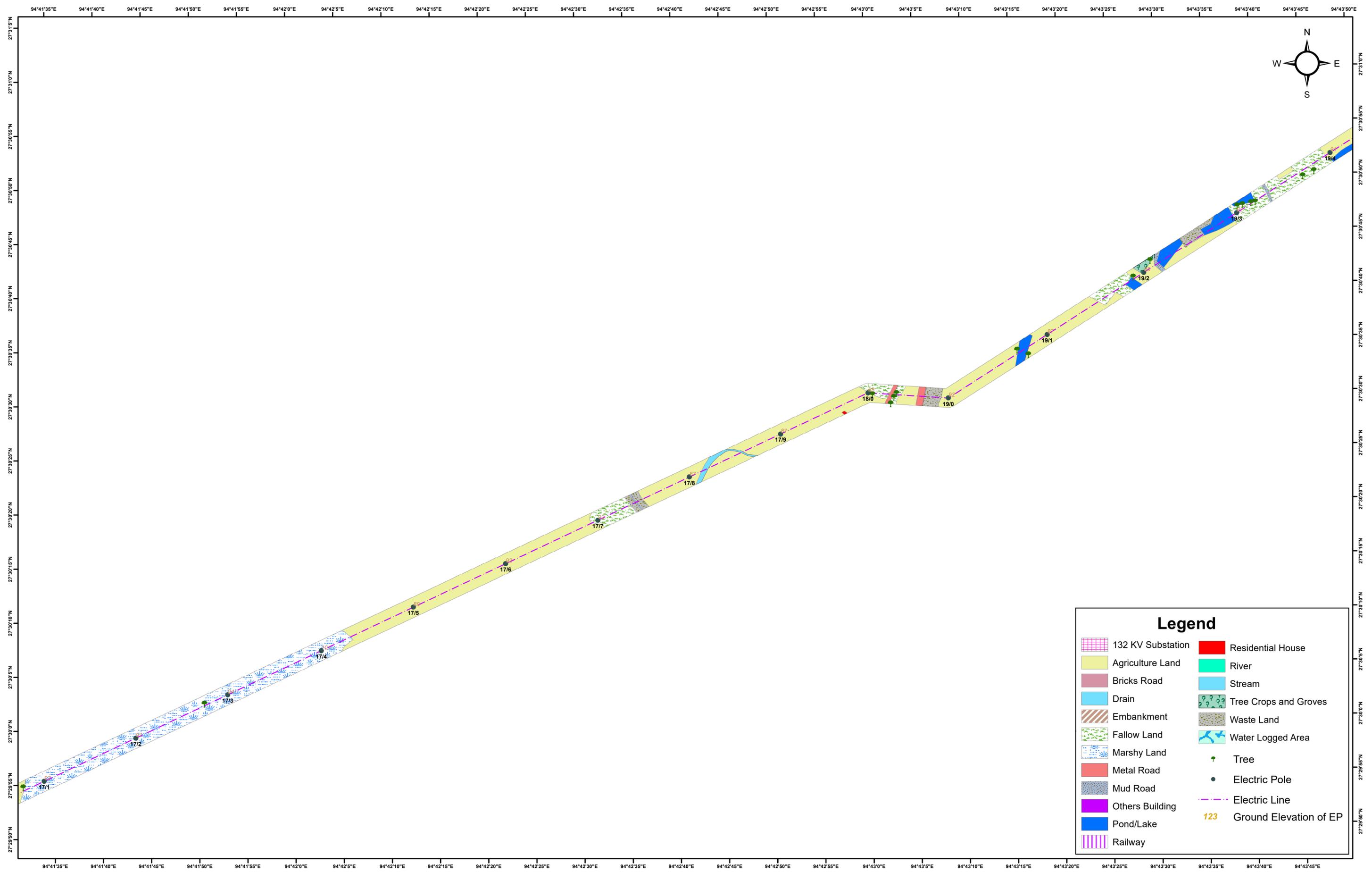
Legend			
	132 KV Substation		Residential House
	Agriculture Land		River
	Bricks Road		Stream
	Drain		Tree Crops and Groves
	Embankment		Waste Land
	Fallow Land		Water Logged Area
	Marshy Land		Tree
	Metal Road		Electric Pole
	Mud Road		Electric Line
	Others Building		Ground Elevation of EP
	Pond/Lake		
	Railway		

**LAND USE/LAND COVER DETAILS OF 132 KV S/C (ON D/C TOWER) DHEMAJI-SILAPATHAR TRANSMISSION LINE**  
**CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)**  
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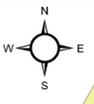
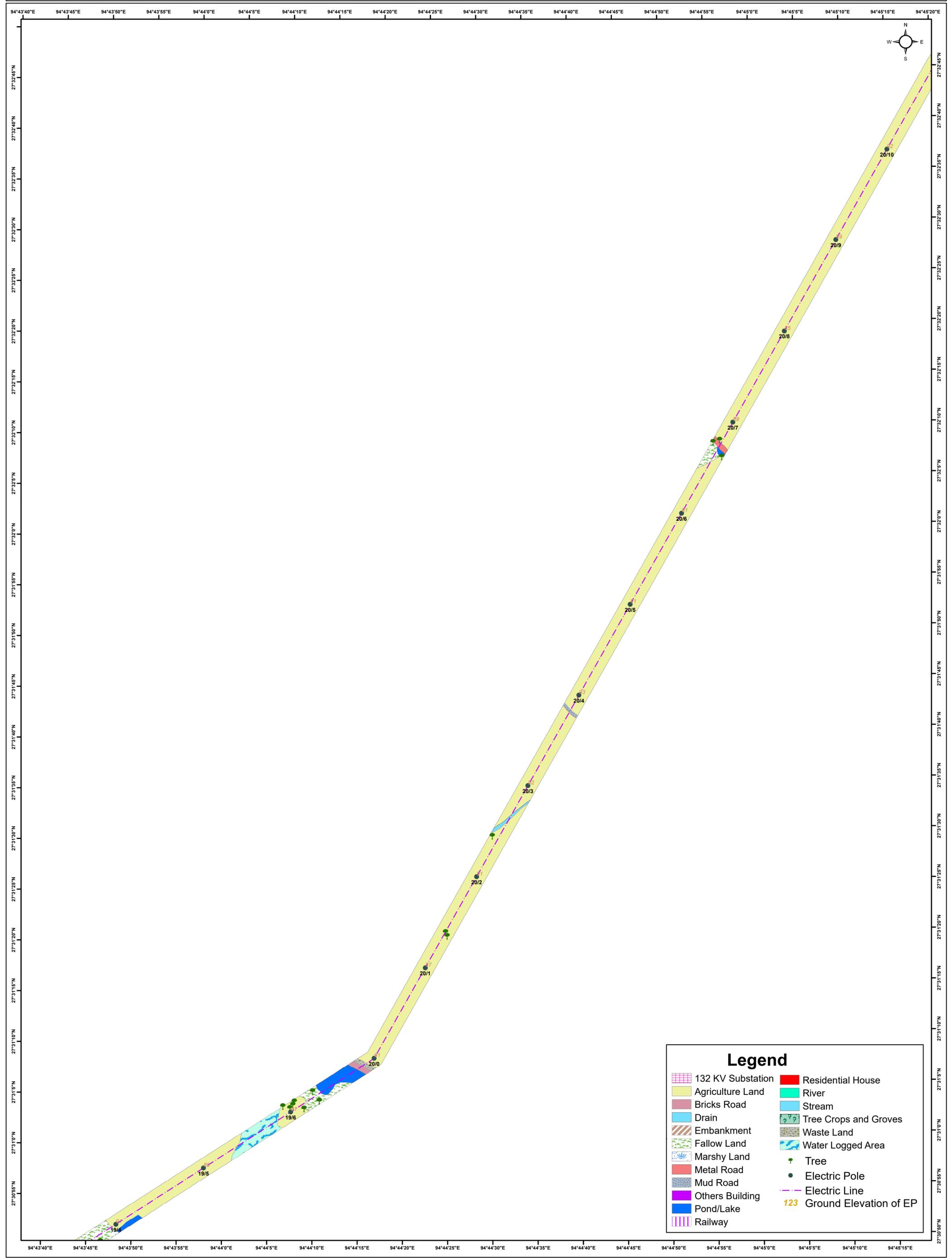
Legend			
	132 KV Substation		Residential House
	Agriculture Land		River
	Bricks Road		Stream
	Drain		Tree Crops and Groves
	Embankment		Waste Land
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**LAND USE/LAND COVER DETAILS OF 132 KV S/C (ON D/C TOWER) DHEMAJI-SILAPATHAR TRANSMISSION LINE**  
**CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)**  
**PREPARED BY GREEN CIRCLE INC,**



Legend			
	132 KV Substation		Residential House
	Agriculture Land		River
	Bricks Road		Stream
	Drain		Tree Crops and Groves
	Embankment		Waste Land
	Fallow Land		Water Logged Area
	Marshy Land		Tree
	Metal Road		Electric Pole
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	Others Building		Ground Elevation of EP
	Pond/Lake		
	Railway		

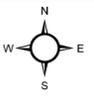
**LAND USE/LAND COVER DETAILS OF 132 KV S/C (ON D/C TOWER) DHEMAJI-SILAPATHAR TRANSMISSION LINE**  
**CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)**  
**PREPARED BY GREEN CIRCLE INC,**



**Legend**

- |                   |                        |
|-------------------|------------------------|
| 132 KV Substation | Residential House      |
| Agriculture Land  | River                  |
| Bricks Road       | Stream                 |
| Drain             | Tree Crops and Groves  |
| Embankment        | Waste Land             |
| Fallow Land       | Water Logged Area      |
| Marshy Land       | Tree                   |
| Metal Road        | Electric Pole          |
| Mud Road          | Electric Line          |
| Others Building   | Ground Elevation of EP |
| Pond/Lake         |                        |
| Railway           |                        |

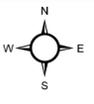
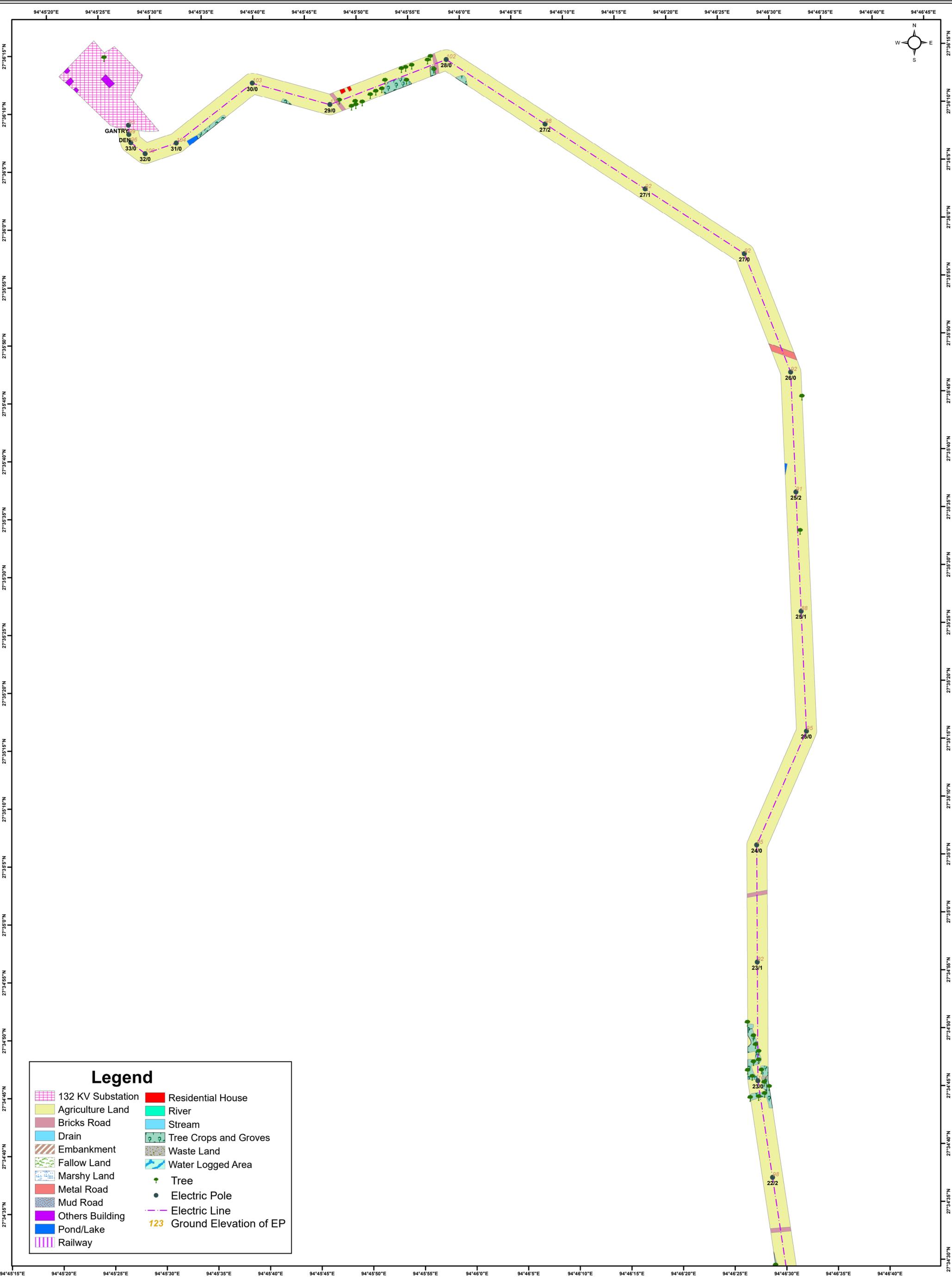
**LAND USE/LAND COVER DETAILS OF 132 KV S/C (ON D/C TOWER) DHEMAJI-SILAPATHAR TRANSMISSION LINE**  
**CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)**  
**PREPARED BY GREEN CIRCLE INC,**



**Legend**

- |  |                   |  |                        |
|--|-------------------|--|------------------------|
|  | 132 KV Substation |  | Residential House      |
|  | Agriculture Land  |  | River                  |
|  | Bricks Road       |  | Stream                 |
|  | Drain             |  | Tree Crops and Groves  |
|  | Embankment        |  | Waste Land             |
|  | Fallow Land       |  | Water Logged Area      |
|  | Marshy Land       |  | Tree                   |
|  | Metal Road        |  | Electric Pole          |
|  | Mud Road          |  | Electric Line          |
|  | Others Building   |  | Ground Elevation of EP |
|  | Pond/Lake         |  |                        |
|  | Railway           |  |                        |

**LAND USE/LAND COVER DETAILS OF 132 KV S/C (ON D/C TOWER) DHEMAJI-SILAPATHAR TRANSMISSION LINE**  
**CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)**  
**PREPARED BY GREEN CIRCLE INC,**

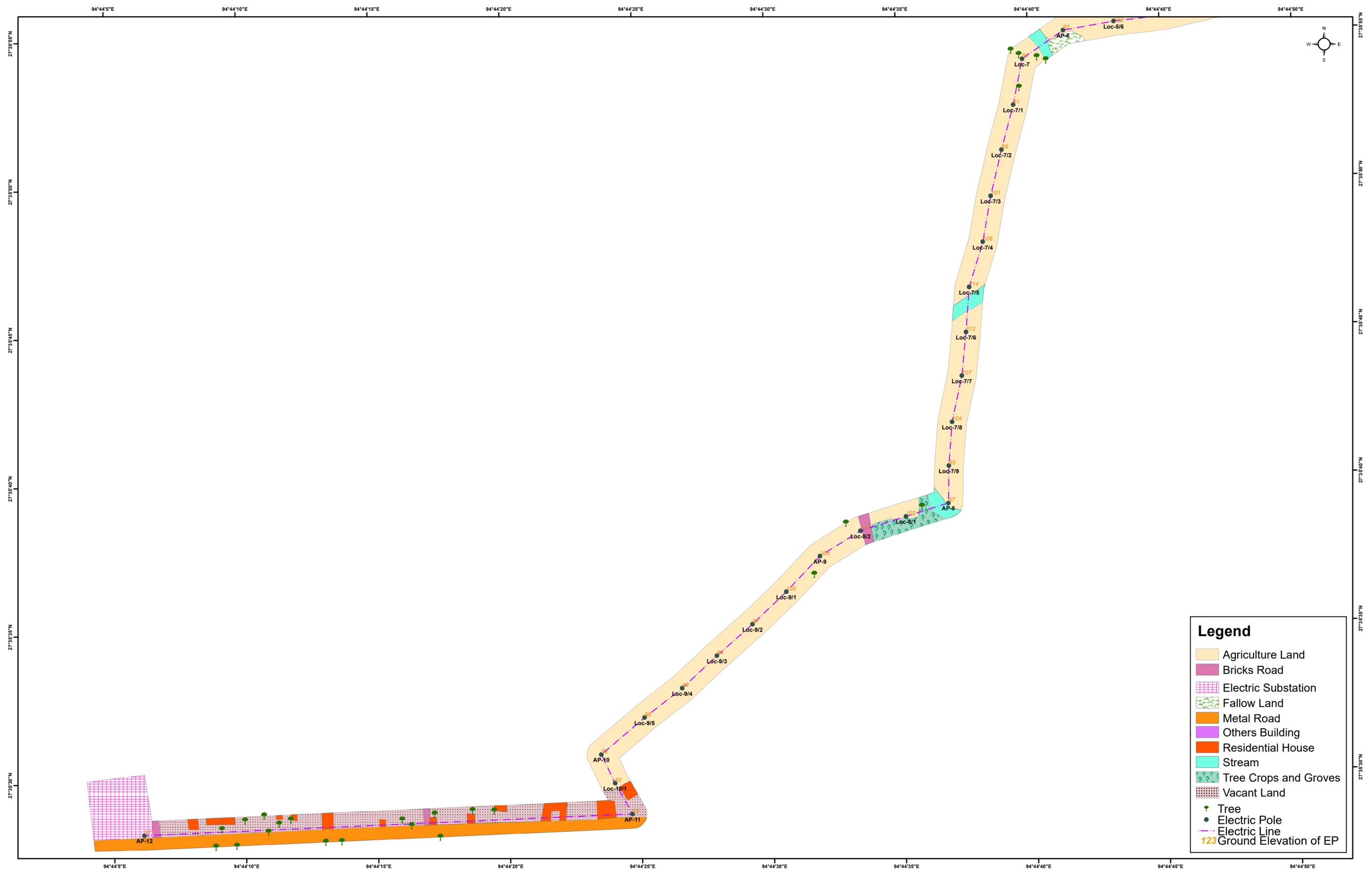


**Legend**

- |                   |                        |
|-------------------|------------------------|
| 132 KV Substation | Residential House      |
| Agriculture Land  | River                  |
| Bricks Road       | Stream                 |
| Drain             | Tree Crops and Groves  |
| Embankment        | Waste Land             |
| Fallow Land       | Water Logged Area      |
| Marshy Land       | Tree                   |
| Metal Road        | Electric Pole          |
| Mud Road          | Electric Line          |
| Others Building   | Ground Elevation of EP |
| Railway           |                        |

## **ANNEXURE A-2**

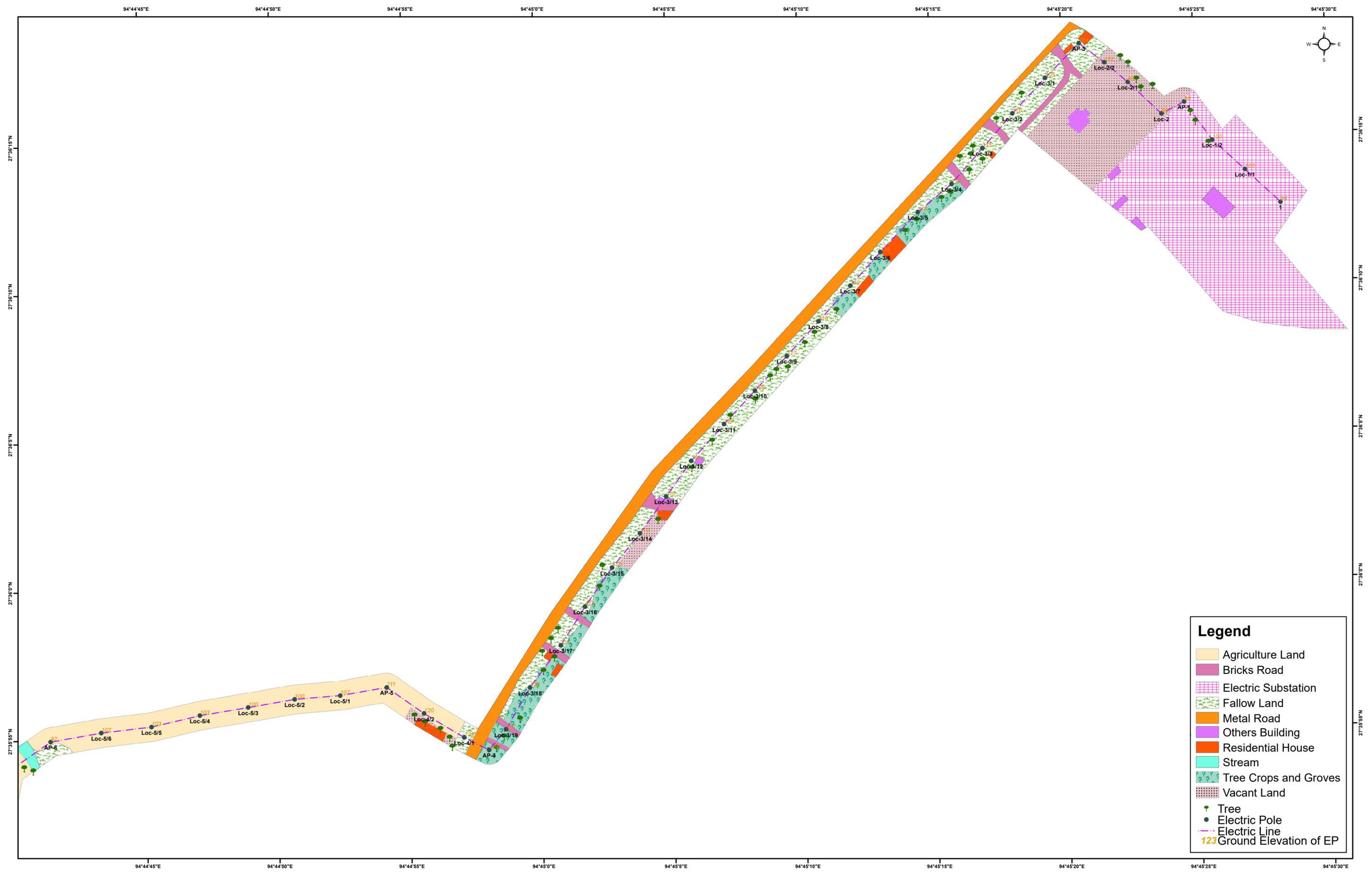
**LAND USE/LAND COVER DETAILS OF 33KV LINE FROM NEW 132/33 KV SILAPATHAR S/S TO 33/11 KV EXISTING SILAPATHAR**  
**CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)**  
**PREPARED BY GREEN CIRCLE INC,**



**Legend**

- Agriculture Land
- Bricks Road
- Electric Substation
- Fallow Land
- Metal Road
- Others Building
- Residential House
- Stream
- Tree Crops and Groves
- Vacant Land
- Tree
- Electric Pole
- Electric Line
- Ground Elevation of EP

**LAND USE/LAND COVER DETAILS OF 33KV LINE FROM NEW 132/33 KV SILAPATHAR S/S TO 33/11 KV EXISTING SILAPATHAR**  
**CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)**  
**PREPARED BY GREEN CIRCLE INC,**

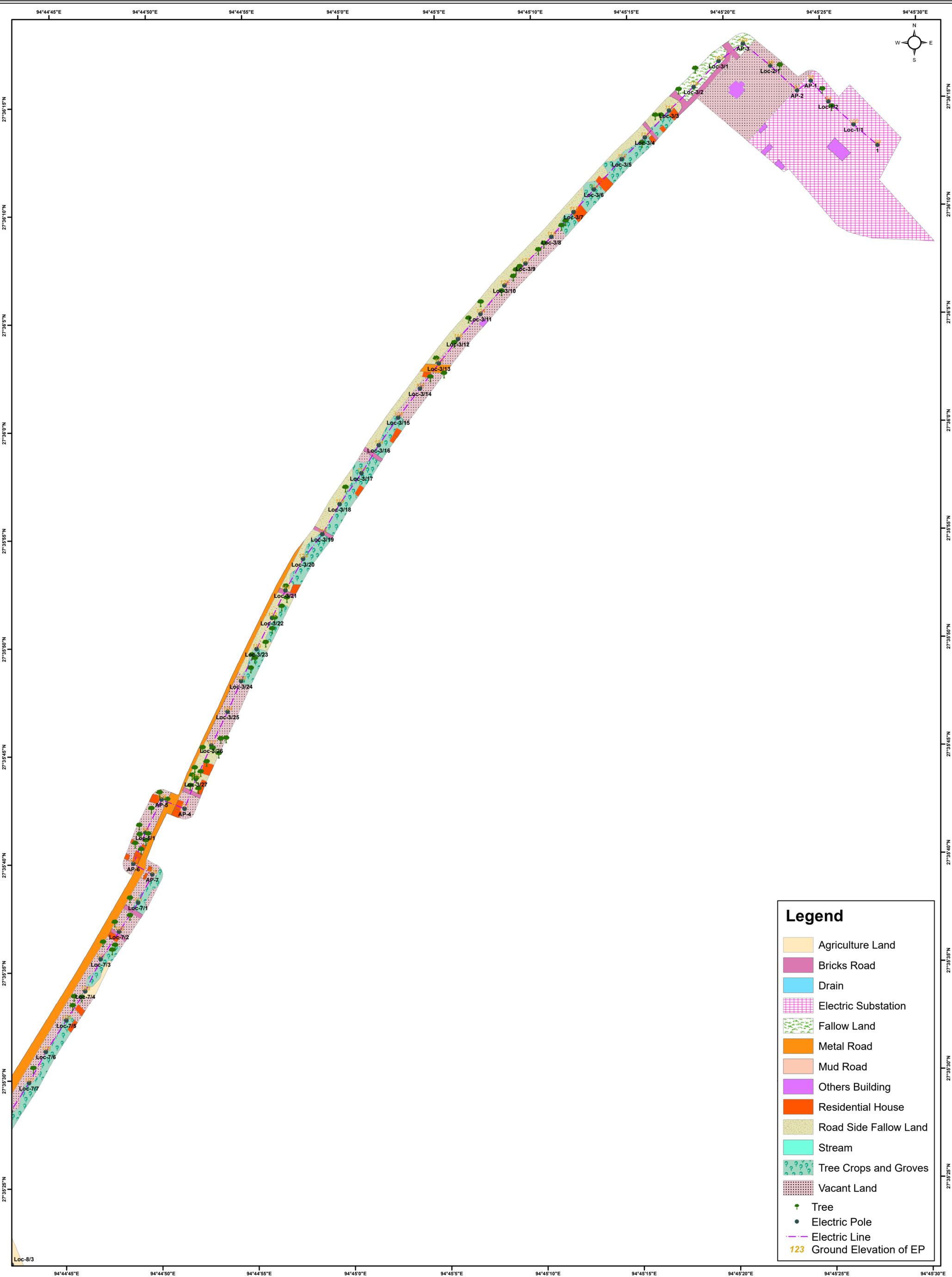


**Legend**

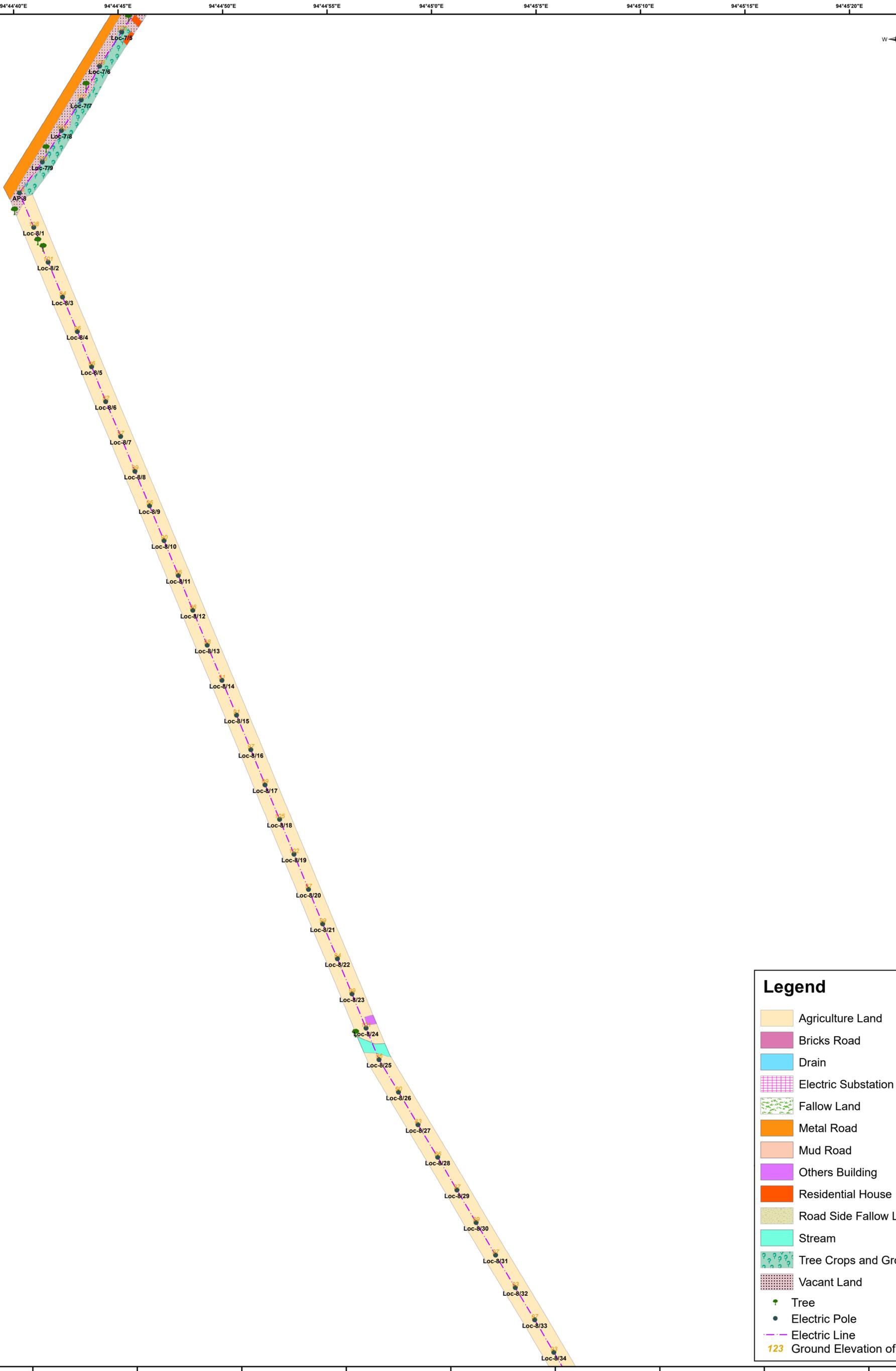
- Agriculture Land
- Bricks Road
- Electric Substation
- Fallow Land
- Metal Road
- Others Building
- Residential House
- Stream
- Tree Crops and Groves
- Vacant Land
- Tree
- Electric Pole
- Electric Line
- 123 Ground Elevation of EP

## **ANNEXURE A-3**

**LAND USE/LAND COVER DETAILS OF 33 KV S/C LINE FROM 132/33 KV NEW SILAPATHAR S/S TO 33/11 KV SILAPATHAR-II S/S**  
**CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)**  
**PREPARED BY GREEN CIRCLE INC,**



**LAND USE/LAND COVER DETAILS OF 33 KV S/C LINE FROM 132/33 KV NEW SILAPATHAR S/S TO 33/11 KV SILAPATHAR-II S/S**  
**CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)**  
**PREPARED BY GREEN CIRCLE INC,**



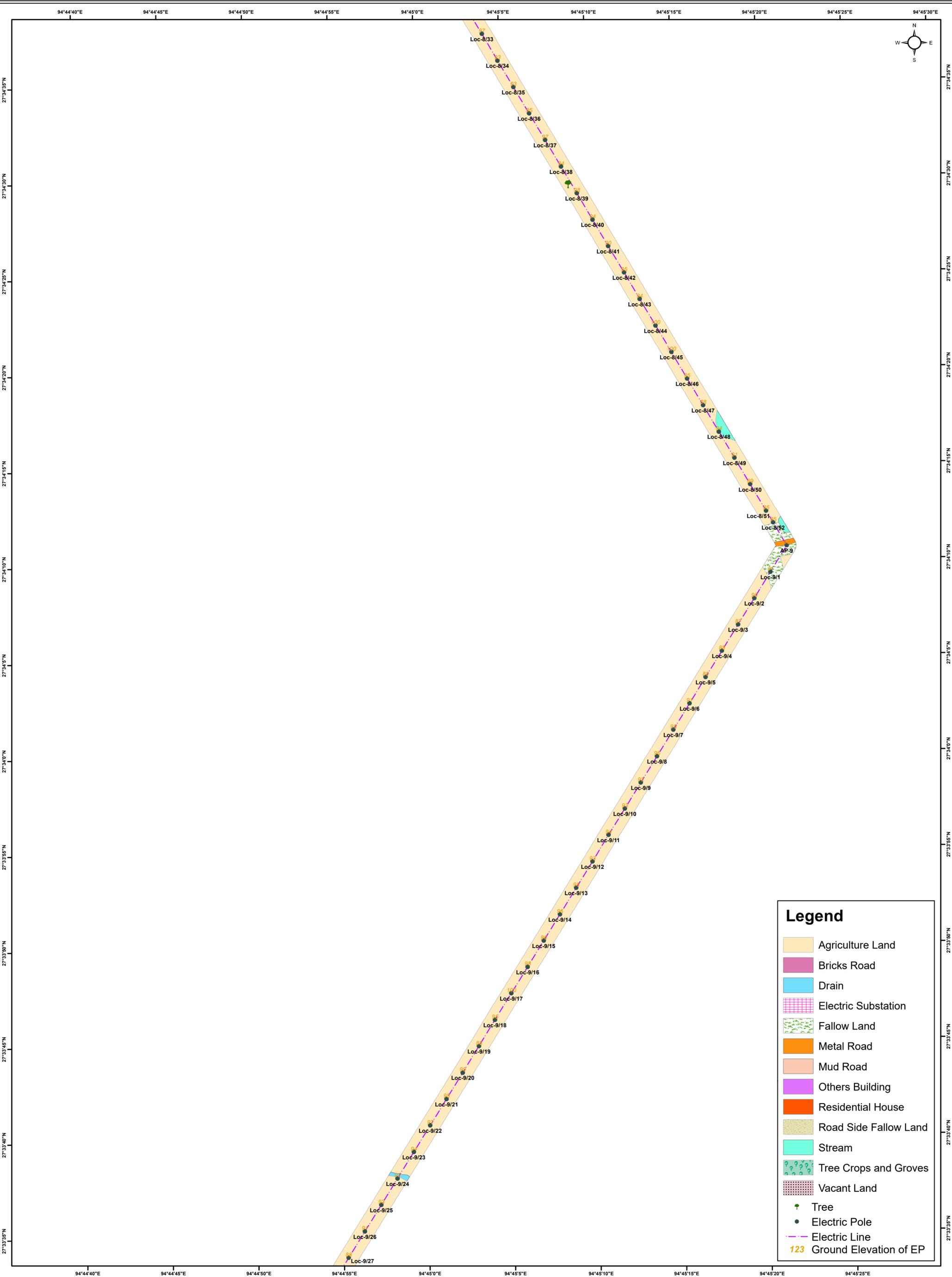
**Legend**

- Agriculture Land
- Bricks Road
- Drain
- Electric Substation
- Fallow Land
- Metal Road
- Mud Road
- Others Building
- Residential House
- Road Side Fallow Land
- Stream
- ?
?
?
?
 Tree Crops and Groves
- Vacant Land
- Tree
- Electric Pole
- Electric Line
- Ground Elevation of EP

94°44'35"E 94°44'40"E 94°44'45"E 94°44'50"E 94°44'55"E 94°45'0"E 94°45'5"E 94°45'10"E 94°45'15"E 94°45'20"E

27°35'30"N  
27°35'25"N  
27°35'20"N  
27°35'15"N  
27°35'10"N  
27°35'0"N  
27°34'55"N  
27°34'50"N  
27°34'45"N  
27°34'40"N

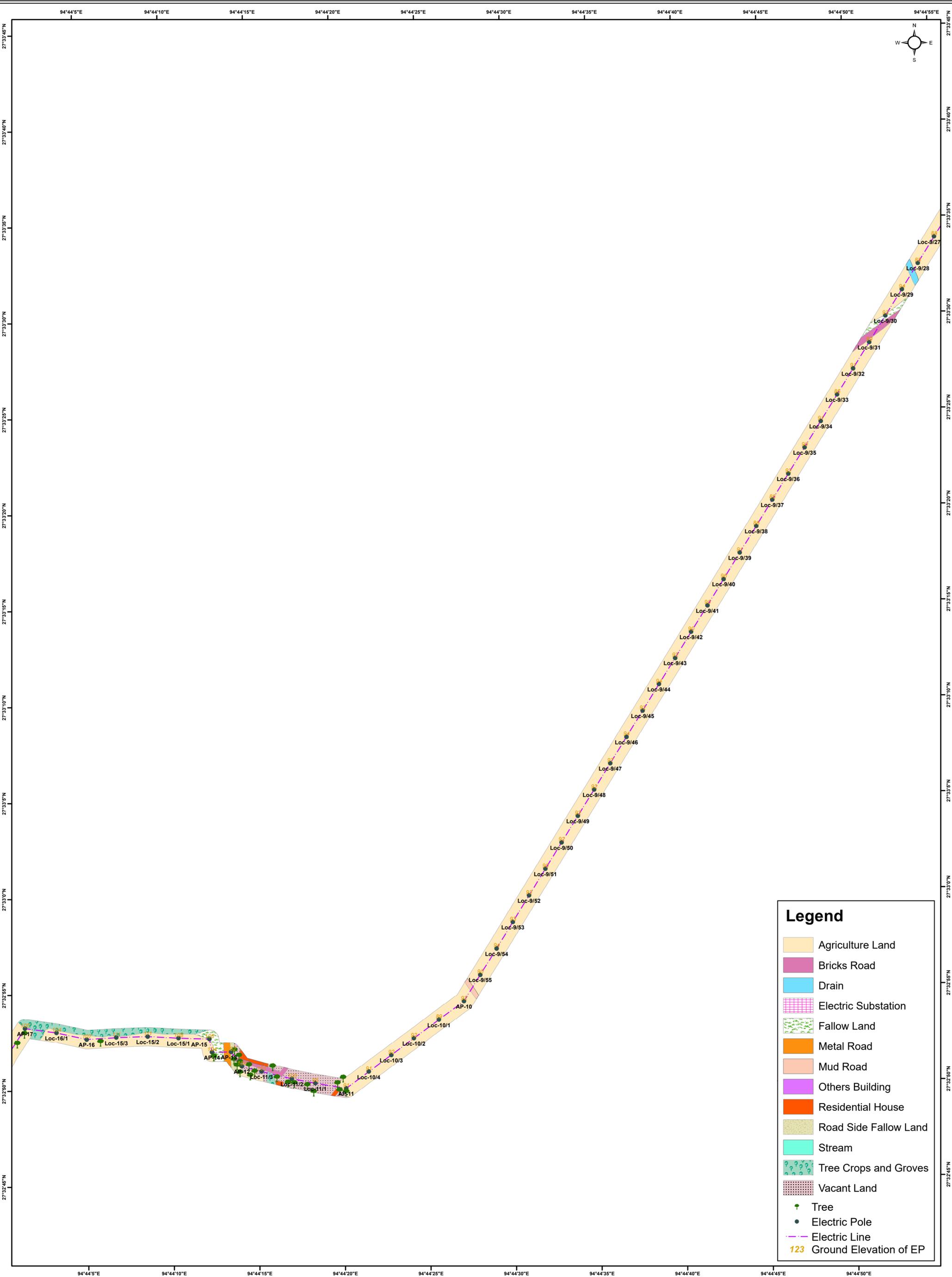
**LAND USE/LAND COVER DETAILS OF 33 KV S/C LINE FROM 132/33 KV NEW SILAPATHAR S/S TO 33/11 KV SILAPATHAR-II S/S**  
**CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)**  
**PREPARED BY GREEN CIRCLE INC,**



**Legend**

- Agriculture Land
- Bricks Road
- Drain
- Electric Substation
- Fallow Land
- Metal Road
- Mud Road
- Others Building
- Residential House
- Road Side Fallow Land
- Stream
- Tree Crops and Groves
- Vacant Land
- Tree
- Electric Pole
- Electric Line
- Ground Elevation of EP

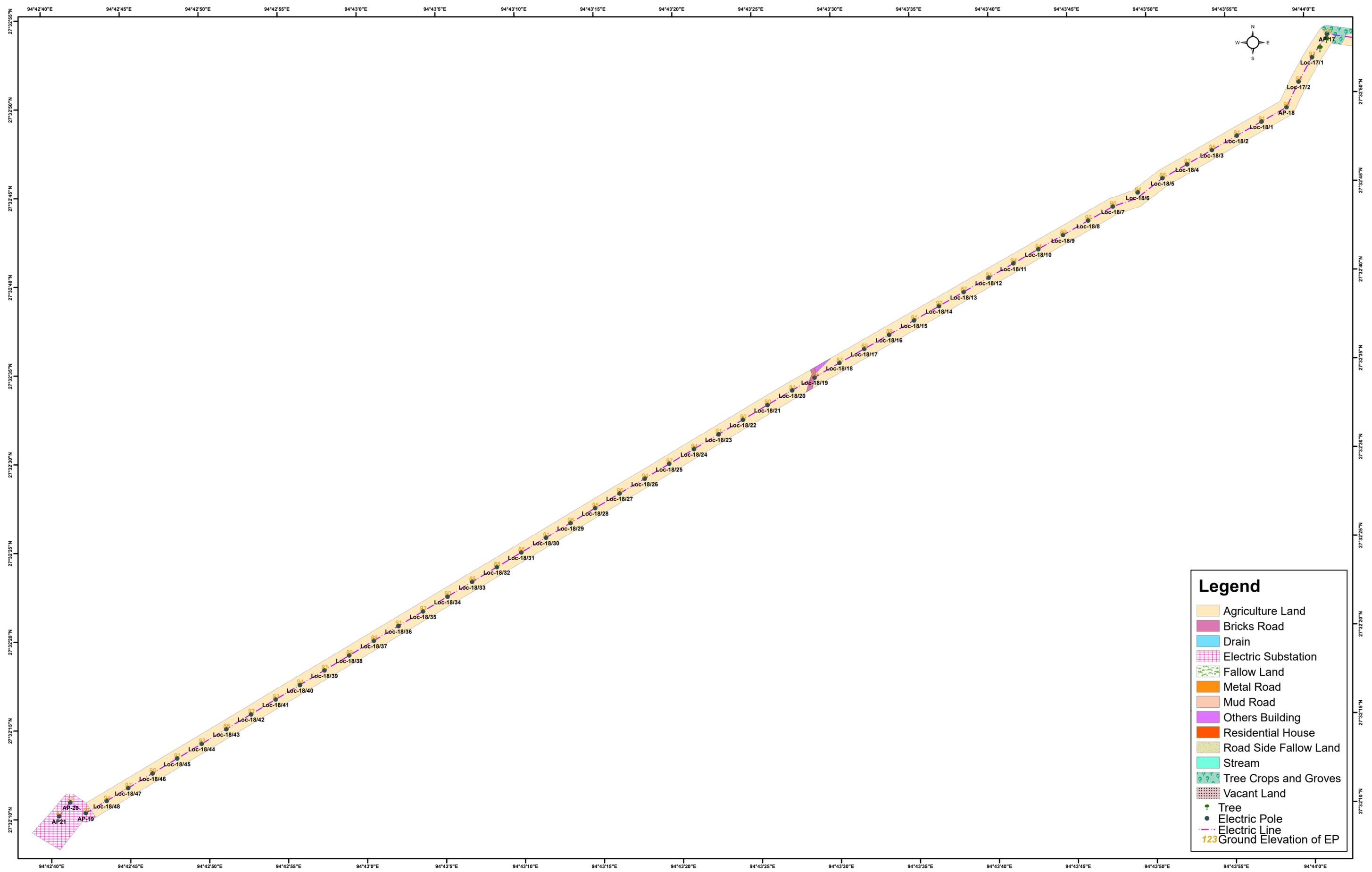
**LAND USE/LAND COVER DETAILS OF 33 KV S/C LINE FROM 132/33 KV NEW SILAPATHAR S/S TO 33/11 KV SILAPATHAR-II S/S**  
**CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)**  
**PREPARED BY GREEN CIRCLE INC,**



### Legend

- Agriculture Land
- Bricks Road
- Drain
- Electric Substation
- Fallow Land
- Metal Road
- Mud Road
- Others Building
- Residential House
- Road Side Fallow Land
- Stream
- Tree Crops and Groves
- Vacant Land
- Tree
- Electric Pole
- Electric Line
- 123 Ground Elevation of EP

**LAND USE/LAND COVER DETAILS OF 33 KV S/C LINE FROM 132/33 KV NEW SILAPATHAR S/S TO 33/11 KV SILAPATHAR-II S/S**  
**CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)**  
**PREPARED BY GREEN CIRCLE INC,**



**Legend**

- Agriculture Land
- Bricks Road
- Drain
- Electric Substation
- Fallow Land
- Metal Road
- Mud Road
- Others Building
- Residential House
- Road Side Fallow Land
- Stream
- Tree Crops and Groves
- Vacant Land
- Tree
- Electric Pole
- Electric Line
- 123 Ground Elevation of EP

## **ANNEXURE B-1**

AP NO	Location Of EP	Type	Ground Elevation of EP	EP Fall in Feature Class
AP-1	1/0	DD	104	Tree Crops and Groves
AP-10	10/0	DD	91	Agriculture Land
	10/1	DA	93	Agriculture Land
	10/2	DA	91	Agriculture Land
AP-11	11/0	DC	85	Agriculture Land
	11/1	DA	91	Agriculture Land
	11/10	DA	105	Agriculture Land
	11/11	DA	98	Agriculture Land
	11/2	DA	86	Agriculture Land
	11/3	DA	95	Agriculture Land
	11/4	DA	85	Agriculture Land
	11/5	DA	92	Marshy Land
	11/6	DA	96	Marshy Land
	11/7	DA	89	Marshy Land
	11/8	DA	92	Marshy Land
	11/9	DA	89	Marshy Land
AP-12	12/0	DD	102	Agriculture Land
AP-13	13/0	DD	112	Agriculture Land
AP-14	14/0	DD	91	Agriculture Land
AP-15	15/0	DD	95	Marshy Land
	15/1	DA	89	Marshy Land
	15/2	DA	92	Agriculture Land
	15/3	DA	82	Agriculture Land
	15/4	DA	91	Marshy Land
	15/5	DA	94	Marshy Land
	15/6	DA	91	Marshy Land
	15/7	DA	90	Marshy Land
	15/8	DA	88	Marshy Land
	15/9	DA	89	Marshy Land
AP-16	16/0	DD	90	Marshy Land
AP-17	17/0	DD	88	Agriculture Land
	17/1	DB	92	Marshy Land
	17/2	DA	91	Marshy Land
	17/3	DA	94	Marshy Land
	17/4	DA	101	Marshy Land
	17/5	DA	89	Agriculture Land
	17/6	DA	92	Agriculture Land
	17/7	DA	92	Fallow Land
	17/8	DA	87	Agriculture Land
	17/9	DA	87	Agriculture Land
AP-18	18/0	DD	88	Agriculture Land
AP-19	19/0	DD	92	Agriculture Land
	19/1	DA	87	Agriculture Land
	19/2	DA	85	Agriculture Land
	19/3	DA	92	Fallow Land
	19/4	DA	91	Agriculture Land

	19/5	DA	89	Agriculture Land
	19/6	DA	91	Agriculture Land
AP-2	2/0	DC	100	Tree Crops and Groves
AP-20	20/0	DC	91	Agriculture Land
	20/1	DA	87	Agriculture Land
	20/10	DA	92	Agriculture Land
	20/2	DA	91	Agriculture Land
	20/3	DA	92	Agriculture Land
	20/4	DA	93	Agriculture Land
	20/5	DA	91	Agriculture Land
	20/6	DA	81	Agriculture Land
	20/7	DA	89	Agriculture Land
	20/8	DA	85	Agriculture Land
	20/9	DA	89	Agriculture Land
AP-21	21/0	DB	90	Agriculture Land
	21/1	DA	95	Agriculture Land
	21/10	DA	88	Agriculture Land
	21/2	DA	93	Agriculture Land
	21/3	DA	85	Agriculture Land
	21/4	DA	94	Agriculture Land
	21/5	DA	88	Agriculture Land
	21/6	DA	92	Agriculture Land
	21/7	DA	90	Agriculture Land
	21/8	DA	92	Agriculture Land
	21/9	DA	85	Agriculture Land
AP-22	22/0	DD	85	Agriculture Land
	22/1	DA	86	Agriculture Land
	22/2	DA	98	Agriculture Land
AP-23	23/0	DB	104	Agriculture Land
	23/1	DA	92	Agriculture Land
AP-24	24/0	DC	95	Agriculture Land
AP-25	25/0	DC	95	Agriculture Land
	25/1	DA	88	Agriculture Land
	25/2	DA	91	Agriculture Land
AP-26	26/0	DC	92	Agriculture Land
AP-27	27/0	DD	92	Agriculture Land
	27/1	DA	92	Agriculture Land
	27/2	DA	98	Agriculture Land
AP-28	28/0	DD	102	Agriculture Land
AP-29	29/0	DD	111	Agriculture Land
AP-3	3/0	DD	92	Agriculture Land
AP-30	30/0	DD	103	Agriculture Land
AP-31	31/0	DC	104	Agriculture Land
AP-32	32/0	DD	100	Agriculture Land
AP-33	33/0	DD	96	Agriculture Land
AP-4	4/0	DC	94	Agriculture Land
	4/1	DA	82	Agriculture Land

	4/10	DA	89	Agriculture Land
	4/11	DA	92	Agriculture Land
	4/2	DA	88	Agriculture Land
	4/3	DA	87	Pond/Lake
	4/4	DA	85	Agriculture Land
	4/5	DA	87	Water Logged Area
	4/6	DA	89	Fallow Land
	4/7	DA	84	Fallow Land
	4/8	DA	83	Agriculture Land
	4/9	DA	88	Agriculture Land
AP-5	5/0	DB	87	Agriculture Land
	5/1	DA	92	Agriculture Land
	5/2	DA	81	Agriculture Land
	5/3	DA	90	Agriculture Land
	5/4	DA	87	Waste Land
	5/5	DA	91	Agriculture Land
	5/6	DA	99	Cart Track
AP-6	6/0	DD	101	Agriculture Land
	6/1	DA	87	Agriculture Land
AP-7	7/0	DC	89	Agriculture Land
	7/1	DA	96	Agriculture Land
	7/2	DA	102	Agriculture Land
	7/3	DA	96	Fallow Land
AP-8	8/0	DD	72	Agriculture Land
AP-9	9/0	DD	90	Agriculture Land
	9/1	DA	88	Agriculture Land
	9/2	DA	86	Waste Land
	9/3	DA	84	Agriculture Land
DEN	DEN	DE	96	Agriculture Land
DEN	DEN	DE	99	Agriculture Land
BAY	GANTRY	GAN	92	132 KV Substation
BAY	GANTRY	GAN	95	132 KV Substation







## **ANNEXURE B-2**

Pole No	Pole Type	Ground Elevation of EP	EP Fall in Feature	Geomorphology
1	Four Pole	99	Electric Substation	Younger Alluvial Plain
Loc-1/1	Single Pole	100	Electric Substation	Younger Alluvial Plain
Loc-1/2	Single Pole	100	Electric Substation	Younger Alluvial Plain
AP-1	Four Pole	98	Electric Substation	Younger Alluvial Plain
Loc-2	Four Pole	98	Vacant Land	Younger Alluvial Plain
Loc-2/1	Single Pole	99	Vacant Land	Younger Alluvial Plain
Loc-2/2	Single Pole	101	Vacant Land	Younger Alluvial Plain
AP-3	Four Pole	104	Fallow Land	Younger Alluvial Plain
Loc-3/1	Double Pole	105	Fallow Land	Younger Alluvial Plain
Loc-3/2	Single Pole	116	Fallow Land	Younger Alluvial Plain
Loc-3/3	Single Pole	115	Fallow Land	Younger Alluvial Plain
Loc-3/4	Single Pole	110	Fallow Land	Younger Alluvial Plain
Loc-3/5	Single Pole	118	Tree Crops and Groves	Younger Alluvial Plain
Loc-3/6	Single Pole	114	Residential House	Younger Alluvial Plain
Loc-3/7	Single Pole	113	Fallow Land	Younger Alluvial Plain
Loc-3/8	Single Pole	118	Fallow Land	Younger Alluvial Plain
Loc-3/9	Single Pole	127	Fallow Land	Younger Alluvial Plain
Loc-3/10	Single Pole	128	Fallow Land	Younger Alluvial Plain
Loc-3/11	Single Pole	124	Fallow Land	Younger Alluvial Plain
Loc-3/12	Single Pole	116	Fallow Land	Younger Alluvial Plain
Loc-3/13	Double Pole	112	Fallow Land	Younger Alluvial Plain
Loc-3/14	Double Pole	110	Fallow Land	Younger Alluvial Plain
Loc-3/15	Single Pole	110	Fallow Land	Younger Alluvial Plain
Loc-3/16	Single Pole	114	Fallow Land	Younger Alluvial Plain
Loc-3/17	Single Pole	117	Fallow Land	Younger Alluvial Plain
Loc-3/18	Single Pole	126	Fallow Land	Younger Alluvial Plain
Loc-3/19	Single Pole	121	Tree Crops and Groves	Younger Alluvial Plain
AP-4	Four Pole	124	Tree Crops and Groves	Younger Alluvial Plain
Loc-4/1	Double Pole	124	Fallow Land	Younger Alluvial Plain
Loc-4/2	Single Pole	120	Agriculture Land	Younger Alluvial Plain
AP-5	Double Pole	111	Agriculture Land	Younger Alluvial Plain
Loc-5/1	Single Pole	107	Agriculture Land	Younger Alluvial Plain
Loc-5/2	Single Pole	100	Agriculture Land	Younger Alluvial Plain
Loc-5/3	Single Pole	100	Agriculture Land	Younger Alluvial Plain
Loc-5/4	Single Pole	103	Agriculture Land	Younger Alluvial Plain
Loc-5/5	Single Pole	103	Agriculture Land	Younger Alluvial Plain
Loc-5/6	Single Pole	102	Agriculture Land	Younger Alluvial Plain
AP-6	Double Pole	92	Agriculture Land	Younger Alluvial Plain
Loc-7	Double Pole	91	Agriculture Land	Younger Alluvial Plain
Loc-7/1	Single Pole	91	Agriculture Land	Younger Alluvial Plain
Loc-7/2	Single Pole	95	Agriculture Land	Younger Alluvial Plain
Loc-7/3	Single Pole	101	Agriculture Land	Younger Alluvial Plain
Loc-7/4	Single Pole	106	Agriculture Land	Younger Alluvial Plain
Loc-7/5	Double Pole	114	Agriculture Land	Younger Alluvial Plain
Loc-7/6	Double Pole	112	Agriculture Land	Younger Alluvial Plain
Loc-7/7	Single Pole	107	Agriculture Land	Younger Alluvial Plain

Loc-7/8	Single Pole	104	Agriculture Land	Younger Alluvial Plain
Loc-7/9	Single Pole	95	Agriculture Land	Younger Alluvial Plain
AP-8	Four Pole	97	Agriculture Land	Younger Alluvial Plain
Loc-8/1	Single Pole	102	Agriculture Land	Younger Alluvial Plain
Loc-8/2	Single Pole	114	Agriculture Land	Younger Alluvial Plain
AP-9	Double Pole	106	Agriculture Land	Younger Alluvial Plain
Loc-9/1	Single Pole	105	Agriculture Land	Younger Alluvial Plain
Loc-9/2	Single Pole	97	Agriculture Land	Younger Alluvial Plain
Loc-9/3	Single Pole	94	Agriculture Land	Younger Alluvial Plain
Loc-9/4	Single Pole	94	Agriculture Land	Younger Alluvial Plain
Loc-9/5	Single Pole	96	Agriculture Land	Younger Alluvial Plain
AP-10	Four Pole	92	Agriculture Land	Younger Alluvial Plain
Loc-10/1	Single Pole	92	Agriculture Land	Younger Alluvial Plain
AP-11	Double Pole	95	Vacant Land	Younger Alluvial Plain
AP-12	Double Pole	97	Electric Substation	Younger Alluvial Plain



Dry Soil	Low Flood Hazard
Dry Soil	Not Flood Hazard
Dry Soil	Low Flood Hazard
Dry Soil	Not Flood Hazard

## **ANNEXURE B-3**

Pole No	Pole Type	Ground Elevation Of EP	EP Fall In Feature	Geomorphology
1	Four Pole	99	Electric Substation	Younger Alluvial plain
Loc-1/1	Single Pole	100	Electric Substation	Younger Alluvial plain
Loc-1/2	Single Pole	94	Electric Substation	Younger Alluvial plain
AP-1	Four Pole	98	Electric Substation	Younger Alluvial plain
AP-2	Four Pole	91	Electric Substation	Younger Alluvial plain
Loc-2/1	Single Pole	99	Vacant Land	Younger Alluvial plain
AP-3	Four Pole	104	Fallow Land	Younger Alluvial plain
Loc-3/1	Double Pole	103	Fallow Land	Younger Alluvial plain
Loc-3/2	Single Pole	116	Fallow Land	Younger Alluvial plain
Loc-3/3	Single Pole	115	Road Side Fallow Land	Younger Alluvial plain
Loc-3/4	Single Pole	110	Tree Crops and Groves	Younger Alluvial plain
Loc-3/5	Single Pole	118	Tree Crops and Groves	Younger Alluvial plain
Loc-3/6	Single Pole	114	Tree Crops and Groves	Younger Alluvial plain
Loc-3/7	Single Pole	113	Road Side Fallow Land	Younger Alluvial plain
Loc-3/8	Single Pole	118	Road Side Fallow Land	Younger Alluvial plain
Loc-3/9	Single Pole	127	Road Side Fallow Land	Younger Alluvial plain
Loc-3/10	Single Pole	126	Road Side Fallow Land	Younger Alluvial plain
Loc-3/11	Single Pole	124	Vacant Land	Younger Alluvial plain
Loc-3/12	Single Pole	116	Vacant Land	Younger Alluvial plain
Loc-3/13	Double Pole	112	Vacant Land	Younger Alluvial plain
Loc-3/14	Double Pole	110	Vacant Land	Younger Alluvial plain
Loc-3/15	Single Pole	108	Tree Crops and Groves	Younger Alluvial plain
Loc-3/16	Single Pole	114	Tree Crops and Groves	Younger Alluvial plain
Loc-3/17	Single Pole	117	Tree Crops and Groves	Younger Alluvial plain
Loc-3/18	Single Pole	119	Tree Crops and Groves	Younger Alluvial plain
Loc-3/19	Single Pole	116	Tree Crops and Groves	Younger Alluvial plain
Loc-3/20	Single Pole	124	Tree Crops and Groves	Younger Alluvial plain
Loc-3/21	Single Pole	114	Road Side Fallow Land	Younger Alluvial plain
Loc-3/22	Single Pole	112	Road Side Fallow Land	Younger Alluvial plain
Loc-3/23	Single Pole	119	Tree Crops and Groves	Younger Alluvial plain
Loc-3/24	Single Pole	108	Vacant Land	Younger Alluvial plain
Loc-3/25	Single Pole	104	Vacant Land	Younger Alluvial plain
Loc-3/26	Single Pole	107	Road Side Fallow Land	Younger Alluvial plain
Loc-3/27	Single Pole	110	Road Side Fallow Land	Younger Alluvial plain
AP-4	Four Pole	111	Vacant Land	Younger Alluvial plain
AP-5	Four Pole	106	Vacant Land	Younger Alluvial plain
Loc-5/1	Double Pole	99	Vacant Land	Younger Alluvial plain
AP-6	Four Pole	108	Vacant Land	Younger Alluvial plain
AP-7	Four Pole	109	Vacant Land	Younger Alluvial plain
Loc-7/1	Single Pole	111	Tree Crops and Groves	Younger Alluvial plain
Loc-7/2	Single Pole	108	Vacant Land	Younger Alluvial plain
Loc-7/3	Single Pole	111	Vacant Land	Younger Alluvial plain
Loc-7/4	Single Pole	108	Agriculture Land	Younger Alluvial plain
Loc-7/5	Single Pole	105	Tree Crops and Groves	Younger Alluvial plain
Loc-7/6	Single Pole	108	Vacant Land	Younger Alluvial plain
Loc-7/7	Single Pole	107	Vacant Land	Younger Alluvial plain

Loc-7/8	Single Pole	103	Vacant Land	Younger Alluvial plain
Loc-7/9	Single Pole	116	Tree Crops and Groves	Younger Alluvial plain
AP-8	Four Pole	115	Vacant Land	Younger Alluvial plain
Loc-8/1	Single Pole	108	Agriculture Land	Younger Alluvial plain
Loc-8/2	Single Pole	101	Agriculture Land	Younger Alluvial plain
Loc-8/3	Single Pole	94	Agriculture Land	Younger Alluvial plain
Loc-8/4	Single Pole	96	Agriculture Land	Younger Alluvial plain
Loc-8/5	Single Pole	96	Agriculture Land	Younger Alluvial plain
Loc-8/6	Single Pole	92	Agriculture Land	Younger Alluvial plain
Loc-8/7	Single Pole	97	Agriculture Land	Younger Alluvial plain
Loc-8/8	Single Pole	99	Agriculture Land	Younger Alluvial plain
Loc-8/9	Single Pole	96	Agriculture Land	Younger Alluvial plain
Loc-8/10	Single Pole	90	Agriculture Land	Younger Alluvial plain
Loc-8/11	Double Pole	86	Agriculture Land	Younger Alluvial plain
Loc-8/12	Single Pole	96	Agriculture Land	Younger Alluvial plain
Loc-8/13	Single Pole	98	Agriculture Land	Younger Alluvial plain
Loc-8/14	Single Pole	91	Agriculture Land	Younger Alluvial plain
Loc-8/15	Single Pole	91	Agriculture Land	Younger Alluvial plain
Loc-8/16	Single Pole	97	Agriculture Land	Younger Alluvial plain
Loc-8/17	Single Pole	99	Agriculture Land	Younger Alluvial plain
Loc-8/18	Single Pole	105	Agriculture Land	Younger Alluvial plain
Loc-8/19	Single Pole	102	Agriculture Land	Younger Alluvial plain
Loc-8/20	Single Pole	97	Agriculture Land	Younger Alluvial plain
Loc-8/21	Single Pole	99	Agriculture Land	Younger Alluvial plain
Loc-8/22	Single Pole	94	Agriculture Land	Younger Alluvial plain
Loc-8/23	Single Pole	99	Agriculture Land	Younger Alluvial plain
Loc-8/24	Single Pole	101	Agriculture Land	Younger Alluvial plain
Loc-8/25	Double Pole	96	Agriculture Land	Younger Alluvial plain
Loc-8/26	Single Pole	90	Agriculture Land	Younger Alluvial plain
Loc-8/27	Single Pole	83	Agriculture Land	Younger Alluvial plain
Loc-8/28	Single Pole	86	Agriculture Land	Younger Alluvial plain
Loc-8/29	Single Pole	97	Agriculture Land	Younger Alluvial plain
Loc-8/30	Single Pole	99	Agriculture Land	Younger Alluvial plain
Loc-8/31	Single Pole	97	Agriculture Land	Younger Alluvial plain
Loc-8/32	Single Pole	93	Agriculture Land	Younger Alluvial plain
Loc-8/33	Single Pole	97	Agriculture Land	Younger Alluvial plain
Loc-8/34	Single Pole	93	Agriculture Land	Younger Alluvial plain
Loc-8/35	Single Pole	93	Agriculture Land	Younger Alluvial plain
Loc-8/36	Single Pole	95	Agriculture Land	Younger Alluvial plain
Loc-8/37	Single Pole	97	Agriculture Land	Younger Alluvial plain
Loc-8/38	Double Pole	94	Agriculture Land	Younger Alluvial plain
Loc-8/39	Single Pole	98	Agriculture Land	Younger Alluvial plain
Loc-8/40	Single Pole	94	Agriculture Land	Younger Alluvial plain
Loc-8/41	Single Pole	90	Agriculture Land	Younger Alluvial plain
Loc-8/42	Single Pole	95	Agriculture Land	Younger Alluvial plain
Loc-8/43	Single Pole	94	Agriculture Land	Younger Alluvial plain
Loc-8/44	Single Pole	100	Agriculture Land	Younger Alluvial plain

Loc-8/45	Single Pole	100	Agriculture Land	Younger Alluvial plain
Loc-8/46	Single Pole	95	Agriculture Land	Younger Alluvial plain
Loc-8/47	Single Pole	88	Agriculture Land	Younger Alluvial plain
Loc-8/48	Single Pole	94	Agriculture Land	Younger Alluvial plain
Loc-8/49	Single Pole	91	Agriculture Land	Younger Alluvial plain
Loc-8/50	Single Pole	89	Agriculture Land	Younger Alluvial plain
Loc-8/51	Single Pole	95	Agriculture Land	Younger Alluvial plain
Loc-8/52	Double Pole	95	Agriculture Land	Younger Alluvial plain
AP-9	Four Pole	95	Fallow Land	Younger Alluvial plain
Loc-9/1	Single Pole	91	Fallow Land	Younger Alluvial plain
Loc-9/2	Single Pole	90	Agriculture Land	Younger Alluvial plain
Loc-9/3	Single Pole	87	Agriculture Land	Younger Alluvial plain
Loc-9/4	Single Pole	88	Agriculture Land	Younger Alluvial plain
Loc-9/5	Single Pole	89	Agriculture Land	Younger Alluvial plain
Loc-9/6	Single Pole	91	Agriculture Land	Younger Alluvial plain
Loc-9/7	Single Pole	95	Agriculture Land	Younger Alluvial plain
Loc-9/8	Single Pole	96	Agriculture Land	Younger Alluvial plain
Loc-9/9	Single Pole	92	Agriculture Land	Younger Alluvial plain
Loc-9/10	Single Pole	93	Agriculture Land	Younger Alluvial plain
Loc-9/11	Single Pole	94	Agriculture Land	Younger Alluvial plain
Loc-9/12	Single Pole	93	Agriculture Land	Younger Alluvial plain
Loc-9/13	Single Pole	95	Agriculture Land	Younger Alluvial plain
Loc-9/14	Single Pole	96	Agriculture Land	Younger Alluvial plain
Loc-9/15	Single Pole	96	Agriculture Land	Younger Alluvial plain
Loc-9/16	Single Pole	98	Agriculture Land	Younger Alluvial plain
Loc-9/17	Single Pole	100	Agriculture Land	Younger Alluvial plain
Loc-9/18	Double Pole	95	Agriculture Land	Younger Alluvial plain
Loc-9/19	Single Pole	88	Agriculture Land	Younger Alluvial plain
Loc-9/20	Single Pole	99	Agriculture Land	Younger Alluvial plain
Loc-9/21	Single Pole	98	Agriculture Land	Younger Alluvial plain
Loc-9/22	Single Pole	97	Agriculture Land	Younger Alluvial plain
Loc-9/23	Single Pole	94	Agriculture Land	Younger Alluvial plain
Loc-9/24	Single Pole	92	Agriculture Land	Younger Alluvial plain
Loc-9/25	Single Pole	93	Agriculture Land	Younger Alluvial plain
Loc-9/26	Single Pole	91	Agriculture Land	Younger Alluvial plain
Loc-9/27	Single Pole	88	Agriculture Land	Younger Alluvial plain
Loc-9/28	Single Pole	88	Agriculture Land	Younger Alluvial plain
Loc-9/29	Single Pole	94	Agriculture Land	Younger Alluvial plain
Loc-9/30	Single Pole	93	Fallow Land	Younger Alluvial plain
Loc-9/31	Single Pole	99	Agriculture Land	Younger Alluvial plain
Loc-9/32	Single Pole	91	Agriculture Land	Younger Alluvial plain
Loc-9/33	Single Pole	86	Agriculture Land	Younger Alluvial plain
Loc-9/34	Single Pole	91	Agriculture Land	Younger Alluvial plain
Loc-9/35	Single Pole	90	Agriculture Land	Younger Alluvial plain
Loc-9/36	Single Pole	92	Agriculture Land	Younger Alluvial plain
Loc-9/37	Double Pole	86	Agriculture Land	Younger Alluvial plain
Loc-9/38	Single Pole	86	Agriculture Land	Younger Alluvial plain

Loc-9/39	Single Pole	91	Agriculture Land	Younger Alluvial plain
Loc-9/40	Single Pole	96	Agriculture Land	Younger Alluvial plain
Loc-9/41	Single Pole	90	Agriculture Land	Younger Alluvial plain
Loc-9/42	Single Pole	90	Agriculture Land	Younger Alluvial plain
Loc-9/43	Single Pole	92	Agriculture Land	Younger Alluvial plain
Loc-9/44	Single Pole	94	Agriculture Land	Younger Alluvial plain
Loc-9/45	Single Pole	92	Agriculture Land	Younger Alluvial plain
Loc-9/46	Single Pole	94	Agriculture Land	Younger Alluvial plain
Loc-9/47	Single Pole	97	Agriculture Land	Younger Alluvial plain
Loc-9/48	Single Pole	92	Agriculture Land	Younger Alluvial plain
Loc-9/49	Single Pole	92	Agriculture Land	Younger Alluvial plain
Loc-9/50	Single Pole	92	Agriculture Land	Younger Alluvial plain
Loc-9/51	Single Pole	90	Agriculture Land	Younger Alluvial plain
Loc-9/52	Single Pole	92	Agriculture Land	Younger Alluvial plain
Loc-9/53	Single Pole	93	Agriculture Land	Younger Alluvial plain
Loc-9/54	Single Pole	94	Agriculture Land	Younger Alluvial plain
Loc-9/55	Single Pole	90	Agriculture Land	Younger Alluvial plain
AP-10	Double Pole	92	Agriculture Land	Younger Alluvial plain
Loc-10/1	Single Pole	89	Agriculture Land	Younger Alluvial plain
Loc-10/2	Double Pole	92	Agriculture Land	Younger Alluvial plain
Loc-10/3	Double Pole	92	Agriculture Land	Younger Alluvial plain
Loc-10/4	Double Pole	91	Agriculture Land	Younger Alluvial plain
AP-11	Double Pole	91	Agriculture Land	Younger Alluvial plain
Loc-11/1	Single Pole	95	Vacant Land	Younger Alluvial plain
Loc-11/2	Single Pole	100	Vacant Land	Younger Alluvial plain
Loc-11/3	Single Pole	101	Vacant Land	Younger Alluvial plain
AP-12	Double Pole	100	Vacant Land	Younger Alluvial plain
AP-13	Double Pole	102	Road Side Fallow Land	Younger Alluvial plain
AP-14	Four Pole	104	Agriculture Land	Younger Alluvial plain
AP-15	Four Pole	106	Agriculture Land	Younger Alluvial plain
Loc-15/1	Single Pole	108	Agriculture Land	Younger Alluvial plain
Loc-15/2	Single Pole	111	Agriculture Land	Younger Alluvial plain
Loc-15/3	Single Pole	111	Agriculture Land	Younger Alluvial plain
AP-16	Double Pole	107	Agriculture Land	Younger Alluvial plain
Loc-16/1	Single Pole	104	Agriculture Land	Younger Alluvial plain
AP-17	Four Pole	100	Agriculture Land	Younger Alluvial plain
Loc-17/1	Single Pole	93	Agriculture Land	Younger Alluvial plain
Loc-17/2	Single Pole	93	Agriculture Land	Younger Alluvial plain
AP-18	Double Pole	98	Agriculture Land	Younger Alluvial plain
Loc-18/1	Single Pole	91	Agriculture Land	Younger Alluvial plain
Loc-18/2	Single Pole	91	Agriculture Land	Younger Alluvial plain
Loc-18/3	Single Pole	95	Agriculture Land	Younger Alluvial plain
Loc-18/4	Single Pole	92	Agriculture Land	Younger Alluvial plain
Loc-18/5	Single Pole	88	Agriculture Land	Younger Alluvial plain
Loc-18/6	Single Pole	94	Agriculture Land	Younger Alluvial plain
Loc-18/7	Double Pole	96	Agriculture Land	Younger Alluvial plain
Loc-18/8	Single Pole	90	Agriculture Land	Younger Alluvial plain

Loc-18/9	Single Pole	89	Agriculture Land	Younger Alluvial plain
Loc-18/10	Single Pole	94	Agriculture Land	Younger Alluvial plain
Loc-18/11	Single Pole	94	Agriculture Land	Younger Alluvial plain
Loc-18/12	Single Pole	91	Agriculture Land	Younger Alluvial plain
Loc-18/13	Single Pole	87	Agriculture Land	Younger Alluvial plain
Loc-18/14	Single Pole	92	Agriculture Land	Younger Alluvial plain
Loc-18/15	Single Pole	91	Agriculture Land	Younger Alluvial plain
Loc-18/16	Single Pole	89	Agriculture Land	Younger Alluvial plain
Loc-18/17	Single Pole	89	Agriculture Land	Younger Alluvial plain
Loc-18/18	Single Pole	87	Agriculture Land	Younger Alluvial plain
Loc-18/19	Double Pole	89	Bricks Road	Younger Alluvial plain
Loc-18/20	Double Pole	91	Agriculture Land	Younger Alluvial plain
Loc-18/21	Single Pole	90	Agriculture Land	Younger Alluvial plain
Loc-18/22	Single Pole	90	Agriculture Land	Younger Alluvial plain
Loc-18/23	Single Pole	91	Agriculture Land	Younger Alluvial plain
Loc-18/24	Single Pole	94	Agriculture Land	Younger Alluvial plain
Loc-18/25	Single Pole	97	Agriculture Land	Younger Alluvial plain
Loc-18/26	Single Pole	94	Agriculture Land	Younger Alluvial plain
Loc-18/27	Single Pole	96	Agriculture Land	Younger Alluvial plain
Loc-18/28	Single Pole	95	Agriculture Land	Younger Alluvial plain
Loc-18/29	Single Pole	96	Agriculture Land	Younger Alluvial plain
Loc-18/30	Single Pole	91	Agriculture Land	Younger Alluvial plain
Loc-18/31	Single Pole	86	Agriculture Land	Younger Alluvial plain
Loc-18/32	Single Pole	88	Agriculture Land	Younger Alluvial plain
Loc-18/33	Single Pole	89	Agriculture Land	Younger Alluvial plain
Loc-18/34	Single Pole	90	Agriculture Land	Younger Alluvial plain
Loc-18/35	Double Pole	93	Agriculture Land	Younger Alluvial plain
Loc-18/36	Single Pole	91	Agriculture Land	Younger Alluvial plain
Loc-18/37	Single Pole	89	Agriculture Land	Younger Alluvial plain
Loc-18/38	Single Pole	89	Agriculture Land	Younger Alluvial plain
Loc-18/39	Single Pole	93	Agriculture Land	Younger Alluvial plain
Loc-18/40	Single Pole	94	Agriculture Land	Younger Alluvial plain
Loc-18/41	Single Pole	93	Agriculture Land	Younger Alluvial plain
Loc-18/42	Single Pole	93	Agriculture Land	Younger Alluvial plain
Loc-18/43	Single Pole	88	Agriculture Land	Younger Alluvial plain
Loc-18/44	Single Pole	93	Agriculture Land	Younger Alluvial plain
Loc-18/45	Single Pole	91	Agriculture Land	Younger Alluvial plain
Loc-18/46	Single Pole	90	Agriculture Land	Younger Alluvial plain
Loc-18/47	Single Pole	97	Agriculture Land	Younger Alluvial plain
Loc-18/48	Single Pole	94	Agriculture Land	Younger Alluvial plain
AP-19	Four Pole	89	Electric Substation	Younger Alluvial plain
AP-20	Four Pole	92	Electric Substation	Younger Alluvial plain
AP21	Four Pole	83	Electric Substation	Younger Alluvial plain









