

**FINAL ENVIRONMENT ASSESSMENT REPORT (FEAR)
FOR
T & D NETWORK IN KAMRUP RURAL, UDALGURI,
SONITPUR AND NALBARI DISTRICTS UNDER NERPSIP
TRANCHE-1, ASSAM**



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Prepared for:



Power Grid Corporation of India Limited

Prepared by:



R S Envirolink Technologies Pvt. Ltd.

402, BESTECH CHAMBER,

B-BLOCK, SUSHANT LOK-I, GURGAON

Phone: +91-124-4295383: www.rstechnologies.co.in

ABBREVIATIONS

AEGCL	-	Assam Electricity Grid Corporation Limited
APDCL	-	Assam Power Distribution Company Limited
AP	-	Affected Persons
CA	-	Compensatory Afforestation
CBIS	-	Capacity Building and Institutional Strengthening
CEA	-	Central Electricity Authority
CFC	-	Chlorofluorocarbon
CPIU	-	Central Project Implementation Unit
CPR	-	Common Property Resources
CPTD	-	Compensation Plan for Temporary Damage
CRM	-	Contractor's Review Meeting
DC	-	Deputy Collector
DL	-	Distribution Line
DPR	-	Detailed Project Report
EMF	-	Electro Magnetic Field
EMP	-	Environment Management Plan
EN	-	Endangered
EPA	-	Environment Protection Act
ESMU	-	Environment and Social Management Unit
ESPPF	-	Environment and Social Policy & Procedures Framework
FEAR	-	Final Environment Assessment Report
FSI	-	Forest Survey of India
GBPP	-	Gas Based Power Project
GA	-	Geographical Area
GCC	-	General Conditions of Contract
GHG	-	Green House Gas
GIS	-	Geographical Information System
GoA	-	Government of Assam
GoI	-	Government of India
GPS	-	Global Positioning System
GRC	-	Grievance Redress Committee
GRM	-	Grievance Redressal Mechanism
GW	-	Green Wash
HEP	-	Hydro Electric Project
HFL	-	High Flood Level
HQ	-	Head Quarter
IBRD	-	International Bank for Reconstruction and Development
IA	-	Implementing Agency
ICNIRP	-	International Commission on Non-Ionizing Radiation Protection
IEAR	-	Initial Environment Assessment Report

ISFR	-	India State of Forest Report
IUCN	-	International Union for Conservation of Nature
Km	-	Kilometer
kV	-	KiloVolt
LC	-	Least Concerned
LILO	-	Loop-In Loop-Out
MDF	-	Moderately Dense Forest
MoEF&CC	-	Ministry of Environment Forest & Climate Change
MVA	-	Mega Volt Ampere
MW	-	MegaWatt
NA	-	Not Assessed
NBSS&LUP	-	National Bureau of Soil Survey & Land Use Planning
NEEPCO	-	North Eastern Electric Power Corporation Limited
NER	-	North East Region
NERPSIP	-	North Eastern Region Power System Improvement Project
NH	-	National Highway
NOC	-	No Objection Certificate
NPV	-	Net Present Value
NT	-	Near Threatened
NTFP	-	Non Timber Forest Product
OF	-	Open Forest
PCB	-	Poly Chlorinated Biphenyl
PF	-	Protected Forest
PGCIL	-	Powergrid Corporation of India Limited
PIU	-	Project Implementation Unit
PRA	-	Participatory Rural Appraisal
PWD	-	Public Works Department
RF	-	Reserved Forest
RFA	-	Recorded Forest Area
RFCTLARRA	-	Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act
ROW	-	Right of Way
RSET	-	R S Envirolink Technologies Pvt. Ltd.
S/S	-	Substation
SH	-	State Highway
SIA	-	Social Impact Assessment
SMF	-	Social Management Framework
SPCU	-	State Project Coordination Unit
Sq km	-	Square Kilometer
ST	-	Scheduled Tribes
T&D	-	Transmission and Distribution
TL	-	Transmission Line

TOF	-	Tree Outside Forest
TPS	-	Thermal Power Station
TRC	-	Terrace Rice Cultivation
USD	-	United States Dollar
VDF	-	Very Dense Forest
VU	-	Vulnerable
WB	-	World Bank
ZSI	-	Zoological Survey of India

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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 transmission and distribution network in Kamrup Rural, Udalguri, Sonitpur and Nalbari districts of Assam and has been undertaken to verify the actual locational 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 six 220/ 132 kV transmission lines of 73.482 km, construction of four new transmission sub-stations, twelve 33 kV distribution lines of 127.783 km and construction of five new distribution sub-stations.

The topography of the districts is plain. Hence, transmission and distribution components of the project are in plains. About 82% of the study area comprises of agricultural land, around 4% comprises of private plantation land and the rest around 14% comprises of govt. land.

The final layout of transmission line has been carefully selected from three alternatives. The alignment has successfully avoided all ecological and social sensitive areas such as forest land, protected areas, sacred groves, community conserved areas, important bird areas, wetlands, settlements, common property resources, etc. The land use along the RoW (30 m for 220 kV, and 27 m for 132 kV) of lines comprises of agricultural land, private plantation land and govt. land. The original length of the line has been increased to 73.482 km from earlier 70.2 km due changes in the locations of the substation, tapping point of LILo line at Amingaon and when optimized during ground truthing survey. However, there is no change in the environmental footprints and impacts as envisaged in IEAR. A total of 285 towers are erected for the proposed transmission line.

Similarly, the distribution lines too have been aligned mostly along the existing roads and by avoiding forest areas, ecological and social sensitive areas such as protected areas, sacred groves, community conserved areas, important bird areas, wetlands, settlements, common property resources, etc. 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 use along the RoW of lines comprises of agricultural land, private plantation and govt. land. The original length of the line has been increased to 127.783 km from earlier 98.72 km due to change in the locations substations and change in route to avoid RoW issues. Though line length has increased however, considering that distribution line has minimum environmental footprints and without any change in land use and other base line data, no additional impacts of any kind apart from earlier identified impacts in IEAR/EMP are

anticipated. A total of around 3379 poles are being/to be erected for the proposed finalized distribution lines.

Sub-station locations are based on environment and social aspects and technical requirement. Various site-specific parameters that include availability of infrastructure facilities such as access roads, water, distance from railheads, type of land (Government/ revenue/private land); social impacts such as number of families getting affected; CPR including feasibility of acquisition were considered for analysis. The social aspects are provided due weightage after technical requirement in decision making for selection/finalization of land for substation. In the instant case land for all the proposed substations have been purchased on willing seller-willing buyer basis.

Impacts due to project have been analyzed for all the phases of project i.e. during design, construction and operation. Since, no involuntary acquisition was involved and fresh lands were secured only through private purchase there is no R & R and resettlement issues. Due to electricity supply, land value is expected to increase, therefore, possibility of land value depreciation is not envisaged. Final routes of lines and sites for construction of new substations don't involve any monuments of historical or cultural significance. In case of felling of trees in non-designated forest areas AEGCL/APDCL/IA are providing funds for compensation. 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, as per existing laws compensation for all damages (tree/crop) are paid to the individual land owner. Subsequent to the notification by Govt. of Assam on adoption of MoP guidelines, compensation toward damages in regard to RoW for proposed 132kV and 220 kV line @ 85% land value for tower base & maximum 15% land value for width of RoW corridor as decided by District Magistrate or any other authority shall be paid to land owners. Execution of the projects covered in this report has not resulted in any steep rise in traffic volume. The project does not require availing clearances from Department of Telecommunications, and the Ministry of Aviation. However, clearances are being obtained from the Ministry of Railway as transmission and distribution lines are crossing railway tracks at few locations. Further, the present project requires very less vehicular movement and that too restricted to construction period only. Hence, neither any interference with other utility nor steep rise in traffic volume is anticipated/ observed. The lines proposed under this scheme don't involve any tower/ pole to be placed in river bed which could interfere with existing drainage patterns. In sub-stations, 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.

Detailed specification with respect to equipment design and substation drainage and sewage design has been included in tender document to avoid any incidence of land and water contamination. Adequate safety measures are in place to avoid any potential fire/ explosion hazard. All the 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. Hence, possibility of erosion of

exposed area due to construction activity is negligible. To contain the noise level within the permissible limits, measures like providing sound and vibration dampers and rectification of equipment are undertaken. In addition, plantations of sound absorbing species like Casuarinas, Tamarind, and Neem are raised at the substations that reduce the sound level appreciably. The proposed lines are not passing through any forest area, wildlife area. Since there is no protected area or demarcated/ documented migration path of wildlife like elephant corridor existing near to subproject locations, hence, possibility of any disturbance to wildlife is not imminent. No bird migration/fly path found in project area.

During construction limited quantity of excavated material is generated from tower/pole foundations. Moreover, excavated soil is backfilled and compacted immediately after erection of tower/ pole. Additionally, other preventative measures such as utilization of leg extension, construction of revetment retaining walls are in place so as to eliminate the chances of uncontrolled silt runoff. Further, excavation is avoided in rainy days. Hence, uncontrolled silt run off is not anticipated. So far there are no instances with potential of erosion during construction of above said lines. Any adverse impact arising during the construction is limited to the boundaries of proposed substation only and neither impacts nearby habitat/property nor health & safety of neighboring community. In case of substations, generally the sites are selected in such a manner that the volume of cutting is equal to volume of filling so as to avoid borrowing of the area. Issues relating to operational health and safety has been adequately addressed. The labourers 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 COVID-19 pandemic outbreak which not only created unprecedented situation all over world but has also impacted every aspects/ activities including project implementation. Since such pandemic was totally unforeseen/ unexpected, impacts associated with such events/situations were not been specifically included in existing EMPs. However, the existing safety plan and other contract conditions particularly related to labours do have provisions to deal with such extraordinary situations.

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.

Public is informed about the project at every stage of execution. Public consultation using different technique like Public Meeting, Small Group Meeting, informal meetings have been carried out during different activities of project cycle. For the Participatory Rural Appraisal (PRA), informal meetings were held with various stakeholders such as IA, contractors, labours, villagers etc. to capture their view about the project. It emerged from the survey that the PAPs were appreciative of the project and hoped that the power scenario would improve after commissioning of the project. Local people are also getting benefited through project related employment that was being generated. However, following suggestions may be considered to further improve the safeguard measures and also enhance the environmental sustainability of project.

- During the construction phase, the implementing agency needs to ensure strict compliance of the contract provisions/EMP by Contractor especially in respect of workers health and safety.
- Along with labours, supervisors, engineers and Staff of Implementing Agency (IA) should also need to follow the health and safety precautions.
- Need of regular induction and training program for labours and engineers at all sites.
- Training for PMU staff regarding monitoring and implantation of EMP as proposed in IEAR.
- Records of labour registration, health checkup of labours and other working staff need to be maintained at all sites and strictly monitoring to avoid engagement of child labour.
- Training and awareness regarding cleanliness and solid waste disposal to maintain the hygiene in the labour camps and construction sites.
- Demarcation and protection for sites where work has been on hold due to various reasons to avoid accidents and runoff of excavated soil from construction sites
- Project staff of the implementing agency should be well versed with the contents of the IEAR so as to ensure proper compliance by the contractors.
- All the drainage provided in the substation area should be covered to prevent any accidents.

Overall, the planning and layout of the project elements have been undertaken in a judicious manner so as to ensure minimum environmental impact. Also, commissioning of the project will augment the power distribution and availability in the region which will further catalyze economic activity and development of the area/region.

Chapter 1

INTRODUCTION & PROJECT DESCRIPTION

1.1 PROJECT BACKGROUND

India's North East Region (NER) stretches across the eastern foothills of the Himalayan mountain range and is comprised of seven states including Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, and Tripura.

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

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

MoP, GoI has appointed POWERGRID as Implementing Agency (IA) to six North Eastern States for the said 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 Utilities/State Government which upon progressive commissioning shall be handed over to them for taking care of Operation and Maintenance of assets. 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 in **Table 1.1**.

Table 1.1: State Wise Scope of Work Proposed Under Tranche-1

State	Transmission/ Sub-transmission (132 kV & above)			Distribution (33 kV)		
	Line (km)	New S/s (No.)	Total MVA (New & Aug.)	Line (km)	New S/s (No.)	Total MVA (New & Aug.)
Assam	225	11	1668	356	16	240
Manipur	223	2	139	99	13	275

State	Transmission/ Sub-transmission (132 kV & above)			Distribution (33 kV)		
	Line (km)	New S/s (No.)	Total MVA (New & Aug.)	Line (km)	New S/s (No.)	Total MVA (New & Aug.)
Meghalaya	205	4	940	174	11	150
Mizoram	116	3	100	4	1	6
Nagaland	193	5	245	76	10	200
Tripura	236	9	1389	950	34	510
Total	1198	34	4481	1659	85	1381

Source: https://cea.nic.in/wp-content/uploads/transmission/2020/09/mpr_cfs.pdf and updated based upon Monthly Progress Report of Assam PSIP, January 2022

The project has two components namely, Component A: Priority Investments for Strengthening Intrastate Transmission, Sub-transmission, and Distribution Systems, and Component B: Technical Assistance for Capacity Building and Institutional Strengthening (CBIS) of Power Utilities and Departments of Participating States. The total project cost is **Rs. 5111.33 Crore** with financing from both Gol and Bank on 50:50 basis. The Bank is providing financial support to the tune of US\$ 470 million (**Rs. 2511.165 Crore**) under the Loan No.-8631-IN which was signed on 28th November, 2016 and became effective from 20th February, 2017. The loan closing date is 31st March, 2023. The remaining financing including capacity building will be met through Gol funding. Details of State wise funding is placed below in **Table 1.2.**

Table 1.2: Details of State Wise Funding

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

Source: https://www.powergridindia.com/sites/default/files/Our_Business/Domestic_Consultancy/NER_Agreements_and_MoUs/sanctions/NERPSIP%20SANCTION%20ORDER.pdf

1.2 PROJECT JUSTIFICATION

The State of Assam is endowed with rich energy resources but faces significant bottlenecks in electricity access and availability levels. The present per capita energy consumption is of the order of 205 units (kWh) against the regional per capita consumption of about 258 units and national per capita consumption of about 779 units. The State meets its power requirement through about 460 MW of self-generation and about 600MW of power allocation from various central sector generation projects of NHPC and NEEPCO. The present demand (met) is of the order of 1150 MW whereas the un-restricted demand is about 1300 MW. As most of the generation projects in the north eastern region are hydro in nature, the State faces acute shortage of power during low-hydro generation condition.

Presently, the State draws its share of power from central sector generating stations through various intra-state lines connected to the following substations of inter-state transmission system:

- Misa 400/220 kV substation (2x315 MVA)
- Balipara 400/220 kV substation (315 MVA)
- Bongaigaon 400/220 substation (315 MVA)
- Silchar 400/132 substation (2x200 MVA)
- Salakati 220/132 kV substation (2x50 MVA)
- Haflong 132/33 kV substation (2x5 MVA)
- Badarpur Switching Station

Besides this, the State draws power from 220/132 kV Mariani substation of AEGCL, wherein the one circuit of Kathalguri-Misa 400 kV D/C line (operated at 220 kV level) has been looped-in and looped-out and from 132 kV Gohpur substation of AEGCL which is connected to 132 kV Itanagar (Nirjuli) substation of POWERGRID. Another 220 kV substation namely New Mariani has recently been commissioned in the State by POWERGRID. AEGCL is also constructing a 2x315 MVA, 400/220 kV substation at Azara by looping in and looping out Silchar-Bongaigaon 400 kV D/C line (one ckt via Byrnihat). This will further enhance the interconnection of transmission system of Assam with the inter-state transmission network.

As per the 18th Electric Power Survey of CEA, the future demand of the State is expected to grow to about 1817 MW by year 2016-17 and 2534 MW by year 2021-22. This shall be met through various hydro and thermal projects coming up in the north-eastern region in near future, which are as follows:

- Pallatana GBPP : 726 MW
- Bongaigaon TPS : 750 MW
- Kameng HEP : 600 MW
- Lower Subansiri HEP : 2000 MW

The State has a share of about 894 MW from these future generation schemes. With this, the total share of the State from central sector generating stations shall be about 1500 MW.

Besides this, the present Intra-State transmission system of the State is quite old & weak and is unable to cater to the growing power requirements of the State. Although the present transmission and 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, outage of any transmission system element results in long term power shortages making the system highly unreliable. Besides, some of the network elements have undergone long term outage due to breakdown. Therefore, it has become essential to address the above situation through remedial measures in the T&D system. Accordingly, phase wise strengthening of transmission & sub-transmission system has been proposed.

The transmission schemes proposed under Tranche-1 of Assam State include construction of 224.525 km of 132 kV Transmission Lines (TL) & associated 11 new substations and 355.592 km of 33 kV Distribution Lines (DL) & associated 9 new substations along with augmentation & strengthening of transmission and distribution spread across the State.

The Power Map of Assam indicating the existing and proposed T&D network is placed in **Figure 1.1**. Summary of subprojects to be implemented in the State in Tranche-1 under NERPSIP along with capacity addition and cost is shown in **Table 1.3** below.

Table 1.3: Summary of Subprojects in Tranche- I Under NERPSIP

S. No.	Name of the subproject	Quantity (Nos.)	Capacity Addition (km/MVA)	Estimated Cost (Rs. in Cr.)
1	132 kV Transmission lines	13	224.525 km	1473.803
2	132/33kV substations (New/Augmentation)	20	940 MVA	
3	33 kV Distribution lines	17	174.249 km	
4	33/11kV substations (New/Extension/ Augmentation)	41	150 MVA	

Source: Monthly Progress Report of Assam PSIP, January 2022

1.3 PROJECT BENEFIT

The proposed transmission and distribution schemes will not only improve overall power supply situation but will also improve reliability, quality, security and enhancement of power supply in the North Eastern Region.

1.4 PROJECT SCOPE & PRESENT STUDY

In line with Assam Electricity Grid Corporation Limited's (AEGCL)/ Assam Power Distribution Company Limited's (APDCL), Electricity Department, Government of Assam (GoA), Environment and Social Policy & Procedures Framework (ESPPF), POWERGRID carried out comprehensive environment and social assessment of each subprojects and prepared Initial Environment Assessment Report (IEAR). These reports were subsequently disclosed for public information both on the State Utility, POWERGRID and Bank website after obtaining clearance from The World Bank.

As mandated in the ESPPF, a Final Environment Assessment Report (FEAR) for each subproject need to be prepared with an objective to assess the compliance of mitigation measures identified in IEAR including implementation of EMP provisions by IA/ Contractor. However, as per Project Agreement signed between POWERGRID and Bank such study is required to be undertaken by Independent Agencies as per Term of Reference agreed with Bank. As a part of this development, POWERGRID appointed **R S Envirolink Technologies Pvt. Ltd. (RSET)** as Independent consultant vide Letter of Award (LOA) Ref No.: **NEGW/C&M/2021-22/NERPSIP/900-23/FEAR/LOA-96** dated **11/11/2021** to carry out FEAR study.

The present FEAR is a document developed as a consultancy assignment to validate the work undertaken and to critically examine any deviation, if any with respect to management measures as outlined in the IEAR which is based on AEGCL/APDCL's ESPPF, World Bank's Operational Policies and Bank's Environmental, Health, and Safety Guidelines for Electric Power Transmission and Distribution.

The scope of the present study includes 132 kV transmission line and associated 132/33 kV substations, 33 kV distribution lines and associated 33/11 kV substations which are being implemented in Kamrup Rural, Udalguri, Sonitpur and Nalbari Districts of Assam. Detail of T&D network are given below and shown in **Figure 1.2** and **Figure 1.3**.

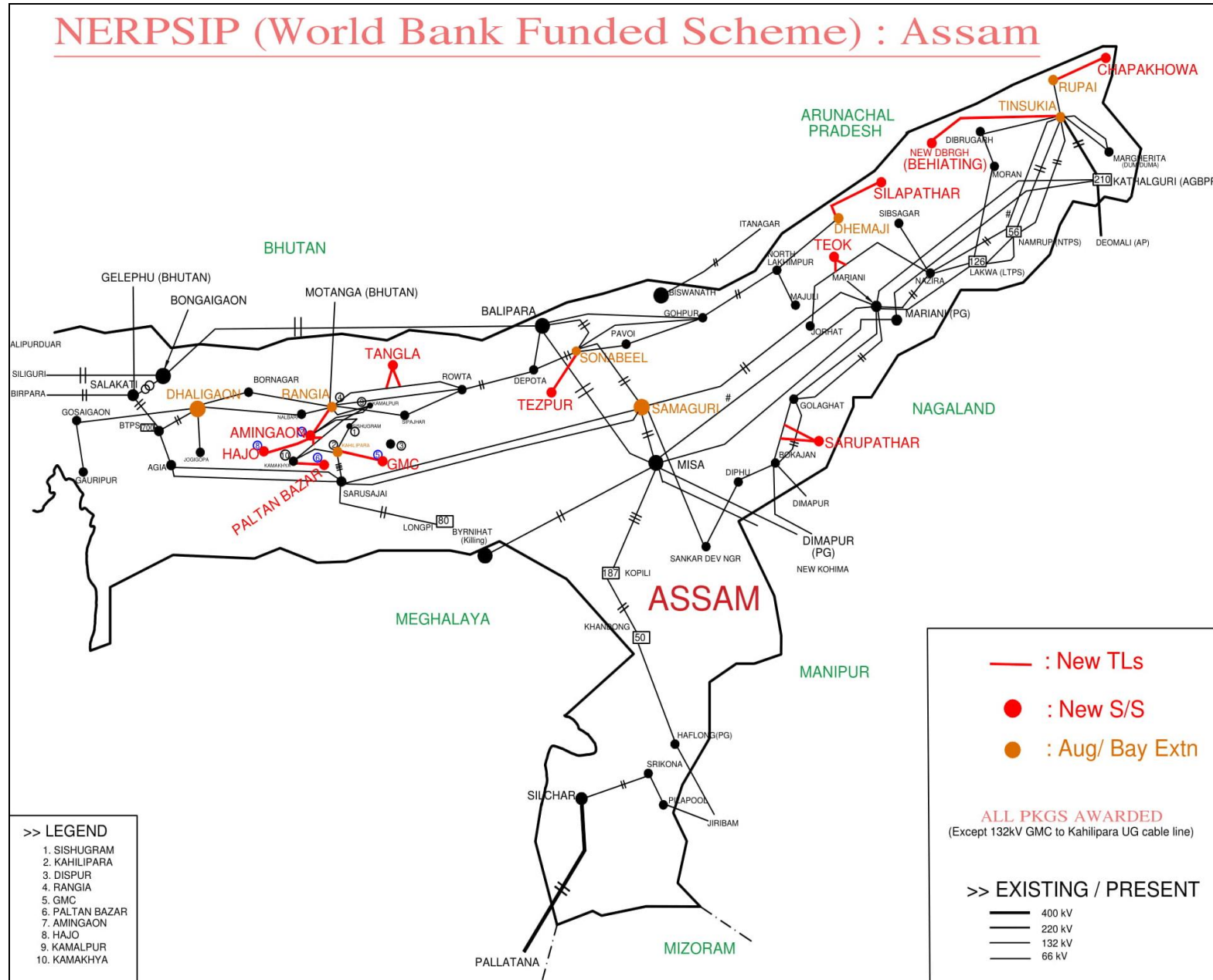


Figure 1.1: Power Map of Assam

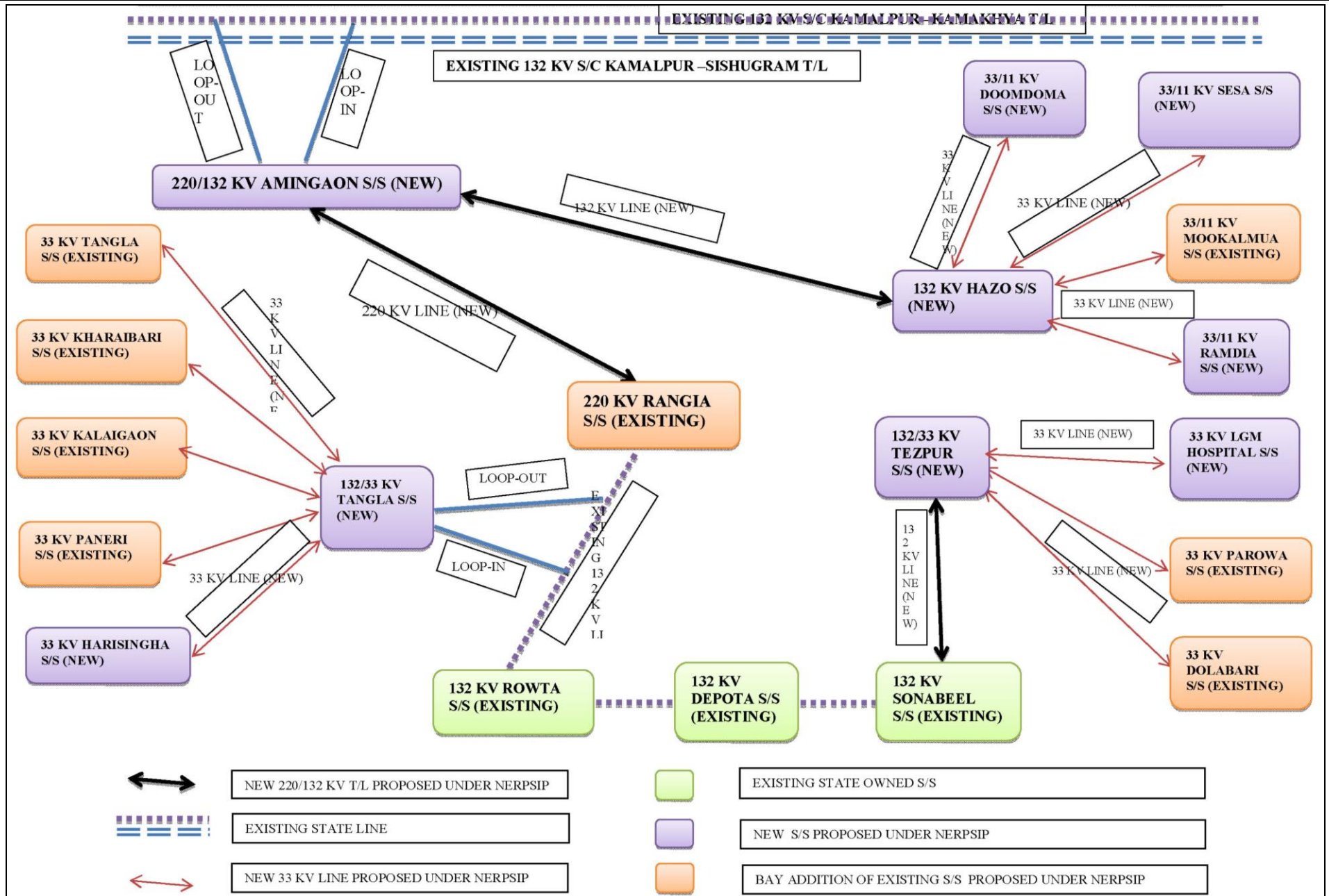


Figure 1.2: Proposed T&D Network in Kamrup Rural, Udalguri, Sonitpur and Nalbari Districts under NERPSIP

1.4.1 Transmission Components

The present study includes six 220/132 kV transmission lines and associated six 220/132/33 kV substations being implemented in Kamrup Rural, Udalguri, Sonitpur and Nalbari Districts of Assam. Details of Transmission network are given below in **Table 1.4**.

Table 1.4: Details of Transmission Network

S. No.	Name of the Line	Name of New/ Existing Sub-station
1	Rangia (existing) – Amingaon (new) 220 kV D/C line – 28.665 km	Establishment of 2x160 MVA, 220/132 kV new GIS substation at Amingaon
		Extension of 220/132 kV substation at Rangia
2	Amingaon (new) – Hazo (new) 132 kV D/C line – 8.605 km	Establishment of 2x31.5 MVA, 132/33 kV new substation at Hazo
3	Sonabil (existing) – Tezpur (new) 132 kV D/C line – 15.992 km	Establishment of 2x50 MVA, 132/33 kV new substation at Tezpur
		Extension of 132/33 kV substation at Sonabil
4	LILO of one circuit of Rangia – Rowta 132 kV D/C line at Tangla – 10.876 km	Establishment of 2x31.5 MVA, 132/33 kV new substation at Tangla
5	LILO of one circuit of Kamalpur – Sishugram 132 kV S/C line at Amingaon – 9.344 km	
6	LILO of one circuit of Kamalpur – Kamakhya 132 kV S/C line at Amingaon – 9.344 km	

1.4.2 Distribution Components

The present study includes twelve 33 kV distribution lines and associated twelve 33 kV substations being implemented in Kamrup Rural, Udalguri, Sonitpur and Nalbari Districts of Assam. Details of Distribution network are given below in **Table 1.5**.

Table 1.5: Details of Distribution Network

S. No.	Name of the Line	Name of New/ Existing Sub-station
1	33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Mukalmuwa (existing) S/S – 29.178 km	Strengthening of 33/11 kV substation at Mukalmuwa
2	33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Khairabari (existing) S/S – 16.325 km	Strengthening of 33/11 kV substation at Khairabari
3	33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Sesa (new) S/S – 6.55 km	Establishment of 2x5 MVA, 33/11 kV new substation at Sesa
4	33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Ramdiya (new) S/S – 8.687 km	Establishment of 2x5 MVA, 33/11 kV new substation at Ramdiya
5	33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Domdoma-Hazo (new) S/S – 11.172 km	Establishment of 2x5 MVA, 33/11 kV new substation at Domdoma-Hazo
6	33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Harisingha (new) S/S – 12.094 km	Establishment of 2x5 MVA, 33/11 kV new substation at Harisingha
7	33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Paneri (existing) S/S – 11.019 km	Strengthening of 33/11 kV substation at Paneri
8	33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Kalaigaon (existing) S/S – 14.137 km	Strengthening of 33/11 kV substation at Kalaigaon
9	33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Tangla (existing) S/S – 1.341 km	Strengthening of 33/11 kV substation at Tangla
10	33 kV line from 132/33 kV Tezpur (new) S/S to	Establishment of 2x5 MVA, 33/11 kV new

S. No.	Name of the Line	Name of New/ Existing Sub-station
	33/11 kV LGM Hospital (new) S/S – 6.759 km	substation at LGM Hospital
11	33 kV line from 132/33 kV Tezpur (new) S/S to 33/11 kV Parowa (existing) S/S – 4.891 km	Strengthening of 33/11 kV substation at Parowai
12	33 kV line from 132/33 kV Tezpur (new) S/S to 33/11 kV Dolabari (existing) S/S – 5.630 km	Strengthening of 33/11 kV substation at Dolabari

1.5 OVERALL PROJECT PROGRESS

A brief status on project implementation progress of various transmission & distribution components till January, 2022 is given below in **Table 1.6**.

Table 1.6: Brief Status on Project Implementation Progress

S. No.	Name of the T & D Components	Progress as on January, 2022
A	Transmission and Distribution Line	
1	Rangia (existing) – Amingaon (new) 220 kV D/C line – 29.105 km (28.665 km Overhead and 0.44 km Underground)	<p>Underground Section (0.44 km)</p> <ul style="list-style-type: none"> ➤ Detailed survey completed ➤ Cable laying yet to commence <p>Overhead Section (28.665 km)</p> <ul style="list-style-type: none"> ➤ Route alignment survey completed and approved ➤ Check survey completed for 25.273 km ➤ 50% tree enumeration completed ➤ Out of 104 towers, foundation work completed for 42 towers and 20 towers have been erected
2	Amingaon (new) – Hazo (new) 132 kV D/C line – 8.605 km	<ul style="list-style-type: none"> ➤ Route alignment survey completed ➤ Check survey completed for 4.363 km ➤ Tree enumeration completed ➤ Out of 33 towers, foundation work completed for 21 towers and 17 towers have been erected
3	Sonabil (existing) – Tezpur (new) 132 kV D/C line – 15.992 km	<ul style="list-style-type: none"> ➤ Check survey completed ➤ Tree enumeration completed ➤ Out of 64 towers, foundation work completed for 55 towers and 46 towers have been erected ➤ Stringing of conductor completed in 4.7 km
4	LILO of one circuit of Rangia – Rowta 132 kV D/C line at Tangla – 10.876 km	<ul style="list-style-type: none"> ➤ Check survey completed ➤ Tree enumeration completed ➤ Foundation work for all 41 towers completed ➤ All the 41 towers, except Gantry to cross existing 400 kV line have been erected ➤ Stringing of conductor, except between tower 10/0 and 11/0 completed
5	LILO of one circuit of Kamalpur – Sishugram 132 kV S/C line at Amingaon – 9.344 km	<ul style="list-style-type: none"> ➤ Route alignment survey completed ➤ Check survey completed for 0.281 km ➤ 10% tree enumeration completed ➤ Out of 34 towers, foundation work completed for 17 towers and 5 towers have been erected
6	LILO of one circuit of Kamalpur – Kamakhya 132 kV S/C line at Amingaon – 9.344 km	<ul style="list-style-type: none"> ➤ Route alignment survey completed ➤ Check survey completed for 0.281 km

S. No.	Name of the T & D Components	Progress as on January, 2022
		<ul style="list-style-type: none"> ➤ 10% tree enumeration completed ➤ Out of 34 towers, foundation work completed for 17 towers and 5 towers have been erected
7	33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Mukalmuwa (existing) S/S – 29.178 km	<ul style="list-style-type: none"> ➤ Route alignment survey completed and approved ➤ Out of the total 778 poles, 767 poles have been erected ➤ Stringing work completed for 17.40 km
8	33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Khairabari (existing) S/S – 16.325 km	<ul style="list-style-type: none"> ➤ Completed on 31/03/2021
9	33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Sesa (new) S/S – 6.55 km	<ul style="list-style-type: none"> ➤ Completed on 28/02/2021
10	33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Ramdiya (new) S/S – 8.687 km	<ul style="list-style-type: none"> ➤ Route alignment survey completed and approved ➤ All the 237 poles have been erected ➤ Stringing work completed for 7.60 km
11	33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Domdoma-Hazo (new) S/S – 11.172 km	<ul style="list-style-type: none"> ➤ Completed on 31/12/2021
12	33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Harisingha (new) S/S – 12.094 km	<ul style="list-style-type: none"> ➤ Completed on 28/02/2021
13	33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Paneri (existing) S/S – 11.019 km	<ul style="list-style-type: none"> ➤ Completed on 31/03/2021
14	33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Kalaigaon (existing) S/S – 14.137 km	<ul style="list-style-type: none"> ➤ Completed on 31/01/2021
15	33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Tangla (existing) S/S – 1.341 km	<ul style="list-style-type: none"> ➤ Completed on 31/10/2020
16	33 kV line from 132/33 kV Tezpur (new) S/S to 33/11 kV LGM Hospital (new) S/S – 6.759 km	<ul style="list-style-type: none"> ➤ All the 116 poles erected ➤ Stringing work completed for 5.51 km
17	33 kV line from 132/33 kV Tezpur (new) S/S to 33/11 kV Parowa (existing) S/S – 4.891 km	<ul style="list-style-type: none"> ➤ Commissioned on 10/11/2020
18	33 kV line from 132/33 kV Tezpur (new) S/S to 33/11 kV Dolabari (existing) S/S – 5.63 km	<ul style="list-style-type: none"> ➤ All the 91 poles erected ➤ Stringing work completed for 5.25 km
B	Transmission and Distribution Sub-stations	
1	Establishment of 2x160 MVA, 220/132 kV new GIS substation at Amingaon	<ul style="list-style-type: none"> ➤ 90% of the site levelled ➤ Boundary wall constructed, 15 m fencing work under progress ➤ 95% of the control room/ GIS building and transit camp building constructed ➤ 90% work of the FF pump house and FF water tank completed ➤ Transfer and tower foundation work completed ➤ Cable trench work completed ➤ Work on tower, beam, equipment, transformer erection is almost completed ➤ Out of the 648 rm drain, 250 rm constructed ➤ Out of the 323 rm road, 233 rm constructed ➤ Rest all work are under progress
2	Extension of 220/132 kV substation at Rangia	<ul style="list-style-type: none"> ➤ Test charged on 06/03/2019
3	Establishment of 2x31.5 MVA, 132/33 kV new substation at Hazo	<ul style="list-style-type: none"> ➤ 80% of the site levelled ➤ Out of the 950 rm of boundary wall, 570 rm

S. No.	Name of the T & D Components	Progress as on January, 2022
		have been constructed ➤ 80% of the control room/ GIS building constructed ➤ 5% of the transit camp building completed ➤ 70% work of the FF pump house and FF water tank completed ➤ Transfer and tower foundation work completed ➤ Cable trench work completed ➤ Work on tower, beam, equipment, transformer erection completed ➤ Rest all work such as approach road, drain etc. are yet to start
4	Establishment of 2x50 MVA, 132/33 kV new substation at Tezpur	➤ 97% of the site levelled ➤ Out of the 690 m of boundary wall, 688 m have been constructed ➤ 95% of the control room/ GIS building and transit camp building constructed ➤ 90% work of the FF pump house and FF water tank completed ➤ Transfer and tower foundation work completed ➤ Cable trench work completed ➤ Work on tower, beam, equipment, transformer erection completed ➤ Rest all work such as approach road, drain etc. are on verge of completion
5	Extension of 132/33 kV substation at Sonabil	➤ Commissioned on 29/03/2019
6	Establishment of 2x31.5 MVA, 132/33 kV new substation at Tangla	➤ 80% of the site levelled ➤ Almost entire boundary wall constructed ➤ 80% of the control room/ GIS building constructed ➤ 55% work of the FF pump house and 90% work of the FF water tank completed ➤ Transfer and tower foundation work completed ➤ Cable trench work completed ➤ Work on tower, beam, equipment, transformer erection is almost completed ➤ Rest all work such as transit camp building, approach road, drain etc. are yet to start
7	Strengthening of 33/11 kV substation at Mukalmuwa	➤ Commissioned on 09/04/2019
8	Strengthening of 33/11 kV substation at Khairabari	➤ Commissioned on 02/04/2019
9	Establishment of 2x5 MVA, 33/11 kV new substation at Sesa	➤ Test charged on 30/11/2019
10	Establishment of 2x5 MVA, 33/11 kV new substation at Ramdiya	➤ Test charged on 30/07/2020
11	Establishment of 2x5 MVA, 33/11 kV new substation at Domdoma-Hazo	➤ Charged on 31/12/2020
12	Establishment of 2x5 MVA, 33/11 kV new substation at Harisingha	➤ Commissioned on 28/12/2020

S. No.	Name of the T & D Components	Progress as on January, 2022
13	Strengthening of 33/11 kV substation at Paneri	➤ Commissioned on 30/03/2019
14	Strengthening of 33/11 kV substation at Kalaigaoni	➤ Commissioned on 18/12/2020
15	Strengthening of 33/11 kV substation at Tangla	➤ Commissioned on 01/11/2019
16	Establishment of 2x5 MVA, 33/11 kV new substation at LGM Hospital	<ul style="list-style-type: none"> ➤ 90% of the control room/ GIS building constructed ➤ Works such as approach road and drain are under progress ➤ Test Charged on 30/10/2020
17	Strengthening of 33/11 kV substation at Parowai	➤ Commissioned on 30/12/2019
18	Strengthening of 33/11 kV substation at Dolabari	➤ Commissioned on 13/10/2020

1.6 OBJECTIVE & METHODOLOGY ADOPTED FOR FEAR STUDY

The main objectives of the FEAR study are 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 also helps in establishing the status of compliance of various mitigation/management measures provided in the IEAR/EMP and suggests gaps or weaknesses, if any.

To achieve this, RSET undertook a comprehensive biophysical, environmental, socioeconomic data gathering exercise along the transmission/ distribution line routes and substations location to assess/verify the actual site-specific measures implemented/ being implemented by IA/ Contractor in respect of measure/ actions listed in IEAR/EMP. The methodologies adopted for instant FEAR are as follows:

Defining Study Area: Environmental impacts of Transmission & Distribution (T&D) projects are not far reaching and are mostly localized to RoW (refer **Table 1.7**). However, T & D projects have some effects on natural and socio-culture resources. Study area has been defined as RoW of transmission line i.e. 35 m corridor for 220 kV transmission line, 27 m corridor for 132 kV transmission line and 15 m corridor for 33 kV distribution line. Also, area in immediate vicinity of substations has been included in the study area.

Table 1.7: RoW Width

Transmission Voltage	Max. RoW (m)
220 kV	35
132 kV	27
33 kV	15

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.

Literature review: Review of existing literature was undertaken for collection of secondary baseline data related to physiography, climatic conditions, demography, natural resources

including forests/wildlife, protected area and socio-economic features of the study area. Sources and data so collected have been mentioned below:

- '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.
- Data collected from published literature of Zoological Survey of India, Forest Survey of India, Botanical Survey of India, Website of Directorate of Environment, Govt. of Assam and other research and government publications for floral and faunal diversity of 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.

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 January and February 2022. 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.

Surveys for flora and fauna: Being a transmission line project, ecological 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.

The terrestrial ecological surveys were undertaken to prepare a comprehensive checklist of flora (angiosperm, gymnosperm, pteridophyte, and bryophytes) and fauna (mammals, birds and butterflies) of the study area. The study area was divided into different strata based on topography and vegetation pattern covering different land use/ land cover categories like scrubland near agricultural fields, fallow/abandoned land, and vegetation growing along the project components (RoW of transmission line, near towers and sub-stations).

During the field surveys at least 10% of the route was covered for the collection of baseline data, which in some cases constituted a continuous stretch and, in some cases, could be covered in parts.

A series of transects were identified along the routes of transmission line covering the corridors between the ROW of transmission line and substations. Area covered under different sub-components (ROW of transmission line) of project is given below in **Table 1.8**. Faunal surveys also were conducted along the same transects.

Table 1.8: Transmission & Distribution Lines and Transects Locations for Sampling

S. No.	Name of Transmission Line	Status of Project	Distance Covered
1	Rangia (existing) – Amingaon (new) 220 kV D/C line – 29.105 km (28.665 km Overhead and 0.44 km Underground)	<p>Underground Section (0.44 km)</p> <ul style="list-style-type: none"> ➤ Detailed survey completed ➤ Cable laying yet to commence <p>Overhead Section (28.665 km)</p> <ul style="list-style-type: none"> ➤ Route alignment survey completed and approved ➤ Check survey completed for 25.273 km ➤ 50% tree enumeration completed ➤ Out of 104 towers, foundation work completed for 42 towers and 20 towers have been erected 	<ul style="list-style-type: none"> • Gantry to Tower 4A/0 = 0.6 km • Tower 6/0 to 8/0 = 0.9 km • Tower 11/0 to 12/1 = 0.8 km • Tower 13A/0 to 17/0 = 2 km • Tower 49A to 52/0 = 0.4 km <p>Total Distance Covered = 4.7 km</p>
2	Amingaon (new) – Hazo (new) 132 kV D/C line – 8.605 km	<ul style="list-style-type: none"> ➤ Route alignment survey completed ➤ Check survey completed for 4.363 km ➤ Tree enumeration completed ➤ Out of 33 towers, foundation work completed for 21 towers and 17 towers have been erected 	<ul style="list-style-type: none"> • Gantry to Tower 4/0 = 1.5 km • Tower 8/2 to 10A/2 = 1.4 km • Tower 12A/0 to Gantry = 0.4 km <p>Total Distance Covered = 3.3 km</p>
3	Sonabil (existing) – Tezpur (new) 132 kV D/C line – 15.992 km	<ul style="list-style-type: none"> ➤ Check survey completed ➤ Tree enumeration completed ➤ Out of 64 towers, foundation work completed for 55 towers and 46 towers have been erected ➤ Stringing of conductor completed in 4.7 km 	<ul style="list-style-type: none"> • Gantry to Tower AP/06 = 0.8 km • Tower AP/18 to AP/20 = 2.6 km • Tower AP/30 to Gantry = 0.2 km <p>Total Distance Covered = 3.6 km</p>
4	LILO of one circuit of Rangia – Rowta 132 kV D/C line at Tangla – 10.876 km	<ul style="list-style-type: none"> ➤ Check survey completed ➤ Tree enumeration completed ➤ Foundation work for all 41 towers completed ➤ All the 41 towers, except Gantry to cross existing 400 kV line have been erected ➤ Stringing of conductor, except between tower 10/0 and 11/0 completed 	<ul style="list-style-type: none"> • Tapping Point to Tower 2/0 = 0.4 km • Tower 3/0 to 4/0 = 0.25 km • Tower 10/0 to 13/1 = 2.2 km <p>Total Distance Covered = 2.85 km</p>
5	LILO of one circuit of Kamalpur – Sishugram 132 kV S/C line at Amingaon – 9.344 km	<ul style="list-style-type: none"> ➤ Route alignment survey completed ➤ Check survey completed for 0.281 km ➤ 10% tree enumeration completed ➤ Out of 34 towers, foundation work completed for 17 towers and 5 towers have been erected 	<ul style="list-style-type: none"> • Tapping Point to Tower QD 2/0 = 0.5 km • Tower QC 5/2 to QD 7/0 = 0.7 km • Tower QD 8/0 to QC 8/1 = 0.3 km
6	LILO of one circuit of Kamalpur – Kamakhya 132 kV S/C line at	<ul style="list-style-type: none"> ➤ Route alignment survey completed ➤ Check survey completed for 0.281 km 	<ul style="list-style-type: none"> • Tower QC 10/3

S. No.	Name of Transmission Line	Status of Project	Distance Covered
	Amingaon – 9.344 km	<ul style="list-style-type: none"> ➤ 10% tree enumeration completed ➤ Out of 34 towers, foundation work completed for 17 towers and 5 towers have been erected 	<ul style="list-style-type: none"> to QC 12/0 = 0.7 km • Tower QC 13/0 to DE 02 = 0.2 km <p>Total Distance Covered = 2.4 km</p>
7	33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Mukalmuwa (existing) S/S – 29.178 km	<ul style="list-style-type: none"> ➤ Route alignment survey completed and approved ➤ Out of the total 778 poles, 767 poles have been erected ➤ Stringing work completed for 17.40 km 	<ul style="list-style-type: none"> • Gantry to Pole SP-14 = 0.8 km • Pole SP-66 to FP-1 = 0.5 km • Pole SP-350 to DP-90 = 0.5 km • Pole DP-117 to Gantry = 1.1 km <p>Total Distance Covered = 2.9 km</p>
8	33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Khairabari (existing) S/S – 16.325 km	<ul style="list-style-type: none"> ➤ Completed on 31/03/2021 	<ul style="list-style-type: none"> • Pole SP-70 to DP-9 = 0.3 km • Pole SP-150 to SP-156 = 0.3 km • Pole SP-190 to FP-7 = 1.5 km <p>Total Distance Covered = 2.1 km</p>
9	33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Sesa (new) S/S – 6.55 km	<ul style="list-style-type: none"> ➤ Completed on 28/02/2021 	<ul style="list-style-type: none"> • Gantry to Pole SP-15 = 0.9 km • Pole DP-18 to SP-46 = 0.2 <p>Total Distance Covered = 1.1 km</p>
10	33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Ramdiya (new) S/S – 8.687 km	<ul style="list-style-type: none"> ➤ Route alignment survey completed and approved ➤ All the 237 poles have been erected ➤ Stringing work completed for 7.60 km 	<ul style="list-style-type: none"> • Pole FP-8 to Gantry = 5 km
11	33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Domdoma-Hazo (new) S/S – 11.172 km	<ul style="list-style-type: none"> ➤ Completed on 31/12/2021 	<ul style="list-style-type: none"> • Pole SP-93 to SP-110 = 0.8 km • Pole DP-38 to DP-42 = 0.5 km • Pole FP-4 to Gantry = 0.5 km <p>Total Distance Covered = 1.8 km</p>
12	33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Harisingha (new) S/S – 12.094 km	<ul style="list-style-type: none"> ➤ Completed on 28/02/2021 	<ul style="list-style-type: none"> • Gantry to Pole SP-3 = 0.2 km • Pole DP-16 to SP-129 = 0.25 km • Pole SP-153 to FP-7 = 3 km <p>Total Distance Covered = 3.45 km</p>
13	33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Paneri (existing) S/S – 11.019 km	<ul style="list-style-type: none"> ➤ Completed on 31/03/2021 	<ul style="list-style-type: none"> • Gantry to Pole SP-7 = 0.3 km • Pole SP-30 to SP-36 = 0.4 km

S. No.	Name of Transmission Line	Status of Project	Distance Covered
			<ul style="list-style-type: none"> Route of line mentioned at S. No. 15 Total Distance Covered = 2.05 km
14	33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Kalaigaon (existing) S/S – 14.137 km	➤ Completed on 31/01/2021	<ul style="list-style-type: none"> Gantry to Pole FP-2 = 3.5 km Pole FP-4 to SP-182 = 1 km Total Distance Covered = 4.5 km
15	33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Tangla (existing) S/S – 1.341 km	➤ Completed on 31/10/2020	Almost entire route
16	33 kV line from 132/33 kV Tezpur (new) S/S to 33/11 kV LGM Hospital (new) S/S – 6.759 km	<ul style="list-style-type: none"> ➤ All the 116 poles erected ➤ Stringing work completed for 5.51 km 	<ul style="list-style-type: none"> Gantry to Pole AP-5 = 1.6 km Pole AP-11 to Gantry = 0.7 km Pole AP-17 to Loc-19/2 = 0.3 km Gantry to Pole AP-2 = 0.2 km Total Distance Covered = 2.8 km
17	33 kV line from 132/33 kV Tezpur (new) S/S to 33/11 kV Parowa (existing) S/S – 4.891 km	➤ Commissioned on 10/11/2020	Almost entire route
18	33 kV line from 132/33 kV Tezpur (new) S/S to 33/11 kV Dolabari (existing) S/S – 5.63 km	<ul style="list-style-type: none"> ➤ All the 91 poles erected ➤ Stringing work completed for 5.25 km 	Almost entire route

The results of the primary field surveys were supplemented with secondary data to fill the gaps and further with the information generated through PRA. In addition, at all the sites bird walks were also undertaken, particularly areas under private plantations nearby the routes to locate nesting sites and for bird sightings.

Consultation: Consultation was carried out with stakeholders like POWERGRID officials, Contractor, migratory labours, local labours, affected people etc. to collect data with respect to compliance of suggested Environmental Management Plan and implementation of mitigation measures.

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.

Chapter
2**POLICY, LEGAL AND REGULATORY
FRAMEWORK****2.1 INTRODUCTION**

Power transmission and distribution project activities by their inherent nature and flexibility have negligible impacts on environmental and social attributes. Indian laws relating to environmental and social issues have strengthened in the last decade both due to local needs and international commitments. AEGCL/APDCL, IA and contractors are undertaking its activities within the purview of Indian and State specific laws keeping in mind appropriate international obligations and directives and guidelines with respect to environmental and social considerations of World Bank's Operational Policies.

2.2 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 42nd 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 guarantees fundamental right to life – a life of dignity to be lived in a proper environment, free of danger or disease or infection. Recently, Supreme Court has broadly and liberally interpreted the Article 21, transgressing into the area of protection of environment, and held that the citizen's right to live in an eco-friendly atmosphere is to be interpreted as the basic right guaranteed under Article 21.

Thus, the Indian Constitution now has a two folds provision:

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

Sixth Schedule, In Assam, special provisions also have been extended to the Tribal Areas under the 6th Schedule [Articles 244(2) and 244(A) 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. These institutions were expected to integrate these areas with the modern system of administration while preserving the traditional autonomy and local self-governing institutes of the tribal people. The three Autonomous District Council (ADC) viz. Bodoland Territorial Council, Karbi Anglong Autonomous Council, Dima Hasao Autonomous District Council in sixth schedule areas enjoy these privileges. Details of ADC in Assam are as follows

S. No.	Autonomous District Council	Revenue District
1	Bodoland Territorial Council	Baksha, Kokrajhar, Chirang and Udalguri
2	Karbi Anglong	Karbi Anglong
3	Dima Hasao	Dima Hasao

2.3 ENVIRONMENTAL PROVISIONS

Environmental issues of T&D projects are manageable given the inherently small 'foot print' of towers and flexibility in siting facilities within a relatively large host area and are mostly localized to RoW. However, transmission line project may have some adverse effects on natural resources. These impacts can be minimized by careful route selection and siting of substations. The applicable acts, rules, and relevant policies in the context of the project and its status of compliance are presented in **Table 2.1**.

2.4 SOCIAL PROVISIONS

The applicable acts, rules, and relevant policies in the context of the project and its status of compliance are presented in **Table 2.2**.

2.5 WORLD BANK OPERATIONAL POLICY

When World Bank provide governments with financing to invest in projects such as building a road, connecting people to electricity, or treating waste water, World Bank we aim to ensure that the people and the environment are protected from potential adverse impacts. World Bank do this through policies that identify, avoid, and minimize harm to people and the environment. These policies require the borrowing governments to address certain environmental and social risks in order to receive World Bank support for investment projects. The mandatory environment and social requirements with respect to World Bank Operational Policies are presented in **Table 2.3**.

Table 2.1: Environmental Provisions

S. No.	Acts, Notifications and Policies	Relevance	Applicability to the project	Status of Compliance
1.	Electricity Act, 2003	To consolidate the laws relating to generation, transmission, distribution, trading and use of electricity. Under the provisions of Section 68(1):- Prior approval of the GoA is a mandatory requirement to undertake any new transmission and distribution project in the State.	Applicable - Transmission line projects are constructed under the ambit of Electricity Act, 2003 following the provisions of Section 68 (1) of act.	Complied with: MoP, Gol approved the NERPSIP comprehensive scheme for six North Eastern States including Assam under vide its Office Memorandum dated 1 st December 2014.
2.	Forest (Conservation) Act, 1980	To protect and conserve Forest Areas and Tree Cover. Any transmission/ distribution line traverses forest land, prior clearance is mandatorily required from Ministry of Environment, Forest & Climate Change (MoEF&CC), Gol under the Forest (Conservation) Act, 1980.	Not Applicable - No notified forest area is involved in any of the line routes or substations location.	Not Required
3.	Environment (Protection) Act, 1986	To protect and improve the overall environment. It is umbrella legislation for the protection and improvement of environment.	Applicable – Though some limited compliance measures notified under this EPA, 1986 are to be adhered to relevant rules and regulations under the EPA, 1986 applicable to the operations of AEGCL/APDCL.	Complied with: Though applicable as it is umbrella legislation, however, as such statutory permission/ license is not required.
i)	Ozone Depleting Substances (Regulation and Control) Rules, 2000	Regulate and control manufacturing, import, export and use of Ozone Depleting Substances under Montreal Protocol adopted on 16 th September 1987	Applicable - As per the notification, certain control and regulation has been imposed on manufacturing, import, export, and use of these compounds.	Complied with: Only CFC free equipments are being procured/ specified in tender document
ii)	Batteries (Management and Handling) Rules, 2001	Provides certain restriction on disposal of used batteries and its handling and to file half yearly return in prescribed form to the concerned State Pollution Control Board.	Applicable during operation phase only – Used batteries to be disposed to dealers, manufacturer, registered recycler, reconditioners or at the designated collection centers only. A half-yearly return to be filed as per Form-8 to the Assam State Pollution Control Board	Batteries are used during operation phase. Hence, the issue of proper handling and disposal of batteries as per rules not an issue during construction stage.
iii)	Hazardous Wastes (Management,	To ensure that the hazardous wastes are managed in a manner which shall protect the health and the	Applicable – Requires proper handling, storage and disposed only to authorized disposal facility	Generally Used oil is generated after 10-15

S. No.	Acts, Notifications and Policies	Relevance	Applicability to the project	Status of Compliance
	Handling and Transboundary Movement) Rules, 2008	environment against the adverse effects that may result from such waste. The used transformer oil has been declared as a hazardous waste vide this notification.	(registered recyclers/ reprocessors). In case it is decided to outsource the process of recycle of used oil to registered recycler as per the provisions of notification then AEGCL/APDCL shall submit the desired return in prescribed form to concerned State Pollution Control Board at the time of disposal of used oil.	years of operation of transformers and hence the issues of handling and disposals of hazardous transformer oil is not an issue at this stage.
iv)	E-waste (Management and Handling) Rules, 2011	To ensure that e-waste is managed in a manner which shall protect health and the environment against the adverse effects that may result from hazardous substance contained in such wastes. It is the responsibility of the bulk consumer to ensure that e-waste generated is channelized to authorized collection centre(s) or registered dismantler(s) or recycler(s) or is returned to the pick-up of take back services provided by the producer.	Applicable – To dispose e-waste generated in environmentally sound manner by channelizing to authorized collection centres/ registered dismantler/ recyclers/ return to producers. AEGCL/APDCL, being a bulk consumer of electrical and electronics equipment's shall maintain record as per Form-2 for scrutiny by State Pollution Control Board.	E-waste disposal is not an issue during construction phase.
4.	The Biological Diversity Act, 2002	To provide for conservation of biological diversity, sustainable use of its components and fair and equitable sharing of the benefits arising out of the use of biological resources, knowledge and for matters connected therewith. All restrictions applicable to protected areas like National Park & Sanctuaries are also applicable to these reserves.	Not Applicable - The present project does not involve any biosphere reserves.	Not Required
5.	Ancient Monuments & Archaeological Sites and Remains Act, 1958	To prevent damage to archaeological sites and its maintenance. It also places restriction on activities which can cause harm to the monument /property. The law is however applicable only in monuments identified by the Archaeological Survey of India.	Not Applicable - All such areas have been completely avoided.	Not Required
6.	The Scheduled Tribes & Other Traditional Forest Dwellers (Recognition of Forest	This act recognizes and vests the forest rights and occupation in forest land to forest dwelling Scheduled Tribes and other traditional forest dwellers who have been residing in such forests for generations but whose	Not Applicable – For linear projects including transmission lines, obtaining NoC from the Gram sabha (Village Council) has been exempted for the requirement of FRA compliance as per	Not Required

S. No.	Acts, Notifications and Policies	Relevance	Applicability to the project	Status of Compliance
	Rights) Act, 2006	rights could not be recognized.	MoEF&CC circular dated 5 th February 2013 & 15 th January 2014.	
7.	Assam control of Tree Felling Rules, 2002	These rules prescribe how tree plantations raised in non recorded forest areas by individuals or institutions are to be governed. They specify which plantations need to be registered, which tree species do 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 the Government.	Applicable – Since 1557 trees are affected/ likely to be affected due to the construction of 28.665 km of 220 kV transmission line, 44.817 km of 132 kV transmission lines and 127.785 km of 33 kV distribution lines.	Complied With: Regulated felling in RoW is being carried out with the permission of owner and revenue authorities keeping required electrical clearance as per applicable norms (CEA's regulations, 2010 (Measures related to safety & electric supply). Also, compensation process as laid down in the ESPPF is being followed.

Table 2.2: Social Provisions

S. No.	Acts, Notifications and Policies	Relevance	Applicability to the project	Status of Compliance
1.	The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013	Act ensures appropriate identification of the affected families/ households, fair compensation and rehabilitation of titleholders and non-titleholders. The Act authorizes State Govt. (i.e. GoA) or its authorized Government agency to complete the whole process of acquisition of private land including Social Impact Assessment (SIA), Action Plan for R&R (i.e. Rehabilitation and Resettlement) & its implementation and the AEGCL/APDCL responsibility is limited to identification and selection of suitable land based on technical requirement and ensuring budget allocation.	Not Applicable – Land has been purchased on willing buyer and willing seller basis.	Not Required
2.	Sixth Schedule of the Constitution	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.	Applicable - Since the project is being implemented in the jurisdiction of Bodoland Territorial Council, therefore, consent of ADC is required.	Complied with: NoC from Village Headman/ Land owner obtained by IA.
3.	Rights of Way (RoW) and Compensation	The Electricity Act, 2003 has a provision for notifying transmission company under section 164 (B) to avail benefits of eminent domain provided under the Indian Telegraph Act, 1885.	Applicable – AEGCL/APDCL may seek for GoA authorization to exercise all the powers that the Telegraph authority possesses and can spot, construct and erect towers without acquiring the land. Moreover, all damages due to its activity shall be compensated at market rate. In case of agricultural or private land the provisions of section- 67 and or section-68 (5 & 6) of the Electricity Act, 2003 and section-10 of the Indian Telegraph Act, 1885 are followed for assessment and payment of compensation towards such damages.	Complied with: Implementing Agency has already been vested with powers of telegraph authority by GoI vide Gazette Notification dated Dec.24, 2003. However, compensation for all damages are being paid to the individual land owner as per the provision of Section-10 (d) of Indian Telegraph Act, 1885
4.	The Right to	To provide for setting out the practical regime of right	Applicable - Designated authorities to be in	Complied with: Designated

S. No.	Acts, Notifications and Policies	Relevance	Applicability to the project	Status of Compliance
	Information Act, 2005	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.	place.	authorities are already in place in AEGCL/APDCL.
5.	Indian Treasure Trove Act, 1878 as amended in 1949	To provide for procedures to be followed in case of finding of any treasure, archaeological artifacts etc. during excavation.	Not Applicable - No such instances reported.	Not Required
6.	Workmen's Compensation Act, 1923	This act provides for compensation in case of injury by accidents arising out of and during the course of employment.	Applicable during construction, operation and decommissioning phases – Since labours are engaged during different phases.	Complied with: No such instances of violation of act have been reported.
7.	Minimum Wages Act, 1948	As per this act, the employer is supposed to pay not less than the Minimum Wages fixed by appropriate Government.	Applicable during construction, operation and decommissioning phases – Since labours are engaged during different phases.	Complied with: No such instances of violation of act have been reported.
8.	The Child Labour (Prohibition and Regulation) Act, 1986	This Act prohibits employment of children below 14 years of age in Building and Construction Industry covering Railway.	Applicable during construction, operation and decommissioning phases – Since are engaged during different phases.	Complied with: No such instances of violation of act have been reported.
9.	The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013	To provide protection against sexual harassment of women at workplace and for the prevention and redressal of complaints of sexual harassment and for matters connected therewith or incidental thereto.	Applicable during construction, operation and decommissioning phases – Since labours are engaged during different phases.	Complied with: No such instances of violation of act have been reported.

Table 2.3: World Bank Operational Policy

S. No.	Acts, Notifications and Policies	Relevance	Applicability to the project	Status of Compliance
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.	Applicable - E & S aspects of the project have already been integrated into management procedures based on comprehensive environment assessment undertaken by IA.	Complied with: E & S aspects of the project have already been integrated into management procedures based on comprehensive environment assessment undertaken by IA during 2015.
2.	OP- 4.04: Natural Habitats	To promote and supports natural habitat conservation and improved land use to integrate into national and regional development the conservation of natural habitats and the maintenance of ecological functions. Furthermore, to promote the rehabilitation of degraded natural habitats.	Not Applicable - The present project does not involve any natural habitats such as biodiversity area, protected area, sacred groves etc.	Not Required
3.	OP-4.11: Physical Cultural Resources (PCR)	To preserve PCR and in avoiding their destruction or damage. PCR includes resources of archaeological, paleontological, historical, architectural, and religious (including graveyards and burial sites), aesthetic, or other cultural significance.	Not Applicable - The Present project does not encroach upon any such resources.	Not Required
4.	OP-4.36: Forests	To harness the potential of forests to reduce poverty in a sustainable manner, integrate forests effectively into sustainable economic development, and protect the vital local and global environmental services and values of forests	Not Applicable – Though all line routes and substation locations successfully avoided encroachment into any Protected and Reserve forests.	Not Required
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 contain the performance levels and measures that are generally considered to be achievable in new facilities by existing technology at reasonable costs.	Applicable - EHS guidelines are being followed during project implementation.	Complied with: EHS guidelines are being followed during project implementation.
6.	OP 4.12 – Involuntary	Covers direct economic and social impacts both resulting	Not Applicable - As no involuntary acquisition	Not Required.

S. No.	Acts, Notifications and Policies	Relevance	Applicability to the project	Status of Compliance
	Resettlement	from Bank-assisted investment projects and are caused by the involuntary taking of land. To avoid or minimize involuntary resettlement and, where this is not feasible, assist displaced persons in improving or at least restoring their livelihoods and standards of living in real terms relative to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher.	invoked for securing land for proposed substations. However, fresh land required for construction of new substations were secured through direct Purchase on Willing Buyer Willing Seller basis on negotiated rate	
7.	OP 4.10 – Indigenous Peoples	This policy contributes to the Bank's mission of poverty reduction and sustainable development by ensuring that the development process fully respects the dignity, human rights, economies, and cultures of Indigenous Peoples. The 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.	Not Applicable - Explicit consent from ADC and the Village Councils is required in the case of acquisition of lands which is not applicable in instant project. However, NoC from Village Council/ Headman/ Land owner have been obtained in this regard.	Complied with: NoC from Village Headman/ Land owner have been obtained.

2.6 STATUTORY PERMISSION/LICENSES/NOC OBTAINED

The applicability of acts, notifications and policies have 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 AEGCL and APDCL and PGCIL has been signed on 29th May, 2015.
- All the contractors are operating with valid labor 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.
- Since the route of transmission lines are coming under various villages of Udalguri district, a Bodoland Territorial Council, No Objection Certificates (NoC) from concerned land owner are being obtained as per the progress of work.

Chapter 3

BASELINE DATA

3.1 INTRODUCTION

This chapter deals with the baseline status of physical, biological, socio-economic environment in the study area as well as district belonging to study area. The baseline data presented in this chapter has been prepared from primary data collected during field studies as well as data/information gathered from available literature and reports published by various institutions and organizations.

3.2 DEFINING STUDY AREA

Environmental impacts of T&D projects are not far reaching and are mostly localized to RoW (refer **Table 3.1**). However, T&D projects have some effects on natural and socio-culture resources. Study area has been defined as RoW of transmission line i.e., 35 m corridor for 220 kV transmission, 27 m corridor for 132 kV transmission line and 15 m corridor for 33 kV distribution line. Also, area in immediate vicinity of substations has been included in the study area.

Table 3.1: RoW Width

Transmission Voltage	Max. RoW (m)
220 kV	35
132 kV	27
33 kV	15

3.3 DISTRICTS BELONGING TO STUDY AREA

The project is an intra-state power sector project located in the State of Assam and study area covers Kamrup Rural, Udalguri, Sonitpur and Nalbari districts of Assam.

Kamrup Rural district occupies an area of 3105 sq. km. The district extends from 25°46' N to 26° 49' N and 90°48' E to 91°50'E. It is bounded by Udalguri and Baska districts in North, by Meghalaya in South, by Darrang district and Kamrup Metropolitan district in East and by Goalpara district and Nalbari district in west. Amingaon is the district headquarters.

Udalguri district was created in year 2004 by the bifurcation of district Darrang. Udalguri district lies between co-ordinates 26°46' N to 27°77' N and 92°08' E to 95°15' E and has a Geographical Area of 2012 sq. km. The district is bounded by Bhutan & Arunachal Pradesh on the North, Sonitpur district on the East, Darrang district on the south and by Baksa district on West. Udalguri town is the district headquarters.

Sonitpur is the second largest district of Assam after Karbi-Anglong district, having an area of 5204 sq. km. The co-ordinates of the district are 26°30' N to 27°01' N and 92°16' E to 93°43' E. The district is bounded by Arunachal Pradesh in the North, Lakhimpur district in the east and Darrang district in the west. River Brahmaputra forms the south boundary of the district. Tezpur town is the district headquarters.

Nalbari district having geographical area of 1052 sq. km lies in the latitude of 26 degrees north and the longitude is 91 degrees east. The northern side of the district is bounded by the newly curved out Baksa district of parts of erstwhile Nalbari district and the southern side by the mighty Brahmaputra. The Kamrup District is located in the east and the Barpeta District is in the western part of the district.

3.4 PHYSICAL ENVIRONMENT OF DISTRICTS BELONGING TO STUDY AREA

3.4.1 Physiography

Kamrup Rural district is bifurcated into nearly equal parts by the mighty river Brahmaputra. The river thus has a lot of influence in the physiography of the entire district. In the immediate neighborhood of the Brahmaputra the land is low and exposed to annual inundation. In this marshy tract reeds and canes flourish luxuriantly, and the only cultivation is that of rice. At a comparatively short distance from the river banks the ground begins to rise in undulating knolls towards the mountains of Bhutan on the north, and towards the Khasi hills on the south. The hills south of the Brahmaputra in some parts reach the height of 800 feet (240 m). The Brahmaputra is navigable by river steamers throughout the year and receives several tributaries navigable by large native boats in the rainy season. The chief of these are the Manas, Chaul Khoya and Barnadi on the north, and the Kulsi and Dibru on the south bank.

Geologically, the hills are for the most part formed of gneissic rocks from which excellent building stone can be obtained. The plain is of alluvial origin and consists of sand and clay in varying proportions, ranging from pure sand near the banks of the Brahmaputra to a blue stiff clay, utterly unfit for cultivation. Surface lime was discovered over a small area at the foot of the Bhutan Hills. The hills are represented by a group of Siwalik sediments consisting of clays, sand stones and grits conglomerated with pieces of fossil wood and lignite's.

Udalguri district intersected by numerous hill streams is almost quadrilateral block of alluvial plain. The southern parts of the district are situated on the plains of the Brahmaputra Valley Zone. Major tributaries of the river Brahmaputra viz. Pachnoi, Dhansiri, Jiya Dhansiri, Mora Dhansiri, Noa, Kulsi, Dipila and Borno, which originate from the foothills of the Himalayan Range flow through the district and they mainly contribute towards the sustenance of the agrarian economy of the district. Northern part of this area is largely covered by tea gardens fringed here and there by villages of ex-tea garden labourers. The northern part of the district is generally hilly areas and the southern part of the district is covered with forest and hillocks.

Physiographically, the **Sonitpur** district is mainly a flat alluvial tract; in its southern part, a few scattered 'inselbergs' of gneissic rocks not exceeding 90 to 140 m, high above mean sea level, lie along the north bank of the Brahmaputra. In the northern front along the base of the foothills of the eastern Himalayas, from where the alluvial plain gradually slopes down to the Brahmaputra, there are several low-lying mounds made up of unsorted river terraces. Some parts of the district are hills, covered with long grass jungle interspersed here and there with patches of rice fields.

The eastern part of the district is intersected by numerous rivers and streams divided it into several tracts of varying characteristics. The area, especially in Gohpur Sub-Division is practically one unbroken plain sloping gently towards the south. There is however, a belt of high land under low grass jungle along the banks of Burai River. To the west of Behali, the Vishwanath plain lies in between Bargang River on the east and the Ghiladhari River on the west. It is an elevated region stretching to the bank of Brahmaputra River and is of older geological formation than other parts of the district. The jungle at the foot of the hills has been cleared and the region is now dotted with tea gardens and the plain is covered with paddy fields.

The area west of Chatia in between the Ghiladhari River and the Bharali River gently slopes down towards the Brahmaputra. Rice is grown in great stretches having villages in the background. Feathery bamboo, slender palms and broad-leafed plantations add to the wealth of the greenery of the district.

The area to the west of the Mara Bharali contains the most populous Assamese villages up to some distance from Brahmaputra. The Tezpur town, the district Headquartes is situated on an elevated tract of about 78 m above mean sea level and in and around which are situated a few low hills along the bank of the Brahmaputra. To the north of Tezpur, the landscape is generally high and uneven. The best tea gardens in the district are situated in this region, which is fringed by villages of ex-tea garden labourers on the east and west of it.

The tract between the Gabharu River and Pachnai river is one continuous high plain, rising slowly towards the west. The northern region at the foot of the hills is covered with wide stretches of forests and the southern region along the Brahmaputra by high reeds and elephant grass jungles. In general, the district has much appeal to the lovers of scenic beauty. A few km to the north of the mountains, rise like a wall from the dead level of the plain and throughout the year, the eternal snow line of the great Himalayan range can be viewed from the district in clear weather. The snow-clad peaks of the Arunachal Pradesh glitter in the winter sun.

There are no mountains in this district. The elevated tracts consist of a range of low hills about sixty to one hundred fifty meters high, covered with jungle and sweep outwards in a crescent shape from the Bhairavi to the Brahmaputra. Some ruins found at Bhalukpong are associated with the capital of the mythological King Bhaluka, the grandson of Banasur. Along the river-front near Tezpur there is a range of low hills, whose summits are 90 to 135 m above the mean sea level. Traditionally famous Agnigarh hills are situated at Tezpur town. To a little east of this hillock, there is the Bamuni hill. Further east of the Bamuni hill is the Bhairavi hill, where there is a small shrine of Goddess Bhairavi and close to this hill is the Maukata hillock and a little to the east are the Bhomoraguri hills. There are some other hills viz. Auguri Parbat, Singri etc., around Tezpur town.

The **Nalbari** district forms a great plain comprising a few elevated tracts lying along the Bhutan Hills which is the northern boundary of the district. The ground undulates considerably as it approaches the hills so much so that the edge of the plain is not easily

defined. The villages in this part of the district are exceedingly picturesque and bear a good appearance.

3.4.2 Drainage

The **Kamrup Rural district** is intersected by numerous rivers and streams all of which come from the hills and mountains and flows into the Brahmaputra which is a gigantic river. The river runs through the Assam Valley and it absorbs waters of all the rivers and streams. In summer, the river looks like an inland lake in its wide expanses but in winter the river and its channels zigzag in sandy stretches. At Guwahati, the river is confined between rocks and hills on either side making it comparatively narrow but even here the breadth of the river is over one kilometer. The river spreads itself during the rains and distance from one bank to the other is very great. The important tributaries are Puthimari, Borno, Nona, Kulsi, Pagladiya, Kalaja etc. The whole drainage of the district ultimately finds its way to all rivers and tributaries. The rivers and its tributaries are only drains to flash out the water from the district. However, in rainy season, the rain waters are deposited in all rivers, beels and plain land. So the water remains for a few months in a stand still way. Whenever water level comes down in the rivers, the water of plain areas goes out through rivers and its tributaries. The natural drainage is the only system for the district. However, in the towns, modern drainage systems have been introduced to flash out the water.

The floods which are so frequent in the Brahmaputra cause tremendous changes in the river course and raise the rivers beds by depositing sediment carried from the upper reaches. This is a common feature of floods in big rivers. The miseries caused by the Brahmaputra and its tributaries are so much so that it needs no description in detail. However, villages situated on the river banks are sub-merged, paddy fields are turned into vast sheets of water, standing crops are destroyed, cattle are swept away and hundreds of cultivators, fishermen and other people living in these areas are rendered homeless. All important links of communications are snapped and life hinges on the relief provided by the government and public. After the flood, people generally suffer from epidemics. The untold miseries spread all over the areas. Due to flood many paddy fields become unfit for cultivation for spread of sand.

The different rivers flowing through the **Udalguri** district serves as the major drainage system for the district. However, during the heavy monsoon season they seem inadequate. Recurrence of flood during monsoon due to heavy rainfalls in the district and neighboring Arunachal Pradesh and Bhutan causes loss of crops and other properties almost every year. In recent years the district experienced heavy floods, to be precise, flash floods, due to heavy deforestation towards northern part. The people of the district, who mainly depend on rain water for their cultivations, are often badly affected on one hand by floods and on the other hand by occasional dry spell. Number of perennial streams flow through the district from north to south and join the Brahmaputra River. The major streams that drain the area are Barnadi, Kulsi, Na, Noanadi, Bega, Mara Dhansiri, Jiya Dhansiri and Pachnai Rivers. Jia Dhansiri River is one of the important tributaries of the river Brahmaputra in Mangaldoi sub-division. It emanates from the Bhutan hills and has an approximate total length of about 80 kilometres from its source to out-fall. Another river is Noanadi, which also originates from the Bhutan hills, and collects some drainage from the hills before reaching the plains.

The river Nanai also has its origin in the Bhutan range of the Himalayas in the Tongsa province at an elevation of about 1220 m above the mean sea level. After crossing the Bhutan boundary, the river enters the Udalguri district and traverses through Khalingduar forest where it flows through gorges and rapids till it enters the plains near Bhutiachang village. After flowing about 19 km from Bhutiachang, the river crosses the North Frontier Railway line near Tangla Railway station. Further flowing towards south, in a curve for a distance of 69 km, the Nanai joins the Brahmaputra at about 16 km up stream of North-Guhawati. The river Nanai is approximately 104 Km in length and has its catchment area of 504 sq. km.

The whole of the drainage of the **Sonitpur** district ultimately find its way into the Brahmaputra, which flows along the southern boundary of this district. The river here is wide and deep and remains navigable throughout the year. Its main tributaries in the district are the Burai, Bargang, Bharali, Gabharu, Dhansiri, Nanai, Noanadi and the Barnadi. Rising in the glaciers, this mighty river Brahmaputra has a total length of about 2,900 km. and a drainage area of about 9,35,500 sq km., flows for about half its length in a trough, north of the Himalayas running parallel to the main Himalayan range. Then it swings northeast, runs through many gorges in a series of cascades and rapids; makes a hairpin bend, turns south and southwest taking the name Dihang. After receiving the waters of the Dibang and the Luit, the united stream from this point, assumes the name Brahmaputra and flows for about 725 kms.

The floods, which are so frequent in the Brahmaputra cause tremendous changes in the river course, as well as raise the riverbed by depositing the detritus carried from the upper reaches. Villages that are situated on the riverbanks are submerged and paddy fields are turned into vast sheets of water during floods. The standing crops are destroyed; cattle are swept away and hundreds of cultivators, fishermen and other people living in these areas are rendered homeless. The largest tributary of the Brahmaputra is the Bharali, which originates in Aka hills and flows about 193 km in the hills and 56 kms on the plains after entering the district at Bhalukpong. The gorge, through which the river makes its way, is of great natural beauty. The Bharali River is fed by the discharge from large catchments through its innumerable tributaries. Among them, the BordiKarai is the major one. Next to Bharali, other tributaries to the Brahmaputra are Burai, Bargang, Ghiladhari, Gabharu, Belsiri and Nanai Rivers are the major tributaries.

The whole of the drainage of the **Nalbari** district ultimately meets with the Brahmaputra going through the southern part of the district. The district is being traversed from north to south by two important rivers, the Pagladiya and the Puthimari. Both the rivers come from the Bhutan hills. The Pagladiya is one of the most ravaging river. Like a mad elephant, it changes its course as it pleases and when it runs amuck, it leaves behind completely desolate area. It can turn paddy fields to either swamp or arid lands. It can wash away rail tracks and roads thereby cut off communication with rest of country for many days.

The Puthimari is known by various names. When it enters the district it is known as Jia Bamodia. When it meets its tributary, the Sesa it is known as Puthimari. When it enters Kamrup near at Hajo, it is known as the Lakhitara. Heavy silt deposits in its bed made it prone to flood. Besides above two rivers, there are Mara Pagladiya, Nona, Tihu etc. Over and above

rivers and tributaries, there are jan and juri which carry off the drainage of the hills into the Brahmaputra. In addition there are some beels (ponds), marshes and tanks in the district.

3.4.3 Meteorology

The climate of **Kamrup Rural** district does not differ from that of the other districts of Assam. Its principal characteristics are a cold and foggy winter, a moderately hot spring and a temperately hot but humid summer. In March and April, the weather begins to grow a little warmer. During the height of the rains, the climate is decidedly oppressive. The air is absolutely saturated with moisture and the damp heat gets very trying. Climatically from February to May, the weather is dry and moisture less and the heat is gentle; from June to October, there is enough rain and moisture and the heat is very unbearable and from November to January, the climate is cold and foggy. During the later part of December and early part of January, the Brahmaputra fog can be very cold while in March, the wild wind carrying the Brahmaputra sand can be seen everywhere.

From the end of February, the mercury level gradually goes up and in June July and August the temperature reaches the maximum point. During these months, the mean maximum temperature does not generally come down below 31°C and even sometimes it goes to above 40°C. These months are treated as hottest months for the district in each year.

Most of the rainfall in the district occurs during the monsoon, i.e. from June to October each year, while during the other months of the year some rainfall occurs due to the north western winds. The monsoon along humidity makes the climate very oppressive. Although the real temperature may not be so high yet the heat and excessive sweating due to humidity makes it unbearable. As per Statistical Handbook Assam - 2020 the average monthly rainfall was highest in the month of May with 352.8 mm. The lowest rainfall recorded was 0.1 mm in December.

The climate of the **Udalguri** district is characterized by the absence of a dry hot summer season, the highest temperatures being experienced during the south-west monsoon season along with abundant rains and highly humid atmosphere throughout the year. Winter starts from December and ends in February, which is followed by a season of thunder storms, from March to May. Next from June and up to the beginning of October is the season of southwest monsoon and October and November are marked as post-monsoon season.

The cold season starts towards the end of November when both day and night temperatures begin to decline. January is the coldest month of the year with the mean daily maximum temperature at about 24°C and the mean daily minimum at 9°C to 11°C. In association with low pressure waves passing eastwards during the winter season, the district experiences cold spells for a day or two when the minimum temperatures may fall below 50°C. Temperature begins to rise from the beginning of March. The rise in temperature continues well into the south-west monsoon season, when temperatures are higher than even in the period March to May. The highest mean daily temperatures experienced in July and August. This together with high humidity (highest during the year) makes the south-west monsoon season rather unpleasant particularly when not raining. With the termination of the monsoon season the weather becomes gradually cooler.

The air is highly humid throughout the year, except during the period February to April when the relative humidity are comparatively less (less than 70%), particularly in the afternoons. Skies appear heavily clouded to over cast during the south-west monsoon seasons. There is a decrease in cloudiness after the withdrawal of the monsoon and during the period December to April, skies remain usually clear or lightly clouded. Winds are light throughout the year except for short spells of strong winds during thunderstorms in the period March to May.

Rainfall, mostly as thundershowers, amounting to about a fifth of the annual rainfall is received in the pre-monsoon months of April and May. The southwest monsoons, arrives over the district by about the beginning of June. The rainfall in the period June to September accounts for about two thirds of the annual rainfall.

The climate of the **Sonitpur** district is similar to that in the neighbouring districts of upper Assam and is characterized by the absence of a dry hot summer season. The highest temperatures being experienced during the south-west monsoon season, along with abundant rains and a highly humid atmosphere throughout the year.

The cold season is from December to February. This is followed by a season of thunderstorms from March to May. The southwest monsoon season is from June to about the beginning of October. October and November constitute the post-monsoon season. January is the coldest month of the year with the mean daily maximum temperature at about 24°C and the mean daily minimum at 9°C to 11°C. In association with low-pressure waves passing eastwards during the winter season, the district experiences cold spells of a day or two when the minimum temperatures may fall below 50°C. Temperatures begin to rise from the beginning of March. The rise in temperatures continues well into the southwest monsoon season when temperatures are higher than even in the period March to May. The highest mean daily values of temperatures experienced in July and August when the mean daily maximum temperature is about 32°C and the mean daily minimum is 25°C. This together with high humidity (highest during the year) makes the southwest monsoon season rather unpleasant, particularly when not raining. With the termination of the monsoon season the weather becomes gradually cooler.

The air is highly humid throughout the year, except during the period February to April when the relative humidity is comparatively less particularly in the afternoons (less than 70%). Skies are heavily clouded to over cast in the southwest monsoon seasons. There is a decrease in cloudiness after the withdrawal of the monsoon; and in the period December to April, skies are usually clear or lightly clouded. Winds are light throughout the year except for short spells of strong winds during thunderstorms in the period March to May. As per Statistical Handbook Assam - 2020 the average monthly rainfall was highest in the month of July with 445.9 mm. The lowest rainfall recorded was 1.0 mm in January.

The Climate of the **Nalbari** district is characterised by the absence of a dry hot summer season, the highest temperatures being experienced during the southwest monsoon season alongwith abundant rains and highly humid atmosphere throughout the year. Winter starts from December and ends in February, which is followed by a season of thunder storms, from March to May. Next from June and upto the beginning of October is the season of south-west

monsoon and October and November are marked as post-monsoon season. The cold season starts about the ends of November when both day and night temperature begins to fall rapidly. January is the coldest month of the year with mean daily minimum temperature. Temperature begins to rise from the beginning of March and by July it attains the highest point. The monsoon season is the period of the year with the highest temperature. Being also the high moisture in the air the weather is often unpleasant with the damp heat particularly in between the spells of rain.

As per Statistical Handbook Assam - 2020 the average monthly rainfall was highest in the month of July with 740.4 mm. The lowest rainfall recorded was 0 mm in December. The cold season starts about the ends of November when both day and night temperature begins to fall rapidly. January is the coldest month of the year. Temperature begins to rise from the beginning of March and by July it attains the highest point.

3.4.4 Soils

The soil of **Kamrup Rural** district is not much different from those of the other district of Assam. The district is characterized by an abundance of marshes and low lands, the soils of which contain a large percentage of organic matter. Kamrup is an important crop region of the valley. The agriculture in the rainy season is mainly confined to the high lands which are free from water-logging. In winter the soils are excellent for growing crops like pulses and oil seeds. The soils in Kamrup district are generally fertile due to annual depositing of silt. A major portion of total sown area of this district is under rice and tea.

Acidity is the general characteristic of the soil of the **Udalguri** district and more so in the older alluvium soil. New alluvial soils representing the lands of the river banks are less acidic. These are often neutral and even alkaline. Acidic alluvial soils are suitable for cultivation of tea. Major part of the district, mainly southern part, is Younger alluvial entisols. The central portion is covered by older alluvial alfisols.

The soils of the district are more or less heterogeneous in nature. The northern part of the district is composed of clay and clay-loam soils and consists of the vast tracts of marshy Tarai-land of Bhutan hills filled up by alluvial and colluvial deposits, forming light textured soils with a loose stratum. The northern part is brown red and yellow alfisols, tarai mollisols and small amount of bhabar. The middle part is loamy and sandy. The soil of the southern part of the district is composed of deposited sand and clay. There are several low lying mounds are made up of un-assorted river terraces.

The forests are mainly tropical evergreen in nature. Terraced alluvial deposits is characterised with the conspicuous occurrence of buried channels, back swamps, etc. Soils in greater part of the district are sandy and silty loam. It is found to be slightly alkaline in reaction and is moderately permeable. Soils restricted to inselberg areas are more clayey, lateritic and less permeable and are highly acidic in nature. From agriculture point of view, the soils in major part of the area are suitable for all sorts of crops.

Acidity is a general characteristic of the soil of the **Sonitpur** district and more so in the older alluvial soil. New alluvial soils representing the lands of the river banks are less acidic. There

are often neutral and even alkaline. The phosphoric content is good in the river side of the Brahmaputra where tea is grown. Acidic alluvial soils are suitable for cultivation of tea. Heavy clay with high percentage of nitrogen in low land areas give a good return of rice, while sand looms above inundation level give a good yield of crops. Overflowing of the rivers replenishes the soil every year by depositing silt. The potash (k₂O) content is low in some soils and moderate in others.

The soil of the **Nalbari** district is of new alluvial nature. These are less acidic and are moderately rich in plant nutrients.

3.4.5 Landuse Pattern of the Study Area

The study area pass through mixed land uses which are agricultural land, private plantation, government land etc. The calculations are based on detailed survey/ investigation carried out along the route of transmission/distribution lines and considering the total length of the line and its right of way. The total line length is 201.265 km which will impact an estimated of 1020.529 acre of land. These include 160.098 km of line passing through agricultural land (838.460 acre of agricultural land), 4.888 km of private plantation (36.812 acre of private plantation land) and 36.279 km of government land (145.256 acre of government land). A brief description about the type and use of land in the study area is given in **Table 3.2**.

3.5 BIOLOGICAL ENVIRONMENT OF DISTRICTS BELONGING TO STUDY AREA

It is pertinent to mention that, in the present project, forest area/land covered under Forest (Conservation) Act, 1980 has been completely avoided with careful selection of route alignment. Therefore, diversion of forest land is not involved in the project.

To analyze the impacts and plan mitigation measures, it is imperative to study baseline information broadly for districts belonging to study area and specifically for transmission line and surrounding or proximity area as well (study area), which includes forest areas under the control of individual/community/village councils. The same has been described in ensuing paragraphs.

3.5.1 Forest Types

As per the Champion & Seth Classification of Forest Types (1968), the forests of Assam belong to seven Forest Type Groups further divided into 25 different Forest Types and Plantation/Tree outside Forest (TOF). Among these, 7 forest types as given in **Table 3.3** are recorded in the study area districts.

Table 3.2: Landuse Pattern of the Study Area

S. No.	Name of Line	RoW (m)	Agricultural Land		Private Plantation		Govt. Land		Total	
			Length (km)	Area (acre)	Length (km)	Area (acre)	Length (km)	Area (acre)	Length (km)	Area (acre)
A	Transmission Lines									
1	Rangia – Amingaon 220 kV D/C line	35	25.785	222.999	2.880	24.907	0.000	0.000	28.665	247.906
2	Amingaon – Hazo 132 kV D/C line	27	7.100	47.368	1.505	10.041	0.000	0.000	8.605	57.409
3	Sonabil – Tezpur 132 kV D/C line	27	12.571	83.869	0.000	0.000	3.421	22.824	15.992	106.692
4	LILO of one circuit of Rangia – Rowta 132 kV D/C line at Tangla	27	10.658	71.106	0.000	0.000	0.218	1.454	10.876	72.560
5	LILO of Kamalpur – Sishugram & Kamalpur – Kamakhya 132 kV S/C lines at Amingaon	27	9.344	62.340	0.000	0.000	0.000	0.000	9.344	62.340
	TOTAL - A		65.458	487.681	4.385	34.948	3.639	24.278	73.482	546.907
B	Distribution Lines									
6	33 kV line from 132/33 kV Hazo S/S to 33/11 kV Mukalmuwa S/S	15	29.178	108.147	0.000	0.000	0.000	0.000	29.178	108.147
7	33 kV line from 132/33 kV Tangla S/S to 33/11 kV Khairabari S/S	15	9.832	36.442	0.000	0.000	6.493	24.066	16.325	60.508
8	33 kV line from 132/33 kV Hazo S/S to 33/11 kV Sesa S/S	15	6.550	24.277	0.000	0.000	0.000	0.000	6.550	24.277
9	33 kV line from 132/33 kV Hazo S/S to 33/11 kV Ramdiya S/S	15	8.687	32.198	0.000	0.000	0.000	0.000	8.687	32.198
10	33 kV line from 132/33 kV Hazo S/S to 33/11 kV Domdoma-Hazo S/S	15	11.172	41.408	0.000	0.000	0.000	0.000	11.172	41.408
11	33 kV line from 132/33 kV Tangla S/S to 33/11 kV Harisingha S/S	15	4.400	16.308	0.000	0.000	7.694	28.517	12.094	44.826
12	33 kV line from 132/33 kV Tangla S/S to 33/11 kV Paneri S/S	15	10.019	37.135	0.000	0.000	1.000	3.706	11.019	40.841
13	33 kV line from 132/33 kV Tangla S/S to 33/11 kV Kalaigaon S/S	15	9.470	35.100	0.000	0.000	4.667	17.298	14.137	52.398
14	33 kV line from 132/33 kV Tangla S/S to 33/11 kV Tangla S/S	15	1.341	4.970	0.000	0.000	0.000	0.000	1.341	4.970
15	33 kV line from 132/33 kV Tezpur S/S to 33/11 kV LGM Hospital S/S	15	3.796	14.070	0.000	0.000	2.963	10.982	6.759	25.052
16	33 kV line from 132/33 kV Tezpur S/S to 33/11 kV Parowa S/S	15	0.195	0.723	0.000	0.000	4.696	17.405	4.891	18.128
17	33 kV line from 132/33 kV Tezpur S/S to 33/11 kV Dolabari S/S	15	0.000	0.000	0.503	1.864	5.127	19.003	5.630	20.867
	TOTAL - B		94.640	350.778	0.503	1.864	32.640	120.979	127.783	473.621
	TOTAL A+B		160.098	838.460	4.888	36.812	36.279	145.256	201.265	1020.529

Source: Detailed Survey of POWERGRID/ Contractor

Table 3.3: Forest Types Found in the Study Area

S. No.	Forest Type
1.	1B/C1 Assam Valley Tropical Wet Evergreen Forest (Dipterocarpus)
2.	1B/C3 Cachar Tropical Evergreen Forest
3.	2/2S1 Secondary Moist Bamboo Brakes
4.	2B/2S2 Eastern Alluvial Secondary Semi-Evergreen Forest
5.	2B/C1a Assam Alluvial Plains Semi-Evergreen Forest
6.	3C/2S1 Northern Secondary Moist Mixed Deciduous Forest
7.	3C/C3b East Himalayan Moist Mixed Deciduous Forest

3.5.2 Forest Cover

Total forest cover in the districts belonging to study area is 2552.71 km², which is 22.44% of the geographical area of the districts. In terms of forest canopy density classes, the districts has 166.97 km² under Very Dense Forest, 830.99 km² under Moderately Dense Forest and 1554.75 km² under Open Forest. The details of forest cover are given below in **Table 3.4**.

Table 3.4: Forest Cover in Districts Belonging to Study Area

S. No.	Name of District	Geographical Area (GA) (km ²)	2019 Assessment (Area in km ²)				% of GA	Scrub
			Very Dense Forest	Moderately Dense Forest	Open Forest	Total Area		
1	Kamrup Rural	3105	50.00	455.95	457.52	963.47	31.03	3.00
2	Sonitpur	5204	108.97	257.53	703.11	1069.61	20.55	3.38
3	Udalguri	2012	8.00	86.67	317.85	412.52	20.50	1.00
4	Nalbari	1052	0.00	30.84	76.27	107.11	10.18	0.00
	TOTAL	11373	166.97	830.99	1554.75	2552.71	22.44	7.38

Source: India State of Forest Report 2019, Assam

3.6 BIOLOGICAL ENVIRONMENT OF THE STUDY AREA (RoWs & SUB-STATIONS' VICINITY)

3.6.1 Floristics Elements

The study area for the floristic surveys has already been defined in the Chapter 1 which 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 as already mentioned above.

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. Details of transmission line and locations (transects) selected for phyto-sociological survey are as given in **Table 3.5**.

Table 3.5: Transmission Lines and Transects Locations for Vegetation Sampling

S. No.	Name of Transmission Line	Status of Project	Distance Covered
1	Rangia (existing) – Amingaon (new) 220 kV D/C line – 29.105 km (28.665 km Overhead and 0.44 km Underground)	<p>Underground Section (0.44 km)</p> <ul style="list-style-type: none"> ➤ Detailed survey completed ➤ Cable laying yet to commence <p>Overhead Section (28.665 km)</p> <ul style="list-style-type: none"> ➤ Route alignment survey completed and approved ➤ Check survey completed for 25.273 km ➤ 50% tree enumeration completed ➤ Out of 104 towers, foundation work completed for 42 towers and 20 towers have been erected 	<ul style="list-style-type: none"> • Gantry to Tower 4A/0 = 0.6 km • Tower 6/0 to 8/0 = 0.9 km • Tower 11/0 to 12/1 = 0.8 km • Tower 13A/0 to 17/0 = 2 km • Tower 49A to 52/0 = 0.4 km <p>Total Distance Covered = 4.7 km</p>
2	Amingaon (new) – Hazo (new) 132 kV D/C line – 8.605 km	<ul style="list-style-type: none"> ➤ Route alignment survey completed ➤ Check survey completed for 4.363 km ➤ Tree enumeration completed ➤ Out of 33 towers, foundation work completed for 21 towers and 17 towers have been erected 	<ul style="list-style-type: none"> • Gantry to Tower 4/0 = 1.5 km • Tower 8/2 to 10A/2 = 1.4 km • Tower 12A/0 to Gantry = 0.4 km <p>Total Distance Covered = 3.3 km</p>
3	Sonabil (existing) – Tezpur (new) 132 kV D/C line – 15.992 km	<ul style="list-style-type: none"> ➤ Check survey completed ➤ Tree enumeration completed ➤ Out of 64 towers, foundation work completed for 55 towers and 46 towers have been erected ➤ Stringing of conductor completed in 4.7 km 	<ul style="list-style-type: none"> • Gantry to Tower AP/06 = 0.8 km • Tower AP/18 to AP/20 = 2.6 km • Tower AP/30 to Gantry = 0.2 km <p>Total Distance Covered = 3.6 km</p>
4	LILO of one circuit of Rangia – Rowta 132 kV D/C line at Tangla – 10.876 km	<ul style="list-style-type: none"> ➤ Check survey completed ➤ Tree enumeration completed ➤ Foundation work for all 41 towers completed ➤ All the 41 towers, except Gantry to cross existing 400 kV line have been erected ➤ Stringing of conductor, except between tower 10/0 and 11/0 completed 	<ul style="list-style-type: none"> • Tapping Point to Tower 2/0 = 0.4 km • Tower 3/0 to 4/0 = 0.25 km • Tower 10/0 to 13/1 = 2.2 km <p>Total Distance Covered = 2.85 km</p>
5	LILO of one circuit of Kamalpur – Sishugram 132 kV S/C line at Amingaon – 9.344 km	<ul style="list-style-type: none"> ➤ Route alignment survey completed ➤ Check survey completed for 0.281 km ➤ 10% tree enumeration completed ➤ Out of 34 towers, foundation work completed for 17 towers and 5 towers have been erected 	<ul style="list-style-type: none"> • Tapping Point to Tower QD 2/0 = 0.5 km • Tower QC 5/2 to QD 7/0 = 0.7 km • Tower QD 8/0 to QC 8/1 = 0.3 km
6	LILO of one circuit of Kamalpur – Kamakhya 132 kV S/C line at Amingaon – 9.344 km	<ul style="list-style-type: none"> ➤ Route alignment survey completed ➤ Check survey completed for 0.281 km ➤ 10% tree enumeration completed ➤ Out of 34 towers, foundation work 	<ul style="list-style-type: none"> • Tower QC 10/3 to QC 12/0 = 0.7 km

S. No.	Name of Transmission Line	Status of Project	Distance Covered
		completed for 17 towers and 5 towers have been erected	<ul style="list-style-type: none"> • Tower QC 13/0 to DE 02 = 0.2 km Total Distance Covered = 2.4 km
7	33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Mukalmuwa (existing) S/S – 29.178 km	<ul style="list-style-type: none"> ➤ Route alignment survey completed and approved ➤ Out of the total 778 poles, 767 poles have been erected ➤ Stringing work completed for 17.40 km 	<ul style="list-style-type: none"> • Gantry to Pole SP-14 = 0.8 km • Pole SP-66 to FP-1 = 0.5 km • Pole SP-350 to DP-90 = 0.5 km • Pole DP-117 to Gantry = 1.1 km Total Distance Covered = 2.9 km
8	33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Khairabari (existing) S/S – 16.325 km	<ul style="list-style-type: none"> ➤ Completed on 31/03/2021 	<ul style="list-style-type: none"> • Pole SP-70 to DP-9 = 0.3 km • Pole SP-150 to SP-156 = 0.3 km • Pole SP-190 to FP-7 = 1.5 km Total Distance Covered = 2.1 km
9	33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Sesa (new) S/S – 6.55 km	<ul style="list-style-type: none"> ➤ Completed on 28/02/2021 	<ul style="list-style-type: none"> • Gantry to Pole SP-15 = 0.9 km • Pole DP-18 to SP-46 = 0.2 Total Distance Covered = 1.1 km
10	33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Ramdiya (new) S/S – 8.687 km	<ul style="list-style-type: none"> ➤ Route alignment survey completed and approved ➤ All the 237 poles have been erected ➤ Stringing work completed for 7.60 km 	<ul style="list-style-type: none"> • Pole FP-8 to Gantry = 5 km
11	33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Domdoma-Hazo (new) S/S – 11.172 km	<ul style="list-style-type: none"> ➤ Completed on 31/12/2021 	<ul style="list-style-type: none"> • Pole SP-93 to SP-110 = 0.8 km • Pole DP-38 to DP-42 = 0.5 km • Pole FP-4 to Gantry = 0.5 km Total Distance Covered = 1.8 km
12	33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Harisingha (new) S/S – 12.094 km	<ul style="list-style-type: none"> ➤ Completed on 28/02/2021 	<ul style="list-style-type: none"> • Gantry to Pole SP-3 = 0.2 km • Pole DP-16 to SP-129 = 0.25 km • Pole SP-153 to FP-7 = 3 km Total Distance Covered = 3.45 km
13	33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Paneri	<ul style="list-style-type: none"> ➤ Completed on 31/03/2021 	<ul style="list-style-type: none"> • Gantry to Pole SP-7 = 0.3 km

S. No.	Name of Transmission Line	Status of Project	Distance Covered
	(existing) S/S – 11.019 km		<ul style="list-style-type: none"> • Pole SP-30 to SP-36 = 0.4 km • Route of line mentioned at S. No. 15 Total Distance Covered = 2.05 km
14	33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Kalaigaon (existing) S/S – 14.137 km	➤ Completed on 31/01/2021	<ul style="list-style-type: none"> • Gantry to Pole FP-2 = 3.5 km • Pole FP-4 to SP-182 = 1 km Total Distance Covered = 4.5 km
15	33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Tangla (existing) S/S – 1.341 km	➤ Completed on 31/10/2020	Almost entire route
16	33 kV line from 132/33 kV Tezpur (new) S/S to 33/11 kV LGM Hospital (new) S/S – 6.759	<ul style="list-style-type: none"> ➤ All the 116 poles erected ➤ Stringing work completed for 5.51 km 	<ul style="list-style-type: none"> • Gantry to Pole AP-5 = 1.6 km • Pole AP-11 to Gantry = 0.7 km • Pole AP-17 to Loc-19/2 = 0.3 km • Gantry to Pole AP-2 = 0.2 km Total Distance Covered = 2.8 km
17	33 kV line from 132/33 kV Tezpur (new) S/S to 33/11 kV Parowa (existing) S/S – 4.891 km	➤ Commissioned on 10/11/2020	Almost entire route
18	33 kV line from 132/33 kV Tezpur (new) S/S to 33/11 kV Dolabari (existing) S/S – 5.63 km	<ul style="list-style-type: none"> ➤ All the 91 poles erected ➤ Stringing work completed for 5.25 km 	Almost entire route

3.6.1.1 Taxonomic Diversity

Based upon the data collected during field surveys and data/information collected from secondary sources, an inventory of 99 plant species in the study area has been prepared. Group-wise breakup of families, genera and species is given below.

Group	Angiosperms	Gymnosperms	Pteridophytes	Bryophytes	Total
Families	40	3	7	7	57
Genera	68	3	10	7	88
Species	74	3	13	9	99

Total 74 plant species of angiosperms belonging to 40 families and 68 genera were recorded. These include trees, shrubs, herbs, and grasses. Trees were comprised of 42 species, shrubs are 11, herbaceous component comprises of 13 species, and grasses/bamboos were represented by 8 species. The families with the most number of species recorded from the

study area were Fabaceae (9), Poaceae (8), Asteraceae (5), Lamiaceae (4) and Moraceae (4). Three species of gymnosperms, thirteen species belonging to 7 families of pteridophytes and nine species belonging to 7 families of bryophytes were recorded from the study area (For detailed list see **Annexure I**).

3.6.1.2 Rare Threatened and Endangered Species

Conservation status of plant species found in the 'Study Area' was assessed using IUCN Red list of Threatened Species Version 2021.3 (accessed in February 2022) and Botanical Survey of India Red Data Book. Majority of the species have not been evaluated or assessed yet by IUCN (2021.3) and only 44 species have been assessed (Table 3.6) and most of them fall under 'Least Concern' (LC) category, 3 species under 'Near Threatened (NT)', 4 species under 'Vulnerable (VU)' and 2 species under Data Deficient (DD) category (For detailed list see **Annexure I**).

3.6.1.3 Vegetation Profile along the route of transmission lines

During the field surveys vegetation profile of the study area i.e., areas along the transmission and distribution lines and around substations were studied. Based upon these observations the information of vegetation along the transmission/ distribution lines is discussed below:

1. Rangia (existing) – Amingaon (new) 220 kV D/C line

The line from Rangia to Amingaon 220 kV D/C line was mostly going through the paddy fields. The vegetation of the area was represented by the tree species like *Ziziphus mauritiana*, *Lagerstroemia Speciosa*, *Tectona grandis* and *Bombax ceiba*. Shrub species included *Adhatoda vasica* and *Lantana camara*. The herbs plant consisted the species like *Achyranthus aspera*, *Xanthium strumarium* and *Maranta arundinacea*. *Saccharum spontaneum* was only grass species found along the line.

2. Amingaon (new) – Hazo (new) 132 kV D/C line

The line from Amingaon sub-station to Hazo (new) 132 KV D/C line mostly comprised paddy fields. The line also consisted the tree species viz; *Tectona grandis*, *Mallotus philippensis*, *Mangifera indica*, *Bombax ceiba*, *Azadirachta indica*, *Legistromia speciosa* and *Chukrasia tabularis*. The shrub species was represented by *Lantana camara*, *Murraya koenigii* and *Vitex negundo*. Among herb species, *Ageratum conyzoides*, *Musa acuminata*, *Achyranthus aspera* and *Aerva lanata* were present along the line. *Dendrocalamus hamiltonii* was only bamboo species growing in the area.

3. Sonabil (existing) – Tezpur (new) 132 kV D/C line

Sonabil (existing) – Tezpur (new) 132 kV D/C line was mostly comprised of paddy fields.

4. LILO of one circuit of Rangia – Rowta 132 kV D/C line at Tangla

The area in LILO of one circuit of Rangia – Rowta 132 kV D/C line at Tangla mostly comprised paddy and mustard fields. Vegetation in the area was represented by tree species like *Delonix regia*, *Lagerstroemia speciosa*, *Mangifera indica*, *Albizia procera* etc. The shrubs species constituted *Chromolaena odorata*, *Murraya koinigii* and *Solanum indicum*. Herb species

comprised mainly of *Ageratum conyzoides*, whereas, *Oplismenus compositus* and *Sachharum spontaneum* were among the few grass species occurred in the area.

5. Multi Circuit LILO of Kamalpur – Kamakhya and Kamalpur – Sishugram 132 kV S/C lines at Amingaon

The area along kamalpur – Kamakhya 132 kV line was mostly going through the paddy fields. A few tree species which was found on the part of line were *Bomax ceiba* and *Areca catechu*. *Ipomoea cornea* and *Clerodendrum glandulosum* were among the few shrub species reported along the line. *Maranta arundinacea*, *Xanthium strumarium*, *Cyanthillium cinereum* and *Oplismenus compositus* represented the herb and grass species of the area.

6. 33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Mukalmuwa (existing) S/S

The line from 132/33 kV Hazo (new) sub-station to 33/11 kV Mukalmuwa (existing) sub-station was mostly represented by paddy fields and some private lands. The tree species included the species like *Schima wallichii*, *Cassia abbreviate*, *Ficus religiosa*, *Aegle marmelose*, *Saraca asoca*, *Albizia procera*, *Tectona grandis*, *Areca catechu* and *Delonix regia*. The bamboo and grass species were represented by *Dendrocalamus hamiltonii*, *Bambusa cacharensis* and *Arundinella bengalensis*. *Musa acuminata* represented the only herb species in the area.

7. 33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Khairabari (existing) S/S

The area between 132/33 kV Tangla (new) sub-station to 33/11 kV Khairabari (existing) sub-station mostly comprised of paddy fields. The tree species occurred along line were *Delonix regia*, *Ficus religiosa*, *Ziziphus mauritiana*, *Areca catechu*, *Mangifera indica* and *Azadirachta indica*. *Dendrocalamus hamiltonii* and *Bambusa balcooa* were some of bamboo species found along the line. The herb species included *Ageratum conyzoides* and *Colocasia esculenta*.

8. 33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Sesa (new) S/S

The line from 132/33 kV Hazo (new) sub-station to 33/11 kV Sesa (new) sub-station mostly comprised of paddy fields and private lands. The tree species along the line was represented by *Moringa oleifera*, *Cassia abbreviate*, *Acacia auriculiformis*, *Azadirachta indica*, *Lagerstroemia speciosa* and *Bombax ceiba*. *Desmodium cephalotes* and *Chromolaena odorata* represented the shrub species of the line. The herb species included *Xanthium strumarium*, *Proniphricum nudatum*, *Musa acuminata* and *Vernonia cinera*. Two bamboo species *Dendrocalamus hamiltonii* and *Bambusa balcooa* were also recorded in the area.

9. 33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Ramdiya (new) S/S

The line from 132/33 kV sub-station to 33/11 kV Ramdiya sub-station consisted the tree species like *Terminalia arjuna*, *Cassia abbreviate*, *Areca catechu* and *Azadirachta indica*. Shrub species was represented by *Chromolaena odorata*, *Murraya koenigii* and *Solanum* species. The important herb species of the area consisted the species like *Oplismenus compositus*, *Aerva lanata*, *Ageratum conyzoides* and *Musa acuminata*. The bamboo species recorded along the line were *Bambusa balcooa* and *Bambusa tulda*.

10. 33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Domdoma-Hazo (new) S/S

The line between 132/33 kV Hazo (new) sub-station to 33/11 kV Domdoma-Hazo (new) sub-station mostly comprised of paddy field. Some stretch of the line consisted the tree species like *Lagerstroemia speciosa*, *Ficus religiosa*, *Palaquium polyanthum*, *Areca catechu* and *Cassia abbreviate*. Shrub species was represented by *Lantana camara* and *Desmodium cephalotes*. Herb species included *Ageratum conyzoides*, *Vernonia cinera* and *Chrysopogan aciculatus*. *Dendrocalalus hamiltonii* and *Bambusa tulda* were the bamboo species recorded in the area.

11. 33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Harisingha (new) S/S

The line from 132/33 kV Tangla (new) sub-station to 33/11 kV Harisingha (new) sub-station mostly comprised of paddy fields. The tree species along the line were represented by *Toona ciliate*, *Ficus religiosa*, *Erythrina variegata*, *Albizia procera*, *Bombax ceiba*, *Ziziphus mauritiana*, *Areca catechu*, *Phoenix dactylifera* and *Mangifera indica*. The shrub species consisted of *Lantana camara*, *Adhatoda vasica* and *Chromolaena odorata*. The herb species consisted of *Ageratum conyzoides*, *Vitex negundo* and *Xanthium strumarium*. The grass species constituted mainly *Chrysopogn aciculatus* and *Oplismenus compositus*.

12. 33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Paneri (existing) S/S

The line from 132/33 kV Tangla (new) sub-station to 33/11 kV Paneri (existing) sub-station was mostly represented by the paddy fields. The tree species included along the line were *Toona ciliate*, *Lagerstroemia speciosa*, *Alstonia scholaris*, *Areca catechu* and *Ficus religiosa*. The shrub species included *Murraya koenigii* and *Lantana camara*. The herb species comprised of *Ageratum conyzoides*, *Colocasia esculenta* and *Diplazium esculentum*. The bamboo species consisted of *Dendrocalamus hamiltonii* and *Bambusa balcooa*.

13. 33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Kalaigaon (existing) S/S

The line between 33 kV line from 132/33 kV Tangla (new) sub-station to 33/11 kV Kalaigaon (existing) sub-station was represented by the tree species like *Ziziphus mauritiana*, *Bombax ceiba*, *Tectona grandis*, *Mangifera indica*, *Albizia procera*, *Ficus religiosa*, *Lagerstroemia speciosa*, *Eucalyptus tereticornis*, *Albizia chinensis*, *Erythrina variegata* etc. The shrub species included *Murraya koenigii*, *Lantana camara* and *Solanum* species. The herb species was mostly represented by *Ageratum conyzoides*. The bamboo species consisted of *Dendrocalamus hamiltonii*, *Bambusa tulda* and *Bambusa balcooa*.

14. 33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Tangla (existing) S/S

The line from 132/33 kV Tangla (new) sub-station to 33/11 kV Tangla (existing) sub-station mostly comprised paddy fields. *Erythrina variegata*, *Ziziphus mauritiana*, *Albizia lebbeck*, *Areca catechu*, *Cassia abbreviate* and *Tectona grandis* were some major tree species found along the line. Shrub species included *Lantana camara* and *Solanum* species. The bamboo species consisted of *Bambusa tulda* and *Bambusa balcooa*.

15. 33 kV line from 132/33 kV Tezpur (new) S/S to 33/11 kV LGM Hospital (new) S/S

The area along the lines between 132/33 kV Tezpur (new) sub-station to 33/11 kV LGM Hospital (new) sub-station comprised mainly of paddy fields and private lands. The tree species recorded along the line were: *Tectona grandis*, *Ficus religiosa*, *Erythrina variegata*,

Areca catechu, *Carica papaya* and *Delonix regia*. *Lantana camara* and *Adhatoda vasica* represented the shrub species of the area. Herb species represented by *Ageratum conyzoides* and *Cyanthillium cinereum*.

16. 33 kV line from 132/33 kV Tezpur (new) S/S to 33/11 kV Parowa (existing) S/S

The line from 132/33 kV Tezpur (new) sub-station to 33/11 kV Parowa (existing) sub-station was mainly going along the road and on the paddy fields. The tree species constituted mainly *Tectona grandis*, *Podocarpus nerifolius*, *Toona ciliate*, *Cassia abbreviate*, *Mallotus phillipensis*, *Erythrina variegata* and *Mangifera indica*. Shrub species was represented by *Desmodium cephalotes*, *Solanum* species and *Xanthium strumarium*. *Dendrocalamus hamiltonii* and *Bambusa balcooa* represented the bamboo species of the area.

17. 33 kV line from 132/33 kV Tezpur (new) S/S to 33/11 kV Dolabari (existing) S/S

The line from 132/33 kV Tezpur (new) sub-station to 33/11 kV Dolabari (existing) sub-station was mostly comprised of paddy fields along the road.

3.6.1.4 Economically Important Plant Species

Forest and forest products are integral part of the people in the area. Along with the cultivated crops, people of the area also use wild plants as fodder, fuel wood, fibre, timber, vegetables, fruits, medicine, and various minor forest products. According to Agro-Ecological Sub Region (ICAR) classification, the study area falls under North-Eastern Hills (Purvachal), Warm Perhumid Eco-Region. (17.1) Assam and Bengal Plain, Hot Subhumid to Humid (Inclusion of Perhumid) Eco-Region (15.2). As per the Agro Climatic Zone (NARP) and Agro Climatic zone classification of the Planning Commission it falls in Eastern Himalayan Division.

Major food crops are Rice, Maize soybean, and rapeseed/mustard are main crops cultivated. Potato, Ginger, Turmeric, Black Pepper, Areca nut, and Ginger, etc. are some of the important cash crops in the study area. Besides food crops, the state is also renowned for its horticultural crops like Orange, Lemon, and Pineapple.

Medicinal Plants

Plant species are used for various medicinal purposes for treating various ailments by local tribals. In order to collect the information on medicinal plants used in the area, published literature on ethnomedicinal plants of the region by Das et al. (2008), Sarkar and Devi (2017), Gogoi and Nath (2021) were consulted.

Based upon the studies quoted above and information gathered during interaction with local people while conducting field surveys a list of important medicinal plant species used for treating various ailments was prepared and the same is given in **Annexure I**.

Wild Edible Plants

List of wild edible plants used by villagers in the study area was prepared with consultation of published literature by Nath (2015); Dutta et al (2017); Komor and Devi, Assam State Biodiversity Board (2016) and the same is given in **Annexure I**.

Timber yielding Tree species

A total number of 16 timber yielding tree species were found in the study area, illustrated in in **Annexure I**.

3.6.2 Faunal Elements

Assam harbors a variety of wildlife distributed throughout the state due to the forest as well as extensive network of river systems and swamps, marshes and wetlands which provide ideal conditions and suitable habitat for sustenance of wide variety of fauna. The fauna of the state has been compiled with the help of secondary sources. Data was compiled from published literatures.

For management and preservation of wildlife in the State, the Department of Forests, Environment & Ecology and Wildlife has a full-fledged wildlife Wing under the Chief Wildlife Warden.

3.6.2.1 Mammals

As per the data compiled, 50 species of mammals belonging 20 families of 9 orders are reported from the districts belonging to study area.

As per the International Union for Conservation of Nature (IUCN) Red List of Threatened Species, 2021.3, 1 species is Critically Endangered (CR), 9 species are in Endangered (EN) category, 3 species are in Near Threatened (NT) category, 13 species are in Vulnerable (VU) category, 23 species are in Least Concerned (LC) category and 1 species is in Data deficient (DD) category. List of important mammals found in the districts belonging to study area along with their conservation status is given in **Annexure I**. The classification and nomenclature of mammals is as per <https://www.iucnredlist.org/>.

3.6.2.2 Avifauna

As per the data compiled, 47 species of avifauna belonging to 27 families of 11 orders are reported from the districts falling within study area. As per the IUCN Red List of Threatened species, 2021.3, all other bird species reported from the study area fall under the Least Concern category of IUCN. List of important avifauna found in the districts belonging to study area along with their conservation status is given in **Annexure I**.

3.6.2.3 Butterflies

As per the data compiled, 29 species of butterflies belonging 6 families are reported from the districts belonging to study area. Of which, 12 species belong to Nymphalidae family, Lycaenidae by 6 species, Pieridae by 5 species and Hesperidae family were represented by 3 species. List of butterflies found in the districts belonging to study area is given in **Annexure I**.

3.6.3 Protected Areas

The Protected Area (PA) network in Assam occupies 4069.25 km² area, which constitute about 5.19% of the state's geographical area. The Protected Area Network includes 5 National Park (NP) and 20 Wildlife Sanctuaries (WLS). The State has four Tiger Reserves (TR) namely Kaziranga, Manas, Orang and Nameri. Manas TR has also been declared as a Biosphere

Reserve (BR), the other BR of the state is Dibru Saikhowa WLS. Kaziranga NP and Manas WLS are also included in the World Heritage sites. Out of these, 5 protected areas i.e. Nameri Tiger Reserve, Rajiv Gandhi Orang NP, Sonai-Rupai WLS, Bornadi WLS and Burachapori WLS falls in districts belonging to study area. However, the proposed transmission and distribution lines do not pass through this protected area. In the instant scheme, all such areas are completely avoided through careful route selection. Details of the protected area is presented below in **Table 3.6**. Map showing location of protected areas w.r.t sub project location in the Sonitpur and Udalguri districts is given at **Figure 3.1** and **Figure 3.2** respectively.

Table 3.6: Protected Area Network in Districts Belonging to Study Area

S. No.	Protected Areas	District	Area (km ²)	Year of Notification	ESZ Area (km ²)	Year of ESZ Notification
1	Nameri Tiger Reserve	Sonitpur	344	2000	1338.62	2020
2	Sonai-Rupai Wildlife Sanctuary	Sonitpur	220	1998		
3	Rajiv Gandhi Orang National Park	Sonitpur, Udalguri & Darrang	78.80	1999	Yet to be finalized	
4	Bornadi Wildlife Sanctuary	Udalguri	26.22	1980	Yet to be finalized	
5	Burachapori Wildlife Sanctuary	Sonitpur	44.06	1995	Yet to be finalized	

Source: <https://moef.gov.in/en/rules-and-regulations/esz-notifications-2/>

From the map given at **Figure 3.1** it is evident that the nearest protected area to any of the sub project in Sonitpur district is Nameri TR. The nearest component of the sub project to the Nameri TR is the existing 132/33 kV Sonabil S/S, the aerial distance of the substation from the boundary of TR and its ESZ is approx. 5.2 km and 4.3 km respectively (refer **Figure 3.3**).

Similarly, from the map given at **Figure 3.2** it is evident that the nearest protected area to any of the sub project in Udalguri district is Bornadi WLS. The nearest component of the sub project to the Bornadi WLS is the existing 33/11 kV Paneri S/S, which is at an aerial distance of approx. 14.3 km (refer **Figure 3.4**).

In view of above, it is concluded that there will not be any impact of any magnitude on the PA as the proposed subprojects are located far away from the PA.

3.6.4 Elephant Reserves

The Elephant Reserves (ER) in the state comprises of Chirang-Ripu ER, Sonitpur ER, Dining Patkai ER, Kaziranga-Karbi Anglong ER and Dhansiri-Lungding ER (refer **Figure 3.4**). Total area of these ERs is 10,967 sq km. Nearest ER from the project location is Sonitpur ER. The nearest subprojects from the Sonitpur ER are 33/11 kV Paneri (ext) S/S and 132/33 kV Sonabil (et) S/S, which are at an aerial distance of approx. 8.1 km and 9.1 km respectively (refer **Figure 3.5**). Since the subprojects are located far away from the ER, therefore, there will not be any impact of any magnitude on the ERs due to the construction of subprojects.

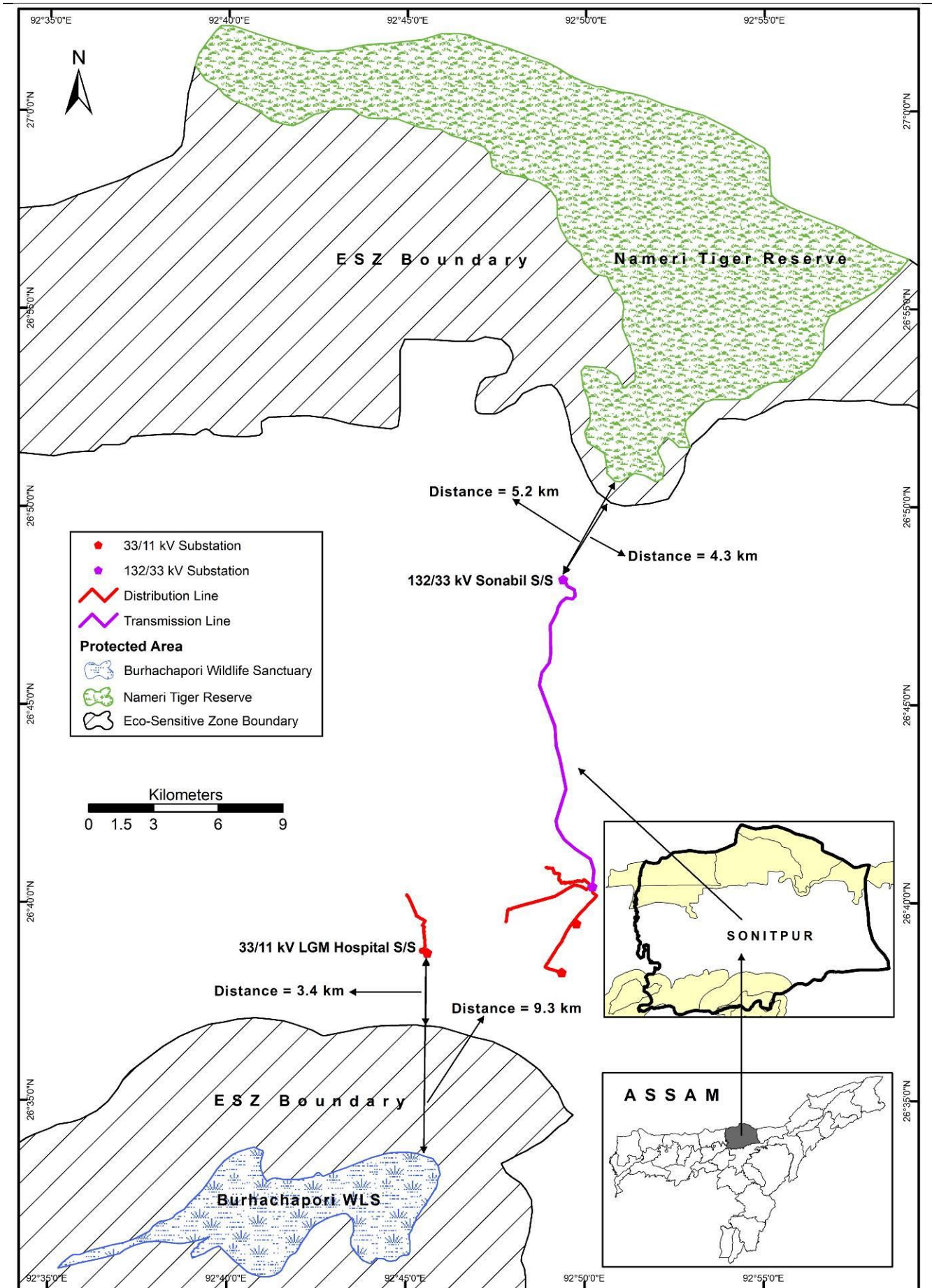


Figure 3.1: Map Showing Protected Area w.r.t. Sub Project Locations in Sonitpur District

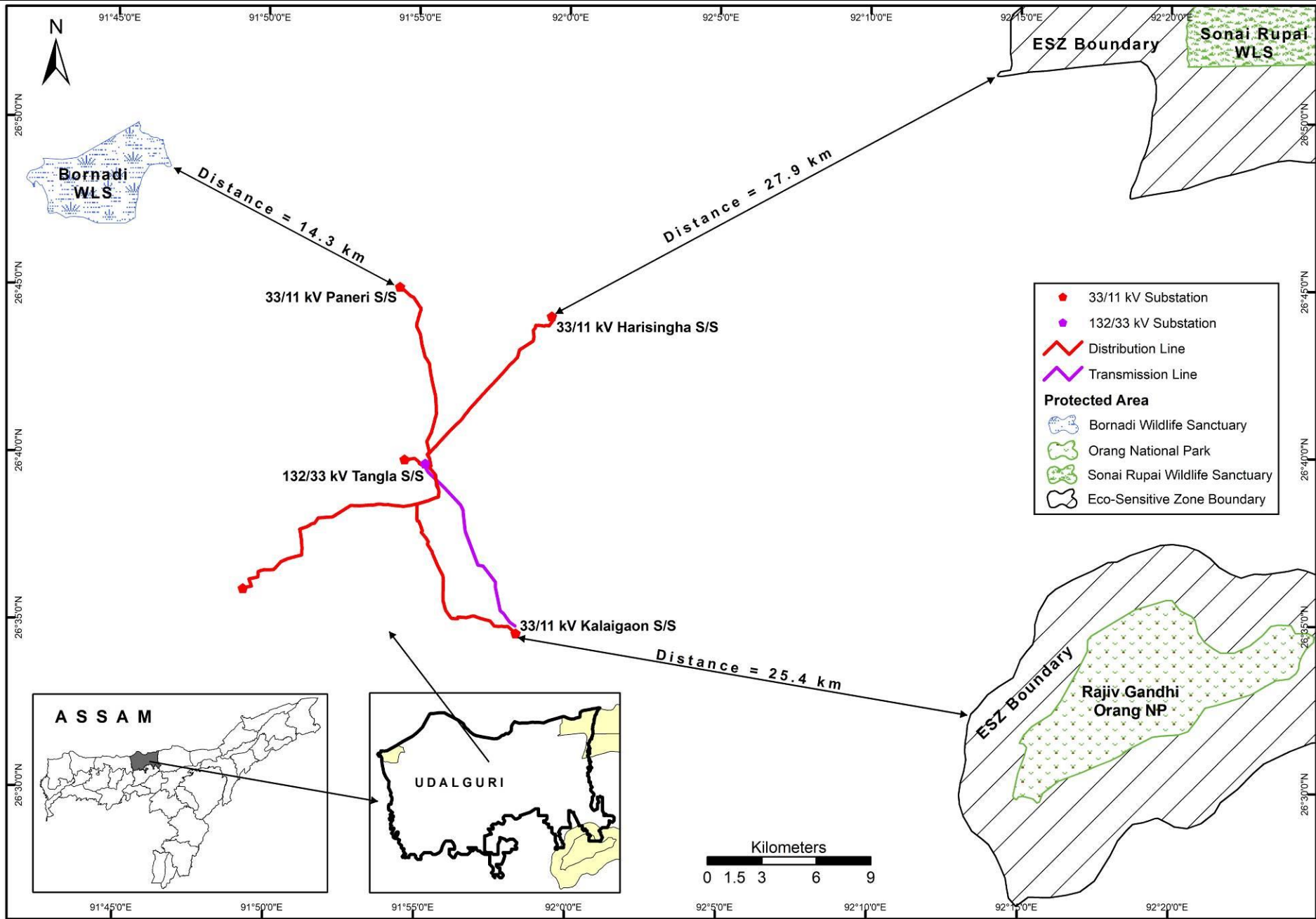


Figure 3.2: Map Showing Protected Area w.r.t. Sub Project Locations in Udalguri district

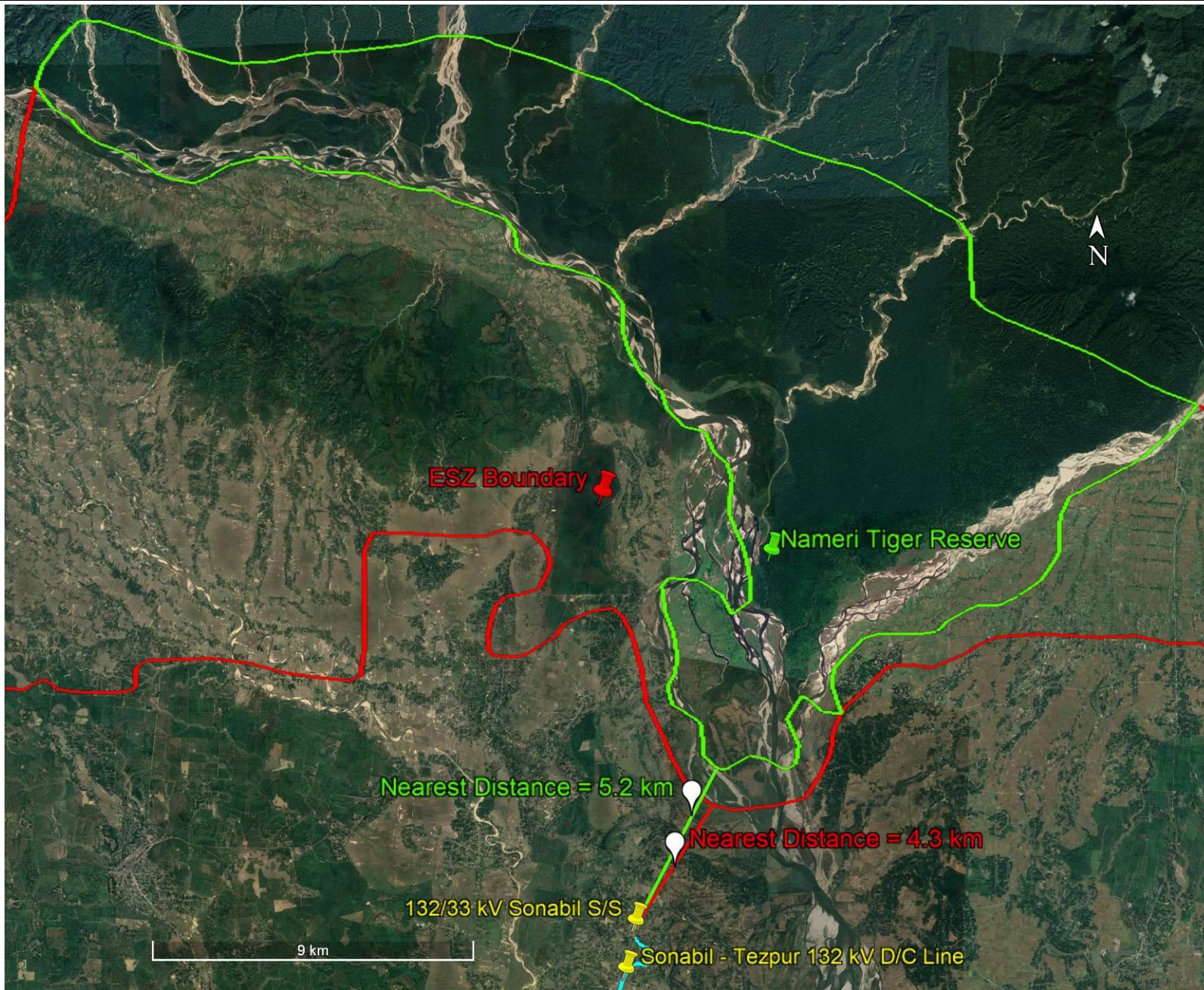


Figure 3.3: Google Imagery Showing Protected Area w.r.t. Sub Project Locations in Sonitpur District



Figure 3.4: Google Imagery Showing Protected Area w.r.t. Sub Project Locations in Udalguri District

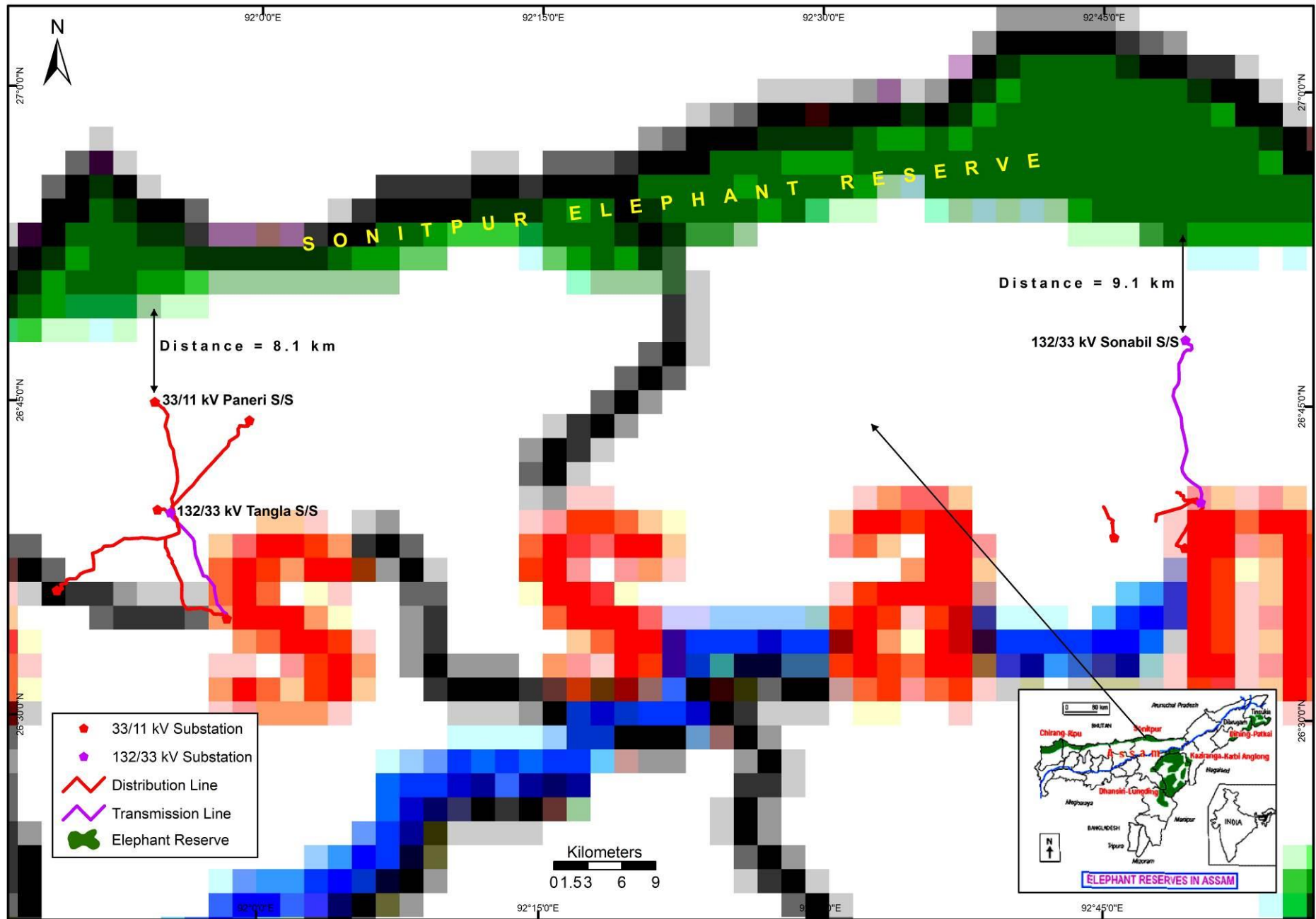


Figure 3.5: Map Showing Elephant Reserves w.r.t. Sub Project Locations

3.6.5 Important Bird & Biodiversity Areas (IBAs)

Bird Life International (www.birdlife.org) has identified 55 Important Bird & Biodiversity Areas (IBAs) in Assam. These IBAs cover 815.92 sq km area, which constitute about 3.6% of the state's geographical area. Out of these 55 IBAs, below mentioned 8 IBAs falls in project districts. Details of the IBAs are presented below in **Table 3.7**. Maps showing location of IBAs w.r.t to the sub project locations in the Kamrup Rural, Udalguri and Sonitpur districts are given at **Figure 3.6**, **Figure 3.7** and **Figure 3.8** respectively.

Table 3.7: Important Bird & Biodiversity Areas in Districts Belonging to Study Area

S. No.	IBA Code	IBA Name	District	Criteria	Important Species	Area (sq km)
1	IN368	Bornadi Wildlife Sanctuary	Udalguri	A1	<i>Houbaropsis bengalensis</i>	26.22
2	IN375	Chandubi Lake and Adjoining Areas	Kamrup Rural	A1	<i>Leptoptilos javanicus, Haliaeetus leucoryphus</i>	20.00
3	IN388	Jengdia Beel and Satgaon	Kamrup Rural	A1	<i>Leptoptilos dubius, Leptoptilos javanicus, Pelecanus philippensis, Haliaeetus leucoryphus</i>	5.00
4	IN393	Laokhowa & Burachapori Wildlife Sanctuaries	Sonitpur	A1, A2	<i>Francolinus gularis, Aythya baeri, Houbaropsis bengalensis, Leptoptilos dubius, Leptoptilos javanicus, Tringa guttifer, Gyps bengalensis, Gyps tenuirostris, Clanga clanga, Haliaeetus leucoryphus, Pelloroneum palustre</i>	114.17
5	IN397	Nameri National Park	Sonitpur	A1, A2	<i>Arborophila mandellii, Francolinus gularis, Asarcornis scutulata, Columba punicea, Ardeotis nigriceps, Houbaropsis bengalensis, Leptoptilos javanicus, Ardea insignis, Gyps tenuirostris, Clanga clanga, Aquila heliaca, Haliaeetus leucoryphus, Aceros nipalensis, Falco naumanni, Prinia cinereocapilla, Phylloscopus cantator, Spelaeoris caudatus, Pelloroneum palustre, Argya longirostris, Saxicola insignis</i>	200.00
6	IN398	Orang National Park	Sonitpur & Darrang	A1, A4ii	<i>Francolinus gularis, Aythya baeri, Houbaropsis bengalensis, Leptoptilos dubius, Leptoptilos javanicus, Pelecanus philippensis, Gyps bengalensis, Gyps tenuirostris, Haliaeetus leucoryphus, Schoenicola striatus, Ploceus megarhynchus</i>	78.81
7	IN405	Sonai-Rupai Wildlife Sanctuary	Sonitpur	A1	<i>Francolinus gularis, Asarcornis scutulata, Houbaropsis bengalensis, Gyps tenuirostris, Aceros nipalensis</i>	220.00
8	IN-AS-49	Dadara-Pasariya-Singimari	Kamrup Rural	A1	<i>Leptoptilos dubius, Leptoptilos javanicus, Gyps bengalensis, Gyps tenuirostris</i>	3.00

Source: <http://www.birdlife.org/datazone/country/india>

International Bird Areas are achieved through the application of quantitative ornithological criteria, grounded in up-to-date knowledge of the sizes and trends of bird populations. The Global criteria are as follows:

A1. Globally threatened species

Criterion: The site is known or thought regularly to hold significant numbers of a globally threatened species, or other species of global conservation concern.

A2. Restricted-range species

Criterion: The site is known or thought to hold a significant component of a group of species whose breeding distributions define an Endemic Bird Area (EBA) or Secondary Area (SA).

A4ii. Congregatory species

Criterion: The site is known or thought to hold, on a regular basis, 1% or more of the global population of a congregatory seabird or terrestrial species.

From the map given at **Figure 3.6** it is evident that the nearest IBA to any of the sub project in Kamrup Rural district is Dadara-Pasariya-Singimari. The nearest component of the sub project to the Dadara-Pasariya-Singimari is the Tower No. 07 of the Amingaon – hazo 132 kV D/C Line. The aerial distance of the Tower No. 07 from the boundary of Dadara-Pasariya-Singimari IBA is approx. 2.2 km (refer **Figure 3.9**).

Further, from the map given at **Figure 3.7** it is evident that the nearest IBA to any of the sub project in Sonitpur district is Nameri TR. The nearest component of the sub project to the Nameri TR is the existing 132/33 kV Sonabil S/S, the aerial distance of the substation from the boundary of TR is approx. 5.2 km (refer **Figure 3.3**).

Similarly, from the map given at **Figure 3.8** it is evident that the nearest IBA to any of the sub project in Udalguri district is Bornadi WLS. The nearest component of the sub project to the Bornadi WLS is the existing 33/11 kV Paneri S/S, which is at an aerial distance of approx. 14.3 km (refer **Figure 3.4**).

In view of above, it is concluded that there will not be any impact of any magnitude on the IBAs as the proposed subprojects are located far away from the IBAs.

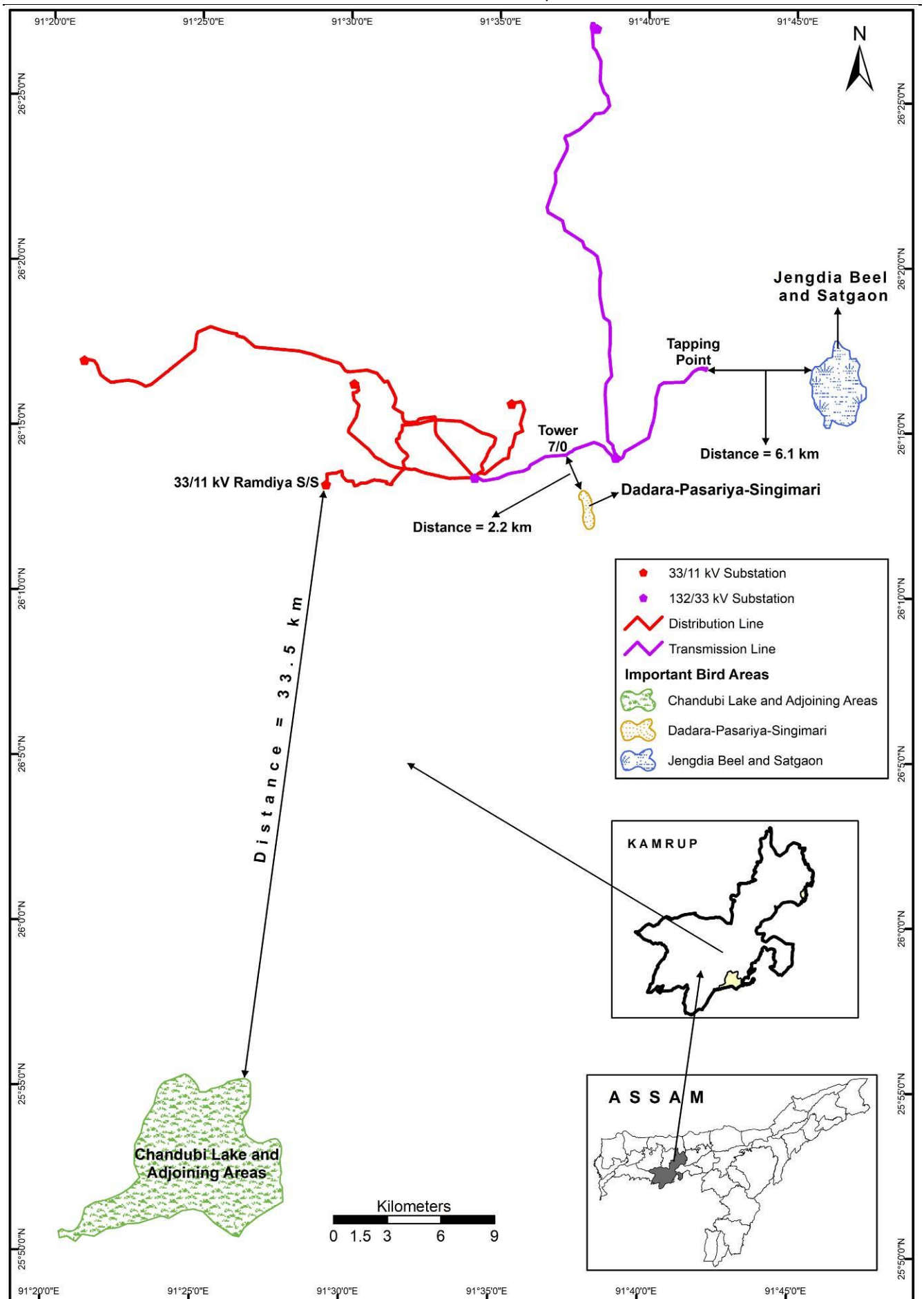


Figure 3.6: Map Showing IBAs w.r.t. Sub Project Locations in Kamrup Rural District

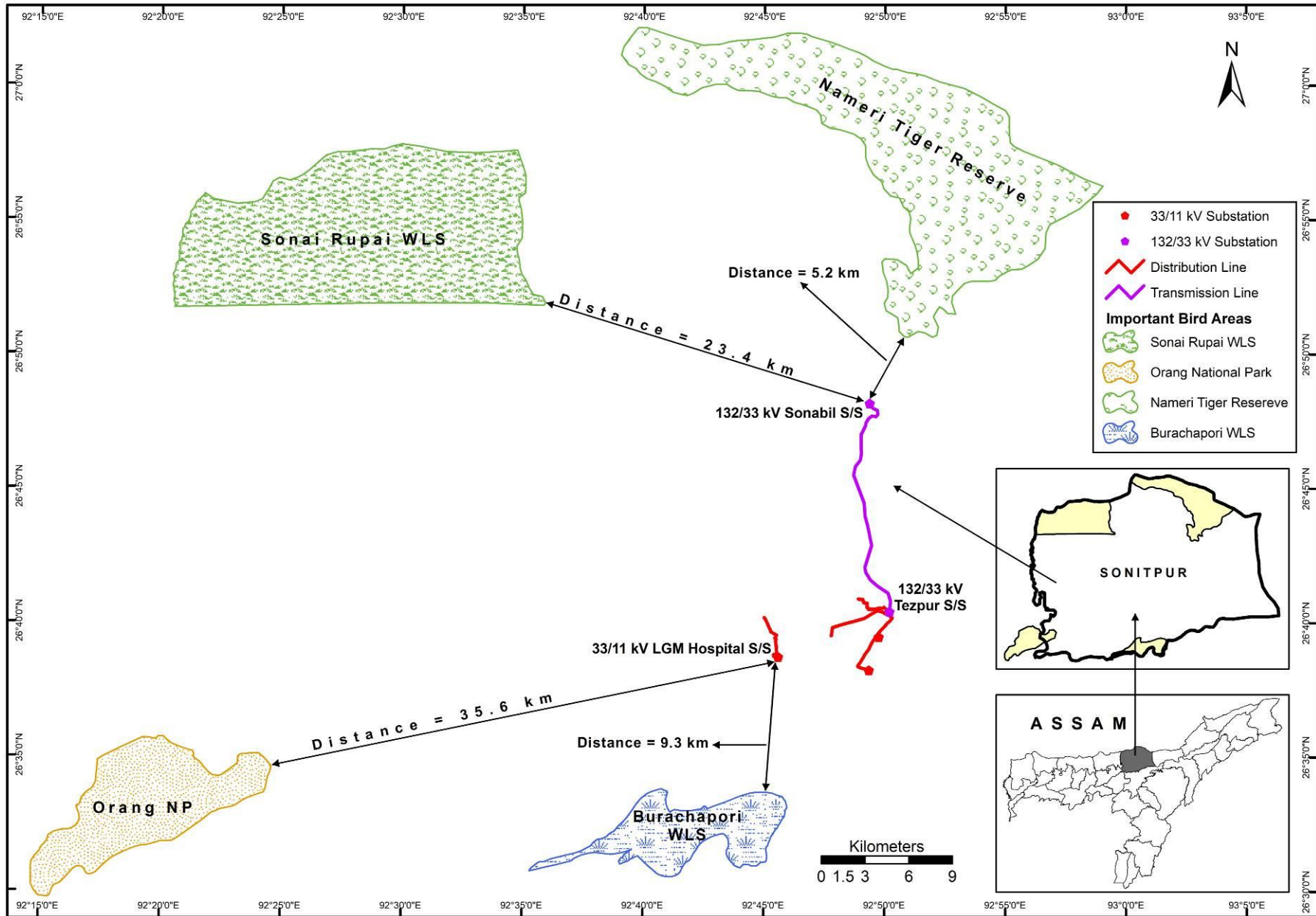


Figure 3.7: Map Showing IBAs w.r.t. Sub Project Locations in Sonitpur District

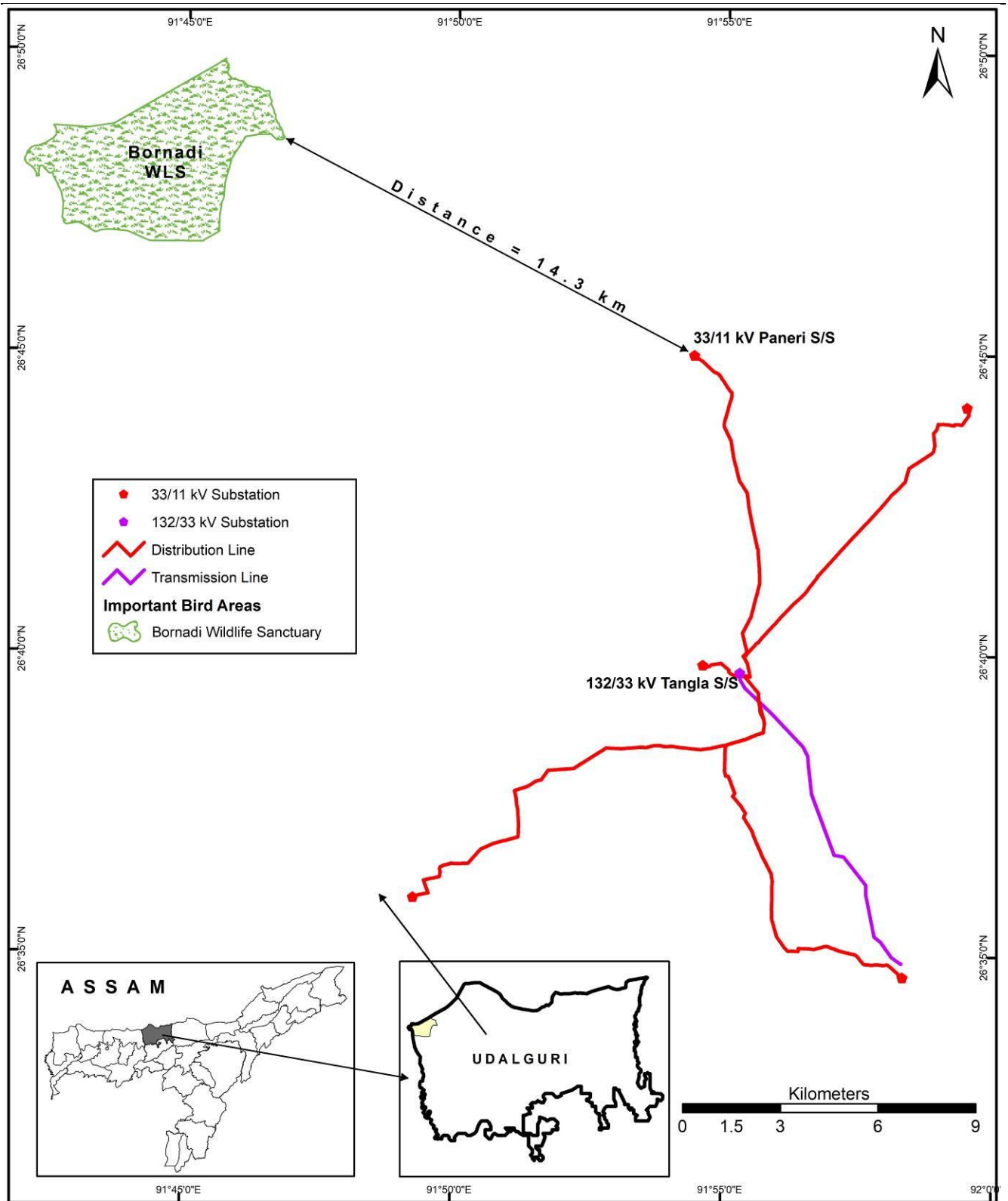


Figure 3.8: Map Showing IBAs w.r.t. Sub Project Locations in Udalguri District

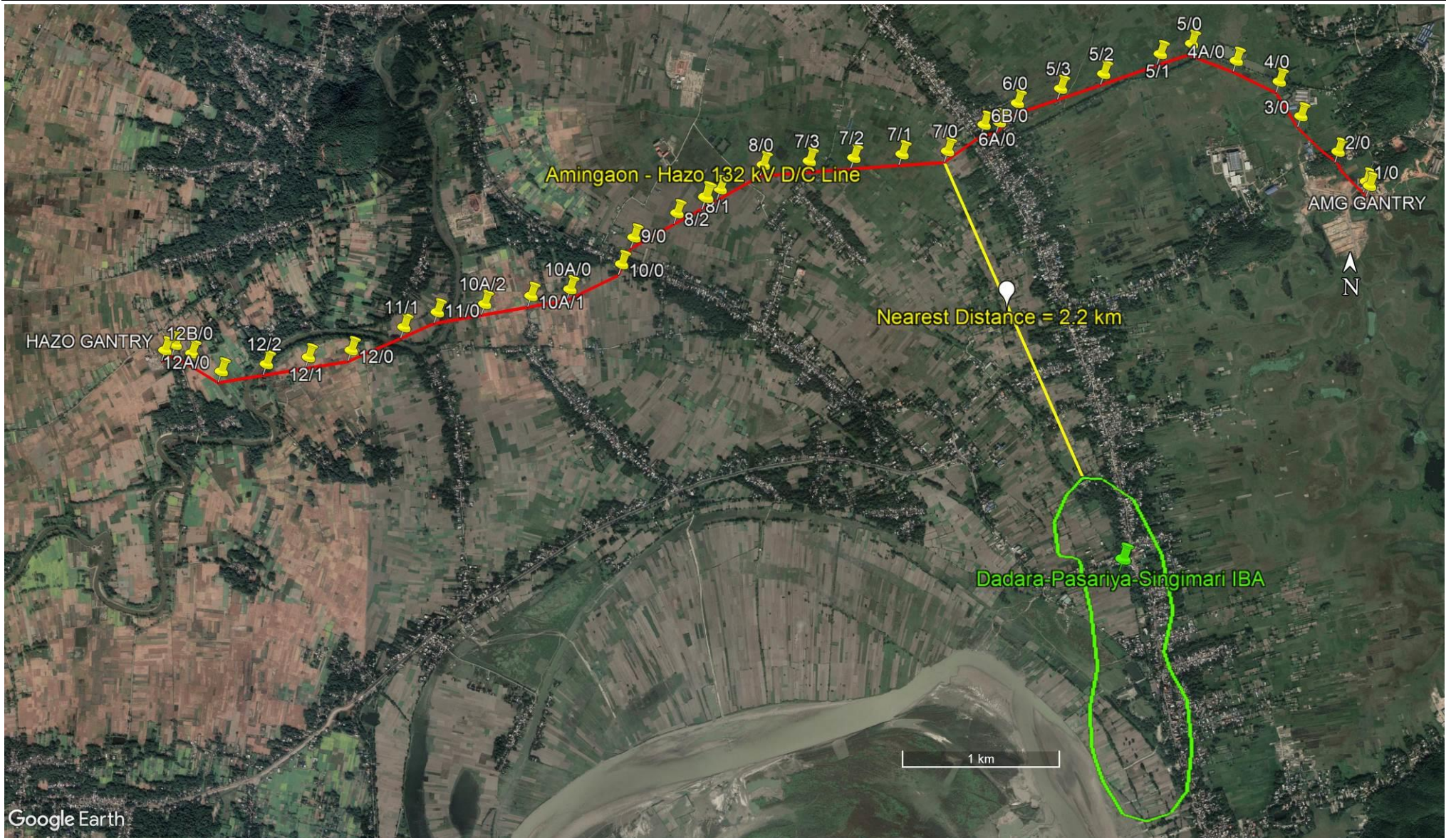


Figure 3.9: Google Imagery Showing IBA w.r.t. Sub Project Locations in Kamrup Rural District

3.6.6 Wetland

As per the National Wetland Atlas of Assam, there are total 5097 wetlands in the state. In addition, 6081 small wetlands (< 2.25 ha) have also been identified. Total wetland area estimated is 764372 ha that is around 9.74 per cent of the geographic area of the state. Natural wetlands dominate the state. The major wetland types are River/Stream accounting for 84% of the wetlands (637164 ha), Lake/Ponds (51257 ha), waterlogged (47141 ha) and Ox-bow lakes (14173 ha). There are two Reservoir/Barrages mapped with 2833 ha area, which is the major man made wetland type.

Important wetlands of the state include, Deepor beel, Dhir beel, Sareswar beel, Sone beel, Tamaranga beel and Sonai beel. None of the important wetlands falls in the study area districts. Hence, there will not be any impact of any magnitude on the wetlands due to the construction of subprojects.

3.7 SOCIO-ECONOMIC ENVIRONMENT

For sustainable development, it is important to understand social and economic conditions of the community in the region, impacts of development on the community, measures to mitigate negative impacts and enhance the positive impacts. For new development initiatives, socio economic assessment plays an important role to ensure community participation and their acceptance of the development activity. It also helps in planning the activities for local area development. The population of Assam as per census 2011 was 3,12,05,576 out of which 1,59,39,443 were males and 1,52,66,133 were females.

Sonitpur district has a population of 19,24,110. The district has a sex ratio of 956 female per 1000 male. The population of Schedule Caste and Schedule Tribes constitute 5.7% and 12.1% respectively of the total population. The literacy rate of the district stands at 67.3%, male and female literacy rate stands at 73.6% and 60.7% respectively (**Table 3.8**). Work participation rate is about 40%, out of which 69.7% are male workers and 30.3% are female workers. Among the total work force, 72.5% are Main Workers and 27.5% are Marginal Workers. Among main workers, 35.2% are cultivators and 9.1% are agricultural labourers, about 2.5% are household industrial workers and about 53.2% of work force is engaged in other than agricultural activities. Of the total population, 60% are non workers (**Table 3.9**).

Kamrup Rural district has a population of 15,17,542. The district has a sex ratio of 949 female per 1000 male. The population of Schedule Caste and Schedule Tribes constitute 7.1% and 12.0% respectively of the total population. The literacy rate of the district stands at 75.5%, male and female literacy rate stands at 81.3% and 69.5% respectively (**Table 3.8**). Work participation rate is about 41.4%, out of which 68.1% are male workers and 31.9% are female workers. Among the total work force, 67.0% are Main Workers and 33.0% are Marginal Workers. Among main workers, 35.5% are cultivators and 10.0% are agricultural labourers, about 7.0% are household industrial workers and about 47.5% of work force is engaged in other than agricultural activities. Of the total population, 58.6% are non workers (**Table 3.9**).

Udalguri district has a population of 8,31,668. The district has a sex ratio of 973 female per 1000 male. The population of Schedule Caste and Schedule Tribes constitute 4.6% and 32.1%

respectively of the total population. The literacy rate of the district stands at 65.4%, male and female literacy rate stands at 72.6% and 58.0% respectively (**Table 3.8**). Work participation rate is about 41.5%, out of which 66.9% are male workers and 33.1% are female workers. Among the total work force, 73.4% are Main Workers and 26.6% are Marginal Workers. Among main workers, 41.5% are cultivators and 14.3% are agricultural labourers, about 2.5% are household industrial workers and about 41.7% of work force is engaged in other than agricultural activities. Of the total population, 58.5% are non workers (**Table 3.9**).

Nalbari district has a population of 7,71,639. The district has a sex ratio of 949 female per 1000 male. The population of Schedule Caste and Schedule Tribes constitute 7.8% and 3.0% respectively of the total population. The literacy rate of the district stands at 78.6%, male and female literacy rate stands at 84.4% and 72.6% respectively (**Table 3.8**). Work participation rate is about 34.7%, out of which 78.5% are male workers and 24.5% are female workers. Among the total work force, 73.5% are Main Workers and 26.5% are Marginal Workers. Among main workers, 26.1% are cultivators and 10.0% are agricultural labourers, about 4.4% are household industrial workers and about 59.6% of work force is engaged in other than agricultural activities. Of the total population, 65.3% are non workers (**Table 3.9**).

Chapter 4

MAJOR FEATURES OF FINAL ROUTE

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, AEGCL/APDCL & IA at the system planning stage itself try to avoid ecological sensitive areas. 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 ENVIRONMENTAL CRITERIA FOR ROUTE SELECTION

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

- i. The route of the proposed lines does not involve any human rehabilitation.
- ii. Any monument of cultural or historical importance is not affected by the route of the line.
- iii. The proposed route does not create any threat to the survival of any community with special reference to Tribal Community.
- iv. The proposed route does not affect any public utility services like playgrounds, schools, other establishments etc.
- v. The line route does not pass through any sanctuaries, National Park etc.
- vi. 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 of concerned Forest Department and the Department of Revenue. Although under National law, AEGCL/APDCL has the right of eminent domain, yet alternative alignments are considered keeping in mind the above-mentioned factors during site selection, with minor alterations often added to avoid environmentally sensitive areas and settlements at execution stage.

- As a rule, alignments are generally cited away from major towns, whenever possible, to account for future urban expansion (refer **Figure 4.1 to Figure 4.17** for final route of all T&D network).
- 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, Tiger reserves, Biosphere reserves, Elephant corridors and IBA sites etc. Keeping above in mind the routes of proposed lines under the project have been so aligned that it takes care of 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:

- (i) The alignment of transmission line shall be most economical from the point of view of construction and maintenance.
- (ii) 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 then keeping in view of the overall economy, the route should be aligned in such a way that cutting of trees is minimum.
- (iii) The route should have minimum crossing of major rivers, railway lines, and national/state highways, overhead EHP power lines and communication lines.
- (iv) The number of angle point shall be kept to a minimum.
- (v) The distance between the terminal points specified shall be kept shortest possible, consistent with the terrain that is encountered.
- (vi) Marshy and low line areas, river beds and earth slip zones shall be avoided to minimum risk to the foundations.
- (vii) It would be preferable to utilize level ground for the alignment.
- (viii) 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.
- (ix) Crossings of communication lines shall be minimized and it shall be preferably at right angle, proximity and paralyses with telecom lines shall be eliminated to avoid danger of induction to them.
- (x) Area subjected to flooding searches streams shall be avoided.
- (xi) Restricted areas such as civil and military airfield shall be avoided. Care shall also be taken to avoid the aircraft landing approaches.
- (xii) All alignment should be easily accessible both in dry and rainy seasons to enable maintenance throughout the year.
- (xiii) Certain areas such as quarry sites, tea, tobacco and saffron fields and rich plantation, gardens and nurseries that will present the owner problems in of right of way and leave clearance during construction and maintenance should be avoided.
- (xiv) 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.
- (xv) The line routing should avoid large habitation densely populated areas to the extent possible.

- (xvi) The area requires special foundations and those prone to flooding should be avoided.
- (xvii) 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.
- (xviii) 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 flythrough 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.
- (xix) Final digitized route alignment drawing with the latest topographical and other details/features including all river railway lines, canals, roads etc. up to 8 Kms on both side of selected route alignment shall be submitted by the contractors for owner's approval along with report containing other information / details as mentioned above.

The route finalized after detailed survey by contractor follows all the environmental criteria laid down for consideration of route selection. The major features encountered in the finalized route are elaborated in the ensuing paragraphs.

4.2.1 Transmission Line

The transmission line scope includes following subproject:

- i. Rangia (existing) – Amingaon (new) 220 kV D/C line – 28.665 km
- ii. Amingaon (new) – Hazo (new) 132 kV D/C line – 8.605 km
- iii. Sonabil (existing) – Tezpur (new) 132 kV D/C line – 15.992 km
- iv. LILO of one circuit of Rangia – Rowta 132 kV D/C line at Tangla – 10.876 km
- v. LILO of one circuit of Kamalpur – Sishugram 132 kV S/C line at Amingaon – 9.344 km
- vi. LILO of one circuit of Kamalpur – Kamakhya 132 kV S/C line at Amingaon – 9.344 km

In the instant project also, criteria for route selection as mentioned above, has been duly adhered to and all the proposed lines 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 some 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/ minimizing forest/private plantation areas, settlements, Common Property Resource (CPR), and also considering the technical feasibility of the route from operation and maintenance point of view in consultation with the local village councils prevalent in the project area. Efforts of IA/ AEGCL/APDCL in effectively integrating safeguard

and engineering measures successfully minimized impact on forest and environment. For changes in scope of work with respect to IEAR scope i.e. changes in the route alignment based upon alternatives studies and detailed survey for transmission line is given in **Table 4.1**. Final route alignment of the all transmission lines are given at **Figure 4.1** to **Figure 4.5**.

Table 4.1: Change in Scope of Work of Transmission Lines w.r.t. IEAR

S. No.	Scope as per IEAR	Current Status	Justification/ Remarks
1	Rangia (existing) – Amingaon (new) 220 kV D/C line – 30 km	Rangia (existing) – Amingaon (new) 220 kV D/C line – 28.665 km	<p>Change in current status is due to the change in route as location of 220/132 kV Amingaon GIS substation has been changed as land owner & AEGCL/APDCL could not reach a common agreement.</p> <p>With the change in substation location length of line was decreased by 1.335 km.</p> <p>All the criteria for route selection as mentioned above, has been duly adhered to during finalization of this new route.</p>
2	Amingaon (new) – Hazo (new) 132 kV D/C line – 18.49 km	Amingaon (new) – Hazo (new) 132 kV D/C line – 8.605 km	<p>Change in current status is due to the change in route as location of 220/132 kV Amingaon GIS substation has been changed as land owner & AEGCL/APDCL could not reach a common agreement.</p> <p>With the change in substation location length of line was decreased by 9.885 km.</p> <p>All the criteria for route selection as mentioned above, has been duly adhered to during finalization of this new route.</p>
3	Sonabil (existing) – Tezpur (new) 132 kV D/C line – 13.33 km	Sonabil (existing) – Tezpur (new) 132 kV D/C line – 15.992 km	<p>Change in current status is due to the change in route as location of 132/33 kV Tezpur substation has been changed as land owner & AEGCL/APDCL could not reach a common agreement.</p> <p>With the change in substation location length of line was increased by 2.662 km.</p> <p>Although there is a slight increase in the route length, however, all the criteria for route selection as mentioned above, has been duly adhered to.</p>
4	LILO of one circuit of Rangia – Rowta 132 kV D/C line at Tangla – 7 km	LILO of one circuit of Rangia – Rowta 132 kV D/C line at Tangla – 10.876 km	<p>Change in current status is due to the change in route as location of 132/33 kV Tangla substation has been changed as land owner & AEGCL/APDCL could not reach a common agreement.</p> <p>With the change in substation location length of line was increased by 3.876 km.</p>

S. No.	Scope as per IEAR	Current Status	Justification/ Remarks
			Although there is a substantiate increase in the route length, however, all the criteria for route selection as mentioned above, has been duly adhered to.
5	LILO of one circuit of Kamalpur – Sishugram 132 kV S/C line at Amingaon – 0.6 km	LILO of one circuit of Kamalpur – Sishugram 132 kV S/C line at Amingaon – 9.344 km	<p>Change in current status is due to the change in route as location of 220/132 kV Amingaon GIS substation has been changed as land owner & AEGCL/APDCL could not reach a common agreement. Also, to avoid the no. of crossing and RoW issues, tapping point of the LILO was changed, hence, route of the line was changed.</p> <p>Due to the changes length of line was increased by 8.744 km.</p> <p>Route has been changed so as to avoid crossings and avoid RoW issued and also to adhere all the criteria for route selection so as to minimize environmental and social impacts.</p>
6	LILO of one circuit of Kamalpur – Kamakhya 132 kV S/C line at Amingaon – 0.8 km	LILO of one circuit of Kamalpur – Kamakhya 132 kV S/C line at Amingaon – 9.344 km	Except for towers erected for tapping and at gantry, the lines mentioned at S. No. 5 and S. No. 6 are aligned on composite tower with multi circuit. Hence this length of 9.344 km is common for both the lines.

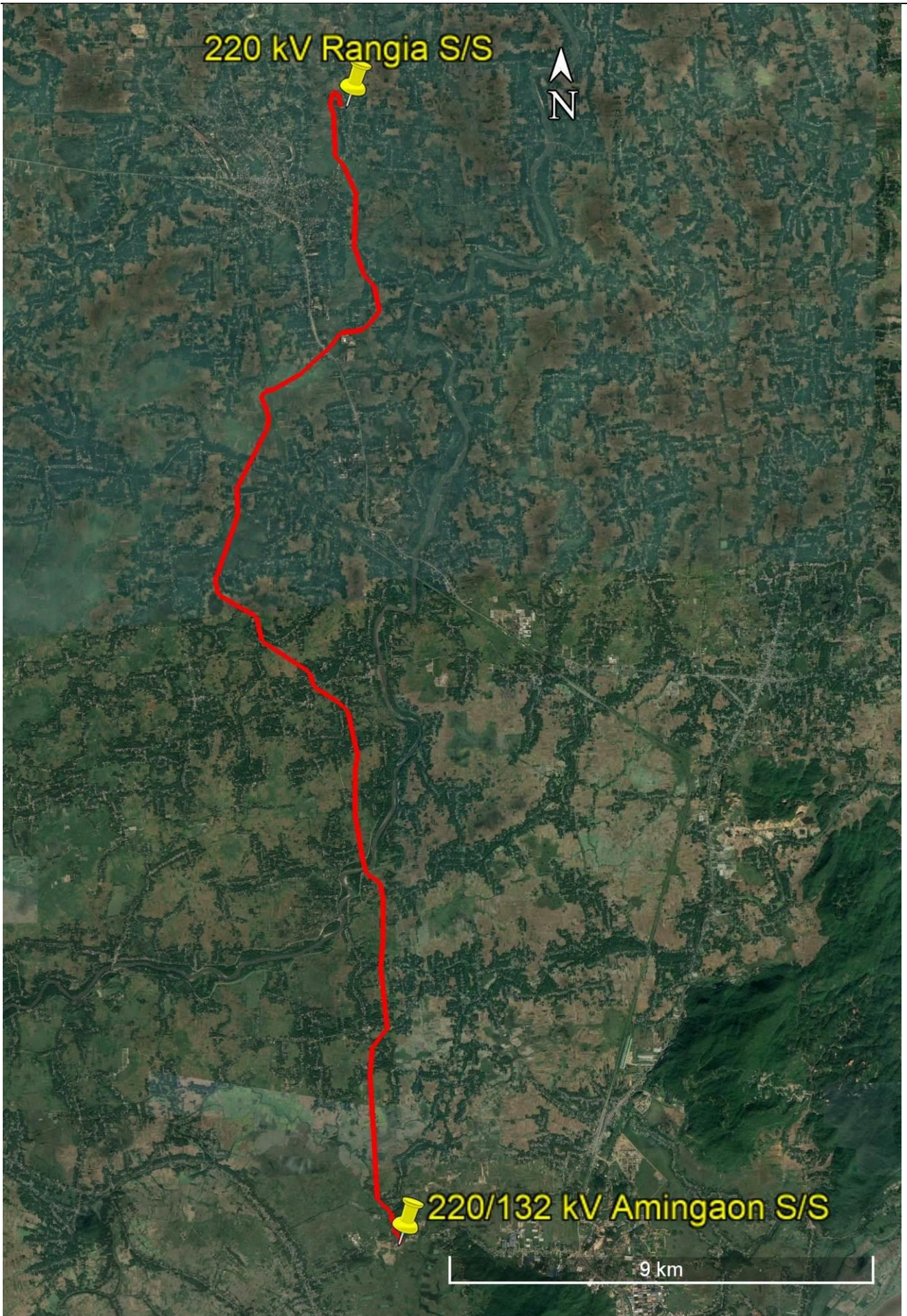


Figure 4.1: Satellite Imagery Showing Route of Rangia (existing) – Amingaon (new) 220 kV D/C Line



Figure 4.2: Satellite Imagery Showing Route of Amingaon (new) – Hazo (new) 132 kV D/C Line

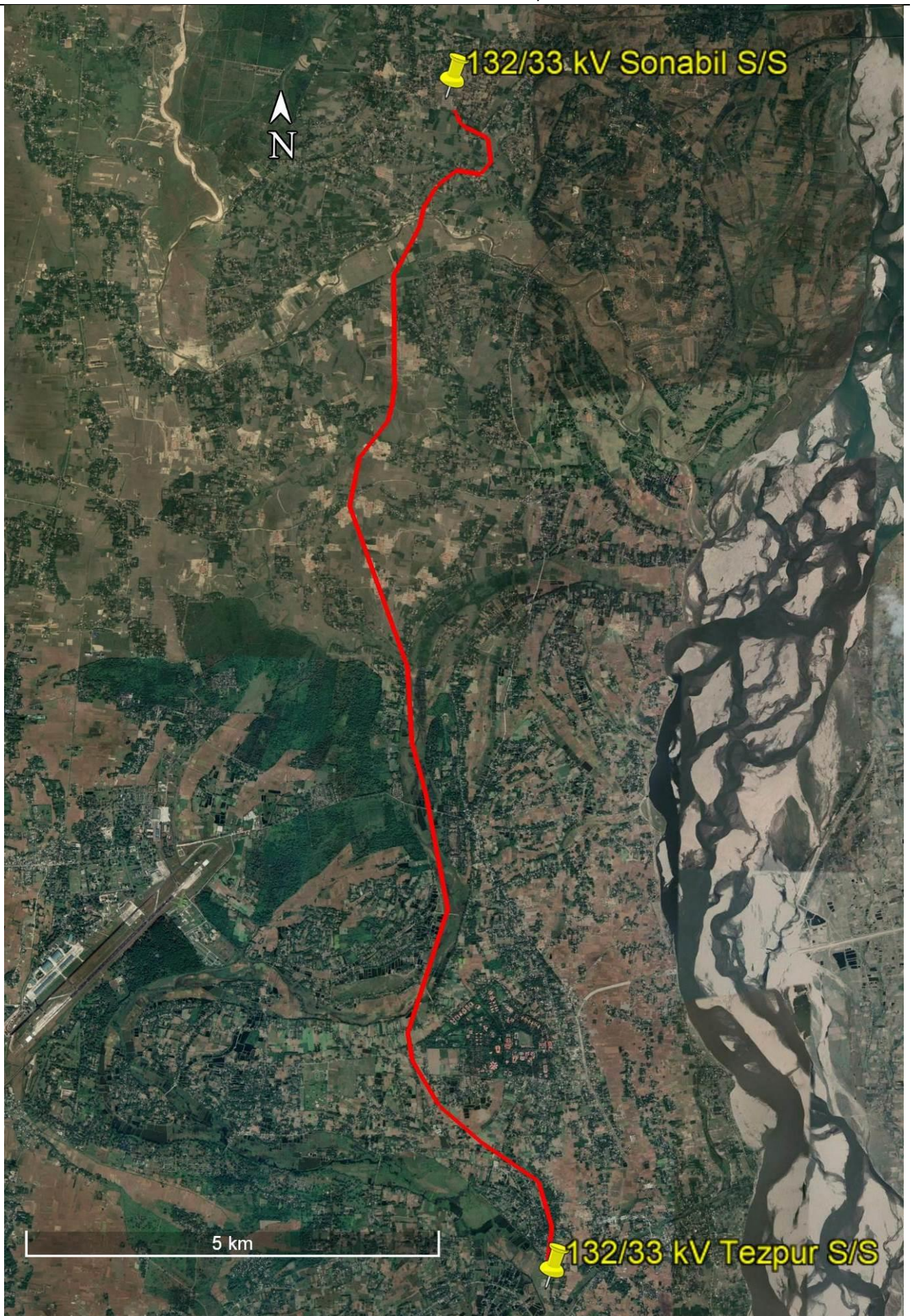


Figure 4.3: Satellite Imagery Showing Route of Sonabil (existing) – Tezpur (new) 132 kV D/C Line



Figure 4.4: Satellite Imagery Showing Route of LIL0 of one circuit of Rangia – Rowta 132 kV D/C Line at Tangla

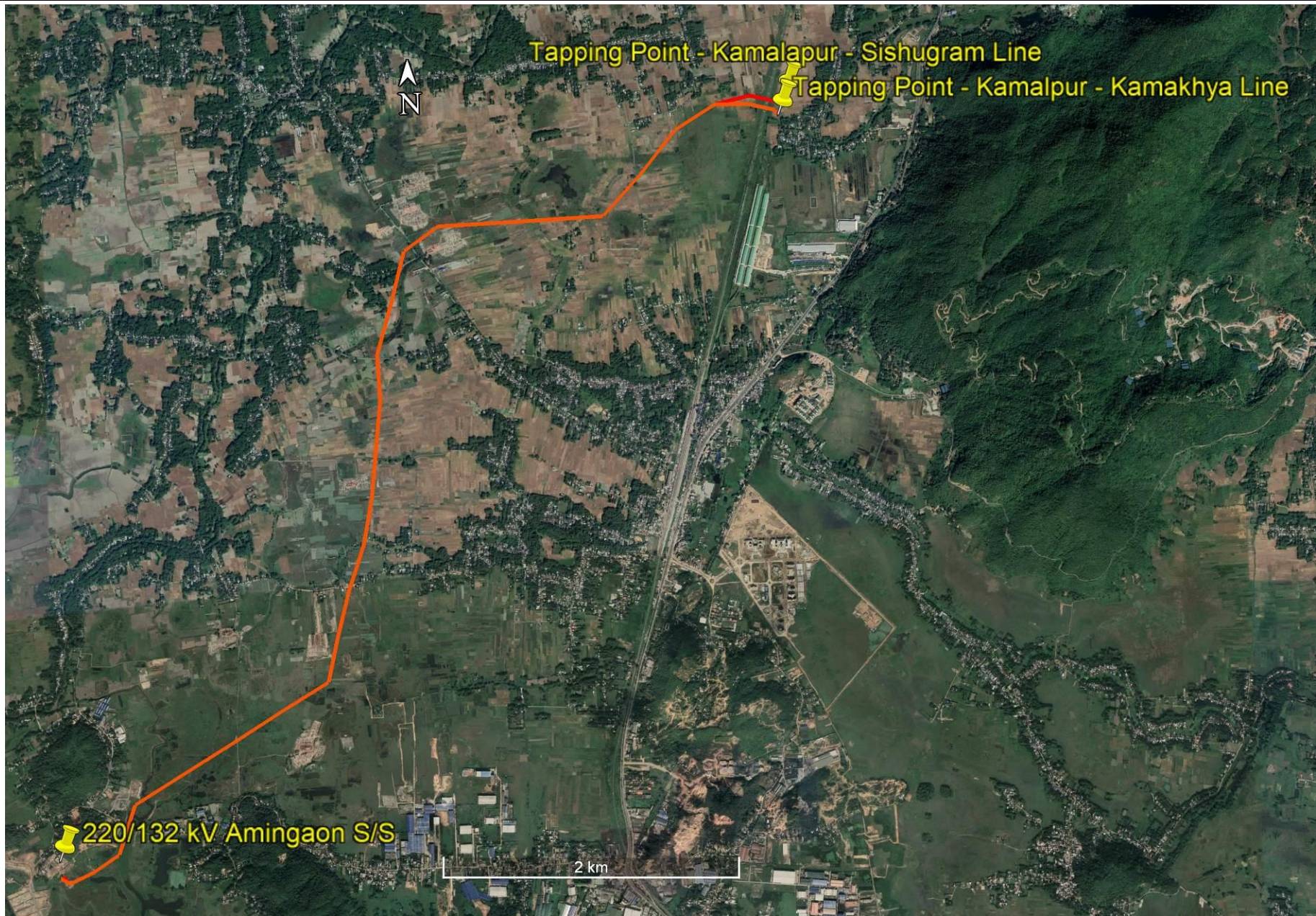


Figure 4.5: Satellite Imagery Showing Route of LILO of one circuit of Kamalpur – Sishugram and Kamalpur – Kamakhya 132 kV S/C Lines at Amingaon

4.2.2 Distribution Lines

The distribution line scope includes following subprojects:

- i. 33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Mukalmuwa (existing) S/S – 29.178 km;
- ii. 33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Khairabari (existing) S/S – 16.325 km;
- iii. 33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Sesa (new) S/S – 6.55 km;
- iv. 33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Ramdiya (new) S/S – 8.687 km;
- v. 33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Domdoma-Hazo (new) S/S – 11.172 km;
- vi. 33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Harisingha (new) S/S – 12.094 km;
- vii. 33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Paneri (existing) S/S – 11.019 km;
- viii. 33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Kalaigaon (existing) S/S – 14.137 km;
- ix. 33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Tangla (existing) S/S – 1.341 km;
- x. 33 kV line from 132/33 kV Tezpur (new) S/S to 33/11 kV LGM Hospital (new) S/S – 6.759 km;
- xi. 33 kV line from 132/33 kV Tezpur (new) S/S to 33/11 kV Parowa (existing) S/S – 4.891 km;
- xii. 33 kV line from 132/33 kV Tezpur (new) S/S to 33/11 kV Dolabari (existing) S/S – 5.630 km.

Distribution lines not exceeding 10 kms and intending for providing power supply to the predestined areas have negligible environmental and social impacts. Hence alternative analysis study is not required for these lines. However, for distribution lines having line length of more than 10 kms, details of alternative route alignment study has been carried out. Here also, criteria for route selection as mentioned above, has been duly adhered to and the proposed distribution lines having length of more than 10 km 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). For changes in scope of work with respect to IEAR scope i.e. changes in the route alignment based upon alternatives studies and detailed survey for distribution line is given in **Table 4.2**. Final route alignment of the all distribution lines are given at **Figure 4.6** to **Figure 4.17**.

Table 4.2: Change in Scope of Work of Distribution Lines w.r.t. IEAR

S. No.	Scope as per IEAR	Current Status	Justification/ Remarks
1	33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Mukalmuwa (existing) S/S – 21.1 km	33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Mukalmuwa (existing) S/S – 29.178 km	Route of the line was changed so as to avoid the RoW issues and minimize environmental and social impacts. Although route length was increased by 8.078 km, however, all the criteria for route selection as mentioned above, has been duly adhered to.
2	33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Khairabari (existing) S/S – 13.7 km	33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Khairabari (existing) S/S – 16.325 km	Change in current status is due to the change in route as location of 132/33 kV Tangla substation has been changed as land owner & AEGCL/APDCL could not reach a common agreement. Although route length was increased by 2.625 km,

S. No.	Scope as per IEAR	Current Status	Justification/ Remarks
			however, all the criteria for route selection as mentioned above, has been duly adhered to.
3	33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Sesa (new) S/S – 4.39 km	33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Sesa (new) S/S – 6.55 km	Change in current status is due to the change in route as location of 33/11 kV Sesa substation has been slightly changed as land owner & AEGCL/APDCL could not reach a common agreement. Also, route of the line was changed so as to avoid the RoW issues and minimize environmental and social impacts. Although route length was increased by 2.16 km, however, all the criteria for route selection as mentioned above, has been duly adhered to.
4	33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Ramdiya (new) S/S – 8.92 km	33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Ramdiya (new) S/S – 8.687 km	Change in current status is due to the change in route as location of 33/11 kV Ramdiya substation has been slightly changed as land owner & AEGCL/APDCL could not reach a common agreement. The change in substation location resulted in reduction of line length by 0.233 km. As a result environmental and social footprints were also reduced.
5	33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Domdoma-Hazo (new) S/S – 3.3 km	33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Domdoma-Hazo (new) S/S – 11.172 km	Change in current status is due to the change in route as location of 33/11 kV Domdoma Hazo substation has been completely changed as land owner & AEGCL/APDCL could not reach a common agreement. The change in substation location resulted in massive increase of line length by 7.872 km. However, all the criteria for route selection as mentioned above, has been duly adhered to.
6	33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Harisingha (new) S/S – 9.3 km	33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Harisingha (new) S/S – 12.094 km	Change in current status is due to the change in route as location of 132/33 kV Tangla and 33/11 kV Harisingha substations has been slightly changed as land owner & AEGCL/APDCL could not reach a common agreement. The change in substation locations resulted in substantiate increase of line length by 2.794 km. However, all the criteria for route selection as mentioned above, has been duly adhered to.
7	33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Paneri (existing) S/S – 6.6 km	33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Paneri (existing) S/S – 11.019 km	Change in current status is due to the change in route as location of 132/33 kV Tangla substation has been slightly changed as land owner & AEGCL/APDCL could not reach a common agreement. Also, route of the line was changed so as to avoid the RoW issues and minimize environmental and social impacts.

S. No.	Scope as per IEAR	Current Status	Justification/ Remarks
			The change in substation location and route alignment resulted in substantiate increase of line length by 4.419 km. However, all the criteria for route selection as mentioned above, has been duly adhered to.
8	33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Kalaigaon (existing) S/S – 9.11 km	33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Kalaigaon (existing) S/S – 14.137 km	<p>Change in current status is due to the change in route as location of 132/33 kV Tangla substation has been slightly changed as land owner & AEGCL/APDCL could not reach a common agreement. Also, route of the line was changed so as to avoid the RoW issues and minimize environmental and social impacts.</p> <p>The change in substation location and route alignment resulted in substantiate increase of line length by 5.027 km. However, all the criteria for route selection as mentioned above, has been duly adhered to.</p>
9	33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Tangla (existing) S/S – 5.1 km	33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Tangla (existing) S/S – 1.341 km	<p>Change in current status is due to the change in route as location of 132/33 kV Tangla substation has been slightly changed as land owner & AEGCL/APDCL could not reach a common agreement.</p> <p>The change in substation location and further optimization during detailed survey resulted in reduction of line length by 3.759 km. As a result environmental and social footprints were also reduced.</p>
10	33 kV line from 132/33 kV Tezpur (new) S/S to 33/11 kV LGM Hospital (new) S/S – 8.8 km	33 kV line from 132/33 kV Tezpur (new) S/S to 33/11 kV LGM Hospital (new) S/S – 6.759 km	<p>Change in current status is due to the change in route as location of 33/11 kV LGM substation has been completely changed as land owner & AEGCL/APDCL could not reach a common agreement.</p> <p>Due to this change of substation location, the original route involved many crossings and RoW issues, hence the route was divided into 2 parts. First part comprises of 3.633 km of line from 33/11 kV LGM Hospital to the existing 132/33 kV Dipota substation. Second part comprises of 3.126 km of line from 132/33 kV Tezpur new substation to 33 kV Tezpur-Tezpur University D/C line.</p> <p>These changes resulted in reduction of line length by 2.041 km. As a result environmental and social footprints were also reduced.</p>
11	33 kV line from 132/33 kV Tezpur	33 kV line from 132/33 kV Tezpur (new) S/S to	Change in current status is due to the change in route as location of 132/33 kV Tezpur substation

S. No.	Scope as per IEAR	Current Status	Justification/ Remarks
	(new) S/S to 33/11 kV Parowa (existing) S/S – 3.7 km	33/11 kV Parowa (existing) S/S – 4.891 km	<p>has been slightly changed as land owner & AEGCL/APDCL could not reach a common agreement. Also, route of the line was changed so as to avoid the RoW issues and minimize environmental and social impacts.</p> <p>The change in substation location and route alignment resulted in slight increase of line length by 1.191 km. However, all the criteria for route selection as mentioned above, has been duly adhered to.</p>
12	33 kV line from 132/33 kV Tezpur (new) S/S to 33/11 kV Dolabari (existing) S/S – 4.7 km	33 kV line from 132/33 kV Tezpur (new) S/S to 33/11 kV Dolabari (existing) S/S – 5.630 km	<p>Change in current status is due to the change in route as location of 132/33 kV Tezpur substation has been slightly changed as land owner & AEGCL/APDCL could not reach a common agreement. Also, route of the line was changed so as to avoid the RoW issues and minimize environmental and social impacts.</p> <p>The change in substation location and route alignment resulted in slight increase of line length by 0.93 km. However, all the criteria for route selection as mentioned above, has been duly adhered to.</p>

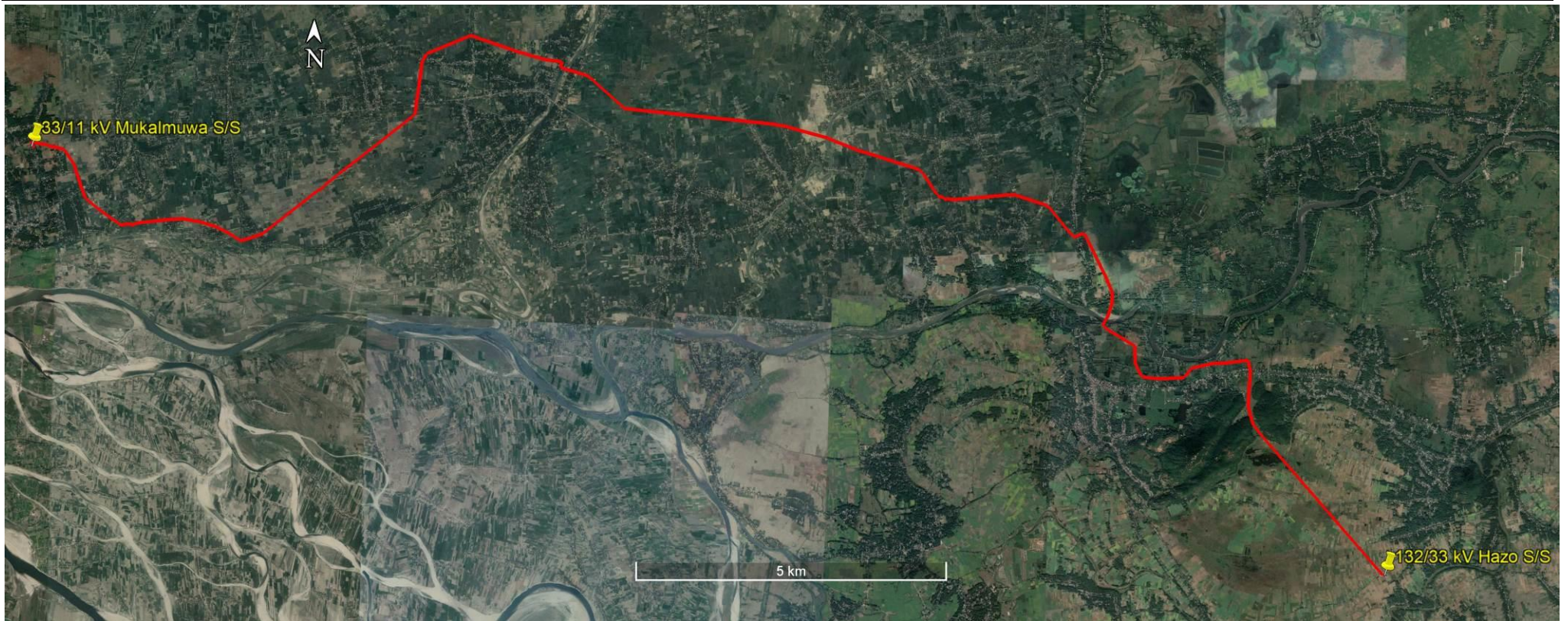


Figure 4.6: Satellite Imagery Showing Route of 33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Mukalmuwa (existing) S/S

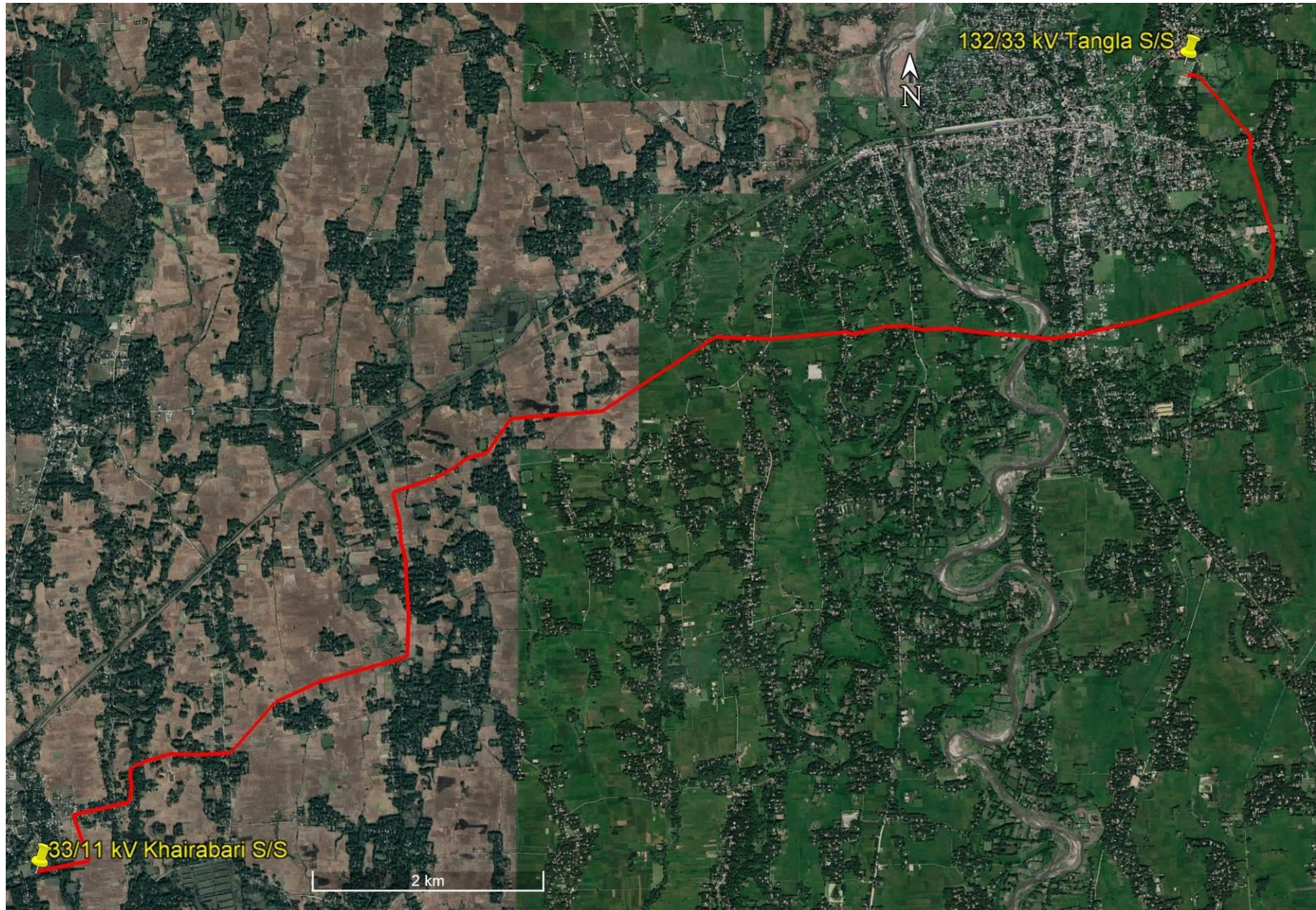


Figure 4.7: Satellite Imagery Showing Route of 33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Khairabari (existing) S/S



Figure 4.8: Satellite Imagery Showing Route of 33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Sesa (new) S/S



Figure 4.9: Satellite Imagery Showing Route of 33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Ramdiya (new) S/S

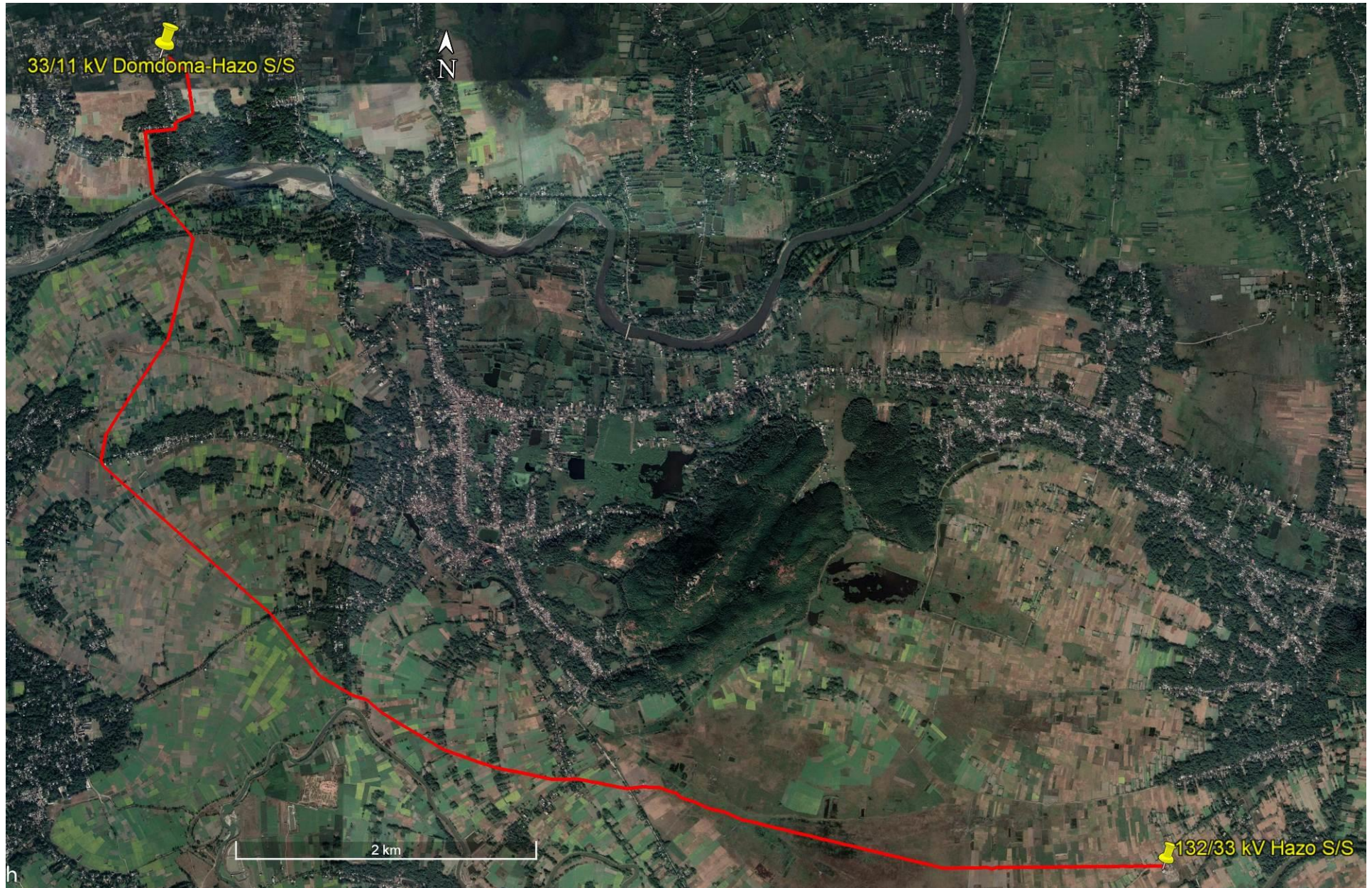


Figure 4.10: Satellite Imagery Showing Route of 33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Domdoma-Hazo (new) S/S

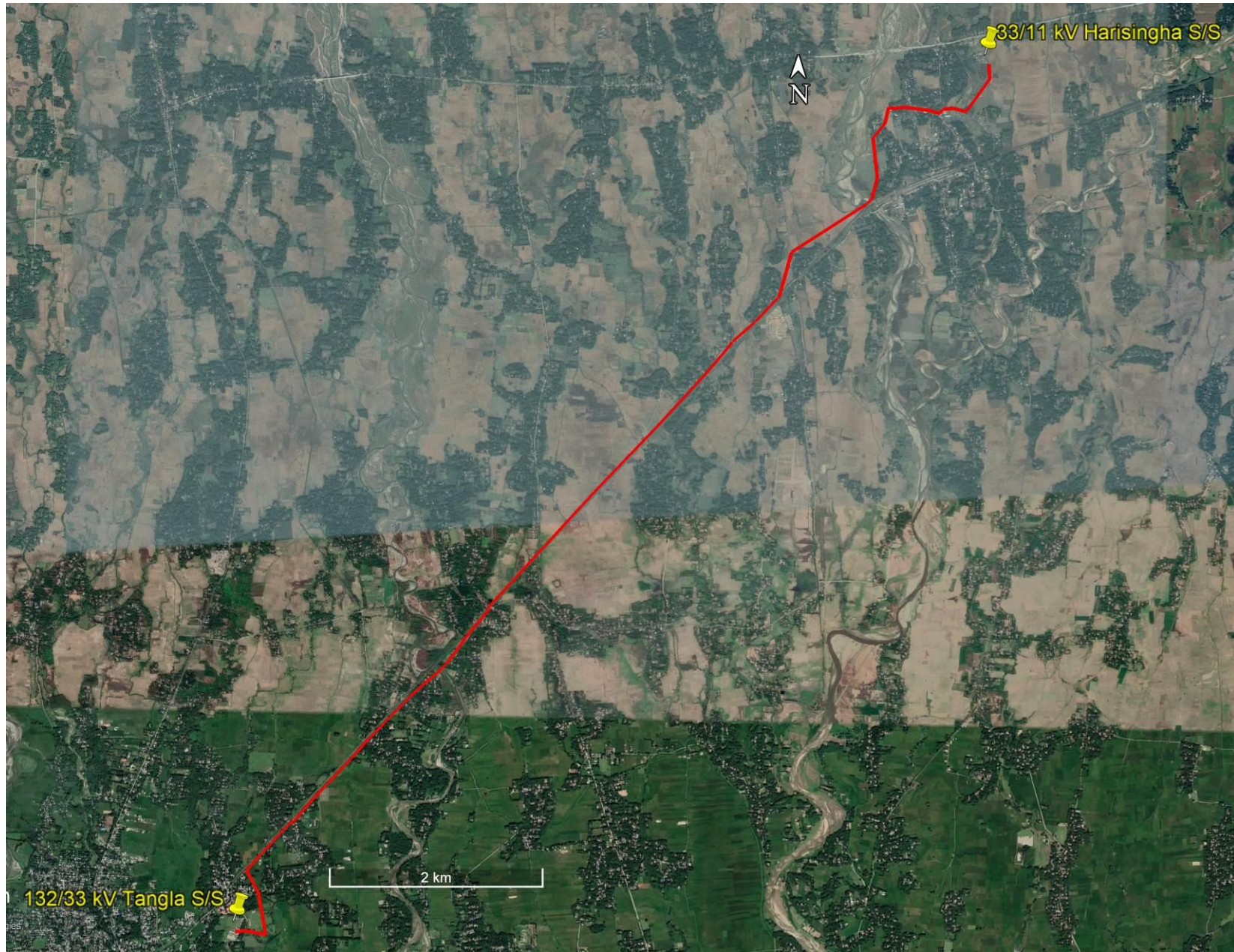


Figure 4.11: Satellite Imagery Showing Route of 33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Harisingha (new) S/S



Figure 4.12: Satellite Imagery Showing Route of 33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Paneri (existing) S/S

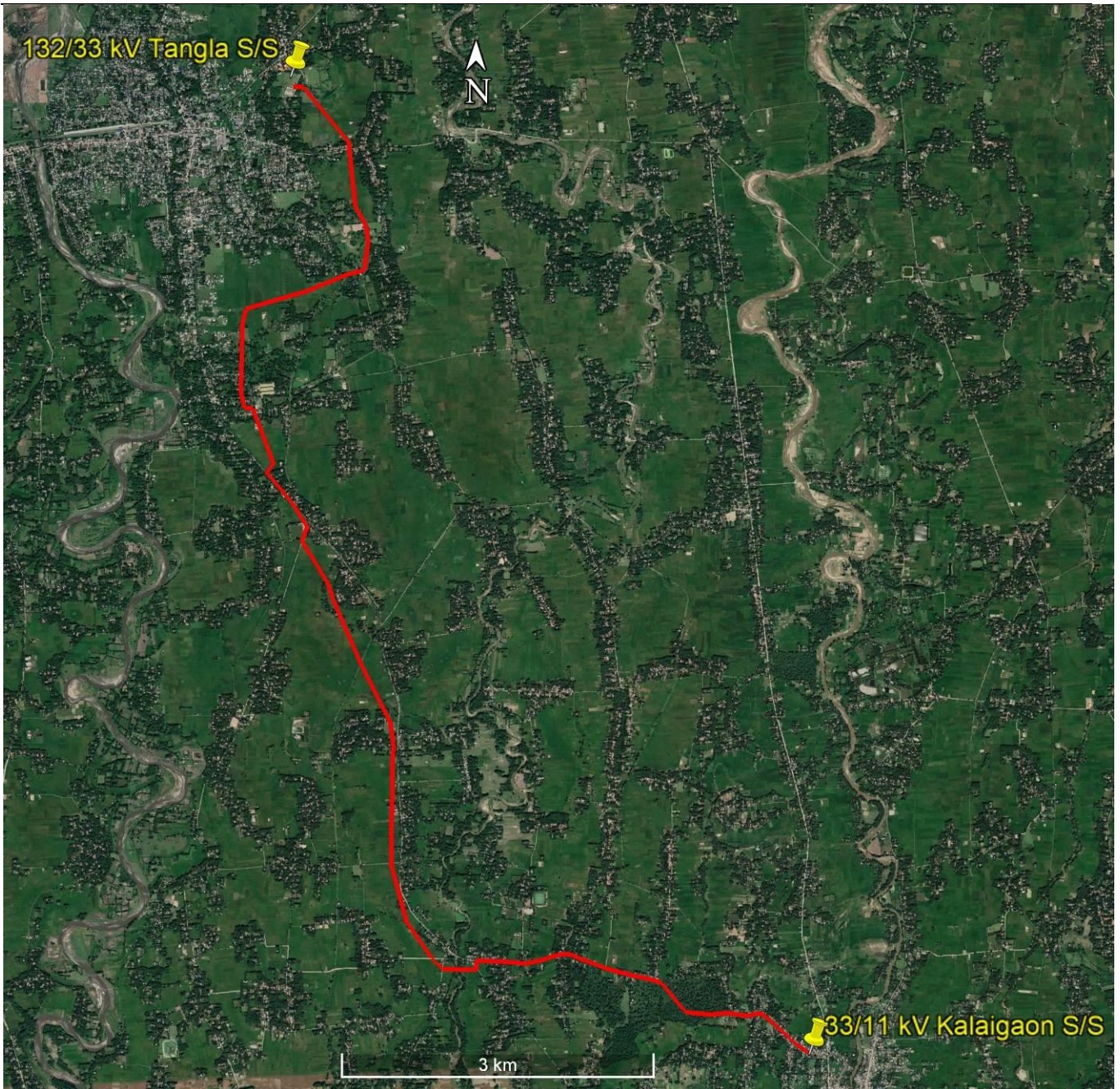


Figure 4.13: Satellite Imagery Showing Route of 33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Kalaigaon (existing) S/S



Figure 4.14: Satellite Imagery Showing Route of 33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Tangla (existing) S/S



Figure 4.15: Satellite Imagery Showing Route of 33 kV line from 132/33 kV Tezpur (new) S/S to 33/11 kV LGM Hospital (new) S/S



Figure 4.16: Satellite Imagery Showing Route of 33 kV line from 132/33 kV Tezpur (new) S/S to 33/11 kV Parowa (existing) S/S

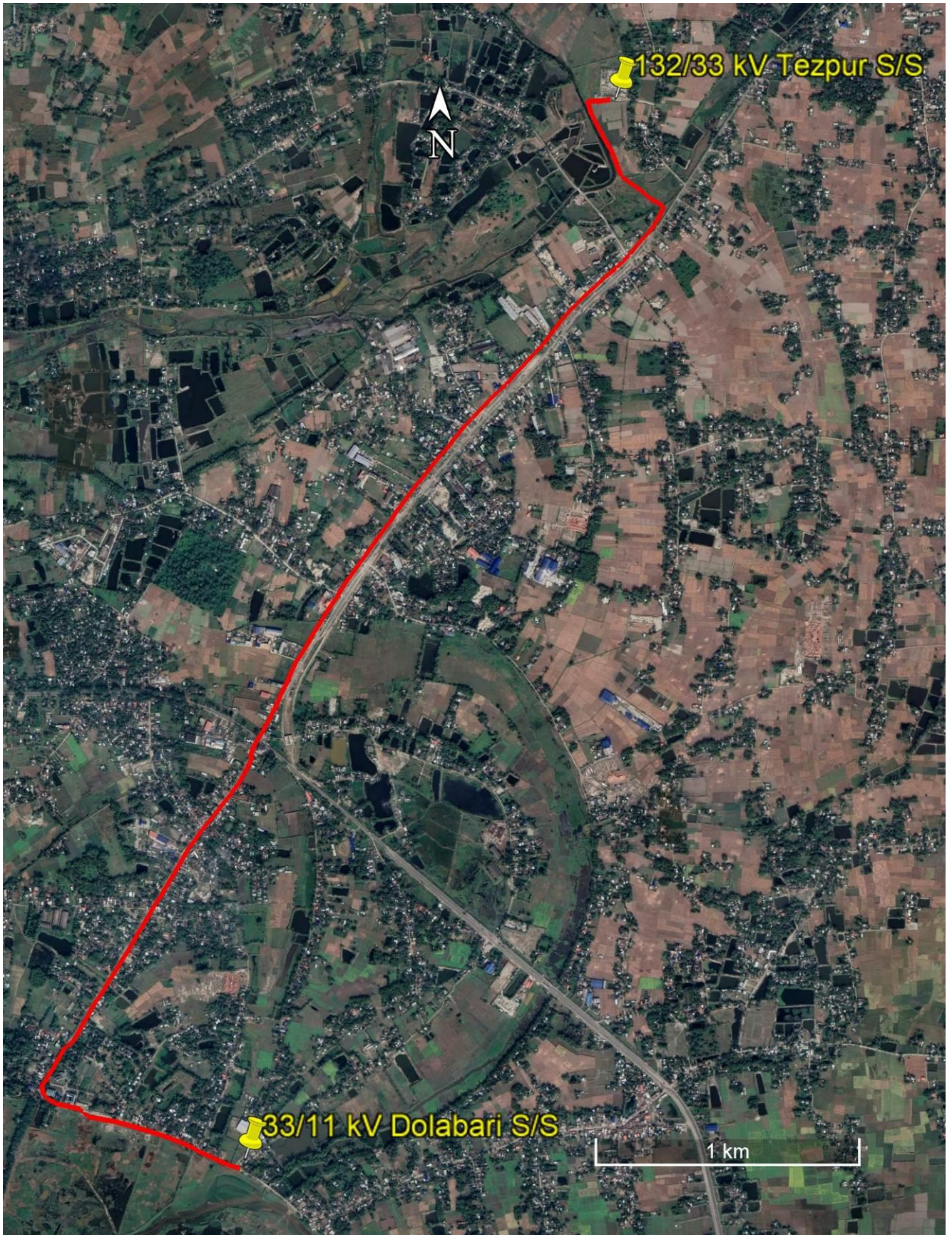


Figure 4.17: Satellite Imagery Showing Route of 33 kV line from 132/33 kV Tezpur (new) S/S to 33/11 kV Dolabari (existing) S/S

4.2.3 Sub-stations

For sub-station, site selection analysis of 2-3 alternatives sites is usually carried out based on environment and social aspects and technical requirement. Such analysis considers various site-specific parameters that include availability of infrastructure facilities such as access roads, water, distance from railheads, type of land (Government/ revenue/private land); social impacts such as number of families getting affected; CPR including feasibility of acquisition. The finalization of substation land is done based on above analysis and site visit/verification. The social aspects are provided due weightage after technical requirement in decision making for selection/finalization of land for substation.

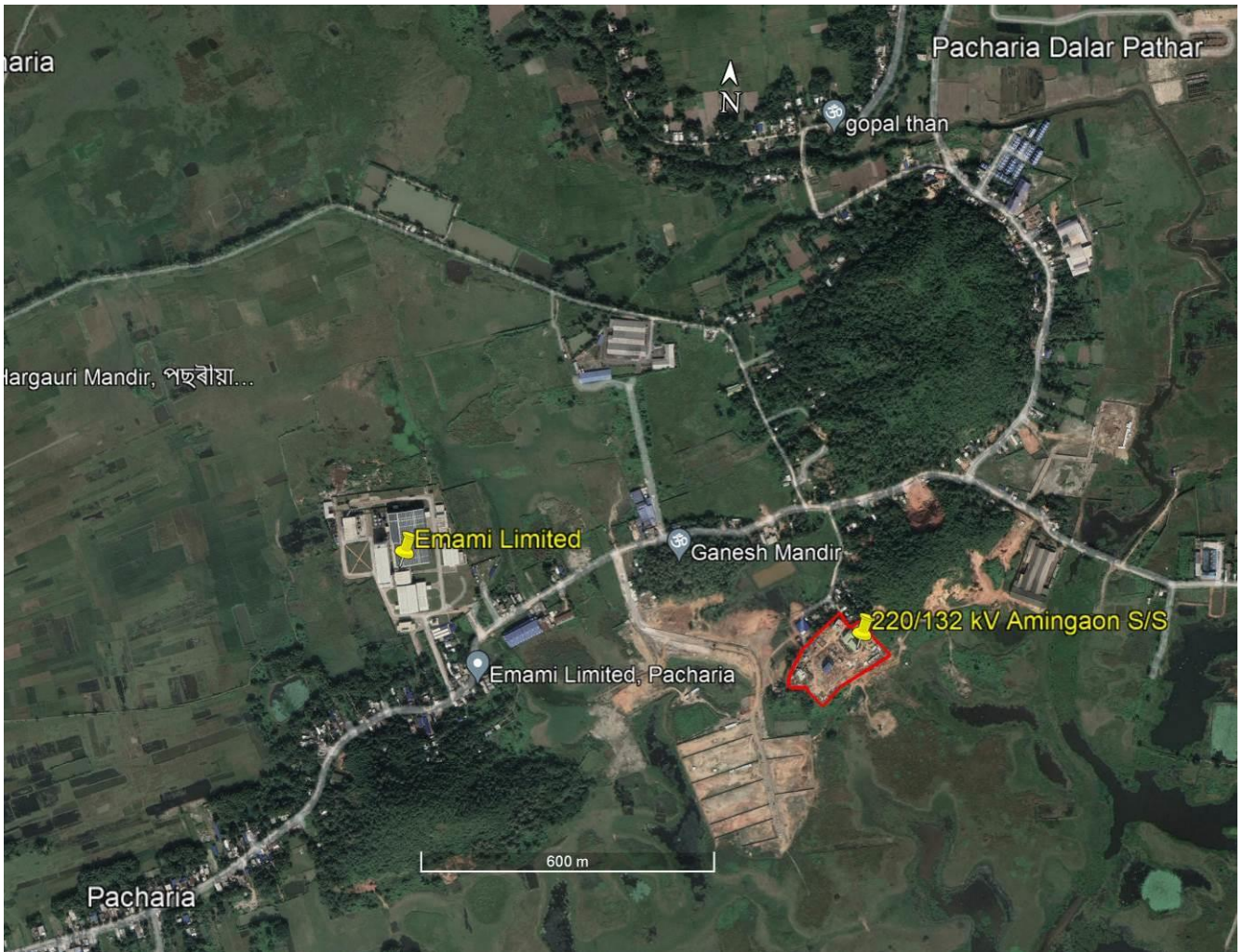
In the instant case also land for all the proposed substations, purchased on willing seller – willing buyer basis were acquired as per above mentioned analysis and site visit/ verification. Also, as per the provisions of ESPPF, all land directly purchased were reviewed/ approved by a broad-based committee comprising representatives of different sections including those from the IA and Govt. of Assam. The ownership of all the finalized location has been transferred to the AEGCL. The finalized location of transmission and distribution substations is given below in **Table 4.3**.

Table 4.3: Finalized Location of Transmission & Distribution Substation

S. No.	Name of Substation	Earlier Identified Land as per IEAR	Finalized Land (Actual)	Reason for Change
A	Transmission Substation			
1	220/132 kV GIS substation at Amingaon (New)	Located at Katamura Gaon under Sangsari Police Station under Kamrup (Rural) district. Location is appx. 2 km from the DC Office, Kamrup (Rural) Co-ordinates: 26°14'11.77" N, 91°42'19.99" E	Shifted to Pacharia Dalar Pathar village. Around 1.1 km towards east from Emami Limited, Pacharia. Co-ordinates: 26°14'10.75" N, 91°39'1.58" E	Land owner & AEGCL/APDCL could not reach a common agreement.
2	132/33 kV substation at Hazo (New)	Located at Kulhati along the Kulhati-Bongsar PWD road. The location is appx 4/5 km from the main Hazo town/market area Co-ordinates: 26°13'31.30" N, 91°34'24.39" E	Located at Kulhati along the Kulhati-Bongsar PWD road. The location is appx 4/5 km from the main Hazo town/market area. Co-ordinates: 26°13'31.30" N, 91°34'24.39" E	No change
3	132/33 kV substation at Tezpur (New)	Located at Jahaj duba gaon under Tezpur Revenue Circle, Dist: Sonitpur. Co-ordinates: 26°41'12.78" N,	Located at No. 2 Dolabari under Tezpur Revenue Circle, Dist: Sonitpur. Around 370 m towards north from Dolabari Panchmile Napam Road.	Land owner & AEGCL/APDCL could not reach a common agreement.

S. No.	Name of Substation	Earlier Identified Land as per IEAR	Finalized Land (Actual)	Reason for Change
		92°50'39.33" E	Co-ordinates: 26°40'25.05" N, 92°50'12.58" E	
4	132/33 kV substation at Tangla (New)	Located at Uttar Jangalpara village which is appx 3 KM from the Tangla Rly Station. Co-ordinates: 26°40'22.34" N, 91°55'48.38" E	Located along the Pub Nalbari Medhipara Path and opposite to Tangla College Playground, Tangla. Co-ordinates: 26°39'42.46" N, 91°55'17.56" E	Land owner & AEGCL/APDCL could not reach a common agreement.
5	220/132 kV substation at Rangia (Extension)	Existing Rangia Substation under Kamrup (Rural) district.	Existing Rangia Substation under Kamrup (Rural) district.	No change
6	132/33 kV substation at Sonabil (Extension)	Existing Sonabil Substation under Sonitpur district.	Existing Sonabil Substation under Sonitpur district.	No change
B	Distribution Substation			
7	33/11 kV substation at Sesa (New)	Located at Abhoypur village under Hajo Revenue Circle, Kamrup (Rural) district. Co-ordinates: 26°15'50.10" N, 91°35'35.27" E	Located at Abhoypur village under Hajo Revenue Circle, Kamrup (Rural) district. However, shifted towards south by around 100 m. Co-ordinates: 26°15'46.92" N, 91°35'30.82" E	Land owner & AEGCL/APDCL could not reach a common agreement.
8	33/11 kV substation at Ramdiya (New)	Located in the Ramdia area near the Ramdia PHC. appx. 4.7 km from the Hajo main market area. Co-ordinates: 26°13'34.07" N, 91°29'13.71" E	Shifted towards south by around 600 m. Located along the road to Chilardia village and now falls under Chilardia village. Co-ordinates: 26°13'16.68" N, 91°29'18.25" E	Land owner & AEGCL/APDCL could not reach a common agreement.
9	33/11 kV substation at Domdoma-Hazo (New)	Located at Domdoma area under Hajo Revenue Circle, Kamrup (Rural) district. Co-ordinates: 26°14'58.61" N, 91°34'18.98" E	Located in Kalitakuchi village area under Hajo Revenue Circle, Kamrup (Rural) district. Along the approach road which is 150 m towards south from the Barpeta-Hajo-Guwahati road and around 900 m from Kalitakuchi village towards Barpeta. Co-ordinates: 26°16'20.13" N,	Land owner & AEGCL/APDCL could not reach a common agreement.

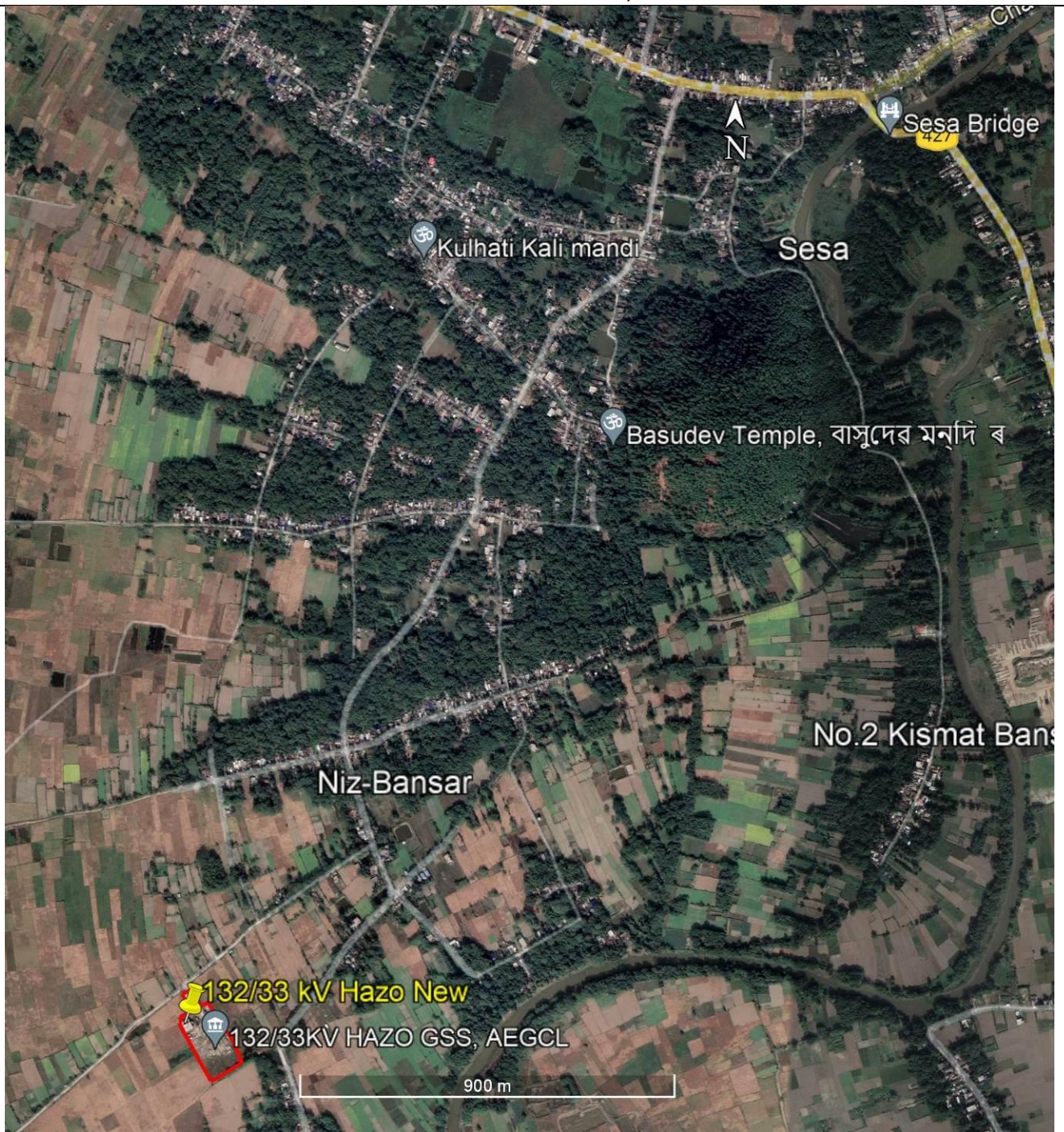
S. No.	Name of Substation	Earlier Identified Land as per IEAR	Finalized Land (Actual)	Reason for Change
			91°30'13.17" E	
10	33/11 kV substation at Harisingha (New)	Located at Niz-Harisinga village, appx 1.3 KM from Harisinga Rly Station in Udalguri district, Assam Co-ordinates: 26°44'12.60" N, 91°59'25.24" E	Location shifted towards south by around 130 m. Located in Niz-Harisinga village, adjacent to Harisinga Model Hospital and around 150 m from Tangla-Udalguri road in Udalguri district, Assam. Co-ordinates: 26°44'8.16" N, 91°59'27.69" E	To minimize the RoW issues.
11	33/11 kV substation at LGM Hospital (New)	Located near the Tezpur Town appx 400 m from the LGM Hospital, Tezpur Co-ordinates: 26°37'58.45" N, 92°48'44.17" E	Shifted to Tezpur Doloni. Around 350 m from Beleswar Shiva Temple, Tezpur Doloni. Co-ordinates: 26°38'44.26" N, 92°45'35.82" E	Land owner & AEGCL/APDCL could not reach a common agreement.
12	33/11 kV substation at Mukalmuwa (Strengthening)	Existing Mukalmuwa substation	Existing Mukalmuwa substation	No change
13	33/11 kV substation at Khairabari (Strengthening)	Existing Khairabari substation	Existing Khairabari substation	No change
14	33/11 kV substation at Paneri (Strengthening)	Existing Paneri substation	Existing Paneri substation	No change
15	33/11 kV substation at Kalaigaoni (Strengthening)	Existing Kalaigaoni substation	Existing Kalaigaoni substation	No change
16	33/11 kV substation at Tangla (Strengthening)	Existing Tangla substation	Existing Tangla substation	No change
17	33/11 kV substation at Parowai (Strengthening)	Existing Parowai substation	Existing Parowai substation	No change
18	33/11 kV substation at Dolabari (Strengthening)	Existing Dolabari substation	Existing Dolabari substation	No change



Location of 220/132 kV Amingaon GIS Substation (New)



220/132 kV Amingaon GIS Substation (New)



Location of 132/33 kV Hazo Substation (New)



132/33 kV Hazo Substation (New)



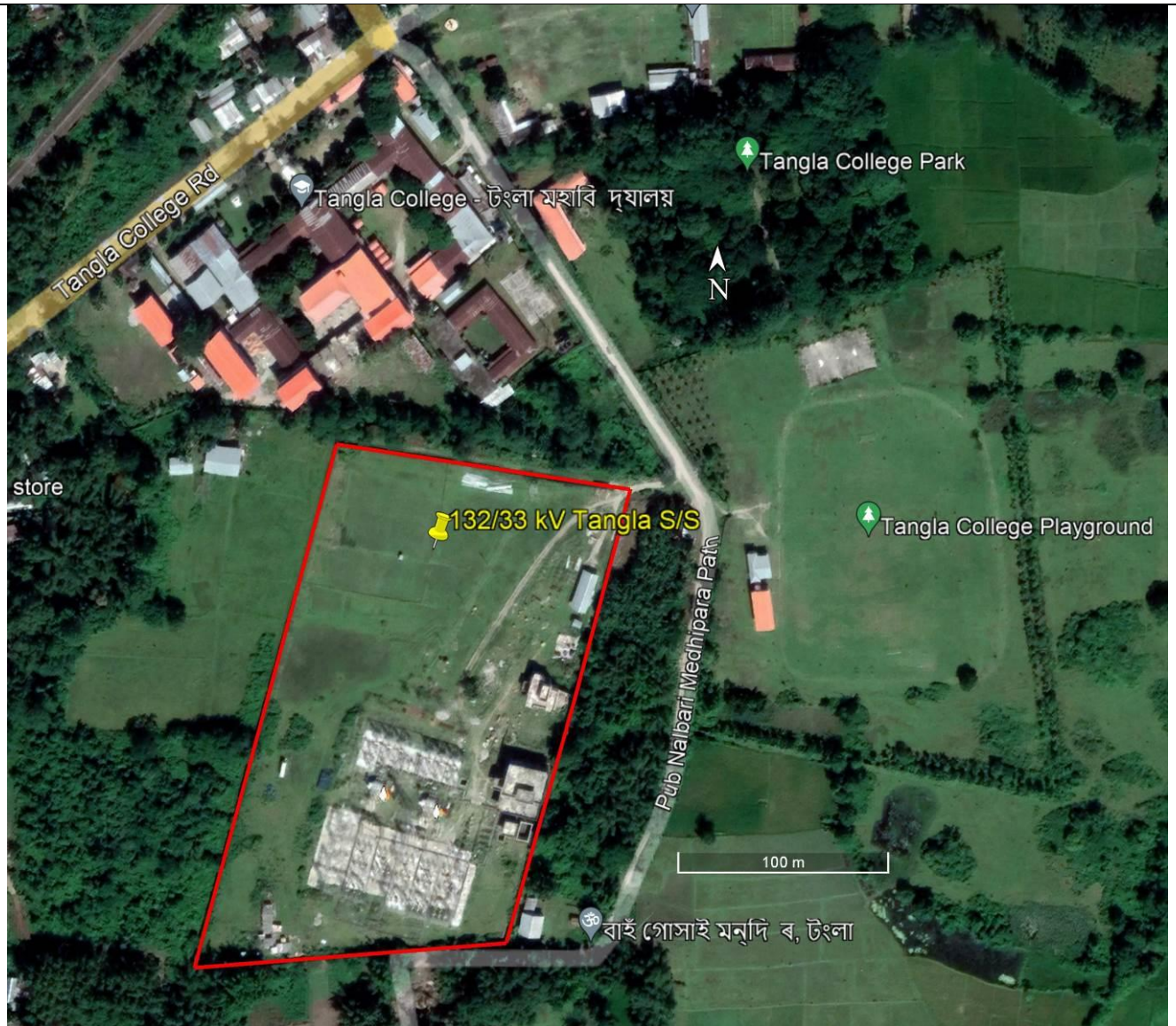
Location of 132/33 kV Tezpur Substation (New)



132/33 kV Tezpur Substation (New)



132/33 kV Tangla Substation (New)



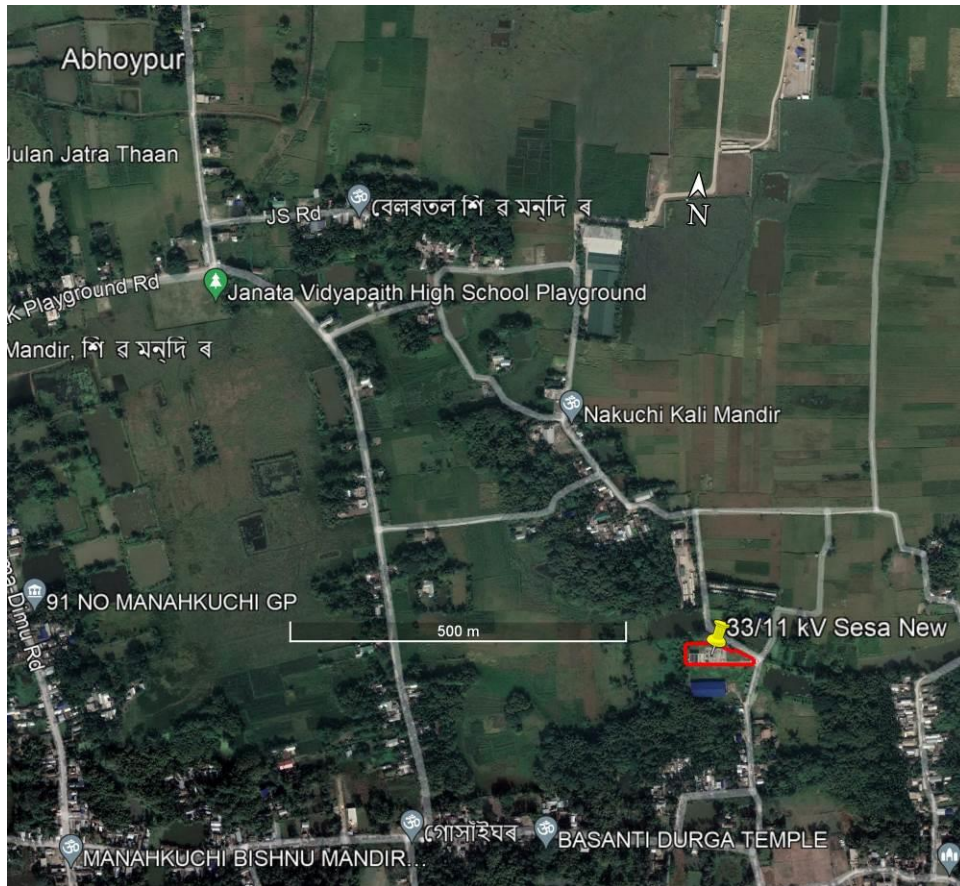
Location of 132/33 kV Tangla Substation (New)



220/132 kV Rangia Substation (Bay Extension)



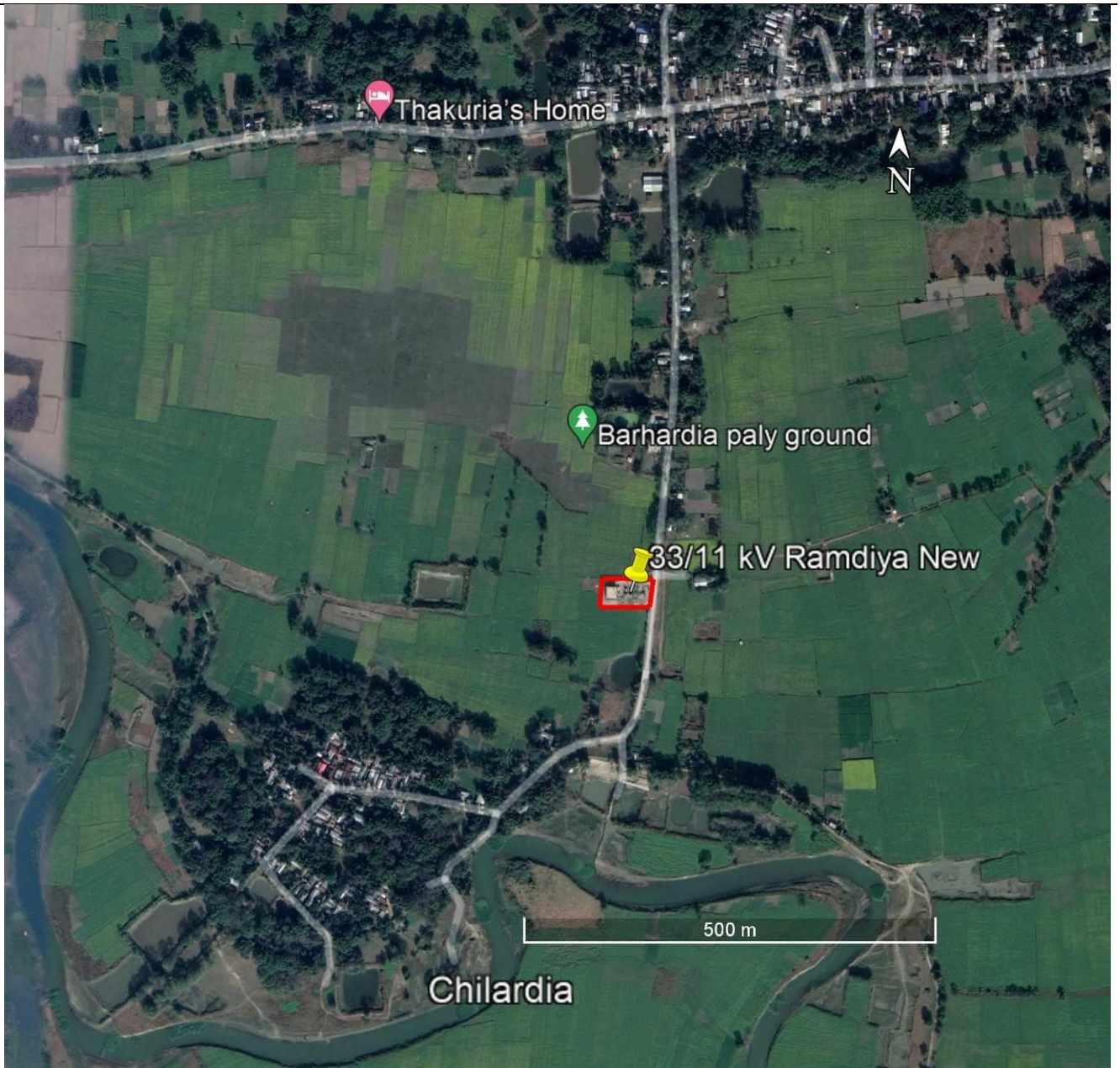
132/33 kV Sonabil Substation (Bay Extension)



Location of 33/11 kV Sesa Substation (New)



33/11 kV Sesa Substation (New)



Location of 33/11 kV Ramdiya Substation (New)



33/11 kV Ramdiya Substation (New)



33/11 kV Domdoma-Hazo Substation (New)

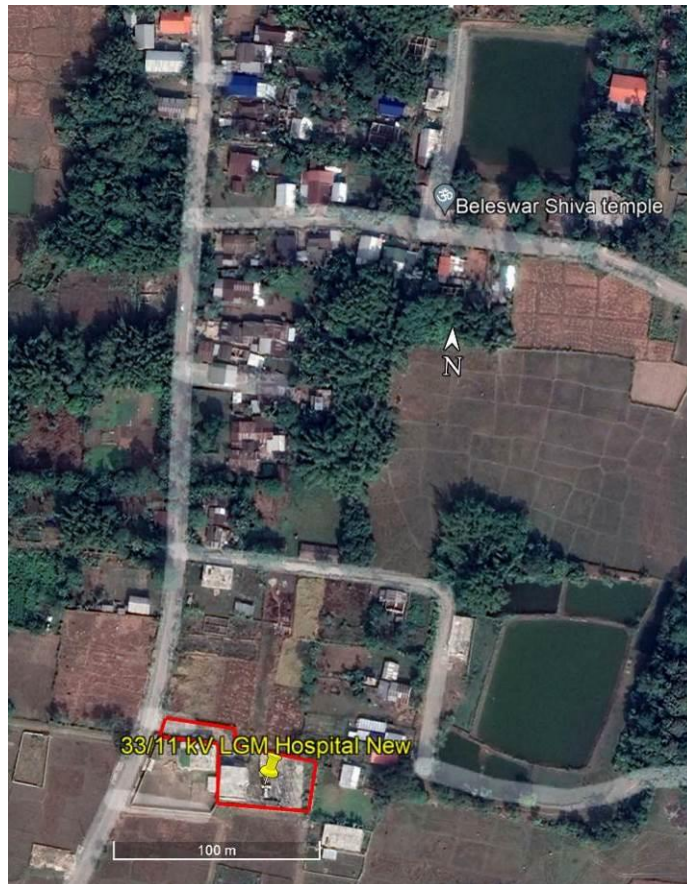


33/11 kV Domdoma Hazo Substation (New)





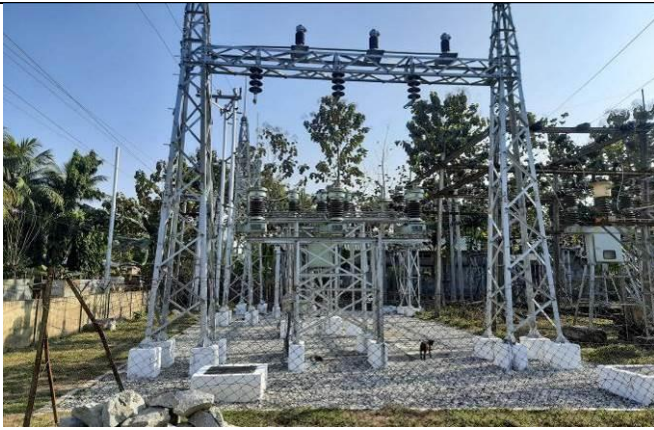
33/11 kV Harisingha Substation (New)



33/11 kV LGM Hospital Substation (New)



33/11 kV LGM Hospital Substation (New)



33/11 kV Mukalmuwa Substation (Bay Extension)



33/11 kV Khairabari Substation (Bay Extension)



33/11 kV Paneri Substation (Bay Extension)



33/11 kV Kalaigaon Substation (Bay Extension)





33/11 kV Tangla Substation (Bay Extension)



33/11 kV Parowai Substation (Bay Extension)



33/11 kV Dolabari Substation (Bay Extension)

4.3 MAJOR FEATURES OF FINAL ROUTE

4.3.1 Transmission Lines

All the transmission lines are passing through plain land. The land use beneath the lines comprises of agricultural land, private plantation and govt. owned fallow/ scrub land (refer **Figure 4.1** to **Figure 4.5**). The lines do not pass through any settlement. The lines route doesn'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,

Biosphere Reserve etc.; Natural habitats, IBAs, Sacred groves, Wetlands etc. have been completely avoided. It has been observed that there are some slight as well as major variations in final route length of lines from earlier routes as locations of substations were changed. At places route has been changed so that environment & social sensitive areas are avoided/ minimized and RoW issues are avoided. Due to these changes, length of final routes has been marginally increased by 3.282 km i.e. from 70.2 km to 73.482 km. These changes have not resulted any major change in land use and other base line data, therefore, no additional impacts of any kind apart from earlier identified impacts in IEAR/EMP are anticipated. Moreover, length has been increased so to avoid any RoW issues, hence, environmental and social impacts have also been minimized to a great extent. A total of around 285 towers are being/to be erected for both the proposed transmission lines having a total line length of 73.482 km.

4.3.1.1 Rangia (existing) – Amingaon (new) 220 kV D/C line

Total length of the line is 28.665 km, of which, around 438 m from location no. 4/0 to Gantry at Rangia substation will be underground cable and the rest around 28.227 will be overhead. Reason for opting for underground cable is lack of space due to already existing lines. In such a scenario it is practically not possible to get the RoW clearance hence underground cable is the only alternative available.

Out of the total length, 25.785 km of the line passes through agricultural land and the rest 2.88 km passes through private plantation. All protected areas like National Parks, Wildlife Sanctuaries, Biosphere Reserve etc.; Natural habitats, IBAs, Sacred groves, Wetlands etc. have been completely avoided. Major crossing en route of the line are 400 kV line, 132 kV lines, 33 kV lines, 11 kV lines, Railway line, Nala, Bridge, National Highway, Cart Track, and other metal roads.

Due to the change in the 220/132 kV Amingaon GIS substation and optimization during ground truthing survey, line length of final route (**Table 4.1**) has been decreased by 1.3 km i.e. from 30 km to 28.665 km. Due to this reduction in line length social and environmental footprints have also decreased, also all the criteria for route selection have been duly adhered to during finalization of this new route. Hence, no additional impacts of any kind apart from earlier identified impacts in IEAR/EMP were found. Moreover, environment & social safeguard issues which have been taken care off are: -

- Habitation areas along the route have been completely avoided
- It is ensured that common property resources (CPR) are not impacted.
- Any areas/monuments of archaeological importance are also not encountered along the route.
- All critical environmental area have been completely avoided.

The line has a total 111 towers and the types of towers used are double circuit (DA, DB, DC, DD) towers, composite tower and gantry. Due to various type of crossings, height of 30 towers have been increased by 3 m, 25 towers by 6 m, 8 towers by 9 m and 5 towers by 18 m. All the tower locations are easily accessible through existing road to carryout construction and maintenance activity and construction of new approach road is not required. Details of tower

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



Route of Underground Cable



Landuse Pattern of the Line Route

4.3.1.2 Amingaon (new) – Hazo (new) 132 kV D/C line

Total length of the line is 8.605 km, of which, 7.1 km of the line passes through agricultural land and the rest 1.505 km passes through private plantation. All protected areas like National Parks, Wildlife Sanctuaries, Biosphere Reserve etc.; Natural habitats, IBAs, Sacred groves, Wetlands etc. have been completely avoided. Major crossing en route of the line are:

- 33 kV line between Tower No. AP9 and AP10.
- 11 kV line at Tower No. AP3, between Tower No. AP4 and AP5, between Tower No. AP6 and AP7, between Tower No. AP9 and AP11.

- River Sessa between Tower No. AP11 and AP12 and between Tower No. AP12 and AP13.
- Metal and PWD roads

Due to the change in the 220/132 kV Amingaon GIS substation and optimization during ground truthing survey, line length of final route (**Table 4.1**) has been massively decreased by 9.885 km i.e. from 18.49 km to 8.605 km. Due to this reduction in line length social and environmental footprints have also decreased, also all the criteria for route selection has been duly adhered to during finalization of this new route. Hence, no additional impacts of any kind apart from earlier identified impacts in IEAR/EMP were found. Moreover, environment & social safeguard issues which have been taken care off are: -

- Habitation areas along the route have been completely avoided
- It is ensured that common property resources (CPR) are not impacted.
- Any areas/monuments of archaeological importance are also not encountered along the route.
- All critical environmental area have been completely avoided.

The line has a total 31 towers and the types of towers used are double circuit (DA, DB, DC) towers, composite tower and gantry. Due to various type of crossings, height of towers have been increased by 3 m, 6 m and 9 m. All the tower locations are easily accessible through existing road to carryout construction and maintenance activity and construction of new approach road is not required. Details of tower schedule of final route alignment describing important features of line route are placed as **Annexure II**.





Landuse Pattern of the Line Route

4.3.1.3 Sonabil (existing) – Tezpur (new) 132 kV D/C line

Total length of the line is 15.992 km, of which, 12.571 km of the line passes through agricultural land and the rest 3.421 km passes through govt. owned fallow/ scrub land. All protected areas like National Parks, Wildlife Sanctuaries, Biosphere Reserve etc.; Natural habitats, IBAs, Sacred groves, Wetlands etc. have been completely avoided. Major crossing en route of the line are:

- 400 kV line between new Gantry and AP—13/0
- 220 kV line between AP-6/0 and AP-7/0
- 132 kV line between AP-2/0 and AP-3/0,
- 66kV line between AP-27/1 and AP-27/2
- 11 kV line between AP-11/0 and AP-12/0, between AP-19/0 and AP-19/1, between AP-19/4 and AP-19/5, between AP-22/1 and AP-22/2, between AP-24/0 and AP-25/0, between AP-26/0 and AP-26/1, between AP-27/2 and AP-28/0, between AP-30/0 and AP-31/0.
- River Mansari between AP-11/0 and AP-12/0.
- Metal and PWD roads and cart tracks

Due to the change in the 132/33 kV Tezpur substation and optimization during ground truthing survey, line length of final route (**Table 4.1**) has been slightly increased by 2.662 km i.e. from 13.33 km to 15.992 km. Although there is a slight increase in the route length, however, all the criteria for route selection has been duly adhered to during finalization of this new route. Hence, no additional impacts of any kind apart from earlier identified impacts in IEAR/EMP were found. Moreover, environment & social safeguard issues which have been taken care off are: -

- Habitation areas along the route have been completely avoided
- It is ensured that common property resources (CPR) are not impacted.
- Any areas/monuments of archaeological importance are also not encountered along the route.
- All critical environmental area have been completely avoided.

The line has a total 64 towers and the types of towers used are double circuit (DA, DB, DC, DD) towers and gantry. Due to various type of crossings, height of 12 towers have been increased by 3 m, 1 tower by 6 m, 3 towers by 9 m and 1 tower by 18 m. All the tower locations are easily accessible through existing road to carryout construction and maintenance activity and

construction of new approach road is not required. Details of tower schedule of final route alignment describing important features of line route are placed as **Annexure II**.



Landuse Pattern of the Line Route

4.3.1.4 LILO of one circuit of Rangia – Rowta 132 kV D/C line at Tangla

Total length of the line is 10.876 km, of which, 10.658 km of the line passes through agricultural land and the rest 0.218 km passes through govt. owned fallow/ scrub land. All protected areas like National Parks, Wildlife Sanctuaries, Biosphere Reserve etc.; Natural habitats, IBAs, Sacred groves, Wetlands etc. have been completely avoided. Major crossing en route of the line are:

- 400 kV line between AP—10/0 and new Gantry
- 11 kV line between AP-1/0 and AP-2/0, between AP-8/2 and AP-8/3, between AP-8/5 and AP-8/6, between AP-14/0 and AP-15/0, between AP-15/0 and AP-16/0, between AP-26/0 and AP-26/1, between AP-27/2 and AP-28/0, between AP-30/0 and AP-31/0.
- Unmanned river between AP-4/2 and AP-4/3, between AP-8/4 and AP-8/5.
- Metal and PWD roads and cart tracks

Due to the change in the 132/33 kV Tangla substation and optimization during ground truthing survey, line length of final route (**Table 4.1**) has been increased by 3.876 km i.e. from 7 km to 10.876 km. Although the route length has increased, however, all the criteria for route selection has been duly adhered to during finalization of this new route. Hence, no additional impacts of any kind apart from earlier identified impacts in IEAR/EMP were found. Moreover, environment & social safeguard issues which have been taken care off are: -

- Habitation areas along the route have been completely avoided
- It is ensured that common property resources (CPR) are not impacted.
- Any areas/monuments of archaeological importance are also not encountered along the route.
- All critical environmental area have been completely avoided.

The line has a total 40 towers and the types of towers used are double circuit (DA, DB, DC, DD) towers and gantry. Due to various type of crossings, height of 6 towers have been increased by 3 m and 1 tower by 6 m. All the tower locations are easily accessible through existing road to carryout construction and maintenance activity and construction of new approach road is not required. Details of tower schedule of final route alignment describing important features of line route are placed as **Annexure II**.



Tapping Point



Tower No. 1





Landuse Pattern of the Line Route

4.3.1.5 **Multi Circuit for LILO of Kamalpur – Shishugram and Kamalpur – Kamakhya 132 kV S/C lines at Amingaon**

This is a multi circuit 132 kV lines for LILO of Kamalpur – Shishugram and Kamalpur – Kamakhya line at 220/132 kV Amingaon substation. Since the towers used are composite tower therefore, length of both the lines is same/ identical. Total length of the line is 9.344 km and the entire line passes through agricultural land. All protected areas like National Parks, Wildlife Sanctuaries, Biosphere Reserve etc.; Natural habitats, IBAs, Sacred groves, Wetlands etc. have been completely avoided. Major crossing en route of the line are:

- Railway crossing between Tapping Towers and AP-2.
- 11 kV line between AP-4/0 and AP-5/0, between AP-5/0 and AP-5/A, between AP-4/A and AP-3/A, between AP-7/0 and AP-8/0, between AP-9/0 and AP-10/0.
- Metal and PWD roads and cart tracks

Due to the change in the 220/132 kV Amingaon GIS substation, tapping location and optimization during ground truthing survey, line length of final route (**Table 4.1**) has been completely changed i.e. from 0.6 km to 9.344 km. Although the route length has increased, however, all the criteria for route selection has been duly adhered to during finalization of this new route. Moreover, line length has been increased to avoid several crossings, habitated areas and RoW issues. Hence, no additional impacts of any kind apart from earlier identified impacts in IEAR/EMP were found. Moreover, environment & social safeguard issues which have been taken care off are: -

- Habitation areas along the route have been completely avoided
- It is ensured that common property resources (CPR) are not impacted.
- Any areas/monuments of archaeological importance are also not encountered along the route.
- All critical environmental area have been completely avoided.

The line has a total 39 towers and the types of towers used are multi circuit (QC and QD) towers and gantry. Due to various type of crossings, height of 5 towers have been increased by 3 m, 5 towers by 6 m and 8 towers by 9 m. All the tower locations are easily accessible through existing road to carryout construction and maintenance activity and construction of new approach road is not required. Details of tower schedule of final route alignment describing important features of line route are placed as **Annexure II**.



Tapping Point for Loop In and Loop Out



Site Marked for Loop In and Loop Out at Railway Crossing





Landuse Pattern of the Line Route

4.3.2 Distribution Lines

All the distribution lines are passing through plains. The landuse beneath the lines comprises of agricultural land, private plantation and govt. owned fallow/ scrub land and along existing roads and bunds (refer Figure 4.6 to Figure 4.17). It has been observed that there are some slight as well as major variations in final route length of lines from earlier routes as locations of substations were changed. At places route has been changed so that environment & social sensitive areas are avoided/ minimized and RoW issues are avoided. Due to these changes, length of final routes has been increased by 37.084 km i.e. from 98.72 km to 135.804 km. These changes have not resulted any major change in land use and other base line data, therefore, no additional impacts of any kind apart from earlier identified impacts in IEAR/EMP are anticipated. Moreover, length has been increased so to avoid any RoW issues, hence, environmental and social impacts have also been minimized to a great extent. A total of around poles 3379 poles are being/to be erected for both the proposed distribution lines having a total line length of 135.804 km.

4.3.2.1 33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Mukalmuwa (existing) S/S

Total length of the line is 29.178 km and the entire line passes through agricultural land. The selected line does not pass through any National Highway, Railway crossings, settlement or any other critical environmental area. However, the line is crossing the following:

- 33 kV line between Single Pole (SP) 69 and Double Pole (DP) 18, between SP 83 and DP 22, between SP 483 and SP 484
- State Highway No 2 between DP 18 and DP 19, between DP 88 and DP 89
- 11 kV line between SP 71 and SP 72, between SP 84 and SP 85, between DP 38 and SP 162, between DP 41 and DP 42, between SP 251 and SP 252, between SP 327 and DP 81, between SP 327 and DP 81, between SP 38 and DP 96, between DP 114 and SP 453, between DP 117 and DP 118, between Four Pole (FP) and Gantry at Mukalmuwa
- Puthimari river between DP 29 and DP 30, Baralia river between FP 8 and FP 9 and Pagladia river between FP 10 and FP 11
- Nala between FP 6 and SP 148, between SP 223 and SP 224
- PWD village and village kachha road at several locations.

The line length of final route has been increased by 8.078 km i.e. from 21.10 km to 29.178 km (refer **Table 4.2**). The line length has been increased to avoid any kind of RoW issues and social impacts and also to minimize environmental impacts. Although the route length has been increased there is no change on the impacts anticipated on environmental and social aspects as all the criteria for route selection has been duly adhered to. No felling of tree will be required, only lopping of tree branches will suffice for ROW clearance. The line has total 787 poles. The types of poles used are SP, DP and FP. All the pole locations are easily accessible through existing road to carryout construction and maintenance activity and construction of new approach road is not required. Detail of pole schedule of final route alignment is placed as **Annexure II**.



Landuse Pattern of the Line Route

4.3.2.2 33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Khairabari (existing) S/S

Total length of the line is 16.325 km, of which, 9.832 km of the line passes through agricultural land and the rest 6.493 km passes through govt. land including fallow land/ scrub land and along the road. The selected line does not pass through any National Highway, Railway crossings, settlement or any other critical environmental area.

Due to the change in the location of 132/33 kV Tangla substation, line length of final route has been increased by 2.625 i.e. from 13.70 km to 16.325 km (refer **Table 4.2**). Other reasons for change in the line route is to avoid RoW issues and minimize the crossing. Although the route length has been increased there is no change on the impacts anticipated on environmental and social aspects as all the criteria for route selection has been duly adhered to. No felling of tree will be required, only lopping of tree branches will suffice for ROW clearance.

The line has total 387 poles. The types of poles used are SP, DP and FP. All the pole locations are easily accessible through existing road to carryout construction and maintenance activity and construction of new approach road is not required. Detail of pole schedule of final route alignment is placed as **Annexure II**.





Landuse Pattern of the Line Route

4.3.2.3 33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Sesa (new) S/S

Total length of the line is 6.55 km, and the entire line passes through agricultural land. The selected line does not pass through any Railway crossings, National Highway, settlement or any other critical environmental area. However, the line is crossing the following:

- State Highway between DP-19 and DP-20
- 33 kV line between DP-19 and DP-20
- 11 kV line between DP-5 and SP-12, between SP-14 and SP-15, between DP-19 and DP-20, between SP-92 and SP-93
- Kalajal river between DP-14 and DP-15, between DP-26 and DP-27
- PWD and village road at several locations

Due to the change in the location of 33/11 kV Sesa substation line length of final route has been increased by 2.16 km i.e. from 4.39 km to 6.55 km (refer **Table 4.2**). The line length has also been increased to avoid any kind of RoW issues and social impacts and also to minimize environmental impacts. Although the route length has been increased there is no change on the impacts anticipated on environmental and social aspects as all the criteria for route selection has been duly adhered to. No felling of tree will be required, only lopping of tree branches will suffice for ROW clearance.

The line has total 188 poles. The types of poles used are SP, DP and FP. All the pole locations are easily accessible through existing road to carryout construction and maintenance activity and construction of new approach road is not required. Detail of pole schedule of final route alignment is placed as **Annexure II**.





Landuse Pattern of the Line Route

4.3.2.4 33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Ramdiya (new) S/S

Total length of the line is 8.687 km, and the entire line passes through agricultural land. The selected line does not pass through any Railway crossings, National Highway, settlement or any other critical environmental area.

Due to the change in the location of 33/11 kV Ramdiya substation, line length of final route has been slightly decreased by 0.233 km i.e. from 8.92 km to 8.687 km (refer **Table 4.2**). Due to this reduction in line length social and environmental footprints have also decreased, also all the criteria for route selection have been duly adhered to during finalization of this new route. Hence, no additional impacts of any kind apart from earlier identified impacts in IEAR/EMP were found.

The line has total 232 poles. The types of poles used are SP, DP and FP. All the pole locations are easily accessible through existing road to carryout construction and maintenance activity and construction of new approach road is not required. Detail of pole schedule of final route alignment is placed as **Annexure II**.



Landuse Pattern of the Line Route

4.3.2.5 33 kV line from 132/33 kV Hazo (new) S/S to 33/11 kV Domdoma-Hazo (new) S/S

Total length of the line is 11.172 km, and the entire line passes through agricultural land. The selected line does not pass through any Railway crossings, National Highway, settlement or any other critical environmental area. However, the line is crossing the following:

- 33 kV line between DP-14 and DP-15
- 11 kV line between SP-60 and DP-17, between SP-66 and SP-67, between DP-27 and SP-90, between DP-40 and DP-41
- Puthimari river between FP-1 and SP-155, between FP-2 and FP-3
- PWD and village road at several locations

Due to the complete change in the location of 33/11 kV Domdoma-Hazo substation, line length of final route has been massively increased by 7.872 km i.e. from 3.3 km to 11.172 km (refer **Table 4.2**). Although the route length has been increased there is no change on the impacts anticipated on environmental and social aspects as all the criteria for route selection has been duly adhered to. Also, all kind of ROW issues and social impacts have been avoided

and environmental impacts have been minimized. No felling of tree will be required, only lopping of tree branches will suffice for ROW clearance.

The line has total 310 poles. The types of poles used are SP, DP and FP. All the pole locations are easily accessible through existing road to carryout construction and maintenance activity and construction of new approach road is not required. Detail of pole schedule of final route alignment is placed as **Annexure II**.



Landuse Pattern of the Line Route

4.3.2.6 33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Harisingha (new) S/S

Total length of the line is 12.094 km, of which, 4.40 km of the line passes through agricultural land and the rest 7.694 km passes through govt. land including fallow land/ scrub land and along the road. The selected line does not pass through any National Highway, settlement or any other critical environmental area. However, the line crosses Railway line.

Due to the change in the location of 132/33 kV Tangla substation and 33/11 kV Harisingha, line length of final route has been increased by 2.794 i.e. from 9.30 km to 16.325 km (refer **Table 4.2**). Other reasons for change in the line route is to avoid RoW issues and minimize the crossing. Although the route length has been increased there is no change on the impacts anticipated on environmental and social aspects as all the criteria for route selection has been duly adhered to. No felling of tree will be required, only lopping of tree branches will suffice for ROW clearance.

The line has total 298 poles. The types of poles used are SP, DP and FP. All the pole locations are easily accessible through existing road to carryout construction and maintenance activity and construction of new approach road is not required. Detail of pole schedule of final route alignment is placed as **Annexure II**.



Landuse Pattern of the Line Route



Route of Line along the Railway Line



Site of Railway Crossing

4.3.2.7 33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Paneri (existing) S/S

Total length of the line is 11.019 km, of which, 10.019 km of the line passes through agricultural land and the rest 1.0 km passes through govt. land including fallow land/ scrub land and along the road. The selected line does not pass through any National Highway, settlement or any other critical environmental area. However, the line crosses Railway line.

Due to the change in the location of 132/33 kV Tangla substation line length of final route has been increased by 4.419 i.e. from 6.60 km to 16.325 km (refer **Table 4.2**). Other reasons for change in the line route is to avoid RoW issues and minimize the crossing. Although the route length has been increased there is no change on the impacts anticipated on environmental and social aspects as all the criteria for route selection has been duly adhered to. No felling of tree will be required, only lopping of tree branches will suffice for ROW clearance.

The line has total 269 poles. The types of poles used are SP, DP and FP. All the pole locations are easily accessible through existing road to carryout construction and maintenance activity and construction of new approach road is not required. Detail of pole schedule of final route alignment is placed as **Annexure II**.



Landuse Pattern of the Line Route

4.3.2.8 33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Kalaigaon (existing) S/S

Total length of the line is 14.137 km, of which, 9.470 km of the line passes through agricultural land and the rest 4.667 km passes through govt. land including fallow land/ scrub land and along the road. The selected line does not pass through any National Highway, Railway crossing, settlement or any other critical environmental area.

Due to the change in the location of 132/33 kV Tangla substation line length of final route has been increased by 5.027 i.e. from 9.11 km to 16.325 km (refer **Table 4.2**). Other reasons for change in the line route is to avoid RoW issues and minimize the crossing. Although the route length has been increased there is no change on the impacts anticipated on environmental and social aspects as all the criteria for route selection has been duly adhered to. No felling of tree will be required, only lopping of tree branches will suffice for ROW clearance.

The line has total 355 poles. The types of poles used are SP, DP and FP. All the pole locations are easily accessible through existing road to carryout construction and maintenance activity and construction of new approach road is not required. Detail of pole schedule of final route alignment is placed as **Annexure II**.





Landuse Pattern of the Line Route

4.3.2.9 33 kV line from 132/33 kV Tangla (new) S/S to 33/11 kV Tangla (existing) S/S

Total length of the line is 1.341 km and the entire line passes through govt. land including along the road. The selected line does not pass through any National Highway, settlement or any other critical environmental area. However, the line crosses Railway line.

Due to the change in the location of 132/33 kV Tangla substation line length of final route has been massively decreased by 3.759 i.e. from 5.1 km to 1.341 km (refer **Table 4.2**). Due to this reduction in line length social and environmental footprints have also decreased, also all the criteria for route selection have been duly adhered to during finalization of this new route. Hence, no additional impacts of any kind apart from earlier identified impacts in IEAR/EMP were found. No felling of tree will be required, only lopping of tree branches will suffice for ROW clearance.

The line has total 123 poles. The types of poles used are SP, DP and FP. All the pole locations are easily accessible through existing road to carryout construction and maintenance activity and construction of new approach road is not required. Detail of pole schedule of final route alignment is placed as **Annexure II**.



Site of Railway Crossing



Landuse Pattern of the Line Route

4.3.2.10 33 kV line from 132/33 kV Tezpur (new) S/S to 33/11 kV LGM Hospital (new) S/S

The line is divided into 2 sections with a total length of 6.759, first section comprises of 3.633 km long line from existing 132/33 kV Depota substation to the new 33/11 kV LGM Hospital substation and the second section comprises of 3.126 km long line from new 132/33 kV Tezpur substation to the existing 33 kV Tezpur – Tezpur University D/C line. Out of the total length, 3.796 km passes through agricultural land and the rest 2.963 passes through govt. land i.e. along the road. Out of the total length of 132/33 kV Depota substation to the new 33/11 kV LGM Hospital substation section of the line, 1.462 km passes through agricultural land and the rest 2.171 passes through govt. land i.e. along the road. Similarly, out of the total length of 132/33 kV Tezpur substation to the existing 33 kV Tezpur – Tezpur University D/C line section of the line, 2.334 km passes through agricultural land and the rest 0.792 passes through govt. land i.e. along the road. 132/33 kV Tezpur substation to the existing 33 kV Tezpur – Tezpur University D/C line section of the line crosses 11 kV line between Loc-13/1 and Loc-13/2 and between Loc-17/6 and AP-18. 132/33 kV Depota substation to the new 33/11 kV LGM Hospital substation section of the line crosses the following:

- 132 kV line between Loc-1/2 and AP-2
- 11 kV line between Loc-3/20 and AP-4 and between AP-14 and AP-15
- National Highway between Loc-3/20 and AP-4
- Road at few locations

Due to the change in the location of 33/11 kV LGM Hospital substation, the original route which involved many crossings and RoW issues was divided into 2 sections as mentioned above. These changes resulted in reduction of line length by 2.041 km i.e. from 8.8 km to 6.759 km. Another reason for the reduced line length is change in the location of 132/33 kV Tezpur substation. As a result, environmental and social footprints were also reduced, also all the criteria for route selection have been duly adhered to during finalization of this new route. Hence, no additional impacts of any kind apart from earlier identified impacts in IEAR/EMP were found. No felling of tree will be required, only lopping of tree branches will suffice for ROW clearance.

The line has total 238 poles. The types of poles used are SP, DP and FP. All the pole locations are easily accessible through existing road to carryout construction and maintenance activity and construction of new approach road is not required. Detail of pole schedule of final route alignment is placed as **Annexure II**.





Landuse Pattern of the Line Route from 132/33 kV Depota S/S to the 33/11 kV LGM Hospital S/S Section





Landuse Pattern of the Line Route from 132/33 kV Tezpur substation to the existing 33 kV Tezpur – Tezpur University D/C line Section

4.3.2.11 33 kV line from 132/33 kV Tezpur (new) S/S to 33/11 kV Parowa (existing) S/S

Total length of the line is 4.891 km, of which, 0.195 km of the line passes through agricultural land and the rest 4.696 km passes through govt. land i.e. along the road. The selected line does not pass through any Railway crossings, National Highway, settlement or any other critical environmental area. However, the line is crossing the following:

- 11 kV line between Loc-2/3 and AP-3, between Loc-7/22 and Loc-7/23, between Loc-8/3 and Loc-8/4, between Loc-9/2 and Loc-9/3
- Nala between AP-1 and AP-2, between AP-6 and AP-7, between Loc-8/2 and Loc-8/3
- Kachha road at few locations

Due to the change in the location of 132/33 kV Tezpur substation line length of final route has been increased by 1.191 km i.e. from 3.7 km to 4.891 km (refer **Table 4.2**). The line length has also been increased to avoid any kind of RoW issues and social impacts and also to minimize environmental impacts. Although the route length has been increased there is no change on the impacts anticipated on environmental and social aspects as all the criteria for route selection has been duly adhered to. No felling of tree will be required, only lopping of tree branches will suffice for ROW clearance.

The line has total 119 poles. The types of poles used are SP, DP and FP. All the pole locations are easily accessible through existing road to carryout construction and maintenance activity and construction of new approach road is not required. Detail of pole schedule of final route alignment is placed as **Annexure II**.





Landuse Pattern of the Line Route

4.3.2.12 33 kV line from 132/33 kV Tezpur (new) S/S to 33/11 kV Dolabari (existing) S/S

Total length of the line is 5.630 km, of which, 0.503 km of the line passes through private plantation and the rest 5.127 km passes through govt. land i.e. along the road. The selected line does not pass through any Railway crossings, settlement or any other critical environmental area. However, the line is crossing the following:

- 33 kV line between Loc-6/4 and Loc-6/5
- 11 kV line between Loc-4/51 and Loc-4/52, between Loc-5/10 and Loc-5/11, between Loc-6/3_1 and Loc-6/3_2
- National Highway between Loc-4/53 and AP-5
- PWD road at few locations

Due to the change in the location of 132/33 kV Tezpur substation line length of final route has been slightly increased by 0.93 km i.e. from 4.7 km to 5.630 km (refer **Table 4.2**). The line length has also been increased to avoid any kind of RoW issues and social impacts and also to minimize environmental impacts. Although the route length has been increased there is no change on the impacts anticipated on environmental and social aspects as all the criteria for route selection has been duly adhered to. No felling of tree will be required, only lopping of tree branches will suffice for ROW clearance.

As the 2.805 km stretch of the line is on already existing poles therefore, the line has total 82 poles. The types of poles used are SP, DP and FP. All the pole locations are easily accessible through existing road to carryout construction and maintenance activity and construction of

new approach road is not required. Detail of pole schedule of final route alignment is placed as **Annexure II**.



Landuse Pattern of the Line Route

Chapter 5

POTENTIAL ENVIRONMENTAL IMPACTS, EVALUATION AND ITS MANAGEMENT

5.1 INTRODUCTION

Environmental impacts of Transmission & Distribution (T & D) projects are not far reaching and are mostly localized to RoW (refer **Table 5.1**). However, T & D projects have some effects on natural and socio-culture resources. All possible measures have been taken during the finalization of route alignment as described in the earlier chapter for the proposed transmission/distribution system, however, due to the peculiarity of terrain where project is being implemented, some environmental impacts may be there. The explanations in brief with regard to possible environmental impact and measures taken to minimize the same are given in ensuing paragraph.

Table 5.1: RoW Width

Transmission Voltage	Max RoW (m)
220 kV	35
132 kV	27
33 kV	15

5.2 IMPACT DUE TO PROJECT LOCATION

5.2.1 Resettlement

Land is required for

- a) construction of substations and
- b) erection of transmission line

5.2.1.1 Construction of Substation

The project component consists of establishment of one new 220/132 kV GIS substation at Amingaon, three new 132/33 kV sub-stations at Hazo, Tezpur and Tangla and five new 33/11 kV sub-stations at Sesa, Ramdiya, Domdoma-Hazo, Harisingha and LGM Hospital. For the establishment of sub-stations fresh lands were either secured through private purchased on negotiated rates based on “willing buyer-willing seller basis” or were already in possession of AEGCL/ APDCL. A total of 23.77 acre land has been secured for three 132/33 kV substations and four 33/11 kV substations from 21 private persons who willing sold their land. Since, no involuntary acquisition was involved and fresh lands were secured only through private purchase there is no R & R and resettlement issues. The details are provided below in **Table 5.2**.

Table 5.2: Details of Land Securing Method for New Sub-stations

S. No.	Name of Sub-station	Land Area (acre)	No. of Land Owner	Land Securing Method
A	Transmission Scheme			
1	220/132 kV at Amingaon	8.0	NA	AEGCL Land

S. No.	Name of Sub-station	Land Area (acre)	No. of Land Owner	Land Securing Method
2	132/33 kV at Hazo	6.25	1	willing buyer-willing seller basis
3	132/33 kV at Tezpur	7.27	3	
4	132/33 kV at Tangla	8.26	12	
B	Distribution Scheme			
5	33/11 kV at Sesa	0.66	1	willing buyer-willing seller basis
6	33/11 kV at Ramdiya	0.50	2	
7	33/11 kV Domdoma-Hazo	0.50	1	
8	33/11 kV at LGM Hospital	0.33	1	
9	33/11 kV Harisingha	0.74	NA	APDCL Land

Source: Detailed Survey of POWERGRID/ Contractor

The other environmental impacts that impact environment due to construction/ bay extension of sub-station are uncontrolled silt runoff, nuisance to nearby area, inadequate resurfacing for erosion control, inadequate disposition of borrow area, workers health/ safety. All these impacts and their management are discussed in detail in Section 5.4.

Another impact is construction of access roads. Access to all the new/ existing sub-stations will be along existing roads or village paths; minor improvements to paths have been made wherever necessary. In addition, new approach roads of 200 m, 33 m, 100 m and 62 m have been constructed for 220/132 kV Amingaon, 132/33 kV Tangla, 132/33 kV Tezpur and 33/11 kV Harisingha sub-stations respectively.

The approach road at Tezpur, Tangla and Harisingha sub-stations has been constructed on already acquired land for the construction of sub-stations. The approach road of 200 m at Amingaon sub-station is from Pacharia – Pacharia Dalar Pathar village road to sub-station. It was an existing foot path on community land, being used by villagers for movement from their home to Pacharia – Pacharia Dalar Pathar village road or other movements. Since the approach road is a permanent upgradation of footpath to road, therefore, villagers gave their consent for this expansion. Such improvement in the access road is highly appreciated by the local population. Since none of these segments require any additional land and thus have insignificant environmental and social impacts, these would fall in low risk category as per E & S screening criteria.

However, Construction of road may lead to soil erosion, increase the airborne dust particles, nuisance to nearby area, require land for temporary accessibility etc. Impacts due to road construction and its management are discussed in detail in Section 5.4.

5.2.1.2 Erection of Transmission Line

In respect of land required for the erection of transmission line, no permanent acquisition is envisaged. Land for tower and right of way is not acquired as existing activities can continue. As explained in previous chapter during line routing stage itself all measures have been undertaken by AEGCL/APDCL/IA to avoid settlements such as cities, villages etc. in line with the guiding principle of avoidance as per ESPPF. From the description of proposed route alignments and also keeping in mind that no permanent acquisition of land is involved for

tower foundation as per existing law, the project does not require any resettlement of villagers. However, some temporary damages/ disturbances can happen. Same is being compensated to minimize the damages and provide compensation for temporary damages in consultation with the state government and affected persons and/ or community. Details of the loss on the land due to the temporary damages/ disturbances is provided in the ensuing paragraphs.

5.2.1.2.1 Loss of Land for Tower Base & Pole

As per the assessment carried out in CPTD by PGCIL and detailed survey, the land requirement for erection of tower legs is very small i.e. for each leg of tower actual construction is done on a small square area with side length ranging from 0.20 to 0.30 meter depending on the types of tower. Four such square pieces of land will be required to place the legs of tower. The area that becomes unavailable because of the erection of tower legs for an average 220/ 132 kV transmission tower ranges from 0.16-0.36 sq m of land. Thus, the actual impact is restricted to 4 legs of the tower and existing activities can continue as clearly depicted in the **Figure 5.1**. In case of 33 kV distribution line area that becomes unavailable because of the erection of pole is insignificant as approx. 1 sq. ft. land area is occupied for one pole (refer **Figure 5.2**). Due diligence confirms that current land use is not altered and resumed after construction.

As already explained, the impact of transmission line is restricted to 4 legs of the tower and existing activities can continue after construction activity is over. The average land area will be unavailable for existing activities after erection of one 220/ 132 kV T/L tower and one pole for 33 kV D/L is approx. 0.25 sq m & 0.092 sq m, respectively. Based on above, total land loss for construction of 28.665 km of 220 kV transmission line, 44.817 km of 132 kV transmission lines and 127.785 km of 33 kV distribution lines proposed under the present scheme is estimated as 382.118 sq m or 0.0944 acre. Details of land loss for tower base & pole are given in **Table 5.3**.

Table 5.3: Estimation of Actual Loss of Land for Tower Base & Pole

S. No.	Name of Line	Line Length (Kms.)	Total Tower/ Pole (Nos.)	Land loss per tower/ pole base (sq m)	Total land loss area for tower & pole base (sq m)
A	Transmission Lines				
1	Rangia – Amingaon 220 kV D/C line	28.665	111	0.25	27.75
2	Amingaon – Hazo 132 kV D/C line	8.605	31	0.25	7.75
3	Sonabil – Tezpur 132 kV D/C line	15.992	64	0.25	16.00
4	LILO of one circuit of Rangia – Rowta 132 kV D/C line at Tangla	10.876	40	0.25	10.00
5	LILO of Kamalpur – Sishugram & Kamalpur – Kamakhya 132 kV S/C lines at Amingaon	9.344	39	0.25	9.75
	TOTAL - A	73.482	285		71.25
B	Distribution Lines				
6	132/33 kV Hazo S/S to 33/11 kV Mukalmuwa S/S	29.178	787	0.092	72.404
7	132/33 kV Tangla S/S to 33/11 kV Khairabari S/S	16.325	387	0.092	35.604
8	132/33 kV Hazo S/S to 33/11 kV Sesa S/S	6.55	188	0.092	17.296
9	132/33 kV Hazo S/S to 33/11 kV Ramdiya S/S	8.687	232	0.092	21.344

S. No.	Name of Line	Line Length (Kms.)	Total Tower/ Pole (Nos.)	Land loss per tower/ pole base (sq m)	Total land loss area for tower & pole base (sq m)
10	132/33 kV Hazo S/S to 33/11 kV Domdoma-Hazo S/S	11.172	310	0.092	28.520
11	132/33 kV Tangla S/S to 33/11 kV Harisingha S/S	12.094	289	0.092	26.588
12	132/33 kV Tangla S/S to 33/11 kV Paneri S/S	11.019	269	0.092	24.748
13	132/33 kV Tangla S/S to 33/11 kV Kalaigaon S/S	14.137	355	0.092	32.660
14	132/33 kV Tangla S/S to 33/11 kV Tangla S/S	1.341	123	0.092	11.316
15	132/33 kV Tezpur S/S to 33/11 kV LGM Hospital S/S	6.759	238	0.092	21.896
16	132/33 kV Tezpur S/S to 33/11 kV Parowa S/S	4.891	119	0.092	10.948
17	132/33 kV Tezpur S/S to 33/11 kV Dolabari S/S	5.630	82	0.092	7.544
	TOTAL - B	127.785	3379		310.868
	TOTAL A+B				382.118 (0.0944 acre)

Source: Detailed Survey of POWERGRID/ Contractor

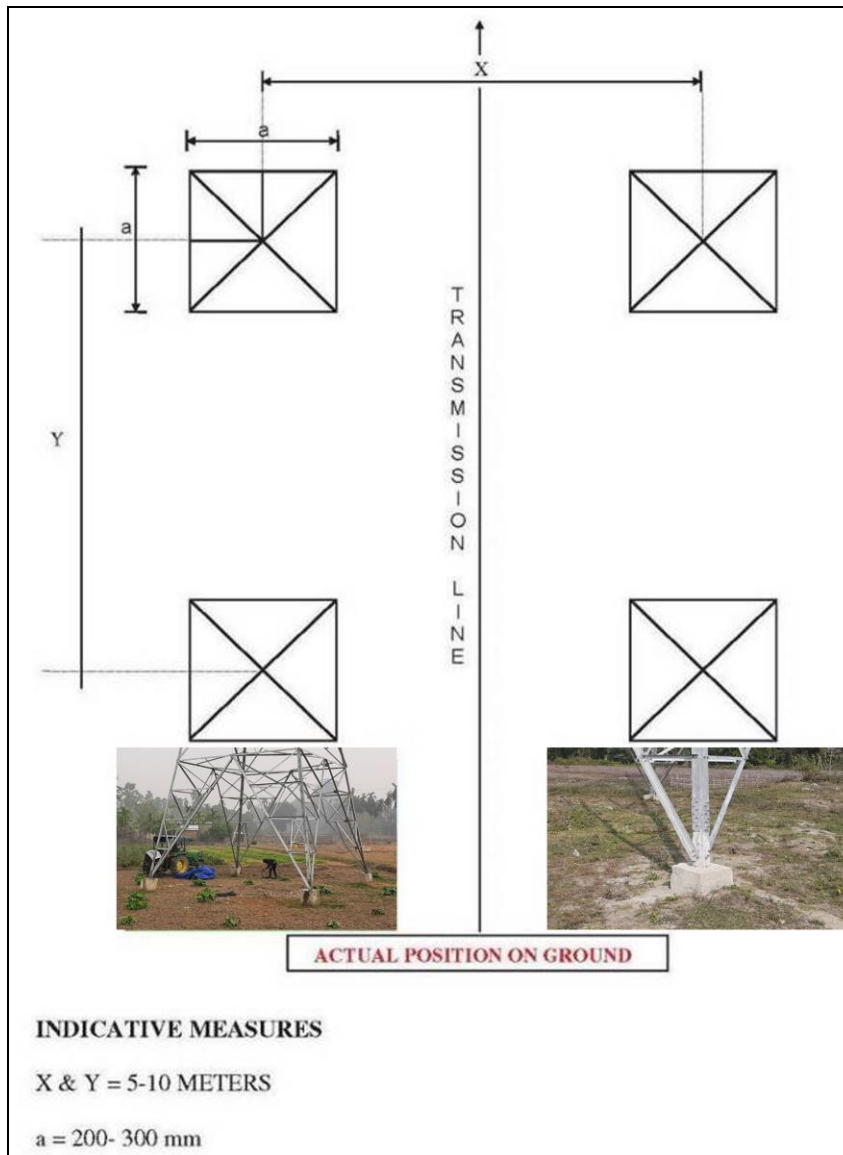


Figure 5.1: Typical Plan of Transmission Line Tower Footing Showing actual Ground Position and Extent of Impact



Figure 5.2: 33 kV Lines (Single & H Pole) Depicting Base Area Impact

5.2.2 Impact on Crop Area (RoW Corridor & Tower/ Pole)

Construction of line in crop season is avoided as far as possible. In case when installation of towers/poles impacts on agricultural activity, detailed assessment/survey is conducted looking at existing crops, general crop patterns, seasonal particulars, nature and extent of yield. This data is compiled and analysed to study the extent and nature of impact.

For the temporary loss of crops, only agricultural land and private plantation land are considered for estimation. The damages are not done in complete RoW of line but mostly restricted to tip to tip of the conductor and tower base area where average affected width/corridor would be limited to 27 m (maximum) and 20 m (maximum) instead of RoW of 35 meter and 27 m for 220 kV and for 132 kV respectively. In 33 kV distribution lines, damages are minimal (mostly near bi-pole/quad-pole structure) however, 10 m corridor is considered for accessing the damages. Moreover, all efforts were made to reduce the damages to crops and to minimize the impacts whatsoever. One of the reasons is that schedules of construction activities are undertaken in lean season or post-harvest periods. Assets of any sorts were not acquired but during construction, only temporary damages occurred for which the

compensation has been/ is being paid to affected persons as per entitlement matrix. As per the entitlement matrix, compensation for the damage to the crop area is paid to the actual cultivator at market rate.

Based on the above estimation, the total land considered for crop compensation for transmission/distribution line corridor and tower/pole foundation for the entire subproject covered under the scope of above CPTD is 626.46 acre. Details of estimated impacted area for crop damages is given in **Table 5.4**.

5.2.3 Impact on Trees

Construction of line in fruit bearing season is avoided as far as possible. Tree compensation is calculated on the basis of tree enumeration, tree species and an estimate of the compensation will be calculated on the basis of 8 years yield (assessed by revenue/horticulture department).

Total number of trees affected/ likely to be affected due to the construction of 28.665 km of 220 kV transmission line, 44.817 km of 132 kV transmission lines and 127.785 km of 33 kV distribution lines is approx. 1557. Out of 1557 trees, 1505 trees are on private land and 52 trees in govt. land. Most of the trees affected/ likely to be affected are fruit bearing trees and not timber trees. Details on number of trees for each line are given in **Table 5.5**.

5.2.4 Affected Persons

Affected Persons (APs) are those who are affected due to the placing of tower, various civil works like damage to trees due to pollarding/ pruning or some partial damage to produces during stringing. Though the impact is temporary. The estimated number of affected persons are approximately 366. It is once again pertinent to mention here that persons got affected due to some temporary damages which lasted during construction phase only. The persons details are given in **Table 5.6**. The number of APs in the table refers to the most conservative option. State Utilities/ POWERGRID scheduled the civil works in such a way to minimize impacts and substantially reduce the damages to crops and therefore the number of affected persons and Agricultural Households (AHH).

Table 5.4: Estimation on Loss of Land for Crop Damage due to Overhead Lines

S. No.	Name of the Line	Width Considered for Estimation of Loss of Crops and other impacts (m)	Total Agricultural Land (km)	Total Private Plantation (km)	Total Line Length Considered for Crop Compensation (km)	Total Land Area considered for Crop Compensation (acre)
A	Transmission Lines					
1	Rangia – Amingaon 220 kV D/C line	27	25.785	2.88	28.665	191.24
2	Amingaon – Hazo 132 kV D/C line	20	7.1	1.505	8.605	42.52
3	Sonabil – Tezpur 132 kV D/C line	20	12.571	0	12.571	62.12
4	LILO of one circuit of Rangia – Rowta 132 kV D/C line at Tangla	20	10.658	0	10.658	52.67
5	LILO of Kamalpur – Sishugram & Kamalpur – Kamakhya 132 kV S/C lines at Amingaon	20	9.344	0	9.344	46.18
	TOTAL - A		65.458	4.385	69.843	394.73
B	Distribution Lines					
6	132/33 kV Hazo S/S to 33/11 kV Mukalmuwa S/S	10	29.178	0	29.178	72.08
7	132/33 kV Tangla S/S to 33/11 kV Khairabari S/S	10	9.832	0	9.832	24.29
8	132/33 kV Hazo S/S to 33/11 kV Sesa S/S	10	6.55	0	6.55	16.18
9	132/33 kV Hazo S/S to 33/11 kV Ramdiya S/S	10	8.687	0	8.687	21.46
10	132/33 kV Hazo S/S to 33/11 kV Domdoma-Hazo S/S	10	11.172	0	11.172	27.60
11	132/33 kV Tangla S/S to 33/11 kV Harisingha S/S	10	4.40	0	4.40	10.87
12	132/33 kV Tangla S/S to 33/11 kV Paneri S/S	10	10.019	0	10.019	24.75
13	132/33 kV Tangla S/S to 33/11 kV Kalaigaon S/S	10	9.470	0	9.470	23.40
14	132/33 kV Tangla S/S to 33/11 kV Tangla S/S	10	0	0	0	0.00
15	132/33 kV Tezpur S/S to 33/11 kV LGM Hospital S/S	10	3.796	0	3.796	9.38
16	132/33 kV Tezpur S/S to 33/11 kV Parowa S/S	10	0.195	0	0.195	0.48
17	132/33 kV Tezpur S/S to 33/11 kV Dolabari S/S	10	0	0.503	0.503	1.24
	TOTAL - B		93.299	0.503	93.802	231.73
	TOTAL A+B		158.757	4.888	163.645	626.46

Source: Detailed Survey of POWERGRID/ Contractor

Table 5.5: Details of Impact on Trees

S. No.	Name of Line	Trees on Private Land (No.)	Trees on Govt. Land (No.)	Total Trees (No.)
A	Transmission Lines			
1	Rangia – Amingaon 220 kV D/C line	42	0	42
2	Amingaon – Hazo 132 kV D/C line	99	0	99
3	Sonabil – Tezpur 132 kV D/C line	322	0	322
4	LILO of one circuit of Rangia – Rowta 132 kV D/C line at Tangla	189	0	189
5	LILO of Kamalpur – Sishugram & Kamalpur – Kamakhya 132 kV S/C lines at Amingaon	238	0	238
	TOTAL - A	890	0	890
B	Distribution Lines			
6	132/33 kV Hazo S/S to 33/11 kV Mukalmuwa S/S	164	0	164
7	132/33 kV Tangla S/S to 33/11 kV Khairabari S/S	Only Trimming required	Only Trimming required	Only Trimming required
8	132/33 kV Hazo S/S to 33/11 kV Sesa S/S	118	0	118
9	132/33 kV Hazo S/S to 33/11 kV Ramdiya S/S	81	0	81
10	132/33 kV Hazo S/S to 33/11 kV Domdoma-Hazo S/S	83	0	83
11	132/33 kV Tangla S/S to 33/11 kV Harisingha S/S	Only Trimming required	Only Trimming required	Only Trimming required
12	132/33 kV Tangla S/S to 33/11 kV Paneri S/S	Only Trimming required	Only Trimming required	Only Trimming required
13	132/33 kV Tangla S/S to 33/11 kV Kalaigaon S/S	Only Trimming required	Only Trimming required	Only Trimming required
14	132/33 kV Tangla S/S to 33/11 kV Tangla S/S	Only Trimming required	Only Trimming required	Only Trimming required
15	132/33 kV Tezpur S/S to 33/11 kV LGM Hospital S/S	96	0	96
16	132/33 kV Tezpur S/S to 33/11 kV Parowa S/S	70	52	122
17	132/33 kV Tezpur S/S to 33/11 kV Dolabari S/S	79	0	79
	TOTAL - B	691	52	743
	TOTAL A+B	1505	52	1557

Source: Detailed Survey of POWERGRID/ Contractor

Table 5.6: Details of Affected Persons

S. No.	Name of Line	Total APs (No.)		
		Tower/ Pole Base	RoW Corridor	Tree/ Crop
A	Transmission Lines			
1	Rangia – Amingaon 220 kV D/C line	20	Identification under progress	6
2	Amingaon – Hazo 132 kV D/C line	18		14
3	Sonabil – Tezpur 132 kV D/C line	41		46
4	LILO of one circuit of Rangia – Rowta 132 kV D/C line at Tangla	21		27
5	LILO of Kamalpur – Sishugram & Kamalpur – Kamakhya 132 kV S/C lines at Amingaon	39		34
	TOTAL - A	139		127

S. No.	Name of Line	Total APs (No.)		
		Tower/ Pole Base	RoW Corridor	Tree/ Crop
B	Distribution Lines			
6	132/33 kV Hazo S/S to 33/11 kV Mukalmuwa S/S			21
7	132/33 kV Tangla S/S to 33/11 kV Khairabari S/S			0
8	132/33 kV Hazo S/S to 33/11 kV Sesa S/S			15
9	132/33 kV Hazo S/S to 33/11 kV Ramdiya S/S			12
10	132/33 kV Hazo S/S to 33/11 kV Domdoma-Hazo S/S			23
11	132/33 kV Tangla S/S to 33/11 kV Harisingha S/S			0
12	132/33 kV Tangla S/S to 33/11 kV Paneri S/S			0
13	132/33 kV Tangla S/S to 33/11 kV Kalaigaon S/S			0
14	132/33 kV Tangla S/S to 33/11 kV Tangla S/S			0
15	132/33 kV Tezpur S/S to 33/11 kV LGM Hospital S/S			12
16	132/33 kV Tezpur S/S to 33/11 kV Parowa S/S			17
17	132/33 kV Tezpur S/S to 33/11 kV Dolabari S/S			10
	TOTAL - B			110
	TOTAL A+B	139		227

Source: Detailed Survey of POWERGRID/ Contractor

5.2.5 Other Damages

Till date, other damages like bunds, water bodies, fish ponds, approach paths, drainage and irrigation canals etc. have been avoided. However, if damaged in future, the Revenue Department will assess the cost of damage as per State Govt. norms. The total estimate will be submitted for approval to the competent authority. Payments will be made to owners in the presence of local revenue authorities or village head/ Sarpanch and respective acknowledgements will be obtained and POWERGRID/ AEGCL/ APDCL will pay the compensation. Hindrances to power, telecom carrier & communication lines etc. will be paid as per Govt. norms.

5.2.6 Land Value Depreciation

It is evident that electric power being an enabler sector acts as a catalyst for the growth and development of areas having accessibility to it. Based on past experience land prices are generally expected to rise in the areas receiving power. In the present project, transmission lines pass through agriculture fields, private plantation area and govt. land (mostly uninhabited and scrub land), 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. Moreover, distribution lines are primarily intended to provide power supply to populated area which boost the economic status as well as land price of the area, thus, outweighing possible negative impacts, if any.

5.2.7 Historical/Cultural Monuments/Value

Final routes of transmission and distribution line and sites for construction of new sub-stations don't involve any monuments of historical or cultural significance.

5.2.8 Encroachment into Precious Ecological Areas

In accordance with the policy of route selection, IA/Utility takes all precautions right from the planning stage itself to avoid routing of line through forest, protected areas like national park, wildlife sanctuary, biosphere reserve/ biodiversity hotspot and other ecological sensitive areas. In the instant scheme the route of the lines have been selected in such a way that there is no forest area involvement along the corridors. Moreover, suitable management measures like minimizing RoW requirement, use of existing tower, use of tall or extended tower etc., wherever feasible, are being undertaken to minimize the loss of vegetation.

5.2.9 Line into Other Valuable Lands

Other valuable land includes land acquired, though temporarily, for tower base and width of RoW corridor. Subsequent to the notification by Govt. of Assam on adoption of MoP guidelines, compensation toward damages in regard to RoW for proposed 132kV and 220 kV line @ 85% land value for tower base & maximum 15% land value for width of RoW corridor as decided by District Magistrate or any other authority shall be paid to land owners. Details of land areas considered for such compensation is given in **Table 5.7**.

Table 5.7: Land area for RoW Compensation

S. No.	Name of Line	Line Length (Km)	Total Tower (Nos.)	Land area for Tower base per km (acre)	Total land area for tower base (acre)	*RoW Corridor area per km (acre)	Total land area for RoW Corridor (acre)	Total Land area (acre)
1	Rangia – Amingaon 220 kV D/C line	28.665	111	0.077	2.21	8.571	245.69	247.89
2	Amingaon – Hazo 132 kV D/C line	8.605	31	0.036	0.31	6.635	57.09	57.40
3	Sonabil – Tezpur 132 kV D/C line	15.992	64	0.036	0.58	6.635	106.11	106.68
4	LILO of one circuit of Rangia – Rowta 132 kV D/C line at Tangla	10.876	40	0.036	0.39	6.635	72.16	72.55
5	LILO of Kamalpur – Sishugram & Kamalpur – Kamakhya 132 kV S/C lines at Amingaon	9.344	39	0.036	0.34	6.635	62.00	62.33
	TOTAL				3.82		543.05	546.87

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

Source: Detailed Survey of POWERGRID/ Contractor

In case of 33 kV distribution line, area that becomes unavailable because of the erection of pole is insignificant as approximately one sq. ft. land area is occupied for one pole. As already mentioned in Table 5.3, total land loss area for 3379 poles is only 0.0768 acre, therefore, land value for pole base is not considered for land compensation.

In line with the compensation procedures laid down in ESPPF & CPTD, compensation have been/ are being 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 III**.

5.2.10 Interference with Other Utilities and Traffic

As per regulations, it is mandatory for IA/AEGCL/APDCL 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 & distribution lines affect nearby telecommunication circuits by causing electrical interference. To plan and implement the mitigating measures for the induced voltage which may occur to nearby telecom circuit and suggest necessary protection measures to be adopted, a standing committee, Power Telecom Co-ordination Committee (P.T.C.C.) has been constituted by Government of India. The committee suggests measures like rerouting of the telecom circuits, conversion of overhead telecom circuits into cables etc. to minimize the interference. The cost of such measures is determined by the Committee on the basis of prevailing norms and guidelines. Though the exact cost to mitigate the impacts of induction in neighboring telecom circuits would vary from case to case, the cost on an average works out to be Rs. 50,000/- per km. Provision to meet these expenses has been made in the cost estimate for the same for transmission line proposed under the instant scheme.

Wherever transmission & distribution line crosses the railways, clearance is taken from that Ministry. In general, the system is planned and executed in such a way that adequate clearance is maintained between transmission lines on the one hand and railways on the other. In the instant project also, clearances are being obtained from the Ministry of Railway as transmission and distribution lines are crossing railway tracks at few locations. As a management practice underground cables will be laid at these crossings.

Further, aviation routes are not present in the project locations. It is therefore not required to avail clearances from the Ministry of Aviation.

NH-31 and NH-37 A are the main roads, which connect the subproject locations through various state, district and village roads. NH-31 is an important National Highway, which provides a gateway to the states of North East. NH-37 A starts from Kuwarital in Assam and ends at junction of NH-52 near Tezpur in Assam. The volume of traffic on these roads found to be medium. Therefore, steep rise in volume of traffic due to mobilization for said projects is not anticipated.

5.2.11 Interference with Drainage Pattern

As the transmission lines are constructed aerially and the blockage of ground surface is limited to area of tower footings, which is very small, there is little possibility of affecting drainage pattern.

In the instant scheme, several numbers of river/ nala crossings are involved on various rivers/ nalas. All possible efforts have been made to avoid placing of tower in the river bed while crossing the river. In cases where complete avoidance was not possible, due precaution to minimize impact on river ecology have been undertaken. No major impact on river ecology and on aquatic flora & fauna is possible as the construction phase of such activity is limited to some days. Apart from these measures like construction during lean period, dredging by using anti-turbidity technology, driven precast pile technique etc. are used to reduce all possible impact on aquatic flora and fauna. To avoid any interfere, DD towers are being used instead DB/ DC tower as single span limit is crossed in this stretch, further, heights of the tower have been increased to avoid any interference, cross-arm strengthening has been suggested. Another measure already suggested in EMP and in place is to avoid dumping of fill materials in sensitive drainage area. In case of substations, 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.

5.2.12 Impact on Indigenous People

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

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

Essentially, indigenous people have a social and cultural identity distinct from the 'mainstream' society that makes them vulnerable to being overlooked or marginalized in the development processes. STs, who have no modern means of subsistence, with distinctive culture and are characterized by socio-economic backwardness, could be identified as Indigenous Peoples. Indigenous people are also characterized by cultural continuity. Constitution of India identifies schedule areas which are predominately inhabited by such people. In the whole Meghalaya State, special provisions also have been extended to the Tribal Areas under the 6th Schedule [Articles 244(2) and 244(A) 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.

The project is being implemented in Udalguri district also which is governed by Bodoland Territorial Council Autonomous District Council as per the provisions of Sixth Schedule of the Indian Constitution. In such ADC area No Objection Certificate (NoC) from concerned land owner/ Headman /Village Council shall be obtained. As stipulated, NoCs are being obtained from all the Headman/ Village Council. Besides, all social issues shall be dealt separately in accordance with the provisions of Social Management Framework (SMF, A-C) placed in the ESPPF of AEGCL/APDCL. The SMF has been given as **Annexure IV**.

5.2.13 Environmental & Social Impact Matrix Due to Route Alignment

Based on the above 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 5.8**.

Table 5.8: Summary of Impacts

S. No.	PARAMETERS	EXTENT OF IMPACT
1. A.	Total Line length - (TL -73.482 km, DL-127.783 km)	The TL length has increased by just 3.282 km, while the DL length has been increased by approx. 29.063 km. Thus, the total line length has been increased by 32.347 km. Length of the TL has increased due to changes in the locations of the substation, tapping point of LILLO line at Amingaon and when optimized during ground truthing survey. Main reason for the increase of length of the DLs is change in the locations substations and change in route to avoid RoW issues. Though the length has been increased however, no additional impacts of any kind apart from earlier identified impacts in IEAR/ EMP are anticipated as all the environmental criteria for route selection were adhered to. Moreover, due to avoidance of RoW issues, social impacts have also been avoided and environmental impacts have been minimized.
B.	Terrain: Plain	Entire project is being implemented on plains. Land use beneath the TLs and DLs is primarily agricultural land, followed by govt. land i.e. along the road and private plantation. Therefore, no adverse impact is recorded/ anticipated.
2.	Forest land (km)	No forest land involved.
3.	Forest type	NA
4.	Forest density	NA
5.	Rare/ endangered flora	No rare/endangered flora found in project area.
6.	Rare/ endangered fauna	No rare/endangered fauna found in project area.
7.	Migrating Wildlife/ breeding ground	NA
8.	National Park / sanctuaries	No protected areas involved.
9.	Wet land	None
10.	Soil erodibility	Since the terrain is plain therefore there is almost no possibility of soil erodibility. However, adequate measures at tower location and substation have been/ are being undertaken by IA to minimize any such impact if any.
11.	Historical / Cultural monuments	None
12.	Total Affected Persons (APs)	As per assessment carried out under CPTD, total APs are 366, of which 256 are due to TLs and 110 are due to DLs. All APs will be compensated as per the Govt. norms.
13.	Relocation of villagers	None
14.	Area of actual land loss under Tower Base	Total 0.0944 acre of actual loss of land will be taking place under tower/ pole base, of which 0.0176 acre will be under tower base and 0.0768 acre under pole. This loss is temporary in nature i.e. during construction time only. APs are being compensated for actual land loss.
15.	Affected Structures	Nil
16.	Temporary Damage to	Total 626.46 acre of land area is considered for crop damage due to

S. No.	PARAMETERS	EXTENT OF IMPACT
	Crop	overhead lines, of which 394.73 acre will be due to TLs and 231.73 acre will be due to DLs. This loss is temporary in nature i.e. during construction time only. APs are being compensated for actual land loss.
17.	Loss/ Hindrance to Public Utilities	Negligible, restricted to construction phase only.

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 drainage and sewage design has been included in tender document to avoid any incidence of land and water contamination. Transformers have been designed with oil spill containment systems having sump of capacity of 200% of oil volume of largest transformer, and purpose-built oil, lubricant and fuel storage system, complete with spill cleanup equipment. Substations include drainage and sewage disposal systems to avoid offsite land and water pollution. Apart from this, solid waste like packing materials, cables, aluminum conductor, sand, aggregate material, cements and steel generated during construction is carefully handled and removed from the sites periodically to avoid any contamination.



Oil Spill Containment Systems at 33/11 kV Ramdiya and Domdoma-Hazo S/S



Oil Spill Containment Systems at 33/11 kV Sesa and Harisingha S/S



Drainage within the 220/132 kV Amingaon GIS S/S



Drainage within the 132/33 kV Tangla S/S



Drainage within the 132/33 kV Tezpur S/S



Drainage and Septic Tank within the 33/11 kV Sesa S/S



Drainage and Septic Tank within the 33/11 kV Ramdiya S/S



Drainage and Septic Tank within the 33/11 kV Domdoma-Hazo S/S



Drainage and Septic Tank within the 33/11 kV Harisingha S/S



Drainage and Septic Tank within the 33/11 kV LGM Hospital S/S

5.3.2 Explosion/Fire Hazards

During the survey and site selection for transmission lines, and substations, it has been ensured that these are kept away from oil/gas pipelines and other sites with potential for creating explosions or fires. Fires due to flashover from lines can be a more serious problem in forest. However, adequate safety measures are taken to avoid such incidence. In the present project, 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, automatic tripping mechanism for transmission/distribution and substations are being installed so that line gets disconnected in fraction of seconds to prevent fire hazards. Fire protection and fire fighting system are being installed in all the 220/ 132/ 33 kV substations. The fire protection system includes fire fighting pump house, water tank, HT cable trench, fire detection system, fire extinguishers at appropriate places, water spray system etc. Also, Explosion Prevention and Fire Extinguishing System (EPFES), a reliable, proven, proactive system are placed at all the 132/33 kV substations to save transformer and reactors in different fault conditions which can lead to explosion and/or fire. It extinguishes external fire in bushing and/or radiator also, back up provision ensures nitrogen injection for fail safe operation. EPFES is designed to protect oil filled transformer/reactor from explosion and fire in all types of possible fault scenarios. In addition, fire wall between transformers are constructed to prevent fire from spreading.



Fire Fighting Pump House, Water Tank, Water Spray System at 220/ 132 kV Amingaon GIS S/S



Fire Fighting Pump House, Water Tank, Cable Trench at 132/33 kV Hazo S/S



Fire Fighting Pump House, Water Tank, Cable Trench at 132/33 kV Tangla S/S



Water Spray System at 132/33 kV Tangla S/S



Fire Fighting Pump House, Water Tank, Water Spray System at 132/ 33 kV Tezpur S/S



Fire Wall at 220/132 kV Amingaon GIS S/S



Fire Wall at 33/11 kV LGM Hospital S/S

5.3.3 Erosion Hazards due to Inadequate Provision for Resurfacing of Exposed Area

Construction of 220/ 132 kV line involves only small-scale excavation of area i.e. 3m L x 3m W x 3m H for tower footing that may result in generation of 108 m³ of excavated material from each tower. In case of 220/132 kV and 132/33 kV substation foundation, excavation of soil to the tune of 7500 m³ is required depending on site condition. Similarly, in case of 33 kV line, soil excavation is limited to 0.72 m³ for each pole, and for 33/11 kV sub-station, excavation of around 2000 m³ is required. It has been worked out that a total of approximately 73,213 m³ (285x108 + 4x7500 + 3379x0.72 + 5x2000) of excavated materials gets generated for construction of 285 towers, 4 new 220/132 kV & 132/33 kV sub-stations, 3379 poles and 5 new 33/11 KV substations proposed under present scheme. However, all the soil excavated for pole footings and substations construction are optimally (about 80-90%) 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 used as fill for substation/ and tower/pole foundations. Hence, possibility of erosion of exposed area due to construction activity is negligible.

5.3.4 Environmental Aesthetics

Since spacing between the towers/poles in case of 220/ 132 kV transmission & 33 kV distribution lines is approximately 300 meters and 100 meters, respectively, these don't affect the visual aesthetics of the localities particularly when it is ensured to route the lines 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. Wherever AEGCL/ APDCL feels it appropriate, discussions are held with local Forest Department officials to determine feasibility of planting trees along roads running parallel to transmission lines to buffer visual effect in these areas. In addition, towers are painted grey or green to merge with the background.

5.3.5 Noise/Vibration Nuisances

The equipment installed at substation are mostly static and are so designed that the noise level always remains within permissible limits i.e. 85 dB as per Indian standards. Transformers with maximum noise emitting level of 75 dB and DG set with proper enclosures are part of equipment specification/ design criteria. Some noise is unavoidable during construction phase like noise produced by concrete mixing equipment and excavators which are temporary and only in day time. However, regular monitoring by IA/Contractors and due maintenance of equipment are ensured to keep the noise level well within the prescribed limit. Further, to contain the noise level within the permissible limits whenever noise level increases beyond permissible limits, measures like providing sound and vibration dampers and rectification of equipment are undertaken. In addition, plantations of sound absorbing species like Casuarinas, Tamarind, and Neem are raised at all the substations that reduce the sound level appreciably.

5.3.6 Blockage of Wildlife Passage/ Impact on Avifauna

The proposed transmission & distribution lines are passing through mostly waste/ fallow land. Since there is no protected area or demarcated/ documented migration path of wildlife like elephant corridor existing near to subproject locations, hence, possibility of any disturbance

to wildlife is not imminent. Avian hazards are mostly encountered in bird sanctuaries area, IBAs and fly path of migratory bird predominantly related to nesting site. Since in the instant case due to routing of line away from such areas, bird hit/electrocution is not anticipated.

5.4 ENVIRONMENTAL PROBLEMS DURING CONSTRUCTION PHASE

5.4.1 Uncontrolled Silt Runoff

Almost all the tower/ pole are in plain area, therefore, there was no impact due to the silt runoff. In case of distribution lines all the excavated soil is backfilled and compacted immediately after erection of tubular poles.

In case of sub-station, existing one are located on flat land and adjacent to existing road and new ones are also being constructed on flat land after site clearing and leveling. It is also being ensured that new sub-stations are close to existing road and construction of approach road is avoided as far as possible, however, new approach roads of 200 m, 33 m, 100 m and 62 m have been constructed for 220/132 kV Amingaon, 132/33 kV Tangla, 132/33 kV Tezpur and 33/11 kV Harisingha sub-stations respectively.



Approach Road at 220/132 kV Amingaon and 132/ 33 kV Tangla S/S



Approach Road at 33/11 kV Harisingha and 132/ 33 kV Tezpur S/S

As already explained, during construction limited quantity of excavated material is generated from tower/pole foundations and sub-station foundation. However, adequate measures have been taken to store excavated materials properly for refilling after construction is over.

Further, excavation is avoided in rainy days. Hence, uncontrolled silt run off is not anticipated. However, during construction, precautions have been taken by contractors to avoid any such runoff of excavated material from the construction sites. Moreover, sub-stations are being constructed above the high flood level (HFL) by raising the foundation pad, therefore, are not prone to flooding/ erosive losses of soil. Also, regular sprinkling have been undertaken to suppress increase in the airborne dust particles.

So far there are no instances with potential of erosion during construction of above said lines. Similarly, 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.



Levelled Sites after Erecting Towers and Poles



Earth cutting and Surface levelling at 220/ 132 kV Amingaon GIS S/S



Levelled Surface at 132/ 33 kV Hazo S/S



Levelled Surface at 132/ 33 kV Tangla S/S



Levelled Surface at 132/ 33 kV Tezpur S/S



Levelled Surface at 33/11 kV Sesa and Ramdiya S/S



Levelled Surface at 33/11 kV Domdoma-Hazo and Harisingha S/S

5.4.2 Nuisance to Nearby Properties

During site selection due care is taken to keep the transmission & distribution lines and substations away from settlements. Further, all the construction activities including construction of new approach road are 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. The construction activities are normally undertaken in lean period and post harvesting to avoid/minimize such impact. All construction sites of new sub-station are prohibited for general public both due to its separation/demarcation by boundary wall and also due to statutory provisions. Hence, any adverse impact arising during the construction of substation is temporary i.e. will last during construction phase only, and limited to the boundaries of proposed substation only and neither impacts nearby habitat/property nor health & safety of neighboring community. Boundary wall of all the substations have been almost completed, it is expected that the remaining boundary wall construction work will be completed soon.



Boundary Wall and Fencing at 220/132 kV Amingaon GIS Substation



Boundary Wall at 132/33 kV Hazo Substation



Boundary Wall and Gate at 132/33 kV Tangla Substation



Boundary Wall and Gate at 132/33 kV Tezpur Substation



Boundary Wall and Gate at 33/11 kV Sesa Substation



Boundary Wall and Gate at 33/11 kV Ramdiya Substation



Boundary Wall and Gate at 33/11 kV Domdoma-Hazo Substation



Boundary Wall and Gate at 33/11 kV Harisingha Substation



Boundary Wall and Gate at 33/11 kV LGM Hospital Substation

5.4.3 Interference with Utilities and Traffic and Blockage of Access Way

Since all the locations of subprojects are not well connected through rail link, transportation of construction materials were mostly through road network. Access to the site is along existing roads or village paths; minor improvements to paths have been made where necessary. In addition, new approach roads of 200 m, 33 m, 100 m and 62 m have been constructed for 220/132 kV Amingaon, 132/33 kV Tangla, 132/33 kV Tezpur and 33/11 kV Harisingha sub-stations respectively.

The approach road at Tezpur, Tangla and Harisingha sub-stations has been constructed on already acquired land for the construction of sub-stations. The approach road of 200 m at Amingaon sub-station is from Pacharia – Pacharia Dalar Pathar village road to sub-station. It was an existing foot path on community land, being used by villagers for movement from their home to Pacharia – Pacharia Dalar Pathar village road or other movements. Since the approach road is a permanent upgradation of footpath to road, therefore, villagers gave their consent for this expansion. Such improvement in the access road is highly appreciated by the local population. Since none of these segments require any additional land and thus have insignificant environmental and social impacts, these would fall in low risk category as per E & S screening criteria.

In case of tower/ pole erection and stringing of lines where access road is not available at some places, existing field/path are being utilized and compensation for any damage to crop or field is being paid to the owner. As and when a transmission line crosses any road/ railways line, adequate care/caution is taken so as not to cause any hindrance to the movement of traffic. Stringing at the construction stage is carried 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 are being undertaken to avoid any unforeseen incident.

5.4.4 Inadequate Resurfacing for Erosion Control

As explained earlier, all the towers and poles are locations are on plain surface, therefore, there were no instances of soil erosion due to tower and pole erecting. The excavated material is being backfilled and any remaining earth, if any have been spread around the base

and compacted. Till date no instances with potential of erosion observed during construction of above said lines. Further, construction is generally undertaken in dry/non- monsoon period.

Similarly, almost all the sub-stations are located on flat land and are being constructed after site clearing and leveling. However, as a precautionary measure slope protection, retaining / RRM walls have been planned/ being implemented as erosion protection measure in the sub-stations mentioned in **Table 5.9**.

Table 5.9: Details of Slope Protection Measures

S. No.	Location of Substation	Measure Type	Purpose of Measure	Present Status
1	220/ 132 kV at Amingaon	RRM Wall	To avoid soil erosion	Completed
2	132/ 33 kV at Hazo	RRM Wall	To avoid soil erosion	Completed
3	132/ 33 kV at Tezpur	RRM Wall	To avoid soil erosion	Completed
4	33/11 kV at Harisingha	RRM Wall	To avoid soil erosion	Completed
5	33/11 kV at Sesa	RRM Wall	To avoid soil erosion	Completed
6	33/11 kV at Domdoma-Hazo	RRM Wall	To avoid soil erosion	Completed
7	33/11 kV at Ramdiya	RRM Wall	To avoid soil erosion	Completed
8	In all sub-stations	Stone Pitching	To retain the soil	Provided



RRM Wall at 220/ 132 kV Amingaon GIS S/S and 132/ 33 kV Tezpur S/s



RRM Wall at 33/ 11 kV Harisingha and Ramdiya S/s

5.4.5 Inadequate Disposition of Borrow Area

As mentioned earlier the tower/pole foundations involve excavations on small scale basis and the excavated soil is utilized for back filling. In case of substations, generally the sites are selected in such a manner that the volume of cutting is equal to volume of filling avoiding borrowing of the area. In the instant project also, excavated material is disposed off in the same premises at all the substation only. However, in addition to the excavated material, excess soil was required for three 132/33 kV substations and three 33/11 kV substations. Details of the excess soil required and source of the borrow area is given below in the **Table 5.10**.

Table 5.10: Details of Borrow Area

S. No.	Name of Substation	Quantity Borrowed (cum)	Source of Borrow Area	Ownership of Borrow Area
1	132/33 kV Hazo substation	21,500	Vill. Saokuchi, Mauza-Beltola, (existing)	Private Land
2	132/33 kV Tangla Substation	7,040	Vill. Jhalukbari, Tangla	Private Land
3	132/33 kV Tezpur Substation	14,186	Vill. Khaliha Mari, Tezpur	Private Land
4	33/11 kV Sesa substation	1,760.93	Puthimari River Bank, Lakhai Tara, Hazo (existing)	Govt. approved site
5	33/11 kV Domdoma-Hazo substation	2,703		
6	33/11 kV Ramdiya substation	3,162.67		

Except for sites mentioned at S. No. 2 and 3 of the table below all the sites are existing borrow sites hence reclamation of site was not needed. The two new sites were developed as ponds after due consent of the land owner. The land owners gave their consent for development of these areas as ponds so as to use them for fish farming. Although such ponds are very common in the area and these do not require any heavy construction, still, PGCIL, in order to prevent any mishappening, adopted scientific approach while developing the ponds. Since the terrain is flat, complete digging and construction of embankment method was adopted. In the present case, most of the digging part was already in place since soil was excavated from these sites. Side slope depends upon the type of soil which in present case is alluvial soil. Therefore, slope of the embankment in horizontal to vertical axis was taken as 2H:1V. The embankments constructed are compact, solid and leak proof so as to maintain the desired level of water as well as a hygienic pond environment. The top layer of the soil i.e. up to the depth of 10-20 cm was kept separately; the other portions was used for construction of the dyke whereas the top soil was used for the finishing of the same. As the height of the embankment depends on the annual rainfall and the highest water level of the area and considering that Assam receives an annual average rainfall of 120 cm, a free board of 60 cm has been kept during construction of pond. The crest of the embankment has also been kept sufficiently wide. Finally, an outlet pipe has been provided through the embankment at appropriate height to drain out the excess water, if any.

Prior to use, the soil sample were tested and found to be within the specified limits of PGCIL's Standard Field Quality Plan. The approval of borrow areas is enclosed as **Annexure V**.

5.4.6 Protection of Worker's Health/Safety

All health & safety issues and their management aspects are integral part of project/contract specific safety plan (**Annexure VI**), which is also part of contract conditions. Various aspects such as, work and safety regulations, workmen's compensation, insurance are adequately covered under the General Conditions of Contract (GCC), a part of bidding documents. 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 Rs 1.0 lakh for each injury and is deducted from the contractor's payment and paid to the deceased/affected family (**Annexure VII**).

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 labor 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. Besides, the contractors have obtained requisite insurance policy as per provisions of Employee Compensation Act, 1923 for its employed workforce. Sample copy of labor license and insurance policy for workers is attached as **Annexure VIII**.

During construction work, safety guidelines/checklists including work permits and safety precautions are being strictly followed which are also regularly monitored by site in-charge. Sample copy of filled checklist is enclosed as **Annexure IX**.

Efforts are being made to hire labourers locally to the extent possible, else same have been outsourced. The workers 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 of the workforce. Safety induction & awareness programme including HIV/AIDS are also conducted at every active site. Safety film for transmission project in local language is 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.

The COVID-19 pandemic outbreak which not only created unprecedented situation all over world but has also impacted every aspects/ activities including project implementation. Since such pandemic was totally unforeseen/ unexpected, impacts associated with such events/situations were not been specifically included in existing EMPs. However, the existing safety plan and other contract conditions particularly related to labours do have provisions to deal with such extraordinary situations.

Since Govt. of India has enforced The Disaster Management Act, 2005 and Epidemic Diseases Act, 1897, w.e.f. March, 2020 in whole of India which empower the GoI & State Govt. to take special measures and prescribe regulations in an epidemic to control the spread of the virus. Provisions of these acts which are also enforceable on all provide that all the protocols of

Govt of India and State Govt in respect of COVID-19 are to be mandatorily followed. Individual protocols also required necessary permission from Govt. Therefore, POWERGRID and all its contractors were duty bound to follow the instructions of government including closing of all construction activities during lockdown and the guidelines issued after detailed assessment regarding unlock which allows work to start with certain conditions. Based on this, POWERGRID's Corporate Safety Cell has also prepared a detailed guideline / plan to be followed at all its establishments, Construction sites and O&M during resumption of work in COVID-19 situation and site officials/contractors directed for ensuring strict implementation of the said guidelines. Besides, POWERGRID has provided food relief/exgratia payment to stranded workers and also financial assistance for improvement of health infrastructure/other medical facility/equipment. Measures undertaken at construction Sites in response to COVID-19 are:

- Arrangement of RT PCR /Rapid Antigen test for the labour as per requirement based on symptoms, on contact tracing, upon new workforce joining the existing workforce or upon completion of the quarantine period, as required.
- If the construction works have been stopped due to COVID conditions in the local areas and labour have to be kept idle, providing of food/amenities during such period are being ensured.
- Covid-19 positive labours have been kept in designated quarantine center and all expenditures are being borne by POWERGRID.
- Sanitizers, Face masks, Gloves and other COVID related PPEs are provided for construction workers along with employees. Thermal scanning is being done on daily basis.

During site visit also it was observed that the COVID-19 pandemic outbreak has impacted every aspects/ activities of project implementation. The biggest impact on the project implementation is the irregular availability of manpower. Due to the lockdown at both the waves labour gangs had to be dismantled and it became impossible to assemble same gang when lockdowns were eased out. Also, the uncertainty of COVID-19 virus has resulted in unwillingness of out station workers/ labours to join as fear of getting stuck if once again lockdown is announced prevails. This has resulted in contractors getting the work done at the mercy of whatever labours are available. Further, over a period of time contractors have also started neglecting the health and safety aspect. As a result, all the records related to health and safety aspects which were well initiated are not maintained now; labours, supervisors/ engineers of contractor as well as IA staff were seen without any PPEs during construction; workers were not aware about their health and safety during construction; labours were not aware about availability of first aid box at construction site; first aid box contained expired date medicines, except at Amingaon there was no ambulance at site; surroundings of labour camp was unhygienic; Control Room Buildings are being used as labour camps; records of labours' health checkup were missing at most of the sites; lack of induction and training programme was observed at most of the sites; except of a few there were no safety signs.

Though, the site incharges have ensured full compliance of worker's health/ safety prior to COVID-19 pandemic. Staff of IA i.e. PGCIL designated as Environment, Health and Safety

Engineer also confirmed the compliance No instance of any sort of mis happening with worker's health/ safety also justifies compliance of worker's health/ safety.



Lack of use of PPEs



Labour Camp at 220/ 132 kV Amingaon S/S



Labour Camp at 132/ 33 kV Hazo S/S



Labour Camp at 132/ 33 kV Tangla S/S

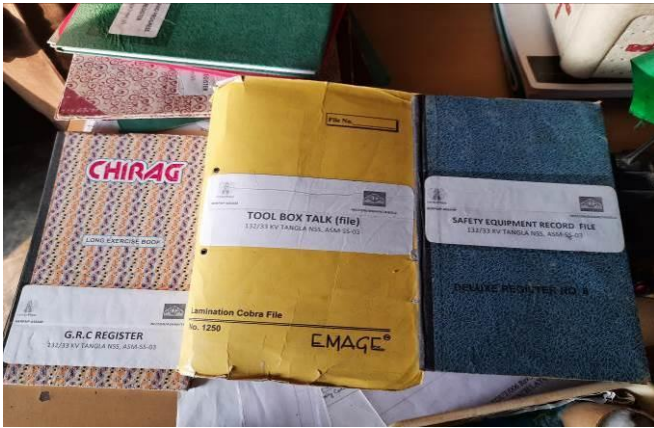


Labour Camp at 33/ 11 kV LGM Hospital S/S





Condition of First Aid Boxes at Site



Records Well Started but Not Maintained



Condition of Limited Sign Boards

5.5 ENVIRONMENTAL PROBLEMS RESULTING FROM OPERATION

5.5.1 O&M Staff/Skills Less Than Acceptable Resulting in Variety of Adverse Effects

The O & M program is normally 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 is 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. Monthly monitoring reports are generated and appraised to Management, including a report of corrective action taken and a schedule for future action.

AEGCL/ APDCL follows the best international practices while designing its system to maintain acceptable prescribed Electro Magnetic Field (EMF) level. The ICNIRP guideline for acceptable EMF level for the general public (up to 24 hours a day) is a maximum exposure level of 1,000 mG or 100 μ T. Further, because of health and safety issues such as fire safety, safe voltages on metallic parts of buildings, and safety clearances to avoid flashover, the transmission lines do not pass directly over any residential properties and as such the potential for EMF effects to occur is further diminished.

As regard control of SF6 leak it may be noted that present standard of SF6 gas leakage from GIS substation is 0.5% per year. This aspect has been adequately addressed in tender document under Clause 4.9 of Technical Specification Part-I:

“The maximum SF6 gas leakage shall not exceed 0.5% (half percent) per year for the whole equipment and for any individual gas compartment separately. The SF6 gas leakage should not exceed 0.5% per year and the leakage rate shall be guaranteed for at least 10 years”.

Poly Chlorinated Biphenyls (PCBs) due to their high heat capacity, low flammability and low electrical conductivity were extensively used as insulating material in capacitors and transformers. But after the finding that these PCBs are non-biodegradable and have carcinogenic tendency, their use in electrical equipment as insulating medium has been banned all over the world long back. However, it has been reported in some studies that chances of contamination of oil with PCB is possible. Keeping that in mind, AEGCL/ APDCL has discontinued procurement of electrical equipment containing PCB more than 2 mg/kg and specification (as per IEC 61619 or ASTM D4059) is being stated in the tender document. Moreover, the subject scheme doesn't involve replacement of any PCB containing equipment, hence no disposal of such equipment is anticipated.

5.6 CRITICAL ENVIRONMENTAL REVIEW CRITERIA

5.6.1 Loss of Irreplaceable Resources

The T & D projects do not involve any large scale excavation. In transmission line land is affected to the extent 144 sq. m below the tower base for which compensation is paid to land

owner. However, loss of land is insignificant due to erection of pole for distribution line. Moreover, the subject transmission and distribution lines are not passing through any forest area; hence the problem of losing natural resources is not envisaged.

5.6.2 Accelerated Use of Resources for Short-term Gains

The subprojects are not making use of any natural resources occurring in the area during construction and are not utilizing the same during maintenance phases. The construction material such as tower members, cement etc. are being sourced from factories while the excavated soil is being reused for backfilling to restore the surface. During construction of transmission line, very small quantity of water is required which is met from nearby existing source or through tankers. However, for substation water requirement is met mostly by ground water derived by digging a borewell during construction as well as for operational stage. Moreover, provision of rain water harvesting in all proposed substations under the present scheme has been made to conserve precious water resources and enhance the ground water level. The aggregates used for construction are already available within substation area due to cutting, thus no new borrow area will be created. Hence, it may be seen that the activities associated with implementation of subject project shall not cause any accelerated use of resources for short term gain.

5.6.3 Endangering of Species

As described earlier, no endangered species of flora and fauna exist in the subprojects area getting affected and considering aerial nature of transmission and distribution project, there is no possibility of endangering/ causing extinction of any species.

5.6.4 Promoting Undesirable Rural-to Urban Migration

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

5.7 PUBLIC CONSULTATION

Public consultation/ information dissemination is a continuous process starting with the project conception and continues during project implementation and even during O&M stage. Public is informed about the project at every stage of execution. During survey, AEGCL/ APDCL & POWERGRID site officials met people and informed 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, were consulted. Apart from this, Public consultation using different technique like Public Meeting, Small Group Meeting, informal Meeting have been carried out during different activities of project cycle. During such consultation, the public is informed about the project in general and in particular about the following:

- Complete project plan (i.e. its route and terminating point and substations, if any, in between);
- Design standards in relation to approved international standards;
- Health impacts in relation to EMF;
- Measures taken to avoid public utilities such as school, hospitals, etc.;

- Other impacts associated with transmission & distribution lines and MSPCL approach to minimizing and solving them;
- Trees and crop compensation process.

In the instant project also, many group meetings were organized (informally and formally) by IA & AEGCL/ APDCL in all villages where the interventions are happening. These meetings were attended by Village Panchayat members, senior/respected person of village, interested villagers/general public and representatives from AEGCL/ APDCL & IA. To ensure maximum participation, prior intimation in local language was given and such notices were also displayed at prominent places/panchayat office etc. During consultations/interaction processes with people of the localized areas, AEGCL/ APDCL field staffs explained benefit of the project, impacts of transmission line, payment of compensation for damaged of crops, trees, huts etc. as per The Indian Electricity Act, 2003 and The Indian Telegraph Act, 1885 and measures to avoid public utilities such as schools, hospital etc. People more or less welcomed the construction of the proposed project. Various issues inter alia raised by the people during public consultation and informal group meetings are as follows;

- To involve village headman during survey work/finalization of line corridor;
- To engage local people in various works associated with construction of line and if required proper training may be provided to engage them.
- To provide flexibility in disbursement of compensation;
- Direct payment of compensation to affected land owners and expeditious disbursement of compensation.

Also, during site visits, consultations were conducted with various stake holders belonging to community and affected people. Target group included contractor, IA Staff, labours and villagers. These consultations were carried out to capture the views of stakeholders about the project plan, design and layout of the project, environmental and social impacts, compensation process, benefits or drawback of the project etc.

It needs to be emphasized that public consultation was kept restricted due to the apprehensions of IA and contractors for security and other law & order related issues which were communicated and advised to field team at onset of field surveys itself and hence limited stakeholder consultations have been carried out. However, it was ensured that consultations representatively covered most stakeholders involved. Major findings of the consultations are summarized below:

- People are well aware about the project, its various components and confirmed that IA & AEGCL/ APDCL informs about the project at every stage of execution.
- Considering that the state of electricity supply in the state is very weak, people welcomed the project as it will not only improve overall power supply situation but will also improve reliability, quality, security and enhancement of power supply of the state.
- People confirmed that IA & AEGCL/ APDCL 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 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.
- No cases of conflict between migrant and local population has been reported till date.
- 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 for local vendors and shopkeepers that helps in economic upliftment of the area
- The contractor labor informed that they have not been provided with PPEs such as boots and helmets.
- Mock drills such as fire safety, first aid etc. were conducted periodically to enhance the preparedness level. Safety induction & awareness programme including HIV/AIDS were also conducted.
- 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









5.8 COMPLIANCE OF EMP

The IA has a continuous monitoring mechanism of the project w.r.t. compliance of the mandatory requirements as stipulated in the IEAR. As many provisions of EMP related to construction contractor, EMP has been made integral part of contract document for its proper implementation by contractor/sub-contractor. Thus, the adherence to the clauses by the contractor is regularly monitored especially in respect of various implementation E & S measures including health and safety aspects. As part of the present study, mitigation measures as stipulated in the IEAR have been critically assessed/evaluated for compliance through physical inspection, verification of record/ documents/ drawing, interaction with project officials/contractor/ villagers/construction workers and PRA etc. Based on above, a detailed compliance status w.r.t. each identified impacts enlisted in EMP have been prepared and is presented in **Table 5.11**.

Table 5.11: Compliance of EMP

Cl. No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Compliance Status
Pre-Construction				
1	Location of overhead line towers/ poles/ underground distribution lines and alignment & design	Exposure to safety related risks	Setback of dwellings to overhead line route designed in accordance with permitted level of power frequency and the regulation of supervision at sites.	Complied with. Route alignment criterion is part of survey contract wherein all statutory Electrical clearances as stipulated under CEA's regulations, 2010 (Measures related to safety & electric supply) are 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.	Complied with. 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 ASTM D4059
			Processes, equipment and systems not to use chlorofluorocarbons (CFCs), including halon, and their use, if any, in existing processes and systems should be phased out and to be disposed of in a manner consistent with the requirements of the Government	Complied with. CFC free equipments are being procured.
3	Transmission/ Distribution line design	Exposure to electromagnetic interference	Line design to comply with the limits of electromagnetic interference from overhead power lines	Complied with. AEGCL/ APDCL follows the best international practices while designing its system to maintain acceptable prescribed Electro Magnetic Field (EMF) level. Designed as per guidelines of ICNIRP and ACGIH and checked by CPRI & M/s PTI, USA
4	Substation location and design	Exposure to noise	Design of plant enclosures to comply with noise regulations.	Complied with. Transformers with maximum noise emitting level of 75 dB specified in tender specifications. Sound proof enclosures used for D.G sets
		Social inequities	Careful selection of site to avoid encroachment of socially, culturally and archaeological	Complied with. No encroachment of any socially sensitive areas

Cl. No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Compliance Status
			sensitive areas (i. g. sacred groves, graveyard, religious worship place, monuments etc.)	due to proposed substations.
5	Location of overhead line towers/poles/ laying of underground distribution line & alignment and design	Impact on water bodies	Avoidance of such water bodies to the extent possible. Avoidance of placement of tower inside water bodies to the extent of possible	Complied with. Part of detailed alignment survey and design. No tower/pole located in water bodies.
		Social inequities	Careful route selection to avoid existing settlements and sensitive locations	Complied with. Part of detailed tower/pole alignment survey design. All socially sensitive areas including habitated areas avoided for TLs. However, DLs due to their functional mandate are bound to pass through habitated areas.
			Minimise impact on agricultural land	Complied with. Though major section of proposed lines are routed through agricultural land in order to avoid impact on environmentally/ socially sensitive areas, efforts such as scheduling of construction lean/ post-harvest period, consultation with local authorities/ autonomous councils etc. are being made to minimize impacts on agricultural land/produce to the extent possible
			Careful selection of site and route alignment to avoid encroachment of socially, culturally and archaeological sensitive areas (i. e. sacred groves, graveyard, religious worship place, monuments etc.)	Complied with. All settlements & ecologically sensitive areas avoided.
6	Involuntary acquisition or permanent land acquisition for substation.	Social inequities	Compensation and R&R measures as per provision of RFCTLARRA, 2013	Since no involuntary 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	Avoid siting into such areas by careful site and alignment selection (National Parks, Wildlife	Complied with. Part of detailed siting and alignment

Cl. No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Compliance Status
		precious species	Sanctuary, Biosphere Reserves/ Biodiversity Hotspots) Minimize the need by using RoW wherever possible	survey/design. All such areas are avoided
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 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	Not Applicable as there are no wildlife corridors Complied with. All such identified/ established birds migratory path have been avoided.
9	Line through forestland	Deforestation and loss of biodiversity, edge effect	Avoid siting of line by careful site and alignment selection Minimise the need by using existing towers, tall towers and RoW, wherever possible Measures to avoid invasion of alien species Obtain statutory clearances from the Government Consultation with autonomous councils wherever required	Complied with. Forest land has been completely avoided. Complied with. Forest land has been completely avoided. Invasion of alien species not anticipated NA Complied with. NOC are being obtained from the village councils.
10	Lines through farmland	Loss of agricultural production/ change in cropping pattern	Use existing tower or footings wherever possible Avoid siting new towers on farmland wherever feasible	Complied with. While passing through agricultural land construction activities are scheduled mostly during lean period so that damage to standing crop is avoided. However, full compensation as per assessment of revenue authorities is paid to land owner/farmer in case of inevitable damages.

Cl. No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Compliance Status
11	Noise related	Nuisance to neighbouring properties	Substations sited and designed to ensure noise will not be a nuisance	Complied with. Part of detailed equipment design. Substations are appropriately sited and away from settlement area. Transformers with maximum noise emitting level of 75 dB 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	Complied with. Part of detailed 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 with spill cleanup equipment.	Complied with. Part of detailed equipment design /drawings. Designed with oil spill containment systems having sump of capacity of 200% of oil volume of largest transformer.
			Substations to include drainage and sewage disposal systems to avoid offsite land and water pollution.	Complied with. Proper drainage and sewage system are part of detailed substation layout and design /drawings based on site condition.
14	Equipment submerged under flood	Contamination of receptors	Substations constructed above the high flood level (HFL) by raising the foundation pad	Complied with. Part of detailed substation layout and design /drawings. All substations are being constructed above HFL.
15	Explosions /Fire	Hazards to life	Design of substations to include modern firefighting equipment	Complied with. Part of detailed substation layout and design /drawings. Compliance assured by site manager
			Provision of firefighting equipment to be located close to transformers	Complied with. Part of detailed substation layout and design /drawings. Compliance assured by site manager
Construction				
16	Equipment layout and installation	Noise and vibrations	Construction techniques and machinery selection seeking to minimize ground	Complied with (Refer Section 5.3.5). Noise produced by concrete mixing equipment

Cl. No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Compliance Status
			disturbance.	and excavators are temporary and confined to day time only. 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 harvest wherever possible).	Complied with (Refer Section 5.2.2). Excavations not done during monsoon which is the cropping period. However, full compensation as per assessment of revenue authorities are being paid to land owner/ farmer by IA/AEGCL/APDCL in case of inevitable damages. Till date no grievance has been received in this regard
18	Mechanized construction	Noise, vibration and operator safety, efficient operation	Construction equipment to be well maintained.	Complied with (Refer Section 5.3.5). Some noise is unavoidable during day time but no noise at night as no work is being undertaken at night. Noise levels' measurements are done regularly by IA & Construction contractor. Noise level measured during site visits to all active sites found to be within permissible limits (<75 dB). Till date no grievance has been received in this regard
		Noise, vibration, equipment wear and tear	Turning off plant not in use.	Complied with.
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.	Complied with (Refer Section 5.2.1.1, 5.4.1 and 5.4.3). Existing roads and tracks have been used for construction and maintenance. However, new approach roads of 200 m, 33 m, 100 m and 62 m have been constructed for 220/132 kV Amingaon, 132/33 kV Tangla, 132/33 kV Tezpur and 33/11 kV Harisingha sub-stations respectively. In addition, regular sprinkling have been undertaken to suppress increase in the

Cl. No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Compliance Status
				airborne dust particles.
		Increased land requirement for temporary accessibility	New access ways restricted to a single carriageway width within the RoW.	Complied with (Refer Section 5.2.1.1 and 5.4.1). Most of the tower locations are easily accessible through existing roads/ paths. Additional land has not been acquired for 4 new approach roads needed for 4 substations.
20	Construction activities	Safety of local villagers	Coordination with local communities for construction schedules, Barricading the construction area and spreading awareness among locals	Complied with (Refer Section 5.4.2). Excavated areas are barricaded and restriction to enter work site during construction have been strictly followed. Till date no grievance has been received in this regard
		Local traffic obstruction	Coordination with local authority/ requisite permission for smooth flow of traffic	Complied with. Most of the tower/pole locations are in agricultural land. Hence, no traffic obstruction is witnessed. For substation location, smooth traffic flow is ensured by project authorities/contractor in close co-ordination with local authorities wherever necessary.
21	Temporary blockage of utilities	Overflows, reduced discharge	Measure in place to avoid dumping of fill materials in sensitive drainage area	Complied with (Refer Section 5.3.5). No dumping is observed. All overburden is 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.	Complied With. Prior to undertaking clearance, marking has been undertaken to ensure minimal removal of vegetation during detailed survey. Minimum trees have been felled for construction of T&D network and sub-stations.
			No use of herbicides and pesticides	Not Applicable
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	Complied With. Regulated felling in RoW is being carried out with the permission of owner and revenue

Cl. No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Compliance Status
			per the regulations.	authorities keeping required electrical clearance as per applicable norms (CEA's regulations, 2010 (Measures related to safety & electric supply)
		Loss of vegetation and deforestation	Trees that can survive pruning to comply should be pruned instead of cleared.	Complied With. Actual damage/tree felling is minuscule and limited 3m strip below each conductor and not in entire RoW. However, after stringing natural vegetation is allowed to regrowth in all these cleared strips except for one strip which is kept clear of vegetation for maintenance purpose. In remaining RoW area, only pruning/ pollarding is done to maintain electrical clearance.
			Felled trees and other cleared or pruned vegetation to be disposed of as authorized by the statutory bodies.	Complied With. Felled trees are handed over to land owner. IA/AEGCL/APDCL 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)	Complied with. Cooking Gas/ fuel wood is being provided by the Contractor.
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	Complied with (Refer Section 5.4.1). Soil backfilled and excess spread out evenly and compacted. Excavated soil was properly stored and no dumping observed in visited sites/ location.
26	Substation construction	Loss of soil	Loss of soil is not a major issue as excavated soil will be mostly reused for filling. However, in case of requirement of excess soil the same will be met from existing quarry or through deep excavation of existing pond or other nearby barren land with agreement of local	Complied with (Refer Section 5.4.1, 5.4.4 & 5.4.5). Excavated soil used optimally for backfilling and distribution within the substations' boundary is adequate. However, excess soil was required for three 132/33 kV substation and three 33/11

Cl. No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Compliance Status
			communities	kV substations. Sources were identified and approved.
		Water pollution	Construction activities involving significant ground disturbance (i.e. substation land forming) not undertaken during the monsoon season	Complied with No construction during monsoons. No seepage or water pollution observed.
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	Complied with Already explained at clause no. 23.
28	Substation foundation/ Tower erection disposal of surplus earthwork/fill	Waste disposal	Excess fill from substation/tower foundation excavation disposed of next to roads or around houses, in agreement with the local community or landowner	Complied with (Refer Section 5.4.1 & 5.4.4) Excavated soil optimally used. Backfilling and spreading of excess soil within substation area undertaken by project authorities
29	Storage of chemicals and materials	Contamination of receptors (land, water, air)	Fuel and other hazardous materials securely stored above high flood level.	Proper compliance to be ensured. To be stored in designated area inside the premise at most sites.
30	Construction schedules	Noise nuisance to neighbouring properties	Construction activities only undertaken during the day and local communities informed of the construction schedule.	Complied with Construction in day time only
31	Provision of facilities for construction workers	Contamination of receptors (land, water, air)	Construction workforce facilities to include proper sanitation, water supply and waste disposal facilities.	Complied with (Refer Section 5.4.6). As assured by the IA.
32	Influx of migratory workers	Conflict with local population to share local resources	Using local workers for appropriate asks	Complied with (Refer Section 5.4.6). Local workforces have been given preference based on skill levels.
33	Lines through farmland	Loss of agricultural productivity	Use existing access roads wherever possible Ensure existing irrigation facilities are maintained in working condition Protect /preserve tops soil and reinstate after construction completed Repair /reinstate damaged bunds etc. after	Complied with. Observation already provided at Clause no 19 above. Repair/restoration done immediately wherever required. Till date no grievance has been received in this

Cl. No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Compliance Status
			construction completed	regard.
		Social inequities	Land owners/ Farmers compensated for any temporary loss of productive land as per existing regulation.	Compensation for land and damage to crop/tree etc. is being paid to land owner after assessment by revenue authorities. It is suggested that project authorities expedite process for early payment
34	Uncontrolled erosion/silt runoff	Soil loss, downstream siltation	<p>Need for access tracks minimised, use of existing roads.</p> <p>Limit site clearing to work areas</p> <p>Regeneration of vegetation to stabilise works areas on completion (where applicable)</p> <p>Avoidance of excavation in wet season</p> <p>Water courses protected from siltation through use of bunds and sediment ponds</p>	<p>Complied with (Refer Section 5.4.1). Observation already provided at Clause no 19 above.</p> <p>Construction during monsoon avoided as far as possible.</p>
35	Nuisance to nearby properties	Losses to neighbouring land uses/ values	<p>Contract clauses specifying careful construction practices.</p> <p>As much as possible existing access ways will be used</p> <p>Productive land will be reinstated following completion of construction</p>	Complied with (Refer Section 5.4.2). Good 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 will be paid for loss of production, if any.	Observation already provided at Clause no 33 above.
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 ongoing construction activities	Complied with. Good construction management practices are being employed at sites to avoid blockage of natural drainage and resultant flooding.
37	Equipment submerged under flood	Contamination of receptors (land, water)	Equipment stored at secure place above the high flood level (HFL)	Complied with. (Refer Section 5.4.1). Substations are constructed above HFL.
38	Inadequate siting of borrow areas (quarry areas)	Loss of land values	Existing borrow sites will be used to source aggregates, therefore, no need to develop new sources of aggregates	Complied with. Observation already provided at Clause no 26 above.
39	Health and safety	Injury and sickness of	Safety equipment's (PPEs) for construction	Complied with (Refer Section 5.4.6).

Cl. No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Compliance Status
		workers and members of the public	workers Contract provisions specifying minimum requirements for construction camps Contractor to prepare and implement a health and safety plan. Contractor to arrange for health and safety training sessions	As assured by the IA.
40	Inadequate construction stage monitoring	Likely to maximise damages	Training of environmental monitoring personnel Implementation of effective environmental monitoring and reporting system using checklist of all contractual environmental requirements Appropriate contract clauses to ensure satisfactory implementation of contractual environmental mitigation measures.	More specific and periodic awareness/ training on IEAR, ESPPF etc. requirements for effective implementation/ monitoring of provisions of IEAR, ESPPF and contract conditions to achieve 100% compliance.
Operation and Maintenance				
41	Location of line towers/poles and overhead/ underground line alignment & design	Exposure to safety related risks	Setback of dwellings to overhead line route designed in accordance with permitted level of power frequency and the regulation of supervision at sites.	Complied/Being complied. Route alignment criterion is part of survey contract which was followed thoroughly during construction and no incident have been reported so far.
42	Line through identified bird flyways, migratory path	Injury/ mortality to birds, bats etc. due to collision and electrocution	Avoidance of established/ identified migration path (Birds & Bats). Provision of flight diverter/reflectors, elevated perches, insulating jumper loops, obstructive perch deterrents, raptor hoods etc., if applicable	Complied/Being complied. The line routes don't form part of any such areas. Moreover, no incident of injury /mortality of avifauna due to construction of lines have been reported from any sites so far.
43	Equipment submerged under flood	Contamination of receptors (land, water)	Equipment installed above the high flood level (HFL) by raising the foundation pad.	Complied/ Being complied. Already part of detailed substation design.
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.	Complied/ being complied Oil sump of sufficient capacity already provided for each transformer which was also part of detailed substation design. However, no spillage of transformer oil is observed/ reported

Cl. No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Compliance Status
				so far.
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 inventory and use, enhance recovery and applying new technologies to reduce leakage	Complied/ being complied. Regular monitoring and controlled inventory is ensured to avoid any leakage of SF6.
46	Inadequate provision of staff/workers health and safety during operations	Injury and sickness of staff /workers	Careful design using appropriate technologies to minimise hazards	Complied/ being complied. All safety related precautions/ systems/ plans are in place. Proper safety training for workers are being conducted on regular interval including mock drills on fire and other occupational hazards. However, more training to be conducted to create awareness on use of PPEs /safety gear.
			Safety awareness raising for staff.	
			Preparation of fire emergency action plan and training given to staff on implementing emergency action plan	
			Provide adequate sanitation and water supply facilities	
47	Electric Shock Hazards	Injury/ mortality to staff and public	Careful design using appropriate technologies to minimise hazards	Complied/ being complied. Used of technology like tripping line/substation in milliseconds in case of any hazards. Boundary and Security fences are maintained at each substation. Sufficient barriers with warning signages are maintained at appropriate places of line/substation. Further, regular awareness/ mock drill on electrical safety and other occupational hazards are being undertaken.
			Security fences around substations	
			Barriers to prevent climbing on/ dismantling of transmission	
			Appropriate warning signs on facilities	
48	Operations and maintenance staff skills less than acceptable	Unnecessary environmental losses of various types	Adequate training in O&M to all relevant staff of substations & transmission/ distribution line maintenance crews.	Being complied. Regular trainings are being imparted to staffs engaged in O & M activity based on their skill at regular interval
			Preparation and training in the use of O&M manuals and standard operating practices	
49	Inadequate periodic environmental monitoring.	Diminished ecological and social values.	Staff to receive training in environmental monitoring of project operations and maintenance activities.	Being complied.
50	Equipment specifications and	Release of chemicals and	Processes, equipment and systems using	Complied/ Being complied.

Cl. No.	Project activity/ stage	Potential impact	Proposed mitigation measures	Compliance Status
	design parameters	gases in receptors (air, water, land)	cholorofluorocarbons (CFCs), including halon, should be phased out and to be disposed of in a manner consistent with the requirements of the Govt.	Already part of equipment specification (CFC Free)
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	Complied/ Being complied. Designed as per guidelines of ICNIRP and ACGIH and checked by CPRI &M/s PTI, USA.
52	Uncontrolled growth of vegetation	Fire hazard due to growth of tree/shrub /bamboo along RoW	Periodic pruning of vegetation to maintain requisite electrical clearance. No use of herbicides/ pesticides	Being complied.
53	Noise related	Nuisance to neighbouring properties	Substations sited and designed to ensure noise will not be a nuisance.	Complied/ being complied. The average noise level reported at the boundary of substation is well within permissible limit.

5.9 CONCLUSIONS

It is vivid from the above discussion that all transmission & distribution line routes and substations location have been selected judiciously by considering the technical, environmental, socio-economic aspects. Though some changes in line length & route alignment have been observed in transmission /distribution lines as compared to IEAR scope but as a result careful route selection IA could able to avoid ecologically & socially sensitive areas including forest, protected areas, PCR etc. completely in all the lines and substations being implemented under this project.

The provisions of IEAR & EMP are being implemented at ground level and strict compliance by construction contractors is ensured through regular monitoring by IA. So far, no major impacts apart from earlier identified impacts are anticipated due to such changes in scope. Besides, all other 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 so far, 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 vigil of the IA.

It has also emerged from the survey & PRA exercise that the PAPs 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. However, following suggestions may be considered to further improve the safeguard measures and also enhance the environmental sustainability of project.

- During the construction phase, the implementing agency needs to ensure strict compliance of the contract provisions/EMP by Contractor especially in respect of workers health and safety.
- Along with labours, supervisors, engineers and Staff of Implementing Agency (IA) should also need to follow the health and safety precautions.
- Need of regular induction and training program for labours and engineers at all sites.
- Training for PMU staff regarding monitoring and implantation of EMP as proposed in IEAR.
- Records of labour registration, health checkup of labours and other working staff need to be maintained at all sites and strictly monitoring to avoid engagement of child labour.
- Training and awareness regarding cleanliness and solid waste disposal to maintain the hygiene in the labour camps and construction sites.
- Demarcation and protection for sites where work has been on hold due to various reasons to avoid accidents and runoff of excavated soil from construction sites
- Project staff of the implementing agency should be well versed with the contents of the IEAR so as to ensure proper compliance by the contractors.
- All the drainage provided in the substation area should be covered to prevent any accidents.

Overall, the commissioning of the project will augment the power distribution and availability in the region which will further catalyze economic activity and development of the area/region.

Chapter
6**MONITORING AND ORGANIZATION
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 State Utility and responsible for coordinating with IA in preparing and implementing the project at the State level. It consists of experts across different areas from the Utility 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 the work site/s & operating in close association with the SPCU/ CPIU. PIU reports to the State level "Project Manager" nominated by the Project-in-Charge of IA. The IA has a Core team stationed at the CPIU on a permanent basis, and other IA officers (with required skills) make visits as and when required by this core team. This team represents IA is responsible for all coordination with SPCU, PIU, within IA and MoP, Gol. CPIU also assists MoP, Gol in monitoring project progress and 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;

- A. 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 a formal monthly review meeting. This meeting forum is called as Joint Co-ordination Committee Meeting (JCCM). The IA convenes & keeps record of every meeting. MoP, Gol and The Bank join in as and when needed.
- B. 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 Gol and The Bank.

- C. 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 Gol and The Bank.
- D.** Review meetings are held among MoP, Gol, 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 Gol/ State Government level. Minutes of the meeting shall be prepared by IA and shared with all concerned.

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 IA, POWERGRID endeavours 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 each state including Assam to oversee the E&S management. Besides, AEGCL/APDCL has formed a separate cell at the corporate office level 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 ESPP 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 co-ordination 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 is religiously complied in time bound manner. Additionally, review meeting among MoP, Gol, 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 Gol/ 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) programme. Further, State utility 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.

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 adherences to the clauses by the contractors are regularly monitored especially in respect of various implementations of 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 was 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, it was observed that mitigation measures as suggested in IEAR are mostly complied with even though some gaps were found with respect to proper documentation and condition of labour camp at one of the DMS sub-station.

6.4 GRIEVANCE REDRESSAL MECHANISM (GRM)

Grievance Redress Mechanism (GRM) is an integral and important mechanism for addressing/resolving the concern and grievances in a transparent and swift manner. In accordance with the provision in ESPPF, Grievance Redress Committees (GRC) have to be constituted in Assam both at the project/site level and at Corporate/HQ. This GRC is aimed to provide a trusted way to voice and resolve environment & social concerns of the project, and to address the concerns of the affected person/community in a time bound manner without impacting project implementation.

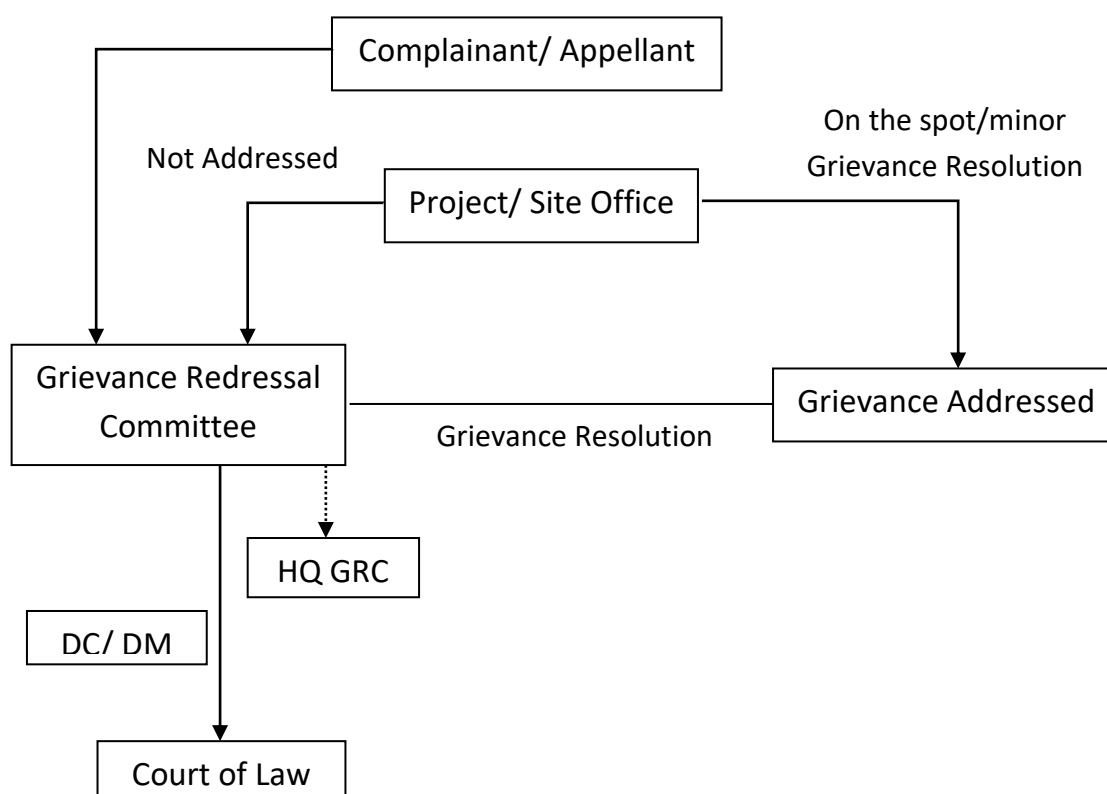
The Corporate/HQ level GRC has been constituted and notified which is headed by Director (PMU). Similarly, project level GRCs have been constituted for each transmission and substations covered under this project. Notifications of Corporate & Project level GRC are placed as **Annexure X**.

Apart from above, grievance redressal is in built in crop/tree/tower footing 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 may also be noted 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. Besides, many concerns/grievances from affected persons/public have been received by Site Offices which are also regularly tracked for early resolution. However, it has been observed that most of them were minor in nature and were resolved instantly and amicably by Site Officials after discussion & deliberation with affected person/ in consultation of revenue/district officials.

The flow chart showing Grievance Redressal Mechanism is presented below.



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

6.4.1 Grievances Received & Resolved

Till date only one written grievance and some verbal grievances have been received at site during project execution. These grievances were resolved at the site itself. Details of complaints received up to February, 2022 are given in **Table 6.1**.

Table 6.1: Details of Complaints

S. 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						

S. No.	Name of the Subproject /State	Location	Name of complainants	Date of complaints	Main Issue of complaints	Status of complaint
B. Written Complaints						
1	132/33 kV substation at Hazo	Substation premises	Villagers of Hazo	25.09.20	Regarding boundary wall of the substation which was claimed to be constructed on the complainant's property	Resolved on 6.10.20 through discussion with the land owners along with APDCL team.
C. Verbal Complaints						
1	220 kV Rangia-Amingaon line	Towers: 9/0, 9/1, 11/0, 23/0, 23/1	Landowners from Nakul No 2, Nij Borigog village		RoW issue (Resistance by landowners)	POWERGRID is constantly pursuing the matter with Stage Government and DC, Kamrup for resolving the issue. The same is under progress and expected to be resolved shortly.
2	220 kV Rangia-Amingaon line	Towers: 30/0, 35/1, 41/0, 41/1, 42/,43/0	Landowners from Haripur village		RoW issue (Resistance by landowners)	
3	220 kV Rangia-Amingaon line	Towers: 48/0, 49/0, 50/0	Landowners from Pacharia village		RoW issue (Resistance by landowners)	
4	132 kV Amingaon-Hazo line	Towers: 5/1, 5/3, 6/0, 6A/0, 7/0, 7/1, 8A/1, 9/0, 10/0	Landowners from Pacharia, Alikash and Pakorkona village		RoW issue (Resistance by landowners)	

ANNEXURE I

Baseline Data on Biological Environment in the Study Area

1. LIST OF ANGIOSPERMS REPORTED FROM THE STUDY AREA

S. No.	Family	Species Name	Habit	Common Name
1	Acanthaceae	<i>Adhatoda vesica</i>	Shrub	Malabar nut
2	Acanthaceae	<i>Andrographis paniculata</i>	Herb	Green chiretta
3	Agavaceae	<i>Agave cantula</i>	Herb	Bombay Aloe
4	Amaranthaceae	<i>Achyranthes aspera</i>	Herb	Chaff-flower
5	Amaranthaceae	<i>Aerva lanata</i>	Herb	The mountain knotgrass
6	Anacardiaceae	<i>Mangifera indica</i>	Tree	Mango
7	Apocynaceae	<i>Alstonia scholaris</i>	Tree	Saptparni
8	Apocynaceae	<i>Calotropis gigantea</i>	Shrub	Giant Indian Milkweed
9	Araceae	<i>Colocasia esculenta</i>	Herb	Pindalu
10	Arecaceae	<i>Areca catechu</i>	Tree	Areca Palm
11	Arecaceae	<i>Phoenix dactylifera</i>	Tree	Date Palm
12	Asteraceae	<i>Ageratum conyzoides</i>	Herb	Billygoat weed
13	Asteraceae	<i>Chromolaena odorata</i>	Shrub	Devil weed
14	Asteraceae	<i>Crassocephalum crepidioides</i>	Herb	Ebobo
15	Asteraceae	<i>Vernonia cinera</i>	Herb	Little ironweed
16	Asteraceae	<i>Xanthium strumarium</i>	Herb	Rough cocklebur
17	Bombacaceae	<i>Bombax ceiba</i>	Tree	Semal
18	Calophyllaceae	<i>Mesua ferrea</i>	Tree	Ceylon ironwood
19	Caricaceae	<i>Carica papaya</i>	Tree	Papaya
20	Combretaceae	<i>Terminalia arjuna</i>	Tree	Arjun Tree
21	Convolvulaceae	<i>Ipomoea cornea</i>	Shrub	The pink morning glory
22	Dilleniaceae	<i>Dillenia pentagyna</i>	Tree	Karmal
23	Euphorbiaceae	<i>Acalypha indica</i>	Herb	Indian acalypha
24	Euphorbiaceae	<i>Mallotus Phillipensis</i>	Tree	Kumkum tree
25	Fabaceae	<i>Acacia auricorlifomis</i>	Tree	Australian Babool
26	Fabaceae	<i>Albezia chinensis</i>	Tree	Black siris
27	Fabaceae	<i>Albezia procera</i>	Tree	White siris
28	Fabaceae	<i>Albizia lebbeck</i>	Tree	Siris
29	Fabaceae	<i>Cassia abbreviata</i>	Tree	Long-tail cassia
30	Fabaceae	<i>Delonix regia</i>	Tree	Gulmohar
31	Fabaceae	<i>Desmodium cephalotes</i>	Shrub	Tick-trefoil
32	Fabaceae	<i>Erythrina variegata</i>	Tree	Indian Coral Tree
33	Fabaceae	<i>Saraca asoca</i>	Tree	Ashoka Tree
34	Lamiaceae	<i>Clerodendrum glandulosum</i>	Shrub	East Indian glory bower
35	Lamiaceae	<i>Gmelina arborea</i>	Tree	Gamhar
36	Lamiaceae	<i>Tectona grandis</i>	Tree	Teak
37	Lamiaceae	<i>Vitex negundo</i>	Herb	five-leaved chaste tree
38	Lauraceae	<i>Actinodaphne obovata</i>	Tree	Pisa
39	Lauraceae	<i>Alseodaphne petiolaris</i>	Tree	Jatisundi
40	Lythraceae	<i>Lagerstroemia speciosa</i>	Tree	Pride of India
41	Lythraceae	<i>Duabanga grandiflora</i>	Tree	Duabanga
42	Magnoliaceae	<i>Michelia glabra</i>	Tree	Champak
43	Marantaceae	<i>Maranta arundinacea</i>	Herb	Arrowroot
44	Melastomataceae	<i>Melastoma affine</i>	Shrub	Blue Tounge
45	Meliaceae	<i>Azadirachta india</i>	Tree	Neem
46	Meliaceae	<i>Chukrasia tabularis</i>	Tree	Chitta gong wood
47	Meliaceae	<i>Toona ciliata</i>	Tree	Toon
48	Moraceae	<i>Artocarpus chama</i>	Tree	Jackfruit
49	Moraceae	<i>Ficus bengalensis</i>	Tree	Banyan Tree

S. No.	Family	Species Name	Habit	Common Name
50	Moraceae	<i>Ficus religiosa</i>	Tree	Pipal
51	Moraceae	<i>Ficus roxburghii</i>	Tree	Fig tree
52	Moringaceae	<i>Moringa oleifera</i>	Tree	Drumstick
53	Musaceae	<i>Musa acuminata</i>	Herb	Banana
54	Myrtaceae	<i>Eucalyptus tereticornis</i>	Tree	forest red gum
55	Phyllanthaceae	<i>Emblca officinalis</i>	Tree	Amla
56	Poaceae	<i>Arundinella bengalensis</i>	Grass	River Grass
57	Poaceae	<i>Bambusa balcooa</i>	Grass	Bhaluka bamboo
58	Poaceae	<i>Bambusa cacharensis</i>	Grass	Bamboo
59	Poaceae	<i>Bambusa tulda</i>	Grass	Jati Bamboo
60	Poaceae	<i>Chrysopogn aciculatus</i>	Grass	lesser spear grass
61	Poaceae	<i>Dendrocalamus hamiltonii</i>	Grass	Koko bamboo
62	Poaceae	<i>Oplismenus compositus</i>	Grass	The running mountain-grass
63	Poaceae	<i>Saccharum spontaneum</i>	Grass	Kans grass
64	Rhamnaceae	<i>Ziziphus mauritiana</i>	Tree	Ber
65	Rubiaceae	<i>Anthocephalus chinensis</i>	Tree	Burflower-tree
66	Rutaceae	<i>Aegle marmelose</i>	Tree	Bel
67	Rutaceae	<i>Murraya koenigii</i>	Shrub	Kari Patta
68	Sapindaceae	<i>Litchi chinensis</i>	Tree	Litchi
69	Sapotaceae	<i>Palaquium polyanthum</i>	Tree	Tali
70	Simaroubaceae	<i>Ailanthus excelsa</i>	Tree	Indian Tree of Heaven
71	Solanaceae	<i>Solanum indicum</i>	Shrub	Bari kateri
72	Theaceae	<i>Schima wallichii</i>	Tree	Needlewood tree
73	Urticaceae	<i>Boehmeria hamiltoniana</i>	Shrub	China Grass
74	Verbenaceae	<i>Lantana camara</i>	Shrub	Lantana

2. LIST OF GYMNOSPERMS REPORTED FROM THE STUDY AREA

S. No.	Family	Botanical name
1	Cycadaceae	<i>Cycas pectinata</i>
2	Cupressaceae	<i>Platyclusus orientalis</i> (Syn. <i>Thuja orientalis</i>)
3	Podocarpaceae	<i>Podocarpus neriifolia</i>

3. LIST OF PTERIDOPHYTES REPORTED FROM THE STUDY AREA

S. No.	Family	Species
1	Athyriaceae	<i>Diplazium esculentum</i>
2	Blechnaceae	<i>Blechnum orientale</i>
3	Dryopteridaceae	<i>Dryopteris sparsa</i>
4	Gleicheniaceae	<i>Dicranopteris linearis</i>
5	Polypodiaceae	<i>Lepisorus excavats</i>
6	Polypodiaceae	<i>Lepisorus sordidus</i>
7	Polypodiaceae	<i>Polypodium sp.</i>
8	Pteridaceae	<i>Adiantum caudatum</i>
9	Pteridaceae	<i>Adiantum philippense</i>
10	Pteridaceae	<i>Pteris vitata</i>
11	Pteridaceae	<i>Adiantum edgeworthii</i>
12	Pteridaceae	<i>Pieris eniformis</i>

S. No.	Family	Species
13	Thelypteridaceae	<i>Proniphrium nudatum</i>

4. LIST OF BRYOPHYTES REPORTED FROM THE STUDY AREA

S. No.	Family	Species
1	Cyathodiaceae	<i>Cyathodium tuberculatum</i>
2	Lejeuneaceae	<i>Lejeunea curviloba</i>
3	Marchantiaceae	<i>Marchantia linearis</i>
4	Marchantiaceae	<i>Marchantia papiliata</i>
5	Marchantiaceae	<i>Marchantia paleacea</i>
6	Metzgeriaceae	<i>Metzgeria lindenbergii</i>
7	Pallaviciniaceae	<i>Pallavicinia lyellii</i>
8	Pelliaceae	<i>Pellia endiviifolia</i>
9	Plagiochilaceae	<i>Plagiochila subtropica</i>

5. RET PLANT SPECIES REPORTED FROM THE STUDY AREA

S. No.	Family	Species	Habit	Conservation Status
1	Acanthaceae	<i>Adhatoda vesica</i>	Shrub	LC
2	Amaranthaceae	<i>Achyranthes aspera</i>	Herb	LC
3	Anacardiaceae	<i>Mangifera indica</i>	Tree	DD
4	Apocynaceae	<i>Alstonia scolaris</i>	Tree	NT
5	Araceae	<i>Colocasia esculenta</i>	Herb	LC
6	Arecaceae	<i>Phoenix dactylifera</i>	Tree	LC
7	Asteraceae	<i>Ageratum conyzoides</i>	Herb	LC
8	Asteraceae	<i>Chromolaena odorata</i>	Shrub	LC
9	Athyriaceae	<i>Diplazium esculentum</i>	Fern	LC
10	Bombacaceae	<i>Bombax ceiba</i>	Tree	LC
11	Calophyllaceae	<i>Mesua ferrea</i>	Tree	VU
12	Caricaceae	<i>Carica papaya</i>	Tree	DD
13	Cupressaceae	<i>Platyclusus orientalis (Syn. Thuja orientalis)</i>	Trees	NT
14	Cycadaceae	<i>Cycas pectinata</i>	Trees	VU
15	Euphorbiaceae	<i>Mallotus Phillipensis</i>	Tree	LC
16	Fabaceae	<i>Acacia auriculiiformis</i>	Tree	LC
17	Fabaceae	<i>Albezia procera</i>	Tree	LC
18	Fabaceae	<i>Albizia lebbeck</i>	Tree	LC
19	Fabaceae	<i>Cassia abbreviata</i>	Tree	LC
20	Fabaceae	<i>Delonix regia</i>	Tree	LC
21	Fabaceae	<i>Erythrina variegata</i>	Tree	LC
22	Fabaceae	<i>Saraca asoca</i>	Tree	VU
23	Lamiaceae	<i>Gmelina arborea</i>	Tree	LC
24	Lamiaceae	<i>Vitex negundo</i>	Herb	LC
25	Lythraceae	<i>Duabanga grandiflora</i>	Tree	LC
26	Meliaceae	<i>Azadirachta india</i>	Tree	LC
27	Meliaceae	<i>Chukrasia tabularis</i>	Tree	LC
28	Meliaceae	<i>Toona ciliata</i>	Tree	LC
29	Moraceae	<i>Ficus bengalensis</i>	Tree	LC
30	Moraceae	<i>Ficus roxburghii</i>	Tree	LC

S. No.	Family	Species	Habit	Conservation Status
31	Moringaceae	<i>Moringa oleifera</i>	Tree	LC
32	Musaceae	<i>Musa acuminata</i>	Herb	LC
33	Myrtaceae	<i>Eucalyptus tereticornis</i>	Tree	LC
34	Phyllanthaceae	<i>Embllica officinalis</i>	Tree	LC
35	Poaceae	<i>Chrysopogn aciculatus</i>	Grass	LC
36	Poaceae	<i>Oplismenus compositus</i>	Grass	LC
37	Poaceae	<i>Saccharum spontaneum</i>	Grass	LC
38	Podocarpaceae	<i>Podocarpus nerifolius</i>	Trees	LC
39	Rhamnaceae	<i>Ziziphus mauritiana</i>	Tree	LC
40	Rutaceae	<i>Aegle marmelose</i>	Tree	NT
41	Rutaceae	<i>Murraya koenigii</i>	Shrub	LC
42	Sapindaceae	<i>Litchi chinensis</i>	Tree	VU
43	Solanaceae	<i>Solanum indicum</i>	Shrub	LC
44	Theaceae	<i>Schima wallichii</i>	Tree	LC

6. PLANT SPECIES USED FOR MEDICINAL PURPOSES IN THE STUDY AREA

S. No.	Family	Name of species	Common Name	Parts Used	Disease/ailment treated
1	Fabaceae	<i>Acacia auriculiformis</i>	Australian Babool	Entire plant	Diuretic
2	Amaranthaceae	<i>Achyranthes aspera</i>	chaff-flower	Stem and leaf	Jaundice and also used in menstruation trouble
3	Acanthaceae	<i>Adhatoda vesica</i>	Malabar nut	Leaves & flower	Cough, fever, dysentery
4	Rutaceae	<i>Aegle marmelose</i>	Bel	Leaves and Fruit	Leaf Juice with black pepper is used to get relief form piles.
5	Asteraceae	<i>Ageratum conyzoides</i>	Billygoat weed	Leaves, roots	Leaves in cuts & sores; roots anthelmintic, anti-allergic
6	Simaroubaceae	<i>Ailanthus excelsa</i>	Indian Tree of Heaven	Seeds	Constipation
7	Fabaceae	<i>Albezia chinensis</i>	Black siris	Bark	Bark paste is wrapped around injured part that supports as bandage
8	Fabaceae	<i>Albizia lebbeck</i>	Siris	Leaves, seeds	Improves womb weakness
9	Apocynaceae	<i>Alstonia scholaris</i>	Saptarni	Stem, Bark	Toothache, Malaria
10	Acanthaceae	<i>Andrographis paniculata</i>	Green chiretta	Leaves	Chronic fever
11	Moraceae	<i>Artocarpus chama</i>	Jackfruit	Seeds, bark	Cancer, asthma
12	Meliaceae	<i>Azadirachta india</i>	Neem	Leaves	Heart problems
13	Poaceae	<i>Bambusa balcooa</i>	Bhaluka bamboo	Culm, Leaves	Insect Bite
14	Poaceae	<i>Bambusa tulda</i>	Jati Bamboo	Shoot	Piles
15	Bombacaceae	<i>Bombax ceiba</i>	Semal	Seed	Liver and stomach trouble
16	Caricaceae	<i>Carica papaya</i>	Papaya	Whole plant	Fruit used in dysentery; Flower in ear trouble; Leaf is used against toothache;

S. No.	Family	Name of species	Common Name	Parts Used	Disease/ailment treated
					seeds are used from deworming
17	Asteraceae	<i>Chromolaena odorata</i>	Devil weed	Leaves	Cuts, wounds
18	Lamiaceae	<i>Clerodendrum glandulosum</i>	East Indian glory bower	Leaves, roots and wood	High blood pressure, hypertension
19	Araceae	<i>Colocasia esculenta</i>	Pindalu	Leaves, stem, rhizome	Vermifuge, laxative
20	Fabaceae	<i>Delonix regia</i>	Gulmohar	Bark	Cough
21	Phyllanthaceae	<i>Emblica officinalis</i>	Amla	Fruits	Cough; source of vitamin improving eye sight
22	Moraceae	<i>Ficus bengalensis</i>	Banyan Tree	Leaves, Bark and Latex	Rheumatism, diarrhoea, dysentery, diabetes;
23	Moraceae	<i>Ficus religiosa</i>	Pipal	Leaves and Bark	Leaf bark used as a tonic
24	Lamiaceae	<i>Gmelina arborea</i>	Beechwood	Leaves	Wound-healing and antidiarrheal properties
25	Convolvulaceae	<i>Ipomoea cornea</i>	The pink morning glory	Fresh milky juice of the plant	Cuts and wounds
26	Lyrthaceae	<i>Lagerstroemia speciosa</i>	Pride of India	Whole plant	Diarrhoea, dysentery, jaundice;
27	Verbenaceae	<i>Lantana camara</i>	Lantana	Leaves	Tetanus; insect repellent
28	Anacardiaceae	<i>Mangifera indica</i>	Mango	Leaves	Jaundice, stomach ache
29	Calophyllaceae	<i>Mesua ferrea</i>	Ceylon ironwood	Bark	Fever, vomiting, urinary tract disorders, migraine
30	Moringaceae	<i>Moringa oleifera</i>	Drumstick	Whole plant	Reducing rheumatic pain
31	Rutaceae	<i>Murraya koenigii</i>	Kari Patta	Leaves	Anemia, stomachic, arthritis, piles
32	Musaceae	<i>Musa acuminata</i>	Banana	Fruit & Flower	Dysentery
33	Combretaceae	<i>Terminalia arjuna</i>	Arjun Tree	Bark	Cardiovascular disease, piles
34	Meliaceae	<i>Toona ciliata</i>	Toon	Leaves	Skin diseases & poxes
35	Asteraceae	<i>Vernonia cinera</i>	little ironweed	Leaves	Useful in leucorrhoe
36	Lamiaceae	<i>Vitex negundo</i>	five-leaved chaste tree	Leaves	Reduce rheumatic pain
37	Asteraceae	<i>Xanthium strumarium</i>	rough cocklebur	Seed and root	Internal wound healing
38	Rhamnaceae	<i>Ziziphus mauritiana</i>	Ber	Fruits	Pneumonia, fever, cough, Toothache, piles

7. WILD EDIBLE PLANT SPECIES USED BY TRIBES IN THE STUDY AREA

S. No.	Name of species	Family	Common Name	Parts used
1	<i>Acalypha indica</i>	Euphorbiaceae	Indian acalypha	Shoots and leaves
2	<i>Achyranthes aspera</i>	Amaranthaceae	chaff-flower	Leaves
3	<i>Adhatoda vesica</i>	Acanthaceae	Malabar nut	Flowers
4	<i>Aegle marmelose</i>	Rutaceae	Bel	Fruit

S. No.	Name of species	Family	Common Name	Parts used
5	<i>Aerva lanata</i>	Amaranthaceae	The mountain knotgrass	Leaves
6	<i>Agave cantala</i>	Agavaceae	Bombay Aloe	Stem
7	<i>Areca catechu</i>	Arecaceae	Areca Palm	Nut, Seed
8	<i>Artocarpus chama</i>	Moraceae	Jackfruit	Fruit
9	<i>Bambusa balcooa</i>	Poaceae	Bhaluka bamboo	Tender shoots
10	<i>Bambusa cacharensis</i>	Poaceae	Bamboo	Tender shoots
11	<i>Bambusa tulda</i>	Poaceae	Jati Bamboo	Tender shoots
12	<i>Bombax ceiba</i>	Bombacaceae	Semal	Flowers, fleshy calyx
13	<i>Carica papaya</i>	Caricaceae	Papaya	Fruit
14	<i>Colocasia esculenta</i>	Araceae	Pindalu	Leaves, Rhizomes
15	<i>Dendrocalamus hamiltonii</i>	Poaceae	Koko bamboo	Young shoots
16	<i>Emblica officinalis</i>	Phyllanthaceae	Amla	Fruits
17	<i>Erythrina variegata</i>	Fabaceae	Indian Coral Tree	Young leaves and sprouts
18	<i>Ficus religiosa</i>	Moraceae	Pipal	Fruits
19	<i>Ficus roxburghii</i>	Moraceae	Fig tree	Fruits
20	<i>Gmelina arborea</i>	Lamiaceae	Beechwood	Fruits and Flower
21	<i>Litchi chinensis</i>	Sapindaceae	Litchi	Fruit
22	<i>Mangifera indica</i>	Anacardiaceae	Mango	Fruit
23	<i>Murraya koenigii</i>	Rutaceae	Kari Patta	Leaves
24	<i>Musa acuminata</i>	Musaceae	Banana	Fruit
25	<i>Phoenix dactylifera</i>	Arecaceae	Date Palm	Fruit
26	<i>Solanum indicum</i>	Solanaceae	Bari kateri	Fruits
27	<i>Vitex negundo</i>	Lamiaceae	five-leaved chaste tree	Leaves
28	<i>Xanthium strumarium</i>	Asteraceae	rough cocklebur	Young shoots
29	<i>Ziziphus mauritiana</i>	Rhamnaceae	Ber	Fruits

8. IMPORTANT TIMBER YIELDING TREE SPECIES REPORTED IN THE STUDY AREA

Species Name	Family
<i>Ailanthus excelsa</i>	Simaroubaceae
<i>Albezia chinensis</i>	Fabaceae
<i>Albezia procera</i>	Fabaceae
<i>Albizia lebbeck</i>	Fabaceae
<i>Alstonia scolaris</i>	Apocynaceae
<i>Areca catechu</i>	Arecaceae
<i>Duabanga grandiflora</i>	Lythraceae
<i>Ficus bengalensis</i>	Moraceae
<i>Gmelina arborea</i>	Lamiaceae
<i>Lagerstroemia speciosa</i>	Lythraceae
<i>Mangifera indica</i>	Anacardiaceae
<i>Mesua ferrea</i>	Calophyllaceae
<i>Phoenix dactylifera</i>	Arecaceae
<i>Tectona grandis</i>	Lamiaceae
<i>Terminalia arjuna</i>	Combretaceae
<i>Toona ciliata</i>	Meliaceae

9. LIST OF MAMMALS REPORTED FROM THE STUDY AREA

S. No.	Order/Family	Scientific Name	Common Name	Conservation Status (IUCN 2021.3)
Order- Cetartiodactyla				
1	Bovidae	<i>Bos gaurus</i>	Gaur	VU
2	Bovidae	<i>Bubalus arnee arnee</i>	Wild Asiatic Water Buffalo	EN
3	Cervidae	<i>Muntiacus muntjak</i>	Barking Deer	LC
4	Cervidae	<i>Rucervus duvaucelii</i>	Eastern Swamp Deer	VU
5	Cervidae	<i>Axis porcinus</i>	Hog Deer	EN
6	Cervidae	<i>Muntiacus vaginalis</i>	Indian Muntjac	LC
7	Cervidae	<i>Rusa unicolor</i>	Sambar	VU
8	Suidae	<i>Porcula salvania</i>	Pigmy Hog	EN
9	Suidae	<i>Sus scrofa</i>	Indian Wild Boar	LC
Order-Carnivora				
10	Felidae	<i>Neofelis nebulosa</i>	Clouded Leopard	VU
11	Felidae	<i>Prionailurus viverrinus</i>	Fishing Cat	VU
12	Felidae	<i>Pardofelis temminckii</i>	Golden Cat	NT
13	Felidae	<i>Felis chaus</i>	Jungle Cat	LC
14	Felidae	<i>Panthera pardus</i>	Leopard	VU
15	Felidae	<i>Prionailurus bengalensis</i>	Leopard Cat	LC
16	Felidae	<i>Pardofelis marmorata</i>	Marbled cat	NT
17	Felidae	<i>Panthera tigris</i>	Tiger	EN
18	Viverridae	<i>Arctictis binturong</i>	Binturong	VU
19	Viverridae	<i>Paradoxurus hermaphroditus</i>	Common Palm Civet	LC
20	Viverridae	<i>Paguma larvata</i>	Himalayan Palm Civet	LC
21	Viverridae	<i>Viverra zibetha</i>	Large Indian Civet	LC
22	Viverridae	<i>Viverricula indica</i>	Small Indian Civets	LC
23	Herpestidae	<i>Urva urva urva</i>	Crab eating mongoose	LC
24	Herpestidae	<i>Herpestes edwardsii</i>	Indian Gray Mongoose	LC
25	Herpestidae	<i>Herpestes javanicus</i>	Small Indian Mongooses	LC
26	Canidae	<i>Vulpes bengalensis</i>	Bengal Fox	LC
27	Canidae	<i>Canis aureus</i>	Golden Jackal	LC
28	Canidae	<i>Cuon alpinus</i>	Wild Dog (Dhole)	EN
29	Ursidae	<i>Ursus thibetanus thibetanus</i>	Himalayan Black Bear	VU
30	Ursidae	<i>Melursus ursinus ursinus</i>	Sloth Bear	VU
31	Mustelidae	<i>Arctonyx collaris</i>	Hog Badger	VU
32	Mustilidae	<i>Melogale personata</i>	Burmese Ferret Badger	LC
33	Mustilidae	<i>Melogale moschata</i>	Chinese Ferret Badgers	LC
34	Mustilidae	<i>Martes foina toufoeus</i>	Stone marlin	LC
35	Prionodontidae	<i>Prionodon pardicolor</i>	Spotted linsang	LC
Order-Pholidota				
36	Manidae	<i>Manis pentadactyla</i>	Chinese Pangolin	CR
37	Manidae	<i>Manis crassicaudata</i>	Indian Pangolins	EN
Order-Primates				
38	Cercopithecidae	<i>Macaca assamensis</i>	Assamese Macaque	NT
39	Cercopithecidae	<i>Macaca mulatta</i>	Rhesus Macaque	LC
40	Cercopithecidae	<i>Trachypithecus pileatus</i>	Capped Langur	VU
41	Hylobatidae	<i>Hoolock hoolock</i>	Western Hoolock Gibbon	VU
Order-Rodentia				
42	Sciuridae	<i>Hylopetes alboniger</i>	Parti-coloured Flying Squirrel	LC

S. No.	Order/Family	Scientific Name	Common Name	Conservation Status (IUCN 2021.3)
43	Sciuridae	<i>Belomys pearsonii</i>	Hairy-footed Flying Squirrel	DD
44	Hystricidae	<i>Atherurus macrourus</i>	Asiatic Brush-Tailed Porcupine	LC
45	Spalacidae	<i>Cannomys badius</i>	Bay bamboo rat	LC
46	Spalacidae	<i>Rhizomys pruinosus</i>	Hoary bamboo rat	LC
Order-Lagomorpha				
47	Leporidae	<i>Caprolagus hispidus</i>	Hispid Hare (rare)	EN
Order-Artiodactyla				
48	Platanistidae	<i>Platanista gangetica gangetica</i>	Gangetic Dolphin	EN
Order-Perissodactyla				
49	Rhinocerotidae	<i>Rhinoceros unicornis</i>	Great Indian One-Horned Rhinoceros	VU
Order-Proboscidea				
50	Elephantidae	<i>Elephas maximus indicus</i>	Asian Elephant	EN

Source: http://asmervis.nic.in/database/animal_diversity_844.aspx

Talukdar et al. (2021): Mammals of Northeastern India: An updated checklist. Journal of Threatened Taxa, 13(4): 18059–18098, <https://doi.org/10.11609/jott.6010.13.4.18059-18098>

10. LIST OF AVIFAUNA REPORTED FROM THE STUDY AREA

S. No.	Order/ Family	Scientific Name	Common Name	Conservation Status (IUCN 2021.3)
Apodiformes				
1	Apodidae	<i>Aerodramus brevirostris</i>	Himalayan Swiftlet	LC
2	Apodidae	<i>Apus affinis</i>	House Swift	LC
3	Apodidae	<i>Apus affinis</i>	House Swift	LC
Charadriiformes				
4	Charadriidae	<i>Vanellus indicus</i>	Red-wattled Lapwing	LC
Columbiformes				
5	Columbidae	<i>Chalcophaps indica</i>	Emerald Dove	LC
6	Columbidae	<i>Columba livia</i>	Rock Pigeon	LC
7	Columbidae	<i>Streptopelia chinensis</i>	Spotted Dove	LC
8	Columbidae	<i>Streptopelia orientalis</i>	Oriental Turtle Dove	LC
9	Columbidae	<i>Treron apicauda</i>	Pintailed Green Pigeon	LC
Coraciiformes				
10	Alcedinidae	<i>Alcedo atthis</i>	Common Kingfisher	LC
11	Alcedinidae	<i>Halcyon smyrnensis</i>	White-throated Kingfisher	LC
12	Coraciidae	<i>Coracias benghalensis</i>	Indian Roller	LC
13	Meropidae	<i>Merops orientalis</i>	Green Bee-eater	LC
Cuculiformes				
14	Cuculidae	<i>Phaenicophaeus tristis</i>	Green-billed Malkoha	LC
15	Cuculidae	<i>Eudynamis scolopaceus</i>	Asian Koel	LC
Galliformes				
16	Phasianidae	<i>Gallus gallus</i>	Red Jungle Fowl	LC
Passeriformes				
17	Campephagidae	<i>Pericrocotus ethologus</i>	Long-tailed Minivet	LC
18	Corvidae	<i>Cissa chinensis</i>	Green Magpie	LC

S. No.	Order/ Family	Scientific Name	Common Name	Conservation Status (IUCN 2021.3)
19	Corvidae	<i>Corvus macrorhynchos</i>	Large-billed Crow	LC
20	Corvidae	<i>Urocissa flavirostris</i>	Yellow-billed Blue magpie	LC
21	Dicaeidae	<i>Dicaeum cruentatum</i>	Scarlet-backed flowerpecker	LC
22	Dicruridae	<i>Dicrurus macrocercus</i>	Black Drongo	LC
23	Lanidae	<i>Lanius schach</i>	Grey Backed Shrike	LC
24	Leiothrichidae	<i>Turdoides striata</i>	Jungle Babbler	LC
25	Motacillidae	<i>Dendronanthus indicus</i>	Forest Wagtail	LC
26	Muscicapidae	<i>Chaimarrornis leucocephalus</i>	White-capped Water-redstart	LC
27	Muscicapidae	<i>Cyornis concretus</i>	White-tailed Flycatcher	LC
28	Muscicapidae	<i>Cyornis rubeculoides</i>	Blue-throated Flycatcher	LC
29	Muscicapidae	<i>Enicurus immaculatus</i>	Black-backed Forktail	LC
30	Muscicapidae	<i>Monticola cinclorhynchus</i>	Blue caped rock thrush	LC
31	Muscicapidae	<i>Rhyacornis fuliginosus</i>	Plumbeous Water Redstart	LC
32	Muscicapidae	<i>Saxicoloides fulicata</i>	Indian Robin	LC
33	Nectariniidae	<i>Cinnyris asiaticus</i>	Purple Sunbird	LC
34	Passeridae	<i>Motacilla alba</i>	White wagtail	LC
35	Passeridae	<i>Passer domesticus</i>	House sparrow	LC
36	Passeridae	<i>Passer montanus</i>	Eurasian Tree Sparrow	LC
37	Phylloscopidae	<i>Phylloscopus fuscatus</i>	Dusky Warbler	LC
38	Pycnonotidae	<i>Pycnonotus cafer</i>	Red Vented Bulbul	LC
39	Sturnidae	<i>Acridotheres fuscus</i>	Jungle myna	LC
40	Sturnidae	<i>Acridotheres tristis</i>	Common Myna	LC
	Pelecaniformes			
41	Phalacrocoracidae	<i>Phalacrocorax fuscicollis</i>	Indian Cormorant	LC
	Piciformes			
42	Picidae	<i>Dendrocopos macei</i>	Fulvous breasted Woodpecker	LC
43	Ramphastidae	<i>Psilopogon asiaticus</i>	Blue throated barbet	LC
44	Megalaimidae	<i>Psilopogon lineatus</i>	Lineated barbet	LC
	Psittaciformes			
45	Psittaculidae	<i>Psittacula alexandri</i>	Red breasted parakeet	LC
	Strigiformes			
46	Strigidae	<i>Athene brama</i>	Spotted Owlet	LC
47	Strigidae	<i>Strix leptogrammica</i>	Brown wood owl	LC

Source: Field Survey; <https://avibase.bsc-eoc.org/checklist.jsp?region=INneas>

11. LIST OF BUTTERFLIES REPORTED FROM THE STUDY AREA

S. No.	Family	Scientific Name	Common Name
1	Nymphalidae	<i>Junonia atlites atlites</i>	Grey Pansy
2	Nymphalidae	<i>Paltoporia paraka paraka</i>	Perak Lascar
3	Nymphalidae	<i>Ypthima baldus</i>	Common Five ring
4	Nymphalidae	<i>Mycalesis perseus blasius</i>	Common Brushbrown
5	Nymphalidae	<i>Tanaecia lepidea lepidea</i>	Grey Count
6	Nymphalidae	<i>Cirrochroa aoris aoris</i>	Large Yeoman

S. No.	Family	Scientific Name	Common Name
7	Nymphalidae	<i>Lethe mekara</i>	Common Red forester
8	Nymphalidae	<i>Danaus genutia</i>	Striped Tiger
9	Nymphalidae	<i>Neptis hylas varmona</i>	Common Sailor
10	Nymphalidae	<i>Phalanta phalantha</i>	Common Leopard
11	Nymphalidae	<i>Acraea terpsicore</i>	Tawny Coaster
12	Nymphalidae	<i>Melanitis leda leda</i>	Common Evening brown
13	Lycaenidae	<i>Castalius rosimon</i>	Common Pierrot
14	Lycaenidae	<i>Arhropala rama rama</i>	Dark Himalayan oak blue
15	Lycaenidae	<i>Surendra quercetorum quercetorum</i>	Common Acacia blue
16	Lycaenidae	<i>Catochrysops strabo</i>	Forget me-not
17	Lycaenidae	<i>Zizeeria karsandra</i>	Dark Grass blue
18	Lycaenidae	<i>Pseudozizeeria maha maha</i>	Pale Grass blue
19	Riodinidae	<i>Abisara echerius suffusa</i>	Plum Judy
20	Pieridae	<i>Leptosia nina nina</i>	Psyche
21	Pieridae	<i>Eurema hecabe hecabe</i>	Common Grass yellow
22	Pieridae	<i>Delias descombesi descombesi</i>	Red spot Jezebel
23	Pieridae	<i>Pieris canidia indica</i>	Indian Cabbage white
24	Pieridae	<i>Catopsilia pomona</i>	Common Emigrant
25	Papilionidae	<i>Papilo demoleus demoleus</i>	Lime swallow tail
26	Papilionidae	<i>Graphium agamemnon agamemnon</i>	Tailed jay
27	Hesperidae	<i>Tagiades japetus rav</i>	Common Snow flat
28	Hesperidae	<i>Matapa aria</i>	Common Red eye
29	Hesperidae	<i>Artiopterus jama olivascens</i>	Forest Hopper

Source: Field Survey; Buragohain et al. (2018). A preliminary checklist of butterfly diversity in the vicinity of IIT Guwahati Campus, Guwahati, Assam, India. *Journal of Entomology and Zoology Studies*, 6(3): 1845-1852

ANNEXURE II

Details of Tower & Pole Schedule

POWER GRID CORPORATION LTD
220 KV D/C RANGIYA-AMINGAON TRANSMISSION LINE
Name of Agency: M/s. KEC INTERNATIONAL LIMITED

CHECK SURVEY REPORT FROM AP 4/0 (Composite Tower) TO GANTRY (Amingaon)

DI. 27.01.2022

AS PER CHECK SURVEY																
Sl. NO	AP NO	Loc no	Tower type	RC	Angle of Deviation	Span (M)	Section Length (Mtrs)	Cumulative Length	Reduced Level (m)	AS PER CHECK SURVEY			Remarks/Crossing Details			
										AF NO	Loc no	Tower type				
AS PER DETAIL SURVEY																
Sl. NO	AP NO	Loc no	Tower type	RC	Angle of Deviation	Span (M)	Section Length (Mtrs)	Cumulative Length	Reduced Level (m)	Span(M)	Section Length (Mtrs)	Cum. Length	Reduced Level (m)	UTM Co-ordinate Longitude Latitude	Remarks/Crossing Details	
1	DEAD END	0/0	DD+0		00°00'00"LT			0	49.79							
2	AP 1/0	1/0	DB+0		11°40'42"LT	74.00	74.00	74	49.93							
3	AP 2/0	2/0	DD+0		55°46'17"LT	57.00	57.00	131	49.90							
4	AP 3/0	3/0	DD+9	3	52°50'48"LT	82.00	82.00	213	49.79							
5	AP 4/0	4/0	DD+18		05°42'07"LT	166.00	166.00	379	49.30							
6	AP 5/0	5/0	DD+9		34°11'04"LT	145.00	145.00	524	48.96							
7	AP 6/0	6/0	DD+0		34°53'39"LT	135.00	135.00	659	48.89							
Powergrid will lay 438 meter of cable from Loc. No 4/0 to Gantry S/S.																
8	AP 5/0	5/0	DD+9		29°35'49"LT	242.00	242.00	242	45.89							
9	AP 5/0	5/0	DB+3	0	10°22'10"LT	248.00	248.00	490.00	47.75							
10	AP 5/0	5/0	DA+3	0		249.00	249.00	739.00	47.62							
11	AP 6/0	6/0	DA+3	0		315.00	315.00	1054.00	47.35							
12	AP 6/0	6/0	DB+0	1				1074.00	47.02							
13	AP 6/0	6/0	DD+18	1	39°58'43"LT	292.00	292.00	1366.00	47.02							

Checked by: *[Signature]*

31/01/22

05/02/22

[Signature] J. P. G. PEGU
 J. P. G. P. G. M.

[Signature] RAHUL DAS
 RAHUL DAS
 Assistant Engineer

[Signature] POWERGRID, Guwahati

POWERGRID

DD+18m Extension Required due to vertical clearance from New 11kv line. 1 MRC Required

DB Type Tower Required due to weight span violation. 1 M RC Required

COMPOSITE TOWER

132 KV Power Line Crossing Ht. of E/W 11.00 M, 3 KV Line, 11 Kv Line, Naa & Bridge

Vill-Solmari

11KV/Carl Tract

Drain

POWER GRID CORPORATION LTD
220 KV D/C RANGIYA-AMINGAON TRANSMISSION LINE

Name of Agency: M/s. KEC INTERNATIONAL LIMITED

CHECK SURVEY REPORT FROM AP 4/0 (Composite Tower) TO GANTRY (Amingaon)

Dt. 27.01.2022

AS PER DETAIL SURVEY										AS PER CHECK SURVEY													
SL NO	AP NO	Loc no	Tower type	RC	Angle of Deviation	Span (M)	Section Length (Mtrs.)	Cumulative Length	Reduced Level (m)	SL NO	AP NO	Loc no	Tower type	RC	Angle of Deviation	Span(M)	Section Length (Mtrs.)	Cumm. Length	Reduced Level (m)	UTM Co-ordinate Longitude	UTM Co-ordinate Latitude	Remarks/Crossing Details	
						309.00										260.00							Low land, Metal Road/Crosser to Rangiyas, 11 KV line, Ditch.
12	AP 7/0	7/0	DB+9		08°25'23"LT		1473.00	2132	47.81	7	AP 7/0	7/0	DD+18	1	18°16'51"RT		260.00	1626.00	47.81	364104	2925331	DD+18m Extension Required due to vertical clearance from New 11kv line	
13		7/1	DB+6			320.00		2452	47.48	8		7/1	DB+6	1		320.00		1946.00	47.48	364234.12	2925039.19	11KV line, 33 KV line 1 M RC Required	
14	AP 8/0	8/0	DC+0		27°33'47"RT		652.00	2784	47.76	9	AP 8/0	8/0	DC+6	1	27°33'47"RT		652.00	2278.00	47.76	364366	2924739	To get vertical clearance from 11KV line +6m Ext. Required, 1 M RC Required.	
15		8/1	DA+0			266.00		3070	47.80	10		8/1	DA+0	1		286.00		2564.00	47.80	364356	2924454	11KV line, Car track, Drain, 1 M RC Required	
16		8/2	DA+0			296.00		3366	47.52	11		8/2	DA+0	1		296.00		2860.00	47.52	364345	2924158	Pond, Room 1 M RC Required	
17		8/3	DA+0			274.00		3640	47.22	12		8/3	DA+0	1		274.00		3134.00	47.22	364335	2923884	Ditch 1 M RC Required	
18	AP 9/0	9/0	DC+3		21°26'15"LT		1,120.00	3904	47.52	13	AP 9/0	9/0	DD+18		21°26'15"LT		1120.00	3398.00	47.52	364325	2923620	Metal Road (Bengalkuchi to NH31) To get vertical clearance from 11KV line +18m Ext. Required.	
19		9/1	DB+6			318.00		4222	47.06	14		9/1	DB+9			318.00		3716.00	47.06	364430	2923320	Nala 11KV line, Ditch To get vertical clearance from 11KV line +9m Ext. Required.	
20	AP 10/0	10/0	DC+3		23°22'02"LT		648.00	4552	47.14	15	AP 10/0	10/0	DC+9		23°22'02"LT		648.00	4046.00	47.14	364539	2923008	To get vertical clearance from 11KV line +9m Ext. Required.	
						307.00										307.00						Ditch, Farnoo Garden, Road (Bengalkuchi to Pachim-Par Baghbari), 11KV Line	

Res. Jyoti Karmakar



Signature



Signature

राहुल कुमार शर्मा
 RAHUL K. SHARMA
 Engineer
 पावरग्रिड, एन.ई.एस.आई.पि.
 POWERGRID, NERPSIP

Signature
 05/01/22
 जे. पी. / G. PEGU
 जी. एम. / G. M.

एन. ई. आर. पि. एस. आई. पि. / NERPSIP
 पावरग्रिड, गुवाहाटी
 आनिगाँव / Amingaon (P)

POWER GRID CORPORATION LTD
220 KV D/C RANGIYA-AMINGAON TRANSMISSION LINE
 Name of Agency: M/s. KEC INTERNATIONAL LIMITED


CHECK SURVEY REPORT FROM AP 4/0 (Composite Tower) TO GANTRY (Amingaon)

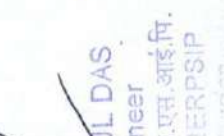
Dt. 27.01.2022

AS PER CHECK SURVEY																						
SL NO	AP NO	Loc no	Tower type	RC	Angle of Deviation	Span (M)	Section Length (Mtrs.)	Cumulative Length	Reduced Level (m)	SL NO	AP NO	Loc no	Tower type	RC	Angle of Deviation	Span(M)	Section Length (Mtrs.)	Cumm. Length	Reduced Level (m)	UTM Co-ordinate		Remarks/Crossing Details
																				Longitude	Latitude	
21	AP 11/0	11/0	DD+3		31°15'50"RT		307.00	4859	47.59	16	AP 11/0	11/0	DD+6		31°15'50"RT		307.00	4353.00	47.59	364748	2922782	To get vertical clearance from 11KV line +6m Ext. Required.
22		11/1	DA+0			274.00		5133	46.77	17		11/1	DA+0	1				4627.00	46.77	364802	2922514	Ditch 1 M RC Required 11KV line, Metal Road, Unemployed stuff colony to NH 31,
23	AP 12/0	12/0	DD+3		49°12'56"RT		535.00	5394	46.37	18	AP 12/0	12/0	DD+3	1	49°12'56"RT		535.00	4888.00	46.37	364854	2922258	VIII-Pachim-Par Baghbhari, 1 M RC Required.
24		12/1	DA+6			272.00		5666	46.22	19		12/1	DA+6					5160.00	46.22	364687	2922043	11KV line 1 M RC Required
25	AP 13/0	13/0	DC+0		25°29'26"RT		516.00	5910	46.24	20	AP 13/0	13/0	DD+3	1	47°30'2"RT		516.00	5404.00	46.24	364537	2921850	Due to New Asian paint Factory between API30 to API40 line diverted and API30 DD+3 type of tower Proposed, 1 M RC Required.
26		13/1	DA+3			296.00		6206	45.70	21		13/1	DA+3	1				5634.00	45.70	364269	2921827	Fencing Culvert 1 M RC Required
27	AP 14/0	14/0	DA+0					6500	45.52	22	AP 13A/0	13A/0	DD+3	1	47°31'52"LT		500.00	5904.00	45.52	364039	2921809	Hul, Boundary, 33KV line Due to New Asian paint Factory, between API30 to API40 line diverted and API3A/0 DD+3 type of tower Proposed, 1 M RC Required.
28								6500		23		13A/1	DB+0	1				6114.00	45.45	363933.49	2921670.51	Due to weight span violation DB type of tower Proposed, 1 M RC Required.
29	AP 14/0	14/0	DD+0		10°27'42"LT		844.00	6754	45.46	24	AP 14/0	14/0	DD+6	1	16°15'52"LT		440.00	6344.00	45.46	363783	2921470	Nala, Boundary, Vertical clearance from 33KV line +6m extension required, 1 M RC Required.
30	AP 15/0	15/0	DD+3		05°19'19"LT		162.00	6916	45.79	25	AP 15/0	15/0	DD+6				172.00	6516.00	45.79	363654	2921372	NH-31 Crossing, VIII-Kani Kuchi, Vertical clearance from 33KV line +6m extension required


 Rajesh Kumar
 Engineer
 POWER GRID CORPORATION
 RANGIYA-AMINGAON TRANSMISSION LINE


 KEC INTERNATIONAL LTD
 Date:


 G. PEGU
 Jt. Engr. / G.M.
 POWER GRID CORPORATION
 RANGIYA-AMINGAON TRANSMISSION LINE
 GUWAHATI


 S. Anand
 Jt. Engr. / G.M.
 POWER GRID CORPORATION
 RANGIYA-AMINGAON TRANSMISSION LINE
 GUWAHATI

POWER GRID CORPORATION LTD
220 KV D/C RANGIYA-AMINGAON TRANSMISSION LINE

Name of Agency: M/s. KEC INTERNATIONAL LIMITED
CHECK SURVEY REPORT FROM AP 4/0 (Composite Tower) TO GANTRY (Amingaon)

Dr. 27.01.2022

AS PER CHECK SURVEY																					
AS PER DETAIL SURVEY																					
SL NO	AP NO	Loc no	Tower type	RC	Angle of Deviation	Span (M)	Section Length (Mtrs)	Cumulative Length	Reduced Level (m)	SL NO	AP NO	Loc no	Tower type	RC	Angle of Deviation	Span (M)	Section Length (Mtrs)	Cumulative Length	Reduced Level (m)	Remarks/Crossing Details	
31		15/1	DB+3			290.00		7206	45.04												
32	AP16/0	16/0	DB+6	13°02'38"RT		352.00	642.00	7558	45.09	26	AP15/0	15/1	DB+3	1				6806.00	45.04	2921176	1 M RC Required
33		16/1	DB+0			327.00		7885	45.07	27	AP16/0	16/0	DB+6	1	13°02'38"RT			7158.00	45.09	2920938	Cartrack, Low Land, Ditch, VIII-Kani Kuchi, 1 M RC Required.
34	AP17/0	17/0	DD+9	18°34'01"RT		340.00	667.00	8225	44.70	28		16/1	DB+0	1				7485.00	45.07	2920771	Ditch 1 M RC Required
35	AP18/0	18/0	DD+6	54°32'11"RT		193.00	193.00	8418	44.46	29	AP17/0	17/0	DD+18	1	18°34'01"RT			7825.00	44.70	2920610	To Get Vertical Clearance from Railway Track +18m Ext. Required, 1 M RC Required.
36	AP19/0	19/0	DD+0	49°14'17"LT		150.00	150.00	8568	44.73	30	AP18/0	18/0	DD+18	1	54°32'11"RT			8018.00	44.46	2920574	N.F. Railway Line (Electrified), Nallah To Get Vertical Clearance from Railway Track +18m Ext. Required, 1 M RC Required.
37	AP20/0	20/0	DD+0	08°27'49"RT		208.00	208.00	8776	45.02	31	AP19/0	19/0	DD+0		49°14'17"LT			8168.00	44.73	2920438	VIII-Kani Kuchi,
38	GANTRY	GANTRY				86.00		8862	44.71	32	AP20/0	20/0	DD+0		08°27'49"RT			8376.00	45.02	2920249	VIII-Kani Kuchi,
39	GANTRY	GANTRY				60.00		8922	44.56	33	GANTRY 1	GANTRY 1						8462.00	44.71	2920172	To get vertical clearance from 400KV Line Gantry tower height Should be below 14.0m 400KV D/C Balipara to Bongaigaon (Quad) T/L
40	AP21/0	21/0	DD+0	13°31'47"RT		88.00	234.00	9010	44.83	34	GANTRY 2	GANTRY 2						8522.00	44.56	2920118	To get vertical clearance from 400KV Line Gantry tower height Should be below 14.0m
41	AP22/0	22/0	DD+0	47°57'29"RT		242.00	242.00	9252	45.00	35	AP21/0	21/0	DD+0		13°31'47"RT			8610.00	44.80	2920024	VIII-Kani Kuchi, Bamboo Garden
										36	AP22/0	22/0	DD+0		47°57'29"RT			8831.00	44.98	2919804	VIII-Nir-Berigog



Signature of Engineer
Rajesh Kumar

Signature of Engineer
Rajesh Kumar

Signature of Engineer
Rajesh Kumar

Date: 05/02/22

POWER GRID CORPORATION LTD
RANGIYA-AMINGAON TRANSMISSION LINE
Name of Agency: M/s. KEC INTERNATIONAL LIMITED
CHECK SURVEY REPORT FROM AP 4/0 (Composite Tower) TO GANTRY (Amingaon)

POWER GRID CORPORATION LTD
220 KV D/C RANGIYA-AMINGAON TRANSMISSION LINE
Name of Agency: M/s. KEC INTERNATIONAL LIMITED

CHECK SURVEY REPORT FROM AP 4/0 (Composite Tower) TO GANTRY (Amingaon)

Dt. 27.01.2022

AS PER CHECK SURVEY

AS PER DETAIL SURVEY

SL NO	AP NO	Loc no	Tower type	RC	Angle of Deviation	Span (M)	Section Length (Mtrs.)	Cumulative Length	Reduced Level (m)	SL NO	AP NO	Loc no	Tower type	RC	Angle of Deviation	Span(N)	Section Length (Mtrs.)	Cumm. Length	Reduced Level (m)	UTM Co-ordinate		Remarks/Crossing Details
																				Longitude	Latitude	
42		22/1	DA+3			298.00		9550	44.19	37		22/1	DA+3			268.00		9099.00	44.18	362358	2919566	Nallah
43		22/2	DA+0			296.00		9846	44.90	38		22/2	DA+0			290.00		9389.00	44.89	362226	2919308	
44		22/3	DA+0			286.00		10132	45.42	39		22/3	DA+6			311.00		9700.00	45.20	362084	2919032	Bambao Garden,Toak Garden,Metal Road,Simolua to Niz.Berigigi),New 11 KV line, To Get Vertical Clearance from New 11KV line +6m Ext. Required.
45		22/4	DA+0			280.00		10412	44.66	40		22/4	DA+3			271.00		9971.00	44.47	361987	2918792	New 11KV line,Fencing, Due to Weight span violation +3m Ext. Required
46	AP23/0	23/0	DD+3		43°12'56"RT	278.00	1,453.00	10705	44.77	41	AP23/0	23/0	DD+3			293.00		10264.00	44.47	361821	2918533	Cartrack, Ditch,2 Noad 1 KV line,Metal Road(Baljuptelli to Ghopla), Vill-Ischadgharia
47		23/1	DA+					10983	44.54	42		23/1	DA+3			278.00		10542.00	44.54	361830	2918256	To get vertical clearance from new Li Line +3m Ext. Required
48	AP24/0	24/0	DC+0		21°03'11"RT		565.00	11270	44.00	43	AP24/0	24/0	DC+6	1	21°03'11"RT	287.00		10829.00	44.00	361839	2917969	Metal Road(Kamha to Ischadgharia),New 11 Line To get vertical clearance from new Li Line +6m Ext. Required and Low land area.
49		24/1	DA+3			298.00		11568	43.68	44		24/1	DA+3	1		298.00		11227.00	43.68	361740	2917683	Low land, Pond Low land area
50		24/2	DA+0			282.00		11850	44.08	45		24/2	DA+0	1		282.00		11409.00	44.08	361648	2917424	Pond Low land area
51		24/3	DA+3			298.00		12148	43.63	45		24/3	DA+3	1		298.00		11707.00	43.63	361550	2917140	Low land Low land area Low land,11KV line

Kastha Karm

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05/01/22



ADARSH DAS
Engineer
Project Engineer
R.K. TRANSMISSION
Department Manager
D/ RANGIYA-AMINGAON TRANSMISSION
POWERGRID, NERPSIP
आपूर्तिकर्ता/अंगण
आपूर्तिकर्ता/अंगण

श्री. एच. / G. PEGU
जी. एच. / G.M.
श्री. एच. / G. PEGU, I.NERPSIP
श्री. एच. / G. PEGU, I.NERPSIP
श्री. एच. / G. PEGU, I.NERPSIP
POWERGRID, NERPSIP
आपूर्तिकर्ता/अंगण
आपूर्तिकर्ता/अंगण

POWER GRID CORPORATION LTD
220 KV D/C RANGIYA-AMINGAON TRANSMISSION LINE
Name of Agency: M/s. KEC INTERNATIONAL LIMITED

CHECK SURVEY REPORT FROM AP 470 (Composite Tower) TO GANTRY (Amingaon)

Dt. 27.01.2022

AS PER CHECK SURVEY										AS PER CHECK SURVEY												
Sl NO	AP NO	Loc no	Tower type	RC	Angle of Deviation	Span (M)	Section Length (Mtrs.)	Cumulative Length	Reduced Level (m)	SL NO	AP NO	Loc no	Tower type	RC	Angle of Deviation	Span(M)	Section Length (Mtrs.)	Cum. Length (Mtrs.)	Reduced Level (m)	UTM Co-ordinate		Remarks/Crossing Details
																				Longitude	Latitude	
52		24/4	DA+0					12446	43.86	47		24/4	DA+0	1				12005.00	43.86	361452	2916858	Low land area
53	AP25/0	25/0	DD+3		31°49'43"LT	290.00	1466.00	12736	44.42	48	AP25/0	25/0	DD+3		31°49'43"LT	290.00	1466.00	12295.00	44.42	361357	2916585	Low land, Metal Road (Dudlong to Debak No 1), Bamboo Garden, Ditch, Vill-Changmagauri,
54	AP26/0	26/0	DD+0		47°15'40"LT	305.00	305.00	13041	43.14	49	AP26/0	26/0	DD+0		47°15'40"LT	305.00	305.00	12600.00	43.14	361423	2916287	Cartrack, Bamboo Garden Vill-Changmagauri,
55		26/1	DA+0			248.00		13289	43.28	50		26/1	DA+0			248.00		12848.00	43.28	361638	2916163	
56		26/2	DA+0			216.00		13505	43.51	51		26/2	DA+0			216.00		13064.00	43.51	361841	2916043	
57		26/3	DA+0			242.00		13747	43.85	52		26/3	DA+0			242.00		13306.00	43.85	362034	2915933	Fond, Cartrack,
58	AP27/0	27/0	DD+0		47°06'53"RT	223.00	929.00	13970	43.71	53	AP27/0	27/0	DD+0		47°06'53"RT	223.00	929.00	13529.00	43.71	362227	2915822	Vill-Dimunc-2
59		27/1	DA+0			284.00		14254	44.54	54		27/1	DA+0			284.00		13813.00	44.54	362290	2915545	Fond, Ditch, House, Tubwell,
60	AP28/0	28/0	DD+3		44°12'40"LT	248.00	532.00	14502	43.95	55	AP28/0	28/0	DD+3		44°12'40"LT	248.00	532.00	14061.00	43.95	362345	2915302	Fond, Metal Road, Debok- No 2, Todebok- No 1), Sheok, Li line,
61		28/1	DA+6			280.00		14782	43.75	56		28/1	DA+6			280.00		14341.00	43.75	362580	2915150	Vill-Dimunc-2 Cart Track, 11KV line.
62		28/2	DB+3			314.00		15096	43.94							284.00						Gas pipe line, 28/2 30m Sifted Towards loc 28/1 due to safe distance from New gas pipe line and sum of adj span violation DB type tower Proposed.
63		28/3	DA+0			312.00		15408	44.13	58		28/3	DB+0			342.00		14987.00	44.13	363105	2914809	11KV line, Gas pipe line due to sum of adj span violation DB type tower Proposed. Bamboo Garden,


 Engineer
 POWER GRID CORPORATION LTD
 RANGIYA-AMINGAON TRANSMISSION LINE
 220 KV D/C RANGIYA-AMINGAON TRANSMISSION LINE
 Name of Agency: M/s. KEC INTERNATIONAL LIMITED
 CHECK SURVEY REPORT FROM AP 470 (Composite Tower) TO GANTRY (Amingaon)
 Dt. 27.01.2022
 28/10/22
 05/01/22

POWER GRID CORPORATION LTD
220 KV D/C RANGIYA-AMINGAON TRANSMISSION LINE
Name of Agency: M/s. KEC INTERNATIONAL LIMITED

CHECK SURVEY REPORT FROM AP 4/0 (Composite Tower) TO GANTRY (Amingaon)

Dt. 27.01.2022

AS PER DETAIL SURVEY										AS PER CHECK SURVEY													
SL NO	AP NO	Loc no	Tower type	RC	Angle of Deviation	Span (M)	Section Length (Mtrs.)	Cumulative Length	Reduced Level (m)	SL NO	AP NO	Loc no	Tower type	RC	Angle of Deviation	Span(M)	Section Length (Mtrs.)	Cummin. Length	Reduced Level (m)	UTM Co-ordinate Longitude	UTM Co-ordinate Latitude	Remarks/Crossing Details	
64	AP29/0	29/0	DD+3		38°56'08"RT		1,191.00	15693	44.43	59	AP29/0	29/0	DD+6		38°56'08"RT		1151.00	15252.00	44.43	363344	2914653	Get vertical clearance from new LI line +6m Ext. Required.	
						335.00										335.00				363447	2914335	Bamboo garden, Cart Track, New 11KV line	
65	AP30/0	30/0	DD+6		40°03'38"LT		335.00	16028	44.39	60	AP30/0	30/0	DD+6		40°03'38"LT		335.00	15587.00	44.39	363447	2914335	Pond, School, House, 33 KV line, Metal Road (Guitya to Soreswar)	
66		30/1	DA+9					16289	44.38	61		30/1	DB+9						15848.00	44.38	363680	2914190	11 KV line
67	AP31/0	31/0	DB+3		09°25'40"RT		549.00	16577	44.59	62	AP31/0	31/0	DB+3		09°25'40"RT		549.00	16136.00	44.69	363914	2914045	Pond, Metal Road, Parara to Barangabari, LI line, Ditch.	
68	AP32/0	32/0	DD+3		35°36'42"RT		321.00	16898	45.32	63	AP32/0	32/0	DD+3		35°36'42"RT		321.00	16457.00	45.32	364155	2913833	VIII-Palara	
69		32/1	DB+3					17225	45.42	64		32/1	DB+6					16784.00	45.42	364233	2913481	Metal Road (Palara to Singara), 11KV line	
70	AP33/0	33/0	DB+6	0	01°51'10"RT		653.00	17551	44.25	65	AP33/0	33/0	DB+6	0	01°51'10"RT		653.00	17110.00	44.25	364297	2913190	To get vertical clearance from 11KV line +6m Ext. Required.	
71	AP34/0	34/0	DC+6		20°35'06"RT	304	304	17855	44.05	66	AP34/0	34/0	DC+6		22°47'53"RT	304.00	304.00	17414.00	44.05	364362	2912898	Ditch	
72	AP35/0	35/0	DB+3		09°12'36"LT	336	336	18191	44.08	67	AP35/0	35/0	DB+3		09°17'36"LT	336.00	336.00	17750.00	44.08	364307	2912567	VIII-Farkha	
73		35/1	DA+3			320		18511	44.16	68		35/1	DA+6			320.00		18070.00	44.20	364306	2912247	Drain, Pond	
74		35/2	DA+6			268		18779	44.56	69		35/2	DA+6			268.00		18338.00	44.62	364306	2911978	Pond, Metal road (Mokhania to Barkha), 11KV Line, House BW	

KEC INTERNATIONAL LTD

Rajiv G. Pegu
 Director
 POWER GRID, NERPSIP
 Amingaon

R. K. Das
 Director
 POWER GRID, NERPSIP
 Amingaon

M. Das
 Director
 POWER GRID, NERPSIP
 Amingaon

05/02/22

09/02/22

G. M. Das
 Director
 POWER GRID, NERPSIP
 Amingaon

POWER GRID CORPORATION LTD
220 KV D/C RANGIYA-AMINGAON TRANSMISSION LINE
Name of Agency: M/s. KEC INTERNATIONAL LIMITED

CHECK SURVEY REPORT FROM AP 40 (Composite Tower) TO GANTRY (Amingaon)

Dt. 27.01.2022

AS PER DETAIL SURVEY

AS PER CHECK SURVEY

SL NO	APNO	Loc no	Tower type	RC	Angle of Deviation	Span (M)	Section Length (Mtrs.)	Cumulative Length	Reduced Level (m)	SL NO	APNO	Loc no	Tower type	RC	Angle of Deviation	Span (M)	Section Length (Mtrs.)	Cumulative Length	Reduced Level (m)	Cumulative Length	Reduced Level (m)	UTM Co-ordinate		Remarks/Crossing Details
																						Longitude	Latitude	
						318																		Ditch, Fencing, LT line, Cart Trac
75	AP36/0	36/0	DB+0		09°25'22"L		906	19097	44.36	70	AP36/0	36/0	DB+0		09°34'29"L		906	18656.00	44.36		364305	2911661	VIII-Ahigaon	
76		36/1	DA+0			296		19393	44.46	71		36/1	DA+0					18952.00	44.46		364352	2911369		
77		36/2	DB+3			298		19691	45.20	72		36/2	DB+3					19250.00	45.20		364400	2911075		
78	AP37/0	37/0	DB+9		05°07'46"L	331		20022	45.41	73	AP37/0	37/0	DB+9		05°03'46"L		925	19581.00	45.41		364454	2910748	Cart Track, LT Line, Drain	
						361																		VIII-Ahigaon Putimari River
79	AP38/0	38/0	DD+6		41°14'33"L			20383	44.85	74	AP38/0	38/0	DD+6		41°14'33"L			19942.00	44.85		364544	2910398		
80	AP39/0	39/0	DD+3		45°06'43"RT	348.0		20731	44.28	75	AP39/0	39/0	DD+3		45°17'45"RT			20290.00	44.28		364831	2910202		
						333.0																		2 Nos Drain, 11KV Line
81	AP40/0	40/0	DB+3		10°45'42"RT			21064	43.88	76	AP40/0	40/0	DB+3		10°22'45"RT			20625.00	43.88		364892	2909874		
						298.0																		Pond
82		40/1	DA+0					21362	43.65	77		40/1	DA+0					20923.00	43.65		364890	2909576		
						294.0																		LT line, Cart Track
83		40/2	DA+6					21656	43.74	78		40/2	DA+6					21217.00	43.74		364889	2909282		
						283.0																		33KV Line, Ditch
84	AP41/0	41/0	DB+0		04°34'18"RT			21939	43.37	79	AP41/0	41/0	DB+0		04°35'51"RT			875.00	43.37		364888	2909000		
						298.0																		Cart Track, Ditch
85		41/1	DA+6					22237	43.45	80		41/1	DA+6					21800.00	43.45		364863	2908703		
						299.0																		Pond, Metal road (Dhonskato Barkha), 11KV Line
86	AP42/0	42/0	DB+3		10°48'40"L			597.00	44.64	81	AP42/0	42/0	DB+3		10°50'06"L			599.00	44.64		364838	2908404		
						270.0																		Ditch

Kasturba Medical

Ring

25/02/22

जो. चे. / G. PEGU
जो. ए. / G.M.
एन. ई. आर. ए. ए. आर. ए. / INERPSIP
पारमिष्ठ, गुवाहाटी / POWERGRID, GUWAHATI
आंध्रप्रदेश / Amingaon (P)

राहुल कुमार / RAHUL DAS
अभिजीत / Engineer
पारमिष्ठ, एन. ई. आर. ए. ए. आर. ए. / INERPSIP
POWERGRID, INERPSIP
आंध्रप्रदेश / Amingaon

के. के. आर. इंटरनैशनल लिमिटेड
KEC INTERNATIONAL LTD

POWER GRID CORPORATION LTD
220 KV D/C RANGIYA-AMINGAON TRANSMISSION LINE
Name of Agency: M/s. KEC INTERNATIONAL LIMITED

Dt. 27.01.2022

CHECK SURVEY REPORT FROM AP 4/0 (Composite Tower) TO GANTRY (Amingaon)

AS PER CHECK SURVEY																								
SL NO	AP NO	Loc no	Tower type	RC	Angle of Deviation	Span (M)	Section Length (Mtrs.)	Cumulative Length	Reduced Level (m)	SL NO	AP NO	Loc no	Tower type	RC	Angle of Deviation	Span (M)	Section Length (Mtrs.)	Cumulative Length	Reduced Level (m)	Cumm. Length (Mtrs.)	Reduced Level (m)	UTM Co-ordinate		Remarks/Crossing Details
																						Longitude	Latitude	
87		4/1	DA+0					22806	43.48	82		4/1	DA+3					22339.00	43.48	364865	2908145	To Maintain weight span Loc. 42/1 +3m Extension Required and Shifted toward AP42/0 by 10m.		
88		4/2	DA+0			238.0		23044	43.66	83		4/2	DA+3					22571.00	43.66	364887	2907934	To Maintain weight span Loc. 42/2 Shifted towards Loc. 42/1 by 36m and Loc. 42/2 +3m Extension Required.		
89		4/3	DA+0			214.0		23258	44.07	84		4/3	DA+6					22821.00	44.07	364913	2907685	To Maintain vertical Clearance from 11KV and Temple shed Loc. 42/3 +6m Ext. Required		
90		4/4	DA+0			263		23521	43.64	85		4/4	DA+3					23114.00	43.64	364943	2907394	To Maintain vertical Clearance from 11KV line, Cart Shed, Temple, 11KV line, Cart Track, Pond.		
91	AP43/0	4/30	DD+0		44°25'21"RT	289	1274.00	23810	44.36	86	AP43/0	4/30	DD+0		44°35'42"RT	252.00	1274.00	23371.00	44.36	364971	2907138	AP42/4 Shifted towards AP43/0 by 30m. To Maintain Horizontal Clearance from 11KV line. and maintain Vertical clearance from 11KV Loc. 42/4 +3m Extension Required.		
92		4/31	DA+0			252		24062	44.01	87		4/31	DA+0					23625.00	44.01	364815	2906940	Pond, Metal Road (Pantema to Barkha)		
93	AP44/0	4/40	DD+3		33°06'53"LT	258	510.00	24320	43.60	88	AP44/0	4/40	DD+3		36°20'06"LT	300.00	528.00	23901.00	43.60	364653	2906723	11KV Line Bamboo Garden, Teak Garden, Metal Road (Athlaboi to Pantitema) 11KV Line Shifted 18m towards 44/1 by 18m to maintain Sum of Adj. span of Loc. 44/1.		
94		4/41	DA+0			298		24618	43.71	89		4/41	DA+3					24201.00	43.71	364638	2906620	Pond, Cart Track Loc. 44/1 Shifted towards AP 43/0 by 20m. 44/1 +3m Extension Required to Maintain Vertical Ground clearance.		








POWER GRID CORPORATION LTD
 220 KV D/C RANGIYA-AMINGAON TRANSMISSION LINE
 Name of Agency: M/s. KEC INTERNATIONAL LIMITED
 POWER GRID, NEERUPUR, GUWAHATI
 781005, Assam, India.

POWER GRID CORPORATION LTD
220 KV D/C RANGIYA-AMINGAON TRANSMISSION LINE

Name of Agency: M/s. KEC INTERNATIONAL LIMITED
CHECK SURVEY REPORT FROM AP 470 (Composite Tower) TO GANTRY (Amingaon)

AS PER CHECK SURVEY

AS PER CHECK SURVEY										AS PER CHECK SURVEY												
SL NO	AP NO	Loc no	Tower type	RC	Angle of Deviation	Span (M)	Section Length (Mtrs.)	Cummulative Length	Reduced Level (m)	SL NO	AP NO	Loc no	Tower type	RC	Angle of Deviation	Span (M)	Section Length (Mtrs.)	Cumm. Length	Reduced Level (m)	UTM Co-ordinate	Remarks/Crossing Details	
																				Longitude	Latitude	
95	AP45/0	45/0	DB+0		08°00'07"LT	280	578.00	24898	43.42	90	AP45/0	45/0	DB+0		08°04'07"LT	300.00	600.00	24501.00	43.42	364603	2906123	Nala
96		45/1	DA+0			284		25182	43.33	91		45/1	DA+0			244.00		24745.00	43.33	364619	2905882	Nala
97		45/2	DA+0			280		25462	42.44	92		45/2	DA+0			280.00		25025.00	42.44	364634	2905598	
98		45/3	DA+0			280		25742	42.58	93		45/3	DA+0			280.00		25305.00	42.58	364651	2905320	
99		45/4	DA+0			286		26028	41.25	94		45/4	DA+0	1		286.00		25591.00	41.25	364669	2905033	1M RC Required Due to Low land.
100		45/5	DA+0			284		26312	41.95	95		45/5	DA+3	1		284.00		25875.00	41.95	364687	2904750	1M RC Required Due to Low land and Loc. 45/5 maintain vertical clearance from 11KV +3m Extension Required.
101		45/6	DA+0			256		26568	42.11	96		45/6	DA+3	1		256.00		26131.00	42.11	364698	2904495	Cart Track, 11KV Line
102		45/7	DA+0			242		26810	42.93	97		45/7	DA+0	1		242.00		26373.00	42.34	364710	2904254	1M RC Required Due to Low land.
103		45/8	DA+0			244		27054	42.45	98		45/8	DA+0			259.00		26632.00	42.45	364721	2904001	Loc. 45/8 Shifted towards AP46/0 by 15 due to not suitable lower position. Bamboo Garden.
104	AP46/0	46/0	DB+0		14°25'12"RT	269	2425.00	27323	43.41	99	AP46/0	46/0	DB+0			234.00	2365.00	26866.00	43.41	364739	2903767	AP46/0 Shifted towards towards 45/8 by 20m due to maintain clearance from new solar pump/boaring.
105	AP47/0	47/0	DD+9	0	49°33'54"LT	279.00	279.00	27602	42.37	100	AP47/0	47/0	DD+9	0	44°33'55"LT	265.00	265.00	27131.00	44.37	364755	2903518	Nala, Lt. Line

Handwritten signature: *Asst. Engineer*

Stamp: KEC INTERNATIONAL LTD (Circular)

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POWER GRID CORPORATION LTD
220 KV D/C RANGIYA-AMINGAON TRANSMISSION LINE
Name of Agency: M/s. KEC INTERNATIONAL LIMITED

Dt. 27.01.2022

CHECK SURVEY REPORT FROM AP 4/0 (Composite Tower) TO GANTRY (Amingaon)

AS PER CHECK SURVEY										UTM Co-ordinate		Remarks/Crossing Details
Sl NO	AP NO	Loc no	Tower type	RC	Angle of Deviation	Span (M)	Section Length (Mtrs.)	Cumm. Length	Reduced Level (m)	Longitude	Latitude	
106		47/1	DA+6			307.00		27909	43.50	364920	2903364	
107	AP45/0	48/0	DB+0		3°45'38"RT	236.00	543.00	28145	46.46	365051	2903242	Temple, Boundary, Cart Track
108	AP49/0	49/0	DD+0		32°26'55"RT	224.00	224.00	28369	46.57	365050	2903096	Shed, Temple, 11 KV Line, Cart Track
										365105	2902994	
						96.00				365133	2902805	It Line Private land boundary, School
109	AP50/0	50/0	DD+6		59°34'24"LT	86.00	98.00	28467	43.97	365207	2902770	It Line 11KV, Road Location Casted
110	AP51/0	51/0	DD+9		48°53'15"RT	143.00	88.00	28555	55.73	365249	2902644	Auxiliary Cross-arm, Location Casted
111	AP52/0	52/0 (D/E) Auxilia	DD+0		56°03'25"RT	53.00	143.00	28698	67.49			
112	GANTRY	GANTRY						28751	55.65			
TOTAL LENGTH										28.303 KM		

FOR KEC INTERNATIONAL LIMITED		FOR POWER GRID CORPORATION OF INDIA LIMITED	
SURVEYED BY <i>Rasthakar</i>	CHECKED BY <i>[Signature]</i>	RECOMMENDED BY <i>[Signature]</i>	CHECKED BY <i>[Signature]</i>
SUBMITTED BY <i>[Signature]</i>		APPROVED BY PEGU <i>[Signature]</i>	

POWER GRID CORPORATION OF INDIA LIMITED
 राहुल दास / RAHUL DAS
 अभियंता / Engineer
 पावरग्रिड, एन.ई.आर.पि.एस.आई.पि.
 POWERGRID, NERPSIP

KEC INTERNATIONAL LIMITED
 प्र.के. तंकचन / P.K. Tankachan
 34. प्रबंधक / Deputy Manager
 पावरग्रिड, एन.ई.आर.पि.एस.आई.पि.
 POWERGRID, NERPSIP
 आमिंगाण/amingaon, गुवाहाटी-31.Ghy-31

COMPARATIVE STATEMENTS AS PER ANGLE POINT

NAME OF THE LINE : 132 KV D/C AMINGAON TO HAZO T/L (ROUTE-II)

SL NO.	AP NO	AOD	SECTION LENGTH IN Mtr.	CO-ORDINATE OF AP (WGS-84)		MAJOR CROSSING	REMARKS	VILLAGE NAME
				NORTHING	EASTING			
1	GANTRY	00°00'00"	59	26°14'9.93"N	91°38'57.81"E			MALANG
2	AP 1(D/E)	25°58'51"RT	200	26°14'10.86"N	91°38'56.22"E		AP-1 is Dead End tower and its provided for adjust slack span	MALANG
3	AP 2	02°01'00"RT	180	26°14'16.25"N	91°38'52.29"E	CT		MALANG
4	AP 3	37°36'LT	907	26°14'21.30"N	91°38'48.96"E	METAL ROAD, 11 KV, LT LINE		MALANG
5	AP 4	07°58'13"RT	2369	26°14'32.27"N	91°38'18.61"E			PACHARIA
6	AP 5	59°12'55"LT	662	26°15'12.83"N	91°37'6.04"E	CT, 11 KV		PACHARIA
7	AP 6	40°12'54"LT	213	26°15'5.61"N	91°36'45.07"E		AP-6 and AP-7 are provided avoid locality and also adjust deviation of angles. (Right side house 1st point -4m & 2nd point -7m. Also left side house 11m distance)	PACHARIA
8	AP 7	02°36'52"LT	1015	26°14'58.96"	91°36'42.99"	PWD ROAD, LT LINE, 11 KV		DHINGARBARI
9	AP 8	11°13'36"RT	1130	26°14'27.91"N	91°36'30.81"E			DHINGARBARI
10	AP 9	08°27'34"LT		26°13'56.43"N	91°36'9.85"E	METAL ROAD	AP-8, AP-9 and AP-10 are provided for exting SH-2 Crossing	BAMONBARI

SANGHVI CONSTRUCTION LIMITED
 C-3269
 18/12/18
 N.H. K. ...
 P. SARMAN
 ...

COMPARATIVE STATEMENTS AS PER ANGLE POINT
NAME OF THE LINE : 132 KV D/C AMINGAON TO HAZO T/L (ROUTE-II)

SL NO.	AP NO	AOD	SECTION LENGTH IN Mtr.	CO-ORDINATE OF AP (WGS-84)		MAJOR CROSSING	REMARKS	VILLAGE NAME
				NORTHING	EASTING			
11	AP 10	50°30'52"RT	197	26°13'50.49"N	91°36'7.12"E	33 KV, 11 KV, SH		BAMONBARI
12	AP 11	08°29'25"RT	917	26°13'41.80"N	91°35'35.53"E	METAL ROAD, 11 KV		DAKKHIN PAKORKONA
13	AP 12	11°03'48"LT	592	26°13'38.96"N	91°35'14.42"E	RIVER(SESSA)		DAKKHIN PAKORKONA
14	AP 13	25°07'18"RT	626	26°13'32.16"N	91°34'53.18"E	RIVER(SESSA)	AP-11, AP-12, AP-13, AP-14 and AP-15 are provided to avoid locality and also adjust deviation of angles.	GOLAGHAT
15	AP 14	06°44'2"LT	519	26°13'33.80"N	91°34'34.58"E	RIVER(SESSA)		MOAMARI
16	AP 15	23°43'44"LT	192	26°13'33.67"N	91°34'27.68"E	METAL ROAD		MOAMARI
17	AP 16(D/E)	07°45'52"LT	121	26°13'32.03"N	91°34'23.77"E	CT	AP-16 is Dead End tower and its provided for adjust slack span	MOAMARI
18	GANTRY	00°00'00"	73	26°13'30.71"N	91°34'21.48"E			MOAMARI
TOTAL LENGTH:			9,966	KM				



 SIMPLEX INFRASTRUCTURES LIMITED
 C-3288

M/S. [Handwritten signature]
 16/12/18
 P.S. [Handwritten]
 [Handwritten notes and signatures]

POWER GRID CORPORATION OF INDIA LTD.

132 KV D/C SONABIL - TEZPUR TRANSMISSION LINE

Execution Agency: M/s KEC INTERNATIONAL LIMITED

CHECK SURVEY REPORT FROM Sonabil Gantry to Tezpur Gantry (Total Length:16.092 KM)

AS PER CHECK SURVEY																		
AS PER DETAIL SURVEY					AS PER CHECK SURVEY													
SL.N o.	AP NO.	LOCATIO N NO.	TYPE OF TOWER	Angle of Deviation	Span Length (m)	Section Length (m)	Cumulative Length(m)	AP NO. GANTRY	LOCATION NO.	TYPE OF TOWER	EXT.	Angle of Deviation	Span Length (m)	Section Length (m)	Cumulative Length(m)	UTM COORDINATE Latitude	Longitude	Crossing Details
0	SONABIL GANTRY	GANTRY					0.00	SONABIL GANTRY	GANTRY		0				0.00	2964473.22	482517.93	VILL-AKA BOSTI
1	AP-1/0 (D/E)	1/0	DD+3	58°51'58" (LT)	29.00	29.00	29.00	AP-1/0 (D/E)	1/0	DD	3	58°57'07" (LT)	29.00	29.00	29.00	2964444.18	482513.61	VILL-AKA BOSTI, PROPOSED AUX-X-ARM S/S BOUNDARY.
2	AP-2/0	2/0	DD+9	40°31'35" (RT)	56.00	56.00	85.00	AP-2/0	2/0	DD	9	40°31'35" (RT)	56.00	56.00	85.00	2964408.15	482557.17	VILL-AKA BOSTI, JMTR RC
3	AP-3/0	3/0	DD+9	38°15'21" (LT)	72.00	72.00	157.00	AP-3/0	3/0	DD	9	38°15'21" (LT)	72.00	72.00	157.00	2964336.46	482569.65	VILL-AKA BOSTI
4	AP-4/0	4/0	DC+3	16°04'41" (LT)	93.00	93.00	250.00	AP-4/0	4/0	DC	3	17°00'15" (LT)	322.00	322.00	250.00	2964274.30	482639.02	VILL-AKA BOSTI POND, METALLED ROAD, 132 KV EARTH WIRE (EARTH WIRE TO BE REMOVED)
5	AP-5/0	5/0	DD+0	58°29'45" (RT)	302.00	302.00	572.00	AP-5/0	5/0	DD	0	58°29'45" (RT)	302.00	302.00	572.00	2964140.00	482919.00	VILL-AKA BOSTI
6	AP-6/0	6/0	DD+18	43°45'38" (RT)	186.00	186.00	874.00	AP-6/0	6/0	DD	18	43°45'38" (RT)	186.00	186.00	874.00	2963852.00	482950.00	VILL-GUDAMGHAT GOSARI AP-7/0 OMIT, CART TRACK, 220 KV D/C LINE (SONABIL TO SHAMAGURI)
7	AP-8/0	8/0	DD+9	56°58'55" (RT)	287.00	186.00	1060.00	AP-8/0	8/0	DD	9	56°58'55" (RT)	287.00	287.00	1060.00	2963706.00	482856.00	VILL-GUDAMGHAT GOSARI 2 NOS CART TRACK, LT LINE
8	AP-9/0	9/0	DD+0	44°31'11" (LT)	301.00	287.00	1347.00	AP-9/0	9/0	DD	0	44°34'31" (LT)	301.00	301.00	1347.00	2963747.00	482545.00	VILL-GUDAMGHAT GOSARI, 0.5M RC
9	AP-10/0	10/0	DC+0	20°42'07" (LT)		301.00	1648.00	AP-10/0	10/0	DC	0	21°29'40" (LT)		301.00	1648.00	2963558.00	482309.00	VILL-GUDAMGHAT GOSARI

For KEC INTERNATIONAL LTD.

For KEC International Ltd.

(Signature)

N.A. KHAN

Sr. Project Manager (C)

(Signature)

ANUP PAIKAR

Engineer (Projects)

(Signature)

(Sd/-) *(Signature)* S. K. SINGH

Powergrid Corporation of India Ltd.

NERPSIP, Tezpur, Assam

NERPSIP, Tezpur, Assam

POWER GRID CORPORATION OF INDIA LTD.

132 KV D/C SONABIL - TEZPUR TRANSMISSION LINE

Execution Agency: M/s KEC INTERNATIONAL LIMITED

CHECK SURVEY REPORT FROM Sonabil Gantry to Tezpur Gantry (Total Length:16.092 KM)

Sl. No.	AS PER CHECK SURVEY																
	AS PER DETAIL SURVEY						AS PER CHECK SURVEY					Crossing Details					
AP NO.	LOCATIO N NO.	TYPE OF TOWER	Angle of Deviation	Span Length (m)	Section Length (m)	Cumulative Length(m)	AP NO.	LOCATION NO.	TYPE OF TOWER	EXT.	Angle of Deviation		Span Length (m)	Section Length (m)	Cumulative Length(m)	UTM COORDINATE latitude	Longitude
10	AP-11/0	11/0	DC+0	18°28'59" (LT)	305.00	305.00	AP-11/0	11/0	DC	0	18°28'38" (LT)	305.00	305.00	1953.00	2963296.24	482154.25	2 NOS LT LINE, CART TRACK
11	AP-12/0	12/0	DD+0	13°48'55" (RT)	229.00	2182.00	AP-12/0	12/0	DD	0	13°48'55" (RT)	229.00	229.00	2182.00	2963071.64	482106.25	11KV LINE, CART TRACK, RIVER MANSIRI 2 NOS HUT
12	GANTRY-1	GANTRY-1	GANTRY		86.00	2268.00	GANTRY-1	GANTRY-1	GANTRY	0		86.00		2268.00	2962993.63	482068.41	VILL-BAITHA BHANGA
13	AP-13/0	13/0	DD+0	2°18'06" (RT)	210.00	2418.00	AP-13/0	13/0	DD	0	2°18'06" (RT)	210.00	236.00	2418.00	2962858.06	482002.65	400 KV (MESA TO BALIPARA) LINE
14		13/1	DA+0		214.00	2628.00		13/1	DA	0		214.00		2628.00	2962672.96	481903.48	WATER LOGGED AREA
15	AP-14/0	14/0	DC+0	29°09'25" (LT)	250.00	2842.00	AP-14/0	14/0	DC	0	29°09'59" (LT)	250.00	424.00	2842.00	2962483.89	481802.19	WATER LOGGED AREA, CART TRACK
16		14/1	DA+0		270.00	3092.00		14/1	DA	0		270.00		3092.00	2962233.93	481806.45	VILL-BAITHA BHANGA
17		14/2	DA+0		242.00	3362.00		14/2	DA	0		242.00		3362.00	2961963.96	481811.06	LOW LAND
18		14/3	DA+0		294.00	3604.00		14/3	DA	3		294.00		3604.00	2961722.00	481815.18	1 MT RC
																	CART TRACK, LT LINE, METALLED ROAD
																	BORING, UBBI BRICK FACTORY BOUNDARY
																	POND

For KEC INTERNATIONAL LTD For KEC International Ltd.
ANUP PAIKAR
 Engineer (Projects)

 N.A. KHAN
 Sr. Project Manager (C)

श्री. क. सि. सि. / S.K. SINGH
 असिस्टेंट / Engineer
 Powergrid Corporation of India Ltd.
 NERPSIP, Tezpur, Sonitpur, Assam

(श्री. ज. बा. बा. / BARBHUIYA)
 असिस्टेंट / Engineer
 Powergrid Corporation of India Ltd.
 NERPSIP, Tezpur, Sonitpur, Assam

AS PER DETAIL SURVEY

AS PER CHECK SURVEY

SLN No.	AP NO.	LOCATIO N NO.	TYPE OF TOWER	Angle of Deviation	Span Length (m)	Section Length (m)	Cumulative Length(m)	AP NO.	LOCATION NO.	TYPE OF TOWER	EXT	Angle of Deviation	Span Length (m)	Section Length (m)	Cumulative Length(m)	UTM COORDINATE		Crossing Details
																Latitude	Longitude	
19	AP-15/0	14/4	DA+0		284.00		3898.00	14/4	DA	0			284.00		3898.00	2961628.64	481829.20	
20	AP-15/0	15/0	DD+0	7°46'36"(RT)	83.00	1340.00	4182.00	AP-15/0	15/0	DD	0	7°46'36"(RT)	93.00	1340.00	4182.00	2961143.53	481825.95	VILL-BILGHARGARE GACON
21	GANTRY-I	GANTRY-IGANTRY					4265.00	GANTRY-II	GANTRY-I	GANTRY	0		40.00		4275.00	2961060.22	481815.12	VILL-BILGHARGARE GACON
22	AP-16/0	16/0	DD+0	7°07'31"(RT)	207.00	217.00	4399.00	GANTRY-III	GANTRY-II	GANTRY	0		84.00	133.00	4315.00	2960926.79	481799.21	BOO K.V (BNC) - GURAI LINE
23	AP-17/0	17/0	DC+0	24°12'04"(RT)	207.00	207.00	4606.00	AP-16/0	16/0	DD	0	7°07'31"(RT)	207.00	207.00	4399.00	2960926.79	481799.21	VILL-BILGHARGARE GACON
24	AP-17/0	17/1	DA+0		269.00	564.00	4901.00	AP-17/0	17/0	DC	0	23°17'17"(RT)	295.00	207.00	4606.00	2960724.67	481749.10	METALLED ROAD MONDO. HULT
25	AP-18/0	18/0	DC+0	27°08'33"(LT)	320.00	564.00	5170.00	17/1	17/1	DA	0		269.00		4901.00	2960489.00	481570.00	VILL-BILGHARGARE GACON
26	AP-18/0	18/1	DA+3		314.00	564.00	5490.00	AP-18/0	18/0	DC	0	27°05'35"(LT)	320.00	564.00	5170.00	2960276.00	481409.00	IBB BRICK FACTORY BOUNDARY CART TRACK, 11 KV LINE
27	AP-19/0	19/0	DD+0	30°54'22"(LT)	308.00	634.00	5804.00	18/1	18/1	DA	3		314.00		5490.00	2959955.65	481332.29	VILL-GHORGHARE
28	AP-19/0	19/1	DA+0			634.00	6112.00	AP-19/0	19/0	DD	0	30°34'28"(LT)	634.00	634.00	5804.00	2959652.09	481288.28	11 KV LINE, METALLED ROAD



ANUP PAIKAR
 Engineer (Projects)



N.A. KHAN
 Sr. Project Manager (C)

For KEC INTERNATIONAL LTD.
 For KEC International Ltd.



S.K. SINGH
 Engineer / Engineer
 Powergrid Corporation of India Ltd.
 MPPSP, Tezpur



N.S. BARSHUIYA
 Project Manager
 Powergrid Corporation of India Ltd.
 NERSIP, Tezpur, Assam

POWER GRID CORPORATION OF INDIA LTD.

132 KV D/C SONABIL - TEZPUR TRANSMISSION LINE

Execution Agency: M/s KEC INTERNATIONAL LIMITED.

CHECK SURVEY REPORT FROM Sonabil Gantry to Tezpur Gantry (Total Length:16.092 KM)

Sl.N o.	AS PER DETAIL SURVEY										AS PER CHECK SURVEY			Crossing Details				
	AP NO.	LOCATIO N NO.	TYPE OF TOWER	Angle of Deviation	Span Length (m)	Section Length (m)	Cumulative Length(m)	AP NO.	LOCATION NO.	TYPE OF TOWER	EXT.	Angle of Deviation	Span Length (m)		Section Length (m)	Cumulative Length(m)	Latitude	Longitude
29		19/2	DA+0		310.00		6422.00		19/1	DA	0		308.00		6112.00	2959364.20	481407.75	BRICK FACTORY
30		19/3	DA+3		320.00		6742.00		19/2	DA	0		310.00		6422.00	2959074.44	481517.92	TEA GARDEN,BRICK FACTORY,HUT
31		19/4	DA+3		278.00		7020.00		19/3	DA	3		320.00		6742.00	2958775.32	481631.65	SBF BRICK FACTORY
32		19/5	DA+0		302.00		7322.00		19/4	DA	3		278.00		7020.00	2958515.47	481730.45	CART TRACK, 11 KV LINE
33		19/6	DA+0		260.00		7582.00		19/5	DA	0		302.00		7322.00	2958233.19	481837.79	POND
34	AP-20.0	20/0	DC+0	17°25'21"(RT)	243.00	2021.00	7825.00		19/6	DA	0		260.00		7582.00	2957990.00	481930.00	POND, DITCH,RIVER
35		20/1	DA+0		308.00		8133.00	AP-20/0	20/0	DC	0	16°22'22"(RT)	243.00	2021.00	7825.00	2957763.63	482016.32	VILL-KAILAPATA(KHAILAMARI)
36		20/2	DA+0		300.00		8433.00		20/1	DA	0		308.00		8133.00	2957456.17	482034.57	RIVER,LOW LAND AREA 0.5 MTR RC
37	AP-21.0	21/0	DBN+0	13°09'47"(LT)	306.00	914.00	8739.00		20/2	DA	0		300.00		8433.00	2957156.69	482052.30	3NOS RIVER,LOW LAND AREA 0.5 MTR RC, LOW LAND AREA

For KEC INTERNATIONAL LTD For KEC International Ltd.

(Signature)

N.A. KHAN

Sr. Project Manager (C)

(Signature)

ANUP PAIKAR

Engineer (Projects)

(Signature)

S.K. SINGH

Engineer

Powergrid Corporation of India Ltd.

(Signature)

U. BARBHUIYA

Chief Manager

NERPSIP, Tezpur, Assam

SLN No.	AS PER DETAIL SURVEY							AS PER CHECK SURVEY							Crossing Details			
	AP NO.	LOCATIO N NO.	TYPE OF TOWER	Angle of Deviation	Span Length (m)	Section Length (m)	Cumulative Length(m)	AP NO.	LOCATION NO.	TYPE OF TOWER	Angle of Deviation	Span Length (m)	Section Length (m)	Cumulative Length(m)		UTM COORDINATE Latitude Longitude		
38		21/1	DA+0		320.00		9059.00	AP-21/0	21/0	DBN	0	10°36'36" (LT)	320.00	914.00	8739.00	2956850.55	482079.50	VILL-BOKALAN, 0.5 MTR RC RIVER/LOW LAND AREA
39	AP-22/0	22/0	DBN-3	5°16'10" (RT)		640.00	9379.00		21/1	DA	0			9059.00	2956544.06	482162.45	1.0 MTR RC LOW LAND AREA	
40		22/1	DA+0		241.00		9620.00	AP-22/0	22/0	DBN	3	2°43'17" (RT)	320.00	640.00	9379.00	2956237.82	482254.33	VILL-BHALUK JHARANI, 1.0 MTR RC POND, METALLED ROAD, 11 KV LINE, U.C LINE
41		22/2	DA+0		298.00		9918.00		22/1	DA	3		241.00	9620.00	2956001.32	482302.16	1.5 MTR RC	
42		22/3	DA+0		280.00		10198.00		22/2	DA	0		298.00	9918.00	2955709.54	482361.17	1.5 MTR RC	
43		22/4	DA+0		297.00		10495.00		22/3	DA	0		280.00	10198.00	2955434.80	482416.74	1.5 MTR RC	
44	AP-23/0	23/0	DC+0	28°4'54" RT	296.00	1412.00	10791.00		22/4	DA	0		297.00	10495.00	2955143.70	482475.61	1.5 MTR RC	
45		23/1	DA+0		254.00		11045.00	AP-23/0	23/0	DC	0	28°4'21" RT	296.00	1412.00	10791.00	2954852.21	482524.57	VILL-SHALUK JHARANI, 1.5 MTR RC METALLED ROAD
46		23/2	DA+0		310.00		11355.00		23/1	DA	0		254.00	11045.00	2954609.85	482448.57	1.5 MTR RC POND	
47		23/3	DA+0		303.00		11658.00		23/2	DA	0		310.00	11355.00	2954314.05	482365.82	2.0 MTR RC	

For KEC INTERNATIONAL LTD. For KEC International Ltd.


ANUP PAIKAR
Engineer (Projects)

N.A. KHAN
Sr. Project Manager (C)


ए.के. सिंह / S.K. SINGH (नगर विकास अधिकारी, बारभुवा)
उपनिर्देशक/प्रबंधक
Powergrid Corporation of India Ltd.
NERPSIP, Tezpur, Assam

POWER GRID CORPORATION OF INDIA LTD.
132 KV DC SONABIL - TEZPUR TRANSMISSION LINE
 Execution Agency: M/s KEC INTERNATIONAL LIMITED
CHECK SURVEY REPORT FROM Sonabil Gantry to Tezpur Gantry (Total Length:16.092 KM)


SLN No.	AS PER DETAIL SURVEY							AS PER CHECK SURVEY							Crossing Details			
	AP NO.	LOCATIO N NO.	TYPE OF TOWER	Angle of Deviation	Span Length (m)	Section Length (m)	Cumulative Length(m)	AP NO.	LOCATION NO.	TYPE OF TOWER	EXT.	Angle of Deviation	Span Length (m)	Section Length (m)		Cumulative Length(m)	UTM COORDINATE Latitude Longitude	
48		23/4	DA+0		213.00		11871.00		23/3	DA	0		303.00		11658.00	2954020.16	482273.67	POND 2.0 MTR RC
49		23/5	DA+0		256.00		12127.00		23/4	DA	0		213.00		11871.00	2953821.69	482211.44	2.0 MTR RC RIVER
50	AP-24/0	24/0	DC+0	27°35'48"LT	230.00	1566.00	12357.00		23/5	DA	0		230.00		12127.00	2953546.88	482125.27	CART TRACK LT LINE 11KV LINE, 2 NOS HUT
51	AP-25/0	25/0	DC+3	21°19'16"LT	292.00	342.00	12699.00	AP-24/0	24/0	DC	3	27°35'31"LT	342.00	1566.00	12357.00	2953357	482065	VILL-NAPAM GAON
52		25/1	DA+0		338.00		12991.00	AP-25/0	25/0	DC	3	20°40'10"LT	342.00	12699.00	12699.00	2953020	482126	BAMBO
53	AP-26/0	26/0	DC+3	18°19'33"LT	324.00	630.00	13329.00		25/1	DA	0		292.00		12991.00	2952747	482293	POND, METALED ROAD, 11KV LINE-1LT LINE
54		26/1	DA+3		316.00		13653.00	AP-26/0	26/0	DC	3	18°19'06"LT	324.00	630.00	13329.00	2952482	482456	VILL-AMOLAPAM
55	AP-27/0	27/0	DBN+0	06°28'07"LT	225.00	640.00	13969.00		26/1	DA	3		316.00		13653.00	2952261	482719	CARTTACK
56		27/1	DA+6		318.00		14194.00	AP-27/0	27/0	DBN	0	07°05'28"LT	225.00	640.00	13969.00	2952042	482978	VILL-BARAGURI ROAD,

For KEC INTERNATIONAL LTD. For KEC International Ltd.

ANUP PAIKAR
 Engineer (Projects)

N.A. KHAN
 Sr. Project Manager (C)


DR. K. SINGH / S.K. SINGH
 अधिकारी / Engineer
 Powergrid Corporation of India Ltd.
 NERPSIP, Tezpur, Sonailpur, Assam


(DR. K. SINGH) BARBHUIYA
 Project Manager
 Powergrid Corporation of India Ltd.
 NERPSIP, Tezpur, Sonailpur, Assam


POWER GRID CORPORATION OF INDIA LTD.
132 KV D/C SONABIL - TEZPUR TRANSMISSION LINE
Execution Agency: M/s KEC INTERNATIONAL LIMITED
CHECK SURVEY REPORT FROM Sonabil Gantry to Tezpur Gantry (Total Length: 16.092 KM)

AS PER CHECK SURVEY																		
AS PER DETAIL SURVEY					AS PER CHECK SURVEY													
S/N	AP NO.	LOCATIO N NO.	TYPE OF TOWER	Angle of Deviation	Span Length (m)	Section Length (m)	Cumulative Length(m)	AP NO.	LOCATION NO.	TYPE OF TOWER	EXT.	Angle of Deviation	Span Length (m)	Section Length (m)	Cumulative Length(m)	UTM COORDINATE	Crossing Details	
															Latitude	Longitude		
57		27/2	DA-3				14512.00		27/1	DA	6		318.00		14194.00	2951905	483183	POND,CART TRACK, 11 KV LINE
58	AP-28/0	28/0	DD-3	39°12'55"RT	322.00	865.00	14834.00		27/2	DA	3		322.00		14512.00	2951740	483430	CONCRETE BATHROOM
59		28/1	DA+0		288.00		15122.00	AP-28/0	28/0	DD	3	40°59'49"RT	288.00	865.00	14834.00	2951595	483665	VILL-AMOLAPAM POND
60	AP-29/0	29/0	DD+0	33°18'48"RT	281.00	569.00	15403.00		28/1	DA	0		281.00		15122.00	2951310	483747	METALLED ROAD, 2 NOS POND
61		29/1	DA-3		208.00		15611.00	AP-29/0	29/0	DD	0	30°40'23"RT	208.00	569.00	15403.00	2951033	483827	VILL-PANCHMAIL GAON METALLED ROAD
62	AP-30/0	30/0	DD+6	41°01'04"LT	235.00	443.00	15846.00		29/1	DA	3		235.00		15611.00	2950863	483777	METALLED ROAD, 11 KV LINE
63	AP-31/0(D/E)	31/0	DD-0	28°55'10"RT	157.00	157.00	16003.00	AP-30/0	30/0	DD	6	39°18'24"LT	168.00	443.00	15846.00	2950612	483705	VILL-2 NO DOLABARI
	TEZPUR GANTRY	GANTRY		00°00'00"	78.00	78.00	16081.00	AP-31/0 (D/E)	31/0	DD	0	27°58'31"RT	78.00	168.00	16014.00	2950472	483771	VILL-2 NO DOLABARI BOUNDARY
							TEZPUR GANTRY	GANTRY			0	00°00'00"	78.00	78.00	16092.00	2950394	483778	VILL-2 NO DOLABARI

For KEC INTERNATIONAL LTD. For KEC
ANUP PAIKAR
 Engineer (Projects)


S.K. SINGH
 Project Manager / Engineer
 Powergrid Corporation of India Ltd.
 NERPSIP, Tezpur, Sonitpur, Assam


S. PARBHUIYA
 Project Manager
 Powergrid Corporation of India Ltd.
 NERPSIP, Tezpur, Sonitpur, Assam



N.A. KISHAN
 Sr. Project Manager (C)

CLIENT: POWER GRID CORPORATION OF INDIA LIMITED
Agency: KEC INTERNATIONAL LIMITED

Check Survey report of Lilo of 132kV S/C from Rangia to Rowta T/L. (From Tapping Tower to Tangla Substation, Route Length = 10.680 Km)

Sl. No	As per Detail Survey										As per Check Survey		Crossing Details/Remarks	Village Name				
	Ap No.	Loc No.	Type Of Tower	Angle Of deviation	Span (In m.)	Section Length (In m.)	Cum. Length-(m)	Ap No.	Loc No.	Type Of Tower	Angle Of deviation	Span (In m.)			Section Length (In m.)	Cum. Length-(m)	Co-ordinate(UTM COORDINATE) latitude	Longitude
1	TAPPING TOWER	TT-1	DD+0	00°00'00"				TAPPING TOWER	TT-1	DD+0	00°00'00"				2940474.02	394619.05	PROPOSED ONLINE TOWER	Gerua
2	1/0	1/0	DD+6	02°59'04"LT	48	48	48	1/0	1/0	DD+6	05°42'34"RT	49	49	29404501.08	397583.03	11 KV Line	Gerua	
3	2/0	2/0	DC+0	19°49'08"RT	317	365	365	2/0	2/0	DC+0	20°33'52"RT	304	317	2940682.86	397323.85	Pond, Nala	Gerua	
4		2/1	DA+3		300	665	665	2/1	2/1	DA+3		285	670	2940928.00	397151.00	4nos cart track, 2nos LT line, Pond	Sagunbari	
5	3/0	3/0	DC+0	15°55'24"LT	285	950	950	3/0	3/0	DC+0	15°55'24"LT	253	589	2941162.50	396987.48	Casted 2nos Pond, Cart track, LT line	2No Bhalabari	
6	4/0	4/0	DD+0	39°39'58"RT	251	1201	1201	4/0	4/0	DD+0	39°39'58"RT	294	253	2941321	396792.9	Casted		
7		4/1	DA+0		294	1495	1495	4/1	4/1	DA+0		232	1502			River		
8		4/2	DA+0		232	1727	1727	4/2	4/2	DA+0		274	1734			Casted		
9		4/3	DA+0		260	2001	2001	4/3	4/3	DA+0		260	2008			Bamboo Area		
10		4/4	DA+0		258	2261	2261	4/4	4/4	DA+0		261	2268			Casted		
11	5/0	5/0	DBN+0	11°06'55"RT	296	2519	2519	5/0	5/0	DBN+0	11°06'55"RT	296	1321	2942609.26	396535.57	Cart track, LT line	2No Bhalabari	
12	6/0	6/0	DD+0	37°53'50"LT	280	2815	2815	6/0	6/0	DD+0	37°53'50"LT	280	2825	2942807.41	396536.33	Casted		
13		6/1	DA+0		260	3095	3095	6/1	6/1	DA+0		260	3105			Cart track		
14		6/2	DA+0		260	3355	3355	6/2	6/2	DA+0		260	3365			2nos Cart track, Canal		


TAPAS SARKAR
Senior Surveyor
KEC INTERNATIONAL LTD.


S.K. RAVA
Chief Manager
Powergrid
Checked by S.K. RAVA / NEPPSIP
Recommended By

CLIENT: POWER GRID CORPORATION OF INDIA LIMITED

Agency: KEC INTERNATIONAL LIMITED

Check Survey report of Lilo of 132KV S/C from Rangia to Rowta T/L (From Tapping Tower to Tangla Substation, Route Length = 10.680 Km)

SL No	As per Detail Survey														As per Check Survey				Crossing Details/Remarks	Village Name
	Ap No.	Loc No.	Type Of Tower	Angle Of deviation	Span (In m.)	Section Length (In m.)	Cum. Length (m)	Ap No.	Loc No.	Type Of Tower	Angle Of deviation	Span (In m.)	Section Length (In m.)	Cum. Length (m)	Co-ordinate(WGS-84) UTM (COORDINATE)					
															latitude	Longitude				
15		6/3	DA+0		250	3605		6/3	DA+0				3615							
16	7/0	7/0	DD+3	42°50'07"(LT)	314	3919	7/0	7/0	DD+3	42°50'07"(LT)	314	1104	3929	2943779.14	395854.99			Pond, Nala, Cart track	Bhehguri	
17	8/0	8/0	DD+0	58°40'54"(RT)	308	4227	8/0	8/0	DD+0	58°40'54"(RT)	308	308.00	4237	2943834.59	395565.21			L.T. line, Metal Road, Pond		
18		8/1	DA+0		300	4527		8/1	DA+0		300		4537							
19		8/2	DA+0		300	4827		8/2	DA+0		300		4837							
20		8/3	DA+0		300	5127		8/3	DA+0		300		5137							
21		8/4	DA+3		310	5437		8/4	DA+3		310		5447							
22		8/5	DA+0		320	5757		8/5	DA+0		320		5767							
23		8/6	DA+0		222	5979		8/6	DA+0		222		5989							
24	9/0	9/0	DBN+0	13°49'44"(RT)	231	6210	9/0	9/0	DBN+0	13°49'44"(RT)	231	1983.00	6220	2945697.11	394872.91			Nala, Cart track, 11 KV line		
25		9/1	DA+0		308	6518		9/1	DA+0		308		6528							
26		9/2	DA+3		316	6834		9/2	DA+3		316		6844							
27	10/0	10/0	DD+0	02°37'19"(RT)	318	7152	10/0	10/0	DD+0	02°37'19"(RT)	318	942	7162	2946633.05	394770.87			Low land, Ditch	Gohaikhat	
28		GANTRY		00°00'00"		7270		GANTRY		00°00'00"	98	98	7260					400 KV D/C BALIPARA - BONGAIGAON TRANSMISSION LINE	Jalha Gaon	

TAPAS SARKAR
Senior Surveyor
KEC INTERNATIONAL LTD.

S.K. RAHA
Asst. Manager
Checked By: S.K. RAHA
Checked By: S.K. RAHA
Checked By: S.K. RAHA

CLIENT: POWER GRID CORPORATION OF INDIA LIMITED
Agency: KEC INTERNATIONAL LIMITED

Check Survey report of Lilo of 132kV S/C from Rangia to Rowta T/L. (From Tapping Tower to Tangla Substation, Route Length = 10.680 Km)

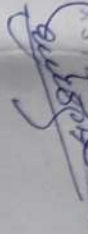
Sl. No	As per Detail Survey						As per Check Survey						Village Name				
	Ap No.	Loc No.	Type Of Tower	Angle Of deviation	Span (In m.)	Section Length (In m.)	Cum. Length (m)	Ap No.	Loc No.	Type Of Tower	Angle Of deviation	Span (In m.)		Section Length (In m.)	Cum. Length (m)	Co-ordinate (WGS-84) UTM COORDINATE	Crossing Details/Remarks
29	11/0	11/0	DD+0	21°30'36" (LT)	113	231	7383		GANTRY	GANTRY	00°00'00"	40	40	7300		Cart track, LT line	Jalaha Gaon
30	12/0	12/0	DC+0	18°19'21" (LT)	325	325	7708	11/0	11/0	DD+0	21°30'36" (LT)	93	93	7393	2946854.1	Cart track, Pond	Jalaha Gaon
31		12/1	DA+0		290		7998	12/0	12/0	DC+0	18°19'21" (LT)	290	325	7718	2947147.56	Cart track, Pond	Jalaha Gaon
32		12/2	DA+0		298		8296		12/1	DA+0		298	8306				
33		12/3	DA+0		296		8592		12/2	DA+0		296	8602				
34		12/4	DA+0		284		8876		12/3	DA+0		284	8886				
35	13/0	13/0	DBN+0	14°30'54" (LT)	256	1424	9132		12/4	DA+0		256	9142				Dakshin Jangalpara
36		13/1	DA+3		236		9368	13	13/0	DBN+6	14°56'57" (LT)	310	9452			Metal Road, LT line	
37		13/2	DA+0		314		9682		13/1	DA+6		250	9702			U/C 33 KV line	
38	14/0	14/0	DD+3	40°38'50" (RT)	306		9988		13/2	DA+3		290	9992			11KV LINE	
39	15/0	15/0	DBN+0	13°30'35" (LT)	330	856	10318	14	14/0	DD+6	42°31'00" (RT)	343	10335			Metal Road, 11KV line, Nala	Jangalpara
40	16/0	16/0	DD+0	17°43'44" (RT)	287	287	10605	15	15/0	DBN+3	14°03'11" (LT)	303	10638			Bamboo Area	Nalbari
41	GANTRY	GANTRY		00°00'00"	53	53	10658	16	16/0	DD+0	30°15'12" (RT)	42	10680			Cart Track, S/S Boundary	Nalbari
									GANTRY	GANTRY	15°40'54"	42	42	2949257			Nalbari


TAPAS SARKAR
Senior Surveyor
KEC INTERNATIONAL LTD.

Submitted By

Page 3 of 4

Approved By


S.K. RANA
Chief Manager
Checked By: / Powergrid
RECOMMENDED BY: / NEERPAR
Mangaldai

ANGLE POINT SCHEDULE FOR PROPOSED ROUTE-1

NAME OF THE LINE : PROPOSED M/C FOR LILO 132 KV S/C KAMALPUR - KAMAKHYA & KAMALPUR - SISHUGRAM AT AMINGAON T/L

SL NO.	AP NO	AOD	SECTION LENGTH	CO-ORDINATE OF AP (WGS-84)		CROSSING DETAILS	REMARKS	REMARKS	VILLAGE NAME
				NORTHING	EASTING				
1	TAPPING TOWER	18°29'44" RT	75	26°16'9.32"	91°41'54.91"	RAILWAY LINE	EXT. TOWER		VAIKAJAN
2	AP-1(D/E)	64°10'32" RT	60	26°16'38.03"	91°41'56.84"	RAILWAY LINE	D/C	AP-1 its provided for adjust slack span and also Crossing Railway crossing	VAIKAJAN
3	AP-2	38°07'37" LT	204	26°16'39.24"	91°41'49.72"	RAILWAY LINE	D/C		NAKHALI
4	AP-3	10°12'45" RT	640	26°16'29.79"	91°41'29.52"	METAL ROAD, 2 NOS. 11 KV LINE, NALA	D/C		NAKHALI
5	AP-4	14°21'10" LT	318	26°16'26.72"	91°41'18.62"	11 KV LINE, LT LINE, METAL ROAD	D/C		VALUKPAM
6	AP-5	12°21'48" LT	280	26°16'21.98"	91°41'10.07"		D/C		BONMAJA
7	AP-6 (MC COM POINT)	00°00'00"	52	26°16'20.76"	91°41'18.69"		M/D	AP-2, AP-3, AP-4, AP-5, AP-6, AP-5A, AP-4A, AP-3A, AP-2A, AP-1A are provided for Railway crossing, Metal road.	CHANGSARI
8	AP-5A	14°04'57" RT	83	26°16'21.54"	91°41'11.62"	METAL ROAD, 11 KV LINE	D/C		CHANGSARI
9	AP-4A	36°36'39" RT	290	26°16'23.32"	91°41'21.77"		D/C		CHANGSARI
10	AP-3A	07°06'34" RT	638	26°16'14.37"	91°41'42.49"	METAL ROAD, 11 KV LINE	D/C		CHANGSARI
11	AP-2A	04°18'48" RT	204	26°16'12.22"	91°41'49.34"	RAILWAY LINE, FENCING	D/C		MALANG
12	AP-1A	29°33'28" RT	145	26°16'10.41"	91°41'54.12"	NON ELECTRIFIED NORTHEAST FRONTIRE RAILWAY MAIN LINE (BROAD GAUGE) SINGLE LINE	D/C		MALANG
13	TAPPING TOWER	31°11'28" LT	40	26°16'39.97"	91°41'58.42"		EXT. TOWER		MALANG

S. Beera
 Mohan Kr. Pandit
 Project Manager
 Simplex

ANGLE POINT SCHEDULE FOR PROPOSED ROUTE-1

NAME OF THE LINE : PROPOSED M/C FOR LILO 132 KV S/C KAMALPUR - KAMAKHYA & KAMALPUR - SISHUGRAM AT AMINGAON T/L

SL NO.	AP NO	AOD	SECTION LENGTH	CO-ORDINATE OF AP (WGS-84)		CROSSING DETAILS	REMARKS	REMARKS	VILLAGE NAME
				NORTHING	EASTING				
14	AP-6 (MC COM POINT)	00°00'00"	151	26°16'20.76"	91°41'18.69"		M/D		MALANG
15	AP-7	09°47'09"LT	245	26°16'16.99"	91°41'1.18"		M/C		BONMAJA
16	AP-8	37°24'33"LT	720	26°16'2.27"	91°40'41.23"	METAL ROAD, 11 KV LINE	M/C		DHOPATARI
17	AP-9	26°22'21"RT	720	26°15'39.64"	91°40'35.26"		M/C		MALANG
18	AP-10	24°25'44"LT	820	26°15'19.11"	91°40'16.53"	METAL ROAD, 11 KV LINE	M/C	AP-7, AP-8, AP-9, AP-10, AP-11, AP-12, AP-13, AP-14 are provided for Metal road, Metal Road.	MALANG
19	AP-11	44°28'14"RT	985	26°14'48.15"	91°40'7.34"	METAL ROAD, 11 KV LINE, BRICK FIE	M/C		MALANG
20	AP-12	39°6'18"LT	1550	26°14'22.65"	91°39'19.36"	2 NOS DITCH, METAL ROAD, NALA	M/C		MALANG
21	AP-13	26°7'17"RT	325	26°14'12.93"	91°39'15.36"	METAL ROAD, NALA	M/C		MALANG
22	AP-14 (MC COM POINT)	00°00'00"	145	26°14'9.77"	91°39'11.71"		M/D		MALANG
23	AP-14 (MC COM POINT)	08°49'54"LT	110	26°14'9.77"	91°39'11.71"		M/D		MALANG
24	AP-15	43°14'47"RT	105	26°14'6.12"	91°39'8.59"	NALA	D/C		MALANG
25	AP-16	50°45'30"RT	105	26°14'5.51"	91°39'4.68"		D/C		MALANG
26	AP-17(D/E)	03°37'17"RT		26°14'7.69"	91°39'1.96"		D/C	AP-17 is Dead End its provided for adjust slack span.	MALANG
27	GANTRY	00°00'00"	80	26°14'9.44"	91°39'0.03"		NOT FIXED		MALANG
28	AP-14 (MC COM POINT)	29°23'46"RT		26°14'9.77"	91°39'11.71"		M/D		MALANG
29	AP-14A	39°06'28"RT	172	26°14'8.41"	91°39'5.74"	DITCH	D/C		MALANG
			52						

S. B. Saha
M. S. Saha
Mohan Kr. Pandit
 Project Manager
 SBBCL Infrastructure

ANGLE POINT SCHEDULE FOR PROPOSED ROUTE-I									
NAME OF THE LINE : PROPOSED M/C FOR LIL0 132 KV S/C KAMALPUR -KAMAKHYA & KAMALPUR -SISHUGRAM AT AMINGAON T/L									
SL NO.	AP NO	AOD	SECTION LENGTH	CO-ORDINATE OF AP (WGS-84)		CROSSING DETAILS	REMARKS	REMARKS	VILLAGE NAME
				NORTHING	EASTING				
30	AP-15A	14°58'50"RT	90	26°14'19.19"	91°39'4.11"	DITCH	D/C		MALANG
31	GANTRY	00°00'00"		26°14'10.96"	91°39'1.72"		NOT FIXED		MALANG
TOTAL LENGTH =			9.344 KM						

S. B. Saha

M. K. Pandit



Mohan Kr Pandit
 Project Manager
 Simplex Infrastructures Ltd.
 TW07, PGCIL, Guwahati- 781007

POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING

MUKALMUA S/S

Sl No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
1	GENTRY			26 13 31.6	91 34 17.5			
2	SP-1	SP 64	1	26 13 32.7	91 34 16.3	Sub-Station Road		
3	SP-2	SP 64	1	26 13 33.8	91 34 15.2	Crossing		
4	SP-3	SP 64	1	26 13 34.8	91 34 14.1			
5	SP-4	SP 64	1	26 13 35.9	91 34 13.0			
6	DP-1	SP 64	2	26 13 37.0	91 34 11.9			
7	SP-5	SP 64	1	26 13 38.1	91 34 10.8			
8	SP-6	SP 64	1	26 13 39.1	91 34 09.7			
9	SP-7	SP 64	1	26 13 40.2	91 34 08.6			
10	SP-8	SP 64	1	26 13 41.3	91 34 07.5			
11	DP-2	SP 64	2	26 13 42.4	91 34 06.4			
12	SP-9	SP 64	1	26 13 43.5	91 34 05.4			
13	SP-10	SP 64	1	26 13 44.5	91 34 04.3			
14	SP-11	SP 64	1	26 13 45.6	91 34 03.2	Village Kachha		
15	SP-12	SP 64	1	26 13 46.6	91 34 02.2	Road Crossing		
16	DP-3	SP 64	2	26 13 47.7	91 34 01.1			
17	SP-13	SP 64	1	26 13 48.9	91 33 59.9			
18	SP-14	SP 64	1	26 13 50.0	91 33 58.7			
19	SP-15	SP 64	1	26 13 51.2	91 33 57.6			
20	SP-16	SP 64	1	26 13 52.3	91 33 56.4			
21	DP-4	SP 64	2	26 13 53.4	91 33 55.3			
22	SP-17	SP 64	1	26 13 54.6	91 33 54.1			
23	SP-18	SP 64	1	26 13 55.7	91 33 52.9			



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EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING
MUKALMUJA S/S

S/No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
24	SP-19	SP 64	1	26 13 56.9	91 33 51.8			
25	SP-20	SP 64	1	26 13 58.0	91 33 50.6			
26	DP-5	SP 64	2	26 13 59.2	91 33 49.5			
27	SP-21	SP 64	1	26 14 00.3	91 33 48.3			
28	SP-22	SP 64	1	26 14 01.5	91 33 47.2			
29	SP-23	SP 64	1	26 14 02.6	91 33 46.0			
30	SP-24	SP 64	1	26 14 03.8	91 33 44.9			
31	DP-6	SP 64	2	26 14 04.9	91 33 43.7			
32	SP-25	SP 64	1	26 14 06.0	91 33 42.5			
33	SP-26	SP 64	1	26 14 07.2	91 33 41.4			
34	SP-27	SP 64	1	26 14 08.3	91 33 40.2			
35	SP-28	SP 64	1	26 14 09.5	91 33 39.1			
36	DP-7	SP 64	2	26 14 10.6	91 33 38.0			
37	SP-29	SP 64	1	26 14 11.7	91 33 36.8			
38	SP-30	SP 64	1	26 14 12.8	91 33 35.7			
39	SP-31	SP 64	1	26 14 13.9	91 33 34.6			
40	SP-32	SP 64	1	26 14 15.1	91 33 33.4			
41	DP-8	SP 64	2	26 14 16.2	91 33 32.3			
42	SP-33	SP 64	1	26 14 17.3	91 33 31.1			
43	SP-34	SP 64	1	26 14 18.5	91 33 29.9			
44	SP-35	SP 64	1	26 14 19.7	91 33 28.8			
45	SP-36	SP 64	1	26 14 20.9	91 33 27.6			
46	DP-9	SP 64	2	26 14 22.0	91 33 26.4	Village Kachha		
47	SP-37	SP 64	1	26 14 23.1	91 33 25.3	Road Crossing		



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POWERGRID, N.E.R.P.S.I.P
आ-एनएच/अमिंगाउन



POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING MUKALMUA S/S

(11)

Sl No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
48	SP-38	SP 64	1	26 14 24.2	91 33 24.2		0.1 Meter extension require on SP-64 Pole to maintain the clearance.	We can decrease the gap between OPGW and 33 KV Line by 0.1 meter to obtain the clearance.
49	SP-39	SP 64	1	26 14 25.3	91 33 23.1	Village Kachha Road Crossing	0.56 Meter extension require on SP-64 Pole to maintain the clearance.	We can shift the cross arm upward 0.5 mtr and shift the OPGW upward to avoid the extension/ SP 76 Pole. erect 1 pole beside road, we can the extension / SP 76 Pole also.
50	SP-40	SP 64	1	26 14 26.4	91 33 22.0			
51	DP-10	SP 64	2	26 14 27.5	91 33 20.8			
52	SP-41	SP 64	1	26 14 28.7	91 33 19.7	Village Kachha Road Crossing	0.89 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended without extension.	We can shift the cross arm upward 0.5 mtrs and shift the OPGW cable upward and reduce the span to obtain the clearance. Also if we erect 1 pole beside road, we can avoid the pole extension/SP76 Pole
53	SP-42	SP 64	1	26 14 29.8	91 33 18.5		0.66 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended without extension.	
54	SP-43	SP 64	1	26 14 30.9	91 33 17.4			
55	SP-44	SP 64	1	26 14 32.0	91 33 16.2			
56	DP-11	SP 64	2	26 14 33.1	91 33 15.1	Village Kachha Road Crossing		
57	SP-45	SP 64	1	26 14 34.2	91 33 14.0			
58	SP-46	SP 64	1	26 14 35.2	91 33 13.0			



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K. K. Kulkarni
Field Engineer

महाराष्ट्र राज्य विद्युत वितरण
CORPORATION
POWER DIVISION, M.E.R.P.S.I.P
अभिषेक रोड, मुंबई-४०००३२
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POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING
MUKALMUA S/S

Sl No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
59	SP-47	SP 64	1	26 14 36.3	91 33 11.9			
60	SP-48	SP 64	1	26 14 37.4	91 33 10.7			
61	DP-12	SP 64	2	26 14 38.5	91 33 09.6			
62	SP-49	SP 64	1	26 14 39.6	91 33 08.4			
63	SP-50	SP 64	1	26 14 40.8	91 33 07.3			
64	SP-51	SP 64	1	26 14 41.9	91 33 06.1			
65	SP-52	SP 64	1	26 14 43.0	91 33 05.0			
66	DP-13	SP 64	2	26 14 44.1	91 33 03.9			
67	SP-53	SP 64	1	26 14 45.2	91 33 02.9			
68	SP-54	SP 64	1	26 14 46.4	91 33 02.0			
69	SP-55	SP 64	1	26 14 47.4	91 33 01.1			
70	SP-56	SP 64	1	26 14 48.5	91 33 00.2			
71	DP-14	SP 64	2	26 14 49.7	91 32 59.3			
72	SP-57	SP 64	1	26 14 51.2	91 32 58.8			
73	SP-58	SP 64	1	26 14 52.7	91 32 58.4			
74	SP-59	SP 64	1	26 14 54.3	91 32 57.9			
75	SP-60	SP 64	1	26 14 55.8	91 32 57.5			
76	DP-15	SP 64	2	26 14 57.4	91 32 57.0			
77	SP-61	SP 64	1	26 14 58.9	91 32 56.9			
78	SP-62	SP 64	1	26 15 00.4	91 32 56.8			
79	SP-63	SP 64	1	26 15 02.0	91 32 56.8			
80	SP-64	SP 64	1	26 15 03.6	91 32 56.8			
81	DP-16	SP 64	2	26 15 05.2	91 32 56.9			
82	SP-65	SP 64	1	26 15 06.7	91 32 57.0			



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POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING MUKALMUA S/S

(12)

Sl No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
83	SP-66	SP 64	1	26 15 08.3	91 32 57.1			
84	SP-67	SP 64	1	26 15 09.9	91 32 57.2			
85	SP-68	SP 64	1	26 15 11.5	91 32 57.3			
86	DP-17	SP 64	2	26 15 13.1	91 32 57.3			PGCIL recommended to Go for under wire crossing If clearance is there and use DP if reqd to obtain reqd clearance as there is no provision of 5.0m extn.
87	SP-69	SP 64	1	26 15 14.6	91 32 57.4	Existing 33 KV Line Crossing	7.02 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 4.936 meter extension.	PGCIL recommended to Go for under wire crossing If clearance is there and use DP if reqd to obtain reqd clearance as there is no provision of 5.0m extn.
88	DP-18	SP 76	2	26 15 16.1	91 32 57.5		5.704 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 3.620 meter extension.	PGCIL recommended to Go for under wire crossing If clearance is there and use DP if reqd to obtain reqd clearance as there is no provision of 4 m extn.
89	DP-19	SP 76	2	26 15 16.5	91 32 57.5	State Highway 2 Crossing, between DP 18 & DP 19	1.224 Meter extension require on SP-64 Pole for DP 19 to maintain the clearance. Hence, SP 76 Pole recommended without extension for DP 19	
90	SP-70	SP 64	1	26 15 17.9	91 32 57.1			



Field Engineer

 31/11/18

 POWERGRID, N.E.R.P.S.I.P

 आंध्रप्रदेश/Andhra Pradesh

POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING MUKALMUA S/S

Sl No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
91	SP-71	SP 76	1	26 15 19.4	91 32 56.7	11 KV Line Crossing	2.72 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 0.636 meter extension.	We can shift the OPGW cable to top of Pole by 0.15 mtr and decreasing the gap between OPGW and 33 KV Line by 0.550 mtr. Finally Extension require 0.636 - (0.15+0.550) = 0 mtr metre.
92	SP-72	SP 76	1	26 15 20.7	91 32 56.3		2.51 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 0.426 meter extension.	We can decrease the gap between OPGW and 33 KV Line by 0.426 mtr to obtain the clearance
93	FP-1	SP 64	4	26 15 22.1	91 32 56.0			
94	SP-73	SP 64	1	26 15 21.9	91 32 54.2			
95	SP-74	SP 64	1	26 15 21.7	91 32 52.5			
96	SP-75	SP 64	1	26 15 21.5	91 32 50.8			
97	SP-76	SP 64	1	26 15 21.3	91 32 49.1			
98	DP-20	SP 64	2	26 15 21.0	91 32 47.4			
99	SP-77	SP 64	1	26 15 20.8	91 32 45.7			
100	SP-78	SP 64	1	26 15 20.6	91 32 44.1			
101	SP-79	SP 64	1	26 15 20.4	91 32 42.3			
102	SP-80	SP 64	1	26 15 20.3	91 32 40.6			
103	SP-81	SP 64	1	26 15 20.2	91 32 38.8			
104	SP-82	SP 64	1	26 15 20.1	91 32 37.0			
105	DP-21	SP 64	2	26 15 19.9	91 32 35.3			


 R. S. SAHA
 Field Engineer
 POWERGRID, N.E.R.P.S.I.P
 আমলাইল, ন্যাংগাম, ফার্মা, অরুণাচল
 POWERGRID, N.E.R.P.S.I.P
 আমলাইল/Armingaon


 STERLING AND WILSON PVT. L.
 KOLKATA

POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING MUKALMUA S/S

(13)

Sl No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
106	SP-83	SP 64	1	26 15 19.6	91 32 33.6	33 KV Line Crossing, PWD Village Road Crossing	9.13 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 7.046 mtr extension.	PGCIL recommended to Go for under wire crossing if clearance is there and use DP if reqd to obtain reqd clearance as there is no provision of 7.046 m extn
107	DP-22	SP 64	1	26 15 19.2	91 32 31.9			
108	SP-84	SP 76	2	26 15 18.8	91 32 30.2	11 KV Line Crossing, Fisheries / Pond, Low Lying Area	2.734 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 0.65 mtr extension.	We can shift the OPGW cable to top of Pole by 0.15 mtr and decreasing the gap between OPGW and 33 KV Line by 0.500 mtr. Finally Extension require 0.65 - (0.15+0.50) = 0 mtr
109	SP-85	SP 76	1	26 15 18.4	91 32 28.4			
110	SP-86	SP 64	1	26 15 18.1	91 32 26.7			
111	SP-87	SP 64	1	26 15 17.7	91 32 25.0			
112	DP-23	SP 64	2	26 15 17.3	91 32 23.3			
113	SP-88	SP 64	1	26 15 16.1	91 32 22.4			
114	SP-89	SP 64	1	26 15 14.8	91 32 21.4			


Field Engineer
 पावरग्रिड, एन.ई.आर.पि.एल.आइ.पि
 POWERGRID, N.E.R.P.S.I.P
 आफिस/पेज 7 of 39
 पावरग्रिड, एन.ई.आर.पि.एल.आइ.पि
 POWERGRID, N.E.R.P.S.I.P



EXISTING **LINE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING**

MUKALMUA S/S

SI No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
115	SP-90	SP 64	1	26 15 13.6	91 32 20.4			
116	DP-24	SP 64	2	26 15 12.3	91 32 19.4			
117	SP-91	SP 64	1	26 15 12.2	91 32 18.3			
118	SP-92	SP 64	1	26 15 12.1	91 32 16.9			
119	SP-93	SP 64	1	26 15 12.0	91 32 15.4			
120	SP-94	SP 64	1	26 15 12.0	91 32 14.0			
121	DP-25	SP 64	2	26 15 11.9	91 32 12.7			
122	SP-95	SP 64	1	26 15 11.8	91 32 11.6			
123	SP-96	SP 64	1	26 15 11.7	91 32 10.3			
124	SP-97	SP 64	1	26 15 11.6	91 32 08.7			
125	SP-98	SP 64	1	26 15 11.5	91 32 06.9			
126	DP-26	SP 76	2	26 15 11.4	91 32 05.2		1.294 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended without extension	
127	SP-99	SP 76	1	26 15 11.5	91 32 03.4	Existing LT Line, PWD Village Road Crossing	2.53 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 0.446 Meter extension	We can shift the OPGW cable to top of Pole by 0.15 mtr and decreasing the gap between OPGW and 33 KV Line by 0.300 mtr. Finally Extension require 0.446 - (0.15+0.300) = 0 mtr.
128	SP-100	SP 64	1	26 15 11.6	91 32 01.7			
129	SP-101	SP 64	1	26 15 11.7	91 31 59.9			
130	SP-102	SP 64	1	26 15 11.8	91 31 58.2			
131	SP-103	SP 64	1	26 15 12.0	91 31 56.4			
132	FP-2	SP 64	4	26 15 12.1	91 31 54.7			



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POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING MUKALMUA S/S

(14)

Sl No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
133	SP-104	SP 64	1	26 15 13.5	91 31 53.9			
134	SP-105	SP 64	1	26 15 14.9	91 31 53.1			
135	SP-106	SP 64	1	26 15 16.3	91 31 52.4			
136	SP-107	SP 64	1	26 15 17.7	91 31 51.6			
137	DP-27	SP 64	2	26 15 19.1	91 31 50.8			
138	SP-108	SP 64	1	26 15 20.6	91 31 50.7			
139	SP-109	SP 64	1	26 15 22.0	91 31 50.6			
140	SP-110	SP 64	1	26 15 23.5	91 31 50.5			
141	SP-111	SP 64	1	26 15 24.9	91 31 50.3			
142	SP-112	SP 64	1	26 15 26.5	91 31 50.4			
143	FP-3	SP 64	4	26 15 28.0	91 31 50.5			
144	SP-113	SP 64	1	26 15 28.8	91 31 49.0			
145	SP-114	SP 64	1	26 15 29.5	91 31 47.5			
146	SP-115	SP 64	1	26 15 30.3	91 31 46.0			
147	SP-116	SP 64	1	26 15 31.1	91 31 44.5			
148	DP-28	SP 64	2	26 15 31.9	91 31 43.1			
149	SP-117	SP 64	1	26 15 32.7	91 31 41.6			
150	SP-118	SP 64	1	26 15 33.4	91 31 40.1			
151	SP-119	SP 64	1	26 15 34.2	91 31 38.5			
152	SP-120	SP 64	1	26 15 35.0	91 31 37.0			
154	SP-121	SP 64	1	26 15 36.6	91 31 33.9			



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 R. Prasad
 3/9/18
 Field Engineer
 पावरग्रिड, एन.ई.आर.पि.एस.आइ.पि
 POWERGRID, N.E.R.P.S.I.P
 আমিনগাঁও/Amingaon



 R. Prasad
 3/9/18
 Field Engineer
 पावरग्रिड, एन.ई.आर.पि.एस.आइ.पि
 POWERGRID, N.E.R.P.S.I.P
 আমিনগাঁও/Amingaon

LINE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING MUKALMUA S/S

Sl No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
155	SP-122	SP 64	1	26 15 37.6	91 31 32.6			
153	DP-29	SP 76	2	26 15 35.8	91 31 35.4	Puthimari River Embankment & LT Line crossing	4.344 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 2.26 mtr extension.	We can shift the cross arms upto 1 mtr and take the OPGW at 1 mtr extension. Higher size than SP 76 is recommended
156	DP-30	SP 76	2	26 15 38.8	91 31 31.6		1.82 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended without extension.	
157	FP-4	SP 76	4	26 15 39.6	91 31 31.9	Puthimari River Crossing	0.11 Meter extension require on SP-64 Pole to maintain the clearance.	PGCIL recommended to take major river crossing by SP76 Pole or higher size/H-beam.
158	FP-5	SP 76	4	26 15 43.0	91 31 34.1		No extension require on SP-64 Pole to maintain the clearance.	PGCIL recommended to take major river crossing by SP76 Pole or higher size/H-beam.
159	SP-123	SP 64	1	26 15 44.0	91 31 34.4			
160	SP-124	SP 64	1	26 15 45.5	91 31 34.9			
161	SP-125	SP 64	1	26 15 47.0	91 31 35.4			
162	SP-126	SP 64	1	26 15 48.5	91 31 35.9			
163	DP-31	SP 64	2	26 15 50.0	91 31 36.4			



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Field Engineer
 पावरग्रिड, एन.ई.ए.पी.एस.ए.पी.
 POWERGRID, N.E.R.P.S.I.P
 सहायता/मिनीगाउन

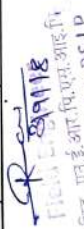
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LE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING MUKALMUA S/S

Sl No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
181	SP-141	SP 64	1	26 16 14.7	91 31 26.1			
182	SP-142	SP 64	1	26 16 16.1	91 31 25.3			
183	DP-35	SP 64	2	26 16 17.5	91 31 24.5			
184	SP-143	SP 64	1	26 16 18.9	91 31 23.6			
185	SP-144	SP 64	1	26 16 20.3	91 31 22.8			
186	SP-145	SP 64	1	26 16 21.7	91 31 22.0			
187	SP-146	SP 64	1	26 16 23.1	91 31 21.2			
188	SP-147	SP 64	1	26 16 24.6	91 31 20.3			
189	FP-6	SP 64	4	26 16 26.0	91 31 19.5	LT Line, Village Road Crossing, Nala crossing between SP148 & SP149		
190	SP-148	SP 64	1	26 16 25.7	91 31 17.8			
191	SP-149	SP 76	1	26 16 25.1	91 31 16.2	LT Line, PWD Village Road Crossing	1.21 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended without extension.	
192	SP-150	SP 76	1	26 16 24.6	91 31 14.6		2.01 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended without extension.	




 P. K. SAHAI
 Director, N.E.R.P.S.I.P.
 POWERGRID, N.E.R.P.S.I.P.
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POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EX MUKALMUA S/S

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SI No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
193	FP-7	SP 76	4	26 16 24.2	91 31 13.1			
194	SP-151	SP 76	1	26 16 25.4	91 31 11.9	LT Line Crossing		1.47 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended without extension.
195	SP-152	SP 64	1	26 16 26.5	91 31 10.8			
196	SP-153	SP 64	1	26 16 27.7	91 31 09.7			
197	SP-154	SP 64	1	26 16 28.9	91 31 08.6			
198	DP-36	SP 64	2	26 16 30.1	91 31 07.4			
199	SP-155	SP 64	1	26 16 31.3	91 31 06.3			
200	SP-156	SP 64	1	26 16 32.4	91 31 05.2			
201	SP-157	SP 64	1	26 16 33.6	91 31 04.0			
202	SP-158	SP 64	1	26 16 34.6	91 31 03.1			
203	DP-37	SP 64	2	26 16 35.7	91 31 02.1	Village Kachha		
204	SP-159	SP 64	1	26 16 36.8	91 31 01.0	Road Crossing		
205	SP-160	SP 64	1	26 16 37.9	91 31 00.0			
206	SP-161	SP 64	1	26 16 39.0	91 30 58.9			




Field Engineer
 POWERGRID, N.E.R.P.S.I.P.
 Bhubaneswar, Odisha


Field Engineer
 POWERGRID, N.E.R.P.S.I.P.
 Bhubaneswar, Odisha

**POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING
MUKALMUA S/S**

SI No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
207	DP-38	SP 76	2	26 16 40.1	91 30 58.0	11 KV Line, LT Line & PWD Village Road Crossing	2.474 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 0.39 meter extension.	We can shift the OPGW cable to top of Pole by 0.4 mtr to obtain the clearance
208	SP-162	SP 76	1	26 16 40.5	91 30 56.3			
209	SP-163	SP 64	1	26 16 41.0	91 30 54.7			
210	SP-164	SP 64	1	26 16 41.4	91 30 53.0			
211	SP-165	SP 64	1	26 16 41.9	91 30 51.4			
212	DP-39	SP 64	2	26 16 42.3	91 30 49.7			
213	SP-166	SP 64	1	26 16 42.8	91 30 48.1			
214	SP-167	SP 64	1	26 16 43.2	91 30 46.4			
215	SP-168	SP 64	1	26 16 43.7	91 30 44.7			
216	SP-169	SP 64	1	26 16 44.1	91 30 43.1			
217	DP-40	SP 64	2	26 16 44.6	91 30 41.4			
218	SP-170	SP 64	1	26 16 45.0	91 30 39.7			



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POWERGRID, N.E.R.P.S.I.P.
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**POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING
MUKALMUA S/S**

SI No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
219	DP-41	SP 76	2	26 16 45.5	91 30 38.1	11 KV Line, LT Line Crossing & State Highway 9 Crossing	3.574 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 1.49 meter extension.	We can shift the OPGW cable on 0.5 mtr extension and shift the cross arm upward by 1 mtr to obtain the clearance.
220	DP-42	SP 76	2	26 16 45.5	91 30 37.5			
221	SP-171	SP 64	1	26 16 45.3	91 30 35.9			
222	SP-172	SP 64	1	26 16 45.2	91 30 34.2			
223	SP-173	SP 64	1	26 16 45.0	91 30 32.5			
224	SP-174	SP 64	1	26 16 44.8	91 30 30.8			
225	DP-43	SP 64	2	26 16 44.6	91 30 29.1			
226	SP-175	SP 64	1	26 16 44.5	91 30 27.4			
227	SP-176	SP 64	1	26 16 44.3	91 30 25.6			
228	SP-177	SP 64	1	26 16 44.1	91 30 23.9			
229	SP-178	SP 64	1	26 16 43.9	91 30 22.2			
230	DP-44	SP 64	2	26 16 43.7	91 30 20.4			
231	SP-179	SP 64	1	26 16 43.6	91 30 18.7			
232	SP-180	SP 64	1	26 16 43.4	91 30 17.0			
233	SP-181	SP 64	1	26 16 43.2	91 30 15.3			
234	SP-182	SP 64	1	26 16 43.1	91 30 13.5			
235	DP-45	SP 64	2	26 16 42.9	91 30 11.8			
236	SP-183	SP 64	1	26 16 42.7	91 30 10.1			
237	SP-184	SP 64	1	26 16 42.5	91 30 08.4			
238	SP-185	SP 64	1	26 16 42.4	91 30 06.6			



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Field Engineer
 POWERGRID, N.E.R.P.S,IP
 2017/03/18

POWERGRID, N.E.R.P.S,IP
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 LE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING
 MUKALMUA S/S

Sl No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
239	SP-186	SP 76	1	26 16 42.2	91 30 04.9	LT Line & PWD Village Road Crossing	2.96 Meter extension require on SP-64 Pole to maintain the clearance. Hence SP 76 Pole recommended with 0.876 mtr extension	We can shift the cross arm upward by 0.9 mtr up and take the OPGW by 0.5 mtr extension to obtain the clearance
240	DP-46	SP 76	2	26 16 42.0	91 30 03.2			
241	SP-187	SP 64	1	26 16 42.2	91 30 01.7			
242	SP-188	SP 64	1	26 16 42.6	91 30 00.0			
243	SP-189	SP 64	1	26 16 42.9	91 29 58.4			
244	SP-190	SP 64	1	26 16 43.2	91 29 56.7			
245	DP-47	SP 64	2	26 16 43.5	91 29 55.0			
246	SP-191	SP 64	1	26 16 44.4	91 29 53.7			
247	SP-192	SP 64	1	26 16 45.7	91 29 52.7			
248	SP-193	SP 64	1	26 16 46.9	91 29 51.7			
249	SP-194	SP 64	1	26 16 48.2	91 29 50.7			
250	DP-48	SP 64	2	26 16 49.5	91 29 49.7			
251	SP-195	SP 64	1	26 16 50.8	91 29 48.7			
252	SP-196	SP 64	1	26 16 52.0	91 29 47.8			
253	SP-197	SP 64	1	26 16 53.3	91 29 46.8			
254	SP-198	SP 64	1	26 16 54.6	91 29 45.8			
255	DP-49	SP 64	2	26 16 55.8	91 29 44.9			
256	SP-199	SP 64	1	26 16 56.6	91 29 43.6			
257	SP-200	SP 64	1	26 16 57.4	91 29 42.3			
258	SP-201	SP 64	1	26 16 57.9	91 29 40.7			
259	SP-202	SP 64	1	26 16 58.3	91 29 39.1			



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POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING MUKALMUA S/S

SI No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
261	SP-203	SP 64	1	26 16 59.1	91 29 35.8			
262	SP-204	SP 64	1	26 16 59.6	91 29 34.2			
263	SP-205	SP 64	1	26 17 00.0	91 29 32.6			
264	SP-206	SP 64	1	26 17 00.4	91 29 31.0			
265	DP-51	SP 64	2	26 17 00.8	91 29 29.3	Village Kachha Road Crossing		
266	SP-207	SP 64	1	26 17 01.3	91 29 27.7			
267	SP-208	SP 64	1	26 17 01.7	91 29 26.1			
268	SP-209	SP 64	1	26 17 02.1	91 29 24.5			
269	SP-210	SP 64	1	26 17 02.5	91 29 22.9			
270	DP-52	SP 64	2	26 17 03.0	91 29 21.3			
271	SP-211	SP 64	1	26 17 03.4	91 29 19.6			
272	SP-212	SP 64	1	26 17 03.8	91 29 18.0			
273	SP-213	SP 64	1	26 17 04.2	91 29 16.4			
274	SP-214	SP 64	1	26 17 04.7	91 29 14.8			
275	DP-53	SP 64	2	26 17 05.1	91 29 13.1			
276	SP-215	SP 64	1	26 17 05.4	91 29 11.7			
277	SP-216	SP 76	1	26 17 05.7	91 29 10.3		2.73 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 0.65 mtr extension.	We can shift the OPGW cable to top of Pole by 0.15 mtr and shift the cross arm upward by 0.5 mtr to obtain the clearance
278	SP-217	SP 76	1	26 17 06.0	91 29 09.0	Existing LT Line & PWD Village Road Crossing	1.7 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended without extension.	
279	SP-218	SP 64	1	26 17 06.3	91 29 07.7			
280	DP-54	SP 64	2	26 17 06.8	91 29 06.2			
281	SP-219	SP 64	1	26 17 07.3	91 29 04.7			



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 POWERGRID, N.E.R.P.S.I.P.
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 POWERGRID, N.E.R.P.S.I.P.

LINE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING MUKALMUA S/S

Sl No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
280	DP-54	SP 64	2	26 17 06.8	91 29 06.2			
281	SP-219	SP 64	1	26 17 07.3	91 29 04.7			
282	SP-220	SP 64	1	26 17 07.9	91 29 03.1			
283	SP-221	SP 64	1	26 17 08.4	91 29 01.6			
284	SP-222	SP 64	1	26 17 09.0	91 28 59.9			
285	DP-55	SP 64	2	26 17 09.5	91 28 58.3			
286	SP-223	SP 64	1	26 17 10.0	91 28 56.8			
287	SP-224	SP 64	1	26 17 10.5	91 28 55.2			
288	SP-225	SP 64	1	26 17 11.1	91 28 53.7			
289	SP-226	SP 64	1	26 17 11.5	91 28 52.3			
290	FP-8	SP 76	4	26 17 12.0	91 28 50.9			PGCIL recommended to cross River by SP76 pole
291	FP-9	SP 76	4	26 17 12.9	91 28 47.9			PGCIL recommended to cross River by SP76 pole
292	SP-227	SP 64	1	26 17 13.0	91 28 47.1			
293	SP-228	SP 64	1	26 17 13.4	91 28 45.7			
294	SP-229	SP 64	1	26 17 13.7	91 28 44.2			
295	SP-230	SP 64	1	26 17 14.1	91 28 42.6			
296	DP-56	SP 64	2	26 17 14.4	91 28 41.0			
297	SP-231	SP 64	1	26 17 14.8	91 28 39.4			
298	SP-232	SP 64	1	26 17 15.1	91 28 37.8			
299	SP-233	SP 64	1	26 17 15.5	91 28 36.3			
300	SP-234	SP 64	1	26 17 15.8	91 28 34.7			
301	DP-57	SP 64	2	26 17 16.2	91 28 33.2			
302	SP-235	SP 64	1	26 17 16.5	91 28 31.6			
303	SP-236	SP 64	1	26 17 16.9	91 28 30.0			
304	SP-237	SP 64	1	26 17 17.2	91 28 28.6			
305	SP-238	SP 64	1	26 17 17.6	91 28 27.1			


 P. Prabhakar
 Assistant Engineer, Electrical, PWS, IED
 Page 18 of 39, MLE R.P.S., IED
 T.O. Srinivasan/Annapaola



POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING MUKALMUA S/S

SI No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
306	DP-58	SP 64	2	26 17 17.9	91 28 25.8			
307	SP-239	SP 76	1	26 17 18.1	91 28 24.2	Existing LT Line & Village Kachha Road Crossing		
308	SP-240	SP 76	1	26 17 18.4	91 28 22.5			
309	SP-241	SP 64	1	26 17 18.6	91 28 20.9			
310	SP-242	SP 64	1	26 17 18.8	91 28 19.3			
311	DP-59	SP 64	2	26 17 19.1	91 28 17.7			
312	SP-243	SP 64	1	26 17 19.2	91 28 15.9			
313	SP-244	SP 64	1	26 17 19.3	91 28 14.2			
314	SP-245	SP 64	1	26 17 19.4	91 28 12.5			
315	SP-246	SP 64	1	26 17 19.6	91 28 10.8			
316	DP-60	SP 64	2	26 17 19.7	91 28 09.1			
317	SP-247	SP 64	1	26 17 19.8	91 28 07.3			
318	SP-248	SP 64	1	26 17 19.9	91 28 05.6			
319	SP-249	SP 64	1	26 17 20.0	91 28 03.9			
320	SP-250	SP 64	1	26 17 20.2	91 28 02.2	Village Kachha Road Crossing		
321	DP-61	SP 64	2	26 17 20.3	91 28 00.4			
322	SP-251	SP 76	1	26 17 20.4	91 27 58.7	Existing 11 KV Line Crossing	1.52 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended without extension.	



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 POWERGRID, एन.ई.आर.पि.एस.आइ.पि.
 POWERGRID, N.E.R.P.S.I.P.
 अदालत, कोलकाता-700001
 31/1/19
 एन.ई.आर.पि.एस.आइ.पि.
 कोलकाता-700001

POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING MUKALMUA S/S

SI No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
323	SP-252	SP 76	1	26 17 20.5	91 27 57.0	Existing 11 KV Line Crossing	1.3 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended without extension.	
324	SP-253	SP 64	1	26 17 20.7	91 27 55.3			
325	SP-254	SP 64	1	26 17 20.8	91 27 53.6			
326	DP-62	SP 64	2	26 17 20.9	91 27 51.8			
327	SP-255	SP 64	1	26 17 21.0	91 27 50.1			
328	SP-256	SP 64	1	26 17 21.2	91 27 48.4			
329	SP-257	SP 64	1	26 17 21.3	91 27 46.7			
330	SP-258	SP 64	1	26 17 21.4	91 27 45.0			
331	DP-63	SP 64	2	26 17 21.5	91 27 43.2			
332	SP-259	SP 64	1	26 17 21.6	91 27 41.5			
333	SP-260	SP 64	1	26 17 21.8	91 27 39.8			
334	SP-261	SP 64	1	26 17 21.9	91 27 38.0			
335	SP-262	SP 64	1	26 17 22.0	91 27 36.3			
336	DP-64	SP 64	2	26 17 22.1	91 27 34.6			
337	SP-263	SP 64	1	26 17 22.3	91 27 32.9			
338	SP-264	SP 64	1	26 17 22.4	91 27 31.1			
339	SP-265	SP 64	1	26 17 22.5	91 27 29.4			
340	SP-266	SP 64	1	26 17 22.6	91 27 27.7			
341	DP-65	SP 64	2	26 17 22.8	91 27 25.9	Village Kachha Road Crossing		
342	SP-267	SP 64	1	26 17 22.9	91 27 24.2			
343	SP-268	SP 64	1	26 17 23.0	91 27 22.5			
344	SP-269	SP 64	1	26 17 23.1	91 27 20.8			

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FIELD SUPERVISOR

POWERGRID, N.E.P.S.I.P
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POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING MUKALMUJA S/S

Sl No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
345	SP-270	SP 64	1	26 17 23.2	91 27 19.1	Village Kachha Road Crossing		
346	DP-66	SP 64	2	26 17 23.4	91 27 17.3			
347	SP-271	SP 64	1	26 17 23.5	91 27 15.6			
348	SP-272	SP 64	1	26 17 23.6	91 27 13.9			
349	SP-273	SP 64	1	26 17 23.7	91 27 12.2			
350	SP-274	SP 64	1	26 17 23.9	91 27 10.5			
351	DP-67	SP 64	2	26 17 24.0	91 27 08.7			
352	SP-275	SP 64	1	26 17 24.1	91 27 07.0			
353	SP-276	SP 64	1	26 17 24.2	91 27 05.3			
354	SP-277	SP 64	1	26 17 24.3	91 27 03.6			
355	SP-278	SP 64	1	26 17 24.5	91 27 01.8			
356	DP-68	SP 64	2	26 17 24.6	91 27 00.1			
357	SP-279	SP 64	1	26 17 24.7	91 26 58.4			
358	SP-280	SP 64	1	26 17 24.8	91 26 56.7			
359	SP-281	SP 64	1	26 17 25.0	91 26 54.9			
360	SP-282	SP 64	1	26 17 25.1	91 26 53.3			
361	DP-69	SP 64	2	26 17 25.2	91 26 51.6			
362	SP-283	SP 64	1	26 17 26.2	91 26 50.3			
363	SP-284	SP 64	1	26 17 27.2	91 26 49.0			
364	SP-285	SP 64	1	26 17 28.1	91 26 47.7			
365	SP-286	SP 64	1	26 17 29.1	91 26 46.4			
366	DP-70	SP 64	2	26 17 30.1	91 26 45.1			
367	SP-287	SP 64	1	26 17 31.1	91 26 43.8			
368	SP-288	SP 64	1	26 17 32.1	91 26 42.6			
369	SP-289	SP 64	1	26 17 33.1	91 26 41.3			
370	SP-290	SP 64	1	26 17 34.0	91 26 40.0			



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Project: 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING MUKALMUJA S/S
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POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING MUKALMUA S/S

SI No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
371	DP-71	SP 64	2	26 17 35.0	91 26 38.7			
372	SP-291	SP 64	1	26 17 36.0	91 26 37.4			
373	SP-292	SP 64	1	26 17 37.0	91 26 36.1			
374	SP-293	SP 64	1	26 17 38.0	91 26 34.8			
375	SP-294	SP 64	1	26 17 39.0	91 26 33.5			
376	DP-72	SP 64	2	26 17 40.0	91 26 32.2			
377	SP-295	SP 64	2	26 17 40.9	91 26 30.9	Village Kachha		
378	DP-73	SP 64	2	26 17 41.8	91 26 29.7	Road Crossing		
379	SP-296	SP 64	1	26 17 42.2	91 26 28.2			
380	SP-297	SP 64	1	26 17 42.6	91 26 26.7			
381	SP-298	SP 76	1	26 17 43.0	91 26 25.1	LT Line & Pagladia River Embankment Crossing	4.73 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 2.646 meter extension.	PGCIL Recommended for SP 76 by minor shifting of Pole with Ext of Cross arm.
382	SP-299	SP 76	1	26 17 43.3	91 26 23.6	LT Line & Pagladia River Embankment Crossing	5.29 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 3.206 meter extension.	PGCIL Recommended for SP 76 by minor shifting of Pole with Ext of Cross arm.
383	DP-74	SP 64	2	26 17 43.7	91 26 22.1			
384	SP-300	SP 64	1	26 17 44.1	91 26 20.5			
385	FP-10	SP 76	4	26 17 44.4	91 26 19.0	Pagladia River Crossing	No extension require on SP-64 Pole to maintain the clearance.	PGCIL recommended to cross River by SP76 pole



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POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING MUKALMUA S/S

SI No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
386	FP-11	SP 76	4	26 17 45.3	91 26 15.5	Pagladia River Crossing	No extension require on SP-64 Pole to maintain the clearance.	PGCIL recommended to cross River by SP76 pole
387	FP-12	SP 64	4	26 17 45.8	91 26 13.9			
388	SP-301	SP 64	1	26 17 47.3	91 26 14.2			
389	FP-13	SP 76	4	26 17 48.7	91 26 14.6		4.84 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 2.756 meter extension.	PGCIL Recommended for SP 76 by minor shifting of Pole with Ext of Cross arm. Span length of river to be mentioned.
390	SP-302	SP 76	1	26 17 48.9	91 26 13.1	LT Line & Pagladia River Embankment Crossing	7.09 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 5.006 meter extension.	PGCIL Recommended for SP 76 by minor shifting of Pole with Ext of Cross arm.
391	SP-303	SP 64	1	26 17 49.0	91 26 11.9			
392	SP-304	SP 64	1	26 17 49.2	91 26 10.3			
393	SP-305	SP 64	1	26 17 49.3	91 26 08.6			
394	DP-75	SP 64	2	26 17 49.5	91 26 06.9			
395	SP-306	SP 64	1	26 17 49.7	91 26 05.3			
396	SP-307	SP 76	1	26 17 49.9	91 26 03.7	LT Line & PWD Village Road Crossing	1.77 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended without extension	



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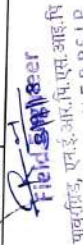
POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING MUKALMUA S/S

SI No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
397	SP-308	SP 76	1	26 17 50.3	91 26 02.1	LT Line & PWD Village Road Crossing	2.67 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 0.586 meter extension.	We can shift the OPGW cable upward by 0.1 mtr and shift the cross arm upward by 0.5 mtr to obtain the clearance.
398	SP-309	SP 64	1	26 17 50.6	91 26 00.5			
399	DP-76	SP 64	2	26 17 51.0	91 25 58.9			
400	SP-310	SP 64	1	26 17 51.4	91 25 57.3			
401	SP-311	SP 64	1	26 17 51.8	91 25 55.7			
402	SP-312	SP 64	1	26 17 52.2	91 25 54.2			
403	SP-313	SP 64	1	26 17 52.6	91 25 52.5			
404	DP-77	SP 64	2	26 17 52.9	91 25 51.0			
405	SP-314	SP 64	1	26 17 53.3	91 25 49.3			
406	SP-315	SP 76	1	26 17 53.7	91 25 47.7		2.6 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 0.516 meter extension.	We can shift the OPGW cable upward by 0.16 mtr and shift the cross arm upward by 0.5 mtr to obtain the clearance.
407	SP-316	SP 76	1	26 17 54.2	91 25 46.0	LT Line & PWD Village Road Crossing	2.55 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 0.466 meter extension.	We can shift the cross arm upward by 0.466 mtr to obtain the clearance.
408	SP-317	SP 64	1	26 17 54.7	91 25 44.4			
409	DP-78	SP 64	2	26 17 55.2	91 25 42.7			



 Mukalmaa S/S






 POWERGRID, N.E.R.P.S.I.P.

POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING MUKALMUA S/S

SI No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
410	SP-318	SP 64	1	26 17 55.6	91 25 41.1			
411	SP-319	SP 64	1	26 17 56.1	91 25 39.4			
412	SP-320	SP 64	1	26 17 56.6	91 25 37.8			
413	SP-321	SP 64	1	26 17 57.0	91 25 36.1			
414	DP-79	SP 64	2	26 17 57.5	91 25 34.5			
415	SP-322	SP 64	1	26 17 58.0	91 25 32.8			
416	SP-323	SP 64	1	26 17 58.5	91 25 31.2			
417	SP-324	SP 64	1	26 17 58.9	91 25 29.5			
418	SP-325	SP 64	1	26 17 59.4	91 25 27.9			
419	DP-80	SP 64	2	26 17 59.9	91 25 26.2			
420	SP-326	SP 64	1	26 18 00.4	91 25 24.5			
421	SP-327	SP 76	1	26 18 00.9	91 25 22.9	Existing 11 KV Line, LT Line & PWD Village Road Crossing	3.11 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 1.026 meter extension.	We can shift the OPGW cable on 0.5 mtr extension and shift the cross arm upward by 0.5 mtr to obtain the clearance.
422	DP-81	SP 76	2	26 18 01.2	91 25 21.2			


 3/19/18
R. Rajitha
 Field Engineer
 P. U. & S. L. POWER GRID, N. E. R. P. S. L. P.
 Siftir / Amilgaon



POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING MUKALMUA S/S

SI No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
410	SP-318	SP 64	1	26 17 55.6	91 25 41.1			
411	SP-319	SP 64	1	26 17 56.1	91 25 39.4			
412	SP-320	SP 64	1	26 17 56.6	91 25 37.8			
413	SP-321	SP 64	1	26 17 57.0	91 25 36.1			
414	DP-79	SP 64	2	26 17 57.5	91 25 34.5			
415	SP-322	SP 64	1	26 17 58.0	91 25 32.8			
416	SP-323	SP 64	1	26 17 58.5	91 25 31.2			
417	SP-324	SP 64	1	26 17 58.9	91 25 29.5			
418	SP-325	SP 64	1	26 17 59.4	91 25 27.9			
419	DP-80	SP 64	2	26 17 59.9	91 25 26.2			
420	SP-326	SP 64	1	26 18 00.4	91 25 24.5			
421	SP-327	SP 76	1	26 18 00.9	91 25 22.9	Existing 11 KV Line, LT Line & PWD Village Road Crossing	3.11 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 1.026 meter extension.	We can shift the OPGW cable on 0.5 mtr extension and shift the cross arm upward by 0.5 mtr to obtain the clearance.
422	DP-81	SP 76	2	26 18 01.2	91 25 21.2		3.024 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 0.94 meter extension.	We can shift the OPGW cable on 0.5 mtr extension and shift the cross arm upward by 0.5 mtr to obtain the clearance.





 2/9/18
 Field Engineer
 POWERGRID, N.E.R.P.S.I.P
 Amti/Amibgaon

**POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING
MUKALMUA S/S**

Sl No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
423	SP-328	SP 64	1	26 18 00.5	91 25 19.6			
424	SP-329	SP 64	1	26 17 59.9	91 25 18.0			
425	SP-330	SP 64	1	26 17 59.3	91 25 16.4			
426	SP-331	SP 64	1	26 17 58.6	91 25 14.8			
427	DP-82	SP 64	2	26 17 58.0	91 25 13.2			
428	SP-332	SP 64	1	26 17 57.4	91 25 11.7			
429	SP-333	SP 64	1	26 17 56.7	91 25 10.1			
430	SP-334	SP 64	1	26 17 56.1	91 25 08.5			
431	SP-335	SP 64	1	26 17 55.5	91 25 06.9			
432	DP-83	SP 64	2	26 17 54.8	91 25 05.3			
433	SP-336	SP 64	1	26 17 54.2	91 25 03.8			
434	SP-337	SP 64	1	26 17 53.6	91 25 02.2			
435	SP-338	SP 64	1	26 17 53.0	91 25 00.6			
436	SP-339	SP 64	1	26 17 52.3	91 24 59.0			
437	SP-340	SP 64	1	26 17 51.7	91 24 57.4			
438	DP-84	SP 64	2	26 17 51.1	91 24 55.9			



01/10/2018


Field Engineer
 पावरग्रिड, एन.ई.आर. सि.एस.आर. सि.
 POWERGRID, N.E.R.P.S.I.P.
 अफिल्टरिंग डिपार्टमेंट

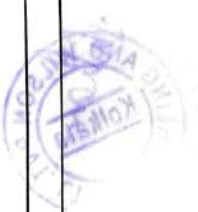


POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING MUKALMUA S/S

Sl No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
439	SP-341	SP 76	1	26 17 49.7	91 24 55.2	Existing LT Line & Village Kachha Road Crossing	1.33 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended without extension.	
	SP-342							
440	SP-342	SP 76	1	26 17 48.3	91 24 54.4	Existing LT Line & PWD Village Road Crossing	0.65 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended without extension.	
441	DP-85	SP 64	2	26 17 46.9	91 24 53.6			
442	SP-343	SP 64	1	26 17 45.3	91 24 53.4			
443	SP-344	SP 64	1	26 17 43.7	91 24 53.2			
444	SP-345	SP 64	1	26 17 42.2	91 24 53.1			
445	SP-346	SP 64	1	26 17 40.6	91 24 52.9			
446	DP-86	SP 64	1	26 17 39.0	91 24 52.7			
447	SP-347	SP 64	1	26 17 37.5	91 24 52.5			
448	SP-348	SP 64	2	26 17 35.9	91 24 52.3			
449	SP-349	SP 64	1	26 17 34.3	91 24 52.1	Village Kachha Road Crossing	No extension require on SP-64 Pole to maintain the clearance.	
450	SP-350	SP 64	1	26 17 32.7	91 24 51.9			




Field Engineer
 पावरग्रिड, एन.ई.आर.पि.एस.आइ.पि
 POWER GRID, N.E.R.P.S.I.P
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POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING MUKALMUA S/S

SI No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
451	DP-87	SP 64	2	26 17 31.1	91 24 51.7			
452	SP-351	SP 64	1	26 17 29.6	91 24 51.5			
453	SP-352	SP 64	1	26 17 28.0	91 24 51.3			
454	SP-353	SP 64	1	26 17 26.5	91 24 51.1			
455	DP-88	SP 76	2	26 17 25.0	91 24 50.9	State Highway No- 2 Crossing	SP 64 Pole recommended without extension SP 64 Pole recommended without extension	PGCIL recommended to use SP 76 pole PGCIL recommended to use SP 76 pole
456	DP-89	SP 76	2	26 17 24.6	91 24 50.9			
457	SP-354	SP 64	1	26 17 23.2	91 24 50.7			
458	SP-355	SP 64	1	26 17 21.9	91 24 50.5			
459	SP-356	SP 64	1	26 17 20.6	91 24 50.4			
460	DP-90	SP 64	2	26 17 19.3	91 24 50.2			
461	SP-357	SP 64	1	26 17 18.3	91 24 48.8			
462	SP-358	SP 64	1	26 17 17.3	91 24 47.5			
463	SP-359	SP 64	1	26 17 16.3	91 24 46.2			
464	SP-360	SP 64	1	26 17 15.3	91 24 44.8			
465	DP-91	SP 64	2	26 17 14.3	91 24 43.5			
466	SP-361	SP 64	1	26 17 13.3	91 24 42.1			
467	SP-362	SP 64	1	26 17 12.3	91 24 40.8			
468	SP-363	SP 64	1	26 17 11.3	91 24 39.5			
469	SP-364	SP 64	1	26 17 10.4	91 24 38.1			
470	DP-92	SP 64	2	26 17 09.4	91 24 36.8			
471	SP-365	SP 64	1	26 17 08.4	91 24 35.5			
472	SP-366	SP 64	1	26 17 07.4	91 24 34.2			



Field Officer
 POWERGRID, N.E.R.P.S.I.P.
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**POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING
MUKALMUA S/S**

SI No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
473	SP-367	SP 64	1	26 17 06.5	91 24 32.9			
474	SP-368	SP 64	1	26 17 05.5	91 24 31.6			
475	DP-93	SP 64	2	26 17 04.6	91 24 30.4			
476	SP-369	SP 64	1	26 17 03.8	91 24 29.2			
477	SP-370	SP 64	1	26 17 02.9	91 24 28.1			
478	SP-371	SP 76	1	26 17 01.9	91 24 26.8	LT Line & Village Kachha Road Crossing	1.33 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended without extension.	
479	SP-372	SP 76	1	26 17 00.9	91 24 25.4		1.76 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended without extension.	
480	DP-94	SP 64	2	26 16 59.9	91 24 24.0			
481	SP-373	SP 64	1	26 16 58.9	91 24 22.7			
482	SP-374	SP 64	1	26 16 57.9	91 24 21.3			
483	SP-375	SP 64	1	26 16 56.8	91 24 19.9			
484	SP-376	SP 64	1	26 16 55.8	91 24 18.5			
485	DP-95	SP 64	2	26 16 54.8	91 24 17.2			
486	SP-377	SP 64	1	26 16 53.8	91 24 15.8			
487	SP-378	SP 64	1	26 16 52.8	91 24 14.4			
488	SP-379	SP 64	1	26 16 51.8	91 24 13.1			



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Field Engineer

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**POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING
MUKALMUA S/S**

SI No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
489	SP-380	SP 76	1	26 16 50.8	91 24 11.7			
490	DP-96	SP 76	2	26 16 49.7	91 24 10.3	11 KV Line Crossing		
491	SP-381	SP 64	1	26 16 48.7	91 24 09.0			
492	SP-382	SP 64	1	26 16 47.7	91 24 07.7	PWD Village Road Crossing		
493	SP-383	SP 64	1	26 16 46.8	91 24 06.3			
494	SP-384	SP 64	1	26 16 45.8	91 24 05.0			
495	DP-97	SP 64	2	26 16 44.8	91 24 03.6			
496	SP-385	SP 64	1	26 16 43.8	91 24 02.3			
497	SP-386	SP 64	1	26 16 42.8	91 24 00.9			
498	SP-387	SP 64	1	26 16 41.8	91 23 59.6			
499	SP-388	SP 64	1	26 16 40.8	91 23 58.3			
500	DP-98	SP 64	2	26 16 39.8	91 23 57.0			
501	SP-389	SP 64	1	26 16 38.8	91 23 55.6			
502	SP-390	SP 64	1	26 16 37.8	91 23 54.3			
503	SP-391	SP 64	1	26 16 36.9	91 23 53.0			
504	SP-392	SP 64	1	26 16 35.9	91 23 51.6			
505	DP-99	SP 64	2	26 16 34.9	91 23 50.3			
506	SP-393	SP 64	1	26 16 33.9	91 23 49.0			


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**POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING
MUKALMUA S/S**

Sl No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
507	SP-394	SP 64	1	26 16 32.9	91 23 47.7			
508	SP-395	SP 64	1	26 16 31.9	91 23 46.3			
509	SP-396	SP 64	1	26 16 30.9	91 23 45.0			
510	DP-100	SP 64	2	26 16 30.0	91 23 43.6			
511	SP-397	SP 64	1	26 16 29.0	91 23 42.3			
512	SP-398	SP 64	1	26 16 28.0	91 23 41.0			
513	SP-399	SP 64	1	26 16 27.0	91 23 39.6			
514	SP-400	SP 64	1	26 16 26.0	91 23 38.3			
515	DP-101	SP 64	2	26 16 25.0	91 23 37.0			
516	SP-401	SP 64	1	26 16 24.0	91 23 35.7			
517	SP-402	SP 64	1	26 16 23.0	91 23 34.3			
518	SP-403	SP 64	1	26 16 22.0	91 23 33.0			
519	SP-404	SP 64	1	26 16 21.1	91 23 31.6			
520	DP-102	SP 64	2	26 16 20.1	91 23 30.3			
521	SP-405	SP 64	1	26 16 19.1	91 23 29.0			
522	SP-406	SP 64	1	26 16 18.1	91 23 27.6			
523	SP-407	SP 64	1	26 16 17.1	91 23 26.3			
524	SP-408	SP 64	1	26 16 16.1	91 23 25.0			
525	DP-103	SP 64	2	26 16 15.2	91 23 23.7			



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Field Engineer

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POWERGRID, N.E.R.P.S.I.P
अभिजात/Amingaon

POWERGRID, N.E.R.P.S.I.P
अभिजात/Amingaon



POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING MUKALMUA S/S

SI No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
526	SP-409	SP 76	1	26 16 14.6	91 23 22.2	LT Line & Village Kachha Road Crossing	1.33 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended without extension.	
527	SP-410	SP 76	1	26 16 14.1	91 23 20.6			
528	SP-411	SP 64	1	26 16 13.6	91 23 19.1	PWD Village Road Crossing	3.7 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 1.616 meter extension.	We can shift the OPGW cable on 1 mtr extension and shift the cross arm upward by 0.6 mtr and reduce the span length to obtain the clearance.
529	SP-412	SP 64	1	26 16 13.1	91 23 17.6			
530	DP-104	SP 64	2	26 16 12.5	91 23 16.0			
531	SP-413	SP 64	1	26 16 12.1	91 23 14.4			
532	SP-414	SP 76	1	26 16 11.7	91 23 12.8			
533	DP-105	SP 76	2	26 16 11.3	91 23 11.3			
534	SP-415	SP 64	1	26 16 12.1	91 23 09.8			
535	SP-416	SP 64	1	26 16 12.9	91 23 08.2			



 KOLKATA ELECTRIC SUPPLY CORPORATION
 ERASING AND WINDING DEPARTMENT

13/01/2024
 POWERGRID, N.E. R.P.S.A.P.
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**POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING
MUKALMUA S/S**

Sl No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
536	SP-417	SP 64	1	26 16 13.7	91 23 06.7			
537	SP-418	SP 64	1	26 16 14.5	91 23 05.2			
538	DP-106	SP 64	2	26 16 15.3	91 23 03.7			
539	SP-419	SP 64	1	26 16 15.9	91 23 02.1			
540	SP-420	SP 64	1	26 16 16.6	91 23 00.5			
541	SP-421	SP 64	1	26 16 17.2	91 22 58.9			
542	SP-422	SP 64	1	26 16 17.9	91 22 57.4			
543	DP-107	SP 64	2	26 16 18.5	91 22 55.7			
544	SP-423	SP 64	1	26 16 18.9	91 22 54.1			
545	SP-424	SP 64	1	26 16 19.3	91 22 52.4			
546	SP-425	SP 64	1	26 16 19.7	91 22 50.7			
547	SP-426	SP 64	1	26 16 20.2	91 22 49.0			
548	DP-108	SP 64	2	26 16 20.6	91 22 47.4	Village Kachha Road Crossing		
549	SP-427	SP 64	1	26 16 20.8	91 22 45.7			
550	SP-428	SP 64	1	26 16 21.0	91 22 44.0			
551	SP-429	SP 64	1	26 16 21.2	91 22 42.3			
552	SP-430	SP 64	1	26 16 21.5	91 22 40.7			
553	SP-431	SP 64	1	26 16 21.7	91 22 39.0			
554	DP-109	SP 64	2	26 16 21.9	91 22 37.3			
555	SP-432	SP 64	1	26 16 21.8	91 22 35.7			
556	SP-433	SP 64	1	26 16 21.7	91 22 34.1			
557	SP-434	SP 64	1	26 16 21.5	91 22 32.5			
558	SP-435	SP 64	1	26 16 21.4	91 22 30.9			
559	DP-110	SP 64	2	26 16 21.3	91 22 29.3			
560	SP-436	SP 64	1	26 16 21.1	91 22 27.6			
561	SP-437	SP 64	1	26 16 21.0	91 22 26.0			



Shahid

Field Engineer

Assistant Engineer

POWER GRID, T.S.R.P.S.L.P
Sri Perambalur

POWER GRID, T.S.R.P.S.L.P
Sri Perambalur Page 38 of 38



POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING MUKALMUA S/S

SI No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks	
562	SP-438	SP 64	1	26 16 20.8	91 22 24.3				
563	SP-439	SP 64	1	26 16 20.6	91 22 22.6				
564	DP-111	SP 64	2	26 16 20.3	91 22 20.8				
565	SP-440	SP 64	1	26 16 20.1	91 22 19.1				
566	SP-441	SP 64	1	26 16 19.9	91 22 17.3				
567	SP-442	SP 64	1	26 16 19.7	91 22 15.6				
568	SP-443	SP 64	1	26 16 19.5	91 22 13.8				
569	DP-112	SP 64	2	26 16 19.2	91 22 12.1				
570	SP-444	SP 64	1	26 16 19.0	91 22 10.3				
571	SP-445	SP 64	1	26 16 18.8	91 22 08.6				
572	SP-446	SP 64	1	26 16 18.6	91 22 06.8				
573	SP-447	SP 64	1	26 16 18.4	91 22 05.1				
574	SP-448	SP 64	1	26 16 18.1	91 22 03.3				
575	DP-113	SP 64	2	26 16 17.9	91 22 01.6				
576	SP-449	SP 76	1	26 16 18.6	91 22 00.3	LT Line , River Embankment & Small River Crossing	3.92 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 1.836 meter extension.	We can shift the OPGW cable on 1 mtr extension and shift the cross arm upward by 0.6 mtr and reduce the span length by 0.25 mtrs to obtain the clearance. Higher size than SP 76 is recommended.	
577	SP-450	SP 76	1	26 16 19.3	91 21 59.0				1.7 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended without extension.
578	SP-451	SP 64	1	26 16 20.2	91 21 57.6				



Field Engineer

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EXISTING

POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING MUKALMUA S/S

SI No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
579	SP-452	SP 64	1	26.16 21.1	91.21 56.1			
580	DP-114	SP 76	2	26.16 22.0	91.21 54.7	11 KV Line & PWD Village Road Crossing	2.514 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 0.43 meter extension.	We can decrease the gap between OPGW & 33 KV TL by 0.5 mtr to obtain the clearance.
581	SP-453	SP 76	1	26.16 22.9	91.21 53.2		3.08 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 0.996 meter extension.	We can shift the OPGW cable on 0.5 mtr extension and shift the cross arm upward by 0.5 mtr to obtain the clearance.
582	SP-454	SP 64	1	26.16 23.8	91.21 51.8			
583	SP-455	SP 64	1	26.16 24.7	91.21 50.3			
584	SP-456	SP 64	1	26.16 25.6	91.21 48.8			
585	DP-115	SP 64	2	26.16 26.5	91.21 47.4			
586	SP-457	SP 64	1	26.16 27.5	91.21 46.0			
587	SP-458	SP 64	1	26.16 28.5	91.21 44.7			
588	SP-459	SP 64	1	26.16 29.4	91.21 43.3			
589	SP-460	SP 64	1	26.16 30.4	91.21 42.0			
590	DP-116	SP 64	2	26.16 31.3	91.21 40.6			
591	SP-461	SP 64	1	26.16 32.7	91.21 40.0			
592	SP-462	SP 64	1	26.16 34.1	91.21 39.5			



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3/9/18
Field Engineer
POWER GRID, N.E.R.P.S.I.P.
Amilgongon

[Signature]
3/9/18
Field Engineer
POWER GRID, N.E.R.P.S.I.P.
Amilgongon



POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING MUKALMUA S/S

SI No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
593	DP-117	SP 76	2	26 16 35.5	91 21 38.9	11 KV Line, LT Line & State Highway 2 Crossing	3.07 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 0.99 meter extension.	We can shift the OPGW cable on 0.5 mtr extension and shift the cross arm upward by 0.5 mtr to obtain the clearance.
594	DP-118	SP 76	2	26 16 35.9	91 21 38.6	11 KV Line, LT Line & State Highway 2 Crossing	2.554 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 0.47 meter extension.	We can decrease the gap between OPGW & 33 KV TL by 0.5 mtr to obtain the clearance.
595	SP-463	SP 64	1	26 16 37.3	91 21 38.0			
596	SP-464	SP 64	1	26 16 38.8	91 21 37.4			
597	SP-465	SP 64	1	26 16 40.3	91 21 36.8			
598	SP-466	SP 64	1	26 16 41.8	91 21 36.2			
599	DP-119	SP 64	2	26 16 43.3	91 21 35.6			
600	SP-467	SP 64	1	26 16 44.8	91 21 35.0			
601	SP-468	SP 64	1	26 16 46.3	91 21 34.4			
602	SP-469	SP 64	1	26 16 47.7	91 21 33.9			
603	DP-120	SP 64	2	26 16 49.2	91 21 33.3			
604	SP-470	SP 64	1	26 16 50.5	91 21 32.3			
605	SP-471	SP 64	1	26 16 51.8	91 21 31.3			
606	SP-472	SP 64	1	26 16 53.1	91 21 30.3			
607	SP-473	SP 64	1	26 16 54.4	91 21 29.3			



Field Engineer
 शंकरराव, एन.ए.एस.पी.पु.स.आर.पी.
 POWER-100, N.E.R.P.S.I.P
 अक्षांश/देश/राज्य

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POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING MUKALMUA S/S

SI No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks	
608	SP-474	SP 64	1	26 16 55.7	91 21 28.3	PWD Village Road Crossing	0.25 Meter extension require on SP-64 Pole to maintain the clearance.	We can shift the cross arm upward by 0.25 mtr to obtain the clearance.	
609	DP-121	SP 64	2	26 16 56.5	91 21 27.4		No extension require on SP-64 Pole to maintain the clearance.		
610	SP-475	SP 64	1	26 16 56.9	91 21 25.7				
611	SP-476	SP 64	1	26 16 57.5	91 21 22.2				
612	SP-477	SP 64	1	26 16 57.5	91 21 22.2				
613	SP-478	SP 64	1	26 16 57.8	91 21 20.5				
614	DP-122	SP 64	2	26 16 58.1	91 21 18.8				
615	SP-479	SP 64	1	26 16 58.9	91 21 17.1				
616	SP-480	SP 64	1	26 16 58.8	91 21 15.3				
617	SP-481	SP 64	1	26 16 59.1	91 21 13.5				
618	SP-482	SP 64	1	26 17 59.5	91 21 11.8				
619	SP-483	SP 76	1	26 17 59.8	91 21 10.1		33 KV Line Crossing	3.87 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 1.326 meter extension.	We can shift the OPGW cable on 0.8 mtr extension and shift the cross arm upward by 0.55 mtr to obtain the clearance.
620	FP-14	SP 76	4	26 17 00.1	91 21 08.5			3.16 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 1.536 meter extension.	We can shift the OPGW cable on 1 mtr extension and shift the cross arm upward by 0.55 mtr to obtain the clearance.




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Field Engineer

**POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV EXISTING
MUKALMUA S/S**

SI No	Pole No	Require Pole Type	Require Pole Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
621	SP-484	SP 76	1	26 16 58.6	91 21 09.1	33 KV Line Crossing between SP484 & FP14	4.11 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 2.026 meter extension.	We can shift the OPGW cable on 1 mtr extension and shift the cross arm upward by 0.55 mtr reduce the span to obtain the clearance.
622	FP-15	SP 76	4	26 16 57.2	91 21 09.7	PWD/Village Rd Crossing, Existing 11 KV Line crossing	6.6 Meter extension require on SP-64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 4.216 meter extension.	PGCL recommend to review the crossing with re profiling is reqd to match with Gantry position.
623	GANTRY - MUKALMU A			26 16 56.9	91 21 09.3			




Field Engineer
 POWERGRID, N.E.R.P.S.I.P
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Name of Package:	ASM-DMS-03
Name of Work:	33 KV New Line from New Hajo (Kulhati) 132/33 KV Sub-Station to New Sesa 33/11 KV Sub-Station

SL NO	Pole From	Pole To	Span (Meter)	Description of Land	Remarks/Village
1	GANTRY	DP-1	13 m	132/33 KV Proposed Kulhati Sub-Station	Kulhati
2	DP-1	FP-1	46 m	132/33 KV Proposed Kulhati Sub-Station	Kulhati
3	FP-1	SP-1	43 m	PWD Village Road Side	Kulhati
4	SP-1	SP-2	43 m	PWD Village Road Side	Kulhati
5	SP-2	SP-3	47 m	PWD Village Road Side	Kulhati
6	SP-3	SP-4	44 m	PWD Village Road Side	Kulhati
7	SP-4	DP-2	44 m	PWD Village Road Side	Kulhati
8	DP-2	SP-5	45 m	PWD Village Road Side	Kulhati
9	SP-5	SP-6	41 m	PWD Village Road Side	Kulhati
10	SP-6	DP-3	43 m	Paddy Field	Kulhati
11	DP-3	SP-7	43 m	Paddy Field	Kulhati
12	SP-7	SP-8	41 m	Paddy Field	Kulhati
13	SP-8	SP-9	44 m	Paddy Field	Goraghat
14	SP-9	DP-4	43 m	Paddy Field	Goraghat
15	DP-4	SP-10	47 m	PWD Road Crossing, LT Line crossing	Goraghat
16	SP-10	SP-11	43 m	Paddy Field	Goraghat
17	SP-11	DP-5	42 m	Paddy Field, 11 KV Line Crossing	Goraghat
18	DP-5	SP-12	30 m	PWD Road Crossing, LT Line crossing	Goraghat
19	SP-12	DP-6	32 m	Paddy Field	Goraghat
20	DP-6	SP-13	49 m	Paddy Field	Goraghat
21	SP-13	SP-14	48 m	Paddy Field, 11 KV Line Crossing	Goraghat
22	SP-14	SP-15	46 m	Paddy Field	Goraghat
23	SP-15	SP-16	48 m	Paddy Field	Goraghat
24	SP-16	DP-7	49 m	Paddy Field	Kamadia
25	DP-7	SP-17	48 m	Paddy Field	Kamadia
26	SP-17	SP-18	48 m	Paddy Field & Kachha Road Crossing	Kamadia
27	SP-18	SP-19	48 m	Paddy Field	Kamadia
28	SP-19	SP-20	49 m	Paddy Field	Kamadia
29	SP-20	DP-8	49 m	Paddy Field	Kamadia
30	DP-8	SP-21	47 m	Paddy Field & Kachha Road Crossing	Kamadia
31	SP-21	SP-22	49 m	Paddy Field	Kamadia
32	SP-22	SP-23	46 m	Paddy Field	Kamadia
33	SP-23	DP-9	50 m	Paddy Field	Kamadia
34	DP-9	DP-10	49 m	Paddy Field & Densed Trees	Kamadia
35	DP-10	SP-24	48 m	Paddy Field	Kamadia
36	SP-24	SP-25	39 m	Paddy Field & Densed Trees	Kamadia
37	SP-25	SP-26	42 m	Paddy Field	Kamadia
38	SP-26	SP-27	41 m	Paddy Field	Kamadia
39	SP-27	DP-11	48 m	Paddy Field, Low Lying Area	Kamadia
40	DP-11	SP-28	48 m	Paddy Field, Low Lying Area	Kamadia
41	SP-28	SP-29	49 m	Paddy Field, Low Lying Area	Kamadia
42	SP-29	SP-30	48 m	Paddy Field, Low Lying Area	Kamadia
43	SP-30	SP-31	47 m	Paddy Field, Low Lying Area	Kamadia
44	SP-31	DP-12	47 m	Paddy Field, Low Lying Area	Kamadia
45	DP-12	SP-32	49 m	Paddy Field, Low Lying Area	Kamadia
46	SP-32	SP-33	48 m	Paddy Field, Low Lying Area	Kamadia
47	SP-33	DP-13	41 m	Paddy Field, Low Lying Area	Kamadia
48	DP-13	SP-34	42 m	Paddy Field, Low Lying Area	Kamadia
49	SP-34	SP-35	45 m	Paddy Field, Low Lying Area	Kamadia
50	SP-35	SP-36	48 m	Paddy Field & Densed Trees	Kamadia



Field Supervisor

पावरग्रिड, एन.ई.आर.पि.एस.आइ.पि
POWERGRID, N.E.R.P.S.I.P
आमिनगांव/Amingaon

Name of Package: ASM-DMS-03

Name of Work: 33 KV New Line from New Hajo (Kulhati) 132/33 KV Sub-Station to New Sesa 33/11 KV Sub-Station

SL NO	Pole From	Pole To	Span (Meter)	Description of Land	Remarks/Village
51	SP-36	DP-14	48 m	Kachha Road Crossing	Kamadia
52	DP-14	DP-15	69 m	Kalajal River Crossing	Kamadia
53	DP-15	SP-37	50 m	Paddy Field, Low Lying Area	Kamadia
54	SP-37	SP-38	50 m	Paddy Field, Low Lying Area	Publal Sesa
55	SP-38	SP-39	50 m	Paddy Field, Low Lying Area	Publal Sesa
56	SP-39	SP-40	50 m	Paddy Field, Low Lying Area	Publal Sesa
57	SP-40	DP-16	50 m	Paddy Field, Low Lying Area	Publal Sesa
58	DP-16	SP-41	50 m	Paddy Field, Low Lying Area	Publal Sesa
59	SP-41	SP-42	50 m	Paddy Field, Low Lying Area	Publal Sesa
60	SP-42	SP-43	50 m	Paddy Field, Low Lying Area	Publal Sesa
61	SP-43	SP-44	49 m	Paddy Field, Low Lying Area	Publal Sesa
62	SP-44	DP-17	50 m	Paddy Field, Low Lying Area	Publal Sesa
63	DP-17	DP-18	51 m	Paddy Field, Low Lying Area	Publal Sesa
64	DP-18	SP-45	46 m	Paddy Field	Publal Sesa
65	SP-45	DP-19	43 m	Paddy Field	Publal Sesa
66	DP-19	DP-20	22 m	State Highway 2 Crossing and 11 KV & 33 KV Line Crossing	Publal Sesa
67	DP-20	SP-46	39 m	Paddy Field	Publal Sesa
68	SP-46	DP-21	39 m	Paddy Field	Publal Sesa
69	DP-21	SP-47	50 m	Paddy Field	Publal Sesa
70	SP-47	SP-48	49 m	Paddy Field	Publal Sesa
71	SP-48	SP-49	49 m	Paddy Field	Publal Sesa
72	SP-49	SP-50	49 m	Paddy Field	Publal Sesa
73	SP-50	DP-22	49 m	Paddy Field, Low Lying Area	Publal Sesa
74	DP-22	SP-51	50 m	Paddy Field, Low Lying Area	Publal Sesa
75	SP-51	SP-52	50 m	Paddy Field, Low Lying Area	Publal Sesa
76	SP-52	SP-53	50 m	Paddy Field, Low Lying Area	Publal Sesa
77	SP-53	SP-54	50 m	Paddy Field, Low Lying Area	Publal Sesa
78	SP-54	DP-23	50 m	Paddy Field, Low Lying Area	Publal Sesa
79	DP-23	SP-55	48 m	Paddy Field, Low Lying Area	Publal Sesa
80	SP-55	SP-56	46 m	Paddy Field	Publal Sesa
81	SP-56	SP-57	50 m	Paddy Field	Publal Sesa
82	SP-57	SP-58	44 m	Paddy Field	Publal Sesa
83	SP-58	DP-24	44 m	Paddy Field	Publal Sesa
84	DP-24	SP-59	48 m	Paddy Field & Kachha Road Crossing	Publal Sesa
85	SP-59	SP-60	47 m	Paddy Field	Publal Sesa
86	SP-60	SP-61	50 m	Paddy Field	Publal Sesa
87	SP-61	SP-62	49 m	Paddy Field, Low Lying Area	Publal Sesa
88	SP-62	DP-25	46 m	Paddy Field, Low Lying Area	Publal Sesa
89	DP-25	SP-63	47 m	Paddy Field, Low Lying Area	Publal Sesa
90	SP-63	SP-64	47 m	Paddy Field, Low Lying Area	Publal Sesa
91	SP-64	SP-65	49 m	Paddy Field, Low Lying Area	Publal Sesa
92	SP-65	FP-2	48 m	Paddy Field & Kachha Road Crossing	Publal Sesa
93	FP-2	DP-26	48 m	Paddy Field, Low Lying Area	Publal Sesa
94	DP-26	DP-27	96 m	Paddy Field, Low Lying Area & Kalajal River Crossing	Publal Sesa
95	DP-27	SP-66	41 m	PWD Road Crossing & LT Line Crossing	Tetlia
96	SP-66	SP-67	44 m	PWD Road Side	Tetlia
97	SP-67	SP-68	42 m	PWD Road side	Tetlia
98	SP-68	DP-28	44 m	Paddy Field	Tetlia
99	DP-28	SP-69	45 m	Paddy Field	Tetlia
100	SP-69	DP-29	45 m	Paddy Field	Tetlia



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Field Supervisor
 पावरग्रिड, एन.ई.आर.पि.एस.आइ.पि
 POWERGRID, N.E.R.P.S.I.P
 आमिनगांव/Amingaon

Name of Package: ASM-DMS-03

Name of Work: 33 KV New Line from New Hajo (Kuihat) 132/33 KV Sub-Station to New Sesa 33/11 KV Sub-Station

SL NO	Pole From	Pole To	Span (Meter)	Description of Land	Remarks/Village
101	DP-29	SP-70	48 m	Paddy Field	Tetlia
102	SP-70	SP-71	49 m	Paddy Field	Tetlia
103	SP-71	SP-72	49 m	Paddy Field	Bahana
104	SP-72	SP-73	49 m	Paddy Field	Bahana
105	SP-73	DP-30	49 m	Paddy Field & Kachha Road Crossing	Bahana
106	DP-30	SP-74	49 m	Paddy Field	Bahana
107	SP-74	SP-75	49 m	Paddy Field	Bahana
108	SP-75	SP-76	49 m	Paddy Field	Bahana
109	SP-76	SP-77	48 m	Paddy Field	Bahana
110	SP-77	DP-31	49 m	Paddy Field	Bahana
111	DP-31	SP-78	49 m	Paddy Field	Bahana
112	SP-78	SP-79	49 m	Paddy Field	Bahana
113	SP-79	SP-80	49 m	Paddy Field	Bahana
114	SP-80	SP-81	49 m	Paddy Field	Bahana
115	SP-81	DP-32	48 m	Paddy Field	Bahana
116	DP-32	SP-82	49 m	Paddy Field	Bahana
117	SP-82	SP-83	42 m	Paddy Field	Bahana
118	SP-83	DP-33	41 m	Paddy Field	Bahana
119	DP-33	SP-84	47 m	Paddy Field	Bahana
120	SP-84	SP-85	45 m	Paddy Field & Kachha Road Crossing	Bahana
121	SP-85	SP-86	48 m	Paddy Field	Bahana
122	SP-86	SP-87	46 m	Paddy Field	Bahana
123	SP-87	DP-34	47 m	Paddy Field	Bahana
124	DP-34	SP-88	45 m	Paddy Field	Bahana
125	SP-88	SP-89	47 m	Paddy Field	Bahana
126	SP-89	SP-90	49 m	Paddy Field	Bahana
127	SP-90	DP-35	44 m	Paddy Field	Bahana
128	DP-35	SP-91	48 m	Paddy Field & Kachha Road Crossing	Bahana
129	SP-91	DP-36	50 m	Paddy Field	Bahana
130	DP-36	SP-92	50 m	Paddy Field	Bahana
131	SP-92	SP-93	50 m	Paddy Field, 11KV Line Crossing & Beside Pond	Bahana
132	SP-93	DP-37	50 m	Paddy Field & Beside Pond	Bahana
133	DP-37	SP-94	40 m	Paddy Field	Bahana
134	SP-94	SP-95	40 m	Paddy Field	Bahana
135	SP-95	SP-96	44 m	Paddy Field	Bahana
136	SP-96	SP-97	42 m	Paddy Field	Bahana
137	SP-97	DP-38	40 m	Paddy Field, LT Line Crossing	Bahana
138	DP-38	DP-39	41 m	Paddy Field	Bahana
139	DP-39	SP-98	44 m	Paddy Field	Bahana
140	SP-98	FP-3	43 m	Paddy Field & Beside Pond	Bahana
141	FP-3	GANTRY	37 m	33/11 KV Proposed Sesa S/S, 11 KV Line Crossing	Bahana



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Field Supervisor

पावरग्रिड, एन.ई.आर.पि.एस.आइ.पि
POWERGRID, N.E.R.P.S.I.P
आमिनगांव/Amingaon

**POLE EXTENSION AND SPECIAL FOUNDATION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV
HAJO(KULHATI) S/S TO 33/11KV NEW SESA S/S**

Sl No	Pole No	Require Pole Type	Latitude	Longitude	Crossing Details	Require Extension / Remarks	Special Foundation Recommended By PGCIL (Submergeable / Low Lying area. Water remains more than 3 Months)
1	GANTRY		26 13 31.7	91 34 17.9			
2	DP-1	SP 64	26 13 32.1	91 34 17.7			
3	DP-1	SP 64	26 13 33.2	91 34 16.6			
4	SP-1	SP 64	26 13 34.1	91 34 17.8			
5	SP-2	SP 64	26 13 35.1	91 34 19.0			
6	SP-3	SP 64	26 13 36.1	91 34 20.2			
7	SP-4	SP 64	26 13 37.0	91 34 21.4			
8	DP-2	SP 64	26 13 38.0	91 34 22.6			
9	SP-5	SP 64	26 13 39.0	91 34 23.8			
10	SP-6	SP 64	26 13 39.8	91 34 24.9			
11	DP-3	SP 64	26 13 40.8	91 34 26.1			
12	SP-7	SP 64	26 13 40.8	91 34 27.6			
13	SP-8	SP 64	26 13 40.8	91 34 29.1			
14	SP-9	SP 64	26 13 40.8	91 34 30.7			
15	DP-4	SP 64	26 13 40.9	91 34 32.2			
16	SP-10	SP 76	26 13 40.3	91 34 33.8	PWD Village Road & LT Line Crossing	3.04 meter extension required on SP-64 Pole to maintain clearance, for which SP-76 recommended with 0.956 mtr extension. PGCIL recommended to take line by Max Sag point of existing LT line and shifting the OPGW cable to top of Pole and decreasing the gap between OPGW and 33 KV Line to avoid the extension.	
17	SP-11	SP 76	26 13 39.8	91 34 35.2		3.22 meter extension required to maintain clearance for which SP-76 recommended with 1.136 mtr extension. PGCIL recommended to take line by Max Sag point of existing LT line and shifting the OPGW cable to top of Pole and decreasing the gap between OPGW and 33 KV Line to avoid the extension.	
18	DP-5	SP 76	26 13 39.3	91 34 36.6	11 KV Line Crossing between DP-5 & SP-12	0.904 meter extension required to maintain clearance for which SP-76 recommended without extension.	
19	SP-12	SP 76	26 13 39.6	91 34 37.7	PWD Village Road & LT Line Crossing	1.35 meter extension required to maintain clearance for which SP-76 recommended without extension.	
20	DP-6	SP 64	26 13 39.9	91 34 38.8			
21	SP-13	SP 64	26 13 40.9	91 34 40.1			



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Field Supervisor

पावरग्रिड, एन.ई.आर.पि.एस.आइ.पि
POWERGRID, N.E.R.P.S.I.P
आमिनगांव/Amingaon

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**POLE EXTENSION AND SPECIAL FOUNDATION DETAILS FOR 33 KV TL FROM PROPOSED 132/33kV
HAJO(KULHATI) S/S TO 33/11kV NEW SESA S/S**

Sl No	Pole No	Require Pole Type	Latitude	Longitude	Crossing Details	Require Extension / Remarks	Special Foundation Recommended By PGCIL (Submergeable / Low Lying area. Water remains more than 3 Months)
22	SP-14	SP 76	26 13 41.9	91 34 41.5	11 KV Line Crossing	3.44 meter extension required to maintain clearance for which SP-76 recommended with 0.86 mtr extension.	
23	SP-15	SP 76	26 13 42.9	91 34 42.7		3.63 meter extension required to maintain clearance for which SP-76 recommended with 1.05 mtr extension. PGCIL recommended to take line by Max Sag point of existing 11 KV line and shifting the OPGW cable to top of Pole and decreasing the gap between OPGW and 33 KV Line to avoid the extension.	
24	SP-16	SP 64	26 13 43.9	91 34 44.0			
25	DP-7	SP 64	26 13 44.9	91 34 45.4			
26	SP-17	SP 64	26 13 45.9	91 34 46.7			
27	SP-18	SP 76	26 13 46.9	91 34 48.1	PWD Village Road Crossing		
28	SP-19	SP 76	26 13 47.9	91 34 49.4			
29	SP-20	SP 64	26 13 48.9	91 34 50.7			
30	DP-8	SP 64	26 13 49.9	91 34 52.1			
31	SP-21	SP 64	26 13 50.9	91 34 53.4	Village Kachha Road Crossing		
32	SP-22	SP 64	26 13 51.9	91 34 54.7			
33	SP-23	SP 64	26 13 52.9	91 34 56.0			
34	DP-9	SP 64	26 13 53.9	91 34 57.4			
35	DP-10	SP 64	26 13 55.0	91 34 58.7			
36	SP-24	SP 64	26 13 56.0	91 35 00.1			
37	SP-25	SP 64	26 13 56.8	91 35 01.1	Village Kachha Road Crossing		
38	SP-26	SP 64	26 13 57.6	91 35 02.3			
39	SP-27	SP 64	26 13 58.4	91 35 03.5			
40	DP-11	SP 64	26 13 59.3	91 35 04.9			
41	SP-28	SP 64	26 14 00.2	91 35 06.2			1 Meter Special Foundation
42	SP-29	SP 64	26 14 01.2	91 35 07.7			1 Meter Special Foundation
43	SP-30	SP 64	26 14 02.1	91 35 09.1			1 Meter Special Foundation
44	SP-31	SP 64	26 14 03.0	91 35 10.4			1 Meter Special Foundation
45	DP-12	SP 64	26 14 03.9	91 35 11.8			1 Meter Special Foundation
46	SP-32	SP 64	26 14 04.9	91 35 13.2			1 Meter Special Foundation
47	SP-33	SP 64	26 14 05.8	91 35 14.6			1 Meter Special Foundation
48	DP-13	SP 64	26 14 06.6	91 35 15.8			1 Meter Special Foundation
49	SP-34	SP 64	26 14 06.9	91 35 17.3			1 Meter Special Foundation
50	SP-35	SP 64	26 14 07.2	91 35 18.8			
51	SP-36	SP 64	26 14 07.5	91 35 20.2	Village Kachha Road Crossing		
52	DP-14	SP 64	26 14 07.7	91 35 21.7	KALAJAL RIVER Crossing		
54	DP-15	SP 64	26 14 08.8	91 35 24.5			
55	SP-37	SP 64	26 14 10.3	91 35 24.8			1 Meter Special Foundation
56	SP-38	SP 64	26 14 11.9	91 35 25.0			1 Meter Special Foundation
57	SP-39	SP 64	26 14 13.5	91 35 25.3			1 Meter Special Foundation
58	SP-40	SP 64	26 14 15.1	91 35 25.5			1 Meter Special Foundation
59	DP-16	SP 64	26 14 16.7	91 35 25.8			1 Meter Special Foundation
60	SP-41	SP 64	26 14 18.3	91 35 26.1			1 Meter Special Foundation
61	SP-42	SP 64	26 14 19.9	91 35 26.3			2 Meter Special Foundation
62	SP-43	SP 64	26 14 21.5	91 35 26.6			2 Meter Special Foundation
63	SP-44	SP 64	26 14 23.1	91 35 26.8			2 Meter Special Foundation
64	DP-17	SP 64	26 14 24.7	91 35 27.1			2 Meter Special Foundation



Field Supervisor

पावरग्रिड, एन.ई.आर.पि.एस.आइ.पि
POWERGRID, N.E.R.P.S.I.P
आमिनगांव/Amingaon

SP-21

SP-4

DP-0

**POLE EXTENSION AND SPECIAL FOUNDATION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV
HAJO(KULHATI) S/S TO 33/11KV NEW SESA S/S**

(6)

SI No	Pole No	Require Pole Type	Latitude	Longitude	Crossing Details	Require Extension / Remarks	Special Foundation Recommended By PGCIL (Submergeable / Low Lying area. Water remains more than 3 Months)
65	DP-18	SP 64	26 14 26.3	91 35 27.3			2 Meter Special Foundation
66	SP-15	SP 64	26 14 27.0	91 35 28.9			2 Meter Special Foundation
67	DP-19	SP 64	26 14 27.4	91 35 29.8	State Highway 2 Crossing, Existing 33 KV Line	5.764 meter extension required to maintain clearance for which 'H' beam recommended with required extension.	SP-76 with Extra clearance does not meet req.
68	DP-20	SP 64	26 14 27.8	91 35 30.0	Crossing, Existing 11 KV Dead Line Crossing	4.904 meter extension required to maintain clearance for which 'H' beam recommended with required extension.	
69	SP-16	SP 64	26 14 28.7	91 35 32.0			
70	DP-21	SP 64	26 14 29.5	91 35 32.9			
71	SP-17	SP 64	26 14 31.1	91 35 33.3			
72	SP-18	SP 64	26 14 32.6	91 35 33.7			
73	SP-19	SP 64	26 14 34.1	91 35 34.0			1 Meter Special Foundation
74	SP-50	SP 64	26 14 35.7	91 35 34.4			1 Meter Special Foundation
75	DP-22	SP 64	26 14 37.2	91 35 34.8			1 Meter Special Foundation
76	SP-51	SP 64	26 14 38.8	91 35 35.2			1 Meter Special Foundation
77	SP-52	SP 64	26 14 40.4	91 35 35.6			1 Meter Special Foundation
78	SP-53	SP 64	26 14 42.0	91 35 36.0			1 Meter Special Foundation
79	SP-54	SP 64	26 14 43.5	91 35 36.4			1 Meter Special Foundation
80	DP-23	SP 64	26 14 45.1	91 35 36.8			
81	SP-55	SP 64	26 14 46.6	91 35 37.2			
82	SP-56	SP 64	26 14 48.1	91 35 37.5			
83	SP-57	SP 64	26 14 49.7	91 35 37.9			
84	SP-58	SP 64	26 14 51.0	91 35 38.3			
85	DP-24	SP 64	26 14 52.4	91 35 38.6			
86	SP-59	SP 64	26 14 53.0	91 35 40.2			
87	SP-60	SP 64	26 14 53.6	91 35 41.8			1 Meter Special Foundation
88	SP-61	SP 64	26 14 54.2	91 35 43.5			1 Meter Special Foundation
89	SP-62	SP 64	26 14 54.8	91 35 45.1			1 Meter Special Foundation
90	DP-25	SP 64	26 14 55.4	91 35 46.6			1 Meter Special Foundation
91	SP-63	SP 64	26 14 56.0	91 35 48.2			1 Meter Special Foundation
92	SP-64	SP 64	26 14 56.6	91 35 49.7			1 Meter Special Foundation
93	SP-65	SP 64	26 14 57.2	91 35 51.4			1 Meter Special Foundation
94	SP-2	SP 64	26 14 57.8	91 35 53.0			
95	DP-26	SP 76	26 14 59.3	91 35 52.5	KALAJAL RIVER Crossing	0.704 meter extension required to maintain clearance for which SP-76 recommended without extension.	1 Meter Special Foundation
96	DP-27	SP 76	26 15 02.2	91 35 51.5		0.724 meter extension required to maintain clearance for which SP-76 recommended without extension.	2 Meter Special Foundation
97	SP-66	SP 64	26 15 03.5	91 35 51.2	PWD Road Crossing & LT Line Crossing, Between DP28 and SP 66		
98	SP-67	SP 64	26 15 04.9	91 35 50.8			
99	SP-68	SP 76	26 15 06.3	91 35 50.5			
100	DP-28	SP 64	26 15 07.7	91 35 50.1			
101	SP-69	SP 64	26 15 08.8	91 35 49.1			
102	DP-29	SP 64	26 15 09.9	91 35 48.0			

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Field Supervisor
 पावरग्रिड, एन.ई.आर.पि.एस.आइ.पि
 POWERGRID, N.E.R.P.S.I.P
 आमिनगांव/Amingaon

SP-76
SP-1
PP-2

**POLE EXTENSION AND SPECIAL FOUNDATION DETAILS FOR 33 KV TL FROM PROPOSED 132/33kV
HAJO(KULHATI) S/S TO 33/11KV NEW SESA S/S**

SI No	Pole No	Require Pole Type	Latitude	Longitude	Crossing Details	Require Extension / Remarks	Special Foundation Recommended By PGCIL (Submergeable / Low Lying area. Water remains more than 3 Months)
103	SP-70	SP 64	26 15 11.4	91 35 48.5			
104	SP-71	SP 64	26 15 12.9	91 35 49.0			
105	SP-72	SP 64	26 15 14.4	91 35 49.4			
106	SP-73	SP 64	26 15 16.0	91 35 49.9	Village Kachha Road Crossing		
107	DP-30	SP 64	26 15 17.5	91 35 50.4			
108	SP-74	SP 64	26 15 19.0	91 35 50.8			
109	SP-75	SP 64	26 15 20.5	91 35 51.3			
110	SP-76	SP 64	26 15 22.1	91 35 51.8			
111	SP-77	SP 64	26 15 23.5	91 35 52.3			
112	DP-31	SP 64	26 15 25.1	91 35 52.7			
113	SP-78	SP 64	26 15 26.6	91 35 53.2			
114	SP-79	SP 64	26 15 28.1	91 35 53.7			
115	SP-80	SP 64	26 15 29.6	91 35 54.2			
116	SP-81	SP 64	26 15 31.1	91 35 54.6			
117	DP-32	SP 64	26 15 32.6	91 35 55.1			
118	SP-82	SP 64	26 15 34.2	91 35 55.6			
119	SP-83	SP 64	26 15 35.5	91 35 56.0			
120	DP-33	SP 64	26 15 36.7	91 35 56.4			
121	SP-84	SP 76	26 15 38.2	91 35 55.9	PWD Village Road Crossing		
122	SP-85	SP 76	26 15 39.6	91 35 55.4			
123	SP-86	SP 64	26 15 41.1	91 35 54.8			
124	SP-87	SP 64	26 15 42.5	91 35 54.3			
125	DP-34	SP 64	26 15 43.9	91 35 53.8			
126	SP-88	SP 64	26 15 45.3	91 35 53.3			
127	SP-89	SP 64	26 15 46.7	91 35 52.8			
128	SP-90	SP 64	26 15 48.3	91 35 52.3			
129	DP-35	SP 64	26 15 49.6	91 35 51.8			
130	SP-91	SP 76	26 15 50.6	91 35 50.3	PWD Village Road Crossing		
131	DP-36	SP 76	26 15 51.5	91 35 48.9			
132	SP-92	SP 76	26 15 51.1	91 35 47.2	11 KV Line Crossing	0.58 meter extension required to maintain clearance for which SP-76 recommended without extension.	
133	SP-93	SP 76	26 15 50.6	91 35 45.5		0.78 meter extension required to maintain clearance for which SP-76 recommended without extension.	
134	DP-37	SP 76	26 15 50.1	91 35 43.7	PWD Village Road Crossing & LT Line Crossing	1.45 meter extension required to maintain clearance for which SP-76 recommended without extension.	
135	SP-94	SP 76	26 15 50.0	91 35 42.3		1.44 meter extension required to maintain clearance for which SP-76 recommended without extension.	
136	SP-95	SP 64	26 15 49.8	91 35 40.9			
137	SP-96	SP 64	26 15 49.7	91 35 39.3			
138	SP-97	SP 76	26 15 49.5	91 35 37.8	PWD Village Road Crossing & LT Line Crossing		
139	DP-38	SP 76	26 15 49.4	91 35 36.3			
140	DP-39	SP 64	26 15 49.5	91 35 34.9			
141	SP-98	SP 64	26 15 48.3	91 35 34.0			
142	FP-3	SP 64	26 15 47.0	91 35 33.4			
143	GANTRY		26 15 47.1	91 35 32.1			

Sesa

Note :

SP - Single Pole

DP - Double Pole

FP - Four Pole



P. S. S.
Field Supervisor

पावरग्रिड, एन.ई.आर.पि.एस.आइ.पि
POWERGRID, N.E.R.P.S.I.P
आमिनावां/Amingaon

**POLE COUNT (ROUTE - 3) FROM PROPOSED 132/33KV HAJO(KULHATI)
SUBSTATION TO 33/11KV NEW RAMDIYA SUBSTATION**

SI No	Pole No	Pole Type	Route Name	Substation	Latitude	Longitude
1	GANTRY	GANTRY	Route - 3	New Ramdiya Substation	26 13 31.7	91 34 17.9
2	SP-1	Single Pole	Route - 3	New Ramdiya Substation	26 13 32.1	91 34 17.7
3	FP-1	Four Pole	Route - 3	New Ramdiya Substation	26 13 33.2	91 34 16.6
4	SP-2	Single Pole	Route - 3	New Ramdiya Substation	26 13 34.1	91 34 17.8
5	SP-3	Single Pole	Route - 3	New Ramdiya Substation	26 13 35.1	91 34 19.0
6	SP-4	Single Pole	Route - 3	New Ramdiya Substation	26 13 36.1	91 34 20.2
7	SP-5	Single Pole	Route - 3	New Ramdiya Substation	26 13 37.0	91 34 21.4
8	SP-6	Single Pole	Route - 3	New Ramdiya Substation	26 13 38.0	91 34 22.6
9	SP-7	Single Pole	Route - 3	New Ramdiya Substation	26 13 39.0	91 34 23.8
10	SP-8	Single Pole	Route - 3	New Ramdiya Substation	26 13 39.8	91 34 24.9
11	SP-9	Single Pole	Route - 3	New Ramdiya Substation	26 13 40.8	91 34 26.1
12	SP-10	Single Pole	Route - 3	New Ramdiya Substation	26 13 41.5	91 34 27.4
13	SP-11	Single Pole	Route - 3	New Ramdiya Substation	26 13 42.3	91 34 28.6
14	SP-12	Single Pole	Route - 3	New Ramdiya Substation	26 13 43.0	91 34 29.7
15	SP-13	Single Pole	Route - 3	New Ramdiya Substation	26 13 43.7	91 34 30.8
16	SP-14	Single Pole	Route - 3	New Ramdiya Substation	26 13 44.6	91 34 32.3
17	DP-1	Double Pole	Route - 3	New Ramdiya Substation	26 13 45.5	91 34 33.6
18	DP-2	Double Pole	Route - 3	New Ramdiya Substation	26 13 46.0	91 34 34.0
19	SP-15	Single Pole	Route - 3	New Ramdiya Substation	26 13 47.2	91 34 33.6
20	SP-16	Single Pole	Route - 3	New Ramdiya Substation	26 13 48.5	91 34 33.1
21	SP-17	Single Pole	Route - 3	New Ramdiya Substation	26 13 49.7	91 34 32.7
22	SP-18	Single Pole	Route - 3	New Ramdiya Substation	26 13 51.0	91 34 32.2
23	SP-19	Single Pole	Route - 3	New Ramdiya Substation	26 13 52.3	91 34 31.7
24	DP-3	Double Pole	Route - 3	New Ramdiya Substation	26 13 53.3	91 34 31.4
25	SP-20	Single Pole	Route - 3	New Ramdiya Substation	26 13 54.6	91 34 31.3
26	DP-4	Double Pole	Route - 3	New Ramdiya Substation	26 13 56.1	91 34 31.4
27	SP-21	Single Pole	Route - 3	New Ramdiya Substation	26 13 57.4	91 34 31.7
28	DP-5	Double Pole	Route - 3	New Ramdiya Substation	26 13 58.5	91 34 32.5
29	SP-22	Single Pole	Route - 3	New Ramdiya Substation	26 13 59.5	91 34 33.2
30	SP-23	Single Pole	Route - 3	New Ramdiya Substation	26 14 00.5	91 34 34.2
31	SP-24	Single Pole	Route - 3	New Ramdiya Substation	26 14 01.4	91 34 35.0
32	SP-25	Single Pole	Route - 3	New Ramdiya Substation	26 14 02.3	91 34 35.9
33	DP-6	Double Pole	Route - 3	New Ramdiya Substation	26 14 03.2	91 34 36.8
34	SP-26	Single Pole	Route - 3	New Ramdiya Substation	26 14 04.6	91 34 37.6
35	SP-27	Single Pole	Route - 3	New Ramdiya Substation	26 14 05.8	91 34 38.3
36	SP-28	Single Pole	Route - 3	New Ramdiya Substation	26 14 07.1	91 34 39.1
37	SP-29	Single Pole	Route - 3	New Ramdiya Substation	26 14 08.4	91 34 39.8
38	SP-30	Single Pole	Route - 3	New Ramdiya Substation	26 14 09.8	91 34 40.6
39	SP-31	Single Pole	Route - 3	New Ramdiya Substation	26 14 11.0	91 34 41.3
40	DP-7	Double Pole	Route - 3	New Ramdiya Substation	26 14 12.2	91 34 42.0
41	SP-32	Single Pole	Route - 3	New Ramdiya Substation	26 14 13.6	91 34 42.2
42	DP-8	Double Pole	Route - 3	New Ramdiya Substation	26 14 15.0	91 34 42.4
43	SP-33	Single Pole	Route - 3	New Ramdiya Substation	26 14 16.3	91 34 43.2
44	SP-34	Single Pole	Route - 3	New Ramdiya Substation	26 14 17.6	91 34 44.0
45	SP-35	Single Pole	Route - 3	New Ramdiya Substation	26 14 19.0	91 34 44.8



POLE COUNT (ROUTE - 3) FROM PROPOSED 132/33kV HAJO(KULHATI) SUBSTATION TO 33/11kV NEW RAMDIYA SUBSTATION

SI No	Pole No	Pole Type	Route Name	Substation	Latitude	Longitude
46	SP-36	Single Pole	Route - 3	New Ramdiya Substation	26 14 20.3	91 34 45.5
47	SP-37	Single Pole	Route - 3	New Ramdiya Substation	26 14 21.7	91 34 46.3
48	SP-38	Single Pole	Route - 3	New Ramdiya Substation	26 14 23.2	91 34 47.2
49	DP-9	Double Pole	Route - 3	New Ramdiya Substation	26 14 24.6	91 34 48.0
50	DP-10	Double Pole	Route - 3	New Ramdiya Substation	26 14 25.3	91 34 48.1
51	DP-11	Double Pole	Route - 3	New Ramdiya Substation	26 14 26.4	91 34 48.8
52	SP-39	Single Pole	Route - 3	New Ramdiya Substation	26 14 27.4	91 34 50.2
53	SP-40	Single Pole	Route - 3	New Ramdiya Substation	26 14 28.2	91 34 51.3
54	SP-41	Single Pole	Route - 3	New Ramdiya Substation	26 14 28.9	91 34 52.4
55	DP-12	Double Pole	Route - 3	New Ramdiya Substation	26 14 29.6	91 34 53.5
56	SP-42	Single Pole	Route - 3	New Ramdiya Substation	26 14 30.9	91 34 54.3
57	SP-43	Single Pole	Route - 3	New Ramdiya Substation	26 14 32.3	91 34 55.2
58	SP-44	Single Pole	Route - 3	New Ramdiya Substation	26 14 33.7	91 34 55.8
59	DP-13	Double Pole	Route - 3	New Ramdiya Substation	26 14 35.0	91 34 56.5
60	SP-45	Single Pole	Route - 3	New Ramdiya Substation	26 14 36.4	91 34 56.8
61	SP-46	Single Pole	Route - 3	New Ramdiya Substation	26 14 37.8	91 34 57.1
62	SP-47	Single Pole	Route - 3	New Ramdiya Substation	26 14 39.3	91 34 57.4
63	SP-48	Single Pole	Route - 3	New Ramdiya Substation	26 14 40.6	91 34 57.7
64	SP-49	Single Pole	Route - 3	New Ramdiya Substation	26 14 42.1	91 34 58.1
65	SP-50	Single Pole	Route - 3	New Ramdiya Substation	26 14 43.6	91 34 58.4
66	DP-14	Double Pole	Route - 3	New Ramdiya Substation	26 14 44.9	91 34 58.7
67	DP-15	Double Pole	Route - 3	New Ramdiya Substation	26 14 45.8	91 34 57.9
68	SP-51	Single Pole	Route - 3	New Ramdiya Substation	26 14 46.4	91 34 56.2
69	SP-52	Single Pole	Route - 3	New Ramdiya Substation	26 14 46.9	91 34 54.6
70	SP-53	Single Pole	Route - 3	New Ramdiya Substation	26 14 47.5	91 34 52.9
71	SP-54	Single Pole	Route - 3	New Ramdiya Substation	26 14 48.0	91 34 51.6
72	SP-55	Single Pole	Route - 3	New Ramdiya Substation	26 14 48.6	91 34 50.3
73	SP-56	Single Pole	Route - 3	New Ramdiya Substation	26 14 49.1	91 34 49.0
74	SP-57	Single Pole	Route - 3	New Ramdiya Substation	26 14 49.7	91 34 47.5
75	SP-58	Single Pole	Route - 3	New Ramdiya Substation	26 14 50.2	91 34 46.0
76	DP-16	Double Pole	Route - 3	New Ramdiya Substation	26 14 50.7	91 34 44.5
77	SP-59	Single Pole	Route - 3	New Ramdiya Substation	26 14 51.1	91 34 43.1
78	SP-60	Single Pole	Route - 3	New Ramdiya Substation	26 14 51.4	91 34 41.7
79	SP-61	Single Pole	Route - 3	New Ramdiya Substation	26 14 51.8	91 34 40.4
80	SP-62	Single Pole	Route - 3	New Ramdiya Substation	26 14 52.2	91 34 39.0
81	SP-63	Single Pole	Route - 3	New Ramdiya Substation	26 14 52.4	91 34 37.5
82	SP-64	Single Pole	Route - 3	New Ramdiya Substation	26 14 52.6	91 34 36.1
83	SP-65	Single Pole	Route - 3	New Ramdiya Substation	26 14 52.8	91 34 34.6
84	DP-17	Double Pole	Route - 3	New Ramdiya Substation	26 14 53.0	91 34 33.4
85	SP-66	Single Pole	Route - 3	New Ramdiya Substation	26 14 53.4	91 34 32.3
86	SP-67	Single Pole	Route - 3	New Ramdiya Substation	26 14 54.1	91 34 30.9
87	SP-68	Single Pole	Route - 3	New Ramdiya Substation	26 14 54.8	91 34 29.4
88	SP-69	Single Pole	Route - 3	New Ramdiya Substation	26 14 55.5	91 34 27.9
89	SP-70	Single Pole	Route - 3	New Ramdiya Substation	26 14 56.2	91 34 26.5
90	SP-71	Single Pole	Route - 3	New Ramdiya Substation	26 14 56.7	91 34 25.3



**POLE COUNT (ROUTE - 3) FROM PROPOSED 132/33kV HAJO(KULHATI)
SUBSTATION TO 33/11kV NEW RAMDIYA SUBSTATION**

SI No	Pole No	Pole Type	Route Name	Substation	Latitude	Longitude
91	SP-72	Single Pole	Route - 3	New Ramdiya Substation	26 14 57.2	91 34 24.1
92	SP-73	Single Pole	Route - 3	New Ramdiya Substation	26 14 57.8	91 34 22.9
93	SP-74	Single Pole	Route - 3	New Ramdiya Substation	26 14 58.4	91 34 21.4
94	DP-18	Double Pole	Route - 3	New Ramdiya Substation	26 14 59.0	91 34 19.9
95	SP-75	Single Pole	Route - 3	New Ramdiya Substation	26 14 59.9	91 34 18.6
96	SP-76	Single Pole	Route - 3	New Ramdiya Substation	26 15 00.8	91 34 17.1
97	SP-77	Single Pole	Route - 3	New Ramdiya Substation	26 15 01.7	91 34 15.6
98	SP-78	Single Pole	Route - 3	New Ramdiya Substation	26 15 02.6	91 34 14.2
99	SP-79	Single Pole	Route - 3	New Ramdiya Substation	26 15 03.4	91 34 12.7
100	SP-80	Single Pole	Route - 3	New Ramdiya Substation	26 15 04.2	91 34 11.1
101	SP-81	Single Pole	Route - 3	New Ramdiya Substation	26 15 05.0	91 34 09.5
102	SP-82	Single Pole	Route - 3	New Ramdiya Substation	26 15 05.8	91 34 07.9
103	SP-83	Single Pole	Route - 3	New Ramdiya Substation	26 15 06.4	91 34 06.4
104	SP-84	Single Pole	Route - 3	New Ramdiya Substation	26 15 07.1	91 34 04.8
105	SP-85	Single Pole	Route - 3	New Ramdiya Substation	26 15 07.7	91 34 03.2
106	DP-19	Double Pole	Route - 3	New Ramdiya Substation	26 15 08.4	91 34 01.6
107	SP-86	Single Pole	Route - 3	New Ramdiya Substation	26 15 09.1	91 34 00.0
108	SP-87	Single Pole	Route - 3	New Ramdiya Substation	26 15 09.7	91 33 58.4
109	SP-88	Single Pole	Route - 3	New Ramdiya Substation	26 15 10.2	91 33 57.4
110	SP-89	Single Pole	Route - 3	New Ramdiya Substation	26 15 10.6	91 33 56.4
111	SP-90	Single Pole	Route - 3	New Ramdiya Substation	26 15 11.2	91 33 55.2
112	SP-91	Single Pole	Route - 3	New Ramdiya Substation	26 15 11.7	91 33 54.0
113	SP-92	Single Pole	Route - 3	New Ramdiya Substation	26 15 12.3	91 33 52.8
114	SP-93	Single Pole	Route - 3	New Ramdiya Substation	26 15 12.9	91 33 51.6
115	SP-94	Single Pole	Route - 3	New Ramdiya Substation	26 15 13.5	91 33 49.9
116	DP-20	Double Pole	Route - 3	New Ramdiya Substation	26 15 14.1	91 33 48.3
117	SP-95	Single Pole	Route - 3	New Ramdiya Substation	26 15 14.3	91 33 47.0
118	SP-96	Single Pole	Route - 3	New Ramdiya Substation	26 15 14.6	91 33 45.7
119	DP-21	Double Pole	Route - 3	New Ramdiya Substation	26 15 14.6	91 33 43.9
120	SP-97	Single Pole	Route - 3	New Ramdiya Substation	26 15 14.7	91 33 42.2
121	SP-98	Single Pole	Route - 3	New Ramdiya Substation	26 15 14.8	91 33 40.5
122	SP-99	Single Pole	Route - 3	New Ramdiya Substation	26 15 14.9	91 33 38.8
123	SP-100	Single Pole	Route - 3	New Ramdiya Substation	26 15 14.9	91 33 37.2
124	SP-101	Single Pole	Route - 3	New Ramdiya Substation	26 15 14.9	91 33 35.7
125	SP-102	Single Pole	Route - 3	New Ramdiya Substation	26 15 15.0	91 33 34.3
126	SP-103	Single Pole	Route - 3	New Ramdiya Substation	26 15 15.0	91 33 32.7
127	SP-104	Single Pole	Route - 3	New Ramdiya Substation	26 15 15.1	91 33 31.1
128	SP-105	Single Pole	Route - 3	New Ramdiya Substation	26 15 15.2	91 33 29.4
129	SP-106	Single Pole	Route - 3	New Ramdiya Substation	26 15 15.3	91 33 27.8
130	SP-107	Single Pole	Route - 3	New Ramdiya Substation	26 15 15.3	91 33 25.9
131	DP-22	Double Pole	Route - 3	New Ramdiya Substation	26 15 15.3	91 33 24.1
132	SP-108	Single Pole	Route - 3	New Ramdiya Substation	26 15 15.4	91 33 22.3
133	SP-109	Single Pole	Route - 3	New Ramdiya Substation	26 15 15.5	91 33 20.5
134	SP-110	Single Pole	Route - 3	New Ramdiya Substation	26 15 15.6	91 33 18.7
135	SP-111	Single Pole	Route - 3	New Ramdiya Substation	26 15 15.7	91 33 17.0

**POLE COUNT (ROUTE - 3) FROM PROPOSED 132/33KV HAJO(KULHATI)
SUBSTATION TO 33/11KV NEW RAMDIYA SUBSTATION**

SI No	Pole No	Pole Type	Route Name	Substation	Latitude	Longitude
136	SP-112	Single Pole	Route - 3	New Ramdiya Substation	26 15 15.9	91 33 15.2
137	SP-113	Single Pole	Route - 3	New Ramdiya Substation	26 15 16.0	91 33 13.4
138	SP-114	Single Pole	Route - 3	New Ramdiya Substation	26 15 16.0	91 33 11.7
139	SP-115	Single Pole	Route - 3	New Ramdiya Substation	26 15 16.1	91 33 09.9
140	SP-116	Single Pole	Route - 3	New Ramdiya Substation	26 15 16.2	91 33 08.1
141	SP-117	Single Pole	Route - 3	New Ramdiya Substation	26 15 16.3	91 33 06.3
142	SP-118	Single Pole	Route - 3	New Ramdiya Substation	26 15 16.4	91 33 04.5
143	SP-119	Single Pole	Route - 3	New Ramdiya Substation	26 15 16.5	91 33 02.7
144	SP-120	Single Pole	Route - 3	New Ramdiya Substation	26 15 16.6	91 33 00.9
145	DP-23	Double Pole	Route - 3	New Ramdiya Substation	26 15 16.6	91 32 59.1
146	SP-121	Single Pole	Route - 3	New Ramdiya Substation	26 15 16.5	91 32 57.4
147	SP-122	Single Pole	Route - 3	New Ramdiya Substation	26 15 16.3	91 32 55.7
148	SP-123	Single Pole	Route - 3	New Ramdiya Substation	26 15 16.1	91 32 54.0
149	SP-124	Single Pole	Route - 3	New Ramdiya Substation	26 15 15.8	91 32 52.2
150	SP-125	Single Pole	Route - 3	New Ramdiya Substation	26 15 15.5	91 32 50.5
151	SP-126	Single Pole	Route - 3	New Ramdiya Substation	26 15 15.2	91 32 48.8
152	SP-127	Single Pole	Route - 3	New Ramdiya Substation	26 15 15.0	91 32 47.1
153	SP-128	Single Pole	Route - 3	New Ramdiya Substation	26 15 14.7	91 32 45.4
154	SP-129	Single Pole	Route - 3	New Ramdiya Substation	26 15 14.4	91 32 43.6
155	SP-130	Single Pole	Route - 3	New Ramdiya Substation	26 15 14.1	91 32 41.8
156	SP-131	Single Pole	Route - 3	New Ramdiya Substation	26 15 13.6	91 32 40.2
157	SP-132	Single Pole	Route - 3	New Ramdiya Substation	26 15 13.2	91 32 38.7
158	SP-133	Single Pole	Route - 3	New Ramdiya Substation	26 15 12.8	91 32 37.1
159	SP-134	Single Pole	Route - 3	New Ramdiya Substation	26 15 12.4	91 32 35.6
160	SP-135	Single Pole	Route - 3	New Ramdiya Substation	26 15 12.0	91 32 34.1
161	SP-136	Single Pole	Route - 3	New Ramdiya Substation	26 15 11.6	91 32 32.7
162	SP-137	Single Pole	Route - 3	New Ramdiya Substation	26 15 11.3	91 32 31.2
163	SP-138	Single Pole	Route - 3	New Ramdiya Substation	26 15 10.9	91 32 29.7
164	SP-139	Single Pole	Route - 3	New Ramdiya Substation	26 15 10.5	91 32 28.2
165	SP-140	Single Pole	Route - 3	New Ramdiya Substation	26 15 10.0	91 32 26.6
166	DP-24	Double Pole	Route - 3	New Ramdiya Substation	26 15 09.6	91 32 25.0
167	SP-141	Single Pole	Route - 3	New Ramdiya Substation	26 15 09.2	91 32 23.4
168	SP-142	Single Pole	Route - 3	New Ramdiya Substation	26 15 09.0	91 32 21.9
169	SP-143	Single Pole	Route - 3	New Ramdiya Substation	26 15 08.8	91 32 20.5
170	SP-144	Single Pole	Route - 3	New Ramdiya Substation	26 15 08.6	91 32 18.7
171	SP-145	Single Pole	Route - 3	New Ramdiya Substation	26 15 08.4	91 32 17.0
172	SP-146	Single Pole	Route - 3	New Ramdiya Substation	26 15 08.2	91 32 15.3
173	SP-147	Single Pole	Route - 3	New Ramdiya Substation	26 15 08.0	91 32 13.6
174	SP-148	Single Pole	Route - 3	New Ramdiya Substation	26 15 07.8	91 32 11.8
175	SP-149	Single Pole	Route - 3	New Ramdiya Substation	26 15 07.6	91 32 10.1
176	SP-150	Single Pole	Route - 3	New Ramdiya Substation	26 15 07.4	91 32 08.5
177	SP-151	Single Pole	Route - 3	New Ramdiya Substation	26 15 07.3	91 32 06.9
178	SP-152	Single Pole	Route - 3	New Ramdiya Substation	26 15 07.2	91 32 05.2
179	SP-153	Single Pole	Route - 3	New Ramdiya Substation	26 15 07.0	91 32 03.6
180	SP-154	Single Pole	Route - 3	New Ramdiya Substation	26 15 06.9	91 32 01.9



**POLE COUNT (ROUTE - 3) FROM PROPOSED 132/33KV HAJO(KULHATI)
SUBSTATION TO 33/11KV NEW RAMDIYA SUBSTATION**

Sl No	Pole No	Pole Type	Route Name	Substation	Latitude	Longitude
181	SP-155	Single Pole	Route - 3	New Ramdiya Substation	26 15 06.8	91 32 00.3
182	SP-156	Single Pole	Route - 3	New Ramdiya Substation	26 15 06.6	91 31 58.7
183	SP-157	Single Pole	Route - 3	New Ramdiya Substation	26 15 06.5	91 31 56.9
184	SP-158	Single Pole	Route - 3	New Ramdiya Substation	26 15 06.4	91 31 55.3
185	SP-159	Single Pole	Route - 3	New Ramdiya Substation	26 15 06.2	91 31 53.6
186	SP-160	Single Pole	Route - 3	New Ramdiya Substation	26 15 06.1	91 31 52.0
187	FP-2	Four Pole	Route - 3	New Ramdiya Substation	26 15 06.0	91 31 50.3
188	SP-161	Single Pole	Route - 3	New Ramdiya Substation	26 15 04.5	91 31 50.3
189	SP-162	Single Pole	Route - 3	New Ramdiya Substation	26 15 03.1	91 31 50.3
190	SP-163	Single Pole	Route - 3	New Ramdiya Substation	26 15 01.7	91 31 50.3
191	SP-164	Single Pole	Route - 3	New Ramdiya Substation	26 15 00.4	91 31 50.3
192	SP-165	Single Pole	Route - 3	New Ramdiya Substation	26 14 58.9	91 31 50.3
193	DP-25	Double Pole	Route - 3	New Ramdiya Substation	26 14 57.6	91 31 50.3
194	SP-166	Single Pole	Route - 3	New Ramdiya Substation	26 14 56.5	91 31 49.8
195	DP-26	Double Pole	Route - 3	New Ramdiya Substation	26 14 55.1	91 31 49.4
196	SP-167	Single Pole	Route - 3	New Ramdiya Substation	26 14 54.3	91 31 48.5
197	SP-168	Single Pole	Route - 3	New Ramdiya Substation	26 14 53.3	91 31 47.5
198	SP-169	Single Pole	Route - 3	New Ramdiya Substation	26 14 52.4	91 31 46.5
199	DP-27	Double Pole	Route - 3	New Ramdiya Substation	26 14 51.5	91 31 45.5
200	DP-28	Double Pole	Route - 3	New Ramdiya Substation	26 14 50.1	91 31 45.0
201	SP-170	Single Pole	Route - 3	New Ramdiya Substation	26 14 48.6	91 31 44.8
202	SP-171	Single Pole	Route - 3	New Ramdiya Substation	26 14 47.0	91 31 44.7
203	SP-172	Single Pole	Route - 3	New Ramdiya Substation	26 14 45.4	91 31 44.5
204	SP-173	Single Pole	Route - 3	New Ramdiya Substation	26 14 44.0	91 31 44.4
205	FP-3	Four Pole	Route - 3	New Ramdiya Substation	26 14 42.4	91 31 44.2
206	SP-174	Single Pole	Route - 3	New Ramdiya Substation	26 14 42.0	91 31 43.0
207	SP-175	Single Pole	Route - 3	New Ramdiya Substation	26 14 41.6	91 31 41.7
208	SP-176	Single Pole	Route - 3	New Ramdiya Substation	26 14 41.2	91 31 40.4
209	FP-4	Four Pole	Route - 3	New Ramdiya Substation	26 14 40.6	91 31 39.1
210	SP-177	Single Pole	Route - 3	New Ramdiya Substation	26 14 39.1	91 31 39.0
211	SP-178	Single Pole	Route - 3	New Ramdiya Substation	26 14 37.6	91 31 38.9
212	FP-5	Four Pole	Route - 3	New Ramdiya Substation	26 14 36.1	91 31 38.7
213	SP-179	Single Pole	Route - 3	New Ramdiya Substation	26 14 34.9	91 31 39.8
214	SP-180	Single Pole	Route - 3	New Ramdiya Substation	26 14 33.7	91 31 40.8
215	DP-29	Double Pole	Route - 3	New Ramdiya Substation	26 14 32.8	91 31 41.6
216	SP-181	Single Pole	Route - 3	New Ramdiya Substation	26 14 31.8	91 31 42.1
217	SP-182	Single Pole	Route - 3	New Ramdiya Substation	26 14 30.8	91 31 42.7
218	SP-183	Single Pole	Route - 3	New Ramdiya Substation	26 14 29.6	91 31 43.2
219	SP-184	Single Pole	Route - 3	New Ramdiya Substation	26 14 28.6	91 31 43.7
220	DP-30	Double Pole	Route - 3	New Ramdiya Substation	26 14 27.7	91 31 44.2
221	SP-185	Single Pole	Route - 3	New Ramdiya Substation	26 14 26.5	91 31 45.1
222	SP-186	Single Pole	Route - 3	New Ramdiya Substation	26 14 25.2	91 31 46.2
223	SP-187	Single Pole	Route - 3	New Ramdiya Substation	26 14 23.9	91 31 47.3
224	SP-188	Single Pole	Route - 3	New Ramdiya Substation	26 14 22.7	91 31 48.4
225	SP-189	Single Pole	Route - 3	New Ramdiya Substation	26 14 21.4	91 31 49.5



POLE COUNT (ROUTE - 3) FROM PROPOSED 132/33KV HAJO(KULHATI) SUBSTATION TO 33/11KV NEW RAMDIYA SUBSTATION

Sl No	Pole No	Pole Type	Route Name	Substation	Latitude	Longitude
226	SP-190	Single Pole	Route - 3	New Ramdiya Substation	26 14 20.4	91 31 50.6
227	DP-31	Double Pole	Route - 3	New Ramdiya Substation	26 14 19.5	91 31 51.7
228	SP-191	Single Pole	Route - 3	New Ramdiya Substation	26 14 18.6	91 31 53.0
229	SP-192	Single Pole	Route - 3	New Ramdiya Substation	26 14 17.8	91 31 54.4
230	SP-193	Single Pole	Route - 3	New Ramdiya Substation	26 14 17.0	91 31 55.7
231	DP-32	Double Pole	Route - 3	New Ramdiya Substation	26 14 16.2	91 31 57.2
232	SP-194	Single Pole	Route - 3	New Ramdiya Substation	26 14 15.3	91 31 58.3
233	DP-33	Double Pole	Route - 3	New Ramdiya Substation	26 14 14.5	91 31 59.3
234	SP-195	Single Pole	Route - 3	New Ramdiya Substation	26 14 13.5	91 31 59.8
235	SP-196	Single Pole	Route - 3	New Ramdiya Substation	26 14 12.5	91 32 00.6
236	DP-34	Double Pole	Route - 3	New Ramdiya Substation	26 14 11.6	91 32 01.4
237	SP-197	Single Pole	Route - 3	New Ramdiya Substation	26 14 11.0	91 32 01.6
238	DP-35	Double Pole	Route - 3	New Ramdiya Substation	26 14 09.6	91 32 01.9
239	SP-198	Single Pole	Route - 3	New Ramdiya Substation	26 14 08.4	91 32 01.1
240	SP-199	Single Pole	Route - 3	New Ramdiya Substation	26 14 07.2	91 32 00.2
241	SP-200	Single Pole	Route - 3	New Ramdiya Substation	26 14 06.2	91 31 59.2
242	SP-201	Single Pole	Route - 3	New Ramdiya Substation	26 14 05.2	91 31 58.2
243	SP-202	Single Pole	Route - 3	New Ramdiya Substation	26 14 04.2	91 31 57.1
244	SP-203	Single Pole	Route - 3	New Ramdiya Substation	26 14 03.2	91 31 56.1
245	SP-204	Single Pole	Route - 3	New Ramdiya Substation	26 14 02.1	91 31 54.8
246	SP-205	Single Pole	Route - 3	New Ramdiya Substation	26 14 01.0	91 31 53.6
247	FP-6	Four Pole	Route - 3	New Ramdiya Substation	26 14 00.0	91 31 52.4
248	SP-206	Single Pole	Route - 3	New Ramdiya Substation	26 13 58.4	91 31 52.8
249	SP-207	Single Pole	Route - 3	New Ramdiya Substation	26 13 56.9	91 31 53.2
250	SP-208	Single Pole	Route - 3	New Ramdiya Substation	26 13 55.3	91 31 53.6
251	SP-209	Single Pole	Route - 3	New Ramdiya Substation	26 13 53.7	91 31 54.1
252	SP-210	Single Pole	Route - 3	New Ramdiya Substation	26 13 52.3	91 31 54.6
253	SP-211	Single Pole	Route - 3	New Ramdiya Substation	26 13 50.8	91 31 55.2
254	SP-212	Single Pole	Route - 3	New Ramdiya Substation	26 13 49.2	91 31 55.8
255	FP-7	Four Pole	Route - 3	New Ramdiya Substation	26 13 47.7	91 31 56.4
256	SP-213	Single Pole	Route - 3	New Ramdiya Substation	26 13 46.8	91 31 55.4
257	SP-214	Single Pole	Route - 3	New Ramdiya Substation	26 13 45.9	91 31 54.3
258	SP-215	Single Pole	Route - 3	New Ramdiya Substation	26 13 45.1	91 31 53.2
259	SP-216	Single Pole	Route - 3	New Ramdiya Substation	26 13 44.2	91 31 52.1
260	SP-217	Single Pole	Route - 3	New Ramdiya Substation	26 13 43.3	91 31 51.0
261	DP-36	Double Pole	Route - 3	New Ramdiya Substation	26 13 42.2	91 31 49.8
262	DP-37	Double Pole	Route - 3	New Ramdiya Substation	26 13 41.5	91 31 48.5
263	SP-218	Single Pole	Route - 3	New Ramdiya Substation	26 13 40.2	91 31 47.3
264	SP-219	Single Pole	Route - 3	New Ramdiya Substation	26 13 39.0	91 31 46.2
265	SP-220	Single Pole	Route - 3	New Ramdiya Substation	26 13 37.8	91 31 45.1
266	SP-221	Single Pole	Route - 3	New Ramdiya Substation	26 13 36.6	91 31 43.9
267	SP-222	Single Pole	Route - 3	New Ramdiya Substation	26 13 35.4	91 31 42.8
268	SP-223	Single Pole	Route - 3	New Ramdiya Substation	26 13 33.1	91 31 40.8
269	SP-224	Single Pole	Route - 3	New Ramdiya Substation	26 13 32.0	91 31 39.7
270	SP-225	Single Pole	Route - 3	New Ramdiya Substation	26 13 30.8	91 31 38.6



**POLE COUNT (ROUTE - 3) FROM PROPOSED 132/33KV HAJO(KULHATI)
SUBSTATION TO 33/11KV NEW RAMDIYA SUBSTATION**

SI No	Pole No	Pole Type	Route Name	Substation	Latitude	Longitude
271	SP-226	Single Pole	Route - 3	New Ramdiya Substation	26 13 29.6	91 31 37.5
272	SP-227	Single Pole	Route - 3	New Ramdiya Substation	26 13 28.5	91 31 36.5
273	SP-228	Single Pole	Route - 3	New Ramdiya Substation	26 13 27.4	91 31 35.5
274	SP-229	Single Pole	Route - 3	New Ramdiya Substation	26 13 26.3	91 31 34.5
275	SP-230	Single Pole	Route - 3	New Ramdiya Substation	26 13 25.2	91 31 33.4
276	DP-38	Double Pole	Route - 3	New Ramdiya Substation	26 13 24.0	91 31 32.4
277	DP-39	Double Pole	Route - 3	New Ramdiya Substation	26 13 22.6	91 31 31.1
278	SP-231	Single Pole	Route - 3	New Ramdiya Substation	26 13 21.1	91 31 30.5
279	SP-232	Single Pole	Route - 3	New Ramdiya Substation	26 13 19.5	91 31 30.4
280	FP-8	Four Pole	Route - 3	New Ramdiya Substation	26 13 18.0	91 31 30.2
281	SP-233	Single Pole	Route - 3	New Ramdiya Substation	26 13 18.0	91 31 29.3
282	DP-40	Double Pole	Route - 3	New Ramdiya Substation	26 13 18.1	91 31 27.6
283	SP-234	Single Pole	Route - 3	New Ramdiya Substation	26 13 18.5	91 31 26.1
284	DP-41	Double Pole	Route - 3	New Ramdiya Substation	26 13 19.1	91 31 24.7
285	SP-235	Single Pole	Route - 3	New Ramdiya Substation	26 13 19.4	91 31 22.9
286	SP-236	Single Pole	Route - 3	New Ramdiya Substation	26 13 19.7	91 31 21.2
287	FP-9	Four Pole	Route - 3	New Ramdiya Substation	26 13 19.9	91 31 19.5
288	SP-237	Single Pole	Route - 3	New Ramdiya Substation	26 13 21.0	91 31 19.5
289	SP-238	Single Pole	Route - 3	New Ramdiya Substation	26 13 22.1	91 31 19.7
290	FP-10	Four Pole	Route - 3	New Ramdiya Substation	26 13 23.4	91 31 19.7
291	SP-239	Single Pole	Route - 3	New Ramdiya Substation	26 13 23.5	91 31 18.4
292	SP-240	Single Pole	Route - 3	New Ramdiya Substation	26 13 23.6	91 31 16.9
293	SP-241	Single Pole	Route - 3	New Ramdiya Substation	26 13 23.7	91 31 15.2
294	SP-242	Single Pole	Route - 3	New Ramdiya Substation	26 13 23.9	91 31 13.5
295	SP-243	Single Pole	Route - 3	New Ramdiya Substation	26 13 24.0	91 31 12.0
296	DP-42	Double Pole	Route - 3	New Ramdiya Substation	26 13 24.1	91 31 10.4
297	SP-244	Single Pole	Route - 3	New Ramdiya Substation	26 13 24.7	91 31 08.7
298	DP-43	Double Pole	Route - 3	New Ramdiya Substation	26 13 25.2	91 31 07.0
299	SP-245	Single Pole	Route - 3	New Ramdiya Substation	26 13 25.3	91 31 05.3
300	SP-246	Single Pole	Route - 3	New Ramdiya Substation	26 13 25.4	91 31 03.5
301	SP-247	Single Pole	Route - 3	New Ramdiya Substation	26 13 25.5	91 31 01.8
302	SP-248	Single Pole	Route - 3	New Ramdiya Substation	26 13 25.6	91 31 00.1
303	DP-44	Double Pole	Route - 3	New Ramdiya Substation	26 13 25.6	91 30 58.4
304	SP-249	Single Pole	Route - 3	New Ramdiya Substation	26 13 25.9	91 30 56.9
305	DP-45	Double Pole	Route - 3	New Ramdiya Substation	26 13 26.1	91 30 55.4
306	SP-250	Single Pole	Route - 3	New Ramdiya Substation	26 13 25.9	91 30 54.2
307	SP-251	Single Pole	Route - 3	New Ramdiya Substation	26 13 25.5	91 30 52.8
308	SP-252	Single Pole	Route - 3	New Ramdiya Substation	26 13 25.2	91 30 51.4
309	SP-253	Single Pole	Route - 3	New Ramdiya Substation	26 13 24.6	91 30 49.8
310	SP-254	Single Pole	Route - 3	New Ramdiya Substation	26 13 24.1	91 30 48.2
311	SP-255	Single Pole	Route - 3	New Ramdiya Substation	26 13 23.5	91 30 46.7
312	SP-256	Single Pole	Route - 3	New Ramdiya Substation	26 13 22.8	91 30 45.1
313	SP-257	Single Pole	Route - 3	New Ramdiya Substation	26 13 22.2	91 30 43.7
314	SP-258	Single Pole	Route - 3	New Ramdiya Substation	26 13 21.6	91 30 42.2
315	SP-259	Single Pole	Route - 3	New Ramdiya Substation	26 13 21.1	91 30 40.9



POLE COUNT (ROUTE - 3) FROM PROPOSED 132/33kV HAJO(KULHATI) SUBSTATION TO 33/11kV NEW RAMDIYA SUBSTATION

Sl No	Pole No	Pole Type	Route Name	Substation	Latitude	Longitude
316	DP-46	Double Pole	Route - 3	New Ramdiya Substation	26 13 20.6	91 30 39.7
317	DP-47	Double Pole	Route - 3	New Ramdiya Substation	26 13 20.2	91 30 37.6
318	SP-260	Single Pole	Route - 3	New Ramdiya Substation	26 13 20.1	91 30 36.0
319	SP-261	Single Pole	Route - 3	New Ramdiya Substation	26 13 20.1	91 30 34.2
320	SP-262	Single Pole	Route - 3	New Ramdiya Substation	26 13 20.1	91 30 32.5
321	DP-48	Double Pole	Route - 3	New Ramdiya Substation	26 13 20.0	91 30 30.7
322	DP-49	Double Pole	Route - 3	New Ramdiya Substation	26 13 20.3	91 30 29.7
323	SP-263	Single Pole	Route - 3	New Ramdiya Substation	26 13 19.9	91 30 28.6
324	SP-264	Single Pole	Route - 3	New Ramdiya Substation	26 13 19.6	91 30 27.7
325	SP-265	Single Pole	Route - 3	New Ramdiya Substation	26 13 19.0	91 30 26.6
326	SP-266	Single Pole	Route - 3	New Ramdiya Substation	26 13 18.2	91 30 25.0
327	SP-267	Single Pole	Route - 3	New Ramdiya Substation	26 13 17.5	91 30 23.6
328	SP-268	Single Pole	Route - 3	New Ramdiya Substation	26 13 17.0	91 30 22.6
329	SP-269	Single Pole	Route - 3	New Ramdiya Substation	26 13 16.3	91 30 21.2
330	SP-270	Single Pole	Route - 3	New Ramdiya Substation	26 13 15.9	91 30 19.7
331	SP-271	Single Pole	Route - 3	New Ramdiya Substation	26 13 15.4	91 30 18.4
332	SP-272	Single Pole	Route - 3	New Ramdiya Substation	26 13 15.0	91 30 17.0
333	FP-11	Four Pole	Route - 3	New Ramdiya Substation	26 13 14.7	91 30 15.6
334	DP-50	Double Pole	Route - 3	New Ramdiya Substation	26 13 15.5	91 30 15.2
335	DP-51	Double Pole	Route - 3	New Ramdiya Substation	26 13 16.0	91 30 15.1
336	SP-273	Single Pole	Route - 3	New Ramdiya Substation	26 13 16.5	91 30 14.9
337	SP-274	Single Pole	Route - 3	New Ramdiya Substation	26 13 17.7	91 30 14.2
338	SP-275	Single Pole	Route - 3	New Ramdiya Substation	26 13 19.0	91 30 13.6
339	SP-276	Single Pole	Route - 3	New Ramdiya Substation	26 13 20.5	91 30 13.0
340	SP-277	Single Pole	Route - 3	New Ramdiya Substation	26 13 22.0	91 30 12.5
341	FP-12	Four Pole	Route - 3	New Ramdiya Substation	26 13 23.3	91 30 11.9
342	SP-278	Single Pole	Route - 3	New Ramdiya Substation	26 13 23.3	91 30 10.3
343	SP-279	Single Pole	Route - 3	New Ramdiya Substation	26 13 23.3	91 30 08.8
344	SP-280	Single Pole	Route - 3	New Ramdiya Substation	26 13 23.3	91 30 07.3
345	SP-281	Single Pole	Route - 3	New Ramdiya Substation	26 13 23.4	91 30 05.7
346	SP-282	Single Pole	Route - 3	New Ramdiya Substation	26 13 23.4	91 30 04.1
347	DP-52	Double Pole	Route - 3	New Ramdiya Substation	26 13 23.4	91 30 02.5
348	SP-283	Single Pole	Route - 3	New Ramdiya Substation	26 13 23.9	91 30 00.9
349	SP-284	Single Pole	Route - 3	New Ramdiya Substation	26 13 24.4	91 29 59.3
350	DP-53	Double Pole	Route - 3	New Ramdiya Substation	26 13 25.1	91 29 57.9
351	SP-285	Single Pole	Route - 3	New Ramdiya Substation	26 13 26.2	91 29 56.7
352	SP-286	Single Pole	Route - 3	New Ramdiya Substation	26 13 27.2	91 29 55.4
353	SP-287	Single Pole	Route - 3	New Ramdiya Substation	26 13 28.3	91 29 54.5
354	SP-288	Single Pole	Route - 3	New Ramdiya Substation	26 13 29.2	91 29 53.5
355	SP-289	Single Pole	Route - 3	New Ramdiya Substation	26 13 30.4	91 29 52.4
356	SP-290	Single Pole	Route - 3	New Ramdiya Substation	26 13 31.5	91 29 51.5
357	SP-291	Single Pole	Route - 3	New Ramdiya Substation	26 13 32.5	91 29 50.7
358	DP-54	Double Pole	Route - 3	New Ramdiya Substation	26 13 33.5	91 29 50.1
359	DP-55	Double Pole	Route - 3	New Ramdiya Substation	26 13 34.9	91 29 50.1
360	DP-56	Double Pole	Route - 3	New Ramdiya Substation	26 13 35.6	91 29 50.7



POLE COUNT (ROUTE - 3) FROM PROPOSED 132/33KV HAJO(KULHATI) SUBSTATION TO 33/11KV NEW RAMDIYA SUBSTATION

Sl No	Pole No	Pole Type	Route Name	Substation	Latitude	Longitude
361	SP-292	Single Pole	Route - 3	New Ramdiya Substation	26 13 36.6	91 29 50.4
362	SP-293	Single Pole	Route - 3	New Ramdiya Substation	26 13 37.7	91 29 50.3
363	SP-294	Single Pole	Route - 3	New Ramdiya Substation	26 13 38.9	91 29 50.1
364	DP-57	Double Pole	Route - 3	New Ramdiya Substation	26 13 40.3	91 29 49.9
365	DP-58	Double Pole	Route - 3	New Ramdiya Substation	26 13 41.2	91 29 49.4
366	FP-13	Four Pole	Route - 3	New Ramdiya Substation	26 13 41.6	91 29 49.4
367	SP-295	Single Pole	Route - 3	New Ramdiya Substation	26 13 41.3	91 29 48.5
368	SP-296	Single Pole	Route - 3	New Ramdiya Substation	26 13 40.9	91 29 46.9
369	SP-297	Single Pole	Route - 3	New Ramdiya Substation	26 13 40.4	91 29 45.2
370	SP-298	Single Pole	Route - 3	New Ramdiya Substation	26 13 39.9	91 29 43.6
371	SP-299	Single Pole	Route - 3	New Ramdiya Substation	26 13 39.4	91 29 41.9
372	SP-300	Single Pole	Route - 3	New Ramdiya Substation	26 13 38.8	91 29 40.4
373	SP-301	Single Pole	Route - 3	New Ramdiya Substation	26 13 38.3	91 29 39.3
374	DP-59	Double Pole	Route - 3	New Ramdiya Substation	26 13 37.8	91 29 38.1
375	SP-302	Single Pole	Route - 3	New Ramdiya Substation	26 13 37.7	91 29 37.0
376	SP-303	Single Pole	Route - 3	New Ramdiya Substation	26 13 37.6	91 29 35.3
377	SP-304	Single Pole	Route - 3	New Ramdiya Substation	26 13 37.5	91 29 33.8
378	SP-305	Single Pole	Route - 3	New Ramdiya Substation	26 13 37.4	91 29 32.2
379	SP-306	Single Pole	Route - 3	New Ramdiya Substation	26 13 37.3	91 29 30.6
380	DP-60	Double Pole	Route - 3	New Ramdiya Substation	26 13 37.2	91 29 29.1
381	SP-307	Single Pole	Route - 3	New Ramdiya Substation	26 13 37.0	91 29 27.9
382	SP-308	Single Pole	Route - 3	New Ramdiya Substation	26 13 36.8	91 29 26.4
383	SP-309	Single Pole	Route - 3	New Ramdiya Substation	26 13 36.6	91 29 25.0
384	SP-310	Single Pole	Route - 3	New Ramdiya Substation	26 13 36.4	91 29 23.7
385	SP-311	Single Pole	Route - 3	New Ramdiya Substation	26 13 36.2	91 29 22.3
386	SP-312	Single Pole	Route - 3	New Ramdiya Substation	26 13 36.0	91 29 20.9
387	FP-14	Four Pole	Route - 3	New Ramdiya Substation	26 13 35.8	91 29 19.5
388	SP-313	Single Pole	Route - 3	New Ramdiya Substation	26 13 34.8	91 29 19.5
389	SP-314	Single Pole	Route - 3	New Ramdiya Substation	26 13 33.8	91 29 19.5
390	SP-315	Single Pole	Route - 3	New Ramdiya Substation	26 13 32.5	91 29 19.6
391	SP-316	Single Pole	Route - 3	New Ramdiya Substation	26 13 31.2	91 29 19.7
392	SP-317	Single Pole	Route - 3	New Ramdiya Substation	26 13 30.3	91 29 19.8
393	SP-318	Single Pole	Route - 3	New Ramdiya Substation	26 13 29.2	91 29 19.8
394	SP-319	Single Pole	Route - 3	New Ramdiya Substation	26 13 28.2	91 29 19.9
395	SP-320	Single Pole	Route - 3	New Ramdiya Substation	26 13 27.1	91 29 19.9
396	SP-321	Single Pole	Route - 3	New Ramdiya Substation	26 13 26.2	91 29 19.9
397	DP-61	Double Pole	Route - 3	New Ramdiya Substation	26 13 25.2	91 29 19.8
398	SP-322	Single Pole	Route - 3	New Ramdiya Substation	26 13 24.1	91 29 19.9
399	SP-323	Single Pole	Route - 3	New Ramdiya Substation	26 13 23.0	91 29 19.8
400	SP-324	Single Pole	Route - 3	New Ramdiya Substation	26 13 22.0	91 29 19.7
401	SP-325	Single Pole	Route - 3	New Ramdiya Substation	26 13 20.8	91 29 19.5
402	SP-326	Single Pole	Route - 3	New Ramdiya Substation	26 13 19.6	91 29 19.4
403	SP-327	Single Pole	Route - 3	New Ramdiya Substation	26 13 18.1	91 29 19.1
404	GANTRY	GANTRY	Route - 3	New Ramdiya Substation	26 13 16.7	91 29 18.9



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Field Engineer

Sub-Station Manager / Deputy Manager
N.E.R.P.S.I.
Bongaon

POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV NEW DOMDUM

Sl No	Pole No	Recommended/ Require Pole Type	Req. Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
1	GANTRY - HAZO			26 13 32.4	91 34 18.8			
2	SP-1	SP 64	1	26 13 32.3	91 34 17.2	132/33 KV Proposed Kulhati S/S Area		
3	SP-2	SP 64	1	26 13 32.3	91 34 15.5	Road Crossing		
4	SP-3	SP 64	1	26 13 32.2	91 34 14.0			
5	SP-4	SP 64	1	26 13 32.2	91 34 12.2			
6	DP-1	SP 64	2	26 13 32.1	91 34 10.4			
7	SP-5	SP 64	1	26 13 32.1	91 34 08.7			
8	SP-6	SP 64	1	26 13 32.0	91 34 06.9			
9	SP-7	SP 64	1	26 13 31.9	91 34 05.1			
10	SP-8	SP 64	1	26 13 31.9	91 34 03.3			
11	DP-2	SP 64	2	26 13 31.8	91 34 01.5			
12	SP-9	SP 64	1	26 13 31.8	91 33 58.7			
13	SP-10	SP 64	1	26 13 31.7	91 33 57.9			
14	SP-11	SP 64	1	26 13 31.6	91 33 56.1			
15	SP-12	SP 64	1	26 13 31.6	91 33 54.3			
16	DP-3	SP 64	2	26 13 31.5	91 33 52.5			
17	SP-13	SP 64	1	26 13 31.4	91 33 50.7			
18	SP-14	SP 64	1	26 13 31.4	91 33 48.9			
19	SP-15	SP 64	1	26 13 31.3	91 33 47.1			
20	SP-16	SP 64	1	26 13 31.3	91 33 45.3			
21	DP-4	SP 64	2	26 13 31.2	91 33 43.5			
22	SP-17	SP 64	1	26 13 31.1	91 33 41.8			
23	SP-18	SP 64	1	26 13 31.1	91 33 39.9			
24	SP-19	SP 64	1	26 13 31.0	91 33 38.2			
25	SP-20	SP 64	1	26 13 31.0	91 33 36.4			
26	DP-5	SP 64	2	26 13 30.9	91 33 34.6			
27	SP-21	SP 64	1	26 13 30.8	91 33 32.8			
28	SP-22	SP 64	1	26 13 30.8	91 33 31.0			
29	SP-23	SP 64	1	26 13 30.7	91 33 29.2			
30	SP-24	SP 64	1	26 13 30.7	91 33 27.4			
31	DP-6	SP 64	2	26 13 30.6	91 33 25.7			
	SP-25	SP 64	1	26 13 30.9	91 33 24.0			



A. P. S. S.
Field Engineer
Mobile: 981 881 881 881

POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV NEW DOMDC.

HAZO S/S

Sl No	Pole No	Recommended/ Require Pole Type	Req. Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
33	SP-26	SP 64	1	26 13 31.3	91 33 22.2			
34	SP-27	SP 64	1	26 13 31.6	91 33 20.5			
35	SP-28	SP 64	1	26 13 31.9	91 33 18.8			
36	DP-7	SP 64	2	26 13 32.2	91 33 17.1			
37	SP-29	SP 64	1	26 13 32.6	91 33 15.4			
38	SP-30	SP 64	1	26 13 32.9	91 33 13.6			
39	SP-31	SP 64	1	26 13 33.2	91 33 11.9			
40	SP-32	SP 64	1	26 13 33.6	91 33 10.2			
41	DP-8	SP 64	2	26 13 33.9	91 33 08.4			
42	SP-33	SP 64	1	26 13 34.2	91 33 06.7			
43	SP-34	SP 64	1	26 13 34.6	91 33 04.9			
44	SP-35	SP 64	1	26 13 34.9	91 33 03.2			
45	SP-36	SP 64	1	26 13 35.2	91 33 01.4			
46	DP-9	SP 64	2	26 13 35.6	91 32 59.7			
47	SP-37	SP 64	1	26 13 35.9	91 32 57.9			
48	SP-38	SP 64	1	26 13 36.2	91 32 56.1			
49	SP-39	SP 64	1	26 13 36.6	91 32 54.4			
50	SP-40	SP 64	1	26 13 36.9	91 32 52.7			
51	DP-10	SP 64	2	26 13 37.2	91 32 50.9			
52	SP-41	SP 64	1	26 13 37.5	91 32 49.3			
53	SP-42	SP 64	1	26 13 37.9	91 32 47.6			
54	SP-43	SP 64	1	26 13 38.2	91 32 45.9			
55	SP-44	SP 64	1	26 13 38.5	91 32 44.2			
56	DP-11	SP 64	2	26 13 38.8	91 32 42.5			
57	SP-45	SP 64	1	26 13 39.2	91 32 40.8			
58	SP-46	SP 64	1	26 13 39.5	91 32 39.1			
59	DP-12	SP 64	2	26 13 39.8	91 32 37.4			
60	SP-47	SP 64	1	26 13 40.3	91 32 35.9			
61	SP-48	SP 64	1	26 13 40.9	91 32 34.4			
62	SP-49	SP 64	1	26 13 41.4	91 32 32.9			
63	SP-50	SP 64	1	26 13 41.9	91 32 31.3			
64	DP-13	SP 64	2	26 13 42.4	91 32 29.8			
65	SP-51	SP 64	1	26 13 43.0	91 32 28.3			
66	SP-52	SP 64	1	26 13 43.5	91 32 26.8			



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A. Sanyal Field Engineer

पावरग्रिड, एन.ई.ए.फ़.एल.आइ.फ़ि

POWERGRID, N.E.R.P.S.I.P

अहिमता/Amingaon

**POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV NEW DOMDU,
HAZO S/S**

Sl No	Pole No	Recommended/ Require Pole Type	Req. Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
67	SP-53	SP 64	1	26 13 43.9	91 32 25.3			
68	SP-54	SP 64	1	26 13 44.4	91 32 23.7			
69	SP-55	SP 64	1	26 13 44.9	91 32 22.1			
70	DP-14	SP 76	2	26 13 45.3	91 32 20.6	Existing 33 KV Line Crossing (DEAD LINE)	6.194 Meter extension require on SP 64 Pole to maintain the clearance.	POWERGRID & APDCL suggest to take line as per our suitable by SP 76 Pole extension.
71	DP-15	SP 76	2	26 13 45.7	91 32 19.1		6.074 Meter extension require on SP 64 Pole to maintain the clearance.	POWERGRID & APDCL suggest to take line as per our suitable by SP 76 Pole to avoid extension.
72	SP-56	SP 64	1	26 13 46.2	91 32 17.6			
73	SP-57	SP 64	1	26 13 46.2	91 32 16.4			
74	SP-58	SP 64	1	26 13 46.2	91 32 15.0			
75	DP-16	SP 64	2	26 13 46.3	91 32 13.6			
76	SP-59	SP 64	1	26 13 46.1	91 32 12.3			
77	SP-60	SP 76	1	26 13 45.9	91 32 10.9	Temporary Nala, Existing 11 KV Line and PWD Village Road Crossing	3.2 Meter extension require on SP 64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 1.116 Meter extension.	PGCIL recommended to shift the OPGW cable to top of Pole and decreasing the gap between OPGW and 33 KV Line by 0.550 metre. Finally Extension require (1.116 - 0.550) = 0.564 metre. PGCIL Recommended to shift the pole near road & reducing crossing span to obtain clearance.
78	DP-17	SP 76	2	26 13 45.8	91 32 09.7		1.744 Meter extension require on SP 64 Pole to maintain the clearance. Hence, SP 76 Pole recommended without extension.	
79	SP-61	SP 64	1	26 13 46.0	91 32 08.0			
80	SP-62	SP 64	1	26 13 46.3	91 32 06.3			
81	SP-63	SP 64	1	26 13 46.5	91 32 04.7			
82	SP-64	SP 64	1	26 13 46.8	91 32 03.2			
83	DP-18	SP 64	2	26 13 47.0	91 32 01.4			
84	SP-65	SP 64	1	26 13 47.3	91 31 59.7			



Amit Field Engineer
 पावरग्रिड, एन.ई.आर.पि.एस.आइ.पि
 POWERGRID, N.E.R.P.S.I.P
 अमिनगाँव/Amingaon

**POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV NEW DOMD,
HAZO S/S**

Sl No	Pole No	Recommended/ Require Pole Type	Req. Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
85	DP-19	SP 64	2	26 13 47.5	91 31 58.2			
86	SP-66	SP 76	1	26 13 47.5	91 31 56.5		0.9 Meter extension require on SP 64 Pole to maintain the clearance. Hence, SP 76 Pole recommended without extension.	
87	SP-67	SP 76	1	26 13 47.4	91 31 55.4	11 KV & LT Line, PWD Village Road Crossing	0.53 Meter extension require on SP 64 Pole to maintain the clearance. Hence, SP 76 Pole recommended without extension.	
88	SP-68	SP 64	1	26 13 47.4	91 31 53.6			
89	DP-20	SP 64	2	26 13 47.3	91 31 51.9			
90	SP-69	SP 64	1	26 13 47.6	91 31 50.1			
91	SP-70	SP 64	1	26 13 47.9	91 31 48.3			
92	SP-71	SP 64	1	26 13 48.2	91 31 46.6			
93	SP-72	SP 64	1	26 13 48.5	91 31 44.8			
94	DP-21	SP 64	2	26 13 48.8	91 31 43.0			
95	SP-73	SP 64	1	26 13 49.0	91 31 41.2			
96	SP-74	SP 64	1	26 13 49.3	91 31 39.5			
97	DP-22	SP 64	2	26 13 49.6	91 31 37.7	Village Kachha Road Crossing		
98	SP-75	SP 64	1	26 13 50.1	91 31 36.1			
99	SP-76	SP 64	1	26 13 50.5	91 31 34.4			
100	SP-77	SP 64	1	26 13 51.0	91 31 32.7			
101	SP-78	SP 64	1	26 13 51.5	91 31 31.1			
102	DP-23	SP 64	2	26 13 52.0	91 31 29.4			
103	SP-79	SP 64	1	26 13 52.5	91 31 27.6	Village Kachha Road Crossing		
104	DP-24	SP 64	2	26 13 53.0	91 31 25.9			
105	SP-80	SP 64	1	26 13 53.7	91 31 24.4			
106	SP-81	SP 64	1	26 13 54.5	91 31 22.9			
107	SP-82	SP 64	1	26 13 55.2	91 31 21.4			
108	SP-83	SP 64	1	26 13 56.0	91 31 19.9			
109	DP-25	SP 64	2	26 13 56.7	91 31 18.4			
110	SP-84	SP 64	1	26 13 57.5	91 31 16.9			



Apsara Field Engineer
 पावरग्रिड, एन.ई.आर.फ़.एल.आइ.फ़ि
 POWERGRID, N.E.R.P.S.I.P
 आसिपारा/Amingaon

POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV NEW DOMDU HAZO S/S

Sl No	Pole No	Recommended/ Require Pole Type	Req. Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
111	SP-85	SP 64	1	26 13 58.2	91 31 15.4			
112	SP-86	SP 64	1	26 13 59.0	91 31 13.9			
113	SP-87	SP 64	1	26 13 59.8	91 31 12.4			
114	DP-26	SP 64	2	26 14 00.5	91 31 10.9			
115	SP-88	SP 64	1	26 14 01.4	91 31 09.7			
116	SP-89	SP 64	1	26 14 02.3	91 31 08.4			
117	DP-27	SP 76	2	26 14 03.2	91 31 07.3	Small Nala & 11 KV Existing Line Crossing	2.584 Meter extension require on SP 64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 0.5 Meter extension.	PGCIL recommended to shifting the OPGW cable to top of Pole and decreasing the gap between OPGW and 33 KV Line by 0.5 metre to avoid the extension.
118	SP-90	SP 76	1	26 14 03.6	91 31 06.0		3.12 Meter extension require on SP 64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 0.5 Meter extension.	PGCIL recommended to shifting the OPGW cable to top of Pole and decreasing the gap between OPGW and 33 KV Line by 0.5 metre to avoid the extension.
119	SP-91	SP 64	1	26 14 03.9	91 31 04.6			
120	DP-28	SP 64	2	26 14 04.3	91 31 03.3	Village Kachha Road Crossing		
121	SP-92	SP 64	1	26 14 05.1	91 31 01.8			
122	SP-93	SP 64	1	26 14 05.8	91 31 00.3			
123	SP-94	SP 64	1	26 14 06.6	91 30 58.8			
124	SP-95	SP 64	1	26 14 07.3	91 30 57.3			
125	DP-29	SP 64	2	26 14 08.1	91 30 55.7			
126	SP-96	SP 64	1	26 14 09.3	91 30 54.6			
127	SP-97	SP 64	1	26 14 10.5	91 30 53.5			
128	SP-98	SP 64	1	26 14 11.7	91 30 52.4			
129	SP-99	SP 64	1	26 14 12.8	91 30 51.3			
130	DP-30	SP 64	2	26 14 14.0	91 30 50.2			
131	SP-100	SP 64	1	26 14 15.2	91 30 49.1			
132	SP-101	SP 64	1	26 14 16.4	91 30 48.0			
133	SP-102	SP 64	1	26 14 17.6	91 30 46.9			
134	SP-103	SP 64	1	26 14 18.8	91 30 45.8			
135	DP-31	SP 64	2	26 14 20.0	91 30 44.6	PWD Village Road Crossing (HAZO)	No extension require to achieve the clearance from road	



A. P. Ghosh
Power Engineer
 पॉवर इंजिनियर, एन.ई.आर.पि.एस.आइ.पि
POWERGRID, N.E.R.P.S.I.P
 आसिसराव/Amingaon

**POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV NEW DOMD
HAZO S/S**

Sl No	Pole No	Recommended/ Require Pole Type	Req. Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
136	DP-32	SP 64	2	26 14 21.1	91 30 43.7	Crossing (Hazo Bamundi Path)	No extension require to achieve the clearance from road	
137	SP-104	SP 64	1	26 14 21.8	91 30 42.8			
138	SP-105	SP 64	1	26 14 22.7	91 30 41.5			
139	SP-106	SP 64	1	26 14 23.7	91 30 40.2			
140	SP-107	SP 64	1	26 14 24.7	91 30 38.8			
141	DP-33	SP 64	2	26 14 25.7	91 30 37.5			
142	SP-108	SP 64	1	26 14 26.7	91 30 36.2			
143	SP-109	SP 64	1	26 14 27.7	91 30 34.8			
144	SP-110	SP 64	1	26 14 28.7	91 30 33.5			
145	SP-111	SP 64	1	26 14 29.7	91 30 32.2			
146	DP-34	SP 64	2	26 14 30.7	91 30 30.9			
147	SP-112	SP 64	1	26 14 31.7	91 30 29.5			
148	SP-113	SP 64	1	26 14 32.7	91 30 28.2			
149	SP-114	SP 64	1	26 14 33.7	91 30 26.9			
150	DP-35	SP 64	2	26 14 34.7	91 30 25.5			
151	SP-115	SP 64	1	26 14 35.7	91 30 24.2			
152	SP-116	SP 64	1	26 14 36.7	91 30 22.9			
153	SP-117	SP 64	1	26 14 37.7	91 30 21.6			
154	SP-118	SP 64	1	26 14 38.7	91 30 20.2			
155	DP-36	SP 64	2	26 14 39.7	91 30 18.9			
156	SP-119	SP 64	1	26 14 40.7	91 30 17.6			
157	SP-120	SP 64	1	26 14 41.7	91 30 16.2			
158	SP-121	SP 64	1	26 14 42.7	91 30 14.9			
159	SP-122	SP 64	1	26 14 43.7	91 30 13.6			
160	DP-37	SP 64	2	26 14 44.7	91 30 12.3			
161	DP-38	SP 64	2	26 14 45.7	91 30 10.9			
162	SP-123	SP 64	1	26 14 46.5	91 30 09.8	Village Kachha Road Crossing		
163	SP-124	SP 64	1	26 14 47.3	91 30 08.8			
164	SP-125	SP 64	1	26 14 48.2	91 30 07.5			
165	SP-126	SP 64	1	26 14 49.2	91 30 06.3			
166	DP-39	SP 64	2	26 14 50.1	91 30 05.0			
167	SP-127	SP 64	1	26 14 51.1	91 30 03.8			



A.P. Singh

Field Engineer

पावरग्रिड, एन.ई.आर.पि.एस.आइ.पि
POWERGRID, N.E.R.P.S.I.P
आमिनिगाव/Amingaon

**POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV NEW DOMDUGU.
HAZO S/S**

SI No	Pole No	Recommended/ Require Pole Type	Req. Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
168	DP-40	SP 76	2	26 14 52.0	91 30 02.5	11 KV line & PWD Village Road Crossing	4.584 Meter extension require on SP 64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 2.5 Meter extension.	PGCIL recommended to shift the OPGW cable to top of Pole and decreasing the gap between OPGW and 33 KV Line by 0.550 metre. Finally Extension require (2.5 - 0.550) = 1.95 metre. PGCIL Recommended to shift the pole near road & reducing crossing span to obtain clearance.
169	DP-41	SP 76	2	26 14 53.3	91 30 01.9		3.564 Meter extension require on SP 64 Pole to maintain the clearance. Hence, SP 76 Pole recommended with 1.48 Meter extension.	PGCIL recommended to shift the OPGW cable to top of Pole and decreasing the gap between OPGW and 33 KV Line by 0.550 metre. Finally Extension require (1.48 - 0.550) = 0.93 metre. PGCIL Recommended to shift the pole near road & reducing crossing span to obtain clearance.
170	SP-128	SP 64	1	26 14 54.7	91 30 02.2			
171	SP-129	SP 64	1	26 14 56.1	91 30 02.4			
172	SP-130	SP 64	1	26 14 57.4	91 30 02.7			
173	DP-42	SP 64	2	26 14 58.8	91 30 02.9			
174	SP-131	SP 64	1	26 15 00.1	91 30 03.8			
175	SP-132	SP 64	1	26 15 01.4	91 30 04.6			
176	SP-133	SP 64	1	26 15 02.8	91 30 05.5			
177	SP-134	SP 64	1	26 15 04.1	91 30 06.4			
178	DP-43	SP 64	2	26 15 05.4	91 30 07.3			
179	SP-135	SP 64	1	26 15 06.8	91 30 08.2			
180	SP-136	SP 64	1	26 15 08.1	91 30 09.1			
181	SP-137	SP 64	1	26 15 09.4	91 30 10.0			
182	SP-138	SP 64	1	26 15 10.8	91 30 10.9			
183	DP-44	SP 64	2	26 15 12.1	91 30 11.8			
184	SP-139	SP 64	1	26 15 13.4	91 30 12.7			
185	SP-140	SP 64	1	26 15 14.8	91 30 13.6			



A.P.P.
Field Engineer

पावरग्रिड, एन.ई.आर.पि.एस.आइ.पि
POWERGRID, N.E.R.P.S.I.P
आमिनतांव/Amritnagar110

**POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV NEW DOMDO,
HAZO S/S**

Sl No	Pole No	Recommended/ Require Pole Type	Req. Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
186	SP-141	SP 64	1	26 15 16.1	91 30 14.5			
187	SP-142	SP 64	1	26 15 17.4	91 30 15.4			
188	DP-45	SP 64	2	26 15 18.7	91 30 16.3			
189	DP-46	SP 64	2	26 15 20.0	91 30 17.2			
190	SP-143	SP 64	1	26 15 21.5	91 30 17.5			
191	SP-144	SP 64	1	26 15 22.9	91 30 17.9			
192	SP-145	SP 64	1	26 15 24.3	91 30 18.2			
193	SP-146	SP 64	1	26 15 25.7	91 30 18.6			
194	DP-47	SP 64	2	26 15 27.2	91 30 18.9			
195	SP-147	SP 64	1	26 15 28.6	91 30 19.3			
196	SP-148	SP 64	1	26 15 30.0	91 30 19.6			
197	SP-149	SP 64	1	26 15 31.5	91 30 20.0			
198	SP-150	SP 64	1	26 15 32.9	91 30 20.3			
199	DP-48	SP 64	2	26 15 34.3	91 30 20.7			
200	SP-151	SP 64	1	26 15 35.7	91 30 21.0			
201	SP-152	SP 64	1	26 15 37.1	91 30 21.3			
202	SP-153	SP 64	1	26 15 38.5	91 30 21.7			
203	SP-154	SP 64	1	26 15 40.0	91 30 22.0			
204	FP-1	SP 76	4	26 15 41.5	91 30 22.4	Puthimari River Barrage	Due to river barrage crossing, SP 76	Recommended by PGCIL
205	SP-155	SP 76	1	26 15 42.7	91 30 21.5	Crossing	Pole recommended.	Recommended by PGCIL
206	SP-156	SP 64	1	26 15 43.9	91 30 20.2			
207	SP-157	SP 64	1	26 15 45.1	91 30 19.1			
208	SP-158	SP 64	1	26 15 46.2	91 30 17.8			
209	DP-49	SP 64	2	26 15 47.4	91 30 16.7			
210	FP-2	SP 76	4	26 15 48.6	91 30 15.5			
211	FP-3	SP 76	4	26 15 50.8	91 30 12.6	Puthimari River & River Barrage Road Crossing	1.76 Meter extension require on SP 64 Pole to maintain the clearance. Hence, SP 76 Pole recommended without extension.	
212	SP-159	SP 64	1	26 15 52.3	91 30 12.3			
213	SP-160	SP 64	1	26 15 53.9	91 30 12.0			
214	SP-161	SP 64	1	26 15 55.4	91 30 11.8			
215	SP-162	SP 64	1	26 15 56.9	91 30 11.5			



A.P. Singh

Field Engineer

पावरग्रिड, एन.ई.आर.पि.एस.आइ.पि
POWERGRID, N.E.R.P.S.I.P
आसिमाना/हाजो/गडो

**POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV NEW DOMA
HAZO S/S**

Sl No	Pole No	Recommended/ Require Pole Type	Req. Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
216	DP-50	SP 76	2	26 15 58.5	91 30 11.2	PWD Village Road and LT Line crossing	1.84 Meter extension require on SP 64 Pole to maintain the clearance. Hence, SP 76 Pole recommended without extension.	
217	SP-163	SP 76	1	26 16 00.0	91 30 10.9			
218	SP-164	SP 64	1	26 16 01.6	91 30 10.6	PWD Village Road and LT Line crossing		
219	SP-165	SP 76	1	26 16 03.1	91 30 10.4			
220	FP-4	SP 76	4	26 16 04.3	91 30 10.1			
221	SP-166	SP 64	1	26 16 04.4	91 30 11.7			
222	SP-167	SP 64	1	26 16 04.6	91 30 13.2			
223	SP-168	SP 64	1	26 16 04.7	91 30 14.6			
224	SP-169	SP 64	1	26 16 04.9	91 30 16.1			
225	FP-5	SP 76	4	26 16 05.1	91 30 17.6			
226	FP-6	SP 76	4	26 16 06.4	91 30 17.2			
227	SP-170	SP 64	1	26 16 07.1	91 30 18.6	PWD Village Road and LT Line crossing	1.79 Meter extension require on SP 64 Pole to maintain the clearance. Hence, SP 76 Pole recommended without extension.	
228	SP-171	SP 64	1	26 16 07.8	91 30 20.1			
229	FP-7	SP 64	4	26 16 08.4	91 30 21.5			
230	SP-172	SP 64	1	26 16 10.0	91 30 21.2			
231	SP-173	SP 64	1	26 16 11.5	91 30 20.9			
232	SP-174	SP 64	1	26 16 13.1	91 30 20.6			
233	SP-175	SP 64	1	26 16 14.6	91 30 20.3			



A.P.S. Field Engineer

পার্বতী, এ.ই.আর.বি.এস.আই.বি

POWERGRID, N.E.R.P.S.I.P

আমিনগাঁও/Amingaon
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**POLE EXTENSION DETAILS FOR 33 KV TL FROM PROPOSED 132/33KV HAJO(KULHATI) S/S TO 33/11KV NEW DOMB
HAZO S/S**

Sl No	Pole No	Recommended/ Require Pole Type	Req. Qty	Latitude	Longitude	Crossing Details	Require Extension	Remarks
234	DP-51	SP 64	2	26 16 16.1	91 30 20.0			
235	DP-52	SP 64	2	26 16 17.5	91 30 19.7			
236	SP-176	SP 64	1	26 16 18.3	91 30 18.5			
237	SP-177	SP 64	1	26 16 19.1	91 30 17.3			
238	SP-178	SP 64	1	26 16 19.9	91 30 16.2			
239	GANTRY- DOMDOMA			26 16 20.6	91 30 15.2			



A. Singh

Field Engineer

पावरग्रिड, एन.ई.आर.पि.एस.आइ.पि
POWERGRID, N.E.R.P.S.I.P
आमिनाबाव/Amingaon

POLE SCHEDULE														
33kV S/C DEPOTA TO LGM HOSPITAL LINE														
CLIENT: POWER GRID CORPORATION OF INDIA LIMITED														
LOA Ref.No: LCC-CS/94-NER/REV-30791/G10/CA-I/7026 - Supply														
2.CC-CS/94-NER/REV-30791/G10/CA-II/7027-Services														
CONTRACTOR: NECCON POWER & INFRA LIMITED														
PACKAGE: ASM-DMS-01														
Sl. No.	Angle Point	Loc. No	Pole Type	Angle of Deviation	Span Length (m)	Cum. Span (m)	Stay (Nos.)	Earthing (Nos.)	Co-Ordinates Latitude	Longitude	Description of Land	Crossing Details	Village Name	Remarks
1		Gantry	Gantry		19	19	0	0	26.669844	92.750236	Sub-station		Depota	
2		Loc-0/1	Exist. Three Pole		8	27	0	0	26.670009	92.750289	Sub-station		Depota	
3	AP-1		Double Pole		18	45	0	1	26.66995	92.75037	Along the Road - Govt.		Depota	
4		Loc-1/1	Single Pole	29°60'86"	30	75	0	0	26.66983	92.75049	Along the Road - Govt.		Depota	
5		Loc-1/2	Double Pole	67°73'30"	34	109	0	1	26.66958	92.75059	Along the Road - Govt.	Over 132kV Line	Depota	
6	AP-2		Double Pole	34°3'697"	30	139	0	1	26.66931	92.75074	Along the Road - Govt.	Road	Depota	
7	AP-3		Double Pole	32°5'731"	44	183	0	1	26.66918	92.751	Along the Road - Govt.		Depota	
8		Loc-3/1	Single Pole	0°77'52"	39	222	0	0	26.66883	92.75121	Along the Road - Govt.	Under LT Line	Depota	
9		Loc-3/2	Single Pole	8°26'04"	42	264	0	0	26.66852	92.75139	Along the Road - Govt.		Depota	
10		Loc-3/3	Single Pole	5°48'64"	45	309	0	0	26.66816	92.75153	Along the Road - Govt.	Road	Depota	
11		Loc-3/4	Single Pole	1°77'06"	43	352	0	0	26.66779	92.75172	Along the Road - Govt.		Depota	
12		Loc-3/5	Single Pole	2°99'93"	43	395	0	0	26.66743	92.75189	Along the Road - Govt.		Depota	
13		Loc-3/6	Single Pole	2°86'01"	56	451	0	0	26.66708	92.75208	Along the Road - Govt.		Depota	
14		Loc-3/7	Double Pole	5°68'72"	51	502	0	0	26.66664	92.75235	Along the Road - Govt.		Depota	
15		Loc-3/8	Single Pole	1°88'32"	36	538	0	0	26.66622	92.75255	Along the Road - Govt.		Depota	
16		Loc-3/9	Single Pole	0°83'72"	49	587	0	0	26.66592	92.75268	Along the Road - Govt.		Depota	
17		Loc-3/10	Single Pole	8°21'28"	58	645	0	0	26.66551	92.75285	Along the Road - Govt.		Depota	
18		Loc-3/11	Single Pole	7°78'15"	39	684	0	0	26.66505	92.75313	Along the Road - Govt.		Depota	
19		Loc-3/12	Single Pole (SP-76 Pole)	4°19'63"	59	743	0	1	26.66472	92.75327	Along the Road - Govt.	Road	Depota	
20		Loc-3/13	Single Pole (SP-76 Pole)	1°46'24"	45	788	0	1	26.66424	92.75352	Along the Road - Govt.		Depota	
21		Loc-3/14	Exist. Three Pole (SP-76 Pole)	4°33'30"	21	809	0	0	26.66387	92.7537	Along the Road - Govt.		Depota	Composite with 11kV Feeder
22		Loc-3/15	Exist. Single Pole (SP-76 Pole)	1°79'26"	42	851	0	0	26.66369	92.75377	Along the Road - Govt.		Depota	Composite with 11kV Feeder
23		Loc-3/16	Exist. Single Pole (SP-76 Pole)	3°66'47"	48	899	0	0	26.66334	92.75392	Along the Road - Govt.		Depota	Composite with 11kV Feeder
24		Loc-3/17	Exist. Single Pole (SP-76 Pole)	1°7'641"	64	963	0	0	26.66295	92.75412	Along the Road - Govt.		Depota	Composite with 11kV Feeder
25		Loc-3/18	Exist. Double Pole (SP-76 Pole)	0°42'40"			0	0	26.66242	92.75437	Along the Road - Govt.		Depota	Composite with 11kV Feeder

POLE SCHEDULE														
33KV S/C DEPOTA TO LGM HOSPITAL LINE														
CLIENT: POWER GRID CORPORATION OF INDIA LIMITED														
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2.CC-CS/94-NER/REV-30791/G10/CA-II/7027-Services														
CONTRACTOR: NECCON POWER & INFRA LIMITED														
PACKAGE: ASM-DMS-01														
Sl. No.	Angle Point	Loc. No	Pole Type	Angle of Deviation (°)	Span Length (m)	Cum. Span (m)	Stay (Nos.)	Earthing (Nos.)	Co-Ordinates Latitude	Longitude	Description of Land	Crossing Details	Village Name	Remarks
26		Loc-3/19	Single Pole (SP-76 Pole)	14°53'96"	65	1028	0	1	26.66188	92.75463	Along the Road - Govt.	Road	Depota	Composite with 11KV Feeder
27		Loc-3/20	Double Pole (SP-76 Pole)	5°67'92"	50	1078	0	1	26.661439	92.754705	Along the Road - Govt.	NH & Under 11KV Line	Depota	
28	AP-4	AP-4	Single Pole (SP-76 Pole)	70°06'63"	29	1107	0	1	26.66118	92.75472	Along the NH - Govt.		Tarajan Kumargaon	
29		Loc-4/1	Single Pole	14°56'37"	23	1130	0	0	26.66112	92.75494	Along the NH - Govt.		Tarajan Kumargaon	
30		Loc-4/2	Single Pole	1°21'04"	36	1166	0	0	26.66095	92.75525	Along the NH - Govt.		Tarajan Kumargaon	
31		Loc-4/3	Double Pole	2°27'35"	51	1217	0	1	26.66072	92.75569	Along the NH - Govt.		Tarajan Kumargaon	
32		Loc-4/4	Single Pole (SP-76 Pole)	0°05'40"	47	1264	0	0	26.66052	92.75611	Along the NH - Govt.		Tarajan Kumargaon	
33		Loc-4/5	Single Pole (SP-76 Pole)	4°01'25"	50	1314	0	0	26.66031	92.75655	Along the NH - Govt.		Tarajan Kumargaon	
34		Loc-4/6	Single Pole (SP-76 Pole)	2°35'11"	48	1362	0	0	26.66008	92.75696	Along the NH - Govt.		Tarajan Kumargaon	
35		Loc-4/7	Single Pole (SP-76 Pole)	1°16'95"	52	1414	0	1	26.65985	92.75741	Along the NH - Govt.		Tarajan Kumargaon	
36		Loc-4/8	Single Pole (SP-76 Pole)	2°47'34"	44	1458	0	0	26.65966	92.7578	Along the NH - Govt.		Tarajan Kumargaon	
37		Loc-4/9	Single Pole (SP-76 Pole)	0°74'58"	45	1503	0	0	26.65945	92.75819	Along the NH - Govt.		Tarajan Kumargaon	
38		Loc-4/10	Double Pole (SP-76 Pole)	0°61'64"	51	1554	2	1	26.65922	92.75863	Along the NH - Govt.		Tarajan Kumargaon	
39	AP-5	AP-5	Single Pole	103°85'84"	32	1586	0	0	26.65907	92.75891	Along the NH - Govt.		Tarajan Kumargaon	
40		Loc-5/1	Single Pole	18°39'43"	42	1628	0	0	26.65888	92.75861	Along the road - Pvt.		Tarajan Kumargaon	
41		Loc-5/2	Single Pole	1°12'98"	45	1673	0	0	26.65844	92.75841	Along the road - Pvt.		Tarajan Kumargaon	
42		Loc-5/3	Single Pole	0°00'00"	45	1718	0	1	26.65808	92.7582	Along the road - Pvt.		Tarajan Kumargaon	
43		Loc-5/4	Single Pole	9°31'94"	45	1763	0	0	26.65772	92.75799	Along the road - Pvt.		Tarajan Kumargaon	
44		Loc-5/5	Single Pole	7°66'75"	43	1806	0	0	26.65741	92.75773	Along the road - Pvt.		Tarajan Kumargaon	
45	AP-6	AP-6	Single Pole	89°06'45"	31	1837	1	1	26.65717	92.75758	Paddy Field - Pvt.		Tarajan Kumargaon	
46		Loc-6/1	Single Pole	3°47'70"	31	1868	0	0	26.65703	92.75785	Paddy Field - Pvt.		Tarajan Kumargaon	
47		Loc-6/2	Single Pole	0°33'68"	38	1906	0	0	26.65684	92.75817	Paddy Field - Pvt.		Tarajan Kumargaon	
48	AP-7	AP-7	Single Pole	58°38'95"	34	1940	0	0	26.65667	92.75846	Paddy Field - Pvt.		Tarajan Kumargaon	

POLE SCHEDULE														
33kV S/C DEPOTA TO LGM HOSPITAL LINE														
CLIENT: POWER GRID CORPORATION OF INDIA LIMITED														
LOA Ref.No: LCC-CS/94-NER/REV-30791/G10/CA-I/7026 - Supply														
2.CC-CS/94-NER/REV-30791/G10/CA-II/7027-Services														
CONTRACTOR: NECCON POWER & INFRA LIMITED														
PACKAGE: ASM-DMS-01														
Sl. No.	Angle Point	Loc. No	Pole Type	Angle of Deviation (°)	Span Length (m)	Cumm. Span (m)	Stay (Nos.)	Earthing (Nos.)	Latitude	Longitude	Description of Land	Crossing Details	Village Name	Remarks
49		Loc-7/1	Single Pole	45°35'10"	34	1974	0	0	26.65636	92.75845	Paddy Field - Pvt.		Tarajan Kumargaon	
			Single Pole (SP-76 Pole)	38°53'03"		2007	0	0	26.65616	92.75821	Paddy Field - Pvt.		Tarajan Kumargaon	
50	AP-8				34	0	0	0						
51		Loc-8/1	Single Pole (SP-76 Pole)	1°66'21"		2041	0	1	26.65586	92.75816	Paddy Field - Pvt.		Tarajan Kumargaon	
52	AP-9		Double Pole	17°8'90"	51	2092	0	0	26.65541	92.75807	Paddy Field - Pvt.		Tarajan Kumargaon	
			Single Pole	0°28'74"	52	2144	0	0	26.65495	92.75814	Paddy Field - Pvt.		Tarajan Kumargaon	
53		Loc-9/1	Single Pole	66°9'3'63"	21	2165	1	0	26.65476	92.75817	Paddy Field - Pvt.		Tarajan Kumargaon	
54		Loc-9/2	Single Pole	90°9'2'86"	26	2191	1	0	26.6547	92.75842	Paddy Field - Pvt.		Tarajan Kumargaon	
55		Loc-9/3	Single Pole	22°49'67"	58	2249	0	0	26.6542	92.75826	Paddy Field - Pvt.		Tarajan Kumargaon	
56		Loc-9/4	Single Pole	2°69'32"	44	2293	0	0	26.65381	92.75831	Paddy Field - Pvt.		Tarajan Kumargaon	
57		Loc-9/5	Single Pole	2°98'43"	37	2330	0	0	26.65348	92.75837	Paddy Field - Pvt.		Tarajan Kumargaon	
58	AP-10		Double Pole	0°55'02"	55	2385	0	0	26.65299	92.75843	Paddy Field - Pvt.		Tarajan Kumargaon	
59		Loc-10/1	Single Pole	1°32'58"	34	2419	0	0	26.65269	92.75847	Paddy Field - Pvt.		Tarajan Kumargaon	
60		Loc-10/2	Single Pole	0°95'40"	31	2450	0	0	26.65241	92.75855	Paddy Field - Pvt.		Tarajan Kumargaon	
61		Loc-10/3	Single Pole	0°80'84"	42	2492	0	0	26.65203	92.75854	Paddy Field - Pvt.		Tarajan Kumargaon	
62		Loc-10/4	Single Pole	16°5'48'1"	37	2529	0	1	26.6517	92.75858	Paddy Field - Pvt.		Tarajan Kumargaon	
63		Loc-10/5	Double Pole	25°0'58"	39	2568	0	0	26.65138	92.75873	Paddy Field - Pvt.		Tarajan Kumargaon	
64		Loc-10/6	Double Pole	0°14'20"	50	2618	0	0	26.65093	92.75871	Paddy Field - Pvt.		Tarajan Kumargaon	
65		Loc-10/7	Single Pole	0°16'39"	27	2645	0	0	26.65069	92.7587	Paddy Field - Pvt.		Tarajan Kumargaon	
66		Loc-10/8	Single Pole	0°52'76"	29	2674	0	0	26.65043	92.75869	Paddy Field - Pvt.		Tarajan Kumargaon	
67		Loc-10/9	Single Pole	10°3'9'22"	46	2720	0	0	26.65002	92.75867	Paddy Field - Pvt.		Tarajan Kumargaon	
68		Loc-10/10	Double Pole	3°80'61"	65	2785	0	1	26.64944	92.75876	Paddy Field - Pvt.		Tarajan Kumargaon	
69		Loc-10/11	Double Pole	2°04'23"	56	2841	0	0	26.64894	92.7588	Paddy Field - Pvt.		Tarajan Kumargaon	
70		Loc-10/12	Single Pole	2°04'75"	28	2869	1	0	26.64869	92.75881	Paddy Field - Pvt.		Tarajan Kumargaon	
71		Loc-10/13	Single Pole	6°07'35"	27	2896	1	0	26.64845	92.75881	Paddy Field - Pvt.		Tarajan Kumargaon	
72		Loc-10/14	Single Pole	23°6'9'86"	47	2943	1	0	26.64803	92.75876	Paddy Field - Pvt.		Tarajan Kumargaon	
73	AP-11		Double Pole	29°25'09"	64	3007	1	0	26.64753	92.75844	Paddy Field - Pvt.		Tarajan Kumargaon	
74		Loc-11/1	Single Pole	0°18'60"	48	3055	1	1	26.64731	92.75803	Paddy Field - Pvt.		Tarajan Kumargaon	
75		Loc-11/2	Double Pole											

33kV S/C DEPOTA TO LGM HOSPITAL LINE														
POLE SCHEDULE														
CLIENT: POWER GRID CORPORATION OF INDIA LIMITED														
CONTRACTOR: NECCON POWER & INFRA LIMITED														
PACKAGE: ASM-DMS-01														
LOA Ref.No: LCC-CS/94-NER/REV-30791/G10/CA-I/7026 - Supply														
2.CC-CS/94-NER/REV-30791/G10/CA-II/7027-Services														
Sl. No.	Angle Point	Loc. No	Pole Type	Angle of Deviation (°)	Span Length (m)	Cum. Span (m)	Stay (Nos.)	Earthing (Nos.)	Latitude	Longitude	Description of Land	Crossing Details	Village Name	Remarks
76		Loc-11/3	Single Pole	28°11'48"	43	3098	0	0	26.64711	92.75766	Paddy Field - Pvt.		Tarajan Kumargaon	
77		Loc-11/4	Single Pole	10°91'26"	42	3140	0	0	26.64709	92.75724	Paddy Field - Pvt.		Tarajan Kumargaon	
78		Loc-11/5	Single Pole	38°01'00"	37	3177	0	0	26.64701	92.75688	Paddy Field - Pvt.		Tarajan Kumargaon	
79	AP-12	AP-12	Single Pole	39°53'35"	23	3200	1	0	26.64685	92.75674	Along the Road - Govt.		Tarajan Kumargaon	
80		Loc-12/1	Single Pole	6°96'69"	38	3238	0	0	26.64651	92.75675	Along the Road - Govt.		Tarajan Kumargaon	
81		Loc-12/2	Single Pole	2°76'11"	40	3278	0	0	26.64615	92.75681	Along the Road - Govt.		Tarajan Kumargaon	
82	AP-13	AP-13	Single Pole	75°00'07"	20	3298	1	0	26.64597	92.75685	Along the Road - Govt.	Road	Tarajan Kumargaon	
83		Loc-13/1	Double Pole	3°76'54"	17	3315	0	0	26.64596	92.75702	Along the Road - Govt.		Tarajan Kumargaon	
84		Loc-13/2	Single Pole	7°49'85"	37	3352	0	0	26.64596	92.75739	Along the Road - Govt.		Tarajan Kumargaon	
85		Loc-13/3	Single Pole	3°49'85"	34	3386	0	0	26.64592	92.75773	Along the Road - Govt.		Tarajan Kumargaon	
86		Loc-13/4	Single Pole	1°67'95"	32	3418	0	0	26.6459	92.75805	Along the Road - Govt.		Tarajan Kumargaon	
87		Loc-13/5	Single Pole	0°12'82"	45	3463	0	0	26.64586	92.75855	Along the Road - Govt.		Tarajan Kumargaon	
88		Loc-13/6	Single Pole	0°57'62"	44	3507	0	0	26.64582	92.75894	Along the Road - Govt.		Tarajan Kumargaon	
89	AP-14	AP-14	Double Pole (SP-76 Pole)	32°59'40"	30	3537	0	0	26.64579	92.75924	Along the Road - Govt.	Road & Under 11KV Line	Tarajan Kumargaon	
90	AP-15	AP-15	Double Pole (SP-76 Pole)	29°97'56"	28	3565	0	1	26.6459	92.75949	Paddy Field - Pvt.		Tarajan Kumargaon	
91		Loc-15/1	Single Pole	38°06'50"	35	3600	0	0	26.64588	92.75983	Sub-station		Tarajan Kumargaon	
92		Loc-15/2	Single Pole	37°56'47"	14	3614	0	0	26.6458	92.75993	Paddy Field - Pvt.		Tarajan Kumargaon	
93	AP-16	AP-16	Single Pole	66°06'14"	15	3629	0	1	26.64579	92.76008	Paddy Field - Pvt.		Tarajan Kumargaon	
94		Gantry	Gantry		4	3633	0	0	26.64574	92.7601	Sub-station		Tarajan Kumargaon	

POLE SCHEDULE												
33kV D/C Line From Tezpur GSS To Tezpur University Line												
CLIENT: POWR GRID CORPORATION OF INDIA LIMITED												
CONTRACTOR: NECCON POWER & INFRA LIMITED												
LOA Ref.No: 1.CC-CS/94-NER/REW-3079/1/G10/CA-I/7026 -Supply												
2.CC-CS/94-NER/REW-3079/1/G10/CA-II/7027-Services												
SL. No.	Angle Point	Loc. No	Pole Type	Angle of Deviation	Span Length (m)	Span (m)	Co-Ordinates		Description of Land	Crossing Details	Village Name	Remarks
							Latitude	Longitude				
1	0	0	Gantry		34		26.67398	92.83632	Sub-station boundary			
2	AP-0	AP-0	Four Pole	85°30'30"	61	34	26.67367	92.83632	Sub-station boundary			
3	AP-1	AP-1	Four Pole	68°65'11"	53	95	26.67363	92.83571	Sub-station boundary			
4		Loc-1/1	Single Pole	7°02'04"	47	148	26.67406	92.83548	Sub-station boundary			
5		Loc-1/2	Single Pole	1°33'79"	30	195	26.67446	92.83533	Sub-station boundary			
6	AP-2	AP-2	Double Pole	33°53'59"	33	225	26.67472	92.83524	Sub-station boundary			
7		Loc-2/1	Single Pole	3°38'76"	46	258	26.67491	92.83498	Paddy Field - Pvt.			
8		Loc-2/2	Single Pole	3°21'42"	44	304	26.67519	92.83464	Paddy Field - Pvt.			
9		Loc-2/3	Single Pole	2°01'07"	50	348	26.67544	92.8343	Paddy Field - Pvt.			
10		Loc-2/4	Single Pole	0°55'49"	41	398	26.67574	92.83392	Paddy Field - Pvt.			
11		Loc-2/5	Single Pole	0°10'14"	46	439	26.67598	92.83361	Paddy Field - Pvt.			
12		Loc-2/6	Single Pole	1°67'38"	44	485	26.67625	92.83326	Paddy Field - Pvt.			
13	AP-3	AP-3	Four Pole	82°97'83"	50	529	26.67652	92.83293	Paddy Field - Pvt.	Under LT Line		
14		Loc-3/1	Double Pole	3°56'56"	51	579	26.67623	92.83255	Paddy Field - Pvt.			
15		Loc-3/2	Single Pole	24°68'71"	37	630	26.67591	92.83218	Paddy Field - Pvt.			
16	AP-4	AP-4	Double Pole	31°22'86"	49	667	26.6758	92.83183	Paddy Field - Pvt.			
17		Loc-4/1	Single Pole	3°77'98"	33	716	26.67589	92.83135	Paddy Field - Pvt.			
18		Loc-4/1_1	Single Pole	12°42'78"	40	749	26.67597	92.83103	Paddy Field - Pvt.			
19		Loc-4/2	Single Pole	2°60'65"	44	789	26.67599	92.83063	Paddy Field - Pvt.			
20		Loc-4/3	Single Pole	8°53'57"	47	833	26.67603	92.83019	Paddy Field - Pvt.			
21		Loc-4/4	Double Pole	26°99'90"	56	880	26.67601	92.82972	Paddy Field - Pvt.			
22	AP-5	AP-5	Double Pole	30°68'24"	67	936	26.67576	92.82923	Paddy Field - Pvt.			
23		Loc-5/1	Double Pole	30°70'34"	54	1003	26.67577	92.82856	Paddy Field - Pvt.			
24		Loc-5/2	Double Pole	34°01'32"	45	1057	26.67553	92.82809	Paddy Field - Pvt.			
25	AP-6	AP-6	Double Pole	12°50'44"	49	1102	26.67556	92.82764	Paddy Field - Pvt.			

POLE SCHEDULE												
33kV D/C Line From Tezpur GSS To Tezpur University Line												
CLIENT: POWR GRID CORPORATION OF INDIA LIMITED												
CONTRACTOR: NECCON POWER & INFRA LIMITED												
LOA Ref.No: I.CC-CS/94-NER/REW-3079/1/G10/CA-I/7026-Supply												
2.CC-CS/94-NER/REW-3079/1/G10/CA-II/7027-Services												
SL. No.	Angle Point	Loc. No	Pole Type	Angle of Deviation	Span Length (m)	Span (m)	Co-Ordinates		Description of Land	Crossing Details	Village Name	Remarks
							Latitude	Longitude				
26		Loc-61	Single Pole	20°41'49"	43	1151	26.675497	92.827153	Paddy Field - Pvt.			
27		Loc-62	Double Pole	2°70'63"	51	0	26.67531	92.82677	Paddy Field - Pvt.			
28		Loc-63	Double Pole	115°94'62"	22	0	26.67511	92.82631	Paddy Field - Pvt.			
29		Loc-64	Single Pole	22°80'68"	21	0	26.67531	92.82631	Paddy Field - Pvt.			
30		Loc-65	Single Pole	71°60'66"	58	0	26.67548	92.82623	Paddy Field - Pvt.			
31		Loc-66	Single Pole	9°26'02"	47	0	26.67544	92.82565	Paddy Field - Pvt.			
32		Loc-67	Single Pole	6°9'50"	38	0	26.67534	92.82519	Paddy Field - Pvt.			
33	AP-7	AP-7	Double Pole	26°63'84"	40	0	26.6753	92.82481	Paddy Field - Pvt.			
34	AP-8	AP-8	Double Pole	15°73'78"	54	0	26.6751	92.82447	Paddy Field - Pvt.			
35		Loc-81	Double Pole	77°94'41"	27	0	26.6751	92.82447	Paddy Field - Pvt.			
36		Loc-82	Single Pole	6°86'81"	41	0	26.67534	92.82519	Paddy Field - Pvt.			
37	AP-9	AP-9	Double Pole	85°19'24"	32	0	26.6751	92.82447	Paddy Field - Pvt.			
38		Loc-91	Single Pole	5°42'33"	34	0	26.67534	92.82519	Paddy Field - Pvt.			
39		Loc-92	Single Pole	2°66'44"	35	0	26.67534	92.82519	Paddy Field - Pvt.			
40		Loc-93	Single Pole	2°44'02"	40	0	26.67534	92.82519	Paddy Field - Pvt.			
41	AP-10	AP-10	Double Pole	91°84'15"	20	0	26.6751	92.82447	Along the road Pvt.			
42		Loc-10/1	Single Pole	3°35'13"	35	0	26.67534	92.82519	Along the road Pvt.			
43		Loc-10/2	Single Pole	1°35'79"	37	0	26.67534	92.82519	Along the road Pvt.			
44		Loc-10/3	Single Pole	5°9'513"	32	0	26.67534	92.82519	Along the road Pvt.			
45		Loc-10/4	Single Pole	0°30'73"	29	0	26.67534	92.82519	Along the road Pvt.			
46	AP-11	AP-11	Double Pole	85°13'17"	15	0	26.6751	92.82447	Along the road Pvt.			
47		Loc-11/1	Single Pole	0°56'96"	43	0	26.67534	92.82519	Paddy Field - Pvt.			
48	AP-12	AP-12	Double Pole	96°36'34"	18	0	26.6751	92.82447	Paddy Field - Pvt.			
49		Loc-12/1	Single Pole	9°9'317"	30	0	26.67534	92.82519	Paddy Field - Pvt.			
50		Loc-12/2	Single Pole	4°80'42"	1993	0	26.67534	92.82519	Paddy Field - Pvt.			

POLE SCHEDULE												
33kV D/C Line From Tezpur GSS To Tezpur University Line												
CLIENT: POWER GRID CORPORATION OF INDIA LIMITED												
CONTRACTOR: NECCON POWER & INFRA LIMITED												
LOA Ref.No: 1.CC-CS/94-NER/REW-3079/1/G/10/CA-I/7026-Supply												
2.CC-CS/94-NER/REW-3079/1/G/10/CA-II/7027-Services												
SL. No.	Angle Point	Loc. No	Pole Type	Angle of Deviation	Span Length (m)	Span (m)	Co-Ordinates		Description of Land	Crossing Details	Village Name	Remarks
							Latitude	Longitude				
					33	0						
51		Loc-12/3	Single Pole	14°40'62"		2026	26.67534	92.82519	Paddy Field - Pvt.			
					43	0						
52		Loc-12/4	Single Pole	2°60'32"		2069	26.67534	92.82519	Paddy Field - Pvt.			
					44	0						
53		Loc-12/5	Single Pole	4°01'01"		2113	26.67534	92.82519	Paddy Field - Pvt.			
					27	0						
54		Loc-12/6	Double Pole	0°9'34.2"		2140	26.6751	92.82447	Along the road - Pvt.			
					25	0						
55		Loc-12/7	Single Pole	2°59'20"		2165	26.67534	92.82519	Along the road - Pvt.			
					45	0						
56		Loc-12/8	Single Pole	12°29'64"		2210	26.67534	92.82519	Along the road - Pvt.			
					33	0						
57		Loc-12/9	Single Pole	6°10'16"		2243	26.67534	92.82519	Along the road - Pvt.			
					21	0						
58	AP-13	AP-13	Double Pole	85°19'19"		2264	26.6751	92.82447	Along the road - Pvt.			
					34	0						
59		Loc-13/1	Single Pole	2°7'8'56"		2298	26.67534	92.82519	Paddy Field - Pvt.			
					37	0						Under 11kV Line

POLE SCHEDULE

33kV S/C Line Tezpur New 132/33 kv S/S To Paruwa 33/11kv S/S(Ex.)

CONTRACTOR: NECCON POWER & INFRA LIMITED

CLIENT: POWER GRID CORPORATION OF INDIA LIMITED

PACKAGE:ASM- ASM-DMS-01

**LOA Ref.No: 1.CC-CS/94-NER/REW-3079/I/G10/CA-I/7026 -Supply
2.CC-CS/94-NER/REW-3079/I/G10/CA-II/7027-Services**

Sl. No.	Angle Point	Loc. No	Pole Type	Angle of Deviation	Span Length (m)	Cumm. Span (m)	Stay (Nos)	Earthing (Nos)	Co-Ordinates Latitude Longitude	Description of Land	Crossing Details	Village Name	Remarks
1			Gantry		40		0	0	26.67393 92.83659	S/S Boundary		Purai Alimur	
2	0	0	Four Pole	94°84'49"	64	40	2	2	26.67357 92.83641	S/S Boundary		Purai Alimur	
3	AP-1	AP-1	Double Pole	34°12'29"	48	104	1	1	26.67359 92.83577	S/S Boundary		Purai Alimur	
4	AP-2	AP-2	Double Pole	3°67'90"	55	152	2	1	26.67336 92.83536	Paddy Field-Pvt.	Nala -10m	Jahazduba	
5		Loc-2/1	Single Pole	3°70'99"	49	207	0	0	26.67307 92.83491	Paddy Field-Pvt.		Jahazduba	
6		Loc-2/2	Single Pole	4°95'47"	47	256	0	0	26.67279 92.83453	Paddy Field-Pvt.		Jahazduba	
7		Loc-2/3	Double Pole	1°27'50"	38	303	0	1	26.67255 92.83414	Paddy Field-Pvt.		Jahazduba	
8	AP-3	AP-3	Four Pole (SP-76 Pole)	81°55'93"	34	341	2	2	26.67235 92.83383	Along the Road-Pvt.	Over-11kv & Kaachha Road-4m	Jahazduba	
9	AP-4	AP-4	Single Pole	7°96'37"	33	375	0	0	26.67257 92.83359	Along the Road-Pvt.		Jahazduba	
10		Loc-4/1	Single Pole	5°64'70"	48	408	0	0	26.67275 92.83333	Along the Road-Pvt.		Jahazduba	
11		Loc-4/2	Single Pole	0°09'91"	40	456	0	0	26.67298 92.83292	Along the Road-Pvt.		Jahazduba	
12		Loc-4/3	Single Pole	4°30'84"	55	496	0	0	26.67317 92.83258	Along the Road-Pvt.		Jahazduba	
13		Loc-4/4	Single Pole	5°44'71"	44	551	0	0	26.6734 92.83209	Along the Road-Pvt.		Jahazduba	
14		Loc-4/5	Single Pole	11°61'42"	30	595	0	1	26.67355 92.83168	Along the Road-Pvt.		Jahazduba	
15	AP-5	AP-5	Single Pole	12°88'84"	37	625	2	0	26.6737 92.83143	Along the Road-Pvt.		Jahazduba	
16		Loc-5/1	Single Pole	7°41'18"	52	662	0	0	26.67382 92.83108	Along the Road-Pvt.		Jahazduba	
17		Loc-5/2	Single Pole	6°27'09"	45	714	0	0	26.673929 92.830575	Along the Road-Pvt.		Jahazduba	
18		Loc-5/3	Single Pole	5°58'46"	45	759	0	0	26.67398 92.83013	Along the Road-Pvt.		Jahazduba	
19		Loc-5/4	Single Pole	1°58'72"	40	804	0	0	26.67407 92.82969	Along the Road-Pvt.		Jahazduba	
20		Loc-5/5	Single Pole	11°69'49"	23	844	0	0	26.67416 92.8293	Along the Road-Pvt.		Jahazduba	
21		Loc-5/6	Single Pole	2°54'23"	36	867	0	0	26.67417 92.82907	Along the Road-Pvt.		Jahazduba	
22	AP-6	AP-6	Double Pole	13°05'29"	66	903	0	1	26.6742 92.82871	Along the Road-Pvt.	Nala-25m	Jahazduba	
23	AP-7	AP-7	Double Pole	14°70'51"	39	969	0	1	26.67412 92.82805	Along the Road-Pvt.		Khonamukh	
24		Loc-7/1	Single Pole	5°43'13"	49	1008	0	0	26.673985 92.827684	Along the Road-Pvt.		Khonamukh	
25		Loc-7/2	Single Pole	2°46'57"	51	1057	0	0	26.67378 92.82725	Along the Road-Pvt.		Khonamukh	
26		Loc-7/3	Single Pole	0°55'81"	52	1108	0	0	26.67355 92.82681	Along the Road-Pvt.		Khonamukh	
27		Loc-7/4	Single Pole	0°00'00"	52	1160	0	0	26.67332 92.82636	Along the Road-Pvt.		Khonamukh	
28		Loc-7/5	Single Pole	5°20'15"	52	1212	0	0	26.67309 92.82591	Along the Road-Pvt.		Khonamukh	

29					39	1251	0	0	26.67289	92.82559	Along the Road-Pvt.	Khonamukh
30					50	0	0	0	26.67268	92.82514	Along the Road-Pvt.	Khonamukh
31					49	0	0	0	26.67245	92.82472	Along the Road-Pvt.	Khonamukh
32					63	0	0	0	26.67216	92.82418	Along the Road-Pvt.	Khonamukh
33					46	0	0	0	26.67194	92.82379	Along the Road-Pvt.	Khonamukh
34					50	0	0	0	26.67171	92.82336	Along the Road-Pvt.	Khonamukh
35					51	0	0	1	26.67147	92.82292	Along the Road-Pvt.	Khonamukh
36					46	0	0	1	26.67123	92.82254	Along the Road-Pvt.	Khonamukh
37					44	0	0	0	26.67106	92.82214	Along the Road-Pvt.	Khonamukh
38					47	0	0	0	26.67085	92.82173	Along the Road-Pvt.	Khonamukh
39					56	0	0	0	26.67059	92.82125	Along the Road-Pvt.	Khonamukh
40					49	0	0	1	26.67037	92.82082	Along the Road-Pvt.	Khonamukh
41					50	0	0	0	26.67013	92.82039	Along the Road-Pvt.	Khonamukh
42					60	0	0	1	26.66983	92.81989	Along the Road-Pvt.	Khonamukh
43					27	0	1	1	26.6697	92.81966	Along the Road-Pvt.	Khonamukh
44					50	0	0	0	26.66949	92.81921	Along the Road-Pvt.	Khonamukh
45					47	0	0	1	26.66936	92.81876	Along the Road-Pvt.	Khonamukh
46					44	0	4	1	26.66928	92.81833	Along the Road-Pvt.	Khonamukh
47					57	0	0	0	26.66911	92.81779	Along the Road-Pvt.	Khonamukh
48					56	0	0	0	26.66899	92.81724	Along the Road-Pvt.	Khonamukh
49					56	0	0	0	26.66886	92.8167	Along the Road-Pvt.	Khonamukh
50					53	0	0	0	26.66873	92.81619	Along the Road-Pvt.	Khonamukh
51					44	0	0	0	26.66862	92.81576	Along the Road-Pvt.	Khonamukh
52					56	0	0	0	26.66849	92.81522	Along the Road-Pvt.	Khonamukh
53					52	0	0	0	26.66838	92.81471	Along the Road-Pvt.	Khonamukh
54					22	0	0	1	26.66831	92.8145	Along the Road-Pvt.	Khonamukh
55					22	0	2	1	26.66824	92.81429	Along the Road-Pvt.	Paruwa
56					50	0	0	0	26.66811	92.81381	Along the Road-Pvt.	Paruwa
57					47	0	0	0	26.66802	92.81335	Along the Road-Pvt.	Paruwa
58					43	0	0	0	26.66791	92.81294	Along the Road-Pvt.	Paruwa
59					48	0	0	1	26.66778	92.81248	Along the Road-Pvt.	Paruwa
60					48	0	0	1	26.66766	92.81202	Along the Road-Pvt.	Paruwa
61					50	0	0	1	26.66753	92.81156	Along the Road-Pvt.	Paruwa

62	Loc-7/38	Single Pole	2°21'58"		2832	0	0	26.66744	92.81107	Along the Road-Pvt.		Paruwa
63	Loc-7/39	Single Pole	0°34'59"		2883	0	0	26.66733	92.81057	Along the Road-Pvt.		Paruwa
64	Loc-7/40	Single Pole	10°10'62"		2926	0	0	26.66724	92.81015	Along the Road-Pvt.	Over -LT Line	Paruwa
65	Loc-7/41	Double Pole	8°97'21"		2970	2	1	26.66708	92.80974	Along the Road-Pvt.		Paruwa
66	Loc-7/42	Single Pole	0°59'95"		3025	0	0	26.666956	92.809208	Along the Road-Pvt.		Paruwa
67	Loc-7/43	Single Pole	2°19'09"		3075	0	0	26.666846	92.808715	Along the Road-Pvt.		Paruwa
68	Loc-7/44	Single Pole	0°26'49"		3125	0	1	26.66672	92.80823	Along the Road-Pvt.		Paruwa
69	Loc-7/45	Single Pole	1°84'36"		3174	0	0	26.66666	92.80776	Along the Road-Pvt.		Paruwa
70	Loc-7/46	Single Pole	2°7'590"		3224	0	0	26.66649	92.80727	Along the Road-Pvt.		Paruwa
71	Loc-7/47	Single Pole	1°23'11"		3274	0	0	26.66636	92.80679	Along the Road-Pvt.		Paruwa
72	Loc-7/48	Double Pole	0°28'09"		3319	2	1	26.66625	92.80635	Along the Road-Pvt.	Kachha Road-4m	Paruwa
73	Loc-7/49	Single Pole	1°51'81"		3374	0	0	26.66612	92.80582	Along the Road-Pvt.		Paruwa
74	Loc-7/50	Single Pole	0°13'43"		3425	0	0	26.66601	92.80532	Along the Road-Pvt.		Paruwa
75	Loc-7/51	Single Pole	4°17'00"		3471	0	0	26.66591	92.80487	Along the Road-Pvt.		Paruwa
76	Loc-7/52	Single Pole	2°83'62"		3514	0	0	26.66579	92.80446	Along the Road-Pvt.		Paruwa
77	Loc-7/53	Single Pole	0°26'55"		3560	0	0	26.66568	92.80401	Along the Road-Pvt.		Paruwa
78	Loc-7/54	Single Pole	3°62'60"		3611	0	0	26.66556	92.80351	Along the Road-Pvt.		Paruwa
79	Loc-7/55	Single Pole	2°34'99"		3657	0	0	26.66543	92.80307	Along the Road-Pvt.		Paruwa
80	Loc-7/56	Single Pole	1°02'65"		3706	0	0	26.66531	92.8026	Along the Road-Pvt.		Paruwa
81	Loc-7/57	Single Pole	0°94'31"		3752	0	0	26.66519	92.80216	Along the Road-Pvt.		Paruwa
82	Loc-7/58	Double Pole	0°99'47"		3799	0	1	26.66506	92.80171	Along the Road-Pvt.	Kachha Road-3m & Over LT Line	Paruwa
83	Loc-7/59	Single Pole	8°58'51"		3850	0	0	26.66491	92.80122	Along the Road-Pvt.	Over-LT Line	Paruwa
84	Loc-7/60	Single Pole	9°08'23"		3893	0	0	26.66484	92.80079	Along the Road-Pvt.		Paruwa
85	Loc-7/61	Single Pole	6°28'36"		3950	0	0	26.66467	92.80025	Along the Road-Pvt.		Paruwa
86	Loc-7/62	Single Pole	0°50'78"		3999	0	0	26.66457	92.79977	Along the Road-Pvt.		Paruwa
87	AP-8	Single Pole	17°44'71"		4019	0	0	26.66453	92.79957	Along the Road-Pvt.		Paruwa
88	Loc-8/1	Single Pole	7°43'76"		4052	0	0	26.66438	92.79928	Along the Road-Pvt.		Paruwa
89	Loc-8/2	Single Pole	15°49'68"		4096	0	0	26.66414	92.79893	Along the Road-Pvt.	Nala crossing	Paruwa
90	Loc-8/3	Double Pole (SP-76 Pole)	45°00'16"		4135	0	1	26.66401	92.79857	Along the Road-Pvt.	SP-76 Pole (only single pole)	Paruwa
91	Loc-8/4	Single Pole	36°59'99"		4166	0	0	26.66412	92.79828	Along the Road-Pvt.	Over 11kv	Paruwa
92	Loc-8/5	Single Pole	2°02'79"		4204	0	0	26.66404	92.79791	Along the Road-Pvt.		Paruwa
93	AP-9	Double Pole	30°95'38"		4241	0	1	26.66395	92.79755	Along the Road-Pvt.		Paruwa
94	Loc-9/1	Single Pole	26°82'92"		4267	0	0	26.66378	92.79737	Along the Road-Pvt.		Paruwa

95	Loc-9/2	Single Pole	13°82'25"		41	4305	0	0	26.66345	92.79726	Along the Road-Pvt.	Over 11kv	Paruwa
96	Loc-9/3	Single Pole	6°46'34"		37	4346	0	0	26.66308	92.79724	Along the Road-Pvt.		Paruwa
97	Loc-9/4	Single Pole	3°00'93"		46	4383	0	0	26.66275	92.79718	Along the Road-Pvt.		Paruwa
98	Loc-9/5	Ex. Three Pole (SP-64 Pole)	0°28'72"		48	4429	0	0	26.66234	92.79713	Along the Road-Pvt.		Paruwa
99	Loc-9/6	Double Pole	0°38'80"		40	4477	0	1	26.66191	92.79708	Along the Road-Pvt.		Paruwa
100	Loc-9/7	Ex. Single Pole (SP-64 Pole)	0°18'54"		80	4517	0	0	26.661555	92.797036	Along the Road-Pvt.		Paruwa
101	Loc-9/8	Ex. Line Double Pole (SP-64 Pole)	2°82'69"		57	4597	0	0	26.66084	92.79695	Along the Road-Pvt.		Paruwa
102	Loc-9/9	Single Pole	2°87'13"		60	4654	0	0	26.66033	92.79686	Along the Road-Pvt.		Paruwa
103	Loc-9/10	Ex. Single Pole (SP-64 Pole)	4°18'33"		48	4714	0	0	26.659794	92.796796	Along the Road-Pvt.		Paruwa
104	Loc-9/11	Single Pole	8°18'52"		55	4762	0	0	26.65937	92.79671	Along the Road-Pvt.		Paruwa
105	AP-10	Exist. Line Double Pole (SP-64 Pole)	79°42'54"		15	4817	0	0	26.65888	92.79669	Along the Road-Pvt.		Paruwa
106	Loc-10/1	Ex. Rail Pole Double Pole	8°48'56"		3	4832	0	0	26.65886	92.79654	Along the Road-Pvt.		Paruwa
107	Loc-10/2	Double Pole				4835	0	2	26.65886	92.79651	Along the Road-Pvt.		Paruwa

POLE SCHEDULE												
33kV S/C Line Tezpur New 132/33 kv S/S To Dolabari 33/11kv S/s(Ex.)												
CLIENT: POWER GRID CORPORATION OF INDIA LIMITED												
CONTRACTOR: NECCON POWER & INFRA LIMITED												
PACKAGE:ASM- ASM-DMS-01												
LOA Ref.No: 1.CC-CS/94-NER/REW-3079/1/G10/CA-1/7026 -Supply												
2.CC-CS/94-NER/REW-3079/1/G10/CA-II/7027- Services												
SL. No.	Angle Point	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				
1			GANTRY				26.67392	92.83664	S/s Boundary			
2	AP-1		Four Pole	78°24'44"	38	38	26.67358	92.83661	S/s Boundary			
3			Single Pole	8°73'82"	44	82	26.67353	92.83617	S/s Boundary			
4	AP-2		Four Pole	107°36'24"	43	125	26.67354	92.83574	S/s Boundary			
5			Single Pole	12°32'64"	51	176	26.6731	92.83588	Along the Nala- Pvt.			
6			Single Pole	1°00'34"	57	233	26.67265	92.83615	Along the Nala- Pvt.			
7			Single Pole	2°60'99"	50	283	26.67225	92.83638	Along the Nala- Pvt.			
8			Single Pole	8°57'27"	55	333	26.67186	92.83663	Along the Nala- Pvt.			
9			Single Pole	1°95'90"	54	388	26.6714	92.83683	Along the Nala- Pvt.			
10	AP-3		Double Pole	34°54'75"	44	442	26.67094	92.83701	Along the Nala- Pvt.			
11			Single Pole	0°10'10"	50	486	26.67078	92.837365	Wet Land-Pvt.			
12			Single Pole	5°21'81"	49	536	26.670443	92.837772	Wet Land-Pvt.			
13			Single Pole	4°20'75"	57	585	26.670151	92.838144	Wet Land-Pvt.			
14	AP-4		Exist. Four Pole	83°97'60"	50	642	26.6699	92.83864	Along the NH-Govt.			Common Pole
15			Exist. Single Pole	8°98'92"	55	692	26.669491	92.838441	Along the NH-Govt.			Common Pole
16			Exist. Single Pole	11°22'82"	46	747	26.66907	92.838141	Along the NH-Govt.			Common Pole
17			Exist. Double Pole	3°04'57"	38	793	26.66877	92.83782	Along the NH-Govt.			Common Pole
18			Exist. Single Pole	2°20'97"	38	831	26.66851	92.83757	Along the NH-Govt.			Common Pole
19			Exist. Single Pole	7°73'25"	39	869	26.66824	92.83733	Along the NH-Govt.			Common Pole
20			Exist. Single Pole	3°19'49"	35	908	26.668	92.83705	Along the NH-Govt.			Common Pole
21			Exist. Four Pole	9°42'87"	40	943	26.66777	92.83681	Along the NH-Govt.			Common Pole
22			Exist. Single Pole	4°70'52"	43	983	26.66755	92.83649	Along the NH-Govt.			Common Pole
23			Exist. Single Pole	0°90'66"	42	1026	26.66729	92.83617	Along the NH-Govt.			Common Pole
24			Exist. Single Pole	0°70'78"	44	1068	26.66703	92.83586	Along the NH-Govt.			Common Pole
25			Exist. Double Pole	0°96'06"	36	1112	26.66676	92.83553	Along the NH-Govt.			Common Pole
26			Exist. Single Pole	3°70'18"	39	1148	26.66654	92.83527	Along the NH-Govt.			Common Pole
27			Exist. Single Pole	0°14'14"	1187	26.66628	92.835	Along the NH-Govt.				Common Pole

51	Loc-4/37	Exist. Double Pole	3°97'18"			38	0	2497	26.65711	92.8265	Along the NH-Govt.		Common Pole
52	Loc-4/38	Exist. Single Pole	3°41'71"			45	0	2542	26.65677	92.82625	Along the NH-Govt.		Common Pole
53	Loc-4/39	Exist. Double Pole	1°82'00"			24	0	2566	26.656585	92.826131	Along the NH-Govt.		Common Pole
54	Loc-4/40	Exist. Single Pole	4°72'44"			23	0	2589	26.65641	92.82601	Along the NH-Govt.		Common Pole
55	Loc-4/41	Exist. Single Pole	4°40'78"			32	0	2621	26.65618	92.82582	Along the NH-Govt.		Common Pole
56	Loc-4/42	Exist. Single Pole	0°21'60"			39	0	2660	26.65588	92.82561	Along the NH-Govt.		Common Pole
57	Loc-4/43	Exist. Double Pole	0°66'38"			45	0	2705	26.65554	92.82537	Along the NH-Govt.		Common Pole
58	Loc-4/44	Exist. Single Pole	5°68'12"			38	0	2743	26.65525	92.82516	Along the NH-Govt.		Common Pole
59	Loc-4/45	Exist. Single Pole	4°33'91"			41	0	2784	26.65492	92.82497	Along the NH-Govt.		Common Pole
60	Loc-4/46	Exist. Single Pole	3°11'19"			42	0	2826	26.6546	92.82475	Along the NH-Govt.		Common Pole
61	Loc-4/47	Exist. Double Pole	9°91'72"			42	0	2868	26.65429	92.82451	Along the NH-Govt.		Common Pole
62	Loc-4/48	Exist. Single Pole	1°88'13"			38	0	2906	26.65398	92.82435	Along the NH-Govt.		Common Pole
63	Loc-4/49	Exist. Single Pole	4°42'92"			43	0	2949	26.65362	92.82418	Along the NH-Govt.		Common Pole
64	Loc-4/50	Single Pole	6°18'04"			56	0	3005	26.65317	92.82392	Along the NH-Govt.		SP-76 Pole
65	Loc-4/51	Double Pole	6°27'02"			44	0	3049	26.6528	92.82376	Along the NH-Govt.		SP-76 Pole
66	Loc-4/52	Single Pole	1°24'14"			63	0	3112	26.6523	92.82347	Along the NH-Govt.	Over 11KV Line	SP-76 Pole
67	Loc-4/53	Double Pole	4°19'92"			46	0	3158	26.65194	92.82325	Along the NH-Govt.	NH	SP-76 Pole
68	AP-5	Double Pole	10°42'55"			48	0	3206	26.65158	92.82299	Along the NH-Govt.		SP-76 Pole
69	Loc-5/1	Double Pole	24°97'49"			47	0	3253	26.65119	92.82281	Along the Road-Pvt.	Road	
70	Loc-5/2	Double Pole	29°07'06"			22	0	3275	26.65099	92.82282	Along the Road-Pvt.		
71	Loc-5/3	Single Pole	3°11'73"			53	0	3328	26.65056	92.82258	Along the Road-Pvt.		
72	Loc-5/4	Single Pole	6°40'58"			42	0	3370	26.65023	92.82237	Along the Road-Pvt.		
73	Loc-5/5	Single Pole	3°65'49"			59	0	3429	26.6498	92.82202	Along the Road-Pvt.		
74	Loc-5/6	Single Pole	2°86'31"			40	0	3469	26.64952	92.82176	Along the Road-Pvt.		
75	Loc-5/6.1	Single Pole	3°96'54"			51	0	3520	26.64915	92.82145	Along the Road-Pvt.		
76	Loc-5/7	Double Pole	2°42'66"			43	0	3563	26.64886	92.82117	Along the Road-Pvt.		
77	Loc-5/8	Single Pole	4°85'94"			50	0	3613	26.64851	92.82086	Along the Road-Pvt.		
78	Loc-5/9	Single Pole	4°82'48"			36	0	3649	26.64824	92.82066	Along the Road-Pvt.		
79	Loc-5/10	Single Pole	8°62'70"			37	0	3686	26.64798	92.82043	Along the Road-Pvt.		SP-76 Pole Required
80	Loc-5/11	Single Pole	0°10'53"			60	0	3746	26.64751	92.82013	Along the Road-Pvt.	Over 11KV Line	SP-76 Pole Required
81	Loc-5/12	Single Pole	2°01'71"			50	0	3796	26.64712	92.81988	Along the Road-Pvt.		

82	Leo-5/13	Single Pole	1°62'78"			47	0	3843	26.64676	92.81963	Along the Road-Pvt.		
83	Leo-5/14	Single Pole	3°63'61"			55	0	3898	26.64633	92.81935	Along the Road-Pvt.		
84	Leo-5/14_1	Single Pole	5°34'88"			48	0	3946	26.64597	92.81908	Along the Road-Pvt.		
85	Leo-5/15	Single Pole	2°30'22"			35	0	3981	26.64569	92.81891	Along the Road-Pvt.		
86	Leo-5/16	Double Pole	0°61'06"			35	0	4016	26.64542	92.81873	Along the Road-Pvt.		
87	Leo-5/17	Single Pole	2°21'11"			53	0	4069	26.64501	92.81845	Along the Road-Pvt.		
88	Leo-5/18	Double Pole	2°84'38"			41	0	4110	26.64469	92.81825	Along the Road-Pvt.		
89	Leo-5/19	Double Pole	0°58'48"			66	0	4176	26.64419	92.81779	Along the Road-Pvt.		
90	Leo-5/20	Single Pole	1°79'52"			50	0	4226	26.64381	92.81764	Along the Road-Pvt.		
91	Leo-5/21	Single Pole	2°76'19"			40	0	4266	26.64351	92.81742	Along the Road-Pvt.		
92	Leo-5/22	Single Pole	5°69'66"			53	0	4319	26.6431	92.81715	Along the Road-Pvt.		
93	Leo-5/23	Single Pole	7°97'40"			45	0	4364	26.64277	92.81688	Along the Road-Pvt.		
94	Leo-5/24	Single Pole	2°58'56"			57	0	4421	26.64232	92.81661	Along the Road-Pvt.		
95	Leo-5/25	Single Pole	1°60'05"			39	0	4460	26.64202	92.81641	Along the Road-Pvt.		
96	Leo-5/25_1	Single Pole	1°20'52"			41	0	4501	26.6417	92.81621	Along the Road-Pvt.		
97	Leo-5/26	Double Pole	40°14'69"			41	0	4542	26.64138	92.816	Along the Road-Pvt.	Road	
98	Leo-5/26_1	Single Pole	33°44'09"			20	0	4562	26.64132	92.81581	Along the Road-Pvt.		
99	Leo-5/27	Single Pole	6°31'07"			18	0	4580	26.64119	92.8157	Along the Road-Pvt.		
100	Leo-5/27_1	Single Pole	1°83'34"			31	0	4611	26.64095	92.81554	Along the Road-Pvt.		
101	Leo-5/28	Single Pole	2°69'43"			53	0	4664	26.64053	92.81528	Along the Road-Pvt.		
102	Leo-5/29	Single Pole	2°53'76"			38	0	4702	26.64024	92.81508	Along the Road-Pvt.		
103	Leo-5/30	Single Pole	42°99'60"			37	0	4739	26.639965	92.814871	Along the Road-Pvt.	Road	
104	AP-6	Double Pole	10°86'69"			25	0	4764	26.63974	92.81491	Along the Road-Pvt.		
105	Leo-6/1	Single Pole	35°96'61"			18	0	4782	26.63959	92.81497	Along the Road-Pvt.		
106	Leo-6/1_1	Single Pole	5°98'68"			22	0	4804	26.63948	92.81515	Along the Road-Pvt.		
107	Leo-6/2	Double Pole	16°61'53"			33	0	4837	26.63934	92.81544	Along the Road-Pvt.		
108	Leo-6/3	Single Pole	2°82'60"			44	0	4881	26.63926	92.81587	Along the Road-Pvt.		
109	Leo-6/3_1	Single Pole	24°04'51"			44	0	4925	26.63916	92.8163	Along the Road-Pvt.	Over 11KV Line & Road	
110	Leo-6/3_2	Double Pole	11°53'44"			18	0	4943	26.63906	92.81644	Along the Road-Pvt.		SP-76 Pole Required
111	Leo-6/4	Double Pole	39°60'11"			22	0	4965	26.63891	92.81658	Along the Road-Pvt.		
112	Leo-6/5	Single Pole	1°10'21"			55	0	5020	26.63882	92.81712	Along the Road-Pvt.	Under 33kV Line	

113								47	0	26.63875	92.81759	Along the Road-Pvt.		
	Leo-66	Double Pole	6°16'58"						5067					
114								66	0					
	Leo-67	Exist. Single Pole	0°38'04"						5133	26.63859	92.81823	Along the Road-Pvt.		Common Pole
115								40	0					
	Leo-67_1	Single Pole	0°96'17"						5173	26.63849	92.81862	Along the Road-Pvt.		Common Pole
116								34	0					
	Leo-68	Exist. Single Pole	0°75'84"						5207	26.6384	92.81895	Along the Road-Pvt.		Common Pole
117								22	0					
	Leo-68_1	Single Pole	1°07'70"						5229	26.63834	92.81916	Along the Road-Pvt.		Common Pole
118								48	0					
	Leo-69	Exist. Double Pole	1°64'82"						5277	26.6382	92.81962	Along the Road-Pvt.		Common Pole
119								51	0					
	Leo-69_1	Single Pole	4°14'08"						5228	26.63804	92.8201	Along the Road-Pvt.		Common Pole
120								48	0					
	Leo-610	Exist. Single Pole	4°62'94"						5376	26.63786	92.82054	Along the Road-Pvt.		Common Pole
121								39	0					
	Leo-610_1	Single Pole	4°78'01"						5415	26.63769	92.82088	Along the Road-Pvt.		Common Pole
122								35	0					
	Leo-611	Exist. Single Pole	1°71'69"						5450	26.63756	92.8212	Along the Road-Pvt.		Common Pole
123								45	0					
	Leo-611_1	Single Pole	3°89'91"						5495	26.63738	92.82161	Along the Road-Pvt.		Common Pole
124	AP-7	Exist. Four Pole	6°20'98"					44	0					
	AP-7							36	0					
125	Leo-8/1	Double Pole							5539	26.63723	92.82202	Along the Road-Pvt.		Common Pole
									5575	26.63714	92.82237	Along the Road-Pvt.		

ANNEXURE III

Sample Case of Compensation Payment

COMPENSATION NOTICE

ASSAM POWER DISTRIBUTION CORPORATION LIMITED (APDCL)



Sl No **007**

Project	Construction of 33 KV line from 132 KV Teok S/S to 33 KV Jhaji S/S 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. **TILOK CH. DAS** Location/Span: **SP-80 - SP82**

Dear Sir/Madam,
 APDCL has undertaken the construction of a **33 KV** line from **132 KV S/S Teok** to **33 KV Jhaji S/S** 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 33 KV line will pass through your land noted as under. The standing trees/plantation 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 trees/plantations, so cut will be handed over to you at site after cutting.

Name of the Land Owner: **TILOK CH. DAS** Revenue Circle: **SIBSAGAR**
 Father's name: **THANU RAM DAS** District: **SIBSAGAR**
 Village: Mauza: **JAKAICHUK - Mauza** Dag No/Patta No: **213 / 107**
village - Dibrunwal Chaudang

Description of trees/plantation etc.

S N	Name of Trees/Plantation	Affected Area in sq. m	Size/Girth/Age	Quantity (Nos)	Remarks
1.	JATHI BAMBOO	-	MEDIUM	830	
2.	MOJ TREE	-		1	

Tilok ch. Das.
Signature of Land owner

Chandra Shekhar Bhatt
For POWERGRID
CHANDRA SHEKHAR BHATT, ENGINEER
पावरग्रिड, एन. ई. आर. पी. एस. आई. पी, टिपक
POWERGRID, NERPSIP, TEOK

FOR APDCL
B. Jais
Sub-Divisional Engineer
Gaunsagar Electrical Sub-Division
DCL, Gaurisagar

Witness:
 1. **Nitish D**
 2. **Ashutosh Kumar Das**

Verification by Revenue Authority

Certified that the land under Dag. No. **213** Patta No. **107** Village **DIBRUNWAL CHAUDANG** Mauza **JAKAICHUK** under **SIBSAGAR** Revenue Circle, belongs to Sri/Smt **TILOK CH. DAS**

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

21/09/21
S. N. DEY, SR. DY. GENERAL MANAGER
 पावरग्रिड, एन. ई. आर. पी. एस. आई. पी, टिपक
 POWERGRID, NERPSIP, TEOK

only land documents verified.
Signature of the Circle Officer,
 Sivasagar



District : শিৱসাগৰ	Subdivision : শিৱসাগৰ	Circle : শিৱসাগৰ	Mouza : জকাইচুক
Lot Number : লাট নং ১	Village/Town : ডিব্ৰুৱাল চাওদাং	Pattatype : খবাজ মসজিদ	

পত্ৰ নং		পত্ৰদাৰৰ নাম/পিতাৰ নাম/স্বামীৰ নাম আৰু ঠিকনা	প্ৰত্যেক দাগৰ মাটিৰ				বাজহ	স্বহীন কৰ	মন্তব্য
পুৰণি	নতুন		নং	কালি (বি-ক-লে)	শ্ৰেণী	কালি (হে-আৰ-ছে)			
1	2	3	4	5	6	7	8	9	10
	১০৭	1) শ্ৰী হৰনাথ শৰ্ম্মা (পিতা লক্ষীনাথ ..) " 2) শ্ৰী শিৱনাথ শৰ্ম্মা (পিতা লক্ষীনাথ ..) " 3) শ্ৰী ঋনুৰাম দাস (পি- ভেবেলা) " 4) শ্ৰী ভিলক চন্দ্ৰ দাস (পি- ঠানুৰাম) "	২১৩	৩-০-১০.০০০০	ফৰিং	০-৪১-৪৯.৯৩৩০৬৫৫৯৫৭১৭	৬২.০০	১৫.৫০	চিঠাৰ চক্ৰবিষয়া হাকিমৰ 12/6/87 তাৰে হুঃ মতে উঃ সূত্ৰে ৩নংৰ সহলত ৫নংৰ নামজৰী হয়। স্বাঃ অস্পষ্ট 2/12/91 (**** টোকা : লাঃ মঃ --- শ্ৰী কুলেপ্ৰ বৰুৱা Dated :-2018-08-28লাঃ মঃৰ প্ৰতিবেদন চোৱা হল। সংশোধনীৰ বাবে অনুমোদন দিয়া হল। চক্ৰ বিষয়া : শ্ৰীমতী সম্প্ৰীতি গোস্বামী Dated: 2018-08-29)
				৩-০-১০		০-৪১-৪৯.৯৩৩০৬৫৫৯৫৭১৭			

** Please note this is a system generated certificate and does not need any signature **



কৃত্বপ্ৰাপ্ত বিষয়া : শ্ৰীমতী সম্প্ৰীতি গোস্বামী
 Designation : চক্ৰ বিষয়া
 Generated Date : 09/10/2018

ANNEXURE IV

Social Management Framework

Part A: Acquisition of Lands and Structures.

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

Table – 1: Land Availability Status for Substation

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

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

- i) Purchase of land on willing buyer & Willing Seller basis on negotiated rate;
 - ii) Voluntary Donation; and
 - iii) Involuntary Acquisition. .
3. In case of procurement of land through private purchase, AEGCL/APDCL shall ensure that compensation/rate for land is not less than the rate provided in the new land acquisition act, 2013. The finalization of land price/negotiation shall be through a committee. In order to comply with this provision AEGCL/APDCL may organize an awareness camp where provisions of new act in respect of basis/modalities of compensation calculation shall be explained to land owners with specific State provision if any.
 4. In case of voluntary donation of land the following shall be ensured:
 - The land user(s) will not be subjected to undue pressure for parting of land;
 - All out efforts shall be made to avoid any physical relocation/displacement due to loss of land;
 - The AEGCL/APDCL shall facilitate in extending ‘gratitude’ to the land donor(s) in lieu of the ‘contribution’ if so agreed. The same shall be documented in the shape of MoU between donor and utility and subsequently title of land transferred in the name of AEGCL/APDCL
 - All land donations (as well as purchases) will be subject to a review/ approval from a broad based committee comprising representatives of different sections including those from the IA and GoA.
 5. In case of land acquired through involuntary acquisition, provisions of RFCTLARRA, 2013 shall be adopted. RFCTLARRA, 2013 has replaced the old Land Acquisition Act, 1894 and has come into force from 1st January 2014. The new act i.e. RFCTLARRA, 2013 authorizes State Govt. (i.e. GoA) or its authorized Government agency to complete the whole process of acquisition of private land by following the laid down procedures in the act/rules which include detailed Social Impact Assessment (SIA) and preparation/disclosure of Social Impact Assessment Plan (SIMP). Responsibility for SIA and R&R rests with the government of Assam and AEGCL/APDCL’s responsibility is limited to identification and selection of suitable land based on technical requirement and ensuring budget allocation.
 6. The provisions of new RFCTLARR Act, 2013 has brought about synergies with the World Bank policy and practices. These imply provisions like Social Impact Assessment; R&R Provisions and Entitlements; Focus on those losing livelihoods; Census surveys and R&R Plan; Providing options and choices; Replacement cost of Land and Assets (Net of Taxes); Additional provisions for disadvantaged groups; Full payment of compensation and R&R prior to taking over of land and assets and Consultations & Disclosures, Post implementation

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

Safeguards against land acquisition:

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

Entitlements:

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

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

A. Comprehensive Compensation Package	
Eligibility for Entitlement	Provisions
<p>The affected families</p> <ul style="list-style-type: none"> • <u>Land Owners: includes any person-</u> <ol style="list-style-type: none"> i) whose name is recorded as (he owner of the land or building or part thereof, in the records of the authority concerned; or ii) any person who is granted forest rights under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 or under any other law for the time being in force; or iii) who is entitled to be granted Patta rights on the land under any law of the State including assigned lands: or iv) any person who has been declared as such by an order of the court or Authority; 	<p>Determination of Compensation :</p> <ol style="list-style-type: none"> 1. Market value of the land <ul style="list-style-type: none"> • as specified in the Indian Stamp Act, 1899 or • the average of the sale price for similar type of land situated in the village or vicinity, or • consented amount of compensation as agreed in case of acquisition of lands for private companies or for public private partnership project. <p>whichever is higher</p> <p>Market value x Multiplier* between 1 to 2 in rural areas only (No multiplier in urban areas).</p> <ol style="list-style-type: none"> 2. Value of the assets attached to land: <ul style="list-style-type: none"> Building/Trees/Wells/Crop etc. as valued by relevant govt. authority; <p>Land compensation = 1+2</p> <ol style="list-style-type: none"> 3. Solatium: 100% of total compensation <p style="background-color: yellow;">Total Compensation : 1+2+3</p>

(*) Precise scale shall be determined by the State Govt.

The indicative values of multiplier factor based on distance from urban areas as provided in the act.

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

B. R&R Package

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

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

Special Provisions for SCs/STs

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

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

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

Social Impact Management Plan (SIMP):

Establishment of Institutions

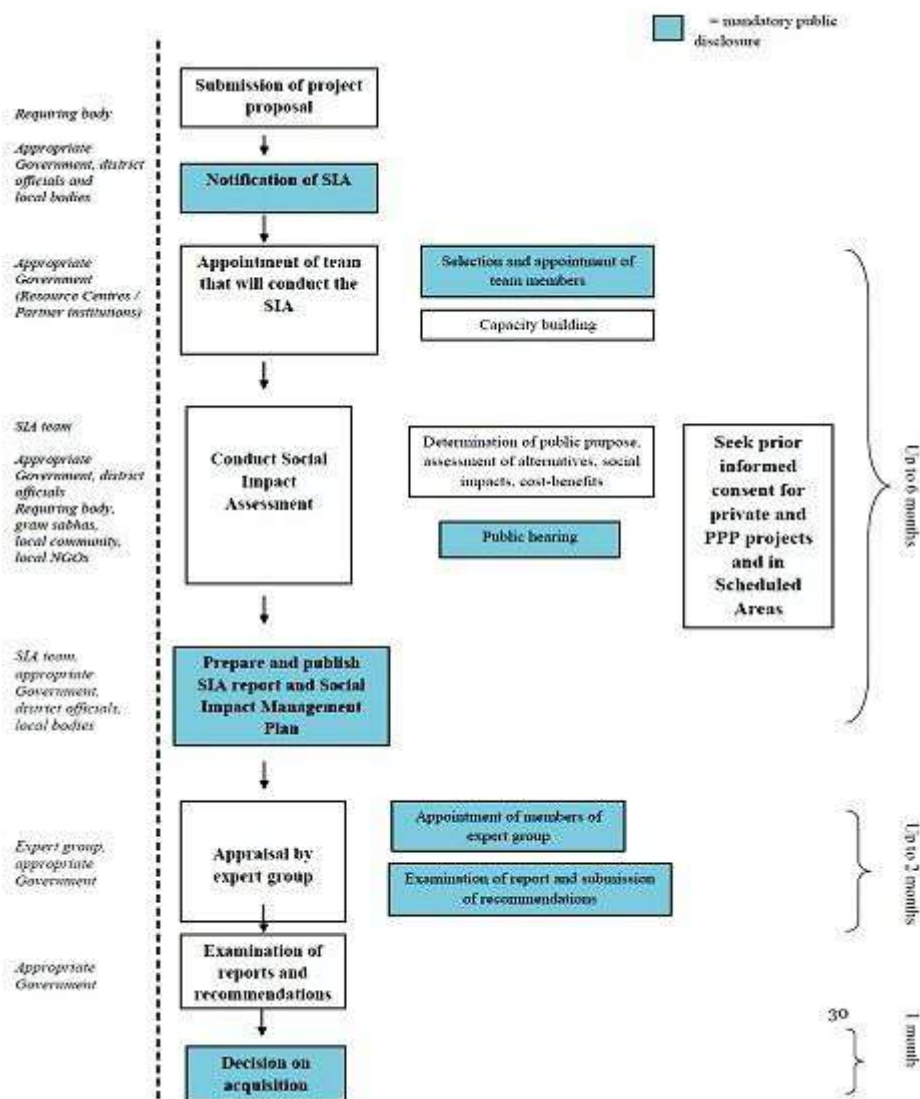
9. The following bodies are to be established permanently in the state (to cater to all projects proposed in future):
 - **The State Social Impact Assessment Unit;**
 - ✓ selecting the SIA team for each project from the individuals and institutions registered/empanelled in the State Database
 - ✓ To develop Project specific ToR
 - ✓ Ensuring no conflicts of interest involving the team members
 - **Land Acquisition Rehabilitation and Resettlement Authority**
 - ✓ Appointment of Presiding Officer
 - **The office of the Commissioner Rehabilitation & Resettlement**
 - ✓ Appointment of Commissioner Rehabilitation and Resettlement
 - ✓ Appointment of Project Specific Administrator for Rehabilitation and Resettlement
 - **The State Level Monitoring Committee**
 - **User-friendly website as a public platform to disclose entire work flow of each acquisition case.**
 - **Formulation of Expert group to study SIA report and recommendation**
 - ✓ Commissioner, R&R to appoint the members of the Expert Group
 - ✓ Names of group members to be publically disclosed
10. On confirmation of the scheme and finalization of land after exploring alternative site, the AEGCL/APDCL's would submit a proposal for acquisition of private selected land detailing the extent of land and its exact location. After due process of approval the government shall notify the affected area where selected land is situated for conducting detailed social assessment.

Social Impact Assessments

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

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

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



Compensation and Rehabilitation and Resettlement (R&R):

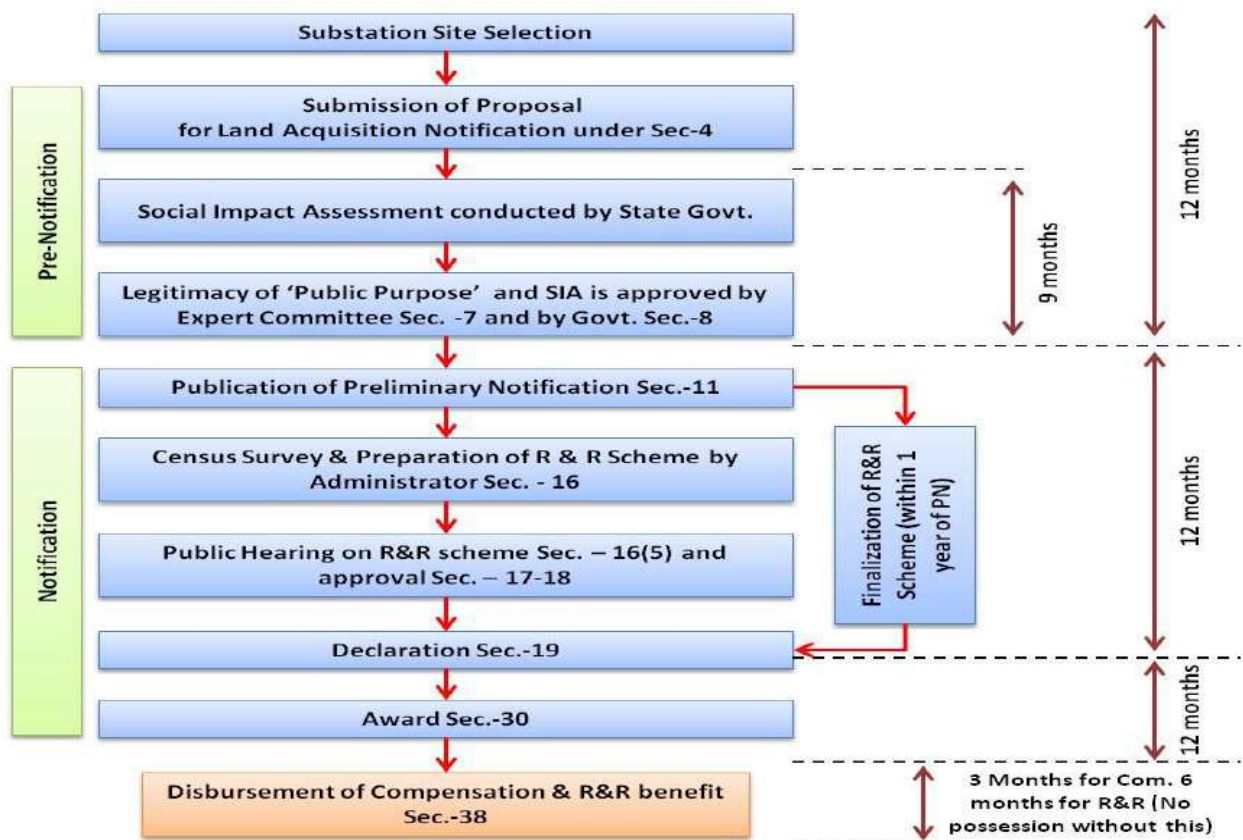
- Based on the SIMP, the Collector shall discuss the Package in a meeting with the Rehabilitation and Resettlement committee at project level, and submit the Package to Commissioner Rehabilitation and Resettlement along with his/ her remarks.
- The Commissioner Rehabilitation and Resettlement shall,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

and second for R & R as per approved SIMP .

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

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

FIGURE 2: ACTIVITY CHART RFCTLARRA, 2013



PART B:

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

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

- (i) land cost of tower footings;
- (ii) standing crops;
- (iii) trees, if any;
- (iv) other assets like well and
- (v) any other damages/ effects.

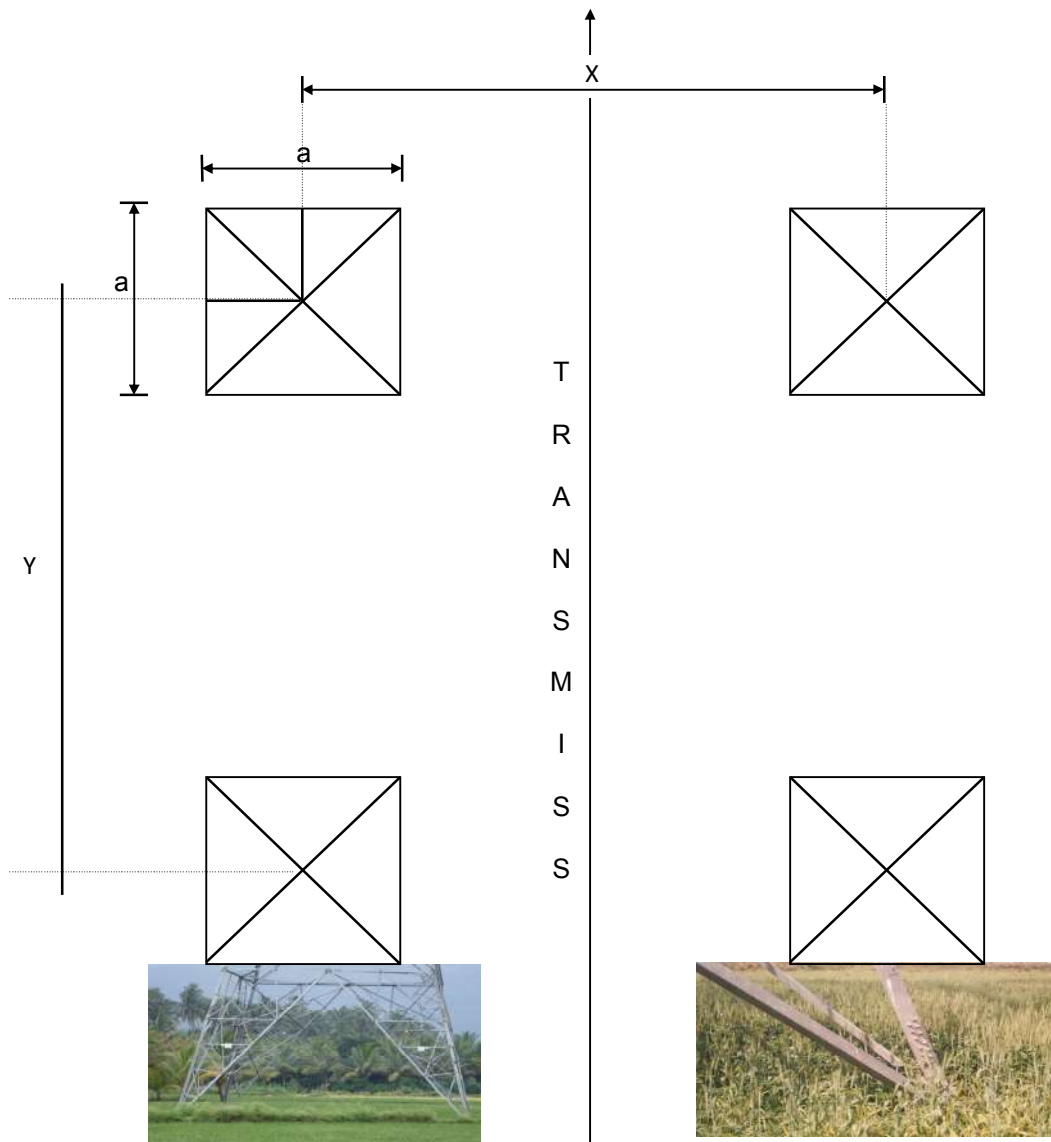
Capturing all these, the Implementing agency (IA) will prepare a Compensatory Plan for Temporary Damage (CPTD). The content/coverage of a typical CPTD is placed at the end.

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

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

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

FIGURE-3 TYPICAL PLAN OF TRANSMISSION LINE TOWER FOOTINGS



ACTUAL POSITION ON GROUND

INDICATIVE MEASURES
X & Y = 10-15 METERS
a = 300- 450 mm

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

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

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

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

Entitlement Matrix for CPTD

S. No	ISSUE/IMPACT	BENEFICIARY	ENTITLEMENT OPTIONS
1.	Land area below tower base.	Owner	100% land cost at market value as ascertained by revenue authorities or based on negotiated settlement without actual acquisition/title transfer.
2.	Loss/damage to crops and trees in line corridor	Owner/Tenant/ sharecropper/ leaseholder	Compensation to actual cultivator at market rate for crops and 8 years income for fruit bearing trees*. APs will be given advance notice to harvest their crops. All timber* will be allowed to retain by the owner.
3.	Other damages (if applicable)	All APs	Actual cost as assessed by the concerned authority.
4.	Loss of structure		
(i)	House	Titleholders	Cash compensation at replacement cost (without deduction for salvaged material) plus Rs. 25,000/- assistance (based on prevailing GOI norms for weaker section housing) for construction of house plus transition benefits as per category-5 below.
(ii)	Shop/ Institutions/ Cattle shed	Individual/ Titleholders	Cash compensation plus Rs. 10000/- for construction of working shed/shop plus transition benefits as per category-5 below

S. No	ISSUE/IMPACT	BENEFICIARY	ENTITLEMENT OPTIONS
5.	Losses during transition under (i) & (ii) above for Shifting / Transport	Family/unit	Provision of transport or equivalent cash for shifting of material/ cattle from existing place to alternate place
6	Tribal/ Vulnerable APs	Vulnerable APs ¹	One time additional lump sum assistance not exceeding 25% of total compensation on recommendation of State Authority/ADC/VC.

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

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

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

11. The Mouja list shall contain the land owner details type of tree/crop, its present age, variety, yielding pattern etc. and the same is prepared at site in the presence of the land owner. These Mouja lists are further compiled and a random verification is conducted by the concerned District Collector or his authorized representative in order to ascertain the assessment carried out by the revenue office is genuine and correct. After this process the District collector issues a tree cutting permit to AEGCL/APDCL to enable removal / damage to the standing tree/crop identified in the line corridor.

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

13. On approval of compensation, the revenue officer shall further intimate the amount payable to the different landowners and AEGCL/APDCL arranges the payment by way of Demand Draft to the affected parties. The payment is further disbursed at the local village office after due verification of the documents in presence of other witnesses.

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

Content of Compensation Plan For Temporary Damages (CPTD)

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

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

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

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

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

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

Part C: Tribal People Development Framework

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

TPDF Objectives and Policies

1. The objectives of the TPDF are to ensure that if indigenous peoples²(referred to as tribal in India) tribal are affected by a project/scheme they:
 - i) are adequately and fully consulted;
 - ii) receive benefits and compensation equal to that of the mainstream population:
 - iii) are provided with special assistance as per laws and policies because of their vulnerabilities vis-à-vis the mainstream population; and
 - iv) receive adequate protection against project adverse impacts on their culture identities.

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

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

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

Identification of Indigenous Peoples

3. The term "Indigenous Peoples" is used in a generic sense to refer to a distinct, vulnerable, social and cultural group possessing the following characteristics in varying degrees:
 - (a) Self-identification as members of a distinct indigenous cultural group and recognition of this identity by others;
 - (b) Collective attachment to geographically distinct habitats or ancestral territories in the project area and to the natural resources in these habitats and territories;
 - (c) Customary cultural, economic, social, or political institutions that are separate from those of the dominant society and culture; and
 - (d) An indigenous language, often different from the official language of the country or region.
4. In Assam, certain areas have been declared as scheduled area as Specified by the Scheduled Areas under the Sixth Schedule of Indian Constitutions. Six schedule areas in Assam are Bodoland Territorial Council, Karbi Anglong Autonomous Council, Dima Hasao Autonomous District Council³.

Tribal People Development Framework (TPDF)

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

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

- (b) Assess the nature and extent of impacts likely to occur as a result of the project interventions;
- (c) Prepare a plan (TPDP) outlining measures towards avoiding/ minimizing the negative impacts as well as enhance positive impacts;
- (d) Outlines an approach for the conduction of social assessment for ensuring free, prior, and informed consultation with the affected tribal communities at each stage of project preparation and implementation;
- (e) Putting in place an implementation arrangements of the TPDP, its disclosure and mechanisms to address any grievances.

TPDF – Land Acquisition and Resettlement

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

- (i) the prior consent of the concerned Gram Sabha or the Panchayats or the autonomous District Councils at the appropriate level in Scheduled Areas under the Fifth Schedule to the Constitution, as the case may be, shall be obtained in all cases of land acquisition in such areas, before issue of a notification under this Act, or any other Central Act or a State Act for the time being in force.
- (ii) Provided that the consent of the Panchayats or the Autonomous Districts Councils shall be obtained in cases where the Gram Sabha does not exist or has not been constituted.
- (iii) In the case of a project involving land acquisition on behalf of a Requiring Body which

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

- (iv) the TPDP also contain a program for development of alternate fuel, fodder and non-timber forest produce resources on non-forest lands within a period of five years sufficient to meet the requirements of tribal communities as well as the Scheduled Castes.
- (v) In the case of land being acquired from the members of the Scheduled Castes or the Scheduled Tribes, at least one-third of the compensation amount due shall be paid to the affected families initially as first instalment and the rest shall be paid after taking over of the possession of the land.
- (vi) The affected families of the Scheduled Tribes shall be resettled preferably in the same Scheduled Area in a compact block so that they can retain their ethnic, linguistic and cultural identity.
- (vii) The resettlement areas predominantly inhabited by the Scheduled Castes and the Scheduled Tribes shall get land, to such extent as may be decided by the appropriate Government free of cost for community and social gatherings.
- (viii) Any alienation of tribal lands or lands belonging to members of the Scheduled Castes in disregard of the laws and regulations for the time being in force shall be treated as Null and void. and in the case of acquisition of such lands, the rehabilitation and resettlement benefits shall be made available to the original tribal land owners or land owners belonging to the Scheduled Castes.
- (ix) The affected Scheduled Tribes, other traditional forest dwellers and the Scheduled Castes having fishing rights in a river or pond or dam in the affected area shall be given fishing rights in the reservoir area of the irrigation or hydel projects.
- (x) Where the affected families belonging to the Scheduled Castes and the Scheduled Tribes are relocated outside of the district, then they shall be paid an additional 25% rehabilitation and resettlement benefits to which they are entitled in monetary terms along with a one-time entitlement of Rs. 50,000/-.
- (xi) All benefits, including the reservation benefits available to the Scheduled Tribes and the Scheduled Castes in the affected areas shall continue in the resettlement area.
- (xii) Whenever the affected families belonging to the Scheduled Tribes who are residing in the Scheduled Areas referred to in the Fifth Schedule or the tribal areas referred to in the Sixth Schedule to the Constitution are relocated outside those areas, then, all the statutory safeguards, entitlements and benefits being enjoyed by them under this Act shall be extended to the area to which they are resettled regardless of whether the resettlement area is a scheduled Area referred to in the said Fifth Schedule or a tribal area referred to in the said Sixth Schedule, or not.
- (xiii) Where the community rights have been settled under the provisions of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006. The same shall be quantified in monetary amount and be paid to the individual who has been displaced.

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

MINIMUM COMPENSATION & R&R ENTITLEMENTS FOR LAND ACQUISITION

A. Comprehensive Compensation Package		
Eligibility for Entitlement	Provisions	
<p>The affected families</p> <ul style="list-style-type: none"> • <u>Land Owners: includes any person-</u> v) whose name is recorded as (he owner of the land or building or part thereof, in the records of the authority concerned; or vi) any person who is granted forest rights under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 or under any other law for the time being in force; or vii) who is entitled to be granted Patta rights on the land under any law of the State including assigned lands: or viii) any person who has been declared as such by an order of the court or Authority; 	<p>Determination of Compensation :</p> <p>4. Market value of the land</p> <ul style="list-style-type: none"> • as specified in the Indian Stamp Act, 1899 or • the average of the sale price for similar type of land situated in the village or vicinity, or • consented amount of compensation as agreed in case of acquisition of lands for private companies or for public private partnership project. <p>whichever is higher</p> <p>Market value x Multiplier* between 1 to 2 in rural areas only (No multiplier in urban areas).</p> <p>5. Value of the assets attached to land:</p> <p>Building/Trees/Wells/Crop etc. as valued by relevant govt. authority;</p> <p>Land compensation = 1+2</p> <p>6. Solatium: 100% of total compensation</p> <p>Total Compensation : 1+2+3</p>	
<p>(*) Precise scale shall be determined by the State Govt. The indicative values of multiplier factor based on distance from urban areas as provided in the act.</p>		
Radial Distance from Urban area (Km)	Multiplier Factor	
0-10	1.00	
10-20	1.20	
20-30	1.40	
30-40	1.80	
40-50	2.00	
B. R&R Package		
<p>Elements of Rehabilitation and Resettlement Entitlements for all the affected families (both land owners and the families whose livelihood is primarily dependent on land acquired) in addition to compensation provided above</p>		
Sl. No.	Elements of R& R Entitlements	Provision
1.	Subsistence grant/allowance for displaced families	Rs. 3000 per month per family for 12 months
2.	The affected families shall be entitled to:	<p>d. Where jobs are created through the project, mandatory employment for one member per affected family; or</p> <p>e. Rupees 5 lakhs per family; or</p>

		f. Rupees 2000 per month per family as annuity for 20 years, with appropriate index for inflation; The option of availing (a) or (b) or (c) shall be that of the affected family
3.	Housing units for displacement: iii) If a house is lost in rural areas: iv) If a house is lost in urban areas	iii. A constructed house shall be provided as per the Indira Awas Yojana specifications. iv. A constructed house shall be provided, which will be not less than 50 sq. mts. in plinth area. In either case the equivalent cost of the house may also be provided in lieu of the house as per the preference of the project affected family. The stamp duty and other fees payable for registration of the house allotted to the affected families shall be borne by the Requiring Body.
4.	Transportation cost for displaced families	Rs 50,000/- per affected family
5.	Resettlement Allowance (for displaced families)	Onetime Rs 50,000/- per affected family
6.	Cattle shed/ petty shop cost	Onetime financial assistance as appropriate for construction as decided by St. Govt. subject to minimum of Rs.25,000/-
7.	Artisan/small traders/others (in case of displacement)	Onetime financial assistance as appropriate as decided by St. Govt. subject to minimum of Rs.25,000/-
Special Provisions for SCs/STs		
In addition to the R&R package, <i>SC/ST families will be entitled to the following additional benefits:</i>		
8. One time financial assistance of Rs. 50,000 per family;		
9. Families settled outside the district shall be entitled to an additional 25% R&R benefits;		
10. Payment of one third of the compensation amount at very outset;		
11. Preference in relocation and resettlement in area in same compact block;		
12. Free land for community and social gatherings;		
13. In case of displacement, a <i>Development Plan is to be prepared</i>		
14. <i>Continuation of reservation and other Schedule V and Schedule VI area benefits from displaced area to resettlement area.</i>		

Consultations and Participation Framework

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

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

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

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

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

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

Tribal Land Acquisition Process:

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

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

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

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

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

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

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

Approval of Borrow Area



पावर वी क्षेत्र
एन.ई.आर.पी.एस
मेनगाव, कार्यालय



पावर लिड
Date: 06.01.2018

Ref: .NERPSIP/AMG/SS-03/F-03/

Sub: Sources approval of borrowed soil for levelling work at 132/33kV Hajo Sub-station package ASM-SS-03 under NERPSIP project.

- 1.0 Construction work of 132/33kV Hajo sub-station under the package ASM-SS-03 has been awarded to M/s Necon Power & Infra Ltd., Jorhat, Assam vide LOA No: CC-CS/94-NER/SS-2672/1/G3/CA-I/6903 & CA-II/6904 dated 29/09/2016.
- 2.0 Site levelling work with borrowed earth is under the scope in the BOQ for 132/33kV Hajo Substation and accordingly one source namely "1 No. Kulhati village (Paddy Field), Hajo" has already been approved vide note sheet no. NERPSIP/AMG/SS-03/56 dtd. 15.05.2017 (copy enclosed).
- 3.0 M/s. Necon Power & Infra Ltd. vide their letter no. NECCON/PGCIL/ASM-SS-03/FE/22 dtd. 06.01.18 also requested for extension of approval of following source for 132/33kv Hajo substation which is already been approved for their ASM-DMS-04 package,-
**"Private Land of Mr. Suraj Van Mittal,
Vill.- Saokuchi, Mauza- Beltola, Patta No. 142, Dag No- 67"**
- 4.0 M/s. NECCON requested for approval of above source on the following reason,-
 - a) Villagers of previous source are not allowed to ply heavy vehicle on the adjacent approach road of the substation.
 - b) Previous source is paddy field & low-lying area hence in rainy season difficult to lift earth.
 - c) Requested source is high land and able to lift the material/earth round the year.
- 5.0 The above source for borrowed earth already been approved for on-going construction work of DMS Substations in Guwahati area under ASM-DMS-04 Pkg vide no.NERPSIP/GHY/1034/14A/ dtd.11.12.2017(Copy enclosed). Since the reason explained by the contractor are justified and therefore, it is proposed to approve the above source under CI. No.03 for borrowed earth for site levelling work of 132/33kV Hajo substation.

- 6.0 In view of the above, the competent authority may please accord approval for the source mentioned as below may be considered for the construction work of 132/33kV Hajo sub-station under ASM-SS-03 package as requested by M/s. Necon Power & Infra Ltd,

Sl. No.	Name of Materials	Name of Source
01	Borrowed Earth	"Private Land of Mr. Suraj Van Mittal, Vill. Saokuchi, Mauza- Beltola, Patta No. 142, Dag No- 67"

- 7.0 As per Standard Field Quality Plan, Site-In-Charge is competent to accord approval of the proposal.

Submitted for approval.

Manager, Amingaon

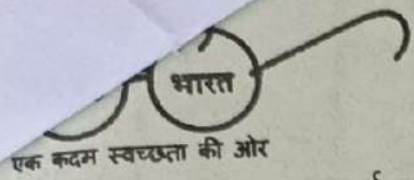
DGM (NERPSIP), Guwahati.

(Polash Kharghoria)

DM (NERPSIP), Amingaon

NORTH EASTERN REGION

उत्तर पूर्वी क्षेत्र



पावरग्रिड, उत्तर-पूर्वी क्षेत्र
एन.ई.आर.पी.एस.आई.पी.- आमिन्गोन



Ref: NERPSIP/AMG/AS-DMS-03/F-03/184A

Date: 03.05.2019

Sub: Approval of source of Borrowed Earth to be used for the construction activities of 33/11kV Sesa Domdoa and Ramdia substation against package ASM-DMS-03 under NERPSIP.

1. With reference to NOA No. CC-CS/94-NER/REW-3081/1/G10/CA-II/7120 dtd. 24.01.2017 for construction package ASM-DMS-03 has been awarded to M/s Sterling and Wilson Pvt. Ltd, Kolkata, West Bengal.
2. Borrowed earth from the following source, to be used for filling in 33/11kV Sesa, Domdoa and Ramdia substation was jointly sampled and sent for testing to Assam Engineering College, Guwahati vide letter no. NERPSIP/AMG/DMS -03/F-03A/113 dtd. 08.03.2019.

**Puthimari River Bank,
Lakhai Tara, Hajo**

3. The test report vide no. CAEC-CON/GT/19/4107 dtd. 30.04.2019 has been received and the brief details of the results are as below:

Sl. No.	Properties	Test Result	As per POWERGRID Technical Specification/SFQP	Remarks
1	Optimum Moisture Content (OMC)	13.00%	As per IS:2720(part-2)	
2	Maximum Dry Density	1.80gm/cc	As per IS:2720(part-7)	
3	Liquid Limit	31%	≤ 80 %	Within limits
4	Plastic Limit	Non plastic	≤ 55 %	Within limits
5	Plasticity Index	Non plastic		

4. From the above, the results of tested soil are within the specified limits as per POWERGRID TS/SFQP, hence it is proposed that the above source named in para 2 of borrowed earth can be approved for use in site levelling works for above 3 (three) sub-stations under ASM-DMS-03 package.
5. In view of the above, competent authority may please accord approval for the source mentioned at para-2 for the subject package awarded to M/s Sterling and Wilson Pvt. Ltd, Kolkata.
6. As per SFQP Doc.No: C/QA&I/SFQP/SCW rev-05, Site In-charge is the competent authority for approval of the same.

Submitted for approval please.
Encl: A/A

पि. खारघोरी 03/05/19
(Polash Kharghoria)
Chief. Manager (C)
NERPSIP, Amingaon

Chief Manager (I/c) Amingaon

GM, PM-II (NERPSIP), Guwahati

Chief mgr, Amingaon

NORTH EASTERN REGION

उत्तर पूर्वी क्षेत्र

04.05.19

ANNEXURE VI

**Signed Copy of Safety
Plan Submitted by
Contractor**

अंतर कार्यालय ज्ञापन
INTER OFFICE MEMO.

प्रेषक/From :- Engr. (Safety), Shillong

सेवा में/To: **GM (NERPSIP),
Amingaon Project**

प्रतिया/ CC: For Kind Information
1. GM (FQA, PESM & Safety),
NERPSIP, Guwahati
2. CM (Safety), NER, Shillong

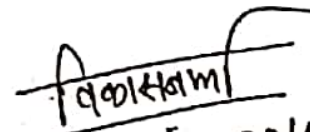
संदर्भ संख्या /Ref. No: NESH/Safety/112/2021/16
दिनांक. / Date: 20.04.2021

Sub: Safety plan submitted by M/s KEC INTERNATIONAL LTD, Mumbai for the package ASM-TW-07B under NERPSIP, Assam -Reg.

In reference to IOM : NERPSIP/AMG/KEC/SAFETY/1123 dated 19.03.2021 regarding the subject cited above, the safety plan submitted by M/s KEC INTERNATIONAL LTD, Mumbai, has been checked and found in order, the safety plan can be approved.

यह आपके सूचना एवम आवश्यक कार्रवाई हेतु प्रेषित है।

सादर/ Regards,


20/4/21
(विकास बर्फा)



असम ASSAM

H 532485

SAFETY PLAN

THIS SAFETY PLAN is made this 19 day of March 2021 by M/S KEC International Ltd., Mumbai, India a company incorporated under the laws of India and having its Registered Office at 1st Floor, Ceat Mahal, 463, Dr. Annie Basant Road, Worli, Mumbai-400030, India (hereinafter called as Contractor' which expression shall include its successors and permitted assigns) for approval of M/S Power Grid Corporation of India Limited a company incorporated under the Companies Act, 1956 having its Registered Office at B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi-110016 and its Corporate Office at 'Sardamini' Plot No. 2, Sector-29, Gurgaon-122001 for its ' Supply, Erection, Testing & Commissioning of Transmission line Tower package TW-7B

WHEREAS M/S Power Grid Corporation of India Limited has awarded to the Contractor the aforesaid Contract vide its Notification of Award No: CC-CS/94-NER/TWT-4171/1/G4/NOA/II/9103 Dated 15/01/21 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.

R. J. Singh

NOW THEREFORE, the Contractor undertakes to execute the Contract as per the safety plan as follows:

1. THAT the contractor shall execute the works as per provisions of Bidding Documents including those in regard to Safety Precautions / provisions as per statutory requirements.
2. THAT the Contractor shall execute the works in a well planned manner from the commencement of Contract as per agreed mile stones of work completion schedule so that planning and execution of construction works goes smoothly and consistently through out the contract duration without handling pressure in last quarter of the financial year/last months of the Contract and the shall be finalized in association with POWERGRID CORPORATION OF INDIA LIMITED 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 mix 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

Page 2 of 15

Rijun - Shu



सह. प्र. अभि. HUL DAS
अभि. एन्जि. Engineer
पावरग्रिड, एन.ई.आर.पि.एस.आई.पि.
POWERGRID, NERPSIP
अभि. नगराज / Aminraj

and warn about imminent dangers and precautions to be taken against the imminent danger (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 CORPORATION OF INDIA LIMITED 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 Equipments / Machineries / Lifting tools / Lifting tackles / Lifting gears / All Kind of Ropes including wire ropes/Polypropylene ropes etc. used for Lifting purpose during execution of the project and get them periodically examined and load tested for safe working load in accordance with relevant provisions and requirement of Building & other construction workers Regulation of Employment and Conditions of Services Act and Central Rule 1998, Factories Act 1948, Indian Electricity Act 2003 before start of the project. A register of such examinations and tests shall be properly maintained by the contractor and will be promptly produced as and when desired by the Engineer In-charge / Project Manager or by the person authorized by him. The Contractor has to ensure to give special attention on the information / 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 CORPORATION OF INDIA LIMITED. The Contractor's Site Supervisor / Project Manager has to ensure that all workmen must use Personal Protective Equipment at site. The Contractor shall ensure that Industrial Safety helmet 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

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Rajendra Singh


राहुल कुमार शर्मा RAHUL DAS
अभिज्ञान अभियंता
पावरग्रिड, न.ए.एस.आई.पि.
POWERGRID, NERPSIP
आमिनगांव/Amingaon

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 CORPORATION OF INDIA LIMITED may issue warning letter to Project Manager of contractor in violation of above norms.


9. 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 CORPORATION OF INDIA LIMITED 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 PPEs to be distributed to the workers shall be checked by POWERGRID CORPORATION OF INDIA LIMITED supervisory staff before its usage.


The Contractor also agrees for addition / modification to the list PPE, if any, as advised by Engineer In-Charge/Project Manager.

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 ensure to maintained them in healthy condition.

THAT the Contractor has prepared / worked out minimum number of healthy Earthing Equipments with Earthing lead confirming to relevant IS / European standards per gang wise during stringing activity / as per requirement, which is enclosed herewith at Annexure – 4 (SP) for review and acceptance of Engineer In-Charge / Project Manager prior to execution of work.

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Raja M. J. Sharma



RAJU DAS
In-charge
पावरग्रिड, एन.एस.आर.ए.एस.आर.पि.
POWERGRID, NERPSIP
आमिनगाँव/Amingaon

10. THAT the Contractor shall provide communication facilities i.e. Walkie-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-coordinator 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 numbers 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 CORPORATION OF INDIA LIMITED 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 copy of organization 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 short comings 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.

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Rajesh - Shukla




राहुल राहुल DAS
Engineer
पवरिग्रिड, एन.ई.आर.पि.एस.आई.पि.
POWERGRID, NERPSIP
आमिनगांव/Amingaon

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 CORPORATION OF INDIA LIMITED 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 stipulation is in addition to all other compensation payable to sufferer as per workmen compensation Act. / Rule.

Raja K. Shankar




MAHUL DAS
Engineer
पावरग्रिड, एन.ई.आर.पि.एस.आई.पि.
POWERGRID, NERPSIP
आमिनगांव/Amingaon

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 st Fatal Accident due to negligence by the Contractor	Rs. 50,00,000/-
b.	Upon 2 nd Fatal Accident due to negligence by the Contractor	Rs. 75,00,000/-
c.	Upon 3 rd Fatal Accident due to negligence by the Contractor	Rs. 1,00,00,000/-
d.	Re-occurrence of Fatal Accident even after 3 rd 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.	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 bills(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 CORPORATION OF INDIA LIMITED 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.

राहुल दास RAHUL DAS
अभियंता Engineer
पावरग्रिड, एन.ई.आर.पि.एस.आई.पि.
POWERGRID, N.E.P.S.A.I.P.



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 Engineer In-charge/Project Manager before start of work.
19. THAT the contractor shall organize safety training program on safety, health and environment and for safe execution of different activities of worker 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 Station / 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 CORPORATION OF INDIA LIMITED 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 feed back from POWERGRID CORPORATION OF INDIA LIMITED concerned shall be taken and recorded. The Employers 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 / person 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.

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राहुल दास / RAHUL DAS
अभियंता / Engineer
पावरग्रिड, एन.ए.ए.पी.एस.आइ.पि.
POWERGRID, NERPSIP
आमिनगाव / Amingaon



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 policy taken by the contractor for insurance coverage against accident for all employees are enclosed at Annexure-10 B (SP).

25. THAT a check list in respect of aforesaid enclosures along with the Contractors remarks wherever required, is attached as Annexure-Cheek List herewith.

THE CONTRACTOR shall incorporate modification / 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 first progressive payment towards Services Contract shall be made on submission of 'Safety Plan' alongwith all requisite documents and approval of the same by the Engineer in -Charge/Project Manager.

IN WITNESS WHEREOF, the Contractor has hereunto set its hand through its authorized representative under the common seal of the Company, the day, month and year first above mentioned.

For and on behalf of

M/S.....K.E.C.....International Limited

Signature.....*Raja Maya Shankar*

Name.....RAJA MAYA SHANKAR

Address.....Amingaon, Kamrup.

Authorized representative



(In case of Company)

WITNESS

1. Signature.....*Nitin Kumar Desh*

Name.....N.I.I.N. KR SINHA

Address.....Amingaon, Kamrup

2. Signature.....*Suman Singh*

Name.....Suman Singh

Address.....Amingaon, Kamrup



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Rahul Das
राहुल दास RAHUL DAS
अभिज्ञान/Engineer
पावरग्रिड, एन.ई.ए.आई.एस.आई.पि.
POWERGRID, NERPSIP
आमिनागांव/Amingaon
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ANNEXURE VII

Safety/Penalty Provisions in Contract Conditions

PC 21.3.4 Replace the word 'may' in line no. 10 with 'is'.

Addition of New Clauses (PC21.3.5, PC21.3.6) after GC 21.3.4

PC 21.3.5 Packing

The Contractor shall provide such packing of the Goods as it is required to prevent their damage or deterioration during transit to their destination as indicated in the Contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit and open storage. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the Goods to their destination and the absence of heavy handling facilities at all points of transit.

PC 21.3.6 The packing, marking and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the Contract and, subject to any subsequent instruction ordered by the Employer consistent with the requirements of the Contract.

PC 21.4 Replace the word 'materials' in line no. 2 with 'Plant and Equipment'.

Add the word 'including liabilities for port charges if any' after the word 'clearance' in line no. 3.

Addition of Sub-Clauses (PC22.2.3.1, PC22.2.3.2, PC22.2.3.3, PC 22.2.3.4) of GC 22.2.3

PC 22.2.3.1 Compliance with Labour Regulations

During continuance of the contract, the Contractor and his sub-contractors shall abide at all times by all applicable existing labour enactments and rules made thereunder, regulations notifications and byelaws of the State or Central Government or local authority and any other labour law (including rules), regulations bye laws that may be passed or notification that may be issued under any labour law in future either by the State or the Central Government or the local authority. The employees of the Contractor and the Sub-contractor in no case shall be treated as the



employees of the Employer at any point of time.

- PC 22.2.3.2 The Contractor shall keep the Employer indemnified in case any action is taken against the Employer by the competent authority on account of contravention of any of the provisions of any Act or rules made thereunder, regulations or notifications including amendments.
- PC 22.2.3.3 If the Employer is caused to pay under any law as principal employer such amounts as may be necessary to cause or observe, or for non observance of the provisions stipulated in the notifications/ byelaws/Acts/ Rules/regulations including amendments, if any, on the part of the Contractor, the Employer shall have the right to deduct any money due to the Contractor under this contract or any other contract with the employer including his amount of performance security for adjusting the aforesaid payment. The Employer shall also have right to recover from the Contractor any sum required or estimated to be required for making good the loss or damage suffered by the Employer.
- PC 22.2.3.4 Salient features of some major laws applicable to establishments engaged in building and other construction works are indicated at **Appendix-I** to PC.

Addition of New Sub-Clauses (PC22.4.1 to 22.4.3 including its sub-clauses) of GC 22.4

PC 22.4.1 Protection of Environment

The Contractor shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as consequence of his methods of operation.

During continuance of the Contract, the Contractor and his Sub-contractors shall abide at all times by all existing enactments on environmental protection and rules made there under, regulations, notifications and bye-laws of the State or Central Government, or local authorities and any other law, bye-law, regulations that may be passed or notification that may be issued in this respect in future by the State or Central Government or the local authority.

Salient features of some of the major laws that are applicable are given below:



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The Water (Prevention and Control of Pollution) Act, 1974. This provides for the prevention and control of water pollution and the maintaining and restoring of wholesomeness of water. 'Pollution' means such contamination of water or such alteration of the physical, chemical or biological properties of water or such discharge of any sewage or trade effluent or of any other liquid, gaseous or solid substance into water (whether directly or indirectly) as may, or is likely to, create a nuisance or render such water harmful or injurious to public health or safety, or to domestic, commercial, industrial, agricultural or other legitimate uses, or to the life and health of animals or plants or of aquatic organisms.

The Air (Prevention and Control of Pollution) Act, 1981. This provides for prevention, control and abatement of air pollution. 'Air Pollution' means the presence in the atmosphere of any 'air pollutant', which means any solid, liquid or gaseous substance (including noise) present in the atmosphere in such concentration as may be or tend to be injurious to human beings or other living creatures or plants or property or environment.

The Environment (Protection) Act, 1986. This provides for the protection and improvement of environment and for matters connected therewith, and the prevention of hazards to human beings, other living creatures, plants and property. 'Environment' includes water, air and land and the inter-relationship which exists among and between water, air and land, and human beings, other living creatures, plants, micro-organism and property.

The Public Liability Insurance Act, 1991. This provides for public liability insurance for the purpose of providing immediate relief to the persons affected by accident occurring while handling hazardous substances and for matters connected herewith or incidental thereto. Hazardous substance means any substance or preparation which is defined as hazardous substance under Environment (Protection) Act, 1986, and exceeding such quantity as may be specified by notification by the Central Government.

- PC 22.4.2 (i) The Contractor shall (a) establish an operational system of managing environmental impacts, (b) carry out all the monitoring and mitigation measures set forth in the environment management plan attached to the Particular Conditions as **Appendix-II**, and (c) allocate the budget required to ensure that such measures are carried out. The



Contractor shall submit to the Employer (quarterly) semi-annual) reports on the carrying out of such measures.

- (ii) The Contractor shall adequately record the conditions of roads, agricultural land and other infrastructure prior to transport of material and construction commencement, and shall fully reinstate road / pathways, other local infrastructure and agricultural land to atleast their pre-project condition upon construction completion.
- (iii) The Contractor shall undertake detailed survey of the affected persons during transmission line alignment finalization under the Project, where applicable. and
- (iv) The Contractor shall conduct health and safety programme for workers employed under the Contract and shall include information on the risk of sexually transmitted diseases, including HIV/AIDS in such programs.

PC 22.4.3 Safety Precautions

PC 22.4.3.1 The Contractor shall observe all applicable regulations regarding safety on the Site.

Unless otherwise agreed, the Contractor shall, from the commencement of work on Site until taking over, provide:

- a) fencing, lighting, guarding and watching of the Works wherever required, and
- b) temporary roadways, footways, guards and fences which may be necessary for the accommodation and protection of Employer / his representatives and occupiers of adjacent property, the public and others.

PC 22.4.3.2 The Contractor shall ensure proper safety of all the workmen, materials, plant and equipment belonging to him or to THE EMPLOYER or to others, working at the Site. The Contractor shall also be responsible for provision of all safety notices and safety equipment required both by the relevant legislations and the Engineer, as he may deem necessary.



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PC 22.4.3.3 The Contractor will notify well-in advance to the Engineer of his intention to bring to the Site any container filled with liquid or gaseous fuel or explosive or petroleum substance or such chemicals which may involve hazards. The Engineer shall have the right to prescribe the conditions, under which such container is to be stored, handled and used during the performance of the works and the Contractor shall strictly adhere to and comply with such instructions. The Engineer shall have the right at his sole discretion to inspect any such container or such construction plant/equipment for which material in the container is required to be used and if in his opinion, its use is not safe, he may forbid its use. No claim due to such prohibition shall be entertained by the Owner and the Owner shall not entertain any claim of the Contractor towards additional safety provisions/conditions to be provided for/constructed as per the Engineer's instructions.

Further, any such decision of the Engineer shall not, in any way, absolve the Contractor of his responsibilities and in case, use of such a container or entry thereof into the Site area is forbidden by the Engineer, the Contractor shall use alternative methods with the approval of the Engineer without any cost implication to THE EMPLOYER or extension of work schedule.

PC 22.4.3.4 Where it is necessary to provide and/or store petroleum products or petroleum mixtures and explosives, the Contractor shall be responsible for carrying-out such provision and/or storage in accordance with the rules and regulations laid down in Petroleum Act 1934, Explosives Act, 1948 and Petroleum and Carbide of Calcium Manual published by the Chief Inspector of Explosives of India. All such storage shall have prior approval of the Engineer. In case, any approvals are necessary from the Chief Inspector (Explosives) or any statutory authorities, the Contractor shall be responsible for obtaining the same.

PC 22.4.3.5 All equipment used in construction and erection by Contractor shall meet Indian/International Standards and where such standards do not exist, the Contractor shall



ensure these to be absolutely safe. All equipment shall be strictly operated and maintained by the Contractor in accordance with manufacturer's Operation Manual and safety instructions and as per Guidelines/rules of THE EMPLOYER in this regard.

- PC 22.4.3.6 Periodical examinations and all tests for all lifting/hoisting equipment & tackles shall be carried-out in accordance with the relevant provisions of Factories Act 1948, Indian Electricity Act 1910 and associated Laws/Rules in force from time to time. 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 or by the person authorised by him.
- PC 22.4.3.7 The Contractor shall be fully responsible for the safe storage of his and his Sub-Contractor's radioactive sources in accordance with BARC/DAE Rules and other applicable provisions. All precautionary measures stipulated by BARC/DAE in connection with use, storage and handling of such material will be taken by the Contractor.
- PC 22.4.3.8 The Contractor shall provide suitable safety equipment of prescribed standard to all employees and workmen according to the need, as may be directed by the Engineer who will also have right to examine these safety equipment to determine their suitability, reliability, acceptability and adaptability.
- PC 22.4.3.9 Where explosives are to be used, the same shall be used under the direct control and supervision of an expert, experienced, qualified and competent person strictly in accordance with the Code of Practice/Rules framed under Indian Explosives Act pertaining to handling, storage and use of explosives.
- PC 22.4.3.10 The Contractor shall provide safe working conditions to all workmen and employees at the Site including safe means of access, railings, stairs, ladders, scaffoldings etc. The scaffoldings shall be erected under the control and supervision of an experienced and competent person. For erection, good and standard quality of material only shall



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be used by the Contractor.

PC 22.4.3.11 The Contractor shall not interfere or disturb electric fuses, wiring and other electrical equipment belonging to the Owner or other Contractors under any circumstances, whatsoever, unless expressly permitted in writing by THE EMPLOYER to handle such fuses, wiring or electrical equipment

PC 22.4.3.12 Before the Contractor connects any electrical appliances to any plug or socket belonging to the other Contractor or Owner, he shall:

- a. Satisfy the Engineer that the appliance is in good working condition;
- b. Inform the Engineer of the maximum current rating, voltage and phases of the appliances;
- c. Obtain permission of the Engineer detailing the sockets to which the appliances may be connected.

PC 22.4.3.13 The Engineer will not grant permission to connect until he is satisfied that;

- a. The appliance is in good condition and is fitted with suitable plug;
- b. The appliance is fitted with a suitable cable having two earth conductors, one of which shall be an earthed metal sheath surrounding the cores.

PC 22.4.3.14 No electric cable in use by the Contractor/Owner will be disturbed without prior permission. No weight of any description will be imposed on any cable and no ladder or similar equipment will rest against or attached to it.

PC 22.4.3.15 No repair work shall be carried out on any live equipment. The equipment must be declared safe by the Engineer and a permit to work shall be issued by the Engineer before any repair work is carried out by the Contractor. While working on electric lines/equipment, whether live or dead, suitable type and sufficient quantity of tools will have to be provided by the Contractor to

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electricians/workmen/officers.

PC 22.4.3.16 The Contractors shall employ necessary number of qualified, full time electricians/electrical supervisors to maintain his temporary electrical installation.

PC 22.4.3.17 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 safety officer to supervise safety aspects of the equipment and workmen, who will coordinate with the Project Safety Officer. 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.

The name and address of such Safety Officers of the Contractor will be promptly informed in writing to Engineer with a copy to Safety Officer-In charge before he starts work or immediately after any change of the incumbent is made during currency of the Contract.

PC 22.4.3.18 In case any accident occurs during the construction/erection or other associated activities undertaken by the Contractor thereby causing any minor or major or fatal injury to his employees due to any reason, whatsoever, it shall be the responsibility of the Contractor to promptly inform the same to the Engineer in prescribed form and also to all the authorities envisaged under the applicable laws.

PC 22.4.3.19 The Engineer 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 Engineer within 3 days



of such stoppage of work and decision of the Engineer in this respect shall be conclusive and binding on the Contractor.

PC 22.4.3.20 The Contractor shall not be entitled for any damages/compensation for stoppage of work due to safety reasons as provided in para GCC 22.4.3.19 above and the period of such stoppage of work will not be taken as an extension of time for completion of work and will not be the ground for waiver of levy of liquidated damages.

PC 22.4.3.21 It is mandatory for the Contractor to observe during the execution of the works, requirements of Safety Rules which would generally include but not limited to following:

Safety Rules

- a) Each employee shall be provided with initial indoctrination regarding safety by the Contractor, so as to enable him to conduct his work in a safe manner.
- b) No employee shall be given a new assignment of work unfamiliar to him without proper introduction as to the hazards incident thereto, both to himself and his fellow employees.
- c) Under no circumstances shall an employee hurry or take unnecessary chance when working under hazardous conditions.
- d) Employees must not leave naked fires unattended. Smoking shall not be permitted around fire prone areas and adequate fire fighting equipment shall be provided at crucial location.
- e) Employees under the influence of any intoxicating beverage, even to the slightest degree shall not be permitted to remain at work.



- f) There shall be a suitable arrangement at every work site for rendering prompt and sufficient first aid to the injured.
- g) The staircases and passageways shall be adequately lighted.
- h) The employees when working around moving machinery, must not be permitted to wear loose garments. Safety shoes are recommended when working in shops or places where materials or tools are likely to fall. Only experienced workers shall be permitted to go behind guard rails or to clean around energized or moving equipment.
- i) The employees must use the standard protection equipment intended for each job. Each piece of equipment shall be inspected before and after it is used.
- j) Requirements of ventilation in underwater working to Licenced and experienced divers, use of gum boots for working in slushy or in inundated conditions are essential requirements to be fulfilled.
- k) In case of rock excavation, blasting shall invariably be done through Licenced blasters and other precautions during blasting and storage/transport of charge material shall be observed strictly.

PC 22.4.3.22

The Contractor shall follow and comply with all THE EMPLOYER Safety Rules, relevant provisions of applicable laws pertaining to the safety of workmen, employees, plant and equipment as may be prescribed from time to time without any demur, protest or contest or reservations. In case of any discrepancy between statutory requirement and THE EMPLOYER Safety Rules referred above, the latter shall be binding on the Contractor unless the statutory provisions are more stringent.

PC22.4.3.23

If the Contractor fails in providing safe working



environment as per THE EMPLOYER Safety Rules or continues the work even after being instructed to stop work by the Engineer as provided in para GCC 22.4.3.19 above, the Contractor shall promptly pay to THE EMPLOYER, on demand by the Owner, compensation at the rate of Rs.5, 000/- per day of part thereof till the instructions are complied with and so certified by the Engineer. However, in case of accident taking place causing injury to any individual, the provisions contained in para GCC 22.4.3.24 shall also apply in addition to compensation mentioned in this para.

PC 22.4.3.24 If the Contractor does not take adequate safety precautions and/or fails to comply with the Safety Rules as prescribed by THE EMPLOYER or under the applicable law for the safety of the equipment and plant or for the safety of personnel or the Contractor does not prevent hazardous conditions which cause injury to his own employees or employees of other Contractors or THE EMPLOYER employees or any other person who are at Site or adjacent thereto, then the Contractor shall be responsible for payment of a sum as indicated below to be deposited with THE EMPLOYER, which will be passed on by THE EMPLOYER to such person or next to kith and kin of the deceased:

a.	Fatal injury or accident causing death	Rs. 1,000,000/- per person
b.	Major injuries or accident causing 25% or more permanent disablement	Rs. 100,000/- per person

Permanent disablement shall have same meaning as indicated in Workmen's Compensation Act. The amount to be deposited with THE EMPLOYER and passed on to the person mentioned above shall be in addition to the compensation payable under the relevant provisions of the Workmen's Compensation Act and rules framed there under or any other applicable laws as applicable from time to time. In case the Contractor does not deposit the above mentioned amount with THE EMPLOYER, such



amount shall be recovered by THE EMPLOYER from any monies due or becoming due to the Contractor under the contract or any other on-going contract.

PC22.4.3.25 If the Contractor observes all the Safety Rules and Codes, Statutory Laws and Rules during the currency of Contract awarded by the Owner and no accident occurs then THE EMPLOYER may consider the performance of the Contractor and award suitable 'ACCIDENT FREE SAFETY MERITORIOUS AWARD' as per scheme as may be announced separately from time to time.

PC22.4.3.26 The Contractor shall also submit 'Safety Plan' as per proforma specified in Section IX: Contract Forms, Part-3 of Bidding Documents alongwith all the requisite documents mentioned therein and as per check-list contained therein to the Engineer In-Charge for its approval within 60 days of award of Contract.

Further, one of the conditions for release of first progressive payment / subsequent payment towards Services Contract shall be submission of 'Safety Plan' alongwith all requisite documents and approval of the same by the Engineer In-Charge.

PC 22.6 Emergency Work (GC Clause 22.6)

Replace the words "Otherwise" with "In case such work is not in the scope of the Contractor", in the second last line of second paragraph of GC clause 22.6.

PC 23.3 Supplementing sub-clause GC 23.3

For notification of testing, four weeks shall be deemed as reasonable advance notice.

PC 23.7 Test and Inspection (GC Clause 23.7)

Replace the words "GC Sub-Clause 6.1" with "GC Sub-Clause 46.1", in the last line of GC clause 23.7.



ANNEXURE VIII

Approved Labour License & Insurance Policy by Contractor



GOVT.OF INDIA
MINISTRY OF LABOUR & EMPLOYMENT
OFFICE OF THE DEPUTY CHIEF LABOUR COMMISSIONER (CENTRAL)
KENDRIYA SHRAM SADAN, R.K.MISSION ROAD, BIRUBARI, GUWAHATI.
PIN: - 781016

NO: - GH.46 (266)/2016-L

Dated: - 25-10-2021

To
Necon Power & Infra Limited
Seuni Ali, A.T.Road, Jorhat-785001

Subject: - Contract Labour (Regulation & Abolition) Act, 1970 and Contract Labour(R&A) Central Rules, 1971:- Issue of Renewal of license No: GH.46 (266)/2016-L dated 21-10-2016.

Dear Sir,

Please refer to your application for renewal of license dated 07-10-2021 under above mentioned subject, received in this Office on 22-10-2021.

In this connection, please find enclose herewith the Original license duly renewed up to **20-10-2022**.

Please acknowledge receipt.

Enclose: - As above.

Yours faithfully,

(S.K.CHAKMA)

Assistant Labour Commissioner (Central)
& Licensing Officer under C.L(R&A) Act, 1970
Assistant Labour Commissioner (C)
& Licensing & Registering Officer under
Contract Labour (R&A) Act. 1970
Guwahati

FORM-VI

[(See Rule 25(1))]

Government of India

Ministry of Labour & Employment

Office of the Licencing Officer & Assistant Labour Commissioner(Central)

KENDRIYA SHRAM SADAN, R.K. Mission Road, Guwahati-781016



Licence No. GH.46/266/2016-L

Dated: 21.10.16

Fee paid: Rs.75.00

1) Licence is hereby granted to M/s Necon Power & Infra Ltd (Rep.by:Shri J.P.Khetan, Director) Seuni Ali, A.T.Road, Jorhat-785001, ASSAM under section 12(1) on 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 132/33KV Hazo S/S(New), 220/132KV Rangia S/S(Extn.), 132/33 KV Kahilipara S/S(Extn.) and 132/33 KV Dhaligaon S/S(Augm) under ASM-SS-03 Package of Assam Associated with NER Power System Improvement Project in the estt. The Dy.General Manager, PGCIL, Royal Centre Flat No.102, G.S.Road, Ulubari, Guwahati-781007

3) The licence shall remain in force till **20.10.2017**

(HARI OM GAUTAM)

Assistant Labour Commissioner(Central)
and Licencing Officer under CL(R&A) Act, 1970
GUWAHATI

Date: 21.10.16

(RENEWAL)

(See Rule 29)

Date of Renewal	Fee Paid for renewal	Date of expiry	
9.09.17	Rs.100.00 (ONE HUNDRED)only	20.10.2018	
20.09.2018	Rs. 100.00	20.10.2019	
23.09.2019	Rs. 100.00	20.10.2020	

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 **95** (Nifty Five)only

WCI ASM-SS-03

THE NEW INDIA ASSURANCE CO. LTD.
(Government of India Undertaking)



POLICY SCHEDULE FOR EMPLOYEES COMPENSATION INSURANCE

Insured's Name	NECCON POWER & INFRA LIMITED		
Insured's Details		Issuing Office Details	
Customer ID	PO53672462	Office Code	DISPUR BRANCH (530702)
Address	SEUNI ALI, A I ROAD, JORHAT, ASSAM JORHAT, ASSAM, 785001	Address	NILGIRI MANSION, OPPOSITE TO NEMCARE HOSPITAL, BHANGAGARH, G. S. ROAD, 781005
Phone No		Phone No	03612529463
E-mail/Fax	neccon@necconpower.com, /	E-mail/Fax	nia 530702@newindia.co.in /
PAN No	AABCN1603J	S. Tax Regn. No	AAACN4165CST178
GSTIN/UIN	18AABCN1603J4ZM / NA	GSTIN	18AAACN4165C22P
		SAC	997139 (Other non-life insurance services excl RI)

Policy Details			
Policy Number	53070236210100000031	Business Source Code	
Period of Insurance	From: 07/11/2021 08:09:51 PM To: 06/11/2022 11:59:59 PM	Dev. Off level/Broker/Corp. Agent/Web Aggregator	Mr. PRADIP MEDHI - (DE7795252)
Date of Proposal	07-Nov-21	Agent/Bancassurance/S pecified Person	Mrs. DOLLY SINGH (NIAAG00116342) DOLLY SINGH (SI00199200)
Prev Policy No.	53070236200100000019	Phone No	NA / 0864032185
Client Type	Corporate	E-mail/Fax	2019dollyghy@gmail.com pradip.medhi@newindia.co.in, / /

Premium(₹)	GST(₹)	Total (₹)	Total (₹ in words)	Receipt No. & Date
49053	8830	57883	RUPEES FIFTY-SEVEN THOUSAND EIGHT HUNDRED EIGHTY-THREE ONLY	5307028121000000250 4 - 07/11/21

Details of Employees with monthly wages upto ₹ 15000:

Categories	Sub Categories	No of Employee	Cash Total Wages
------------	----------------	----------------	------------------

Details of Employees with monthly wages above ₹ 15000:

Categories	Sub Categories	No of Employee	Cash Total Wages
Electricity-Light and/or Power Supply	SKILLED	35	5880000
Electricity-Light and/or Power Supply	UNSKILLED	60	7920000
Trade Description	Particular of Works	Location Details	Included All Sub - Contractors
CONSTRUCTION	CONSTRUCTION WORK OF CIVIL & SUB-STATION/SUB-STATION EXTENSIONS OF 220Kv, 132/33Kv AS PER WORK ORDER.	AT RANGIA, TANGLA, HAZO, K AKALIPARA & DHALIGAON IN ASSAM UNDER SCHEME ASM-SS-03.	

Contractor/Sub-Contractor Details:

Serial No	Name of Contractor	Description	Categorie	No. of Workers			Amount Wages
				Skilled	Unskilled	Others	

Extensions under the Policy Cover

Name of the Extension	Sub Limit of the Extension	Deductibles of the Extension
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Signature Not Verified

Digitally signed by SRINIVASAN VAIDESHARAN Date: 2021.11.07 20:24:04 +5'30'

Policy No. : 53070236210100000031 Document generated by 31930 at 07/11/2021 20:23:59 Hours.

Regd. & Head Office: New India Assurance Bldg., 87 M.G. Road, Fort, Mumbai - 400 001. TOLL FREE No. 1 800 209 1415.

THE NEW INDIA ASSURANCE CO. LTD.
Dispur Branch Office-530702
Nilgiri Mansion, Opp.- Nemcare Hospital, Bhangagarh, G.S. Road, Jorhat-781005
Phone 0361-2529463



Medical Extension	₹50000	NA
Special Conditions	NA	
Special Exclusions	NA	
Special Excess/Deductible	NA	
The Policy shall be subject to EMPLOYEES COMPENSATION INSURANCE Policy clauses attached herewith.		
Clauses	Description	

Premium and GST Details

	Rate of Tax	Amount In INR
Premium		₹ 49053.00
SGST	9	44 15
CGST	9	44 15
IGST	0	0

In witness whereof the undersigned being duly authorised by the Insurers and on behalf of the Insurers has (have) hereunder set his (their) hand(s) on this 07th day of November,2021.

For and on behalf of

The New India Assurance Company Limited

Date of Issue: 07/11/2021

Duly Constituted Attorney(s)

Stamp Duty under the Policy is ₹1

Mudrank _____ Dt. _____ consolidated Stamp Fees Paid by Pay Order Number _____

number _____ dt. _____

vide receipt

Tax Invoice No : 53070221E0003588

IRDA Registration Number: 190

दि न्यु इण्डिया एश्युरेन्स कम्पनी लिमिटेड
THE NEW INDIA ASSURANCE CO. LTD
Dispur Branch Office-530702
Nilgiri Mansion, Opp.- Nercare
Hospital, Bhangagarh, G.S Road,
Guwahati-781005
Phone 0361-2520463



COLLECTION RECEIPT CUM ADJUSTMENT VOUCHER

Issuing Office : DISPUR BRANCH (530702)
Address : NILGIRI MANSION,
OPPOSITE TO NEMCARE HOSPITAL,
BHANGAGARH, G.S ROAD, 781005
GUWAHATI
Phone : 03612529463
Email : nia.530702@newindia.co.in
Fax :
Collection Number : 53070281210000002504
Collection Date : 07/11/2021
Business Source Code : 1D7795262
PAN No of Payer : AABCN1603J

Received with thanks from NECCON POWER & INFRA LIMITED.

The amount received/Adjusted is towards -

Policy No.	A/C Description	Amount ₹	A/C Code	Sub A/C Code
53070236210100000031	Bank-530702	57883.00	9100.530702	BA00012647-530702-9100

Total = ₹ 234847.00

Your Payment/Adjustment Details are as under -

Mode	Amount ₹	Cheque No.	Cheque Date	Drawee Bank	Drawee Branch	Reference No.	Scroll/BG/A PD Balance
RTGS	57883.00	309627958	05-NOV-21	STATE BANK OF INDIA	GUWAHATI	5307022110018914	N.A.

Total = ₹ 234847.00

Utilization details of the Collected Amount :

Premium	GST	Stamp Duty	Excess Amount
49053.00	8830.00	0.00	0
Sl no.	Agency Code	Agency Name	Department Code
1	NIAAG00116342	DOLLY SINGH	36

For The New India Assurance Company Limited

Revenue Stamp

दि न्यु इन्डिया एश्युरेन्स कम्पनी लिमिटेड
THE NEW INDIA ASSURANCE CO. LTD.
Dispur Branch Office-530702
Nilgiri Mansion, Opp.- Nemcare
Hospital, Bhangagarh, G.S Road
Guwahati-781005
Phone 0361-2529463

Date of Issue: 07/11/2021

Cashier's Initial

Authorized Signatory

Note -

1. Please note the Policy Number, Collection Number and date in all future correspondence. .
2. NIA shall not be liable for any claim arising out of sales made during the period between the due date and date of payment of the installment if the premium paid has been exhausted by turnover declarations/ if there is insufficient premium balance.

Tax Invoice No : 53070221E0003588

IRDA Registration Number: 190

Signature Not
Verified
Digitally signed
by SRINIVASAN
VAIDESHARAN
Date: 2021.11.07
20:24:04+05'30'

Policy No. : 53070236210100000031 Document generated by 31930 at 07/11/2021 20:23:59 Hours.

Regd. & Head Office: New India Assurance Bldg., 87 M.G. Road, Fort, Mumbai - 400 001. TOLL FREE No. 1 800 209 1415.

ANNEXURE IX

Filled Safety Checklist as Sample

SAFETY CHECK LIST DURING CONSTRUCTION OF SUB - STATION/ BAY EXTENSION/ AUGMENTATION

Date of Safety Audit/ Inspection: 22/10/2021

Region: NER (NERPSIP) Name of Sub-Stn/ Switching Stn.: 132/33 KV Teok S/S.

Name of Contractor: M/s. NECCON Power & Infra Ltd.

Contractor License / Registration No.: 3153 Validity: 16.08.2022

Name of Agency Site I-C / Safety Officer: P. Datta

A. SUB STATION CIVIL WORKS :

Sl.	Description of Activity	Feedback	Remarks
1	Check a well-planned and documented procedures for the entire Construction works of SS shall be prepared (Safety Plan) by contractor and got approved from POWERGRID for distribution to Contractors' field staff and POWERGRID for follow up.	Yes/ No.	
2	Ensure Supervisor / Gang Leader always issues instruction to the Workmen including contractor labour before start of work. Tool Box Meeting must be conducted prior to commencement of work.	Yes/ No.	
I: SAFETY DURING EXCAVATION:			
3	Check Sub-station area has been protected by constructing Boundary Wall all around the sub-station and Concertina Coils are installed.	Yes / No.	Boundary wall work under progress.
4	De-watering arrangement is available (if necessary)	Yes / No.	
5	Check proper/ adequate arrangement is made for extension of electric supply. Extension Board with MCB to be provided near work point.	Yes / No.	
6	Check arrangement of illumination at construction site is available in safe manner.	Yes / No.	
7	Check dumping of Excavated soil (Minimum 1.5 Mts. or half the depth of the pit which ever is more from the edge of the pit.)	Yes / No.	
8	Check Shoring & Shuttering to protect the loose rock / soil against fall. (if required).	Yes / No.	

(Signature)
22/10/2021

(Signature)

P. Datta
22.10.2021



9	Check lone worker is not allowed to work in the excavated area.	Yes / No.	
10	Ensure that before undertaking excavation, the soil has been tested and in case of availability of any explosive / dangerous gas, necessary arrangement must be made to remove / dilute such gases.	Yes / No. NA	
11	The positions of underground installations such as sewers, water pipes and electrical cables has been verified and in case of their existence, they must be isolated before further excavation works to ensure Human Safety.	Yes / No.	
12	Check the provision of sufficient strong ladder of suitable length is available near the working place during excavation.	Yes / No.	
13	Check if any permission is required from local statutory body before excavation.	Yes / No. NA	
14	Check that undercutting / toe cutting is not done while excavating the pits.	Yes / No. NA	
15	Back filling to be done immediately on completion/ curing of foundation at the earliest.	Yes / No.	
16	Check for any possibility of seepage of water from nearby pond / river has been estimated and taken care of.	Yes / No.	
17	Check to avoid slide / collapse of side walls of excavated pit, the excavation is to be done in trapezoidal cross - section.	Yes / No. NA	
II :SAFETY PRECAUTION DURING STORAGE, HANDLING AND USE OF BLASTING MATERIAL			
18	Check that the adequate arrangement is made for the storage of blasting material at safe place. (Temporary Magazine is to be installed observing all norms) as per Indian Explosive Act.	Yes / No.	} NA
19	Check that the blasting materials is handled by licensed blaster with due care at site. (if applicable)	Yes / No.	
20	Check smoking is prohibited in the vehicle carrying explosives.	Yes / No.	
21	Check that the Blaster is holding proper license issued by the appropriate authority. As per Indian Explosive Act.	Yes / No.	

[Signature]
22/10/2021

[Signature]

P. Dutta
22.10.2021

22	Check that the length of the fuse wire used during blasting operation is adequate.	Yes / No.	NA
23	Check while transportation, no unauthorized person is allowed in vehicle carrying explosives.	Yes / No.	
24	Check that the loading and unloading of explosives is being done carefully.	Yes / No.	
25	Check explosives and detonators or blasting caps is not being transported in the same vehicle.	Yes / No.	
26	Check while transportation the detonators and explosives are not carried loose or mixed with other materials.	Yes / No.	
27	Check surplus explosives shall not be stacked near working area during loading / unloading.	Yes / No.	
28	Check explosives shall not be held in hands when lightening the fuse.	Yes / No.	
29	Check that blasting in the open has been carried out during the fixed hours every day or on fixed days in the week so that the public at large should know about this.	Yes / No.	
30	Check that arrangement has been made to display sufficient warnings / sign board to enable the people to get out of the blasting area to get off the danger zone.	Yes / No.	
31	Check that the danger zone has been suitably cordoned off.	Yes / No.	
32	Check during blasting operations begin / after the firing of explosives shall follow the loud siren.	Yes / No.	
33	Check that during blasting operation, Labour / Workmen / Passerby are at safe places and arrangement is made to inform public by caution markings (Red Flag) / Public Notices etc.	Yes / No.	
34	Check that required PPEs are used by blaster and their gang members during blasting and also the persons supervising the blasting operations.	Yes / No.	
35	For covered blasting ensure placement of cover plates of proper thickness and sufficient numbers of sand filled bags.	Yes / No.	
35	Ensure that permission for blasting has been obtained from the appropriate authority.	Yes / No.	
III : SAFETY DURING CASTING OF FOUNDATION / CONCRETING:			
36	Check construction materials are stacked at safe place and also does not cause any danger. (Away from pit) i.e. 1.5 Mtrs. or half the depth of the pit which ever is more.)	Yes / No.	

M. Shrivastava
22/10/2021

M. Shrivastava

P. Datta
22.10.2021



37	Check proper arrangement of illumination at Construction Site of S/S is available.	Yes / No.	
38	Check that the Concreting Mixer/ Vibrator machines etc are placed at a safe place (Not very near to any pit at least 1.5 Mtr. from the edge of the pit) to avoid transfer of vibrations and should be operated by skilled persons. Machine shall be properly anchored & earthed.	Yes / No.	
39	All bracing, struts and shuttering in excavations shall be adequately secured so as to prevent their accidental displacement.	Yes / No.	
40	Check for proper placing of Hydraulic jacks with stability and constant watch of these instruments (which are continuously loaded) to avoid any danger of displacement causing accident.	Yes / No. NA	

B. : SAFETY DURING STRUCTURE, EQUIPMENT ERECTION & CABLE LAYING ETC.:

41	Check Back filling done prior to erection activity.	Yes / No.	Erection work completed
42	Check the ropes being used re structure erection / Equipment Erection has been checked for adequate strength/ physical condition (free from break of strands and knots etc.(Test Certificates to be verified)	Yes / No.	
43	Check that the lifting Tools and Tackles (e.g Pulleys, D-Shackles, Steel slings) including Derrick are in healthy condition and has been tested periodically. (Test Certificates to be verified).	Yes / No.	
44	Ensure that Man-lift/ Crane is utilized for Equipment Erection in safe and secure manner.	Yes / No.	
45	Check that all Nuts and Bolts are fitted in the structure before undertaking the job of other section of the structure and are tightened.	Yes / No.	
46	Check working area has been cordoned off with Caution tape/ hard barricading/ Safety Cone.	Yes / No.	
47	Check demarcation of feeder is done for Double Circuit Line.	Yes / No. NA	
48	Check proper guying arrangement has been made while lifting structure / Equipment, if necessary.	Yes / No.	Erection work completed
49	Check the structure has been permanently earthed.	Yes / No.	

[Signature]
22/10/2021
DOC NO: D-2-12-XX-01-02, Rev-2

[Signature]

P. Dutta
22.10.2021

50	Check that all the PPEs like Safety Helmets, Full body Double Harness Safety belts, Hand Gloves, Safety Shoes/ Canvass shoes etc. are used by the workers during erection work; Availability of Test Certificate is to be ensured and verified.	Yes / No.	Erection work completed.
51	Ensure that R-Clips/ Split Pins are fixed properly.	Yes / No.	
52	Check that Earthing of Surge Counter is done with minimum bends.	Yes / No.	
53	Cable drums after visual inspection should be stored preferably in the covered area. Cable ends should be clamped.	Yes / No.	
54	Check that Earthing of Panel is done by the erection contractor for connecting it with switchyard earth mat. (As per Scheme)	Yes / No.	
55	Check those who have sufficient knowledge of steel structural job has been employed in steel structural works only.	Yes / No.	} work completed
56	Check necessary instruction has been communicated by supervisor before start of the days works to workmen under his control.	Yes / No.	
57	Storing of equipments are to be made properly to avoid any accident during handling and shall be placed carefully to avoid tilting.	Yes / No.	
58	Check all Nuts and Bolts are properly raised or lowered preferably using closed loop pulleys and gully bags / hand bags tied at the end for carrying nuts and bolts.	Yes / No.	

C. CONDUCTOR LAYOUT DURING CONSTRUCTION STAGE:

59	Ensure that all members are fitted in structure before undertaking conductor laying work.	Yes / No.	Work completed
60	Ensure that standard Discharge Rod/ Earthing Device is utilized, meeting the specifications.	NA Yes / No.	
61	Ensure that insulated Rubber mats are kept in front & back of C&R Panels/ ACDB/ DCDB Panels/ inside FFPH/ DG set room.	Yes / No.	
62	Ensure whether the structure is properly earthed.	Yes / No.	
63	Only Nylon or PP Ropes should be used during conductor laying in the vicinity of charged area.	Yes / No.	work completed

[Signature]
22/10/2021

[Signature]

P. Dutta
22.10.2021

64	Ensure that PTW has been taken from the concerned authority when extension of existing SS is under execution. Shift I-C shall ensure the same under approval by SS I-C.	Yes / No. NA	
65	Ensure that Winch machine being used are properly earthed.	Yes / No. NA	
66	Check the provision and proper positioning for the guying and back staying (Where necessary).	NA Yes / No.	

D: SWITCHYARD EARTHING DURING CONSTRUCTION STAGE :

67	Check all steel structures/ Equipments/ light poles, junction boxes on the poles, cable and cable boxes / glands, etc. are connected to nearby earthing grid conductor by two Earthing leads.	✓ Yes / No.	
68	Check that the Railway tracks within switchyard area has been earthed at a spacing of 30 Mts. / specified distance and also at both ends.	Yes / No.	Work under progress.
69	Check cable trays has been connected to earthing flat of 50 x 6 mm / specified sized earthing flat at intervals specified in approved drawing.	✓ Yes / No.	
70	Check flexible earthing connectors should be provided for the moving parts.	✓ Yes / No.	
71	Check sheath and Armor of Single core Power cable is earthed at switchgear end and equipment side.	✓ Yes / No.	
72	Check that Earthing conductor is generally buried 2.0 Mtrs outside the Switch yard fence. All the Entry Gates of S/Yard area and every alternate post of the fence is to be connected to earthing grid as per Drawing.	Yes / No.	Work under progress.

E. GENERAL POINTS COMMON FOR ALL ACTIVITIES DURING EXCAVATION, CASTING OF FOUNDATION, ERECTION OF STRUCTURES, LAYING OF CONDUCTOR, STORAGE AND TRANSPORTATION OF MATERIAL :

73	(a) Whether Induction Training has been imparted to working personnel and record is available. (b) Check Supervisors/ Workmen have been provided with required healthy PPEs. Like	Yes/ No. ✓ Yes / No.	Record to be updated.
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	(Safety helmet/ Safety Belts/ Safety Shoes /Gum Boots/ Hand Gloves etc.as applicable) (c) Check that the PPEs. required by the workmen are being utilized by them always.	Yes/ No.	
74	(a) First aid box with listed items as per BOCW Act, 1996 available. (b) Number of First Aid Trained persons and their names. (c) Whether First Aid Register is available at site. (d) Nearby medical facilities for use during exigencies identified (Location / Phone No.)	Yes/ No. Yes/ No. Yes/ No. - First Aid Register to be updated Yes/ No.	Minimum item available in First Aid Box, but not as per BOCW
75	(a) Check condition of Labour Camp and status of availability of Toilet/ potable Drinking water. (b) Ensure that Health check-up of Workers have been conducted and record maintained by the Agency	Yes/ No. Yes/ No.	Health check-up of workers to be conducted.
76	Check Site Instruction register is available at site.	Yes/ No.	
77	Ensure supervisory staff from POWERGRID is available at site during construction.	Yes/ No.	
78	Check all driver and plant operators are holding valid driving license.	Yes/ No.	
79	Check the vehicle for rescue is available at site.	Yes/ No.	
80	Ensure engaged labour are aware of the job and Induction Training imparted and record maintained.	Yes/ No.	Record to be updated.
81	While transporting heavy consignment of conductor / EW drums from central store to site by the use of Cranes, Truck, Tractor. The safety aspect for construction and failure of brake system of moving machinery is to be checked.	Yes/ No.	
82	At least one Dry Powder type portable Fire Extinguisher shall be provided especially where explosive or blasting agents are used for excavation.(If applicable)	Yes / No. NA	
83	Check the competence (Qualification / experience) of supervisor / gang leader of contractor.	Yes/ No.	12th Pass
84	Proper loading/ unloading arrangements are in place at site;	Yes/ No.	

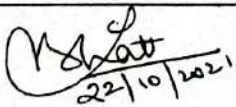
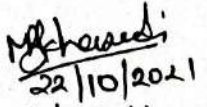
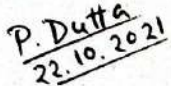
P. Datta
22/10/2021

M. Ghosh

P. Datta
22.10.2021

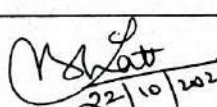
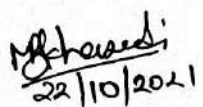
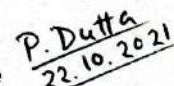
85	While transporting the heavy laden Equipment like transformer / Reactor by road from Railway Stn. to Sub station, check whether all Safety precautions are taken. Like safe lifting capacity of crane, safe load on culvert / Bridge/ Nala / Drain etc. and working plan is available at site with specific reference to safety e.g. local earthing, skilled & experience manpower, proper T&P, strength and LT wires / HT wires interrupting the height of equipment and the required clearance maintained etc. Permission to be obtained from concerned authority if required. "Impact recorder on the equipment like Reactor / Transformer must be installed during transportation"	Yes / No. NA	
86	Check that the adequate and safe means of access and egress has been provided for all work places as far as reasonably practicable and is being used by the workers.	✓ Yes / No.	
87	Check all projected nails has been removed or bent over to prevent injury.	✓ Yes / No.	
88	Check Scrap/ waste materials have not been allowed to accumulate at the site and that the scrap materials has been stored at the earmarked isolated place.	✓ Yes / No.	
89	Ensure that the worker while working at height, any material and tool are not being thrown by them to cause injury (accident) to worker standing adjacent to Gantry/ Tower.	✓ Yes / No.	
90	Check the worker are under constant surveillance by the other person while working at height.	✓ Yes / No.	
91	Check that lifting appliances and machines and vehicles used on the construction site is of sound material and good quality and is free from patent defects and is strong enough to with safely the load and stresses to which they will be subjected.	Yes / No.	Execution work Completed.
92	Check structures and equipment is being used only for the purpose for which they were intended.	✓ Yes / No.	
93	Check equipment has been operated by the competent person.	✓ Yes / No.	



94	Check unskilled labour are not utilized for skilled jobs and only experience persons are deployed for erection.	Yes/ No. <input checked="" type="checkbox"/> Yes / <input type="checkbox"/> No.	
95	(a) Check no metallic measuring tapes are being used during expansion of charged bays. (b) Check metal ladders are not being used in the vicinity of exposed live electrical equipment.	Yes / No. NA Yes/ No. <input checked="" type="checkbox"/> Yes / <input type="checkbox"/> No.	
96	Check that the adjacent charged area of a yard should be properly fenced off.	Yes / No.	s/y fencing work under progress.
97	Check ladders/ lengthy articles / lengthy equipment etc. should always be carried in horizontal position.	Yes/ No. <input checked="" type="checkbox"/> Yes / <input type="checkbox"/> No.	
98	(a) Record of Monthly Safety Activity/Audit Report conducted by Contractor's Safety Officer as per provision of Safety Plan. (b) Status of compliance of audit observations.	Yes/ No. <input checked="" type="checkbox"/> Yes / <input type="checkbox"/> No.	
99	Check all statutory requirements/ Insurance policies are taken by contractor, all Project specific & POWERGRID as co-assured, including Workman compensation policy to provide adequate coverage for any accident etc. (i) Registration Certificate under BOCW — (ii) Labor License — (iii) Employee Compensation Policy — (iv) All applicable Insurance Policies as per provision kept in the Contract. —	valid valid valid OK.	
100	Remark, if any : 1). Health checkup of workers to be conducted. 2). First Aid Register to be updated. 3). Induction training Record to be updated.		
Signature  22/10/2021		Signature  22/10/2021	
Name : C.S. Shatt Designation: Engineer (POWERGRID Site Rep.)		Name : Memish B Khawedi Designation: Engineer Safety steward ASM-PM-1 (POWERGRID RHQ Rep.)	
		Signature  22.10.2021	
		Name : Pranab Dutta Designation : Safety Officer Rep. from Contractor : NECCON POWER & INFRA LTD	

Copy to: Regional I-C /Projects I-C (Region)/ Site I-C., POWERGRID/ Project Site I/c, Agency.



94	Check unskilled labour are not utilized for skilled jobs and only experience persons are deployed for erection.	Yes/ No.	
95	(a) Check no metallic measuring tapes are being used during expansion of charged bays. (b) Check metal ladders are not being used in the vicinity of exposed live electrical equipment.	Yes / No. NA Yes/ No.	
96	Check that the adjacent charged area of a yard should be properly fenced off.	Yes / No.	s/y fencing work under progress.
97	Check ladders/ lengthy articles / lengthy equipment etc. should always be carried in horizontal position.	Yes/ No.	
98	(a) Record of Monthly Safety Activity/Audit Report conducted by Contractor's Safety Officer as per provision of Safety Plan. (b) Status of compliance of audit observations.	Yes/ No. Yes/ No.	
99	Check all statutory requirements/ Insurance policies are taken by contractor, all Project specific & POWERGRID as co-assured, including Workman compensation policy to provide adequate coverage for any accident etc. (i) Registration Certificate under BOCW — valid (ii) Labor License — valid (iii) Employee Compensation Policy — valid (iv) All applicable Insurance Policies as per provision kept in the Contract. — OK.		
100	Remark, if any : 1). Health checkup of workers to be conducted. 2). First Aid Register to be updated. 3). Induction training Record to be updated.		
Signature  Name : C.S. Bhatt Designation: Engineer (POWERGRID Site Rep.)		Signature  Name : Manish B Khareedi Designation: Engineer Safety steward ASM-PM-1 (POWERGRID-RHQ Rep.)	
		Signature  Name : Pranab Dutta Designation : Safety Officer Rep. from Contractor : NECCON POWER & INFRA LTD	

Copy to: Regional I-C /Projects I-C (Region)/ Site I-C., POWERGRID/ Project Site I/c, Agency.

ANNEXURE X

Notification of Grievance Redressal Committee



पावर ग्रिड कारपोरेशन ऑफ इंडिया लिमिटेड
एन.आर.पी.एस.आई.पी, Guwahati



अंतर कार्यालय झापन

प्रेषक / From : D G M
(NERPSIP & ESMD) ,Guwahati

सेवा में/To : **All Site In-charge,**
Silapathar, Teok, Amingaon,
Guwahati, Tezpur, Mangaldoi,
Dibrugarh, Chapakhowa,
Sarupathar, Misa.

Copy to: GM, NERPSIP

संदर्भ संख्या / Ref: NERPSIP/GHY/ Grievance/AEGCL/239 dated 12.01.2017

दिनांक / Date : 13.02.2017

विषय/Sub :- Site / Project Level Grievance Redressal Committee (GRC)

Dear Sir,

With reference to the above, this is to inform you that as envisaged in the World Bank's Project Appraisal Document (PAD) on NERPSIP, **Site/project level GRCs** have been constituted for each project site under NERPSIP, Assam comprising of nominated representatives from both POWERGRID and AEGCL.

In this regard, henceforth, you are requested to handle all kinds of grievances received at site through the site level GRC and resolve it in a time bound manner.

You are also requested to co-ordinate with AEGCL for nomination of members for GRC also from local administration/village panchayats/reputed persons from society after obtaining consent from them.

This is for your kind information and necessary actions at your end.

Enclosed: Letter from AEGCL (File No: AEGCL/MD/WB/NERPSIP/TECH-I/2016/56)
Dated 09.02.2017

(J. Bardhan)



ASSAM ELECTRICITY GRID CORPORATION LIMITED

Regd. Office: 1st Floor, Bijulee Bhawan, Paltan Bazar, Guwahati – 781 001

CIN: U40101AS2003SGC007238

Phone: 0361-2739520/Fax: 0361-2739513, Web: aegcl.co.in, E-mail: managing.director@aegcl.co.in

File No. AEGCL/MD/WB/NERPSIP/TECH-I/2016/56

Date: 09.02.2017

To,

All AGMs as per attached list.

Subject: Constitution of Site Level Redressal Committee (GRC) for World Bank Funded North Eastern Region Power System Improvement Project (NERPSIP).

With reference to the above, this is to inform you that as per agreed World Bank's Project Appraisal Document (PAD) on NERPSIP (Copy Enclosed), it is imperative for the state utility to set up a "Grievance Redressal Mechanism" as mentioned in the state specific ESPPF for effective handling of all stake holder complaints arising out of the project implementation.

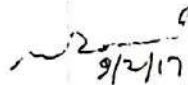
You are hereby designated as a member of the Grievance Redressal Committee (GRC). You will keep records of all grievances received during the execution of the project including contact details of complainant, date that the complaint was received, nature of grievance, agreed corrective actions and final outcome. The GRC should resolve the concerns of project affected persons in a time bound manner without impacting the project implementation.

You are also informed that the Implementing Agency (IA) POWERGRID has also nominated members for the GRC.

The detailed list GRC members is enclosed herewith as Annexure-I: For Sub-station Packages, Annexure-II: For Transmission Line Packages and Annexure-III: For Pile Foundation Packages.

This is for information and necessary action.

Encl: As stated above.


9/2/17

(U. N. Borah)

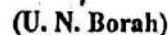
Chief General Manager [T&T]

Memo No.: AEGCL/MD/WB/NERPSIP/TECH-I/2016/56(a)

Date: 09.02.2017

Copy to:

1. The Director (PMU), APDCL, Bijulee Bhawan, Guwahati-01 for information.
2. The DGM, LA T&T Circle/UA T&T Circle/Tezpur T&T Circle/Bongaigaon T&T Circle, AEGCL for information and n/a.


/

(U. N. Borah)
Chief General Manager [T&T]

ANNEXURE-1

WORLD BANK FUNDED NER POWER SYSTEM IMPROVEMENT PROJECT (NERPSIP)

NERPSIP_EHV GRID SUB-STATION			Members from PGCIL for Site Level GRC
Package-Name	Package Description	Members from AEGCL for Site Level GRC	Members from PGCIL for Site Level GRC
ASM-SS-01	Substation Package (ASM-SS-01) Excluding Transformers for		
	(i) 132/33KV Silapathar (New) S/S	Assistant General Manager, T&T Division, North Lakhimpur, AEGCL	P A Kumar, DM, Silapathar
	(ii) 132/33 KV Tezpur (New) S/S	Assistant General Manager, 132/33 KV Depota Grid sub station, AEGCL, Depota	S. K. Dutta, Ch. Manager, Tezpur
	(iii) Extn. of 132/33 KV Dhenaji S/S	Assistant General Manager, T&T, Division, North Lakhimpur, AEGCL	P A Kumar, DM, Silapathar
	(iv) Extn. of 132/33 KV Sonabali S/S	Assistant General Manager, 132/33 KV Depota Grid sub station, AEGCL, Depota	
	(v) Augmentation of 220/132KV Samaguri S/S.	Assistant General Manager, 220/132/33 KV Samaguri Grid Sub Station, AEGCL, Samaguri	S. K. Datta, Ch. Manager, Tezpur
ASM-SS-02	Substation Package (ASM-SS-02) Excluding Transformers for		
	(i) 220/132KV Behating(New) S/S	Assistant General Manager, 132/33 KV Dibrugarh Grid Sub Station, AEGCL, Dibrugarh	
	(ii) Extn of 220 KV Tinsukia S/S	Assistant General Manager, 220/132/33 Tinsukia KV Grid Sub Station, AEGCL, Tinsukia	S. F. Shah, Asst. GM, Dibrugarh
	(iii) 132/33 KV Chapakhowa (New) S/S	Assistant General Manager, 220/132/33 Tinsukia KV Grid Sub Station, AEGCL, Tinsukia	
	(iv) 132/33 KV Sarupathar (New) S/S	Assistant General Manager, Jorhat T&T Division, AEGCL, Garmur	D. D. Misra, Asst. GM, Sarupathar
	(v) 132/33KV Teok (New) S/S	Assistant General Manager, Jorhat T&T Division, AEGCL, Garmur	S. N. Dey, Ch. Manager, Teok
(vi) Extn of 132/33KV Rupai S/S.	Assistant General Manager, 220/132/33 Tinsukia KV Grid Sub Station, AEGCL, Tinsukia	S. F. Shah, Asst. GM, Dibrugarh	

ANNEXURE-II

WORLD BANK FUNDED NER POWER SYSTEM IMPROVEMENT PROJECT (NERPSIP)

NERPSIP TL Package

Package-Name	Package Description	Members from AEGCL for Site Level GRC	Members from PGCIL for Site Level GRC
	Turnkey Tower Package (TW01) including conductor, insulators, earthwire/OPGW, hardware fitting and accessories for conductor & earth wire for		
TW01	(i) 220 kV D/C Rangia-Amingaon	Assistant General Manager, 132/33 KV Rangia Grid sub station, AEGCL, Chirakhundi	K. C. Barman, Asst. GM, Guwahati
TW02	(ii) 220 kV D/C Tinsukia-Behiating	Assistant General Manager, 132/33 KV Dibrugarh EHV SS, AEGCL, Dibrugarh	S. F. Shah, Asst. GM, Dibrugarh
	Turnkey Tower Package (TW02) including conductor, insulators, earthwire/OPGW, hardware fitting and accessories for conductor & earth wire for		
	(i) 132 kV D/C Kahilipara-Guwahati Medical College TL	Asst. General Manager, 132/33 KV Kahilipara Grid S/S, ASEB Campus, Guwahati - 781 019	K. C. Barman, Asst. GM, Guwahati
	(ii) 132 kV D/C Amingaon-Hazo TL	Asst. General Manager [T & T] ASEB CAMPUS, NARENGI, GUWHATI - 781 026	
	(iii) LILO of 132 kV S/C Rangia-Rowla TL	Assistant General Manager, 132/33 KV Depota Grid sub station, AEGCL, Depota	S. K. Rava, DM, Mangaldoi
TW03	(iv) LILO of 132 kV S/C Kamalpur-Sishugram at Amingaon	Asst. General Manager, 132/33 KV Kahilipara Grid S/S, ASEB Campus, Guwahati - 781 019	
	(v) LILO of 132 kV S/C Kamalpur-Khamakhya at Amingaon	Asst. General Manager, 132/33 KV Kahilipara Grid S/S, ASEB Campus, Guwahati - 781 019	K. C. Barman, Asst. GM, Guwahati

ANNEXURE-III

WORLD BANK FUNDED NER POWER SYSTEM IMPROVEMENT PROJECT (NERPSIP)

NERPSIP Pile Foundation Packages

Package-Name	Package Description	Members from AEGCL for Site Level GRC	Members from PGCIL for Site Level GRC
P-01	Pile Foundation Package for River Crossing locations corresponding for Tower package 220 KV D/C Rangia-Amingaon TL	Assistant General Manager, 132/33 KV Rangia Grid sub station, AEGCL, Chirakhundi	K. C. Barman, Asst. GM, Guwahati
	Pile Foundation Package for River Crossing locations corresponding for Tower package 132 KV S/C (on D/C Tower) Rupai-Chapakhowa TL	Assistant General Manager, 220/132/33 Tinsukia KV Grid Sub Station, AEGCL, Tinsukia	S. F. Shah, Asst. GM, Dibrugarh

N. B. Singh
9/2/17

Chief General Manager (T&T)

O/o The MD, AEGCL, Bijulee Bhawan, Ghy-01