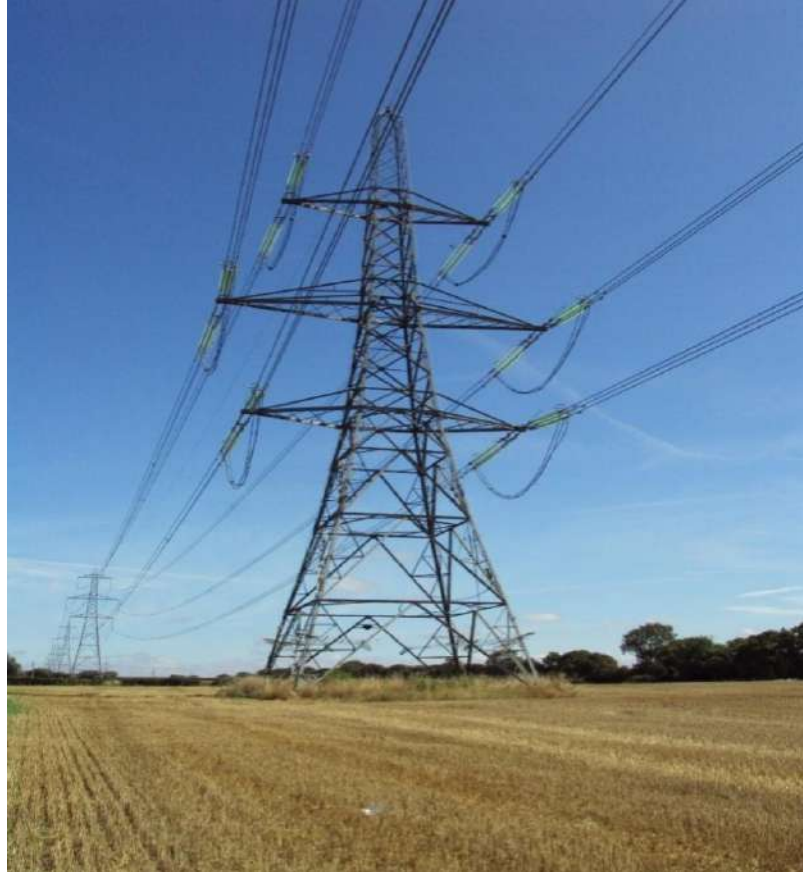


FINAL ENVIRONMENTAL ASSESSMENT REPORT (FEAR)
for
TRANSMISSION AND DISTRIBUTION (T&D) NETWORK
In
West Tripura, South Tripura, Khowai & Sepahijala Districts Under
“North Eastern Region Power System Improvement Project” NERPSIP Tranche-1,
Tripura



GCI/V/PGCIL/TRIPURA/R3/FEAR/01



Prepared By

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For
TRIPURA STATE ELECTRICITY CORPORATION LIMITED (TSECL)
(A Government of Tripura Enterprise)



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



ACKNOWLEDGEMENT

We express our sincere thanks to management & employees of M/S Power Grid Corporation of India Ltd. (POWERGRID) at Tripura. For their co-operation & unstinted help without which the Final Environment Assessment Report (FEAR-I) study of Transmission & Distribution (T&D) sub-projects of West Tripura, South Tripura, Khowai & Sepahijala Districts, Tripura could not have been possible. The courtesy extended to our team is highly appreciated.

For: **GREEN CIRCLE, INC.**






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QUALITY CONTROL SHEET

FEAR I - Revision 3 - October 1, 2021

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ABBREVIATIONS

ADC	Autonomous District Council
PAPs	Project Affected Persons
AP	Angle Point
ASI	Archaeological Survey of India
CBIS	Capacity Building & Institutional Strengthening
CEA	Central Electricity Authority
CPTD	Compensation Plan for Temporary Damages
CPIU	Central Project Implementation Unit
dB	Decibel
DC	District Collector
DL	Distribution Line
E&S	Environmental and Social
EHS	Environment, Health & Safety
EHV	Extra High Voltage
EMF	Electro Magnetic Field
ESMC	Environment & Social Management Cell
ESPPF	Environment and Social Policy & Procedures Framework
EMP	Environmental Management Plan
EP	Electric Pole
FCA,1980	Forest (Conservation) Act, 1980
FEAR	Final Environment Assessment Report
GCC	General Conditions of Contract
GCI	Green Circle Inc
GIS	Geographic Information System
GPS	Global Positioning System
GOI	Government of India
GoT	Government of Tripura
GRM	Grievances Redressal Mechanism
GRC	Grievance Redressal Committee
HFL	Highest Flood Level
IA	Implementing Agency
IBA	Important Bird Areas
IEAR	Initial Environmental Assessment Report
IP	Indigenous People
IUCN	International Union for Conservation of Nature
MoEF&CC	Ministry of Environment, Forest and Climate Change
NEEPCO	North Eastern Electric Power Corporation Limited
LOA	Letter of Award
NOC	No Objection Certificate
NER	North Eastern Region
NERPSIP	North Eastern Region Power System Improvement Project
NHPC	National Hydroelectric Power Corporation
O & M	Operation & Maintenance
OPs	Operational Policies
PCB	Poly Chlorinated Biphenyl
PCR	Physical Cultural Resources
PIU	Project Implementation Unit
POWERGRID	Power Grid Corporation of India Ltd.
PPEs	Personal Protective Equipment
PMU	Project Management Unit
PTCC	Power Telecom Co-ordination Committee



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



RoW	Right of Way
R & R	Rehabilitation and Resettlement
RRM	Random Rubble Masonry
SMF	Social Management Framework
S/S	Substation
SPCU	State Project Coordination Unit
T & D	Transmission & Distribution (T&D)
TL	Transmission Line
TSECL	Tripura State Electricity Corporation Limited
TT	Transmission Tower
WB	World Bank

WEIGHTS & MEASURES

GW	Giga Watt
Km	Kilometer
kV	kilovolt
kW	kilowatt
MVA	Megavolt Ampere
MW	Megawatt
Sq.mm.	Square millimeter

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Sr. No.	Title/Name	Description
		S/S
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70.	Annexure B-20	33kV DL from 33/11 kV Golaghati (New) – 132/33 kV Gokulnagar (New) S/S
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72.	Annexure B-22	33kV DL from 33/11 kV Durganagar (New) – 132/33 kV Gokulnagar (New) S/S
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76.	Annexure B-26	33kV DL from 33/11 kV Nalchar (New) – 33/11 kV Melaghar (Existing) S/S
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79.	Appendix - A	Environmental Monitoring Reports at Subprojects
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EXECUTIVE SUMMARY

North Eastern Region Power Supply Improvement Project (NERPSIP) is a World Bank (WB) funded project aimed at improving the impoverished power transmission and distribution (T&D) system in the North Eastern states of India, which is being implemented by Power Grid Corporation of India Ltd. (POWERGRID), the single transmission utility of the country as the implementing agency (IA). Although the present T&D system covers many areas of the State, it is inadequate in its reach and due to non-availability of redundant T&D system, breakdown of any transmission system element results in long term power shortages making the system highly unreliable.

The present Final Environment Assessment Report (FEAR) I is for the part of priority works of strengthening of T&D System under Tranche-1 of NERSIP in West Tripura, South Tripura, Sepahijala & Khowai districts of Tripura State. FEAR I is associated with the construction of 4 nos 132/33kV Transmission Lines (TLs), 24 nos 33 kV Distribution Lines (DLs), 3 nos 132/33 kV transmission substations (S/S) and 12 Nos 33/11 kV distribution S/S. FEAR is undertaken to verify the actual location details of the project elements, identify possible environmental and social issues, to report any effects on the biodiversity of the region / protected area (PA), identification of the project affected people (PAP) and to assess the compliance of the Initial Environmental Assessment Report (IEAR) / Environment Management Plan (EMP) prepared and submitted by the IA. The elements / scope of the FEAR I include:

Transmission Lines (TL)

- Rokhia - Rabindra Nagar 132 kV D/C line – 22.122 km
- Rabindra Nagar – Belonia 132 kV D/C line – 63.152 km
- LILO of 132kV Rokhia- Surjamaninagar line at 132/33 kV Gokulnagar – 2.92 km
- LILO of 132kV Agartala-Dhalabil line at 132/33kV Mohanpur S/S – 1.224 km

Distribution Lines (DL)

- 33 kV line from 33/11 kV Khowai (New)-132/33 kV Dhalabil (Existing) S/S – 6.643 km
- 33 kV line from 33/11 kV Khowai (New)-33/11 kV Ampura (Existing) S/S – 13.192 km
- 33 kV line from 33/11 kV Simna (New)-33/11 kV Hezamara (existing) S/S – 11.271km
- 33kV line from 33/11 kV Simna (New)-33/11 Tapping of Mohanpur-Hezamara line (Existing) – 14.523 km
- 33 kV line from 33/11 kV Barkathal (New)-33/11 kV Hezamara (Existing) S/S – 11.670 km
- 33 kV line from 33/11 kV Barkathal (New)-132/33 kV Mohanpur (New) S/S – 9.442 km
- 33 kV line from 33/11 kV Bamutia (New)-33/11 kV Durjoynagar (Existing) S/S – 10.828 km
- 33 kV line from 33/11 kV Bamutia (New)-33/11 kV Lembucherra (New) S/S – 8.121 km
- 33 kV line from 33/11 kV Lembucherra (New)-LILO of 33kV Agartala-Mohanpur Line – 1.051 km
- 33 kV line from 33/11 kV Champaknagar (New)-132/33kV Jirania (Existing) S/S – 5.957 km
- 33 kV line from 33/11 kV ADC Head Qtr (New)-132/33 kV Jirania substation – 3.546 km
- 33 kV line from 33/11 kV Ranir Bazar (New)-LILO of 33kV Khayerpur- Jirania line – 0.809 km
- 33 kV line from 33/11 kV ADC Head Qtr (New)-33/11kV Champaknagar (New)- 10.756 km
- 33 kV line from 33/11 kV Munikiakami (New)-LILO of 33kV Ambasa- Teliamura line in – 4.17 km
- 33 kV line from 33/11 kV Munikiakami (New)-LILO of 33kV Ambasa-Teliamura line out – 2.461 km
- 33 kV line from 33/11 kV Golaghati-132/33kV Gakulnagar (New) S/S – 13.205 km
- 33 kV line from 33/11 kV Golaghati (New) - 33/11 kV Takarjala (Existing) S/S – 10.657 km
- 133 kV line from 33/11 kV Sekerkote-LILO of 33 kV Badharghat-Jangalia line – 4.32 km
- 33 kV line from 33/11 kV Durganagar (New)-132/33 kV Gakulnagar (New) S/S – 7.023 km
- 33 kV line from 33/11 kV Durganagar (New)-33/11 kV Madhupur (Existing) S/S – 10.618 km
- 33 kV line from 33/11 kV Nidya (New)-33/11kV Kathalia (Existing) S/S – 9.488 km
- 33 kV line from 33/11 kV Nidya (New)-33/11 kV Rajnagar (Existing) S/S – 17.339 km
- 33 kV line from 33/11 kV Nalchar (New)-33/11 kV Melaghar (Existing) S/S – 6.801 km
- 33 kV line from 33/11 kV Nalchar (New)-33/11 kV Bishramganj (Existing) S/S – 9.144 km

¹ Survey not done on site. Hence data is not available. Hence the line is not considered in FEAR.

- 33 kV line from 33/11 kV Gabardi (New)-LILO of 33kV Surjamaninagar- Takarjala line – 0.807 km

Tripura, is located in the north eastern part of the country and shares international border with Bangladesh from three sides. The area of the State is 10,491 Sq.km which forms 0.32% of country's geographical area. The State lies between latitude 22°57' N and 24°33' N and longitude 91°10' and 92°20' E in NER physiographic zone. The recorded forest area of the State is 6,294 sq. km which constitutes 60% of its geographical area. Reserved forests (RF) constitute 66.33%, protected forests (PF) constitute 2% and unclassed forests (UCF) constitute 33.64%. The biological diversity of any geographical region is estimated at the level of ecosystem diversity, species diversity and genetic diversity. Tripura being a part of NER, belongs to one of the two “Hot Spot” of India amongst 18 identified in the World.

The terrain of the project districts is 50% to 60 % hilly and slopy and 40 to 50% plain through which the TLs and DLs are crossing. All the S/S are planned on plain land parcels. In case tower/pole locations are on hill terrain and where ever positioning of tower on hill top is not possible leg extension is being utilized so as to minimize/ avoid benching/ revetment and to provide great stability.

The proposed project activities include the detailed survey for finalizing the route alignment, and installation of TLs and DLs and construction of S/S (civil and electrical installation). Lattice poles are then being erected on designated places using normal excavation and foundations thereafter conductors are strung across these using manual/stringing machines. The construction of S/S is regular civil works for small buildings. The electrical installations consist of the transformers, breakers, capacitors etc. and other protection/controlling devices to ensure required power flow.

The land use along the RoW (27 m for 132 kV) of TLs comprises of agricultural land, private plantation and government land. The total length of the project TLs is 89.42 km and total number of 359 towers are being/to be erected for all proposed 4 TLs. The earlier length of TL in IEAR was 71 km. However, as a result, though the length is increased, the environmental and social footprints have been reduced as envisaged in IEAR by avoiding the environmental sensitive areas like habitation, PA and Forest area.

The DLs have been aligned mostly along the existing roads by avoiding dense forest areas. Here, the RoW corridor being narrower (15m for 33 kV) which further reduced 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 government land. The original length of the DLs has been decreased to 199.522 km from earlier 259 km in IEAR due to further optimization during ground truthing survey. This has resulted into reduced environmental footprints on land use and other base line data as compered from earlier identified impacts in IEAR/EMP. A total of around 7597 poles are being/to be erected for all 24 proposed DLs.

According to legal status, the project districts is blessed with 2302 ha forests having various types of flora and fauna. The final layout of TLs and DLs has been carefully selected from three given options. Final routes of TLs and DLs and sites for construction of new S/S don't involve any monuments of historical or cultural significance. The proposed final TLs and DLs are not passing through any PA like national parks (NP), wildlife sanctuaries (WLS), designated wildlife/elephant and biosphere reserves etc., as all such areas have been completely avoided through meticulous route selection. In spite of taking due care during route selection, involvement of some forest area could not be avoided completely. Thus,

provisions of the Forest (Conservation) Act (FCA), 1980 are applicable. The proposed TL Rokhia - Rabindranagar 132 kV D/C line is having 21.1896 Ha of RF area and Stage-I & Stage-I (final) approval obtained on 28.06.18 & 07.06.19 respectively. The proposed Rabindranagar – Belonia 132 kV D/C line is having 74.9493 RF area and Stage-I & Stage-II (final) approval obtained on 12.04.19 & 22.06.20 respectively.

Amongst all 15 S/S, 33/11kV Nidaya S/S plot is involved 0.3299 Ha of Forest of Trishna WLS area. Accordingly, Stage-I approval obtained on 16.03.20 and Stage-II clearance (conditional) issued on 19.03.2021 from RoMoEFCC, Shillong. National Board for Wildlife (NBWL) permission obtained on 17.12.19.

The area of land required for S/S is ranges from 0.4 to 4.0 Acres. In the instant case land required for S/S are already in possession with Tripura State Electricity Corporation Limited (TSECL) and hence no fresh land is needed to be acquired. Since no involuntary acquisition is involved, issue related to acquisition of land including possible R&R is not envisaged. The infrastructure facilitates required for the construction and maintenance of S/S like access road, water, transport facility is well available. Hence no new infrastructure demand is envisaged. The present project requires very less vehicular movement and that too restricted to construction period only. During site survey it is observed that project execution is not resulted into large traffic volume in the area.

During the site selection and detailed survey of TLS, DLs, it has been ensured that these are kept away from oil/gas pipelines and other sites with potential for creating explosions or fires. The equipment installed on lines and S/S are static in nature and do not generate any fumes or waste materials. Apart from this, state of art safety instruments, fire safety equipment and firefighting design have been included in the design in the S/S on both the ends, so that, the line gets tripped within milliseconds in case of any fault. 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.

All the TLs and DLs are planned at suitable elevation to avoid any chances of impacts due to flood like situation. All the S/S subproject areas are located at such places where least chances of flooding are observed. However, adequate measures are taken into consideration from design stage to implement the flood, erosion protection measures like construction of retaining wall, boundary wall along with sewerage system. The S/S are designed and constructed at suitable elevation from the ground / flood levels and proper storm water drainage system is implemented. In S/S, all drainage channels along or inside S/S are being trained and connected to main or existing drainage to avoid any erosion due to uncontrolled flow of water. This will help to dispose of the storm water collected in the S/S premises, further creating recharge or percolation pits which will help to recharge the ground water table. Almost all S/S are provided with recharge pits. All these mandatory requirements with detailed specifications with respect to equipment design and S/S drainage and sewage design has been included in tender document to avoid any incidence of land and water contamination.

While construction, utmost care was taken to prevent tree felling, mostly, trees were trimmed to carry out work as far as possible. However, in unavoidable situation, in case of trees cutting in forest area, compensatory afforestation on two times the area of degraded forest land is undertaken by State Forest department subsequently the stipulated conditions recommended in Forest clearances obtained under FCA 1980 and is in implementation process. Tree cutting in non-forest areas are executed strictly under the provisions Electricity Act, 2003/ Indian

Telegraph Act, 1885. TSECL pays compensation to affected land owners towards damages and/or utilization of their land for tower footing if any during implementation of transmission project as well as during operation and maintenance phase under this act. For the true value assessment of timber yielding trees, due concern of forest officials is taken and for fruit bearing trees help of Horticulture department is taken. As per existing law, land for tower/pole & ROW is not acquired and ownership of land remains with the owner and agricultural activities are allowed to continue after construction is over. The project has obtained required clearances from Railway Department, Department of Telecommunications, and the Ministry of Aviation.

During visit to site, it has been observed that excavated pits and all accident-prone areas are appropriately barricaded for safety. All safety measures are in place to avoid fire / explosion hazards. Excavated material from S/S sites are well stored on site and reutilized for levelling and backfilling following C&D Rules 2016 of GoI. Construction management practice has helped in to reduce the soil erosion. No surplus excavated material dumping from S/S site to outside premises is envisaged. Tower footings, pole footings involve very small-scale excavation which is reutilized for backfilling. Impact envisaged during the construction is limited to the boundaries of proposed S/S only. Construction and operation of S/S may raise Ground Noise levels. However, measures like providing sound and vibration dampers and rectification of equipment are undertaken. Environmental quality for Noise and Water is being regularly monitored at S/S locations by construction contractor. Noise levels are observed below the maximum allowable limit which is 90db for 8 hours in the working area. Also, the water quality is observed to be suitable for drinking purpose.

Necessary care is taken by the contractor for workers health and safety and issues relating to operational health and safety have also been adequately addressed. The labours are provided with PPE kits, 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 monitoring committee i.e., IA of this project is very vigilant. It has been observed that concerns of public are addressed/informed regularly about project through public consultation process which started from project planning, continued in the construction period and will be continued in operation and maintenance also. As per record available, no written complaint or court case is registered against any of the sub projects. It has been observed from surveys, public meetings and discussion with PAP, that they are appreciating the efforts taken by both the government and funding agencies to improve power network of that area. Local people believe that this project will enhance their quality of life as well as this project will help them to get new income source in near future.

Overall, the planning and layout of the project elements have been undertaken in a judicious manner so as to ensure minimum environmental impact. During the implementation phase, especially during construction phase, IA is regularly monitoring the implementation of EMP and OHS compliance with reference to the IEAR. 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 TSECL are held on a regular basis to assess the work progress and difficulties encountered in respect of land / tree / crop compensation if any.

1. 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. NER in India is endowed with rich energy resources but faces significant bottlenecks in electricity access and availability levels. The per capita power consumption in NER is one-third of the national average. No significant generation capacity has been added between 2004 and 2011 as a result of which inadequate power supply remains a critical constraint to sustainable and inclusive growth, and to scaling up private investment and economic competitiveness in the NER.

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

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

The road-map for development of power sector specifying the need for strengthening of overall Transmission, Sub-transmission system of NER and Sikkim was brought out in the "Pasighat Proclamation on Power" released during the first Sectoral Summit of North Eastern Council (NEC) at Pasighat in Arunachal Pradesh in January 2007. Pursuant to recommendations of Pasighat summit, a Sub-Group was constituted under the Chairmanship of Member (Power System), CEA on Transmission, Sub-transmission related issues in NER.

Recognizing that intrastate 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 CEA developed a comprehensive scheme in December 2007 for the NER in consultation with POWERGRID and the concerned state governments. This scheme is intended to (a) augment the existing T&D infrastructure to improve the reliability of service delivery across all the NER states and (b) build institutional capacity of the power utilities and departments in the NER. This scheme is

part of the 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 with the financial assistance of the World Bank (WB) has planned a composite scheme viz. NERPSIP to create/augment robust intrastate infrastructure/network of T&D in the region. The scheme covers six NER States (Assam, Meghalaya, Manipur, Tripura, Nagaland & Mizoram) to create a robust power network by improving the intra-state T&D (33kV and above) network with required capacity building initiatives for effective utilization of assets. In 2016, the WB has approved a loan (IBRD 470 USD Million) to the GoI for NERPSIP 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 NER 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 (O&M) 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-station (132kV & above)			Distribution (33kV)		
	Line (km)	New S/s (No.)	Total MVA (New & Aug.)	Line (km)	New S/s (No.)	Total MVA (New & Aug.)
Assam	233	11	1644	479	16	240
Manipur	254	2	160	131	13	229.4
Meghalaya	225	4	940	263	11	135
Mizoram	143	3	125	5	1	6.3
Nagaland	193	5	245	60	10	200
Tripura	261	9	1306.5	1096	34	450.5
Total	1309	34	4420.5	2034	85	1261.2

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 GoI 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 Govt. of India funding. Details of State wise funding is placed below in **Table 1.2**.

Table 1-2: State Wise Funding from World Bank Under Tranche-1

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

1.2 Project Justification

The State of Tripura is spread over an area of about 10,492² km² with a population of more than 37 Lakhs. The State of Tripura 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 335 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 164.5 MW of self-generation and about 105 MW of power allocation from various central sector generation projects of NHPC and NEEPCO. The present average peak demand is of the order of 250 MW. As most of the generation projects in the north eastern region are hydro in nature, the State faces shortage of power during low-hydro generation condition.

Summary of subprojects to be implemented in the State in Tranche-1 under NERPSIP along with capacity addition is described below.

Presently, the State draws its share of power from central sector generating stations through following inter-state transmission system (ISTS):

- Agartala GPP – Agartala (Tripura) 132kV D/C
- Agartala GPP – Kumarghat (POWERGRID) 132 S/C
- Kumarghat (POWERGRID) – Aizwal (POWERGRID) 132kV S/C
- Kumarghat (POWERGRID) – Badarpur (POWERGRID) 132kV S/C
- Dharamanagar(Tripura) – Dullavcherra (Assam) 132kV S/C
- Pallatana (OTPC) – Silchar (POWERGRID) 400kV D/C
- Pallatana (OTPC) – Surjamaninagar (Tripura) 400kV D/C (initially operated at 132kV)

As per the 18th Electric Power Survey of CEA, the future demand of the State is expected to grow to about 340 MW by year 2016-17 and 472 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 316 MW from these future generation schemes. With this, the total share of the State from central sector generating stations shall be about 421 MW.

² tripura.gov.in

Following lines have been planned to transfer power from these future generation schemes to the state of Tripura:

- Surjamaninagar (Tripura) - Purba Kanchanbari (Tripura) 400kV D/C (to be initially operated at 132kV)
- Purba Kanchanbari (Tripura) - Silchar (POWERGRID) 400kV D/C (to be initially operated at 132kV)

The present intra-state transmission system of the State is quite old & weak and is unable to cater to the growing power requirements of the State. Although the present T&D system covers many areas of the State, it is inadequate in its reach and appropriate T&D system. Breakdown of any transmission system element results in long term power shortages making the system highly unreliable. Besides, some of the network elements have undergone long term outage due to break-down. Therefore, it has become essential to address the above situation through remedial measures in the T&D system. Accordingly, phase-wise strengthening of T&D system has been proposed.

The transmission schemes proposed under this report are priority schemes under Tranche-1 and are essential for improving the power supply situation in the State. Implementation of these schemes will improve quality, reliability, security and enhancement of the power supply in the State.

1.3 Benefit of the Project

The proposed T&D schemes not only improve overall power supply situation but also improve reliability, quality, security and enhancement of power supply in the State.

1.4 Project Highlights

Table 1-3: Details of project

Sr. No.	Particulars	Details
1	Project Name	NERSPIP – Tranche- I, Tripura
2	Location	Different parts of Tripura State
3	Beneficiary States	Tripura
4	Project Cost	Rs.1372 Cr.
5	Commissioning Schedule	2019

1.5 Project Scope and Present Study

In line with Environment and Social Policy & Procedures Framework (ESPPF) of Tripura State Electricity Corporation Ltd (TSECL), POWERGRID carried out comprehensive environment and social assessment of each subproject 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 WB.

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 WB such study is required to be undertaken by Independent Agencies as per Term of Reference (TOR) agreed with WB. As a part of this development, POWERGRID appointed GREEN CIRCLE, INC as

independent consultant vide LOA Ref No.: NEGW/C&M/NERPSIP/18-19/700-14/LOA-51/468 dated 31st December 2018 to carry out FEAR study.

1.5.1 Project Scope Components:

FEAR is undertaken to verify the actual location details of the project elements like 132/33 kV TLs, 33/11 kV DLs and associated S/S in West Tripura, South Tripura, Sepahijala & Khowai districts of Tripura State covered under NERPSIP. The scope covered is identification and examination of deviation of environmental and social issues as addressed in IEAR, reporting of effects on the biodiversity of the region / PA, identification of the project affected people (PAP) and assessment of onsite compliance of the Initial Environmental Assessment Report (IEAR) / Environment Management Plan (EMP) prepared and submitted by the IA. The study is carried out adhering to ESPPF of TSECL, Operation Policies of WB designated for Electric Power T&D projects. Refer **Table No. 1.4** for the project scope components.

Table 1-4: Project Scope Components

Sr. No.	Name of the Line	Name of the New / Existing S/S
A. TRANSMISSION SCHEME		
1	Rokhia - Rabindranagar 132 kV D/C line – 22.122 km	Establishment 2 x 50 MVA, 132/33 kV new S/S at Rabindranagar
2	Rabindranagar - Belonia 132 kV D/C line – 63.152 km	-
3	LILO of 132kV Rokhia- Surjamaninagar line at 132/33 kV Gokulnagar -2.92 km	Establishment of 2 x 50 MVA, 132/33 kV new S/S at Gokulnagar
4	LILO of 132kV Agartala-Dhalabil line at 132/33kV Mohanpur S/S -1.224 km	Establishment of 2 x 31.5 MVA, 132/33 kV new S/S at Mohanpur
B. DISTRIBUTION SCHEME		
1	33 kV line from 33/11 kV Khowai (New) – 132/33 kV Dhalabil (Existing) substation - 6.643 km	Establishment of 2 x7.5 MVA, 33/11 kV new S/S at Khowai
2	33 kV line from 33/11 kV Khowai (New)- 33/11 kV Ampura (existing) S/S - 13.192 km	-
3	33 kV line from 33/11 kV Simna (New)- 33/11 kV Hezamara (existing) S/S - 11.271 km	Establishment of 2x5 MVA, 33/11 kV new S/S at Simna
4	33 kV line from 33/11 kV Simna (New)- 33/11 Tapping of Mohanpur – Hezamara line (existing) - 14.523 km	-
5	33 kV line from 33/11 kV Barkathal (New)- 33/11 kV Hezamara (existing) S/S - 11.670 km	Establishment of 2x5 MVA, 33/11 kV new S/S at Barkathal
6	33 kV line from 33/11 kV Barkathal (New)- 132/33 kV Mohanpur (New) S/S - 9.442 km	-
7	33 kV Line Bamutia (New) -Durjoynagar Existing S/S – 10.828 km	-
8	33 kV line from 33/11 kV Bamutia (New)- 33/11 kV Lembucherra (New) S/S - 8.121 km	Establishment of 2x5 MVA, 33/11 kV new S/S at Lembucherra
9	33 kV line from 33/11 kV Lembucherra (New) - LILO of 33kV Agartala-Mohanpur Line - 1.051 km	-
10	33 kV line from 33/11 kV Champaknagar (New)- 132/33kV Jirania (existing) S/S – 5.957 km	Establishment of 2x5 MVA, 33/11 kV new S/S at Champaknagar
11	33 kV line from 33/11 kV Ranir Bazar (New) - LILO of 33kV Khayerpur- Jirania line - 0.809 km	Establishment of 2x7.5 MVA, 33/11 kV new S/S at Ranir Bazar
12	33 kV Line from ADC Head Qtr (New) - Jirania S/S – 3.546 km	-
13	33 kV line from 33/11 kV ADC Head Qtr (New) - 33/11kV Champaknagar (New)- 10.756 km	Establishment of 2x5 MVA, 33/11 new kV S/S at Munikiakami
14	33 kV line from 33/11 kV Munikiakami (New) - LILO of 33kV Ambasa- Teliamura line – 4.17 km in from Ambassa	Establishment of 2x5 MVA, 33/11 new kV S/S at Sekerkote

Sr. No.	Name of the Line	Name of the New / Existing S/S
15	33 kV line from 33/11 kV Munikiakami (New) - LILO of 33kV Ambasa- Teliamura line - 2.461 km out to Teliamura	-
16	33 kV line from 33/11 kV Golaghati- 132/33kV Gokulnagar (New) S/S - 13.205 km	-
17	33 kV line from 33/11 kV Golaghati (New) - 33/11 kV Takarjala (Existing) substation - 10.657 km	-
18	33 kV line from 33/11 kV Durganagar (New) - 132/33 kV Gokulnagar (New) S/S - 7.023 km	Establishment of 2x5 MVA, 33/11kV new S/S at Durganagar
19	33 kV line from 33/11 kV Durganagar (New)- 33/11 kV Madhupur (Existing) substation - 10.618 km	-
20	33 kV line from 33/11 kV Nidaya (New) - 33/11kV Kathalia (Existing) S/S - 9.488 km	Establishment of 2x5 MVA, 33/11kV new S/S at Nidaya
21	33 kV line from 33/11 kV Nidaya (New) - 33/11 kV Rajnagar (Existing) S/S - 17.339 km	-
22	33 kV line from 33/11 kV Nalchar (New) - 33/11 kV Melaghar (Existing) S/S - 6.801 km	Establishment of 2x5 MVA, 33/11kV new S/S at Nalchar
23	33 kV line from 33/11 kV Nalchar (New) - 33/11 kV Bishramganj (Existing) S/S - 9.144 km	-
24	33 kV line from 33/11 kV Gabardi (New) - LILO of 33kV Surjamaninagar- Takarjala line - 0.807 km	Establishment of 2x5 MVA, 33/11kV new S/S at Gabardi

The project activities include the survey for finalizing the route alignment and installation of TL and construction of S/S (civil and electrical installation). Lattice towers/ poles are then erected on designated places using normal excavation and foundations thereafter conductors are strung across these using manual/stringing machines. The construction of S/S is regular civil works for small buildings. The electrical installations consist of the transformers, breakers, capacitors etc. and other protection/controlling devices to ensure required power flow.

A power map showing the transmission grid of Tripura highlighting the above lines and other new projects placed as **Figure 1-1 and Annexure 1**. Schematic map showing the various projects covered under the subject FEAR is placed in **Figure 1-2 and Annexure 2**.



Figure 1-1: Power Map of Tripura

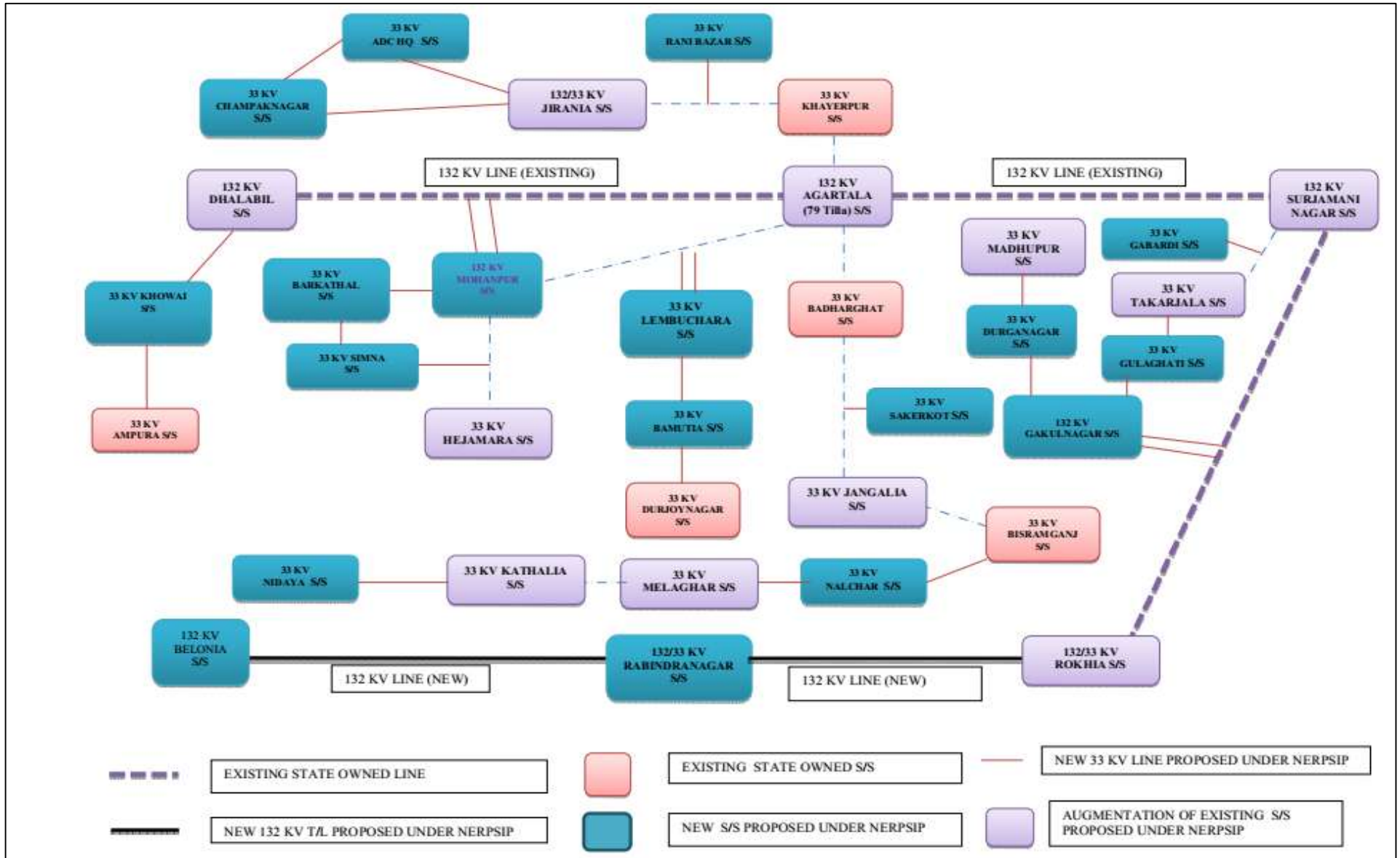


Figure 1-2: Schematic Map Showing Proposed T&D network in West Tripura, Khowai, Sepahijala and South Tripura Districts under NERPSIP

1.6 Overall Project Progress

A brief status on project implementation progress of various T&D components till May 2021 is presented below;

Table 1-5: Status of the Project Progress as on Date

Sr. No.	Name of the T&D Component	Progress as on May, 2021
A. TRANSMISSION SCHEME: AGENCY - EMC / TEEMS		
1	Rokhia - Rabindranagar S/S 132 kV D/C line	TL Length: 22.122 Km <ul style="list-style-type: none"> Forest proposal status: Stage II approval is obtained as on 07th June 2019. Total Number of Tower foundation: 89 amongst which 54 are completed Tower Erection (89 Nos): Yet to Commence Stringing of Conductor, Stringing of OPGW: Yet to Commence Expected Completion Date: December 2021
2	Rabindranagar - Belonia S/S 132 kV D/C line	TL Length: 63.152 Km <ul style="list-style-type: none"> Forest proposal status: Stage II approval is obtained as on 22nd June 2020 Total Number of Tower foundation: 244 amongst which 3 are completed Tower Erection (243 Nos): Yet to Commence Stringing of Conductor, Stringing of OPGW: Yet to Commence Expected Completion Date: December 2021
3	LILO of 132kV Rokhia- Surjamaninagar line at 132/33 kV Gokulnagar S/S	TL Length: 2.92 Km Line completed in February 2021
4	LILO of 132kV Agartala-Dhalabil line at 132/33kV Mohanpur S/S	TL Length: 1.24 Km Line completed in January 2021
B. DISTRIBUTION SCHEME: AGENCY - M/S TECHNOFAB ENGINEERING LTD.		
1	33 kV line from 33/11 kV Khowai (New) - 132/33 kV Dhalabil (Existing) S/S	DL length: 6.643 Kms. <ul style="list-style-type: none"> Total Number of Pole foundation and erection: 265 amongst which 105 are completed Stringing of Conductor, Stringing of OPGW: Yet to Commence Expected Completion Date: December 2021
2	33 kV line from 33/11 kV Khowai (New)- 33/11 kV Ampura (existing) S/S	DL length: 13.192 Kms. <ul style="list-style-type: none"> Total Number of Pole foundation and erection: 532 amongst which 78 are completed Stringing of Conductor, Stringing of OPGW: Yet to Commence Expected Completion Date: December 2021
3	33 kV line from 33/11 kV Simna (New)- 33/11 kV Hezamara (existing) S/S	DL length: 11.271 Kms. Line completed in January 2021
4	33 kV line from 33/11 kV Simna (New)-33/11 Tapping of Mohanpur-Hezamara line (existing)	DL length: 14.523 Kms. <ul style="list-style-type: none"> Total Number of Pole foundation and erection: 478 amongst which 110 are completed Stringing of Conductor, Stringing of OPGW: Yet to Commence Expected Completion Date: December 2021
5	33 kV line from 33/11 kV Barkathal (New)- 33/11 kV Hezamara (existing) S/S	DL length: 11.67 Kms. Line completed in May 2021
6	33 kV line from 33/11 kV Barkathal (New)- 132/33 kV Mohanpur (New) S/S	DL length: 9.442 Kms. <ul style="list-style-type: none"> Total Number of Pole foundation and erection: 379. Work is not started yet Stringing of Conductor, Stringing of OPGW: Yet to Commence Expected Completion Date: December 2021

Sr. No.	Name of the T&D Component	Progress as on May, 2021
7	33 Kv Line Bamutia (New) -Durjoynagar Existing S/S	DL length: 10.828 Kms. <ul style="list-style-type: none"> Total Number of Pole foundation and erection: 401. Work is not started yet Stringing of Conductor, Stringing of OPGW: Yet to Commence Expected Completion Date: December 2021
8	33 kV line from 33/11 kV Bamutia (New)- 33/11 kV Lembucherra (New) S/S	DL Length: 8.121 Line completed in April 2021
9	33 kV line from 33/11 kV Lembucherra (New) - LILO of 33kV Agartala-Mohanpur Line	DL Length: 1.051 Line completed in January 2021
10	33 kV line from 33/11 kV Champaknagar (New)- 132/33kV Jirania (existing) S/S	DL length: 5.957 km <ul style="list-style-type: none"> Total Number of Pole foundation and erection: 217 amongst which 15 are completed Stringing of Conductor, Stringing of OPGW: Yet to Commence Expected Completion Date: December 2021
11	33 kV line from 33/11 kV Ranir Bazar (New) – LILO of 33kV Khayerpur- Jirania line	DL Length: 0.809 Line completed in January 2021
12	33 kV line from 33/11 kV ADC Head Qtr (New) -33/11kV Jirania S/S	DL length: 3.546 Kms. Line completed in January 2021
13	33 kV line from 33/11 kV ADC Head Qtr (New) -33/11kV Champaknagar (New)	DL length: 10.756 Kms. <ul style="list-style-type: none"> Total Number of Pole foundation and erection: 400 amongst which 217 are completed Stringing of Conductor, Stringing of OPGW: Yet to Commence Expected Completion Date: December 2021
14	33 kV line from 33/11 kV Munikiakami (New) – LILO of 33kV Ambasa- Teliamura line in from Ambassa and Out from Teliamura	DL length: 4.17 Kms in From Ambasa and 2.461 out from Teliamura <ul style="list-style-type: none"> Total Number of Pole foundation and erection: 300 amongst which 52 are completed Stringing of Conductor, Stringing of OPGW: Yet to Commence Expected Completion Date: December 2021
15	33 kV line from 33/11 kV Golaghati- 132/33kV Gokulnagar (New) S/S	DL length: 13.205 Kms. <ul style="list-style-type: none"> Total Number of Pole foundation and erection: 470 amongst which 93 are completed Stringing of Conductor, Stringing of OPGW: Yet to Commence Expected Completion Date: December 2021
16	33 kV line from 33/11 kV Golaghati (New) – 33/11 kV Takarjala (Existing) S/S	DL length: 10.657Kms. <ul style="list-style-type: none"> Total Number of Pole foundation and erection: 470 amongst which 292 are completed Stringing of Conductor, Stringing of OPGW: Yet to Commence Expected Completion Date: December 2021
17	33 kV line from 33/11 kV Durganagar (New) – 132/33 kV Gokulnagar (New) S/S	DL length: 7.023 Kms Line is completed in May 2021
18	33 kV line from 33/11 kV Durganagar (New)- 33/11 kV Madhupur (Existing) S/S	DL length: 10.618 Kms. <ul style="list-style-type: none"> Total Number of Pole foundation and erection: 420 amongst which 261 are completed Stringing of Conductor, Stringing of OPGW: Yet to Commence Expected Completion Date: December 2021
19	33 kV line from 33/11 kV Nidaya (New) – 33/11kV Kathalia (Existing) S/S	DL Length: 9.488 Line completed in April 2021
20	33 kV line from 33/11 kV Nidaya (New) – 33/11 kV Rajnagar (Existing) S/S	DL length: 17.339 Kms.

Sr. No.	Name of the T&D Component	Progress as on May, 2021
		<ul style="list-style-type: none"> Total Number of Pole foundation and erection: 641 amongst which 261 are completed Stringing of Conductor, Stringing of OPGW: Yet to Commence Expected Completion Date: December 2021
21	33 kV line from 33/11 kV Nalchar (New) – 33/11 kV Melaghar (Existing) S/S	DL length: 6.801 Kms. Line is completed in May 2021
22	33 kV line from 33/11 kV Nalchar (New) – 33/11 kV Bishramganj (Existing) S/S	DL length: 9.144 Kms. Line is completed in May 2021
23	33 kV line from 33/11 kV Gabardi (New) – LILO of 33kV Surjamaninagar- Takarjala line	DL length: 0.807 Kms. Line test charged on 10.01.2020
C. SUBSTATIONS		
1	Establishment 2 x 50 MVA, 132/33 kV new S/S at Rabindranagar	Agency M/s SPML <ul style="list-style-type: none"> Site levelling works completed 100% CRB construction is under progress. 264 RM boundary wall amongst 369 RM is completed. Transformer foundation work for 2 nos. (50 MVA) completed & 2 nos.(10MVA) is completed Transformer erection is not started yet Equipment foundation of total 198 number is completed. Total 168 Equipment erection amongst 208 is completed. Tower / LM foundation for total 32 numbers is completed. 31nos tower Structure Erection completed amongst 32. 200 RM road construction WIP. Drain Construction of 160 mt is under process. Cable trench of total 342 RM is completed except cover slab. Testing and commissioning are not started yet. Expected Completion of work on site: December 2021
2	Establishment of 2 x 50 MVA, 132/33 kV new S/S at Gokulnagar	Agency: M/s SPML Substation completed in March 2021
3	Establishment of 2 x 31.5 MVA, 132/33 kV new S/S at Mohanpur	Agency: M/s SPML Substation completed in February 2021
4	Establishment of 2 x 7.5 MVA, 33/11 kV new S/S at Khowai	Agency: TECHNOFAB <ul style="list-style-type: none"> 80% site leveling is completed. CRB construction is under progress and 75% completed. Boundary wall 100% completed of 170 RM. Transformer foundation work for 2 nos. (7.5 MVA) completed Transformer erection is not started yet Raft is completed for Equipment foundation of total 17 number. Equipment erection not started yet. Tower / LM foundation for total 9 numbers is completed. Tower Erection is not Started Yet. 40 RM road construction WIP. Drain Construction of 160 mt is under process. Cable trench of total 32 RM out of 133 RM is completed except cover slab. Testing and commissioning are not started yet. Expected Completion of work on site: December 2021
5	Establishment of 2x5 MVA, 33/11 kV new S/S at Simna	Agency: TECHNOFAB Substation completed in February 2021
6	Establishment of 2x5 MVA, 33/11 kV new S/S at Barkathal	Agency: TECHNOFAB Substation completed in March 2021
7	Establishment of 2x5 MVA, 33/11 kV new S/S at Lembucherra	

Sr. No.	Name of the T&D Component	Progress as on May, 2021
Agency: TECHNOFAB		
<ul style="list-style-type: none"> • Site leveling is not started. • CRB construction is under progress. • Boundary wall 70% RM is completed out of 201 RM. • One Transformer foundation work out of 2 upto oil pit is completed • Transformer erection is not started yet • Equipment foundation of total 17 number is not started yet. • Equipment erection of total 41 nos not started yet. • 5 Tower / LM foundation out of total 9 numbers is completed. • Tower Erection is not Started Yet. • 20 RM road construction not started yet. Drain Construction of 240 mt not started yet. • Cable trench of total 24 RM not started yet. • Testing and commissioning are not started yet. • Expected Completion of work on site: December 2021 		
8	Establishment of 2x5 MVA, 33/11 kV new S/S at Champknagar	
Agency: TECHNOFAB		
Substation completed in March 2021		
9	Establishment of 2x7.5 MVA, 33/11 kV new S/S at Ranir Bazar	
Agency: TECHNOFAB		
No work is started yet on Site.		
Expected Completion of work on site: December 2021		
10	Establishment of 2x5 MVA, 33/11 new kV S/S at Munikiakami	
Agency: TECHNOFAB		
<ul style="list-style-type: none"> • Site leveling is 60% completed. • CRB construction is under progress and 50% completed. • Boundary wall 284 RM is completed 100%. • Transformer foundation work of 2 is completed • Transformer erection is not started yet • Equipment foundation of total 17 number is not started yet. • Equipment erection of total 41 nos not started yet. • Tower / LM foundation of total 9 numbers is completed. • Tower Erection is not Started Yet. • 20 RM road construction not started yet. Drain Construction of 240 mt not started yet. • Cable trench of total 24 RM not started yet. • Testing and commissioning are not started yet. • Expected Completion of work on site: December 2021 		
11	Establishment of 2x5 MVA, 33/11 new kV S/S at Sekerkote	
Agency: TECHNOFAB		
Alt. land has been handed over only in October 2020. Hence work is not started yet.		
Expected Completion of work on site: December 2021		
12	Establishment of 2x5 MVA, 33/11kV new S/S at Durganagar	
Agency: TECHNOFAB		
<ul style="list-style-type: none"> • Site leveling is not started yet. • CRB construction is not started yet. • Boundary wall of 155 RM is under progress • Transformer foundation work of 2 is not started yet • Transformer erection is not started yet • Equipment foundation of total 17 number is not started yet. • Equipment erection of total 41 nos not started yet. • Tower / LM foundation of total 9 numbers is not started yet. • Tower Erection is not Started Yet. • 1 RM road construction not started yet. Drain Construction of 1 RM not started yet. • Cable trench of total 110 RM not started yet. • Testing and commissioning are not started yet. • Expected Completion of work on site: December 2021 		
13	Establishment of 2x5 MVA, 33/11kV new S/S at Nidaya	

Sr. No.	Name of the T&D Component	Progress as on May, 2021
	Agency: TECHNOFAB All Work is stalled due to forest issue from 04.06.2018. National Board for Wildlife (NBWL) permission obtained on 17.12.19. II nd Stage Forest approval is obtained on 19.03.2021.	<ul style="list-style-type: none"> • Site leveling is 90% completed. • CRB construction is not started yet. • Boundary wall of 237 RM is 100% completed • Transformer foundation work of 2 is not started yet • Transformer erection is not started yet • Equipment foundation of total 17 number is not started yet. • Equipment erection of total 41 nos not started yet. • Tower / LM foundation of total 9 numbers is not started yet. • Tower Erection is not Started Yet. • 1 RM road construction not started yet. Drain Construction of 1 RM not started yet. • Cable trench of total 110 RM not started yet. • Testing and commissioning are not started yet. • Expected Completion of work on site: December 2021
14	Establishment of 2x7.5 MVA, 33/11kV new S/S at Nalchar	
	Agency: TECHNOFAB Only Site preparation work is completed. No other is started on site. Expected Completion of work on site: December 2021	
15	Establishment of 2x5 MVA, 33/11kV new S/S at Gabardi	
	Agency: TECHNOFAB Test charged on January 2020	
16	Extn. Of 132/33kV Rokhia S/S	
	Agency: M/s SPML Test charge done for one Line Bay in October 2020	
17	Aug. of 132/33kV Jirania S/S	
	Agency: M/s SPML 1 no. 31.5 MVA transformer test charge done in August 2020.	

1.7 Objective and Study 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 will also help in establishing the status of compliance of various mitigation/management measures provided in the IEAR/EMP and suggests gaps or weaknesses, if any.

To achieve this, GCI undertook a comprehensive biophysical, environmental, socioeconomic data gathering exercise along the TL/ DL line routes and S/S 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 project methodology flow chart is given below:

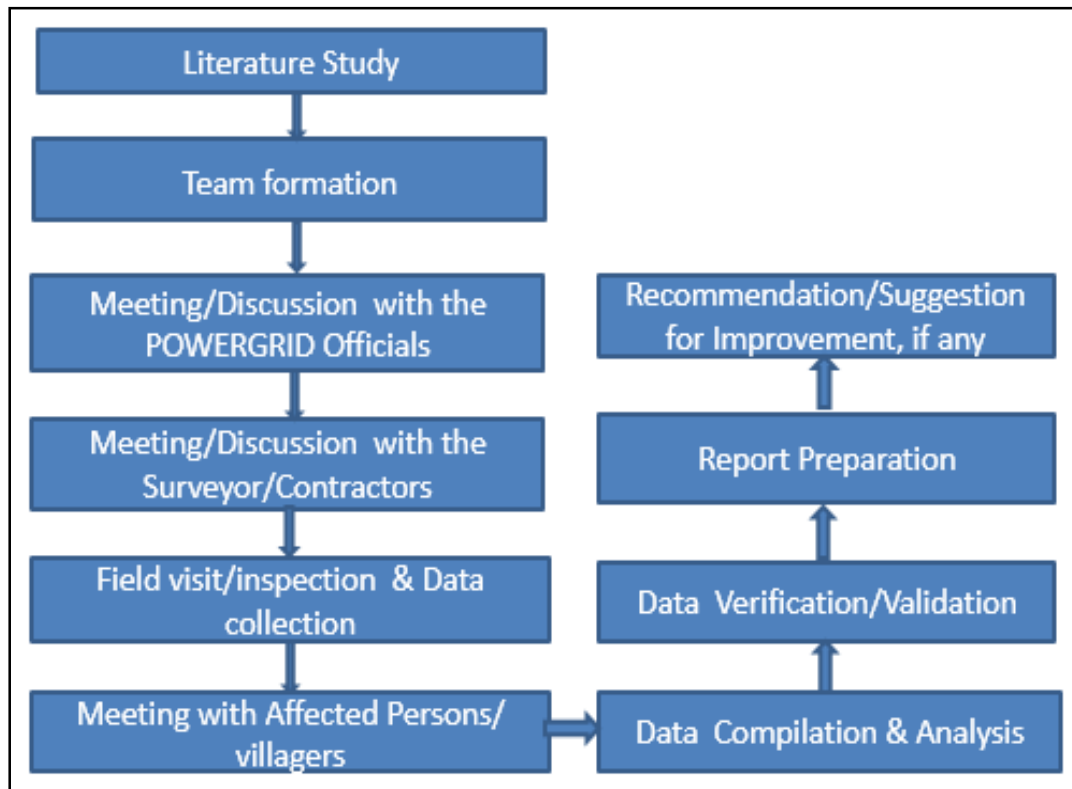


Figure 1-3: Study Methodology for Preparation of FEAR

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

1. **Review of existing reports:** Review of existing reports and data prepared and generated by POWERGRID such as IEAR, ESPPF, Compensatory Plan for Temporary Damage (CPTD) etc. was undertaken and suitably incorporated in the present report.
2. **Literature review / Analysis of Secondary Data:** Review of existing literature are undertaken for collection of secondary baseline data related to physiography, climatic conditions, demography, natural resources including forest/wildlife and socio-economic features of the study area. Sources and data so collected have been mentioned below:
 - Literature from various research papers was reviewed for study biodiversity of the project site
 - A Revised Survey of the Forest Types of India' by Champion and Seth (1968) was used for forest type classification of forests in the study area.
 - Data collected from published literature of Zoological Survey of India (ZSI), Forest Survey of India (FSI), Botanical Survey of India (BSI) and other research and government publications for floral and faunal diversity of the study area.
 - Soil map of the study area was prepared using 'Soils of Tripura for Optimizing Land Use, NBSS Publ.67b, 2000' published by National Bureau of Soil Survey & Land Use Planning (NBSS & LUP), Nagpur.
 - Conservation status of flora and fauna of the study area as per Indian Wildlife (Protection) Act (1972), threatened status according to IUCN Red List 2020.1, Red Data Book of Indian Plants by Botanical Survey of India, Kolkata.
 - Census of India 2011 for demography of the study area.
3. **Collection & collation of primary data:** The data was collected by extensive field visits and interaction with various stakeholders such as POWERGRID, Contractor, forest officials, Project Affected People (PAPs) and public at large. The environmental primary data other than vegetation profile is verified and ascertained through the discussion with local people and

stakeholders, Site visits and IEAR carried out for the proposed T&D alignment and S/S and final alignment schedule In order to, collect data with respect to final route alignment with important feature & maps, forest involvement/forest clearances, other applicable statutory clearances/consent/ exact number of trees to be filled / damaged both in forest as well as non-forest area, number and profile of PAP along with details of compensation provided to PAPs. This includes collection of any other primary data, which, in the opinion of agency, is required for ascertaining the compliance of the mitigating measures as enlisted in IEAR/EMP. Besides, photographs of important events such as interaction with various stakeholders, safe working practices, borrow area management, top soil management and construction during lean period etc. was taken as evidence.

4. **Collection of primary data and Physical verification of construction elements:** To gather primary data/ physical verification, a field visit/ survey of the project area along with IA and Contractor staff was made from February 2019 to May 2021. The data which has been collected from field visit are implementation status of proposed environmental management plan and mitigation measures as suggested in IEAR. Also, the environmental monitoring for ambient Noise levels and water quality is regularly carried out at S/S locations as part of EMP monitoring by construction Contractors. **Environmental baseline reports at various subproject sites are presented at Appendix-A.**

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 S/S, towers, and T&D Lines alignments. Findings of field survey were consolidated along with secondary data for interpretation and finding the gaps for immediate necessary action.

5. **Ascertaining the compliance:** Analysis and interpretation of secondary and primary data to ascertain the compliance of the measures as discussed in EMP.
6. **Survey of flora and fauna:** Phyto-sociological survey is necessary as this is a TL project. Being a TL project, surveys for assessment of vegetation structure/ profile in the proximity of the proposed TL, corridors of TL routes, S/S, etc. were conducted wherein line transect methodology has been followed. Faunal surveys were also conducted along the same transects. As the topography along the routes varied from undulating / plain to top of hill. It was therefore, not feasible to chart the entire routes of proposed TL as large part of the routes has steep slopes and due to issues of accessibility at present. However, during the field surveys it was tried to survey minimum 10% of the route for flora data collection, which in some cases constituted a continuous stretch and, in some cases, could be covered in parts. The stretches were selected considering diversity of flora. At some places along the alignment, forest plantation is recorded e.g., rubber plantation which is homogenous. At some stretches the diversified flora is recorded. The details are reported in chapter 2 section 2.4.4. As regard substation, the whole substation area was covered. The fauna elements were not found during field surveys in the project areas except some bird and common fauna. Hence the data was collected through consultations with local public, Forest department officials and POWERGRID officials working in the project area.

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.

7. **Consultation:** During assessment consultation was done with stakeholders like various field officers of consulting team such as Central Project Implementation Unit (CPIU)/ State Project Coordination Unit (SPCU) POWERGRID officials, Contractor, migratory labors, local labors,

Gram Burrah (village head) and public representatives to collect data with respect to compliance of suggested Environmental Management Plan (EMP) and implementation of mitigation measures. **The details of exercise are presented at Appendix-B.**

8. **Development of Maps:** Geo-referenced and Google maps with superimposed coordinates of project elements were generated to verify locational details and details of physical features of terrain of the project locations (**Please refer to the Annexure A and B**).

1.8 FEAR Structure

Chapter I: Project Description:

Brief description of the background, objective of the project, resultant benefit and scope of the work.

Chapter 2: Baseline Data:

Description of the relevant physical, physiographical, and socioeconomic condition of the project area including description of natural resources base like forest resources or any other environment sensitive areas like National Park sanctuary etc. along with description of climatic condition, population and other demographic features of the project area.

Chapter 3: Policy, Legal and Regulatory Framework:

Description of the policy, Legal and Regulatory framework applicable to transmission project and the environmental requirement under which environment assessment has been carried out.

Chapter 4: Major Features of Final Route & Environment Impact:

Brief description of the environmental criteria for selection of route and major features of final route alignment, details of forest involvement including number of trees and species of the trees likely to be affected. The details of forest clearance and environmental impact matrix describing in brief the extent of impact of TL.

Chapter 5: Potential Environmental Impact, Evaluation and its Management:

Description of the measures adopted and under implementation for identified impact due to project location, design, construction, O&M details of public consultation and its documentation, details of contractual conditions regarding safeguard issues under scope of contract for compliance and conclusion listing the category of the project based on the impact and analysis.

Chapter 6: Monitoring and Organization Support Structure:

Description of the monitoring plan, reporting pattern/frequency, external monitoring requirement/timing for potential environment & social issues with compliance status of EMP and organization support structure.

2. BASELINE DATA

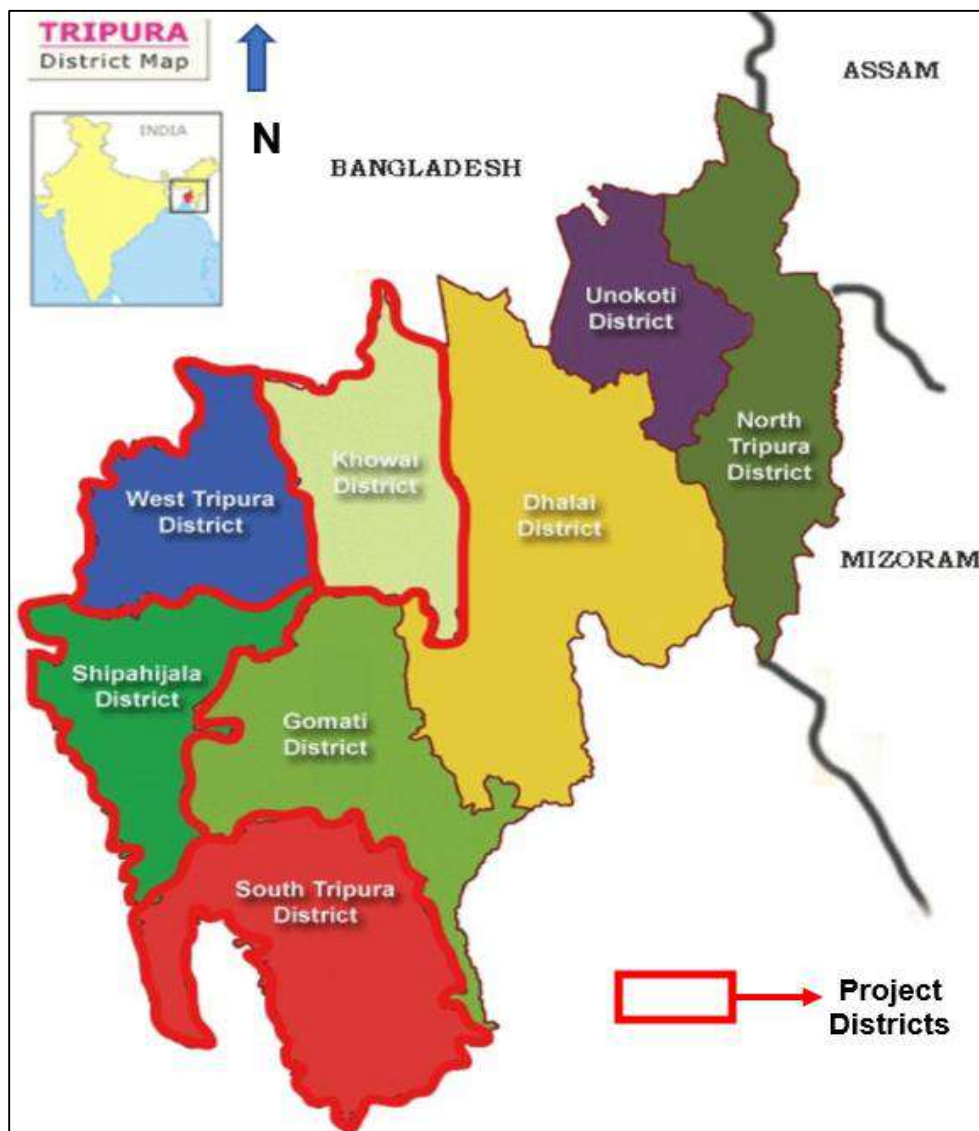
2.1 Introduction

Impact Assessment defines and assesses the potential physical, biological, and socioeconomic impacts of a project and helps in formulating management and mitigation measures to minimize the impacts to a great extent. This chapter deals with the baseline status of physical, biological, socioeconomic environment in the project districts as well as study area.

2.2 Project Location

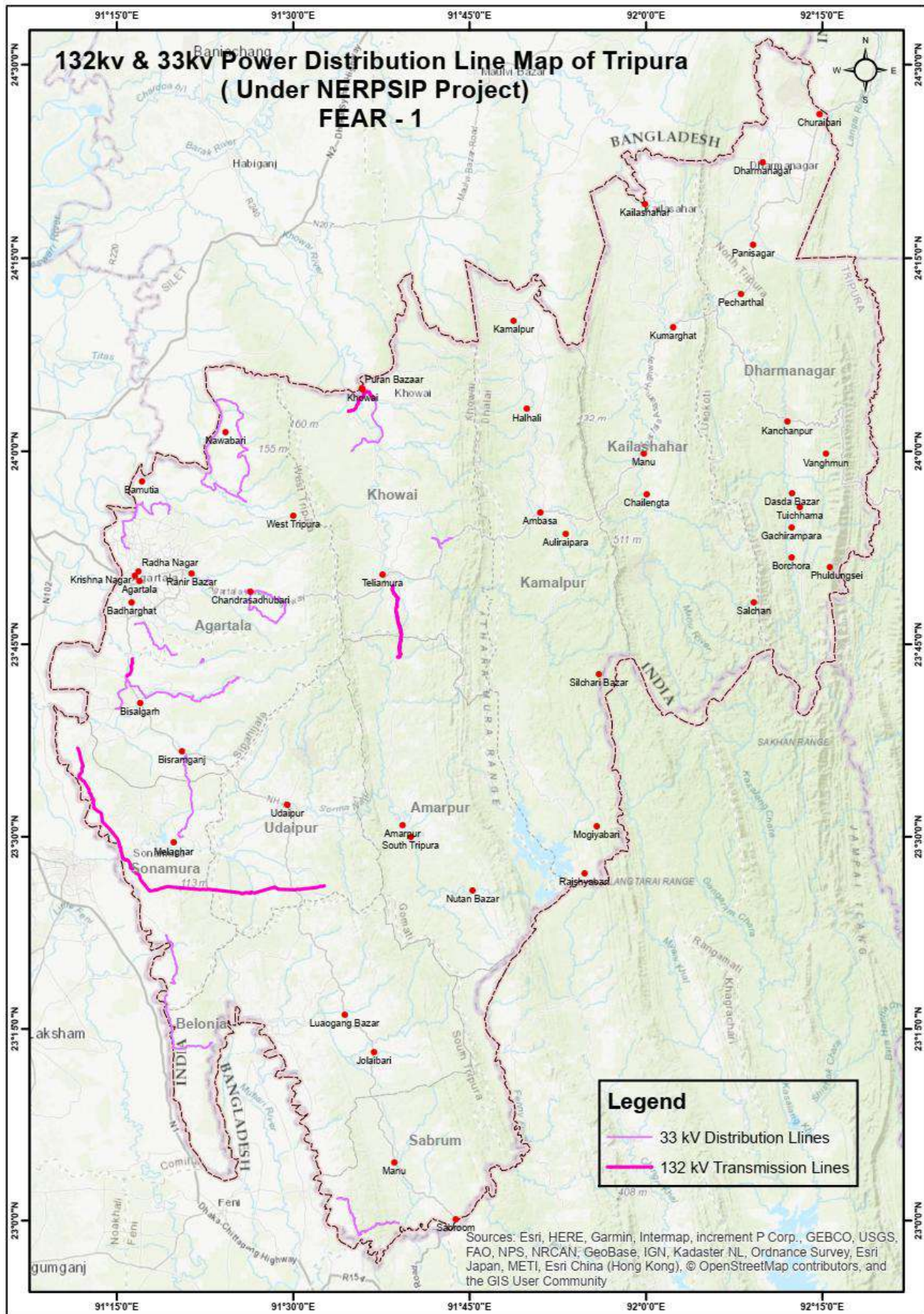
The project is an intra-state power sector project located in the State of Tripura and covers the districts of South Tripura, West Tripura, Sepahijala & Khowai (part of undivided West Tripura district). **Please refer Map 2-1.** The map showing location of various subprojects is presented in **Map - 2.2 & Map - 2.3.**

Map 2-1: Location Map of the Project³

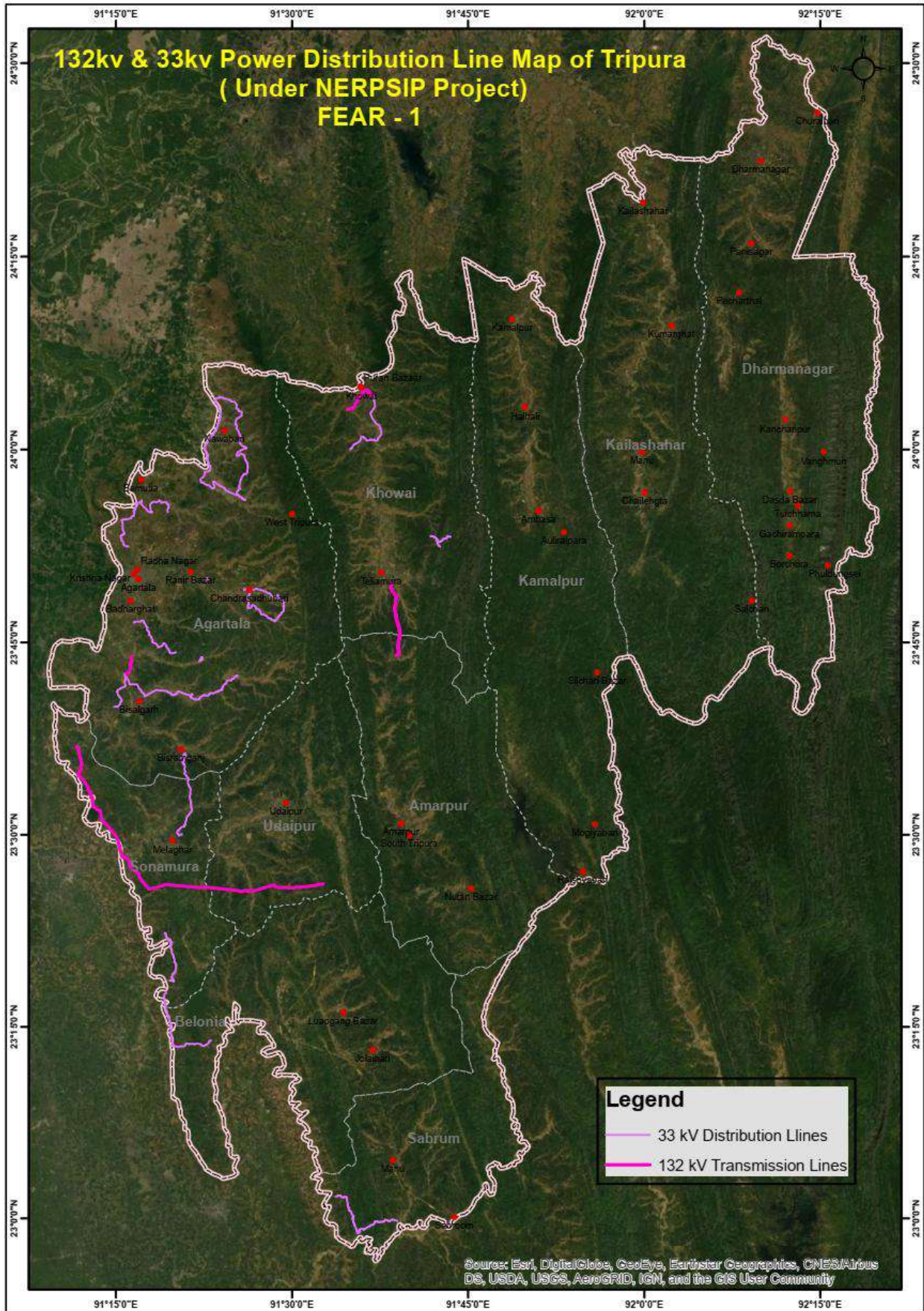


³ Tripura Space Application Centre, Vigyan Bhawan, Tripura

Map 2-2: Topo Map Showing Subprojects Locations



Map 2-3: Google Map Showing Subprojects Locations



2.2.1 Tripura State⁴

Tripura state is situated in the north eastern part of the country and shares international border with Bangladesh from three sides. The area of the State is 10,491 Sq. Km which forms 0.32% of country's geographical area. The State lies between latitude 22°57' N and 24°33' N and longitude 91°10' and 92°20' E in North Eastern Region physiographic zone. Tripura is a land locked state and its geographical limits touch both national and international boundaries. Its length of international boundary line with Bangladesh measures 839 km. Its national boundaries with Assam and Mizoram measure 53 km and 109 km respectively. The basic environmental settings of the State and subject project districts are discussed in the upcoming sections.

2.2.2 Study Area Districts⁵

2.2.2.1 West Tripura District

The West Tripura district lies approximately between latitude 23°16' to 24°14'N and longitude 91°09'E to 91°47'E. West Tripura is an administrative district in the state of Tripura in India. The district headquarters are located at Agartala, which is also the capital of the State. As of 2012 it is the most populous district of Tripura. The West Tripura District is bounded by Bangladesh in the north and west and Khowai district in the east and by Sepahijala district in the south. After creation of four more new districts in the state of Tripura. The district covers geographical area of about 1046 Sq. Km.

2.2.2.2 Sepahijala District

Sepahijala District was created in January 2012 when four new districts were established in Tripura, taking the number of districts in the state from four to eight. It locates to 23°38' N and 91°35' E. Part of the district was formed from the former district of West Tripura. The principal towns in the district are Bishalgarh, Bishramganj, Melaghar and Sonamura. The total geographical area is 1030.80 Sq. Km. The district has the International Boundary with Bangladesh on south and west.

2.2.2.3 Khowai District

Located in the North-eastern part of Tripura in between West Tripura and Dhalai district, Sepahijala District is a district of Tripura, India. This district was created in January 2012 when four new districts were established in Tripura, taking the number of districts in the state from four to eight. The district covers an area of about 920.05 Sq. km. In general, it is an area of subdued macro-relief compared with the eastern sector of the Indo-Burman Ranges bordering Mizoram, two prominent north-south trending ridges namely Baramura on the west and Atharamura on the east, with an intermontane valley drained by the Khowai river predominate the topography of the area. Khowai district of Tripura is located between 23°40' N to 24°14' N latitude and between 91°30'E to 91°45'E. The district is bordered by Bangladesh on the north, by Dhalai district on the east and south east. South boundary is partly covered by Dhalai district and rest of south boundary is covered by Gomati district and west boundary is partly covered by Sepahijala district and rest of west boundary is covered by West Tripura district.

⁴ <http://trpervis.nic.in/>

⁵ District Survey Report, 2018, GoT

2.2.2.4 South Tripura district

South Tripura district is situated between North Latitudes 22°58' and 23°45' and East Longitude 91°15' and 91°58'. It is bounded by Bangladesh on south, east and west sides, by west Tripura district on north and northwestern sides and by Dhalai district on northeast side. The total geographical area of the district is 1585.67 Sq. Km.

2.3 Physical Environment

2.3.1 Climatic Conditions – Tripura State:

The State has a tropical savanna type climate, designated under the Kappen climate classification. The undulating topography leads to local variations, particularly in the hill ranges. The four main seasons are winter from December to February, pre-monsoon or summer from March to April, monsoon from May to September and post-monsoon from October to November. During the monsoon season the south west monsoon brings heavy rains, which cause frequent floods. The climate conditions of projects districts are described in the sections below;

2.3.2 Climatic Conditions – Project Districts:

2.3.2.1 West Tripura District:

The West Tripura District in particular experiences humid sub-tropical type of climate. There is one Meteorological Observatory at Agartala having the facility to record temperature and other weather information. The normal temperature of the district is 25.2°C. The daily maximum temperature and minimum mean temperatures are 30.70°C and 19.50°C respectively during summer months. The cold weather starts from about the end of November when the temperature of both day and night decreases steadily. January is the coldest month when mean daily minimum temperature is only 8.9°C and maximum temperature is 25.2°C. The average annual rainfall of the district is around 2345 mm and lasts for a period of about five months from April to September.

2.3.2.2 Sepahijala District:

The climate of the district is mostly warm and is characterized by a humid summer and a dry cool winter with plenty of rains during July to October. Rainfall is received from the South - West Monsoon, which normally breaks in the month of May. Hailstorm generally occurs during the month of April & May, occasionally causing damage to the field crops. Autumn and Spring are of very short duration. Average annual rainfall in the district is about 2000 mm and the temperature varies between a maximum of 35.230C and a minimum of 7.430C. The variation in temperature is much lower during the rains than during any other season.

2.3.2.3 Khowai District:

Khowai district in particular has a monsoon type of climate. There is however, difference of temperature between the hills and plains, which ranges between sub-tropical in the plains to temperate climatic conditions found in the hilly areas. The topographic features seem to have influenced the climatic condition of the Khowai district, where the plains are hotter and humid in comparison to the hills, which have a salubrious climate. The four main seasons here are Winter season (December to February), Pre-monsoon season (March to May),

Monsoon season (June to September), and Post Monsoon season (October to November) (Bhatt and Bhargava, 2006). Khowai has a monsoon influenced humid subtropical climate with large amounts of rain almost all year. Average annual rainfall in the district is about 2000 mm. The city experiences long, hot and wet summers, lasting from April to October. Temperature variation in this region ranges from 9°C- 35°C fluctuating with rainfall.

2.3.2.4 South Tripura District:

The climate in the area is characterized by moderate temperature and is highly humid in nature. There are three prominent seasons summer, rainy and winter. The summer season spans from March to May and is followed by SW monsoon lasting till September. Average annual rainfall in the district is about 2000 mm. Winter season starts from November and lasts till the end of February. The temperature in the area varies from 5.1°C to 35.6°C. The humidity is generally high throughout the year. In summer season the relative humidity varies between 50 to 90 % and in rainy season, the relative humidity is over 85 % in morning and in evening it varies between 70 to 80 %. The co-efficient of variation of rainfall in the area ranges from 6 – 32% suggested a low variability of annual rainfall. Humidity is generally high throughout the year.

2.3.3 Topography – Tripura State^{6,7}:

The State has three distinct physiographic zones i) hill ranges ii) undulating plateau land and iii) low-lying alluvial land. Five major hill ranges traverse the State in roughly north-south direction and continue southward into Chittagong Hill Tract. Narrow valleys separate these ranges generally 20 km wide. The easternmost range is Jampui, being successively followed to the West by Unokoti-Sakhantlang, Longthorai, Atharamura-Kalajhari and Baramura-Deotamura. The highest peak lies at Bethliang Sib (Thaidawar, Shib-rangkhung), 979 mts above the sea level.

Sedimentary rocks which range in age from Miocene to loosely consolidated sediments of recent age represent the geology of the state. The rocks are sandstone, siltstone and shale grading into clay. These rock types are repeated as layers, one above the other. Depending on their character and the presence of fossils, these sedimentary rock sequences are divided into Surma group, Tipam group and the Dupitila group. From the nature of the grains and the texture imprinted on these rocks, it is inferred that originally the sediments were deposited in the sea and later converted into rocks. The recent fluvial deposits occupy quite a large part of south Tripura district. The sedimentary rocks are deformed and folded.

2.3.4 Topography – Project Districts:

2.3.4.1 West Tripura District:

In general, it is an area of subdued macro-relief compared with the eastern sector of the Indo-Burman Ranges bordering Mizoram. One prominent north-south trending ridge namely Baramura exist in this region. The maximum and minimum elevations are around 300 m and 10 m above mean sea level (MSL), respectively. The minimum elevation is found on the bank of Haora River around Agartala. The ridges get gradually subdued towards north. In the Haora and adjacent valleys, the dissected topography makes a spectacular landscape with its

⁶ ENVIS Tripura Report

⁷ GoT, District Survey Report, 2018

pattern of low mounds and intricate net-work of gullies. The dissected terrace, the low valley flats and the trunk channels in general, gently slope towards west.

Physiographically the district is a part of Purvanchal (Eastern Mountains) and the region represents a low lying plain pierced by a series of low drawn spurs projecting from the lugai / Mizor hills. It is actually part of the surma valley, built up by river borne detritus materials. There are six prominent hill ranges running parallel from north to south and keeping an average distance of about 20 kms from each other. From East to West these ranges are Jampui Kakhautang, Longthorai, Atharamura, Sardaug, Baramura. The other noteworthy hill ranges include Deota Mura, Batchai, Balcom and Kalajhari. These ranges and valleys become taller (increase in height) while approaching towards east. The important peaks are Betalong Sib (Jampui Range) 979 mts is the highest peak, Saisunmura, Baramura (Deotamura Range), Jarimura, Atharamura, Feing Pui, Sinbari (Longthorai range), Sakhan. As per Agroclimatic zones the district is in Mild Tropical Plain Zone. The major soil recorded as per agroclimatic zones are Inceptisols, Ultisols, Alfisols⁸.

2.3.4.2 Sepahijala District:

The district has the similar topography as the state. The percentage of hill area is less compared to that of the total hill area of the state. The physiography is characterized by hill ranges, valleys and plains. The district has five anticlinal ranges of hills running north to south, from Baramura in the west, through Atharamura, Longthorai and Shakhan, to the Jampui Hills in the east. The district is located near of Agartala- Udaipur syncline at east of Baramura Hill range. The small isolated hillocks interspersed throughout the state are known as tillas (small mounds /hillocks), and the narrow fertile alluvial valleys, mostly present in the west, are called lungas. A number of rivers originate in the hills of Tripura and flow into Bangladesh. Elevation (MSL)- 75 m on East and 24 m on West. Slope Range (%)- Nal, Lunga, Bastu and water bodies are at 0% slope. Slope of Tilla Land i.e. upland ranges between 30% to 50%. There are multi slopes. The main rivers of the district are Bijoy, Gomati etc. As per Agroclimatic zones the district is in Mild Tropical Plain Zone. The major soil recorded as per agroclimatic zones are Inceptisols, Ultisols, Entisol.

2.3.4.3 Khowai District:

In general, it is an area of subdued macro-relief compared with the eastern sector of the Indo-Burman Ranges bordering Mizoram. Two prominent north-south trending ridges namely Baramura on the west and Atharamura on the east, with an intermontane valley drained by the Khowai river, predominate the topography of the area, in the western part. The maximum and minimum elevations are around 346 m and 10 m above mean sea level (MSL), respectively. The highest elevation of 346 m is attained by the Atharamura. As per Agroclimatic zones the district is in Mild Tropical Plain Zone. The major soil recorded as per agroclimatic zones are Inceptisols, Ultisols, Entisol.

The topography of Khowai district is traversed by mostly of rugged terrain with some undulating surface. About 70 % of the district geographical areas are characterized by hilly terrain covered with dense forests and only about 25 % are plains. Baramura hill range is located along western boundary and Atharamura hill range is located along eastern boundary of the district. Average altitude of Khowai is 23 m. Physiographically, the district can be divided into two divisions- (1) The hill ranges, and (2) The valley / plain areas. Two hill

⁸ State Level Perspective Plan for Watershed Development of Tripura

ranges viz., Baramura and Atharamura characterise Western and Eastern Part of the District. The average elevation of Atharamura is higher than the Baramura range. In between the hills range are the valleys characterized by gentle slope and broken by intermittent small hillocks. The valley / plain areas in the district consist mainly of Khowai- Talamura valley.

2.3.4.4 South Tripura District:

Geography of South Tripura District comprises three principal hill ranges. South Baramura and Deotamura hill ranges are completely in South Tripura District while apart of Atharamura hill also comes in the district. Deotamura is the principal hill range of South Tripura District having a length of 85 kms and forms the boundry between Amarpur and Udaipur Sub Division. Major rivers flowing through South Tripura District are Gomti River, Muhuri and Feni. As per Agroclimatic zones the district is in Mild Tropical Plain Zone. The major soil recorded as per agroclimatic zones are Inceptisols, Ultisols, Entisol⁹.

Physiographically, the area can be divided into two parts, Anticlinal Hill Ranges and Synclinal flatbottomed valleys. The major hill ranges are Baramura and a hill range at west boundary. The trend of the hill ranges is almost N – S. The height of the hill ranges increases from west to east. A broad synclinal valley is located along Manu-bazar, Jolaibari, Laogang Bazar. The valleys are gently undulating with intermittent flood plains of rivers and streams. The undulations formed by 10 to 30 m high mounds with gullies in between them, locally called “loonga.”

2.3.5 Landuse Pattern – Tripura State¹⁰:

For Land use details of Tripura State and Project Districts, Land use statistics of Ministry of Agriculture, GOI, 2018-2019 and North Eastern Development Finance Corporation Ltd (NEDFI), 2018 are referred. Majority of the Tripura State area is 60% is covered by forest land followed by 24% agricultural land. The general land use area of the Tripura State is given in **Table 2.1**, Land Use Distribution in **Figure 2.1**. The Map created by NBSS LUP is depicted in **Map 2.4**.

Table 2-1: Land use pattern of State Tripura

Sr. No.	Land Use Classes	Area in Ha	%
1	Geographical area	1049169	100
2	Forest Area	629426	60
3	Land Not Available for Agricultural Use	148304	14.1
4	Land under Misc. tree Crops & groves not including in net Area sown	10125	-
5	Permanent pasture & other grazing land	944	-
6	Culturable Waste land	2578	-
7	Total Other Uncultivated Land Excluding Fallow Land (4+5+6)	13647	1.3
8	Fallow Land		
	Current Fallow	1055	-
9	Fallow Land Other than Current fallow	1189	-
10	Total (8+9)	2244	0.2
11	Net Cropped area	255548	24.4
12	Gross cropped Area	488500	-
13	Area sown more than once	232952	-
14	Cropping Intensity (%)	191	-
15	Cultivable land	271439	-

⁹ State Level Perspective Plan for Watershed Development of Tripura

¹⁰ Land use statistics, Ministry of Agriculture, GOI, 2018-2019 and NEDFI, Land Use Details, 2018

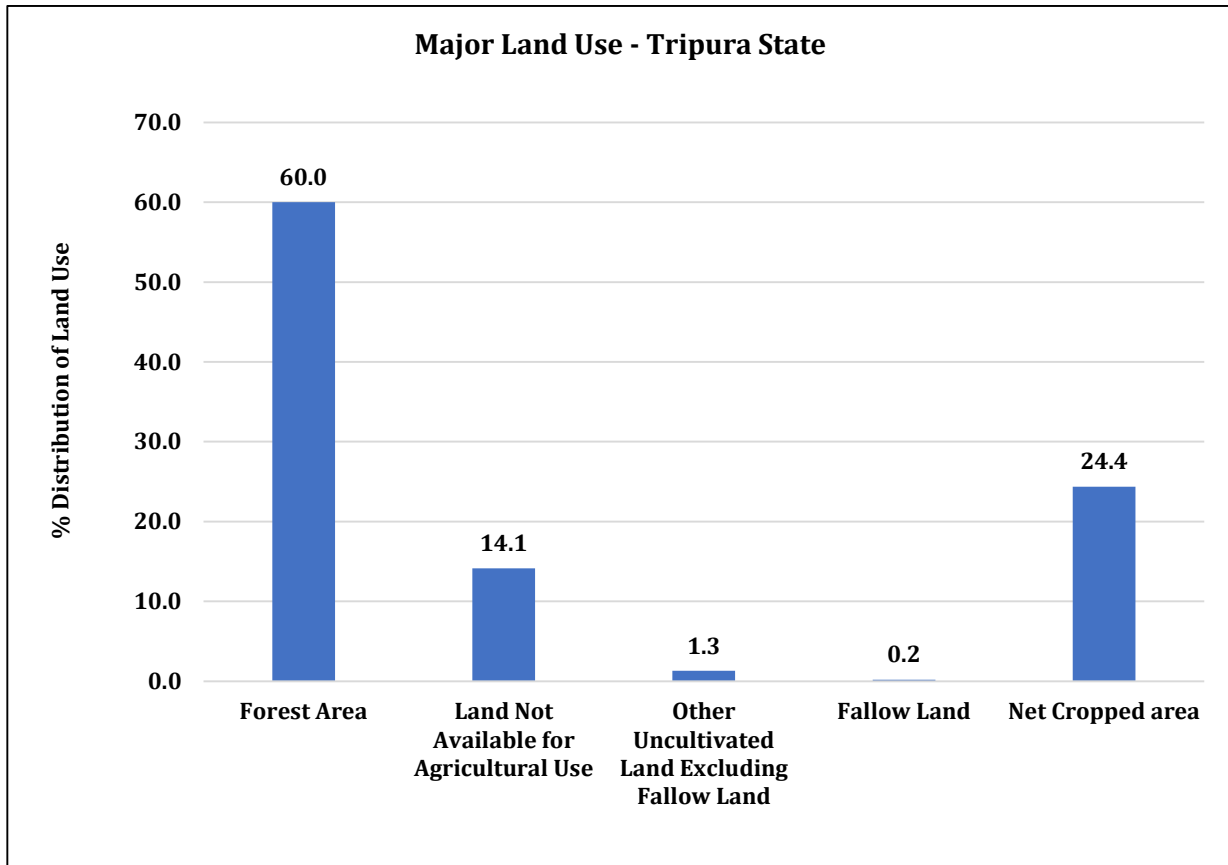
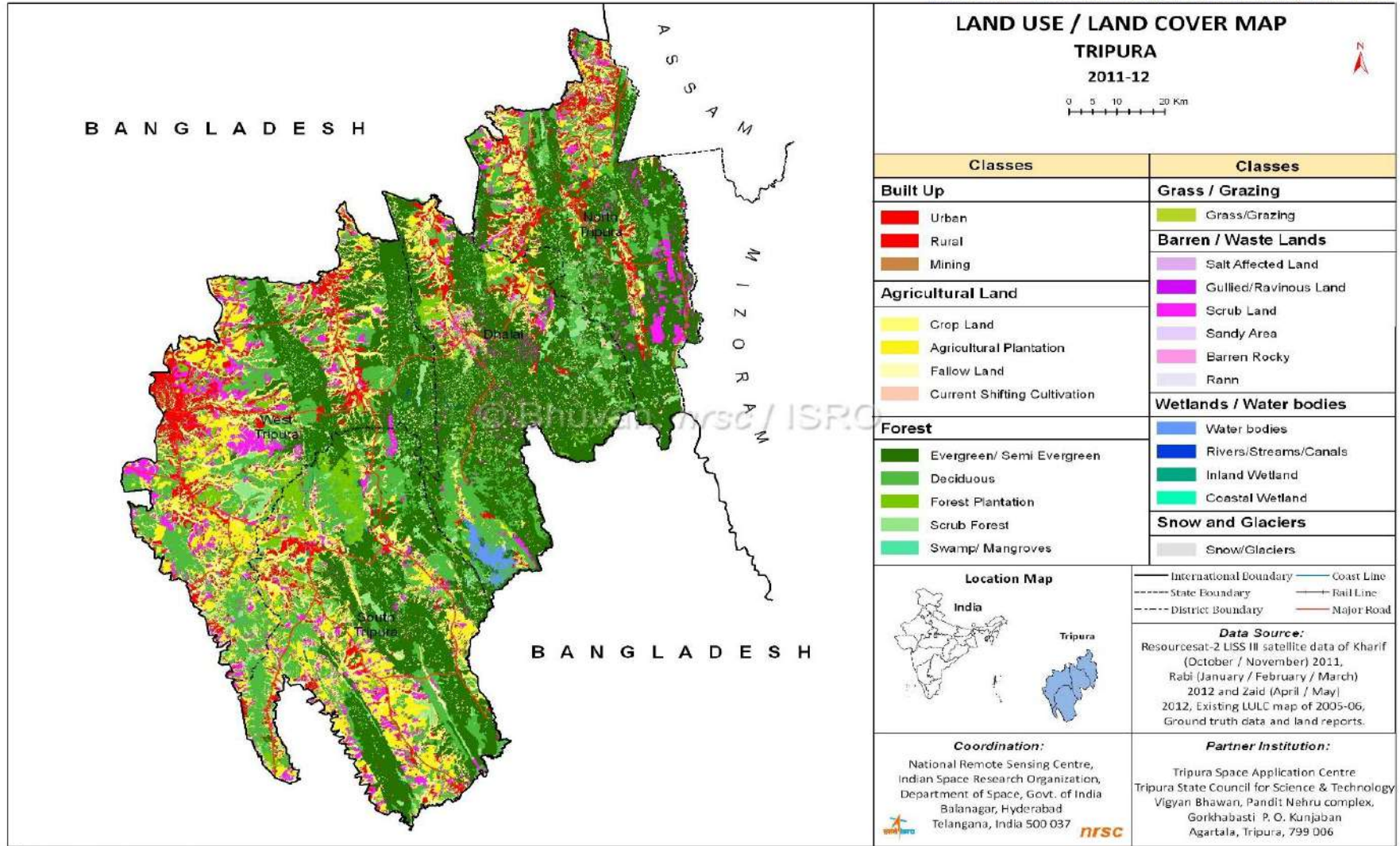


Figure 2-1: Land use pattern of State Tripura

Map 2-4: Land use Map of State Tripura

National Land Use / Land Cover Mapping on 1:50,000 scale using IRS LISS-III data



© National Natural Resources Management System, ISRO, 2014

2.3.6 Landuse Pattern – Project Districts¹¹:

2.3.6.1 West Tripura District:

Reporting area for Landuse Majority of the west Tripura project district area i.e., 32% is covered by Agricultural area, 39.1% covered by Non-Agricultural uses land and 28% is covered by Forest land. The general land use pattern of the project district is given in **Table 2.2**.

Table 2-2: Landuse Pattern of Project District - West Tripura

Sr. No.	Land Use Classes	Area in Ha	%
1	Geographical area	104596	100
2	Forest Area	29265	28.0
3	Land Not Available for Agricultural Use	40949	39.1
4	Land under Misc. tree Crops & groves not including in net Area sown	495	-
5	Permanent pasture & other grazing land	83	-
6	Culturable Waste land	189	-
7	Total Other Uncultivated Land Excluding Fallow Land (4+5+6)	767	0.7
8	Fallow Land	Current Fallow	-
9		Fallow Land Other than Current fallow	-
10	Total (8+9)	182	0.2
11	Net Cropped area	33433	32.0
12	Gross cropped Area	62054	-
13	Area sown more than once	28621	-

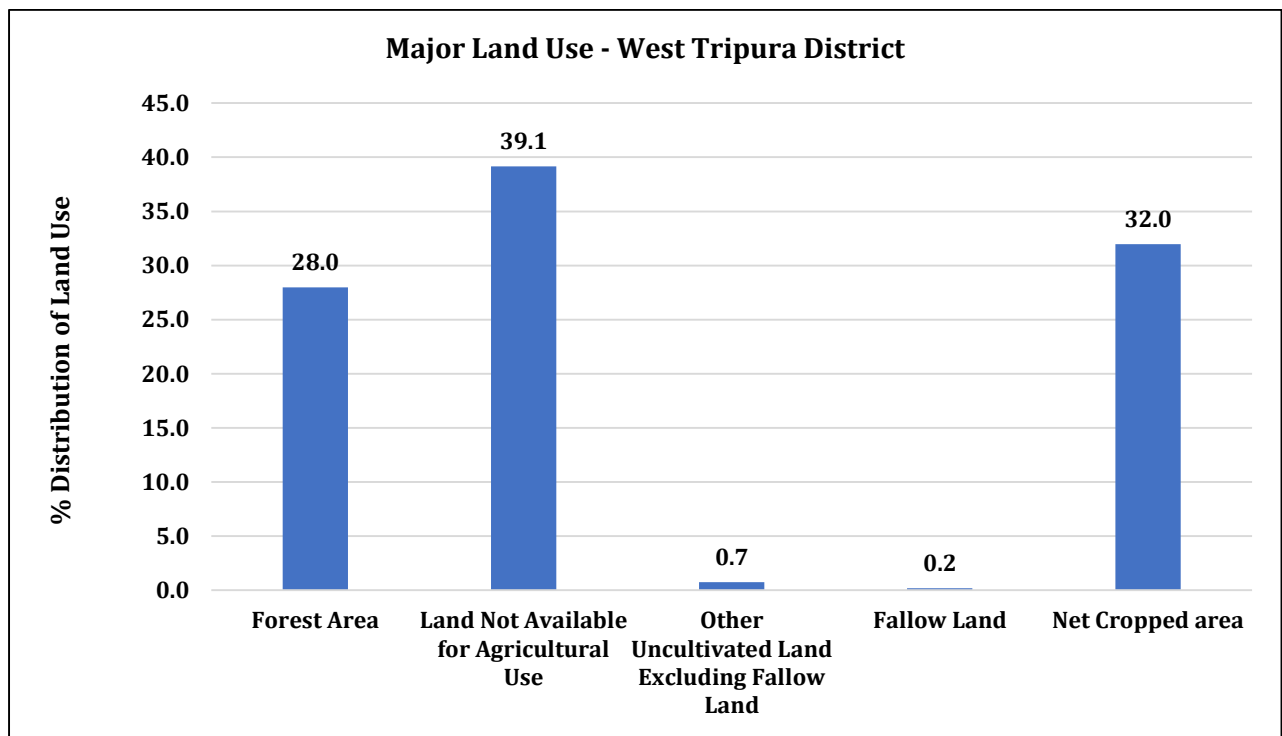
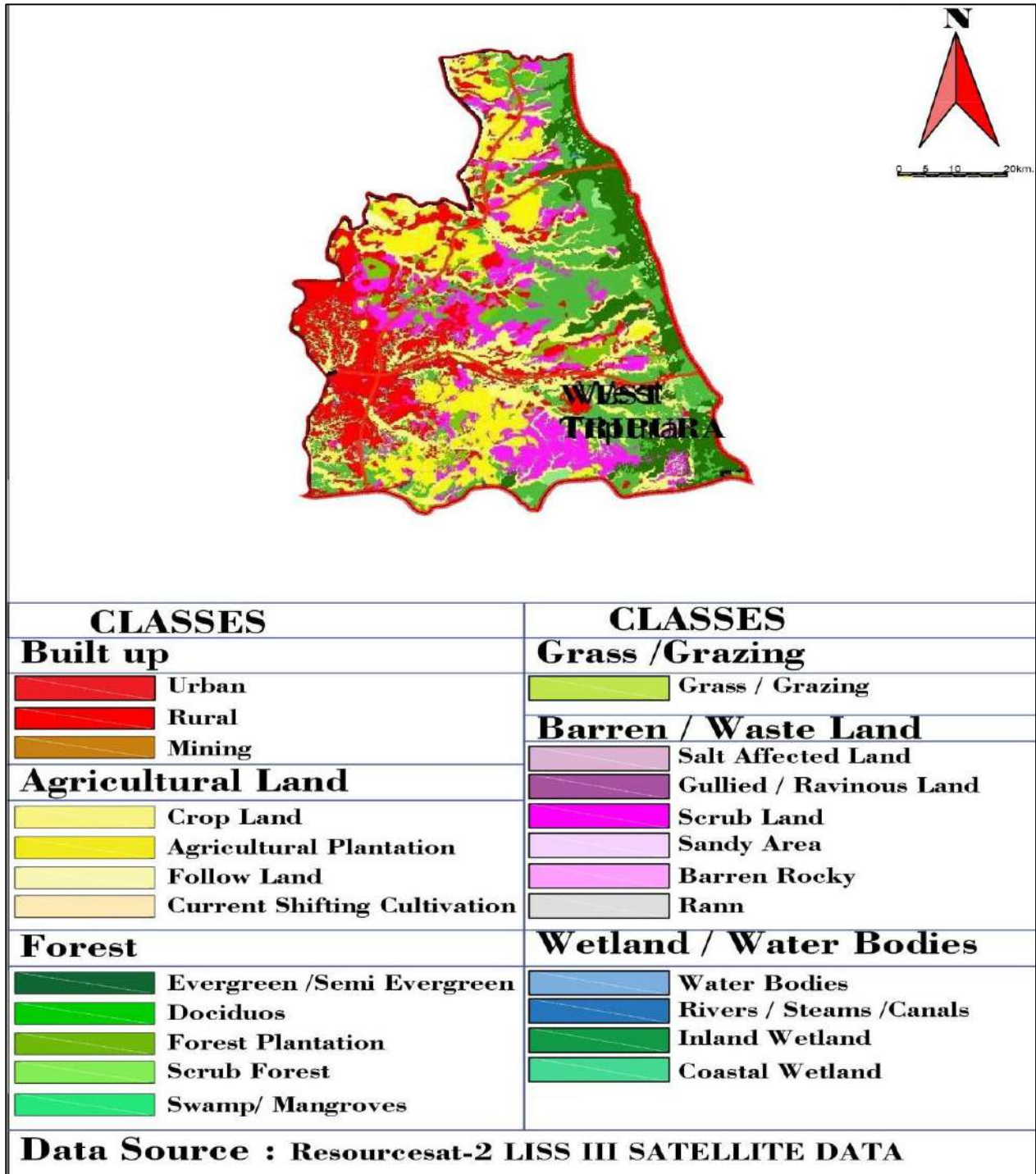


Figure 2-2: Land use pattern of Project District - West Tripura

¹¹ Land use statistics, Ministry of Agriculture, GOI, 2018-2019 and NEDFI, Land Use Details, 2018

Map 2-5: Land use Map of Project District - West Tripura¹²



2.3.6.2 Sepahijala District:

Majority of the Sepahijala project district area i.e. 45% is covered by Agricultural area, 23.7% covered by Non-Agricultural Use Land and 30.1% is covered by Forest land. The general land use pattern of the project district is given in **Table 2.3**.

¹² District profile of West Tripura, GoT, 2018 - 2019

Table 2-3: Landuse Pattern of Project District – Sepahijala

Sr. No.	Land Use Classes	Area in Ha	%
1	Geographical area	103080	100
2	Forest Area	30996	30.1
3	Land Not Available for Agricultural Use	24407	23.7
4	Land under Misc. tree Crops & groves not including in net Area sown	891	
5	Permanent pasture & other grazing land	11	
6	Culturable Waste land	286	
7	Total Other Uncultivated Land Excluding Fallow Land (4+5+6)	1188	1.2
8	Fallow Land	Current Fallow	107
9		Fallow Land Other than Current fallow	123
10	Total (8+9)	230	0.2
11	Net Cropped area	46259	44.9
12	Gross cropped Area	102655	
13	Area sown more than once	56396	

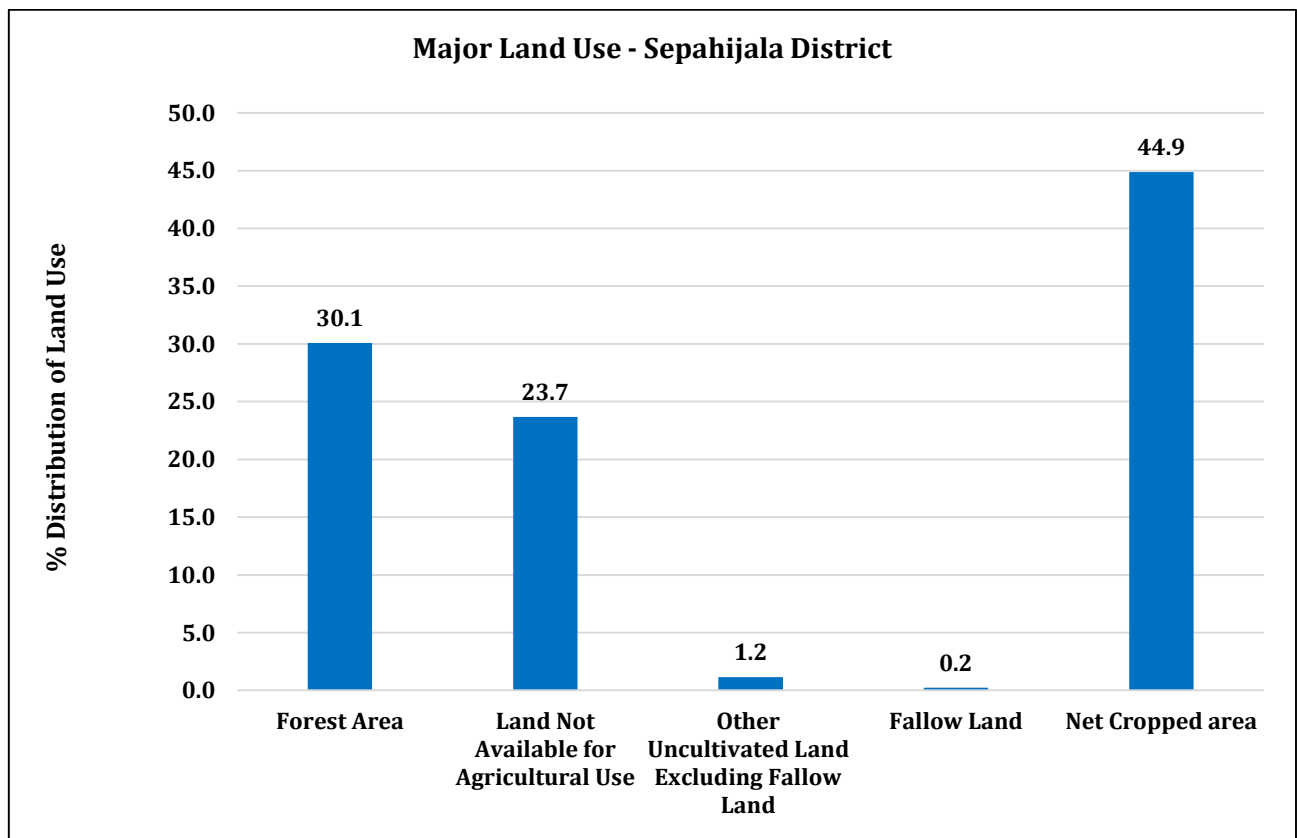
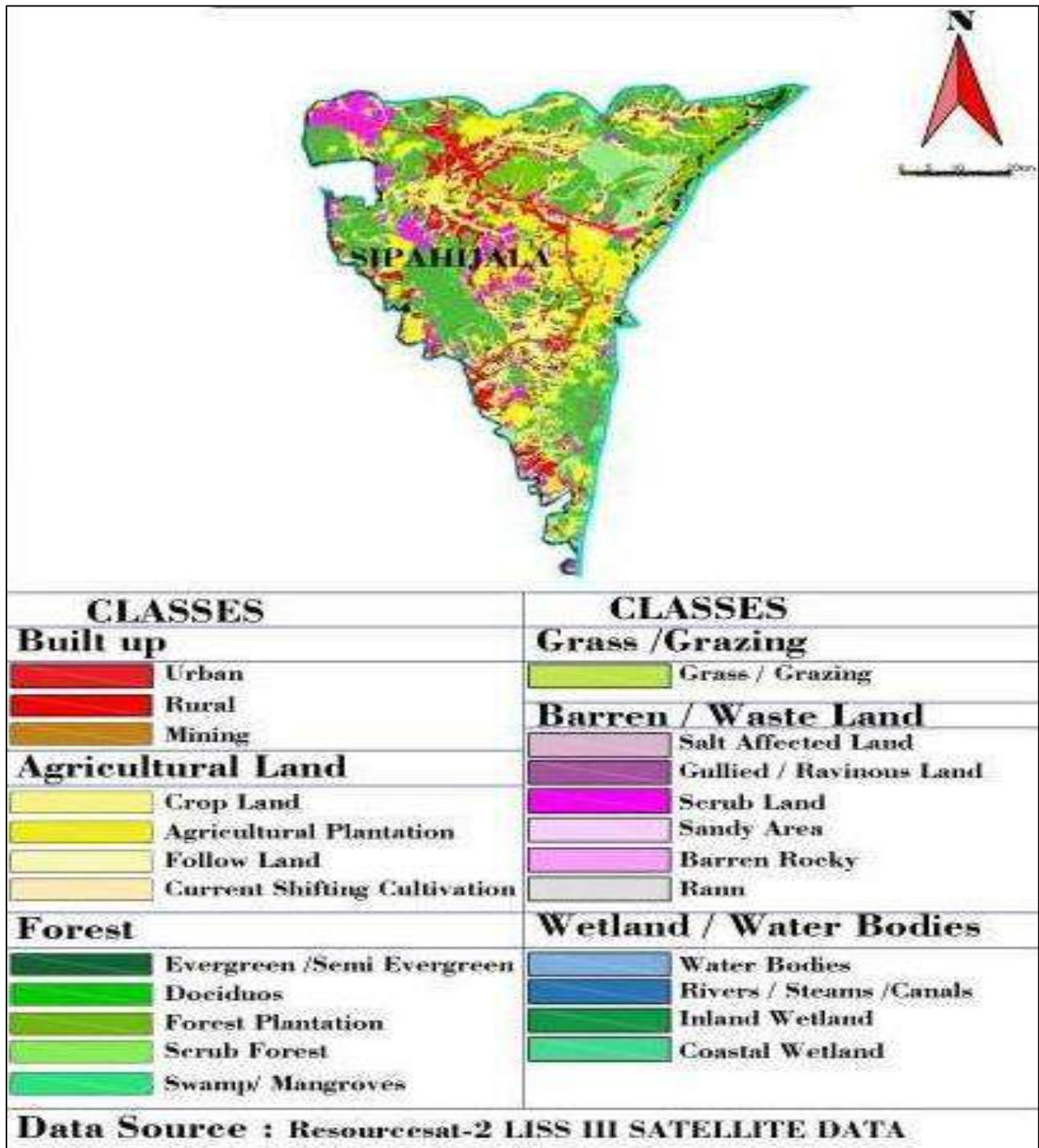


Figure 2-3: Land use pattern of Project District - Sepahijala

Map 2-6: Land use Map of Project District - Sepahijala District¹³



2.3.6.3 Khowai District:

Majority of the Khowai project district area i.e. 59.0% is Forest land, 35.2% covered by agricultural land. The general land use pattern of the project district is given in **Table 2.4**.

¹³ District profile of Sepahijala, GoT, 2018 - 2019

Table 2-4: Landuse Pattern of Project District - Khowai

Sr. No.	Land Use Classes	Area in Ha	%	
1	Geographical area	92005	100	
2	Forest Area	54319	59.0	
3	Land Not Available for Agricultural Use	4987	5.4	
4	Land under Misc. tree Crops & groves not including in net Area sown	93	-	
5	Permanent pasture & other grazing land	-	-	
6	Culturable Waste land	90	-	
7	Total Other Uncultivated Land Excluding Fallow Land (4+5+6)	183	0.2	
8	Fallow Land	Current Fallow	30	-
9		Fallow Land Other than Current fallow	117	-
10	Total (8+9)	147	0.2	
11	Net Cropped area	32369	35.2	
12	Gross cropped Area	58293	-	
13	Area sown more than once	25924	-	

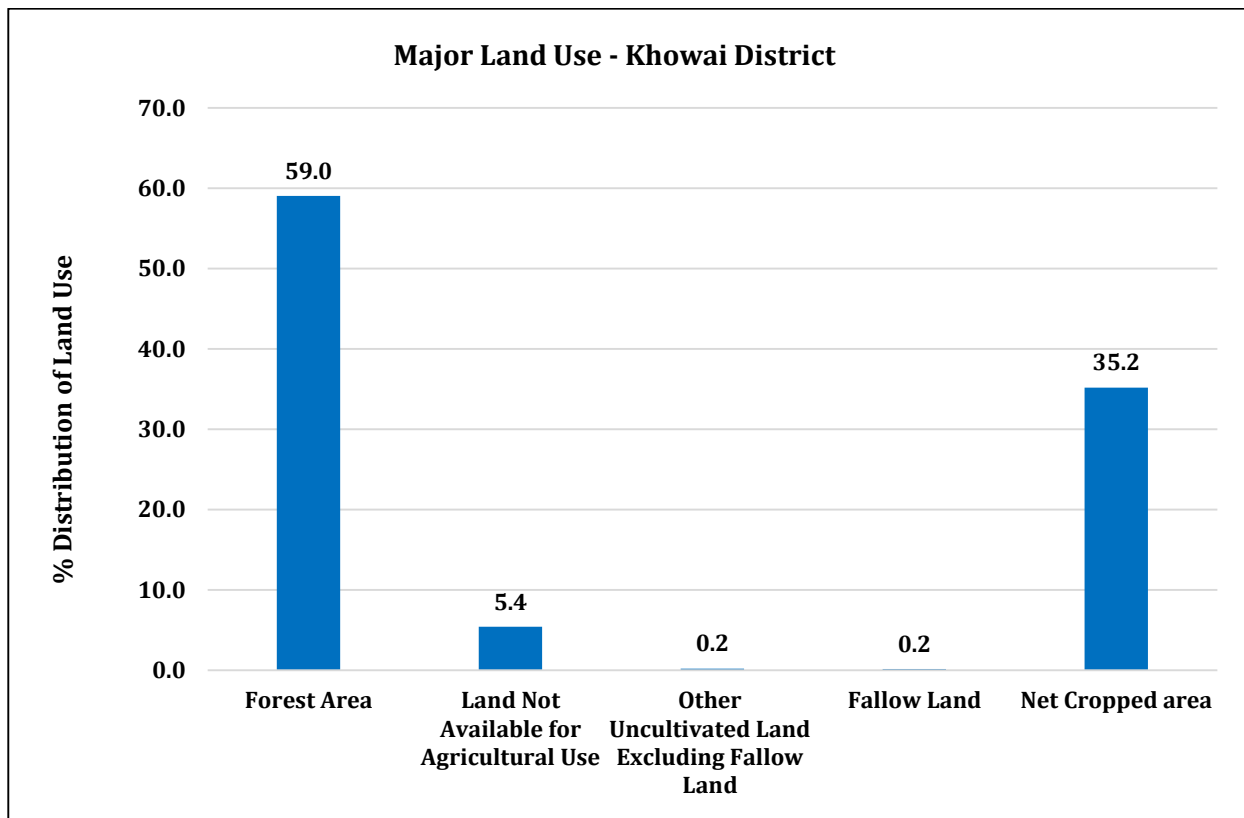
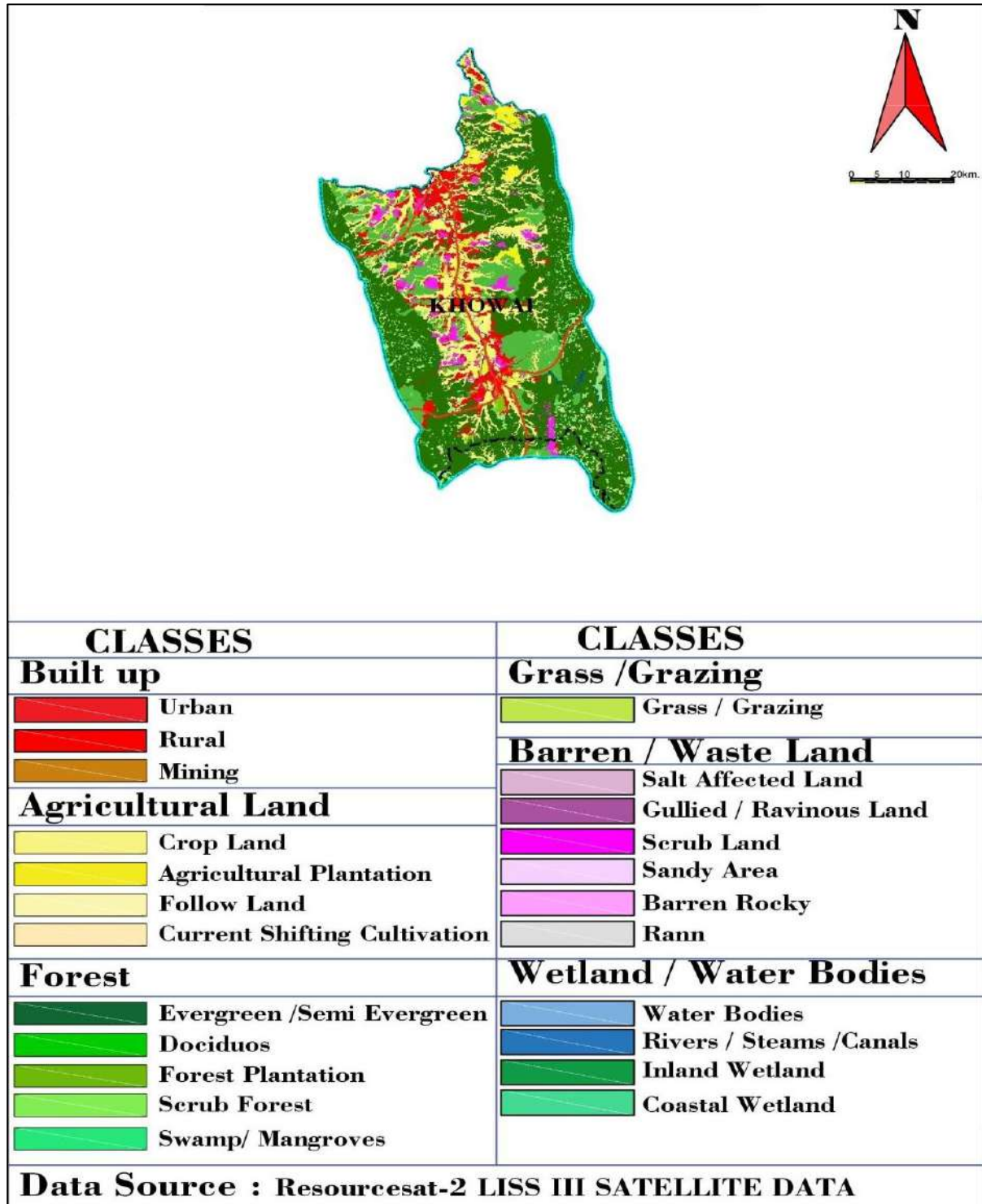


Figure 2-4: Land use pattern of Project District - Khowai

Map 2-7: Land use Map of Project District - Khowai District¹⁴



2.3.6.4 South Tripura District:

Majority of the South Tripura project district area i.e. 5.52% is built up land, 27.07% covered by agricultural land and 67.18 % is covered by Forest land. The general land use pattern of the project district is given in **Table 2.5**.

¹⁴ District profile of Khowai, GoT, 2018 - 2019

Table 2-5: Landuse Pattern of Project District – South Tripura

Sr. No.	Land Use Classes	Area in Ha	%	
1	Geographical area	158567	100	
2	Forest Area	105871	66.8	
3	Land Not Available for Agricultural Use	9133	5.8	
4	Land under Misc. tree Crops & groves not including in net Area sown	287	-	
5	Permanent pasture & other grazing land	20	-	
6	Culturable Waste land	13	-	
7	Total Other Uncultivated Land Excluding Fallow Land (4+5+6)	320	0.2	
8	Fallow Land	Current Fallow	18	-
9		Fallow Land Other than Current fallow	43	-
10	Total (8+9)	61	0.04	
11	Net Cropped area	43182	27.2	
12	Gross cropped Area	83837	-	
13	Area sown more than once	40655	-	

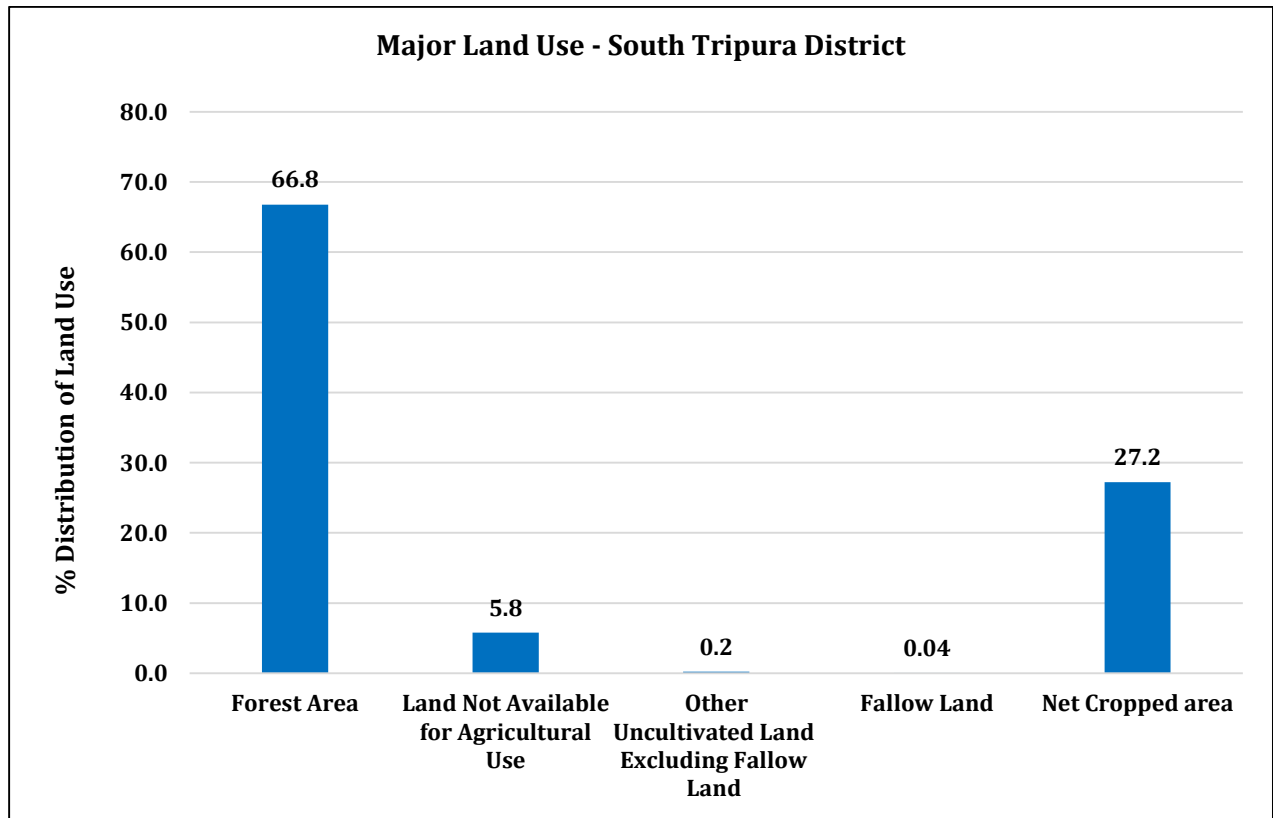
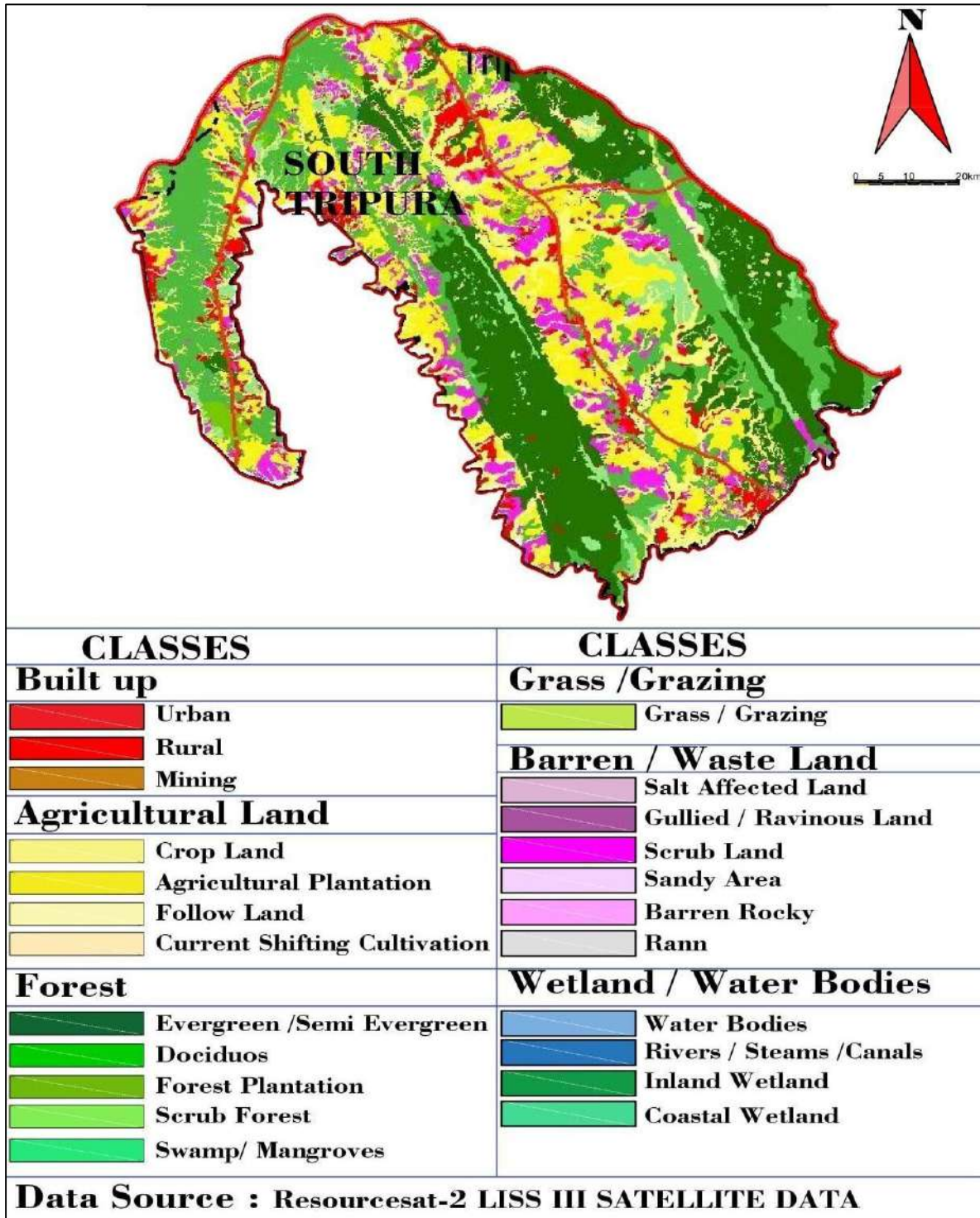


Figure 2-5: Land use pattern of Project District – South Tripura

Map 2-8: Land use Map of Project District – South Tripura District¹⁵



2.3.7 Major Rivers – Tripura State¹⁶

The State of Tripura has rich water resources with the presence of as many as ten major rivers, including Gumti, Manu-Deo and Khowai. All rivers are rain-fed and ephemeral in nature. All major rivers originate from hill ranges and show a typical drainage pattern called trellis, except a few instances of dendrite pattern. A study of basin characteristics by CSME

¹⁵ District profile of South Tripura, GoT, 2018 - 2019

¹⁶ Water Resource Department (WRS), GoT, 2019

(1989) indicate that eight of the ten basins are within the territorial limit of Tripura while basin areas of river Fenni and Langai are shared by two Indian States viz. Tripura and Mizoram and Bangladesh. Collectively basin area of ten major rivers and other minor streams covers nearly 10,500 sq. km. In terms of percentage of the basin of individual rivers vis-a-vis, total basin Gumti (22.66%), is followed by Manu-Deo (18.36%) and Khowai.

Map 2-9: River Map of Tripura State with Project Districts



Table 2-6: Major Rivers of Tripura State¹⁷

Sr. No.	Name of River	Tributaries	Length in Tripura	Origin and Flow
1.	Longai	It is tributary of Barak River	98 km	Originates at Jampui Hill Northerly flow
2.	Juri	Deo chhera, Kakri chhera, Lal chhera, Bali chhera, Hakai N, Lchailal chhera	79 km	Originates at Jampui Hill, Northerly flow through Dharmangar valley
3.	Deo	It is a tributary of Manu River	132 km	Originates at Jampui Hill, Northerly flow through Kanchanpur valley, meets Manu River.
4.	Manu	Deo R, Chamanu chhera, Chailengtha chhera, Kanan chhera, Lakhmi chhera, Madhal chhera	167 km	Originates ate Sakhan range & Northerly flow via Kailasahar to Bangladesh
5.	Dhalai	Bahuri chhera, Chandrai chhera, Sofema chhera, Tamthung chhera, Surma chhera, Kulai chhera, Dalu chhera, Nali chhera	117 km	Originates at Longtharai range, Northerly flow via Kamalpur to Bangladesh
6.	Bijoy / Buriganga	Rangpani chhera	54	Originates from Baramura hill range and flows westward through Agartala valley and near Boxanagar it enters Bangladesh
7.	Khowai	Balu chhera, Jeel chhera, Chamal chhera, Ahiadia chhera, Bhaskar chhera, Maharani chhera, Trirupa chhera, Samru chhera, Lal chhera	166 km	Originates in the eastern part of the Atharamura Hills flow to Bangladesh
8.	Haora	Donaigaon,	53 km	Originates at Baramura range, Westward flow via

¹⁷ Water Resource Department (WRS), GoT, 2019 and TRIPURA (C-SAP) 2015-2020

Sr. No.	Name of River	Tributaries	Length in Tripura	Origin and Flow
		Ghoramora, Dehtagang, Champanadi, Debatila chhera		Agartala to Bangladesh
9.	Sumli	Tributary of Hawra River	50.2 km	Originates from the Damra Hills of Boromura hill range tributary of Choka River
10.	Sonai	Tributary of Barak River	145.13 km	Major Southbank tributary of the Barak River originates from Lushai Hills of Mizoram state and falls in the Barak River at Sonaimukh.
11.	Gumti	Sarma chhera, Malik chhera, Maharani chhera, Sangang, Ganga chhera	133 km	Originates at Longtharai and Atharamura flows to via Sonamura town Bangladesh
12.	Muhuri	Tributary of Fenni River	64 km	Originates at Deotamura range, Westward flow via Belonia to Bangladesh
13.	Fenni	Muhuri River	116 km	Originate at the border by confluence of three streams, of which Asalong is the main channel

2.3.8 Major Rivers – Project Districts

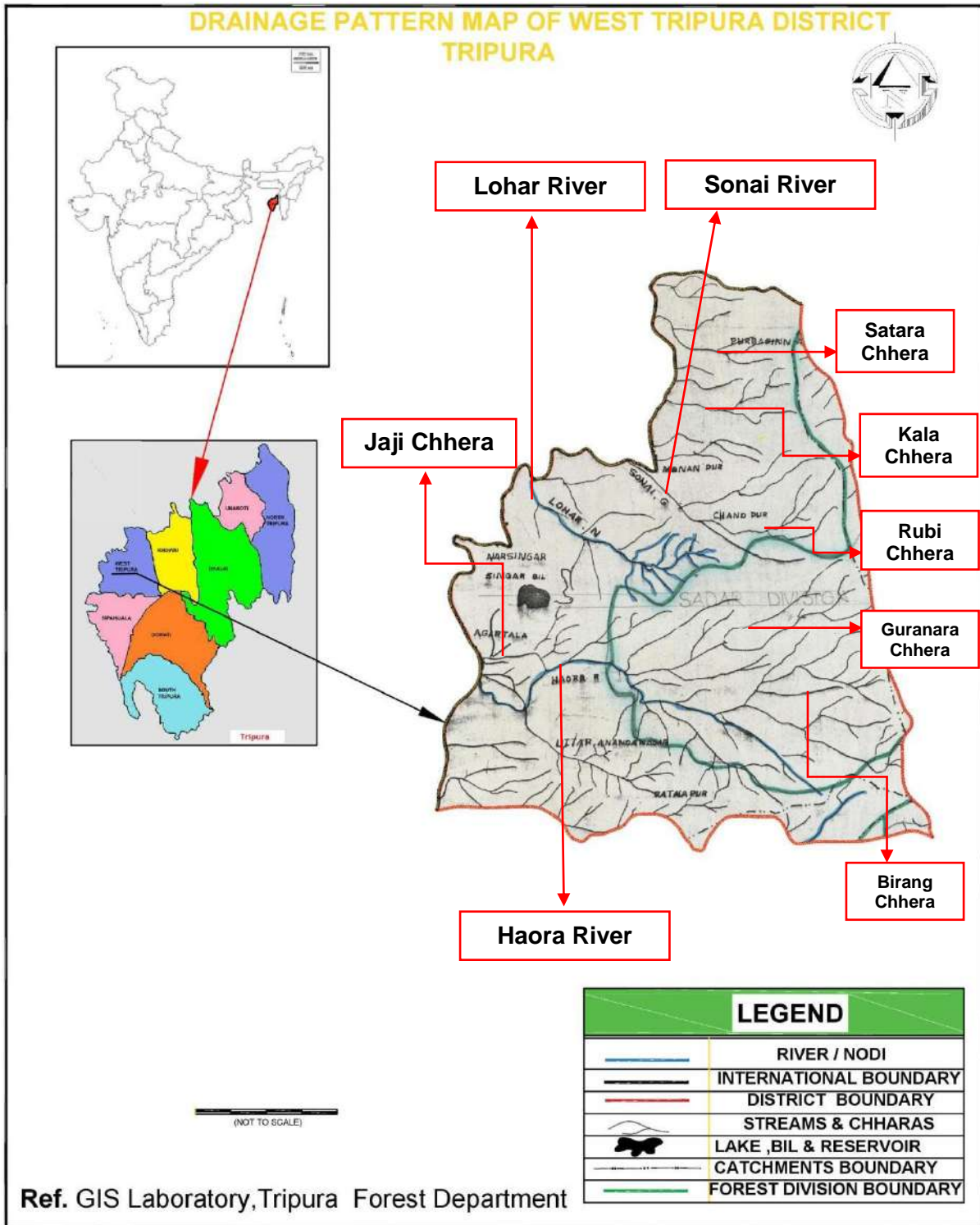
Table 2-7: Major Rivers Flowing Through Project Districts

Sr. No.	Name of District	Name of River
1	West Tripura	Howra, Buriganga, Sonai and Sumli and tributaries
2	Sepahijala	Burima / Bijoy, Kachigung and Gumti and tributaries
3	Khowai	Khowai, Dhalai and tributaries
4	South Tripura	Fenni, Muhuri, Manu and Longai and tributaries

The River Maps of Project Districts are depicted in **Maps 2.10 through 2.13**.

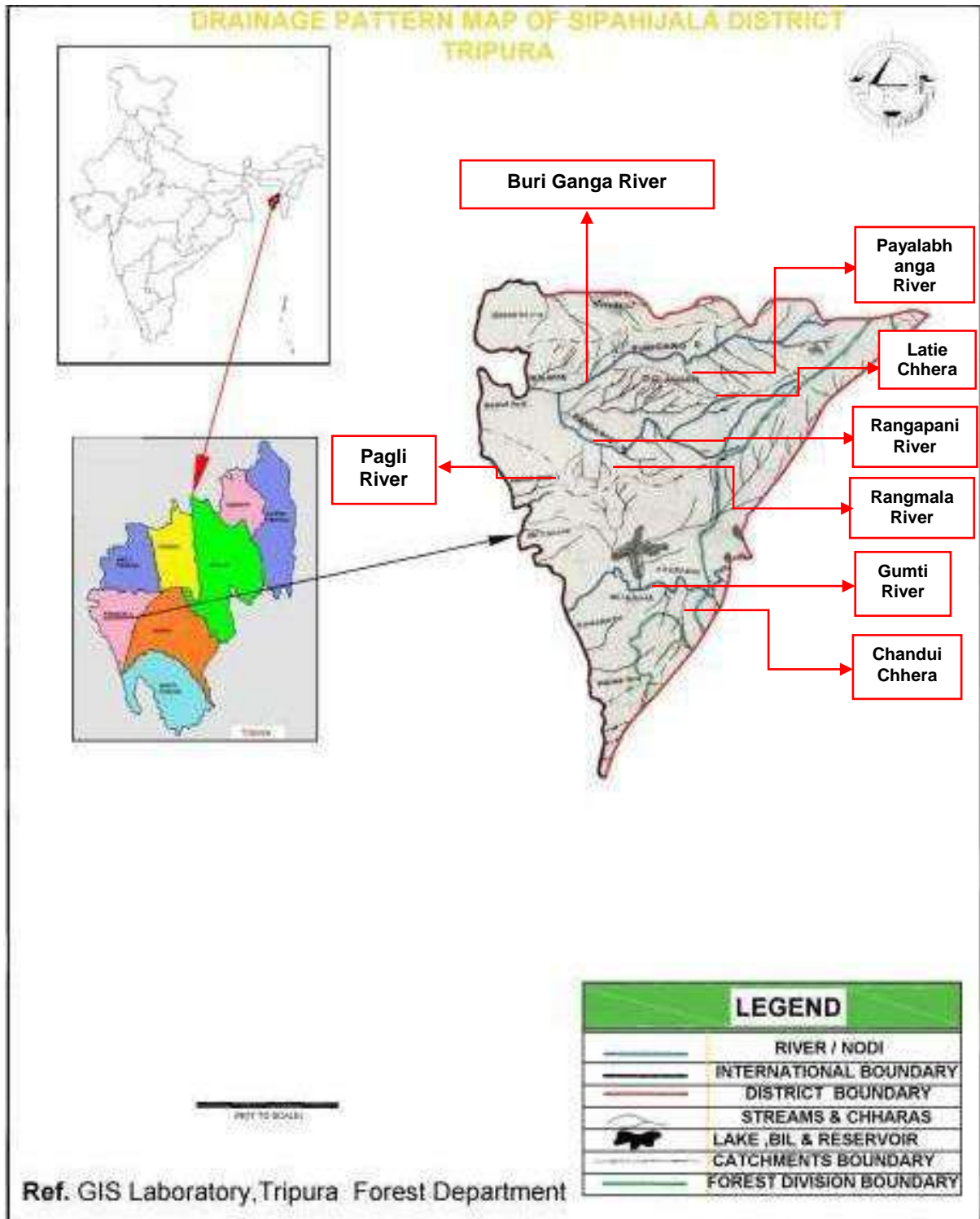
The subproject activity / route alignment which are planned near water body or crossing water body are assessed and discussed in the Chapter 4 and 5 with EMP.

Map 2-10: Drainage Pattern of West Tripura District¹⁸



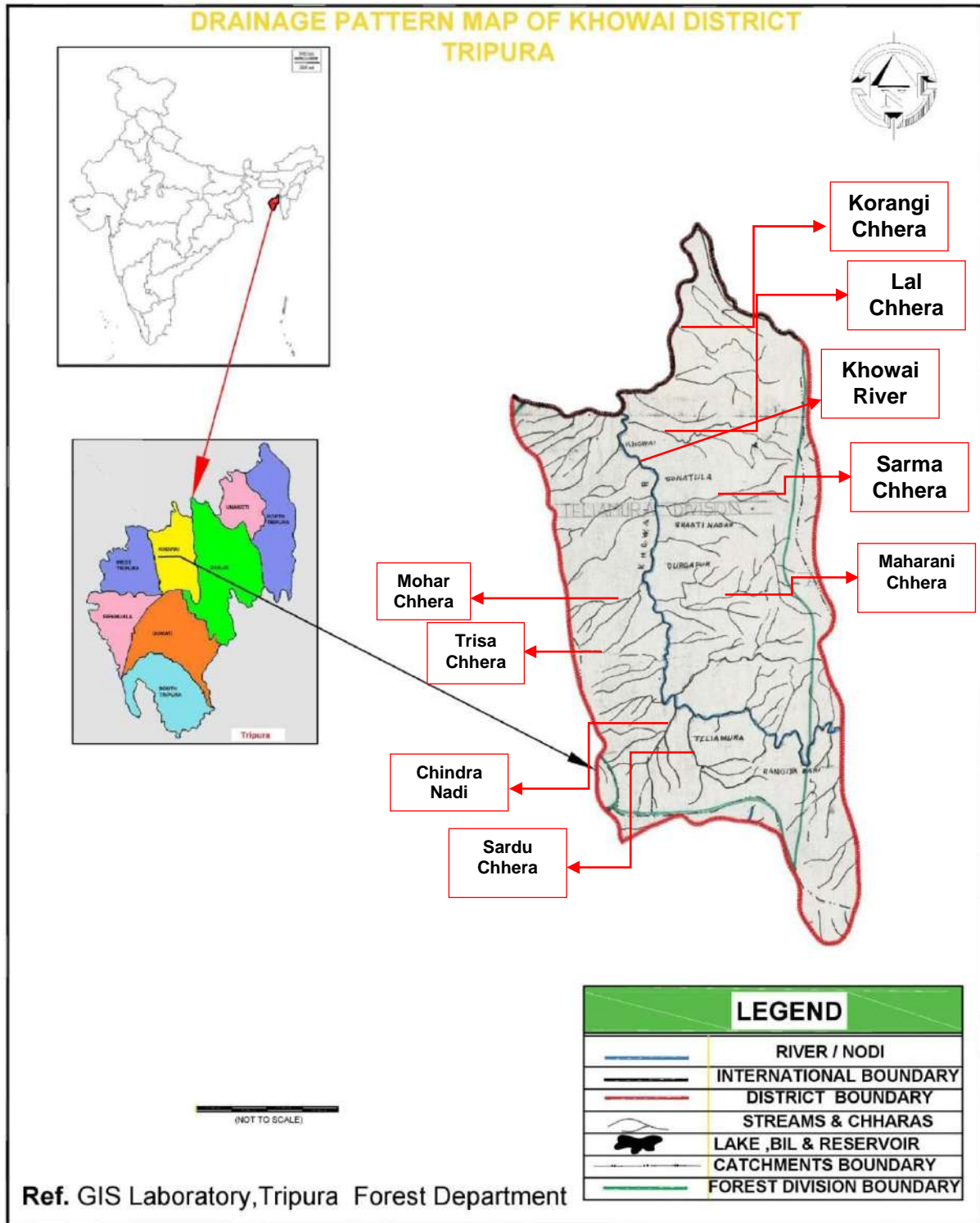
¹⁸ District profile of West Tripura, GoT, 2018 - 2019

Map 2-11: Drainage Pattern of Sepahijala District¹⁹



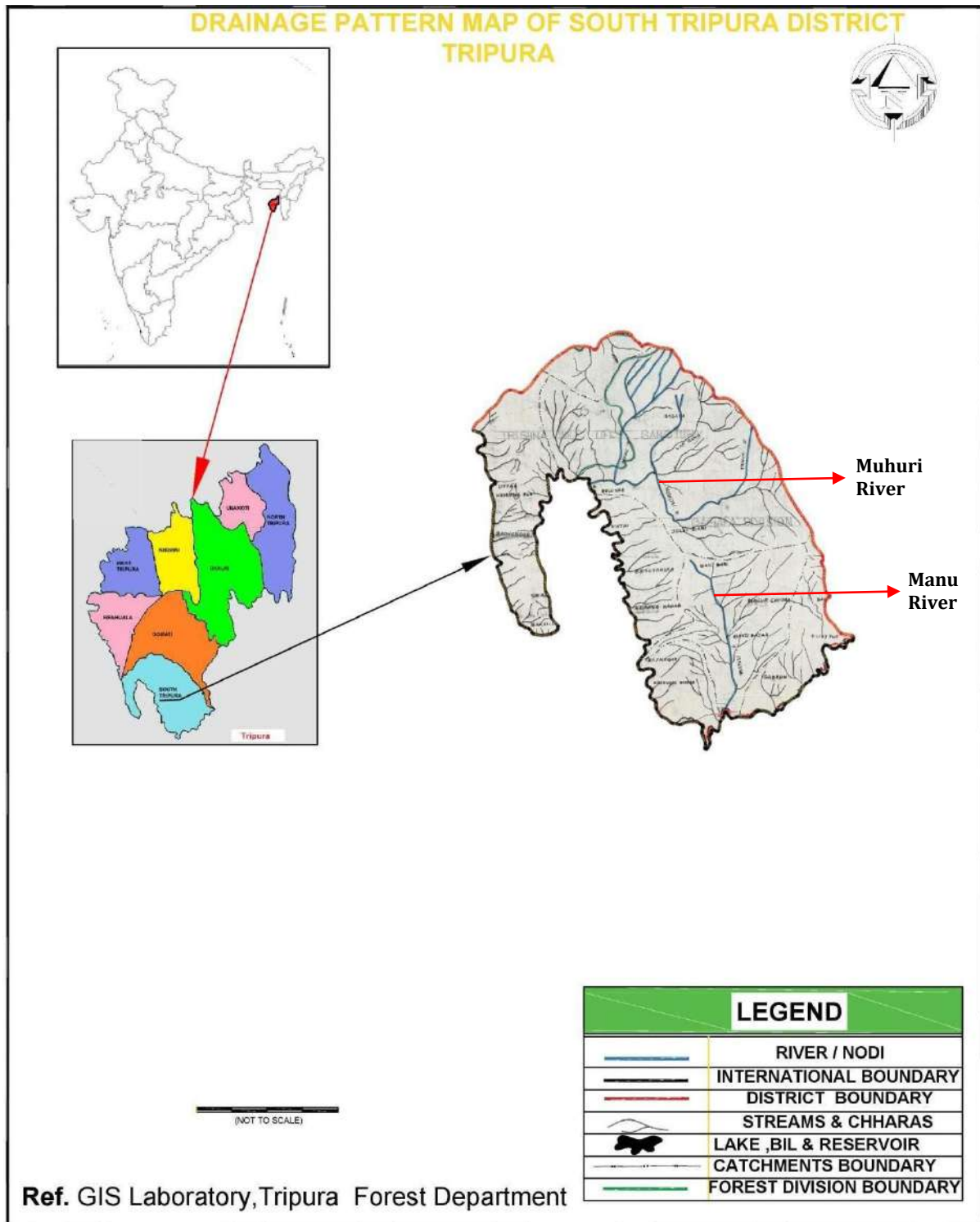
¹⁹ District profile of Sepahijala, GoT, 2018 - 2019

Map 2-12: Drainage Pattern of Khowai District²⁰



²⁰ District profile of Khowai, GoT, 2018 - 2019

Map 2-13: Drainage Pattern of South Tripura District²¹



²¹ District profile of South Tripura, GoT, 2018 - 2019

2.3.9 Wetlands – Tripura State²²:

In Tripura, 432 wetlands have been mapped and 2983 small wetlands (< 2.25 ha) identified. Total wetland area estimated is 17542 ha. Inland natural wetlands dominated in the state with 63% share. The major natural wetland types are; river/stream (42.30%) and waterlogged (16.79%). There are 60 lake/pond with about 1.7% area. Under man-made wetlands, reservoir/barrage is the major wetland type with 18.93% share. The details of type-wise aerial extents of wetland are given in the **Table 2-8**. Tripura has seven wetlands important in the context of state. These are Rudra Sagar, Gomti Reservoir (Dumbur Lake), Sepahijala Reservoir, Trishna, Sattar Mia’s Hoar, Batapura Lake and College Tilla Lake. Amongst there Rudra Sagar Lake and Gomati Reservoir are identified wetlands under National Wetlands Conservation Programme. The Rudrasagar lake of State is also covered under International Convention on wet land (Ramsar Convention).

Table 2-8: Wetland Details – Tripura State

Sr. No.	Wett code	Wetland Category	Number of Wetlands	Total Wetland area	% Of wetland area	Area in ha	
						Post monsoon area	Pre monsoon area
	1100	Inland Wetlands – Natural					
1	1101	Lakes/Ponds	60	300	1.71	180	153
2	1102	Ox-bow lakes/ Cut-off meanders	78	387	2.21	229	170
3	1105	Waterlogged	244	2946	16.79	1872	647
4	1106	River/Stream	17	7420	42.30	4488	5115
	1200	Inland Wetlands -Man-made					
5	1201	Reservoirs/Barrages	12	3320	18.93	2936	796
6	1202	Tanks/Ponds	21	186	1.06	142	142
Sub-Total			432	14559	83.00	9847	7023
Wetlands (<2.25 ha), mainly Tanks			2983	2983	17.00	-	-
Total			3415	17542	100.00	9847	7023

2.3.10 Wetlands – Project Districts

2.3.10.1 West Tripura District:

West Tripura district (including Khowai and Sepahijala) has a Total 162 wetlands have been mapped and 1075 small wetlands (< 2.25 ha) identified. The inland-Natural wetlands comprise about 75.9 %. The Waterlogged occupies the largest area (1527 ha) next to River/Stream (1764 ha). The other major natural wetland types are Lake/pond and Ox-Bow lakes. Total 43 Lakes/Ponds are mapped occupying 225 ha area (4.8 %). Detailed wetland statistics of the district is given in **Table 2.9**. The open water spread area is significantly more during post-monsoon (2430 ha) than that of Premonsoon (1876 ha). Considerable reduction in water spread is observed in case of Waterlogged during Pre-monsoon (281 a) than that of post-monsoon (1032 ha).

²² Ministry of Environment, Forests & Climate Change, National Wetland Atlas: Tripura, Govt of India, 2021

Table 2-9: Wetland Details – West Tripura District (Including Khowai and Sepahijala Districts)

Sr. No.	Wett code	Wetland Category	Number of Wetlands	Total Wetland area	% of wetland area	Open Water	
						Post monsoon area	Pre monsoon area
1100 Inland Wetlands – Natural							
1	1101	Lakes/Ponds	43	225	4.74	137	115
2	1102	Ox-bow lakes/ Cut-off meanders	14	88	1.85	55	36
3	1105	Waterlogged	90	1527	32.15	1032	281
4	1106	River/Stream	6	1764	37.14	1158	1400
1200 Inland Wetlands -Man-made							
5	1201	Reservoirs/Barrages	5	57	1.20	36	32
6	1202	Tanks/Ponds	4	13	0.27	12	12
Sub-Total			162	3674	77.36	2430	1876
Wetlands (<2.25 ha), mainly Tanks			1075	1075	22.64	-	-
Total			1237	4749	100.00	2430	1876

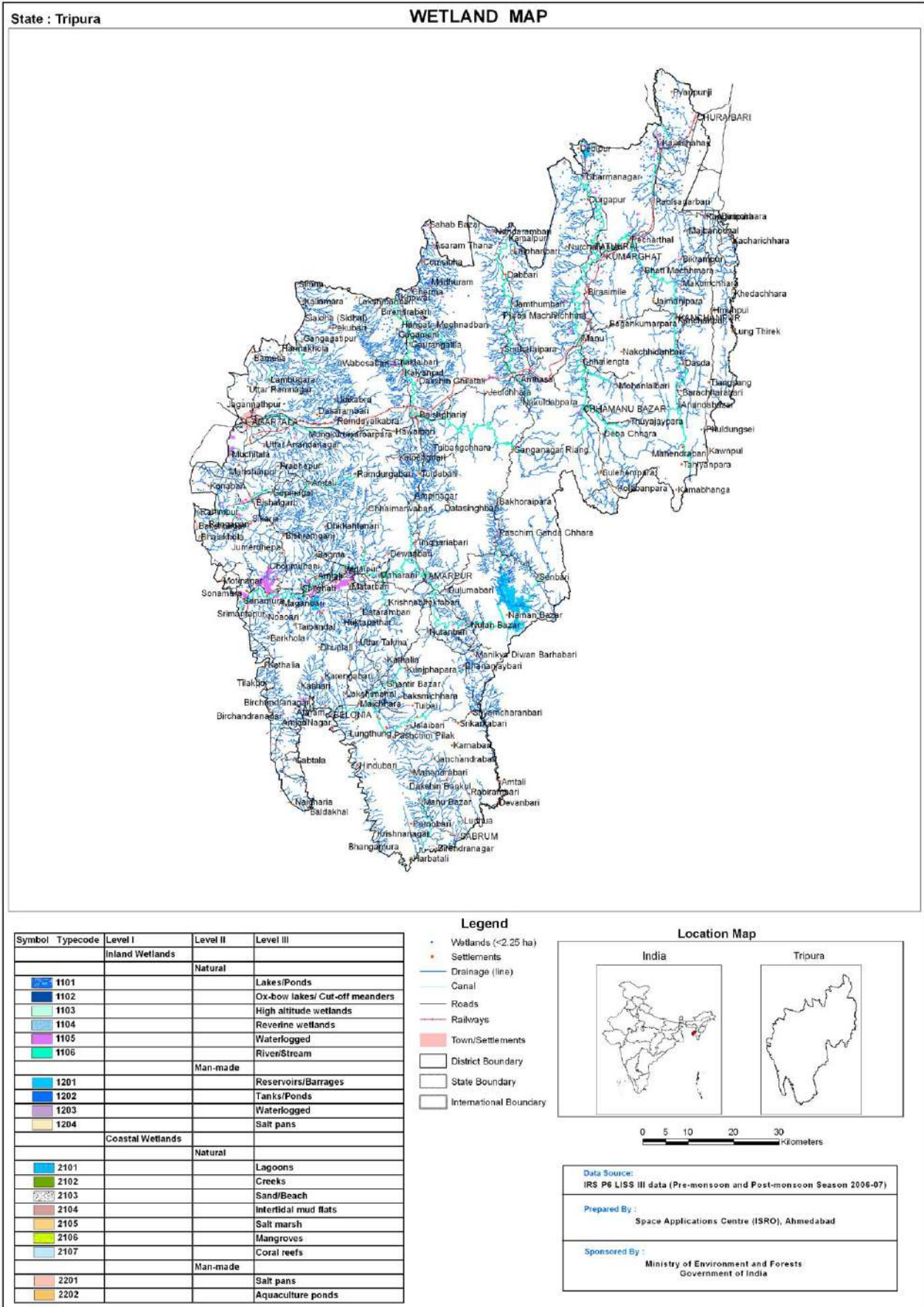
2.3.10.2 South Tripura District:

South Tripura district has total 116 wetlands have been delineated in addition to the 824 small wetlands (< 2.25 ha) identified. The inland-Natural wetlands comprise about 65 %. The major natural wetlands are River/stream (41.74 %), followed Waterlogged (19.09 %) and Ox-bow Lakes (2.93 %). Reservoir/Barrage is the major man-made wetlands. Total 4 such wetland types mapped with 625 ha area occupying 13.66 % of wetlands. Detailed statistics of wetlands of South Tripura district is given in **Table 2.10**. The open water spread area is more in post-monsoon (2474 ha) than in Pre-monsoon (1799 ha). The reduction in open water spread area in Pre-monsoon is more significant in case of Reservoir/Barrages and Waterlogged types.

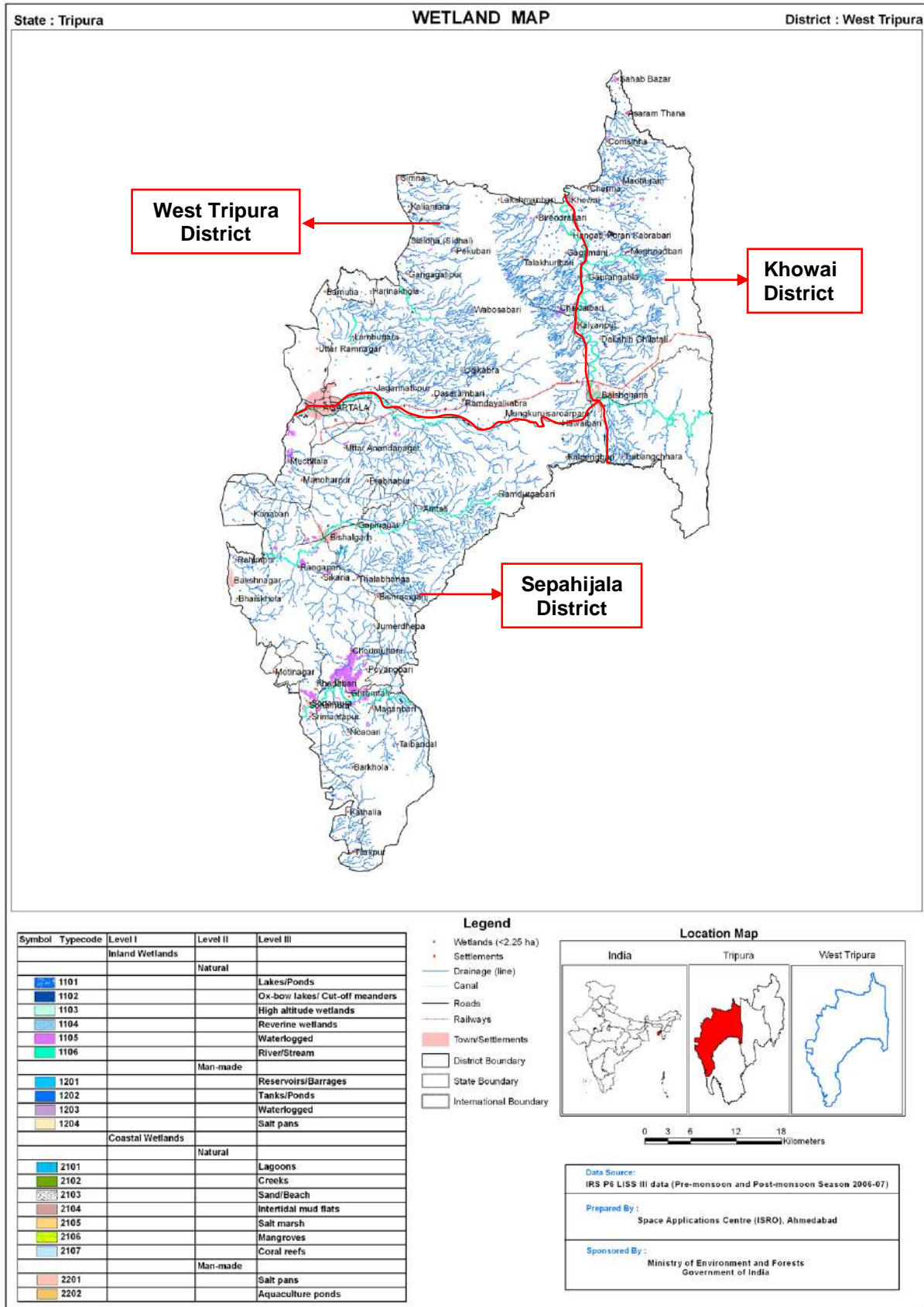
Table 2-10: Wetland Details – South Tripura District

Sr. No.	Wett code	Wetland Category	Number of Wetlands	Total Wetland area	% of wetland area	Open Water	
						Post monsoon area	Pre monsoon area
1100 Inland Wetlands – Natural							
1	1101	Lakes/Ponds	9	41	0.90	25	20
2	1102	Ox-bow lakes/ Cut-off meanders	29	134	2.93	85	68
3	1105	Waterlogged	55	873	19.09	598	122
4	1106	River/Stream	4	1909	41.74	1159	1370
1200 Inland Wetlands -Man-made							
5	1201	Reservoirs/Barrages	3	625	13.66	482	94
6	1202	Tanks/Ponds	16	168	3.67	125	125
Sub-Total			116	3750	81.99	2474	1799
Wetlands (<2.25 ha), mainly Tanks			824	824	18.01	-	-
Total			940	4574	100.00	2474	179

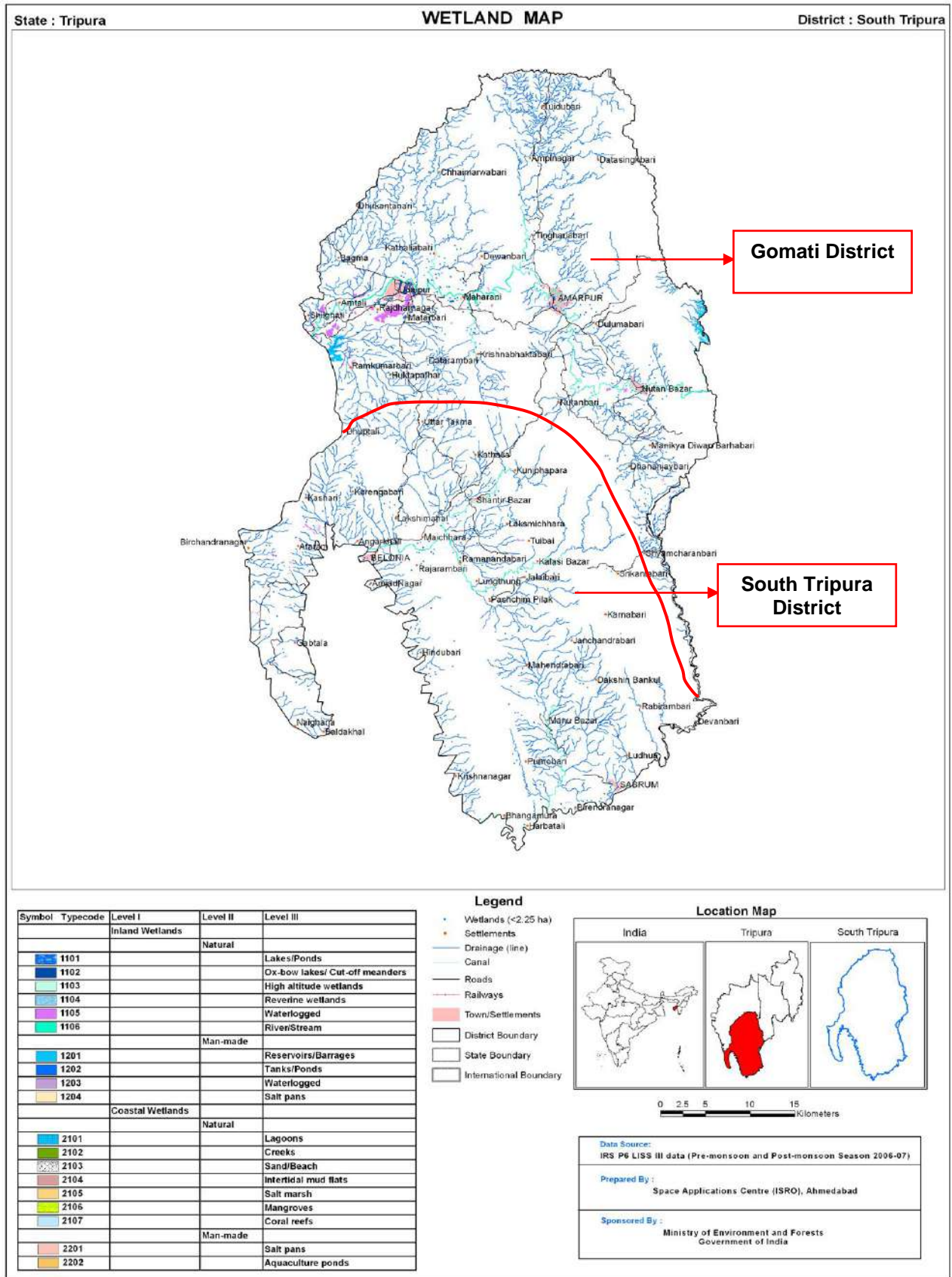
Map 2-14: Wetland Map of Tripura State



Map 2-15: Wetland Map of West Tripura District (Including Khowai and Sepahijala Districts)



Map 2-16: Wetland Map of South Tripura District



2.3.11 Soils

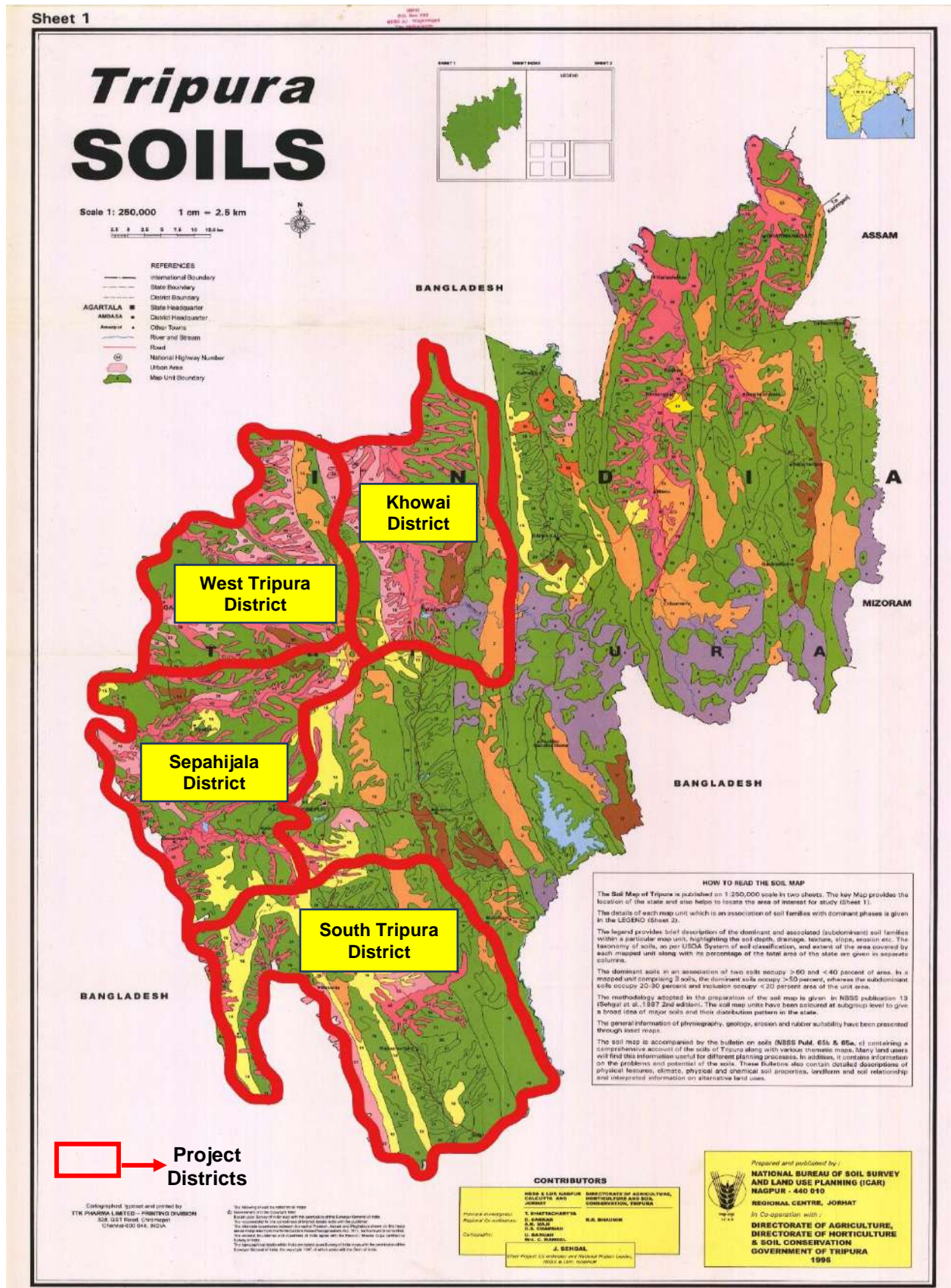
The factors influencing the prevalence of different types of soil in Tripura include topographical changes, climate changes, prevalent rock materials and the vegetation. Soil erosion caused by chemical weathering of the soil in the State of Tripura has led to the bed rock of the region being revealed.

The soil covers a total area of 4,514 Sq. Km. The soil in Tripura can be classified into five distinct categories. 43.07 % of the total land area of the state is occupied by the red loamy soil and the sandy soil. The reddish yellow brown sandy soil of the region covers a total area of 3,468 square kilometers in the state of Tripura. The soil type is the second most dominant type in the region covering 33.06 % of the land area. The three other types of soil that prevail in the region are the lateritic soil, younger alluvial soil and the older alluvial soil.

The soil taxonomic (family) classification map of project districts was prepared as per the data by National Bureau of Soil Survey & Land Use Planning (NBSS&LUP). Soil map is given in **Map 2-17**. The details of Soil Taxonomic Classification are given in **Appendix A under heading C**.

According to **soil taxonomic classification** Soil Unit 21 is the most dominant Group (12.4%) which is characterized by deep, moderately well drained, fine loamy soils on gently sloping undulating plains with low mounds having loamy surface with moderate erosion hazard. Rest all the soil units covers less than 10% of the project districts. The major taxonomic categories are *Typic Dystrochrepts*, *Typic Haplumbrepts*, *Typic Epiaquepts*, *Typic Hapludults*, *Typic Udorthents*.

Map 2-17: Soil Map of Tripura State with Project Districts



2.3.12 Minerals

Of the total geographical area of Tripura, 76% can be marked as of “Tertiary” origin and 24% belong to Quaternary period; none of these contain any major mineral resource. In Tripura, the mineral resources are mainly glass sands, limestone, plastic clay and hard rock; all of these materials are being used to a variable degree. However, the single most important resource in the state is oil and natural gas. Oil and Natural Gas Commission (ONGC) has initiated massive exploration programme in the State. Mineral Map of Tripura is depicted in **Figure 2-6**.

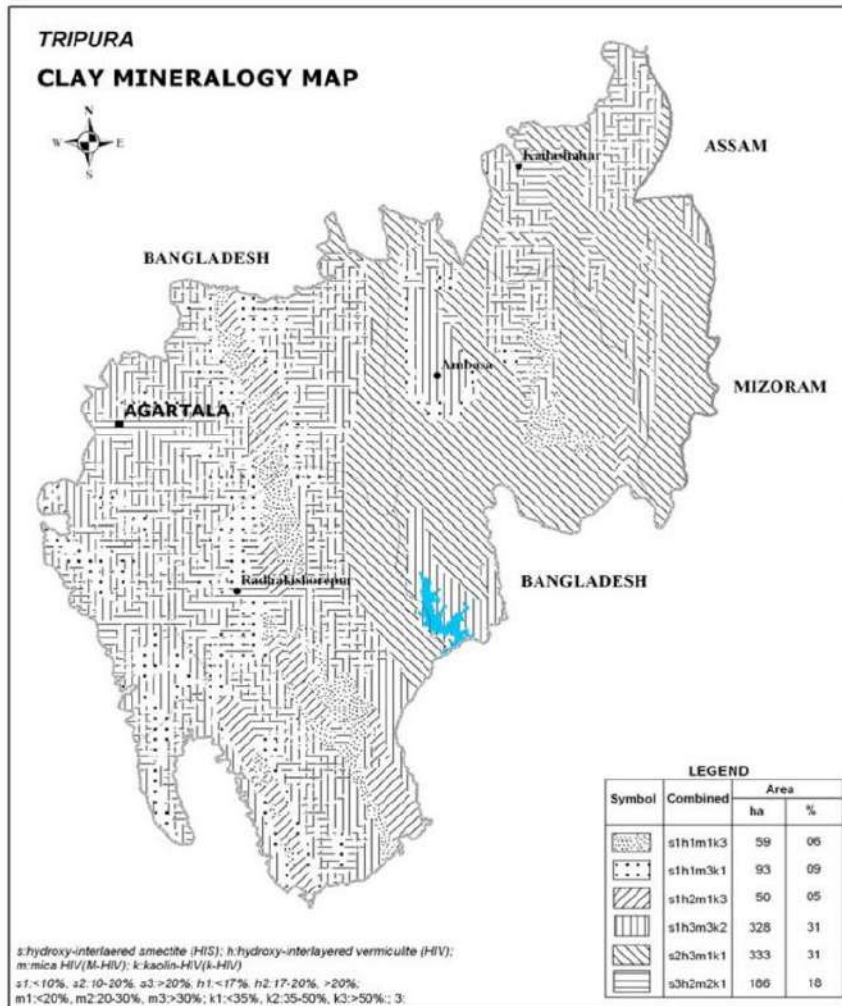


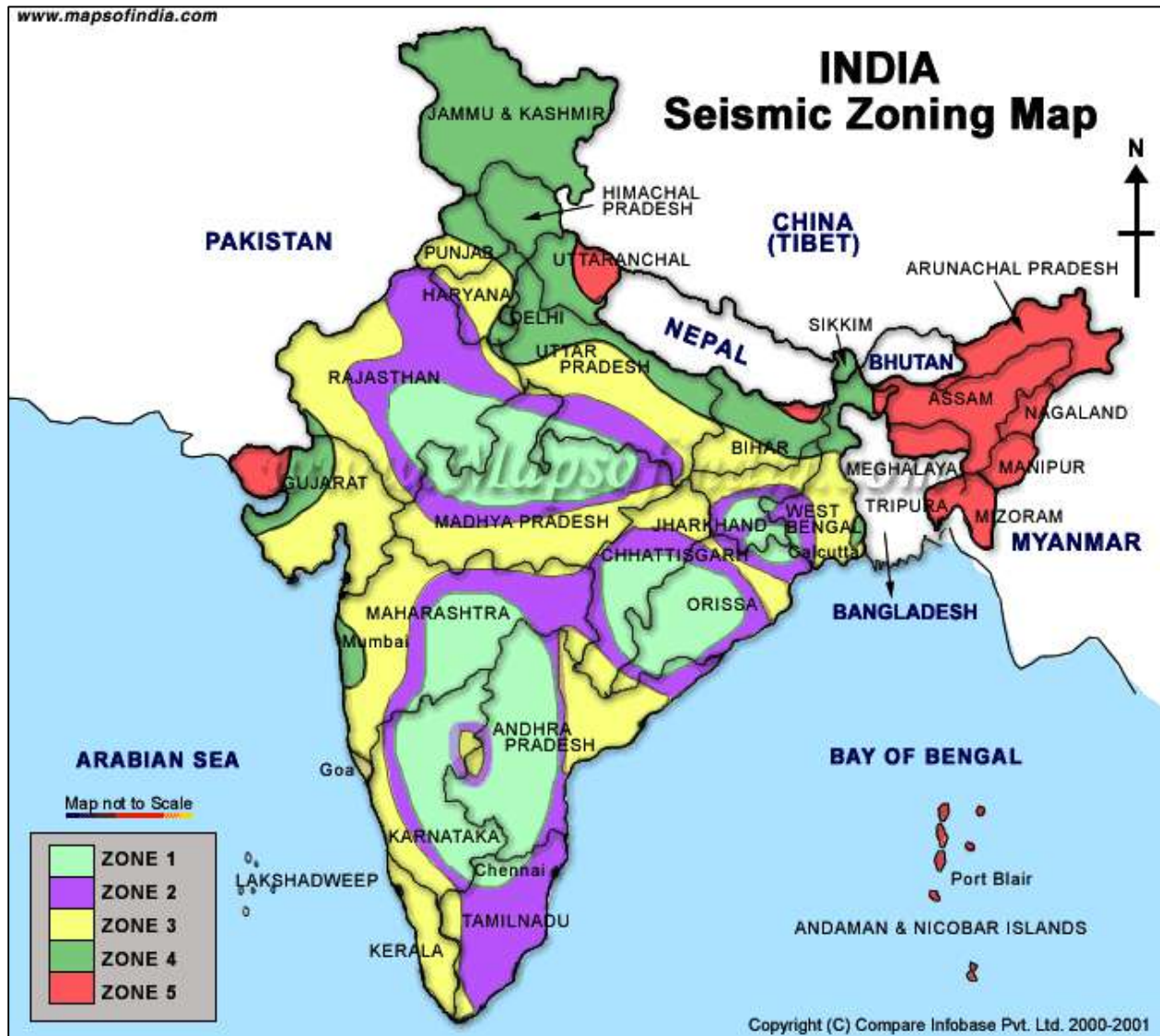
Figure 2-6: Mineral Map of Tripura

2.3.13 Vulnerability

2.3.13.1 Earthquake Vulnerability²³:

Tripura and the rest of the northeastern region lie in the zone-V of the seismological map of India, which is regarded as a high-risk zone with respect to earthquakes. Associated vulnerability is studied in detailed for each alignment of the project TL and DL and same are discussed in the **Section 4.3**.

²³ ENVIS Tripura

Map 2-18: Seismic Map of India


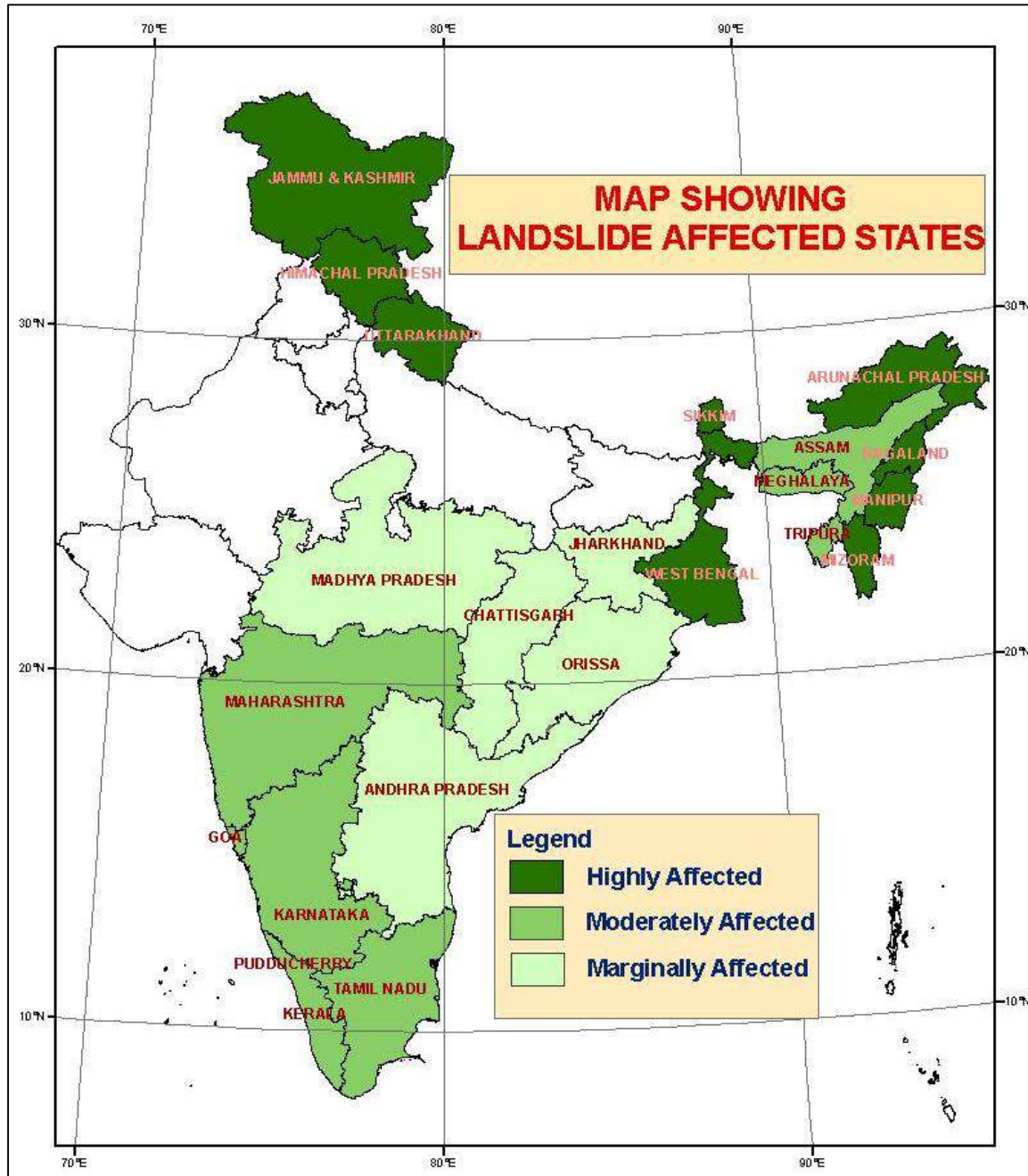
2.3.13.2 Landslide Vulnerability:

Landslide hazard stands as the second geological hazard following earthquake (Li, et. al., 1999; the U.S. Geological Survey, 2000). The Food and Agriculture Organization of the United Nations (FAO) states that steep terrain, vulnerable soil, heavy rainfall and earthquake activities make large parts of Asia highly susceptible to landslides. An area of about 0.49 million sq km out of the total area of India is vulnerable to landslide and about 0.098 sq km of an area in Northeast India is vulnerable to landslide. Tripura State comes under moderately affected landslide hazard class (**Map 2.19**)²⁴.

Landslide, a common phenomenon in hilly region is one of the most important factors of soil erosion. Topsoil and vegetative covers on large scale are considerably lost every year during the monsoon season. Landslides are mainly found below settlement areas, terrace fields, rolling Jhum land and road construction. The possible factors responsible for landslide occurrence may be singular or a combination of several factors. Some of the factors responsible for landslide in Tripura are:

²⁴ <http://appscmaterial.blogspot.in/2012/02/disaster-managementlandslides.html>

Map 2-19: Landslide Map of India



Soil formations: Clayey and shales have low hydraulic conductivity and can be difficult to drain. On the other hand, when the dip angle of the shale is along the slope, the soils over the shale are more susceptible to landslide. Most of the slides in the area are caused due to this reason. It is also observed that during rainy season the shallow soils lying above shale bed are prone to landslide. Please refer **Soil Section 2.3.11**.

Increase in the Runoff Volume: It affects the regimes of the natural downhill drains and toe cutting has been observed in many cases. Such toe cutting leads to slope failure near these natural drains. Slope failure occurring near these drains adversely affects the stability of the slope in general and leads to repeated slope failure in that area. Such toe failure also leads to blockage of drains promoting infiltration of water into the ground causing saturation of the soil, which adversely affects the stability. During the summer season, more specifically from June to October, the rainfall is heavy and almost continuous. So, permeable materials get

saturated due to long continued heavy rains that, instead of the pelting rain driving individual particles in the form of ‘rill’ or ‘rain-wash’ down the slope, the whole of the surficial materials becomes a mass of mud and debris.

Faulty Road Construction: Another important factor causing landslides, it has aggravated the intensity of landslide. One of the main reasons for this is the slope cutting process while constructing the road as it disturbed the slope stability. Most of these slide areas remain weak with mud flow and sinking of highways occur every monsoon season due to the composition of loose sand and dark brown clays where water seepage is quite high.

Urbanization: Due to increasing urbanization and demand for land in the city area, and lack of enforcement of development controls, people have started construction even on the valley lines, completely blocking the drainage path in some cases. These drains need to cross the road system in several stages through culverts. Eroded soils and garbage carried down by water during torrential rainy season block many a time cross drains and lead to overflowing of water onto the road. Increasing urbanization has also increased the surface runoff because extension in the pucca ground cover or black topping through the construction of building, courtyards, roads, pavements, etc., reduces infiltration of rainwater significantly and increases surface runoff, thereby increasing the volume and discharge in the area and drain which in turn remove the top soil rapidly and also cause landslide in the areas. In the instant scheme, during construction limited quantity of excavated material is generated from tower/pole foundations and S/S foundation. However, adequate mitigation measures have been given in the EMP and same are being undertaken to avoid any chances of landslide. In addition, excavation is avoided in rainy days. So far there are no instances of landslide due to any of the construction activity. Landslide due to operation and maintenance is not at all expected. The details are discussed in Chapter 4 for each project line.

2.3.13.3 Erosion Vulnerability²⁵:

Unscientific land utilization incompatible with its carrying capacity leads to land degradation which has both environmental and economic consequences. The information on land degradation is needed for a variety of purposes like planning reclamation programs, rational land use planning, for bringing additional areas into cultivation, to improve productivity levels in degraded lands etc. As per the land degradation mapping undertaken by Department of Space, GoI along with partner institutions under National Natural Resources Census (NRC), water and wind are the most important land degradation process that occurs on the surface of the earth. Rainfall, soil, physical properties, terrain slope, land cover and management practices play a significant role in soil erosion. Some of the factors responsible for soil erosion in Tripura are:

Sheet Erosion: It is a common problem resulting from loss of topsoil. The soil particles are removed from the whole soil surface on a uniform basis in the form of thin layers. The severity of the problem is often difficult to visualize with naked eyes in the field.

Rill Erosion: When sheet erosion is severe and the surface runoff goes in the form of a concentric flow, tiny water channels are formed in the field called rills. Rills are generally associated with the cultivated lands and are visible in the ploughed soil after first heavy showers.

²⁵ State Level perspective plan for watershed development in Tripura and NBSS & LUP, Nagpur

Gully Erosion: Gullies are formed as a result of localized surface run-off affecting the unconsolidated material resulting in the formation of perceptible channels causing undulating terrain. They are commonly found in sloping lands, developed as a result of concentrated run-off over fairly long time. They are mostly associated with stream courses, sloping grounds with good rainfall regions and foothill regions.

Landslide/ Landslip Erosion: The region is quite prone to landslides/ landslips that take a heavy toll on valuable lands, property and life besides aggravating the problem of soil erosion. Factor responsible for landslide have already been explained in earlier section.

Faulty Road Construction: As explained in earlier section.

Unscientific Disposal of Debris Generated by Road Construction: Roads are the only means of communication and form an important development activity in the region. Road construction in the mountainous terrain requires a lot of blasting and construction in a zigzag fashion. The debris thus produced is not properly disposed at dumping sites and is just pushed onto the river side slopes. This results in heavy erosion during the rainy season.

Urbanization: As explained in earlier section.

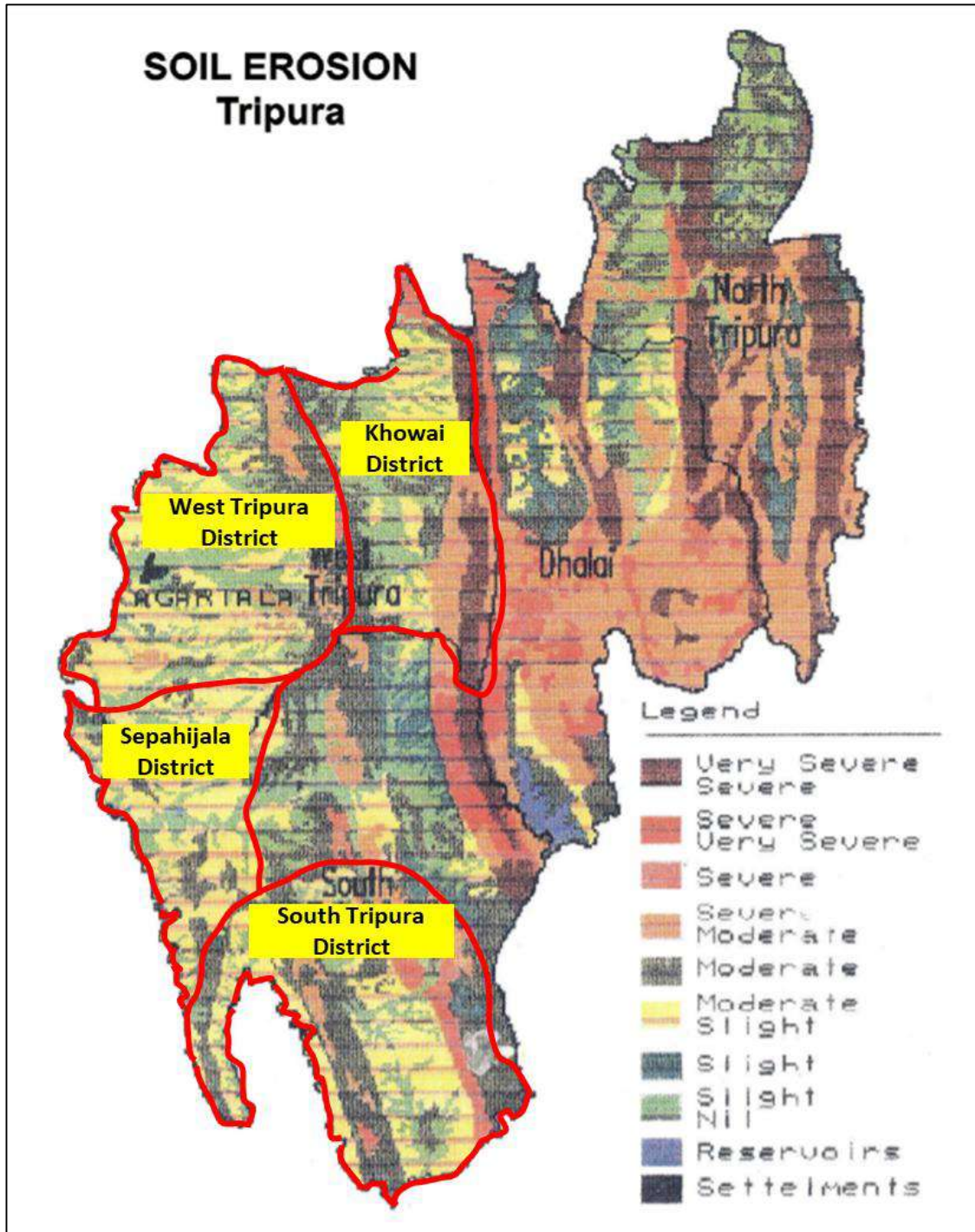
For the assessment of soil erosion vulnerability hazard, NBSS&LUP report on soil erosion (2011) and State Level respective plan of watershed development in Tripura (2012) are referred. All project districts are falling in nil to moderate soil erosion zones. Please Refer **Map 2-20**. Landslide and erosion vulnerability is studied in detailed for each alignment of the project TL and DL and same are discussed in the **Section 4.3**. Adequate mitigation measures have been given in the EMP and same shall be followed to avoid any chances of getting affected by soil erosion vulnerable areas. In addition, any work shall be avoided in rainy days.

2.3.13.4 Flood Vulnerability²⁶:

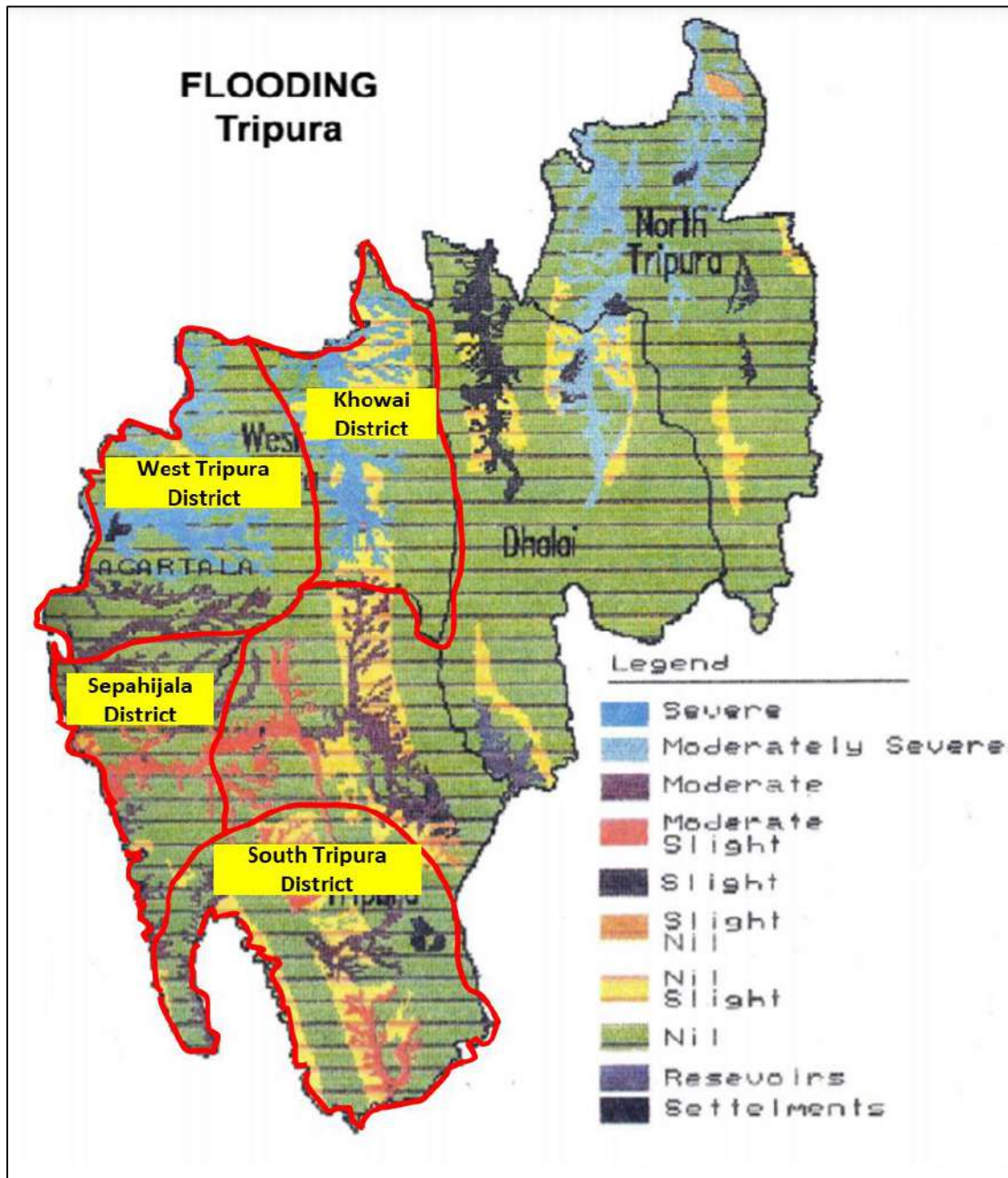
750 km² of land area of the State is considered to be flood prone. Nearly all the rivers are rain-fed and are prone to flood. Drying up of perennial drainage courses and Transportation and deposition of sand, silt in the venerable pockets are the main reasons causing flood and inundation hazards. With reference to the State Level perspective plan for watershed development in Tripura and NBSS & LUP, Nagpur and Disaster Management Cell of GoT, it can be inferred that the project districts Khowai and West Tripura are moderately severe flood prone area and Sepahijala and South Tripura are slight moderate flood prone area in Tripura State. **Please refer Map 2-21**. Flood vulnerability is studied in detailed for each alignment of the project TL and DL and same are discussed in the **Section 4.3**. Adequate mitigation measures have been given in the EMP and same are followed to avoid any chances of getting affected by flood vulnerable areas. In addition, any work is avoided in rainy days.

²⁶ Disaster Management Cell of Tripura, GoT and NBSS&LUP Nagpur

Map 2-20: Soil Erosion Map of Tripura



Map 2-21: Flood Map of Tripura



2.4 Biological Environment

It is pertinent to mention that, in the present project, forest area/land covered under Forest (Conservation) Act, 1980 has been tried to avoided with careful selection of route alignment. All line routes and s/s locations have been selected in such a way that it successfully avoids any kind of PA and RF. However, forest area of 96.4688 ha is involved in TL Routes and Nidaya S/S.

In order to analyse the impacts and plan mitigation measures, it is imperative to study baseline information for TL 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.

2.4.1 Floristics – Tripura State²⁷

The recorded forest area of the State is 6,294 sq. km based on the India State of Forest Report (ISFR), 2019, which constitutes 60% of its geographical area. Reserved forests constitute 66.33%, protected forests 2% and unclassified forests constitute 33.64%. The biological diversity of any geographical region is estimated at the level of ecosystem diversity, species diversity and genetic diversity. Tripura being a part of North-East India, belongs to one of the two “Hot Spot” of India amongst 18 identified in the World.

At the ecosystem level, the State exhibits a part of Mountain ecosystem with moderate hill ranges and forest ecosystem. In between these two dominant ecosystems lies the freshwater ecosystem comprising 10 major rivers, numerous wetlands. Undulating high lands of narrow and broken plates cover extensive areas (Deb, 1975).

Forests in Tripura State are largely under the community and private forests. The Forest Department owns only certain areas classified as Reserved Forests, Protected Forests, Wildlife Sanctuaries, National parks, Nurseries & Botanical Gardens, therefore the department has purchased land from private owners for Biodiversity Conservation and taking up plantations under JICA Project²⁸. The State has started ‘Joint Forest Management’²⁹ program to elicit active participation of villagers in creation, management and protection of plantations. Intensification of Forest Management was carried out in the State by creating adequate infrastructure and controlling the incidences of forest fire.

In Tripura state, during the period January 2015 to February 2017, forest cover was decreased by 164 sq. km is observed as per ISFR 2019. This can be attributed to shifting cultivation, harvesting of mature rubber plantations and other development activities for non-forestry purposes under the Forest Conservation Act, 1980 (MoEF&CC, 2019). In some cases, it can be attributed to change due to extension of area under rubber plantation³⁰.

2.4.1.1 Forest Cover ²³

In terms of geographical area Tripura state has total 60% of Forest Area. The details are depicted in **Table 2.11**. As per the ISFR, 2019 by Forest Survey of India, the Forest cover is 6294 sq. km and forest canopy cover including include the private forest and community forest as well in the State is 7,726 sq. km. which is 73.68 % of the State's geographical area. In terms of forest canopy density classes, the State has 654 sq. km. under Very Dense Forest (VDF), 5,236 sq. km. under Moderately Dense Forest (MDF) and 1,836 sq. km. under Open Forest (OF). Please Refer **Table 2.12 and Figure 2.7**. Forest Map of the Tripura State is given as **Map 2-22**.

Table 2-11: Forest Area Classification – Tripura State

Geographical Area (GA) Sq. Km.	Recorded Forest Area (RFA) Sq. Km.						Total RFA Sq. Km. in 2019	% of GA
	RF	% RF	PF	% PF	UCF	% UCF		
10,486	4,175	66.33	2	0.03	2,117	33.64	6,294	60

RF: Reserved Forest (RF), Protected Forest (PF), Unclassed Forests (UCF)

²⁷ Tripura Envis

²⁸ Biodiversity Conservation Component, Tripura Biodiversity Board

²⁹ Joint Forest Management Committees, GoT, Tripura Forest Department

³⁰ India State of Forest Report (ISFR), 2019

Table 2-12: Forest Canopy Cover – Tripura State

Geographical Area (GA) Sq. Km	Forest Cover in Sq. Km. 2019						Total Area Sq. Km 2019	% of GA
	VDF	%VDF	MDF	%MDF	OF	%OF		
10,486	654	6.24	5236	49.93	1836	17.51	7,726	73.68

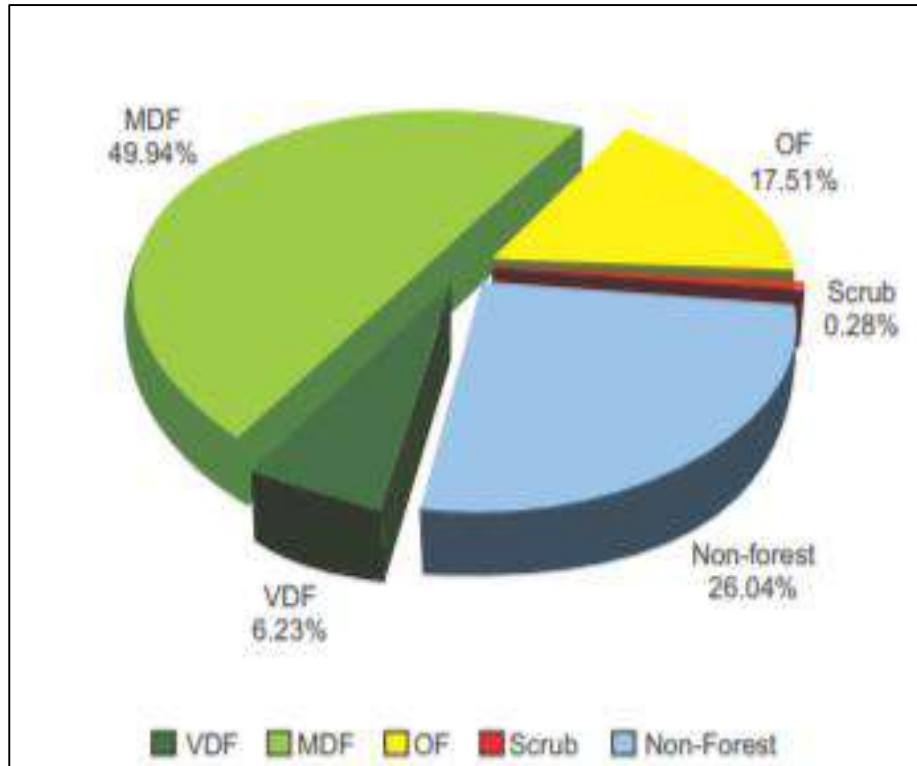


Figure 2-7: Forest Cover of Tripura State

2.4.1.2 Forest Cover inside and outside Recorded Forest Area (Green Wash) ³¹

The State has reported extent of recorded forest area (RFA) 6,294 sq. km. which is 60% of its geographical area. The reserved and unclassed forests are 66.33% and 33.64% of the recorded forest area in the State, respectively. **Please Refer Table 2.11.** Due to non-availability of digitized boundary of recorded forest areas from the State, the updated Green Wash from Survey of India (Sol) toposheets which is 7,726 sq km has been used as proxy to the RFA boundary and the analysis of forest cover inside and outside this area is given below in **Table 2.13.**

Table 2-13: Forest Area Classification – Tripura State

	Forest Cover inside the Recorded Forest Area (or Green Wash)				Forest Cover inside the Recorded Forest Area (or Green Wash)			
	VDF	MDF	OF	Total	VDF	MDF	OF	Total
Area Sq. Km.	410	3,903	1,138	5,451	244	1,333	698	2,275
Area (%)	7.52	71.60	20.88	100.00	10.73	58.59	30.68	100.00

³¹ Indian State Forest Report, 2019

Map 2-22: Forest Map of Tripura State³²

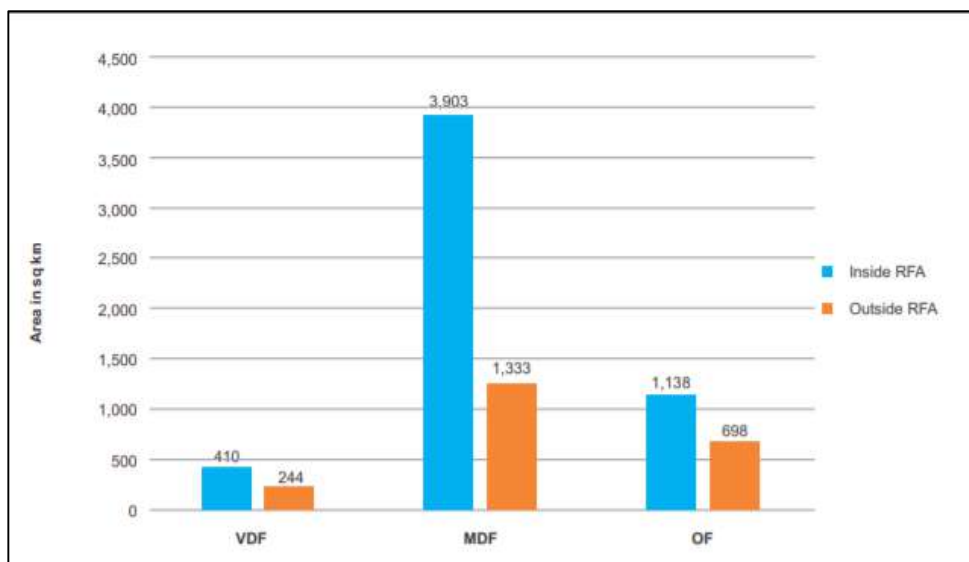
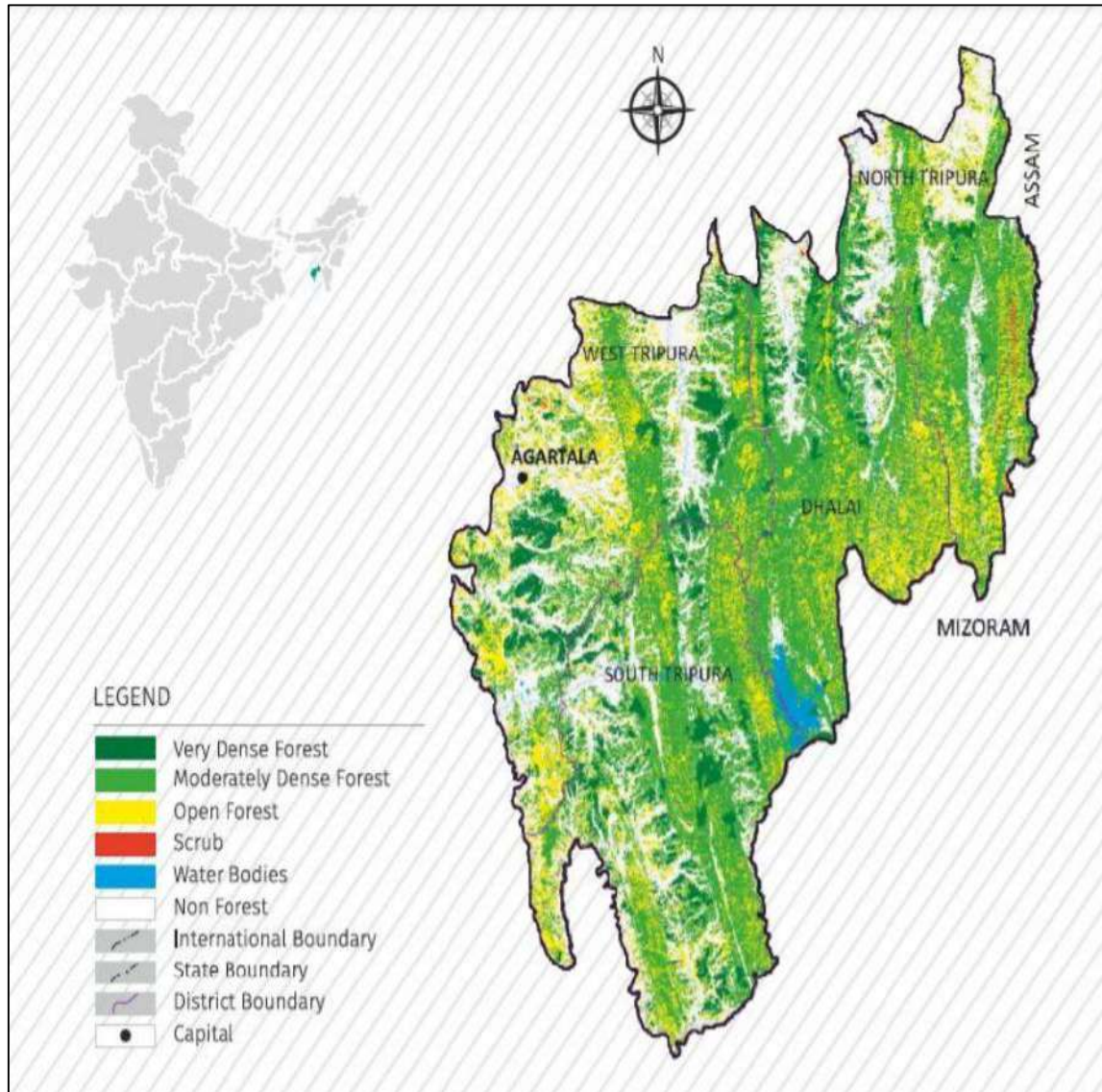


Figure 2-8: Forest Cover Inside and Outside RFA

³² Indian State Forest Report, 2019

2.4.1.3 Forest Types³³

Tripura state has been endowed with a wide variety of forest types on account of its unique geographic location and wide range of physiographic terrain. Tripura has 6 forest types as per the Champion & Seth classification (1968). Latest details of Forest Survey of India (FSI) are presented in the following **Table 2.14**.

Table 2-14: Details of forests in Tripura

Sr. No.	Types of forest	% of Forest Cover
1	2B/C2 Cachar Semi Evergreen Forest	27.47
2	2B/2S1 Pioneer Euphorbiaceous Scrub	0.01
3	2/2S1 Secondary Moist Bamboo Brakes	7.55
4	3C/C1b(ii) East Himalayan Lower Bhabar Sal	2.57
5	3C/C3b East Himalayan Moist Mixed Deciduous Forest	39.89
6	Plantation / TOF	22.51

2.4.2 Biodiversity – Tripura State

Tripura is very rich in biodiversity. Major type of forest in Tripura is tropical type, which is grouped as:

- Evergreen forest
- Moist deciduous
- Seral Type
- Subsidiary edaphic type

2.4.2.1 Biodiversity Index

The State belongs to two forest type groups, viz. Tropical Semi Evergreen and Tropical Moist Deciduous Forests. As per the rapid assessment of Biodiversity carried out by Forest Survey of India (FSI) at the national level for natural forests during September 2018 to May 2019 as part of the forest type mapping exercise in respect of Tripura, total number of species reported in the state are 148, out of which 89 are tree species, 37 are shrub species and 22 are herb species. The Shannon-Wiener Index of Tree, Shrub and Herb species in different Type Groups of the state are given below in **Table 2.16**.

Table 2-15: Shannon-Wiener Index of Tree, Shrub and Herb species in different Type Groups of Tripura

Sr. No.	Forest Type Group	Shannon – Wiener Index		
		Tree	Shrub	Herb
1	Group 2 - Tropical Semi Evergreen and	2.77	1.69	3.47
2	Group 3 - Tropical Moist Deciduous Forests	3.14	2.95	2.97

2.4.2.2 Flora of Tripura State³⁴

Tripura is a landlocked small hilly state of north-eastern India and part of richest reservoir of biodiversity. Aggressive civilization, rapid growth of industrialization and pollution results loss of different species from the earth causes danger to biodiversity. Different tribes of Tripura still live on and near forest and depend on local flora and fauna for the food, shelter,

³³ Champion & Seth Classification system (1968), GoT, Tripura Forest Department

³⁴ biodiversity.tripura.gov.in

medication and ritual ceremonies. Environmental hazards and destruction of forest resulted permanent loss of different flora and fauna for the earth. This also causes great changes in the lives of tribal people of the state. Now this is appropriate time of demand to ensure the biodiversity and conserve it to protect the traditional life of tribal people and the world environment.

It is aimed at commissioning studies and sponsoring investigations and research for inventorization of the biodiversity in the state including dissemination of information and data across. It is also engaged in awareness creation through mass media regarding conservation of biological bio-diversity, sustainable use of its components and fair and equitable sharing of benefits arising out of the use of biological resource and knowledge. Taking steps to build up database and to create information and documentation system for biological resources and associated traditional knowledge through bio-diversity registers and electronics data bases, to ensure effective management, promotion and sustainable uses. The details of flora of Tripura are as follows:

Table 2-16: Highlights of flora of Tripura³⁵

No.	Group of Plant	Families	Genera
1.	Angiosperms	168	816
2.	Gymnosperms	6	8
3.	Pteridophytes	18	38
4.	Total	192	862

Various extension programmes towards biodiversity conservation education by involving schools and colleges; about 900 Eco-clubs across the state; setting up 'Biodiversity Libraries' in village schools; dissemination of posters, booklets, information bulletins etc.; setting up (proposed) exhibits in the Tripura State Museum and Science Academy for display of Biodiversity; observance of International Biodiversity Day, Wildlife Week, Environment Day, conducting and participating at National and State level seminars and workshops in collaboration with organizations/bodies like ONGC, Tripura University (Dept of Botany, Dept. of Forestry & Biodiversity), Trishna Wildlife Sanctuary (Tripura), Eco Clubs in schools, protected areas and BMCs across the State.

a. Some rare and endangered flora of Tripura:

Table 2-17: Rare and endangered flora

Sr. No.	Name of the Species	Family
1.	<i>Begonia surculigera</i>	Begoniaceae
2.	<i>Pterocarpus Marsupium</i>	Fabaceae
3.	<i>Colona flagrocarpa</i>	Tiliaceae
4.	<i>Ophiorrhiza viillosa</i>	Rubiaceae
5.	<i>Torenia mucronulata</i>	Scrophulariaceae
6.	<i>Tournefortia roxburghii</i>	Scrophulariaceae
7.	<i>Jasminum listeri</i>	Oleaceae
8.	<i>Wallichia caryotoides</i>	Areaceae
9.	<i>Cycas pectinata</i>	Cycadaceae
10.	<i>Podocarpus neriifolius</i>	Podocarpaceae
11.	<i>Gnetum montanum</i>	Gnetaceae
12.	<i>Gnetum oblongum</i>	Gnetaceae

³⁵ Deb, 1981 & 1985

Sr. No.	Name of the Species	Family
13.	<i>Mangifera sylvatica</i>	Anacardiaceae
14.	<i>Dischidia benghalensis</i>	Asclepiadaceae
15.	<i>Dischidia nummularia</i>	Asclepiadaceae
16.	<i>Dischidia major</i>	Asclepiadaceae
17.	<i>Aegle marmelos</i>	Rutaceae
18.	<i>Sweetinia Mahagony</i>	Meliaceae

b. Some plants of economical use in Tripura:

Table 2-18: Economically important plants

Sr. No.	Scientific Name	Common Name
1.	<i>Albizzia lucida</i>	Silkoroi
2.	<i>Albizzia procera</i>	Safed Siris
3.	<i>Artocarpus chaplasi</i>	Sam
4.	<i>Carrya arborea</i>	Kumbhi
5.	<i>Chukmsia velutina</i>	Bogapoma
6.	<i>Cinnamomum bejolghata</i>	Tejpata
7.	<i>Dillenia indica</i>	Chalita
8.	<i>Dillenia pentagyna</i>	Akshi
9.	<i>Dipterocarpus turbinatus</i>	Kherjong
10.	<i>Duanbanga gradiflora</i>	Kokam
11.	<i>Gmelina arborea</i>	Gomari
12.	<i>Lagerstroemia parsiflora</i>	Sida
13.	<i>Lagerstroemia speciosa</i>	Ajur
14.	<i>Magnolia pterocarpa</i>	Thouthua
15.	<i>Mesua ferrea</i>	Nahor
16.	<i>Michelia champaca</i>	Titasopa
17.	<i>Palaquium polyantha</i>	-
18.	<i>Shorea robusta</i>	Sal
19.	<i>Sterospermum personatum</i>	Parolli
20.	<i>Syzygium cuminis</i>	Zamun
21.	<i>Terminalia alata var. tomentosa</i>	Asan
22.	<i>Terminalia bellirica</i>	Bairah
23.	<i>Terminalia myriocarpa</i>	Hollock
24.	<i>Toona ciliata</i>	-

Table 2-19: Economically important plants – Bamboo and Cane Species

Sr. No.	Scientific Name	Local Name
A.	Bamboo Species	
1.	<i>Bambusa affinis</i>	Kanak-Kai
2.	<i>Bambusa nutans</i>	Kali bans
3.	<i>Bambusa palida</i>	Makal
4.	<i>Bambusa polymorpha</i>	Bari
5.	<i>Bambusa teris</i>	Purua
6.	<i>Bambusa spp.</i>	Jai/ Purua/ Bombans
7.	<i>Dendrocalamus hamiltoni</i>	Ponch bans
8.	<i>Oxylanthum albouliata</i>	Kalai
9.	<i>Nedhoozca dulloa</i>	Dolu
10.	<i>Melocana bambusoides</i>	Mul
B.	Cane Species	
1.	<i>Calamus ereetus</i>	NA
2.	<i>Calamus floribundus</i>	NA
3.	<i>Calamus garbna</i>	Sundibet
4.	<i>Calamus teotopathoides</i>	NA
5.	<i>Calamus viminalis</i>	Pannabet
6.	<i>Calamus tenuis</i>	Chachibet

c. Important medicinal plants of Tripura:

Table 2-20: Medicinal plants

Sr. No.	Scientific Name	Family
1.	<i>Andrographis paniculata</i>	Acanthaceae
2.	<i>Aquillaria malaccensis</i>	Thymelaeaceae
3.	<i>Asparagus reticulatus</i>	Liliaceae
4.	<i>Baeopa moniari</i>	Scrophulariaceae
5.	<i>Centella asiatica</i>	Umbelliferae
6.	<i>Hemidesmus indicus</i>	Apocynaceae
7.	<i>Holorrhea pubescens</i>	Apocynaceae
8.	<i>Hydrocarpus kurzi</i>	Labiatae
9.	<i>Justica adhatida</i>	Acanthaceae
10.	<i>Marsilea minuta</i>	Acanthaceae
11.	<i>Ocimum tenuifloram</i>	Labiatae
12.	<i>Phlogacanthus thyrsoiflorus</i>	Acanthaceae
13.	<i>Rawlfia serpentina</i>	Apocynaceae
14.	<i>Saraca asoca</i>	Fabaceae
15.	<i>Terminalia belerica</i>	Combretaceae
16.	<i>Terminalia chebula</i>	Combretaceae
17.	<i>Vitex negabdo</i>	Verbenaceae
18.	<i>Vitex peduncularis</i>	Verbenaceae

d. Most common Families of Agri-horticultural Species:

Table 2-21: Agri-Horticultural Plants

Sr. No.	Name of the Family	No. of Genera	No. of Species
1.	Papilionaceae	44	96 + var.
2.	Gramineae	49	79 + 1 var.
3.	Compositae	39	54
4.	Solanaceae	11	26 + 1 var.
5.	Cucurbitaceae	16	26 + 1 var.
6.	Malvaceae	10	25 + 1 var.
7.	Araceae	15	25 + 1 var.

Two-thirds of the state is forested where different species of trees, orchids, birds and wildlife are found. There are four sanctuaries in the state namely, Rowa wildlife sanctuary, Sepahijala wildlife sanctuary, Trishna wildlife sanctuary and Gumti wildlife sanctuary.

The Sepahijala Wildlife Sanctuary in Tripura has 456 plant species of monocotyledon and dicotyledonous plants. Trees of Sal, Chamal, Garjan and Kanak exist predominantly. The secondary species consist of Pichla, Kurcha, Awla, Bahera, Hargaja, Amlaki, Bamboos and grasses. There are 5 species of primates in this sanctuary. The crab eating Mongoose, which was last, sighted before 72 years ago in India has been discovered again in this sanctuary. There are about 150 species of birds in this sanctuary. During winter a large number of migratory birds visit the sanctuary. There are more than 150 species of residential birds and migratory birds are found here. This sanctuary is also a beautiful picnic spot.

2.4.2.3 Invasive Species of Tripura State³⁶

An invasive plant is a non-native plant that is able to persist and proliferate outside of cultivation, resulting in ecological and/or economic harm. Once established in these areas, invasive plants often continue to spread to adjacent habitats. All invasive plant species are aggressive competitors with the ability to significantly reduce diversity of native plant and also disturb & alter wildlife habitat. As per ISFR, 2019, there are five invasive species in Tripura, *Chromolaena odorata*, *Mikania micrantha*, *Imperata cylindrica*, *Saccharum spontaneum* and *Lantana camara*.

As per literature review, it is observed that invasive plants spread by a variety of mechanisms, including birds, wind, and water. Human activities are also a major factor in the spread of these plants, from gardening, medicinal uses, edible properties and transport of nursery stock to erosion control and wildlife plantings.

Table 2-22: Invasive species recorded from Project Area and uses

Species Name	Common Name	Medicinal Uses
Chromolaena odorata	Siam weed / Bagh	used wound skin, skin infections, inflammation, a therapeutic agent for a variety of diseases, such as wound healing, anti-inflammatory, analgesic, antipyretic, diuretic, and antimicrobial, anti-mycobacterial
Mikania micrantha	RAVANLATA / bitter vine	a poultice made from the leaves of <i>M. micrantha</i> is used to treat venomous biting of insects and the leaf juice is used to reduce skin rashes and itches. furthermore, it is used to mitigate stomach ache, jaundice, fever, rheumatism, cold, and respiratory diseases
Imperata cylindrica	Darbha / cogongrass	They are decocted and used to treat urinary tract infections, fevers, thirst etc. The root is astringent, antifebrile, antivenoms, diuretic, emollient, hemostatic, restorative and tonic. It is used in the treatment of nose bleeds, hematuria, hematemesis, oedema and jaundice
Saccharum spontaneum	wild sugarcane/ Kans grass	According to Ayurveda, roots are sweet, astringent, emollient, refrigerant, diuretic, lithotriptic, purgative, tonic, aphrodisiac and useful in treatment of dyspepsia, burning sensation, piles, sexual weakness, gynecological troubles, respiratory troubles
Lantana camara	Raimuniya / Wild sage	The plant extracts have been used in folk medicine for the treatment of cancers, chicken pox, measles, asthma, ulcers, swellings, eczema, tumors, high blood pressure, bilious fevers, catarrhal infections, tetanus, rheumatism and malaria

2.4.2.4 Faunal Diversity of Tripura:

Mammalian Fauna:

The faunal diversity of the State can be viewed from Aquatic and Terrestrial ecosystems. In the aquatic system, at least 129 species of fishes are recorded belonging to 32 families, and 11 order, the largest number of species being from the family Cyprinidae (49 species, including Rohu, Katla, Kalbasu, Puthi, Mahasheer, Chela, etc.). The invertebrate fauna includes 27 species of Protzoans, 30 species of Crustaceans, 10 species of Rotifers, two species of annelids, 14 species of insects (water beetles, bugs, Odonates, mosquitoes, etc.) and six species of Mollusca.

Mammalian fauna was reported to be composed 54 species. These represent more than 33% of the total mammalian fauna known from India. Of the 15 primate species known from India 7 species have been recorded from Tripura of which Phayre's Leaf Monkey (locally known as

³⁶ ISFR, 2019

“Chashma Banar”) is the most dominant species. Endangered species of primates, besides Leaf Monkey include Slow Loris, Stumped-tail Macaque, Pigtail Macaque and the only tail less ape, Hollock Gibbon. Some of the mammalian species like common Tree Shrew, Indian Bison, Chinese Pangolin is reported to be very rare, while the population of Hoolock Gibbon, Indian Elephant and Jackal are reported to be declining.

Avian Fauna:

The avian fauna is composed of 341 species belonging to 51 families of which 77 species are winter visitors. It may be noted that Tripura with only 0.4 percent of the total geographical area of India exhibits more than 25% of the avian species diversity of the country. Of the avian species 4 species belong to Schedule I and 271 species belong to Schedule IV of the Indian Wildlife (Protection) Act, 1972, Amended till date.

Reptilian Fauna:

The reptilian fauna of Tripura is composed of 32 species under 28 genera and 11 families. These include 3 species of turtles and tortoise, 13 species of lizards, and 15 species of snakes.

Table 2-23: Rare and Threatened Fauna of Tripura

Sr. No.	Common Name	Scientific Name	Schedule-I WL (P) Act	Appendix-I CITES
A.	Mammal			
1.	Slow Loris	<i>Nycticebus coucang</i>	+	-
2.	Phayre’s Leaf Monkey	<i>Presbytis phayrei</i>	+	-
3.	Capped Langur	<i>Presbytis pileatus</i>	+	+
4.	Hoolock Gibbon	<i>Hylobates hoolock</i>	+	+
5.	Leopard	<i>Panthera pardus</i>	+	+
6.	Marbled Cat	<i>Felis marmorata</i>	+	+
7.	Leopard Cat	<i>Felis bengalensis</i>	+	+
8.	Golden Cat	<i>Felis temmincki</i>	+	+
9.	Common Otter	<i>Lutra lutra</i>	-	+
10.	Indian Elephant	<i>Elephas maximus</i>	+	+
11.	Indian Bison	<i>Bos gaurus</i>	-	+
12.	Chinese Pangolin	<i>Manis pentadactyla</i>	+	-

Problems relating to Biodiversity Conservation

- **Habitat Destruction:** Change of land use due to conversion of forest for non-forestry purposes specially to meet the demand of plantation crops and development activities cause serious concern for and degradation of wildlife habitat. No quantified data is available on annual or decadal basis for such conversion activities.
- **Grazing:** There is no pasture land in the state for livestock grazing. It is estimated that 60% of the livestock graze in the forest land. This far exceeds the carrying capacity of the forests and causes destruction of young growth of the forest and destruction of habitat for the wild animals.
- **Forest Fires:** Forest fires are common and frequent in the state. It is now estimated that forest fire is common in 20 percent of the total forest area of Tripura. The major causes may be intentional burning of ground cover for grazing or for jhum cultivation. This led to complete wiping out the forest regeneration in some areas, (natural as well as artificial) and wildlife is severely damaged.

- **Shifting Cultivation:** The slash and burn cultivation in the hill tribal areas has direct impact on biodiversity viz. destruction of wildlife and natural habitat, loss of natural forest and loss of ecological balance including destruction of feeding, breeding and roosting grounds.
- **Introduction of Exotic Species:** Due to change in agricultural practices and emphasis in food security a number of plant species have been introduced in Tripura. It is estimated that 280 species of plant have been introduced in the state during the past period. The impact of such introduction has never been assessed but it may be assumed that in number of local indigenous varieties have become rare or have disappeared due to introduction of exotics.
- **Illegal Hunting:** The conservation of biodiversity depends on strict protective measures in the field condition besides, appropriate legal instrument. Due to disturbed geopolitical condition, it is apprehended that illegal hunting pressure has increased in many remote and isolated dense forest areas. In absence of lack of appropriate monitoring and surveillance mechanism, the human pressure on wildlife may continue to increase.

2.4.3 Floristics – Project Districts

2.4.3.1 Forest Cover

Total forest cover in the project districts i.e., West Tripura, Sepahijala, Khowai and South Tripura is 2302 sq km, which is 35 % of the project district’s geographical area. Please refer **Table 2.24**. In terms of forest canopy density classes, the project districts have 490 sq km under VDF, 2725 sq km under MDF and 4268 sq km under OF. The details of forest cover of subproject districts are given below in **Table 2.25** and **Map 2-23 to 2-26**.

Table 2-24: Forest Area Classification – Project Districts³⁷

District	Geographical area of Project District Sq. Km	Forest area Sq. Km					% Total of District GA
		RF	PRF	UCF	Total		
West Tripura	983.63	122.06	0.02	32	154.08	15.66	
Sepahijala	1043.58	191.98	7.17	52.186	251.34	24.08	
Khowai	1495.39	490.96	38.02	167.39	696.37	46.57	
South Tripura	3074.78	614.41	270.67	315.3	1200.38	39.04	
Total	6597.38	1419.41	315.88	566.876	2302.17	34.90	

Table 2-25: Forest Canopy Cover – Project Districts³⁸

District	Geographical area of Project District Sq. Km	2019 Assessment Forest area Sq. Km					% Total of District GA
		VDF	MDF	OF	Total		
West Tripura including Khowai and Sepahijala	3522.6	249	1142	600	1991	56.52	
South Tripura	3074.78	241	1583	453	2277	74.05	
Total	6597.38	490	2725	1053	4268	64.69	

The forest involvement in FEAR I, as per IEAR was 113.62 ha. Forest area of Rokhia-Rabindra Nagar TL reduced from 38.3 Ha as reported in IEAR to 21.1869 Ha as a result to meticulous

³⁷ (Source: <http://trpervis.nic.in/test/forest.html>)

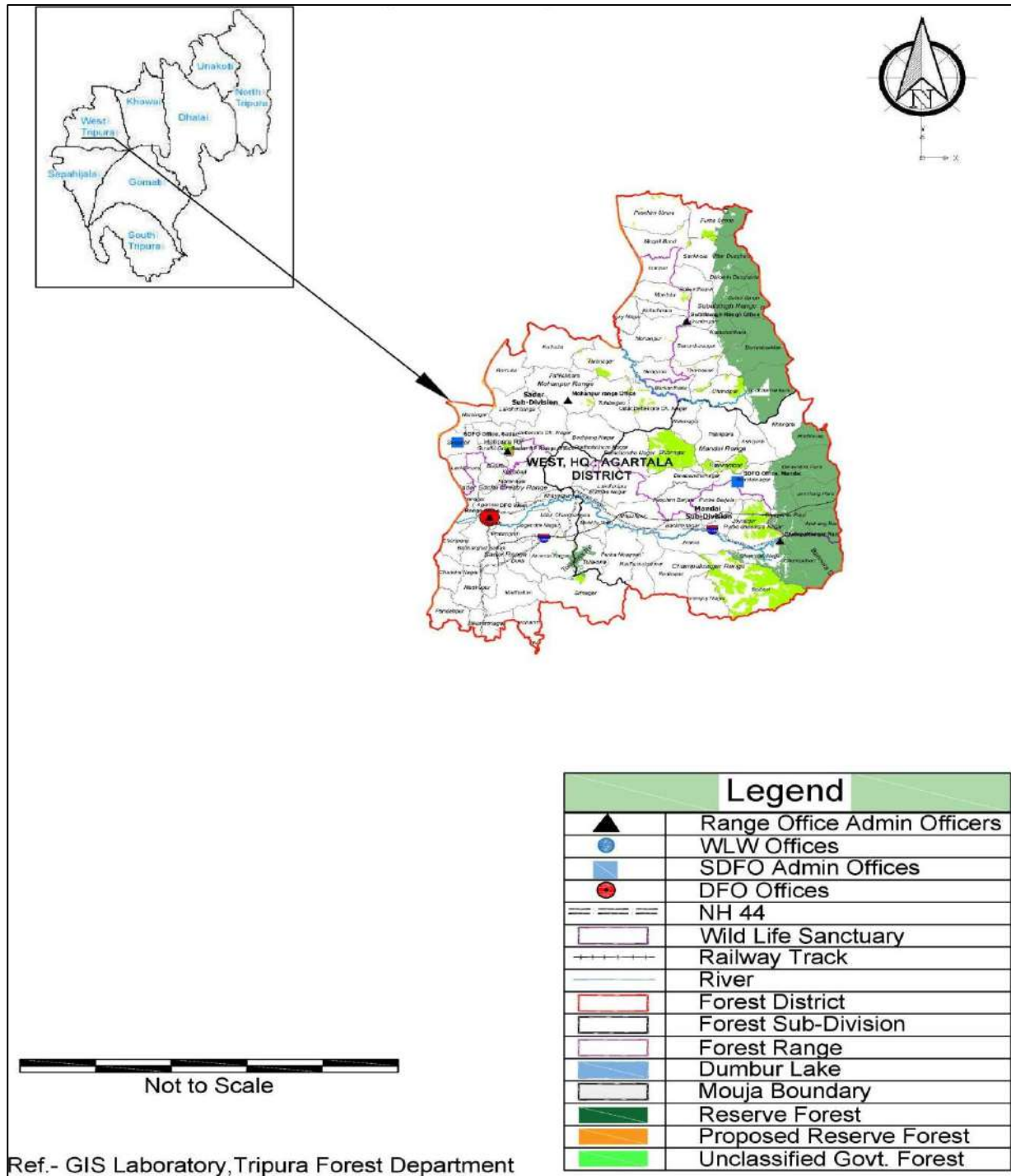
³⁸ India State of Forest Report (ISFR), 2019

planning. The total Forest involvement in TLs and Nidaya S/S is now 96.47 Ha. Details of forest involvement in different lines are presented below in **Table 2.26**.

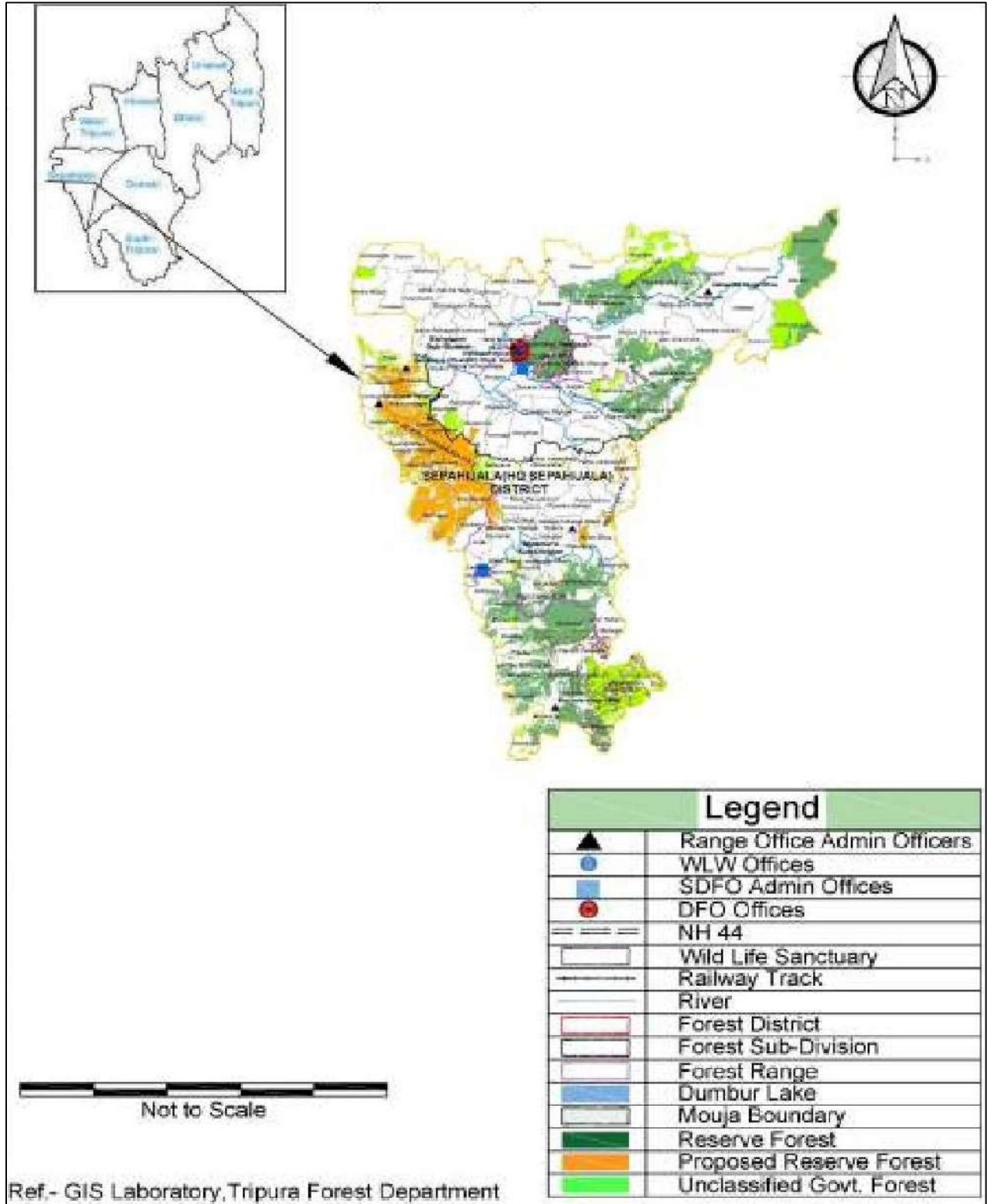
Table 2-26: Forest Area involvement in Project TLs and S/S

Sr. No.	Name of Transmission Line	Forest Involvement (In ha.)
1	Rokhia- Rabindranagar 132 KV D/C line	21.1896
2	Rabindranagar - Belonia 132 KV D/C line	74.9493
3	Nidaya S/S	0.3299
Total		96.47

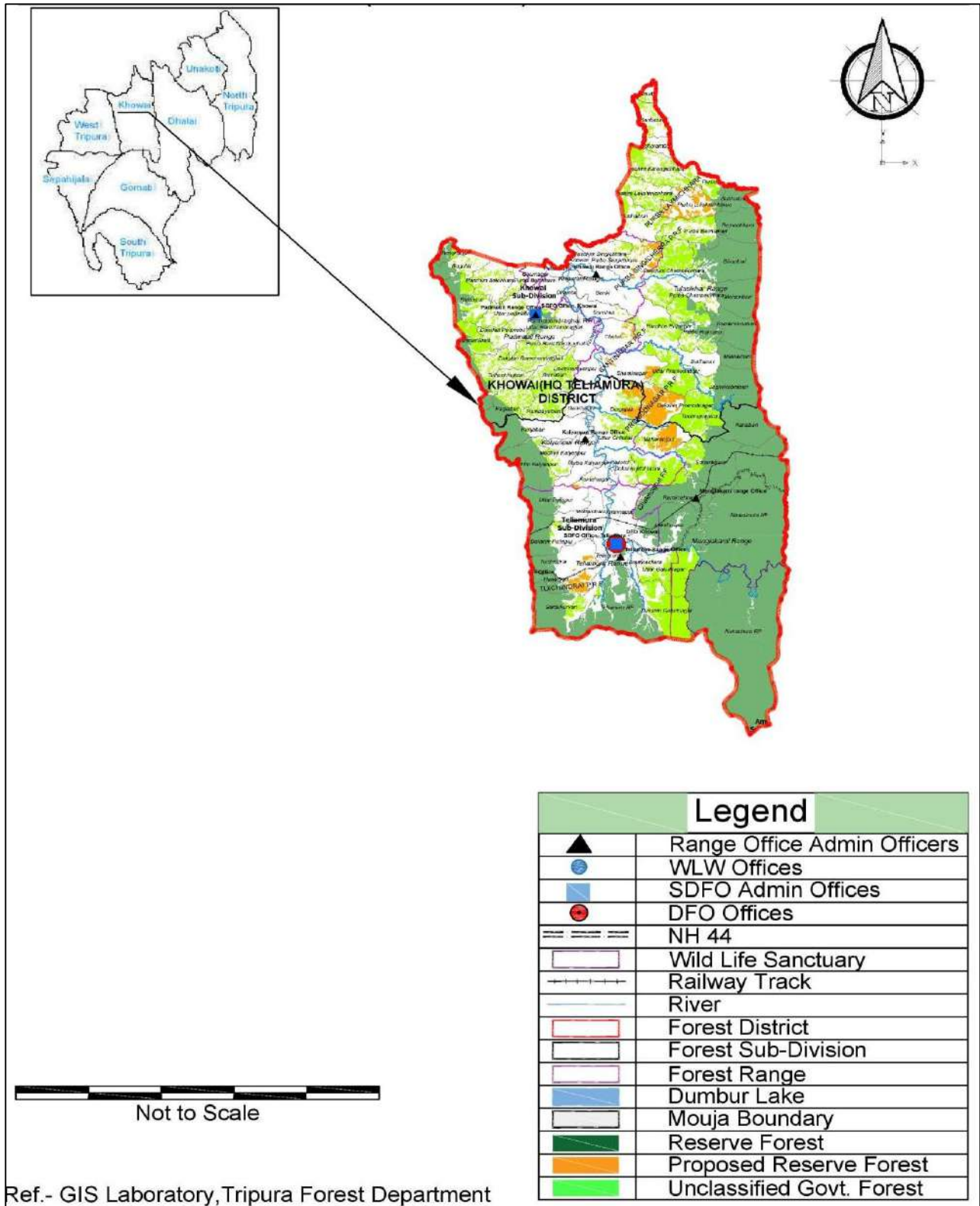
Map 2-23: Forest Classification Map, West Tripura District



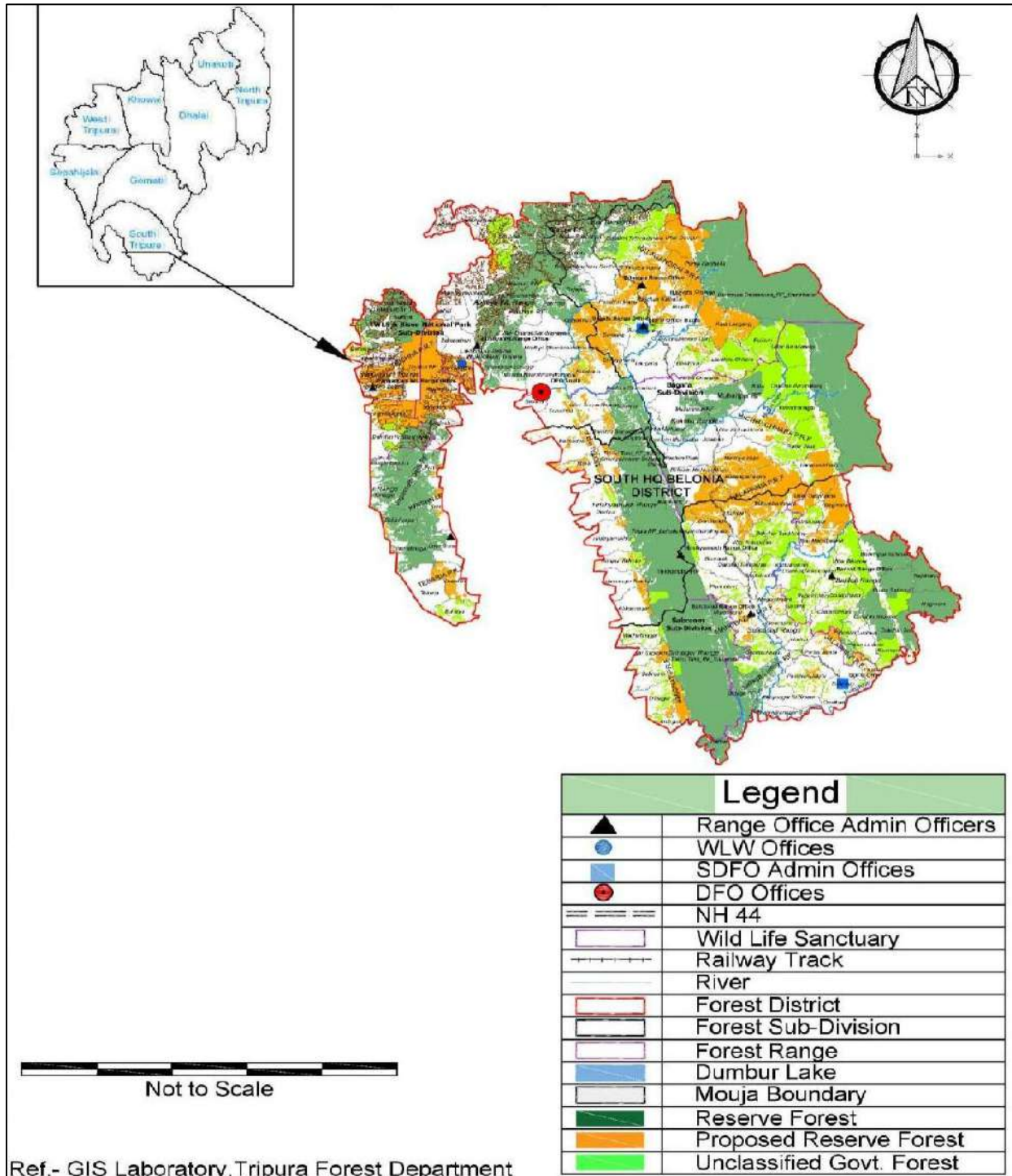
Map 2-24: Forest Classification Map, Sepahijala District



Map 2-25: Forest Classification Map, Khowai District



Map 2-26: Forest Classification Map, South Tripura District



2.4.4 Study Area Baseline Data Collection

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 TLs on both left and right sides, corridors of TL routes and S/S. 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 moist deciduous 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 TL.

A series of transects were identified along the routes of TL covering the corridors between the ROW of TL and s/s. The basis of data collection is along the route of the TL considering a RoW of 27 mts for 132 kV line. For homogenous stretches / sections of the route like along paddy field, along tea garden etc. data collection is carried out section wise. During the surveys, 10 to 50 % of total route length was covered to collect baseline data, because entire route is not accessible at present. As regard substation, the whole S/S area was covered. Details of transects locations selected for phytosociological survey are as given in **Table 2.27**.

Table 2-27: Transmission Lines and Transects Locations for Vegetation Sampling

Sr. No.	Name of Line and Locations of samplings	Stretch Covered and No. of Poles	Section Length	% Covered for Line Survey
1	Rokhia - Rabindranagar 132 kV D/C line - 22 km	AP 3 to AP5 AP 10 to AP17 AP 21 to AP24/0	2.139 km 4.637 km 5.981 km	50%
2	Rabindranagar - Belonia 132 kV D/C line - 62 km	AP 12 to AP 15 AP 15 to AP 23/0	2.11 km 6.07 km	12%

2.4.4.1 Taxonomic Diversity:

Based upon the data collected during field surveys and data / information collected from secondary sources inventory of 89 plant species found in the area surveyed was prepared. Conservation status of plant species found in the study area was assessed using IUCN Red list of Threatened Species Version 2020.1 (accessed in 2021) as well as Red Data Book of Indian Plants by BSI. The list is well given in **Appendix A under Heading D with IUCN Status**. Dominant species recorded in the project area are *Hevea brasiliensis*, *Schima Wallichii Chois*, *Gmelin Arborea*, *Shorea robusta*, *Pterospermum acerifolium*, *Acacia auriculiformis*, *Sweetinia Mahagony*, *Albizia Procera*, *Shorea Robusta*, *Zizyphus Jujuba*, *Mangifera indica*, *Pterocarpus marsupium*, *Terminalia bellarica*, *Techona grandis*, *Syzygium cumini*, *Aegle marmelos*, *Carica papaya*, *Azadirachta indica*, *Moringa oleifera*, *Bombax ceiba*, *Artocarpus heterophyllus*, and *Cinnamomum glanduliferum*. Amongst these *Pterocarpus marsupium* is vulnerable species and *Aegle marmelos* and *Sweetinia Mahagony* is near threatened species as per Conservation Status IUCN (2020.1). *Lantana Camera* is invasive species recorded during filed survey.

2.4.4.2 Invasive Species and Their Control

During field survey *Lantana camara* invasive species is recorded in the study area i.e., transects studied along the different TLs, their routes and s/s. Considered as one of the most invasive weeds. *L. camara* is distributed as an ornamental plant throughout the world since the 17th century, the lantana is one of 100 species of the most invasive of the IUCN list. The presence of invasive plant species is indicative of degradation of vegetation

The newly disturbed ground is prime habitat for more invasive species to colonize. A protective approach is required for eliminating or control the spread and establishment of invasive plants species, for which there are two key elements. First, project authorities would ensure to uproot all existing alien/invasive species from the labor colony and other working areas. Secondly, project workers are discouraged to plant any alien and/or invasive species in the camp and colony areas, which may spread in the forest areas.

Eliminating the invasive species by uprooting or pulling is laborious but may be the best choice for on steep or rough terrain. Replanting the area immediately with a desirable selection of native plants is necessary. There must be an emphasis on early detection and eradication of these invasive species populations in the area especially the new population. To control and check the growth of invasive species, plantation of indigenous species in the area occupied by invasive species is also necessary. The other factor that helps in control of non-indigenous species is the increase of knowledge and awareness among the workers and villagers. In the present project, none of the project activity contribute in the growth of any invasive species.

2.4.4.3 Vegetation Profile of the Sampling Area

Site 1: Rokhia - Rabindranagar 132 kV D/C line - 22 km

The vegetation, in general, in area around is comprised of secondary vegetation with trees like *Tectona grandis*, *Acacia Auriculiformis*, *Zizyphus Jujuba*, *Bamboo*, *Aegle Marmelos*, *Terminalia bellerica*, *M.Champaca*, *Artocarpus Hirsuta*, *Alstonia Scholaris*, *Gmelina Arborea*, *Psidium Guajava*, *Syzigium Cumini*, *Artocarpus Heterophyllus*, *Delonix Regia*, *Mangifera Indica*, *Sweetinia Mahagony*, *Sal*, *Bombax Ceiba*, *Moringa oleifera* along with *Lantana*, *Jasminum*, etc. **Detailed List is depicted in Appendix A under Heading D.** Ground cover is mainly represented by grass species like *Yushania hirsuta* (Syn. *Arundinaria hirsuta*), *Cyperus rotundus*, *Imperata cylindrica*, *Poa annua*, etc. The herbaceous layer is represented by *Ageratum conyzoides*, *Commelina bengalensis*, *Elatostema sessile* and *Lecanthes peduncularis* and *Parthenium hysterophorus*.

Site 2: Rabindranagar - Belonia 132 kV D/C line - 62 km

The vegetation, in general, in area around is comprised of secondary vegetation with trees like *Tectona grandis*, *Rubber Trees*, *Schima Wallichii Chois*, *Gmelin Arborea*, *Artocarpus Heterophyllus*, *Terminalia Bellarica*, *Tectona Grandis*, *Albizia Procera*, *Eucalyptus*, *Erythrina Indica*, *Shorea Robusta*, *Alstonia Scholaris*, *Sweetinia Mahagony*, *Mangifera Indica*, *Aegle Marmelos*, *Psidium Guajava*, *Tamarindus Indica*, *Terminalia Chebula*, *Syzigium Cumini*, *Bombax Ceiba*, *Emblica Sps*, *Zizyphus Jujuba*, *Azadirachta Indica* along with *Lantana* and *Jasminum* etc. **Detailed List is depicted in Appendix A under Heading D.** Ground cover is mainly represented by grass species like *Yushania hirsuta* (Syn. *Arundinaria hirsuta*), *Cyperus rotundus*, *Imperata cylindrica*, *Poa annua*, etc. The herbaceous layer is represented by *Ageratum conyzoides*, *Commelina bengalensis*, *Elatostema sessile* and *Lecanthes peduncularis* and *Parthenium hysterophorus*.

2.4.4.4 Economically Important Plant Species

The people of the area use wild plants in their daily life as food, medicine, fibre, fodder, fuel wood, timber, vegetables, fruits and various minor forest products. Agriculture is the major occupation in the project area with paddy, maize, and rapeseed/mustard are main crops cultivated. Among horticultural crops are pineapple, banana, orange, passion fruit, jackfruit, guava, zizyphus, jamun, imli and litchi. Among vegetable Chili, Colocasia, leafy vegetables, tapioca, pumpkin and ginger are common. Among Timber wood teak is very major portion. Rubber plantation is in vast area.

2.4.4.5 Faunal Elements

Faunal elements of the study area, were studied during floral survey / vegetation profile study of the project ROW. During the field surveys, no species encountered. However, during interaction with local people and forest department officials, fauna species generally found in the project area, are recorded. It is also noted that the number of mammal's species is decreasing gradually in the area and they are occasionally seen. Following faunal elements are recorded in the study area based on information from local people and secondary data.

Table 2-28: Fauna Recorded in Project Area

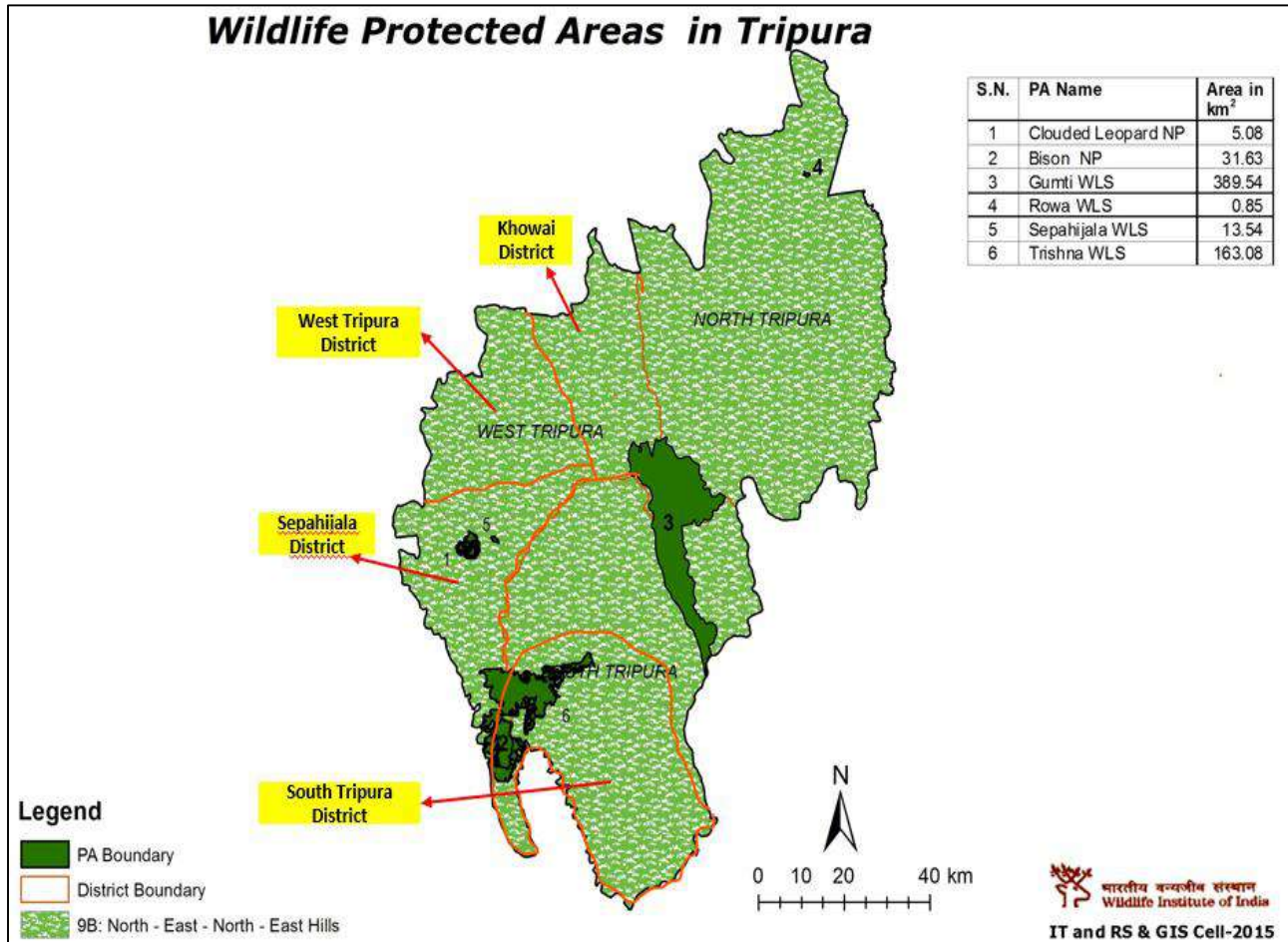
No.	Common Name	Scientific Name	Conservation Status IUCN (2020.1)
1.	Barking deer	Muntiacus muntjak	Least concern
2.	Flower peckers	D. erythrorhynchos	Not evaluated
3.	Black Cross-barred Kukri Snake	Oligodon cinereus	Least concern
4.	Indus Valley Toad	Duttaphrynus stomaticus	Least concern
5.	Asian Common Toad	Duttaphrynus melanosticus	Least concern
6.	Fulvous Whistling Duck	Dendrocygna bicolor	Least concern
7.	Lesser Whistling Duck	Dendrocygna javanica	Least concern
8.	Common Teal	Anas crecca	Least concern
9.	Indian Peafowl	Pavo cristatus	Least concern
10.	Rain Quail	Coturnix coromandelica	Least concern
11.	Red Junglefowl	Gallus gallus	Least concern

2.4.5 Protected Areas – Tripura State

Tripura has two National Parks (NP) and four Wildlife Sanctuaries (WLS) covering an area of 603.64 square km constituting 5.75% of the total geographical area of the State. There is no notified elephant reserve/ corridor found in Tripura. Map of PA of Tripura State is shown in **Map 2-27**.

Table 2-29: PA of Tripura State

Sr. No.	Name of the PA (WLS /NP)	Area in Sq. Km	Location/ District	Important Flora and Fauna found
1.	Sepahijala WLS	18.54	Sepahijala	Birds and Primates, Migratory Birds in the winter, Spectacled Monkey.
2.	Gomati WLS	389.54	Dhalai, Gomati	Elephant, Sambar, Barking Deer, Wild Goats, Serrow etc.
3.	Trishna WLS	194.71	South Tripura	Birds and Primates, Bison, Leopard, Barking Deer, Wild Dog, Capped Langur, Spectacled Monkey, Slow Lorries, etc.
4.	Rowa WLS	0.86	North Tripura	Many species of Birds and Primates
5.	Bison (Rajbari) NP	31.63	South Tripura	Bisons and many species of Birds
6.	Clouded Leopard NP	5.08	West Tripura	Clouded Leopard, Spectacled Langur and many Birds

Map 2-27: Map of PA (Eco sensitive zones) of Tripura


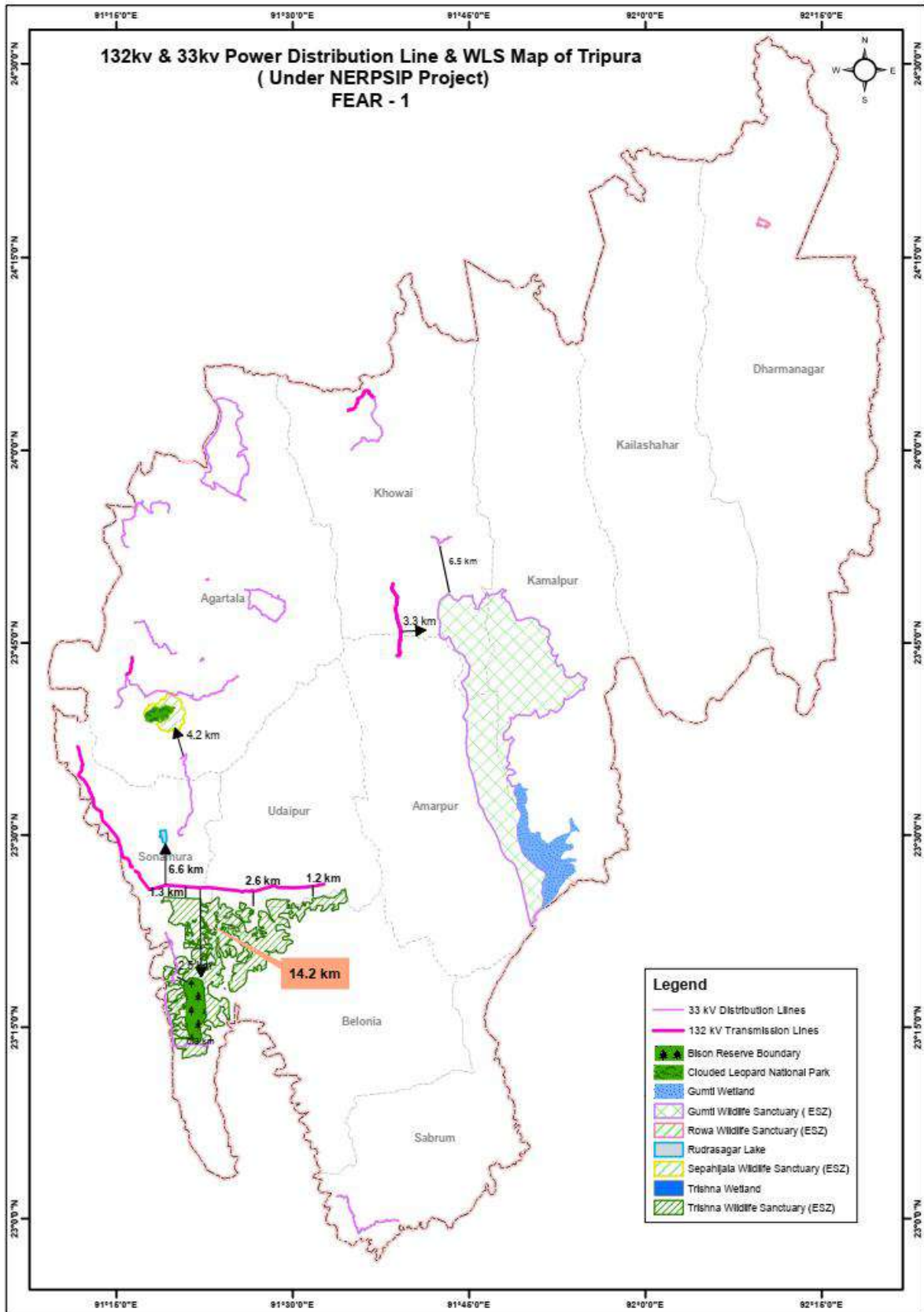
2.4.5.1 PA with respect to project districts:

The proposed TLs/DLs are not passing through any protected area like NP, WLS, IBAs, conservation reserves, community reserves and biosphere reserves, etc., as all such areas have been completely avoided through meticulous alternative alignment analysis and careful route selection. 132 kV D/C Rabindra Nagar - Belonia line alignment is passing at a distance of 1.2 km away from the Trishna WLS boundary. The proposed 132 kV D/C Rabindra Nagar-Belonia line is approximately 14.2 km from this Bison Reserve in respect to its closest point to Trishna WLS boundary from its nearest point in respect of line route. Other PAs are beyond 10km from project components. As confirmed by Wildlife Warden of Trishna Sanctuary Bison migration/ movement is confined to Trishna core which is quite far from proposed route alignment of 132kV D/C Rabindra Nagar - Belonia line and no Bison has ever been reported from project area. The consolidated Map of PA with respect to FEAR 1 Project is depicted as **Map 2.28**. Wildlife Institute of India's geospatial map of area showing Trishna WLS boundary and Bison Reserve vis-à-vis FEAR 1 line route in more details is placed in **Annexure 3**. No ecologically sensitive areas are getting adversely impacted due to project interventions because of TL and DL.

Though the TL/DL is not affecting any of PA. 33 kV Nidaya substation is falling within Trishna WLS and 0.32982 ha forest land utilized for the construction. **Please Refer Map placed in Annexure 4**. Though the part of Trishna Wildlife Sanctuary, due to sparse vegetation cover its impact on forests and its resources would be insignificant. IA has already obtained necessary forest and wildlife clearance as per regulatory provisions under Forest

(Conservation) Act, 1980 and Wildlife (Protection) Act, 1972 respectively and IA has the obligation to comply with conditions prescribed in the above clearances.

Map 2-28: FEAR 1 - Subprojects and PAs



2.5 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.

2.5.1 Human and Economic Development – Tripura State³⁹:

Tripura is a hilly state in northeast India, bordered on 3 sides by Bangladesh, and home to a diverse mix of tribal cultures and religious groups. In the capital Agartala, the imposing Ujjayanta Palace is set among Mughal gardens, and Gedu Mia’s Mosque has white marble domes and towers. South of the city, Neermahal summer palace sits in the middle of Lake Rudrasagar.

Tripura is an agrarian State with more than half of the population dependent on agriculture and allied activities. However, due to hilly terrain and forest cover, only 27 % of the land is available for cultivation. Rice, the major crop of the state, is cultivated in 91 % of the cropped area. According to the Directorate of Economics & Statistics, Government of Tripura, in 2009–10 along with rice cultivation other major cultivation are potato, sugarcane, pulses and jute. Jackfruit and pineapple top the list of horticultural products. Traditionally, most of the indigenous population practiced jhum method (a type of slash-and-burn) of cultivation. The number of people dependent on jhum has declined over the years.

Pisci culture has made significant advances in the State. At the end of 2009–10, the State produced a surplus of 104.3 million fish seeds. Rubber and tea are the important cash crops of the State. Tripura ranks second only to Kerala in the production of natural rubber in the country. The State is known for its handicraft, particularly hand-woven cotton fabric, wood carvings, and bamboo products. High quality timber including sal, garjan, teak and gamar are found abundantly in the forests of Tripura. The industrial sector of the State continues to be highly underdeveloped – brickfields and tea industry are the only two organized sectors. Tripura has considerable reservoirs of natural gas. According to estimates by Oil and Natural Gas Corporation (ONGC), the State has 400 billion cubic meter reserves of natural gas, with 16 billion cubic meters is recoverable. ONGC produced 480 million cubic meter natural gas in the State, in 2006–07. In 2011 and 2013, new large discoveries of natural gas were announced by ONGC.

The economy of Tripura can be characterized by rate of poverty, low capital formation inadequate infrastructure facilities, Geographical isolation and communication bottleneck, inadequate exploration and use of forest and mineral resources, slow industrialization and high unemployment. More than 50% of the population depends on agriculture for sustaining their livelihood. However, share of agriculture and allied activities in Gross State Domestic Production (GSDP) is only 23% primarily due to low capital base in the sector.

³⁹ Economic Review of Tripura, 2018-19, Directorate of Economics & Statistics, Planning (Statistics) Department, Government of Tripura, Agartala

2.5.2 Economic Development – Project Districts

2.5.2.1 Economy – West Tripura District:

The economy of West Tripura is predominantly agrarian. Paddy is the main agricultural crop accounting for majority of sown area. Wheat, Sugarcane, Pulses, fruits, cotton and potato are other major crops. Cattles and Poultry are the main livestock wealth of the district. The fisheries reserve of the district is limited to ponds, tanks, rivers and are not of commercial magnitude. Occurrence of Lignite, Plastic clay and Natural Gas has been reported from the district. Agartala being the state capital is a hub of various small-scale industries including many export-oriented industries. Mainly Cottage industry products like handloom products, baskets, cane products, bamboo made curies and tinned fruit products like orange squash, pineapple juice, and also pineapples are being exported. West Tripura's imports consist of manufactured goods such as readymade garments, cotton yarn and twists, woolen goods, metals, machinery (for tea gardens) motor vehicles, cycles, hardware, sugar and molasses, kerosene oil, petrol, liquor paper, drugs and medicines, salt, spices, tobacco, coal, matches etc. This indicates a lack of manufacturing industries and consequently a low industrial base of the district.

2.5.2.2 Economy – Khowai District:

In spite of its rich natural resources the district lags behind due to the absence of infrastructure. Agriculture and allied activities form the backbone of the economy of the district.

2.5.2.3 Economy – Sepahijala District:

The main source of the lively hood of local people is agriculture. A large number of people have taken rubber plantation as a source of livelihood. The Collectorate is located by the side of NH-8 and in the vicinity of Bishramganj market and motor stand. There are some important tourist places, namely, Sepahijala Wildlife Sanctuary & Zoo, Neermahal, Buddha Stupa and Kashbeswari Kalibari located in this district.

2.5.2.4 Economy – South Tripura District:

Agriculture is the main profession/source of livelihood of the district, with a net sown area of around 41,840 Ha. Paddy is the main food crop. Potato, sugarcane, jute and mustard are also grown. Fisheries and Animal Husbandry are other prominent sources of employment; current fish productivity of the district is 2281 kg/Ha/year. The district has not witnessed much industrial growth due to varied reasons, with presence of only two Industrial Areas located at Belonia and at Sabroom. There are about 132 numbers of reported registered factories in the district employing around 2250 workers. There are 5 numbers of Handloom units and around 18750 numbers of handloom weavers in the district. It has been informed that lack of reliable and uninterrupted power is considered to be major hurdle in the industrial development of the area.

2.5.3 Demography – Tripura State⁴⁰

Tripura is the second most populous State in North Eastern Region after Assam. As per Census 2011 population was 36,73,917, out of which 18,74,376 males and 17,99,541 females. The data of Census-2011 shows that Tripura ranks 18th in terms of density of population at all India level. Among the north-eastern states, in terms of density, Tripura remained the second highest populous State after Assam. The population density of Tripura in 2011 was 350 persons per sq.km., which means that 45 more people live in a sq. km. area in the State then they lived a decade ago. The population density for all India in 2011 was 382. There is a positive improvement in sex ratio in the State as it rose from 945 (per 1000 males) in 1991 to 948 (per 1000 males) in 2001 and further to 960 in 2011. As per Census 2011, the literacy rate of Tripura was 87.22 %. The density of population is 350 persons / sq. km.

The people of the Scheduled Tribes (ST) comprise about one-third of the population. As per Census-2011, ST population of the State was 11,66,813 which is 31.75 % of the total population of the State. The total ST male was 5,88,327 and ST female was 5,78,486. The Census-2011 data shows that SC population of the State was 6,54,918 (17.8 %). The total SC male was 3,34,370 and SC female was 3,20,548.

The workforce data based on Census-2011 has been released by the Registrar General of India, New Delhi shows that the total number of workers (main & marginal) in the State was 14,69,521. Out of these total workers, 11,59,561 were the main workers and 3,09,960 were the marginal workers in 2011. The total male workers (main & marginal) were 10,45,326 and remaining 4,24,195 were the female workers in 2011. Out of the total worker (main & marginal), 11,16,076 (75.95 percent) were in rural areas and 3,53,445 (24.05 percent) were in the urban area in 2011, respectively. The proportion of total workers (main & marginal) in total population of the State was 39.99 in 2011, which was 36.24 percent in 2001. The total main workers were 10,77,019 in 2011, out of which 8,87,881(83.44 percent) were male main workers and 1,89,138 (17.56 percent) were female main workers.

2.5.3.1 Demography – Project Districts

Population of the districts South Tripura, West Tripura, Sepahijala & Khowai in Tripura from where the line is passing through as per 2011 census are as shown in **Table No. 2.30 through Table 2.32.**

⁴⁰ Census of India, 2011

Table 2-30: Demography details of Project District

Sr. No.	District	HH	Population			Literacy Rate %			Sex Ratio	Density / sq. km.	Schedule Caste			Schedule Tribes				
			Male	Female	Total	Male	Female	Total			Male	Female	Total	%	Male	Female	Total	%
1	West Tripura	223,548	466,152	452,048	918,200	94.04	88.01	91.07	970	974	97687	94788	192475	20.96	88523	88073	176596	19.23
2	Shepahijala	110,370	247,829	235,858	483,687	89.80	79.49	84.68	952	463	42526	40032	82558	17.07	60382	59019	119401	24.69
3	Khowai	77,384	167,401	160,163	327,564	92.17	83.17	87.78	957	326	32310	30752	63062	19.25	70210	69327	139537	42.60
4	South Tripura	104,683	220,162	210,589	430,751	89.96	79.16	84.68	957	281	33705	32032	65737	15.26	76934	75757	152691	35.45

Note : Sex Ratio = (Females / 1000 * males), %=(ST or SC total/ Total District population*100), Literacy rate=(total male / female literate/total population*100)

Table 2-31: Occupational Pattern of Project Districts

Sr. No.	District	Total Workers				Main Workers				Marginal Workers				Non-Worker			
		Male	Female	Total	%	Male	Female	Total	%	Male	Female	Total	%	Male	Female	Total	%
1	West Tripura Shepahijala Khowai	197772	500406	698178	40.46	431,743	92,455	524,198	30.38	68,663	105,317	173,980	10.08	379,022	648,539	1,027,561	59.54
2	South Tripura	253,229	113,616	366,845	41.88	212,050	46,407	258,457	29.50	41,179	67,209	108,388	12.37	194,315	314,841	509,156	58.12

Note: Total Worker% = Total Worker/ Total Population x 100, Main Worker% = Main Worker/ Total Worker x 100, Marginal Worker% = Marginal Worker/ Total Worker x 100, Non-Worker% = Non-Worker/ Total Population x 100

Table 2-32: Main Worker Profile of Project Districts

Sr. No.	District	Main Workers	Cultivators				Agricultural Labor				Household Industry Worker				Other Workers			
			Male	Female	Total	%	Male	Female	Total	%	Male	Female	Total	%	Male	Female	Total	%
1	West Tripura Shepahijala Khowai	524,198	90,707	24,468	115,175	16.50	93,290	62,818	156,108	22.36	10,545	14,618	25,163	3.60	305,864	95,868	401,732	57.54
4	South Tripura	258,457	64,847	20,683	85,530	23.32	67,167	44,165	111,332	30.35	2,993	3,382	6,375	1.74	118,222	45,386	163,608	44.60

Note: Total Cultivator% = Total Cultivator/ Main Worker x 100, Total Agricultural Labour% = Total Agricultural Labour/ Main Worker x 100, Household Industry Worker% = Total Household Industry Worker/ Main Worker x 100, Total Other Workers% = Total Other Workers/ Main Worker x 100

2.6 Baseline Description of the Subproject areas

The baseline data around the sub-project sites is broadly in conformity with the data of the project district i.e., West Tripura, Khowai, Sepahijala and South Tripura. However, the topography encountered around the TL and DL route alignment is mostly 50% to 60 % hilly and slopy terrain and 40 to 50% plain. All the S/S are located in plain area. All the S/S are planned on plain land parcels. In case tower/pole locations are on hill terrain and where ever positioning of tower on hill top is not possible leg extension is being utilized so as to minimize/ avoid benching/ revetment and to provide great stability.

Of the total 4 TL, all lines are passing through Moderately dissected Structural Hills and Less dissected Denudational Hills terrain as per line feature survey. The rock type is mostly of sandstone / limestone bands and pebble bed / conglomerate. A major portion of the TL passes through agricultural / paddy fields, and the remaining portion through rubber tree plantation/ tree owned by private owner. The TL at some locations cross Railway track, metal road, bridge, water bodies. The TLs route involves notified forest land and confirms the forest clearance under Forest (Conservation) Act, 1980. The proposed TL Rokhia - Rabindranagar 132 kV D/C line is having 21.1896 Ha of RF area and Stage-I & Stage- II (final) approval obtained on 28.06.18 & 07.06.19 respectively. The proposed Rabindranagar – Belonia 132 kV D/C line is having 74.9493 RF area and Stage-I & Stage-II (final) approval obtained on 12.04.19 & 22.06.20 respectively. **Please refer Annexure 6 for Forest clearance obtained.** Besides all protected areas like NP, WLS, Biosphere Reserve etc.; Natural habitats, IBAs, Sacred groves, Wetlands and designated wildlife/elephant etc. have been completely avoided. The land use along the RoW (27 m for 132 kV) of lines comprises of agricultural land, private plantation and govt. land. The total length of the FEAR 1 project TLs is 89.42 km and total number of 359 towers are being/to be erected for all proposed 4 TLs. The earlier TL Length in FEAR 1 is was 71 km as presented in IEAR. **The details are discussed in Chapter 4.** However, as a result, though the length is increased, the environmental and social footprints have been reduced as envisaged in IEAR avoiding the environmental sensitive areas like habitation, PA and Forest area. Due impact assessment and mitigation measures are implemented as per prescribed EMP and following ESPPF prepared by TSECL. The details are discussed in Chapter 5.

As per line feature survey all 24 DLs are passing mostly through Less dissected Denudational Hills and moderate fill valley terrain. Rock type is majorly sandstone. A major portion of the DL passes through agricultural / paddy fields, and the remaining portion through rubber plantation/ tree owned by private owner. The DL at some locations crossing Railway, metal road, water bodies. The DLs route do not involve notified forest land and do not necessitate forest clearance under Forest (Conservation) Act, 1980. Besides all protected areas like NP, WLS, Biosphere Reserve etc.; Natural habitats, IBAs, Sacred groves, Wetlands and designated wildlife/elephant etc. have been completely avoided. The DLs have been aligned mostly along the existing roads by avoiding dense forest areas. Here, the RoW corridor being narrower (15m for 33 kV) tend further reduction of 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 DLs has been decreased to 199.522 km from earlier 259 km in IEAR due to further optimization during ground truthing survey. **The details are discussed in Chapter 4.** It has been observed that there are variations in final route length of DL from earlier routes considered and studied in IEAR, so that environment & social sensitive areas are avoided/minimized from earlier identified areas in IEAR/EMP and lesser impacts are anticipated. A total of around 7597 poles are being/to be erected for all 24 proposed DLs. Due impact assessment and mitigation measures are implemented which are discussed in Chapter 5.

Amongst all 15 S/S, 33/11kV Nidaya S/S plot is involved 0.3299 Ha of Forest of Trishna WLS area. Hence Forest and NBWL clearance is mandatory. Accordingly, Stage-I approval obtained on 16.03.20 and Stage-II clearance (conditional) issued on 19.03.2021 from ROMoEFCC, Shillong. National Board for Wildlife (NBWL) permission obtained on 17.12.19. **Please refer Annexure 6 for Forest and**

NBWL clearance obtained. Land for all the other proposed 14 S/S is already in possession with TSECL and no fresh land is required to be acquired.

It has been observed that most of these S/S lands were secured by TSECL since long back. As these substation locations are easily accessible with existing metal roads construction of new approach road is not required. The details of requirement of approach road along with google map photos of substations depicting status of approach have been placed at **Table 2.33 and Map 2.29**. However, it is to submit that in few cases i.e., 33/11kV Durganagar S/S - 500m, 33/11kV Nidaya S/S - 200m, 33/11kV Simna S/S - 200m only strengthening / upgradation work of existing road is being undertaken to facilitate movement of construction materials and machineries to the construction sites of S/S in consultation with local authority and villagers.

Table 2-33: Baseline Environmental Settings of Substation Locations

Sr. No	Name of SS	Area (Sq.mt)	Location	Surrounding	Accessibility	Land Status
1	132/33 kV (New) S/S at Rabindranagar	10117	The proposed land is located Inside the existing 66kV Rabindranagar S/S Complex and appx. 3km from Sonamura town. <i>Co-ordinates:</i> 23°27'25.8"N 91°16'18.4"E	The land use surrounding the proposed S/S site is mostly griculture field. However, some sparse habitation is found on the SW side.	Location is just adjacent to State Highway (Sonamura Belonia)	TSECL Own Land
2	132/33kV (New) S/S at Gokulnagar	14164	The proposed land is located adjacent to NH-44 near existing 66kV Gokulnagar S/S. Appx. 16 km from Agartala City. <i>Co-ordinates:</i> 23°42'30.95"N 91°15'47.89"E	East: NF Railway Road. West: NH- 44, North: Private land, South: FCI Store	NH-44, Near existing 66kV Gokulnagar S/S	TSECL Own Land
3	132/33kV (New) S/S at Mohanpur	16187	Behind existing 33kV Mohanpur S/S <i>Co-ordinates:</i> 23°57'46.6"N 91°22'11.6"E	The proposed S/S site is surrounded by rubber garden on two sides and by agriculture field on other two sides.	Mohanpur Main Road	TSECL Own Land
4	33/11 KV (New) S/S at Durganagar	1619	Near Durganagar Bazer & Community hall. <i>Co-ordinate-</i> 23°39'983"N 091°14'851"E	North: Bishalghar to Boxanagar Road. South: Tilla land, West: Village, East: Village, Near Durganagar Bazer & Community Hall.	Adjacent to Bishalghar to Boxanagar Road. However, access road of 500m. may be required.	Land in possession with TSECL
5	33/11 KV (New) S/S at Nalchar	1862	Near Nalchar Line Office (TSECL). <i>Co-ordinate-</i> 23°32'561"N 091°21'412"E	Near: Nalchar Bazar, Community Hall. East: Village road West: Bishramganj -Sonamura road. North: Habitation. South: Habitation.	Adjacent to Bishramganj to Melaghar Road. However, strengthening of existing road may be required.	Land in possession with TSECL
6	33/11 KV (New) S/S at	3238	Near: Nidaya Bazar, Newly Constructed Govt' Hospital.	East: Private land, West: Some habitation, South; Kathalia to	Adjacent to Kathalia to Belonia Road,	Land is in Trishna WLS and diverted to

Sr. No	Name of SS	Area (Sq.mt)	Location	Surrounding	Accessibility	Land Status
	Nidaya		Co-ordinate 23°18'603"N 091°19'520"E	Belonia Road. North: Near Nidaya Bazar, newly Constructed Govt' Hospital.	New approach road of 200mt required.	Nonforest with prior approval from Ro MoEFCC
7	33/11 KV (New) S/S at Gabardi	3642	Adjacent to Gabardi to Ranirbazar Road Co-ordinate- 23°43'834",N 091°22'284"E	South: Assam Rifle Camp. North: Mud Road, East: Gabardi to Ranirbazar Road, West: Tilla land.	Adjacent to Gabardi to Ranirbazar Road, No New access road required.	Land in possession with TSECL
8	33/11 KV (New) S/S at Lembucherra	2995	Adjacent to Agartala to Kamalghat. Co-ordinate- 23°55.303'N 091°19.313'E	West - Village road, South Main Road, North & East - Habitation	Adjacent to PWD Road from Agartala to Kamalghat. However, access road of 50 m. may be required.	Land in possession with TSECL
9	33/11 KV (New) S/S at Khowai	1983	Near DM Quarter complex. Coordinate- 24°04'08.6"N, 091°36'08.5" E	North - DM Quarter complex, South & West: TSECL, East - Habitation	For access to site firming of existing road may be required.	TSECL Own Land
10	33/11 KV (New) S/S at Barkathal	2388	Adjacent to Sonai Barkathal Road, Co-ordinate- 23°56'04.0"N 091°26'027" E	North - Rubber plant, South: PWD road, West: Rubber plant, East : Govt Khas land	Existing PWD road. No New access road required.	Land in possession with TSECL
11	33/11 KV (New) S/S at Mungiakami	4654	At Monkiakami village Co-ordinate- 23°53'14.9"N, 91°41'49.1" E	Govt. Land (Tilla)	Adjacent to existing PWD road. However, access road of 50 m. may be required.	Land available with TSECL
12	33/11 KV (New) S/S at Simna	2388	Near Simna Tea Garden, Co-ordinate 23°04'05.7"N, 091°23'48.7" E	East: Tea Plantation. West, North & South: Health Centre	Govt. Land (Tilla). 200mt extension of existing road may be required	Land available with TSECL
13	33/11 KV (New) S/S at Sekerkote	2833	Adjacent Agartala to Bishalghar Road. Co-ordinate- 23°43'46.5"N 091°15'59.8"E	West: Agartala Bishalgarh road & Market, South: Village road, East: House, North: Paddy land.	Adjacent Agartala to Bishalghar Road. No new road required.	TSECL Own Land.
14	33/11 KV (New) S/S at Ranirbazar	4047	Site is located near to NH - 44 to Mazlishpur Road side. Co-ordinate- 23°49'55.34N, 091°22'34.33"E	North: Paddy land. South: NH -44 & Rail Track, West: NH - 44 to Mazlishpur Road side. East: Paddy land	Close to NH - 44 to Mazlishpur Road side. No New access road required.	Land available with TSECL
15	33/11 KV (New) S/S at Champaknagar	2752	Near Brick Soiling road from NH - 44. Co-ordinate - - 23°48'44.2"N 091°28'47.0" E	West: Tilla Land, East: Brick Soiling road. South: Mud Road, North: Sericulture Office	Accessible through Brick Soiling Road from NH-44, hence no new road required	Available with TSECL

Map 2-29: Google Maps of S/S Before and After S/S Construction
132/33 kV Rabindranagar S/S



S/S Site in 2017 Before Construction



S/S Site in 2021 – Construction Under Progress

Detailed S/S site Photographs are presented in Chapter 4 in Section 4.3

132/33 kV Gokulnagar S/S



S/S Site in 2017 Before Construction



S/S Site in 2021 – Construction Completed

Detailed S/S site Photographs are presented in Chapter 4 in Section 4.3

132/33 kV Mohanpur S/S



S/S Site in 2016 Before Construction



S/S Site in 2021 – Construction Completed

Detailed S/S site Photographs are presented in Chapter 4 in Section 4.3

33/11 KV Khowai S/S



S/S Site in 2017 Before Construction



S/S Site in 2021 – Construction Work Under Progress

Detailed S/S site Photographs are presented in Chapter 4 in Section 4.3

33/11 kV Simna S/S



S/S Site in 2017 Before Construction



S/S Site in 2021 – Construction Completed

Detailed S/S site Photographs are presented in Chapter 4 in Section 4.3

33.11 kV Barkathal S/S



S/S Site in 2017 Before Construction



S/S Site in 2021 – Construction Completed

Detailed S/S site Photographs are presented in Chapter 4 in Section 4.3

33/11 kV Lembucherra S/S



S/S Site in 2017 Before Construction



S/S Site in 2021 – Construction Work in Progress. Image is not available for 2021

Detailed S/S site Photographs are presented in Chapter 4 in Section 4.3

33/11 kV Champaknagar S/S



S/S Site in 2017 Before Construction



S/S Site in 2021 – Construction Work Completed

Detailed S/S site Photographs are presented in Chapter 4 in Section 4.3

33/11 kV Ranir Bazar S/S



S/S Site in 2017 Before Construction



S/S Site in 2021 – Construction Work is Not Started Yet

Detailed S/S site Photographs are presented in Chapter 4 in Section 4.3

33/11 kV Mungiakami S/S



S/S Site in 2017 Before Construction



S/S Site in 2021 – Construction Work Under Progress

Detailed S/S site Photographs are presented in Chapter 4 in Section 4.3

33/11 KV Durganagar S/S



S/S Site in 2017 Before Construction



S/S Site in 2021 – Construction Work is Not Started

Detailed S/S site Photographs are presented in Chapter 4 in Section 4.3

33/11 KV Nidaya S/S



S/S Site in 2017 Before Construction



S/S Site in 2021 – Construction Work is Under Progress

Detailed S/S site Photographs are presented in Chapter 4 in Section 4.3

33/11 KV Nalchar S/S



S/S Site in 2016 Before Construction



S/S Site in 2021 – Construction Work is Not Started.

Detailed S/S site Photographs are presented in Chapter 4 in Section 4.3

33/11 KV Gabardi S/S



S/S Site in 2016 Before Construction



S/S Site in 2021 – Construction Completed (Line test charged on 10.01.2020)

Detailed S/S site Photographs are presented in Chapter 4 in Section 4.3

Details of land use / land cover and environmental setting of final route alignment describing important features discussed in detail in **Chapter 4**.

Regular environmental monitoring is being carried out at S/S locations during Construction activity. It is being observed that during construction activity dust emission is not envisaged as water sprinkling activity is regularly carried out at construction site which has nullified the impact of dust emission in the area. Construction activity is carried out in the confined space and locations are far from nearby habitations. Thus, Noise impacts are not envisaged. However, the baseline environmental monitoring for water and noise environment at various locations of subproject construction sites are being carried out as regular activity as part of EMP during construction phase by construction contractors. All the analysis results are found within prescribed limits. **Please refer Appendix A.**

The during the field surveys it was tried to survey minimum 10% of the route for flora data collection, which in some cases constituted a continuous stretch and, in some cases, could be covered in parts. The stretches were selected considering diversity of flora. At some places along the alignment, forest plantation is recorded e.g., rubber plantation which is homogenous. At some stretches the diversified flora is recorded. In Tripura State rare and endangered species of both Flora and Fauna are listed in Section 2.4. Also, during field survey in project area *Pterocarpus marsupium*, vulnerable species, and *Aegle marmelos* and *Sweetinia Mahagony* near threatened species as per Conservation Status IUCN (2020.1) are recorded. *Lantana Camera* is invasive species recorded during field survey. The fauna elements were not found during field surveys in the project areas except some bird and common fauna. Hence the data was collected through consultations with local public, Forest department officials and POWERGRID officials working in the project area. The details are reported in subsequent chapters. The detailed vegetation assessment is discussed in **Section 2.4.4** and list of vegetation recorded during field survey is depicted in **Appendix A under Heading D.**

The tree cutting in nonforest area was avoided during construction activities at S/S locations and at TLs at maximum. There is no provision of compensatory plantation in non-forest area in lieu of tree cutting in Tripura State. However, it was tried to retain the trees on site. Only grass growth on the S/S plot was cleared during land development prior to construction. At TLs locations trees were maximum tried to trim limited to the locations where the height of trees was hindering the work. Trees are cut only under unavoidable circumstances.

It is mandatory to do the compensatory afforestation as per the forest clearances obtained for the project. As per specific conditions in Forest Clearance obtained from MoEFCC, the compensatory afforestation is to be / being carried out on double the degraded forest area as suggested and identified by forest department. POWERGRID / IA has paid the requisite cost as per prescribed law for the compensatory afforestation (CAMPAs) to Forest department. It may also be noted that the user agency/ IA has no role in taking CAMPAs activity except deposition of CA cost to forest dept/CAMPAs rather it is the forest dept responsibility to undertake the plantation as per CA scheme. **The details are explained in the evaluation chapter 5 Section 5.2.4.**

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

3. POLICY, LEGAL & REGULATORY FRAMEWORK

3.1 Introduction

Power transmission 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. TSECL undertakes 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 Funding Agencies.

3.2 Constitutional Provisions

Subsequent to the first United Nations Conference on Human Environment at Stockholm in June, 1972, which emphasized the need to preserve and protect the natural environment, the Constitution of India was amended through the historical 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 provide:

- "The State shall endeavor to protect and improve the environment and to safeguard the forests and wildlife of the country". (New Article 48A)
- "It shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures". (New Article 51 A (g))
- Article 21 of the constitution provides, "no person shall be deprived of his life or personal liberty except according to procedure established by law".

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

Thus, the Indian Constitution has now two-fold provision:

- 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 natural environment.

Sixth Schedule

In Tripura, special provisions have been extended to the Tribal Areas under the 6th Schedule **[Articles 244(2) and 275(1)]** in addition to basic fundamental rights. Besides, the Tripura Panchayats (Second Amendment) Act, 1998 of Principal Act, 1993 includes ADC in Government functioning. The Sixth Schedule is entirely focused at protection of tribal areas and interests by allowing self-governance through constitutional institutions at the district or

regional level. These institutions are entrusted with the twin task of protecting tribal cultures and customs and undertaking development tasks.

The Sixth Schedule of the Constitution applies to a large part of the state, which is under the jurisdiction of the “Tripura Tribal Areas Autonomous District Council” (TTAADC). Out of the total geographical area of 10,491 sq. km, 7,133 sq. km (about 68%) is under the TTAADC.

Constitutional provisions in regard to social safeguards are well enshrined in the preamble such as JUSTICE, social, economic and political; LIBERTY of thought, expression, belief, faith and worship; EQUALITY of status and of opportunity; FRATERNITY assuring the dignity of the individual and the unity and integrity of the Nation. Fundamental Rights and Directive Principles guarantee the right to life and liberty. Health, safety and livelihood have been interpreted as part of this larger right. Social safeguards provisions are dealt in detail in different Article such as Article-14, 15 17, 23, 24, 25, 46, 330, 332 etc. POWERGRID have implemented the said constitutional provision in true spirit to fulfill its environmental and social obligations and responsibilities.

3.3 Environmental Provisions

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, TL project may have some adverse effects on natural resources. These impacts can be minimized by careful route selection and siting of S/S. The applicable acts, rules, and relevant policies in the context of the project and its status of compliance are presented in **Table 3.1**.

3.4 Social Provisions

The applicable acts, rules, and relevant policies in the context of the project and its status of compliance are presented in **Table 3.2**.

3.5 World Bank Operation Policy

When WB provide governments with financing to invest in projects such as building a road, connecting people to electricity, or treating waste water, WB aim to ensure that the people and the environment are protected from potential adverse impacts. WB 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 WB support for investment projects. The mandatory environment and social requirements with respect to WB Operational Policies are presented in **Table 3.3**.

Table 3-1: Environmental Provisions

Sr. No.	Acts, Notification & Policies	Relevance	Applicability to the project	Status of compliance
1.1	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 Govt. of Tripura (GoT) is a mandatory requirement to undertake any new transmission and distribution project of system in the State	Applicable - TL projects are constructed under the ambit of Electricity Act, 2003 following the provisions of Section 67 & 68 of act	Complied with: MoP, GoI approved the NERPSIP Comprehensive scheme for six North Eastern States including Tripura under vide its Office Memorandum dated 1st December 2014.
1.2	Forest (Conservation) Act, 1980	To protect and conserve Forest Areas and Tree Cover. Any TL/ DL traverses forest land, prior clearance is mandatorily required from Ministry of Environment, Forest & Climate Change (MoEFCC), GoI under the Forest (Conservation) Act, 1980. When transmission projects pass through forest land, prior clearance has to be obtained from Ministry of Environment Forest & Climate Change (MoEFCC), GoI under the Forest (Conservation) Act, 1980 before starting any construction activity in designated forest area	Applicable-Since Reserved Forest area of 96.14 ha is involved in TL routes (Rabindranagar Rokhia Line and Rabindranagar Belonia Line) is involved forest clearance under FC Act 1980 is applicable in instant case.	The proposed TL Rokhia - Rabindranagar has obtained Stage-I & Stage-II (final) approval obtained on 28.06.18 & 07.06.19 respectively. The proposed Rabindranagar - Belonia 132 kV D/C line has obtained Stage-I & Stage-II (final) approval obtained on 12.04.19 & 22.06.20 respectively.
	Wild life (Protection) Act, 1972	To protect and conserve the Wildlife and habitation. Any TL/ DL traverses PA, prior clearance is mandatorily required from NBWL GoI under the Wild life (Protection) Act, 1972.	0.3299 Ha Trishna WLS forest is involved in Nidaya S/S, forest clearance under FC Act 1980 and NBWL clearance under WL Protection act 1972 is applicable in instant case.	Stage-I approval obtained on 16.03.20 and Stage-II clearance (conditional) issued on 19.03.2021 from RoMoEFCC, Shillong. National Board for Wildlife (NBWL) permission obtained on 17.12.19.
1.3	Environment (Protection) Act, 1986/Environment Impact Assessment Notification, 2006	TL projects are exempted from of Environment (Protection) Act, 1986 EIA Notification, 2006. However, amendment in the Environment (Protection) Act, 1986 on 7th May' 1992 made it necessary to obtain clearance from MoEFCC for power transmission projects in three districts in the Aravalis (viz., Alwar	Applicable Though some limited compliance measures notified under this EPA, 1986 are to be adhered to relevant rules and regulations under the EPA, 1986	Complied with: Though applicable as it is umbrella legislation, however, as such statutory permission/



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



Sr. No.	Acts, Notification & Policies	Relevance	Applicability to the project	Status of compliance
		in Rajasthan and Gurgaon & Nuh- Mewat in Haryana).	applicable to the operations of TSECL	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 equipment 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 SPCB.	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 TSPCB	Batteries will be used during operational phase. Hence, the issue of proper handling and disposal of batteries as per the rules is not an issue during the construction phase.
(iii)	Hazardous Wastes (Management, Handling and Trans boundary Movement) Rules, 2016	Provides for environmentally sound management of hazardous wastes so as to ensure no adverse effects that may result from such waste. Used transformer oil is categorized as hazardous waste which has to be disposed of only through auctioned/sold to registered recyclers only and file annual return on prescribed form to the concerned SPCB.	Applicable Requires proper handling, storage and disposed only to authorized disposal facility (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 TSECL submit the desired return in prescribed form to concerned TSPCB at the time of disposal of used oil	Generally Used oil is generated after 10-15 years of operation of transformers and therefore, the handling and disposal of hazardous transformer oil is not an issue at this stage.
(iv)	E-waste (Management and Handling) Rules, 2016	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 center(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 centers/ registered dismantler/ recyclers/ return to producers. TSECL, being a bulk consumer of electrical and electronics equipment maintain record as per form-2 for scrutiny by TSPCB	E-waste disposal is not an issue during construction phase.
1.4	Biological Diversity Act,2002	Provide for conservation of the biological diversity, sustainable use of its components and fair and equitable sharing of the benefits arising out of use of the biological resources, knowledge and for matters connected therewith.	Not applicable as the project does not involve any biosphere reserves	



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



Sr. No.	Acts, Notification & Policies	Relevance	Applicability to the project	Status of compliance
1.5	Ancient Monuments & Archaeological Sites and Remains Act, 1958	The act has been enacted to prevent the damage to the archaeological sites identified by Archaeological Survey of India.	Not Applicable. All such areas have been completely avoided.	Not Required
1.6	Tree Extraction vide notification No.F.7 (44)/For/FP-200 I/PT11/29.042 dated 17.01.2002	This 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 how is the transit of timber originating from non-recorded forest areas regulated and how and why timber can be confiscated to Government. TSECL follows all provisions of this rule for felling of trees from nonforest land.	Applicable The route has been selected in such a way that it has minimum obstructions under its alignment & majority of the trees have been trimmed. Only such trees are felled which create hindrance to electrical safety after due compliance of applicable tree felling provisions. It was tried to retain the trees on site. Only grass growth on the S/S plot was cleared during land development prior to construction.	NOC is obtained under the provision. There is no provision of compensatory plantation in non-forest area in lieu of tree cutting in Tripura State.
1.12	The Scheduled Tribes & Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006	When transmission projects pass through forest land, NOC from DC has to be obtained before Stage-II approval in compliance to FRA as per MoEFCC circular dated 5th February 2013	Applicable as there is forest land involvement	Obtained

Table 3-2: Social Provisions

Sr. No.	Acts, Notification & Policies	Relevance	Applicability to the project	Status of compliance
1.1	Sixth schedule of the constitution	Special provisions also have been extended to the Tribal Areas under the 6th Schedule [Articles 244(2) and 275(1) of the constitution] in addition to basic fundamental rights. The Sixth Schedule provides for administration of tribal areas as autonomous entities. The administration of an autonomous district is vested in a District Council and of an autonomous region, in a Regional Council. These Councils are endowed with legislative, judicial, executive and financial powers.	Not applicable as the subproject district doesn't fall under six schedule areas.	Not Required
1.2	The Right to fair compensation and transparency in land acquisition,	Act ensures appropriate identification of the affected families/ households, fair compensation and rehabilitation of titleholders and nontitle holders. Also, as per Section 112 of the LARR Act, 2013, Tripura State has	Not Applicable as all the land parcels required for construction of S/S are already in the possession of TSECL. Thus, securing of fresh land was not	Not Required



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



Sr. No.	Acts, Notification & Policies	Relevance	Applicability to the project	Status of compliance
	rehabilitation & resettlement act, 2013	already notified LARR Rules, 2015	necessitated.	
1.3	Right of Way (RoW) & compensation	In case of agricultural or private land, the provision of section- 67 and or section-68 (5 & 6) of electricity act, 2003 and section-10 of the Indian Telegraph act, 1885 are followed for assessment and payment of composition towards such damages.	Applicable. TSECL has been vested with the powers of Telegraph Authority under Section - 164 of the Electricity Act. Moreover, all damages due to its activity are 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
1.4	The Right to Information Act, 2005	The Act provides for setting out the practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, the constitution of a Central Information Commission and State Information Commissions and for matters connected therewith or incidental thereto	Applicable. Designated authorities to be in place.	The required mechanism to comply with the provisions of the act including designated officers at various levels are already in place in TSECL
1.5	Indian Treasure Trove Act, 1878 as amended in 1949	The Act provides for procedures to be followed in case of finding of any treasure, archaeological artifacts etc. during excavation.	Not Applicable. No such instances reported in instant case till date.	Moreover, very less possibilities of such discoveries because of limited and shallow excavations

Table 3-3: World Bank Operational Policy

Sr. No.	Acts, Notification & Policies	Relevance	Applicability to the project	Status of compliance
2.1	OP 4.01: Environmental Assessment	To ensure the environmental and social and sustainability of investment projects. Support integration of environmental and social aspects of projects in the decision-making process.	E & S aspects of the project have already been integrated into the management procedures based on comprehensive environment assessment undertaken by IA during	Complied with: E & S aspects of the project have already been integrated into management procedures



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



Sr. No.	Acts, Notification & Policies	Relevance	Applicability to the project	Status of compliance
			2015.	based on comprehensive environment assessment undertaken by IA during 2015
2.2	OP- 4.04: Natural Habitats	To promote sustainable development by supporting the protection, conservation, maintenance, and rehabilitation of natural habitats and their functions	The present project involves natural habitats such as biodiversity area, forest area, protected area etc. Hence Applicable	Required
2.3	OP-4.11: Physical Cultural Resources (PCR)	To preserve PCR and in avoiding their destruction or damage. PCR includes resources of archeological, paleontological, historical, architectural, and religious (including graveyards and burial sites), aesthetic, or other cultural significance.	The present project does not encroach upon any such resources	Not Required
2.4	OP-4.36: Forests	To realize the potential of forests to reduce poverty in a sustainable manner, integrate forests effectively into sustainable economic development, and protect the vital local and global environmental services and values of forests	Applicable-Since Reserved Forest area of 96.14 ha is involved in TL routes (Rabindranagar Rokhia Line and Rabindranagar Belonia Line) is involved forest clearance under FC Act 1980 is applicable in instant case. 0.3299 Ha Trishna WLS forest is involved in Nidaya S/S, forest clearance under FC Act 1980 and NBWL clearance under WL Protection act 1972 is applicable in instant case. Hence OP 4.36 is applicable in instant case	Complied with: To minimize adverse impact on forests, management measure already provided in ESPPF of June, 2015. The proposed TL Rokhia - Rabindranagar 132 kV D/C line is having 21.1896 Ha of RF area and Stage-I & Stage- II (final) approval obtained on 28.06.18 & 07.06.19 respectively. The proposed Rabindranagar – Belonia 132 kV D/C line is having 74.9493 RF area and Stage-I & Stage-II (final) approval obtained on 12.04.19 & 22.06.20 respectively. For 33/11kV Nidaya S/S Stage-I approval obtained on 16.03.20 and Stage-II clearance (conditional) issued on 19.03.2021



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



Sr. No.	Acts, Notification & Policies	Relevance	Applicability to the project	Status of compliance
				from RoMoEFCC, Shillong. NBWL permission obtained on 17.12.19.
2.5	WB EHS Guidelines for Electric power T&D	The Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry specific examples of Good International Industry Practice. The EHS Guidelines contains the performance levels & measures that are generally considered to be achievable in new facilities by existing technology at reasonable costs.	Applicable provisions of EHS guidelines have been followed during the implementation of the project	Complied with: EHS guidelines are being followed during project implementation.
2.6	OP 4.12 – Involuntary Resettlement	This policy covers direct economic and social impacts both resulting from Bank-assisted investment projects and are caused by the involuntary taking of land. To avoid or minimize involuntary resettlement and, where this is not feasible, assist, displaced persons in improving or at least restoring their livelihoods and standards of living in real terms relative to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher.	Not applicable as there is no involuntary acquisition invoked for securing land for proposed S/S.	Not Required.
2.7	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.	Explicit consent from ADC and the Village Councils is required in the case of acquisition of lands which is not applicable in the project.	Complied with: NoC of from village councils (Head man, Gram Burrah) and land owners being obtained for community forest land/ADC area wherever applicable.
2.8	Managing the risks of adverse impacts on communities from temporary project induced labor influx	Provides guidance on identifying, assessing and managing the risks of adverse social and environmental impacts that are associated with the temporary influx of labor resulting from Bank supported projects. provide concrete guidance on how to approach temporary labor influx within the environmental and social assessment process.	Applicable.	Complied. Guiding principles and recommendations are considered during labour appointment through construction contractor

3.6 Necessary Statutory Permission/Licenses/NOC Obtained in the Instant Case

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 to obtained by IA or contractor are:

- Under the provisions of Section 68(1) of Electricity Act, 2003, prior approval GoT is a mandatory requirement to undertake any new transmission project in the State. As a part of permission / approval, GoI approved the NERPSIP comprehensive scheme for six North Eastern States including Tripura under vide its Office Memorandum dated 1st December 2014.
- All the contractors have obtained and operating the construction work with valid labor license as per provision under section – 12(1) of the Contract Labor (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 Labor & Employment. The same are discussed and presented in relevant sections of subsequent chapters.
- All the contractors have obtained requisite insurance policy as per provisions of Employee Compensation Act, 1923 for its employed workforce. The same are discussed and presented in relevant sections of subsequent chapters.
- Since the tower locations are coming under various villages of 4 districts NoC from concerned land owner/ Headman /Village Council are being obtained as per the progress of work. The same are referred and presented in relevant sections of subsequent chapters.
- The proposed TL Rokhia - Rabindranagar 132 kV D/C line is having 21.1896 Ha of RF area and Stage-I & Stage- II (final) approval obtained on 28.06.18 & 07.06.19 respectively. The proposed Rabindranagar – Belonia 132 kV D/C line is having 74.9493 RF area and Stage-I & Stage-II (final) approval obtained on 12.04.19 & 22.06.20 respectively. **Please Refer Annexure 6 for Forest clearance obtained.**
- Amongst all 15 S/S, 33/11kV Nidaya S/S plot is involved 0.3299 Ha of Forest of Trishna WLS area. Accordingly, Stage-I approval obtained on 16.03.20 and Stage-II clearance (conditional) issued on 19.03.2021 from RoMoEFCC, Shillong. National Board for Wildlife (NBWL) permission obtained on 17.12.19. **Please Refer Annexure 6 for Forest and NBWL clearance obtained.**
- It is mandatory to do the compensatory afforestation as per the forest clearances obtained for the project. As per specific conditions in Forest Clearance obtained from MoEFCC, the compensatory afforestation is to be carried out on double the degraded forest area as suggested and identified by forest department. POWERGRID has paid the requisite cost as per prescribed law for the compensatory afforestation (CAMPA) to Forest department. PPOWERGRID has limited role upto compensation payments. Further to this Forest Department is being implementing the CAMPA.
- The project has obtained required clearances from Railway Department, Department of Telecommunications, and the Ministry of Aviation. **Please Refer Annexure 6.**

4. MAJOR FEATURES OF FINAL ROUTE & ENVIRONMENT IMPACT

4.1 Introduction

Environmental impact of T&D line projects is 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, TSECL & IA at the system planning stage itself try to avoid ecological sensitive areas like forest. Wherever such infringements are substantial, different alternative options are considered to select most viable route alignment. For further optimization of route modern survey techniques/tools like GIS, GPS aerial photography is also applied. Introduction of GIS and GPS in route selection result in access to updated/latest information, through satellite images and further optimization of route having minimal environmental impact. Moreover, availability of various details, constraints like topographical and geotechnical details, forest and environmental details etc. help in planning the effective mitigate measures including engineering variations depending upon the site situation/location.

At the system planning stage itself one of the factors that govern the evolution of system is the possible infringement with the forest. Wherever such infringements are substantial, different alternative options are considered. The route/ site selection criteria followed is detailed below:

While identifying the transmission system, preliminary route selection is done by TSECL based on the Survey of India Topo sheets, Forest Atlas (Govt. of India's Publication) and Google Maps etc. During route alignment all possible efforts are made to avoid the forest area involvement completely or to keep it to the barest minimum, whenever it becomes unavoidable due to the geography of terrain or heavy cost involved in avoiding it. Presence of important/protected natural habitats (IUCN category I - IV) is verified by superimposing the proposed alternative alignment on the Integrated Biodiversity Assessment Tool (IBAT) map. 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:

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

In order to achieve this, TSECL has undertaken route selection for individual T&D lines in close consultation with representatives of concerned Forest Department and the Department of Revenue. Although under the law, TSECL has 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.
- 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 NP, WLS, ESZ, 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 TLs were studied with the help of Govt. published data like Forest atlas, SoI and Google Maps etc. to arrive at 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 TL shall be most economical from the point of view of construction and maintenance.
- ii. Routing of TL 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 is 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 query 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

4.2.1 Evaluation of Alternative Route Alignment for Proposed Transmission Lines

In the instant project, criteria for route selection as mentioned above, has been duly adhered to. The proposed Rokhia - Rabindranagar 132 kV D/C line and Rabindranagar – Belonia 132 kV D/C line has been selected from three (3) different alignments as described in IEAR. Both the TLs earlier were passing through rich vegetation and forest cover. Three Alignments alternatives were studied with the help Google Maps and walkover survey to arrive at most optimum route for detailed survey. This was then verified on web-based IBAT Database. The images are Provided in **Annexure 5**. The final routes were considered for the further detailed surveys and primary data collection. Subsequently, the proposed TL routes were considered for detail route survey by Contractor Agency (after awarding of contract) and Environmental Consultant. During detailed survey minor alterations as well as geometrical corrections of the route have been carried out which seems inevitable due to actual ground conditions with prime objective of avoiding dense forest/private plantation areas, 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. Therefore, minor change in scope of work has been observed with respect to IEAR scope which resulted due to the best effort of TSECL in effectively integrating safeguard and engineering measures in successful minimization of impact on forest and environment. The proposed **132 KV D/C Rabindranagar Belonia TL** was earlier passing through Trishna WLS. After detailed route analysis, and meticulous study final alignment is now traversing at 1.2 km from Trishna WLS boundary. **Please refer Annexure 3.**

4.2.2 Evaluation of Alternative Route Alignment for Proposed Distribution Lines

The three alternative alignment analysis is carried out for the proposed DLs connect 2 S/S which are 33kv from 33/11 KV Barkathal (New) - 33/11 KV Hezamara (Existing) S/s, 33KV Line from 33/11 KV Barkathal (NEW) - 132/33KV Mohanpur S/s, 33 KV Line from 33/11KV Golaghati-132/33 KV Gakulnagar (New) S/s and 33 KV Line from 33/11 KV Durganagar (New)-33/11KV Madhupur (Existing) S/s (**Annexure 5**).

Subsequently, the proposed DL routes were considered for detail survey by Contractor Agency and Environmental consultant (after awarding of contract). During detailed survey minor alterations as well as geometrical corrections of the route have been carried out which seems inevitable due to actual ground conditions with prime objective of avoiding dense forest/private plantation areas, settlements, CPR, and also considering the technical feasibility of the route from operation and maintenance point of view in consultation with the local prevalent in the project area. Therefore, minor change in scope of work has been observed with respect to IEAR scope which resulted due to the best effort of IA/TSECL in effectively integrating safeguard and engineering measures in successful minimization of environmental and social impacts.

4.2.3 Evaluation of Location for Proposed Substations

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. It may be noted that in the instant case all land parcels for proposed S/S except for 33/11 kV Nidaya S/S, are already in possession with TSECL and no fresh land is required to be acquired and therefore, the said exercise is not required/needed for proposed project.

33/11kV Nidaya S/S plot is located in the area of Forest of Trishna WLS which is diverted for non-forest activity with prior necessary permissions from MoEFCC and NBWL as stated earlier. **Please refer Map in Annexure 4 and NoC Obtained in Annexure 6.** All the precautions are being taken during construction activity as per the EMP and ESPPF and stipulated conditions in the approvals obtained from MoEFCC and NBWL.

4.2.4 Change in Scope of Work w.r.t. IEAR

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 T&D line carried out on field is given in **Table 4.1**.

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

Sr. No.	Details of Power Line / Substation	Change in Length of Power Lines (Km)/ Location of S/S		Reason / Justification for change in scope of work
		As per IEAR	Final Route / Location	
A.	Transmission Line Network			
1	Rokhia - Rabindranagar 132 kV D/C line	24 km	22.122 km	To avoid forest land / Trishna
2	Rabindranagar – Belonia 132 kV D/C line	40km	63.152 km	

Sr. No.	Details of Power Line / Substation	Change in Length of Power Lines (Km) / Location of S/S		Reason / Justification for
3	LILO of 132kV Rokhia- Surjamaninagar line at 132/33 kV Gokulnagar	5 km	2.92 km	WLS habitation and structures
4	LILO of 132kV Agartala-Dhalabil line at 132/33kV Mohanpur S/S	2 km	1.224 km	
B. Distribution Line Network				
1	33 kV line from 33/11 kV Khowai (New) – 132/33 kV Dhalabil (Existing) S/S	8 km	6.643 km	To avoid forest land / habitation and structures
2	33 kV line from 33/11 kV Khowai (New)- 33/11 kV Ampura (existing) S/S	16 km	13.192 km	
3	33 kV line from 33/11 kV Simna (New)- 33/11 kV Hezamara (existing) S/S	22 km	11.271 km	
4	33 kV line from 33/11 kV Simna (New)- 33/11 Tapping of Mohanpur – Hezamara line (existing)	16 km	14.523 km	
5	33 kV line from 33/11 kV Barkathal (New)- 33/11 kV Hezamara (existing) S/S	12 km	11.670 km	
6	33 kV line from 33/11 kV Barkathal (New)- 132/33 kV Mohanpur (New) S/S	14 km	9.442 km	
7	33 Kv Line Bamutia (New) -Durjoynagar Existing S/S	14 km	10.828 km	
8	33 kV line from 33/11 kV Bamutia (New)- 33/11 kV Lembucherra (New) S/S	6 km	8.121 km	
9	33 kV line from 33/11 kV Lembucherra (New) - LILO of 33kV Agartala-Mohanpur Line	4 km	1.051 km	
10	33 kV line from 33/11 kV Champaknagar (New)- 132/33kV Jirania (existing) S/S	8 km	5.957 km	
11	33 kV line from 33/11 kV Ranir Bazar (New) - LILO of 33kV Khayerpur- Jirania line	8 km	0.809 km	
12	33 Kv Line From ADC Head Qtr (New) - Jirania S/S	5 km	3.546	
13	33 kV line from 33/11 kV ADC Head Qtr (New) - 33/11kV Champaknagar (New)-	9 km	10.756 km	
14	33 kV line from 33/11 kV Munikiakami (New) - LILO of 33kV Ambasa- Teliamura line in from Ambassa	2 km	4.17 km	
15	33 kV line from 33/11 kV Munikiakami (New) - LILO of 33kV Ambasa- Teliamura line out to Teliamura		2.461 km	
16	33 kV line from 33/11 kV Golaghati- 132/33kV Gakulnagar (New) S/S	15 km	13.205 km	
17	33 kV line from 33/11 kV Golaghati (New) - 33/11 kV Takarjala (Existing) S/S	15 km	10.657 km	
18	33 kV line from 33/11 kV Durganagar (New) - 132/33 kV Gakulnagar(New) S/S	15 km	7.023 km	
19	33 kV line from 33/11 kV Durganagar (New)- 33/11 kV Madhupur (Existing) S/S	14 km	10.618 km	
20	33 kV line from 33/11 kV Nidya (New) - 33/11kV Kathalia (Existing) S/S	12 km	9.488 km	
21	33 kV line from 33/11 kV Nidya (New) - 33/11 kV Rajnagar (Existing) S/S	20 km	17.339 km	
22	33 kV line from 33/11 kV Nalchar (New) - 33/11 kV Melaghar (Existing) S/S	10 km	6.801 km	
23	33 kV line from 33/11 kV Nalchar (New) - 33/11 kV Bishramganj (Existing) S/S	10 km	9.144 km	
24	33 kV line from 33/11 kV Gabardi (New) - LILO of 33kV Surjamani nagar- Takarjala line	4 km	0.807 km	
C. Substations				
1.	Establishment 2 x 50 MVA, 132/33 kV new S/S at Rabindranagar Sonamura town	Unchanged.		TSECL Own Land
2.	Establishment of 2 x 50 MVA, 132/33 kV new S/S at Gokulnagar	Unchanged.		TSECL Own Land

Sr. No.	Details of Power Line / Substation	Change in Length of Power Lines (Km)/ Location of S/S	Reason / Justification for
3.	Establishment of 2 x 31.5 MVA, 132/33 kV new S/S at Mohanpur	Unchanged.	TSECL Own Land
4.	Establishment of 2 x7.5 MVA, 33/11 kV new S/S at Khowai	Unchanged.	TSECL Own Land
5.	Establishment of 2x5 MVA, 33/11 kV new S/S at Simna	Unchanged.	TSECL Own Land
6.	Establishment of 2x5 MVA, 33/11 kV new S/S at Barkathal	Unchanged.	TSECL Own Land
7.	Establishment of 2x5 MVA, 33/11 kV new S/S at Lembucherra	Unchanged.	TSECL Own Land
8.	Establishment of 2x5 MVA, 33/11 kV new S/S at Champaknagar	Unchanged.	TSECL Own Land
9.	Establishment of 2x7.5 MVA, 33/11 kV new S/S at Ranir Bazar	Unchanged.	TSECL Own Land
10.	Establishment of 2x5 MVA, 33/11 new kV S/S at Munikiakami	Unchanged.	TSECL Own Land
11.	Establishment of 2x5 MVA, 33/11 new kV S/S at Sekerkote	New Government of Health Department Land Handed Over to TSECL	
12.	Establishment of 2x5 MVA, 33/11kV new S/S at Durganagar	Unchanged.	TSECL Own Land
13.	Establishment of 2x5 MVA, 33/11kV new S/S at Nidya	Trishna WLS land diverted for non-forest activity with prior permission from MOEFCC and NBWL	
14.	Establishment of 2x5 MVA, 33/11kV new S/S at Nalchar	Unchanged.	TSECL Own Land
15.	Establishment of 2x5 MVA, 33/11kV new S/S at Gabardi	Unchanged.	TSECL Own Land

4.3 Features and Satellite Images of T&D Lines

4.3.1 Transmission Lines (TLs)

4.3.1.1 Feature Details of Final Route Alignment of Rokhia – Rabindra Nagar 132 kV D/C TL

Rokhia – Rabindra Nagar 132 kV D/C TL covers 22.122 km distance. Total 89 transmission tower (TT) are proposed in this TL. The TL is finalized after detailed analysis considering the environmental features like forest / PA / river etc. The feature survey along the TL is carried out considering 27 mt ROW area i.e., 13.5 mt on either side from center line of the corridor. Geomorphological studies observed that the geology of project area is majorly having rock structure of shallow younger alluvial, less dissected denudational hills and moderately dissected structurally hills. Rock type comprises conglomerate of sandstone and pebble bed.

Major part of the TL passes through plain paddy / agricultural fields (37.26%) and Rubber Plantation with Open Forest (22.86%). The selected line does not cross any National Highway, Railway and Power line. Other than agriculture, this line traverses through fallow land, metal roads, tree crops and groves, pond / lake, fallow lands, hill forest etc. The TL routes involve RF land of about 21.1896 Ha area which necessitated forest clearance under Forest (Conservation) Act, 1980. Stage II approval is obtained as on 07th June 2019. **Please Refer Annexure 6.** Besides all protected areas like NP, WLS and designated elephant passage have been completely avoided. The landslide study during electric line feature survey and GIS mapping, reveals that the project region is vulnerable to landslide from moderate to high. Though the project district in general is highly vulnerable to flood, the project TL is passing through the area of very less or nil to flood vulnerability. The type of hazard for the project site is recorded as earthquake, windstorm and landslide.

As per detailed surveys and GIS imagery data ROW is crossing water bodies such as river, pond, drain & nala. TL is crossing Gomati River between TT 28/0 and 29/0. However, No TT is planned in water body. TT constructed well above the ground level at required elevation will help to keep the people and animals away from EMF contact. It will also prevent the structure getting damaged during flood situation. 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.

GIS route survey map and TL feature details are provided in **Annexure A1 & B1**. The major feature details are depicted in **Table 4.2**. The Google earth image of TL is provided in the **Map 4.1**.

Table 4-2: Rokhia - Rabindra Nagar 132 kV D/C line

Electric Line Feature Details - 27m ROW

Feature Class Details	Area in Ha.	% of Area
Agriculture land	21.85	37.26%
Barren/Rocky	1.93	3.28%
Bricks Road	0.42	0.72%
Drain/Nala	0.10	0.17%
Electric Substation	0.49	0.83%
Fallow Land	1.88	3.21%
Hill Open Forest	2.75	4.70%
Metal Road	1.28	2.18%
Mud Road	0.22	0.37%
Pond/Lake	2.29	3.90%
River	0.24	0.40%
Rubber Plantation with Open Forest	13.40	22.86%
Tree Crops and Groves	3.57	6.08%
Tree Plantation	4.50	7.68%
Vacant Land	3.45	5.89%
Wet Land	0.27	0.46%
Total	58.64 Ha	100%

Photographs of the Rabindra Nagar S/S site location are given below:



TL is crossing Gomati River between TT 28/0 and 29/0



Construction of Substation at Rabindra Nagar S/S Entry Road (Left) and Tower Erection (Right)



Transformer Erection (Left) and Cable Trench Construction (Right) in Rabindra Nagar S/S



Substation Control Room Building Construction



Transformer Erection



Foundation Work and Erection of Tower at Rabindra Nagar S/S

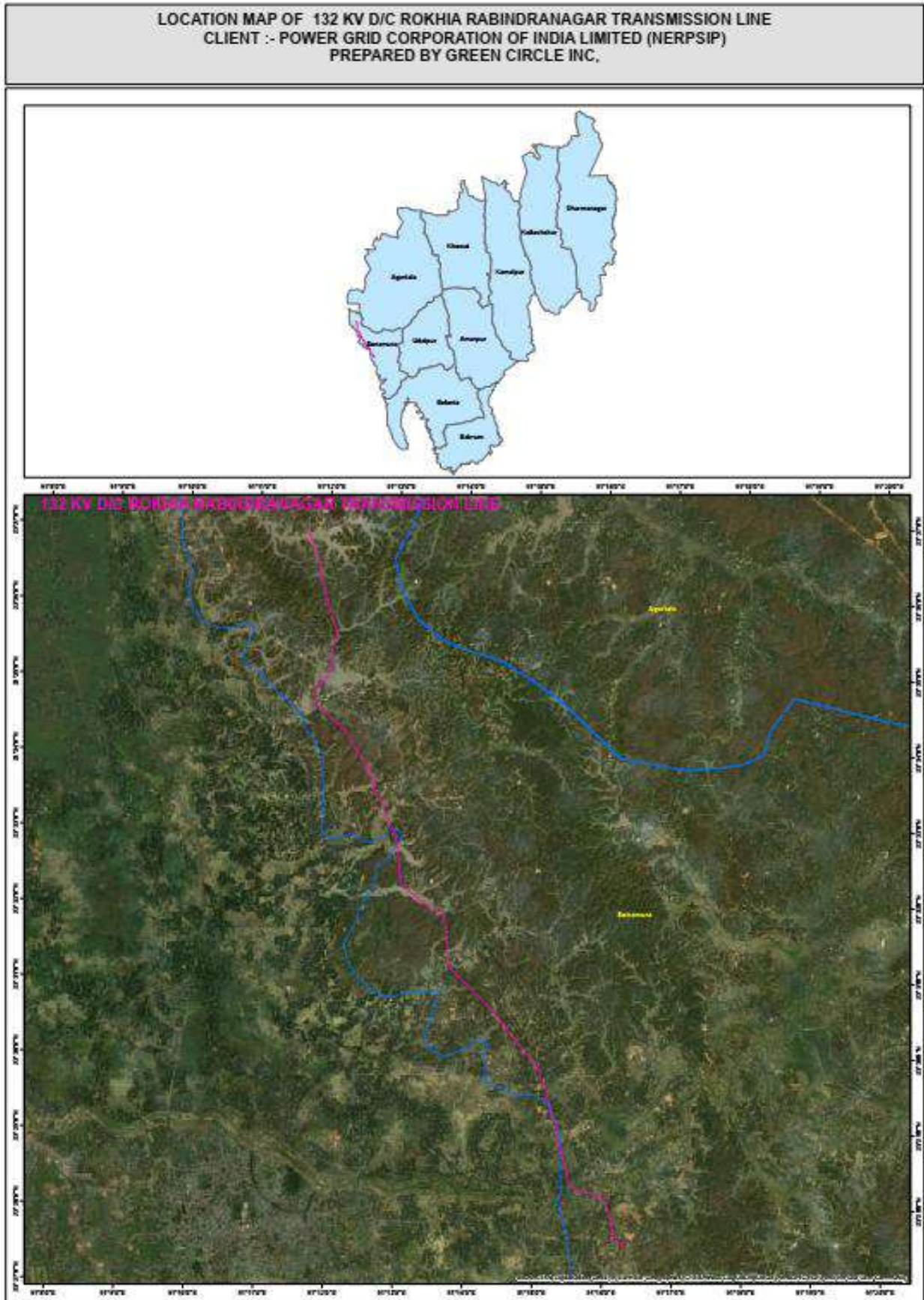


Pole Location from Rabindra Nagar S/S



Agriculture land/Transmission route

Map 4-1: Google Earth Alignment Map for 132 kV D/C Rokhia - Rabindra Nagar TL



*Blue Color: State line crossing

4.3.1.2 Feature Details of Final Route Alignment of Rabindra Nagar to Belonia 132 KV D/C TL

Rabindra Nagar - Belonia 132 kV D/C TL covers 63.152 km distance. Total 244 TT are proposed in this TL. The TL is finalized after detailed analysis considering the environmental features like forest / PA / river etc. The feature survey along the TL is carried out considering 27 mt ROW i.e., 13.5 mt on either side from center line of the corridor. Geomorphological studies observed that the geology of project area is majorly having rock structure of shallow younger alluvial, less dissected denudational hills and moderately dissected structurally. Rock type is recorded as conglomerate of sandstone and pebble bed.

Major part of the TL passes through rubber plantations/orchards (42.72%) and agricultural area (28.89%). The selected line does not cross any National Highway and Power line. Other than agriculture, this line traverses through fallow land, metal roads, tree crops and groves, pond / lake, fallow lands, hill forest etc. The TL crosses railway line and NOC from Railway Department is obtained. The TL routes involve RF land of about 74.95 Ha area which would necessitate forest clearance under Forest (Conservation) Act, 1980. Stage II approval is obtained as on 22nd June 2020. **Please refer Annexure 6.** Besides all protected areas like NP, WLS and designated elephant passage have been completely avoided. The landslide study reveals that the project region is vulnerable to landslide from moderate to high. The project area is very less or nil to flood vulnerability. The type of hazard is recorded as earthquake, windstorm and moderate landslide and flood.

As per detailed surveys and GIS imagery data ROW crossing water bodies such as river, pond, drain & nala. TT No 47, 48, 49 are coming near water body (pond). TT constructed well above the ground level at required elevation will help to keep the people and animals away from EMF contact. It will also prevent the structure getting damaged during flood situation. 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. However, at Belonia 132 kV S/S strengthening of 115mt approach road is required.

GIS route survey map and TL feature details are provided in **Annexure A2 & B2**. The major feature details are depicted in **Table 4.3**. The Google earth image of TL is provided in the **Map 4.2**.

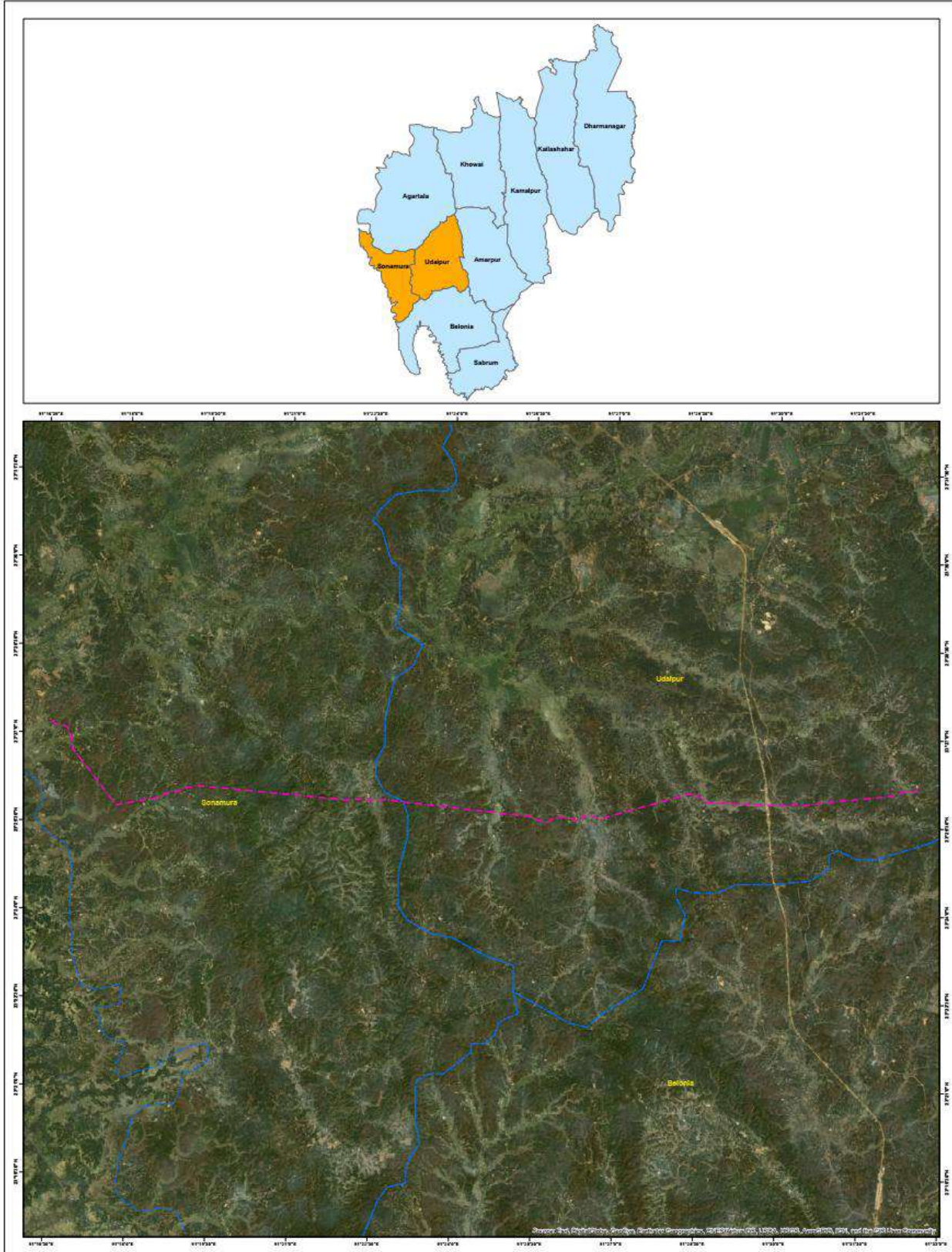
Table 4-3: Rabindra Nagar - Belonia 132 kV D/C line

Electric Line Feature Details-27m ROW

Feature Class Details	Area in Ha.	% of Area
Agriculture Land	23.01	28.89%
Barren/Rocky Waste Land	3.75	4.72%
Brick Road	0.63	0.79%
Drain/Nala	0.29	0.36%
Fallow Land	1.98	2.49%
Gullied Ravinous	1.13	1.42%
Hilly Dense Forest	4.61	5.79%
Metal Road	0.27	0.33%
Mud Road	0.23	0.29%
Open Forest	2.62	3.29%
Pond/Lake	2.04	2.56%
Railway	0.46	0.58%
River	0.21	0.27%
Rubber Plantation/Orchards	34.01	42.72%
Stream	0.31	0.39%
Tree Crops and Groves	2.40	3.02%
Vacant Land	0.87	1.09%
Waste Land	0.80	1.01%
Total	79.62 Ha	100%

Map 4-2: Google Earth Alignment Map for Rabindra Nagar-Belonia 132 kV D/C TL

LOCATION MAP OF RABINDRA NAGAR TO BELONIA 132 KV D/C TRANSMISSION LINE
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



*Blue Color Indicate: State/National line crossing

4.3.1.3 Feature Details of Final Route of LILO of 132kV Rokhia Surjamani Nagar line at 132/33 kV Gokul Nagar S/S

Rokhia – Surjamani Nagar 132 /33 kV line covers 2.92 km distance. Total 16 TT are proposed in this TL. The TL is finalized after detailed analysis considering the environmental features like forest / PA / river etc. The feature survey along the TL is carried out considering 27 mt ROW i.e., 13.5 mt on either side of the center line of corridor. Geomorphological studies observed that the geology of project area is majorly having rock structure of shallow younger alluvial and less dissected denudational hills. Rock type is comprising of shaly sandstone.

Major part of the TL passes through rubber plantations/orchards (43.53%) and agricultural area (17%). The selected line does not cross any National Highway, Railway and Power line. Other than agriculture, this line traverses majorly through Barren Rocky with Scrub Land followed by fallow land, metal roads, tree crops and groves, pond / lake, fallow lands. The TL routes do not involve forest land which do not necessitate forest clearance under Forest (Conservation) Act, 1980. Besides all protected areas like NP, WLS and designated wildlife / elephant passage have been completely avoided. The project area is very less or nil to landslide and flood vulnerability. The type of hazard is recorded as earthquake and windstorm.

As per detailed surveys and GIS imagery data, TL ROW crosses water bodies such as pond, drain & nala. No TT is planned in water body. TT constructed well above the ground level at required elevation will help to keep the people and animals away from EMF contact. It will also prevent the structure getting damaged during flood situation. 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.

GIS route survey map and TL feature details are provided in **Annexure A3 & B3**. The major feature details are depicted in **Table 4.4**. The Google earth image of TL is provided in the **Map 4.3**.

Table 4-4: Rokhia – Surjamani Nagar 132 / 33 kV line

Electric Line Feature Details-27m ROW

Feature Class Details	Area In Ha.	% of Area
Agriculture Land	1.56	17.31%
Barren Rocky Waste land	1.48	16.35%
Bricks Road	0.03	0.38%
drain/Nala	0.01	0.06%
Electric Substation	1.35	15.01%
Fallow Land	0.23	2.51%
Metal Road	0.06	0.63%
Mud Road	0.02	0.23%
Pond/Lake	0.14	1.51%
Rubber Plantation	3.93	43.53%
Tree Crops and Groves	0.22	2.48%
Total	9.02 Ha	100

Photographs of the Gokulnagar S/S site location are given below:



Gokulnagar S/S Location



Gokul Nagar S/S construction site Tower Erection



Gokul Nagar S/S Construction Site - Control Room Building



Drainage Channel Construction in Progress at Gokul Nagar S/S



Transformer Erection and Oil Collection Pit at Gokul Nagar S/S Site

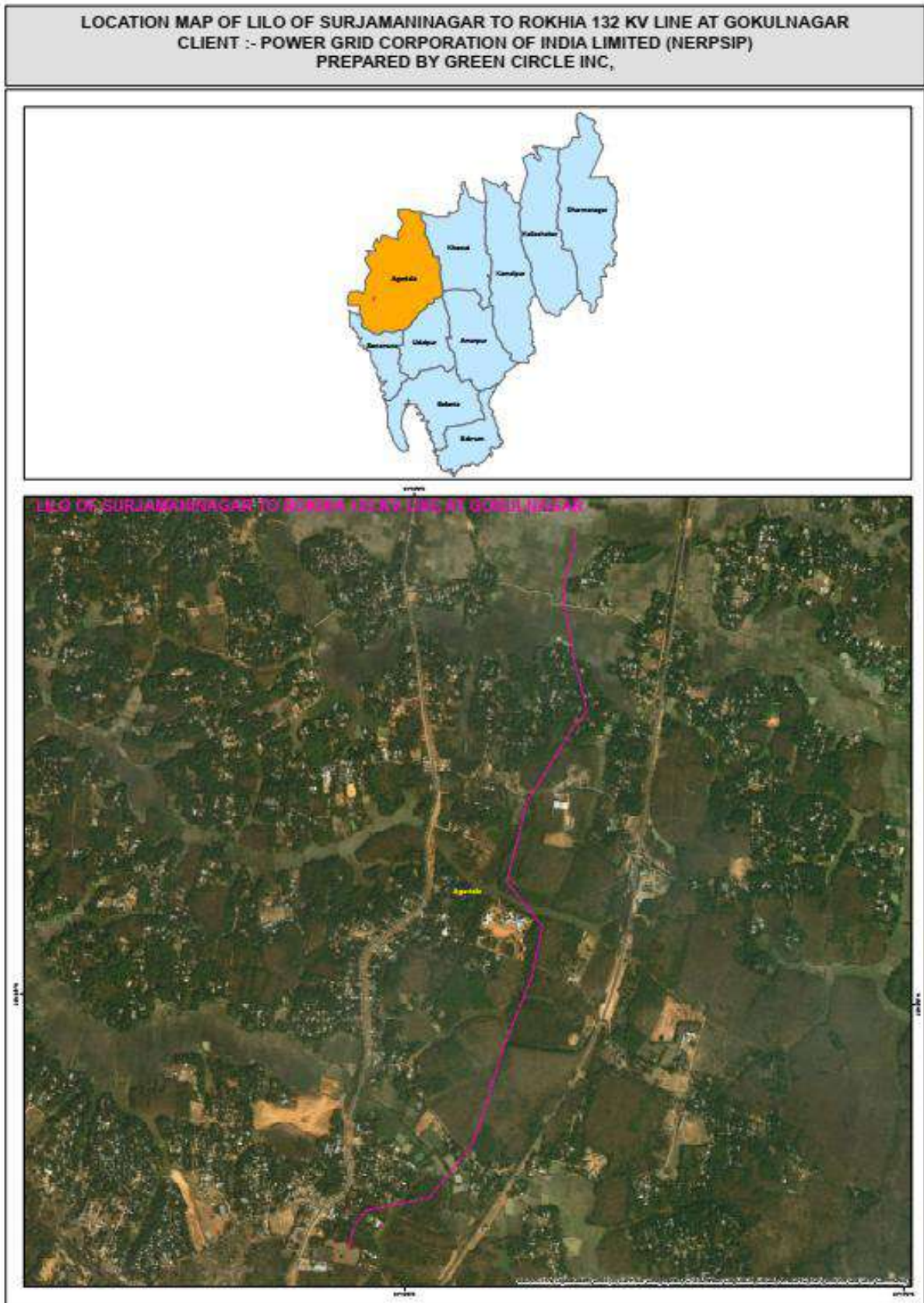


Cable Trench Construction Under Progress (Left) and Retaining Wall (Right) at Gokul Nagar S/S



Gokul Nagar S/S Compound /Boundary Wall

Map 4-3: LILO of 132 kV Surjamani Nagar to Rokhia 132/33 KV line at Gokulnagar S/S



*Blue Color Indicate: State/National line crossing

4.3.1.4 Feature Details of Final Route of LILO of 132 kV Agartala (79 Tilla) - Dhalabil (Khowai) line at 132 / 33 kV Mohanpur (Hezamara) S/S

132 kV Agartala (79 Tilla) - Dhalabil line covers 2.92 km distance. Total 10 TT are proposed in this TL. The TL is finalized after detailed analysis considering the environmental features like forest / PA / river etc. The feature survey along the TL is carried out considering 27 mt ROW i.e., 13.5 mt on either side of the center line of corridor. Geomorphological studies observed that the geology of project area is majorly having rock structure of fracture valley, and less dissected denudational hills. The rock type comprises of shaly sandstone.

Major part of the TL passes through rubber plantations/orchards (29%) and agricultural area (54%). The selected line does not cross any National Highway, Railway and Power line. Other than agriculture, this line traverses majorly through waste Land followed by tree crops and groves, pond / lake, fallow lands. The TL routes do not involve forest land which do not necessitate forest clearance under Forest (Conservation) Act, 1980. Besides all protected areas like NP, WLS and designated wildlife / elephant passage have been completely avoided. The project area is very less or nil to landslide and flood vulnerability. The type of hazard is recorded as earthquake and windstorm.

As per detailed surveys and GIS imagery data that TL do not cross any water body such as river, pond, drain & nala. No TT is coming in water body. TT constructed well above the ground level at required elevation will help to keep the people and animals away from EMF contact. It will also prevent the structure getting damaged during flood situation. 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. At 132 kV Mohanpur S/S strengthening of 250 mt approach road is required.

GIS route survey map and TL feature details are provided in **Annexure A4 & B4**. The major feature details are depicted in **Table 4.5**. The Google earth image of TL is provided in the **Map 4.4**.

Table 4-5 Agartala-Dhalabil line at 132/33 kV Mohanpur S/S

Electric Line Feature Details- 27m ROW		
Feature Class Details	Area In Ha.	% of Area
Agriculture Land	3.35	53.58%
Electric Substation	0.53	8.48%
Fallow Land	0.18	2.86%
Metal Road	0.07	1.11%
Mud Road	0.01	0.21%
Rubber Plantation/ Orchards	1.81	28.89%
Tree Crops and Groves	0.30	4.86%
Total	6.26 Ha	100%

Photographs of the site location are given below:



Mohanpur Electric S/S construction site



Tower route location

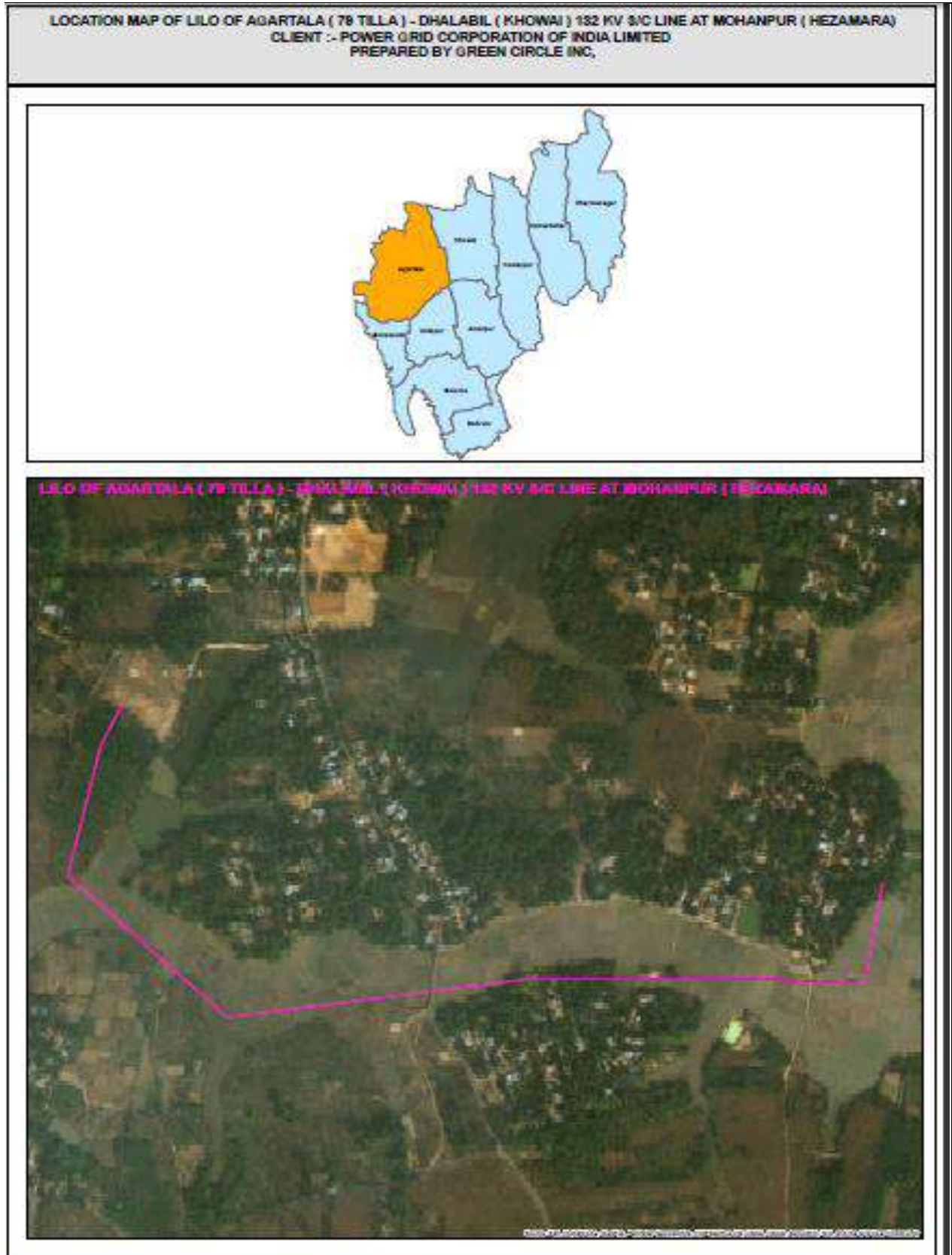


Tree marking



TL Crossing Agriculture land (Left) and TL Crossing Metal Road (Right)

Map 4-4: LILO of 132 kV Agartala - Dhalabil line at 132/33 kV Mohanpur S/S



*Blue Color Indicate: State/National line crossing

4.3.2 Distribution Line

4.3.2.1 Feature Details of Final Route Alignment for 33kV Line from New 33/11 kV Khowai (New) – Dhalabil (Existing) S/S

33kV Line from New 33/11 kV Khowai (New) – Dhalabil (Existing) S/S covers 6.643 km distance. Total 265 EP are proposed in this DL. The DL is finalized after detailed analysis considering the environmental features like forest / PA / river etc. The feature survey along the DL is carried out considering 15 mt ROW i.e., 7.5 mt on either side from center line of the corridor. Geomorphological studies observed that the geology of project area is majorly having rock structure of less dissected denudational hills and moderate valley fill. The Rock type comprises of shaly sandstone and alluvium sand / silt and alternate clay beds.

Major part of the DL passes through barren rocky land (15%), agricultural area (29%) and tree crops and groves (11.83%). The selected line does not cross any National Highway, Railway and Power line. Other than agriculture, this line traverses majorly through waste Land followed by tree crops and groves, pond / lake, fallow lands. The DL routes do not involve forest land which do not necessitate forest clearance under Forest (Conservation) Act, 1980. Besides all protected areas like NP, WLS and designated wildlife / elephant passage have been completely avoided. The landslide study reveals that the project region is moderately to very low vulnerable to landslide. The project area is very less or nil to flood vulnerability where shaly sandstone however is low flood prone where alluvium sand / silt alternating beds are occurred. The type of hazard is recorded as earthquake, windstorm, flood and moderate landslide.

As per detailed surveys and GIS imagery data DL crosses water bodies such as river, pond, drain & nala. No EP is coming in close proximity to water body (stream and pond) however DL is crossing the Khowai river course between poles 22 and 23. All EPs are planned along the existing road side / metal road. As 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. EPs are constructed well above the ground level at required elevation will help to keep the people and animals away from EMF contact. It will also prevent the structure getting damaged during flood situation.

GIS route survey map and DL feature details are provided in **Annexure A5 & B5**. The major feature details are depicted in **Table 4.6**. The Google earth image of DL is provided in the **Map 4.5**.

Table 4-6: 33 kV line form 33/11 kV Khowai (New) - Dhalabil (Existing) S/S

Electric Line Feature Details- 15m ROW		
Feature Class Details	Area In Ha.	% of Area
Agriculture Land	5.39	28.99%
Barren/Rocky	2.76	14.84%
Bricks Road	0.36	1.92%
Drain	0.03	0.18%
Electric Substation	0.97	5.24%
Metal Road	2.04	10.95%
Mud Road	0.21	1.14%
Plantation/Orchards	0.78	4.19%
Pond/Lake	0.38	2.03%
River	0.14	0.76%
River Sand	0.15	0.83%

Feature Class Details	Area In Ha.	% of Area
Stream	0.07	0.38%
Tree Crops and Groves	2.20	11.83%
Vacant Land	2.54	13.64%
Waste Land	0.57	3.07%
Total	18.60 Ha	100%

Photographs of the site location are given below:



DL Section Crossing Khowai River between EP 23 and 22



DL Section – Bridge over Khowai River



DL Section Crossing Metal Road



DL Section Crossing Agriculture Land



Pole Site in Agricultural Land

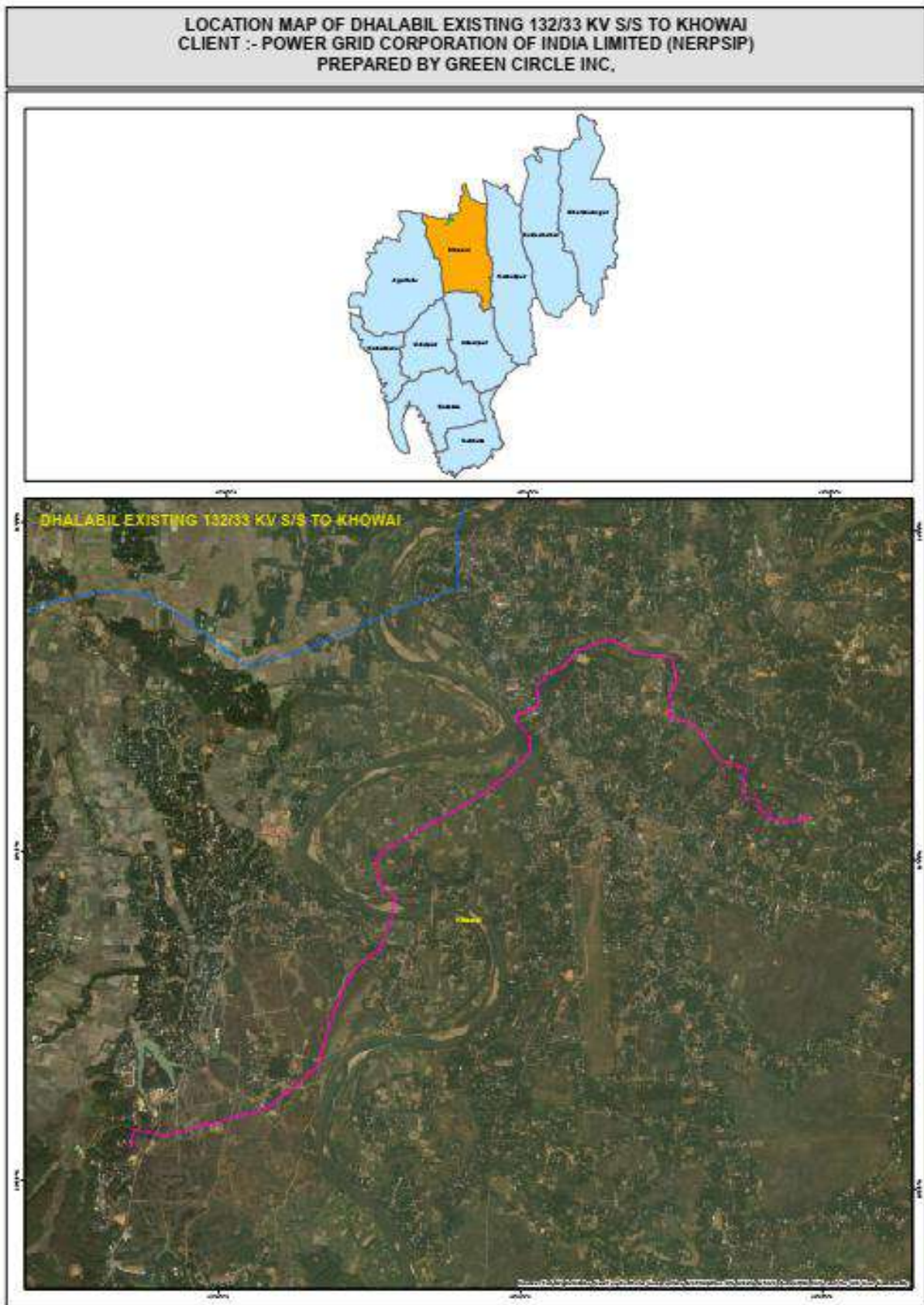


DL Section - Vacant Land



Khowai S/S Construction Site

Map 4-5: Route Alignment for 33kV Line from New 33/11 kV Khowai (New)-Dhalabil (Existing) S/S



*Blue Color Indicate: State/National line crossing

4.3.2.2 Feature Details of Final Route Alignment for 33kV Line from New 33/11 kV Khowai (New) – Ampura (Existing) S/S

33kV Line from New 33/11 kV Khowai (New) – Ampura (Existing) S/S covers 13.192 km distance. Total 532 EP are proposed in this DL. The DL is finalized after detailed analysis considering the environmental features like forest / PA / river etc. The feature survey along the DL is carried out considering 15 mt ROW i.e., 7.5 mt on either side from center line of the corridor. Geomorphological studies observed that the geology of project area is majorly having rock structure of less dissected denudational hills and moderate valley fill. Rock type comprises of shaly sandstone and alluvium sand / silt and alternating clay beds.

Major part of the DL passes through rubber plantation land (15%), agricultural area (23%) and metal road (24.33%). The selected line does not cross any National Highway, Railway and Power line. Other than agriculture, this line traverses majorly through waste Land followed by tree crops and groves, pond / lake, fallow lands. The DL routes do not involve forest land which do not necessitate forest clearance under Forest (Conservation) Act, 1980. Besides all protected areas like NP, WLS and designated wildlife / elephant passage have been completely avoided. The landslide study reveals that the project region is not vulnerable to landslide. The project area is nil to flood vulnerability where shaly sandstone however is low flood prone where alluvium sand / silt alternating beds are occurred. The type of hazard is recorded as windstorm, low flood and low landslide.

As per detailed surveys and GIS imagery data DL crosses water bodies such as river, pond. Eps No.67, 68, 69 127, 132, 133, 181, 182, 183 are coming in close proximity of water pond. DL is crossing the Khowai river course between poles 91 and 92. All EPs are planned along the existing road side / metal road. As 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. EPs are constructed well above the ground level at required elevation will help to keep the people and animals away from EMF contact. It will also prevent the structure getting damaged during flood situation.

GIS route survey map and DL feature details are provided in **Annexure A6 & B6**. The major feature details are depicted in **Table 4.7**. The Google earth image of DL is provided in the **Map 4.6**.

Table 4-7: 33 kV line form 33/11 kV Khowai (New) - Ampura (Existing) S/S

Electric Line Feature Details- 15m ROW		
Feature Class Details	Area In Ha.	% of Area
Agriculture Land	4.75	23.18%
Bricks Road	0.03	0.13%
Electric Substation	0.75	3.68%
Metal Road	4.99	24.33%
Mud Road	0.12	0.56%
Pond/Lake	0.48	2.34%
River	0.09	0.42%
Road Side Fallow land	1.03	5.03%
Rubber Plantation	3.12	15.21%
Tree Crop and Groves	1.29	6.27%
Vacant Land	2.77	13.49%
Waste Land	0.96	4.70%
Water Logged Area	0.14	0.67%
Total	20.51 Ha	100



DL Section Crossing Khowai River Between EP 91 and 92

4.3.2.3 Feature Details of Final Route alignment for 33kV line from New 33/11 kV Simna (New) – Hezamara (Existing) S/S

33kV line from New 33/11 kV Simna (New) – Hezamara (Existing) S/S covers 11.271 km distance. Total 158 EP are proposed in this DL. The DL is finalized after detailed analysis considering the environmental features like forest / PA / river etc. The feature survey along the DL is carried out considering 15 mt ROW i.e., 7.5 mt on either side from center line of the corridor. Geomorphological studies observed that the geology of project area is majorly having rock structure of less dissected denudational hills and shallow valley fills. Rock type is comprised of shaly sandstone.

Major part of the DL passes through rubber plantation land (23%), agricultural area (13%), Barren Rocky with Scrub Land (13%), metal road (13%) and tea garden (9%). The selected line does not cross any National Highway, Railway and Power line. However, the line crosses bridge structure and quarry / brick kiln land. It requires the necessary NOCs from concerned management authority. Other than agriculture, this line traverses majorly through waste Land followed by tree crops and groves, pond / lake, fallow lands. The DL routes do not involve notified forest land which do not necessitate forest clearance under Forest (Conservation) Act, 1980. Besides all protected areas like NP, WLS and designated wildlife / elephant passage have been completely avoided. The landslide study reveals that the project region is low to moderately to low vulnerable to landslide. The project area is not vulnerable to flood. The type of hazard is recorded as earthquake, windstorm and landslide.

As per detailed surveys and GIS imagery data DL is crossing water bodies such as river, pond. DL is crossing Satara Chhera course (Tributary of Sonai R) between poles 12 and 13, 27 and 28 and 41 and 42 and Kala Chhera (Tributary of Sonai R) between Poles 135 and 136. All EPs are planned along the existing road side / metal road. As 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. EPs are constructed well above the ground level at required elevation will help to keep the people and animals away from EMF contact. It will also prevent the structure getting damaged during flood situation.

GIS route survey map and DL feature details are provided in **Annexure A7 & B7**. The major feature details are depicted in **Table 4.8**. The Google earth image of DL is provided in the **Map 4.7**.

Table 4-8: 33 kV line form 33/11 kV Simna (New) - Hezamara (Existing) S/S

Electric Line Feature Details- 15m ROW		
Feature Class Details	Area In Ha.	% of Area
Agriculture Land	2.29	13.39%
Barren Rocky with Scrub Land	2.18	12.70%
Bricks Kilns/Quarry	0.20	1.17%
Bricks Road	0.46	2.66%
Bridge	0.00	0.00%
Electric Substation	0.33	1.92%
Fallow Land	0.42	2.45%
Metal Road	3.01	17.55%
Mud Road	0.17	1.01%
Open Forest	1.07	6.26%
Pond/Lake	0.19	1.13%
River	0.14	0.82%

Feature Class Details	Area In Ha.	% of Area
Rubber Plantation/Orchards	3.38	19.71%
Tea Garden	1.59	9.25%
Tree Crops and Groves	0.60	3.48%
Vacant Land	1.06	6.20%
Wet Land	0.05	0.28%
Total	17.13 Ha	100

Photographs of the site location are given below:



DL Section Crossing Satara Chhera between EP 27 and 28, 41 and 42



DL Section Crossing Kala Chhera between EP 135 and 136



Simna Electric S/S Site under Construction



Transformer and Transmission Tower Erection at Simna S/S – Construction Completed



Control Room Building – Simna S/S – Construction Completed



DL Section - Metal Road



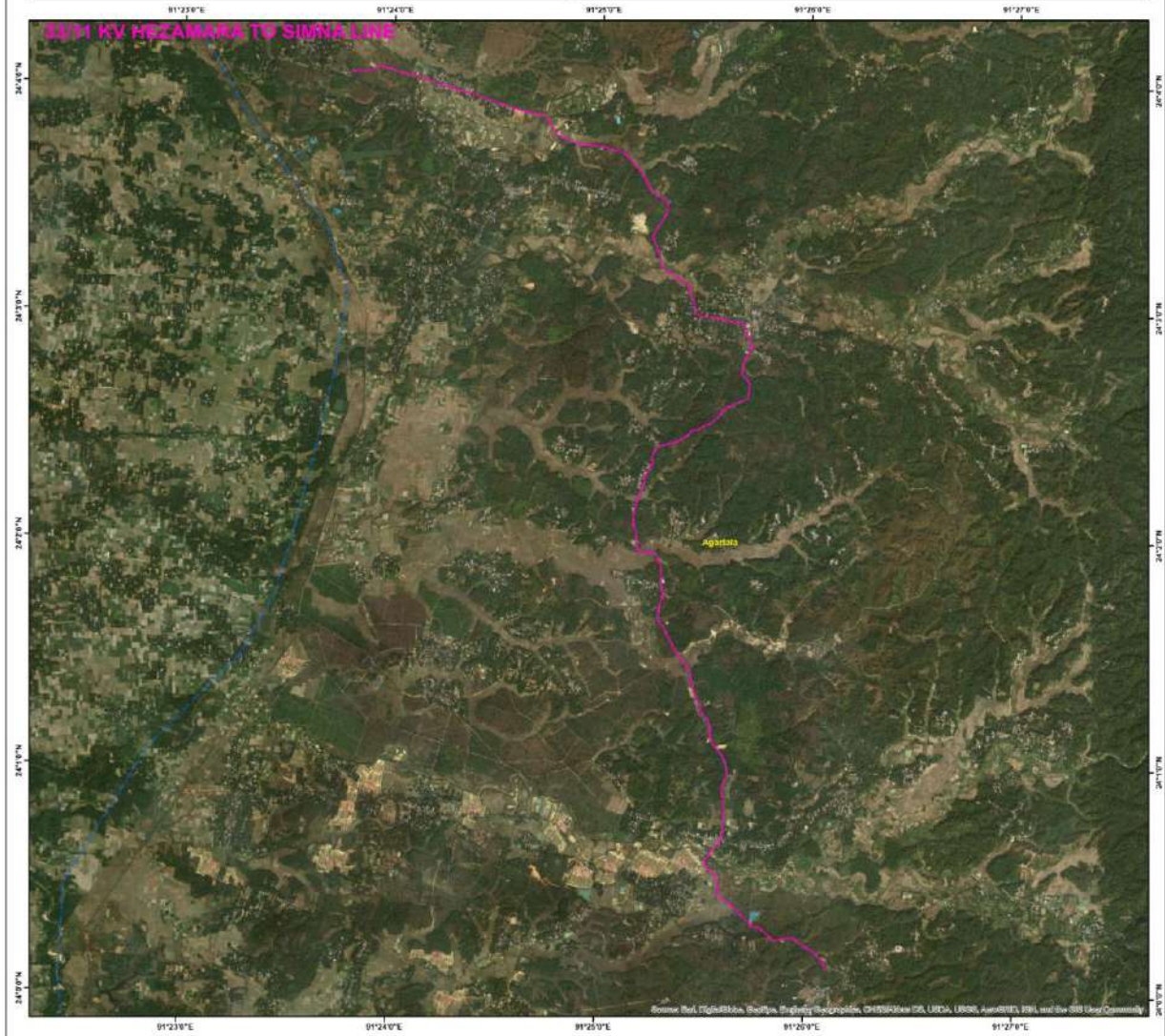
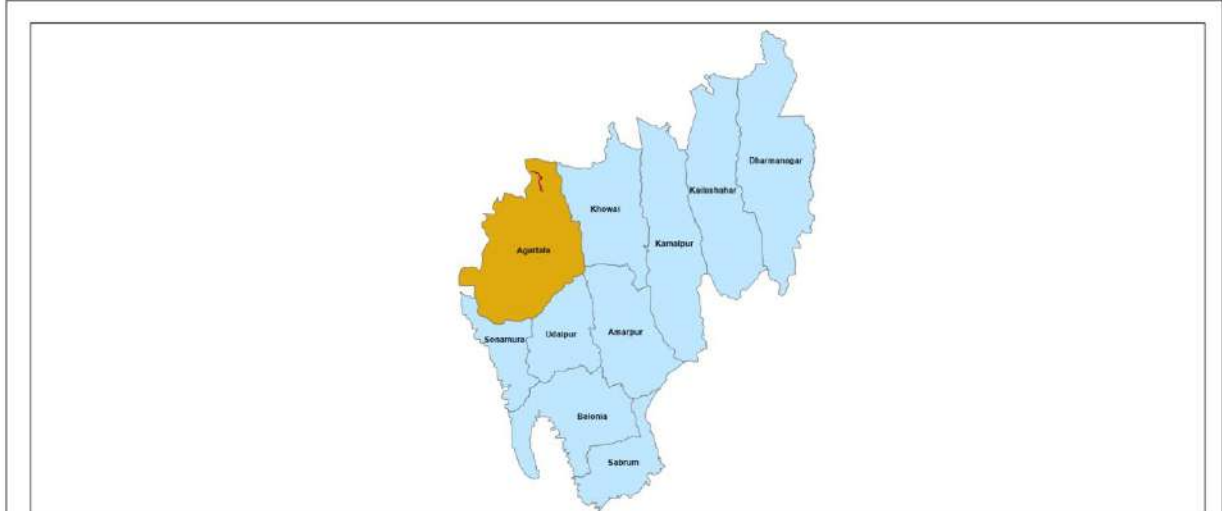
DL Section - Tree Crop



DL Section - Kala Chhera

Map 4-7: Route alignment for 33kV line from new 33/11 kV Simna (new)-Hezamara (existing) S/S

LOCATION MAP OF EXISTING 33/11 KV HEZAMARA TO SIMNA LINE
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



*Blue Color Indicate: State/National line crossing

4.3.2.4 Feature Details of Final Route Alignment for 33kV Line from New 33/11 kV Simna (New) – Tapping of Mohanpur - Hezamara (Existing) line

33kV Line from New 33/11 kV Simna (New) – Tapping of Mohanpur – Hezamara (Existing) Line covers 14.523 km distance. Total 478 EP are proposed in this DL. The DL is finalized after detailed analysis considering the environmental features like forest / PA / river etc. The feature survey along the DL is carried out considering 15 mt ROW area i.e., 7.5 mt on either side from of the center of the corridor. Geomorphological studies observed that the geology of project area is majorly having rock structure of less dissected denudational hills younger shallow alluvial. Rock type is recorded as shaly sandstone.

Major part of the DL passes through agricultural area (39%), Barren Rocky with Scrub Land (4%), waste land (10%), metal road (22%) and tea garden (5%). The selected line does not cross any National Highway, Railway and Power line. However, the line crosses bridge structure and quarry / brick kiln land. Other than agriculture, this line traverses majorly through waste Land followed by tree crops and groves, pond / lake, fallow lands. The DL routes do not involve forest land which do not necessitate forest clearance under Forest (Conservation) Act, 1980. Besides all protected areas like NP, WLS and designated wildlife / elephant passage have been completely avoided. The landslide study reveals that the project region is very low vulnerable to landslide and Highly Vulnerable to flood. The major type of possible hazard is recorded as earthquake and windstorm.

As per detailed surveys and GIS imagery data DL is crossing water bodies such as river, pond, stream at many places. EP No. 5, 51, 52,53, 54, 81, 82, 100, 101, 102, 103, 112, to 127 are coming in close proximity of water body (wetland and pond). DL is crossing water body between EP 123 and 124, 126 and 127. DL is crossing Sonai River course between EP 17 and 18, Kala Chhera (Tributary of Sonai R) between EP 72 and 73 and Satara Chhera (Tributary of Sonai R) between EP 113 and 114. All EPs are planned along the existing road side / metal road. As 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. At 33 kV Simna S/S strengthening of 200 mt approach road is required. EPs are constructed well above the ground level at required elevation will help to keep the people and animals away from EMF contact. It will also prevent the structure getting damaged during flood situation.

GIS route survey map and DL feature details are provided in **Annexure A8 & B8**. The major feature details are depicted in **Table 4.9**. The Google earth image of DL is provided in the **Map 4.8**.

Table 4-9: 33 kV line form 33/11 kV Simna (New) – Tapping of Mohanpur - Hezamara (Existing) line

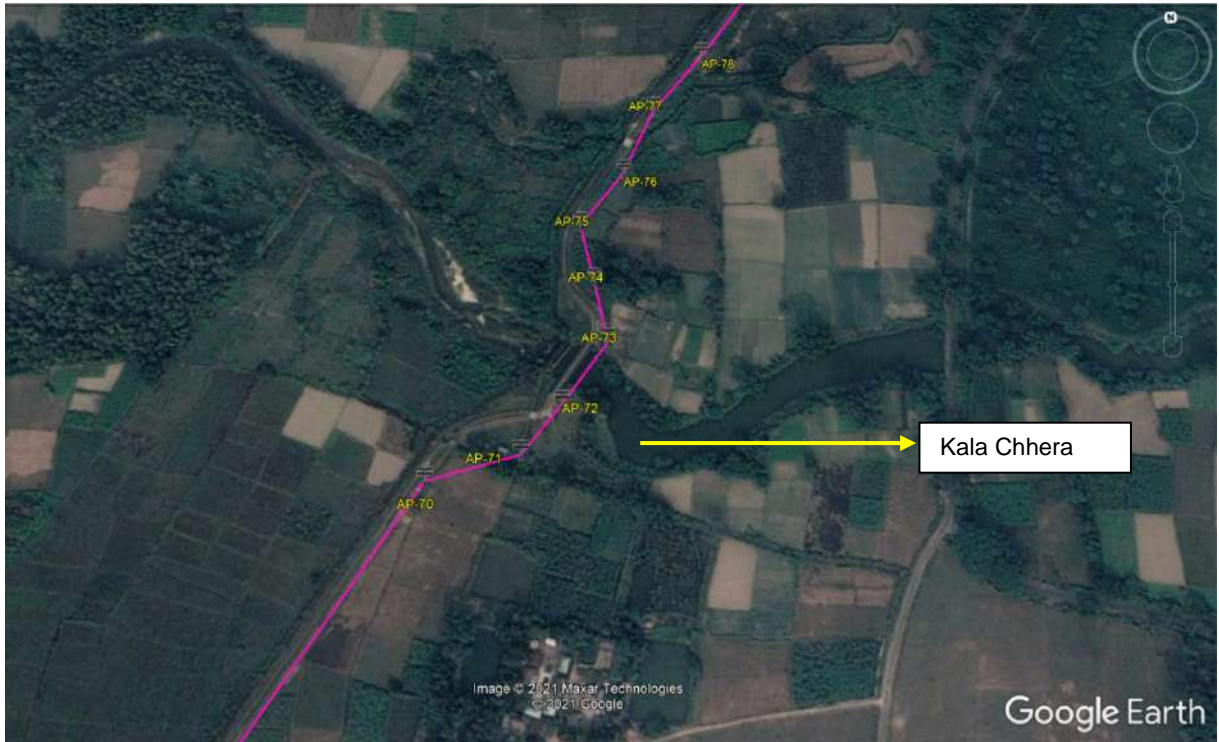
Electric Line Feature Details- 15m ROW		
Feature Class Details	Area In Ha.	% of Area
Agriculture Land	8.82	39.76%
Barren/Rocky Waste Land	0.95	4.28%
Bricks Kilns/Quarry	0.19	0.84%
Bricks Road	0.36	1.64%
Bridge	0.01	0.05%
Drain	0.03	0.13%
Electric Substation	0.29	1.33%
Embankment	0.06	0.28%
Fallow Land	0.61	2.75%
Marshy Swampy	0.11	0.49%

Feature Class Details	Area In Ha.	% of Area
Metal Road	4.78	21.56%
Mud Road	0.27	1.21%
Pond/Lake	0.41	1.84%
River	0.04	0.18%
Road Side Fallow Land	0.64	2.87%
Stream	0.05	0.24%
Tea Factory	0.15	0.69%
Tea Plantation/orchards	1.15	5.20%
Tree Crops and Groves	0.56	2.52%
Vacant Land	0.27	1.23%
Waste Land	2.19	9.87%
Wet Land	0.23	1.03%
Total	22.17 Ha	100

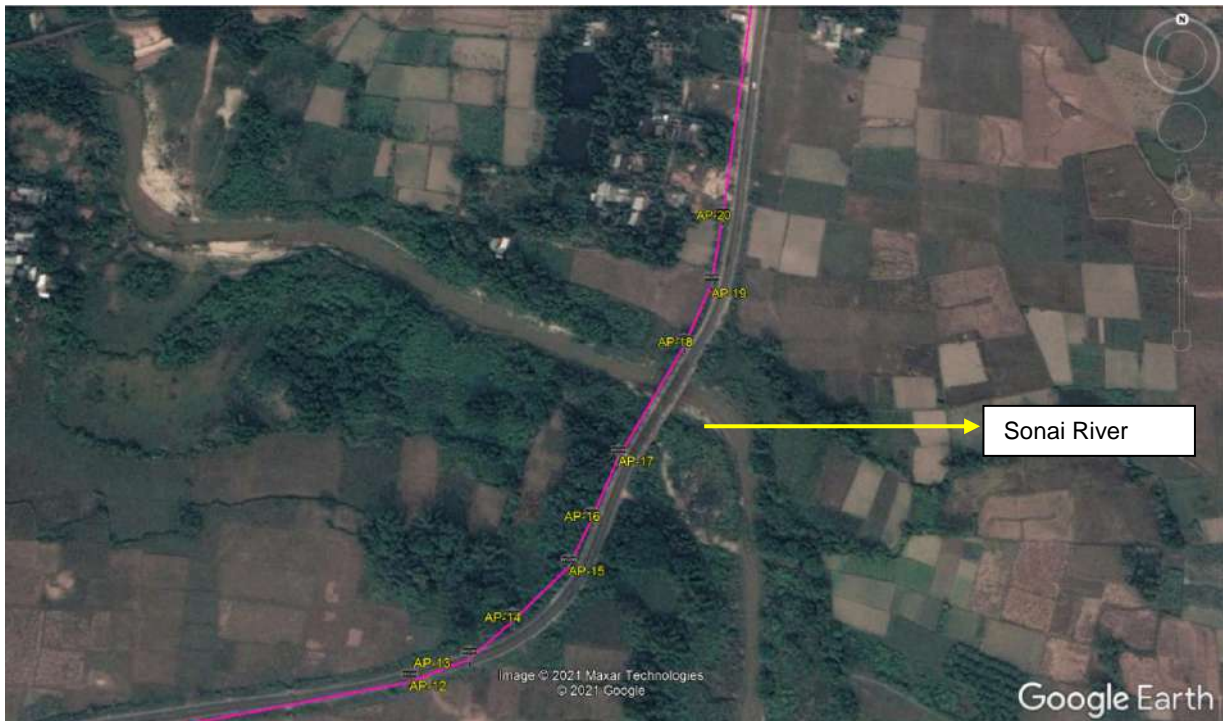
Photographs of the site location are given below:



DL Section Crossing Satara Chhera between EP 113 and 114



DL is crossing Kala Chhera between EP 72 and 73



DL is crossing Sonai river course between EP 17 and 18



DL Section - Sonai River



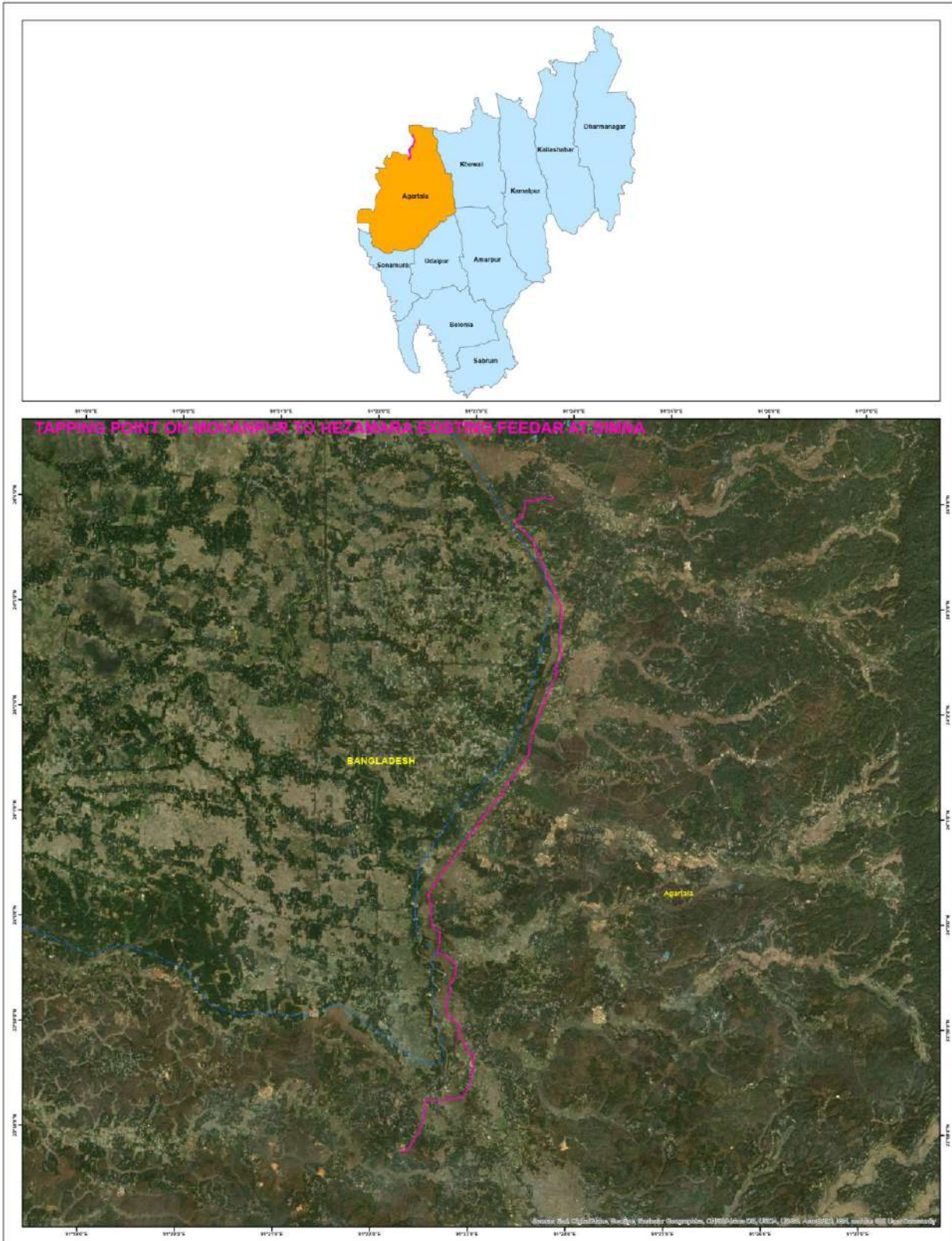
DL Section - Mud Road



DL Section - Pole Erection along the Road

Map 4-8: Route Alignment for 33kV Line from New 33/11 kV Simna (New) – Tapping of Mohanpur - Hezamara (Existing) DL

LOCATION MAP OF TAPPING POINT ON MOHANPUR TO HEZAMARA EXISTING FEEDAR AT SIMNA
 CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
 PREPARED BY GREEN CIRCLE INC,



*Blue Color Indicate: State/National line crossing

4.3.2.5 Feature Details of Final Route Alignment for 33kV Line from New 33/11 kV Barkathal (New) – 33/11 kV Hezamara (Existing) S/S

33kV Line from New 33/11 kV Barkathal (New) to 33/11 kV Hezamara (Existing) Line covers 11.670 km distance. Total 550 EP are proposed in this DL. The DL is finalized after detailed analysis considering the environmental features like forest / PA / river etc. The feature survey along the DL is carried out considering 15 mt ROW i.e., 7.5 mt on either side from center of the corridor. Geomorphological studies observed that the geology of project area is majorly having primary denudational hills less dissected, alluvial younger shallow. Rock type is comprising of shaly sandstone.

Major part of the DL passes through Rubber plantation (16%), Agricultural land (10%), Barren Rocky with Scrub Land (18%), fallow land (9%), metal road (26%), tree crops and groves (7%) and tea garden (2%). The selected line does not cross any National Highway, Railway and Power line. However, the line crosses bridge structure. The DL routes do not involve forest land which do not necessitate forest clearance under Forest (Conservation) Act, 1980. Besides all protected areas like NP, WLS and designated wildlife / elephant corridor have been completely avoided. The landslide study reveals that the project region is none to moderate vulnerable to landslide and not vulnerable to flood. The major type of possible hazard is recorded as earthquake, low landslide and windstorm.

As per detailed surveys and GIS imagery data water bodies such as river, pond, drain & nala. EP 19, 20, 20/A, 185, 189, 208 to 210 are coming in close proximity of water ponds. EP 20 is coming in water body (pond / wet land). DL is crossing Kala Chhera between EP 31 and 32 and Rubri Cherra between 179 and 180. Both are Tributary of Sonai River. All EPs are planned along the existing road side / metal road. As 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. EPs are constructed well above the ground level at required elevation will help to keep the people and animals away from EMF contact. It will also prevent the structure getting damaged during flood situation.

GIS route survey map and DL feature details are provided in **Annexure A9 & B9**. The major feature details are depicted in **Table 4.10**. The Google earth image of DL is provided in the **Map 4.9**.

Table 4-10: 33 kV line form 33/11 kV Barkathal (New) – 33/11 kV Hezamara (Existing) S/S

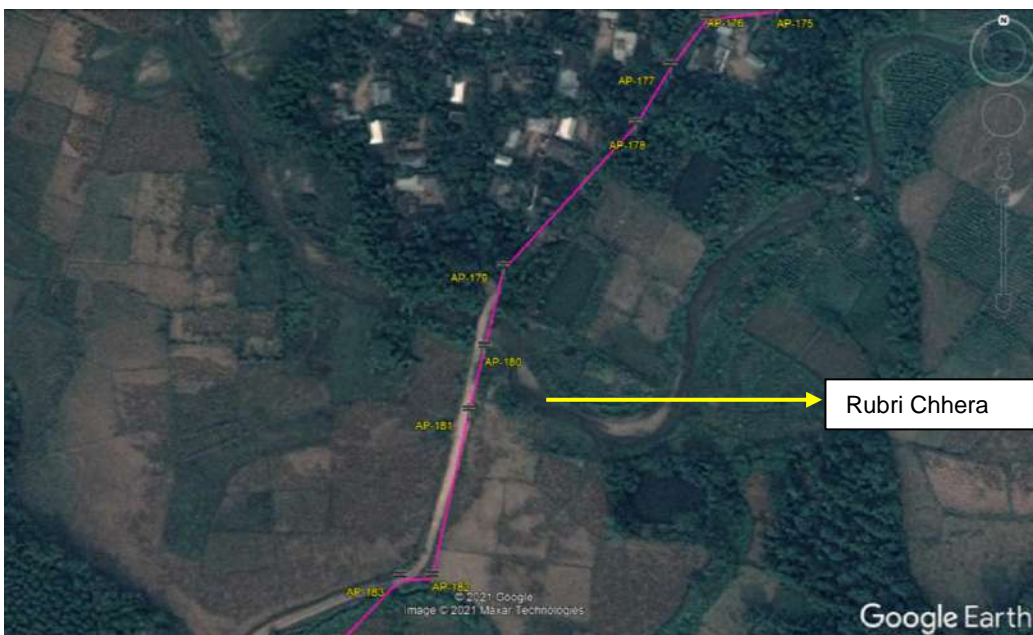
Electric Line Feature Details- 15m ROW		
Feature Class Details	Area In Ha.	% of Area
Agriculture Land	1.74	9.48%
Barren Rocky with Scrub Land	3.34	18.24%
Bricks Road	0.30	1.61%
Bridge	0.01	0.04%
Drain/Nala	0.02	0.09%
Electric Substation	0.83	4.53%
Fallow Land	1.58	8.64%
Metal Road	4.79	26.15%
Mud Road	0.29	1.61%
Pond/Lake	0.19	1.05%
River	0.03	0.18%
Rubber Plantation	2.87	15.68%
Tea Garden	0.40	2.16%
Tree Crop and Groves	0.96	5.25%

Feature Class Details	Area In Ha.	% of Area
Vacant Land	0.70	3.83%
Waste Land	0.26	1.39%
Wet Land	0.01	0.07%
Total	18.32 Ha	100

Photographs of the site location are given below:



DL Section Crossing Kala Chhera between EP 31 and 32



DL Section Crossing Rubri Chhera between EP 179 and 180



DL Section - Pole Location - Metal Road



DL Section - Pole Location - Agriculture Land



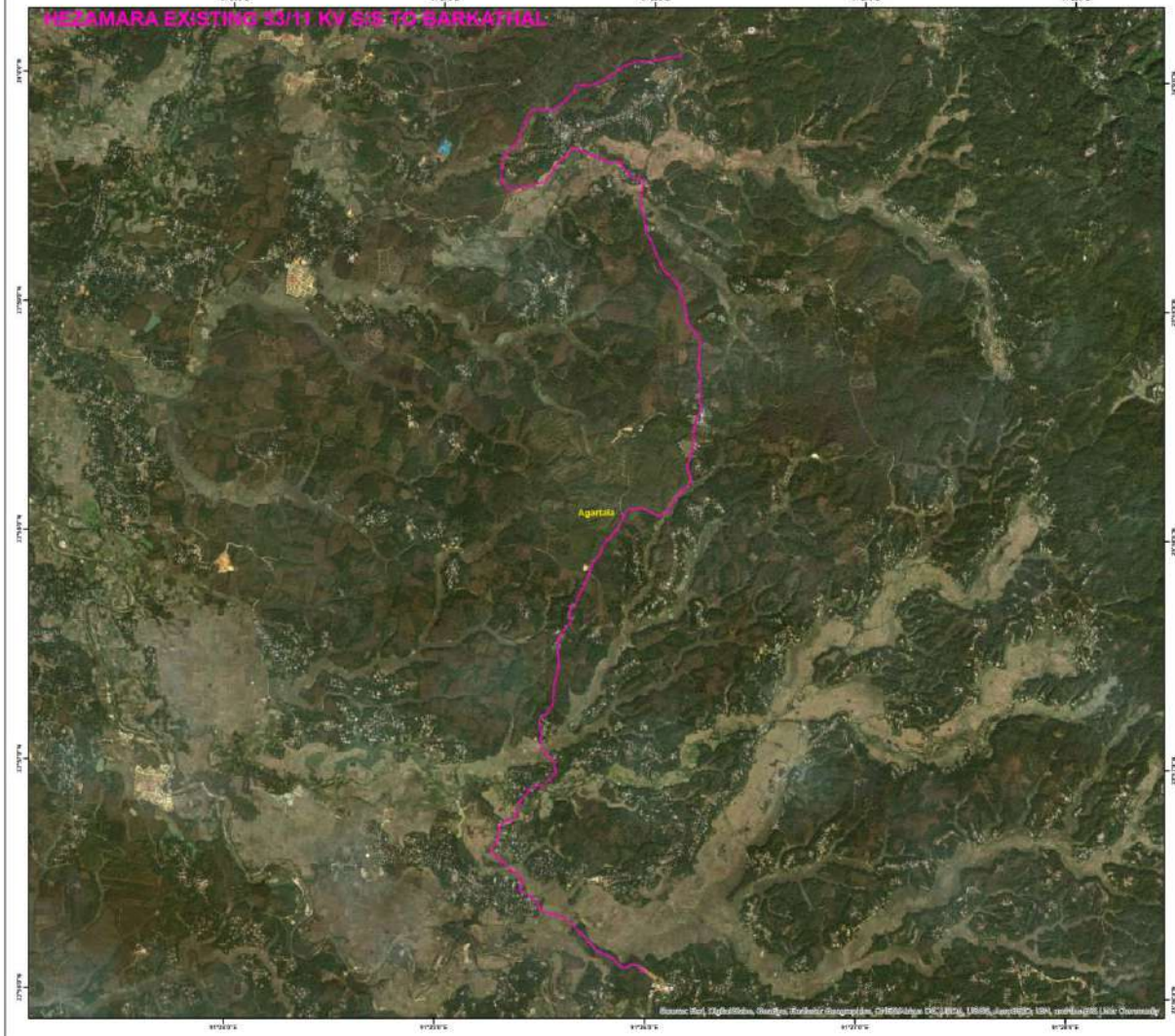
Pole Location - Chhera (Left) and Mud Road (Right)



Barkathal S/S - Tower Erection

Map 4-9: Route Alignment for 33kV Line from New 33/11 kV Barkathal (New) – 33/11 kV Hezamara (Existing) S/S

LOCATION MAP OF HEZAMARA EXISTING 33/11 KV S/S TO BARKATHAL
 CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
 PREPARED BY GREEN CIRCLE INC,



*Blue Color Indicate: State/National line crossing

4.3.2.6 Feature Details of Final Route Alignment for 33kV Line from New 33/11 kV Barkathal (New) – 33/11 kV Mohanpur (New) S/S

33kV Line from New 33/11 kV Barkathal (New) – Mohanpur (New) S/S covers 9.442 km distance. Total 379 EP are proposed in this DL. The DL is finalized after detailed analysis considering the environmental features like forest / PA / river etc. The feature survey along the DL is carried out considering 15 mt ROW area i.e., 7.5 mt on either side from center of the corridor. Geomorphological studies observed that the geology of project area is majorly having rock structure of less dissected denudational hills and shallow younger alluvium. Rock type is primarily shaly sandstone.

Major part of the DL passes through barren rocky land (5%), agricultural area (22%), tree crops and groves (10%) and tea plantation and orchards (6%), and metal road (22%). The selected line does not cross any National Highway, Railway and Power line. However, the line is crossing bridge, mud road and metal road. Other than agriculture, this line traverses majorly through waste Land followed by tree crops and groves, pond / lake, fallow lands. The DL routes do not involve forest land which do not necessitate forest clearance under Forest (Conservation) Act, 1980. Besides all protected areas like National parks, Wildlife sanctuaries and designated wildlife / elephant have been completely avoided. The landslide study reveals that the project region is very low to moderately vulnerable to landslide. The project area is very less or nil to flood vulnerability and is in low flood prone area. The type of hazard is recorded as earthquake, windstorm, flood and low landslide.

As per detailed surveys and GIS imagery data DL crosses water bodies such as river, pond,. EP No. 1, 2, 3 is coming in close proximity of water body (pond). DL is crossing Sumli / Sonai River between EP 91 and 92 and Rubri Chhera between EP 121 and 123. All EPs are planned along the existing road side / metal road. As 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. At 33 kV Mohanpur S/S strengthening of 250 mt approach road is required. EPs are constructed well above the ground level at required elevation will help to keep the people and animals away from EMF contact. It will also prevent the structure getting damaged during flood situation.

GIS route survey map and DL feature details are provided in **Annexure A10 & B10**. The major feature details are depicted in **Table 4.11**. The Google earth image of DL is provided in the **Map 4.10**.

Table 4-11: 33 kV line form 33/11 kV Barkathal (New) – 33/11 kV Mohanpur (New) S/S

Electric Line Feature Details- 15m ROW		
Feature Class Details	Area In Ha.	% of Area
Agriculture Land	3.35	21.62%
Barren/Rocky Waste Land	0.74	4.78%
Bricks Kilns/Quarry	0.06	0.40%
Bricks Road	0.77	4.99%
Bridge	0.04	0.29%
Drain	0.02	0.13%
Electric Substation	1.32	8.54%
Fallow Land	0.66	4.25%
Metal Road	4.06	26.22%
Mud Road	0.07	0.43%
Pond/Lake	0.18	1.14%

Feature Class Details	Area In Ha.	% of Area
River	0.04	0.23%
Tea Plantation and Orchards	0.87	5.61%
Tree Crops and Groves	1.58	10.23%
Vacant Land	1.15	7.46%
Waste Land	0.57	3.69%
Total	15.48 Ha	100

Photographs of the site location are given below:



DL is crossing Sumli / Sonai River between EP 91 and 92



DL is crossing Rubri Chhera between EP 121 and 123



DL Section - Mud Road



DL Section - Metal Road Crossing

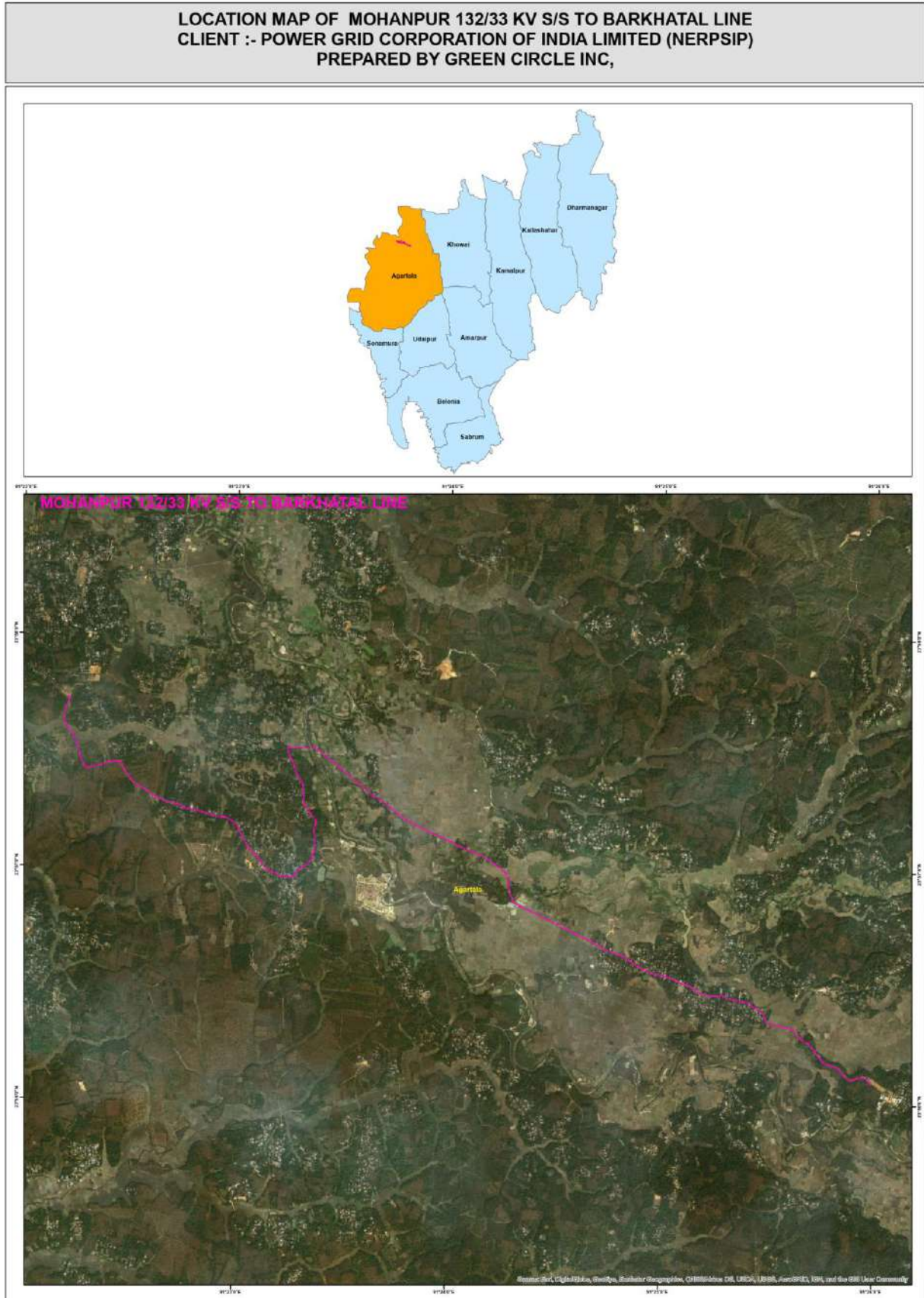


DL Section - Pole Location site



DL Section - Tea Plantation Site

Map 4-10: Route Alignment for 33 kV line form 33/11 kV Barkathal (New) – 33/11 kV Mohanpur (New) S/S



*Blue Color Indicate: State/National line crossing

4.3.2.7 Feature Details of Final Route Alignment for 33 Kv Line Bamutia (New) - Durjoynagar Existing S/S

33 kV Line Bamutia (New) -Durjoynagar Existing S/S covers 10.828 km distance. Total 401 EP are proposed in this DL. The DL is finalized after detailed analysis considering the environmental features like forest / PA / river etc. The feature survey along the DL is carried out considering 15 mt ROW i.e., 7.5 mt on either side from the center line of the corridor. Geomorphological studies observed that the geology of project area is majorly having rock structure of less dissected denudational hills and shallow valley fill with rock type of shaly sandstone.

Major part of the DL passes through Metal Road (10.29%), agricultural area (24%), tree crops and groves (10%), road side fallow land (9%), Metal Road (11%). The selected line does not cross any National Highway, Railway and Power line. Other than agriculture, this line traverses majorly through waste Land, pond / lake, fallow lands. The DL routes do not involve forest land which do not necessitate forest clearance under Forest (Conservation) Act, 1980. Besides all protected areas like NP, WLS and designated wildlife / elephant passage corridor have been completely avoided. The landslide study reveals that the project region is moderately to severe vulnerable to landslide. The project area is very less to moderate to flood vulnerability and is in low flood prone area. The type of hazard is recorded as earthquake, windstorm, flood and low landslide.

As per detailed surveys and GIS imagery data DL crosses water bodies such as river, pond, drain. EP No. 141 is coming in close proximity of water body (pond). All EPs are planned along the existing road side / metal road. As 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. EPs are constructed well above the ground level at required elevation will help to keep the people and animals away from EMF contact. It will also prevent the structure getting damaged during flood situation.

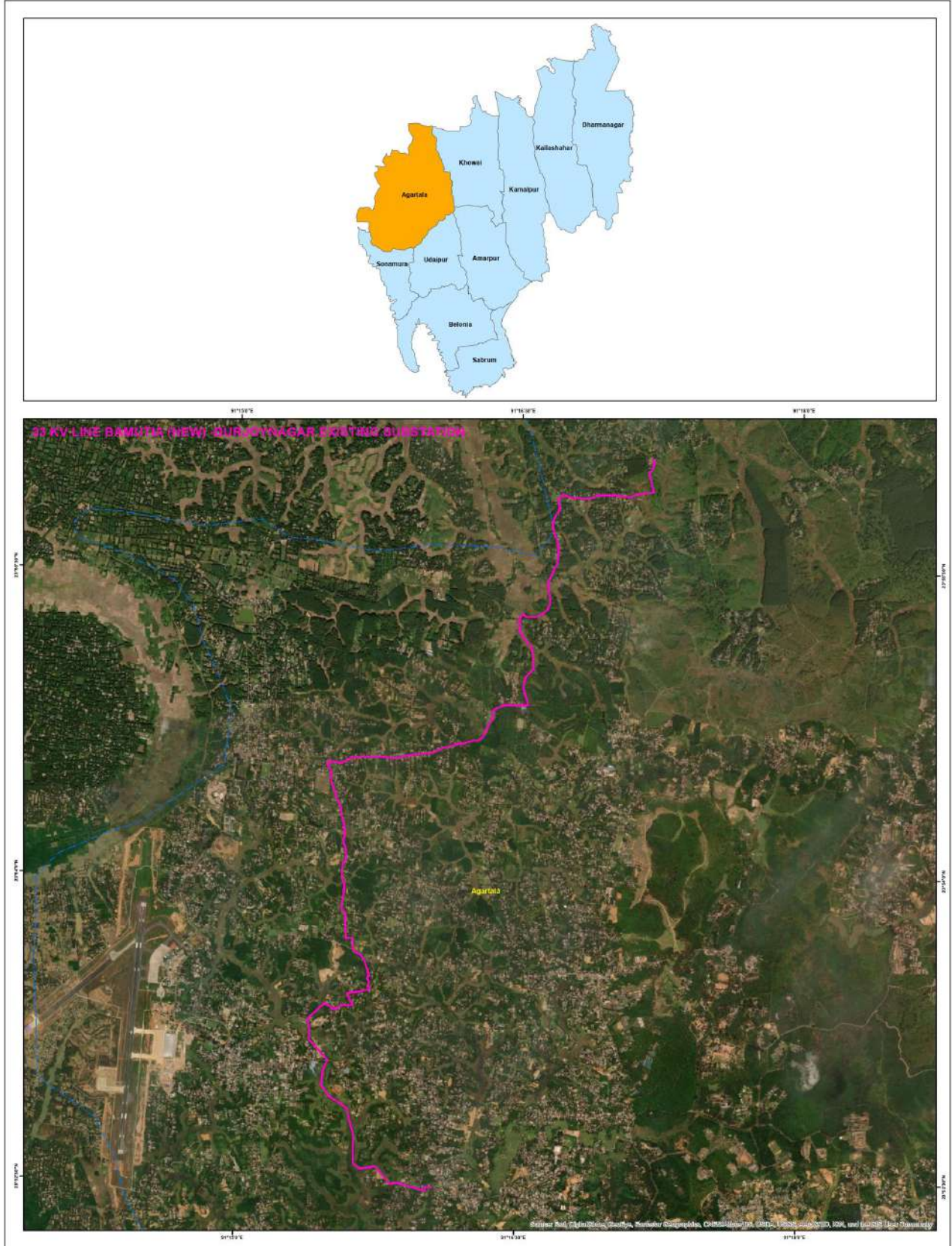
GIS route survey map and DL feature details are provided in **Annexure A11 & B11**. The major feature details are depicted in **Table 4.12**. The Google earth image of DL is provided in the **Map 4.11**.

Table 4-12: 33 Kv Line Bamutia (New) -Durjoynagar Existing S/S

Electric Line Feature Details- 15m ROW		
Feature Class Details	Area In Ha.	% of Area
Agriculture Land	4.15	24.34%
Bricks Road	0.92	5.37%
Drain	0.19	1.13%
Electric Substation	0.70	4.11%
Fallow Land	1.47	8.61%
Metal Road	1.80	10.56%
Mud Road	0.19	1.11%
Plantation	0.93	5.45%
Pond/Lake	0.16	0.93%
River	0.02	0.15%
Road Side Fallow Land	1.56	9.17%
Tree Crops and Groves	1.69	9.93%
Tree Plantation	0.51	2.97%
Vacant Land	2.76	16.18%
Total	17.06 Ha	100

Map 4-11: Route Alignment for 33 Kv Line Bamutia (New) -Durjoynagar Existing S/S

**LOCATION MAP OF 33 KV LINE BAMUTIA (NEW) -DURJOYNAGAR EXISTING SUBSTATION
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,**



*Blue Color Indicate: State/National line crossing

4.3.2.8 Feature Details of Final Route Alignment for 33kV Line from New 33/11 kV Bamutia (New) – 33/11 kV Lembucherra (New) S/S

33kV Line from New 33/11 kV Bamutia (New) – Lembucherra (New) S/S covers 8.121 km distance. Total 221 EP are proposed in this DL. The DL is finalized after detailed analysis considering the environmental features like forest / PA / river etc. The feature survey along the DL is carried out considering 15 mt ROW i.e., 7.5 mt on either side from center line of the corridor. Geomorphological studies observed that the geology of project area is majorly having rock structure of less dissected denudational hills with shaly sandstone rock type.

Major part of the DL passes through tea garden (34%), agricultural area (9%), barren rocky land (10%) and metal road (14%). The selected line does not cross any National Highway, Railway and Power line. Other than agriculture, this line traverses majorly through waste Land followed by tree crops and groves, pond / lake, fallow lands. The DL routes do not involve forest land which do not necessitate forest clearance under Forest (Conservation) Act, 1980. Besides all protected areas like NP, WLS and designated wildlife / elephant passage have been completely avoided. The landslide study reveals that the project region is very low vulnerable to landslide. The project area is not vulnerable to flood. The type of hazard is recorded as earthquake and windstorm.

As per detailed surveys and GIS imagery data DL crosses water bodies such as pond, drain & nala. All EPs are planned along the existing road side / metal road. As 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. EPs are constructed well above the ground level at required elevation will help to keep the people and animals away from EMF contact. It will also prevent the structure getting damaged during flood situation.

GIS route survey map and DL feature details are provided in **Annexure A12 & B12**. The major feature details are depicted in **Table 4.13**. The Google earth of DL is provided in the **Map 4.12**.

Table 4-13: 33 kV line form 33/11 kV Bamutia (New) – 33/11 kV Lembucherra (New) S/S

Electric Line Feature Details- 15m ROW		
Feature Class Details	Area In Ha.	% of Area
Agriculture Land	1.09	8.54%
Barren/Rocky Waste Land	1.25	9.87%
Brick Road	0.84	6.58%
Drain/Nala	0.01	0.09%
Electric Substation	0.58	4.55%
Fallow Land	0.80	6.30%
Metal Road	1.77	13.93%
Mud Road	0.16	1.26%
Pond/Lake	0.08	0.61%
Tea Garden	3.95	31.07%
Tree Crops and Groves	0.90	7.10%
Vacant Land	1.27	10.03%
Waste Land	0.01	0.08%
Total	12.71	100

Photographs of the site location are given below:



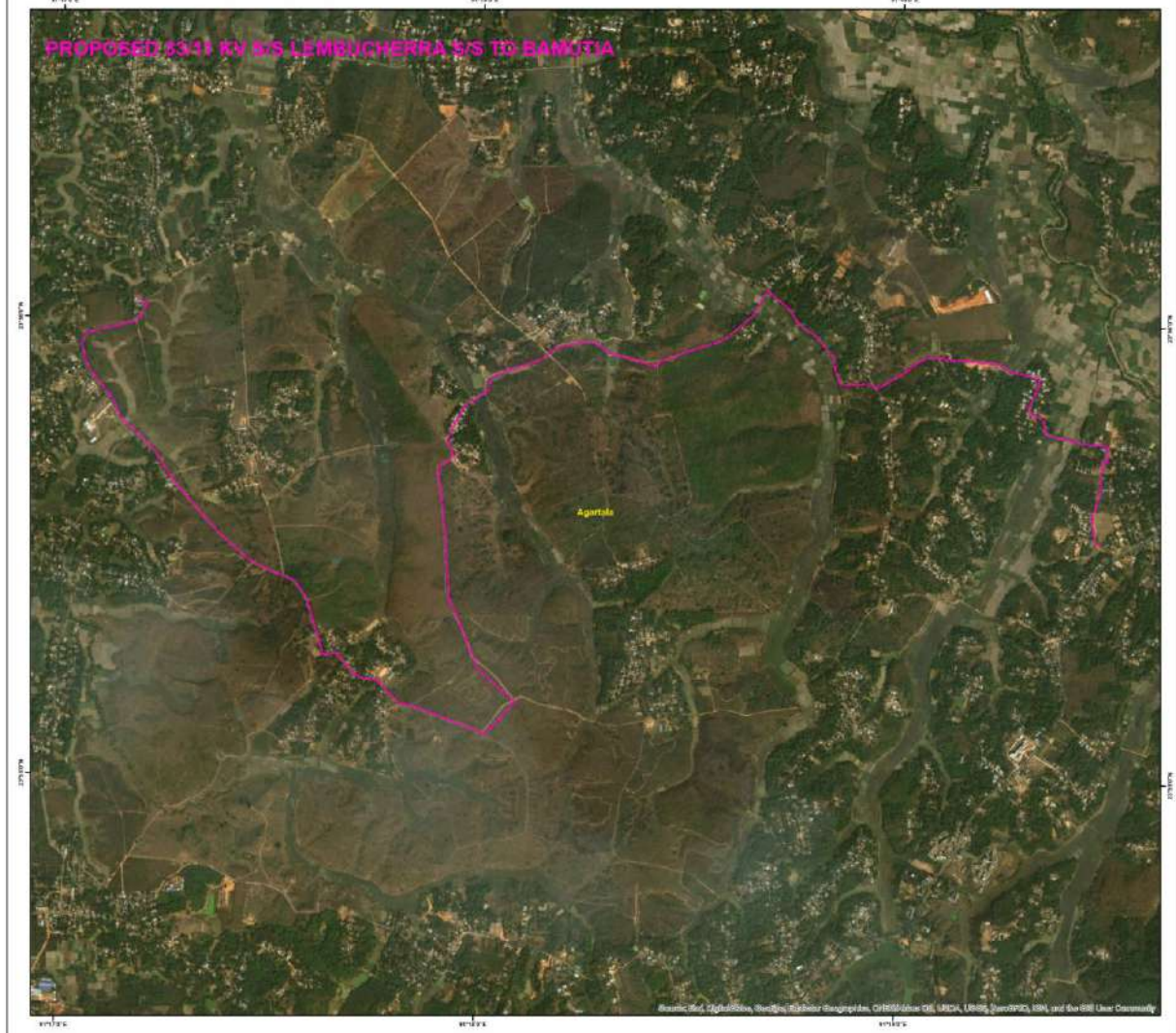
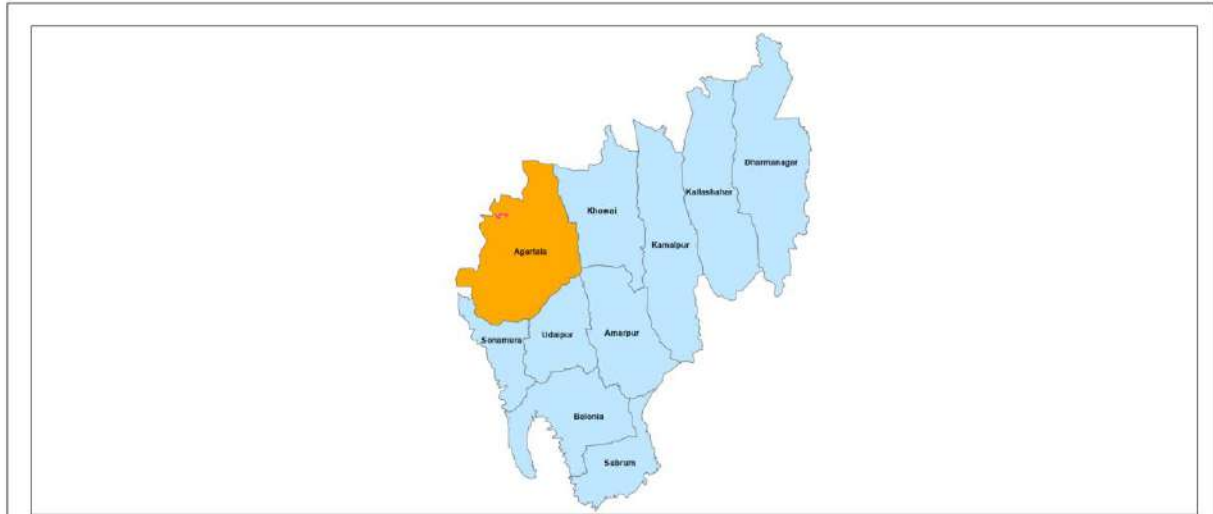
DL Section - Pole Location



DL Section - Metal Road

Map 4-12: Route Alignment for 33kV Line from New 33/11 kV Bamutia (New) – 33/11 kV Lembucherra (New) S/S

LOCATION MAP OF PROPOSED 33/11 KV S/S LEMBUCHERRA S/S TO BAMUTIA
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



*Blue Color Indicate: State/National line crossing

4.3.2.9 Feature Details of Final Route Alignment for 33kV Line from New 33/11 kV Lembucherra (New) – LILO 33/11 kV Agartala – Mohanpur Line

33kV Line from New 33/11 kV Lembucherra (New) - LILO 33/11 kV Agartala – Mohanpur Line covers 1.051 km distance. Total 32 EP are proposed in this DL. The DL is finalized after detailed analysis considering the environmental features like forest / PA / river etc. The feature survey along the DL is carried out considering 15 mt ROW i.e., 7.5 mt on either side of center line of the corridor. Geomorphological studies observed that the geology of project area is majorly having primary rock structure of less dissected denudational hills with shaly sandstone rock type.

Major part of the DL passes through vacant land (13%), barren rocky waste land (20%) and metal road (40%). The selected line does not cross any National Highway, Railway and Power line. The DL routes do not involve forest land which do not necessitate forest clearance under Forest (Conservation) Act, 1980. Besides all protected areas like NP, WLS and designated wildlife / elephant passage have been completely avoided. The landslide study reveals that the project region is very low vulnerable to landslide. The project area is not vulnerable to flood. The type of hazard is recorded as earthquake and wind.

As per detailed surveys and GIS imagery data DL do not cross water bodies such as river, pond, drain & nala. As 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. EPs are constructed well above the ground level at required elevation will help to keep the people and animals away from EMF contact. It will also prevent the structure getting damaged during flood situation.

GIS route survey map and DL feature details are provided in **Annexure A13 & B13**. The major feature details are depicted in **Table 4.14**. The Google earth image of DL is provided in the **Map 4.13**.

Table 4-14: 33 kV line form 33/11 kV Lembucherra (New) – LILO 33/11 kV Agartala - Mohanpur line

Electric Line Feature Details- 15m ROW		
Feature Class Details	Area In Ha.	% of Area
Barren/Rocky Waste Land	0.27	19.90%
Bricks Road	0.01	0.82%
Electric Substation	0.24	17.75%
Fallow Land	0.01	0.48%
Metal Road	0.55	40.17%
Road Side Fallow Land	0.09	6.36%
Tree Crops and Groves	0.02	1.31%
Vacant Land	0.18	13.20%
Total	1.37	100

Photographs of the site location are given below:



DL Section - Pole Location - Tree Crops and Groves



DL Section - Vacant Land Pole Location



DL Section - Market pole Location

4.3.2.10 Feature Details of Final Route Alignment for 33kV Line from New 33/11 kV Champaknagar (New) – 132/33 kV Jirania (existing) S/S

33kV Line from New 33/11 kV Champaknagar (New) – 132/33 kV Jirania (existing) S/S covers 6.0 km distance. Total 217 EP are proposed in this DL. The DL is finalized after detailed analysis considering the environmental features like forest / PA / river etc. The feature survey along the DL is carried out considering 15 mt ROW i.e., 7.5 mt on either side from center line of the corridor. Geomorphological studies observed that the geology of project area is majorly having primary moderately dissected structurally hills and shallow younger alluvium layers with rock type of shaly sandstone.

Major part of the DL passes through metal road (30%), agricultural area (3%), vacant land (24%) and wasteland (9%). The selected line does not cross any National Highway, Railway and Power line. However, the line crosses bridge, mud road, brick kilns/quarry land, petrol pump. Other than agriculture, this line traverses majorly through waste Land followed by tree crops and groves, pond / lake, fallow lands. The DL routes do not involve forest land which do not necessitate forest clearance under Forest (Conservation) Act, 1980. Besides all protected areas like NP, WLS and designated wildlife / elephant passage have been completely avoided. The landslide study reveals that the project region is not vulnerable to landslide. The project area is not vulnerable to flood. The type of hazard is recorded as earthquake and windstorm.

As per detailed surveys and GIS imagery data DL crosses water bodies such as river, pond. No EP is coming in close proximity to water body (pond / river). As 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. EPs are constructed well above the ground level at required elevation will help to keep the people and animals away from EMF contact. It will also prevent the structure getting damaged during flood situation.

GIS route survey map and DL feature details are provided in **Annexure A14 & B14**. The major feature details are depicted in **Table 4.15**. The Google earth image of DL is provided in the **Map 4.14**.

Table 4-15: 33 kV line form 33/11 kV Champaknagar (New) – 132/33 kV Jirania (existing) S/S

Electric Line Feature Details- 15m ROW		
Feature Class Details	Area In Ha.	% of Area
Agriculture Land	0.31	3.22%
Brick kilns/Quarry	0.84	8.62%
Bricks Road	0.02	0.19%
Bridge	0.01	0.09%
Electric Substation	0.96	9.80%
Fallow Land	0.48	4.86%
Metal Road	2.92	29.79%
Mud Road	0.09	0.91%
Pond/Lake	0.14	1.43%
River	0.03	0.31%
Tree Crop and Groves	0.66	6.78%
Vacant Land	2.38	24.29%
Waste Land	0.95	9.71%
Total	9.79	100

Photographs of the site location are given below:



Champak Nagar Electric S/S



DL Section - Pole Location



DL Section -Market Area/Pole Location

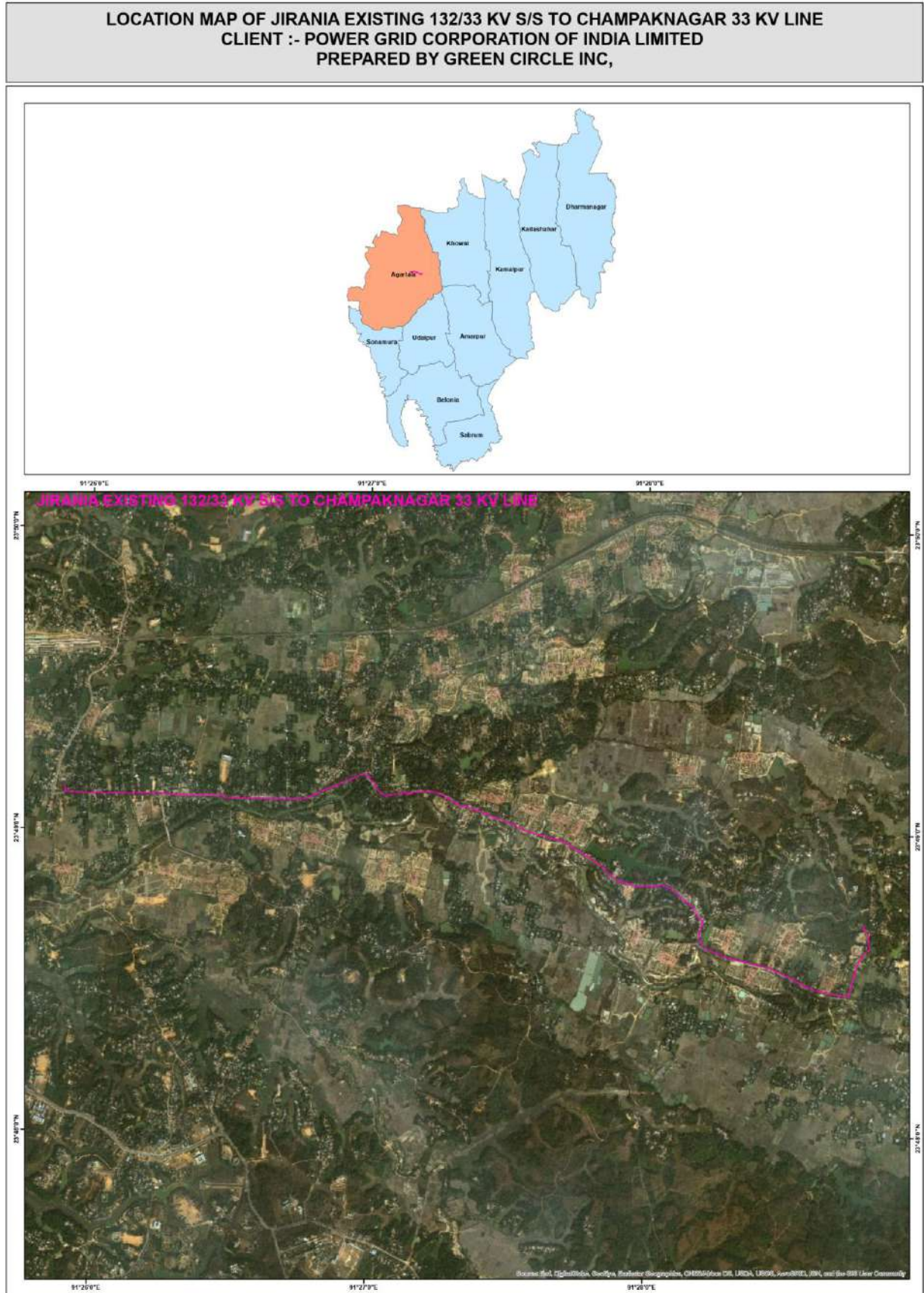


DL Section - Bridge crossing



DL Section - Metal Road

Map 4-14: Route Alignment for 33 kV line form 33/11 kV Champaknagar (New) – 132/33 kV Jirania (existing) S/S



*Blue Color Indicate: State/National line crossing

4.3.2.11 Feature Details of Final Route Alignment for 33kV Line from 33/11 kV Ranir Bazar (New) – LILO of 33 kV Khayerpur – Jirania line

33kV Line from New 33/11 kV Ranirbazar (New) – LILO of 33 kV Khayerpur – Jirania line covers 0.809 km distance. Total 30 EP are proposed in this DL. The DL is finalized after detailed analysis considering the environmental features like forest / PA / river etc. The feature survey along the DL is carried out considering 15 mt ROW i.e., 7.5 mt on either side from center line of the corridor. Geomorphological studies observed that the geology of project area is majorly having rock structure of alluvium layers with rock type shaly sandstone.

Major part of the DL passes through agricultural area (84%) and water body i.e., pond and lakes (14%). The selected line does not cross any National Highway, Railway and Power line. The DL routes do not involve forest land which do not necessitate forest clearance under Forest (Conservation) Act, 1980. Besides all protected areas like NP, WLS and designated wildlife / elephant passage have been completely avoided. The landslide study reveals that the project region is not vulnerable to landslide. However, the project area in this stretch is highly vulnerable to high flood. The type of hazard is recorded as earthquake, windstorm and high flood.

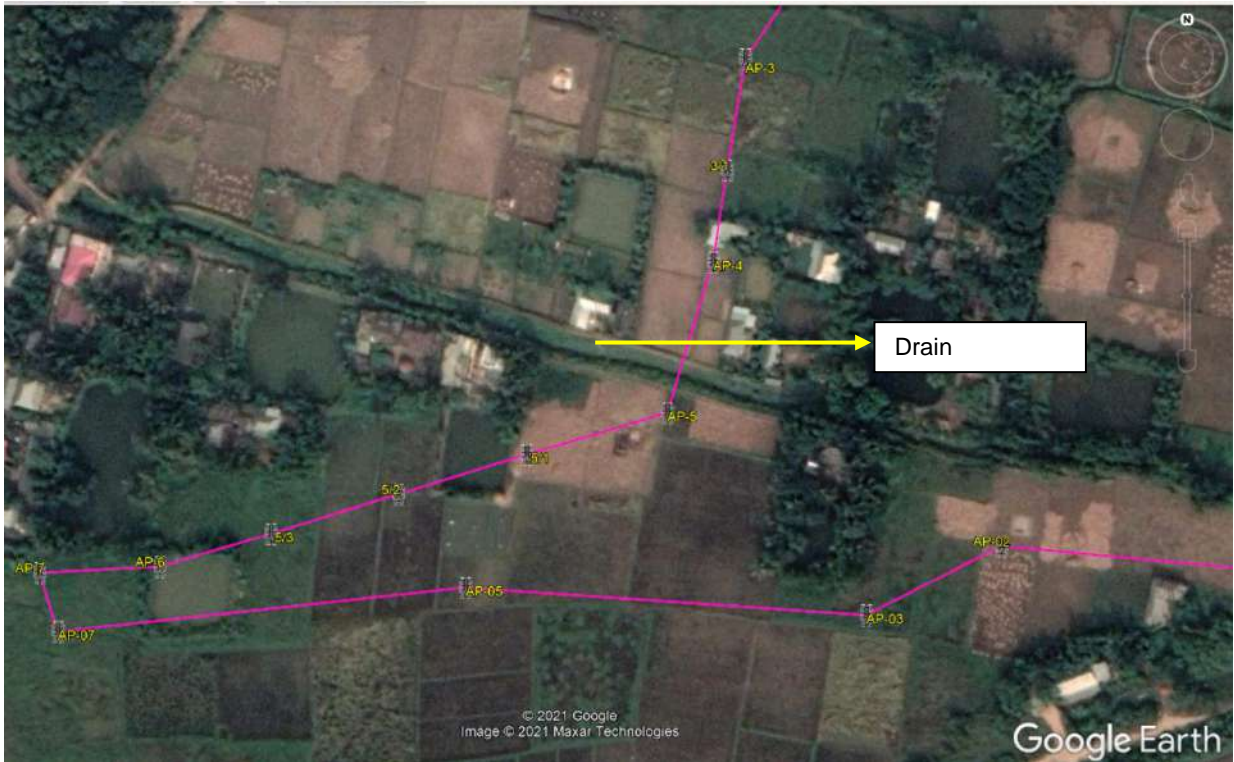
As per detailed surveys and GIS imagery data DL crossing water bodies such as pond, drain & nala. EP 1, 2, 3, 3/1, 6 is coming near water body (pond / lake). DL crossing drain / nalla between EP 4 and 5. As all the pole locations are easily accessible through existing road to carryout construction and maintenance activity and construction of new approach road is not required. EPs are constructed well above the ground level at required elevation will help to keep the people and animals away from EMF contact. It will also prevent the structure getting damaged during flood situation.

GIS route survey map and DL feature details are provided in **Annexure A15 & B15**. The major feature details are depicted in **Table 4.16**. The Google earth image DL is provided in the **Map 4.15**.

Table 4-16: 33 kV line form 33/11 kV Ranir Bazar (New) – LILO 33/11 kV Khayerpur - Jirania line

Electric Line Feature Details- 15m ROW		
Feature Class Details	Area In Ha.	% of Area
Agriculture Land	1.05	83.85%
Pond/Lake	0.17	13.56%
Mud Road	0.01	1.04%
Drain	0.01	0.87%
Fallow Land	0.01	0.68%
Total	1.25	100

Photographs of the site location are given below:



DL Crossing Drain / Nalla Between EP 4 and 5



Pole Location – Agriculture Area



Pole Location - Agriculture Area



DL Section - Nala Crossing



DL Section – Pole Location in Market Area



DL Section – Metal Road Crossing

Map 4-15: Route Alignment for 33kV Line from 33/11 kV Ranir Bazar (New) – LILO of 33 kV Khayerpur – Jirania line

LOCATION MAP OF LILO OF EXT KHAYERPUR-JIRANIA TO RANIRBAZAR
 CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
 PREPARED BY GREEN CIRCLE INC,



*Blue Color Indicate: State/National line crossing

4.3.2.12 Feature Details of Final Route Alignment for 33 kV Line From ADC Head Qtr (New) - Jirania S/S

33 kV Line from ADC Head Qtr (New) - Jirania S/S covers 3.546 km distance. Total 146 EP are proposed in this DL. The DL is finalized after detailed analysis considering the environmental features like forest / PA / river etc. The feature survey along the DL is carried out considering 15 mt ROW i.e. 7.5 mt on either side from center line of the corridor. Geomorphological studies observed that the geology of project area is majorly having rock structure of alluvium layers and less dissected denudational hills with shaly sandstone rock type.

Major part of the DL passes through agricultural area (9%), Metal Road (16%), Road Side Fallow Land (47%). The selected line does not cross any National Highway, Railway and Power line. The DL routes do not involve forest land which do not necessitate forest clearance under Forest (Conservation) Act, 1980. Besides all protected areas like NP, WLS and designated wildlife / elephant passage have been completely avoided. The landslide study reveals that the project region is low vulnerable to landslide. However, the project area in this stretch is highly vulnerable to high flood. The type of hazard is recorded as earthquake, windstorm and high flood.

As per detailed surveys and GIS imagery data DL crosses water bodies such as river, pond, drain & nala. DL crosses Haora River between EP 15 and 16. EP 30 to 33 are in close vicinity of water body (pond / lake). As 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. EPs are constructed well above the ground level at required elevation will help to keep the people and animals away from EMF contact. It will also prevent the structure getting damaged during flood situation.

GIS route survey map and DL feature details are provided in **Annexure A16 & B16**. The major feature details are depicted in **Table 4.17**. The Google earth image of DL is provided in the **Map 4.16**.

Table 4-17: 33 kV Line from ADC Head Qtr (New) - Jirania S/S

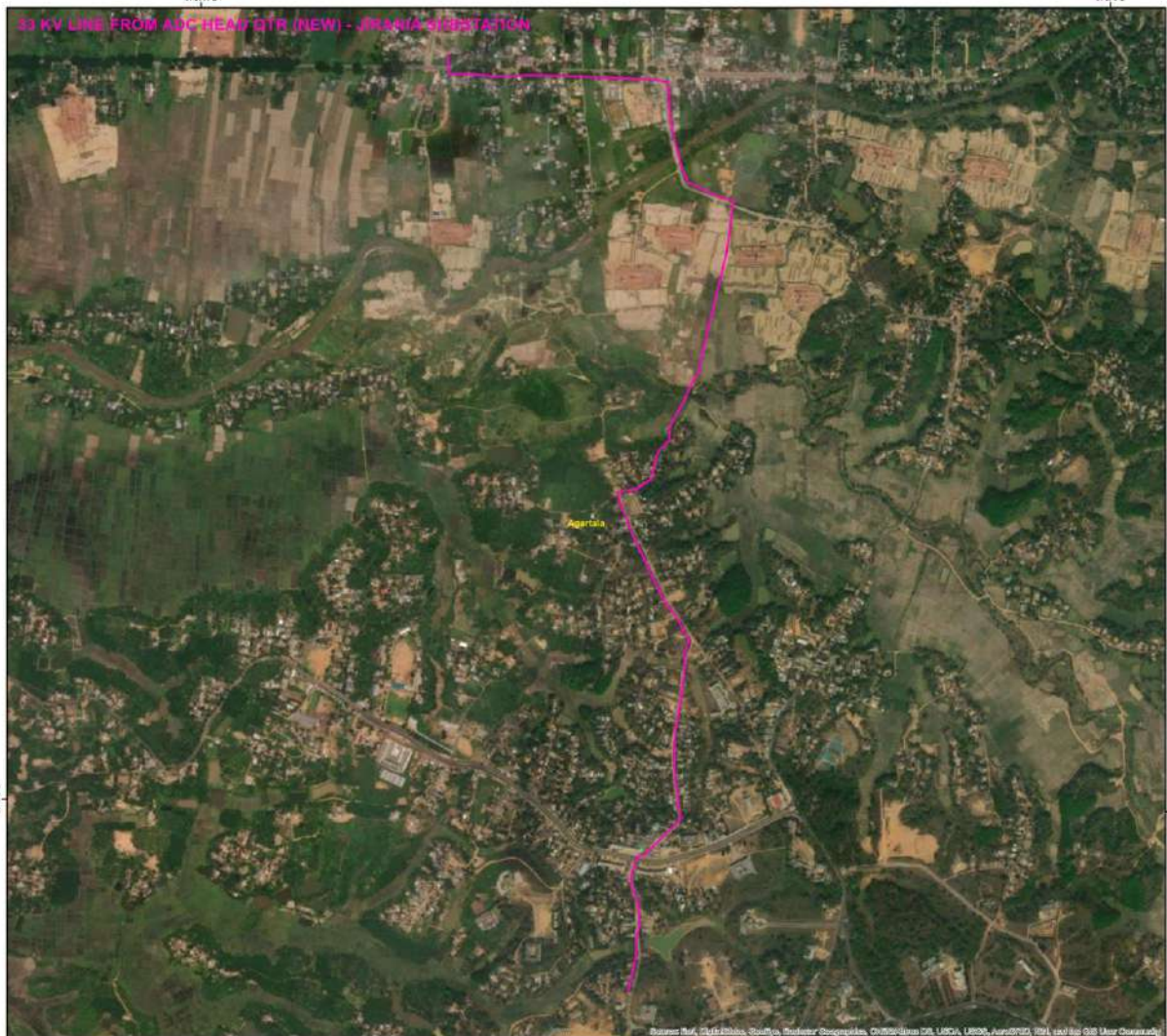
Electric Line Feature Details- 15m ROW		
Feature Class Details	Area In Ha.	% of Area
Agiculture Land	0.53	9.22%
Brick Field	0.26	4.57%
Bricks Road	0.01	0.19%
Bridge	0.04	0.67%
Electric Substation	0.45	7.86%
Metal Road	0.92	15.99%
Mud Road	0.16	2.80%
Nala/Drain	0.02	0.31%
Pond/Lake	0.05	0.88%
River	0.06	1.12%
Road Side Fallow Land	2.71	47.06%
Tree Crops and Groves	0.29	5.05%
Vacant Land	0.25	4.28%
Total	5.76	100



DL Crossing Haora River Between EP 15 and 16

Map 4-16: Route Alignment for 33 kV Line from ADC Head Qtr (New) - Jirania S/S

LOCATION MAP OF 33 KV LINE FROM ADC HEAD QTR (NEW) - JIRANIA SUBSTATION
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



4.3.2.13 Feature Details of Final Route Alignment for 33kV Line from New 33/11 kV ADC Head Qtr (New) – 33/11 kV Champaknagar (New)

33kV Line from New 33/11 kV ADC Head Qtr (New) – 33/11 kV Champaknagar (New) covers 10.756 km distance. Total 400 EP are proposed in this DL. The DL is finalized after detailed analysis considering the environmental features like forest / PA / river etc. The feature survey along the DL is carried out considering 15 mt ROW i.e., 7.5 mt on either side from center line of the corridor. Geomorphological studies observed that the geology of project area is majorly having primary rock structure of moderately dissected structural hills, less dissected denudational hills and shallow valley fill. Rock type comprises of conglomerate of shaly sandstone and sand / pebble stone.

Major part of the DL passes through metal road (33%), tree crops and groves (11%), barren rocky scrub land (9%), agricultural area (4%) and rubber plantation (5%). The selected line does not cross any National Highway, Railway and Power line. However, the line crosses bridge, brick kilns. Other than agriculture, this line traverses majorly through waste Land followed by pond / lake, waste lands. The DL routes do not involve forest land which do not necessitate forest clearance under Forest (Conservation) Act, 1980. Besides all protected areas like NP, WLS and designated wildlife / elephant passage have been completely avoided. The landslide study reveals that the project region is low to moderately vulnerable to landslide. The project area is not vulnerable to flood. The type of hazard is recorded as earthquake, windstorm and moderate landslide.

As per detailed surveys and GIS imagery data DL crosses water bodies such as river and pond, EP No. 4, 24 is coming near water body (pond). DL is crossing Haora River between EP 16 and 17. As 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. EPs are constructed well above the ground level at required elevation will help to keep the people and animals away from EMF contact. It will also prevent the structure getting damaged during flood situation.

GIS route survey map and DL feature details are provided in **Annexure A17 & B17**. The major feature details are depicted in **Table 4.18**. The Google earth image of DL is provided in the **Map 4.17**.

Table 4-18: 33 kV line from New 33/11 kV ADC Head Qtr (New) – 33/11 kV Champaknagar (New)

Electric Line Feature Details- 15m ROW		
Feature Class Details	Area In Ha.	% of Area
Agriculture Land	0.71	4.30%
Barren/Rocky with Scrub Land	1.51	9.12%
Bricks Kilns/Quarry	0.22	1.31%
Bricks Road	0.02	0.15%
Bridge	0.11	0.65%
Electric Substation	0.44	2.64%
Fallow Land	2.07	12.47%
Metal Road	5.54	33.41%
Mud Road	0.16	0.97%
Plantation	0.15	0.91%
Pond/Lake	0.16	0.96%
River	0.07	0.43%
Rubber Plantation/Orchards	0.87	5.26%
Tree Crops and Groves	1.78	10.71%

Feature Class Details	Area In Ha.	% of Area
Vacant Land	2.26	13.65%
Waste Land	0.51	3.05%
Total	16.59	100

Photographs of the site location are given below:



DL Crossing Haora River between EP 16 and 17



Mungiakami S/S construction site – Tower Foundation Work (Left) and CRB (Right)



DL Section Pole Location - Metal Road (Left) and Residential Area (Right)



DL Section - Agriculture land



DL Section - Bridge Crossing

Map 4-17: Route Alignment for 33kV Line from New 33/11 kV ADC Head Qtr (New) – 33/11 kV Champaknagar (New)

LOCATION MAP OF CHAMPKKNAGAR TO ADC HEAD QTR LINE
 CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
 PREPARED BY GREEN CIRCLE INC,



*Blue Color Indicate: State/National line crossing

4.3.2.14 Feature Details of Final Route Alignment for 33 kV line from 33/11 kV Munikiakami (New) - LILO of 33kV Ambasa- Teliamura line in from Ambassa

33 kV line from 33/11 kV Munikiakami (New) - LILO of 33kV Ambasa- Teliamura line in from Ambassa 4.17 km distance. Total 194 EP are proposed in this DL. The DL is finalized after detailed analysis considering the environmental features like forest / PA / river etc. The feature survey along the DL is carried out considering 15 mt ROW i.e., 7.5 mt on either side from center line of the corridor. Geomorphological studies observed that the geology of project area is majorly having rock structure of highly dissected structural hills. Rock type is majorly recorded as shaly sandstone and limestone bands.

Major part of the DL passes through metal road (32%), tree crops and groves (11%), barren rocky scrub land (11%), open forest (19%), fallow land (17%). The selected line does not cross any National Highway and Power line. However, the line crosses railway line, bridge. The DL routes involve non notified forest land and forest plantation scheme which do not necessitate forest clearance / NOC under Forest (Conservation) Act, 1980. Besides all protected areas like NP, WLS and designated wildlife / elephant passage have been completely avoided. The landslide study reveals that the project region is moderately vulnerable to landslide. The project area is not vulnerable to flood. The type of hazard is recorded as earthquake, windstorm and moderate landslide.

As per detailed surveys and GIS imagery data DL do not cross water bodies such as river, pond, drain & nala. As 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. EPs are constructed well above the ground level at required elevation will help to keep the people and animals away from EMF contact. It will also prevent the structure getting damaged during flood situation.

GIS route survey map and DL feature details are provided in **Annexure A18 & B18**. The major feature details are depicted in **Table 4.19**. The Google earth image of DL is provided in the **Map 4.18**.

Table 4-19: 33 kV line from 33/11 kV Munikiakami (New) - LILO of 33kV Ambasa- Teliamura line in from Ambassa

Electric Line Feature Details- 15m ROW		
Feature Class Details	Area In Ha.	% of Area
Barren/Rocky with Scrub Land	0.77	10.46%
Bricks Road	0.00	0.03%
Bridge	0.01	0.16%
Electric Substation	0.57	7.78%
Fallow Land	1.23	16.73%
Forest Plantation	0.33	4.49%
Metal Road	2.34	31.94%
Mud Road	0.05	0.68%
Open Forest	1.36	18.54%
Plantation	0.00	0.00%
Railway Track	0.07	0.99%
Tree Crops and Groves	0.60	8.20%
Total	13.95 Ha	100

Photographs of the site location are given below:



DL Section - Market area pole location



DL Section - Agriculture land

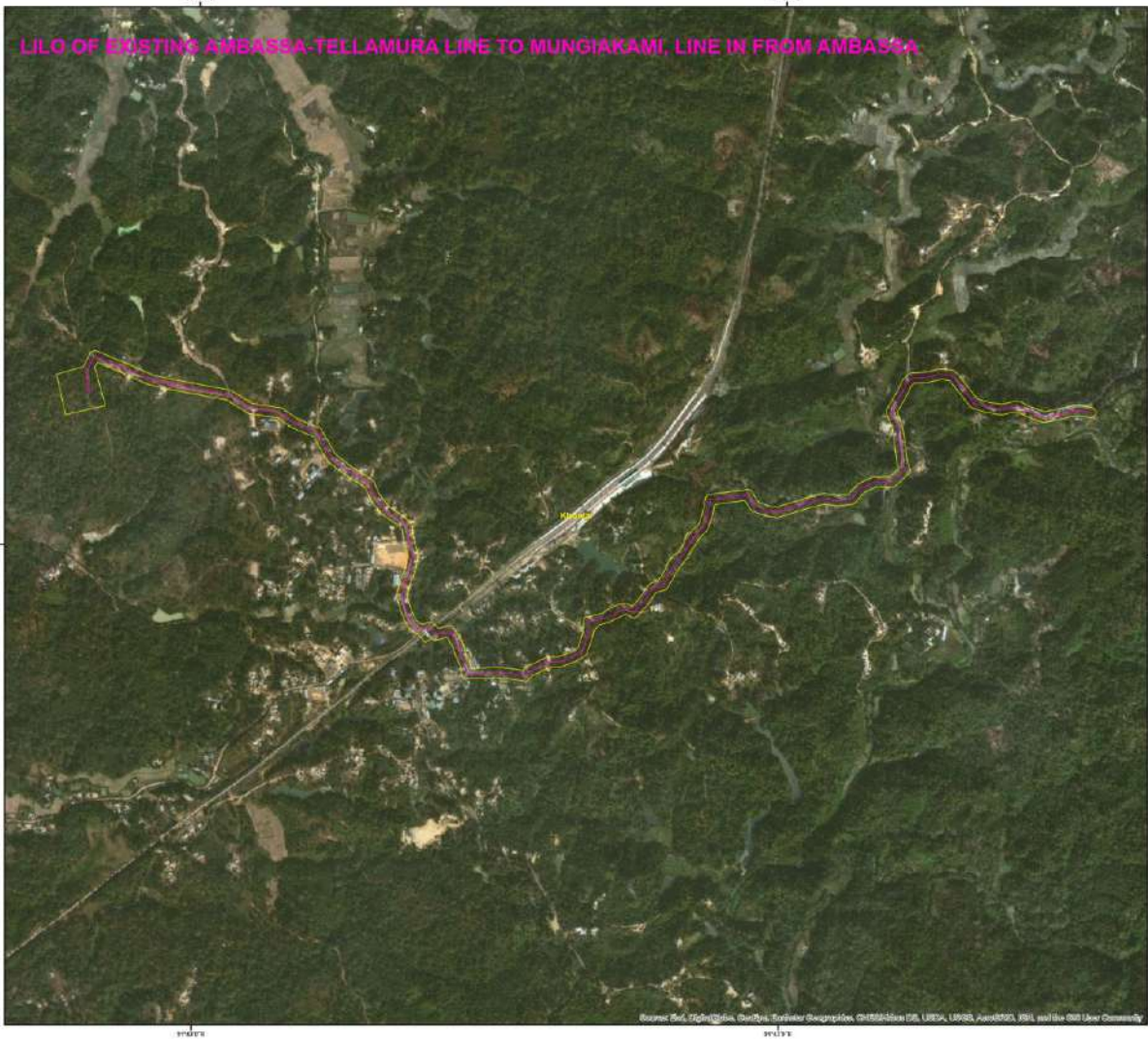
DL Section - Mud Road



DL Section - Road crossing and pole location

Map 4-18: Route Alignment for 33 kV line from 33/11 kV Munikiakami (New) - LILO of 33kV Ambassa-Teliamura line in from Ambassa

LOCATION MAP OF LILO OF EXISTING AMBASSA-TELLAMURA LINE TO MUNGIKAMI, LINE IN FROM AMBASSA
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



*Blue Color Indicate: State/National line crossing

4.3.2.15 Feature Details of Final Route Alignment for 33 kV line from 33/11 kV Munikiakami (New) - LILO of 33kV Ambasa- Teliamura line out to Teliamura

33 kV line from 33/11 kV Munikiakami (New) - LILO of 33kV Ambasa- Teliamura line out to Teliamura covers 2.461 km distance. Total 106 EP are proposed in this DL. The DL is finalized after detailed analysis considering the environmental features like forest / PA / river etc. The feature survey along the DL is carried out considering 15 mt ROW i.e., 7.5 mt on either side from center line of the corridor. Geomorphological studies observed that the geology of project area is majorly having Rock Structure of highly dissected structural hills. Rock type is conglomerate of shaly sandstone, pebble beds and limestone bands.

Major part of the DL passes through metal road (17%), tree crops and groves (8%), barren rocky scrub land (24%), fallow land (25%), open forest (8%). The selected line does not cross any National Highway and Power line. However, the line crosses railway line, bridge. The DL routes involve non notified forest land and forest plantation scheme which do not necessitate forest clearance / NOC under Forest (Conservation) Act, 1980. Besides all protected areas like NP, WLS and designated wildlife / elephant passage have been completely avoided. The landslide study reveals that the project region is low vulnerable to landslide. The project area is not vulnerable to flood. The type of hazard is recorded as earthquake, windstorm and landslide.

As per detailed surveys and GIS imagery data DL cross water ponds. As 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. EPs are constructed well above the ground level at required elevation will help to keep the people and animals away from EMF contact. It will also prevent the structure getting damaged during flood situation.

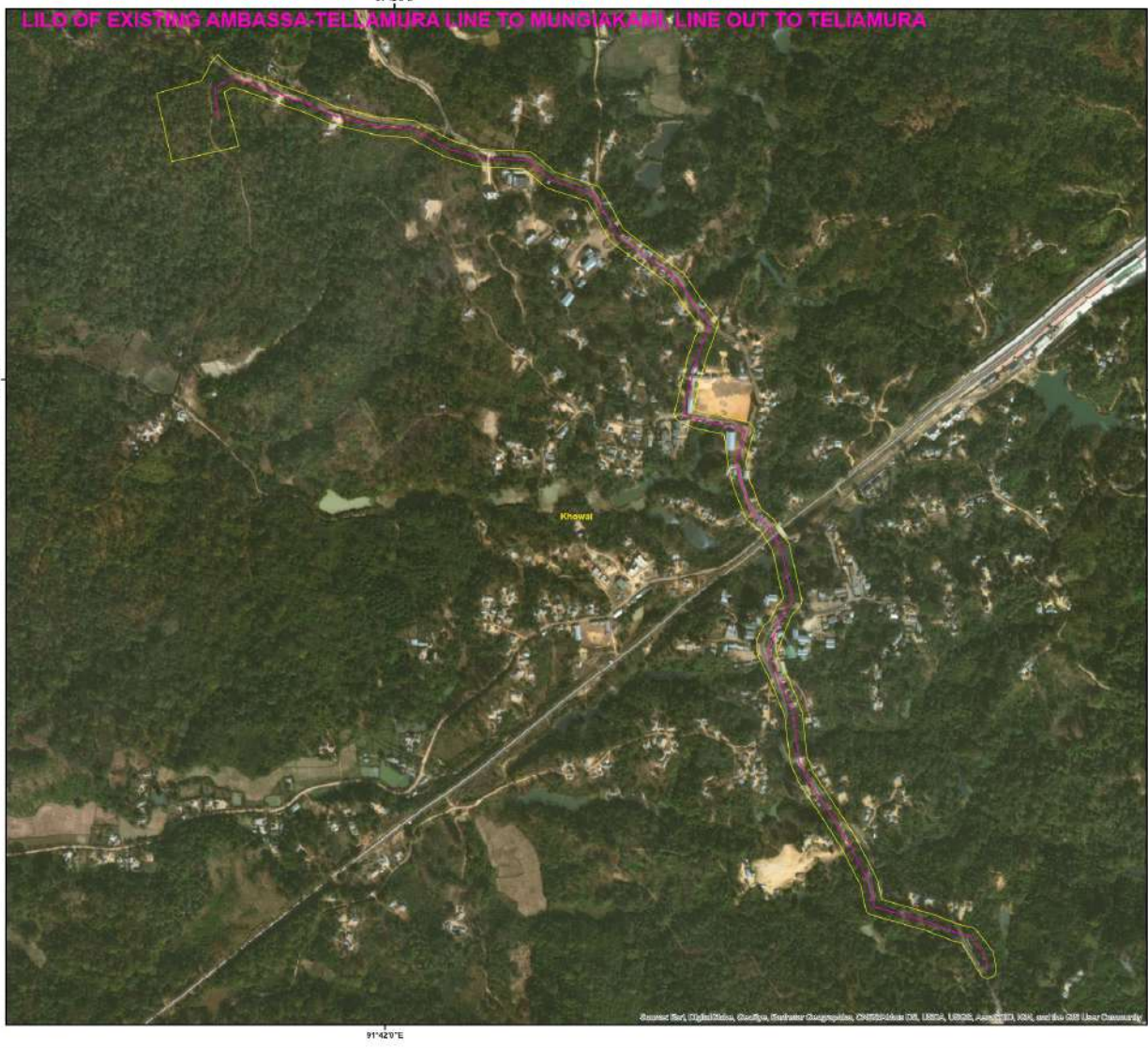
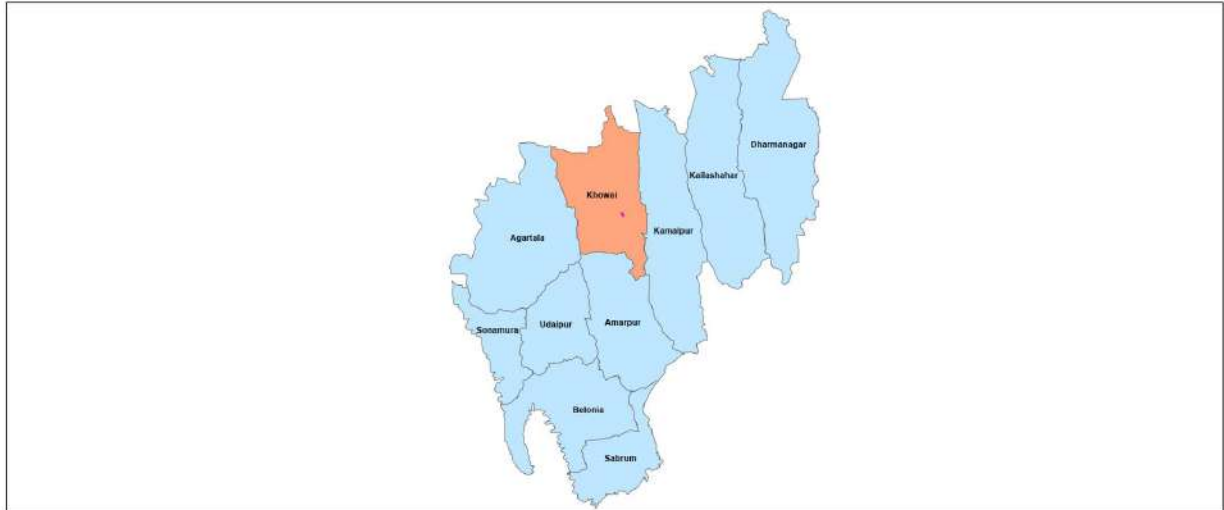
GIS route survey map and DL feature details are provided in **Annexure A19 & B19**. The major feature details are depicted in **Table 4.20**. The Google earth image of DL is provided in the **Map 4.19**.

Table 4-20: 33 kV line from 33/11 kV Munikiakami (New) - LILO of 33kV Ambasa- Teliamura line out to Teliamura

Electric Line Feature Details- 15m ROW		
Feature Class Details	Area In Ha.	% of Area
Barren Rocky Scrub Land	1.17	24.12%
Bricks Road	0.10	2.14%
Bridge	0.00	0.00%
Electric Substation	0.57	11.78%
Fallow Land	1.28	26.48%
Metal Road	0.85	17.44%
Mud Road	0.00	0.04%
Open Forest	0.40	8.32%
Pond/Lake	0.04	0.73%
Railway Track	0.04	0.76%
Tree Crops and Groves	0.40	8.21%
Total	4.85 Ha	100

Map 4-19: Route Alignment for 33 kV line from 33/11 kV Munkiakami (New) - LILO of 33kV Ambassa-Teliamura out to Teliamura

LOCATION MAP OF LILO OF EXISTING AMBASSA-TELLAMURA LINE TO MUNGIKAMI, LINE OUT TO TELIAMURA
 CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
 PREPARED BY GREEN CIRCLE INC,



4.3.2.16 Feature Details of Final Route Alignment for 33kV Line from New 33/11 kV Golaghati 132/33 kV Gokulnagar (New) S/S

33kV Line from New 33/11 kV Golaghati 132/33 kV Gokulnagar (New) S/S covers 13.205 km distance. Total 470 EP are proposed in this DL. The DL is finalized after detailed analysis considering the environmental features like forest / PA / river etc. The feature survey along the DL is carried out considering 15 mt ROW i.e., 7.5 mt on either side from center line of the corridor. Geomorphological studies observed that the geology of project area is majorly having rock structure of less dissected denudational hills and shallow younger alluvium layer. Rock type is comprising of shaly sandstone.

Major part of the DL passes through metal road (40%), tea garden (12%), tree crops and groves (5%), agricultural area (14%). The selected line does not cross any National Highway and Power line. However, the line crosses railway line, bridge. Other than agriculture, this line traverses majorly through waste Land followed by river / pond / lake, waste lands. The DL routes do not involve forest land which do not necessitate forest clearance under Forest (Conservation) Act, 1980. Besides all protected areas like NP, WLS and designated wildlife / elephant passage have been completely avoided. The landslide study reveals that the project region is moderately to not vulnerable to landslide. The project area is not vulnerable to flood. The type of hazard is recorded as earthquake, windstorm and low landslide.

As per detailed surveys and GIS imagery data DL crosses water bodies such as river, pond, drain. DL crosses Buri Ganga between EP 78 and 79 and between EP 175 and 176. As 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. EPs are constructed well above the ground level at required elevation will help to keep the people and animals away from EMF contact. It will also prevent the structure getting damaged during flood situation.

GIS route survey map and DL feature details are provided in **Annexure A20 & B20**. The major feature details are depicted in **Table 4.21**. The Google earth image of DL is provided in the **Map 4.20**.

Table 4-21: 33 kV line from New 33/11 kV Golaghati 132/33 kV Gokulnagar (New) S/S

Electric Line Feature Details- 15m ROW		
Feature Class Details	Area In Ha.	% of Area
Agriculture Land	3.02	13.99%
Barren Rocky Waste Land	0.40	1.84%
Brick Road	0.08	0.38%
Bridge	0.06	0.29%
Electric Substation	1.82	8.46%
Fallow Land	1.34	6.21%
Metal Road	8.56	39.67%
Mud Road	0.09	0.42%
Play Ground	0.09	0.40%
Pond/Lake	0.30	1.39%
Railway	0.02	0.08%
River	0.04	0.20%
Tea Garden	2.58	11.98%
Tree Crops and Groves	1.12	5.19%
Vacant Land	1.90	8.79%
Waste Land	0.15	0.71%
Total	21.58 Ha	100

Photographs of the site location are given below:



DL crosses Buri Ganga River between EP 78 and 79



DL crosses Buri Ganga River between EP 175 and 176



Golaghati Electric S/S Tower Erection

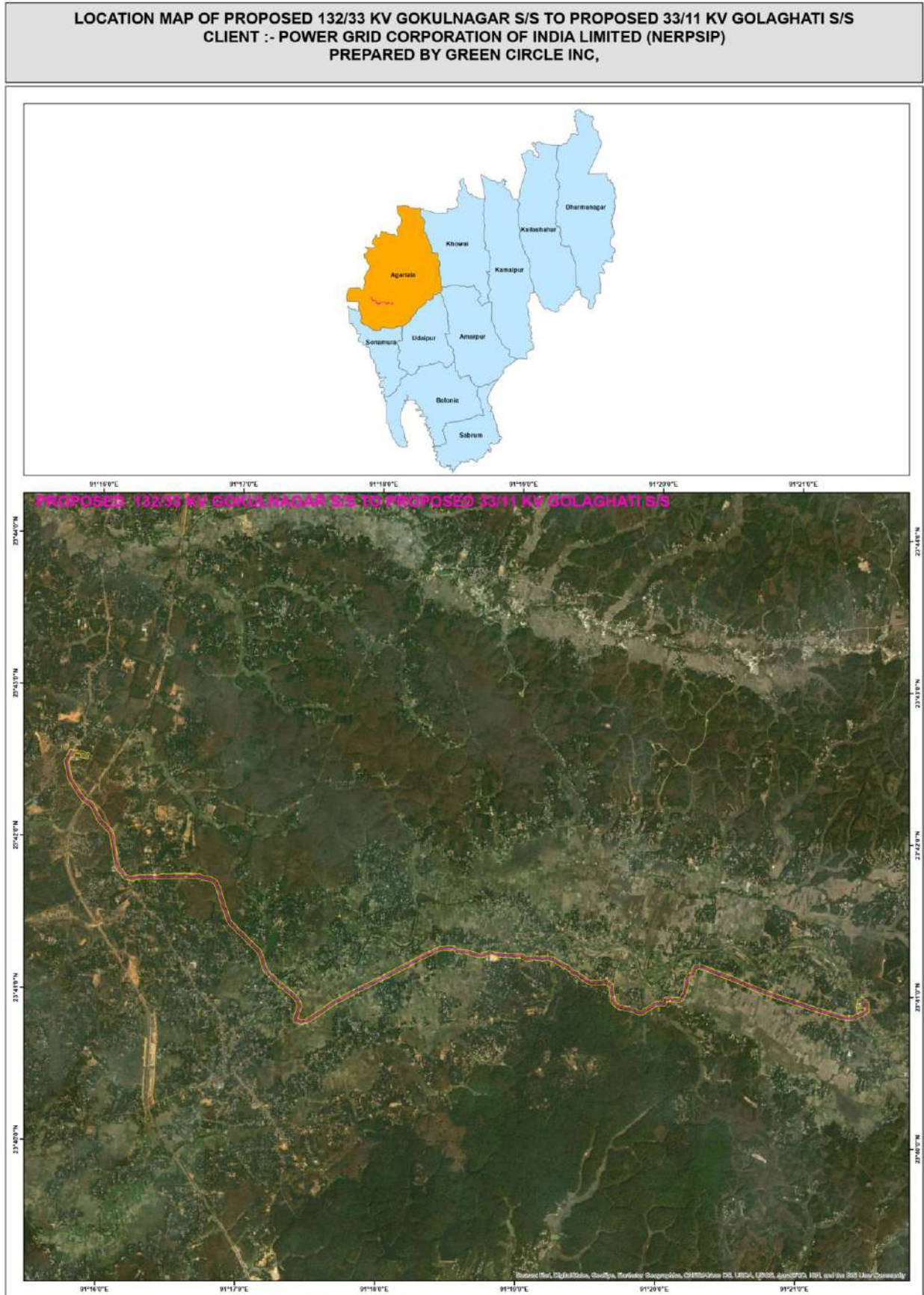


DL Section - Mud Road Pole Location



DL Section - Pole location in Agriculture Land

Map 4-20: Route Alignment for 33kV Line from New 33/11 kV Golaghati 132/33 kV Gokulnagar (New) S/S



*Blue Color Indicate: State/National line crossing

4.3.2.17 Feature Details of Final Route Alignment for 33kV Line from New 33/11 kV Golaghati (New) – 33/11 kV Takarjala (Existing) S/S

33kV Line from New 33/11 kV Golaghati (New) – 33/11 kV Takarjala (Existing) S/S covers 10.657 km distance. Total 470 EP / TT are proposed in this DL. The DL is finalized after detailed analysis considering the environmental features like forest / PA / river etc. The feature survey along the DL is carried out considering 15 mt ROW i.e., 7.5 mt on either side from center line of the corridor. Geomorphological studies observed that the geology of project area is majorly having rock structure of moderately dissected structural hills and shallow younger alluvium layer. Rock type is Shaly sandstone and conglomerate of sandstone and pebble bed.

Major part of the DL passes through metal road (45%), rubber plantation and orchards (11%), tree crops and groves (11%), agricultural area (11%). The selected line does not cross any National Highway, railway and Power line. However, the line crosses bridge, agriculture, waste Land followed by river / pond / lake, waste lands. The DL routes do not involve forest land which do not necessitate forest clearance under Forest (Conservation) Act, 1980. Besides all protected areas like NP, WLS and designated wildlife / elephant passage have been completely avoided. The landslide study reveals that the project region is low vulnerable to landslide. The project area is not vulnerable to flood. The type of hazard is recorded as earthquake, windstorm and low landslide.

As per detailed surveys and GIS imagery data DL crosses water bodies such as river, pond, drain & nala. EP No. 101 to 109, 159 are coming in close proximity of water body (pond). DL is crossing Buri Ganga River between EP 201 and 202. As 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. EPs are constructed well above the ground level at required elevation will help to keep the people and animals away from EMF contact. It will also prevent the structure getting damaged during flood situation.

GIS route survey map and DL feature details are provided in **Annexure A21 & B21**. The major feature details are depicted in **Table 4.22**. The Google earth image of DL is provided in the **Map 4.21**.

Table 4-22: 33 kV line from New 33/11 kV Golaghati (New) - 33/11 kV Takarjala (Existing) S/S

Electric Line Feature Details- 15m ROW		
Feature Class Details	Area in Ha.	% of Area
Agriculture Land	1.87	11.33%
Barren/Rocky with Scrub Land	0.21	1.24%
Bricks Road	0.05	0.28%
Bridge	0.01	0.06%
Drain/Nala	0.02	0.10%
Electric Substation	0.63	3.79%
Fallow Land	0.76	4.58%
Metal Road	7.50	45.43%
Mud Road	0.10	0.62%
Play Ground	0.01	0.07%
Pond/Lake	0.19	1.16%
River	0.05	0.33%
Rubber Plantation and Orchards	1.78	10.80%
Stream	0.06	0.35%
Tree Crops and Groves	1.77	10.74%
Vacant Land	1.33	8.03%

Feature Class Details	Area in Ha.	% of Area
Waste Land	0.18	1.09%
Total	16.52 Ha	100

Photographs of the site location are given below:



DL Crossing Buri Ganga River Between EP 201 and 202



DL Section - Pole Location in Agriculture Land



DL Section - Pole Location Vacant Land



DL Section - Pond Area

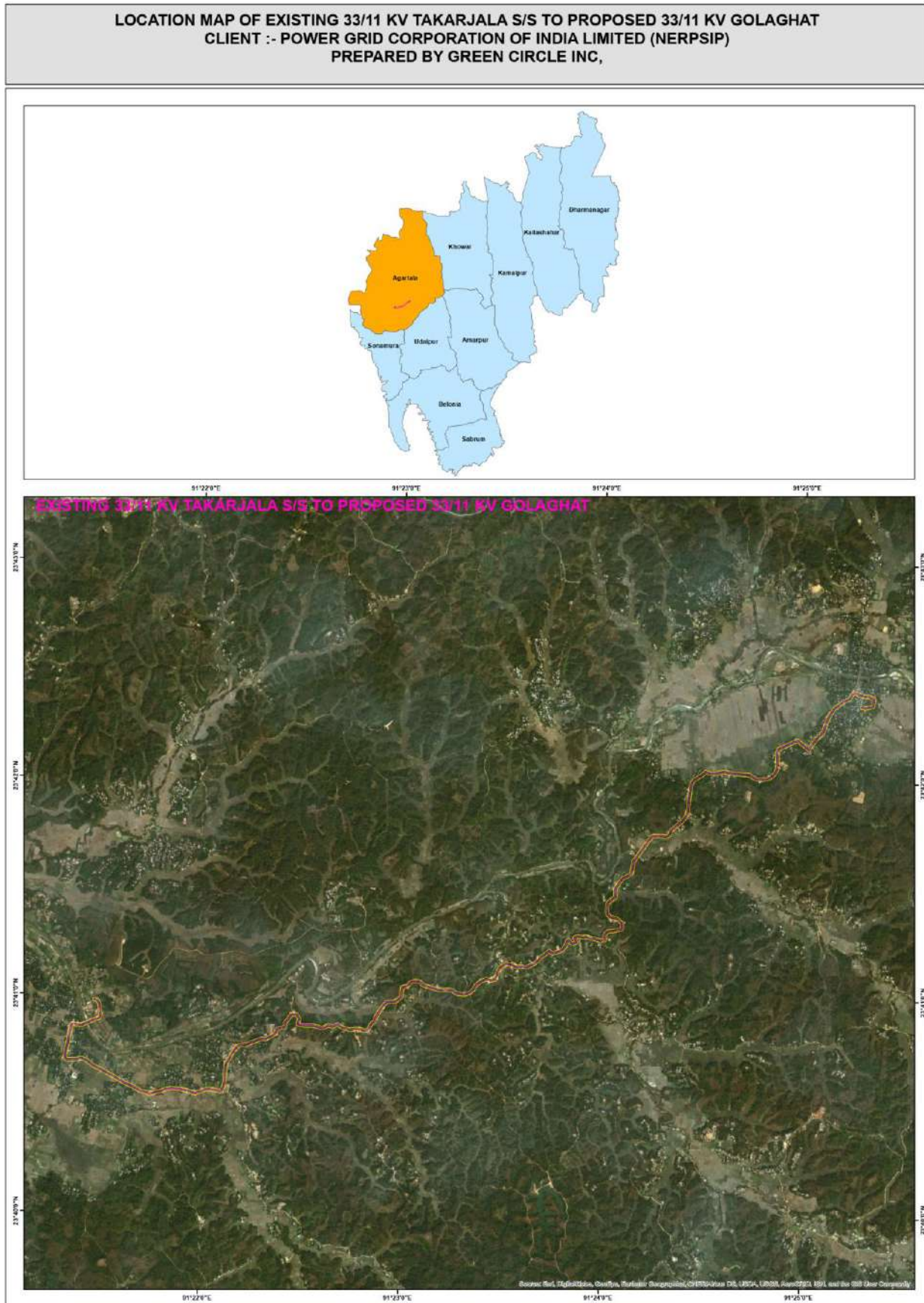


DL Section - Pole Location/Bricks Road



DL Section - Pole Location vacant Land (Left) and Residential Area (Right)

Map 4-21: Route Alignment for 33kV Line from New 33/11 kV Golaghati (New) – 33/11 kV Takarjala (Existing) S/S



*Blue Color Indicate: State/National line crossing

4.3.2.18 Feature Details of Final Route Alignment for 33kV Line from New 33/11 kV Durganagar (New) – 132/33 kV Gakulnagar (New) S/S

33kV Line from New 33/11 kV Durganagar (New) – 132/33 kV Gakulnagar (New) S/S covers 7.023 km distance. Total 292 EP are proposed in this DL. The DL is finalized after detailed analysis considering the environmental features like forest / PA / river etc. The feature survey along the DL is carried out considering 15 mt ROW i.e., 7.5 mt on either side from center line of the corridor. Geomorphological studies observed that the geology of project area is majorly having rock structure of less dissected denudational hills with shaly sandstone rock type.

Major part of the DL passes through metal road (32%), rubber plantation and orchards (23%), tree crops and groves (14%), fallow land (9%). The selected line does not cross any National Highway, railway and Power line. However, the line crosses waste Land and wet land. The DL routes do not involve forest land which do not necessitate forest clearance under Forest (Conservation) Act, 1980. Besides all protected areas like NP, WLS and designated wildlife / elephant passage have been completely avoided. The landslide study reveals that the project region is low to moderate vulnerable to landslide. The project area is not vulnerable to flood. The type of hazard is recorded as earthquake, windstorm and low landslide.

As per detailed surveys and GIS imagery data DL do not cross water bodies such as river, pond however cross drain & nala. No EP No. 15 is coming near drain. EP No. 16 is coming in wet land. As 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. At 33 kV Durganagar S/S strengthening of 500 mt approach road is required. EPs are constructed well above the ground level at required elevation will help to keep the people and animals away from EMF contact. It will also prevent the structure getting damaged during flood situation.

GIS route survey map and DL feature details are provided in **Annexure A22 & B22**. The major feature details are depicted in **Table 4.23**. The Google earth image of DL is provided in the **Map 4.22**.

Table 4-23: 33 kV line from New 33/11 kV Durganagar (New) - 132/33 kV Gakulnagar (New) S/S

Electric Line Feature Details- 15m ROW		
Feature Class Details	Area In Ha.	% of Area
Agriculture Land	0.08	0.67%
Barren/Rocky	0.19	1.61%
Drain	0.03	0.21%
Electric Substation	1.47	12.25%
Fallow Land	1.04	8.69%
Metal Road	3.79	31.73%
Mud Road	0.12	1.04%
Plantation/Orchards	2.77	23.15%
Scrub Land	0.04	0.33%
Tree Crops and Groves	1.72	14.41%
Vacant Land	0.47	3.93%
Waste Land	0.13	1.07%
Wet land	0.11	0.91%
Total	22.52	100

Photographs of the site location are given below:



DL Section - Crossing Metal Road



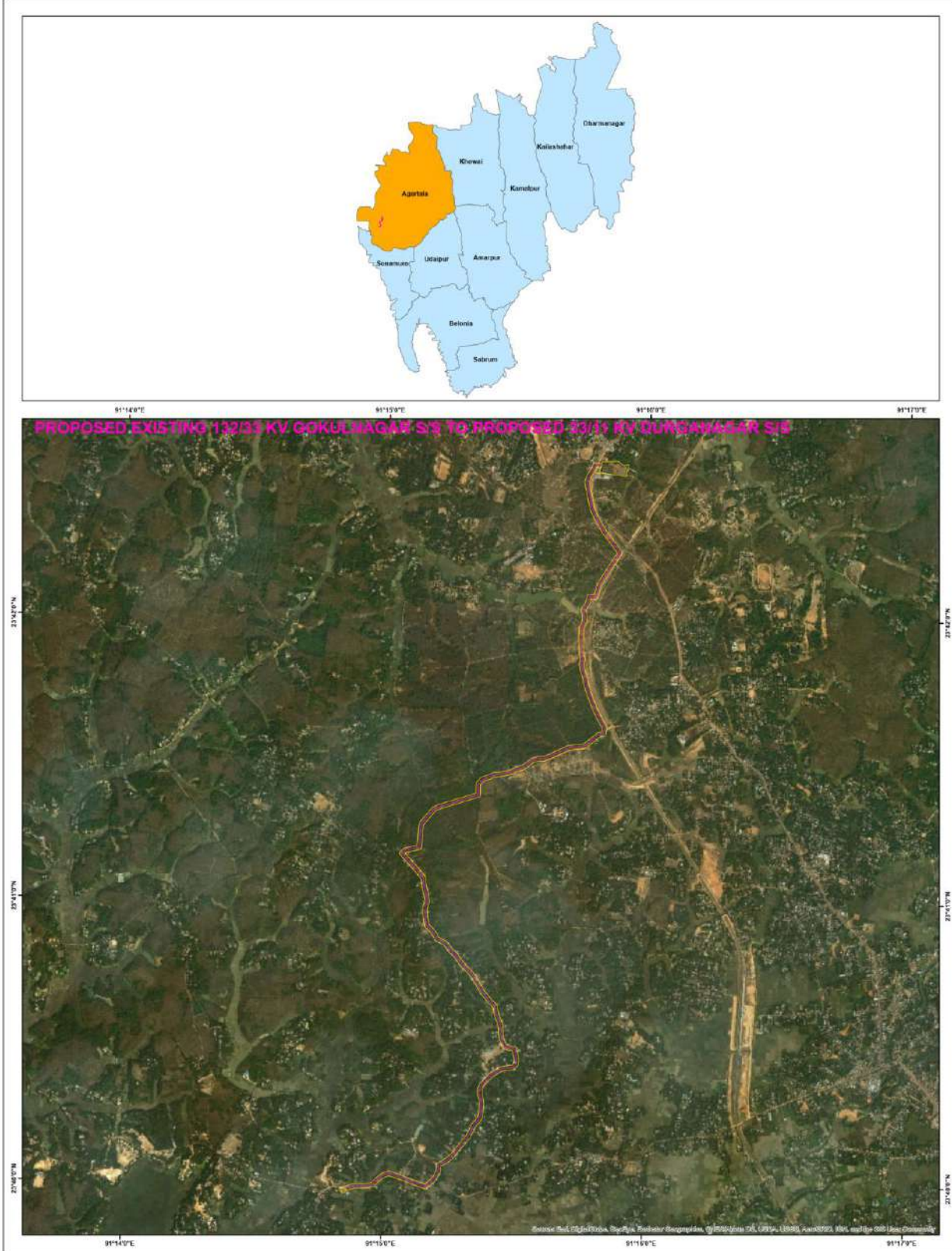
Pole Storage site



DL Section - Near Lakes/Pond

Map 4-22: Final Route Alignment for 33kV Line from New 33/11 kV Durganagar (New) – 132/33 kV Gakulnagar (New) S/S

LOCATION MAP OF PROPOSED EXISTING 132/33 KV GOKULNAGAR S/S TO PROPOSED 33/11 KV DURGANAGAR S/S
 CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
 PREPARED BY GREEN CIRCLE INC,



*Blue Color Indicate: State/National line crossing

4.3.2.19 Feature Details of Final Route Alignment for 33kV Line from New 33/11 kV Durga Nagar (New) – 33/11 kV Madhupur (Existing) S/S

33kV Line from New 33/11 kV Durga Nagar (New) – 33/11 kV Madhupur (Existing) S/S covers 10.618 km distance. Total 420 EP are proposed in this DL. The DL is finalized after detailed analysis considering the environmental features like forest / PA / river etc. The feature survey along the DL is carried out considering 15 mt ROW i.e., 7.5 mt on either side from center line of the corridor. Geomorphological studies observed that the geology of project area is majorly having rock structure of less dissected denudational hills with shaly sandstone rock type.

Major part of the DL passes through rubber plantation with hilly open forest (59%), barren rocky scrub land (10%). The selected line does not cross any National Highway and Power line. However, the line crosses railway line, mud road, metal road, tree crops and groves, waste land and wet land. The DL routes do not involve forest land which would not necessitate forest clearance under Forest (Conservation) Act, 1980. Besides all protected areas like NP, WLS and designated wildlife / elephant passage have been completely avoided. The landslide study reveals that the project region is highly vulnerable to landslide. The project area is not vulnerable to flood. The type of hazard is recorded as earthquake, windstorm and high landslide.

As per detailed surveys and GIS imagery data DL crosses water bodies such as pond, drain & nala and wet land. EP No. 49 is coming near pond. EP No. 21/1, 21/2, 22, 79, 83, 115 is coming in wet land. As 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. At 33 kV Durganagar S/S strengthening of 500 mt approach road is required. EPs are constructed well above the ground level at required elevation will help to keep the people and animals away from EMF contact. It will also prevent the structure getting damaged during flood situation.

GIS route survey map and DL feature details are provided in **Annexure A23 & B23**. The major feature details are depicted in **Table 4.24**. The Google earth image of DL is provided in the **Map 4.23**.

Table 4-24: 33 kV line from New 33/11 kV Durganagar (New) – 33/11 kV Madhupur (Existing) S/S

Electric Line Feature Details- 15m ROW		
Feature Class Details	Area in Ha.	% of Area
Agriculture Land	1.45	9.16%
Barren Rocky with Scrub Land	1.61	10.19%
Bricks Road	0.04	0.24%
Drain/Nala	0.01	0.04%
Metal Road	0.21	1.34%
Mud Road	0.28	1.77%
Pond/Lake	0.12	0.76%
Railway	0.02	0.11%
Rubber Plantation with Hilly Open Forest	9.36	59.36%
Tree Crops and Groves	0.63	3.98%
Tree Plantation	0.50	3.16%
Vacant Land	1.22	7.74%
Waste Land	0.04	0.23%
Wet Land	0.30	1.92%
Total	15.77	100

Photographs of the site location are given below:



DL Section - Tree Crops and Groves



DL Section - Ponds/Lake

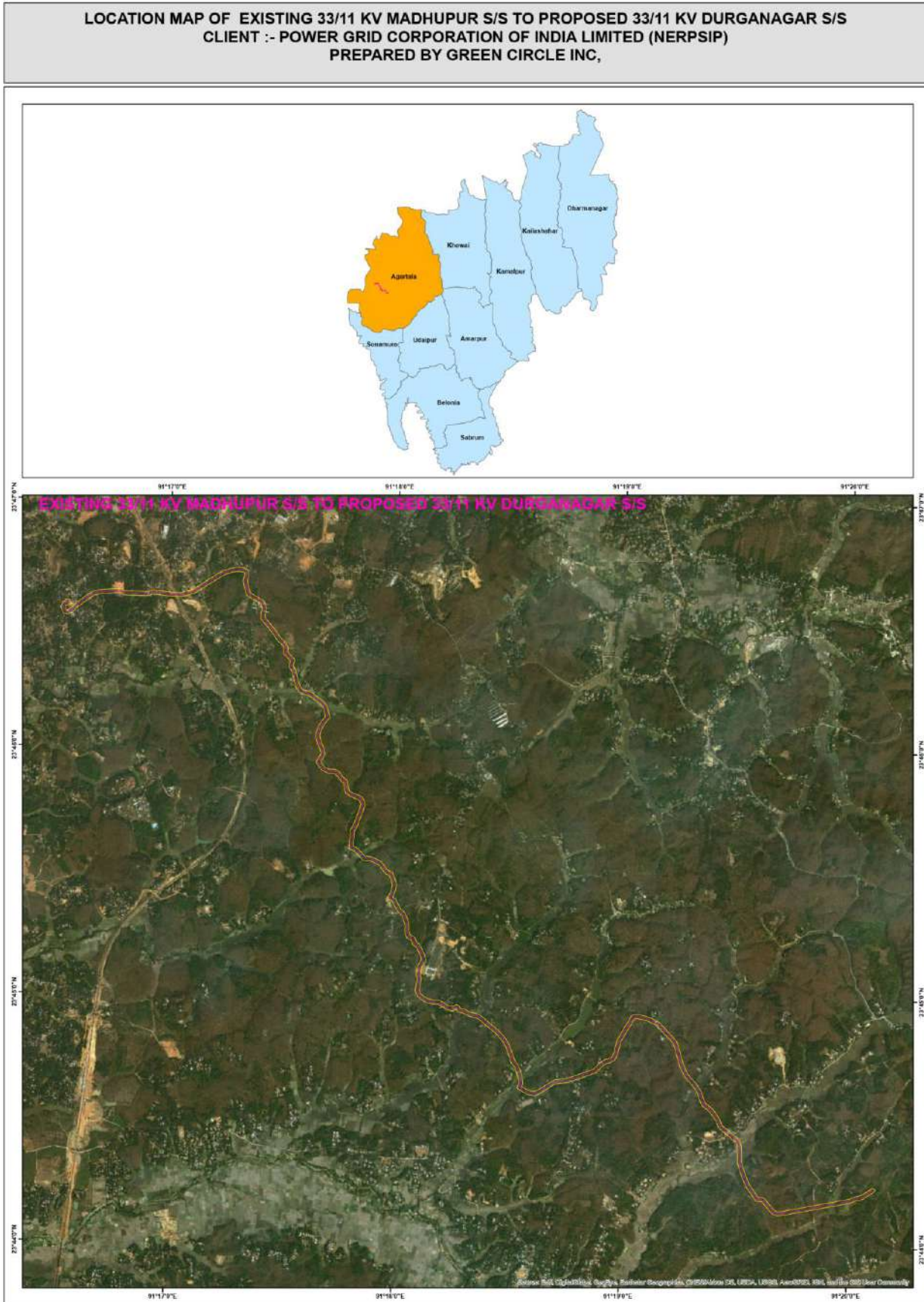


DL Section - Trees/Crops



DL Section - Mud Road

Map 4-23: Route Alignment for 33kV Line from New 33/11 kV Durganagar (New) – 33/11 kV Madhupur (Existing) S/S



*Blue Color Indicate: State/National line crossing

4.3.2.20 Feature Details of Final Route Alignment for 33kV Line from New 33/11 kV Nidaya (New) – 33/11 kV Kathalia (Existing) S/S

33kV Line from New 33/11 kV Nidaya (New) – 33/11 kV Kathalia (Existing) S/S covers 9.364 km distance. Total 395 EP are proposed in this DL. The DL is finalized after detailed analysis considering the environmental features like forest / PA / river etc. The feature survey along the DL is carried out considering 15 mt ROW i.e., 7.5 mt on either side from center line of the corridor. Geomorphological studies observed that the geology of project area is majorly having rock structure of less dissected denudational hills, moderately dissected structural hills and shallow younger alluvial. Rock type is shaly sandstone.

Major part of the DL passes through metal road (36%), rubber plantation (7%), agriculture land (14%), tree crops and groves (9%). The selected line does not cross any National Highway, Railway and Power line. However, the line crosses bridge, mud road, metal road, tree crops and groves. The DL route do not involve notified forest land and WLS however, 33/11 kV Nidaya S/S is located in RF of Trishna WLS. Total Forest area to be diverted is 0.3299 Ha. This requires Forest clearance adhering to Forest (Conservation) Act, 1980 and WL conservation Act 1972. Accordingly, Stage I clearance is obtained as on 16th March 2020. Also, NOC from NBWL is obtained for Trishna Wild life Sanctuary in 2019. The landslide study reveals that the project region is moderately vulnerable to landslide. The project area is not vulnerable to flood. The type of hazard is recorded as earthquake, windstorm and landslide.

As per detailed surveys and GIS imagery data water bodies such as river, pond, drain & nala. EP No. 31/1, 32/1, 58/3 is coming in pond. As 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. At 33 kV Nidaya S/S strengthening of 200 mt approach road is under construction.

EPs are constructed well above the ground level at required elevation will help to keep the people and animals away from EMF contact. It will also prevent the structure getting damaged during flood situation.

GIS route survey map and DL feature details are provided in **Annexure A24 & B24**. The major feature details are depicted in **Table 4.25**. The Google earth image of DL is provided in the **Map 4.24**.

Table 4-25: 33 kV line from New 33/11 kV Nidaya (New) – 33/11 kV Kathalia (Existing) S/S

Electric Line Feature Details- 15m ROW		
Feature Class Details	Area In Ha.	% of Area
Agriculture Land	2.15	14.19%
Barren Rocky with Scrub Land	0.46	3.01%
Bricks Road	0.07	0.49%
Bridge	0.06	0.42%
Electric Substation	0.94	6.21%
Fallow Land	0.41	2.70%
Metal Road	5.45	35.91%
Mud Road	0.19	1.28%
Pond/Lake	0.14	0.95%
River	0.02	0.10%
Rubber Plantation/Orchards	1.03	6.77%
Tree Crops and Groves	1.39	9.14%
Vacant land	2.08	13.73%
Waste Land	0.77	5.09%
Total	15.17 Ha	100

Photographs of the site location are given below:



DL Section - Pole Location



Nidaya Electric S/S - Construction Site

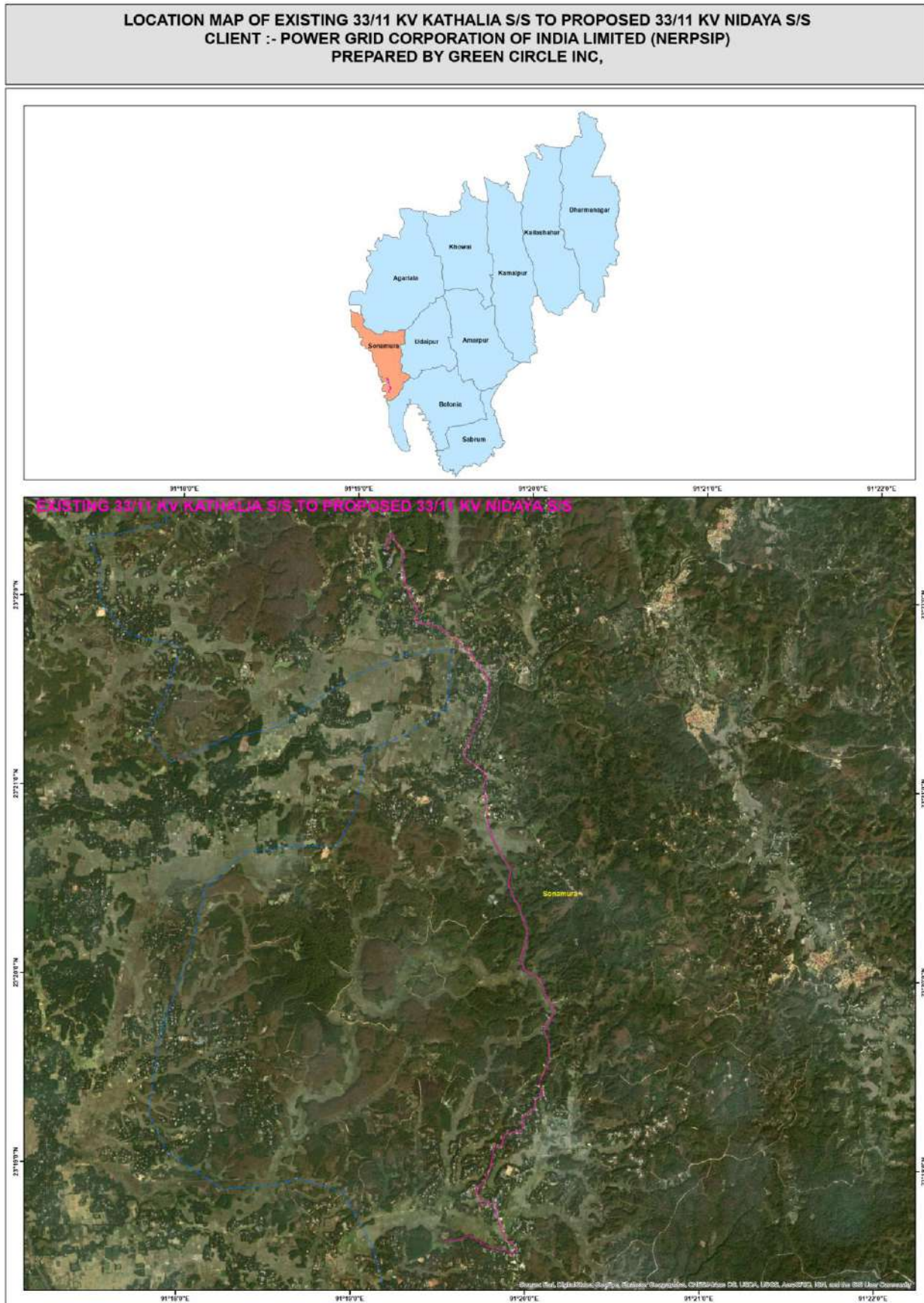


Boundary Wall - Nidaya S/S



DL Section - Metal Road and Pole Location

Map 4-24: Route Alignment for 33kV Line from New 33/11 kV Nidaya (New) – 33/11 kV Kathalia (Existing) S/S



*Blue Color Indicate: State/National line crossing

4.3.2.21 Feature Details of Final Route Alignment for 33kV Line from New 33/11 kV Nidaya (New) – 33/11 kV Rajnagar (Existing) S/S

33kV Line from New 33/11 kV Nidya (New) – 33/11 kV Rajnagar (Existing) S/S covers 17.339 km distance. Total 641 EP are proposed in this DL. The DL is finalized after detailed analysis considering the environmental features like forest / PA / river etc. The feature survey along the DL is carried out considering 15 mt ROW i.e., 7.5 mt on either side from center line of the corridor. Geomorphological studies observed that the geology of project area is majorly having rock structure of less dissected denudational hills. Rock type is shaly sandstone.

Major part of the DL passes through metal road (39%), rubber plantation (11%), agriculture land (12%), tree crops and groves (12%), open forest (4%). The selected line does not cross any National Highway, Railway and Power line. However, the line crosses mud road, metal road, tree crops and groves, waste land, fallow land. The DL route do not involve notified forest land and WLS however, 33/11 kV Nidaya S/S is located in RF of Trishna WLS. Total Forest area to be diverted is 0.3299 Ha. This requires Forest clearance adhering to Forest (Conservation) Act, 1980 and WL conservation Act 1972. Accordingly, Stage I clearance is obtained as on 16th March 2020. Also, NOC from NBWL is obtained for Trishna Wild life Sanctuary in 2019. Besides this designated wildlife / elephant passage is completely avoided. The landslide study reveals that the project region is moderate to low vulnerable to landslide. The project area is not vulnerable to flood. The type of hazard is recorded as earthquake, windstorm and low landslide.

As per detailed surveys and GIS imagery data DL crosses water bodies such as pond, drain & nala. No EP is coming in water body. However, some EPs are coming in close proximity of water pond like EP 18, 126, 157, 157/1, 173, 175. As 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. At 33 kV Nidaya S/S strengthening of 200 mt approach road is under construction. EPs are constructed well above the ground level at required elevation will help to keep the people and animals away from EMF contact. It will also prevent the structure getting damaged during flood situation.

GIS route survey map and DL feature details are provided in **Annexure A25 & B25**. The major feature details are depicted in **Table 4.26**. The Google earth image of DL is provided in the **Map 4.25**.

Table 4-26: 33 kV line from New 33/11 kV Nidaya (New) – 33/11 kV Rajnagar (Existing) S/S

Electric Line Feature Details- 15m ROW		
Feature Class Details	Area In Ha.	% of Area
Agriculture Land	2.21	9.68%
Barren Rocky with Scrub Land	0.16	0.68%
Brick Road	0.07	0.32%
Canal	0.03	0.12%
Drain/Nala	0.01	0.03%
Electric Substation	0.39	1.71%
Fallow Land	0.23	1.01%
Metal Road	8.80	38.56%
Mud Road	0.12	0.53%
Open Forest	1.01	4.44%
Pond/Lake	0.20	0.88%

Feature Class Details	Area In Ha.	% of Area
Rubber Plantation/Orchards	2.52	11.05%
Tree Crops and Groves	2.67	11.71%
Vacant Land	3.15	13.79%
Waste Land	1.25	5.49%
Total	22.81 Ha	100

Photographs of the site location are given below:



DL Section - Tree Mark for AP



DL Section - Metal Road



DL Section - Pole Location



DL Section - Pole Location Near School

4.3.2.22 Feature Details of Final Route Alignment for 33kV Line from New 33/11 kV Nalchar (New) – 33/11 kV Melaghar (Existing) S/S

33kV Line from New 33/11 kV Nalchar (New) – 33/11 kV Melaghar (Existing) S/s covers 6.742 km distance. Total 292 EP are proposed in this DL. The DL is finalized after detailed analysis considering the environmental features like forest / PA / river etc. The feature survey along the DL is carried out considering 15 mt ROW i.e., 7.5 mt on either side from center line of the corridor. Geomorphological studies observed that the geology of project area is majorly having rock structure of moderately dissected structural hills. Rock type is shaly sandstone and conglomerate of pebble beds.

Major part of the DL passes through metal road (41%), rubber plantation (7%), vacant land (23%), tree crops and groves (12%). The selected line does not cross any National Highway, Railway and Power line. However, the line crosses metal road, tree crops and groves, waste land, fallow land. The DL routes do not involve forest land which would not necessitate forest clearance under Forest (Conservation) Act, 1980. Besides all protected areas like NP, WLS and designated wildlife / elephant passage have been completely avoided. The landslide study reveals that the project region is moderate vulnerable to landslide. The project area is not vulnerable to flood. The type of hazard is recorded as earthquake, windstorm and moderate landslide.

As per detailed surveys and GIS imagery data DL crosses water bodies such as river, pond. No EP is coming in water body. DL is crossing small tributary of Gomati River between EP 132 and 133. As 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. EPs are constructed well above the ground level at required elevation will help to keep the people and animals away from EMF contact. It will also prevent the structure getting damaged during flood situation.

GIS route survey map and DL feature details are provided in **Annexure A26 & B26**. The major feature details are depicted in **Table 4.27**. The Google earth image of DL is provided in the **Map 4.26**.

Table 4-27: 33 kV line from New 33/11 kV Nalchar (New) – 33/11 kV Melaghar (Existing) S/s

Electric Line Feature Details- 15m ROW		
Feature Class Details	Area In Ha.	% of Area
Agriculture Land	0.53	4.98%
Bricks Road	0.01	0.10%
Electric Substation	0.46	4.34%
Fallow Land	0.44	4.14%
Metal Road	4.35	41.20%
Mud Road	0.07	0.69%
Petrol Pump	0.02	0.15%
Pond/Lake	0.23	2.16%
River	0.03	0.28%
Rubber Plantation/Orchards	0.74	7.00%
Tree Crops and Groves	1.21	11.49%
Vacant Land	2.47	23.44%
Waste Land	0.01	0.05%
Total	10.55 Ha	100

Photographs of the site location are given below:

Green Circle Inc.



DL is crossing small tributary of Gomati River between EP 132 and 133



Electric Substation



Electric Substation



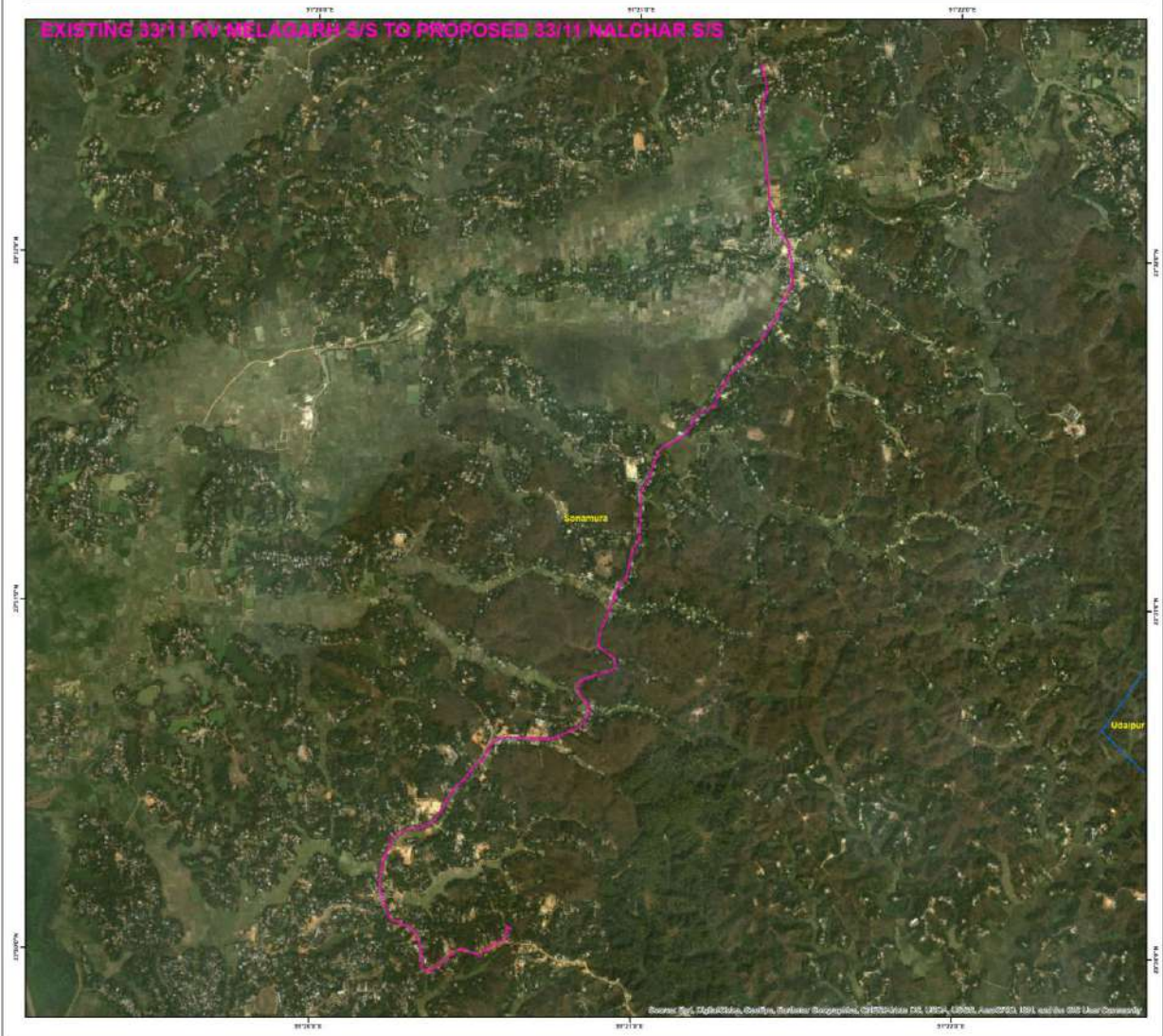
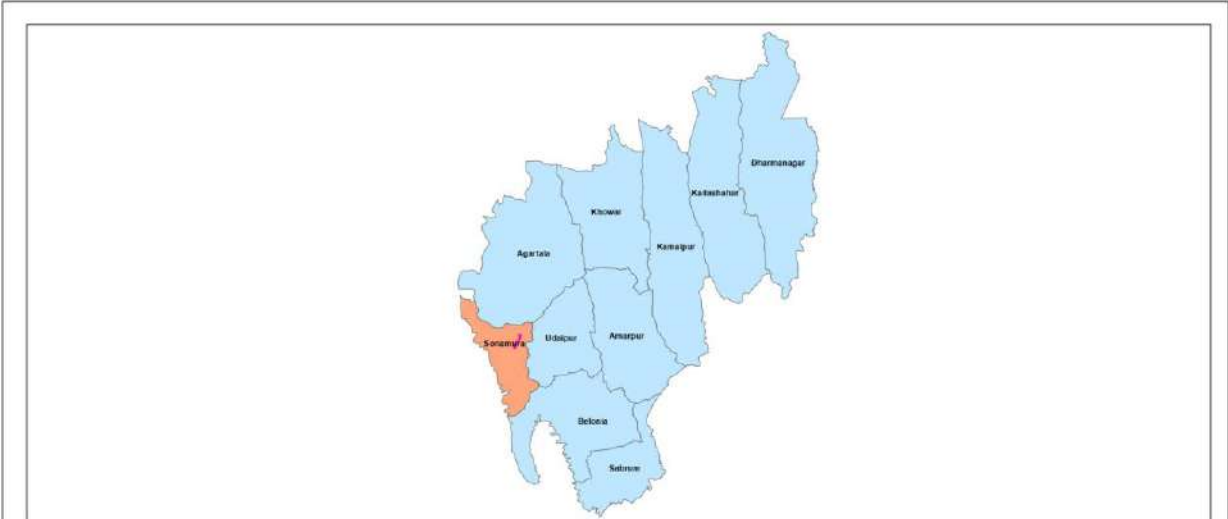
Pole Location/ Metal Road



Pole location

Map 4-26: Route Alignment for 33kV Line from New 33/11 kV Nalchar (New) – 33/11 kV Melagarh (Existing) S/S

LOCATION MAP OF EXISTING 33/11 KV MELAGARH S/S TO PROPOSED 33/11 NALCHAR S/S
 CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
 PREPARED BY GREEN CIRCLE INC,



*Blue Color Indicate: State/National line crossing

4.3.2.23 Feature Details of Final Route Alignment for 33kV Line from New 33/11 kV Nalchar (New) – 33/11 kV Bishramganj (Existing) S/S

33kV Line from New 33/11 kV Nalchar (New) – 33/11 kV Bishramganj (Existing) S/S covers 9.144 km distance. Total 423 EP are proposed in this DL. The DL is finalized after detailed analysis considering the environmental features like forest / PA / river etc. The feature survey along the DL is carried out considering 15 mt ROW i.e., 7.5 mt on either side from center line of the corridor. Geomorphological studies observed that the geology of project area is majorly having rock structure of moderately dissected structural hills and shallow alluvium layers. Rock Type is shaly sandstone and conglomerate of pebble beds.

Major part of the DL passes through metal road (38%), rubber plantation (13%), vacant land (13%), tree crops and groves (13%). The selected line does not cross any National Highway and Power line. However, the line crosses railway, bridges, metal road, tree crops and groves, barren rocky scrub land, fallow land. The DL routes do not involve forest land which would not necessitate forest clearance under Forest (Conservation) Act, 1980. Besides all protected areas like NP, WLS and designated wildlife / elephant passage have been completely avoided. The landslide study reveals that the project region is low vulnerable to landslide. The project area is not vulnerable to flood. The type of hazard is recorded as earthquake, windstorm and low landslide.

As per detailed surveys and GIS imagery data no water bodies such as river, pond is in the ROW however small drain / nala is observed. As 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. EPs are constructed well above the ground level at required elevation will help to keep the people and animals away from EMF contact. It will also prevent the structure getting damaged during flood situation.

GIS route survey map and DL feature details are provided in **Annexure A27 & B27**. The major feature details are depicted in **Table 4.28**. The Google earth image of DL is provided in the **Map 4.27**.

Table 4-28: 33 kV line from New 33/11 kV Nalchar (New) – 33/11 kV Bishramganj (Existing) S/S

Electric Line Feature Details- 15m ROW		
Feature Class Details	Area In Ha.	% of Area
Agriculture Land	0.36	2.23%
Barren Rocky with scrub Land	0.48	3.01%
Bricks Road	0.01	0.07%
Bridge	0.01	0.09%
Drain/Nala	0.01	0.07%
Electric Substation	2.39	14.93%
Fallow Land	0.35	2.19%
Metal Road	6.02	37.55%
Mud Road	0.11	0.68%
Railway	0.03	0.18%
Rubber Plantation/Orchards	2.14	13.34%
Tree Crops and Groves	2.05	12.81%
Vacant Land	2.06	12.86%
Total	16.04 Ha	100

Photographs of the site location are given below:



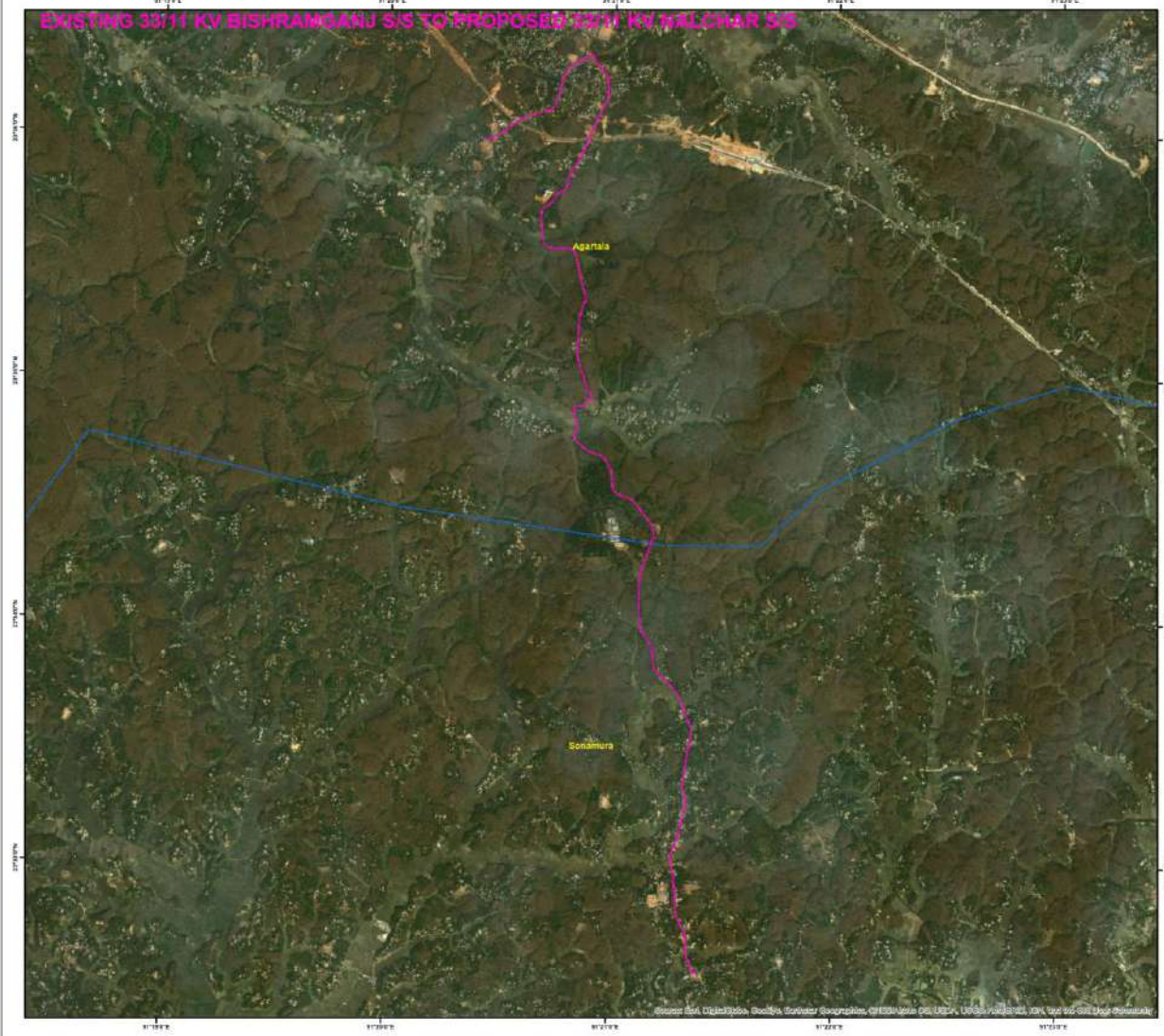
DL Section - Metal Road - Pole Location



Bishramganj Electric Substation

Map 4-27: Final Route Alignment for 33kV Line from New 33/11 kV Nalchar (New) – 33/11 kV Bishramganj (Existing) S/S

LOCATION MAP OF EXISTING 33/11 KV BISHRAMGANJ S/S TO PROPOSED 33/11 KV NALCHAR S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



*Blue Color Indicate: State/National line crossing

4.3.2.24 Feature Details of Final Route Alignment for 33kV Line from New 33/11 kV Gabardi (New) – LILO of 33/11 kV Surjamaninagar – Takarjala Line S/S

33kV Line from New 33/11 kV Gabardi (New) – LILO of 33/11 kV Surjamaninagar – Takarjala Line S/S covers 0.807 km distance. Total 77 EP are proposed in this DL. The DL is finalized after detailed analysis considering the environmental features like forest / PA / water resources etc. The feature survey along the DL is carried out considering 15 mt ROW i.e., 7.5 mt on either side from center line of the corridor. Geomorphological studies observed that the geology of project area is majorly having rock structure of less dissected denudational hills. Rock Type is comprising shaly sandstone.

Major part of the DL passes through metal road (17%), barren scrub land (19%), agricultural land (16%), tree crops and groves (7%). The selected line does not cross any National Highway, Railway and Power line. However, the line crosses vacant land, fallow land. The DL routes do not involve forest land which do not necessitate forest clearance under Forest (Conservation) Act, 1980. Besides all protected areas like NP, WLS and designated wildlife / elephant passage have been completely avoided. The landslide study reveals that the project region is low vulnerable to landslide. The project area is not vulnerable to flood. The type of hazard is recorded as earthquake, windstorm and low landslide.

As per detailed surveys and GIS imagery data DL crosses water bodies such as pond. EP 6, 4, 5 in close proximity of water pond. As 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. EPs are constructed well above the ground level at required elevation will help to keep the people and animals away from EMF contact. It will also prevent the structure getting damaged during flood situation.

GIS route survey map and DL feature details are provided in **Annexure A28 & B28**. The major feature details are depicted in **Table 4.29**. The Google earth image of DL is provided in the **Map 4.28**.

Table 4-29: 33 kV line from New 33/11 kV Nalchar (New) – 33/11 kV Bishramganj (Existing) S/S

Electric Line Feature Details- 15m ROW		
Feature Class Details	Area In Ha.	% of Area
Agriculture Land	0.42	15.84%
Barren with Scrub Land	0.49	18.74%
Bricks Road	0.13	4.83%
Electric Substation	0.39	15.04%
Fallow Land	0.09	3.45%
Metal Road	0.45	17.27%
Pond/Lake	0.09	3.40%
Tree Crops and Groves	0.19	7.12%
Vacant Land	0.38	14.29%
Total	2.62 Ha	100

Map 4-28: Final Route Alignment for 33kV Line from New 33/11 kV Gabardi (New) – LILO of 33/11 kV Surjamaninagar – Takarjola Line S/S

LOCATION MAP OF LILO OF EXISTING 33 KV SURAJMANI NAGAR TO TAKARJOLA AT PROPOSED 33 KV GABARDI S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



*Blue Color Indicate: State/National line crossing

4.4 Project Impacts

Based on the project details and the baseline environmental status, potential impacts due to the construction/ bay extension of sub-stations and along the final route of T&D lines have been assessed.

4.4.1 Impact of Transmission & Distribution Lines

As per existing law i.e., MoP Guidelines Dated 5th October 2015 for Payment of Compensation for TL / DL, land is not required to acquire for tower footing and ownership of land remains with the owner and is allowed to continue cultivation after construction. So, for all T&D Lines acquisition of land or any physical displacement is not applicable. However, as per the present provision in the Section 68 Electricity Act, 2003 and Indian Telegraph Act, 1885 only the damages (without acquisition of subject land) accrued to person while placing the tower and line are to be compensated (Section-10 (d) of Indian Telegraph Act).

However, some social impacts due to construction of lines or placing of towers and poles are seen like temporary removal of soil in agriculture land, loss of standing crops / trees during construction phase only. All mitigation measures as per EMP are implemented by contractor and immediately restored on site as per EMP. Care has been taken by the contractors to avoid unnecessary loss of crops.

4.4.1.1 Landuse within Corridor (Right of Way)

Total land occupied by T&D lines ROW is 475.51 Ha. The major land use occupied by T&D lines is agricultural land (96.04), Notified Forest Area as per Forest Conservation act 1980 (96.5 Ha), rubber plantation (72.37 Ha), metal road (87.17 Ha), Tree Plantation (5.66 Ha), Tree, crops and groves (33 Ha), Barren Rocky / Scrub Land (26 Ha), Rubber Plantation with OF (13.4 Ha), vacant land (37 Ha), waste land (9.35 Ha), Fallow Land (26 Ha), Water Bodies including ponds / lakes / rivers / streams (12.03 Ha), Tea Garden (11 Ha) etc. Details of land use are provided in **Table 4.30**.

4.4.1.2 Impact on soil and surface geology

The project terrain is mixed. As discussed in the feature studies, almost 50 to 60% portion of project area is in undulating terrain. In plain areas impact on soil & geology is almost negligible as the excavated pit material is stacked properly and back filled as well as used for resurfacing the area. On hill slopes where soil is disturbed and prone to erosion is suitably protected by revetment, breast walls, and proper drainage. Besides extensive leg /chimney extension is being used to avoid benching or cutting of slopes to minimize the impact on slope stability.

4.4.1.3 Impact of tower base and pole on land

As per the assessment carried out in Compensation Plan for Temporary Damages (CPTD) by TSECL, the land required for erection of tower legs is very small i.e., for each leg of tower actual construction a small square area with side length ranging from 0.20 to 0.30 meter required depending on the types of towers. Four such square pieces of land will be required to place the legs of tower. The area that becomes unavailable because of the erection of tower legs for an average 132 kV D/C TT ranges from 0.16-0.36 sq m of land. Thus, the actual impact

is restricted to 4 legs of the tower and agriculture can continue as clearly depicted in the **Figure 4.1**.

In case of 33 kV DL area that becomes unavailable because of the erection of pole is insignificant as approx. 1 sq. ft. land area is occupied for one pole (please refer **Figure 4.2**). Due diligence confirms that land is either agricultural or barren, and current land use is not altered and resumed after construction.

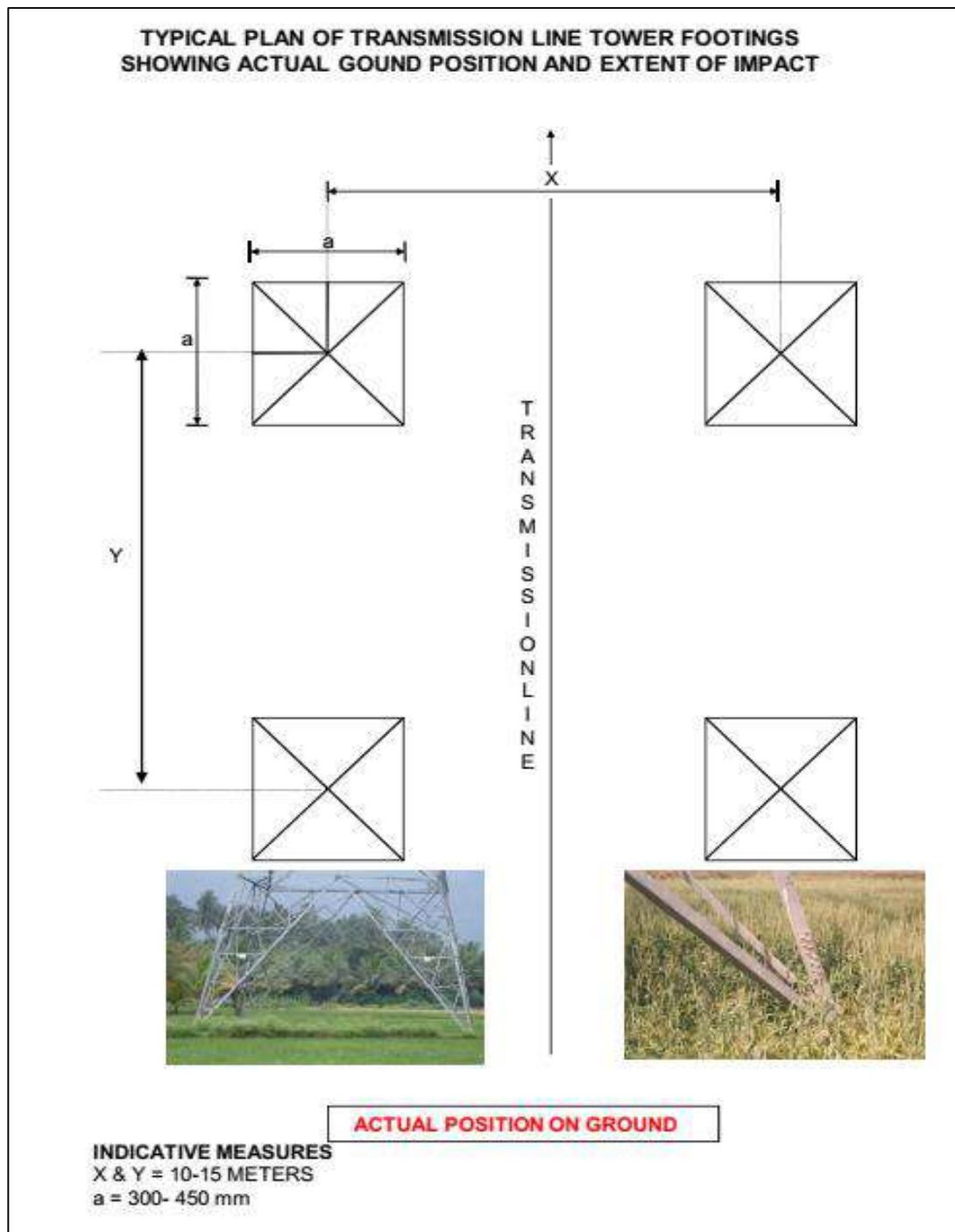
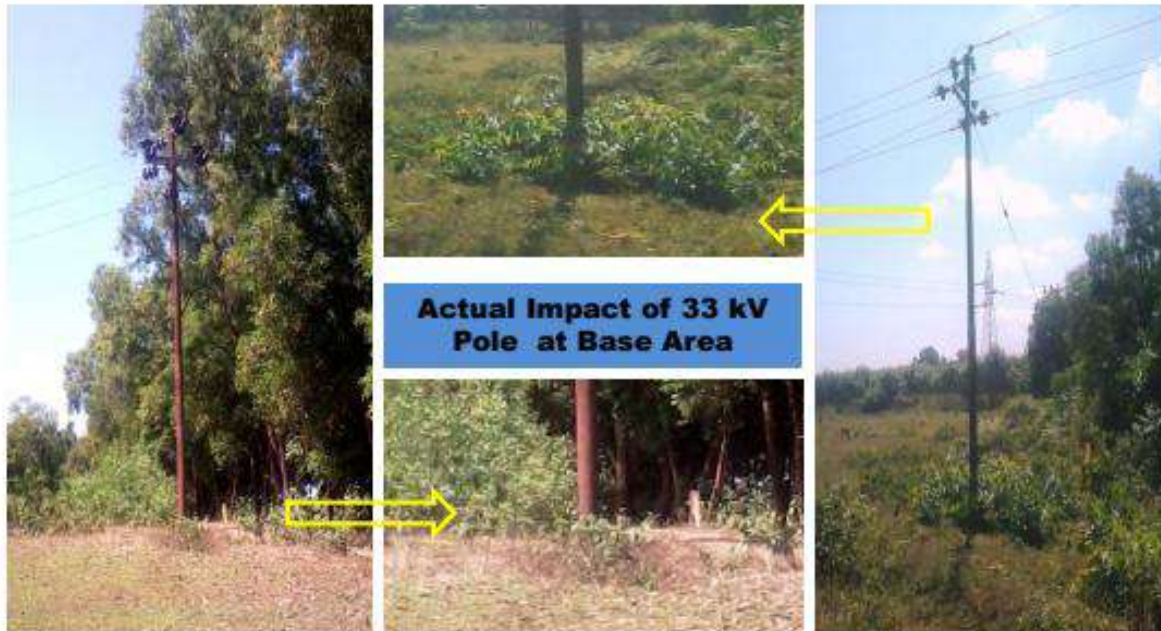


Figure 4-1: Typical Plan of Transmission Line Tower Footing



33 kV line inside city area



33 kV (H Pole) line inside substation

Figure 4-2: 33 kV Lines (Single & H Pole) Depicting Base Area Impact

As already explained, the impact of TL is restricted to 4 legs of the tower and agriculture can continue after construction activity is over. The average land area required for erection of one 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 estimated for construction 89.418 km of 132 kV TL is 89.75 Ha and 199.522 km of 33 kV DL is 698.924 Ha proposed under the present scheme. However, the land loss impact is negligible and temporary for pole erection in DL case. The compensation toward loss land is provided by following compensation MoP Guidelines Dated 5th October 2015 for Payment of Compensation for TL. Details of land loss for tower base & pole are given

in **Table 4.31**. The details of Status of Land Compensation (details of line wise land compensation status updated till June 2021) are given in **Table 4.32**.

4.4.1.4 Impact on Crop area / Tree Crops and Groves

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. Wherever necessary, permissions from tea estate owners were taken to erect towers/poles in their agricultural fields. This data is compiled and analyzed 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 (20 m width of corridor for 132 kV D/c) but mostly restricted to tip to tip of the conductor and tower base area where average affected width/corridor would be limited to 20 m (maximum). In 33 kV DLs, damages are minimal (mostly near bi-pole/quad pole structure) however, 10 m width of corridor is considered for accessing the damages. However, care was taken to reduce the damages to crops and to minimize the impacts whatsoever. The aspect is discussed in more detail in **section 5.2.5 in Chapter 5**.

One of the reasons is that schedules of construction activities are undertaken in lean season or post-harvest periods. Assets of any sorts are not acquired but during construction, only temporary damages are occurred. Based on the estimation of tower foot area as per the thumb rule explained in **section 4.4.1.3**, the total land considered for estimation of crop damage / tree damage because of tower foundation 89.75 Ha. The details of estimated impacted area due to TL ROW are given in **Table 4.33**. As per further detailed analysis and ground survey, the actual total no. of trees affected and status of Tree / Crop Compensation (details of line wise land compensation status updated till June 2021) are given in **Table 4.34**.

Impact on trees is assessed for all TLs within project scope where the actual trees cutting possibility is envisaged. However, in DLs actual impact is negligible as no Tree cutting is envisaged in DL. The aspect is discussed in more detail in **section 5.2.1 in Chapter 5**. Also, while construction of TLs fruit bearing season was avoided to prevent loss of crops. Tree compensation was calculated on the basis of tree enumeration and detailed surveys.

4.4.1.5 Impact on Trees in Forest Area

As we discussed in the earlier sections in the instant case, tree cutting in Forest area is envisaged in Rokhia - Rabindra Nagar 132 kV D/C and Rabindra Nagar – Belonia 132 kV D/C TL sections. The total tree cutting details are provided in **Table 3.35**. The compensatory afforestation is being compiled in double the area of forest which is under progress as prescribed in the specific conditions of Forest Clearances obtained for the lines. In this aspect forest department officials are concerned for the status updates.

Table 4-31: Estimation of Actual Land Loss Because of Tower and Pole Base

Sr. No.	Details of Power Line	Length in km	Total Towers	Land Loss per tower (sq m)	Total land loss area for tower & pole base (sq m)
A.	Transmission Line Network				
1	Rokhia - Rabindranagar 132 kV D/C line	22.122	89	0.25	22.25
2	Rabindranagar – Belonia 132 kV D/C line	63.152	244	0.25	61
3	LILO of 132kV Rokhia- Surjamaninagar line at 132/33 kV Gokulnagar	2.92	16	0.25	4
4	LILO of 132kV Agartala-Dhalabil line at 132/33kV Mohanpur substation	1.224	10	0.25	2.5
Total A		89.418	359		89.75
B.	Distribution Line Network				
1	33 kV line from 33/11 kV Khowai (New) – 132/33 kV Dhalabil (Existing) substation	6.643	265	0.092	24.38
2	33 kV line from 33/11 kV Khowai (New)-33/11 kV Ampura (existing) substation	13.192	532	0.092	48.944
3	33 kV line from 33/11 kV Simna (New)-33/11 kV Hezamara (existing) substation	11.271	158	0.092	14.536
4	33 kV line from 33/11 kV Simna (New)-33/11 Tapping of Mohanpur – Hezamara line (existing)	14.523	478	0.092	43.976
5	33 kV line from 33/11 kV Barkathal (New)-33/11 kV Hezamara (existing) substation	11.67	550	0.092	50.6
6	33 kV line from 33/11 kV Barkathal (New)-132/33 kV Mohanpur (New) substation	9.442	379	0.092	34.868
7	33 Kv Line Bamutia (New) -Durjoynagar Existing S/S	14	401	0.092	36.892
8	33 kV line from 33/11 kV Bamutia (New)-33/11 kV Lembucherra (New) substation	8.121	221	0.092	20.332
9	33 kV line from 33/11 kV Lembucherra (New) - LILO of 33kV Agartala-Mohanpur Line	1.051	32	0.092	2.944
10	33 kV line from 33/11 kV Champaknagar (New)- 132/33kV Jirania (existing) substation	6	217	0.092	19.964
11	33 kV line from 33/11 kV Ranir Bazar (New) - LILO of 33kV Khayerpur- Jirania line	3.546	146	0.092	13.432
12	33 Kv Line from ADC Head Qtr (New) - Jirania S/S	0.809	38	0.092	3.496
13	33 kV line from 33/11 kV ADC Head Qtr (New) -33/11kV Champaknagar (New)-	10.756	400	0.092	36.8
14	33 kV line from 33/11 kV Munikiakami (New) - LILO of 33kV Ambasa- Teliamura line in from Ambassa	4.17	194	0.092	17.848
15	33 kV line from 33/11 kV Munikiakami (New) - LILO of 33kV Ambasa- Teliamura line out to Teliamura	2.461	106	0.092	9.752
16	33 kV line from 33/11 kV Golaghati-132/33kV Gakulnagar (New) substation	13.308	470	0.092	43.24
17	33 kV line from 33/11 kV Golaghati (New) -33/11 kV Takarjala (Existing) substation	10.657	470	0.092	43.24
18	33 kV line from 33/11 kV Durganagar (New) -132/33 kV Gakulnagar(New) substation	7.023	292	0.092	26.864
19	33 kV line from 33/11 kV Durganagar (New)-33/11 kV Madhupur (Existing) substation	10.618	420	0.092	38.64

Sr. No.	Details of Power Line	Length in km	Total Towers	Land Loss per tower (sq m)	Total land loss area for tower & pole base (sq m)
20	33 kV line from 33/11 kV Nidya (New) - 33/11kV Kathalia (Existing) substation	9.364	395	0.092	36.34
21	33 kV line from 33/11 kV Nidya (New) - 33/11 kV Rajnagar (Existing) substation	17.339	641	0.092	58.972
22	33 kV line from 33/11 kV Nalchar (New) - 33/11 kV Melaghar (Existing) substation	6.742	292	0.092	26.864
23	33 kV line from 33/11 kV Nalchar (New) - 33/11 kV Bishramganj (Existing) substation	9.144	423	0.092	38.916
24	33 kV line from 33/11 kV Gabardi (New) - LILO of 33kV Surjamani nagar- Takarjala line	0.807	77	0.092	7.084
Total B		202.657	7597		698.924
Total A+ B		292.075	7956		788.674

Table 4-32: Status of Land Compensation in FEAR I - (details of line wise land compensation status updated till June 2021)

S.I. No	Name of the Line	Total Foundation Completed	Total Affected Persons for Tower Foundation	Compensation already paid to Affected Persons	Compensation for APs under progress	Total Compensation paid for Tower Base	Total Stringing Completed	Total Affected Persons in RoW Corridor	Compensation already paid to Affected Persons in RoW Corridor	Compensation for APs for RoW Corridor under progress	Total Compensation paid for RoW Corridor	No. of Pending cases/non-eligible cases with details thereof (e.g. Govt. land/ title disputes/ any other reasons)
		(No.)	(No.)	(No.)	(No.)	(Rs. Lakh)	(Km)	(No.)	(No.)	(No.)	(Rs. Lakh)	
1	132 kV D/c R'nagar-Belonia	2	Nil	Nil	Nil	Nil	Nil	No provision of compensation for APs in ROW corridor				Nil
2	132 kV D/c R'nagar-Rokhia	55	29	18	11	3.58	Nil	No provision of compensation for APs in ROW corridor				02
3	LILO 132kV S/c Sj'nagar-Rokhia at G'nagar	13	15	13	2	23.86	2.85	No provision of compensation for APs in ROW corridor				2 (Landowner not satisfied with the rate provided by the State Govt.)
4	LILO132kV 79Tilla-Dhalabil	6	6	5	Nil	10.85	1.121	No provision of compensation for APs in ROW corridor				1 (Notice not served as Land ownership is disputed)

Table 4-33: Loss of Crop Area in TL Sections

T&D Lines	Width Considered for estimation of loss of crops	Agriculture land Area in Ha	Tree Plantation Area in Ha	Tree Crops and Groves Area in Ha	Total Area Considered damage survey in Ha
Transmission Lines					
Rokhia - Rabindranagar 132 kV D/C line	20	21.85	4.5	3.57	29.92
Rabindranagar – Belonia 132 kV D/C line		23.01		2.4	25.41
LILO of 132kV Rokhia- Surjamaninagar line at 132/33 kV Gokulnagar		1.56		0.22	1.78
LILO of 132kV Agartala-Dhalabil line at 132/33kV Mohanpur substation		3.35		0.3	3.65

Table 4-34: Details of Crop & Tree compensation (details of line wise compensation status updated till June 2021)

S.I. No.	Name of the Line	Affected Persons (APs) issued with notice (No.)	Compensation already paid to APs (No.)	Compensation to APs under progress (No.)	Affected Land Area (Ha.)	Compensation Paid for crop damages (Rs. Lakhs)			Total Tree Affected (No.)	Compensation Paid for Tree damages (Rs. Lakhs)			No. of Pending cases/non-eligible cases with details thereof (e.g, Govt land/title disputes/ any other reasons)
						Foundation	Erection	Stringing		Foundation	Erection	Stringing	
		(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)
1	132 kV D/c R'nagar-Belonia	1	Nil	Nil	0.008	0.17	Nil	Nil	Nil	Nil	Nil	Nil	Nil
2	132 kV D/c R'nagar-Rokhia	12	03	09	0.5	Nil	Nil	Nil	140	1.5	Nil	Nil	02
3	LILO 132kV S/c Sj'nagar-Rokhia at G'nagar	39	32	7	0.30	0.16	Nil	0.31	1571	4.9	1.5	98	7 Notices Served
4	LILO132kV 79Tilla-Dhalabil	6	6	Nil	0.74	0.677	0.10	0.09	397	7.23	Nil	9.22	Nil

Table 4-35: Loss of Trees in Forest Area

Sr. No.	Name of Line	Trees to be cut (No.)	Forest Area (Sq. Mt.)
1	Rokhia - Rabindranagar 132 kV D/C line – 22.122 km	4212 Trees, 4510 Bamboos	15501
2	Rabindranagar – Belonia 132 kV D/C line – 63.152 km	4832 Trees, 657 Bamboos	32435

4.4.1.6 Other Damages

Major part of T&D lines goes from agricultural fields. Habituated areas and other sensitive areas were purposely avoided to prevent damages. Also, in the instant case based on the actual line study and, there is no possibility of damage to bunds, water bodies etc. However, if damaged or impacted, local revenue department assess the cost of damage as per norms of Govt. of Tripura and submit estimate to the competent authority for approval.

4.4.2 Impact Due to Construction of New Substation and Bay Extension

All the S/S are being constructed on vacant lands owned by TSECL, so there is no displacement of people for this project. Therefore, there is no any social impact on the people residing in this area. Minor improvements to paths were made to reach to the new S/S, which is found useful for the local people of the particular area.

4.4.3 Impact on Indigenous People

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

- tribes' primitive traits;
- distinctive culture;
- shyness with the public at large;
- geographical isolation; and
- 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 people. Indigenous people are also characterized by cultural continuity. Constitution of India identifies schedule areas which are predominately inhabited by such people. As, this project is directly connected with the life of local people of Tripura, there is no negative impact on indigenous people because of this project. Local people are cooperating project related authorities.

4.4.4 Summary of Impacts

Based on the above analysis of final route of T&D lines and location of sub-stations, the summarized environmental & social impact matrix is presented below in **Table 4.36**.

Table 4-36: Summary of Impacts

Sr. No.	Parameters	Extent of Impact
1.	Total Line Length	Transmission line: 89.418 km Distribution line: 199.552 km
2.	Total No. of Poles	TL Towers: 359 DL Poles: 7597
3.	Terrain	Plain and hilly Almost 50 to 60 % of lines are passing through hilly area and remaining approx. 40 to 50 % through plains. All S/S are constructed/ augmented are in plain areas. However, at all S/S locations, provisions for revetment like retaining wall, boundary wall, breast walls, and proper drainage and sewerage system etc. have been made. Besides extensive leg /chimney extension is being used to avoid benching or cutting of slopes to minimize the impact on slope stability. All safety measures like fire wall, fire extinguishers, etc are provided.
4.	Forest land transverse	Transmission Line: 96.1389 ha (RF), length 10.81 km Substation: 0.3299 Ha (RF of Trishna WLS)
5.	Rare/Endangered flora	No rare/endangered flora found in project area.
6.	Rare/ endangered fauna	No rare/endangered fauna habitat found in project area.
7.	Total trees to be cut	132 KV Rabindranagar to Belonia D/C: 4832 Trees, 657 Bamboos 132 KV Rabindranagar to Rokhia D/C: 4212 Trees, 4510 Bamboos
8.	Cleaning jungles of rank vegetations, grass , brush, wood , tree and saplings of girth up to 30 cm (measured at a height of 1 m above ground level)	132 KV Rabindranagar to Belonia D/C: 32435 sq.mt 132 KV Rabindranagar to Rokhia D/C: 15501 sq.mt
9.	Migrating Wildlife/ breeding ground	NA
10.	National Park / sanctuaries	No protected areas involved in TL and DL However, Nidaya S/S is coming in Trishna WLS. (0.3299 RF of Trishna WLS Area)
11.	Notified Wet land traversed	None
12.	Soil erodibility	NA
13.	Historical / Cultural monuments	None
14.	Relocation of villagers	None
15.	Affected Structures	NA
16.	Total Affected People	NA
17.	Relocation of Villagers	NA
18.	Area of actual land loss under Tower Base	89.418 Sq.Mt. under Tower Base 699 under pole base
19.	Affected Structures	Nil
20.	Temporary Damage to Crop	Temporary loss is observed during construction time. It can be recovered later
21.	Loss/ Hindrance to Public Utilities	Negligible, restricted to construction phase only.

5. POTENTIAL ENVIRONMENTAL IMPACTS, THEIR EVALUATION AND MANAGEMENT

5.1 Introduction

Environmental impacts of 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 T&D 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 & Clearance between Conductors and Trees

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

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

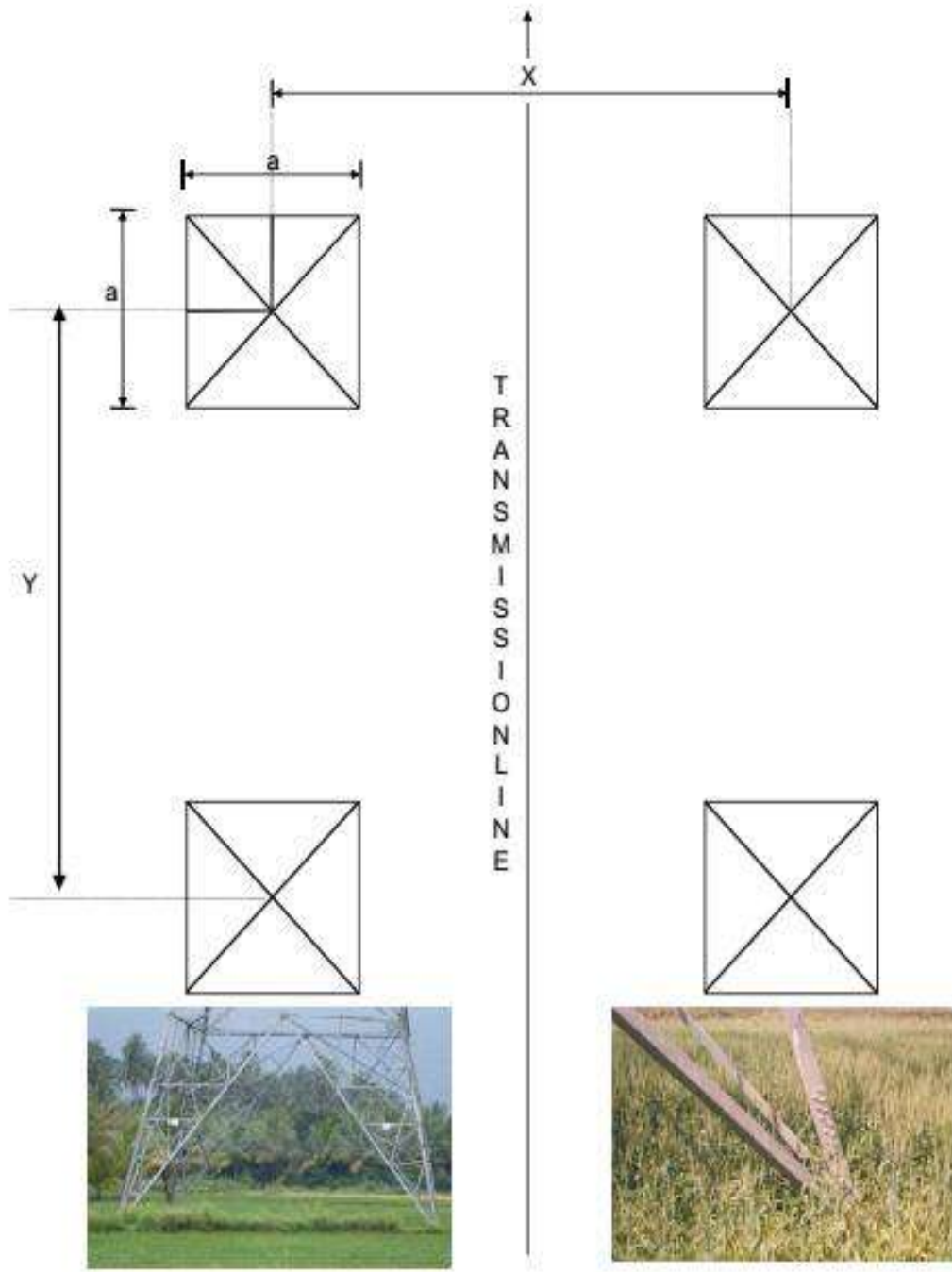
5.2 Impact Due to Project Location and Design

5.2.1 Resettlement

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

In present project construction of total 15 New S/S is under execution. The details are given in **Table 2.35 in Chapter 2 Section 2.6**. In general requirement of land area for S/S varies from 0.3 acres (for 33 kV) to 10 acres depending upon voltage levels and no. of bays. In the instant scheme, TSECL does not need to acquire lands for new S/S as well as for augmentation of existing S/S as TSECL already possess land for all proposed new S/S except 33/11 kV Nidaya S/S. Nidaya S/S is located in Trishna WLS and prior permission from MoEFCC and NBWL is obtained. **Please refer Annexure 6 for the permission granted from MoEFCC and NBWL**. As no fresh land is needed to be acquired for these S/S, issue related to acquisition of land including possible R&R is not envisaged. The details are also discussed in **Chapter 2 in section 2.6**.

In respect of land requirement for erection of T&D lines / towers / poles, no permanent acquisition is envisaged. Land for tower and ROW is not acquired as agricultural activities can continue. A Typical plan of TL tower footing indicating the above position with extent of damage and area of influence are depicted in **Figure 5.1 and 5.2** respectively.



ACTUAL POSITION ON GROUND

INDICATIVE MEASURES
X & Y = 10-15 METERS
a = 300- 450 mm

Figure 5-1: Typical Plan of Transmission Line Tower Footings Showing Actual Ground Position and Extent of Impact

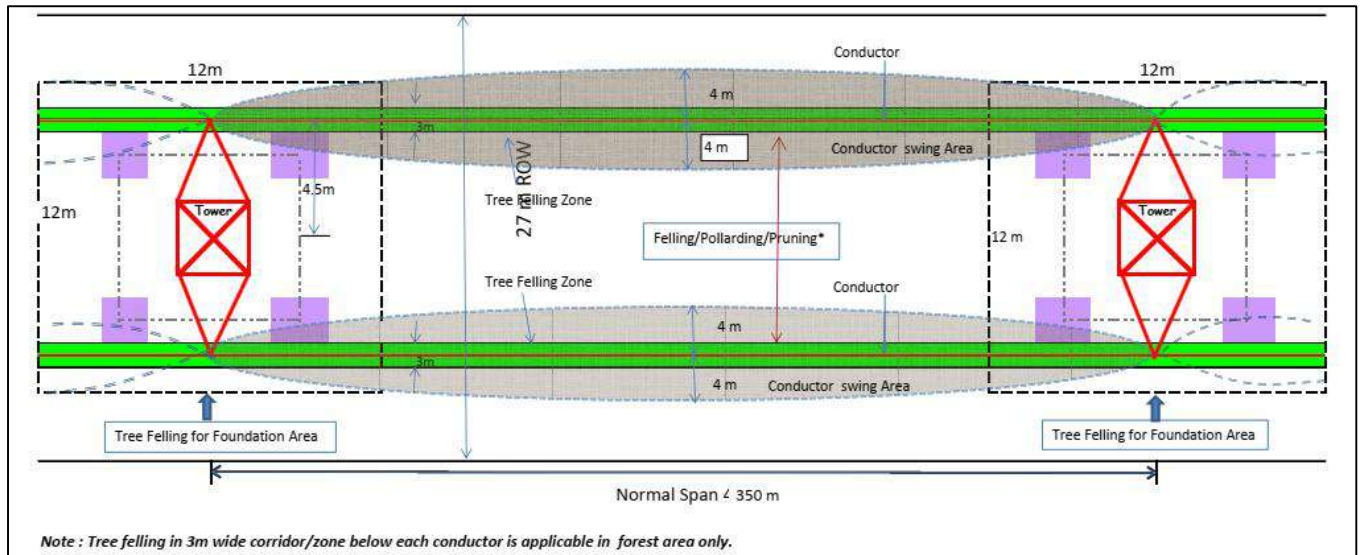


Figure 5-2: Schematic Diagram for Indicating Area of Influence/Impact for 132 KV D/C TL

Actual 132 KV line including tower on ground along with RoW and extent of impact due to erection of tower in undulating terrain, on agricultural land and in the area of vegetation is placed as **Figure 5.3, Figure 5.4. Figure 5.4** depicts the base of 33 kV DL (Single & H pole).

As described earlier, all measures are undertaken by TSECL at the line routing stage itself to avoid settlements such as cities, villages etc. It may be seen from the above 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, these subprojects don't require any resettlement of villagers. However, some temporary damages/ disturbances can happen. Same are being compensated by the project under CPTD to minimize the damages and provide compensation plan for temporary damages in consultation with the GoT and PAP and/or community.

The project is being implemented in the tribal areas governed by TTAADC as per the provisions of Sixth Schedule of the Indian Constitution. It may be noted that all social issues shall be dealt separately in accordance with the provisions of Social Management Framework (SMF, A-C), placed in the ESPPF of TSECL.



Figure 5-3: 132 kV TL depicting actual position along with RoW in Undulating terrain and extent of damage



Figure 5-4: 132 kV Tower Base (TL) Showing Impact on Agricultural Land and Crop

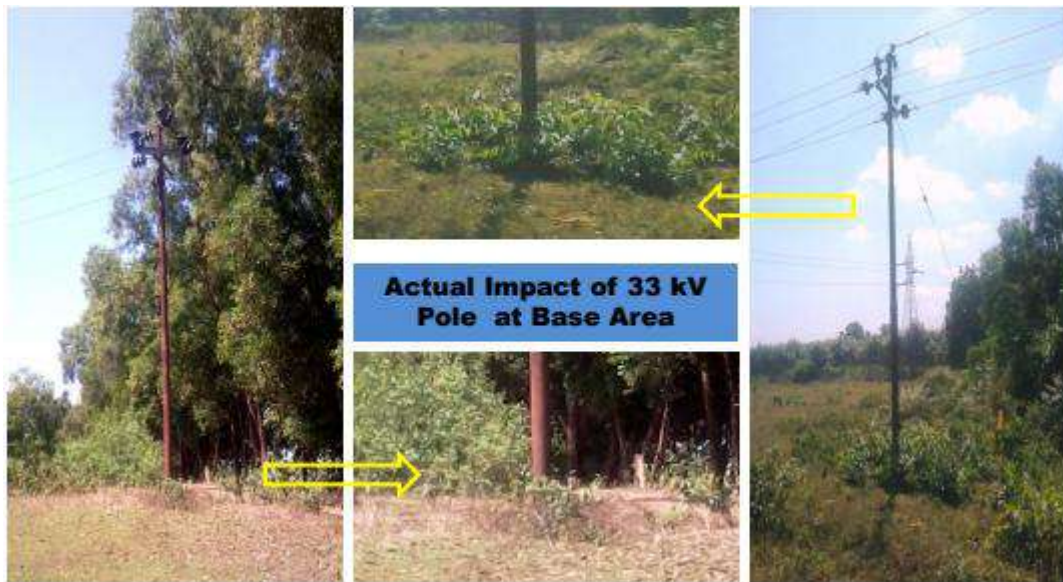


Figure 5-5: 33 kV DLs Depicting Base Area Impact

5.2.2 Land value depreciation

The electric power acts as a catalyst for the growth and development of areas having accessibility to it. Based on previous experiences, land prices are generally expected to rise in the areas receiving power. In the present project, TLs pass through agriculture fields, private plantation area 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, DLs are primarily intended to provide power supply to populated area which boosts the economic status as well as land price of the area, thus, outweighing possible negative impacts, if any.

5.2.3 Historical/cultural monuments/value

As per the policy of route selection, only that route alignment is finalized which avoids all the historical and cultural monuments. As per the preliminary assessment carried out during finalization of route alignment in consultation with State revenue authorities and Archaeological Survey of India (ASI), no such monuments are coming in the proposed route alignments. Moreover, utmost care to be taken during detailed survey to avoid such areas. Also, the chance found procedure is already considered in the procedures.

5.2.4 Encroachment into precious ecological areas

As explained in **Chapters 2 in section 2.4.5 and Chapter 4 in section 4.2 during TL and DL planning** all precautions have been taken right from planning stage to avoid routing of line through forest and PA like NPs/WLS. In spite of taking due care during route selection, involvement of some forest area could not be avoided completely. Moreover, protected areas like wildlife sanctuary, national parks, biosphere reserves etc. have been avoided completely. However, reference in EMP is maintained to address the issues in case of any eventuality / chance found condition. In the instant scheme one of the lines i.e., Rabindra Nagar-Belonia 132 KV D/C line which was earlier passing through Trishna WLS has been realigned at a distance of 1.2 km from the boundary to avoid any impact on wildlife. Details of forest involvement in different lines are presented in **Table No.5.2**. Thus, the potential impacts on

Wildlife nullified in case of TL and DL. Along with this ESPPF is strongly followed by IA during execution of project work.

Table 5-2: Details of Forest Involvement

Sr. No.	Name of Transmission Line	Forest Involvement (In ha.)
1	Rokhia- Rabindra Nagar 132 KV D/C line	21.1896
2	Rabindra Nagar - Belonia 132 KV D/C line	74.95
3	Nidaya S/S	0.3299
Total		96.4688

It may be seen from the above table that out of total TL length of 89.343 km about 15 km shall pass through forest. Stage II Prior approval of GoI/MoEF&CC is obtained as on 07th June 2019 for 132 kV D/c Rabindra Nagar Rokhia and on 22nd June 2020 for 132 kV D/c Rabindra Nagar Belonia under Forest (Conservation) Act, 1980.

The compensatory afforestation for Rabindranagar Belonia 132 kv D/C TL is being raised and maintained by Forest department over the double area i.e., 150.4 Ha of degraded forest land identified in 3 patches i.e. 53 Ha in Compartment No. 9.97,11 Tekka Tulshi, Hrishyamukh Range, Delonia Forest Division in South Tripura District of Tripura, 53.68 Ha in Compartment No. 5, Atharamura Kalahari Block, Amarpur Range, Amarpur Forest Sub-Division in Gomati District of Tripura and 43.72 Ha in Compartment No. 8 of North Somanura, PRF Block, Melagarh in Sepahijala District of Tripura. Other Clearances and NOCs under FRA 2006 are being complied with. Funds required for Compensatory plantation to Forest Department are arranged by TSECL / IA. All the other stipulated conditions in the clearance copy are followed strictly. The copy of MoEFCC clearance for Rabindranagar Belonia 132 kv D/C TL is depicted in **Annexure 6**.

The compensatory afforestation for Rabindranagar Rokhia 132 kv D/C TL is being raised and maintained by Forest department over the double area diverted i.e., 42.55 Ha of degraded forest land identified in 2 patches in Compartment No. 2, 1 and 6 of North Sonamura District of Tripura Management Block, Boxanagar Range, Sonamura Forest Sub Division in Sepahijala District of Tripura. All payments have been deposited by IA towards CAMPA to Forest department. All the other stipulated conditions in the clearance copy are followed strictly. The copy of MoEFCC clearance for Rabindranagar Rokhia 132 kv D/C TL is depicted in **Annexure 6**.

Amongst 15 S/S, Nidaya S/S is involving 0.3299 Ha of Trishna WLS. Accordingly, Stage-I approval obtained on 16th March 2020. IInd Stage Forest approval is obtained on 19th March 2021. Wild life clearance from NBWL is obtained on 17th December 2019. Though it is a part of Trishna WLS. But due to sparse vegetation cover its impact on forests and its resources would be insignificant. It is to submit that no tree is required to be cut for construction of Nidaya s/s. As regard compensatory afforestation, a detailed CA scheme involving double the area i.e., 0.66 ha. with 10 years maintenance has been prepared at Mouja Nidaya by forest authority in lieu of diversion of 0.3299 ha of forest area in Trishna WLS. The compensatory afforestation is being raised and maintained by Forest department over the double area i.e., 0.66 Ha of degraded forest land identified in Kathalia Range, Sonamura Forest Division of Sepahijala District of Tripura. Other Clearances and NOCs under FRA 2006 are being complied with. All payments have been deposited by IA towards CAMPA to Forest department. All the other stipulated conditions in the clearance copy are followed strictly. The copy of MoEFCC clearance for Nidaya S/S is depicted in **Annexure 6**.

It may also be noted that the user agency/ IA has no role in taking compensatory afforestation activity except deposition of CA cost to forest dept/CAMPA rather it is the forest dept responsibility to undertake the plantation as per CA scheme. IA has already deposited requisite cost i.e., 2.07 lakhs against aforesaid CA. All these aspects are integral part of forest clearance process and is available on Parivesh.

The exercise is completed through detail survey and finalization of route through forest area in consultation with local forest authorities as per well-established forest clearance process described in ESPPF. As per the initial study/assessment most of the forests to be traversed by the subject lines are categorized as RF and found to be in various degree of degradation and even the wildlife species present are those who have adapted to open or disturbed habitat. It has also been confirmed by forest department that the plantation of *Tectona grandis*, *Shorea robusta*, *Terminallia bellirica* species have been carried out during last decade to enhance the density and quality of forest. Nonetheless, to mitigate losses to existing forests, clearing of the TL ROW is planned under supervision of forest department, and some low canopy seed trees and shrubs are kept intact which are not interfering with tower erection and line installation. The extracted wood is being sold by the forest department under the process of auction following prescribed guidelines in FC Act 1980. Three-meter-wide strips of land below each conductor is cleared during construction and one such strip is kept free of vegetation for maintenance purpose and regeneration up to certain height in remaining width of RoW is allowed after construction activity.

Periodical lopping/pruning of trees to maintain line clearance is done under the direction of forest department (for details refer **Figure 5.3** for tree failing pattern and refer **Figure 5.2** for area of influence). Moreover, to prevent unauthorized tree felling in forest area, measures like providing construction crews with fuel wood or alternative fuels by Contractor has been specified in **EMP (refer clause- 24)**.

TL can serve as new access routes into previously inaccessible or poorly accessible forests, thereby accelerating forest and wildlife loss. In such cases, TSECL cannot take action itself, but local Forest Department personnel normally assess the dangers and take appropriate action, such as establishing guard stations at the entrance to the forest etc. cost of which is borne by TSECL. Given the already easy access and degraded conditions at the proposed subprojects sites, this problem is not expected to be encountered. Nonetheless, TSECL staff will report to the Forest Department any noticeable encroachment induced by the Projects in such situation.

The tree cutting in non-forest area was avoided during construction activities at S/S locations and at TLs to the maximum possible extent. Trees are only removed to maintain electrical safety clearance. During land development prior to construction of substation shrubs/trees on the plot are cleared that create hinderance to work. In TLs corridor, only 3 m strip below each conductor is cleared during stringing activities and natural vegetation is allowed in cleared strips barring one which is kept for maintenance activity. In remaining corridor, mostly pruning/looping is done to maintain electrical clearance. There is no provision of compensatory plantation in non-forest area in lieu of tree cutting in Tripura State as per the prevailing rule for Tree Extraction vide notification No.F.7(44)/For/FP-200 I/PT11/29.042 dated 17.01.2002 and The Electricity Act 2003. **Please Refer Annexure 11**. However, compensation is paid to farmers/owners after assessment of actual damage duly certified by revenue/forest/horticulture/rubber board authority as per provisions of The Electricity Act, 2003 & The Indian Telegraph Act, 1885. During our site visit and verification of documents it

has been observed that the IA is complying with all such provisions in spirit. Compensations are being paid following CPTD compensation for all damages to the tree owners as explained in **Section 4.4.1**.

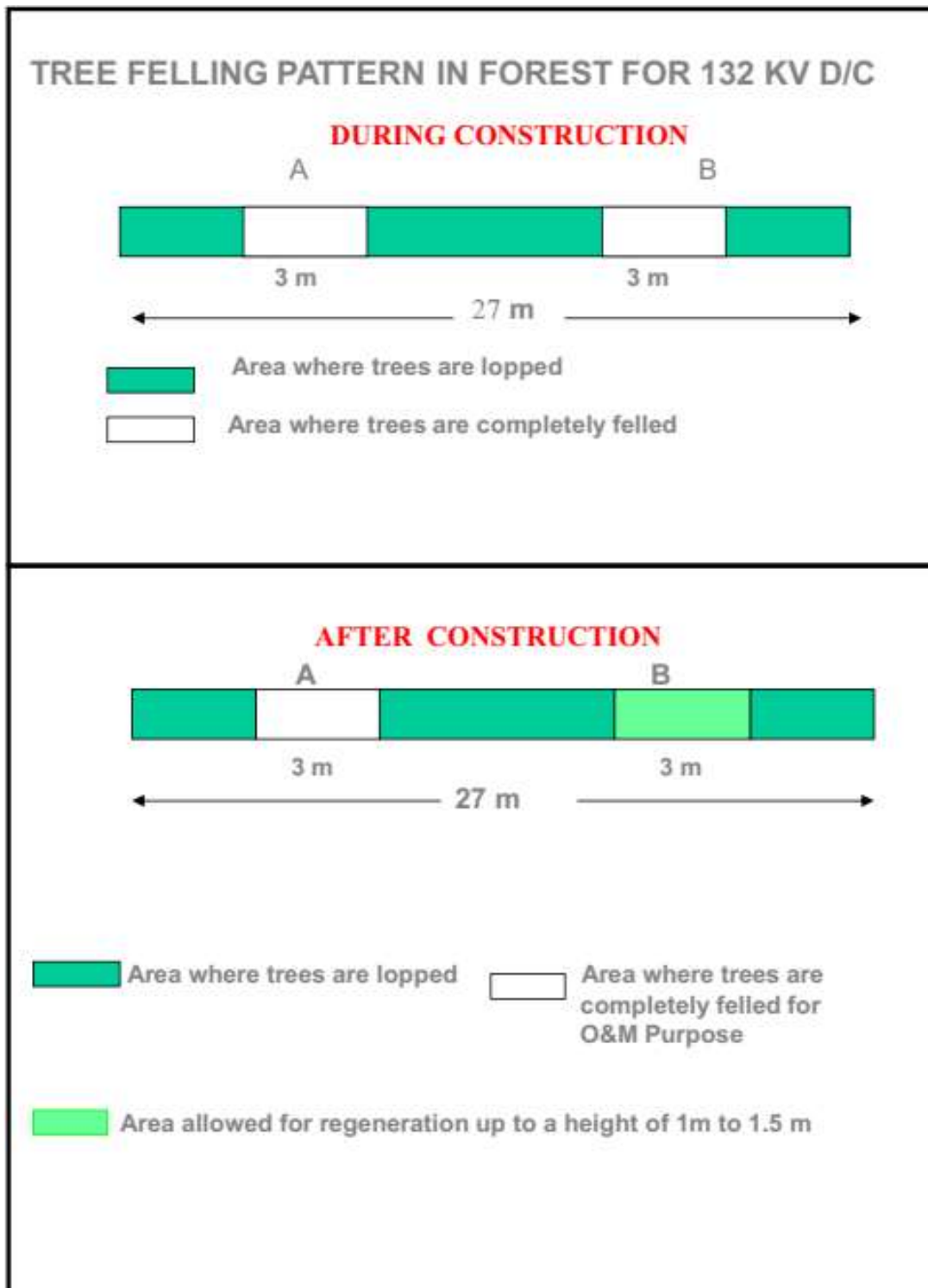


Figure 5-6: Tree Felling pattern



Figure 5-7: Example of Pole erection where Tree is Prevented from Cutting

5.2.5 Lines into other valuable lands

Total land occupied by T&D lines ROW is 475.51 Ha. The major land use occupied by T&D lines is agricultural land (96.04), Notified Forest Area as per Forest Conservation act 1980 (96.5 Ha), rubber plantation (72.37 Ha), metal road (87.17 Ha), Tree Plantation (5.66 Ha), Tree, crops and groves (33 Ha), Barren Rocky / Scrub Land (26 Ha), Rubber Plantation with OF (13.4 Ha), vacant land (37 Ha), waste land (9.35 Ha), Fallow Land (26 Ha), Water Bodies including ponds / lakes / rivers / streams (12.03 Ha), Tea Garden (11 Ha) etc. Details of land use are provided in **Table 4.30**.

MoP, GoI issued guidelines for payment of compensation towards damages in regard to ROW for TL on October 15, 2015, stipulating payment of 85% of land value for tower base area (between four legs) and compensation towards diminution of land value in the width of RoW corridor subject to a maximum of 15% of land value. **Please Refer Annexure 7**. However, these guidelines are not adopted by GoT till date, hence the existing practice of 100% land cost for tower base are being implemented. The letter was issued to TSECL regarding adoption of MoP, GoI Guidelines for payment of compensation towards damages in regards to RoW for TLs vide ref. NEAGT/NERPSIP- 102/2017-18/212 dated 15/05/2018. **Please Refer Annexure 8**.

TSECL intimated POWERGRID that GoT has decided for continuing with the prevailing practice of payment of compensation towards damage in regards to RoW for TLs. **Please Refer Annexure 9**.

Once the tree/crop is removed / damaged, TSECL issues a tree cutting/crop damaged notice to the land owner with a copy to the Revenue Officer to process the compensation payment. Based on the above the compensation payment is generated by means of a computerized program developed by the National Informatics Centre exclusively for this purpose. The detailed Valuation statement thus generated using this program is verified at various levels and approval of payment of compensation is accorded by the concerned District Collectors. On approval of compensation, the revenue officer shall further intimate the amount payable to the different landowners and TSECL arranges the payment by way of Demand Draft/Cheque to the affected parties. The payment is further disbursed at the local village office after due verification of the documents in presence of other witnesses. 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 10**. The sample case of compensation payment including notice for crop/tree compensation provided in **Annexure 11**.

As described earlier in **section 4.4.1 and 5.2.1** all measures are undertaken by TSECL at the line routing stage itself to avoid settlements such as cities, villages etc. It may be seen from the above 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, these subprojects don't require any resettlement of villagers. However, some temporary damages/disturbances can happen. Same are being compensated under CPTD which is developed to minimize the damages and provide compensation plan for temporary damages. This is executed in consultation with the GoT and affected persons and community. As per existing laws and CPTD compensation for all damages (land / tree / crop) paid to the individual land owner. **Please Refer Table 4.32 and Table 4.34**. Budgetary provision of **Rs. 301 lakhs** have been made in the cost estimate to meet these expenses. **Refer Annexure 12**. Please refer **Chapter 4 section 4.4.1.3 and 4.4.1.4** for the details of compensation for tree, crop and land already paid till June 2021.

Agricultural activities are allowed to continue following the construction period. If bunds or other on-farm works are disturbed during construction or maintenance, they are restored to the owner's satisfaction following cessation of construction or maintenance activities.

5.2.6 Interference with other utilities and traffic

As per regulations enacted by GoI, it is mandatory for TSECL 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 TL. The TL affect nearby telecommunication circuits by causing electrical interference. A standing committee -- Power Telecom Co-ordination Committee (P.T.C.C.) has been constituted by GoI to plan and implement the mitigating measures for the induced voltage which may occur to nearby telecom circuit and suggested necessary protection measures has to be adopted. The committee suggests measures like rerouting of the telecom circuits, conversion of overhead telecom circuits into cables etc. to minimize the interference. Accordingly, NOC from Ministry of Aviation, P.T.C.C NOCs are obtained. **Please refer Annexure 6**.

National Highway - 44 is the main approach road, which connects the construction sites including the proposed S/S through various state highways, district roads and village roads. It connects Shillong, the state capital of Meghalaya with Sabroom, near India-Bangladesh in Tripura, passing through Agartala. It runs for a distance of 630 km, of which 184 km is in

Meghalaya, 111 km is in Assam and 335 km (208 mi) is in Tripura. NH-44 is also the only National Highway that links Tripura state capital Agartala with the rest of the Seven Sister States. The volume of traffic on the NH- 44 is quite low. It may be judged from the fact that this Tripura portion of NH-44 from Churaibari to Sabroom near Bangladesh border was decided to be upgraded to 4 lanes by National Highway Authority of India (NHAI) in 2007. However, due to low density of traffic, it has now been taken up for 2 lanes instead of 4 lanes as decided earlier. Therefore, the instant project do not expect any steep rise in volume of traffic due to mobilization and vehicle movements during construction and maintenance period.

Wherever TL crosses the railways, clearance is taken from that department. In general, the system is planned and executed in such a way that adequate clearance is maintained between TLs on the one hand, and railways, civil aviation and defense installations on the other. Wherever the TLs pass by the airports the towers beyond specified height are painted in alternate orange and white stripes for easy visibility and warning lights are placed atop these towers.

5.2.7 Interference with drainage pattern

As the TLs are constructed aerially and the blockage of ground surface is limited to very small area of tower footings, there is little possibility of affecting drainage pattern in case of poor management during construction. In the instant case well planned EMP is designed and it is mandatory for contractor to follow the clauses with site specific implementation plan.

5.2.7.1 Towers/ Poles and drainage pattern

Moreover, the TLs proposed under the subject don't not involve any tower to be placed in river beds for river crossing. However, management measures as specified in **EMP (refer clause - 5 & 12)** like appropriate siting of towers are undertaken during detailed alignment survey and design to avoid any incidence of flooding hazards of loss of agricultural production due to interference with drainage patterns or irrigation channels. In the infrequent instances where the natural flow/drainage is affected, flow is trained and guided to safe zones. The erection of pole is proposed above ground level at desired elevation to avoid flood situation and flood impacts. The **Annexure A** for GIS maps reveal that the project is planned with suitable elevation above ground level.

Provision of drains around the tower pad in plain area is made as the monsoon is very intense and unpredictable in this area. To avoid any interference, DC towers are being used instead DB tower as single span limit is crossed in the stretches where TL/ DL is crossing river; cross-arm strengthening has been suggested. Also, as mentioned in previous chapter, use of leg extension is being implemented for towers to minimize/avoid benching/revetment, to minimize/ avoid chances of soil erosion, to minimize/ avoid sedimentation of river, to provide great stability.

5.2.7.2 Substations and drainage pattern

Since all proposed S/S are located mostly in plane terrain no effect on drainage of the area is envisaged. All the S/S are having systematic and adequate arrangement of drainage system right from design stage and are implemented on site. All drainage channels along or inside S/S are being trained and connected to main or existing drainage to avoid any erosion due to

uncontrolled flow of water. Retention wall are proposed and being constructed at S/S locations. The actual site photos are shown in **section 5.4.1**. The sample drainage layouts are given in the **Annexure 13**.

5.3 Environmental Problems Due to Design

5.3.1 Escape of polluting materials

The equipment installed on lines and S/S are static in nature and do not generate any fumes or waste materials. However, detailed specification with respect to equipment design and S/S 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 pit and 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. Hazardous Waste Management compliances are followed at each S/S. S/S is also equipped with 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. Also, the system helps in avoiding accidents through contamination, spills and fire.



Transformer Erection with Oil pit in Progress – Rabindra Nagar S/S



Transformer Erection with Oil Pit – Gokul Nagar S/S



Drainage System Implementation – Gokul Nagar S/S

5.3.2 Explosion/fire hazards

It may be noted that sub-stations are being constructed on the land provided by TSECL after considering all the risks and after following ESPPF. During the survey and site selection for TLs, and S/S, 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 and has been included in **EMP (refer clause - 15, 23 & 51)**. Besides this forest authorities also incorporate measures like making fire lines to prevent spreading of fire in the affected forest area. Apart from this, state of art safety instruments like automatic tripping system is installed in the S/S on both the ends so that line gets tripped within milliseconds in case of any fault. Firefighting instruments including fire extinguishers are kept in appropriate place for immediate action in case of any fire hazard. Firefighting system is well adopted along with general requirements and fire safety requirements. All the measures are implemented at all the S/S locations. The details of Firefighting system are given in **Annexure 14**.

5.3.3 Erosion hazards due to inadequate provision for resurfacing of exposed area

Construction of 132kV 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 132/33 kV S/S 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 S/S, excavation of around 2000 m³ is required. It is estimated that a total of approximately 96742 m³ (359 x108 + 7500X3 + 7597 x 0.72 + 15 X 2000) of excavated materials is expected to be generated for construction of 359 numbers of TL tower, 3 no of 132/33 KV S/S, 7597 numbers of DL EP and 15 numbers of 33/11 KV S/S proposed under present scheme. Moreover, the topsoil disturbed during the development of sites are stored properly and used to restore the top surface of the platform. Left over infertile and rocky material being used as fill for foundations and leveling / backfilling as detailed out in EMP (refer clause - 25, 26 & 28). Hence, possibility of erosion of exposed area due to construction activity is negligible.

5.3.4 Soil erosion and contamination

Construction of each 132kV tower and 33 kV pole foundations involve generation of approx. 108 m³ and 0.72 m³ excavated earth respectively. Similarly, each 132/33 kV & 33/11 kV substation would generate approx. 7500 m³ and 2000 m³ excavated earth respectively. So, construction of 359 133kv towers generate 38772 m³ earth and 7597 33kV poles generate 5470 m³ earth.

It has been observed that soil excavated for tower/pole footings and S/S 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 carefully used as fill for S/S and TT/EP foundations. Additional soil is utilized to maintain plain area. Moreover, the project is being implemented in plain area only and hence, possibility of erosion hazard is not anticipated from any of the project site.

5.3.5 Environmental aesthetics

Since spacing between each TT in case of 132 kV D/C TL is approx. 300 mt and between each EP in case of 33/11 kV DL is approximately 100 mt. This will not affect the visual aesthetics of the localities particularly when it is ensured to route the lines as far as away from the localities. TSECL takes up plantation of trees to buffer the visual effect around its S/S and to provide better living conditions. Wherever TSECL feels it appropriate, discussions are held regularly with local Forest Department officials to determine feasibility of planting trees

along roads running parallel to TLs to buffer visual effect in these areas. In addition, towers may be painted grey or green to merge with the background.

5.3.6 Noise/vibration Nuisances

The equipment installed at S/S are mostly static and are so designed that the noise level always remains within permissible limits i.e., 85 dB as per Indian standards. The noise levels reported during normal operating conditions are about 60 to 70 dB at 2 m. distance from the equipment. 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 the S/S that reduce the sound level appreciably. DG set with proper enclosures is 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. **Please Refer Appendix A under heading A.**

5.3.7 Blockage of Wildlife passage

The proposed TLs don't pass through any protected area and no migration paths of wildlife like elephant corridor exist near to subproject project locations hence possibility of any disturbance to wild life is not anticipated. In the instant scheme portion of 132 KV D/C Rabindra Nagar-Belonia line is passing at a distance of 1.2 km from the boundary of Trishna WLS will not cause any adverse impact on wildlife. Nidaya S/S is proposed in Trishna WLS RF. Necessary Forest and NBWL clearance are obtained with stipulated specific conditions. The conditions are being implemented on site to avoid impact on wildlife environment. Also, the compliances are regularly submitted to permission Authority with site specific periodic monitoring report. The necessary provisions of bird guard and anti-perch device presented in **Annexure 15.**

5.4 Environmental Problems during Construction Phase

5.4.1 Uncontrolled silt runoff

During construction, maximum 108 m³ from each tower foundation and 7500m³ of excavated materials for each S/S foundation expected to be generated. However, adequate measures are taken to store excavated materials properly for refilling after construction is over. In hill slopes site specific engineering practices including bio-engineering techniques, wherever, feasible are being undertaken to prevent soil erosion. Moreover, excavation in the hilly areas is avoided in rainy days. Hence, uncontrolled silt run off is not anticipated.

As discussed in the earlier section, the terrain of the project area is 50 to 60% hilly and 40 to 50% plain. Majority of tower/pole locations are on plain terrain. Wherever the tower has been positioned on hilltops leg extension is being utilized so as to minimize/ avoid benching/ revetment and to provide great stability.

Retaining walls are also being constructed to eliminate the chances of silt runoff/ soil erosion. The excavated material has been backfilled and any remaining earth has been spread around

the base and compacted. In case of DLs all the excavated soil is backfilled and compacted after erection of tubular poles.

It has been observed that most of these S/S lands were secured by TSECL since long back. As these substation locations are easily accessible with existing metal roads construction of new approach road is not required. The details of requirement of approach road along with google map photos of substations depicting status of approach have been placed at **Table 2.33 and Map 2.29 (page 98-113)**. However, it is to submit that in few cases i.e., 33/11kV Durganagar S/S - 500m, 33/11kV Nidaya S/S - 200m, 33/11kV Simna S/S - 200m only strengthening / upgradation work of existing road will be undertaken to facilitate movement of construction materials and machineries to the construction sites of S/S in consultation with local authority and villagers. Since these S/S are in plain area and no cutting and filling or used of heavy machineries involved the anticipated impacts will be negligible. IA officials have confirmed that all necessary measures like sprinkling of water, minimum disturbance to local community shall be undertaken during construction work. Further, we have been informed that a separate screening / assessment report for all proposed approach roads under NERPSIP being complied by IA and same will be submitted to World Bank shortly.

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 in the hilly areas is avoided in rainy days. Hence, uncontrolled silt run off is not anticipated. However, during construction, precautions are being taken by contractors, boundary / retaining / breast walls are being constructed to avoid any such runoff of excavated material from the construction sites. Moreover, S/S are being constructed above the highest flood level (HFL) by raising the foundation pad, therefore, are not prone to flooding/ erosive losses of soil.

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 S/S boundary walls and properly managed. The S/S are not located in the vicinity of water bodies or ecologically sensitive areas.

5.4.2 Nuisance to nearby properties

While selection of site, due care is taken to keep the TLs and S/S away from settlements. Further, all the construction activities undertaken through the use of small mechanical devices e.g., tractors and manual labor, therefore nuisance to the nearby properties if any, is not expected. Since all construction related activities for new S/S are confined to existing S/S which are already inaccessible for general public due to its separation/demarcation by the boundary wall. Moreover, such areas are declared as prohibited for general public as per the provisions of Electricity Act 2003. Hence, any adverse impact arising during the construction of these S/S are temporary and limited to the boundaries of existing S/S only and do not intend to impact on nearby habitat/property and health & safety of neighboring community.

5.4.3 Dust emission due to construction activities & vehicular movements

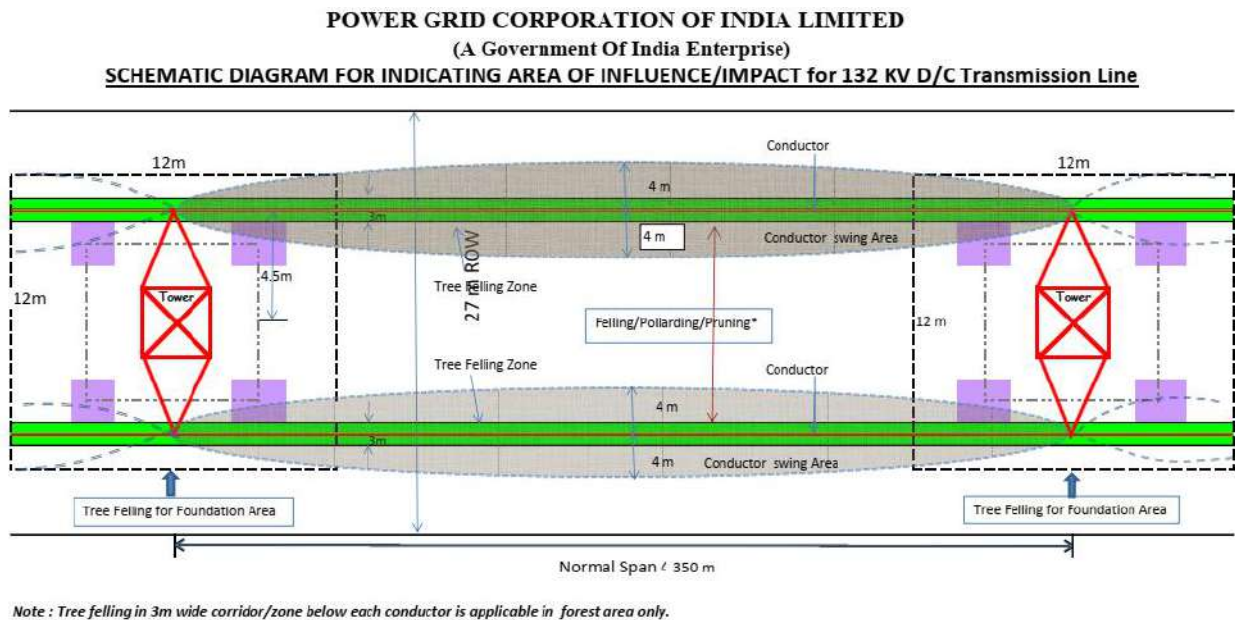
Exposed soils are compacted easily for prevention of dust emission due to construction activities. Sprinkling of water spray vulnerable area and covering transporting vehicles to avoid spillage of materials along with controlled speed measures have been observed in

project site. Use of personal protective equipment by workers is observed. Proper scheduling of transportation of materials are being undertaken to minimize and mitigate any adverse impact on construction materials. Regular water sprinkling is being carried out at construction sites and hence dust emission impacts are not observed.

5.4.4 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 is mostly through road network. However, in environmental sensitive area like forest NP, WLS etc. (33/11 kV Nidaya S/S), transportation is planned mostly through head load. The necessary permission with all the activities proposed for the construction of S/S is obtained as described in the earlier sections. Access to the remote sites are along existing roads or village paths; minor improvements to paths may be made where necessary, but no major construction of roads is necessary either during construction or as a part of maintenance procedures.

In case access road/path is not available than existing field/bund is utilized after paying due compensation for any damage to crop or field. However, the requirement of new access road through forest area including tree felling the same is included in forest proposal in consultation with forest department as per provisions of Forest (Conservation) Act, 1980. However, in case tree felling is not required in access road in forest area, the permission for the same will be obtained from concerned DFO in accordance with MoEF & CC circular dated 7th October, 2014.



As and when a TL 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 is undertaken to avoid any unforeseen incident.

5.4.5 Noise generation from construction activities

Generally, machineries and vehicular movements generate noise during construction activities. It has been found that construction works at S/S are potential to generate noise levels higher than the background noise as compared to construction activity of lines. Since construction sites are quite far from settlement/other sensitive receptors like school, hospitals, possibility of any direct impact to surrounding community is not anticipated. Moreover, all these activities are being undertaken during day time only.

To prevent any adverse impact, staffs/workers engaged in construction activity are equipped with personal protective equipment like earmuffs/ earplugs Besides; construction techniques like use of low noise producing equipment /machinery selection and their proper maintenance of equipment/machinery are practiced by construction contractors which is also evident from the fact that noise levels reported/ measured during site visit are well within the prescribed limits. Regular noise level monitoring is being carried out by Construction Contractor.

5.4.6 Inadequate resurfacing for erosion control

Since, the towers for the proposed T&D lines are to be constructed in plain area as well as hilly area due care is taken to control erosion. In such cases where towers are placed on slopes and erosion prone soils, internationally accepted engineering practices including bio-engineering techniques wherever feasible are being undertaken to prevent soil erosion. This include cutting and filling slopes wherever necessary. The back cut slopes and downhill slopes are being treated with revetments. As explained above adequate steps are taken to resurface the area after construction. Wherever sites are affected by active erosion or landslides, both biological and engineering treatment are carried out, e.g., provision of breast walls and retaining walls, toe wall, revetment wall, stone pitching, guard wall, sowing soil binding grasses around the site. Additionally, one recharge pit is proposed at each S/S location so that the ground water table can be enhanced.

Further, construction is generally undertaken in dry/non-monsoon period. The details of erosion control measures / slope protection work are provided in **Table 5.3** and **Figure 5.2**. The progress of boundary / retaining wall as on date is explained in **Table 1.5**. **Also Refer Annexure 16 for Drawing.**

Table 5-3: Erosion Control / Slope Protection Work

Description	Location
Retaining Wall	132/33kV Belonia, Gakulnagar, Mohanpur
Boundary Wall	All 132/33kV S/s Except Belonia, Gakulnagar and Rokhia All 33/11kV S/s
RRM Wall	33/11kV Golaghati S/s

Figure 5-8: Erosion Control Measures

Retaining Wall at 132/33kV Gokulnagar S/s



RRM Wall at 33/11kV Golaghati S/s





Retention Wall at 132 / 33kV Belonia SS



5.4.7 Inadequate disposition of borrow area

The TT/TP foundations involve excavations on small scale basis and the excavated soil is utilized for back filling. The S/S selected on the sites in such a manner that the volume of cutting is equal to volume of filling avoiding borrowing of the area. Surplus earth/soil not generated up till now from any of the EHV or DMS S/S. If generated, soil is being utilized

within S/S premises either for approach road construction or may be used for backfilling excavated pits.

Table 5-4: Borrowed Earth Details

Sr. No.	Name of Substation	Details of borrowed earth		Disposal of surplus earth	
		Total Volume (m ³)	Source Coordinates	Total Volume (m ³)	Dumping site
1.	132/33kV Mohanpur S/s	1344.00	23°57'0.57251" N 91°23'4.05767" E	N/A	N/A
2.	132/33kV Rabindranagar S/s	813.97	23°27'35.76" N 91°16'22.36" E	N/A	N/A
3	33/11kV Golaghati S/s	3181.85	23°41'47.5" N 91°21'59.8" E	N/A	N/A

5.4.8 Protection of Worker's health/safety

All health and safety issues and its management aspects are integral part of project/contract specific safety plan which is also part of contract condition. Please refer a sample Agreement pertaining to the same in **Annexure - 17**. 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 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/each for any injury and is deducted from the contractor's payment and paid to the deceased/affected family (**Annexure - 18**).

The project authority ensures that all contractors are operating with valid labour license as per provision under section - 12(1) of the Contract Labours (Regulation & Abolition) Act, 1970 and also certified under Section- 7(3) of the Building and Other Construction Workers (Regulation of Employment and Condition of Service) Act, 1996 from Ministry of Labour & Employment. Besides, the contractors have obtained requisite insurance policy as per provisions of Employee Compensation Act, 1923 for its employed workforce. Sample copy of labour license and insurance policy for workers is attached as **Annexure-19**.

TSECL maintains safety as a top priority and has framed guidelines/checklist for workers' safety as its personnel are exposed to live EHV apparatus and TLs. These guidelines / checklists include work permits and safety precautions for work on the TLs both during construction and operation and is regularly monitored by site in-charge. Sample copy of filled in checklist is enclosed as **Annexure-20**. Site inspection is regularly executed on sites by HSE team to ensure the measures implemented and workers health is taken care of. **Please refer sample site inspection report in Annexure 21.**

In addition, training is imparted to the workers in firefighting and safety measures. Standard safety tools like helmet, safety belt, gloves etc. are provided to them in accordance to the provisions of Safety Rules. First aid facilities are to be made available with the labor gangs, and doctors called in from nearby towns when necessary. 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.

The number of outside (skilled) laborers are quite small, of the order of 25-30 people per group and remaining workforce of unskilled laborers are comprised of mostly local people. Workers are also covered by the statutory Workmen (Compensation) Act. Regular health checkups are conducted for construction workers. The construction sites and construction workers' houses are disinfected regularly. In order to minimize/checking of spread of socially transmitted diseases e.g., HIV/AIDS etc. TSECL regularly conduct awareness building programs on such issues for the construction workers.

Work sites and quarters were fumigated to avoid Covid 19 risk to the workers. Awareness program on Covid 19 at S/S was carried out by the construction contractor to prevent Covid 19 infections. Distribution of essential food materials at S/S was done during lockdown period. Photos of health and safety measures taken at the work sites are as follows:

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



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

Figure 5-9: Precautions Taken by the Contractor for Health and Safety of Workers

Safe Work Practices in different States/Sites during reporting period





First Aid & Fire Safety Training





Medical Health Check Up



Covid Awareness



Training on Safety in general including Excavation & Soil management



Construction Camp



Soak-pit Toilet at 132/33kV



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 S/S personnel for both the lines as well as S/S. 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 regularly carried out to disclose problems related to cooling oil, gaskets, circuit breakers, vibration measurements, contact resistance, con- denser, air handling units, electrical panels and compressors. Any sign of soil erosion is also reported and rectified. Monitoring results are published monthly, including a report of corrective action taken and a schedule for future action.

TSECL follows the best international practices while designing its system to maintain acceptable prescribed EMF level. The approved international standards and design, which The ICNIRP guideline for the general public (up to 24 hours a day) is a maximum exposure level of 1,000 mG or 100T. Further, because of issues relating to need to ensure health and safety relating to the line such as fire safety, safe voltages on metallic parts of buildings, and safety clearances to avoid flashover, the TLs do not pass directly over any residential properties and as such the potential for EMF effects to occur will be further diminished. All the S/S are being constructed following the Sustainable Building norms and construction manual.

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, its 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, TSECL has discontinued procurement 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&S projects do not involve any large-scale excavation. In TL land is affected to the extent 89.75 sq. m below the tower base for which compensation is paid to land owner. **Please refer Chapter 4 and Table 4.32.** However, the subject TLs are passing through only 15 km of forest area out of total line length of 89.478 km. However, as per regulation and Forest Clearance obtained (**Annexure 6**), afforestation is being undertaken on double the area diverted which eventually will help in increase the forest cover.

5.6.2 Accelerated use of resources for short-term gains

TSECL do not intend to use any natural resources occurring in the area during construction as well as maintenance of ready sub projects. The construction material such as tower members, cement etc., are procured from factories while the excavated soil is being utilized for backfilling to restore the surface / filling of tower foundations. During construction of TL very small quantity of water is required which is met from nearby existing authorized source and through tanker. However, for S/S mostly ground water is used by installing a bore well during construction as well as for Operational stage. Moreover, provision of rain water harvesting in all proposed S/S by installing recharge pits under the present scheme has been made to conserve precious water resource and enhance the ground water level. Hence it may be seen that the activities associated with implementation of subject project do not intend to cause any accelerated use of resources for short term gains.

5.6.3 Endangering of species

As described earlier, no endangered species of flora and fauna habitat exist in the subprojects area is getting affected thus there is no possibility of endangering/ causing extinction of any species.

5.6.4 Promoting undesirable rural-to urban migration

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

5.7 Public Consultation

Public consultation/information is an integral part of the project implementation. Public is informed about the project at every stage of execution. During survey also TSECL site officials meet people and inform them about the routing of TLs. During the construction, every individual, on whose land tower is erected and people affected by RoW, are consulted. Apart from organizing many informal group meetings in different villages public meeting were also organized in the routes of TLs along with the photographs. To get the maximum participation during the public consultation Program a notice was served well in advance to the villagers. The details of line and its importance were explained to the villagers.

Apart from this, public consultation using different technique like Public Meeting, Small Group Meeting, Informal Meeting are also carried out during different activities of project cycle. During such consultation the public are informed about the project in general and in particular about the following:

- Complete project plan (i.e., its route and terminating point and S/S, 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 TLs and TSECL approach to minimizing and solving them;
- Compensation process for trees and crop damages.

In the instant project many group meetings were organized (informally and formally) in different villages where the interventions are likely to happen. Village women folk have actively participated in these meetings.

During the Public consultation the details of line and its importance were explained to the villagers by the officials of TSECL and POWERGRID. The consultation was arranged in interactive way and queries about routing of line avoiding heavily populated area/houses, RoW width for tree cutting crop/tree & tower footing compensation, engagement of local people in construction activity etc., were replied. The initiative was appreciated by the villagers and they assured to extend their cooperation for construction of the said subprojects. The process of such consultation shall continue during project implementation and even during O&M stage. Details of public consultation mentioned in **Appendix C**.

Findings of public consultation:

1. People are well aware about the project, its various components and confirmed that IA & TSECL informed about the project at every stage of execution
2. People confirmed that IA & TSECL are taking every step possible to avoid/ minimize the environmental and social impacts along the route of TLs and at site of sub stations.
3. People confirmed that community reserves, sacred groves and community conserved areas are completely avoided while finalizing the route of lines
4. 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.
5. 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.
6. 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.
7. 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.
8. Execution of project work provides opportunities to local contractors to get involved in construction, fabrication, transportation etc. activities.
9. Most of the sub-contracts are awarded/ being awarded to local peoples.
10. Contractor prefer and engage local peoples for skilled and unskilled works
11. Local villagers rented out their buildings to contractor and IA for temporary offices and staff quarters in local that helps in income generation
12. Wherever possible contractor and IA purchase daily need requirements for local vendors and shopkeepers that helps in economic upliftment of the area
13. The contractor labor informed that they have been provided with PPEs such as boots and helmets.
14. Mock drills such as fire safety, first aid etc. are conducted periodically to enhance the preparedness level. Safety induction & awareness program including HIV/AIDS are also conducted. Safety film for transmission project in local language is shown for better awareness.
15. First aid boxes and provisions for treatment in case of emergencies are arranged locally/ nearby towns
16. 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 the **Table 5.5**.



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Table 5-5: Compliance of EMP

Clause No.	Project Activity /Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Institutional Responsibility	Implementation Schedule	Compliance Report
Pre-construction								
1	Location of overhead line towers/ poles/ underground DLs and alignment & design	Exposure to safety related risks	Setback of dwellings to overhead line route designed in accordance with permitted level of power frequency and the regulation of supervision at sites.	Tower location and overhead/ underground alignment selection with respect to nearest dwellings	Setback distances to nearest houses – once	Implementing Agency (IA)	Part of overhead lines tower/ poles/ laying of underground cable site survey and detailed alignment survey and design	Careful route alignment had ensured that no house / dwelling unit is coming in the RoW.
2	Equipment specifications and design parameters	Release of chemicals and gases in receptors (air, water, land)	PCBs not used in S/S transformers or other project facilities or equipment.	Transformer design	Exclusion of PCBs in transformers stated in tender specification – once	IA	Part of tender specifications for the equipment	Compiled and included in tender document with technical specification.
			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	Process, equipment and system design	Exclusion of CFCs stated in tender specification – once Phase out schedule to be prepared in case still in use – once		Part of tender specifications for the equipment Part of equipment and process design	Compiled and included in tender document with technical specification. Included in process design and its part of equipment specification.



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Clause No.	Project Activity /Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Institutional Responsibility	Implementation Schedule	Compliance Report
			Government					
3	Transmission/ Distribution line design	Exposure to electromagnetic interference	Line design to comply with the limits of electromagnetic interference from overhead power lines	Electromagnetic field strength for proposed line design	Line design compliance with relevant standards once	IA	Part of design parameters	Designs are in compliance with international standards as certified by PTI, USA, CPRI Bangalore
4	Substation location and design	Exposure to noise	Design of plant enclosures to comply with noise regulations.	Expected noise emissions based on S/S design	Compliance with regulations - once	IA	Part of detailed siting survey and design	Designs are in Compliance with minimal noise and acoustics with international standards as certified by PTI, USA, CPRI Bangalore
		Social inequities	Careful selection of site to avoid encroachment of socially, culturally and archaeological sensitive areas (i.e. sacred graves, graveyard, religious worship place, monuments etc.)	Selection of S/S location (distance to sensitive area).	Consultation with local authorities/ autonomous councils - once	IA	Part of detailed siting survey and design	Complied
5	Location of overhead line towers/poles/ laying of underground distribution line &	Impact on water bodies	Avoidance of such water bodies to the extent possible. Avoidance of placement of tower inside water bodies to the extent of possible	Tower/pole location and overhead/ underground line alignment selection (distance to water bodies)	Consultation with local authorities- once	IA	Part of tower/pole site survey and detailed underground /overhead line alignment survey and design	Careful route selection and provision of adequate extensions has avoided the habituated area to the extent possible.



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Clause No.	Project Activity /Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Institutional Responsibility	Implementation Schedule	Compliance Report
	alignment and design	Social inequities	Careful route selection to avoid existing settlements and sensitive locations	Tower/pole location and overhead/underground line alignment selection (distance to nearest dwellings or social institutions)	Consultation with local authorities/ autonomous councils and land owners - once	IA	Part of detailed tower/pole site and overhead/underground alignment survey and design	Transmission(132/33kV) and Distribution (33/11kV) lines are routed either age of agriculture land or side of the road ensuring that it does not obstruct and create any public nuisance
			Minimize impact on agricultural land Careful selection of site and route alignment to avoid encroachment of socially, culturally and archaeological sensitive areas (i. graveyard, religious worship place, monuments etc.)	Tower location and overhead underground line alignment selection (distance to agricultural land) Tower/pole location and overhead/underground line alignment selection (distance to sensitive area)	Consultation with local authorities/ autonomous councils and land owners - Once Consultation with local authorities/ autonomous councils - once			
6	Involuntary acquisition or permanent land acquisition for S/S.	Loss of land/ income change in social status etc.	Compensation and R&R measures are extended as per provision of RFCT LARR Act, 2013 (Right to Fair Compensation and Transparency in Land Acquisition, Resettlement and Rehabilitation Act, 2013)	Compensation and monetary R&R amounts/ facilities extended before possession of land.	As per provisions laid out in the act	State Govt.	Prior to award /start of S/S construction.	No Land Acquisition in the project. Hence no cases of R&R. Other compensation as per existing rules.



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Clause No.	Project Activity /Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Institutional Responsibility	Implementation Schedule	Compliance Report
7	Line through protected area/ precious ecological area	Loss of precious ecological values / damage to precious species	Avoid siting of lines through such areas by careful site and alignment selection (NP, WLS, Biosphere Reserves/ Biodiversity Hotspots)	Tower/pole location and overhead/ underground line alignment selection (distance to nearest designated ecological protected / sensitive areas)	Consultation with local forest authorities - once	IA	Part of detailed site selection and alignment survey /design	<p>Complied. Since Reserved Forest area of 96.14 ha is involved in TL routes (Rabindranagar Rokhia Line and Rabindranagar Belonia Line) is involved forest clearance under FC Act 1980 is applicable in instant case.</p> <p>For proposed TL Rokhia - Rabindranagar 132 kV D/C line Stage-I & Stage- I (final) approval obtained on 28.06.18 & 07.06.19 respectively. For proposed Rabindranagar - Belonia 132 kV D/C line Stage-I & Stage-II (final) approval obtained on 12.04.19 & 22.06.20 respectively.</p> <p>0.3299 Ha Trishna WLS forest is involved in Nidaya S/S, forest clearance under FC Act 1980 and NBWL</p>



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Clause No.	Project Activity /Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Institutional Responsibility	Implementation Schedule	Compliance Report
								clearance under WL Protection act 1972 is applicable in instant case. For Nidaya S/S plot Stage-I approval obtained on 16.03.20 and Stage-II clearance (conditional) issued on 19.03.2021 from RoMoEFCC, Shillong. National Board for Wildlife (NBWL) permission obtained on 17.12.19.
			Minimize the need by using RoW wherever possible	Tower / pole location and overhead / underground line alignment selection	Consultation with local authorities and design engineers - once	IA	Part of detailed site selection and alignment survey /design	Complied
8	Line through identified Elephant corridor / Migratory bird	Damage to the Wildlife/ Birds and also to line	Study of earmarked elephant corridors to avoid such corridors, Adequate ground clearance, Fault clearing by Circuit Breaker, Barbed wire wrapping on towers, reduced spans etc., if applicable	Tower/pole location and overhead/ underground line alignment selection. Minimum/maximu m ground clearance	Consultation with local forest authorities - once. Monitoring - quarterly basis	IA	Part of detailed site selection and alignment survey /design and Operation	There is no elephant corridor in the selected route.
			Avoidance of established/ identified migration	Tower/pole location and overhead/	Consultation with local forest	IA	Part of detailed site selection and alignment survey	Complied, Bird guards are being provided in towers.



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Clause No.	Project Activity /Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Institutional Responsibility	Implementation Schedule	Compliance Report
			path (Birds & Bats). Provision of flight diverter/ reflectors, bird guard, elevated perches, insulating jumper loops, obstructive perch deterrents, raptor hoods etc7., if applicable	underground line alignment selection	authorities - once		/design and Operation	
9	Line through forestland	Deforestation and loss of biodiversity edge effect	<p>Avoid locating lines in forest land by careful site and alignment selection</p> <p>Minimize the need by using existing towers, tall towers and RoW, wherever Possible</p> <p>Measures to avoid invasion of alien species</p> <p>Obtain statutory clearances from the Government</p>	<p>Tower/pole location and overhead/ underground line alignment selection (distance to nearest protected or reserved forest)</p> <p>Intrusion of invasive species</p> <p>Statutory approvals from Government</p>	<p>Consultation with local authorities - once</p> <p>Consultation with local authorities and design engineers - once</p> <p>Consultation with local forest authorities - once</p> <p>Compliance with regulations -</p>	IA	Part of detailed site selection and alignment survey/design	<p>Minimum tree cutting is done. The shrubby vegetation is retained as it is. Wherever tree cutting is necessary, it was done under supervision of forest department.</p> <p>Minimum tree cutting is done. The shrubby vegetation is retained as it is. Wherever tree cutting is necessary, it was done under supervision of forest department.</p> <p>Complied</p> <p>Complied Complied. Since Reserved Forest</p>



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



Clause No.	Project Activity /Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Institutional Responsibility	Implementation Schedule	Compliance Report
					once for each subproject			<p>area of 96.14 ha is involved in TL routes (Rabindranagar Rokhia Line and Rabindranagar Belonia Line) is involved forest clearance under FC Act 1980 is applicable in instant case.</p> <p>For proposed TL Rokhia - Rabindranagar 132 kV D/C line Stage-I & Stage- I (final) approval obtained on 28.06.18 & 07.06.19 respectively. For proposed Rabindranagar - Belonia 132 kV D/C line Stage-I & Stage-II (final) approval obtained on 12.04.19 & 22.06.20 respectively.</p> <p>0.3299 Ha Trishna WLS forest is involved in Nidaya S/S, forest clearance under FC Act 1980 and NBWL clearance under WL Protection act 1972 is</p>



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



Clause No.	Project Activity /Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Institutional Responsibility	Implementation Schedule	Compliance Report
								applicable in instant case. For Nidaya S/S plot Stage-I approval obtained on 16.03.20 and Stage-II clearance (conditional) issued on 19.03.2021 from RoMoEFCC, Shillong. National Board for Wildlife (NBWL) permission obtained on 17.12.19. Compliance are being submitted to the authorities as per the stipulated conditions in clearance.
			Consultation with autonomous councils wherever required	Permission/ NOC from autonomous councils	Consultation with autonomous councils–once during tower placement			Not applicable.
10	Lines through farmland	Loss of agricultural production/ change in cropping pattern	Use existing tower or Footings wherever possible.	Tower/pole location and overhead/ underground line alignment selection.	Consultation with local authorities and design engineers – once	IA	Part of detailed alignment survey and design	Foundations cast during lean period to avoid damage to the crops during harvesting.
			Avoid sitting new towers on farmland wherever feasible	Tower/pole location and overhead/ underground line	Consultation with local authorities and design		Part of detailed sitting and alignment survey /design	Due care taken to avoid the damage to the extent possible.



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



Clause No.	Project Activity /Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Institutional Responsibility	Implementation Schedule	Compliance Report
				alignment selection	engineers – once			
11	Noise related	Nuisance to neighboring properties	Substations sited and designed to ensure noise is to not be a nuisance	Noise levels	Noise levels to be specified in tender documents – once	IA	Part of detailed equipment design	Complied, Appropriately located. No noise anticipated
12	Interference with drainage patterns/ irrigation channels	Flooding hazards/ loss of agricultural production	Appropriate sitting of towers to avoid channel interference	Tower/pole location and overhead/ underground line alignment selection (distance to nearest flood zone)	Consultation with local authorities and design engineers – once	IA	Part of detailed alignment survey and design	No substation or towers are located in the natural drainage or irrigation channels. All the towers and Poles and S/S are designed and constructed at desired elevation above flood level.
13	Escape of polluting materials	Environmental pollution	Transformers designed with oil spill containment systems, and purpose-built oil, lubricant and fuel storage system, complete	Equipment specifications with respect to potential pollutants	Tender document to mention specifications – once	IA	Part of detailed equipment design /Drawings	Spill control plan is ready and no spilled material will go out of substation due to provision secondary containment. All transformers are well built with oil pits. Hazardous management, storage and handling rules 2016 are adhered to.
			Substations to include drainage and sewage disposal systems to avoid offsite land and	Substation sewage design	Tender document to mention detailed specifications –	IA	Part of detailed substation layout and design/drawings	Spill control plan is ready and no spilled material will go out of substation due to provision secondary



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Clause No.	Project Activity /Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Institutional Responsibility	Implementation Schedule	Compliance Report
			water pollution.		once			containment. Internal drainage and sewerage system is well planned and implemented at all S/S.
14	Equipment's submerged under flood	Contamination of receptors	Substations constructed above the high flood level (HFL) by raising the foundation pad	Substation design to account for HFL (elevation with respect to HFL elevation)	Base height as per flood design-once	IA	Part of detailed substation layout and design/drawings	Substations constructed above the high flood level (HFL) by raising the foundation pad and the surface run off is directed along with the boundary of the substation. Internal drainage system is well planned and implemented at all S/S.
15	Explosions /Fire	Hazards to life	Design of substations to include modern firefighting equipment	Substation design compliance with fire prevention and control codes	Tender document to mention detailed specifications - once	IA	Part of detailed substation layout and design /drawings	Complied, adequate numbers of fire extinguishers are provided being planned in lean period or avoided during harvest
			Provision of firefighting equipment to be located close to transformers					Complied, the fire extinguishers are placed at strategic locations.
Construction								



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Clause No.	Project Activity /Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Institutional Responsibility	Implementation Schedule	Compliance Report
16	Equipment layout and installation	Noise and vibrations	Construction techniques and machinery selection seeking to minimize ground disturbance.	Construction techniques and machinery	Construction techniques and machinery creating minimal ground disturbance- once at the start of each construction phase	IA (Contractor through contract provisions)	Construction period	Complied, Anti-vibration pad are used.
17	Physical construction	Disturbed farming activity	Construction activities on cropping land timed to avoid disturbance of field crops (within one month of Harvest wherever possible).	Timing of start of construction	Crop disturbance – Post harvest as soon as possible but before next crop – once per site	IA (Contractor through contract provisions)	Construction period	Foundation being planned in lean period or avoided during harvest.
18	Mechanized construction	Noise, vibration and operator safety, efficient Operation	Construction equipment to be well maintained.	Construction equipment – estimated noise emissions	Complaints received by local authorities – every 2 weeks	IA (Contractor through contract provisions)	Construction period	Complied, Anti-vibration pad are used and most of the construction activities are done during day time.
		Noise, vibration, equipment wear and tear	Turning off plant not in use.	Construction equipment-estimated noise emissions and operating schedules	Complaints received by local authorities – every 2 weeks	IA (Contractor through contract provisions)	Construction period	Complied, Anti-vibration pad are used.
19	Construction of roads for accessibility	Increase in airborne dust particles	Existing roads and tracks used for construction and maintenance access	Access roads, routes (length and width of new access roads to be constructed)	Use of established roads wherever	IA (Contractor through contract provisions)	Construction period	Existing Road used to access the line route; water sprinkling is done during



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Clause No.	Project Activity /Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Institutional Responsibility	Implementation Schedule	Compliance Report
			to the line wherever possible.		possible – every 2 weeks			additional construction activity.
		Increased land requirement for temporary accessibility	New access ways restricted to a single carriageway width within the RoW.	Access width (meters)	Access restricted to single carriage –way width within RoW – every 2 weeks	IA (Contractor through contract provisions)	Construction period	Most of the construction activity are done during day time and water sprinkling is done during additional construction activity
20	Construction activities	Safety of local villagers	Coordination with local communities for construction schedules, Barricading the construction area and spreading awareness among locals	Periodic and regular reporting /supervision of safety arrangement	No. of incidents- once every week	IA (Contractor through contract provisions)	Construction period	Construction safety procedures are followed with proper barricading with night vision
		Local traffic obstruction	Coordination with local authority/requisite permission for smooth flow of traffic	Traffic flow (Interruption of traffic)	Frequency (time span)- on daily basis	IA (Contractor through contract provisions)	Construction period	There is be any heavy traffic flow anticipated due to the construction activities. The construction is planned only in day time
21	Temporary blockage of utilities	Overflows, reduced discharge	Measure in place to avoid dumping of fill materials in sensitive drainage area	Temporary fill placement (m3)	Absence of fill in sensitive drainage areas – every 4 weeks	IA (Contractor through contract provisions)	Construction period	The subprojects are planned in such a way there are no blockages of any utilities.
22	Site clearance	Vegetation	Marking of vegetation to be removed prior to clearance, and strict control on clearing activities to ensure minimal clearance.	Vegetation marking and clearance control (area in m2)	Clearance strictly limited to target vegetation – every 2 weeks	IA (Contractor through contract provisions)	Construction period	Included in contract provisions and being monitored regularly. An area of 400 m2 is being cleared tower foundation at each location depending on



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Clause No.	Project Activity /Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Institutional Responsibility	Implementation Schedule	Compliance Report
								the type of tower. In rest of ROW trees that are coming in the electrical clearance zone are cleared.
23	Trimming /Cutting of trees within RoW	Fire hazards	Trees allowed growing up to a height within the RoW by maintaining adequate clearance between the top of tree and the conductor as per the regulations.	Species-specific tree retention as approved by statutory authorities (average and max. tree height at maturity, in meters)	Presence of target species in RoW following vegetation clearance - once per site	IA (Contractor through contract provisions)	Construction period	Tree height and its canopy are monitored during constructions activities and there after felling coupled with other safety measures applied restrict any such incident.
		Loss of vegetation and deforestation	Trees that can survive pruning to comply should be pruned instead of cleared.	Species-specific tree retention as approved by statutory authorities	Presence of target species in RoW following vegetation clearance - once per site	IA (Contractor through contract provisions)	Construction period	Route selection and alignment is done with respect to no or minimal cuts of trees.
			Felled trees and other cleared or pruned vegetation to be disposed of as authorized by the statutory bodies.	Disposal of cleared vegetation as approved by the statutory authorities (area cleared in m2)	Use or intended use of vegetation as approved by the statutory authorities - once per site	IA (Contractor through contract provisions)	Construction period	The felled trees are disposed out to local authorities.
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	Illegal wood /vegetation harvesting (area in m2, number of incidents reported)	Complaints by local people or other evidence of illegal harvesting - every 2 weeks	IA (Contractor through contract provisions)	Construction period	No Wood/ vegetation harvesting is allowed in substation and line area.



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Clause No.	Project Activity /Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Institutional Responsibility	Implementation Schedule	Compliance Report
			staff continuing current legal activities)					
25	Surplus earthwork/soil	Runoff to cause water pollution, solid waste disposal	Soil excavated from tower footings/substation foundation disposed of by placement along roadsides, or at nearby house blocks if requested by landowners	Soil disposal locations and volume (m3)	Acceptable soil disposal sites – every 2 weeks	IA (Contractor through contract provisions)	Construction period	Excavated earth is used for refilling. The top/ fertile soil is kept separately for resurfacing and other earth is used for refilling.
26	Substation construction	Loss of soil	Loss of soil is not a major issue as excavated soil is to be mostly reused for filling. However, in case of requirement of excess soil the same is to be met from existing quarry or through deep excavation of existing pond or other nearby barren land with agreement of local communities	Borrow area sitting (area of site in m2 and estimated volume in m3)	Acceptable soil borrow areas that provide a benefit - every 2 weeks	IA (Contractor through contract provisions)	Construction period	All necessary measured undertaken during construction.
		Water pollution	Construction activities involving significant ground disturbance (i.e. substation land forming) not undertaken during the monsoon season	Seasonal start and finish of major earthworks (pH, BOD /COD, Suspended solids, others)	Timing of major disturbance activities – prior to start of construction activities	IA (Contractor through contract provisions)	Construction period	No such water pollution activities are carried out. Proper sewerage system and drainage system is designed and implemented at all S/S locations.



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Clause No.	Project Activity /Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Institutional Responsibility	Implementation Schedule	Compliance Report
27	Site clearance	Vegetation	Tree clearances for easement establishment to only involve cutting trees off at ground level or pruning as appropriate, with tree stumps and roots left in place and ground cover left undisturbed	Ground disturbance during vegetation clearance (area, m ²)	Amount of ground disturbance – every 2 weeks	IA (Contractor through contract provisions)	Construction period	Complied. Minimum trees cut for site clearance. Some trees were trimmed
				Statutory approvals	Statutory approvals for tree clearances – once for each site	IA (Contractor through contract provisions)	Construction period	Complied. Minimum trees cut for site clearance. Some trees were trimmed
28	Substation foundation/ tower erection disposal of surplus earthwork/fill	Waste disposal	Excess fill from substation/tower foundation excavation disposed of next to roads or around houses, in agreement with the local community or landowner.	Location and amount (m ³) of fill disposal	Appropriate fill disposal locations – every 2 weeks	IA (Contractor through contract provisions)	Construction period	These provisions are strictly complied and recorded during construction.
29	Storage of chemicals and materials	Contamination of receptors (land, water, air)	Fuel and other hazardous materials securely stored above high flood level.	Location of hazardous material storage; spill reports (type of material spilled, amount (kg or m ³) and action taken to control and clean up spill)	Fuel storage in appropriate locations and receptacles – every 2 weeks	IA (Contractor through contract provisions)	Construction period	Complied and condition is taken care during storage. Hazardous materials are managed by following Hazardous waste management rules 2016. Also transformers are erected with oil pits for proper management and collection of oil.
30	Construction	Noise nuisance	Construction activities	Timing of	Daytime	IA (Contractor	Construction period	It is ensured by site In-



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Clause No.	Project Activity /Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Institutional Responsibility	Implementation Schedule	Compliance Report
	schedules	to neighboring properties	only undertaken during the day and local communities informed of the construction schedule.	construction (noise emissions, [dB(A)])	construction only - every 2 weeks	through contract provisions)		charge that construction activities takes place during day time and villagers are informed in advance and affected villagers are even served notice in advance and Anti-vibration pad are used.
31	Provision of facilities for construction workers	Contamination of receptors (land, water, air)	Construction workforce facilities to include proper sanitation, water supply and waste disposal facilities.	Amenities for Workforce facilities	Presence of proper sanitation, water supply and waste disposal facilities once each new facility	IA (Contractor through contract provisions)	Construction period	Construction workers are provided all the necessary basic facilities as well as safety equipment.
32	Influx of migratory workers	Conflict with local population to share local resources	Using local workers for appropriate asks	Avoidance/reduction of conflict through enhancement/augmentation of resource requirements	Observation & supervision-on weekly basis	IA (Contractor through contract provisions)	Construction period	Local workers were employed for the construction work, so that no any conflict arose at the construction locations.
33	Lines through farmland	Loss of agricultural productivity	Use existing access roads wherever possible	Usage of existing utilities	Complaints received by local people /authorities - every 4 weeks	IA (Contractor through contract provisions)	Construction period	Crop compensation is paid as per CPTD
			Ensure existing irrigation facilities are maintained in working condition	Status of existing facilities				No irrigation facilities are affected or blocked.
			Protect /preserve topsoil and reinstate	Status of facilities (earthwork in m3)				All measures to resurface the excavated



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			after construction completed					area by top soil is adopted as described above.
			Repair /reinstate damaged bunds etc. after construction	Status of facilities (earthwork in m3)				Damaged bunds were repaired to normal stage
		Loss of Income	Land owners/ farmers compensated for any temporary loss of productive land as per existing regulation	Process of Crop/tree compensation in consultation with forest dept. (for timber yielding tree) and Horticulture dept. (for fruit bearing tree)				Compensation as per CPTD are paid.
34	Uncontrolled erosion/silt runoff	Soil loss, downstream siltation	Need for access tracks minimized, use of existing roads. Regeneration of vegetation to stabilize works areas on completion (where applicable) Avoidance of excavation in wet season Water courses protected from siltation through use of bunds and sediment ponds	Design basis and construction procedures (suspended solids in receiving waters; area re-vegetated in m2; amount of bunds constructed [length in meter, area in m2, or volume in m3])	Incorporating good design and construction management practices - once for each site	IA (Contractor through contract provisions)	Construction period	All necessary measured undertaken during construction. Regeneration/ cultivation is allowed in the complete RoW and even in the area below tower after completion of construction activities. It is ensured by the site In-charge that no excavation is carried out during monsoon /rainy season. The selected route does not come in the natural drainage.



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Clause No.	Project Activity /Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Institutional Responsibility	Implementation Schedule	Compliance Report
35	Nuisance to nearby properties	Losses to neighboring land uses/values	Contract clauses specifying careful construction As much as possible existing access ways is to be reinstated following completion of construction	Contract clauses Design basis and layout Reinstatement of land status (area affected, m2)	Incorporating good construction Incorporating good design engineering Consultation with affected parties - twice - immediately	IA (Contractor through contract provisions)	Construction period	Complied
		Social inequities	Compensation is to be paid for loss of production, if any.	Implementation of Tree/Crop Compensation (amount paid)	Consultation with affected parties - once in a quarter	IA	Prior to construction	Complied Tree Crop compensation is paid as per CPTD.
36	Flooding hazards due to construction impediments of natural drainage	Flooding and loss of soils, contamination of receptors (land, water)	Avoid natural drainage pattern/facilities being disturbed/blocked/diverted by on-going construction activities	Contract clauses (e.g. suspended solids and BOD/COD in receiving water)	Incorporating good construction management practices-once for each site	IA (Contractor through contract provisions)	Construction period	The S/S and tower area at constructed at suitable elevation above HFL of the area. Hence no impact on drainage pattern due to flood
37	Equipment submerged under flood	Contamination of receptors (land, water)	Equipment stored at secure place above the high flood level(HFL)	Store room level to be above HFL (elevation difference in meters)	Store room level as per flood design-once	IA	Construction period	The S/S and tower area at constructed at suitable elevation above HFL of the area. Hence no impact on drainage pattern due to flood
38	Inadequate siting of borrow areas (quarry areas)	Loss of land values	Existing borrow sites is to be used to source aggregates, therefore, no need to develop new sources of aggregates	Contract clauses	Incorporating good construction management practices - once for each site	IA (Contractor through contract provisions)	Construction period	Complied, no such sites are selected for substation and tower location in low lying area.
39	Health and safety	Injury and sickness of	Safety equipment's for	Contract clauses (number of incidents	Contract clauses	IA (Contractor through contract	Construction period	Complied, by providing displays, PPEs and



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		workers and members of the public	construction workers	and total lost-work days caused by injuries and sickness)	compliance - once every quarter	provisions)		training of the contractors and contract workers.
	Contract provisions specifying minimum requirements		Complied. No incident of accident/injury reported					
	Construction camps Contractor to prepare and implement of health and safety plan.		All health and safety plan are in place and monitored regularly					
	Contractor to arrange for health and safety training sessions		Regular briefing / training for contract workers is organized by contractor/POWERGRID					
40	Regular construction stage Environmental monitoring	Likely to maximize damages	Training of environmental monitoring personnel	Training schedules	No. of programs attended by each person - once a year	IA	Routinely throughout construction period	Periodic Environment monitoring and Training program are organized for such persons.
			Implementation of effective environmental monitoring and reporting system using checklist of all contractual environmental requirements	Respective contract checklists and remedial actions taken thereof.	Submission of duly completed checklists of all contracts for each site - once			Complied. Regular monitoring by site and Corporate is organized.
			Appropriate contact clauses to ensure satisfactory implementation of contractual environmental	Compliance report related to environmental aspects for the contract	Submission of duly completed compliance report for each contract - once			All provisions are compiled and monitored regularly by Site



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Clause No.	Project Activity /Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Institutional Responsibility	Implementation Schedule	Compliance Report
			mitigation measures.					
Operation & Maintenance								
41	Location of line towers/poles and overhead/ underground line alignment & design	Exposure to safety related risks	Setback of dwellings to overhead line route designed in accordance with permitted level of power frequency and the regulation of supervision at sites.	Compliance with setback distances ("as-built" diagrams)	Setback distances to nearest houses - once in quarter	TSECL	During operations	Designed as per guidelines of ICNIRP and ACGIH and checked by CPRI and M/s PTI, USA
42	Line through identified bird flyways, migratory path	Injury/ mortality to birds, bats etc due to collision and electrocution	Avoidance of established/ identified migration path (Birds & Bats). Provision of flight diverter/ reflectors, elevated perches, insulating jumper loops, obstructive perch deterrents, raptor hoods etc., if applicable	Regular monitoring for any incident of injury/mortality	No. of incidents- once every month	TSECL	Part of detailed site selection and alignment survey and Operation	Complied, Bird guards are being provided in towers.
43	Equipment Submerged under flood	Contamination of receptors (Land, water)	Equipment installed above the high flood level (HFL) by raising the foundation pads.	Substation design to account for HFL	Base height as per flood design - once	TSECL	During operations	The area is not prone to flood, but necessary care is taken by the authorities to avoid such situations
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	Substation bunding (Oil sump) ("as-built" diagrams)	Bunding (Oil sump) capacity and permeability - once	TSECL	During operations	Oil sump of sufficient capacity (200% by volume of oil tank in transformer) is provided for every transformer. Secondary containment



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			of oil in transformers and associated reserve tanks.					is provided
45	SF6 (Sulfur hexafluoride) management	Emission of most potent GHG causing climate change	Reduction of SF6 emission through awareness, replacement of old seals, proper handling & storage by controlled inventory and use, enhance recovery and applying new technologies to reduce leakage	Leakage and gas density/level	Continuous monitoring	TSECL	During Operations	Being Complied.
46	Inadequate provision of staff/workers health and safety during operations	Injury and sickness of staff /workers	Careful design using appropriate technologies to minimize hazards	Usage of appropriate technologies (lost work days due to illness and injuries)	Preparedness level for using these technologies in crisis - once each year	TSECL	Design and operation	Being Complied. In design and operation standards of safety procedure followed.
			Safety awareness rising for staff.	Training/awareness programs and mock drills	Number of programs and percent of staff / workers covered - once each year			Proper safety training to all workers and primary safety kits/PPEs are provided in every site.
			Preparation of fire emergency action plan and training given to staff on implementing emergency action plan	Provision of facilities	Complaints received from staff /workers every 2 weeks			Regular mock drills on fire and other occupational hazards are organized. Fire emergency is displayed at all substation in English and local language.



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Clause No.	Project Activity /Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Institutional Responsibility	Implementation Schedule	Compliance Report
47	Electric Shock Hazards	Injury/ mortality to staff and public	Careful design using appropriate technologies to minimize hazards	Usage of appropriate technologies (no. of injury incidents, lost work days)	Preparedness level for using this technology in crisis- once a month	TSECL	Design and Operation	Electric shock emergency response plan is displayed at all substations with periodic training in local language.
			Security fences around substations	Maintenance of fences	Report on maintenance - every 2 weeks			Security fences around substations are provided
			Barriers to prevent climbing on/ dismantling of towers	Maintenance of barriers				Barriers to prevent climbing on/ dismantling of towers provided
			Appropriate warning signs on facilities	Maintenance of warning signs				Appropriate warning signs on facilities provided
			Electricity safety awareness raising in project areas	Training /awareness programs and mock drills for all concerned parties	Number of programs and percent of total persons covered - once each year			Training /awareness programs and mock drills for all concerned parties are conducted periodically in local language.
48	Operations and maintenance staff skills less than acceptable	Unnecessary environmental losses of various types	Adequate training in O&M to all relevant staff of substations & T&D line maintenance crews.	Training/awareness programs and mock drills for all relevant staff	Number of programs and percent of staff covered - once each year	TSECL	Operation	Training and educating the staffs with pictorial signage's.
			Preparation and training in the use of O&M manuals and standard operating practices					
49	Inadequate periodic	Diminished ecological	Staff to receive training in environmental	Training/awareness programs and mock	Number of programs and	TSECL	Operation	Periodical environmental



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Clause No.	Project Activity /Stage	Potential Impact	Proposed Mitigation Measures	Parameter to be Monitored	Measurement & Frequency	Institutional Responsibility	Implementation Schedule	Compliance Report
	Environmental monitoring.	& social values.	monitoring of Project operations & maintenance activities.	drills for all relevant staff	percent of staff covered – once each year			monitoring is planned.
50	Equipment specifications and design parameters	Release of chemicals and gases in receptors (air, water, land)	Processes, equipment and systems using chlorofluorocarbons (CFCs), including halon, should be phased out and to be disposed of in a manner consistent with the requirements of the Govt.	Process, equipment and system design	Phase out schedule to be prepared in case still in use – once in a quarter	TSECL	Operations	Provisions for collection and storage is adequate.
51	Transmission/distribution line maintenance	Exposure to electromagnetic interference	T&D line design to comply with the limits of electromagnetic interference from overhead power lines	Required ground clearance (meters)	Ground clearance - once	TSECL	Operations	Designed as per guidelines of ICNIRP and ACGIH and checked by CPRI and 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	Requisite clearance (meters)	Assessment in consultation with forest authorities - once a year (pre /post- monsoon)	TSECL	Operations	All necessary measured undertaken during operation.
53	Noise related	Nuisance to neighboring properties	Substations sited and designed to ensure noise is to not be a nuisance.	Noise levels {dB(A)}	Noise levels at boundary nearest to properties and consultation with affected parties if any - once	TSECL	Operations	Being Complied. Appropriately located. No noise anticipated

5.9 Conclusions

It is clear from the above discussion that the area is rich in natural forest resources. But careful route selection following the principle of avoidance, ecologically sensitive areas like NP / WLS have been avoided completely but complete avoidance of forest could not be achieved due to terrain limitations. However, all possible efforts have been taken that line route is aligned in such a way that it involves minimum forest stretch. In the instant case there is only line involving forest area of 96.5 Ha. for which adequate mitigation measure like providing funds for raising compensatory afforestation on double the area of degraded forest land are being paid by IA to State Forest department. Moreover, to reduce the impact on forest area bare minimum felling of trees are planned in RoW in the forest with meticulous planning. The infrastructural constraints are very real and pose a limiting factor on the development of the area. The above facts while on the one hand underline the need for implementation of the subject scheme for overall development of the area and on another hand suggests that a detailed EIA may not be necessary as per the provisions of existing regulations.

T&D line routes and S/S 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 T&D lines as compared to IEAR scope but as a result careful route selection IA could able to minimize ecologically & socially sensitive areas including forest, protected areas, PCR etc. completely in all the lines and S/S being implemented under this project.

The present T&D schemes not only improve overall power supply situation but also improve reliability, quality, security and enhancement of power supply in the Tripura state. From the above discussion, it would seem that the area is rich in physical resources. But careful route selection has minimized involvement of forest area to the extent possible but could not be completely avoided due to terrain and other physiographical reasons. Thus, routes selected for detailed survey are the most optimum alignment and involved minimum forest.

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 noncompliance 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. Following observations are drawn from the observations through site visits.

- 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. It is suggested to deploy more environmental professionals for effective environmental monitoring and reporting system.
- Good coordination between IA officers and contractors regarding implementation of Health and Safety Plan.
- Health checkup of labours and other working staff are regularly executed. However, the Records of labour registration should be well maintained and strictly monitored.
- Training and awareness regarding cleanliness and solid waste disposal to maintain the hygiene in the labour camps and construction sites.
- The basic needs at workers camp should be provided on site. Transit camps should be well equipped.
- 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.
- Overall, the commissioning of the project tend to augment the power distribution and availability in the region which will further catalyze economic activity and development of the area/region.

6. PROJECT IMPLEMENTATION ARRANGEMENT & MONITORING

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

6.1 Administrative Arrangement for Project Implementation

MoP, GoI has appointed POWERGRID as Design cum Implementation Supervision Consultant (i.e., Project Management Consultant-PMC) and now redesignated as Implementing Agency (IA). However, the ownership of the assets with respective State government or State Utilities, which upon progressive commissioning is to be handed over to them for taking care of Operation and Maintenance of assets. The arrangement for monitoring and reviewing of project from the perspective of environment and social management are form part of overall arrangements for project management and implementation environment. Following implementation arrangement has been proposed at different levels for smooth implementation of this project;

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

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

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

6.2 Review of Project Implementation Progress

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

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

High Power Committee (HPC): The Utility in consultation with its State Government has arranged to constitute a High-Power Committee (HPC) consisting of high-level officials from the Utility, State/ District Administration, Law enforcement agencies, Forest Department etc.

so that various permission/ approvals/ consents/ clearances etc. are processed expeditiously so as to reach the benefits of the Project to the end consumers. HPC is meet on bimonthly basis or earlier, as per requirement. This forum to be called as High-Power Committee Meeting (HPCM) and the SPCU keeps a record of every meeting. Minutes of the meeting is to be shared with all concerned and if required, with GoI and The Bank.

Contractor’s Review Meeting (CRM): Periodic Review Meeting is held by officials of PIU with Contractors at field offices, State Head Quarters (PIU location) and if required with core team of IA at Guwahati. These is to be called “Contractor’s Review Meeting” (CRM). PIU keeps a record of all CRMs, which is shared with all concerned and if required, with GoI and The Bank.

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

6.3 Environmental and Social Monitoring

Monitoring is a continuous process for TSECL projects at all the stages, be it the site selection, construction or maintenance. As Implementing Agency (IA) POWERGRID endeavors to implement the project in close coordination with the respective state power utilities and departments. POWERGRID has been implementing the project based on the Implementation/Participation agreements that were signed separately between POWERGRID and the Power utilities.

The success of TSECL lies in its strong monitoring systems. Apart from the Field In- Charge reviewing the progress on daily basis regular project review meetings are held at least on monthly basis at corporate level wherein apart from construction issues the environmental aspects of the projects are discussed and remedial measures taken wherever required. The exceptions of these meetings are submitted to the Directors and Chairman and Managing Director of the Corporation. The progress of various on- going projects is also informed to the Board of Directors.

TSECL has formed a separate cell at the Circle office level namely Environment and Social Management Cell (ESMC) headed by AGM (Transmission) for proper implementation and monitoring of environmental & social management measures. TSECL organization support structure is depicted in **Figure 6.1**. Key responsibilities of the ESMC are follows:

- Coordinating environmental and social commitments and initiatives with various multilateral agencies, GoT and MoEF&CC.
- Coordination of all environmental activities related to a project from conceptualization to operation and maintenance stage.
- Advising and coordinating /Site office to carry out environmental and social surveys and route alignment for new projects.
- Advising site offices to follow-up with the state forest offices and other state departments for expediting forest clearances and other E & S issues of various projects.
- Providing a focal point for interaction with the MoEF&CC for expediting forest clearances

- Training of Circle and Site officials on E & S issues arising out of T&D 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 coordination and resolution any pending issues. The World Bank mission team also visits various sites every six months to review the progress status including ground level implementation of safeguard measures. Any observation/agreed action plan suggested by the Bank in the Aide Memoire is religiously complied in time bound manner. Additionally, review meeting among MOP, GoI, The Bank, State Governments., Utility and IA being held periodically to maintain oversight at the top level and also to debottleneck issues that require intervention at GoI/ State Government level.

The Capacity building and Institutional Strengthening program of the IA is held intermittently to enhance the skills of the project officials. Besides, separate E & S training are also organized for Official of State Utility under Capacity Building & Institutional Strengthening (CBIS) program. Further, State utility meetings between IA and AEGCL/APDCL are held on a monthly/ bi-monthly basis to assess the work progress and difficulties encountered in respect of land acquisition, RoW and compensation if any. The IA has a continuous monitoring mechanism of the project w.r.t. compliance of the mitigation measures as stipulated in the IEAR. Thus, the adherence to the clauses by the contractors are regularly monitored especially in respect of various implementation E & S measures including health and safety aspects. Due to such strong institutional support structure coupled with monitoring mechanism in place, no major non-compliance 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, our team also observed mitigation measures as suggested in IEAR are mostly complied with even though some gaps were found with respect proper to documentation. It has been observed during field visit and interactions with local people, contractors and contract workers that POWERGRID has adequately taken all precautions and importance to environmental & social aspects. The stakeholders are satisfied with the various measures taken by TSECL its proven fact from the interactions that no complaints are received from the project area. Design realignment, consultation i.e., PAP, Environment & safety awareness training and regular interactions with all the stakeholders has led to sustainability of the project.

As regards monitoring of impacts on ecological resources particularly in Forest, Sanctuary or National Park, it is generally done by the concerned Divisional Forest Officer, Chief Wildlife Warden and their staff as a part of their normal duties. A detailed Environment Management Plan (EMP) including monitoring plan for all possible environmental and social impact and its proper management has been drawn (**Table- 5.5**) and is being implemented during various stage of project execution. Since many provisions of EMP are to be implemented by contractor hence for proper monitoring EMP has included in the contract document. A budget estimate towards tree/crop/tower base compensation and EMP implementation is prepared and is placed at **Annexure-12**. A summary of the same is presented below **Table No.6.1**:

 पावरगिड POWERGRID	FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura	 <small>MEMBER THE GREEN PEOPLE</small>
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Table 6-1: Summary Budget Estimate

Sr. No.	Budgetary Head	Amount (Rs. Lakhs)
1	Forest diversion compensation	2263.00
2	Tree & Crop damage Compensation	301.75
3	Land Compensation for Tower Footing	38.76
4	Implementation Monitoring & Audit	47.00
	Total	2650.50

The routes of TL and DL are finalized only after detailed/ check survey on ground. Since the detailed/ check survey is part of main package requirement of such measures, its extent and estimated cost is incorporated in the revised cost estimate proposal which is normally prepared for all projects as there is a considerable time gap between planning and actual implementation. However, as per the preliminary assessment such additional measures may not be required in the instant scheme as no such impact are envisaged due to routing of lines far away from such sensitive areas.

6.4 Grievance Redressal Mechanism:

Grievance Redressal 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) has been constituted at the project/scheme 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 S/S covered under this project. Notifications of Corporate & Project level GRC are shown as below;

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

Site level Grievance Redressal Committee (GRC) has already been constituted. The nominated officials from TSECL and POWERGRID for GRC and **details are annexed in Annexure 22**. Nominees from local administration, panchayat/ADC & affected persons are also mandatory for GRC. Letter has already been issued twice to AGM (Transmission), 79 Tilla, TSECL for his early action in this regard (**copy of letters enclosed in Annexure 22**).

Implementation Arrangement for Environment and Social Management by TSECL

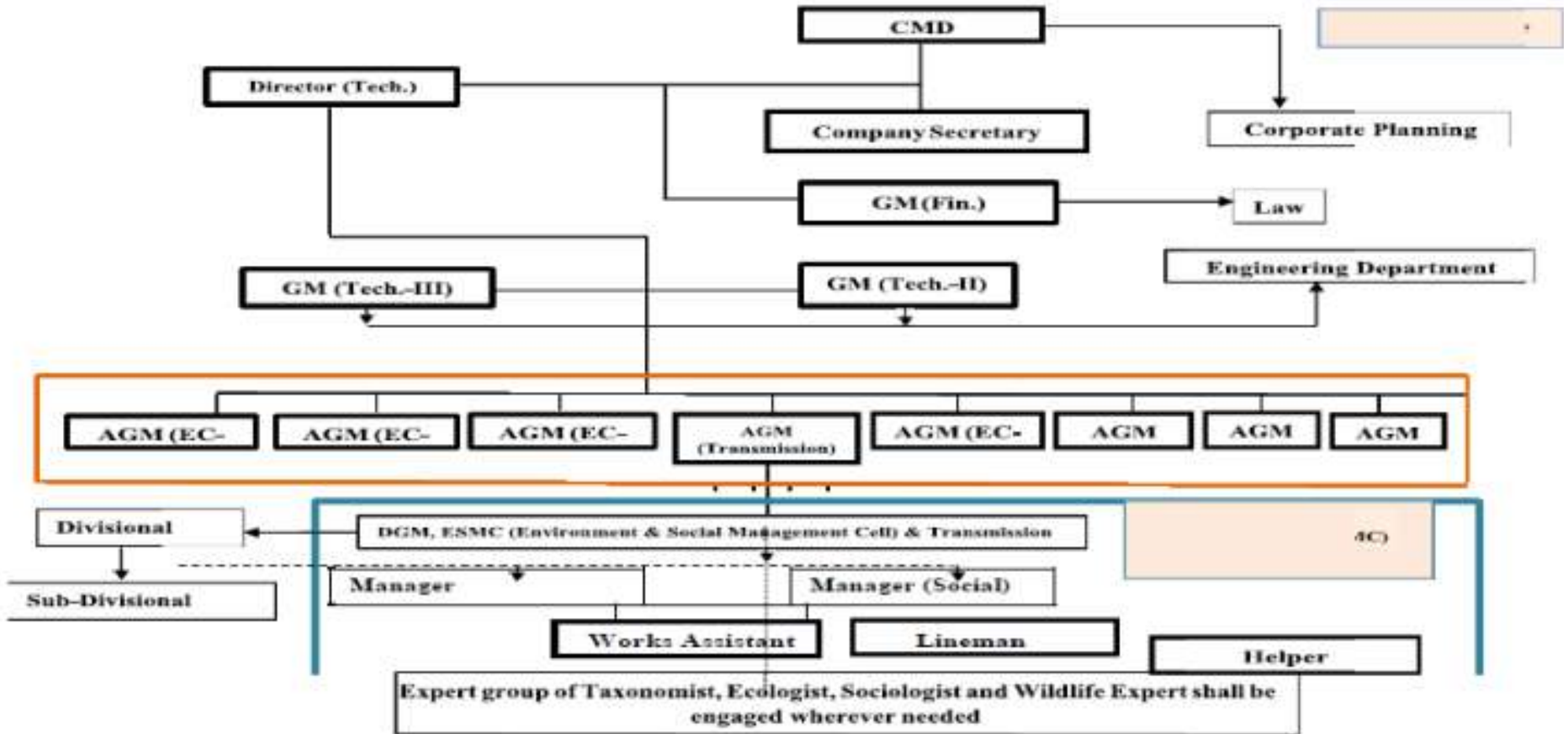


Figure 6-1: Implementation Arrangement for E&S Management by TSECL

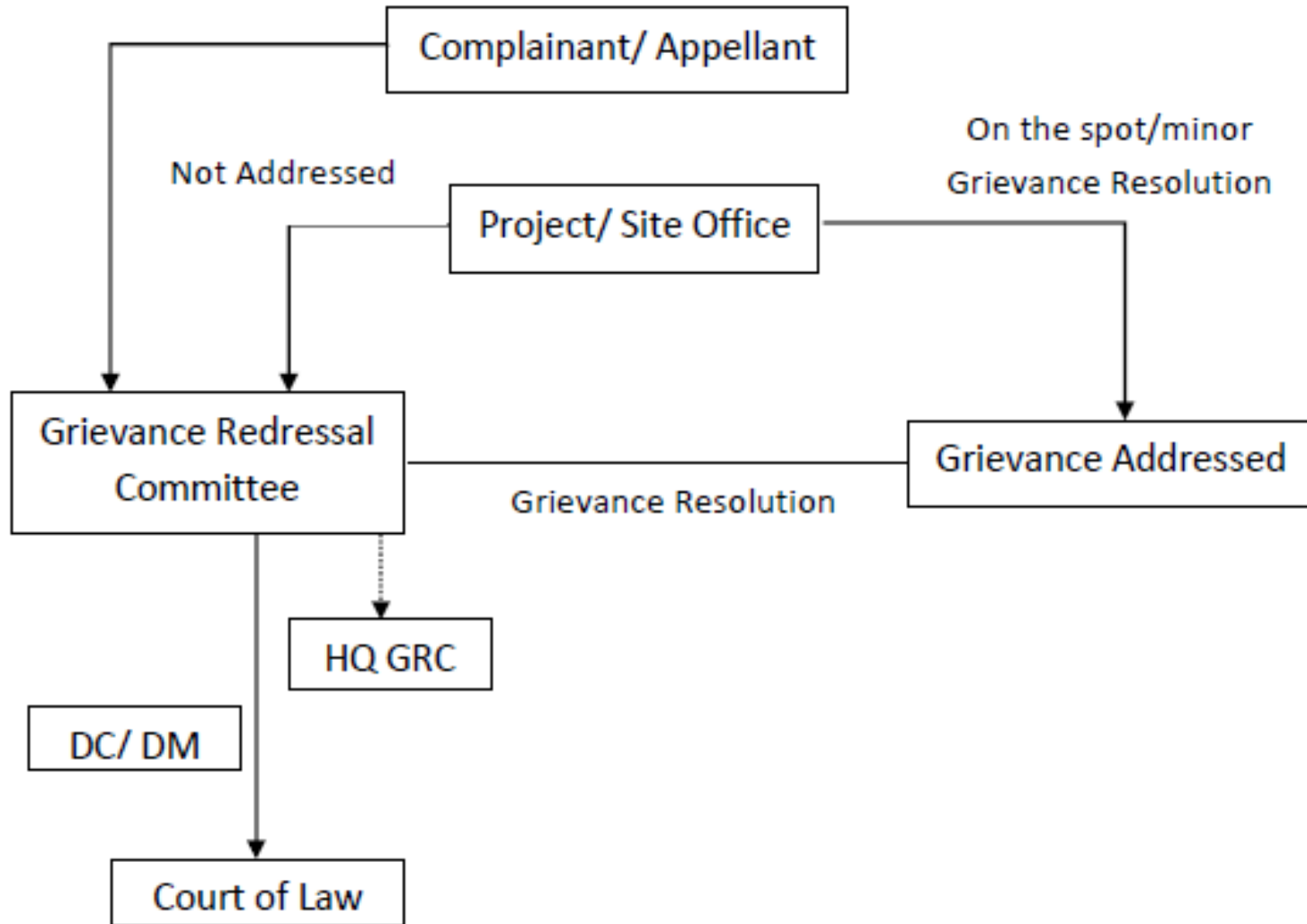


Figure 6-2: Grievance Redressal Mechanism

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

6.5 Good practices of project:

- **All the precautions were taken for health and safety of workers:** At all the places the contractor has taken all the necessary precautions for prevention of diseases at the project sites. Workers were provided with all the safety equipment, special measures taken for prevention of Covid-19.
- **All the stakeholders were considered for consultation during the project cycle:** All the stakeholders were consulted by POWERGRID and their queries were resolved during formal/informal meetings. Therefore, no any major issue observed during project construction. Because of strong PAP consultation, no any written complaint/court case has been received so far.
- **Eco sensitive zones avoided as far as possible:** Eco sensitive zones avoided totally in TL and DL. However small portion of Trishna WLS is involved in Nidaya S/S. River / water ecosystem was not harmed because of pile foundation. Due care is taken to avoid pollution of water resources because of pile foundation work.
- **Avoidance of habituated areas:** Habituated areas were avoided as far as possible to lay towers of 132 kV line. The residential houses are far from the RoW of 132 kV towers, therefore, there is no chance of damage to the human being because of 132 kV line.
- **Interference with utilities:** Wherever utilities were crossed, necessary permissions/NoC was taken from the concern authorities to lay electric wires from their premises. During construction, the concern officials were taking care of avoiding damage to the utility instruments & premises

7. REFERENCES

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Annexure

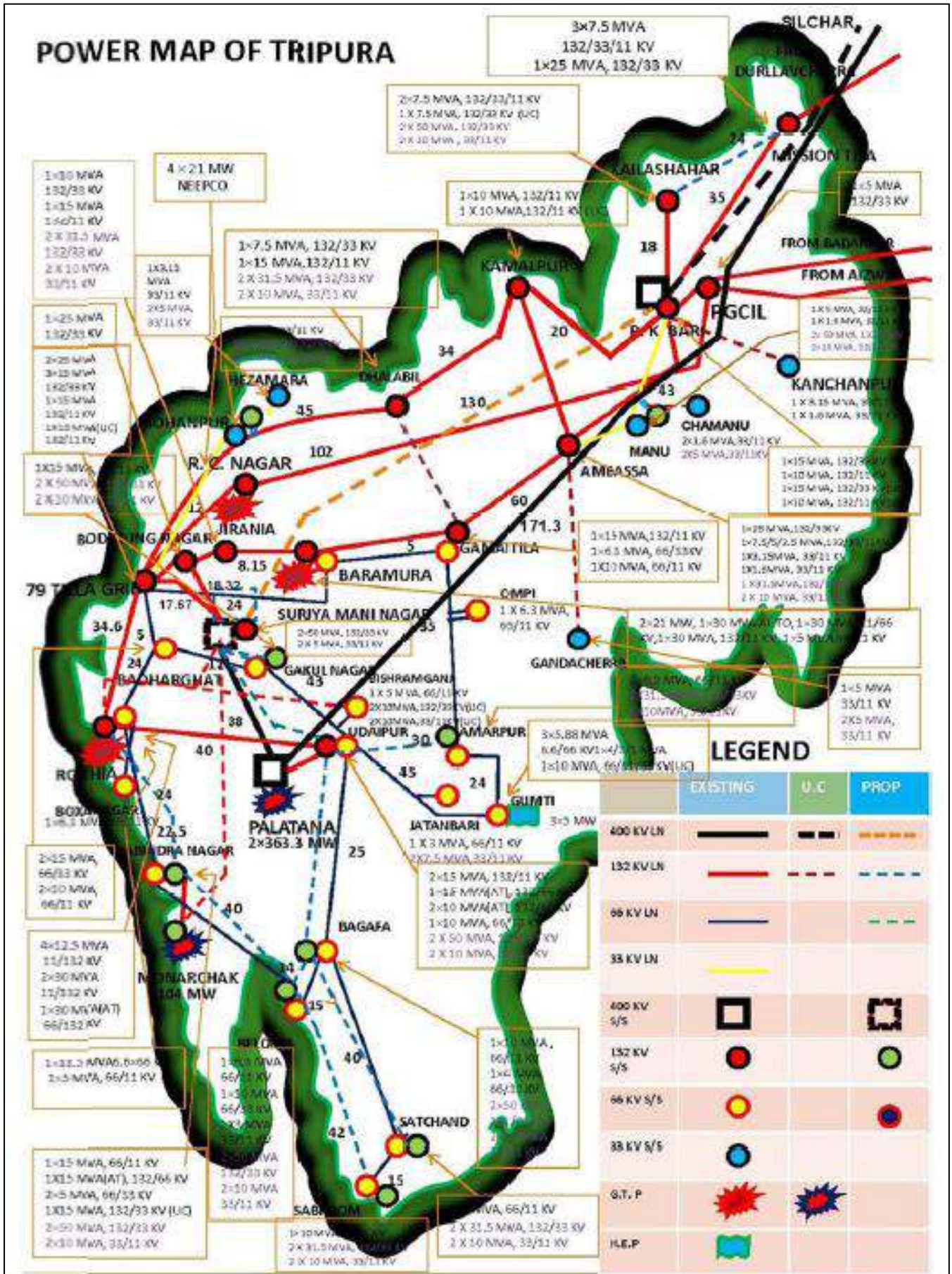


FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



Annexure 1

Power Map of Tripura State

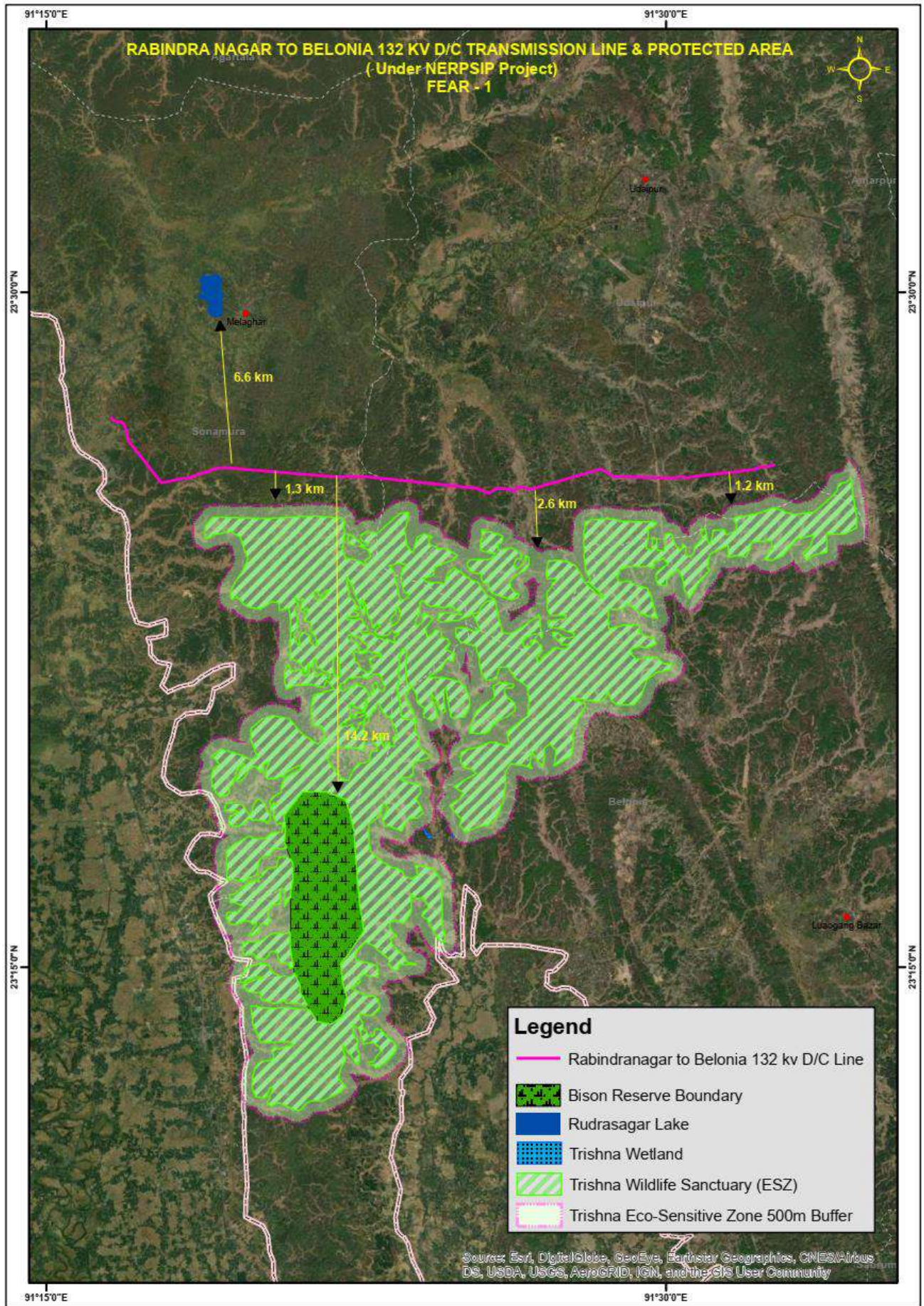


Annexure 2

Schematic Map Showing Proposed Transmission & Distribution in Subject FEAR

Annexure 3

Distance of 132 kV Rabindra Nagar – Belonia TL from Trishna WLS and Bison Reserve



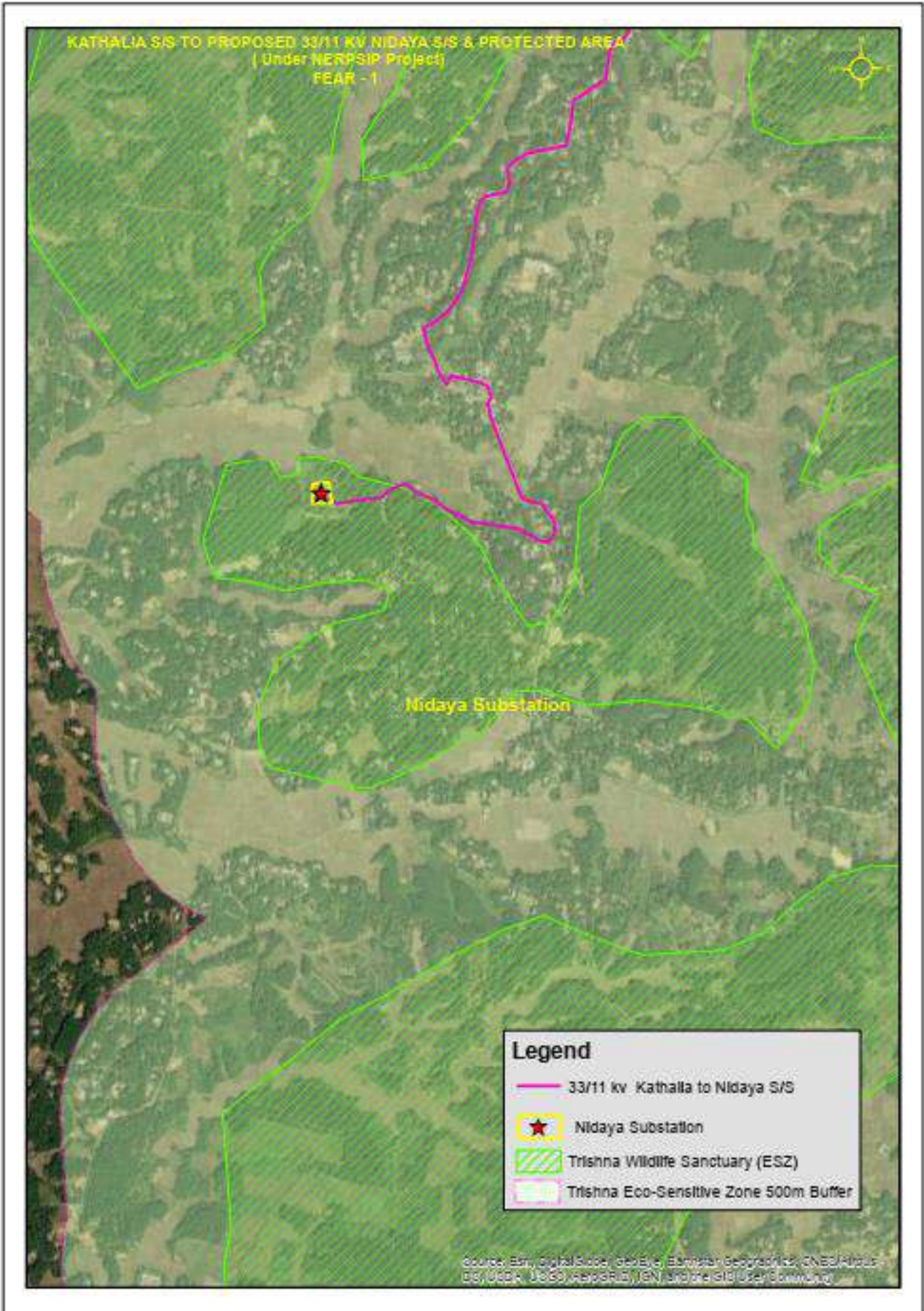


FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



Annexure 4

33/11 kV Nidaya S/S – Trishna WLS





FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura

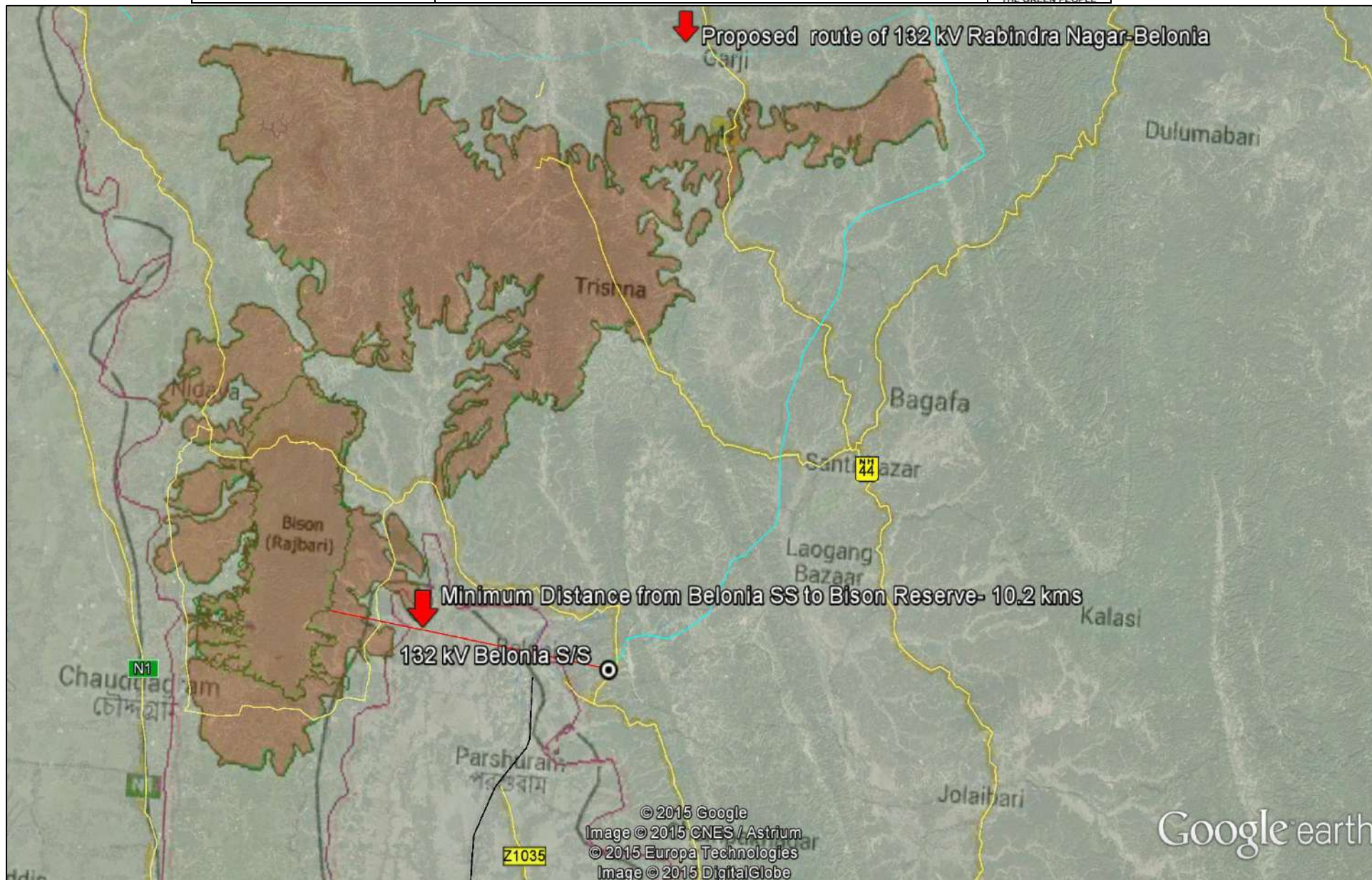


Annexure 5

3 Alternatives of Transmission Lines

Rabindra Nagar Rokhia – 132 kV D/C TL

Rabindra Nagar Belonia – 132 kV D/C TL

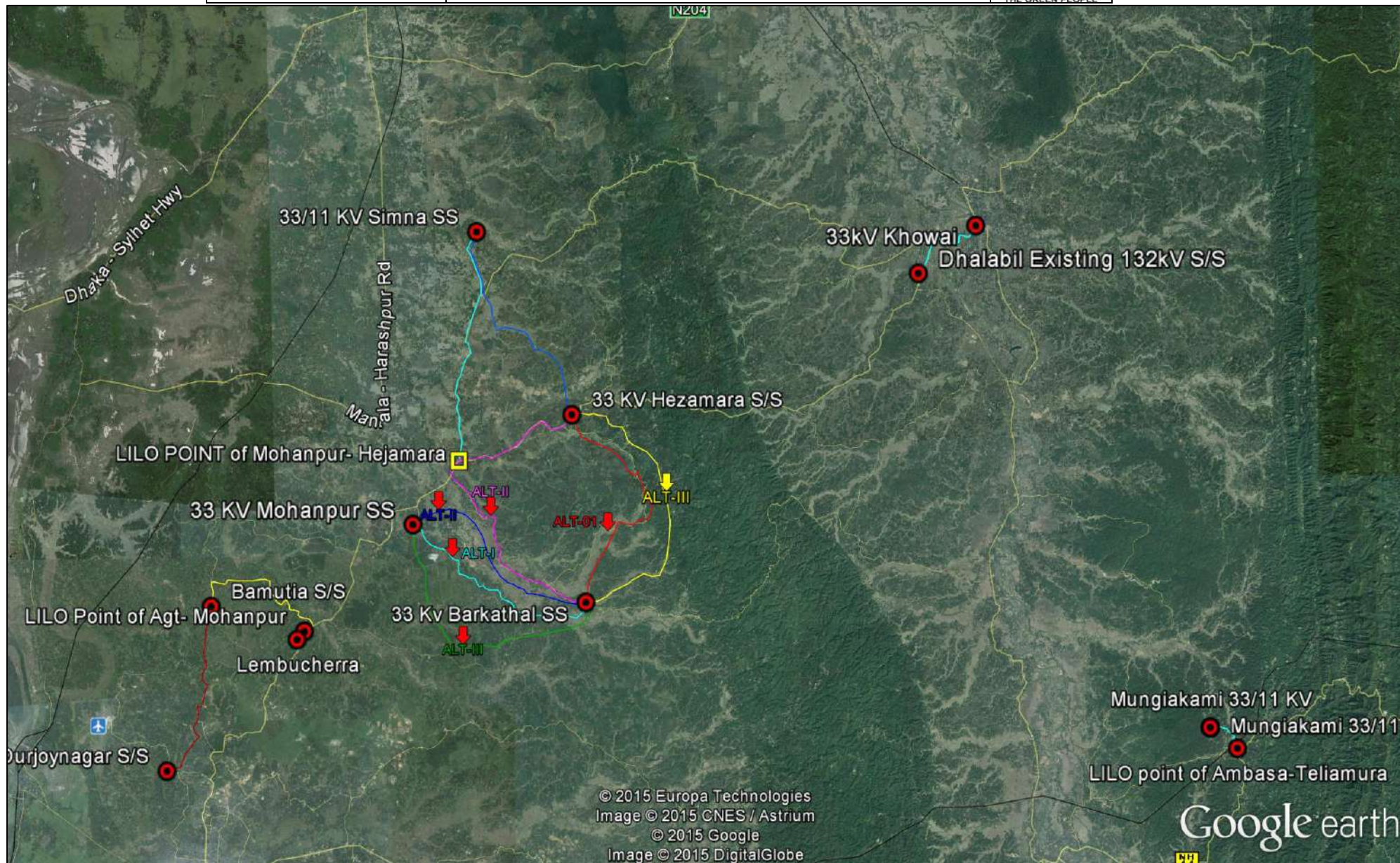




FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



3 Alternatives of Distribution Lines (Barkathal-Hezamara & Barkhatal -Mohannagar)

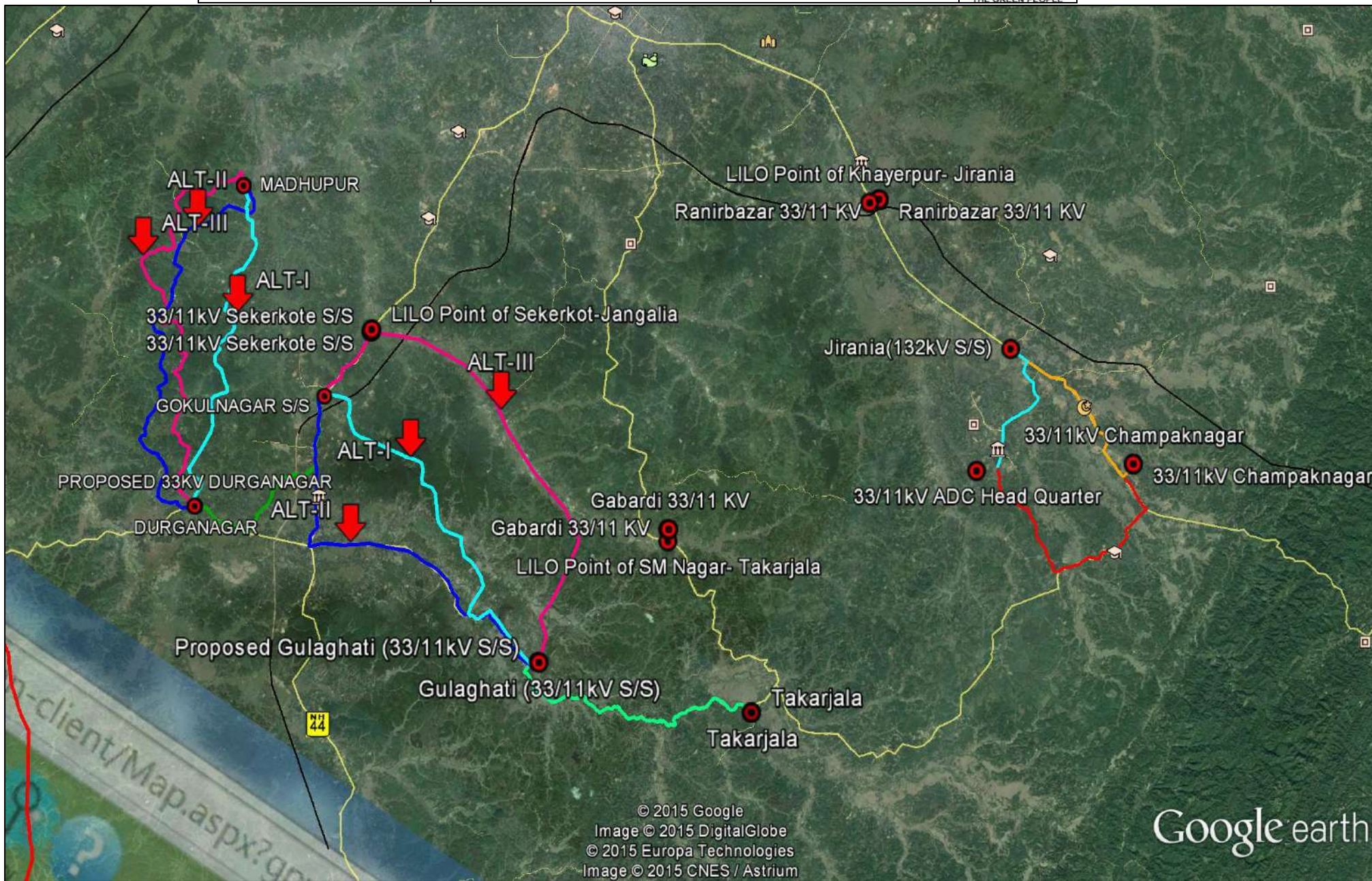




FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



3 Alternatives of Distribution Lines (Golaghati-Gokulnagar & Durganagar-Madhupur)



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Google earth



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



Annexure 6

Details of NOCs obtained from Various Authorities

1. Forest Clearance Obtained for Nidaya Substation



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



भारत सरकार
GOVERNMENT OF INDIA
एकीकृत क्षेत्रीय कार्यालय
INTEGRATED REGIONAL OFFICE
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE
लॉड सीब सुन्बतंगेन/LAW-U-SIB, LUMBATNGEN,
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F. No. 3-TR B 046/2019-SHI 3902-04

19th March, 2021

सेवा में,

सचिव/Secretary,
त्रिपुरा सरकार/ Government of Tripura
पर्यावरण और वन विभाग /Department of Environment & Forests,
कुंजावन, अगरतला/ Kunjaban, Agartala.

Sub: Proposal for diversion of 0.3299 ha of forest land for establishment of 33/11 KV sub-station at Nidaya under DFO, Sepahijala .

Sir,

This has got reference to Government of Tripura letter No. F.6-1164/FC/For-2018/943-946 dated 20.02.2019 and F.6-1164/FC/For-2018/1303-04 dated 02.03.2020 on the subject mentioned above seeking prior approval of the Central Government under Section-2 of the Forest (Conservation) Act, 1980. After careful consideration of the proposal, In-principle approval (IPA) was granted vide this office letter of even number dated 16.03.2020 subject to fulfillment of certain conditions.

In this connection and on the basis of the compliance report furnished by the State Government vide letter No. F.6-1164/FC/For-2018/1000-1003 dated 10.11.2020 and even no. 1480-81 dated 19.01.2021 and 02.03.2021 and submission of compensatory levies by e-challan and online payment by user agency under CAMPA, Final approval of the Central Government is hereby granted under Section-2 of the Forest (Conservation) Act, 1980 for diversion of 0.3299 ha of forest land for establishment of 33/11 KV sub- station at Nidaya under DFO, Sepahijala, subject to the following conditions:

- (1) Legal status of the diverted forest land shall remain unchanged.
- (2) The Compensatory Afforestation shall be raised and maintained by the Forest Department over double the area i.e. 0.66 ha degraded forest land identified in Kathalia Range, Sonamura Forest Division, Sepahijala District of Tripura as per the funds deposited by the User Agency. As far as possible, a mixture of local indigenous species shall be planted and monoculture of any species may be avoided.
- (3) The State Government shall further enquire into the admitted lapse of the user agency and take necessary action as per IFA before the handing over of the land to the user agency. Action Taken Report to be submitted to this office, immediately thereafter.

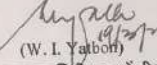
- (4) All other clearances / NOCs under different rules / regulations / local laws and under Forest Dwellers (Recognition of Forest Rights) Act, 2006 as required vide MoEF, New Delhi guideline No. 11-9/98-FC(Pt) dated 05.02.2013 shall be complied with.
- (5) The User Agency at its cost shall provide bird deflectors, which are to be fixed on upper conductor of transmission line at suitable intervals to avoid bird hits.
- (6) The User Agency shall comply with the guidelines for laying transmission through forest areas issued by Ministry vide letter no. 7-25/2012-FC dated 05/05/2014 & 19/11/2014.
- (7) The User Agency shall obtain the Environmental Clearance under Environment (Protection) Act, 1986, if applicable.
- (8) The lay out of the proposal shall not be changed without the prior approval of the Central Government.
- (9) No labour camps shall be established on the forest land.
- (10) Sufficient firewood, preferably the alternative fuel, shall be provided by the User Agency to the labourer after purchasing the same from the State Forest Department or the Forest Development Corporation or any other legal source of alternative fuel.
- (11) The boundary of the diverted forest land shall be suitably demarcated on ground at the project cost, as per the directions of the concerned Divisional Forest Officer.
- (12) No additional or new path will be constructed inside the forest area for transportation of construction materials for execution of the project work.
- (13) The period of diversion under this approval shall be co-terminus with the period of lease to be granted in favour of the user agency or the project life, whichever is less.
- (14) The forest land shall not be used for any purpose other than that specified in the project proposal.
- (15) The State Govt shall ensure the user agency complies with all the conditions recommended by the Standing Committee of National Board of Wildlife:
 - (a) Conservation of artificial water holes and salt licks for wild animals need to be taken up for development of wildlife habitat at the cost of user agency.
 - (b) Plantation of Napier grass and fruit bearing species needs to be done from the funds provided by the user agency up for development of wildlife habitat.
 - (c) The project will comply with all the conditions imposed by the State Chief Wildlife Warden.
 - (d) The annual compliance certificate on the stipulated conditions should be submitted by the project proponent to the State Chief Wildlife Warden and an annual compliance certificate shall be submitted by the State Chief Wildlife Warden to Govt of India.
- (16) The User Agency and the State Government shall ensure compliance of all the Court orders, provisions, rules, regulations and guidelines for the time being in force as applicable to the project.
- (17) The User Agency will have to obtain the Forest (Conservation) Act, 1980 clearance for removal, if any, of stone, river sand, river boulders in forest land.

(18) The forest land proposed to be diverted shall under no circumstances be transferred to any other agencies, department or person without prior approval of Govt. of India.

(19) Violation of any of these conditions will amount to violation of Forest (Conservation) Act, 1980 and action would be taken as per the MoEF & CC Guidelines F No. 11-42/2017-FC dated 29/01/2018.

Any other conditions that the Integrated Regional Office, Shillong may stipulate from time to time in the interest of conservation, protection and development of forests & wildlife.

भवदीय,

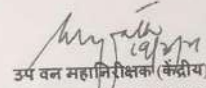


(W. I. Yalbon)

उप वन महानिरीक्षक (केंद्रीय)
Deputy Inspector General of Forests (C)

Copy to:

1. प्रधान मुख्य वन संरक्षक, त्रिपुरा सरकार, पर्यावरण और वन विभाग, कुंजावन, अग्रतला / Principal Chief Conservator of Forests, Govt. of Tripura, Department of Environment & Forests, Kunjaban, Agartala.



उप वन महानिरीक्षक (केंद्रीय)

Deputy Inspector General of Forests (C)

Forest Clearance for 132 kV D/C Rabindra Nagar Belonia TL



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



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लॉउ सीब लुम्बतनिग
एम् टी सी के पास, शिलांग - ७९३०२१
टेली(0364) 253-7609,7340/7395/7278
फैक्स (0364)-2536041/2536983

No.3-TR C 037/2018-SHI 865-66 22nd June, 2020

सेवा में,

सचिव/Secretary,
त्रिपुरा सरकार/ Government of Tripura
पर्यावरण और वन विभाग /Department of Environment & Forests,
कुंजावन, अगरतला/ Kunjaban, Agartala.

Sub: Diversion of 74.9493 ha of forest land construction of 132 KV D/C Transmission Line from Rabindranagar to Belonia under District Forest Officer, Gomati, Sepahijala & South, Tripura.

Sir,

This has reference to the State Govt letter No. F.6-1061/FC/For-2015/Pl.II/779-787 dated 29.03.2018, even no. 438-442 dated 15.08.2018, even no. 989-92 dated 29.03.2019 and 02-03 dated 02.04.2019 on the subject mentioned above, seeking prior approval of the Central Government in accordance with Section 2 of the FCA, 1980.

After careful consideration of the proposal, In-Principle approval was granted vide this office letter of even number dated 12.04.2019 subject to fulfillment of certain conditions. The State Government has furnished compliance report in respect of the conditions stipulated in the In-Principle Approval and has requested the Central Government to grant final approval.

In this connection and on the basis of the compliance report furnished by the State Government letter No. F.6-1061/FC/For-2015/PT-III/118-20 dated 06.06.2020 of Govt of Tripura and confirmation of transaction dated 19.08.2019 and 17.02.2020 of compensatory levies amount from the e-portal, 'Final Approval' of the Central Government is hereby granted under Section-2 of the Forest (Conservation) Act, 1980 for diversion of 74.9493 ha of forest land construction of 132 KV D/C Transmission Line from Rabindranagar to Belonia under District Forest Officer, Gomati, Sepahijala & South, Tripura, subject to the following conditions:

- (1) The legal status of the forest land shall remain unchanged.
- (2) The forest land will be handed over only after required non-forest land for the project is handed over to the user agency.
- (3) Compensatory afforestation shall be raised by the State Forest Department over 150.4 ha identified in 3 (three) patches i.e. 53 ha in compartment no. 9,97,11 Tekka Tulshi, Hrishyamuck Range, Delonia Forest Division in South District, 53.68 ha in compartment no. 5, Atharamura Kalahari Block, Amarpur Range,

Amarpur Forest Sub-Division of Gomati District and 43.72 ha in compartment no. 8 of North Somanura PRF Block, Melagarh in Sepahijala District of Tripura as per the fund deposited by the User Agency & scheme furnished by the State Govt. As far as possible, a mixture of local indigenous species shall be planted and monoculture of any species may be avoided.

- (4) The complete compliance of the FRA, 2006 shall be ensured by way of prescribed certificate from the concerned District Collector.
- (5) The User Agency at its cost shall provide bird deflectors, which are to be fixed on upper conductor of transmission line at suitable intervals to avoid bird hits.
- (6) The User Agency shall comply with the guidelines for laying transmission through forest areas issued by Ministry vide letter no. 7-25/2012-FC dated 05/05/2014 & 19/11/2014.
- (7) The User Agency shall obtain the Environmental Clearance under Environment (Protection) Act, 1986, if applicable.
- (8) The lay out of the proposal shall not be changed without the prior approval of the Central Government.
- (9) No labour camps shall be established on the forest land.
- (10) Sufficient firewood, preferably the alternative fuel, shall be provided by the User Agency to the labourer after purchasing the same from the State Forest Department or the Forest Development Corporation or any other legal source of alternative fuel.
- (11) The boundary of the diverted forest land shall be suitably demarcated on ground at the project cost, as per the directions of the concerned Divisional Forest Officer.
- (12) No additional or new path will be constructed inside the forest area for transportation of construction materials for execution of the project work.
- (13) The period of diversion under this approval shall be co-terminus with the period of lease to be granted in favour of the user agency or the project life, whichever is less.
- (14) The forest land shall not be used for any purpose other than that specified in the project proposal.
- (15) The User Agency and the State Government shall ensure compliance of all the Court orders, provisions, rules, regulations and guidelines for the time being in force as applicable to the project.
- (16) The forest land proposed to be diverted shall under no circumstances be transferred to any other agencies, department or person without prior approval of Govt. of India.
- (17) Violation of any of these conditions will amount to violation of Forest (Conservation) Act, 1980 and action would be taken as per the MoEF & CC Guidelines F No. 11-42/2017-FC dated 29/01/2018.
- (18) Any other conditions that the North Eastern Regional Office, Ministry of Environment, Forest & Climate Change may stipulate from time to time in the interest of conservation, protection and development of forests & wildlife.

भवदीय

(W. I. Satbon)

उप वन महानिरीक्षक (केन्द्रीय)/
Deputy Inspector General of Forests (C)



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



Copy to:

1. प्रधान मुख्य वन संरक्षक, त्रिपुरा सरकार, पर्यावरण और वन विभाग, कुंजावन, अगरतला /
Principal Chief Conservator of Forests, Govt. of Tripura, Department of Environment & Forests, Kunjaban, Agartala.

उप, वन महानिरीक्षक (केंद्रीय)/
Deputy Inspector General of Forests (C)

०/८

Forest Clearance for 132 kV D/C Rabindra Nagar Rokhia TL



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



Government of India
Ministry of Environment, Forest & Climate Change,
North Eastern Regional Office,
Law-U-Sib Lumbatngen,
Near MTC Workshop, Shillong-793021,
देली/Tel(0364)-253-7609,7340/7395/7278,

भारत सरकार
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
पूर्वोत्तर क्षेत्रीय कार्यालय, शिलांग
लॉड सीब लुम्बतंगेन
एम् टी सी के पास, शिलांग - ७९३०२१
बस/Fax -0364- 2536041/2536983

ईमेल/Email-ro.ncz.shil@gmail.com/moefshil_09@rediffmail.com

No. 3-TR C 088/2017-SHI 624-25

7th June, 2019

सेवा मे,

सचिव / Secretary,
त्रिपुरा की सरकार / Government of Tripura,
पर्यावरण और वन विभाग / Environment and Forest Department,
अगरतला / Agartala.

Sub: Proposal for diversion of 21.1896 ha of forest land for construction of 132 KV D/C Transmission Line from Rokhia to Rabindranagar under District Forest Officer, Sepahijala by Tripura State Electricity Corporation Limited.

Sir,

This has got reference to the State Government's letter No. F.6-1090/FC/For-2015/817-22 dated 15.03.2017 and No. F.6-1090/FC/For-2015/52-53 dated 13.04.2018 on the subject mentioned above, seeking prior approval of the Central Government in accordance with Section 2 of the FCA, 1980. After careful consideration of the proposal of the State Govt of Tripura, In-principle approval was granted vide this office letter of even number dated 28.06.2018 subject to fulfillment of certain conditions. The State Government has furnished compliance report in respect of the conditions stipulated in the in-principle approval and has requested the Central Government to grant final approval.

In this connection and on the basis of the compliance report furnished by the State Government vide letter No. F.6-1090/FC/For-2015/Pt-1/114-16 dated 15.05.2019 and confirmation of funds transferred and payment made in web portal, Final Approval of the Central Government is hereby granted under Section-2 of the Forest (Conservation) Act, 1980 for diversion 21.1896 ha of forest land for construction of 132 KV D/C Transmission Line from Rokhia to Rabindranagar under District Forest Officer, Sepahijala by Tripura State Electricity Corporation Limited, subject to the following conditions:

- (1) The legal status of the forest land shall remain unchanged.
- (2) Compensatory afforestation (CA) shall be carried out over double the area diverted i.e. 42.55 ha in degraded forest area identified in 2 (two) patches in Compartment No. 2, 1 & 6 of North Sonamura Management Block, Boxanagar Range, Sonamura Forest Sub Division in Sepahijala District of Tripura as per the fund deposited by the User Agency & scheme furnished by the State Govt. The species planted should be indigenous and Medicinal Plants / Shrubs / Herbs (about 20%).
- (3) The demarcation of forest land proposed for diversion shall be done on the ground at project cost using four feet high reinforced cement concrete pillars with serial numbers, forward and backward bearings and distance from pillar to pillar superscribed on the pillars.

- (4) The User Agency shall restrict the felling of trees to minimum number in the diverted forest land and the trees shall be felled only when it is unavoidable under strict supervision of the State Forest Department.
- (5) The plantation of dwarf species in right of way under the transmission lines wherever feasible should be carried out under project cost in consultation with State Forest Department.
- (6) The User Agency at its cost shall provide bird deflectors, which are to be fixed on upper conductor of transmission line at suitable intervals to avoid bird hits.
- (7) The User Agency shall comply with the guidelines for laying transmission through forest areas issued by Ministry vide letter no. 7-25/2012-FC dated 05/05/2014 & 19/11/2014.
- (8) No labour camps shall be established on the forest land.
- (9) Sufficient firewood, preferably the alternative fuel, shall be provided by the User Agency to the labourer after purchasing the same from the State Forest Department or the Forest Development Corporation or any other legal source of alternative fuel.
- (10) No additional or new path will be constructed inside the forest area for transportation of construction materials for execution of the project work.
- (11) The period of diversion under this approval shall be co-terminus with the period of lease to be granted in favour of the user agency or the project life, whichever is less.
- (12) The User Agency shall obtain the Environmental Clearance under Environment (Protection) Act, 1986, if applicable.
- (13) The User Agency will have to obtain the Forest (Conservation) Act, 1980 clearance for removal of stone, river sand, river boulders in forest land, if necessary.
- (14) All other clearances / NOCs under different rules / regulations / local laws and under Forest Dwellers (Recognition of Forest Rights) Act, 2006 as required vide MoEF, New Delhi guideline No. 11-9/98-FC(Pt) dated 05.02.2013 shall be complied with.
- (15) The lay out of the proposal shall not be changed without the prior approval of the Central Government.
- (16) The forest land shall not be used for any purpose other than that specified in the project proposal.
- (17) The User Agency and the State Government shall ensure compliance of all the Court orders, provisions, rules, regulations and guidelines for the time being in force as applicable to the project.
- (18) The forest land proposed to be diverted shall under no circumstances be transferred to any other agencies, department or person without prior approval of Govt. of India.
- (19) Violation of any of these conditions will amount to violation of Forest (Conservation) Act, 1980 and action would be taken as per the MoEF & CC Guidelines F No. 11-42/2017-FC dated 29/01/2018.
- (20) Any other conditions that the North Eastern Regional Office, Ministry of Environment, Forest & Climate Change may stipulate from time to time in the interest of conservation, protection and development of forests & wildlife.

This is issued with the approval of Addl. Director General (Central).

भवदीय,

(आर. एल. सांगत)/(R.L. Sangta)

उप वन महानिरीक्षक (केंद्रीय)/ Deputy Inspector General of Forests (C)

Copy to:

1. प्रधान मुख्य संरक्षक एफ वन और होफ / The Principal Chief Conservator of Forests & HoFF
त्रिपुरा की सरकार / Government of Tripura, पर्यावरण और वन विभाग / Environment and Forest Department,
अगरतला / Agartala.

उप वन महानिरीक्षक (केंद्रीय)/ Deputy Inspector General of Forests (C)

2. Aviation NOC



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



6/18/2021

NOC Application

NOC Applicant Details			
NOC ID	AGAR/NORTH EAST/P/061821/552114		
Name of the Owner	TRIPURA STATE ELECTRICITY CORPORATION LIMITED (TSECL)		
Address of Owner	TRANSMISSION DIVISION UDAIPUR GOMATI TRIPURA		
Name of Applicant	Priyanshu Srivastav		
Address of Communication	C/O MANJU BEGAM NEAR SONAMURA BUS STAND IN FRONT OF HDFC BANK POWERGRID CORPORATION OF INDIA LIMITED NERPSIP RABINDRANAGAR OFFICE. IN FRONT OF SONAMURA BUS STAND West Tripura Tripura 799131		
Contact No:	8472802547		
Email ID	nerpsrbn1@gmail.com		
Site Details			
Type of Structure	Power Transmission Line		
Site Description	ROKHIA TO RABINDRANAGAR 132 KV TRANSMISSION LINE		
Size of Plot (in sq. mtrs)			
Area Name	BOXANAGAR/MATINAGAR/KHEDABARI/SONAMUTRA/SOVAPUR		
City	West Tripura		
State	Tripura		
Prominent Area	West Tripura		
Site Coordinates			
Latitude (N)	Longitude (E)	Site Elevation (AMSL)(mtr)	Building Height (AGL)(mtr)
23 29 22.12	91 15 12.74	29.53	28.68
23 30 12.92	91 14 34.75	15.42	28.68
23 28 37.53	91 15 25.35	10.68	28.68
23 29 37.06	91 15 11.67	12.37	40.87
23 30 17.35	91 14 32.54	21.71	28.68
23 28 45.16	91 15 21.76	10.08	34.68
23 29 39.67	91 15 6.73	27.23	31.87
23 30 26.66	91 14 27.94	10.59	37.68
23 28 55.61	91 15 20.39	9.99	40.87
23 29 50.19	91 15 3.07	18.67	34.87
23 28 52.66	91 15 18.24	10.13	40.87
23 29 44.14	91 15 5.19	22.95	37.68
23 30 36.71	91 14 22.94	27.65	35.25
23 29 4.61	91 15 20.64	26.48	29.25
23 29 55.29	91 14 49.87	30.19	37.68
23 29 13.59	91 15 14.72	29.33	29.25
23 30 4.42	91 14 39.02	5.99	31.68
23 29 9.46	91 15 18.06	26.29	28.25
23 29 55.95	91 14 43.22	5.75	40.87

Print



सत्यमेव जयते

INDIA NON JUDICIAL
Government of Tripura

e-Stamp

Certificate No.	: IN-TR08977487898572T
Certificate Issued Date	: 08-Jun-2021 12:09 PM
Account Reference	: CSCACC (GV)/ trscceg07/ TR-GOMBIB0006/ TR-GOM
Unique Doc. Reference	: SUBIN-TRTRCSCEG071724092727381T
Purchased by	: TEEMS INDIA TOWERLINES PRIVET LIMITED
Description of Document	: Article IA-5(1) Memorandum of an Agreement
Property Description	: UNDERTAKING
Consideration Price (Rs.)	: 0 (Zero)
First Party	: TEEMS INDIA TOWERLINES PRIVET LIMITED
Second Party	: AIRPORT AUTHORITY OF INDIA
Stamp Duty Paid By	: TEEMS INDIA TOWERLINES PRIVET LIMITED
Stamp Duty Amount(Rs.)	: 10 (Ten only)



.....Please write or type below this line.....

M.R. Kashyap
M.R. KASHYAP
Sr. Manager-Projects
TEEMS. INDIA.

KC0003923667

Statutory Alert
1. The authenticity of the Stamp cert. feeb should be verified at www.e-stamp.com or using e-Stamp Mobile App of State Holding any discrepancy if the details on the Certificate and as available on the website / Mobile App differs it holder.
2. The user of checking the legitimacy is on the users of the certificate.
3. In case of any discrepancy please inform the Competent Authority.



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



FORMAT OF SITE ELEVATION AND SITE COORDINATES CERTIFICATE

NAME OF THE LICENSED CONTRACTOR : TEEMS INDIA TOWERLINES PVT. LTD.
ADDRESS : D. NO. 3, THORAIPAKKAM-NEELANKARAI LINK ROAD, MARUTHI NAGAR, SEEVARAM, PERUNGUDI, CHENNAI – 600096, INDIA
Email Id. : admin@teemsindia.com
PHONE NUMBER : +91-44-24961779
LICENSE NUMBER : ESA458
LICENSE VALIDITY : 03/09/2022
SCOPE OF LICENSE : ELECTRICAL CONTRACTORS LICENSE
LICENSE ISSUING AUTHORITY : THE ELECTRICAL LICENSING BOARD-TAMILNADU-CHENNAI-600032

We hereby certify that we have carried out the site survey as per the following details and the results are shown in (A) and (B) below:

Site/ Plot No.
 (As per the local bodies map)

M. R. KASHYAP
 Sr. Manager-Project
 TEEMS. INDIA

Site Address: - TRIPURA

Registered & Administrative Office :
 Teems India Towerlines Private Limited
 D. No. 3, Thoraipakkam - Neelankarai Link Road, Maruthi Nagar, Seevaram, Perungudi, Chennai - 600 096, India.
 Tel : +91-44-2496 1779 E-mail : marketing@teemsindia.com / admin@teemsindia.com Uri : www.teemsindia.com
 CIN : U40100TN2007PTC065611

UNDERTAKING 1B

(To be filled along with application of NOC for Power Transmission lines)

I/We Teems India Towerlines Private Limited having registered office/residence at No.3, Thoraipakkam- Neelankarai Link Road, Maruthi Nagar, Seevaram, Perungudi, Chennai-600096 the applicant(s) for the prosed construction at Tripura do hereby undertake:-

1. That I am/We are the Owner/lessee or any person(s)/Entity Legally Authorised for installation of the above power transmission line.
2. That, the details submitted in the application, including the site elevation and the co-ordinates, is correct. I am also aware that the NOC will be null and void in case it is established at any stage that the details submitted are different from the actual.
3. That I have examined all the tower location with respect to the AAI list of IFR/VFR airports, available at AAI websites.
4. That the towers list below lie beyond 56 km/20km from the ARP of the nearest IFR/VFR airports and therefore have not been submitted in the NOCAS.

Transmission Tower Number	Coordinate of the tower	Nearest airport/Distance from the nearest airport		Top Elevation
		Name of Airport	Distance	
		NIL		

5. That, I have submitted the NOC application in NOCAS for all the towers lying within 56km/20km from the ARP of the nearest IFR/VFR airports.
6. That, I/We will abide by all the terms and conditions, mentioned in the NOC issued by AAI.

Teems India Towerlines Private Limited
 Name and Signature of the applicant
 TEEMS. INDIA.

Signature, Name and address of Witness

1. Shri A.C.Das – Sr.DGM, POWERGRID, NER Udaipur, South Tripura-799120
2. Shri Ranjit Sarkar – Dy. Manager, POWERGRID, NER Udaipur, South Tripura-799120

A. C. DAS
 Sr. Manager-Project
 GENERAL MANAGER
 पावरग्रिड / POWERGRID
 उ. पू. क्षेत्र उदयपुर / NER UDAIPUR

Date:
 Place: Udaipur, South Tripura.

रजित सरकार / RANJIT SARKAR
 उप प्रबंधक / Dy. MANAGER
 पावरग्रिड / POWERGRID
 उ. पू. क्षेत्र उदयपुर / NER UDAIPUR

3. Power and Telecommunication Co-ordination Committee (PTCC) Approval Application Submitted



TRIPURA STATE ELECTRICITY CORPORATION LIMITED
Office of the Deputy General Manager
Transmission Division, Udaipur
Gomati District, Tripura

No.F. 5(5)/TECH/TD/UDP/2021-2022/ 245-48

Dated:24.05.2021

To

**DET PTCC(ER)
QA AND INSPECTION CIRCLE/BSNL
QA BHAVAN, EP-GP BLOCK
SALLAKE SECTOR-V
KOLKATA-700091**

Sub: Submission of PTCC clearance proposal for 132kV D/C Rokhia-Rabindranagar Transmission line associated with NERPSIP works for Tripura.

Dear Sir,

We are submitting herewith the complete proposal enclosing relevant documents for necessary approval/clearance from PTCC for 132kV D/C Rokhia to Rabindranagar Transmission line which is being constructed under North Eastern Region Power System Improvement Projects (NERPSIP) for Tripura.


It is requested to kindly get the proposal examined and arrange to convey necessary Approval/Clearance of PTCC of the above said Transmission line at the earliest.

List of documents enclosed as detailed below:

1. Questionnaire.
2. Single line diagram for both the terminating substation viz: Rokhia & Rabindranagar.
3. Data of Transformer.
4. Route Map.
5. Tower Schedule.
6. Tower Drawing.
7. Protection Scheme.
8. Soil Resistivity Data.
9. Details of various crossing.

Thanking You,

Yours sincerely,


Dy. General Manager
Transmission Division, Udaipur
Gomati District, Tripura

Copy forwarded to:

1. DRM/Engg. N. F Railway, Lumding Division, Lumding, Assam.
2. Additional General Manager, TSECL, Transmission Circle, Agartala for kind information please.
3. SR. GM, NERPSIP, POWERGRID, Agartala for information please.


24/05/2021
Deputy General Manager



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



Annexure 7

MoP Guidelines Dated 5th OCT.'15 for Payment of Compensation for Transmission Line

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

Dated, 15th October, 2015

To

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

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

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

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

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

—/—

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

Yours faithfully,

Jyoti Arora
(Jyoti Arora)

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

Copy, along with enclosure, forwarded to the following:

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

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



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



Annexure 8

The letter was issued to TSECL regarding adoption of MoP, GoI Guidelines for payment of compensation towards damages in regards to RoW for Transmission lines vide ref. *NEAGT/NERPSIP-102/2017-18/212* dated *15/05/2018*.



पावर ग्रिड कारपोरेशन ऑफ इंडिया लिमिटेड

(भारत सरकार का उद्यम)

**POWER GRID CORPORATION
OF INDIA LIMITED**

(A Government of India Enterprise)



पावरग्रिड

दूरभाष : (0361)2330045 (शु)

NERPSIP Office,

Ramnagar-06(Middle), 3rd Crossing, Agartala - 799002.

उत्तर पूर्वी क्षेत्र / NORTH EASTERN REGION

Date: 15/05/2018

Ref. : NEAGT/NERPSIP-102/2017-18/212

To:

The AGM(Transmission Circle)
Tripura State Electricity Corporation Limited
79 Tilla : Transmission Circle
Agartala, Tripura(W)

Sub: Adoption of MoP, Govt guidelines for payment and compensation towards damage in regards to RoW for Transmission line for State Government-Reg.

Dear Sir,

With reference to the above subject this is to inform you that Ministry of Power (MOP), Government of India (GOI) has issued "Guidelines for payment of compensation towards damages in regards to Right of Way for Transmission Lines" on 15th October 2015. In the said letter MoP requested all the states/UTs etc to take suitable decision regarding adoption of the guidelines considering that compensation towards diminution of land value in the width of Right of Way is a state subject.

As per the guidelines, Govt of Assam & Manipur has already implemented the guideline in their respective states. The notification issued by Govt of Assam & Govt of Manipur is enclosed herewith for your ready reference. The guidelines of MoP, GOI and Notification of Govt of Assam was also earlier forwarded to M/s TSECL vide our letter ref NEAGT/NERPSIP-102/2017-18/465 dtd 06/06/2017.

In view of above, since we have already started construction activity of 132kV Transmission lines under NERPSIP Tripura Project you are hereby requested to kindly take up the matter with state government for issuing guidelines for payment of compensation towards the damage in regards to RoW for Transmission Lines.

Thanking you.



Yours faithfully


(S.I. Singh)
Dy. General Manager
POWERGRID, Agartala.

Copy for kind information to:-

1. CMD TSECL, Corporate Office, Banamalipur, Agartala.

Registered Office: B-9 Qutab Institute Area, Katwaria Sarai, New Delhi- 110016

Tel: 011-26560112, Fax: 26601081, Website: <http://www.powergridindia.com>

संविन एव संरक्षित मे जलम वारत

Save Energy for Benefit of Self and Nation



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



Annexure 9

TSECL intimated POWERGRID that Govt. of Tripura has decided for continuing with the prevailing practice of payment of compensation towards damage in regards to RoW for Transmission lines.

TRIPURA STATE ELECTRICITY CORPORATION LIMITED

(A Govt. of Tripura Enterprise)



No. F. 5(85) / TSECL / 2018 - 19 / 1631

Dated, Agartala, the 25th September, 2018

To
The DGM (NERPSIP),
PGCIL,
Ramnagar - 06, 3rd crossing,
Agartala - 799002.

Sub : Adoption of MoP, Gol guidelines for payment of compensation towards damage in
regards to RoW for Transmission lines. - reg.

Ref: 1) NEAGT / NERPSIP-102 / 2017-18 / 212, dated 15.05.2018.
2) Minutes of Meeting of 4th Project Steering Committee of MoP, Gol vide No. 3 / 16 / 2013 -
Trans. Pt - 3, dated 11th June, 2018.
3) F.1(2) / DT / TSECL / 2018 / 24194, dated 07.09.2018.

Sir

Kindly refer to Minutes of Meeting of the 4th Project Steering Committee of Ministry of Power, Govt. of
India held on 18th May 2018 at Guwahati on NER Power System Improvement Project (NERPSIP),
where it had been recorded that all States are to confirm their stand on the issue of payment of land
compensation for the tower footing and line corridors to MoP.

In view of the above, please find enclosed herewith the letter of Tripura State Electricity Corporation
Ltd. (TSECL) in the above context for favour of your kind record please.

Thanking you

Enclo : As Stated.

Yours faithfully


Adl. General Manager
Transmission Circle, TSECL, Agartala
25/09/18

TRIPURA STATE ELECTRICITY CORPORATION LIMITED

(A Govt. of Tripura Enterprise)



No. F. 1 (2) / DT / T. S. E. C. L. / 2015 / 24194

Dated, Agartala, the 7-September, 2015

To
The Joint Secretary (Trans),
Ministry of Power,
Govt. of India,
Rafi Marg, Shram Shakti Bhawan, New Delhi 110001.

Sub: - Adoption of MoP, Govt. of India guidelines for payment of compensation towards damage in regards to RoW for Transmission lines. - reg.

Sir,

This is to inform you that Govt. of Tripura has decided for continuing with the prevailing practice of payment of compensation towards damage in regards to RoW for Transmission lines as mentioned here-under :

- i) 100 % land value is compensated for tower base affected area as per rate assessed by the District Administration of State Govt. Apart from this if there be any damage to tree/crops/structure in the said area, compensation to the occupier / land owner for the damage in the tower base area is also paid as per State Govt. approved rates. In areas where Land owner does not allow to erect towers, the required land is acquired through acquisition process / purchased through Land Purchase Committee as per norms of State Govt.
- ii) If there be any damage to tree/crops/ structure in the Corridor of width of Right of Way between the towers, compensation for the same is paid to the owner as per rate approved by the State Govt.
- iii) No compensation is paid for the Corridor of land in the width of Right of Way between the towers at present.

Recommendations of the Guidelines issued by Ministry of Power, Govt. of India vide letter dated 15.10.2015 regarding payment of compensation towards damage in regards to RoW for Transmission lines will not be feasible to transmission line developmental activities in the State of Tripura.


This is for favour of your kind record please.

Yours faithfully,


(M. Debarma)

Director (Technical)
TSECL, Agartala

Other correspondences with TSECL in respect to RoW Compensation of 132kV Transmission lines are given below.



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


पावरग्रिड

दूरभाष : (0381)2330045 (M)
NERPSIP Office,
Bam Nagar-06(Middle); 3rd Crossing, Agartala - 791002.
उत्तर पूर्वी क्षेत्र / NORTH EASTERN REGION
Date: 27/04/2018

Ref. : NEAGT/NERPSIP-101/2017-18/169

To,
The AGM(Transmission Circle)
Tripura State Electricity Corporation Limited
79 Tilla; Transmission Circle
Agartala, Tripura(W)

Sub: Compensation of 132kV Transmission line which are to be constructed under NERPSIP Tripura-Reg.

Dear Sir,

With reference to the above it is to inform you that there are 14 Nos. of 132kV Transmission line to be constructed in Tripura under NERPSIP Project.

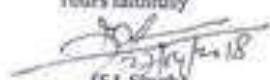
The survey activities of all the Transmission Lines have been completed and the construction of the lines is being started shortly. For Finalization of Surface Damage Compensation to the affected land owners along the route of the Transmission line the following action may kindly be taken from your side:-

- 1) District Authority may kindly be intimated to depute their representative for identification and authentication of the land owner.
- 2) The rates of Tree/Crops compensation prevailing in Tripura State may kindly be provided for assessment of the compensation amount.
- 3) Authorized representative of TSECL, may kindly be identified area wise/Line wise for signing of Compensation notice / assessment sheet etc.

The name of the lines where construction activity is being started is enclosed in Annexure-01.

Your early action in this regards is highly solicited.

Thanking you.

Yours faithfully

(S.I. Singh)
Dy. General Manager
POWERGRID; Agartala.

Copy for kind information to:-
1. CMD TSECL, Corporate Office, Banamalapur, Agartala.

Registered Office: B-9 Qutab Institute Area, Katwaria Sora, New Delhi- 110016
Tel: 011-26560112, Fax: 26601081, Website: <http://www.powergridindia.com>
वर्द्धित एव राष्ट्रमि मे असुत स्वर्ण
Save Energy for Benefit of Self and Nation

TSECL office order dated 04/05/2018 regarding nominated officials who are authorised to sign compensation notice for obtaining RoW and all Statutory Clearances for the corresponding Transmission lines

*Received & J. No. 663
Dtd. 04/05/2018*

TRIPURA STATE ELECTRICITY CORPORATION LIMITED

(A Govt. of Tripura Enterprise)



No.F. 5(85)/AGM/TC/2018-19/219-239

Dated - 4th May, 2018

ORDER

As per Clause No. 7.8 of the Implementation / Participation Agreement signed between Tripura State Electricity Corporation Limited (TSECL) & Power Grid Corporation of India Limited (PGCIL) on 13th March, 2015 regarding implementation of NER Power System Improvement Project (NERPSIP) pertaining to the State of Tripura, the Utility (TSECL) as Owner has the responsibilities of obtaining Right of Way (RoW) and all Statutory Clearances viz. Environment, Forest / River / Canal / Power Lines / Roads / Highways/ Railway Crossing, PTCC, Aviation, Electrical inspector etc. PowerGrid being the Implementing Agency will undertake all the activities for and on behalf of the Owner (TSECL) as well as provide technical / administrative assistance to TSECL to avail RoW / Clearances.

For smooth implementation of the Project, following Officials of TSECL are hereby authorized to sign on the compensation notice jointly with PowerGrid for obtaining Right of Way (RoW) and all Statutory Clearances for the corresponding Transmission Lines as mentioned below -

Sr. No	Name of Line	Name of Authorized Official	Address for Communication
1	132 KV D/C Bagala -Belonia Transmission Line	1. Sr. Manager, Banduar Sub-Station. 2. Sr. Manager / Manager, Bagala S/S 3. Sr. Manager / Manager, Belonia S/S.	DGM, Transmission Division, Udairpur, Gomati District, Tripura.
2	132 KV S/C (on D/C Tower) - Bagala - Satchand Transmission line	1. Sr. Manager, Banduar Sub-Station. 2. Sr. Manager / Manager, Bagala S/S. 3. Sr. Manager / Manager, Satchand S/S.	
3	132 KV D/C Udairpur - Bagala Transmission line	1. Sr. Manager, Banduar Sub-Station. 2. Sr. Manager / Manager, Bagala S/S.	
4	132 KV D/C Udairpur to Amarpur Transmission line	1. Sr. Manager, Banduar Sub-Station. 2. Sr. Manager / Manager, Amarpur S/S.	
5	132 KV D/C Belonia to Sabroom Transmission line	1. Sr. Manager, Banduar Sub-Station. 2. Sr. Manager / Manager, Belonia S/S. 3. Sr. Manager / Manager, Sabroom S/S.	
6	132KV interconnection portion of 132 KV S/C Sabroom - Satchand Transmission Line at Sabroom end.	1. Sr. Manager, Banduar Sub-Station. 2. Sr. Manager / Manager, Sabroom S/S.	
7	132 KV interconnection portion of 132 KV S/C Sabroom - Satchand Transmission Line at Satchand end.	1. Sr. Manager, Banduar Sub-Station. 2. Sr. Manager / Manager, Satchand S/S.	
8	132 KV D/C Rabindranagar - Rokhia Transmission line	1. Sr. Manager, Rabindranagar S/S	DGM, Transmission Division, Agartala, 79 Tilla, West District, Tripura.
9	L.L.C. of Suramanagar - Rokhia 132 KV line at Gokulnagar S/S	1. Sr. Manager, TSD, 79 Tilla, Agartala.	
10	L.L.C. of 132 KV Agartala (79 Tilla) - Dhalabi Transmission line at Mohanpur.	1. Sr. Manager, Transmission Sub-division, 79 Tilla, Agartala	

OFFICE OF THE ADDITIONAL GENERAL MANAGER, TRANSMISSION CIRCLE, 79 TILLA, AGARTALA
PHONE & FAX: 0381-235-1579

TRIPURA STATE ELECTRICITY CORPORATION LIMITED

(A Govt. of Tripura Enterprise)



Sl. No	Name of Line	Name of Authorized Official	Address for Communication
11	132 KV D/C Rabindranagar - Belonia Transmission line	1. Sr. Manager, Rabindranagar S/S 2. Sr. Manager, Banduar S/S	1. DGM, Transmission Division, Agartala, 79 Tilla, West District, Tripura. 2. DGM, Transmission Division, Udaipur, Gomoh District, Tripura
12	LILO of 132 KV S/C Ambassa - P.K. Bari Transmission Line at Manu S/S	1. Sr. Manager, Ambassa S/S	DGM, Transmission Division, Kumarghat, Unokoi District, Tripura.
13	132 KV interconnection portion from Manu (Old-existing) S/S to Manu (New) S/S for charging of 132 KV S/C Manu-Chawmanu TL.		
14	132 KV D/C Kalashahr- Dhamanagar Transmission line	1. Sr. Manager / Manager, Gourmagar S/S, Kalashahr. 2. Sr. Manager / Manager, MissionTala S/S, Dhamanagar.	

In addition, DGM, TD, Agartala / DGM, TD, Udaipur / DGM, TD, Kumarghat / DGM, P – II, / DGM, P – III, / DGM (Civil), / Sr. Manager (Civil), Planning, Transmission Circle, Agartala and Sr. Manager, Transmission Civil Sub-Division, Agartala are hereby instructed to redress Grievances / disputes, if any, for early resolve and smooth execution of the project.


 Addl. General Manager
 Transmission Circle, TSECL, Agartala.
 04/05/18


Copy to:-

- 1-3) The DGM, TD, Agartala // Udaipur // Kumarghat for necessary action.
- 4-6) The DGM, P – II // DGM, P – III // DGM, Civil, TC, Agartala for necessary action.
- 7) The DGM, NERPSIP, PGCL, Agartala for kind information and necessary action.
- 8-13) SM, Banduar S/Stn // SM, TSD, Agartala// SM, Ambassa S/Stn // SM, Rabindranagar S/Stn // SM(Civil), Planning, TC, Agartala // SM, TSD(Civil), Agartala, for necessary action.
- 14-20) SM /M, MissionTala S/Stn, // SM /M, Gourmagar S/Stn, // SM /M, Bagala S/Stn, // SM /M, Belonia S/Stn, // SM /M, Satchand S/Stn, // SM /M, Sabroom S/Stn, // SM /M, Amarput S/Stn, for necessary action.
- 21) Office order book.


 Addl. General Manager
 04/05/18

OFFICE OF THE ADDITIONAL GENERAL MANAGER, TRANSMISSION CIRCLE, 79 TILLA, AGARTALA
PHONE & FAX: 0381-235-1579

TSECL letters to Sub-Divisional Magistrate-Bishalgarh; Sadar & Mohanpur for Deployment of Tehsildar for Identification of affected Land owners for 132kV LILO line Rokhia-Surjamaninagar at 132kV Gokulnagar S/s & Agartala-Dhalabil at 132kV Mohanpur S/s, respectively.

 **TRIPURA STATE ELECTRICITY CORPORATION LIMITED**
(A Govt. of Tripura Enterprise)

No F 585/AGM/TC/2018-19/318-22 Date: 15-05-2018

To
The Sub-Divisional Magistrate
Bishalgarh Sub-Division
Dist- Sepahijala Tripura

Sub: Deployment of Tehsildar for Identification of Land owner for Construction of 132KV LILO line of Rokhia - Surjamaninagar at 132KV Gokulnagar S/S.

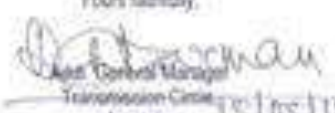
Dear Sir,

This is to bring to your kind notice that Government of India has entrusted Power Grid Corporation of India Ltd. (Government of India Enterprise) for the task of implementation of the North Eastern Region Power System Improvement Project (NERPSIP) in the State of Tripura. Under the said project various 132kV & 33kV Power Transmission Lines are to be constructed along-with the associated Substation in the State.


Tehsildar of Bishalgarh & Gokulnagar Tehsil may kindly be informed to extend their co-operation in order to identify the land owner en-route the 132kV LILO of Rokhia - Surjamaninagar Transmission line at Gokulnagar Substation under Bishalgarh Sub-Division.

NERPSIP being a time-bound Central Sector Project, your co-operation in this regard is highly solicited towards timely completion of the same.

Thanking you.

Yours faithfully,

Addl. General Manager
Transmission Circle
Agartala 15/05/18

Copy to:-
1) DM & Collector Sepahijala District, Bishalgarh for kind information
2) DGM (NERPSIP), PowerGrid, Agartala.
3) DGM TD, Agartala / DGM (TC), Transmission Circle, Agartala


OFFICE OF THE COLLECTOR
M.C. 118
18 MAY 2018
CT

Addl. General Manager, Transmission Circle, 79 Tilla, Agartala, West Tripura, Tel. & Fax - (0381)225-1579

TRIPURA STATE ELECTRICITY CORPORATION LIMITED

(A Govt. of Tripura Enterprise)



No.F.5(85)/AGM/TC/2018-19/382-87

Date: 17-05-2018

To
The Sub-Divisional Magistrate
Mohonpur Sub-Division
Dist- West Tripura

Sub: Deployment of Tehsildar for identification of Land owner for Construction of 132kV LILO line of Agartala - Dhalabil at 132kV Mohonpur S/S.

Dear Sir,

This is to bring to your kind notice that Government of India has entrusted Power Grid Corporation of India Ltd. (A Government of India Enterprise) for the task of implementation of the North Eastern Region Power System Improvement Project (NERPSIP) in the State of Tripura. Under the said project various 132kV & 33kV Power Transmission Lines are to be constructed along-with the associated Substation in the State.

Tehsildar of Mohonpur Tehsil may kindly be informed to extend their co-operation in order to identify the land owner en-route the 132kV LILO of Agartala - Dhalabil Transmission line at Mohonpur Substation under Mohonpur Sub-Division.

NERPSIP being a time-bound Central Sector Project, your co-operation in this regard is highly solicited towards timely completion of the same.

Thanking you



Yours faithfully,

[Signature]
Addl. General Manager
Transmission Circle,
Agartala. 17/05/18

Copy to:-

- 1) DM & Collector, West Tripura District, for kind information.
- 2) DGM (NERPSIP), PowerGrid, Agartala.
- 3-4) DGM, TD, Agartala / DGM (CIVIL), Transmission Circle, Agartala.

Addl. General Manager

Addl. General Manager, Transmission Circle, 79 Tilla, Agartala, West Tripura, Tel. & Fax - (0381)235-1579

TRIPURA STATE ELECTRICITY CORPORATION LIMITED

(A Govt. of Tripura Enterprise)



No.F.5(85)/AGM/TC/2018-19/ 435-39

Dated: 21-05-2018

To
The Sub-Divisional Magistrate
Sadar Sub-Division
Dist. West Tripura

Sub: Deployment of Tehsildar for identification of Land owner for Construction of 132kV LILO line of Rokhia - Surjamaninagar at 132kV Gakulnagar S/S.

Dear Sir,

This is to bring to your kind notice that Government of India has entrusted Power Grid Corporation of India Ltd(A Government of India Enterprise) for the task of implementation of the North Eastern Region Power System Improvement Project (NERPSIP) in the State of Tripura. Under the said project various 132kV & 33kV Power Transmission Lines are to be constructed along-with the associated Substation in the State.

Tehsildar of Bikramnagar Tehsil may kindly be informed to extend co-operation in order to identify the land owner en-route the 132kV LILO of Rokhia - Surjamaninagar Transmission line at Gakulnagar Substation.

NERPSIP being a time-bound Central Sector Project, your co-operation in this regard is highly solicited towards timely completion of the same.

Thanking you.



Yours faithfully,


Add. General Manager
Transmission Circle
Agartala, 21/05/18

Copy to:-

- 1) The DM & Collector, West Tripura District, for kind information.
- 2) The DGM (NERPSIP), PowerGrid, Agartala
- 3-4) The DGM, TD, Agartala / DGM (Civl), Transmission Circle, Agartala.

Copy to:-
1) The D.M. & Collector
West Tripura District,
Agartala, Tripura.
CENTRAL RECEIPT
Dated: 21/5/18
Sector:
Receipt No.


Add. General Manager
21/05/18

Draft notice for compensation for construction of 132kV Transmission lines under NERPSIP-Tripura

TRIPURA STATE ELECTRICITY CORPORATION LIMITED

(A Govt. of Tripura Enterprise)



No.F.5(85) IAGM/TC/2018-19/ 323-29

Dated 15-05-2018

To
The DGM (NERPSIP)
Power Grid Corporation of India Ltd.
Ramnagar-06, Agartala

Sub - Forwarding of Draft Notice for compensation for construction of TL line under NERPSIP : Tripura.
Ref - NEAGT / NERPSIP - 102 / 2017 - 18 / 213, dated 15.05.2018.

Sir,

With reference to the above, kindly find enclosed herewith the sample copy of Notice in Ann-01 & 02 to be used for Surface damage compensation & Land Compensation in respect of construction of Transmission Line under NERPSIP, Tripura.

It is further to be noted that each notice shall be of 5 copies (1 original & 4 Carbon Copy) and Joint signature of POWERGRID & TSECL in original to be put in all the copies of notice. After signing of notice, 1st copy to be handed over to the affected Land Owner, 2nd Copy will be kept at POWERGRID, 3rd & 4th Copies to be forwarded to respective DM & SDM for assessment, and 5th Copy to be handed over to TSECL.

Once assessment is completed and compensation amount is finalized from the respective District Administration, the payment shall be done by POWERGRID.

Thanking you.

Encl:- As stated above.

*Land notice is not
available.
Pl. collect.*

*15/5/18
with enclosed by me*

Yours faithfully,

[Signature]
Asst. General Manager
Transmission Circle
Agartala 15/05/18

Copy to:-

- 1-3) The DGM, TD, Agartala / Udaipur / Kumarghat
- 4-6) The DGM (P - I) / DGM (P - II) / DGM (Civil), Transmission Circle, Agartala

Add. General Manager

TRIPURA STATE ELECTRICITY CORPORATION LIMITED

(A Govt. of Tripura Enterprise)



NOTICE

Ref No.:

Date: / /

To

Dear Sir / Madam

In exercise of power vested with TRIPURA STATE ELECTRICITY CORPORATION LIMITED (TSECL) under Section-154 of the Electricity Act, 2003 and Section 10 & 11 of the Indian Telegraph Act 1885 and amendment made up-to date thereto, this is to inform you that the proposed _____ Transmission line will be passing through your land and the properties belonging to you and standing in the required clearance belt of said transmission line will be cut / removed and the trees / crops belonging to you will have to be unavoidably damaged during the construction / erection of the line. If so desired by you, the trees / crops so felled / damaged will be handed over to you against recovery of salvage value of the felled trees/ crops etc. The compensation for the yield component of the tree(s) so fell and the crop(s) actually damaged will be paid to you as assessed by the Executive Magistrate or authority specified by the Appropriate Government.

I. Activities:

- a. Foundation Loc No. _____
 b. Erection Loc No. _____
 c. Stringing Loc No. from _____ to _____

II. (1) Name of the Owner and Address:

- (2) Name of the Village / Mouza & J.L. No.
 (3) Name of PS & District
 (4) Plot No/ Khatian No

Particulars of trees /Crops / Other standing properties:

Sl. No.	Item	Species	Dimension	Qty.
1)	Trees			
2)	Crops			
3)	Others			

Signature of the owner
Address :-

Signature of Power Grid Corp of India Ltd.

Signature of TSECL

Signature of Tehsildar

Witness:

Copy to:

- The D.M. _____ for kind information please.
- The Deputy General Manager _____ for favour of kind information.
- The S.D.M. _____ for kind information. It is highly requested to assess the value of the said trees/crops etc. from his kind end and inform this office for payment of compensation.
- The Tehsildar, _____

Signature of TSECL

Address of the concern Division/ Communicating address



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura




Annexure 10

Sample Copy of Land Compensation Notices 132kV D/c Rokhia to Rabindra Nagar TL

1. Location : 12A/0

TRIPURA STATE ELECTRICITY CORPORATION LIMITED
(A Govt. of Tripura Enterprise)



NOTICE

Ref No. : _____ Date: 07/10/2020

To Lt Upendra chandra Bis. S/o Adhar chandra Bis. Vill - kamalnagan sub - sonamura, Sepahijala, Tripura.

Sub :- Utilization of land for tower footing at Loc. No. 12A/0, type of tower DD+3 (DRY) in connection with "132 KV D/C Rakhia to Rakhia" transmission line

Dear Sir,

As per section 67 of the Electricity Act, 2003, we require a portion of your land having the area mentioned below for construction of tower footings/stinging etc. related to the above-mentioned work. The Sub-Divisional Magistrate, will assess necessary compensation in this respect.

Sl. No.	Name of owner as per document and other	Area of land utilization	Name of present occupier and relation
1	Name :- Lt Upendra chandra Bis	108.53 sqm.	Jayanta Bis. Grand Son
2	Plot No. :- 1022/1636		
3	Khatian No. :- 135		
4	Jote No. :-		
5	Mouza :- Anandapur		

Signature of the Power Grid Corp. of India Ltd. Name and Seal

Signature of Tahasildar Name & Seal
12/10/2020
Motinagar T.K
Sepahijala, Tripura

Signature /Thumb impression of land Owner / Present Occupier
Address :-
Jayanta Bis.
9/11/20 -
Kamalnagan

Witness :- 1.
2.


Signature of the TSECL Name & Seal
132 KV Rabinranagar Sub Station,
Sonamura, Sepahijala.

Copy to :-
1. The D.M. for kind information please
2. The Deputy General Manager, for favour of kind information.
3. The S.D.M. for kind information. It is highly requested to assess the said land from his kind end and inform this office for payment of compensation.
4. The Tehsildar,

TRIPURA STATE ELECTRICITY CORPORATION LIMITED
Transmission Division, 79 Tilla, Agartala

2. Location : 7/01

TRIPURA STATE ELECTRICITY CORPORATION LIMITED
(A Govt. of Tripura Enterprise)


NOTICE

Ref No. : **52** Date : 23/11/2020

To ^{Chandra} **Jahindra Das s/o Bahabali Day**
Kalanchohra, P.O. - Kalanchohra, Barabagari, R.D South, Kalanchohra

Sub :- **Utilization of land for tower footing at Loc. No. 7/01, type of tower D.G + G (well) in connection with "132 KV D.C. Poktra to Rabindranagar" transmission line**

Dear Sir,
As per section 67 of the Electricity Act, 2003, we require a portion of your land having the area mentioned below for construction of tower footings/stinging etc. related to the above-mentioned work. The Sub-Divisional Magistrate, Sonamura will assess necessary compensation in this respect.

Sl. No.	Name of owner as per document and other	Area of land utilization	Name of present occupier and relation
1	Name :- <u>Jahindra Das</u>	10.155	^{Chandra} <u>Jahindra Day</u>
2	Plot No. :- <u>918, 920</u>	X	
3	Khatian No. :- <u>103/1, 103/1</u>	10.155	<u>s/o Bahabali Day</u>
4	Jote No. :- <u>-</u>	= 103.12 sqm.	
5	Mouza :- <u>Kalanchohra</u>		

Signature of the Power Grid Corp. of India Ltd. Priyanshu 23/11/2020
Name and Seal

Signature of Tahasildar Sonamura 23/11/2020
Name & Seal

Signature / Thumb impression of land Owner / Present Occupier Jahindra Day
Address :-

Witness :- 1.
2.

Yours faithfully
Sonamura 24.12.2020
Signature of the TSECL
Sr. Manager (Elect.)
132 KV Sub-station, Rabindranagar
Sonamura, Sepahijala


Copy to :-
1. The D.M. for kind information please
2. The Deputy General Manager, for favour of kind information.
3. The S.D.M. for kind information. It is highly requested to assess the said land from his kind end and inform this office for payment of compensation.
4. The Tehsildar,

Sonamura 24.12.2020
Sr. Manager (Elect.)
132 KV Sub-station, Rabindranagar
Sonamura, Sepahijala

TRIPURA STATE ELECTRICITY CORPORATION LIMITED
Transmission Division, 79 Tilla, Agartala

3. Location 9/01

TRIPURA STATE ELECTRICITY CORPORATION LIMITED
(A Govt. of Tripura Enterprise)


NOTICE

Ref No. : **54** Date : **24/11/2020**

To **Nitai Sankar s/o Chandra Mohan Sankar**
Dakshin Katalanchayra, P.S+P.O - Katalanchayra Sepahijala Tripura

Sub :- **Utilization of land for tower footing at Loc. No. 9/01, type of tower D+O (Wet) in connection with "132 KV D.C. R. Line to Rabindranagar" Transmission line**

Dear Sir,

As per section 67 of the Electricity Act, 2003, we require a portion of your land having the area mentioned below for construction of tower footings/stinging etc. related to the above-mentioned work. The Sub-Divisional Magistrate, **Sonamura** will assess necessary compensation in this respect.

Sl. No.	Name of owner as per document and other	Area of land utilization	Name of present occupier and relation
1	Name :- Nitai Sankar	5.299 X 5.299 = 28.079 sqm	Nitai Sankar s/o Chandra Mohan Sankar (Self)
2	Plot No. :- 2540		
3	Khatian No. :- 524		
4	Jote No. :-		
5	Mouza :- Katalanchayra		

Signature of the Power Grid Corp. of India Ltd. Name and Seal
24.11.2020

Signature of Tahasildar Name & Seal
28/11/2020
Boxanagar T.K. Sonamura, Sepahijala Tripura

Signature /Thumb impression of land Owner / Present Occupier Address :-
Nitai Sankar

Witness :- 1.
2.

Yours faithfully
24.12.2020
Signature of the TSECL
**Sr. Manager (Elect.)
132 KV Sub-station, Rabindranagar
Sonamura, Sepahijala**


Copy to :-
1. The D.M. for kind information please
2. The Deputy General Manager, for favour of kind information.
3. The S.D.M. for kind information. It is highly requested to assess the said land from his kind end and inform this office for payment of compensation.
4. The Tehsildar,

24.12.2020
Sr. Manager (Elect.)
132 KV Sub-station, Rabindranagar
Sonamura, Sepahijala

TRIPURA STATE ELECTRICITY CORPORATION LIMITED
Transmission Division, 79 Tilla, Agartala

4. Location 10/01

TRIPURA STATE ELECTRICITY CORPORATION LIMITED
(A Govt. of Tripura Enterprise)



NOTICE

Ref No.: **55** Date: 01/12/2020

To *Thakur chandra sarkar s/o Budhai Sarkar*
Vill- South Kalamchaura, Majra- Kalamchaura, Tehsil- Baramulla

Sub :- Utilization of land for tower footing at Loc. No. *10/1*, type of tower *D13+6 (Dry)* in connection with "*132 kv D/E Raktia to Rabindranagar*" Transmission line.

Dear Sir,
As per section 67 of the Electricity Act, 2003, we require a portion of your land having the area mentioned below for construction of tower footings/stinging etc. related to the above-mentioned work. The Sub-Divisional Magistrate, *Sonamura* will assess necessary compensation in this respect.

Sl. No.	Name of owner as per document and other	Area of land utilization	Name of present occupier and relation
1	Name :- <i>Thakur chandra sarkar</i>	<i>9.172 x 9.172 = 84.125 sqm</i>	<i>SELF</i>
2	Plot No. :- <i>2314</i>		
3	Khatian No. :- <i>579</i>		
4	Jote No. :-		
5	Mouza :- <i>Kalamchaura</i>		

Signature of the Power Grid Corp. of India Ltd. *01.12.2020*
Name and Seal *Rabindranagar*

Signature of Tahsildar, *T.K. Sonamura, Sepahijala Tripura.*
Name & Seal

Signature /Thumb impression of land Owner / Present Occupier
Address :-

Witness :- 1.
2.

Yours faithfully
24.12.2020
Signature of the TSECL
Sr. Manager (Elect.)
Name & Seal
132 KV Sub-station, Rabindranagar
Sonamura, Sepahijala

Copy to :-
1. The D.M. for kind information please
2. The Deputy General Manager, for favour of kind information.
3. The S.D.M. for kind information. It is highly requested to assess the said land from his kind end and inform this office for payment of compensation.
4. The Tehsildar,

24.12.2020
Signature of TSECL
Sr. Manager (Elect.)
132 KV Sub-station, Rabindranagar
Sonamura, Sepahijala

TRIPURA STATE ELECTRICITY CORPORATION LIMITED
Transmission Division, 79 Tilla, Agartala

Annexure - I
ASSESSMENT SHEET OF LAND COMPENSATION

S.No.	Name of Tr. Line	Tower Loc. No.	Name & Address of Land Owner	Plot No.(P)/Khatian No.(K)/Jote No.(J)	Notice Ref. No. & Date	Bank Details	Area of Land Utilization	Per Kani Value (in ₹)	Land Value of area (in ₹) as per latest Government approved land valuation chart	Remarks
1	132KV D/C Rokhia to Rabindranagar	Loc no-2/01	Jyoti Debnath W/O-Ratan Debnath,2/241 W-2 Rokhia Manikya Nagar R.D Block Veluarchar, Mouja-Manikya Nagar Tripura Pin code-799102	P-1216, K-371, J-NIL	67 dtd. 04.02.2021	Tripura Gramin Bank,Boxanagar Branch A/C-800902000373 Ifsc -UTBI0RRBTGB	(7.207*7.207)= 51.890 Sq.M (0.005189 Ha)	3,80,000	12,284	Foundation work (4 legs)
2	132KV D/C Rokhia to Rabindranagar	Loc no-3/0	Rabindra Debnath S/o Late Narayan Debnath. Vill-2/239 Ward -02 Manikya Nagar , P.O-Rokhia Dist-Sepahijala Mouja-Manikya Naga Tripura Pin code-799102	P-1256 K-333 J-NIL	66 dtd. 04.02.2021	Tripura Gramin Bank,Boxanagar Branch A/C-8009011802137 Ifsc -UTBI0RRBTGB	(10.155*10.155) = 103.124 Sq.M (0.010312Ha)	380,000	24,413	Foundation work (4 legs)
3	132KV D/C Rokhia to Rabindranagar	Loc no-19/0	Abdul Mamin Maishan S/O Late Abdul Rahman Maishan,W-02 N.C nagar,Sepahijala,Mouja-Motinagar , Tripura Pin code -799181	P-246 K-491 J-NIL	71 dtd. 06.03.2021	SBI ,Sonamura Branch A/C-34332459782 Ifsc -SBI0006626	(8.655*4.327)= 37.450 Sq.M (0.0037450 Ha)	2,50,000	5,833	Foundation work (2 legs)
	132KV D/C Rokhia to Rabindranagar	Loc no-19/0	Nimai Das S/o Lt Ramesh Das Add: Batadola,Kamalnagar , Sepahijala Mouja-Motinagar , Tripura Pin-799181	P-242 K-303/2 J-NIL	62 Dtd: 16.12.2020	Tripura Gramin Bank,Boxanagar Branch A/C no-8009011951640 IFSC-UTBI0RRBTGB	(8.655*4.327)= 37.450 Sq.M (0.0037450 Ha)	2,50,000	5,833	Foundation work (2 legs)
4	132KV D/C Rokhia to Rabindranagar	Loc no-24C/01	Manik miah S/o Farid Miah Village-N.C Nagar Sepahijala P.O-Durgapur , Tripura Pin code-799131	P-129/3617 K-894 J-NIL	72 Dtd: 10.03.2021	SBI ,Sonamura Branch A/C-33096037842 Ifsc -SBI0006626	7.616*7.616= 58.003456 Sq.M (0.0058003456 Ha)	150000	5,420	Foundation work (04 Legs)
5	132KV D/C Rokhia to Rabindranagar	Loc no-15/0	Sharmina Akter D/o Md. Nur Hossain Vill-Kamalnagar, Po-Kamalnagar Dist-Sepahijala , Tripura Pin code-799131	P-129 K-134/1 J-NIL	65 Dtd: 02.02.2021	UCO Bank, Sonamura Branch A/C-28270110099940 IFSC CODE-UCBA0002827	9.693*9.693= 93.96 Sq.M (0.009396 Ha)	400000	23,415	Foundation work (04 Legs)

Signature of POWERGRID

[Signature]
18/03/2021
P.P. NAIK
- Sr. Manager,
Powergrid,
Rabindranagar

[Signature]
18/3/21
Prepared by

[Signature]
Checked by


[Signature]
18/03/2021
Deputy Collector & Magistrate,
Sonamura, Sepahijala Tripura.

[Signature]
18/3/21
Sub-Divisional Magistrate,
Sonamura Sepahijala Tripura

Sample NOC/ Affidavit from Land Owner

Location No. 38/0 of 132kV Bagafa - Satchand Line

SL No - 30/2/2020 14 FEB 2020



RECEIVED
Dated: 14 Feb 2020
Notary, South Tripura

NOTARY
A. T. Das
Notary, South Tripura

0244-222234

We Sri Haradhan Singha S/O Lt. Hanuman Singh aged about 53 years, Sri Nimal Singh S/O Lt. Hanuman Singh aged about 60 years, Sri Anil Singh S/O Lt. Hanuman Singh aged about 56 years, Sri Bilal Kumar Singh S/O Lt. Hanuman Singh aged about 75 years all of village: Rantabari, P.O. -Rantabari, P.S. -Sainthor, Dist: South Tripura, S. West Bengal (Dutt) W/O Sri Arjun Bhatta of village: P.O. -Jirainjan, P.S. -Belonia Dist: South Tripura & aged about 58 years, Smt. Charubala Singhakumari W/O Lt. Sushil Biswas of village: Kalahi, P.O. -Makhera, Dist: South Tripura, aged about 55 years, by Nationality Indian & hereby solemnly affirm and declare as follows:-

1. That, the Document No. 1 to 6 are the joint owners of the property bearing khatian No. 578, in plot No. 2652 situated at Rantabari village, Ranjanai para Hojja under Thakurpore rental South Tripura District, in size our above folding of khatian No. 578 and area of _____ sqm of 1 gatha (one Coropation of Batta

dmd-1/2.

NO. 17744 DATE 12 9 AUG 2010

STAMP VALUED AT RS. 20/-

PURCHASED BY SHRIMATI C. B. SARKAR
DWA ADVOCATE

DEBABRATA CHAKRABORTY
STAMP VENDOR, AGARTALA

AFFIDAVIT
AFFIDAVIT AFFIRMED & DECLARED BEFORE ME
S/O/Smt. Haradhan Singh S/O Lt. Hanuman Singh
S/O/Smt. Nimal Singh S/O Lt. Hanuman Singh
S/O/Smt. Anil Singh S/O Lt. Hanuman Singh
S/O/Smt. Bilal Kumar Singh S/O Lt. Hanuman Singh
Age _____
Identified by: Abhishek Kumar Paul (Adv)
City: Makhera Dist: South Tripura
Belonia _____

NOTARY
A. T. Das
Notary, South Tripura

Haradhan Singha
S/O Lt. Hanuman Singh

Charubala Singhakumari
W/O Lt. Sushil Biswas

Sushil Biswas
Identified by
Abhishek Kumar Paul
ADVOCATE, BELONIA
SOUTH TRIPURA
14/02/2020

Page 1 of 6
Page 2 of 6

RECEIVED
Date: _____
Notary Belonia

NOTARY
Notary Public
WEST BENGAL
WEST TRIPURA

(Page No. 3)

India Limited is erecting Tower for 112KV Line on the land. The Deposits No.2,3,4,5 are the brothers and sisters of Deponent No.1.

2. That Deponent No.1 Sri Haradhan Sinha, is one of the joint owner as in possession and enjoyment of the above said property, as such they swear this Affidavit along with the Deponent No.1. He the above said Deponent No.2,3,4,5 given our consent and no objection with regard to erection of communication amount in the name of Deponent No.1 Sri Haradhan Sinha, and we have no objections what so ever with regard to issuance of compensation amount from power Grid Corporation of India, limited.

3. That, we the Deponents state that we have already given to work in our above said land, we have no objections what so ever to erect power supply tower as per the terms and conditions of Power Grid Corporation of India Limited. If in future either we the above said Deponents or any other legal heirs of family head objection with regard to the holdings of the above said matter, for which above said remaining family members personally and severally held liable, for all future consequences as per law.

Signed.../p/1.

ভারত সরকার
Unique Identification Authority of India
Government of India

ভারতের নতুন পরিচয় কার্ড

ভারত সরকার
Unique Identification Authority of India
Government of India

ভারতের নতুন পরিচয় কার্ড

Your Aadhaar No. :
8964 1138 7065

আধার - সাধারণ মানুষের অধিকার

Your Aadhaar No. :
8964 1138 7065

আধার - সাধারণ মানুষের অধিকার

A/C → 805602 002774
IFSC → CIBE → UTBI00RST068

TRIPURA GRU

ABBREVIATIONS

1. Cash	10. Other
2. Chq.	11. Commission
3. Tr.	12. Postage & Telegraph
4. DR	13. Bank Charges
5. D.W.	14. Other Charges

Signature: _____
Date: _____

জমিদার সনদ
ত্রিপুরা জমি মালিক কর্তৃক - ৬
(নথী নং ২০/১) দাখল করা

১. জমি মালিক: _____
২. জমি মালিকের পিতা: _____
৩. জমি মালিকের মাতা: _____

ক্র.সং.	বিধান	মালিক	ফিল্ড	ফিল্ড	ফিল্ড	ফিল্ড
১	১০০	১০০	১০০	১০০	১০০	১০০

Deputy Collector & District Officer
Khowai District, Tripura



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



Annexure 11

Sample Copy Tree/ Crop Compensation Notices 132kV D/C Rokhia to Rabindra Nagar TL

Location: 2A/D

Book No. :


 Page No. : **451**
NOTICE

 Date : **07/10/2020**

To **Jayanta Biri**
S/O - Lt Anukul Biri.
Vill - Kamalnagar, Sub - Sonamura, Sepahijala, Tripura.

Dear Sir / Madam

In exercise of power vested with TRIPURA STATE ELECTRICITY CORPORATION LIMITED (TSECL) under Section-164 of the Electricity Act, 2003 and Section 10 & 11 of the Indian Telegraph Act 1885 and amendment made up-to date thereto, this is to inform you that the proposed 132 KV D/C Rakhia to Rabindranagar Transmission line will be passing through your land and the properties belonging to you and standing in the required clearance belt of said transmission line will be cut / removed and the trees / crops belonging to you will have to be unavoidably damaged during the construction / erection of the line. If so desired by you, the trees / crops so felled / damaged will be handed over to you against recovery of salvage value of the felled trees/ crops etc. The compensation for the yield component of the tree(s) so fell and the crop(s) actually damaged will be paid to you as assessed by the Executive Magistrate or authority specified by the Appropriate Government.

I. Activities :

- a. Foundation Loc No: **12A/0**
 b. Erection Loc No.
 c. Stringing Loc No. from.....to.....

II. (1) Name of the Owner and Address:

- (2) Name of the Village / Mouza & J.L. No. **Anandapur / Sepahijala**
 (3) Name of PS & District **- Sonamura / Sepahijala**
 (4) Plot No/ Khatian No **1022/1636, 135**

Particulars of trees /Crops / Other standing properties:

SL. No.	Item	Species	Dimension	Qty.
1)	Trees	Rubber	0.3, 0.4, 0.3, 0.35 0.4, 0.5, 0.3, 0.25 0.25, 0.45	10 nos.
2)	Crops	— NA —	NA	NA
3)	Others	— NA —	NA	NA

Jayanta Biri
Signature of the owner
Address :-

[Signature]
Signature of Power Grid Corp. of India Ltd.

[Signature]
Signature of TSECL

[Signature]
Signature of Tehsildar

[Signature]
Sr. Manager,
132 KV Rabindranagar Sub-Station,
Sonamura, Sepahijala.

Witness :

Copy to :


- The D.M. for kind information please.
- The Deputy General Manager, for favour of kind information.
- The S.D.M., for kind information, it is highly requested to assess the value of the said trees/crops etc from his kind end and inform this office for payment of compensation.
- The Tehsildar,

[Signature]
Signature of TSECL

Tripura State Electricity Corporation Ltd.

Location: 9/01

Book No. : Page No. : **452**


NOTICE

Date : **24/11/2020**

To **Nitai Sankar s/o Chandna Mohan Sankar Vill - Dokhin Kalamchawa P.O - Kalamchawa, West Tripura, Tripura - 799102**

Dear Sir / Madam

In exercise of power vested with TRIPURA STATE ELECTRICITY CORPORATION LIMITED (TSECL) under Section-164 of the Electricity Act, 2003 and Section 10 & 11 of the Indian Telegraph Act 1885 and amendment made up-to date thereto, this is to inform you that the proposed **132 KV D.C. Lines to Bokharajaya** Transmission line will be passing through your land and the properties belonging to you and standing in the required clearance belt of said transmission line will be cut / removed and the trees / crops belonging to you will have to be unavoidably damaged during the construction / erection of the line. If so desired by you, the trees / crops so felled / damaged will be handed over to you against recovery of salvage value of the felled trees/ crops etc. The compensation for the yield component of the tree(s) so fell and the crop(s) actually damaged will be paid to you as assessed by the Executive Magistrate or authority specified by the Appropriate Government.

I. Activities :

a. Foundation Loc No: **9/01**
b. Erection Loc No.
c. Stringing Loc No. from.....to.....

II. (1) Name of the Owner and Address:
(2) Name of the Village / Mouza & J.L. No. **Kalamchawa**
(3) Name of PS & District **Kalamchawa / Sepahijala**
(4) Plot No/ Khatian No **2540 / 524**

Particulars of trees /Crops / Other standing properties:

SL. No.	Item	Species	Dimension	Qty.
1)	Trees	Teak	1-16, 0-52, 1-120	06
		Shishu	0-9	01
2)	Crops	— NA —	— NA —	— NA —
3)	Others	— NA —	— NA —	— NA —

Signature of the owner: **Nitai Sankar**
Address :-

Signature of Power Grid Corp.of India Ltd. **Prigashy 24.11.2020**
TENSILDER,
Boxanagar T.K.
Sonamura, Sepahijala Tripura

Signature of TSECL **24.12.2020**
Signature of TSECL (Elect.)
132 KV Sub-station, Rabinrajaya
Sonamura, Sepahijala


Witness :
Copy to :
1. The D.M. for kind information please.
2. The Deputy General Manager, for favour of kind information.
3. The S.D.M. for kind information. It is highly requested to assess the value of the said trees/crops etc from his kind end and inform this office for payment of compensation.
4. The Tehsildar,

Signature of TSECL (Elect.)
132 KV Sub-station, Rabinrajaya
Sonamura, Sepahijala

Tripura State Electricity Corporation Ltd.

Location: 10/1

TRIPURA STATE ELECTRICITY CORPORATION LIMITED
(A Govt. of Tripura Enterprise)



Book No. : _____ Page No. : **453**

NOTICE

Date : 01/12/2020

To *Thakur charn Sankar S/O - Budhai Sankar.
Vill - South kalamchaura. Tehsil - Boxanagar, West Tripura, Tripura.*

Dear Sir / Madam

In exercise of power vested with TRIPURA STATE ELECTRICITY CORPORATION LIMITED (TSECL) under Section-164 of the Electricity Act, 2003 and Section 10 & 11 of the Indian Telegraph Act 1885 and amendment made up-to date thereto, this is to inform you that the proposed 132 KV D/C Rakhia to Rabindranagar Transmission line will be passing through your land and the properties belonging to you and standing in the required clearance belt of said transmission line will be cut / removed and the trees / crops belonging to you will have to be unavoidably damaged during the construction / erection of the line. If so desired by you, the trees / crops so felled / damaged will be handed over to you against recovery of salvage value of the felled trees/ crops etc. The compensation for the yield component of the tree(s) so fell and the crop(s) actually damaged will be paid to you as assessed by the Executive Magistrate or authority specified by the Appropriate Government.

I. Activities :

a. Foundation Loc No: *10/1*
b. Erection Loc No.
c. Stringing Loc No. from.....to.....

II. (1) Name of the Owner and Address:
(2) Name of the Village / Mouza & J.L. No. *South Kalamchaura / Sepahijala*
(3) Name of PS & District *Sonamura & Sepahijala*
(4) Plot No/ Khatian No *2314, 579*

Particulars of trees /Crops / Other standing properties:

SL. No.	Item	Species	Dimension	Qty.
1)	Trees	<i>Teak</i>	<i>0.95, 1.0</i>	<i>2 nos.</i>
		<i>Jamun</i>	<i>1.0, 1.0, 0.90, 1.5</i>	<i>4 nos.</i>
		<i>Jackfruit</i>	<i>0.7, 1.10, 0.9, 1.0</i>	<i>4 nos.</i>
2)	Crops	— NA	— NA	— NA
3)	Others	— NA	— NA	— NA

Signature of the owner _____
Address :- _____

Signature of Power Grid Corp. of India Ltd.
28/12/2020
Signature of Tehsildar

Signature of TSECL (ct.)
24.12.2020
132 KV Sub-station, Rabindranagar
Sonamura, Sepahijala

Witness :
Copy to :
1. The D.M. _____ for kind information please.
2. The Deputy General Manager, _____ for favour of kind information.
3. The S.D.M., _____ for kind information. It is highly requested to assess the value of the said trees/crops etc from his kind end and inform this office for payment of compensation.
4. The Tehsildar, _____

24.12.2020
Signature of TSECL

ASSESSMENT SHEET OF TREE COMPENSATION Annexure-I

Rate of Damage of trees vide No. F-50(2)-REV/AC/01-15 of Revenue Department, Govt. of Tripura dated 21/08/2015

S.No.	Name of T. Use	Tower No. No.	Name & Address of Land Owner	Plot No./P/ Khata No./ (X) Jaha No. (Y)	Police Ser. No. & Date	Block Details	Type of Tree/Crop/ Others	Age (Yrs)	Grth (In mtr)	Height (In mtr)	Volume (In CU.Mtr) (Grth ² *Height/10)	Quantity (Nos.)	Unit Rate per Tree/ Cum. /ha or %	Amount In ₹	Remarks
1	110KV O/C Rukhla to Bahadranagar	AP-9/01	Nita Sarkar C/O Chandru Mohan Sarkar, VII Ward no-01, Batabin Kalam Chovra Kalam Chovra P.O. Kalam Chovra, Baramagar R.D Block, Dolcha Kalam Chovra Gram Panchayat, West Tripura-795101	P-2543 K-214 J-01	482 06/24/11/2020	SR MATINAGAR A/C-31612506335 Hec-5010009876	Teak	N/A	1.18	10	0.841	1	11,700	9,840	Foundation work (4 legs)
									1.11	10	0.784	1	11,700	9,171	
									0.91	10	0.761	1	5,400	4,951	
									0.7	10	0.3625	1	3,400	2,992	
									0.75	10	0.552425	1	3,400	3,074	
									0.85	10	0.4515425	1	3,400	3,974	
Total for AP-09/01													11,938		
2	132KV O/C Rukhla to Bahadranagar	AP-10/01	Thakur Chan Sarkar S/O Badhai Sarkar, VII Ward no-05, Pant Ghosh Baramagar A.O. C South Kalam Chovra, P.O.-Kalam Chovra, Baramagar R.D Block South Kalam Chovra G.P West Tripura-795103	P-2514 K-579 J-01	454 old 01.12.2020	SR MATINAGAR A/C-31610300571 Hec-5010009876	N/A	Teak	0.95	8	0.6135	1	11,700	5,280	Foundation work (4 legs)
								Jakfruit	1	0	3.5625	1	11,700	4,581	
								Jakfruit	N/A	N/A	N/A	4	8,375	33,516	
								Jakfruit	N/A	N/A	N/A	1	5,400	5,400	
								Jam	1.5	8	1.265625	1	6,130	8,391	
								Jam	0.9	7	0.354375	1	5,460	1,935	
								Total for AP-10/01							
3	132KV O/C Rukhla to Bahadranagar	AP-12/01	Jyanta Bir S/O Anand Bir Ward no-06 Baramagar, R.D Block, Baramagar, Karamchakra, West Tripura Pin code 795101	P-1012/616 K-133 J-01	451 old 01.10.2020	SR MATINAGAR A/C-11819462218 Hec-5010009876	Rubber	6	N/A	N/A	N/A	10	5,347	53,470	Foundation work (4 legs)
Total for AP-12/01													53,470		
TOTAL AMOUNT for OI number location (One Lakh Thirty two thousand eight hundred and sixity two)													116,549		

Signature
Signature of POWERGRID

Signature
28/11/2020

Signature
Sub-Divisional Magistrate,
Sonnamura, Sepahijala, Tripura



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



Annexure 12

Tree Compensation Process

TREE CUTTING IN NON FOREST AREA AND PROCESS

No. F.7 (200)/For/FP-2000-09/ 19.611 - 29
GOVERNMENT OF TRIPURA
FOREST DEPARTMENT

Dated: 20/10/2010, 2010.

NOTIFICATION

Whereas the Hon'ble Supreme Court of India vide order dated 12.5.2001 in Writ Petition (Civil) No. 202/ 1995 had directed, inter-alia, that guidelines/rules be framed regarding extraction of trees from non-forest areas including plantations on non-forest areas;

Whereas in pursuance of the said directives, the State Government framed the guidelines on extraction of trees from non-forest areas vide notification No.F.7 (44)/For/FP-2001/PT-II/29.042 dated 17.01.2002;

Whereas in view of certain operational difficulties in implementation of the guidelines, it was deemed necessary to revise the aforesaid guidelines and revised guidelines duly approved Council of Ministers were referred to Ministry of Environment & Forests, Govt. of India vide this office letter No.F.7 (200)/For/FP-2k-2009/1110 dated 24th March, 2010 for concurrence.

Whereas the Ministry of Environment & Forests, Govt. of India has concurred the revised guidelines vide letter F.No.8-24/2010-FP dated 23rd September, 2010 with certain modifications and same was incorporated in the draft guidelines. Now therefore in exercise of all the enabling powers the following guidelines are hereby laid down by the State Govt. of Tripura with immediate effect.

- 1.1 These guidelines shall be called the "Guidelines for extraction of trees from non-forest areas"
- 1.2 These shall extend to the whole of the State in respect of extraction of trees from non-forest areas.
- 1.3 These shall come into effect from the date of their notification in the official gazette

2. DEFINITION:

In these guidelines, unless there is anything repugnant to the subjects or context

- (a) "Government" means Government of Tripura.
- (b) 'Forest' means (i) Reserved forest or Protected Forest or any other areas legally constituted as 'forest'; and (ii) any area recorded as 'Forest' in Government records maintained by Forest Department or other Govt. Departments and (iii) deemed forest area identified as per Supreme Court order dated 12.12.96 in Writ Petition (C) No. 202/95.
- (c) "Non-forest area" for the purpose of these guidelines means land, which is not 'Forest' as per 2 (b) above.
- (d) "Authorized officer" means the officer as prescribed by the Forest Department.
- (e) "PCCF" means Head of the Forest Department of Tripura.

(f) "Extraction" means felling and/or transportation of trees, including timber and firewood derived there from, away from the plot of land, where the trees stand or where these were felled.

(g) "Domestic use/purpose" means use of produce for one own use excluding sale.

(h) "Marking Rules" means Tripura Forest (Timber Marking) Rules, 1985 and amendments made thereto from time to time.

3. REGISTRATION OF TREES FOR PERMISSION FOR EXTRACTION:

- 3.1 For permission of extraction of trees standing on any plot of non-forest area, the owner of the plot who wants to extract trees shall get the trees registered with authorized officer in the manner as may be prescribed in this behalf by the State Government.
- 3.2 Application for registration of trees shall be made to the concerned authorized officer through the concerned Range Officer in the prescribed application Form along with prescribed Registration fee.
- 3.3 While registering a plot with trees standing thereon, it shall be, inter-alia, ensured that the applicant is the legal titleholder; and it is a non-forest area as per Para-2 (c) above.
- 3.4 Processing of applications; enquiry in to the status of land and trees standing there upon; and felling and extraction shall be carried out in accordance with instructions issued by Forest Department from time to time.
- 3.5 Tree registration shall remain valid for 7 (seven) years. After this period, registration shall have to be done afresh.
- 3.6 No registration shall be required for cases mentioned under "Special Provisions".

4. TREES NOT REQUIRING TREE REGISTRATION CERTIFICATES AND EXTRACTION PERMISSION

- 4.1 No permission from Forest Department will be needed for extraction of trees from non-forest land in the following cases.
 - a) For tree species namely Aam (*Mangifera indica*), Lichi (*litchi chinensis*), Sajna (*moringa oleifera*), Guava (*psidium guajava*)
The owner will, however, be required to intimate the local Range Officer at least 10 days in advance in Form prescribed by Forest Department about such intention.
- 4.2 The State Govt. shall be competent to add or delete species in Para 4.1 above.

5. PROCEDURE FOR EXTRACTION OF RUBBER TREES

No registration shall be required for felling of rubber trees. The procedure for extraction of rubber trees shall be separately prescribed by the Forest Department.

6. Service Charge:

Service charge shall be realized by the Forest Department from the owners of the trees for rendering the service on account of verification of the land, marking of trees namely stand marking, log marking and sale marking, issue of transit pass, etc. at the rates prescribed by State Government from time to time.

7. **SPECIAL PROVISIONS:**

Permission of following kinds in the context of non-forest land as per para 2(c) above may be issued by the Authorized officer on receipt of application from legal title holder. Such permissions shall not be considered repugnant to contrary provisions in para (3).

- a. Permission for extraction of such trees from non-forest land that pose danger to the human life and property may be accorded within 10 days from the date of receipt of application from the owner.
- b. Action for extraction of trees from non-forest land which is also Govt. land for construction of Govt. buildings, roads including widening of roads, bridges and railway lines, etc. shall be taken within 45 days from the date of receipt of the complete application from the user agency. Extraction and disposal of felled trees will be done by the Forest Department and revenue collected by way of sale of such timber etc. will be deposited by the Forest Department in the Government exchequer.
- c. One time permission for extraction of 5 trees for domestic use from plots of non-forest land which are not contiguous to forest land.
- d. In habitation areas, public places, roads where the trees have fallen due to natural causes like storm, decay of the tree, etc., causing severe inconvenience to people, the owner will be free to displace the same after giving intimation in writing to the Authorized officer. In other places, where trees have fallen due to such natural causes, intimation shall be given by the owner to the Authorized officer. The Authorized officer shall first causes enquiry and if he is satisfied with natural cause of the fall of tree/trees, he may allow extraction after recoding the reasons within 20 (twenty) days.

8. **CONFISCATION OF TREES FELLED IN VIOLATION OF GUIDELINES**

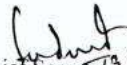
- 8.1 Timber obtained from trees felled in violation of these guidelines shall be seized by the Forest Department.
- 8.2 On enquiry, if the trees are found felled from:
 - a. Private land, the Authorized officer shall be at liberty to release the timber obtained from such trees, to the legal title holder(s), after recovery of an amount equal to 25% of the royalty payable for the tree/timber. However, such released timber shall not be eligible for purchase or use by any wood based unit, traders or registered timber transporters.
 - b. Govt. land/ Forest land, these shall be deemed to have been confiscated to the State Government.
- 8.3 For verification and recovery of the timber mentioned in para 8.1 above the staff of the Forest Department shall have the authority to enter the plot of land where the trees were felled and the Authorized officer shall have the authority to issue search warrants to his staff to search the premises, including houses, concerned.
- 8.4 The seizure of timber as per 8.1 above shall be without prejudice to any other action, including legal action or prosecution in a court of law.

9. **REPEAL AND SAVINGS:**

This is issued in supersession of guidelines and executive orders issued earlier on this matter.


The registration certificates already issued regarding trees on different plots as per guidelines communicated vide no F.7 (44)/For/FP/2001/PT-II/29042, dated 17th January, 2002 will however continue to remain valid.

By order of the Governor,


Chief Secretary,
Government of Tripura

Copy to:

1. The Principal Secretary to the Governor, Tripura for favour of information of the Governor, Tripura.
2. The Principal Secretary to the Chief Minister, Tripura for favour of information of the Chief Minister, Tripura.
3. The P.S. to the Minister for Finance, Tripura for favour of information of the Minister for Finance, Tripura.
4. The P.S. to the Minister for Forests Tripura for favour of information of the Minister for Forests, Tripura.
5. The P.S. to the Minister for Planning, Tripura for favour of information of the Minister for Planning, Tripura.
6. The S.A. to the Chief Secretary, Tripura for favour of information of the Chief Secretary, Tripura.
7. The Principal Chief Conservator of Forests, Tripura.
8. The Principal Secretary, Planning, Tripura.
9. The Principal Secretary, Finance, Tripura.
10. The Chief Wildlife Warden, Tripura.
11. The Inspector General of Forests (Forest Conservation), Ministry of Environment & Forests, Paryavaran Bhawan, CGO Complex, New Delhi.
12. The Addl. Principal Chief Conservator of Forests (Central), Ministry of Environment & Forests, North Eastern Regional office, Law-U-Sib, Lumbatngen, Near M.T.C. Workshop, Shillong 793 021.
13. The Chief Conservator of Forests (Planning & Development), Tripura.
14. The Nodal Officer, Forest (Conservation) Act, Tripura.
15. The Chief Conservator of Forests (Administration), Tripura.
16. The Additional/ Joint Secretary, Forests, Tripura.
17. The Manager, United Bank of India, Agartala.
18. The Manager, Government Press, Agartala for publishing in Tripura Gazette.


(E. K. Das) 20.10.10
Joint Secretary to the
Government of Tripura

**TREE / CROP/ TOWER FOOTING COMPENSATION PROCESS
(OTHER THAN FOREST LAND COMPENSATION)**

As per the provisions of Electricity Act, 2003 and Indian Telegraph Act 1885, land for tower and right of way is not acquired and agricultural activities are allowed to continue. However, the acts also stipulate that licensee shall pay full compensation to all interested for any damages sustained during the execution of said work. Accordingly, TSECL pays compensation to land owners towards damages if any during implementation of transmission project as well as during operation and maintenance phase. TSECL follows the principle of avoidance, minimization and mitigation in the construction of line in agricultural field having crop due to inherent flexibility in phasing the construction activity and tries to defer construction in cropped area to facilitate crop harvesting. However, if it is unavoidable and is likely to affect project schedule, compensation is given at market rate for standing crops. All efforts are also taken to minimize the crop damage to the extent possible in such cases. As regards trees coming in the Right of Way (RoW) following procedure is adopted for enumeration: All the trees which are coming within the clearance belt of ROW on either side of the center line are identified and marked/numbered from one AP (Affected Person) to the other and documented. Type, Girth (Measured 1 m. above ground level), approximate height of the tree is also noted for each tree. Trees belonging to Govt., Forest, Highways and other local bodies may be separately noted down or timely follow up with the concerned authorities for inspection and removal. Cashew, Guava, Lemon and other hybrid trees which are not of tall growing nature are not marked for cutting since these trees can be crossed using standard tower extensions if required. TSECL also pay compensation to affected land owners for utilization of their land for tower footing.

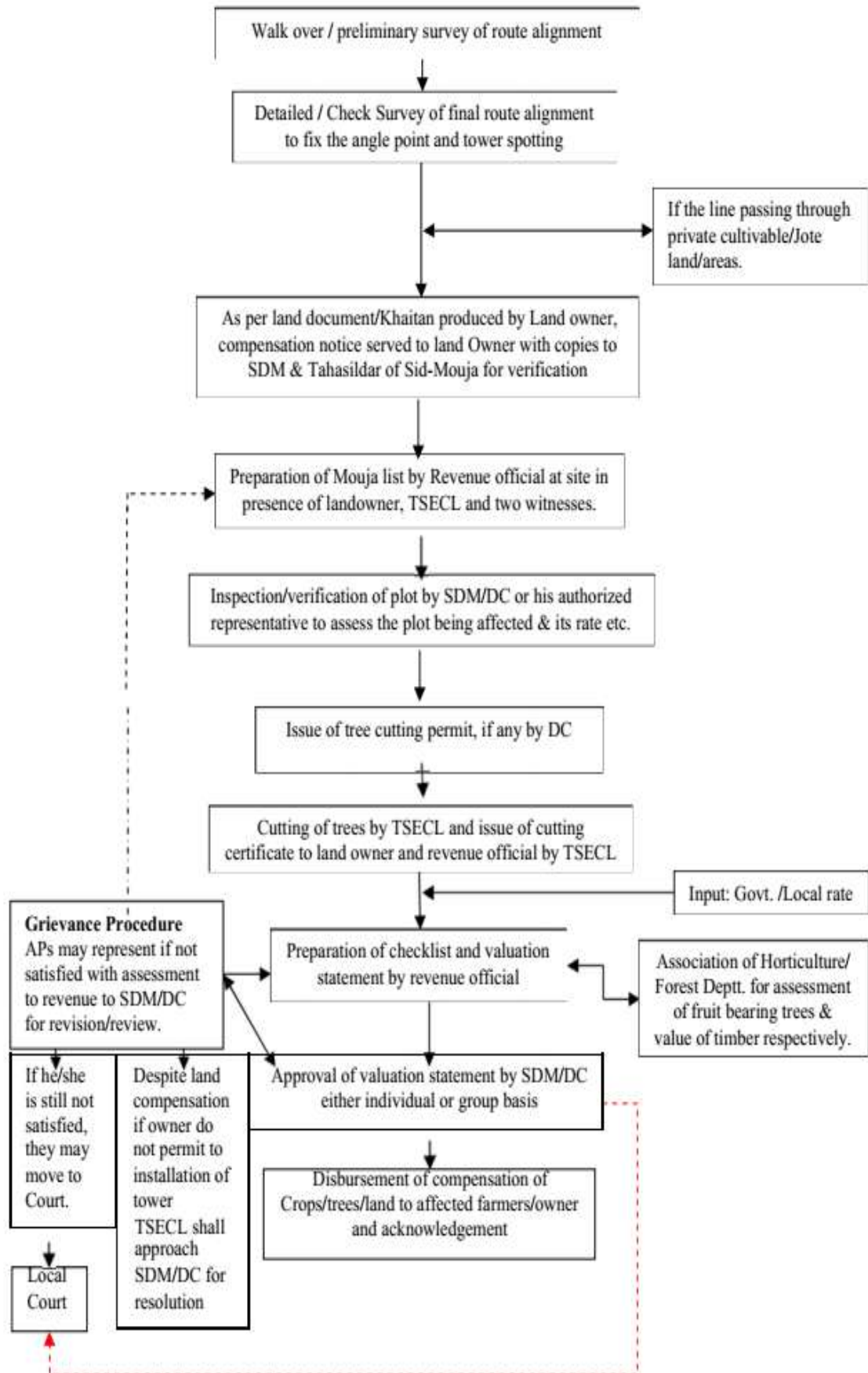
A notice under Electricity Act, 2003/ Indian Telegraph Act, 1885 is served to the landowners informing that the proposed transmission line is being routed through the property of the individual concerned. The notice shall contain the particulars of the land, ownership details and the details of the trees/crops/land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

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

The Mouja list shall contain the land owner details including extent land area utilization for tower footing, type of tree/crop, its present age, variety, yielding pattern etc. and the same is prepared at site in the presence of the land owner. These Mouja lists are further compiled and a random verification is conducted by the concerned DC or his authorized representative in order to ascertain the assessment carried out by the revenue office is

genuine and correct. After this process the District Collector/ a tree cutting permit to TSECL to enable removal / damage to the standing tree/crop identified in the line corridor. Similarly on the basis of enquiry report received from concerned Tehsildar, SDM issue land valuation certificate to TSECL for payment of compensation to land owner. Once the tree/crop is removed / damaged, TSECL shall issue a tree cutting/crop damaged notice to the land owner with a copy to the Revenue Officer to process the compensation payment. Based on the above the compensation payment is generated by means of a computerized programme developed by the National Informatics Center exclusively for this purpose. The detailed Valuation statement thus generated using this programme is verified at various levels and approval of payment of compensation is accorded by the concerned District Collectors.

On approval of compensation, the revenue officer shall further intimate the amount payable to the different landowners and TSECL 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.



Budget Estimation

BUDGET ESTIMATE TOWARDS FOREST AND CROP/TREE/ TOWER FOOTING COMPENSATION

Total 132 kV T/L length	-	87 km
Total 132 kV tower locations	-	285 approx.
 A. Compensation		
1 Forest		- Rs. 2263.00 lakhs.
 2. Crop & Trees		
- 132 kV T/L length in Private /Revenue land -42.05 kms		
- Crop/tree compensation for 132 kV line - (42.05 km @ Rs.5,00,000/-)		- Rs. 210.25 lakhs
- Distribution Line length in Private/Revenue land - 183.0 km.		
- Crop/tree compensation for 33 kV line - (183 km @ Rs.50,000/-)		- Rs. 91.50 lakhs
 1. Land compensation for 132 kV tower footing - (285 towers @ Rs 13,600/-) - Rs 38.76 lakhs		
Sub Total - A (1+2+3)		- Rs. 2603.50 lakhs
 B. Implementation Monitoring & Audit		
i) Man-power involved for EMP implementation & Monitoring in entire route of transmission Line (Rs.10,000/- x 270 km)		= Rs. 27.00 lakhs
ii) Independent Audit (LS) if needed		= Rs. 20.00 lakhs
Sub Total - B		= Rs. 47.00 lakhs
Grand Total (A+B)		= Rs. 2650.50 lakhs



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



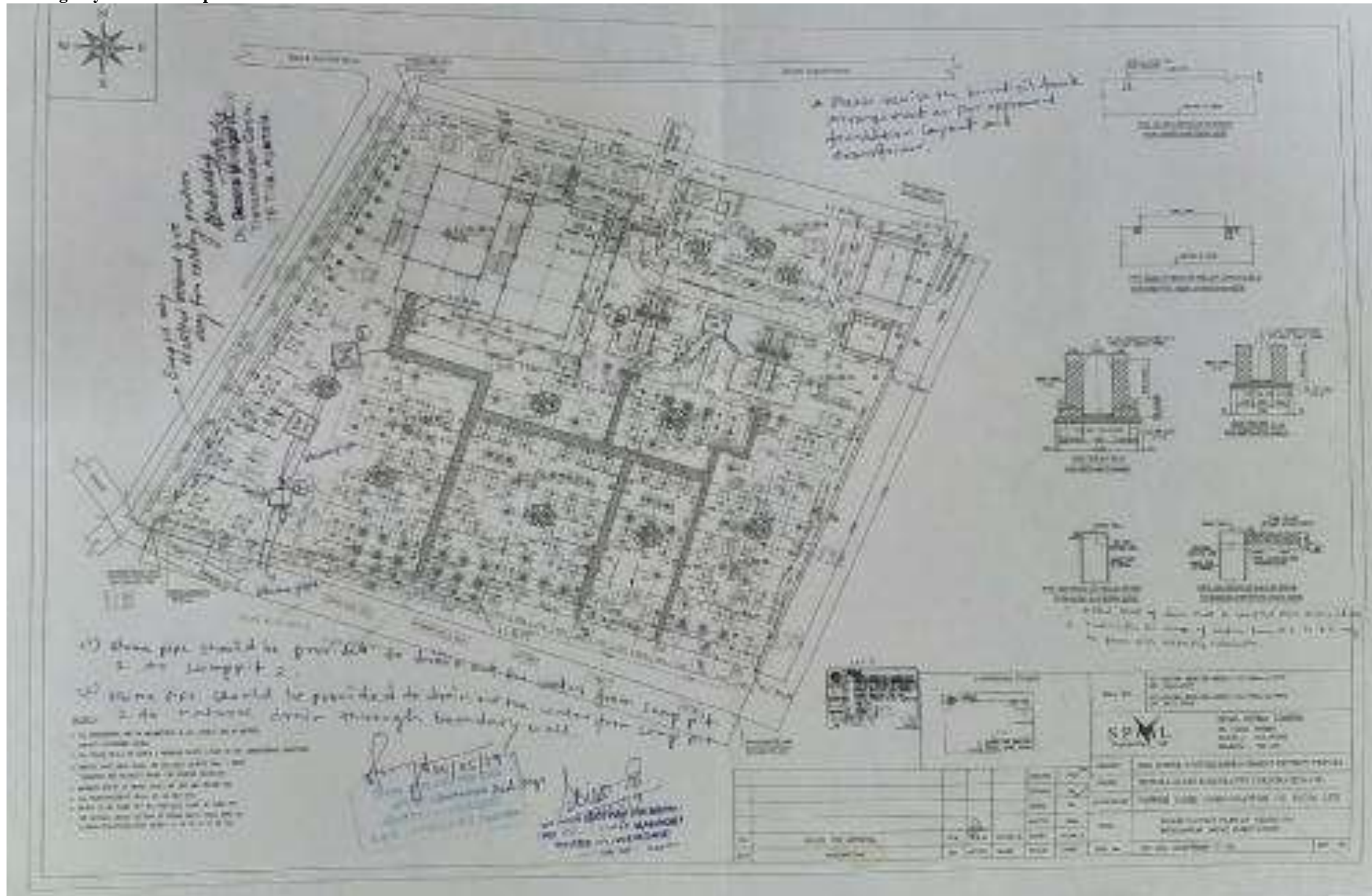
Annexure 13

Drainage System / Mechanism for Sub-Station:

Drainage layout of Rabindranagar S/s



Drainage layout of Mohanpur S/s



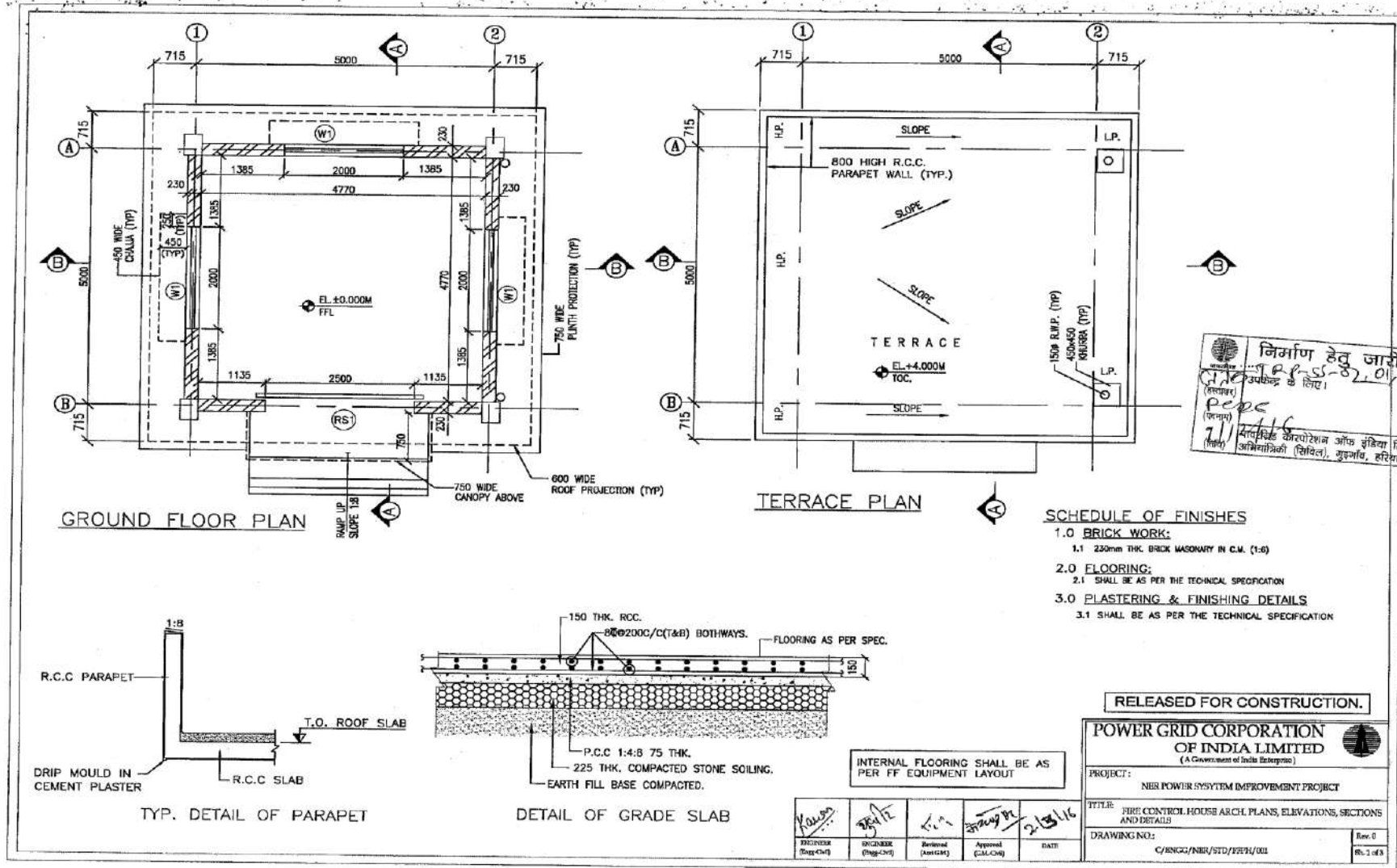


FEAR for T&D subprojects in West Tripura, Sepahijala,
Khowai and South Tripura District under NERPSIP in
Tripura

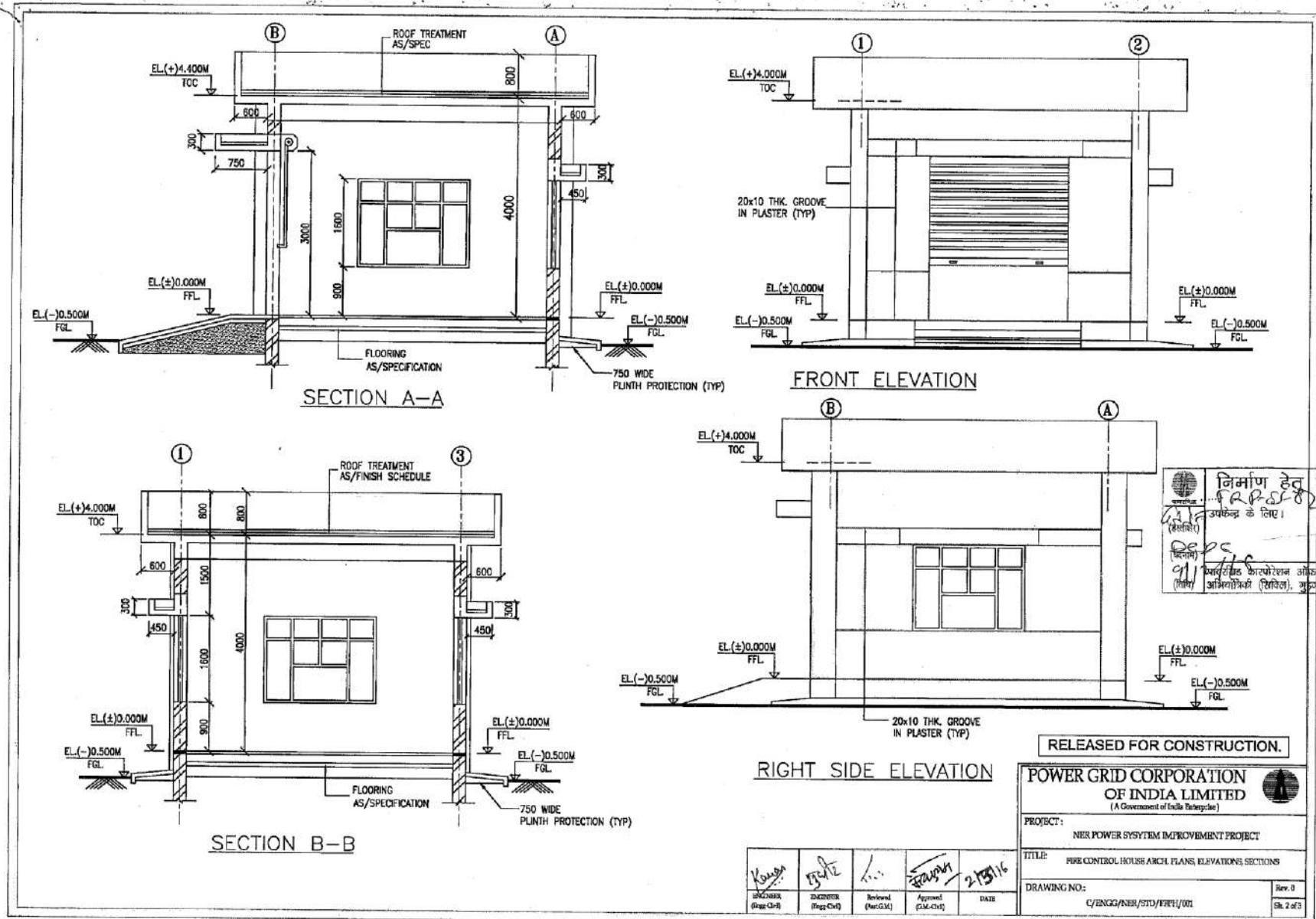


Annexure 14

Fire Fighting System



निर्माण हेतु जारी
 21/11/16
 711/11/16
 सिविल इंजीनियरिंग ऑफ इंडिया लि.
 अभियंताओं की संघ, मुंबई, हरियाणा

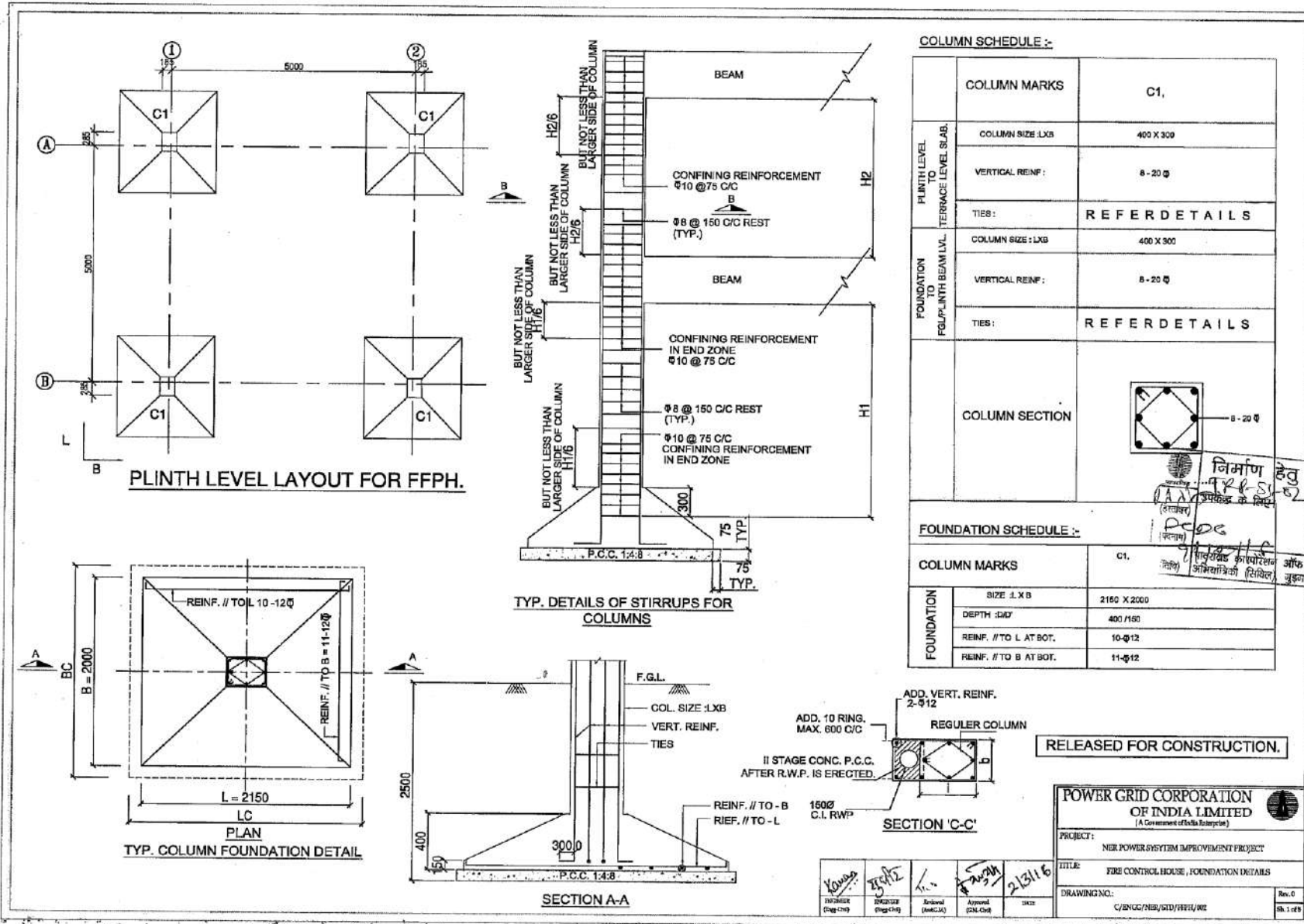


निर्माण हेतु जारी
 FRPSL 01/03
 उपकेंद्र के लिए।
 DEPC
 भारतीय विद्युत नियंत्रण बोर्ड, इंदिरा वि०
 आभिमोक्षी (सिविल), मुंबई, महाराष्ट्र

RELEASED FOR CONSTRUCTION.

POWER GRID CORPORATION OF INDIA LIMITED (A Government of India Enterprise)	
PROJECT: NER POWER SYSTEM IMPROVEMENT PROJECT	
TITLE: FIRE CONTROL HOUSE ARCH. PLANS, ELEVATIONS, SECTIONS	
DRAWING NO: C/ENGG/NER/STD/FRPS/1001	Rev. 0 Sh. 2 of 3

DESIGNED (Date: 03-08)	DRAWN (Date: 03-08)	REVIEWED (Date: 03-08)	APPROVED (Date: 03-08)	DATE 2-13/16
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COLUMN SCHEDULE :-

	COLUMN MARKS	C1,
PLINTH LEVEL TO TERRACE LEVEL SLAB.	COLUMN SIZE : LXB	400 X 300
	VERTICAL REINF :	8 - 20 ϕ
	TIES :	REFER DETAILS
FOUNDATION TO FLOOR/PLINTH BEAM LVL.	COLUMN SIZE : LXB	400 X 300
	VERTICAL REINF :	8 - 20 ϕ
	TIES :	REFER DETAILS
COLUMN SECTION		

FOUNDATION SCHEDULE :-

COLUMN MARKS	C1.
FOUNDATION SIZE : L X B	2150 X 2000
DEPTH : DAD'	400 / 150
REINF. // TO L AT BOT.	10- ϕ 12
REINF. // TO B AT BOT.	11- ϕ 12

निर्माण हेतु जारी
 22/01/23
 PCC
 11- ϕ 12

RELEASED FOR CONSTRUCTION.

POWER GRID CORPORATION OF INDIA LIMITED
 (A Government of India Enterprise)

PROJECT: NER POWER SYSTEM IMPROVEMENT PROJECT

TITLE: FIRE CONTROL HOUSE, FOUNDATION DETAILS

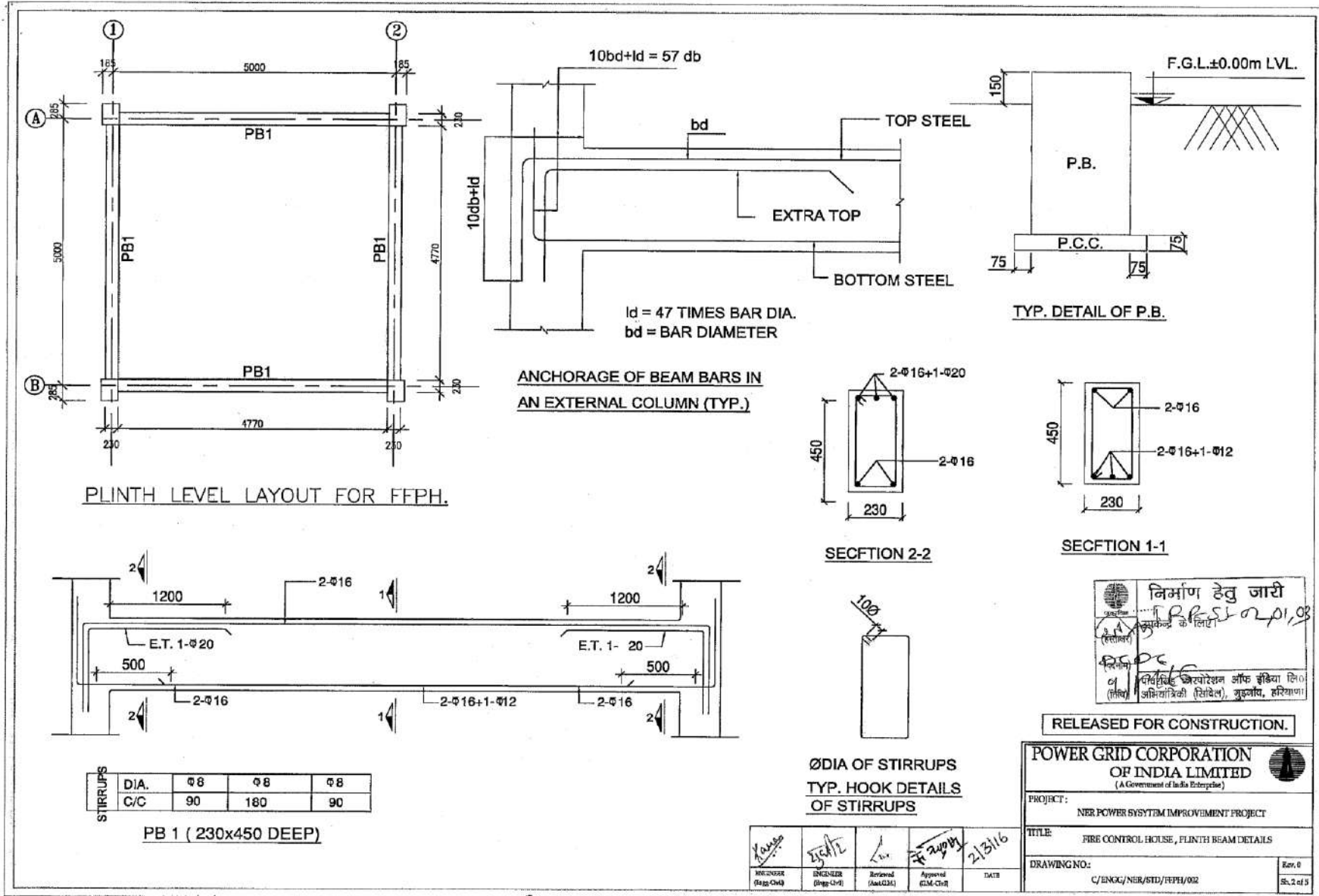
DRAWING NO.: C/BNCC/NER/SID/FFPH/WZ

Rev. 0

Prepared	Checked	Reviewed	Approved	Date
Kousha	21/11/23



FEAR for T&D subprojects in West Tripura, Sepahijala, Khowai and South Tripura District under NERPSIP in Tripura



STIRRUPS

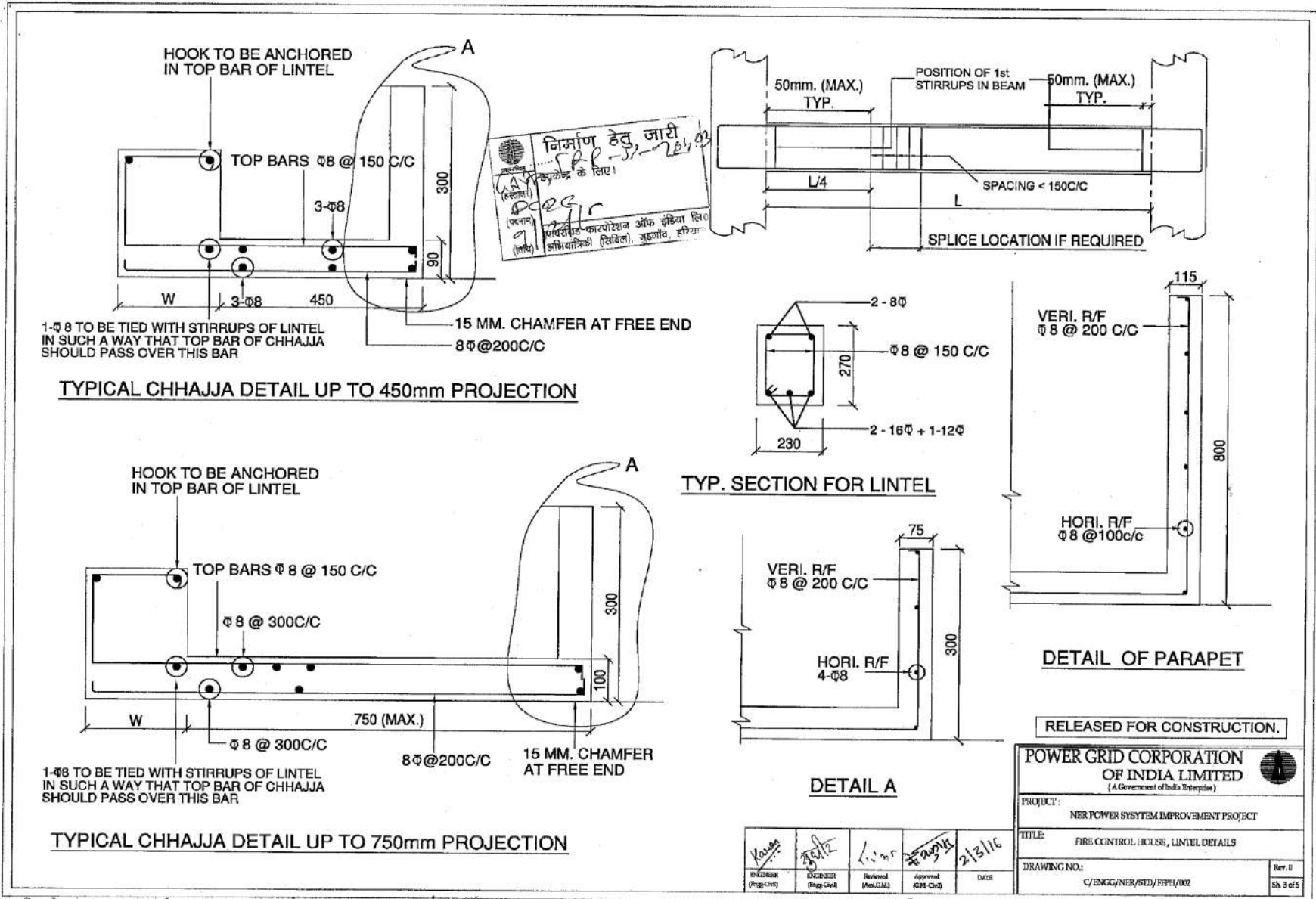
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C/C	90	180	90

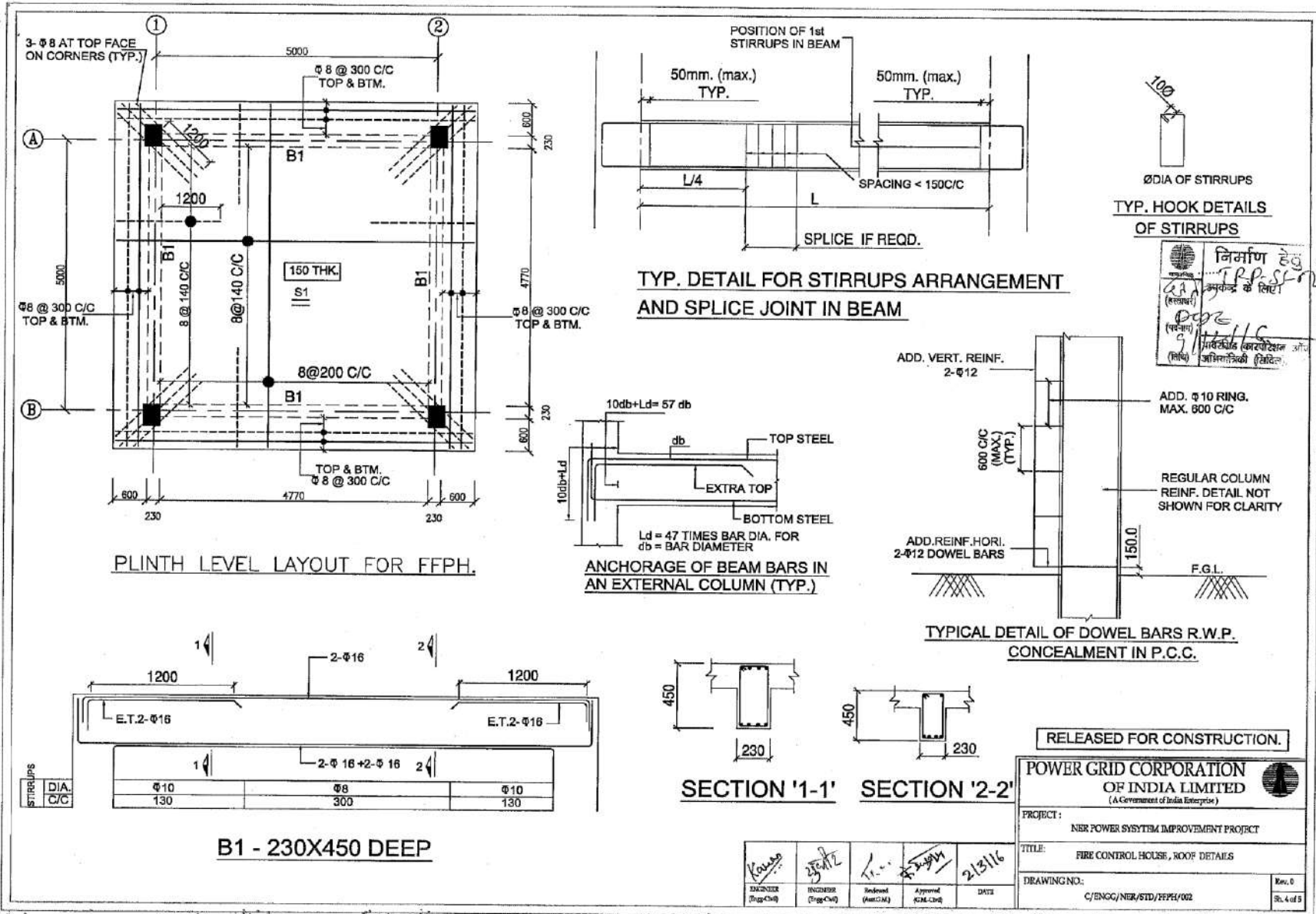
PB 1 (230x450 DEEP)

ØDIA OF STIRRUPS
TYP. HOOK DETAILS
OF STIRRUPS

Yamini	2/2/16	2/2/16	2/2/16	2/2/16	2/2/16
DESIGNER	REVIEWED	APPROVED	DATE		

निर्माण हेतु जारी
2/2/16
2/2/16





GENERAL NOTES:-

- | | |
|--|--|
| <p>(1) ALL DIMENSIONS ARE IN MM AND LEVEL IN METERS.</p> <p>(2) DO NOT SCALE THE DRG. FOLLOW WRITTEN DIMENSIONS ONLY</p> <p>(3) UNLESS OTHERWISE NOTED ALL R.C.C. SHALL BE OF GRADE M-25.</p> <p>(4) ALL LEAN CONCRETE SHALL BE 1:4.8 (1 CEMENT ,4 COARSE SAND 8 GRADED STONE AGGREGATE 40 MM NOMINAL SIZE).A SLIDING LAYER OF BITUMEN PAPER OR CRAFT PAPER SHALL BE PROVIDED BETWEEN BASE SLAB</p> <p>(5) ALL REINFORCEMENT SHALL BE OF GRADE Fe 500 CONFORMING TO IS:1786-1985.</p> <p>(6) CLEAR COVER TO REINFORCEMENT SHALL BE AS UNDER
 * BOTTOM AND SIDES OF FOUNDATION - 50 MM
 * FOR COLUMN - 40 MM
 * FOR BEAMS - 25 MM
 * FOR LINTELS, CHAJJAS & SLABS - 20 MM</p> <p>7 PROVIDE CLEAR COVER TO REINFORCEMENT FOR WATER TANK AS GIVEN BELOW..
 25 mm FOR FACE IN CONTACT WITH WATER
 50 mm FOR FACE IN CONTACT WITH SOIL</p> <p>8 ALL LAPS SHALL BE STAGGERED AND LAP LENGTH SHALL BE 50 TIMES THE BAR DIA.</p> <p>9 CONSTRUCTION JOINT BE IN CONSULTATION WITH SITE INCHARGE TO SUIT CONCRETING PROGRAMME/FORM WORK.</p> <p>10 WATER NOT TO BE FILLED IN TANK UNTIL TOP LIFT HAS BEEN CAST & CURED</p> | <p>11 INTEGRAL WATER PROOFING COMPOUND SHALL BE ADDED WHILE CONCRETING AS PER Manufacturer's RECOMMENDATIONS</p> <p>12 ALL INSERTS, NOZZLES, PIPE SLEEVES ETC. SHALL BE PLACED IN POSITION BEFORE CONCRETING AS PER FIRE FIGHTING REQUIREMENTS.</p> <p>13 DIMENSIONS OF EQUIPMENT FOUNDATIONS SHALL BE AS PER F.F.SYSTEM REQUIREMENTS.</p> <p>14 PURL INS SHALL BE MANUFACTURED AFTER EXACT MEASUREMENT AT SITE.</p> <p>15 COLOUR SCHEME MATCHING WITH CR BUILDING SHALL BE DECIDED AT SITE</p> <p>16 ALL EXTERNAL WALLS ARE 230 THICK</p> <p>17 WATER PROOFING SHALL BE DONE AS PER SPECIFICATION</p> <p>18 ALL EXTERNAL SURFACES SHALL HAVE 18 MM THK CEMENT PLASTER AS PER SPECIFICATION.</p> <p>19 ALL INTERNAL SURFACES SHALL HAVE 12 MM THK CEMENT PLASTER ON SMOOTH SURFACE OF BRICK WALL & 15mm THK. CEMENT PLASTER ON ROUGH SIDE OF BRICK WALL AS PER SPECIFICATION.</p> <p>20 CEILINGS SHALL HAVE 6MM THK CEMENT PLASTER AS PER SPECIFICATION .</p> <p>21 OUTSIDE AND INSIDE SURFACES OF FIRE WATER TANK SHALL BE UNPLASTERED AND PROVIDED WITH A NEAT COAT OF CEMENT WASH</p> <p>22 FOUNDATION HAS BEEN DESIGNED FOR A BEARING CAPACITY OF 9.0 MT/SQM</p> <p>23 LEVELS OF PLINTH BEAM SHALL BE VERIFIED AS PER CABLE ENTRY DETAILS.</p> |
|--|--|

निर्माण हेतु जारी

... 18-5-02/01/03

... के लिए।

DCPC

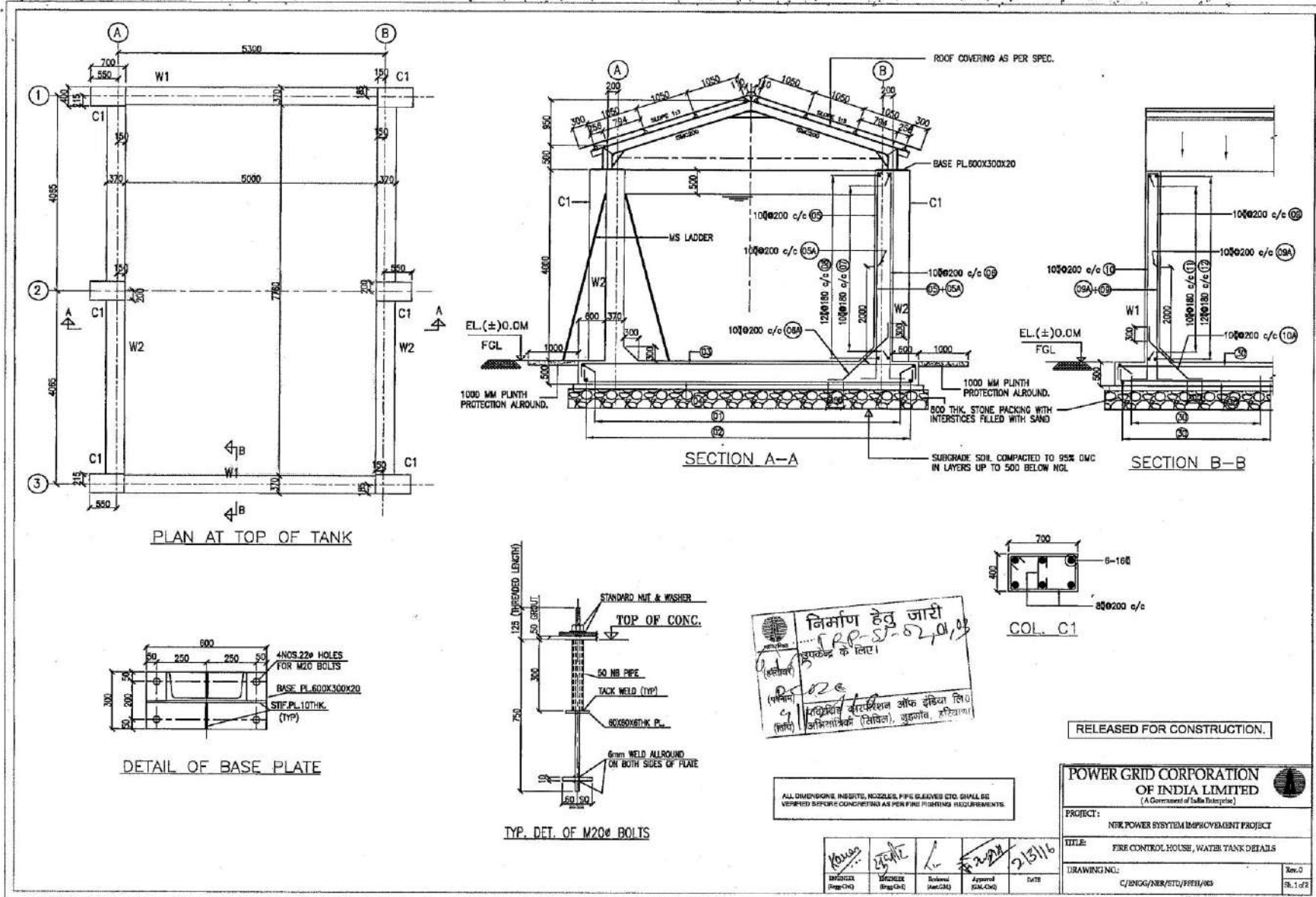
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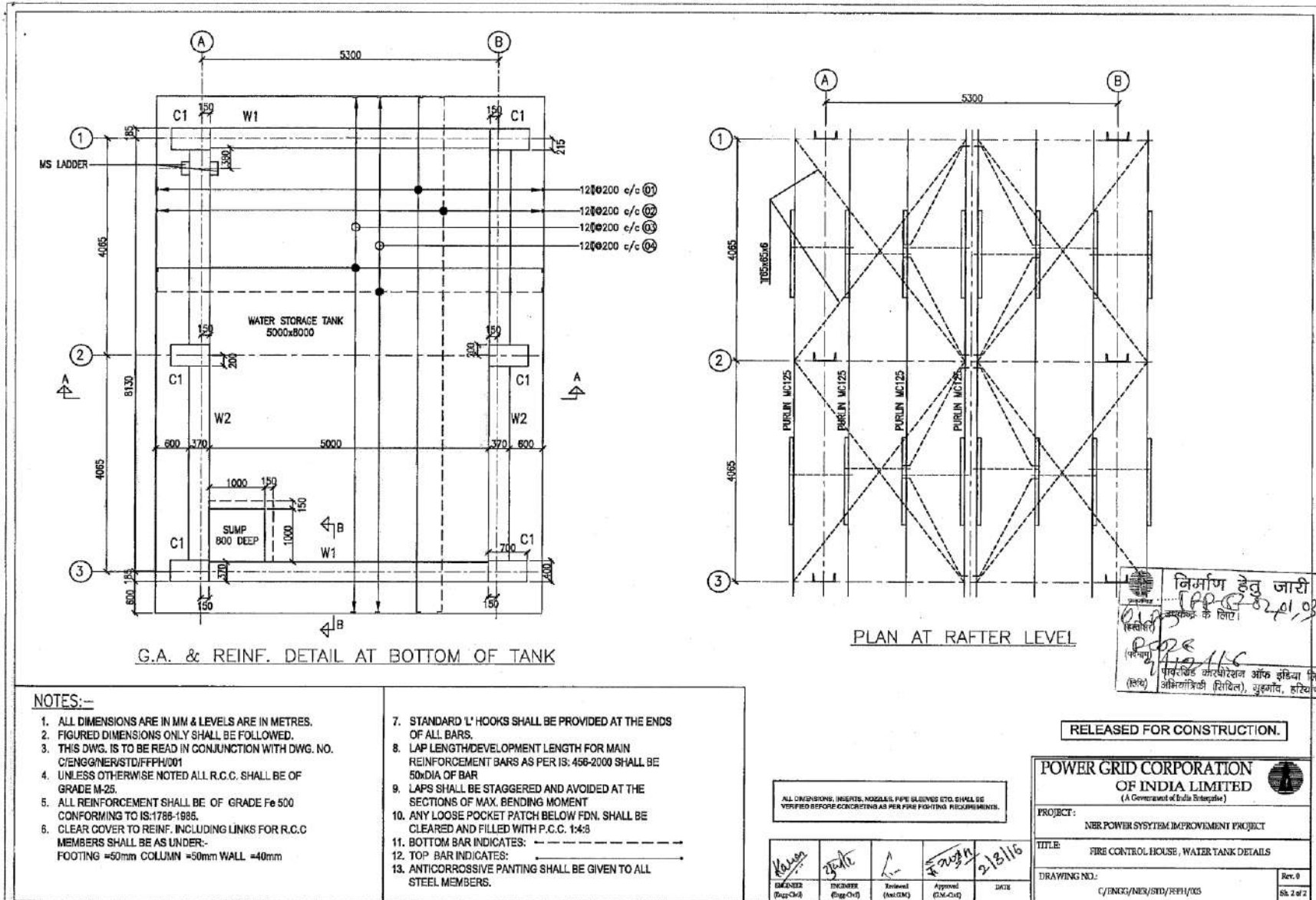
TRIPS

पावरग्रिड कारपोरेशन ऑफ इंडिया लि०
ऑपरेटिविटी सिस्टिम, मुकुर्गाँव, हरियाणा।

<i>Koush</i>	<i>अज्ञात</i>	<i>...</i>	<i>...</i>	<i>2/3/16</i>
ENGINEER (Design)	ENGINEER (Supv-Clk)	Reviewed (Asst.GM)	Approved (GM-Clk)	DATE

POWER GRID CORPORATION OF INDIA LIMITED <small>(A Government of India Enterprise)</small>	
PROJECT: NER POWER SYSTEM IMPROVEMENT PROJECT	
TITLE: FIRE CONTROL HOUSE, GENERAL NOTES	
DRAWING NO: C/ENGG/NER/STU/FFHH/02	Rev. 0 Sh. 5 of 5





NOTES:-

1. ALL DIMENSIONS ARE IN MM & LEVELS ARE IN METRES.
2. FIGURED DIMENSIONS ONLY SHALL BE FOLLOWED.
3. THIS DWG. IS TO BE READ IN CONJUNCTION WITH DWG. NO. C/ENGG/NER/STD/FFPH/001
4. UNLESS OTHERWISE NOTED ALL R.C.C. SHALL BE OF GRADE M-25.
5. ALL REINFORCEMENT SHALL BE OF GRADE Fe 500 CONFORMING TO IS:1786-1985.
6. CLEAR COVER TO REINF. INCLUDING LINKS FOR R.C.C MEMBERS SHALL BE AS UNDER:
FOOTING =50mm COLUMN =50mm WALL =40mm

7. STANDARD 'L' HOOKS SHALL BE PROVIDED AT THE ENDS OF ALL BARS.
8. LAP LENGTH/DEVELOPMENT LENGTH FOR MAIN REINFORCEMENT BARS AS PER IS: 456-2000 SHALL BE 50xDIA OF BAR
9. LAPS SHALL BE STAGGERED AND AVOIDED AT THE SECTIONS OF MAX. BENDING MOMENT
10. ANY LOOSE POCKET PATCH BELOW FDN. SHALL BE CLEARED AND FILLED WITH P.C.C. 1:4:8
11. BOTTOM BAR INDICATES: ----->
12. TOP BAR INDICATES: -----<
13. ANTICORROSSIVE PAINTING SHALL BE GIVEN TO ALL STEEL MEMBERS.

ALL DIMENSIONS, INSERTS, NOZZLES, PIPE SIZES ETC. SHALL BE VERIFIED BEFORE CONCRETING AS PER FIRE FIGHTING REQUIREMENTS.

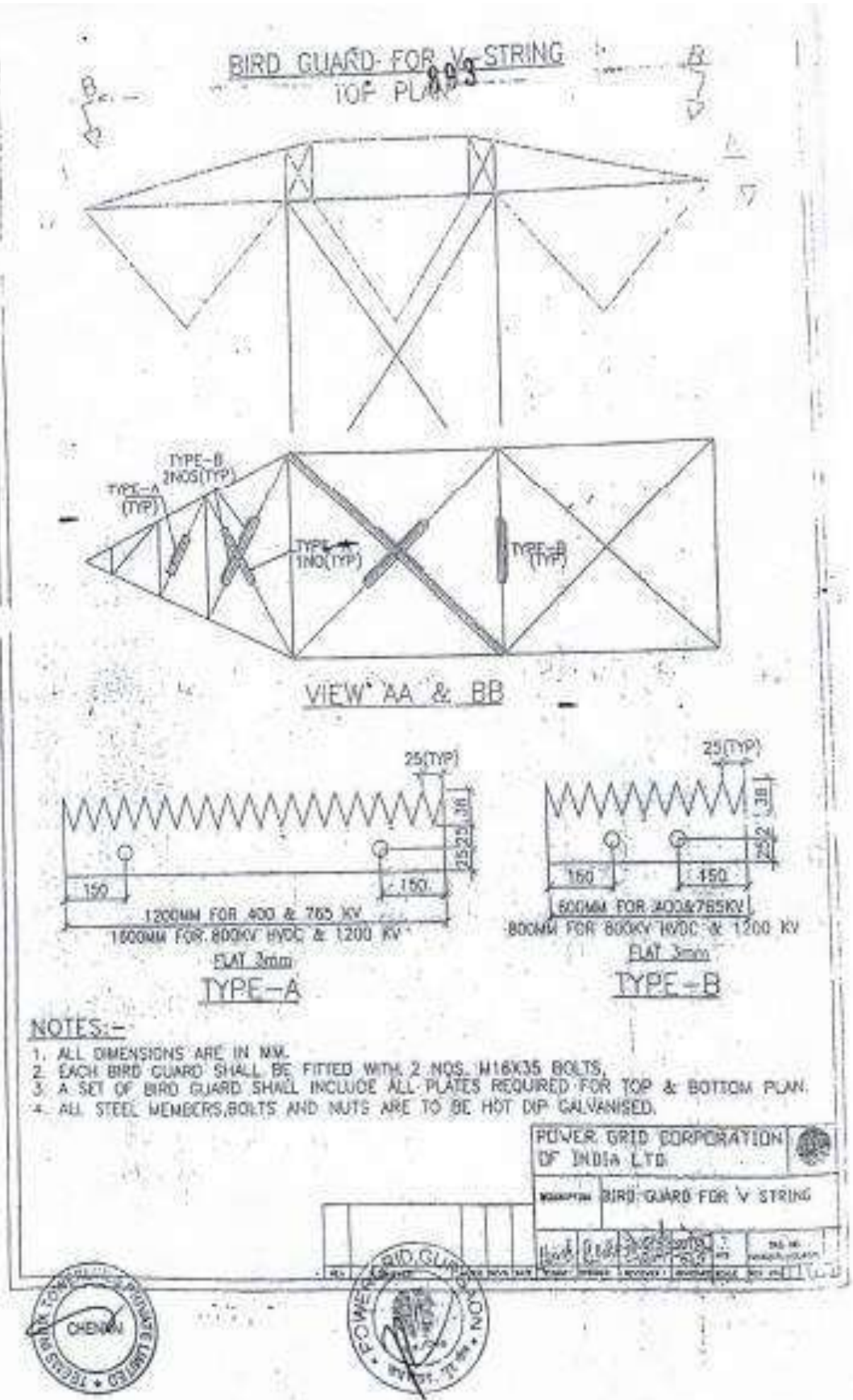


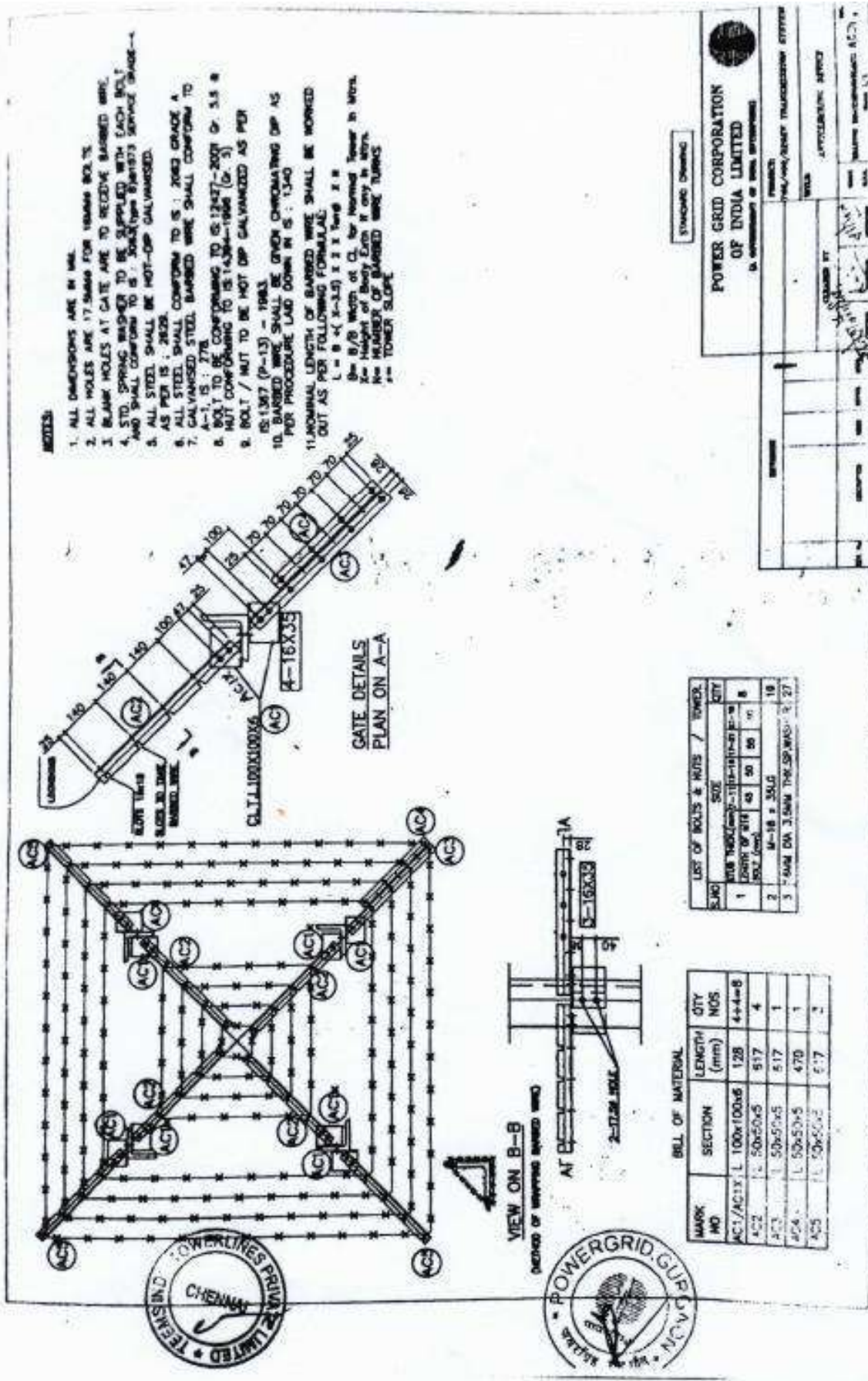
FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



Annexure 15

Bird Guard and Anti-Perch Device





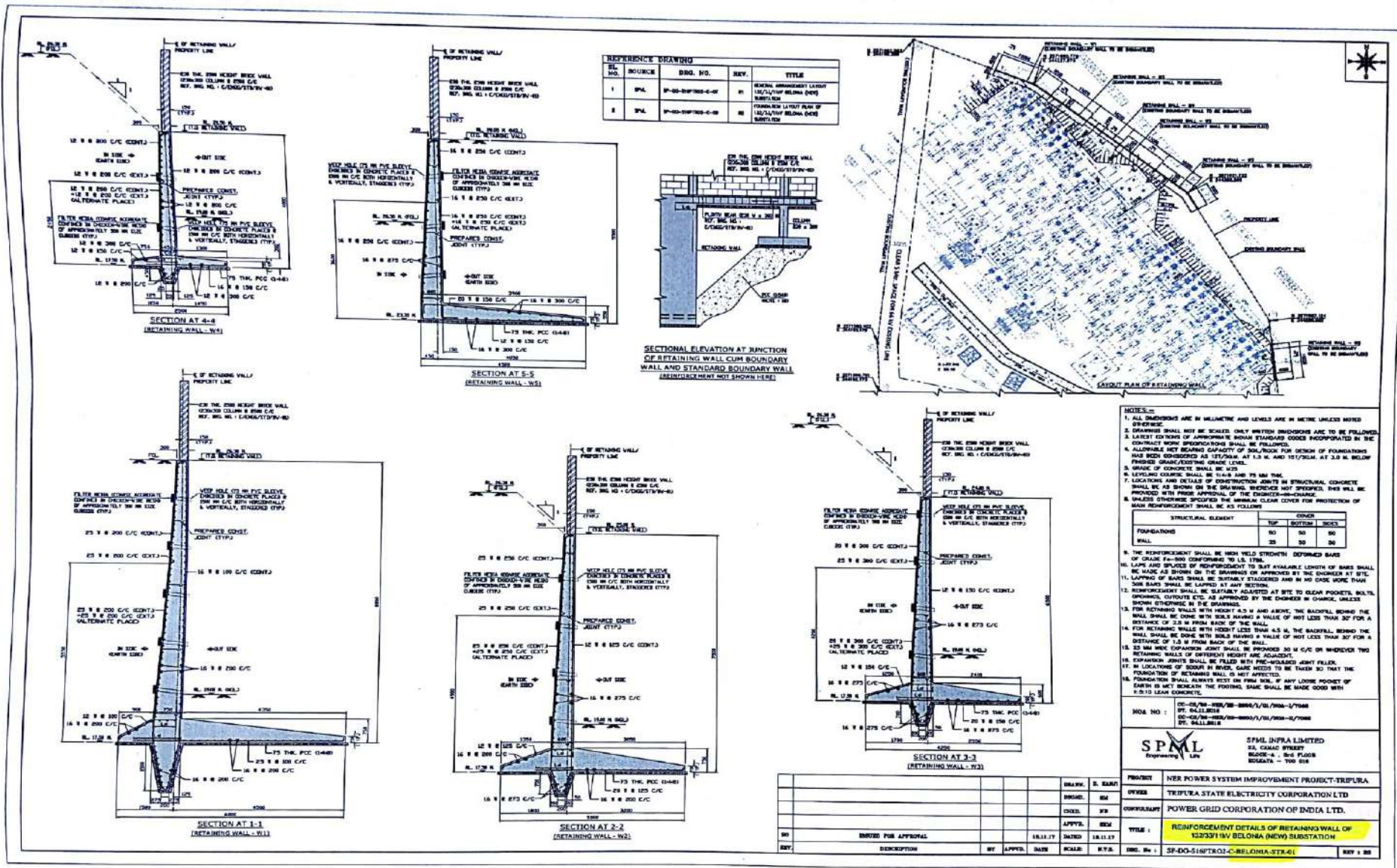


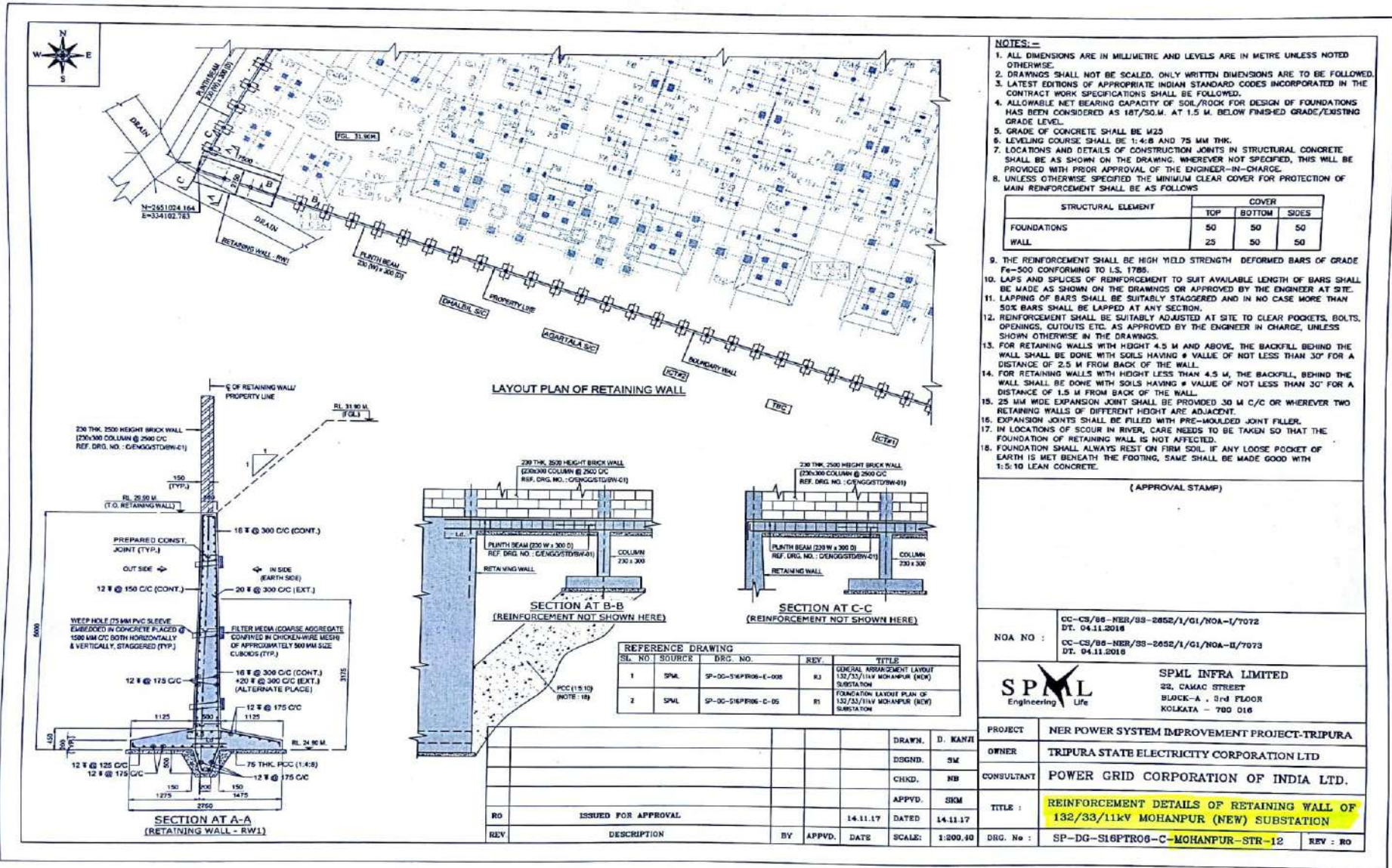
FEAR for T&D subprojects in West Tripura, South
Tripura, Khowai & Sepahijala District
under NERPSIP in Tripura

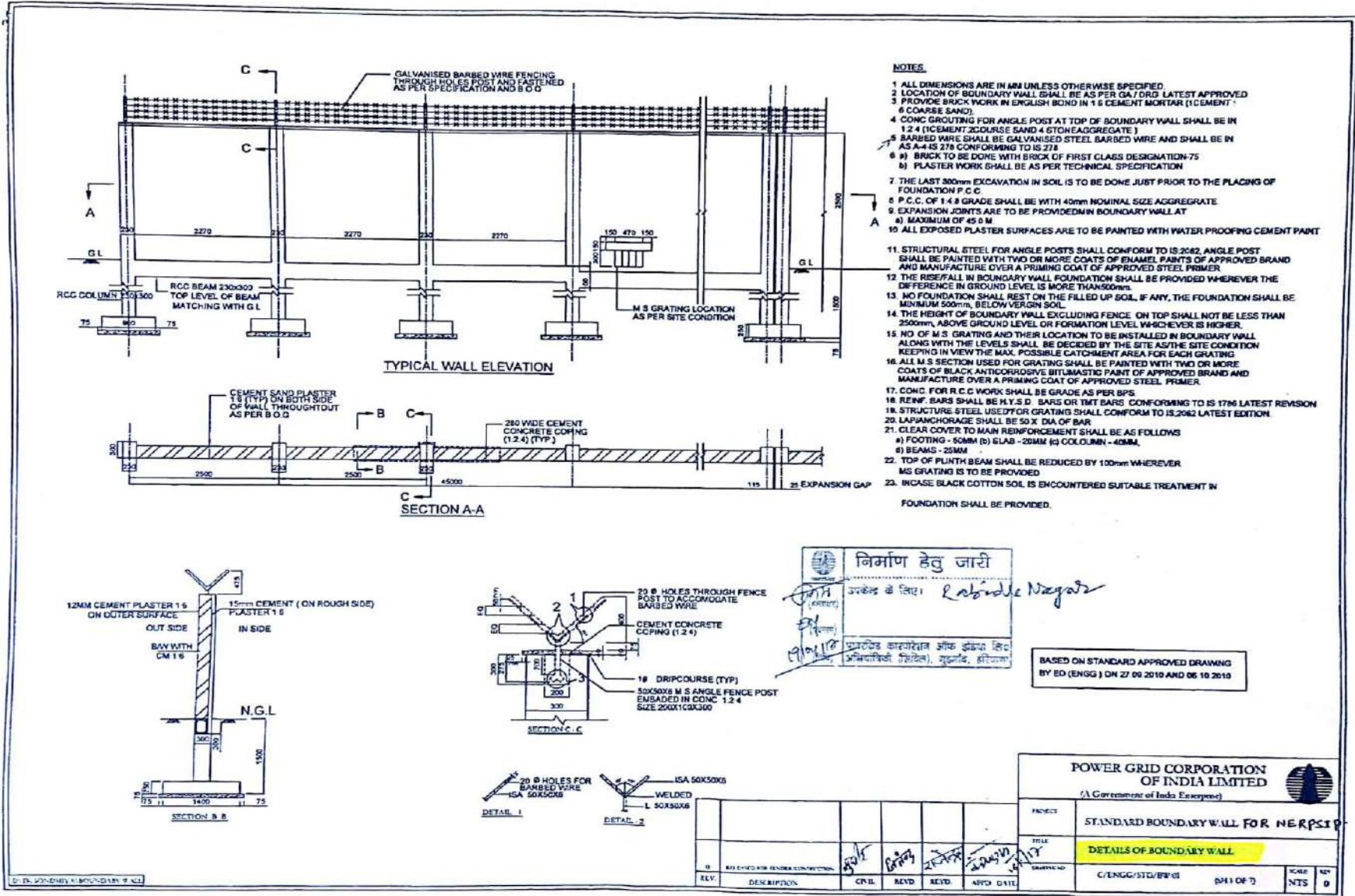


Annexure 16

Drawings of RRM Wall / Pretension Wall / Boundary Wall









FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



Annexure 17

Safety Conditions in Contract Agreement

POWER GRID CORPORATION OF INDIA LTD.

NERPSIP :: AGARTALA



Ref: NEAGT/NERPSIP-600/2018-19/

Dated: 12.05.2018

Sub: - Proposal for approval of Safety Plan for Tower Package TW-01, TW-02, TW-03 for Tripura associated to NERPSIP being awarded to M/s. EMC Limited.

Ref: - CC-CS/86-NER/TW-3612/1/G4/NOA-II/7337 dtd. 12.06.2017

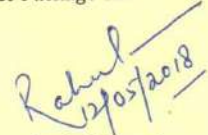
CC-CS/86-NER/TW-3613/1/G4/NOA-II/7339 dtd. 12.06.2017

CC-CS/86-NER/TW-3614/1/G4/NOA-II/7341 dtd. 12.06.2017

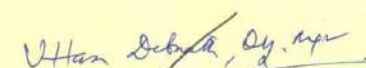
1. Tower package TW-01, TW-02, TW-03 for Tripura associated to NERPSIP is awarded to M/s. EMC Limited. Under the above said package there are total 08 No. 132kV New Transmission Lines, 03 No. Interconnection portions and 03 No. LILOs with total of 238 km line length. The scope of work also includes 260 km and 171 km OPGW stringing in 14 No. 132kV New and 09 No. 132kV Existing Transmission Lines, respectively.
2. As per the contract agreement Volume B, Section IX. PCC 22.4.3.26, the contractor has to submit the Safety Plan as per Section IX: Contract Forms, Part-3 of bidding document.
3. M/s. EMC Limited vide their letter reference EMC/Tripura/Safety/2018/48 dated 18.01.2018; EMC/Tripura/TW-02/Safety/26; EMC/Tripura/TW03/2017-18/29 dated 04.04.2018 has requested for approval of the Safety Plan to in line with contract agreement guidelines for implementation during the construction of 132kV New Transmission Lines under Tower package TW-01, TW-02, TW-03. The Safety Plan is enclosed for kind perusal.
4. The documents and enclosures submitted by M/s. EMC Limited has been checked and found in order as per requirement of LOA.
5. In view of above it is recommended to approve the Safety Plan for the Tower Package TW-01, TW-02, TW-03 as submitted by M/s. EMC Limited.

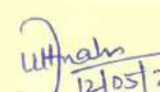
Put up for kind approval please.

Dy. Manager (NERPSIP)/ Agartala

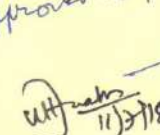

(Rahul Misra)
FO (ESM), Agartala

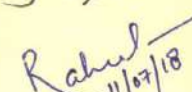
DGM (NERPSIP) / Agartala


R. Misra, FO (ESM)


12/05/2018

Approved as proposed.


11/07/18


11/07/18



पश्चिम बंगाल . WEST BENGAL

22AA 264826

SAFETY PLAN

THIS SAFETY PLAN is made this 7th day of August 2017 by EMC LIMITED, a Company registered under the Companies Act, 1956 concern having its Registered Office at Constantia Office Complex, 11, Dr U N Brahmachari Street, 8th Floor, South Block, Kolkata-700017 (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 – 110 016 for its Contract for Tower Package TW-01 associated with NER Power System Improvement Project (Intra-State: Tripura) (Specification No CC-CS/86-NER/TW-3612/1/G4)

WHEREAS POWERGRID has awarded to the Contractor the aforesaid Contract vide its Notification of Award No. CC-CS/86-NER/TW-3612/1/G4/NOA-I/7336 & NOA-II/7337 dated 12.06.2017 for construction of Tower Package : TW-01 associated with NER Power System Improvement Project (Intra-State : Tripura) – Specification NO. CC-CS/86-NER/TW-3612/1/G4 (hereinafter called the "Contract") in terms of which the Contractor is required to submit 'Safety Plan' along with certain documents to the Engineer In-Charge/Project Manager of the POWERGRID within Sixty (60) days of Notification of Award for its approval.

NOW THEREFORE, the Contractor undertakes to execute the Contract as per the safety plan as follows:

1. THAT the Contractor shall execute the works as per provisions of Bidding Documents including those in regard to Safety Precautions / provisions as per statutory requirements.

For EMC Limited.
Rakesh Kumar
Rakesh Kumar
Safety Officer.

For EMC Limited.
Mithu Dutta
Mithu Dutta
(Project Manager)





पश्चिम बंगाल WEST BENGAL

22AA 264827

SAFETY PLAN

THIS SAFETY PLAN is made this 7th day of August 2017 by EMC LIMITED, a Company registered under the Companies Act, 1956 concern having its Registered Office at Constantia Office Complex, 11, Dr U. N Brahmachari Street, 8th Floor, South Block, Kolkata-700017 (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 – 110 016 for its Contract for Tower Package TW02 associated with NER Power System Improvement Project (Intra-State: Tripura) (Specification No CC-CS/86-NER/TW-3612/1/G4)

WHEREAS POWERGRID has awarded to the Contractor the aforesaid Contract vide its Notification of Award No. CC-CS/86-NER/TW-3613/1/G4/NOA-I/7338 & CA-II/7339 dated 12.06.2017 for Construction of Tower Package : TW-02 associated with NER Power System Improvement Project (Inter-State : Tripura) – Specification No. CC-CS/86-NER/TW-3613/1/G4 (hereinafter called the "Contract") in terms of which the Contractor is required to submit 'Safety Plan' along with certain documents to the Engineer In-Charge/Project Manager of the POWERGRID within Sixty (60) days of Notification of Award for its approval.

NOW THEREFORE, the Contractor undertakes to execute the Contract as per the safety plan as follows:

1. THAT the Contractor shall execute the works as per provisions of Bidding Documents including those in regard to Safety Precautions / provisions as per statutory requirements.





पश्चिमबङ्ग पश्चिम बंगाल WEST BENGAL

22AA 264828

SAFETY PLAN

THIS SAFETY PLAN is made this 7th day of August 2017 by EMC LIMITED, a Company registered under the Companies Act, 1956 concern having its Registered Office at Constantia Office Complex, 11, Dr U N Brahmachari Street, 8th Floor, South Block, Kolkata-700017 (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 – 110 016 for its Contract for Tower Package TW03 associated with NER Power System Improvement Project (Intra-State: Tripura) (Specification No CC-CS/86-NER/TW-3612/1/G4)

WHEREAS POWERGRID has awarded to the Contractor the aforesaid Contract vide its Notification of Award No. CC-CS/86-NER/TW-3614/1/G4/NOA-I/7340 & CA-II/7341 dated 12.06.2017 for Construction of Tower Package-TW-03 associated with NER Power System Improvement Project (Inter-State : Tripura – Specification No. CC-CS/86-NER/TW-3614/1/G4 (hereinafter called the "Contract") in terms of which the Contractor is required to submit 'Safety Plan' along with certain documents to the Engineer In-Charge/Project Manager of the POWERGRID within Sixty (60) days of Notification of Award for its approval.

NOW THEREFORE, the Contractor undertakes to execute the Contract as per the safety plan as follows:

1. THAT the Contractor shall execute the works as per provisions of Bidding Documents including those in regard to Safety Precautions / provisions as per statutory requirements.



THE CONTRACTOR shall incorporate modifications/changes in this 'Safety Plan' necessitated on the basis of review/comments of the Engineer In-Charge/Project Manager within fourteen (14) days of receipt of review/comments and on final approval of the Engineer In-Charge/Project Manager of this 'Safety Plan', the Contractor shall execute the works under the Contract as per approved 'Safety Plan'. Further, the Contractor has also noted that the first progressive payment towards Services Contract shall be made on submission of 'Safety Plan' alongwith all requisite documents and approval of the same by the Engineer In-Charge/Project Manager.

IN WITNESS WHEREOF, the Contractor has hereunto set its hand through its authorised representative under the common seal of the Company, the day, month and year first above mentioned.

MD

For and on behalf of
EMC Limited
Name: *Manoj Toshniwal*
Designation: Managing Director

(Common Seal)

WITNESS

1. Signature

Name :

Address :

2. Signature

Name :

Address :

✓ *Manoj Toshniwal*

MD



FEAR for T&D subprojects in West Tripura, South
Tripura, Khowai & Sepahijala District
under NERPSIP in Tripura



Annexure 18

Safety Plan



SAFETY PLAN

13. FORM OF SAFETY PLAN TO BE SUBMITTED BY THE CONTRACTOR WITHIN SIXTY DAYS OF AWARD OF CONTRACT

[TO BE EXECUTED ON A NON JUDICIAL STAMP PAPER WORTH RS. TWENTY ONLY]

SAFETY PLAN

THIS SAFETY PLAN is made this day of 20..... by a Company registered under the Companies Act, 1956/Partnership firm/proprietary concern having its Registered Office at[to be modified suitably for JV Contractor] (hereinafter called as 'Contractor' which expression shall include its successors and permitted assigns) for approval of(insert name of the Employer)....., a company incorporated under the Companies Act, 1956 having its Registered Office at (Insert registered address of the Employer)..... for its Contract for (Insert package name, project name along with Specification number of the Contract)..... WHEREAS..... (Abbreviated name of the Employer)..... has awarded to the Contractor the aforesaid Contract vide its Notification of Award/Contract No. datedand Amendment No. (Applicable when amendments have been issued(hereinafter called the "Contract") in terms of which the Contractor is required to submit 'Safety Plan' along with certain documents to the Engineer In-Charge/Project Manager of the Employer within Sixty (60) days of Notification of Award for its approval.

NOW THEREFORE, the Contractor undertakes to execute the Contract as per the safety plan as follows:

1. THAT the Contractor shall execute the works as per provisions of Bidding Documents including those 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 throughout the contract duration without handling pressure in last quarter of the financial year/last months of the Contract and the shall be finalized in association with EMPLOYER Engineer In-charge/Project Manager from time to time as required.

3. THAT the Contractor has prepared the safe work procedure for each activity i.e. foundation works including civil works, erection, stringing (as applicable), testing & commissioning, disposal of materials at site / store etc. to be executed at site, which is enclosed at **Annexure - 1A (SP)** for acceptance and approval of Engineer In- charge/Project Manager. The Contractor shall ensure that on approval of the same from Engineer In-charge/Project Manager , the approved copies will be circulated to Employer's personnel at site [Supervisor(s)/Executive(s)] and Contractor's personnel at site [Gang leader, supervisor(s) etc.] in their local language / language understood by gang.

4. 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.

5. THAT the Contractor shall ensure while executing works that they will deploy minimum 25% of their own experienced work force who are on the permanent roll of the company and balance 75% can be a suitable mixed with the hired gangs / local workers / casual workers if required. The above balance 75% work force should be provided with at least 10 days training by the construction agencies at sites and shall be issued with a certificate. No worker shall be engaged without a valid certificate. Hired gang workers shall also follow safe working procedures and safety norms as is being followed by company's workmen. It should also be ensured by the contractor that certified fitters who are

climbing towers / doing stringing operations can be easily identifiable with a system like issue of Badge / Identification cards (ID cards) etc. Color identification batches should be worn by the workers. Contractor has to ensure that inexperience workers / unskilled workers should not be deployed for skilled job.

6. THAT the Contractor's Gang leader / Supervisor / Senior most member available at every construction site shall brief to each worker daily before start of work about safety requirement and warn about imminent dangers and precautions to be taken against the imminent dangers (Daily Safety Drill). This is to be ensured without fail by Contractor and maintain record of each gang about daily safety instructions issued to workers and put up to EMPLOYER site In-charge for his review and record.

7. 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.

8. THAT the Contractor shall maintain in healthy and working condition all kind of Equipments / Machineries / Lifting tools / Lifting tackles / Lifting gears / All kind of Ropes including wire ropes / Polypropylene ropes etc. used for Lifting purpose during execution of the project and get them periodically examined and load tested for safe working load in accordance with relevant provisions and requirement of Building & other construction workers Regulation of Employment and Conditions of

Services Act and Central Rule 1998, Factories Act 1948, Indian Electricity Act 2003 before start of the project. A register of such examinations and tests shall be properly maintained by the contractor and will be promptly produced as and when desired by the Engineer In-charge/Project Manager or by the person authorised by him. The Contractor has to ensure to give special attention on the formation / condition of eye splices of wire rope slings as per requirement of IS 2762 Specification for wire rope slings and sling legs.

9. 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.

10. THAT the Contractor has to procure sufficient quantity of Personal Protective Equipment (PPE) conforming to Indian / International standards and provide these equipment to every workman at site as per need and to the satisfaction of Engineer-in-charge/Project Manager of EMPLOYER. The Contractor's Site Supervisor/ Project Manager has to ensure that all workmen must use Personal Protective Equipment at site. The Contractor shall also ensure that Industrial Safety helmets are being used by all workmen at site irrespective of their working (at height or on ground). The Contractor shall further ensure use of safety shoes by all ground level workers and canvas shoes for all workers working at height, Rubber Gum Boots for workers working in rainy season and concreting job, Use of Twin Lanyard Full body Safety Harness with attachment of light weight such as aluminum alloy etc. and having features of automatic locking arrangement of snap hook, by all workers working at height for more than three meters and also for horizontal movement on tower shall be ensured by contractor. The Contractor shall not use ordinary half body safety harness at site. The Contractor has to ensure use of Retractable type fall arrestors by workers for ascending / descending on suspension

insulator string and other similar works etc., Use of Mobile fall arrestor for ascending / descending from tower by all workers. The contractor has to provide cotton / leather hand gloves as per requirement, Electrical Resistance Hand gloves for operating electrical installations / switches, Face shield for protecting eyes while doing welding works and Dust masks to workers as per requirement. The Contractor will have to take action against the workers not using Personal Protective Equipment at site and those workers shall be asked to rest for that day and also their Salary be deducted for that day. EMPLOYER may issue warning letter to Project Manager of contractor in violation of above norms.

11. THAT the Contractor shall prepare a detailed list of PPEs, activity wise, to commensurate with manpower deployed, which is enclosed at **Annexure – 3 (SP)** for review and approval of Engineer In-charge/Project Manager. It shall also be ensured that the sample of these equipment shall be got approved from EMPLOYER supervisory staff before being distributed to workers. The contractor shall submit relevant test certificates as per IS / International Standard as applicable to PPEs used during execution of work. All the PPE's to be distributed to the workers shall be checked by EMPLOYER supervisory staff before its usage.

12. The Contractor also agrees for addition / modification to the list of PPE, if any, as advised by Engineer In-Charge/Project Manager.

13. THAT the Contractor shall procure, if required sufficient quantity of Earthing Equipment / Earthing Devices complying with requirements of relevant IEC standards (Generally IECs standards for Earthing Equipments / Earthing Devices are – 855, 1230, 1235 etc.) and to the satisfaction of Engineer In-Charge/Project Manager and contractor to ensures to maintained them in healthy condition.

14. 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.

15. THAT the Contractor shall provide communication facilities i.e. Walky – Talkie / Mobile Phone, Display of Flags / whistles for easy communication among workers during Tower erection / stringing activity, as per requirement.

16. THAT the Contractor undertakes to deploy qualified safety personnel responsible for safety as per requirements of Employer/Statutory Authorities.

17. 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 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 number of workers are less than 250 then one qualified safety officer is to be deployed for each contract. He will report directly to his head of organization and not the Project Manager of contractor He shall also not be assigned any other work except assigning the work of safety. The curriculum vitae of such person shall be got cleared from EMPLOYER Project Manager / Construction staff.

18. The name and address of such safety officers of contractor will be promptly informed in writing to Engineer In-charge with a copy to safety officer - In-charge before start of work or immediately after any change of the incumbent is made during the currency of the contract. The list is enclosed at **Annexure – 5A (SP)**.

19. THAT the Contractor has also prepared a list including details of Explosive Operator (if required),

Safety officer / Safety supervisor / nominated person for safety for each erection

20. / 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)**.

21. The Project Manager shall have the right at his sole discretion to stop the work, if in his opinion the work is being carried out in such a way that it may cause accidents and endanger the safety of the persons and/or property, and/or equipment. In such cases, the Contractor shall be informed in writing about the nature of hazards and possible injury/accident and he shall comply to remove shortcomings promptly. The Contractor after stopping the specific work can, if felt necessary, appeal against the order of stoppage of work to the Project Manager within 3 days of such stoppage of work and decision of the Project Manager in this respect shall be conclusive and binding on the Contractor.

22. THAT, if, any Employer's Engineer/ supervisor at site observes that the Contractor is failing to provide safe working environment at site as per agreed Safety Plan / EMPLOYER Safety Rule/ Safety Instructions / Statutory safety requirement and creates hazardous conditions at site and there is possibility of an accident to workmen or workmen of the other contractor or public or the work is being carried out in an un safe manner or he continues to work even after being instructed to stop the work by Engineer / Supervisor at site / RHQ / Corp. Centre, the Contractor shall be bound to pay a penalty of Rs. 10,000/ - per incident per day till the instructions are complied and as certified by Engineer/ Supervisor of Employer at site. The work will remain suspended and no activity will take place without compliance and obtaining clearance / certification of the Site Engineer / Supervisor of the Employer to start the work.

23. THAT, if the investigation committee of Employer observes any accident or the Engineer In-charge/Project Manager of the Employer based on the report of the

Engineer/Supervisor of the Employer at site observes any failure on the Contractor's part to comply with safety requirement / safety rules/ safety standards/ safety instruction as prescribed by the Employer or as prescribed under the applicable law for the safety of the equipment, plant and personnel and the Contractor does not take adequate steps to prevent hazardous conditions which may cause injury to its own Contractor's employees or employee of any other Contractors or Employer or any other person at site or adjacent thereto, or public involvement because of the Contractor's negligence of safety norms, the Contractor shall be liable to pay a compensation of Rs. 10,00,000/- (Rupees Ten Lakh only) per person affected causing death and Rs. 1,00,000/- (Rupees One Lakh only) per person for serious injuries / 25% or more permanent disability to the Employer for further disbursement to the deceased family/ Injured persons. The permanent disability has the same meaning as indicated in Workmen's Compensation Act 1923. The above stipulations is in addition to all other compensation payable to sufferer as per workmen compensation Act / Rules

24. THAT as per the Employer's instructions, the Contractor agrees that this amount shall be deducted from their running bill(s) immediately after the accident, That the Contractor understands that this amount shall be over and above the compensation amount liable to be paid as per the Workmen's Compensation Act /other statutory requirement/ provisions of the Bidding Documents.

25. 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.

26. 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.

27. THAT the Contractor shall make available of First Aid Box [Contents of which shall be as per Building & other construction workers (Regulation of Employment and Conditions of Services Act and Central Rule 1998 / EMPLOYER Guidelines)] to the satisfaction of Engineer In-Charge/ Project Manager with each gang at site and not at camp and ensures that trained persons in First Aid Techniques with each gang before execution of work.

28. THAT the Contractor shall submit an 'Emergency Preparedness Plan' for different incidences i.e. Fall from height, Electrocution, Sun Stroke, Collapse of pit, Collapse of Tower, Snake bite, Fire in camp / Store, Flood, Storm, Earthquake, Militancy etc. while carrying out different activities under execution i.e. foundation works including civil works, erection, stringing (as applicable), testing & commissioning, disposal of materials at site / store etc. which is enclosed at Annexure – 7 (SP) for approval of the Engineer In-Charge/ Project Manager before start of work.

29. THAT the Contractor shall organize Safety Training Programs on Safety, Health and Environment and for safe execution of different activities of works i.e. foundation works including civil works, erection, stringing (as applicable), testing & commissioning, disposal of materials at site / store etc. . For their own employees including sub-contractor workers on regular basis.

30. 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.

31. THAT the Contractor shall conduct safety audit, as per Safety Audit Check Lists enclosed at **Annexure – 8 (SP)**, by his Safety Officer(s) every month during construction of Transmission Lines / Sub Stations / any other work and copy of the safety audit report will be forwarded to

the Employer's Engineer In-charge / Site In-charge/Project Manager for his comments and feedback. During safety audit, healthiness of all Personal Protective Equipments (PPEs) shall be checked individually by safety officer of contractor and issue a certificate of its healthiness or rejection of faulty PPEs and contractor has to ensure that all faulty PPEs and all faulty lifting tools and tackles should be destroyed in the presence of EMPLOYER construction staff. Contractor has to ensure that each gang be safety audited at least once in two months. During safety audit by the contractor, Safety officer's feedback from EMPLOYER concerned shall be taken and recorded. The Employer's site officials shall also conduct safety audit at their own from time to time when construction activities are under progress. Apart from above, the Employer may also conduct surveillance safety audits. The Employer may take action against the person / persons as deemed fit under various statutory acts/provisions under the Contract for any violation of safety norms / safety standards.

32. THAT the Contractor shall develop and display Safety Posters of construction activity at site and also at camp where workers are generally residing.

33. THAT the Contractor shall ensure to provide potable and safe drinking water for workers at site / at camp.

34. 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.

35. 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)**.

36. The Contractor shall also submit details of Insurance Policies taken by the Contractor for insurance coverage against accident for all employees are enclosed at Annexure - 10B (SP).



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



37. THAT a check-list in respect of aforesaid enclosures along with the Contractor’s remarks, wherever required, is attached as Annexure – Check List herewith.

38. THE CONTRACTOR shall incorporate modifications/changes in this ‘Safety Plan’ necessitated on the basis of review/comments of the Engineer In-Charge/Project Manager within fourteen

39. (14) Days of receipt of review/comments and on final approval of the Engineer In-Charge/Project Manager of this ‘Safety Plan’, the Contractor shall execute the works under the Contract as per approved ‘Safety Plan’. Further, the Contractor has also noted that the first progressive payment towards Services Contract shall be made on submission of ‘Safety Plan’ along with all requisite documents and approval of the same by the Engineer In-Charge/Project Manager.

40. 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.....

WITNESS

1.

Signature.....

Signature.....

Name.....

Name.....

2.

Signature.....

Authorized representative



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



Name.....
(Common Seal)

Address.....
(In case of Company)

Note:

All the annexure referred to in this “Safety Plan“are required to be enclosed by the contractor as per the attached “Check List “

Safety Plan is to be executed by the authorized person and (i) in case of contracting Company under common seal of the Company or (ii) having the power of attorney issued under common seal of the company with authority to execute such contract documents etc., (iii) In case of (ii), the original Power of Attorney if it is specifically for this Contract or a Photostat copy of the Power of Attorney if it is General Power of Attorney and such documents should be attached to this Safety Plan.

For all safety monitoring/ documentation, Engineer In-charge / Regional In-charge of safety at RHQ will be the nodal Officers for communication.



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



Annexure 19

Sample Labor License



GOVERNMENT OF INDIA
MINISTRY OF LABOUR & EMPLOYMENT
OFFICE OF THE ASSISTANT LABOUR COMMISSIONER (CENTRAL)
KENDRIYA SADAN
CHIRUKANDI ROAD, RAMNAGAR, TARAPUR, SILCHAR-788 003, ASSAM
E-mail alc.sil-as@gov.in
TELEPHONE NO. 03842-268330

File / Online Licence No. CLRA/ALC SILCHER/2019/L-176

Dated - 08.09.2020

To

M/s EMC LIMITED
POWER GRID CORPORATION OF INDIA LIMITED CONTRACTOR
51, CANAL EAST ROAD, BELIAGHATA
KOLKATA-700085
REPRESENTED THROUGH: - SHRI MANOJ TOSHNIWAL, DIRECTOR
E. mail - pnair@emcpower.com / Mobile No. 09163317444.

Subject: Contract Labour (Regulation and Abolition) Act, 1970 and its Central Rules, 1971 -
Renewal of Licence No. CLRA/ALCSILCHER/2019/L-176 dated-22.07.2019.

Dear Sir,

Please refer to your Application No. Nil dated-21.07.2020 (received at this office on
21.07.2020) for Renewal of Licence along with Rs. 100/- (Rupees ONE HUNDRED) only deposited
through online towards Renewal fee of the above noted Licence.

In this connection, please find enclosed herewith the original Licence duly
RENEWED UP TO 21. 07. 2021 under the provision of Section-13 (3) of the Contract
Labour (Regulation and Abolition) Act, 1970 read with Rule-29 of its Central Rules, 1971.

Please acknowledge the receipt of the same.

Encl: 1 (ONE) LICENCE.



Yours faithfully,

(CHIRANJEEV SAIKIA)
Regional Labour Commissioner (Central)
DIBRUGARH

And Additional Charge of Assistant Labour Commissioner (Central)
Government of India
Chiranjeev Saikia
SILCHAR Regional Labour Commissioner (C)

Copy forwarded to:

- (1) The Labour Enforcement Officer (Central), AGARTALA. A copy of the Form-II is enclosed under the C.L. (R & A) Act, 1970
- (2) The Deputy General Manager (NERPSIP), Power Grid Corporation of India Limited, House of Shri Utpal Dutta (Ground Floor), Ramanagar Road No.6, 3rd Crossing, Agartala-799002, Tripura (West) for information.

Regional Labour Commissioner (Central)
DIBRUGARH
And Additional Charge of Assistant Labour Commissioner (Central)
Government of India
SILCHAR



Form VI

(Under Rule 25(1) of the Contract Labour (Regulation and Abolition) Central
Rules, 1971)

Government of India
Office of the Licensing Officer

LICENCE

Licence No: **CLRA/ALCSILCHER/2019/L-176**

Date: **22-Jul-2019**

1. Licence is hereby granted to **M/s EMC LIMITED, 51, CANAL EAST ROAD, BELIAGHATA, Kolkata - 700085**, through **MANOJ TOSHNIWAL / DIRECTOR** under sub-section (1) of section 12 of the Contract Labour (Regulation and Abolition) Act, 1970 (37 of 1970) subject to the conditions specified in the Annexure.
2. Name and Location of work **Tower Package TW02 associated with NER Power System Improvement Project (Intra-State: Tripura) vide Contract Agreement No. CC-CS/86-NER/TW-3613/1/G4/CA-I/7338 DATED- 30.06.2017 & No. CC-CS/86-NER/TW-3613/1/G4/CA-II/7339 dated. 30.06.2017**, for **ROKHIA , BELONIA , SABROOM , GOKULNAGAR , SATCHAND, 78, NEW TOWN ROAD, RADHA KRISHNAPUR, UDAIPUR, South Tripura, Tripura - 799120**
3. Name of the principal employer **S.I.SINGH / DY.GENERAL MANAGER, NERPSIP OFFICE, RAMNAGAR-06, 3RD CROSSING, AGARTALA, West Tripura, Tripura - 799002**
4. Registration Certificate no. **A-REG 07/2010-S/A** and date of **22-Jun-2010** of the principal employer.
5. The licence shall remain in force till **21-Jul-2020** (date to be indicated).
6. Maximum number of contract labour to be employed on a single day under the licence: **100**
7. Fee Paid Rs **INR 75** (Transaction Id : **1907190005078**)
8. Security Deposit **INR 9000** (Transaction Id : **1907190005189**)
9. Remarks by Licencing Officer: **Licence is granted**

Licensing Officer.

10. A copy of the licence shall be displayed prominently at the premises where the contract work is being carried on.
11. The contractor shall comply with all the provisions of the Act and these Rules.
12. The licensee shall, within fifteen days of the commencement and completion of each contract work, submit a return to the Inspector appointed under section 28 of the Contract Labour (Regulation and Abolition) Act, 1970 (37 of 1970) intimating the actual date of the commencement or, as the case may be, completion of such contract work in Form - VII.

eSign/DSC of Licensing Officer

Hari Om Gautam (ALC(C))

ALC SILCHER (ALCSILCHER)

alc.ghy-as@gov.in

Note: This is an online application summary applied on Shram Suvidha Portal.

Validity unknown

Digitally signed by User
Date: 2019.07.22 14:57:24 IST

**The Oriental Insurance Company Ltd.
CBU KOLKATA 7 RED CROSS PLACE, KOLKATA, WEST BENGAL, 700001
GST NO : 19AAACT0627R3ZU
RECEIPT**

Office Code & Name	: 311800 - CBU Kolkata	Bank Code	: 9100(C-311800-01)										
Collection No.	: 51-014019000228	Posted Doc No.	: 4019000228										
Collection Date	: 10/05/2021 18:08	Posted Doc Dt.	: 10/05/2021										
Received with thanks From Sh./Smt./ M/s.	: EMC LIMITED												
The Sum of	: Indian Rupees Four Lakhs Six Thousand Three Hundred Twenty-Nine Only												
Towards the following	: Premium collections												
SI No. Code	Dept. Policy No.	Policy End/Ren/Dec/ Status Claim No.	Dev. Off. Code	Source Code	Amount Collected	C/D Code	GL Code	SL Code	Pay Mode	Bank Name	Bank Branch	Instrument No.	Instr. Dt./CC Exp. Dt.
1	44	2018/1373	New	311800/44/201	LC000000	4,06,329.00	C	5083	AB0000030018	DC_LIN		UBINR2202	
				Policy 8/1373/012	00198							105080181	
					Total	4,06,329.00						2513	
GST	: Rs. 61982												
GST NO OF Insured	: 19AAACE75821Z7												
Policy Type / Zone	: EAR SUM INSURED												
	: LESS THAN 100 CRORES												

Note : For Payment by cheque , receipt will be valid subject to realisation of Cheque

FOR THE ORIENTAL INSURANCE COMPANY LTD

 Cashier / Signatory

CIN : UB6010DL1947G0I007158 IRDA Regn. No. 556 - All the amounts mentioned in this report are in Indian Rupees



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



The Oriental Insurance Company Ltd.
CBU KOLKATA 7 RED CROSS PLACE , KOLKATA , , WEST BENGAL , 700001
19AAACT0627R3ZU
Tax Invoice

Office Code		: 311800 - CBU Kolkata GST NO :19AAACT0627R3ZU		ORIGINAL FOR RECIPIENT									
Invoice No.		: 192025755		Invoice Date : 10-05-2021									
Billing Details Sh./Smt./ M/s.		: EMC LIMITED 11, Dr. U.N. Brahmachari Street, Constanita Office Complex, 8th Floor (South Block), Kolkata-700017 Principal's Name: Power Grid Corporation of India Limited WB 700017											
		STATE CODE :19 GSTIN:19AAACE7582J1Z7											
		UIN : 0											
Towards HSN/SAC - 997137 - General Insurance Services				Tax is Payable on Reverse Charge :No									
S1 No.	Dept Code	Policy No.	Policy Status	Endorsement No	Amount Collected	Taxable Value	IGST Perc	IGST Amt	CGST Perc	CGST Amt	SGST/UT GST Perc	SGST/UTGST Amt	
1	44	2018/1373	Endors ed	2018/1373/012	4,06,329.00	3,44,347.00			9%	30,991.00	9%	30,991.00	
Total					4,06,329.00	3,44,347.00				30,991.00		30,991.00	
The Sum of		: Indian Rupees Four Lakhs Six Thousand Three Hundred Twenty-Nine Only											
Policy Type / Zone		: EAR SUM INSURED LESS THAN 100 CRORES						FOR THE ORIENTAL INSURANCE COMPANY LTD					
Note		: For Payment by cheque , receipt will be valid subject to realisation of Cheque											

CIN: U66010DL1947GOI007158 IRDA Regn. No. 556 - All the amounts Towards HSN/SAC General Insurance Services Indian Rupees

PAGE NO. : 1 of 1

दि ओरियण्टल इश्योरेंस कं. लि.
The Oriental Insurance Co. Ltd.
भारत सरकार का उपक्रम / (A Govt. of India Undertaking)
कार्पोरेट बिजनेस यूनिट / Corporate Business Unit
7, रेड क्रॉस प्लेस / 7, Red Cross Place
कोलकाता-700 001 / Kolkata-700 001

EAR SUM INSURED LESS THAN 100 CRORES - ENDORSEMENT SCHEDULE

Attached to and forming part of Policy No : 311800/44/2018/1373
 Endorsement No : 311800/44/2018/1373/012 Endorsement Date : 05/05/2021
 Endorsement Effective From 00:00 On 11/05/2021 To Midnight Of 31/08/2021
 Insured's Code : AB0000030018 Issue Office Code : 311800
 Insured's Name : EMC LIMITED (GSTIN: 19AAACE7582J1Z7) Issue Office Name : CBU Kolkata (GSTIN: 19AAACT0627R3ZU)
 Address : 11, Dr. U.N. Brahmachari Street, Constantia Office Complex, 8th Floor (South Block), Kolkata-700017 Address : 7 RED CROSS PLACE KOLKATA
 Principal's Name: Power Grid Corporation of India Limited WEST BENGAL 700001
 CALCUTTA 700017

Agent/Broker Details

Dev.Off.Code :
 Agent/Broker : LC0000000198 SALASAR SERVICES INSURANCE BROKERS P LT
 Address : 23A NETAJI SUBHAS ROAD 6TH FLOOR KOLKATTA 700001,6TH FLOOR KOLKATTA 700001,MOB NO 9674516777, 9836318793, 9830141236 , 9836970832,CALCUTTA,WEST BENGAL,700001
 Tel/Fax/Email : 0361-234030/0333-2943438//

Total Premium : 406,329 Type of Endorsement : Extension of Period with change in Risk
 Collection No & Dt : DC_I_IND 4019000228 - 10/05/2021 GST INVOICE NO :192025755 UIN :0
 Co Insurance Details :

ENDORSEMENT

Notwithstanding anything contained herein to the contrary in the within mentioned policy it is hereby declared and agreed that at the request of the insured the date of expiry of the policy shall read as 31/08/2021 23:59 hRS and not as stated in the policy. In consequence whereof an additional premium amounting to Rs. 406329/-has been collected towards the extension.

Subject otherwise to the terms, conditions, exceptions, exclusions and limitations of the policy.

SCHEDULE OF PREMIUM

Cover Description	Original Sum Insured	Endorsement Sum Insured	Revised Sum Insured	Endorsement Premium
Basic Cover	61,38,47,844		61,38,47,844	7,36,617.00
ADD :STFI Inclusion Cover	61,38,47,844		61,38,47,844	61,385.00
ADD :Escalation Cost	18,41,54,353		18,41,54,353	2,20,985.00

Place : :
 Date : 05/05/2021



For and on behalf of
 The Oriental Insurance Company Limited

Authorised Signatory

All the Amounts mentioned in this policy are in INDIAN RUPEES

Page 1 of 2

Attached to and forming part of policy number 311800/44/2018/1373

ADD :Earthquake Cover	61,38,47,844	61,38,47,844	1,02,308.00
ADD :Third Party Liability Cover - New	50,00,000	50,00,000	469.00
LESS :RO UW Discount - Engineering			7,77,417.00
TOTAL PREMIUM			3,44,347.00
ADD :CGST			30,991.00
ADD :SGST			30,991.00
TOTAL AMOUNT			4,06,329.00

Total Amount in figures and words : Rs 4,06,329 (INDIAN RUPEES Four lakhs six thousand three hundred twenty-nine only)

The Insurance under this policy / endorsement is subject to following terms,conditions,waranties & clauses specified in the policy / endorsement:

All other terms/conditions/waranties/clauses in the policy remain unaltered

Waranted that in case of dishonour of premium cheque(s) the company shall not be liable under the endorsement and the endorsement shall be void ab initio

In witness whereof the undersigned begin authorised by and on behalf of the company has herein to set his hands.

Entered By : PINTU KUMAR MONDAL
Examined By : MITHU DASGUPTA

For and on behalf of
The Oriental Insurance Company Limited
कोलकाता, कोलकाता
CBU, Kolkata
Authorised Signatory



Place : :
Date : 05/05/2021



For and on behalf of
The Oriental Insurance Company Limited
कोलकाता, कोलकाता
Cbu, Kolkata
Authorised Signatory



All the Amounts mentioned in this policy are in INDIAN RUPEES

Page 2 of 2



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



Annexure 20

Checklist for Safety Plan

CHECK LIST FOR SEFETY PLAN

S. N.	Details of Enclosure	Status of Submission of information/ documents	Remarks
1.	<p>Annexure – 1A (SP)</p> <p>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.</p>	Yes/No	
2.	<p>Annexure – 1B (SP)</p> <p>Manpower deployment plan, activity wise foundation works including civil works, erection, stringing (as applicable), testing & commissioning, disposal of materials at site / store etc.</p>	Yes/No	
3.	<p>Annexure – 2 (SP)</p> <p>List of Lifting Machines i.e. Crane, Hoist, Triffor, Chain Pulley Blocks etc. and Lifting Tools and Tackles i.e. D shackle, Pulleys, come along clamps, wire rope slings etc. and all types of ropes i.e. Wire ropes, Poly propylene Rope etc. used for lifting purposes along with test certificates.</p>	Yes/No	
4.	<p>Annexure – 3 (SP)</p> <p>List of Personal Protective Equipment (PPE), activity wise including the following along with test certificate of each as applicable:</p> <ol style="list-style-type: none"> 1. Industrial Safety Helmet to all workmen at site. (EN 397 / IS 2825) with chin strap and back stay arrangement. 2. Safety shoes without steel toe to all ground level workers and canvas shoes for workers working on tower. 3. Rubber Gum Boot to workers working in rainy season / concreting job. 4. Twin lanyard Full Body Safety harness with shock absorber and leg strap arrangement 	Yes/No	

S. N.	Details of Enclosure	Status of Submission of information/ documents	Remarks
	<p>for all workers working at height for more than three meters. Safety Harness should be with attachments of light weight such as of aluminium alloy etc. and having a feature of automatic locking arrangement of snap hook and comply with EN 361 / IS 3521 standards.</p> <p>5. Mobile fall arrestors for safety of workers during their ascending / descending from tower / on tower. EN 353 -2 (Guided type fall arrestors on a flexible anchorage line.)</p> <p>6. Retractable type fall arrestor (EN360: 2002) for ascending / descending on suspension insulator string etc.</p> <p>7. Providing of good quality cotton hand gloves / leather hand gloves for workers engaged in handling of tower parts or as per requirement at site.</p> <p>8. Electrical Resistance hand gloves to workers for handling electrical equipment / Electrical connections. IS : 4770</p> <p>9. Dust masks to workers handling cement as per requirement.</p> <p>10. Face shield for welder and Grinders. IS : 1179 / IS : 2553</p> <p>11. Other PPEs, if any, as per requirement etc.</p>		
5.	<p>Annexure – 4 (SP)</p> <p>List of Earthing Equipment / Earthing devices with Earthing lead conforming to IECs for earthing equipments are – (855, 1230, 1235 etc.) gang wise for stringing activity/as per requirement</p>	Yes/No	
6.	<p>Annexure – 5A (SP)</p> <p>List of Qualified Safety Officer(s) along with their contact details</p>	Yes/No	
7.	<p>Annexure – 5B (SP)</p> <p>Details of Explosive Operator (if required), Safety officer / Safety supervisor for every erection / stringing gang, any other person nominated for safety, list of personnel trained in First Aid as well as brief information about safety set up by the</p>	Yes/No	

S. N.	Details of Enclosure	Status of Submission of information/ documents	Remarks
	Contractor alongwith copy of organisation of the Contractor in regard to safety		
8.	Annexure – 6 (SP) Copy of Safety Policy/ Safety Document of the Contractor's company	Yes/No	
9.	Annexure – 7 (SP) 'Emergency Preparedness Plan' for different incidences i.e. Fall from height, Electrocutation, Sun Stroke, Collapse of pit, Collapse of Tower, Snake bite, Fire in camp / Store, Flood, Storm, Earthquake, Militancy etc. while carrying out different activities under execution i.e. foundation works including civil works, erection, stringing (as applicable), testing & commissioning, disposal of materials at site / store etc.	Yes/No	
10.	Annexure – 8 (SP) Safety Audit Check Lists (Formats to be enclosed)	Yes/No	
11.	Annexure – 9 (SP) Copy of the module of Safety Training Programs on Safety, Health and Environment, safe execution of different activities of works for Contractor's own employees on regular basis and sub contractor employees.	Yes/No	
12.	Annexure – 10A (SP) Information along with documentary evidences in regard to the Contractor's compliance to various statutory requirements including the following:		
(i)	Electricity Act 2003 _____ [Name of Documentary evidence in support of compliance]	Yes/No	
(ii)	Factories Act 1948	Yes/No	

S. N.	Details of Enclosure	Status of Submission of information/ documents	Remarks
	<u>[Name of Documentary evidence in support of compliance]</u>		
(iii)	Building & other construction workers (Regulation of Employment and Conditions of Services Act and Central Act 1996) and Welfare Cess Act 1996 with Rules. <u>[Name of Documentary evidence in support of compliance]</u>	Yes/No	
(iv)	Workmen Compensation Act 1923 and Rules. <u>[Name of Documentary evidence in support of compliance]</u>	Yes/No	
(v)	Public Insurance Liabilities Act 1991 and Rules. <u>[Name of Documentary evidence in support of compliance]</u>	Yes/No	
(vi)	Indian Explosive Act 1948 and Rules. <u>[Name of Documentary evidence in support of compliance]</u>	Yes/No	
(vii)	Indian Petroleum Act 1934 and Rules. <u>[Name of Documentary evidence in support of compliance]</u>	Yes/No	
(viii)	License under the contract Labour (Regulation & Abolition) Act 1970 and Rules. <u>[Name of Documentary evidence in support of compliance]</u>	Yes/No	
(ix)	Indian Electricity Rule 1956 and amendments if	Yes/No	

S. N.	Details of Enclosure	Status of Submission of information/ documents	Remarks
	any, from time to time. <u>[Name of Documentary evidence in support of compliance]</u>		
(x)	The Environment (Protection) Act 1986 and Rules. <u>[Name of Documentary evidence in support of compliance]</u>	Yes/No	
(xi)	Child Labour (Prohibition & Regulation) Act 1986. <u>[Name of Documentary evidence in support of compliance]</u>	Yes/No	
(xii)	National Building Code of India 2005 (NBC 2005). <u>[Name of Documentary evidence in support of compliance]</u>	Yes/No	
(xiii)	Indian standards for construction of Low/ Medium/ High/ Extra High Voltage Transmission Line <u>[Name of Documentary evidence in support of compliance]</u>	Yes/No	
(iv)	Any other statutory requirement(s) [please specify] <u>[Name of Documentary evidence in support of compliance]</u>	Yes/No	
13.	Annexure – 10B (SP) Details of Insurance Policies alongwith documentary evidences taken by the Contractor for the insurance coverage against accident for all employees as below:		

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

EMPLOYER

SAMPLE COPY OF FILLED CHECKLIST

Safety Check List TL Const – 03, Revision-1(May, 2014)

**POWER GRID CORPORATION OF INDIA LTD.,
(CORPORATE OPERATION SERVICES)**

SITE SAFETY INSPECTION/AUDIT CHECK LIST

TOWER ERECTION

DATE OF INSPECTION: 27.02.2021 **NAME OF THE LINE:** Udeipurto Amers Por T/L

LOCATION NO: 38/0 **CLASSIFICATION OF SOIL & TYPE OF TOWER:** Dc to

NAME OF THE AGENCY: Teems India Towers Lines Pvt. Ltd.

SITE ENGINEER / SUPERVISOR OF THE AGENCY: Mrs. Agniso Holsain

SAFETY OFFICER OF THE AGENCY: Somen Jana.

S.NO:	CHECK LIST	YES / NO	REMARKS, IF ANY
1	Check List to be verified by the Agency's Site supervisor / Gang leader is available at Site and updated.	Yes	
2	Safe Work Procedures / Instructions in the language understood by the workers available with Site supervisor / Gang leader and workers are aware of the safe work procedures.	Yes	
3	Pep talk on safety issues (importance of safety, inspection of T&P and PPEs, proper use of PPEs, safe tower erection practices, safe shut down practices / safe material handling / house keeping , etc.) to the workers being done by the Safety Stewards / Supervisor / Engineer / Safety Officer of the Agency.	Yes	
4	Adequate warning / protection to public / children moving nearby ensured (RED FLAGS / CAUTION TAPE / ROPE / BOARDS).	Yes	
5	Appropriate safety messages / warnings are displayed at site to caution the workers.	Yes	
6	Back filling of soil completed before taking up tower erection.	Yes	
7	All the workers are provided with good quality SAFETY HELMETS confirming to BIS Standard IS:2925.	Yes	Brand: Kensem
8	The workers engaged in Tower Erection work at height are provided with good quality FULL BODY DOUBLE LANYARD SAFETY BELTS confirming to BIS Standard IS: 3521 / EN 361.	Yes	Brand: Kensem odyogi
9	Other PPEs provided to the workers: SAFETY SHOES / COTTON HAND GLOVES for material handling / ELECTRICAL SAFETY GLOVES for S/D works	Yes	
10	The workers engaged in Tower Erection work at height are provided with FALL PROTECTION SYSTEMS like Rope Grab Mobile Fall Arrestor for ascending / descending the Tower / Retractable Fall Arrestor (for vertical movement) / Horizontal Life Line Rope for moving from one member to another member (Horizontal movement within the Tower).	Yes	
11	The fitters working on the tower have been trained on safety for work at height before deployment for tower erection works and Training Records maintained.	Yes	
12	The workers engaged in Tower Erection work at height are anchoring the LIFE LINE Rope / Lanyard of the Safety Belts to rigid support.	Yes	

Contd..2..



Safety Check List TL Const - 04, Revision-1(May, 2014)

**POWER GRID CORPORATION OF INDIA LTD.,
(CORPORATE OPERATION SERVICES)**
SITE SAFETY INSPECTION / AUDIT CHECK LIST
STRINGING
DATE OF INSPECTION: 13.04.21 **NAME OF THE LINE:** Uden Pur to Amers Pur

REACH / LOCATION NO: AP-1810-28AP-18101

NAME OF THE AGENCY: Telem India Towerline Pvt. Ltd.

SITE ENGINEER / SUPERVISOR OF THE AGENCY: M.K. Suamy

SAFETY OFFICER OF THE AGENCY: Luman Jana.

S.NO:	CHECK LIST	YES / NO	REMARKS, IF ANY
1	Check List to be verified by the Agency's Site supervisor / Gang leader is available at Site and updated.	YES	
2	Safe Work Procedures / Instructions in the language understood by the workers available with Site supervisor / Gang leader and workers are aware of the safe work procedures.	YES	
3	Pep talk on safety issues (importance of safety, inspection of T&P and PPEs, proper use of PPEs, safe stringing practices, safe shut down practices, safe material handling / house keeping , safety to public / children, etc.) to the workers being done by the Safety Stewards / Supervisor / Engineer / Safety Officer of the Agency.	YES	
4	Adequate warning / protection to public / children moving nearby ensured (RED FLAGS / CAUTION TAPE / ROPE / BOARDS).	YES	
5	Flag men are posted at all the intermediate Spans / Towers with proper SIGNALING FLAGS AND COMMUNICATION GADGETS and they are keeping watch over the movement of general public / children and warning them when they come close.	YES	
6	Number of walkie Talkie available at Site & their healthiness.	NO	Not Available
7	All the workers are provided with good quality SAFETY HELMETS confirming to BIS Standard, IS:2925.	YES	Brand: Karoram
8	The workers engaged in Tower Erection work at height are provided with good quality FULL BODY DOUBLE LANYARD SAFETY BELTS confirming to BIS Standard IS:3521 / EN 361.	YES	Brand: Karoram
9	Other PPEs provided to the workers: SAFETY SHOES / COTTON HAND GLOVES for material handling / ELECTRICAL SAFETY GLOVES for S/D works	YES	Udyogi AS per Site Requirement
10	The workers engaged in work at height are provided with FALL PROTECTION SYSTEMS like Rope Grab Mobile Fall Arrestor for ascending / descending the Tower / Retractable Fall Arrestor (for vertical movement from cross arm to conductor / roller) / Horizontal Life Line Rope for moving from one member to another member (Horizontal movement within tower).	YES	
11	The fitters working on the tower have been trained on safety for work at height before deployment for tower erection works and Training Records maintained.	YES	
12	Life Line Rope / Lanyard of the Safety Belts are properly anchored / looped while the person is working at height / moving along the insulator string / conductor.	YES	
13	Whether the Towers have been permanently earthed?	YES	

Contd..2..

- 2 -

14	(a) First aid box with listed items as per BOCW Act, 1996 available. (b) Number of First Aid Trained persons and their names. (c) First Aid Register is available at site. (d) Nearby medical facilities for use during exigencies identified (Location / Phone No.).	Yes	
15	Before commencing stringing activity, all Tower Members and Bolt & Nuts are fixed and the Bolts properly tightened. WRITTEN CLEARANCE to take up stringing obtained.	Yes	
16	Before commencing stringing activity, it is ensured that all missing Tower Members and Bolt & Nuts are replaced. RECORDS OF CONFIRMATION OF LIQUIDATION OF DEFECTS MAINTAINED.	Yes	
17	Proper fixing of split pins and their verification before hoisting the Insulator String is being ensured.	Yes	
18	Adequate number of BACK STAYS, depending on type of conductors (TWIN / QUAD / HEXA), are provided for all the cross arms of the end Tower, and are properly fixed to the deadman before taking up Tensioning.	Yes	
19	Shutdown of state EB power lines, wherever required, are taken with PTW, and no short cut methods used and chances taken.	N/A	Not Required
20	(a) Adequate capacity local earths suitable for appropriate voltage power lines are used to prevent any electric shock while working on or near charged EB Lines / Power Line crossings. These earths are properly fixed to ensure proper contact with the conductors. Healthiness of discharge rods / cables found OK. (b) Whether a person is stationed near EB Power Line isolating points, especially in LT Lines, to prevent inadvertent charging before return of PTW. (c) Name of the Engineer / Supervisor available / responsible at Site for ensuring proper fixing of local earths and their removal during power line shut downs & normalising.	N/A	as m
21	Atleast one vehicle (four wheeler) is available for use in case of emergencies.	Yes	
22	The polypropylene / wire ropes are of adequate strength & free from any damage. The damaged / discarded ropes and steel wires are removed and not kept along with the other usable T&P, to prevent their use.	Yes	
23	(a) Condition of Load bearing links such as D-shackles, Come-along clamps, steel ropes, pulleys, etc., are found to be sound and free from any defect. (b) Whether all lifting T&P have been tested for safe working load and valid test certificates available and checked?	Yes	
24	The Stringing M/C / Tensioner / Puller are properly anchored and also properly earthed to prevent any electric shock due to induction / lightning to the operators.	Yes	
25	Whether Braking arrangement of TSE Machines / conductor drum stand / E/W Turn table is proper?	Yes	
27	Proper scaffolding arrangements are made during stringing of conductor at Road crossings and Railway crossings.	N/A	Not Required
28	Whether FINAL SAG operation is being done by WINCH M/C.		

SIGNATURE / NAME / DESIGNATION
OF POWERGRID REPRESENTATIVE

SIGNATURE / NAME / DESIGNATION
OF AGENCY'S REPRESENTATIVE

Copy To:

- (1) Regional In-charge / POWERGRID / _____
- (2) Projects In-charge (Region) / POWERGRID / _____
- (3) Site Incharge / POWERGRID / _____
- (4) Project In-charge / AGENCY / Zashaf



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



Annexure 21

Sample Site Inspection Report – Gokulnagar S/S

ANNEXURE-I
SITE INSPECTION REPORT

SUBSTATION	PACKAGE	EXECUTING AGENCY	DATE OF INSPECTION
132/33kV Gokulnagar Substation	TRP-SS-02	M/s. SPML Infra Limited	10 th January, 2020

S.I. NO.	OBSERVATIONS
1.	Medical Health Check-up of 08 (eight) No. site workers conducted on 10/01/2020. Records available at site. <i>(Sample Medical Health Check-up Record of site worker enclosed)</i>
2.	Induction Training & Daily Tool Box Meeting record of workers maintained. <i>(Sample Record of Daily Tool Box Meeting enclosed)</i>
3.	01 No. Sand Filter for workers & staffs/ third party drinking water portability test report of water from Sand Filter available at site. <i>(Photograph of Sand Filter & Water Test Report enclosed)</i>
4.	Proper toilets separately for Gents & Ladies available at site. However, the contractor has been instructed to sanitize the toilets periodically. <i>(Photograph of Toilets enclosed)</i>
5.	First Aid Box with necessary medicines available at site. <i>(Photograph of First Aid Box at site enclosed)</i>
6.	First-Aid/ Incidence & Accident Register available at site. <i>(Photograph of Accident/ First Aid Register at site enclosed)</i>
7.	Safety Banners & Emergency Contact Numbers displayed at site. However, contractor is advised to increase the numbers of Safety Banners. Labour Wage Banner not found at site. Contractor is instructed to display the Labour Wage Banner on priority basis. <i>(Photographs of Safety Banners & Emergency Contact Numbers enclosed)</i>
8.	Record of workers deployed, along with their self attested copies of ID proofs available at site. <i>(Photograph of Register & Sample Self-attested ID proof of Worker enclosed)</i>
9.	02 No. Fire Extinguishers available at site. <i>(Photograph of Fire Extinguisher at site enclosed)</i>
10.	Sufficient PPEs for workers available at site. <i>(Photograph of Stock of PPEs in Site Store enclosed)</i>
11.	Proper barricading by caution tape around the excavated area. <i>(Photograph showing barricading around excavated area enclosed)</i>

Rahul
पावरग्रिड (एन.ए.ए.)/FILED
पावरग्रिड/POWERGRID
स.पु.अ. - आगरा/NER. Agara

S. Modi
(S. Modi)
Safety officer

S. Modi
Site In-charge

K. Prasad
Site In-charge




12.	Grievance Register available & nominated members of site level GRC displayed at site. <i>(Photograph of Grievance Register & nominated members of site level GRC enclosed)</i>
13.	01 No. Dustbin available at site. <i>(Photograph of Dustbin at site enclosed)</i>
14.	Third party testing certificates of lifting tools & tackles available at site. <i>(Third Party Testing Certificates of Lifting Tools & Tackles enclosed)</i>
15.	Statutory Documents (Labor License/ Registration against BOCW/ Safety Plan & All mandatory Insurances) found valid & a copy of each available at site. <i>(Copy of Statutory Documents enclosed)</i>

Rahul
FIELD OFFICER
पावरग्रिड / POWERGRID
अपरकला / NER, Agartala

Jindhi
(Tjoti pratek padhi)
Safety officer
SPML Intra Tripura

Umadhara
Machhi
Site 1/c
SPML Intra Tripura

Uday
GRC
SPML Intra Tripura

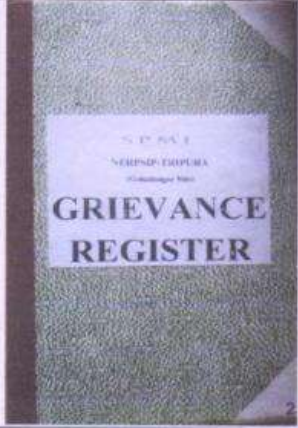









Medical Health Check-up Record																																																																																		
<p>HEALTH HISTORY</p> <p>PERIOD OF EMPLOYMENT OF THIS LIMITED</p> <p>DATE: 10/10/2023</p> <p>NAME: [Blank]</p> <p>ADDRESS: [Blank]</p> <p>AGE: 35</p> <p>SEX: Male</p> <p>RELIGION: Hindu</p> <p>EDUCATION: [Blank]</p> <p>PROFESSION: [Blank]</p> <p>PREVIOUS DISEASES: [Blank]</p> <p>ALLERGIC REACTIONS: [Blank]</p>	<p>To be completed by the medical officer examining the candidate.</p> <p>Physical records</p> <p>Age: 35 years Height: 5.8 inches Weight: 75 kg</p> <p>Any defects in: Senses: Vision [Blank], Hearing [Blank], Taste [Blank], Smell [Blank], Touch [Blank] Feet: [Blank], Nails: [Blank], Others: [Blank]</p> <p>Cardiovascular system</p> <p>Heart: Normal Pulse rate: 77 Blood pressure: 120/80 mm Hg</p> <p>Respiratory system: [Blank]</p> <p>Accumulation of sputum: [Blank]</p> <p>Musculoskeletal system</p> <p>Deformities: [Blank]</p> <p>Neurological system: [Blank]</p> <p>Mental function: Normal</p> <p>Pupils: [Blank]</p> <p>Reflexes: [Blank]</p> <p>Respiration: [Blank]</p> <p>Insanity: [Blank]</p> <p>Any other defects: [Blank]</p>	<p>Vision</p> <p>Is the applicant colour blind? No</p> <p>Distance vision: [Blank] Near vision: [Blank]</p> <p>Any other defects in vision: [Blank]</p> <p>Vertigo test pass or not pass: [Blank]</p> <p>Any other defects in vision: [Blank]</p>																																																																																
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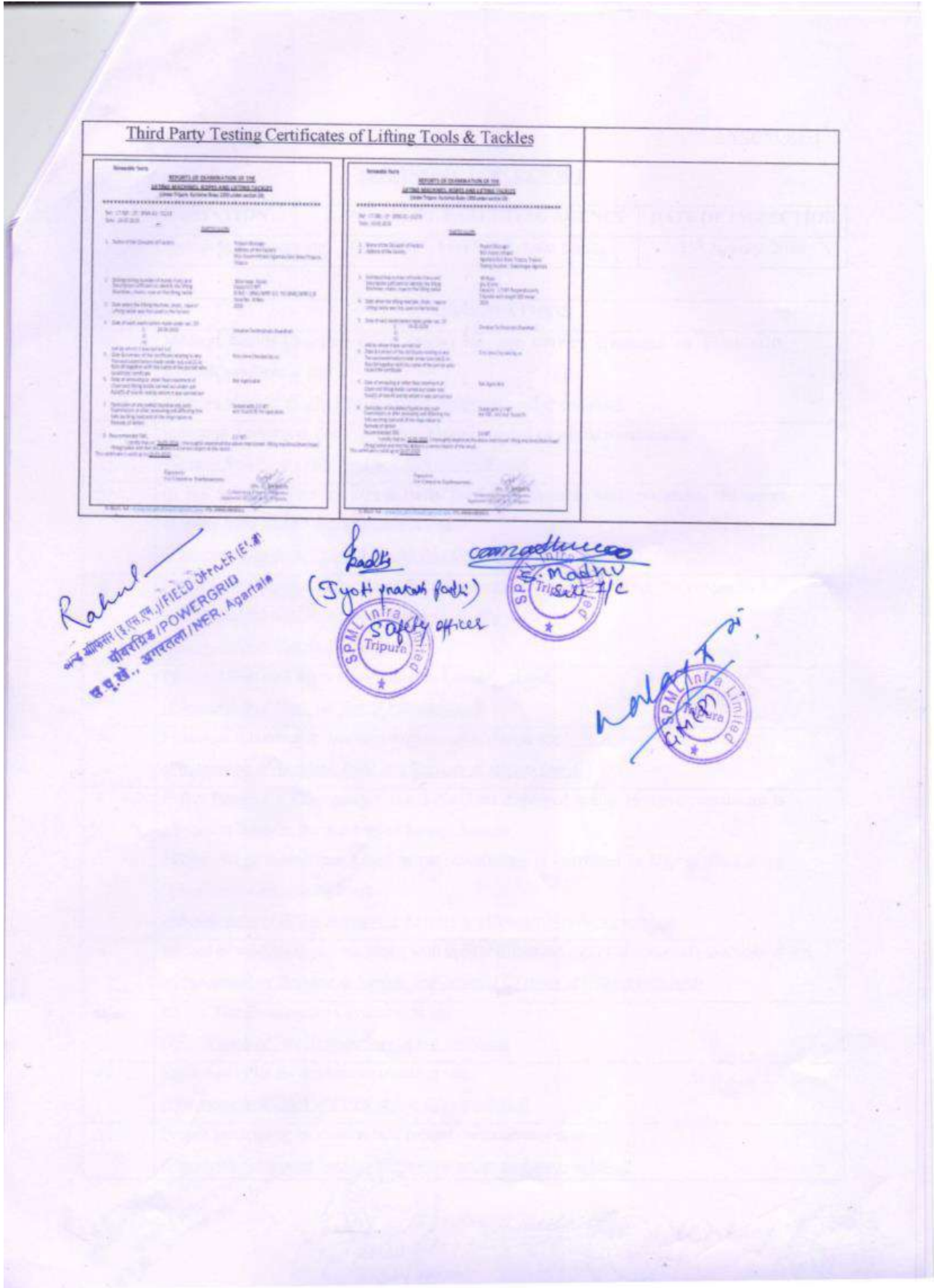
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Rohit
 100% भारतीय (K&N) LIMITED OFFICE, B-1, E-4
 मॉडरनिज पावरग्रिड / POWERGRID
 8 ए.पी. रो., आगरा / NER, Agartala

Ladli
 (Syed) Prakash Ladli
 Safety officer
 SPML Tripura
 S. Prakash
 Site 7/C

Arjun
 SPML Tripura
 C.M.P.

<p>Grievance Register/ Nominated Members of Site Level GRC</p>  		<p>Dustbin</p> 
<p>Statutory Documents</p>		
 <p>Safety Plan</p> 	 <p>Labor License</p>	 <p>BOCW</p>
	 <p>Erection All Risk Policy</p>	 <p>WC Policy</p>
<p><i>Handwritten signatures and stamps:</i></p> <p>Rahul (Safety Officer)</p> <p>(Jyoti prasad) Safety officer</p> <p>Camodius</p> <p>S. MISHRA</p> <p>AMCP</p> <p>Tripura</p>		



Rahul
 अध्यक्ष/अधीक्षक (नि.स.स.)/FIELD OFFICER (E. & S)
 पावरग्रिड/POWERGRID
 एच.यू.सि., आगरवला/NER, Agartala

Jyoti Prakash Fodli
 Safety officer
 S.P.M.I. Infra Tripura

E. Madhu
 S.P.M.I. Infra T/C

Rajendra
 S.P.M.I. Infra Limited



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



Annexure 22

GRC Details

TRIPURA STATE ELECTRICITY CORPORATION LIMITED

(A Govt. of Tripura Enterprise)



No. F. 5(85) / TSECL/2016-17/ 3308-40

dated, Agartala, the 27th February, 2017

To
The General Manager (NERPSIP)
Power Grid Corporation of India Ltd.
Royal Centre Flat No. 102
G.S. Road, Ulubari
Guwahati - 781007.

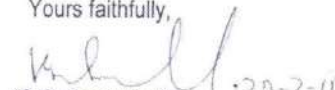
Sub :- Constitution of Site Level Grievance Redressal Committee (GRC) for NER Power
System Improvement Project (NERPSIP) : Tripura

Ref :- NEAGT/NERPSIP / Grievance / 313, dated 19.01.2017.

Sir,

In inviting reference to the letter above, Site Level Grievance Redressal Committee (GRC) has been constituted and attached herewith in line with the State Specific ESPPF adopted by TSECL for the work covered under Tranche - I of ongoing World Bank aided NER Power System Improvement Project (NERPSIP) pertaining to the State of Tripura, to provide a trusted way to resolve environmental and social concerns of the Project and also to effectively address person / community / stake holder complaints arising out of the project implementation.


Yours faithfully,


(S.G. Choudhuri)

Director (Finance) & Company Secretary,
TSECL, Agartala.

Copy to :-

- 1) The P.S. to the CMD, TSECL, Agartala.
- 2) The GM (Technical), TSECL, Agartala.
- 3) The AGM (Transmission), TSECL, Agartala.
- 4-10) The AGM, EC - Gomati / Belonia / Sepahijala / II, Agartala / Khowai / Dhalai / Unokoti.
- 11-13) The DGM, TD, Agartala / Udaipur / Kumarghat.
- 14-16) The DGM (Civil) / DGM (P-II) / DGM (P-III), Transmission Circle, Agartala.
- 17-32) The DGM, ED - Amarpur / Bagafa / Udaipur / Belonia / Sabroom, Jampujala / Sonamura / Bishalgarh / Mohanpur / Teliamura / Jirania / Khowai / Ambassa / Manu / Kamalpur / Kailashahar.


Director (Finance) & Company Secretary

SITE LEVEL GRIEVANCE REDRESSEL COMMITTEE

FOR NER POWER SYSTEM IMPROVEMENT PROJECT (TRANCHE - I): TRIPURA

A. 132 KV sub-station :

Package No.	Sl. No.	Sub-station	Site Level Grievance Redressel Committee	
			Nominated Official of TSECL	Nominated Official of PowerGrid
SS01	1	Belonia	1) DGM, TD, Udaipur, 2) Mgr. Belonia S/S.	Dy. Mgr, PGCIL, Belonia
	2	Bagafa	1) DGM, TD, Udaipur, 2) Mgr. Bagafa S/S.	
	3	Sabroom	1) DGM, TD, Udaipur, 2) Mgr. Sabroom S/S.	Dy. Mgr, PGCIL, Satchand
	4	Satchand	1) DGM, TD, Udaipur, 2) Mgr. Satchand S/S.	
SS02	5	Rabindranagar	1) DGM, TD, Agartala, 2) DGM (Civil), TC, Agartala 3) Sr.Mgr. Rabindranagar S/S	Manager, PGCIL, Udaipur
	6	Gokulnagar	1) DGM, TD, Agartala, 2) DGM (Civil), TC, Agartala 3) Sr.Mgr. Gokulnagar S/S	Dy. Mgr, PGCIL, Agartala
	7	Jirania	1) DGM, TD, Agartala, 2) DGM (Civil), TC, Agartala 3) Sr. Mgr. Jirania S/S	
	8	Udaipur	1) DGM, TD, Udaipur, 2) Sr.Mgr. Udaipur S/S.	Manager, PGCIL, Udaipur
	9	Rokhia	1) DGM, TD, Agartala, 2) DGM (Civil), TC, Agartala 3) Sr.Mgr. TSD,Agartala	Manager, PGCIL, Udaipur
SS03	10	Mohonpur	1) DGM, TD, Agartala, 2) DGM (Civil), TC, Agartala	Dy. Mgr, PGCIL, Agartala
	11	Amarpur	1) DGM, TD, Udaipur, 2) Mgr. Amarpur S/S	Manager, PGCIL, Udaipur
	12	Manu	1) DGM, TD, Kumarghat, 2) Sr.Mgr. Ambassa S/S	Asstt. GM, PGCIL, Kumarghat
	13	Ambassa		
	14	Dhalabil	1) DGM, TD, Agartala, 2) Sr.Mgr. Dhalabil S/SS/S	Dy. Mgr, PGCIL, Agartala
	15	Kailashahar	1) DGM, TD, Kumarghat, 2) Sr.Mgr. Kailashahar S/S	Asstt. GM, PGCIL, Kumarghat
	16	Dharmanagar	1) DGM, TD, Kumarghat, 2) Sr.Mgr. Dharmanagar S/S	



SITE LEVEL GRIEVANCE REDRESSEL COMMITTEE

FOR NER POWER SYSTEM IMPROVEMENT PROJECT (TRANCHE - I): TRIPURA

B. 132 KV line :

Package No.	Sl. No.	Line	Site Level Grievance Redressel Committee	
			Nominated Official of TSECL	Nominated Official of PowerGrid
TW01	1	Bagafa - Belonia	1) DGM, TD, Udaipur, 2) DGM (Civil), TC, Agartala 3) Sr.Mgr, TSD, Agartala.	Dy. Mgr, PGCIL, Belonia
	2	Belonia - Sabroom		
	3	Bagafa - Satchand		
TW02	4	Rabindranagar - Rokhia	1) DGM, TD, Agartala, 2) DGM (Civil), TC, Agartala 3) Sr.Mgr, Rabindranagar S/S	Manager, PGCIL, Udaipur
	5	Rabindranagar - Belonia		
	6	Udaipur - Bagafa		
	7	LILO of Surjamaninagar – Rokhia at Gokulnagar		
TW03	8	Kailashahar - Dharmanagar	1) DGM, TD, Kumarghat, 2) Sr.Mgr, Dharmanagar S/S 1) DGM, TD, Udaipur, 2) DGM(Civil),TC, Agartala 3) Sr.Mgr, TSD,Agartala	Asstt GM, PGCIL, Kumarghat
	9	Udaipur - Amarpur		
	10	LILO of Grid 79 Tilla - Dhalabil at Mohonpur		
	11	LILO of Ambassa – P. K. Bari at Manu		



**SITE LEVEL GRIEVANCE REDRESSAL COMMITTEE
FOR NER POWER SYSTEM IMPROVEMENT PROJECT (TRANCHE - I): TRIPURA**

C. 33 KV Sub-station and 33 KV lines :

Package No.	Sl. No.	New sub-station	Augmentation Sub-station	New 33 KV line	Renovation 33 KV line	Site Level Grievance Redressal Committee	
						Nominated Official of TSECL	Nominated Official of PowerGrid
DMS 01	1	Karbook	Rani	LILO of Tirthamukh - Silachari at Karbook	Jolaibari - Bagafa	1) DGM,ED-Amarpur 2) DGM,TD,Udaipur	Manager, PGCIL, Udaipur
	2	Muhuripur	Jolaibari	LILO of Jolaibari - Bagafa at Muhuripur	Silachari - Tirthamukh	1)DGM,ED-Bagafa 2)DGM, ED - Amarpur 3)DGM,TD,Udaipur	Dy. Mgr, PGCIL, Belonia
	3	Dalak (Chelagang)		Amarpur 132/33 KV S/S - Dalak		1)DGM,ED-Amarpur, 2)DGM,TD,Udaipur	Manager, PGCIL, Udaipur
	4	Garjee		Jatanbari - Dalak		1)DGM, ED - Udaipur, 2)DGM,TD,Udaipur	
	5	Chittamara		Belonia Existing 33/11 kV S/s- Chittamara		1)DGM,TD,Udaipur, 2)DGM ED-Belonia	Dy. Mgr, PGCIL, Belonia
	6	Maharani		Garjee - Chittamara		1)DGM,ED-Udaipur, 2)DGM,TD,Udaipur	
	7	Chechua		Udaipur 132/33 kV s/s - Maharani Garjee - Maharani Amarpur 132/33 KV S/S - Chechua		1)DGM,ED-Amarpur, 2)DGM, ED - Udaipur, 3)DGM,TD,Udaipur 1)DGM,ED-Amarpur, 2)DGM,TD,Udaipur	Manager, PGCIL, Udaipur
DMS 02	8	Ekinpur	Hrshyamukh	Sabroom 132 KV S/s - Manughat	Belonia - Hrshyamukh	1) DGM,ED- Belonia 2) DGM,TD,Udaipur	Dy. Mgr, PGCIL, Belonia
	9	Manughat	Rajnagar	Manughat - Srinagar	Belonia - Rajnagar		Dy. Mgr, PGCIL, Satchand
	10	Rupaichari		Satchand 132/33 KV S/S - Srinagar		1) DGM,ED- Sabroom 2) DGM,TD,Udaipur	
	11	Barpathari		Tapping point on existing Belonia - Hrshyamukh line - Srinagar		1) DGM,ED- Belonia 2) DGM,TD,Udaipur	Dy. Mgr, PGCIL, Belonia
	12	Gabardi		Satchand 132/33 KV S/S - Rupaichari		1) DGM,ED- Jampujala 2) DGM,TD,Agartala, 3) DGM(Civil),TC, Agartala	Dy. Mgr, PGCIL, Agartala
	13	Srinagar		Rajnagar - Ekinpur		1)DGM,ED- Belonia 2)DGM,TD,Udaipur	Dy. Mgr, PGCIL, Satchand Manager, PGCIL, Udaipur
				LILO of existing Belonia - Rajnagar line at Barpathari Jolaibari - Silachari Jolaibari - Proposed Satchand Proposed Rupaichari - proposed Sabroom LILO of existing Suraj Mani Nagar -Takarjala line at Gabardi		1)DGM,ED-Sabroom 2)DGM,TD,Udaipur 1)DGM,ED-Sabroom 2)DGM,TD,Udaipur 1)DGM,ED-Sabroom 2)DGM,TD,Udaipur 1)DGM,ED- Jampujala 2) DGM,TD,Agartala, 3) DGM(Civil),TC, Agartala	Dy. Mgr, PGCIL, Agartala



**SITE LEVEL GRIEVANCE REDRESSAL COMMITTEE
FOR NER POWER SYSTEM IMPROVEMENT PROJECT (TRANCHE – I): TRIPURA**

C. 33 KV Sub-station and 33 KV lines :

Package No.	Sl. No.	New sub-station	Augmentation Sub-station	New 33 KV line	Renovation 33 KV line	Site Level Grievance Redressal Committee	
						Nominated Official of TSECL	Nominated Official of PowerGrid
DMS03	14	Sekerkote	Madhupur	LILO of Badharghat - Jangalia line at Sekerkote	Badharghat - Jangalia	1) DGM,ED- Bishalgarh 2) DGM, ED - Sonamura 3) DGM,TD,Agartala, 4) DGM(Civil),TC, Agartala	Dy. Mgr, PGCIL, Agartala
	15	Golaghati	Melaghar	Proposed Gokul Nagar - Golaghati	Rabindranagar - Kathalia		
	16	Durganagar	Kathalia	Takarjala - Golaghati	Rabindranagar - Melaghar	1) DGM,ED- Sonamura 2) DGM,TD, Agartala, 3) DGM(Civil),TC, Agartala	Dy. Mgr, PGCIL, Belonia
	17	Nidaya	Takarjala	Proposed Gokul Nagar - Durganagar	Badharghat - SM Nagar		
	18	Nalchar		Madhupur - Durganagar	SM Nagar - Takarjala		
				Kathalia - Nidaya			
				Melaghar -Nalchar		1)DGM,ED- Bishalgarh 2)DGM,TD,Agartala, 3)DGM(Civil),TC, Agartala	Dy. Mgr, PGCIL, Agartala
				Bishramganj -Nalchar			
				Proposed Gokul Nagar 132/33 KV S/S - Tapping at Madhupur- Jangalia line		1)DGM,ED- Sonamura 2)DGM,TD,Agartala, 3)DGM(Civil),TC, Agartala	Dy. Mgr, PGCIL, Belonia
				Bishramganj - Jangalia			
			Rajnagar - Nidaya				



**SITE LEVEL GRIEVANCE REDRESSEL COMMITTEE
FOR NER POWER SYSTEM IMPROVEMENT PROJECT (TRANCHE – I): TRIPURA**

C. 33 KV Sub-station and 33 KV lines :

Package No.	Sl. No.	New sub-station	Augmentation Sub-station	New 33 KV line	Renovation 33 KV line	Site Level Grievance Redressel Committee	
						Nominated Official of TSECL	Nominated Official of PowerGrid
DMS04	19	Simna	Hezamara	Dhalabil –Khowai	Teliamura – Kalyanpur	1)DGM,TD,Agartala, 2)DGM(Civil),TC, Agartala 3)DGM,ED-Mohanpur	Dy. Mgr, PGCIL, Agartala
	20	Barkathal	Khayerpur	Ampura – Khowai	Dhalabil – Kalyanpur	1)DGM,TD,Agartala 2)DGM,ED-Mohanpur 3) DGM, ED-Teliamura	
	21	Bamutia		Hezamara -Simna	Mohonpur – Hezamara	1)DGM,TD,Agartala, 2)DGM(Civil),TC, Agartala 3)DGM,ED-Mohanpur	
	22	Champak -Nagar		Tapping point on Mohanpur - Hezamara line to Simna	Mohonpur – Agartala	1)DGM,TD,Agartala, 2)DGM(Civil),TC, Agartala 3)DGM,ED-Mohanpur 4)DGM, ED - Jirania	
	23	Mungia -kami		Hezamara -Barkathal	Khayerpur – Jirania	1)DGM,TD,Agartala, 2)DGM(Civil),TC, Agartala 3)DGM,ED-Mohanpur 4)DGM, ED - Jirania	
	24	Taidu		Proposed Mohanpur -Barkathal		1)DGM,TD,Udaipur, 2)DGM,ED-Amarpur 3)DGM, ED- Mohanpur	
	25	Lembu -cherra		Durjoynagar – Bamutia		1)DGM,TD,Agartala, 2)DGM(Civil),TC, Agartala 3)DGM,ED-Mohanpur	
	26	Khowai		Lembucherra -Bamutia		1)DGM,TD,Agartala, 2)DGM(Civil),TC, Agartala 3)DGM,ED-Mohanpur 4)DGM, ED - Khowai	
	27	ADC Head Qtr		LILO of existing Agartala - Mohanpur at Lembucherra		1)DGM,TD,Agartala, 2)DGM(Civil),TC, Agartala 3)DGM, ED – Jirania 4) DGM, ED – Mohanpur	
	28	Ranir -bazar		Jirania –Champaknagar			
				LILO of existing Khayerpur - Jirania line at Ranirbazaar		1)DGM,TD,Agartala, 2)DGM(Civil),TC, Agartala 3)DGM,ED-Mohanpur 4)DGM, ED - Khowai	
				Jirania –ADC Hear Qtr			
				Champak Nagar –ADC		1)DGM,TD,Agartala, 2)DGM(Civil),TC, Agartala 3)DGM,ED-Mohanpur 4)DGM, ED - Khowai	
				Hezamara -Dhalabil			
			LILO of existing Ambassa - Teliamura at Mungiakami		1)DGM,TD,Agartala, 2)DGM(Civil),TC, Agartala 3)DGM,ED-Teliamura		
			Teliamura –Taidu		1)DGM,TD,Udaipur 2)DGM,ED-Amarpur		
			Chechua – Taidu				



**SITE LEVEL GRIEVANCE REDRESSEL COMMITTEE
FOR NER POWER SYSTEM IMPROVEMENT PROJECT (TRANCHE – I): TRIPURA**

C. 33 KV Sub-station and 33 KV lines :

Package No.	Sl. No.	New sub-station	Augmentation Sub-station	New 33 KV line	Renovation 33 KV line	Site Level Grievance Redressel Committee	
						Nominated Official of TSECL	Nominated Official of PowerGrid
DMS05	29	Tilla Bazar	Gandacherra	Ambassa - JawharNagar	Ambassa - Teliamura	1)DGM, TD,Kumarghat, 2)DGM,ED-Kailashahar 3) DGM, ED-Ambassa	Asstt. GM, PGCIL, Kumarghat
	30	JawharNagar	Salema	LILO of existing Chhamanu-Manu line at Challengta		1)DGM, TD,Kumarghat, 2)DGM,ED- Ambassa 3) DGM, ED -Manu	
	31	Challengta	Rangrung	Proposed Jawhar Nagar - Dhumacherra		1)DGM, TD,Kumarghat, 2)DGM,ED- Manu	
	32	Dhumachhera		Proposed Manu 132/33 KV S/S - Dhumacherra			
	33	82 mile		Proposed Manu 132/33 KV S/S - 82 mile		1)DGM, TD,Kumarghat, 2)DGM,ED- Manu, 3)DGM, ED -Kamalpur	
	34	Durga Chowmohani		P K Bari - 82 mile			
				Kalaisahar existing 132/33 KV s/s -Tillabazaar		1)DGM, TD,Kumarghat, 2) DGM,ED- Manu, 3) DGM, ED-Kailashahar	
				Proposed Manu 132/33 KV S/S- tapping at Chawmanu - Manu line		1)DGM, TD,Kumarghat, 2)DGM,ED- Manu, 3) DGM, ED -Kamalpur	
			LILO of existing Salema - Kamalpur Line				



पावर ग्रिड कारपोरेशन ऑफ इंडिया लिमिटेड

(भारत सरकार का उद्यम)

POWER GRID CORPORATION
OF INDIA LIMITED

(A Government of India Enterprise)



दुरभाष : (0381)2330045 (क)

NERPSIP Office,

Ramnagar 06(Middle); 3rd Crossing,, Agartala - 799002.

उत्तर पूर्वीय क्षेत्र / NORTH EASTERN REGION

Ref. No. NEAGT/NERPSIP-102/2017-18/ 477

Date: 19.06.2017

To,

The AGM (Transmission)
Tripura State Electricity Corporation Limited
79 Tilla, Transmission Circle
Agartala-799006, Tripura (West)

Sub: Nominations from local administration, panchayat/ADC, affected persons etc. as local representative for site level Grievance Redressal Committee (GRC).

Reference: - No. F. 5(85) / TSECL/2016-17/3308-40, dated 27.02.2017

Dear Sir,

With reference to the subject cited above, you may be aware that site level Grievance Redressal Committee (GRC) with members from POWERGRID and TSECL has already been constituted (*copy enclosed*). However as per the requirement of World Bank, the nominations from local administration, panchayat/ADC, affected persons etc. as local representative is also mandatory. This has already been discussed with World Bank during the meeting held on 01st - 02nd March, 2017 at Guwahati (*copy of World Bank Aide-Memoire enclosed*).

In view of above, you are kindly requested to arrange to get the nominations from local administration, panchayat/ADC, affected persons etc. as local representative for site level GRC.

On receipt of nominations, compliance will be communicated to the World Bank.

Thanking you,

Encls: As above

Copy to:

1. GM (NERPSIP), POWERGRID, Guwahati for kind information please



Yours faithfully,


19/06/17
DGM (NERPSIP)
POWERGRID, Agartala

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



दूरभाष : (0381)2330045 (क)
NERPSIP Office,
Ramnagar-06(Middle); 3rd Crossing,, Agartala - 799002.

उत्तर पूर्वीय क्षेत्र / NORTH EASTERN REGION

Ref. No. NEAGT/NERPSIP-102/2018-19/587

Date: 27.03.2019

To,

→ The AGM (Transmission)
Tripura State Electricity Corporation Limited
79 Tilla, Transmission Circle
Agartala-799006, Tripura (West)

Sub: Nominations from local administration, panchayat/ADC, affected persons etc. as local representative for site level Grievance Redressal Committee (GRC) – Reminder-2

Reference: - No. F. 5(85) / TSECL/2016-17/3308-40, dated 27.02.2017

Dear Sir,

With reference to the subject cited above, you may be aware that site level Grievance Redressal Committee (GRC) with members from POWERGRID and TSECL has already been constituted (*copy enclosed*). However as per the requirement of World Bank, the nominations from local administration, panchayat/ADC, affected persons etc. as local representative is also mandatory. This has already been discussed with World Bank during the 5th Project Steering Committee meeting held on 12th November, 2018 at Guwahati (*copy of World Bank Aide-Memoire enclosed*).

In view of above, you are once again requested to arrange to get the nominations from local administration, panchayat/ADC, affected persons etc. as local representative for site level GRC.

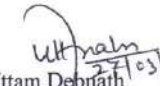
On receipt of nominations, compliance will be communicated to the World Bank.

Thanking you,

Encl: As above



Yours faithfully,


Uttam Debnath
Manager (NERPSIP)
POWERGRID, Agartala

Copy to:

1. Sr. GM (NERPSIP), POWERGRID, Agartala for kind information please
2. CGM (NERPSIP), POWERGRID, Guwahati for kind information please

Annexure A and B

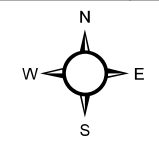
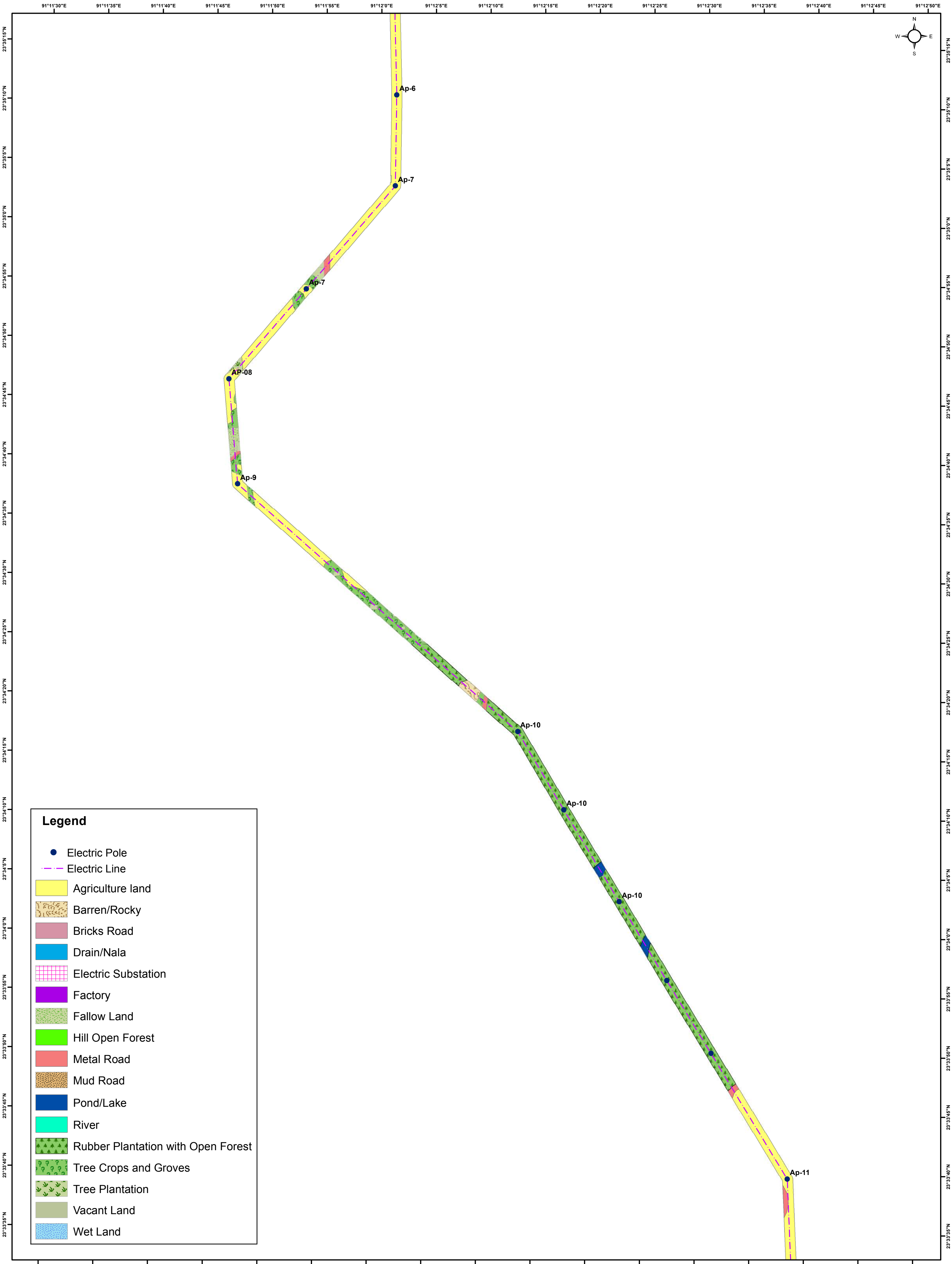
LAND USE/LAND COVER DETAILS OF 132 KV D/C ROKHIA RABINDRANAGAR TRANSMISSION LINE
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



Legend

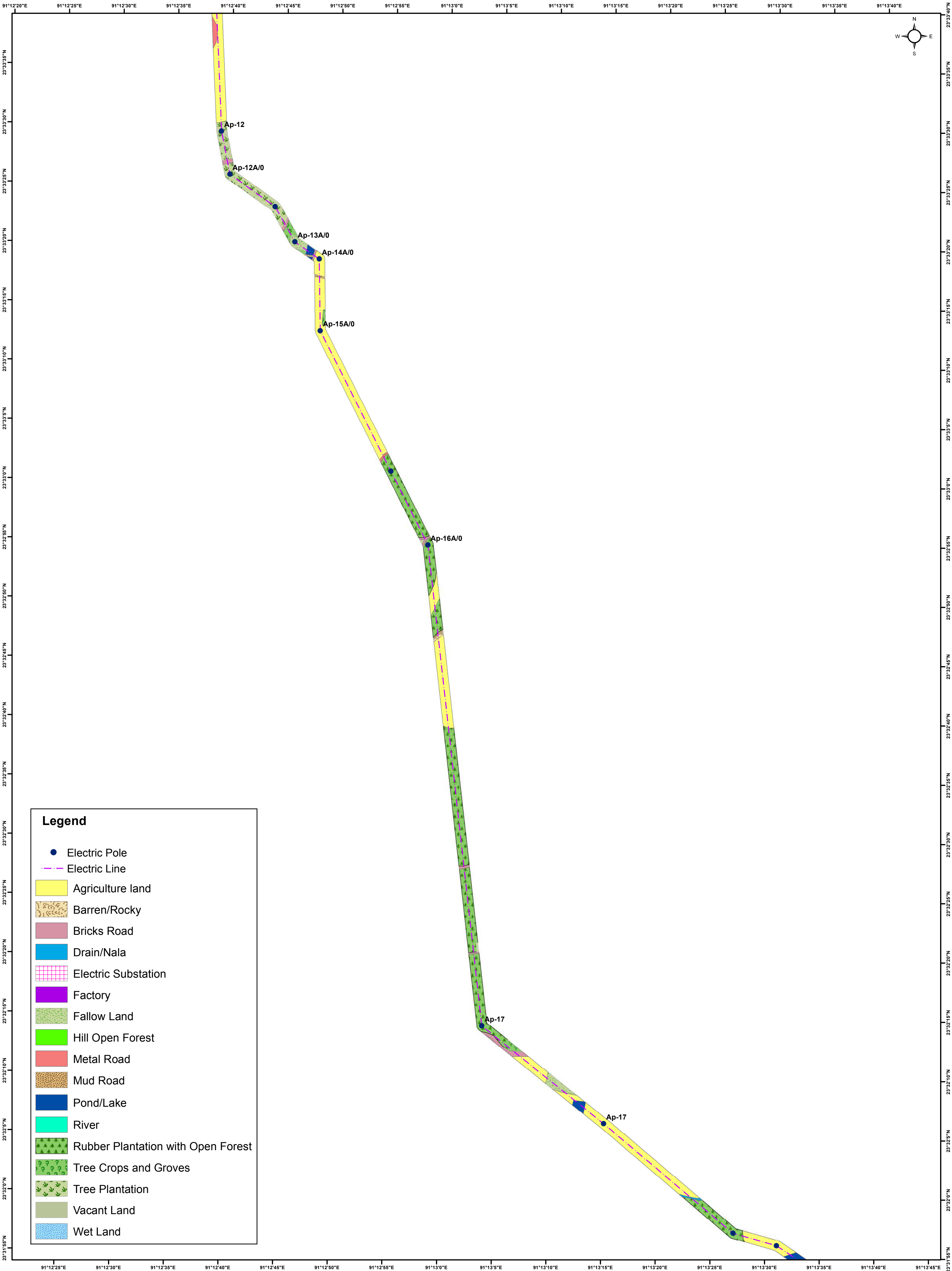
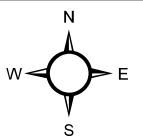
- Electric Pole
- - - Electric Line
- Agriculture land
- Barren/Rocky
- Bricks Road
- Drain/Nala
- Electric Substation
- Factory
- Fallow Land
- Hill Open Forest
- Metal Road
- Mud Road
- Pond/Lake
- River
- Rubber Plantation with Open Forest
- Tree Crops and Groves
- Tree Plantation
- Vacant Land
- Wet Land

LAND USE/LAND COVER DETAILS OF 132 KV D/C ROKHIA RABINDRANAGAR TRANSMISSION LINE
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



- Legend**
- Electric Pole
 - - - Electric Line
 - Agriculture land
 - Barren/Rocky
 - Bricks Road
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 - Rubber Plantation with Open Forest
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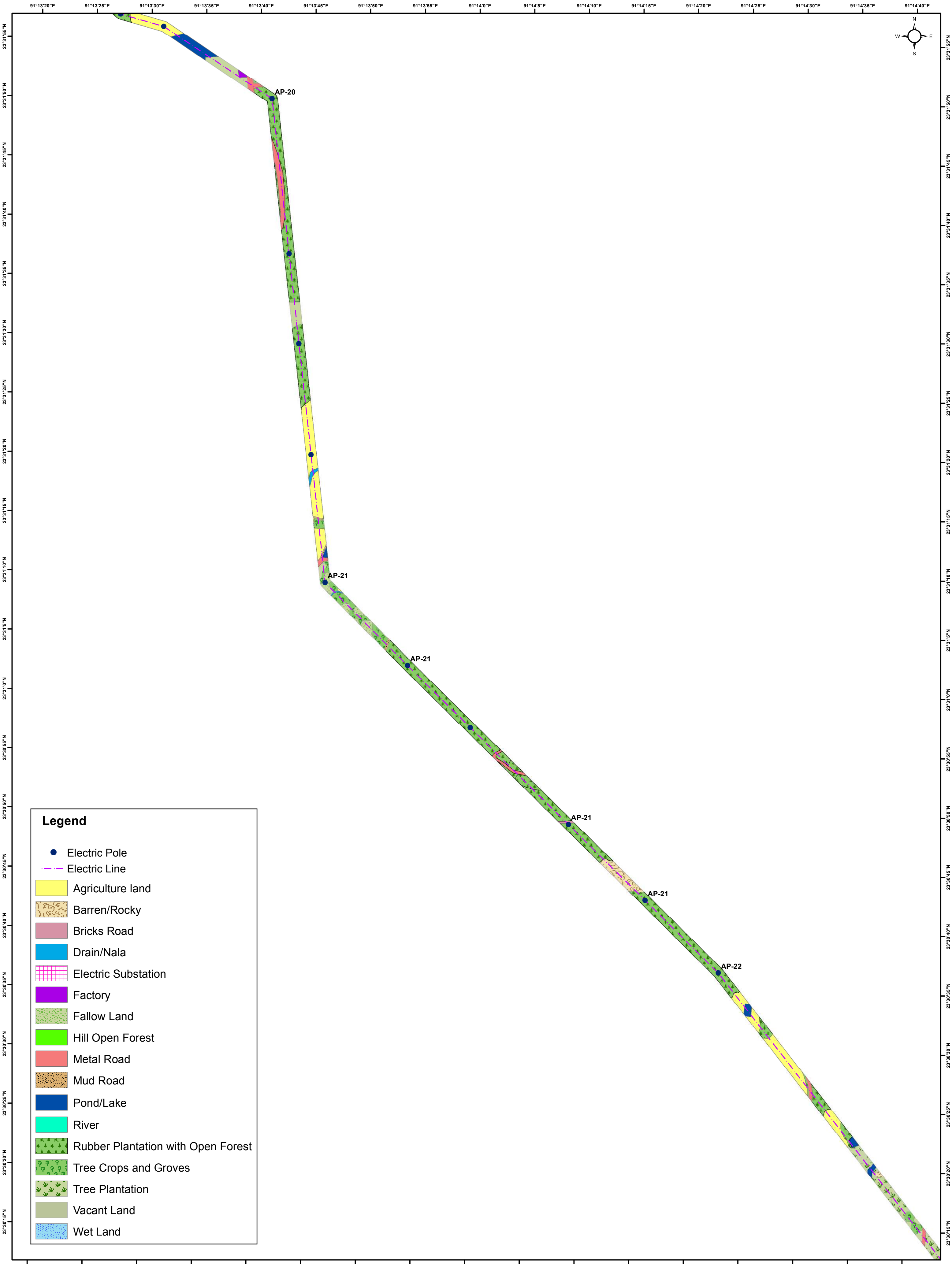
LAND USE/LAND COVER DETAILS OF 132 KV D/C ROKHIA RABINDRANAGAR TRANSMISSION LINE
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



Legend

- Electric Pole
- - - Electric Line
- Agriculture land
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- Bricks Road
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- Electric Substation
- Factory
- Fallow Land
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- Metal Road
- Mud Road
- Pond/Lake
- River
- Rubber Plantation with Open Forest
- Tree Crops and Groves
- Tree Plantation
- Vacant Land
- Wet Land

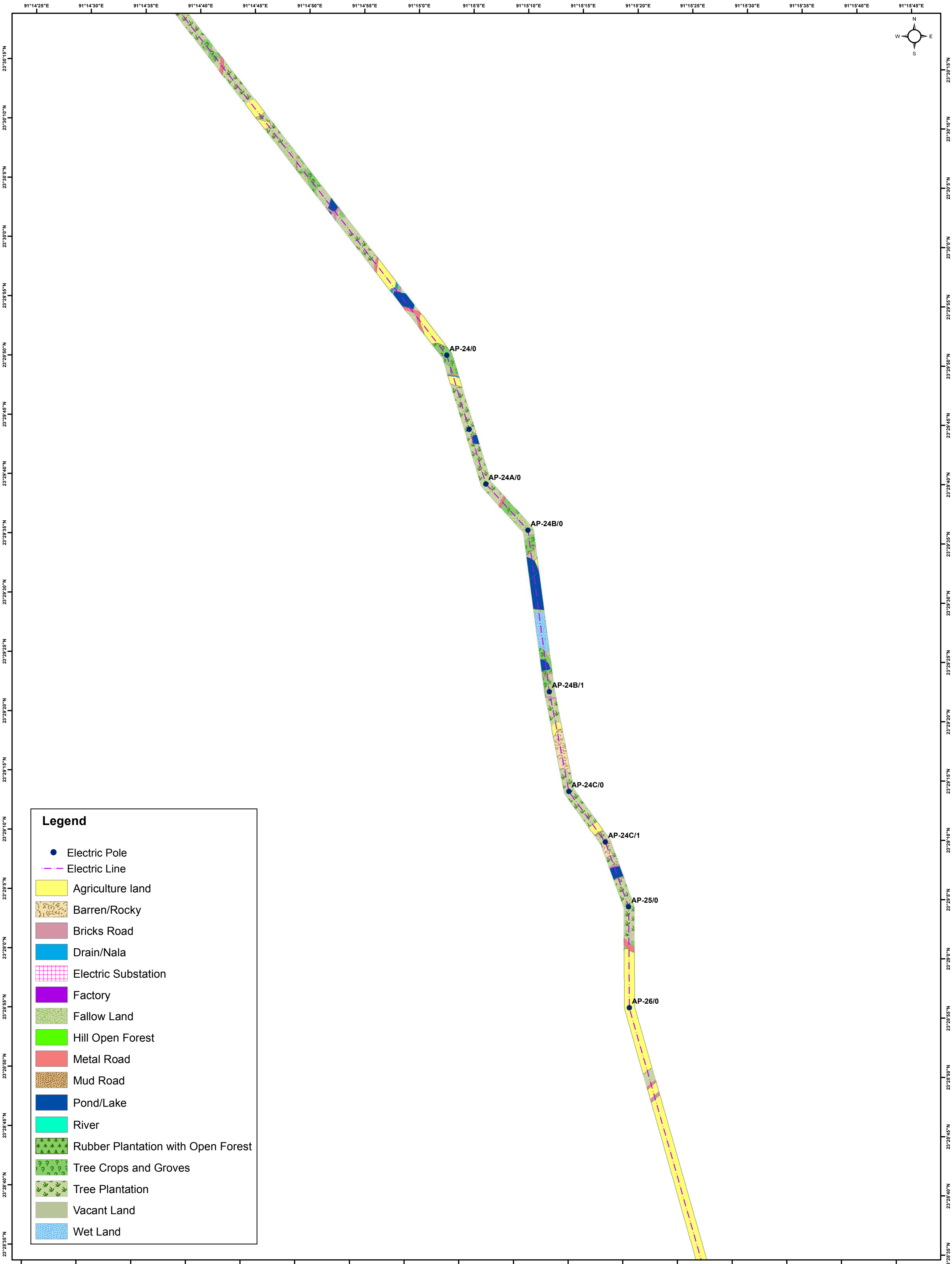
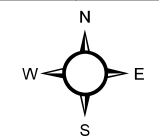
LAND USE/LAND COVER DETAILS OF 132 KV D/C ROKHIA RABINDRANAGAR TRANSMISSION LINE
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



Legend

- Electric Pole
- Electric Line
- Agriculture land
- Barren/Rocky
- Bricks Road
- Drain/Nala
- Electric Substation
- Factory
- Fallow Land
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- Metal Road
- Mud Road
- Pond/Lake
- River
- Rubber Plantation with Open Forest
- Tree Crops and Groves
- Tree Plantation
- Vacant Land
- Wet Land

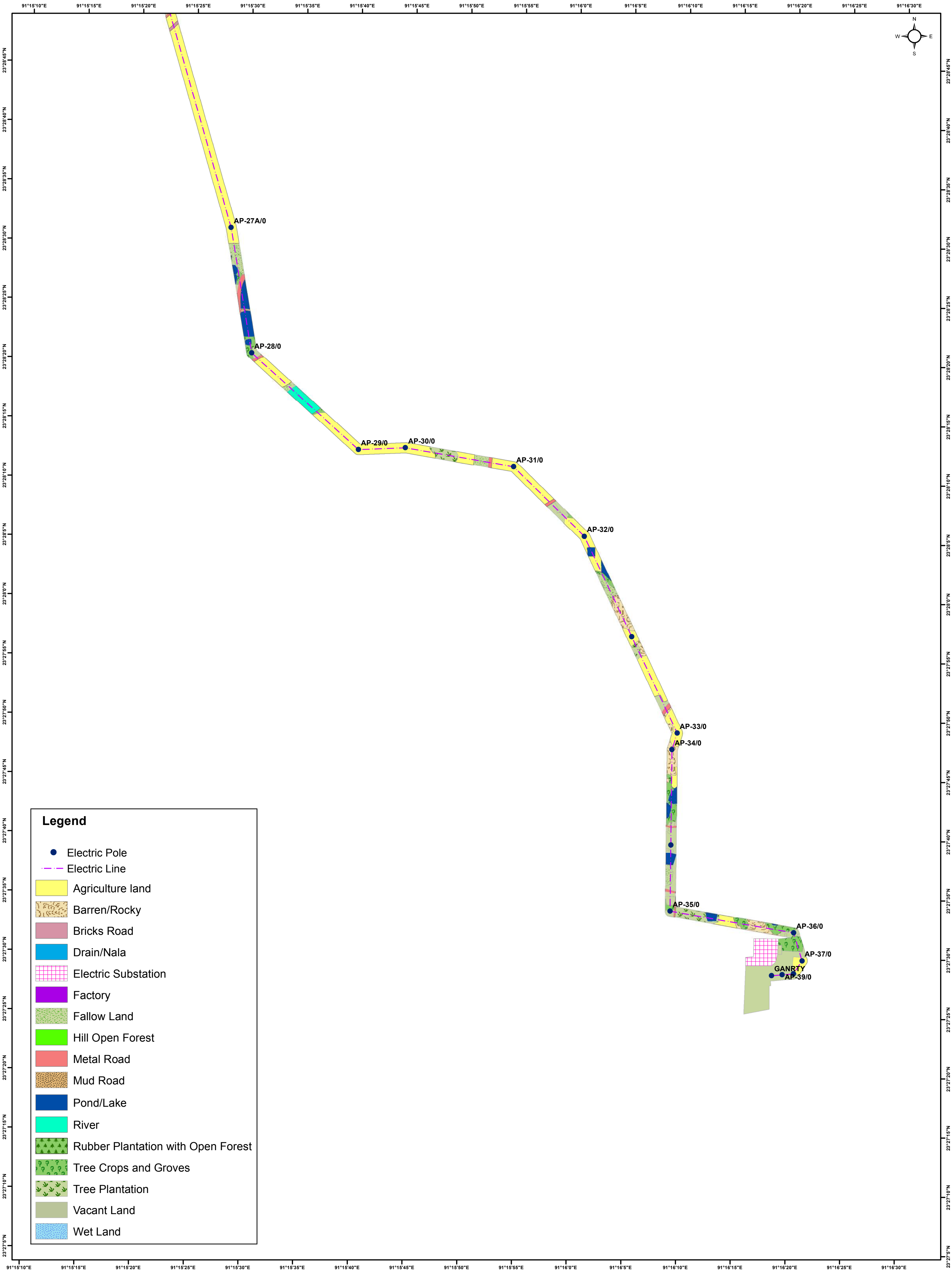
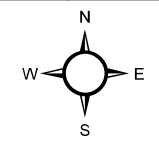
LAND USE/LAND COVER DETAILS OF 132 KV D/C ROKHIA RABINDRANAGAR TRANSMISSION LINE
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



Legend

- Electric Pole
- - - Electric Line
- Agriculture land
- Barren/Rocky
- Bricks Road
- Drain/Nala
- Electric Substation
- Factory
- Fallow Land
- Hill Open Forest
- Metal Road
- Mud Road
- Pond/Lake
- River
- Rubber Plantation with Open Forest
- Tree Crops and Groves
- Tree Plantation
- Vacant Land
- Wet Land

LAND USE/LAND COVER DETAILS OF 132 KV D/C ROKHIA RABINDRANAGAR TRANSMISSION LINE
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



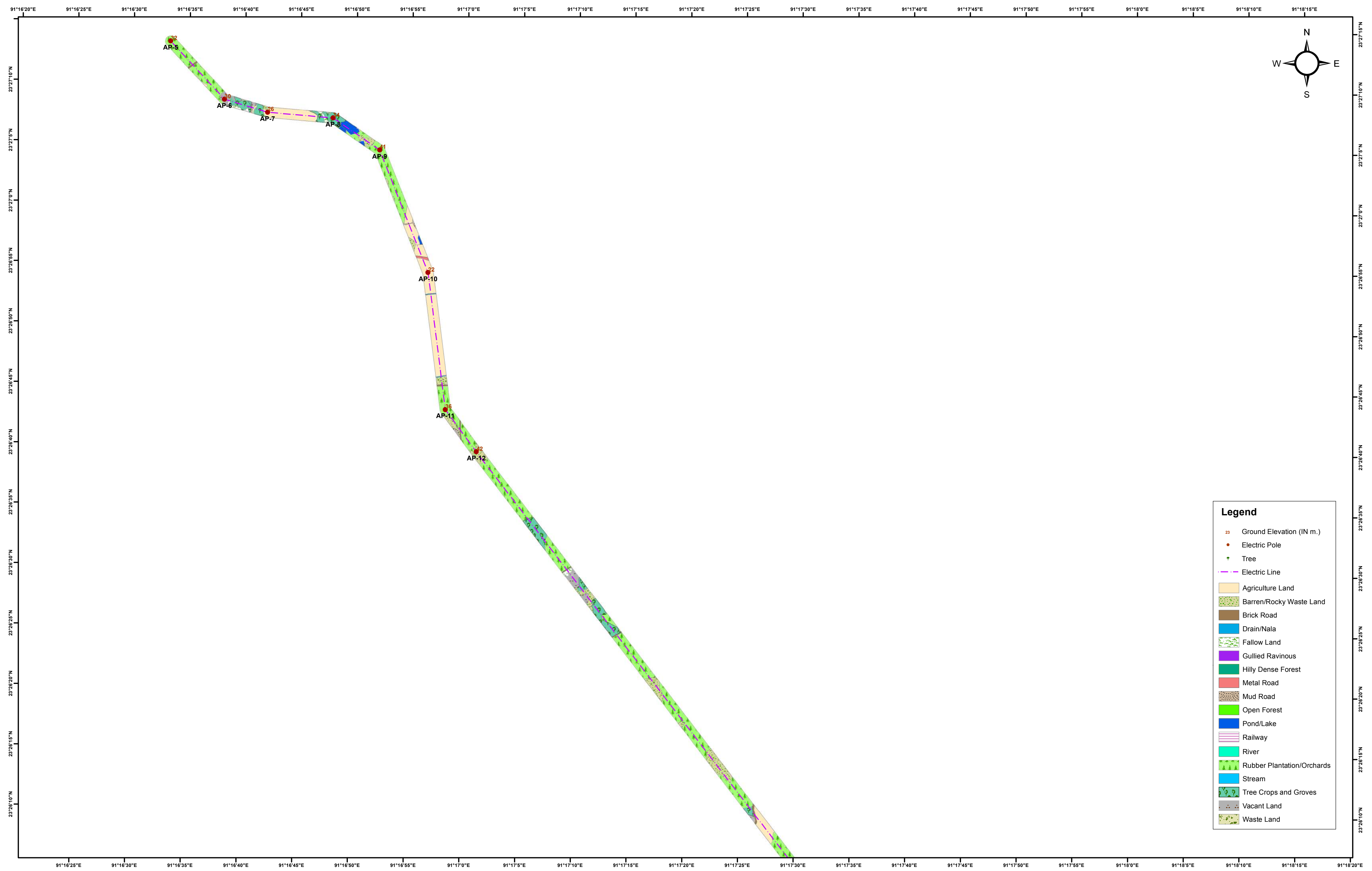
Legend

- Electric Pole
- Electric Line
- Agriculture land
- Barren/Rocky
- Bricks Road
- Drain/Nala
- Electric Substation
- Factory
- Fallow Land
- Hill Open Forest
- Metal Road
- Mud Road
- Pond/Lake
- River
- Rubber Plantation with Open Forest
- Tree Crops and Groves
- Tree Plantation
- Vacant Land
- Wet Land

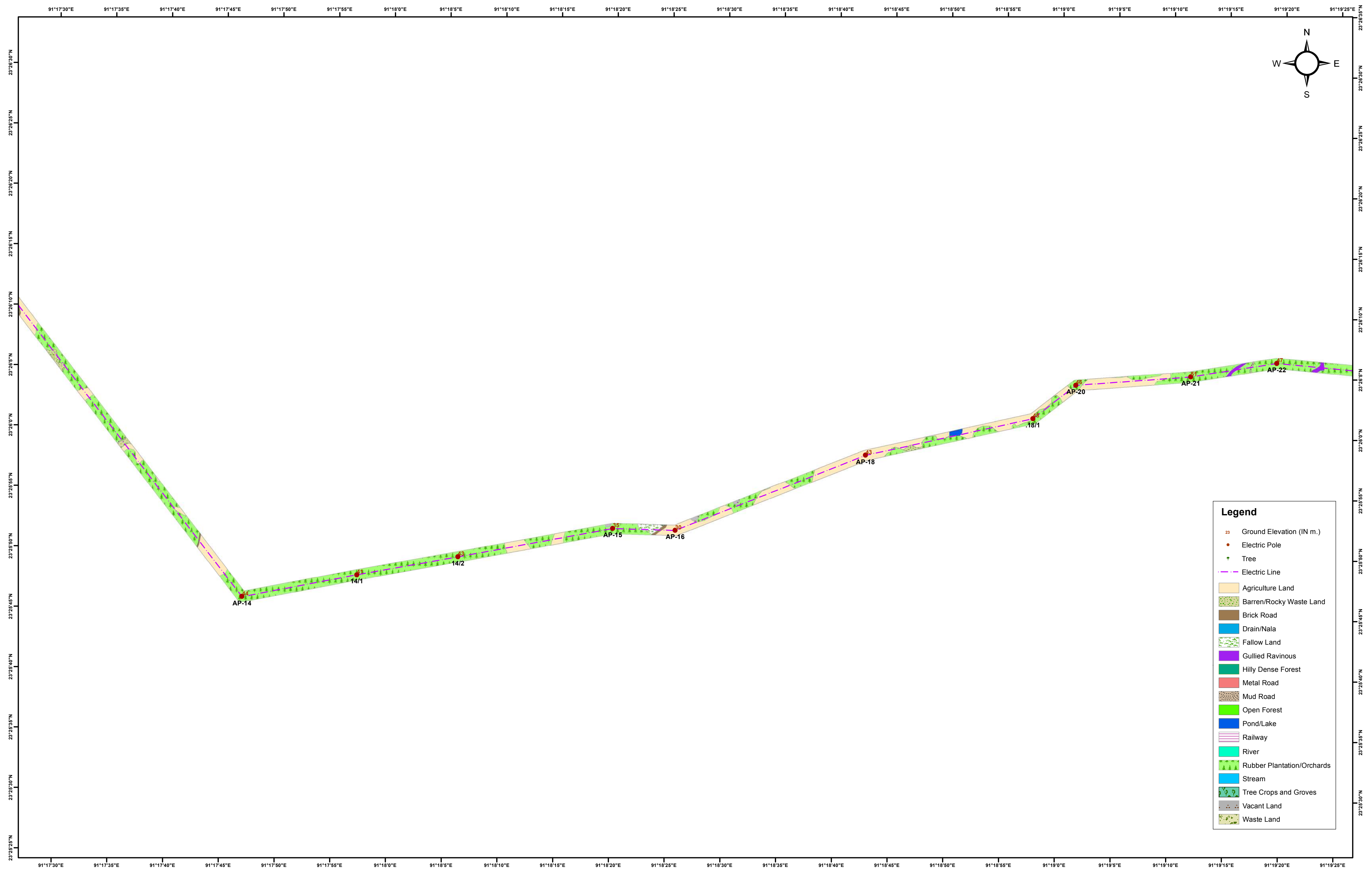
LAND USE/LAND COVER DETAILS OF RABINDRA NAGAR TO BELONIA 132 KV D/C TRANSMISSION LINE

CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED

PREPARED BY GREEN CIRCLE INC,

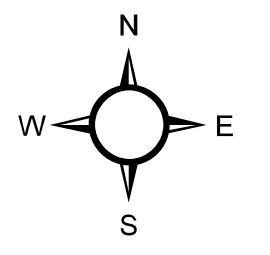
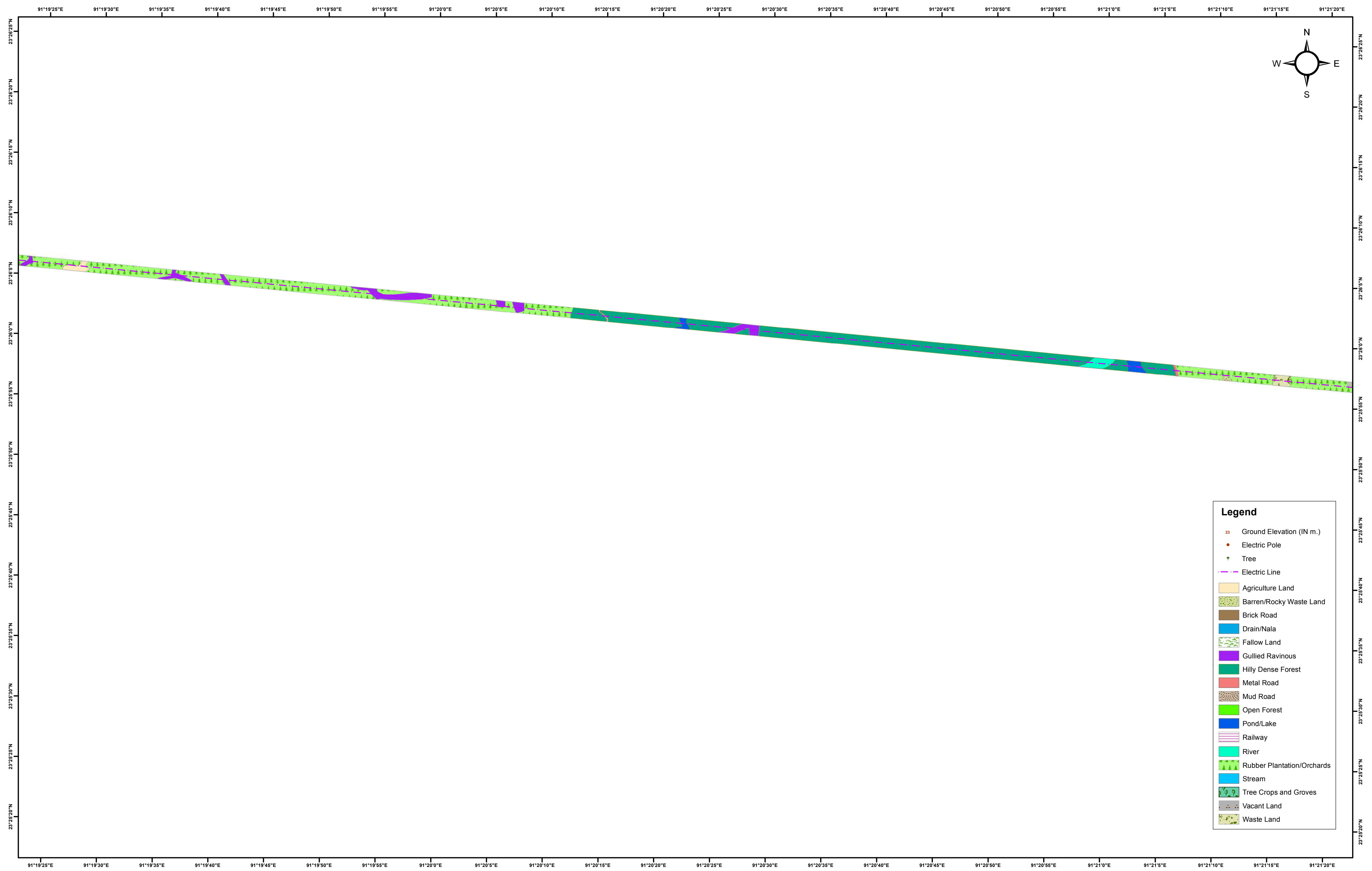


LAND USE/LAND COVER DETAILS OF RABINDRA NAGAR TO BELONIA 132 KV D/C TRANSMISSION LINE
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



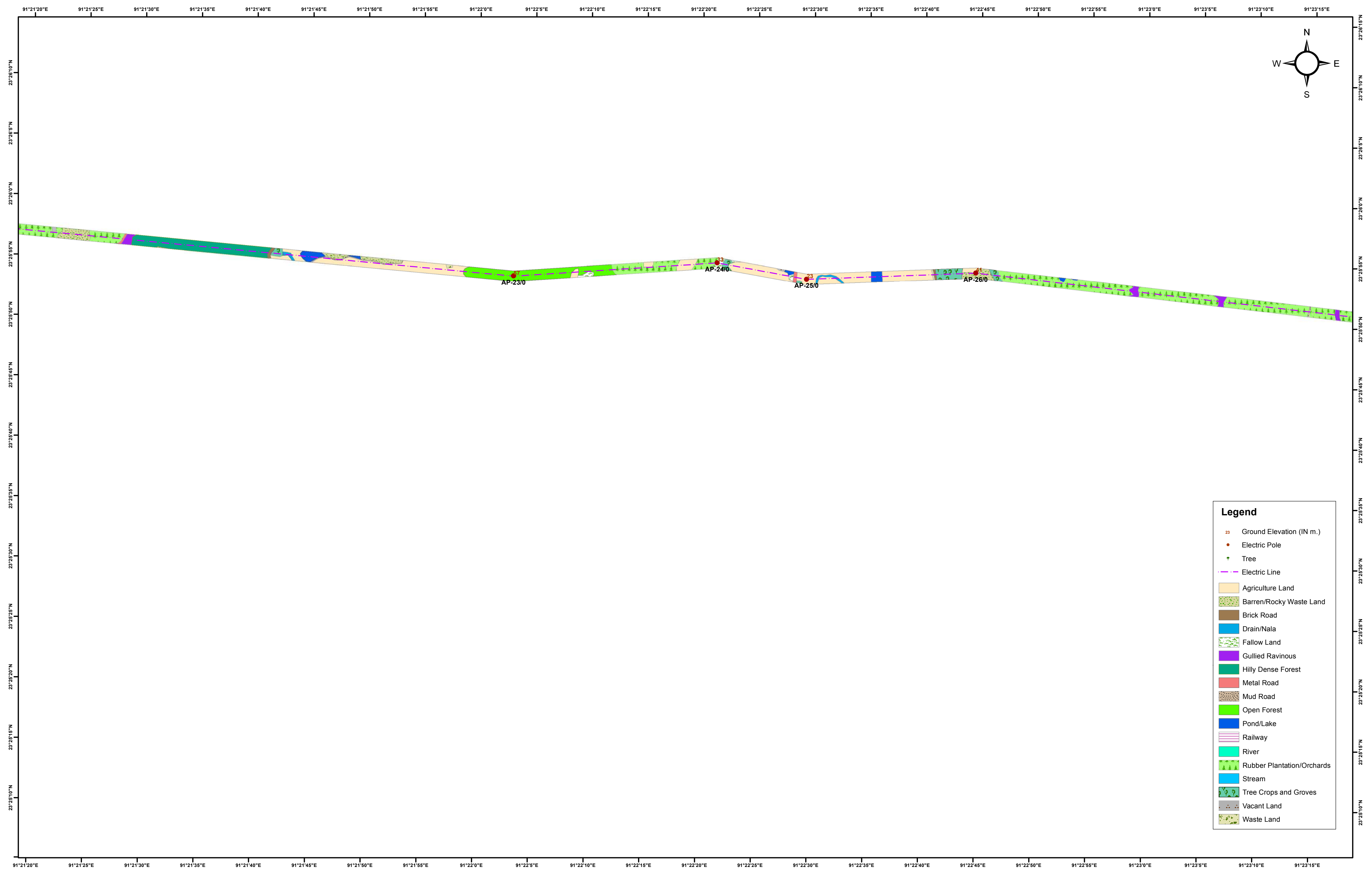
- Legend**
- Ground Elevation (IN m.)
 - Electric Pole
 - + Tree
 - Electric Line
 - Agriculture Land
 - Barren/Rocky Waste Land
 - Brick Road
 - Drain/Nala
 - Fallow Land
 - Gullied Ravinous
 - Hilly Dense Forest
 - Metal Road
 - Mud Road
 - Open Forest
 - Pond/Lake
 - Railway
 - Railway
 - River
 - Rubber Plantation/Orchards
 - Stream
 - Tree Crops and Groves
 - Vacant Land
 - Waste Land

LAND USE/LAND COVER DETAILS OF RABINDRA NAGAR TO BELONIA 132 KV D/C TRANSMISSION LINE
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



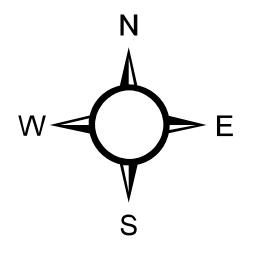
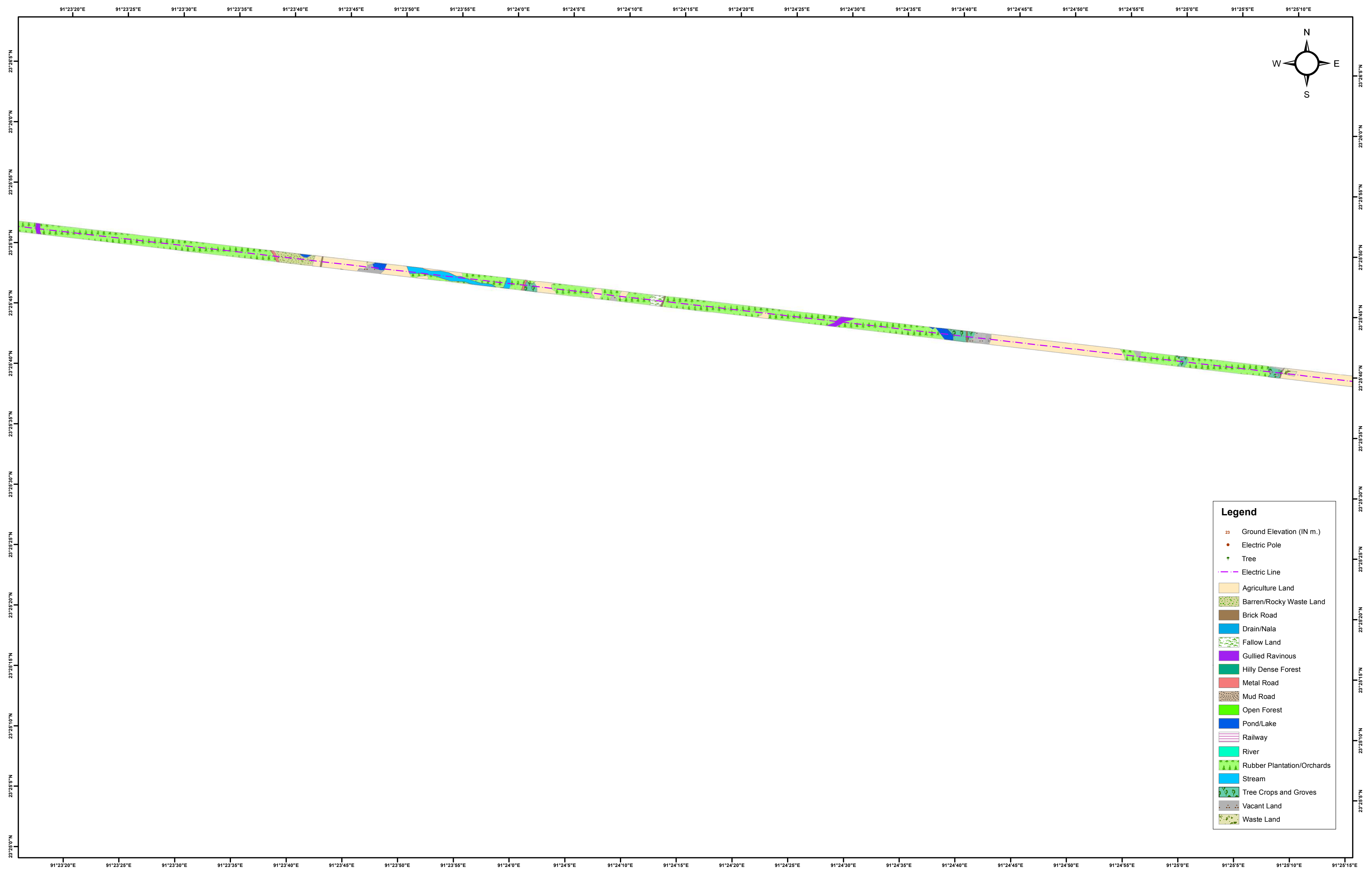
- Legend**
- Ground Elevation (IN m.)
 - Electric Pole
 - + Tree
 - - - Electric Line
 - Agriculture Land
 - Barren/Rocky Waste Land
 - Brick Road
 - Drain/Nala
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 - Pond/Lake
 - Railway
 - River
 - Rubber Plantation/Orchards
 - Stream
 - Tree Crops and Groves
 - Vacant Land
 - Waste Land

LAND USE/LAND COVER DETAILS OF RABINDRA NAGAR TO BELONIA 132 KV D/C TRANSMISSION LINE
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



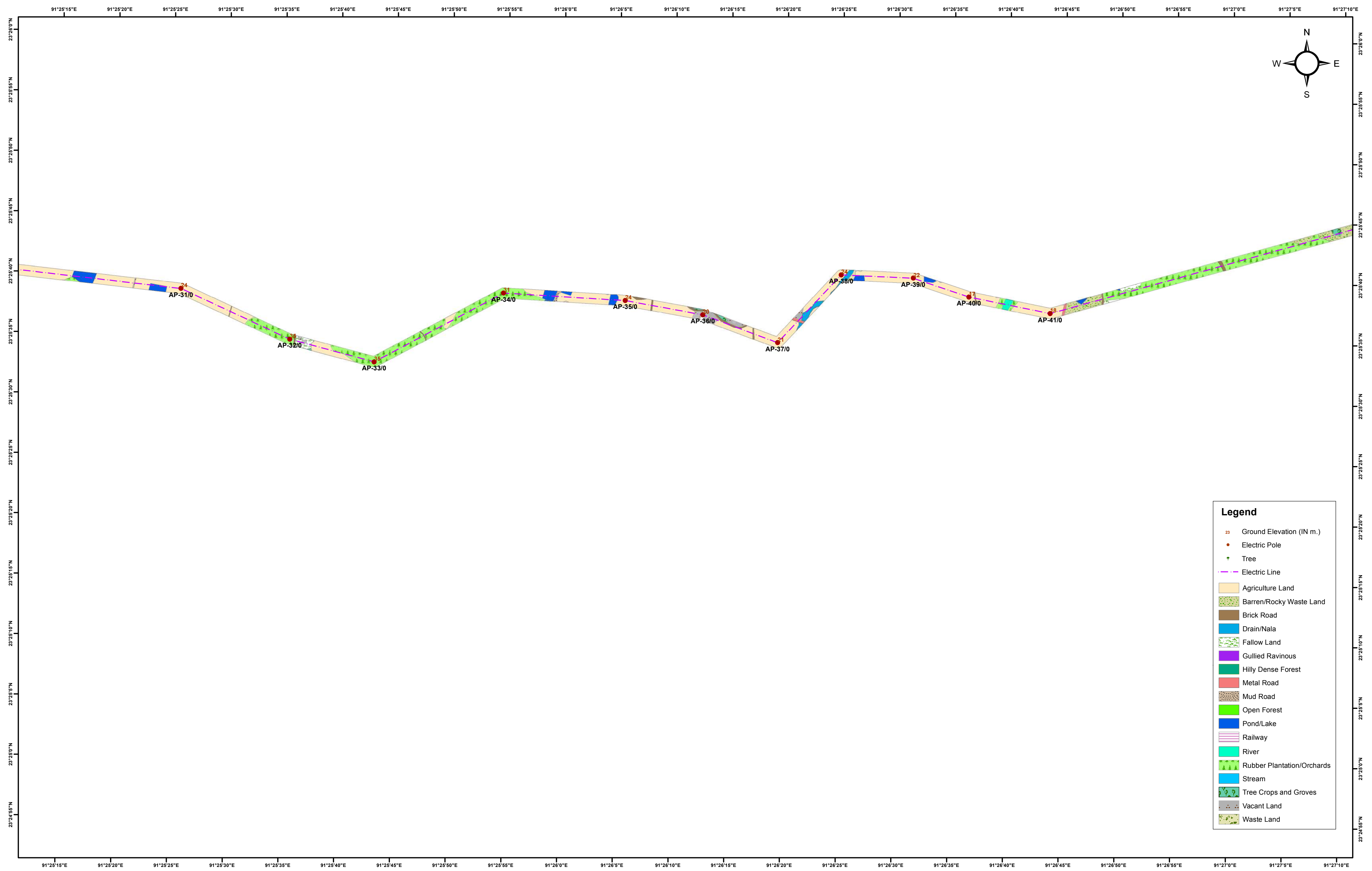
- Legend**
- Ground Elevation (IN m.)
 - Electric Pole
 - Tree
 - - - Electric Line
 - Agriculture Land
 - Barren/Rocky Waste Land
 - Brick Road
 - Drain/Nala
 - Fallow Land
 - Gullied Ravinous
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 - Metal Road
 - Mud Road
 - Open Forest
 - Pond/Lake
 - Railway
 - River
 - Rubber Plantation/Orchards
 - Stream
 - Tree Crops and Groves
 - Vacant Land
 - Waste Land

LAND USE/LAND COVER DETAILS OF RABINDRA NAGAR TO BELONIA 132 KV D/C TRANSMISSION LINE
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,

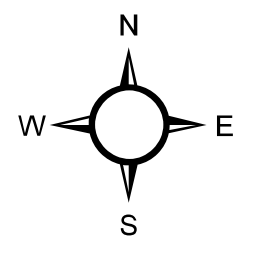
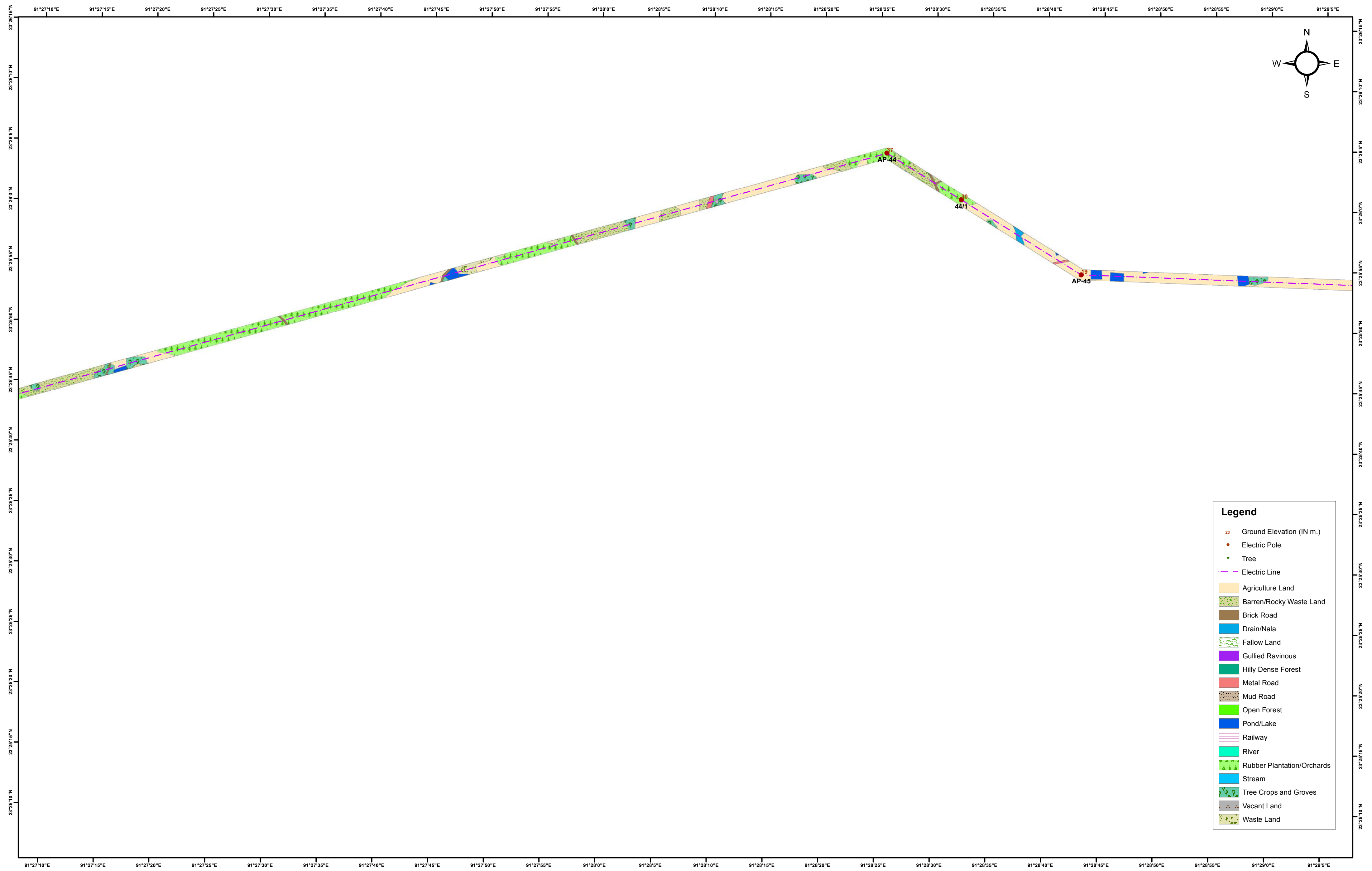


- Legend**
- Ground Elevation (IN m.)
 - Electric Pole
 - + Tree
 - - - Electric Line
 - Agriculture Land
 - Barren/Rocky Waste Land
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LAND USE/LAND COVER DETAILS OF RABINDRA NAGAR TO BELONIA 132 KV D/C TRANSMISSION LINE
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
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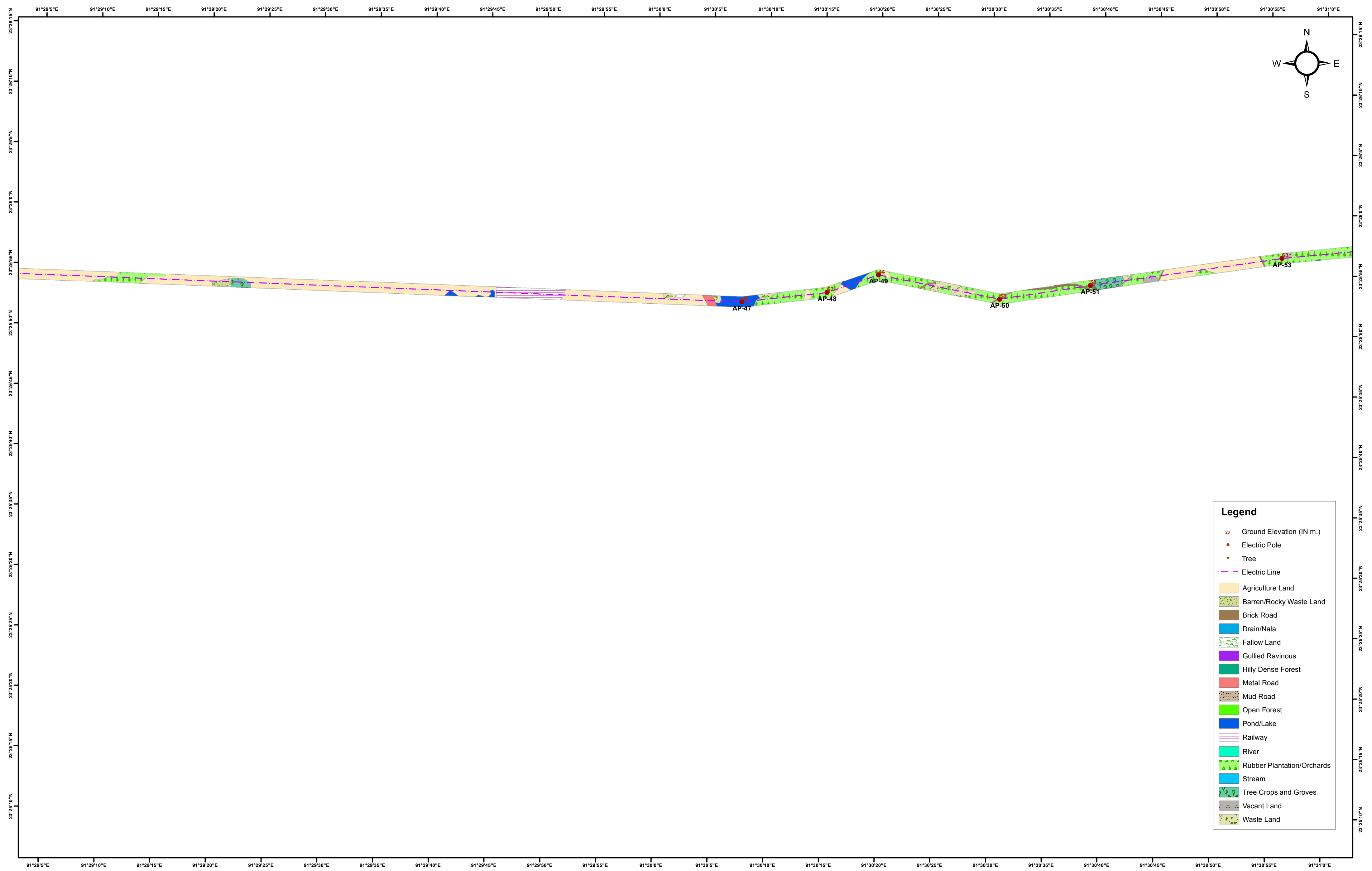


LAND USE/LAND COVER DETAILS OF RABINDRA NAGAR TO BELONIA 132 KV D/C TRANSMISSION LINE
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



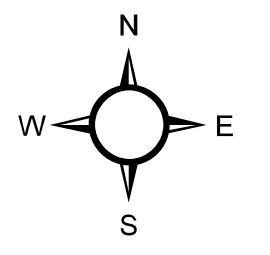
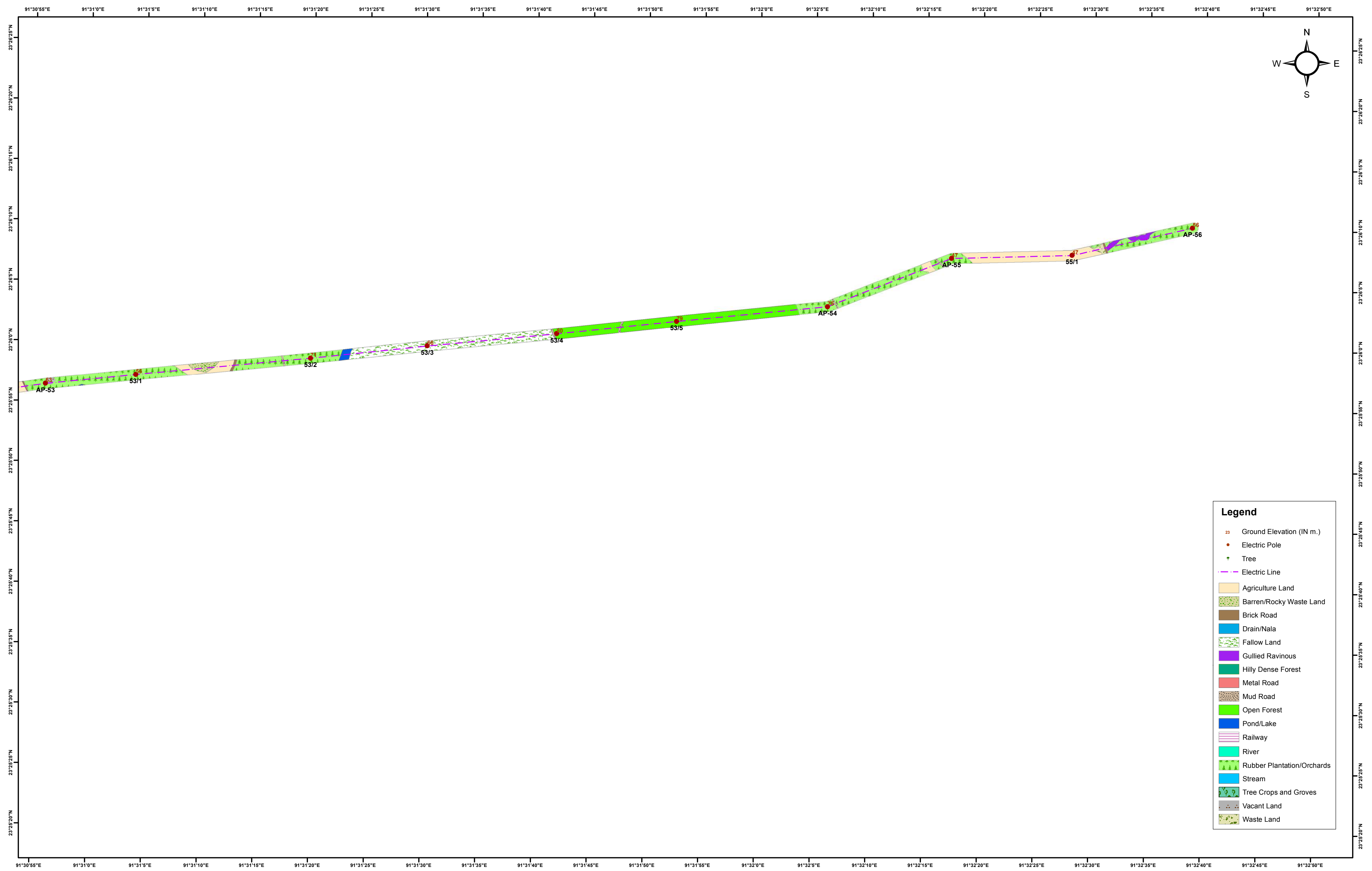
Legend	
	Ground Elevation (IN m.)
	Electric Pole
	Tree
	Electric Line
	Agriculture Land
	Barren/Rocky Waste Land
	Brick Road
	Drain/Nala
	Fallow Land
	Gullied Ravinous
	Hilly Dense Forest
	Metal Road
	Mud Road
	Open Forest
	Pond/Lake
	Railway
	River
	Rubber Plantation/Orchards
	Stream
	Tree Crops and Groves
	Vacant Land
	Waste Land

LAND USE/LAND COVER DETAILS OF RABINDRA NAGAR TO BELONIA 132 KV D/C TRANSMISSION LINE
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,

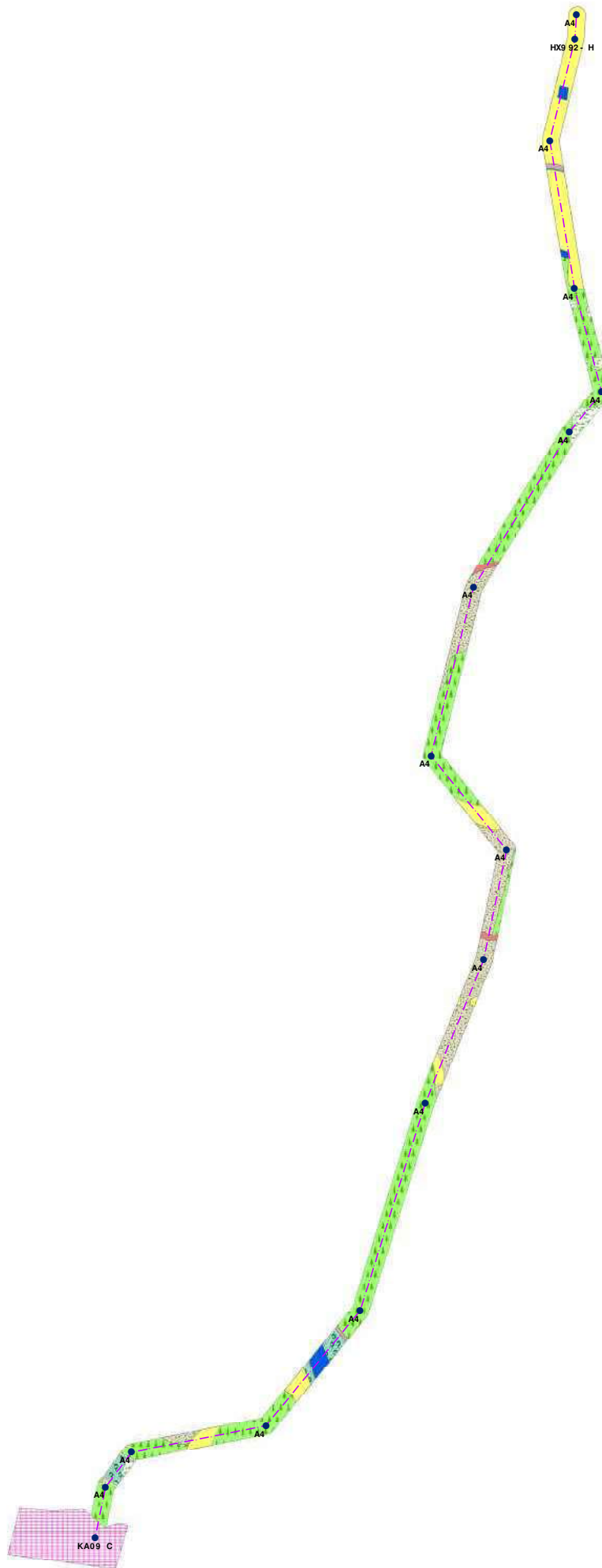


- Legend**
- Ground Elevation (IN m.)
 - Electric Pole
 - + Tree
 - Electric Line
 - Agriculture Land
 - Barren/Rocky Waste Land
 - Brick Road
 - Drain/Nala
 - Fallow Land
 - Gullied Ravinous
 - Hilly Dense Forest
 - Metal Road
 - Mud Road
 - Open Forest
 - Pond/Lake
 - Railway
 - River
 - Rubber Plantation/Orchards
 - Stream
 - Tree Crops and Groves
 - Vacant Land
 - Waste Land

LAND USE/LAND COVER DETAILS OF RABINDRA NAGAR TO BELONIA 132 KV D/C TRANSMISSION LINE
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



Legend	
	Ground Elevation (IN m.)
	Electric Pole
	Tree
	Electric Line
	Agriculture Land
	Barren/Rocky Waste Land
	Brick Road
	Drain/Nala
	Fallow Land
	Gullied Ravinous
	Hilly Dense Forest
	Metal Road
	Mud Road
	Open Forest
	Pond/Lake
	Railway
	River
	Rubber Plantation/Orchards
	Stream
	Tree Crops and Groves
	Vacant Land
	Waste Land



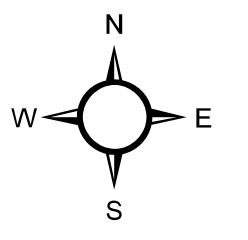
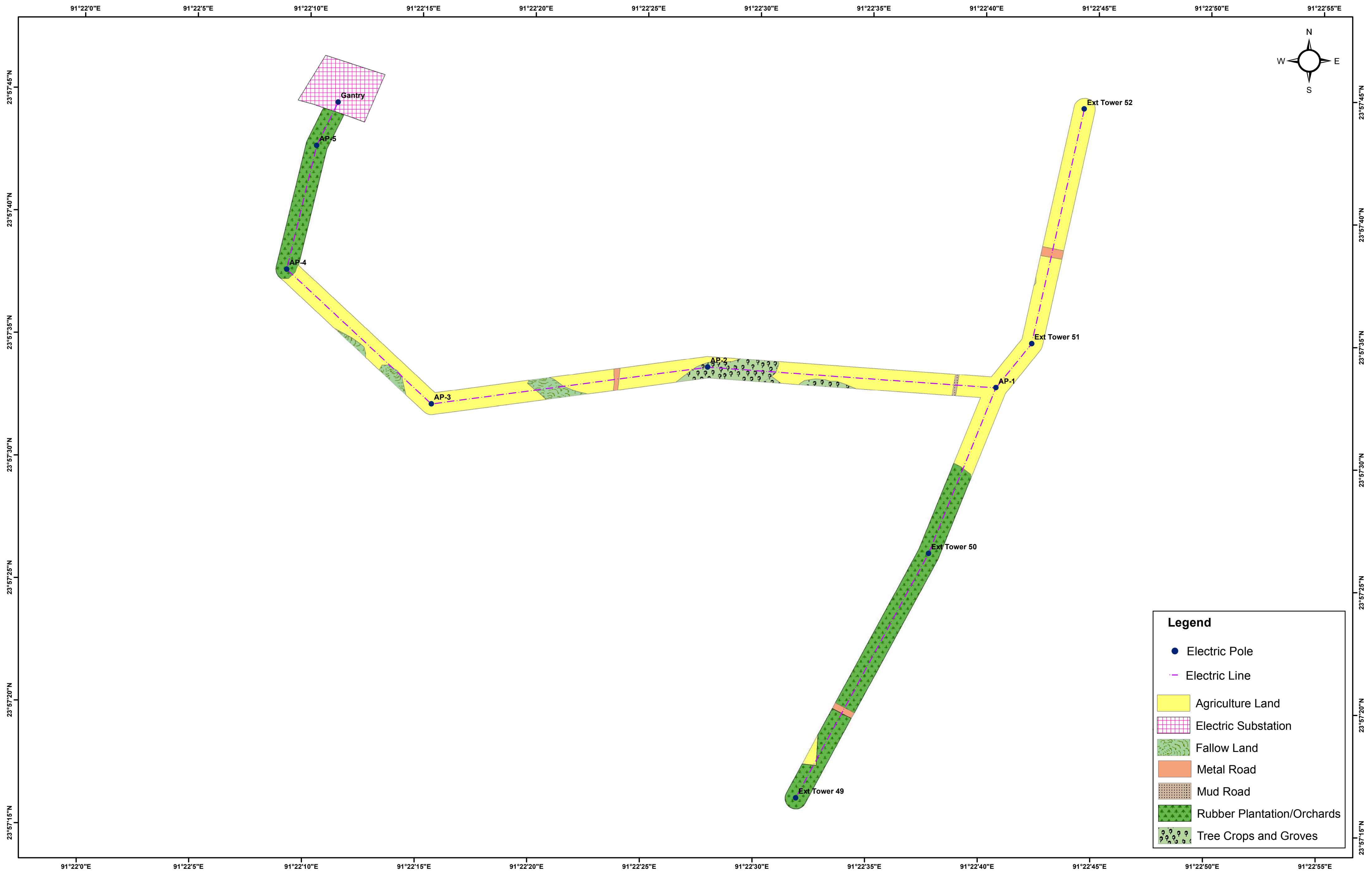
- T151n/**
- usDwg F.i byl/On aR
 - F.i else TCi
 - F.i else dini
 - Akslewiw dyng
 - oysi n WQe)N ytli yng
 - ose)t WQyg
 - F.i else wM lyI/On
 - Gy-Cl dyng
 - Pi ly. WQyg
 - Pwg WQyg
 - TQng dy) i
 - VMMI sT.ynlyI/On
 - (si) DsCE) yng usDi t
 - r sy/n Ry.y

LAND USE/LAND COVER DETAILS OF LILO OF SURJAMANINAGAR TO ROKHIA 132 KV LINE AT GOKULNAGAR
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



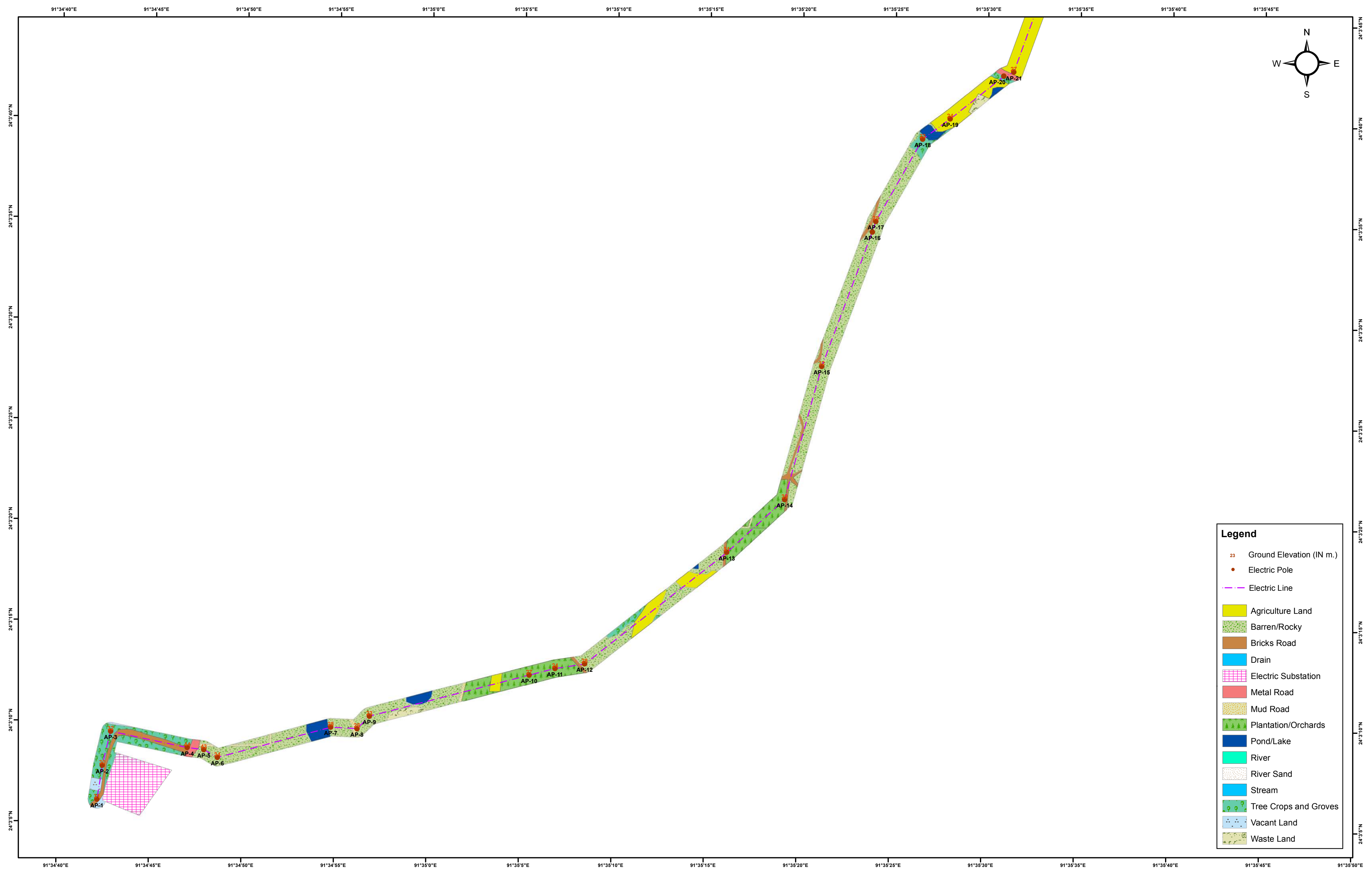
Legend	
23	Ground Elevation (IN m.)
●	Electric Pole
---	Electric Line
■	Agriculture Land
■	Barren Rocky Waste land
■	Bricks Road
■	Electric Substation
■	Fallow Land
■	Metal Road
■	Mud Road
■	Pond/Lake
■	Rubber Plantation
■	Tree Crops and Groves
■	Drain/Nala

LAND USE/LAND COVER DETAILS OF LILO 132 KV AGARTALA - DHALABIL LINE AT 132/33KV MOHANPUR SUBSTATION
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



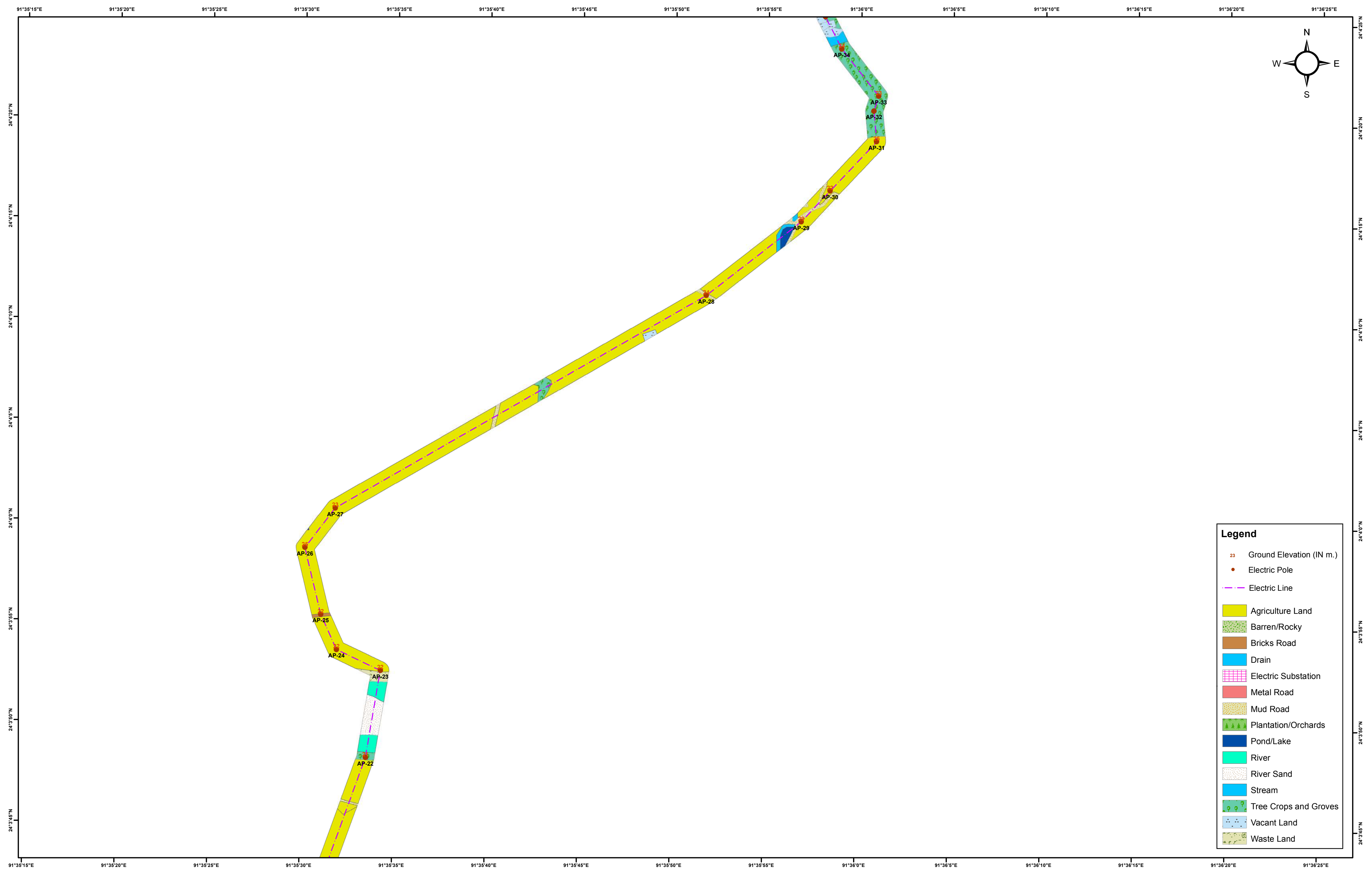
Legend	
●	Electric Pole
---	Electric Line
	Agriculture Land
	Electric Substation
	Fallow Land
	Metal Road
	Mud Road
	Rubber Plantation/Orchards
	Tree Crops and Groves

LAND USE/LAND COVER DETAILS OF DHALABIL EXISTING 132/33 KV S/S TO KHOWAI
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,

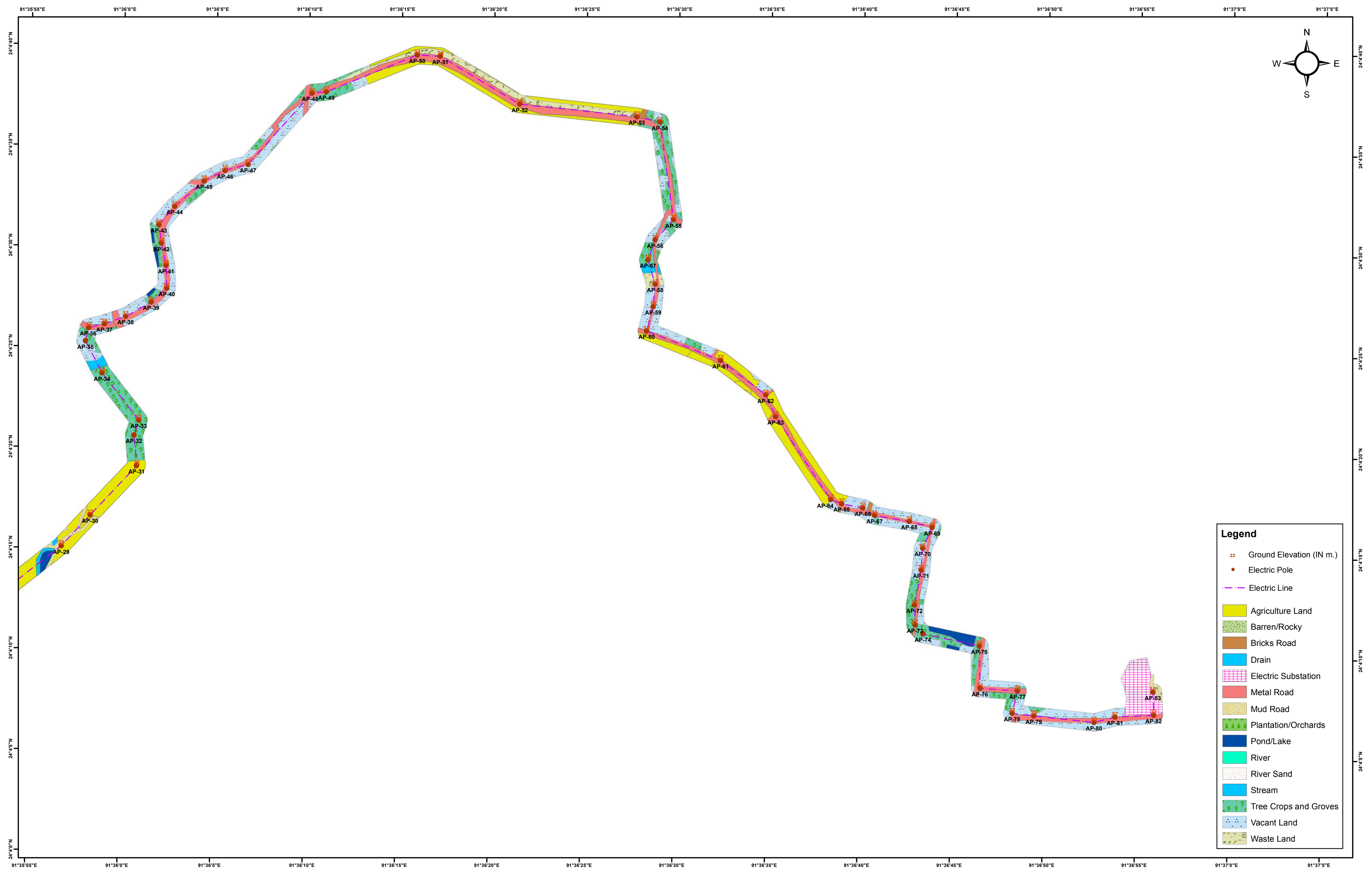


Legend	
23	Ground Elevation (IN m.)
●	Electric Pole
---	Electric Line
■	Agriculture Land
■	Barren/Rocky
■	Bricks Road
■	Drain
■	Electric Substation
■	Metal Road
■	Mud Road
■	Plantation/Orchards
■	Pond/Lake
■	River
■	River Sand
■	Stream
■	Tree Crops and Groves
■	Vacant Land
■	Waste Land

LAND USE/LAND COVER DETAILS OF DHALABIL EXISTING 132/33 KV S/S TO KHOWAI
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,

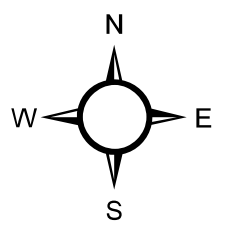
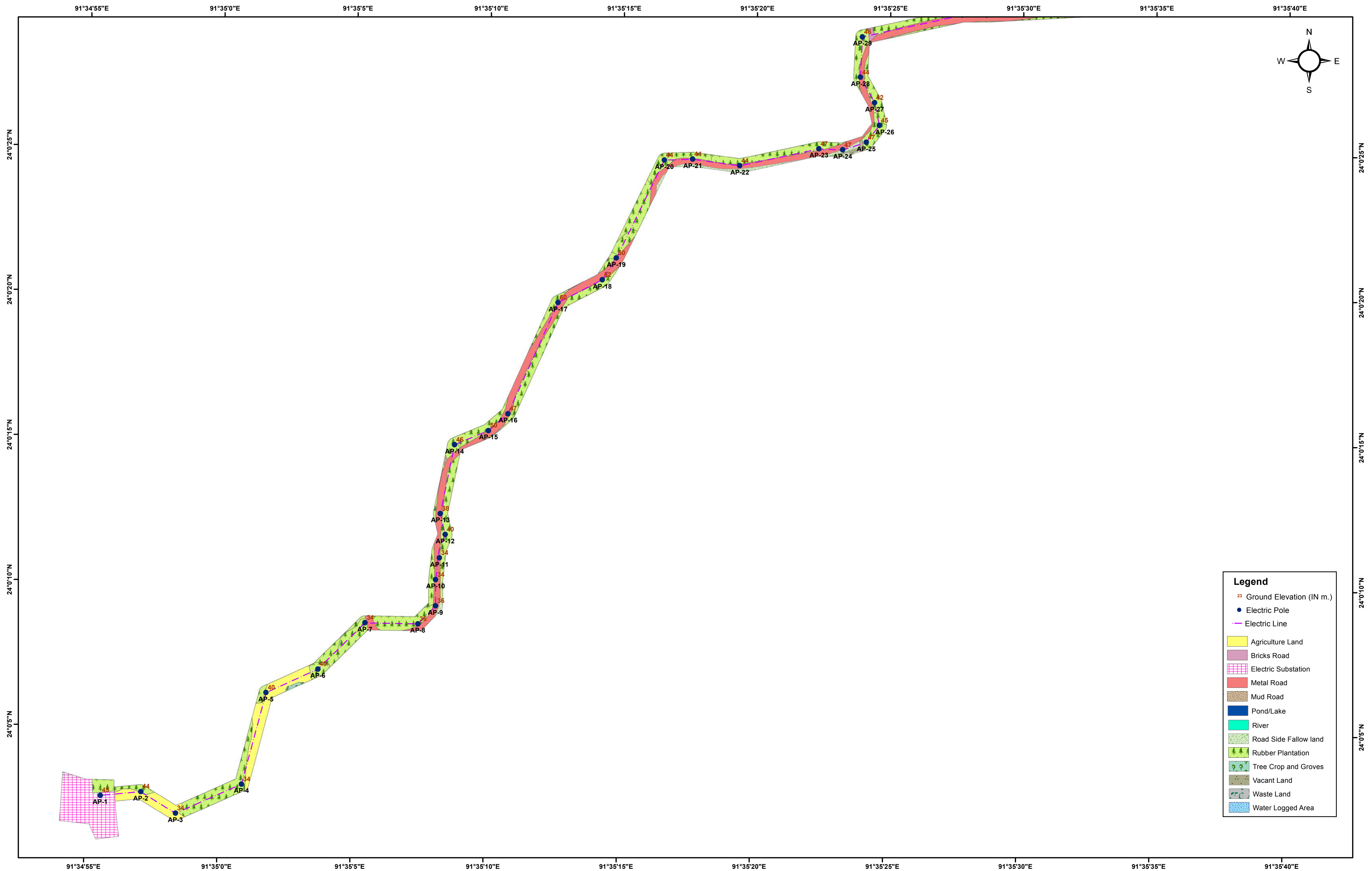


LAND USE/LAND COVER DETAILS OF DHALABIL EXISTING 132/33 KV S/S TO KHOWAI
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



Legend	
23	Ground Elevation (IN m.)
●	Electric Pole
---	Electric Line
■	Agriculture Land
■	Barren/Rocky
■	Bricks Road
■	Drain
■	Electric Substation
■	Metal Road
■	Mud Road
■	Plantation/Orchards
■	Pond/Lake
■	River
■	River Sand
■	Stream
■	Tree Crops and Groves
■	Vacant Land
■	Waste Land

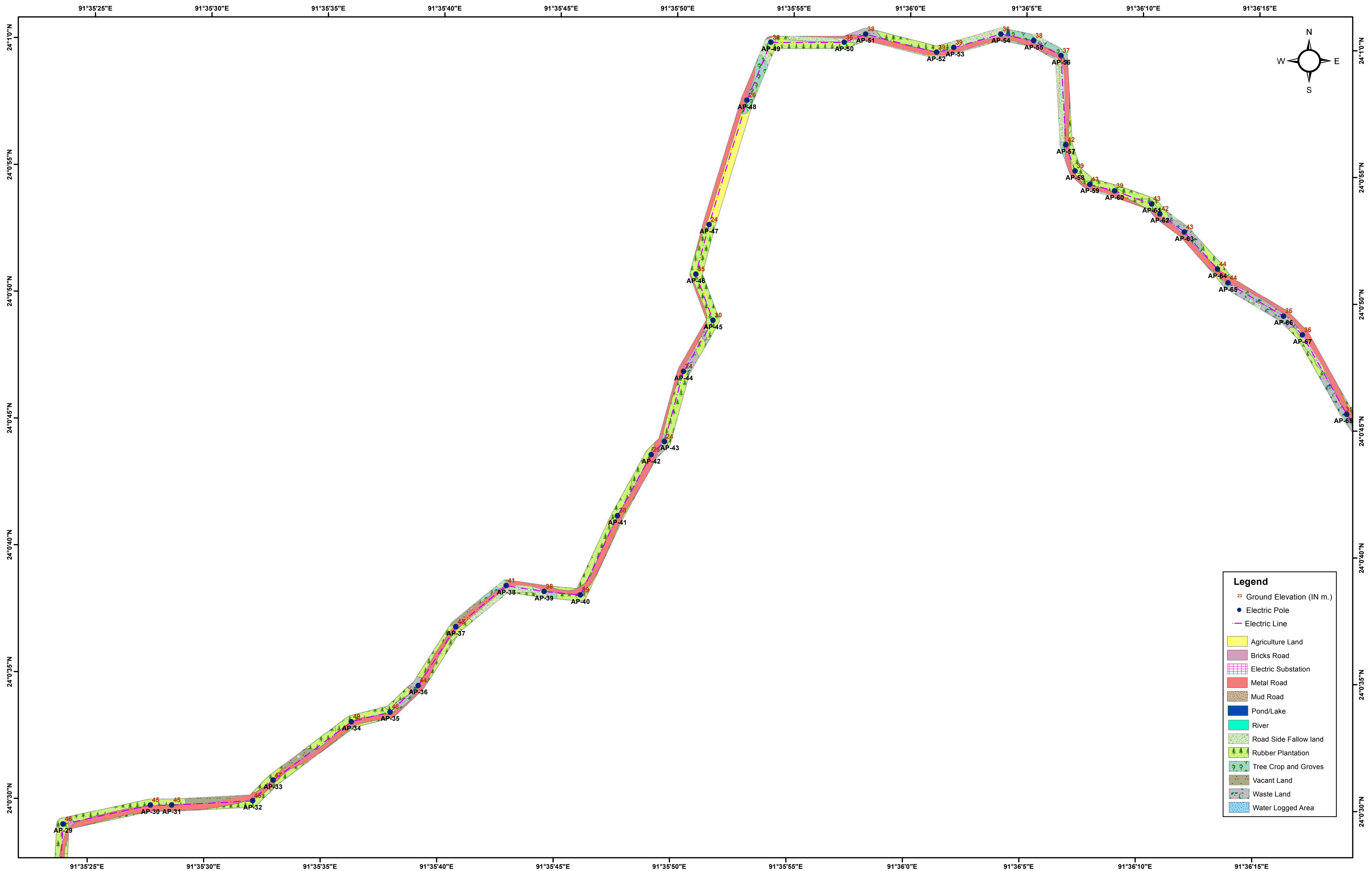
LAND USE/LAND COVER DETAILS OF AMPURA S/S (RGGVY) TO KHOWAI S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



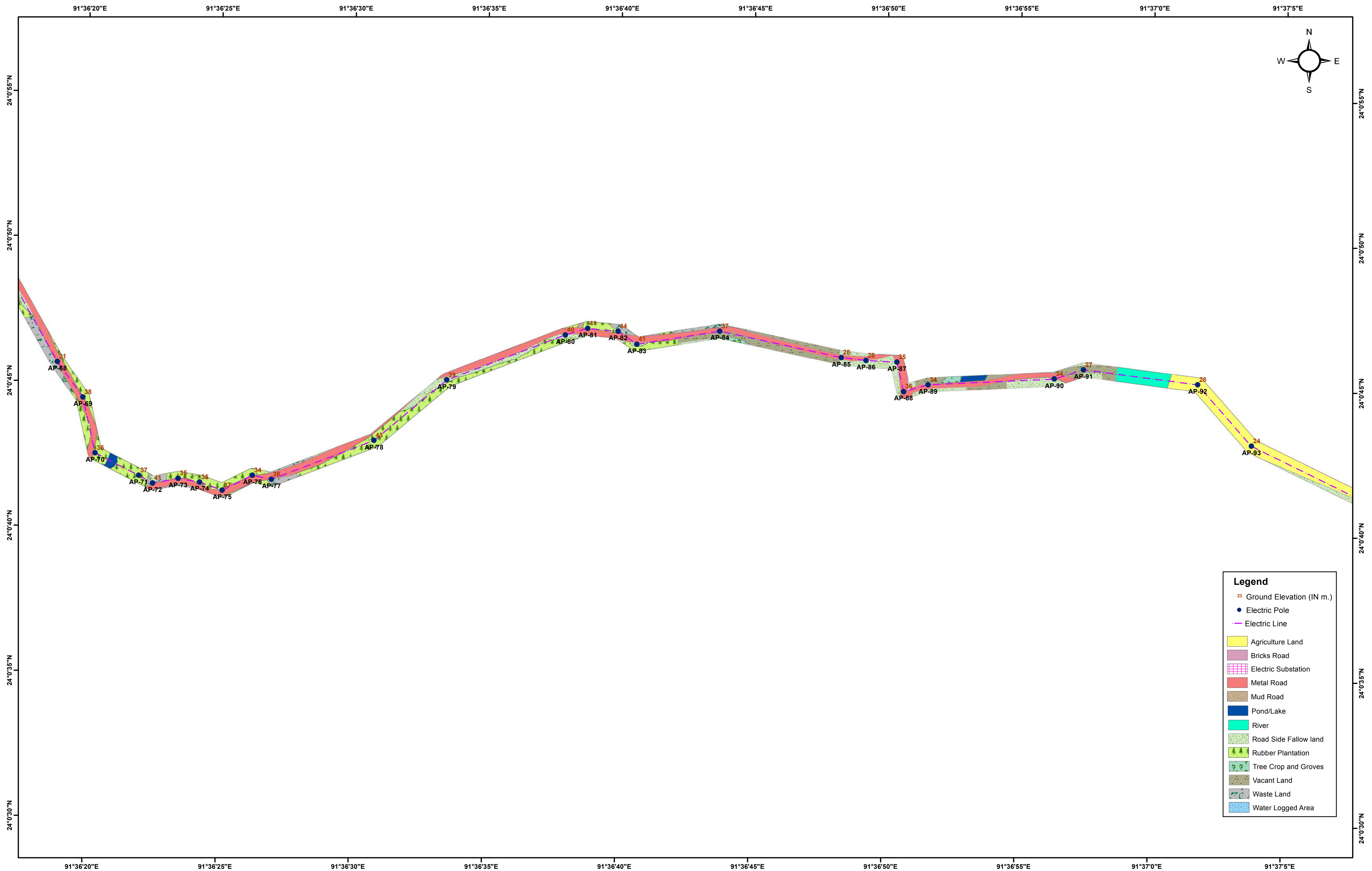
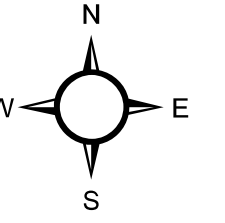
Legend

23	Ground Elevation (IN m.)
●	Electric Pole
—	Electric Line
[Yellow]	Agriculture Land
[Pink]	Bricks Road
[Grid]	Electric Substation
[Red]	Metal Road
[Brown]	Mud Road
[Blue]	Pond/Lake
[Cyan]	River
[Light Green]	Road Side Fallow land
[Green with trees]	Rubber Plantation
[Green with question marks]	Tree Crop and Groves
[Grey]	Vacant Land
[Dark Green]	Waste Land
[Blue with waves]	Water Logged Area

LAND USE/LAND COVER DETAILS OF AMPURA S/S (RGGVY) TO KHOWAI S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



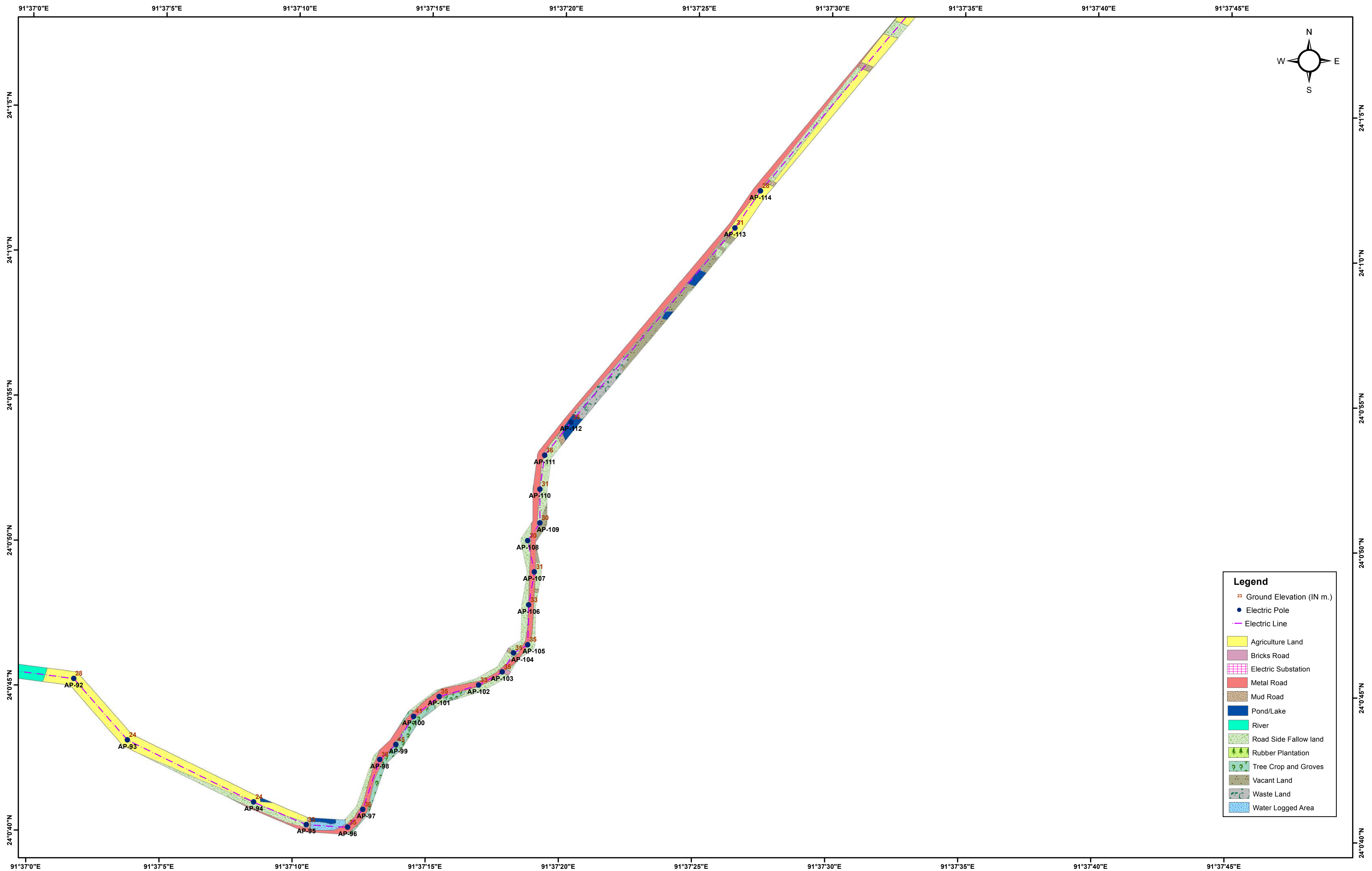
LAND USE/LAND COVER DETAILS OF AMPURA S/S (RGGVY) TO KHOWAI S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



Legend

- 23 Ground Elevation (IN m.)
- Electric Pole
- Electric Line
- Agriculture Land
- Bricks Road
- Electric Substation
- Metal Road
- Mud Road
- Pond/Lake
- River
- Road Side Fallow land
- Rubber Plantation
- Tree Crop and Groves
- Vacant Land
- Waste Land
- Water Logged Area

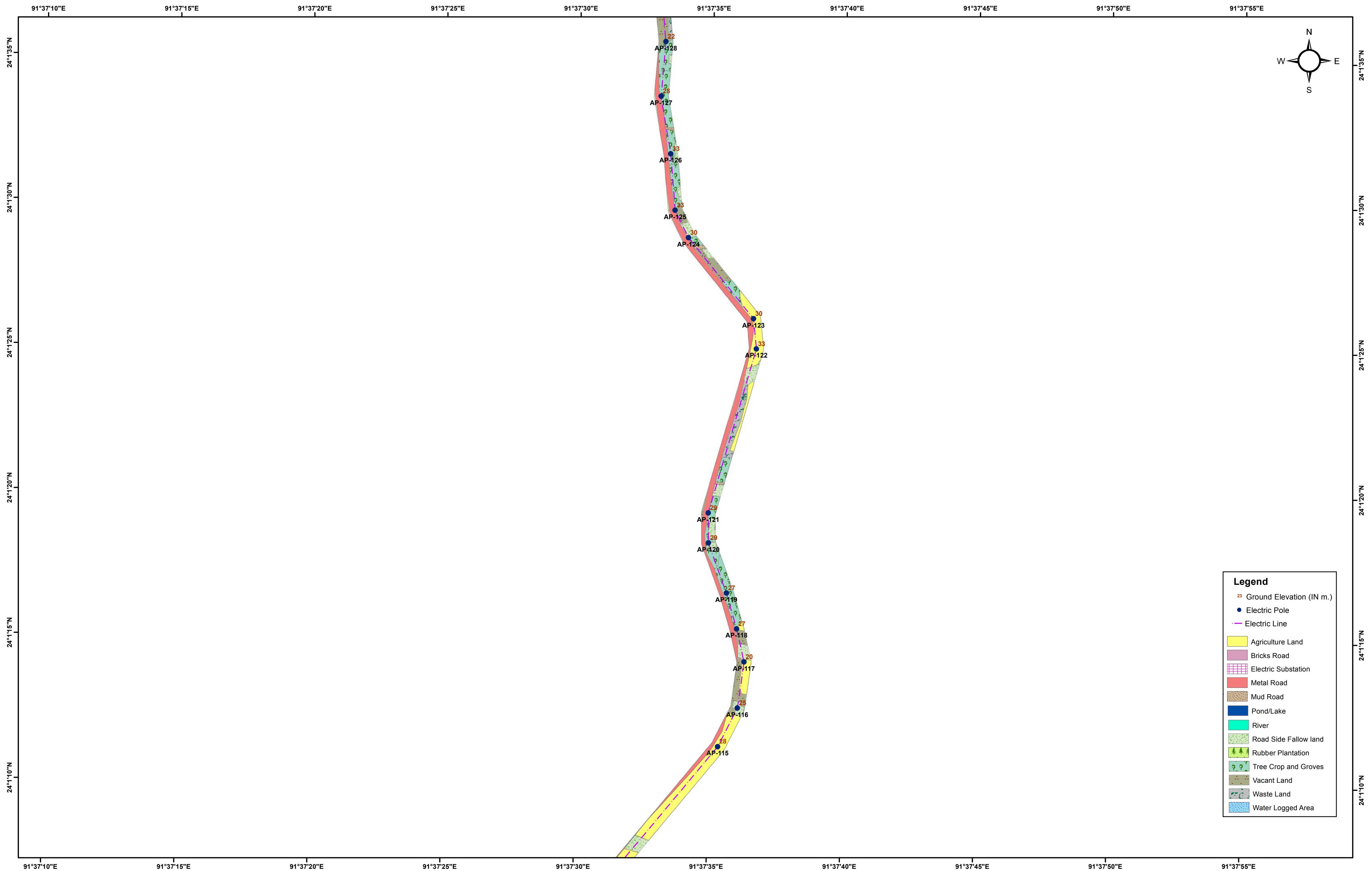
LAND USE/LAND COVER DETAILS OF AMPURA S/S (RGGVY) TO KHOWAI S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



Legend

- 23 Ground Elevation (IN m.)
- Electric Pole
- Electric Line
- Agriculture Land
- Bricks Road
- Electric Substation
- Metal Road
- Mud Road
- Pond/Lake
- River
- Road Side Fallow land
- Rubber Plantation
- Tree Crop and Groves
- Vacant Land
- Waste Land
- Water Logged Area

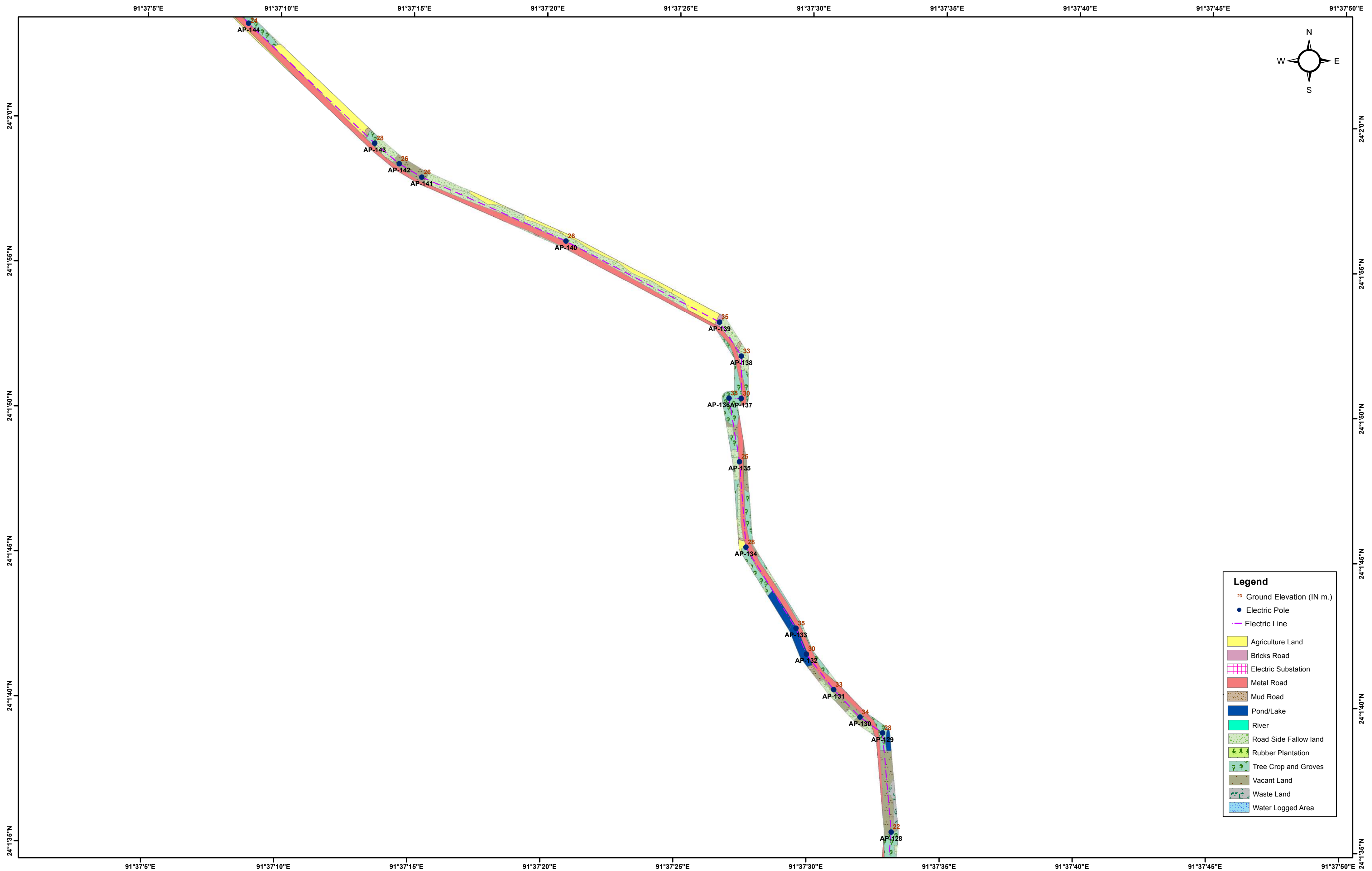
LAND USE/LAND COVER DETAILS OF AMPURA S/S (RGGVY) TO KHOWAI S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



Legend

- 23 Ground Elevation (IN m.)
- Electric Pole
- Electric Line
- Agriculture Land
- Bricks Road
- Electric Substation
- Metal Road
- Mud Road
- Pond/Lake
- River
- Road Side Fallow land
- Rubber Plantation
- Tree Crop and Groves
- Vacant Land
- Waste Land
- Water Logged Area

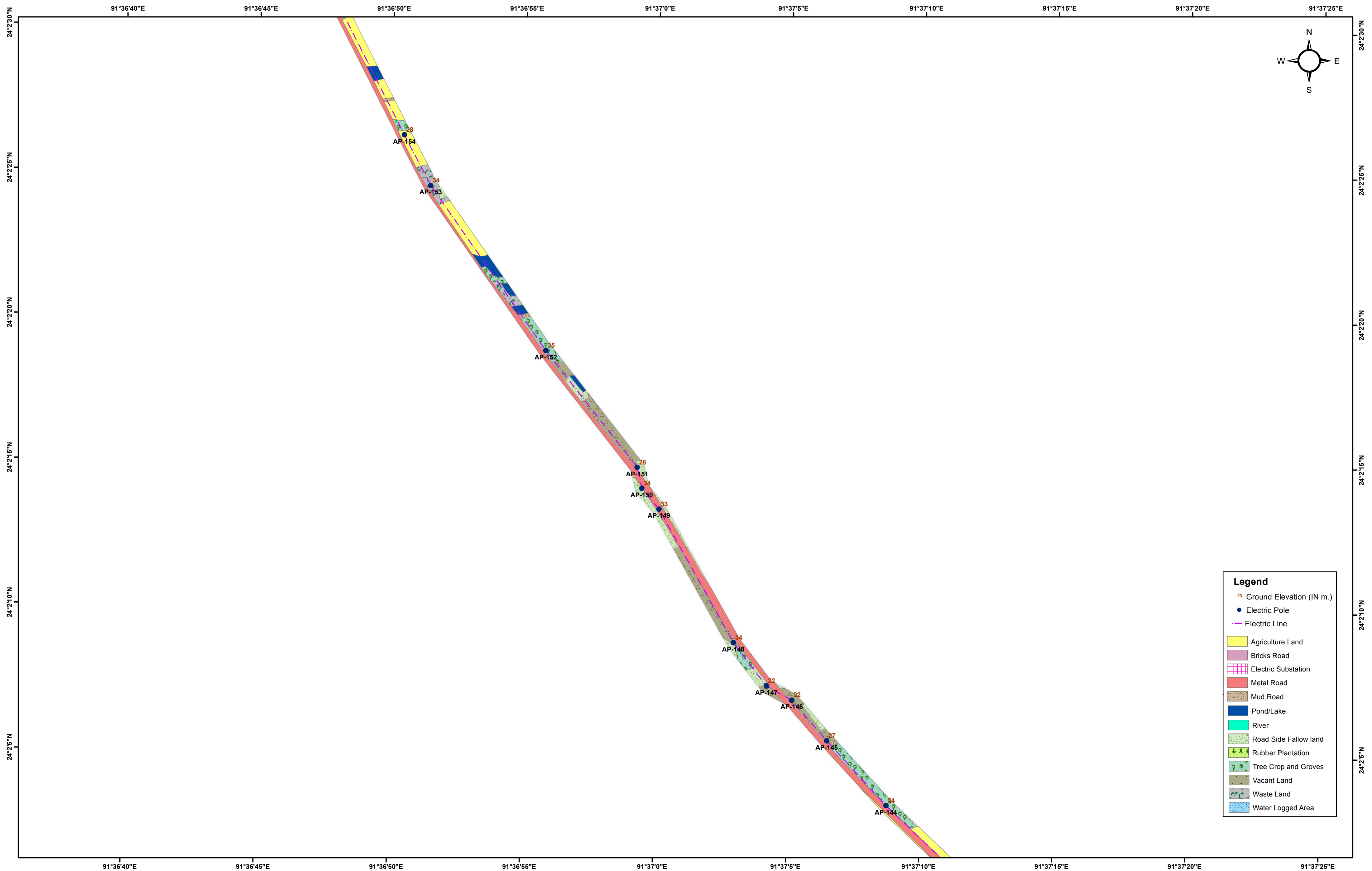
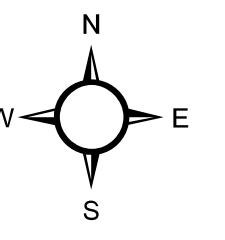
LAND USE/LAND COVER DETAILS OF AMPURA S/S (RGGVY) TO KHOWAI S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



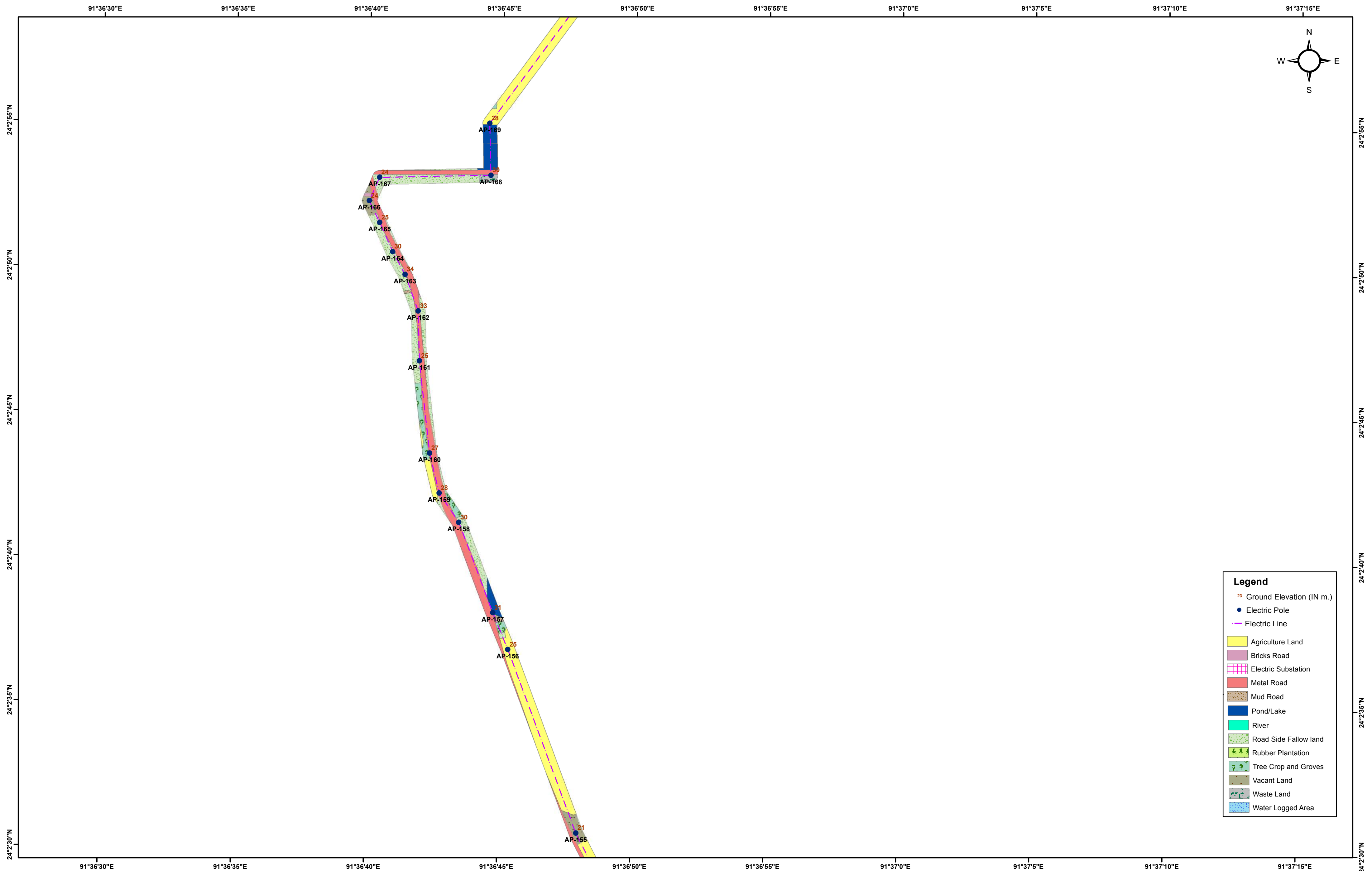
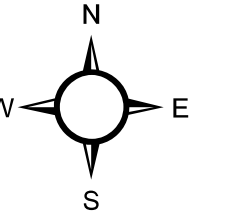
Legend

- 23 Ground Elevation (IN m.)
- Electric Pole
- Electric Line
- Agriculture Land
- Bricks Road
- Electric Substation
- Metal Road
- Mud Road
- Pond/Lake
- River
- Road Side Fallow land
- Rubber Plantation
- Tree Crop and Groves
- Vacant Land
- Waste Land
- Water Logged Area

LAND USE/LAND COVER DETAILS OF AMPURA S/S (RGGVY) TO KHOWAI S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



LAND USE/LAND COVER DETAILS OF AMPURA S/S (RGGVY) TO KHOWAI S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,

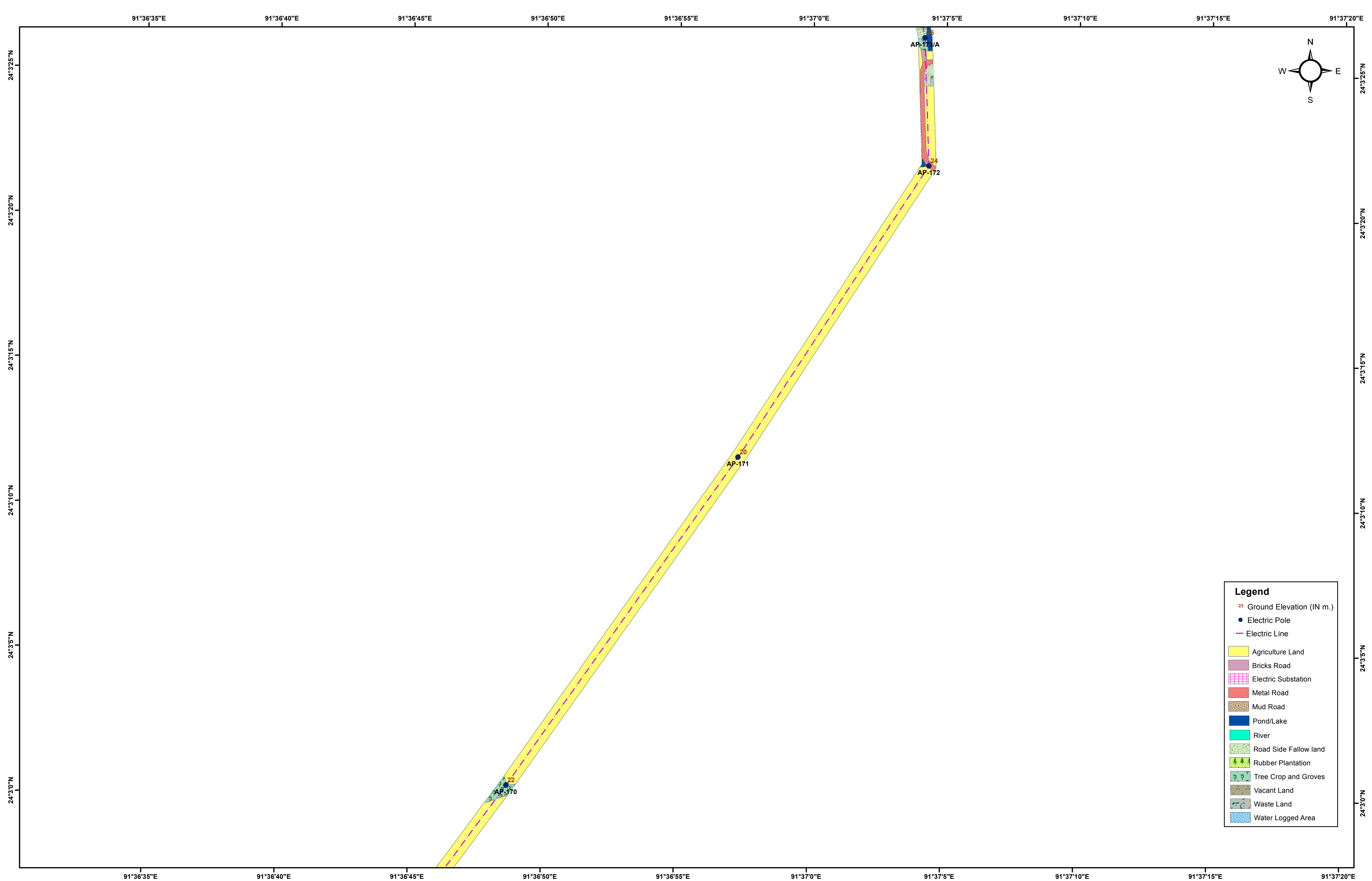


Legend	
23	Ground Elevation (IN m.)
●	Electric Pole
—	Electric Line
[Yellow]	Agriculture Land
[Pink]	Bricks Road
[Grid]	Electric Substation
[Red]	Metal Road
[Brown]	Mud Road
[Blue]	Pond/Lake
[Green]	River
[Light Green]	Road Side Fallow land
[Green with trees]	Rubber Plantation
[Green with trees]	Tree Crop and Groves
[Light Green]	Vacant Land
[Grey]	Waste Land
[Blue with water]	Water Logged Area

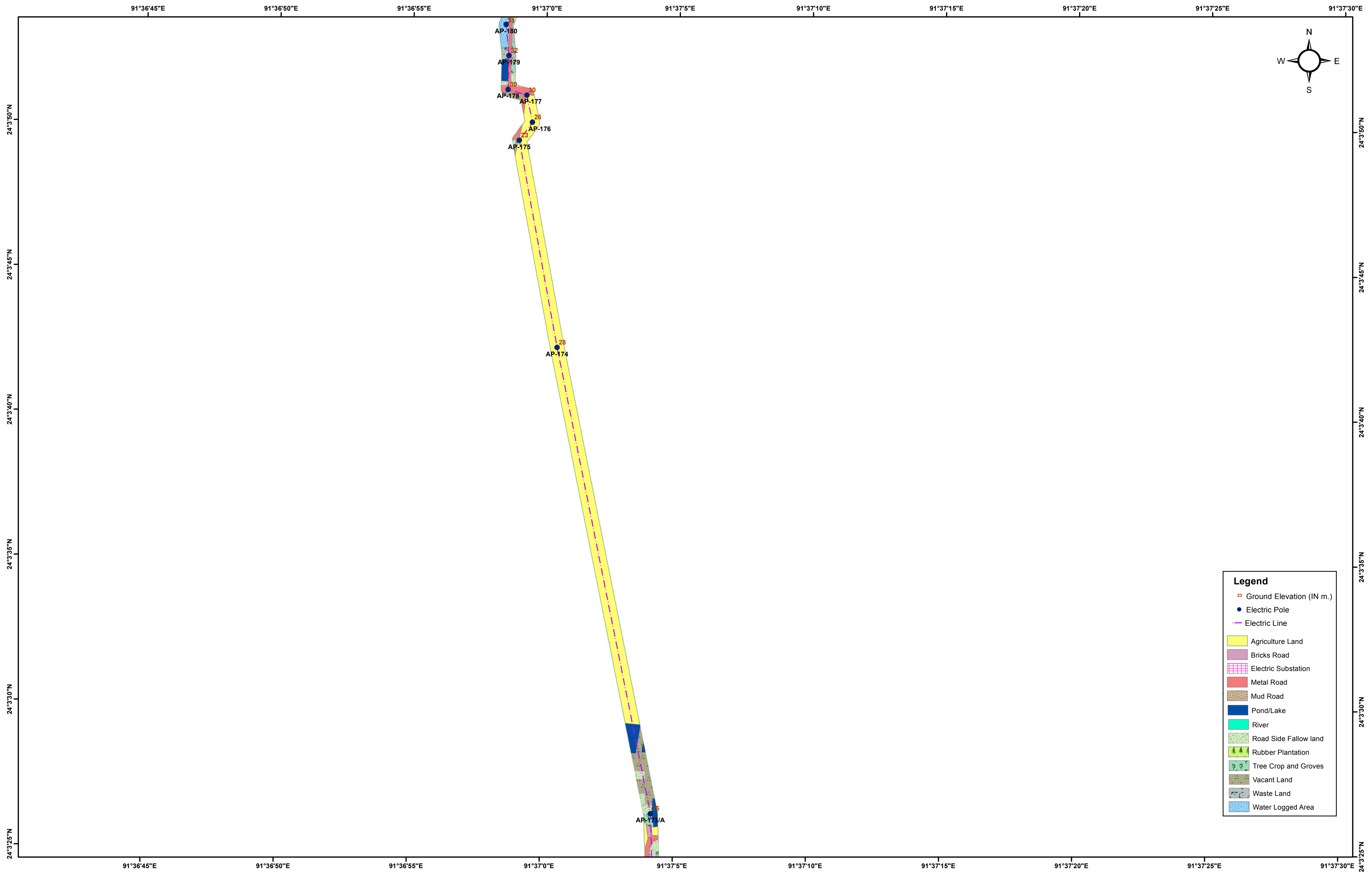
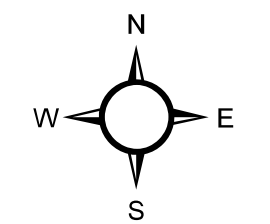
91°36'30"E 91°36'35"E 91°36'40"E 91°36'45"E 91°36'50"E 91°36'55"E 91°37'0"E 91°37'5"E 91°37'10"E 91°37'15"E

24°2'30"N 24°2'35"N 24°2'40"N 24°2'45"N 24°2'50"N 24°2'55"N

LAND USE/LAND COVER DETAILS OF AMPURA S/S (RGGVY) TO KHOWAI S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



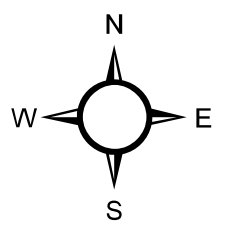
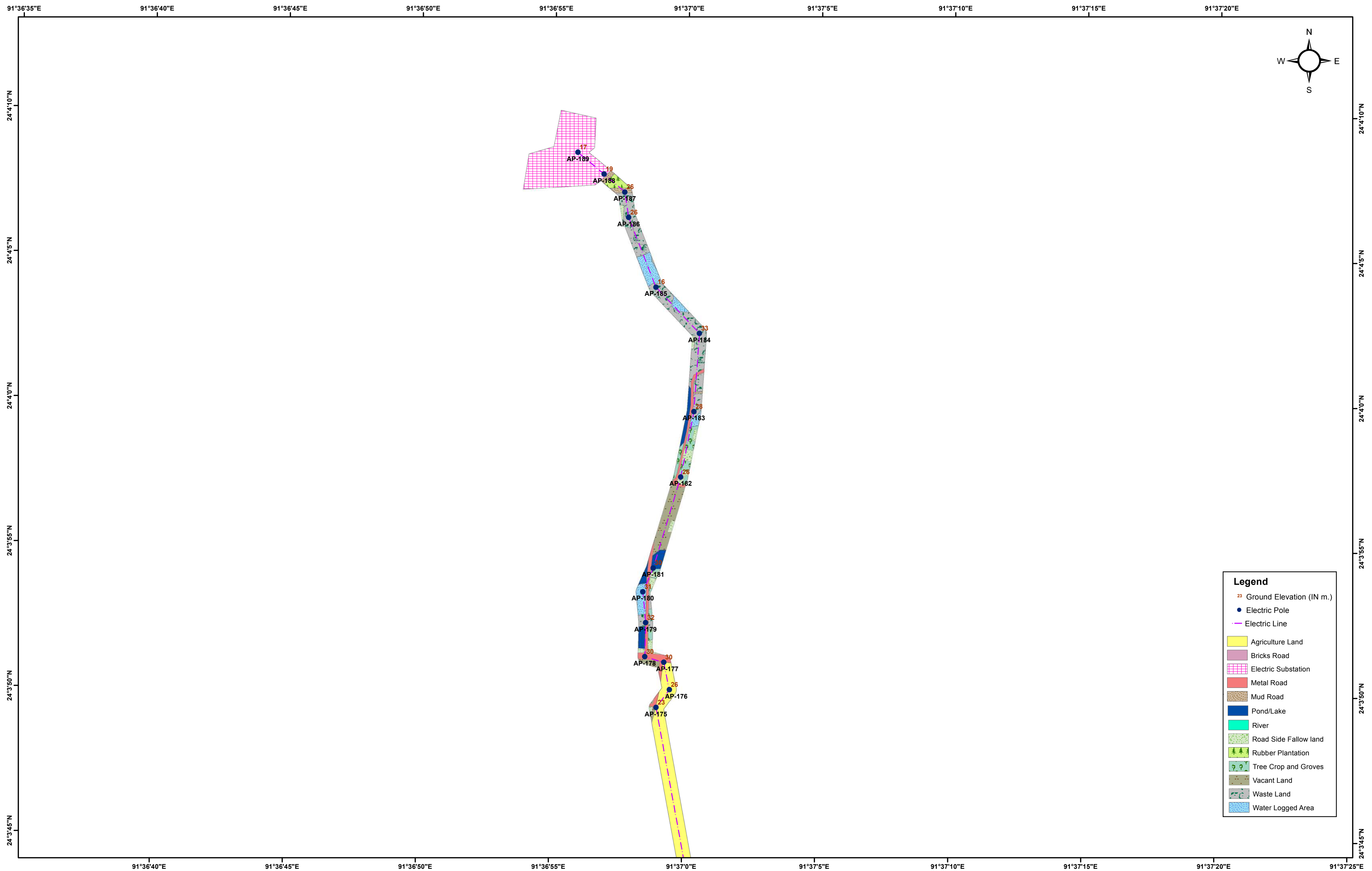
LAND USE/LAND COVER DETAILS OF AMPURA S/S (RGGVY) TO KHOWAI S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



Legend

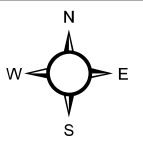
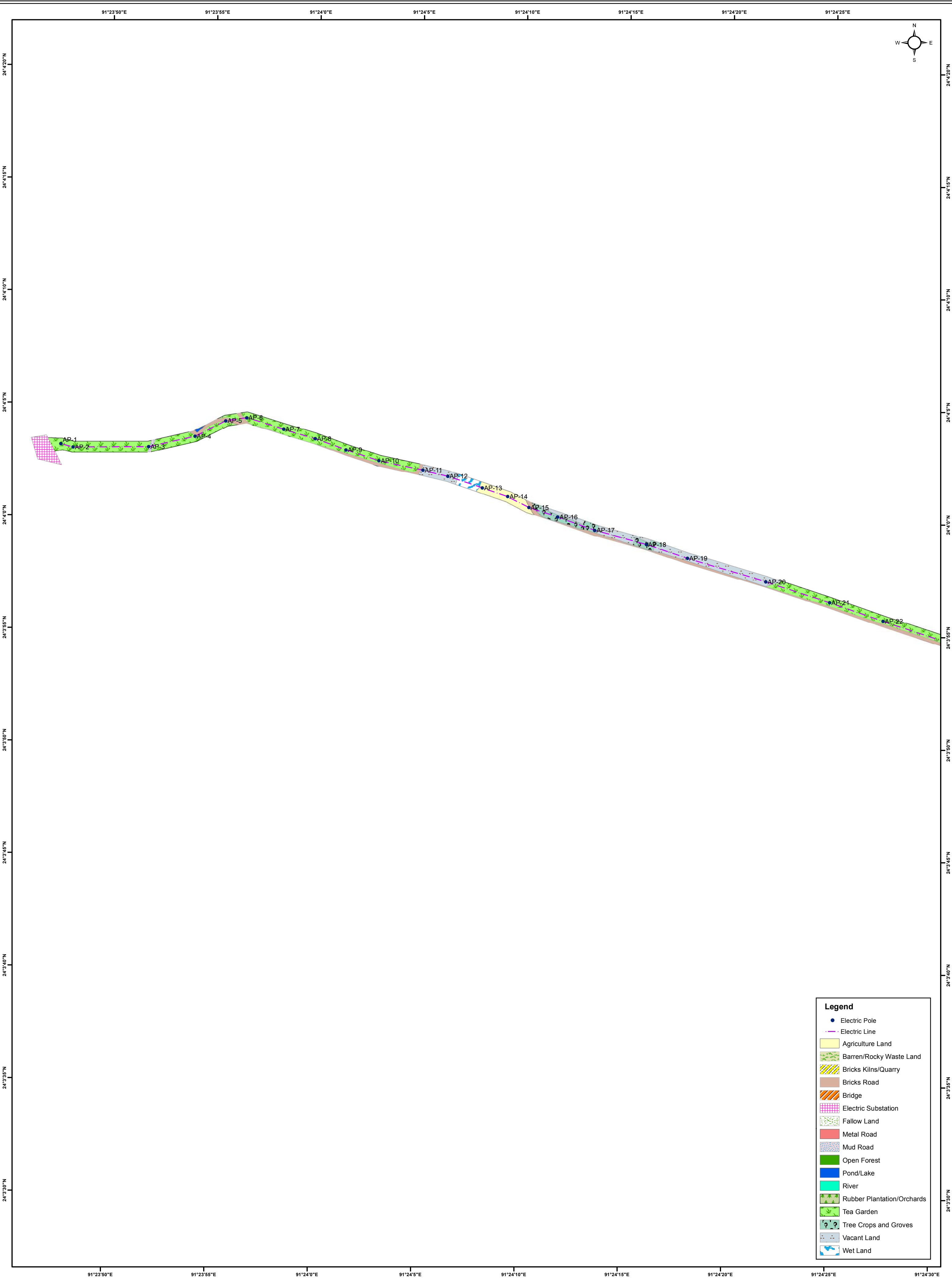
- 23 Ground Elevation (IN m.)
- Electric Pole
- Electric Line
- Agriculture Land
- Bricks Road
- Electric Substation
- Metal Road
- Mud Road
- Pond/Lake
- River
- Road Side Fallow land
- Rubber Plantation
- Tree Crop and Groves
- Vacant Land
- Waste Land
- Water Logged Area

LAND USE/LAND COVER DETAILS OF AMPURA S/S (RGGVY) TO KHOWAI S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



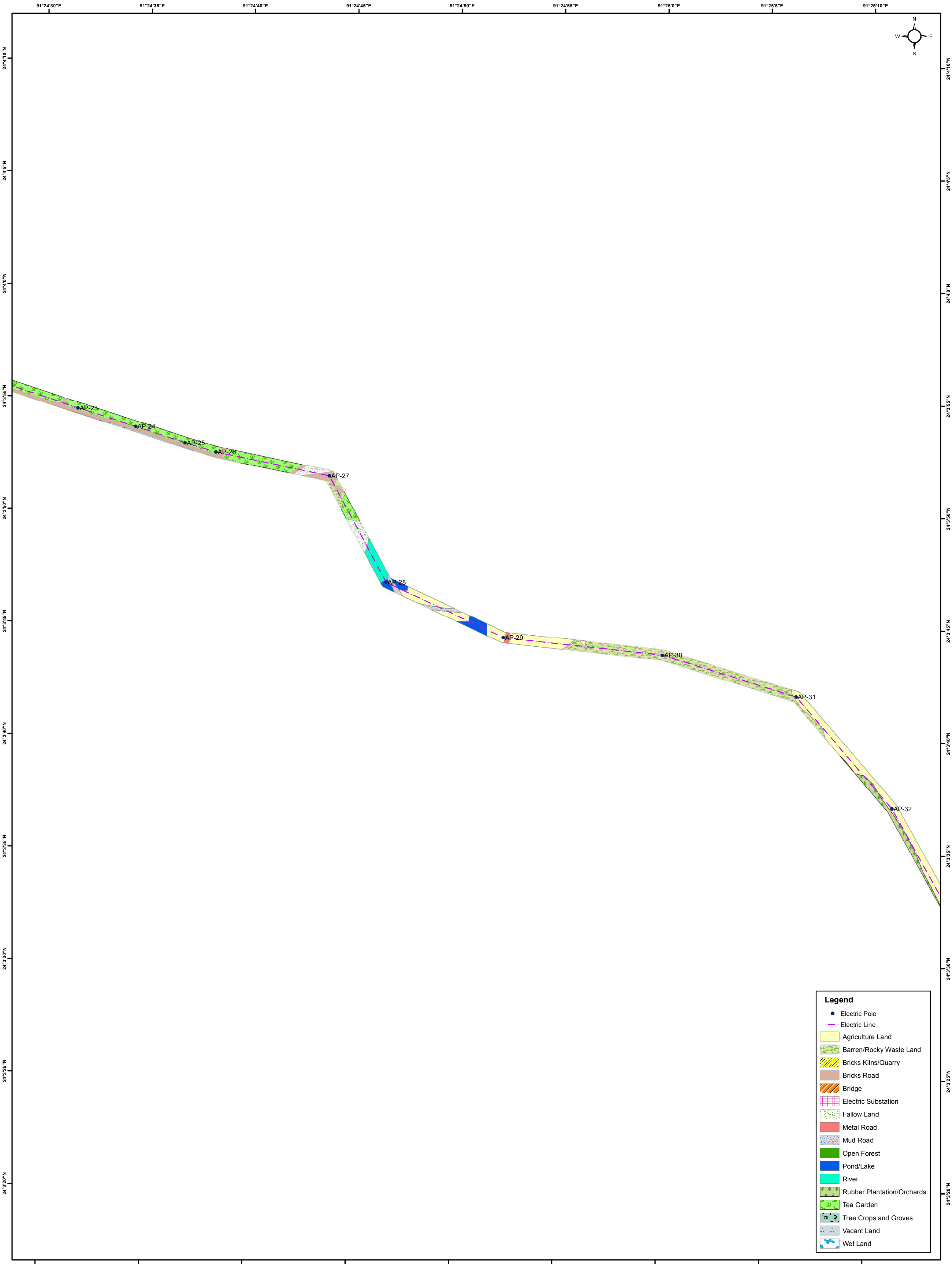
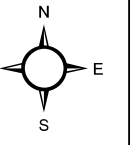
Legend	
23	Ground Elevation (IN m.)
●	Electric Pole
—	Electric Line
■	Agriculture Land
■	Bricks Road
■	Electric Substation
■	Metal Road
■	Mud Road
■	Pond/Lake
■	River
■	Road Side Fallow land
■	Rubber Plantation
■	Tree Crop and Groves
■	Vacant Land
■	Waste Land
■	Water Logged Area

LAND USE/LAND COVER DETAILS OF 33/11 KV HEZAMARA TO SIMNA LINE
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



Legend	
●	Electric Pole
—	Electric Line
■	Agriculture Land
■	Barren/Rocky Waste Land
■	Bricks Kilns/Quarry
■	Bricks Road
■	Bridge
■	Electric Substation
■	Fallow Land
■	Metal Road
■	Mud Road
■	Open Forest
■	Pond/Lake
■	River
■	Rubber Plantation/Orchards
■	Tea Garden
■	Tree Crops and Groves
■	Vacant Land
■	Wet Land

LAND USE/LAND COVER DETAILS OF 33/11 KV HEZAMARA TO SIMNA LINE
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



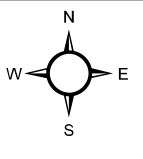
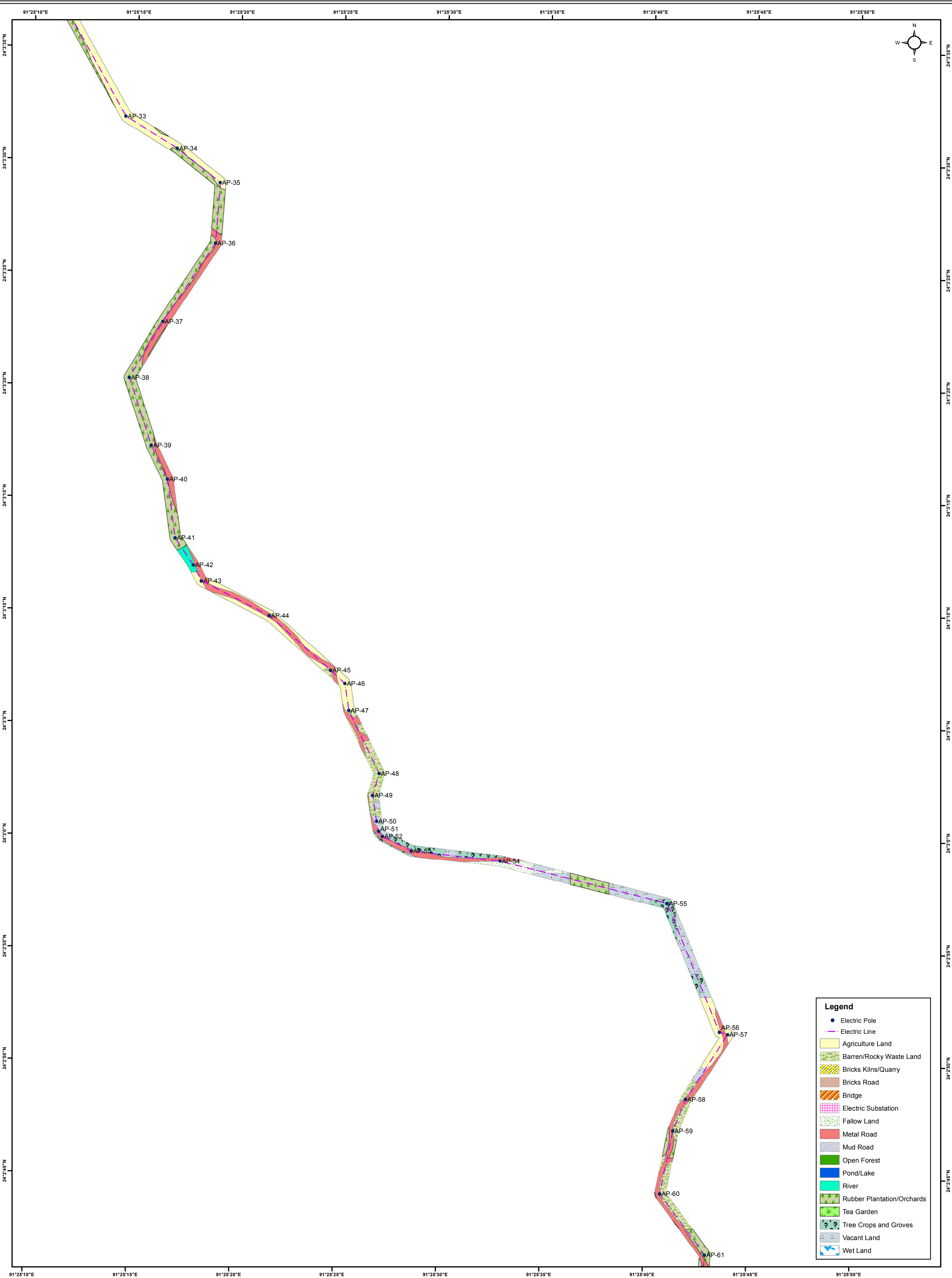
Legend

- Electric Pole
- Electric Line
- Agriculture Land
- Barren/Rocky Waste Land
- Bricks Kilns/Quarry
- Bricks Road
- Bridge
- Electric Substation
- Fallow Land
- Metal Road
- Mud Road
- Open Forest
- Pond/Lake
- River
- Rubber Plantation/Orchards
- Tea Garden
- Tree Crops and Groves
- Vacant Land
- Wet Land

91°24'30"E 91°24'35"E 91°24'40"E 91°24'45"E 91°24'50"E 91°24'55"E 91°25'0"E 91°25'5"E 91°25'10"E

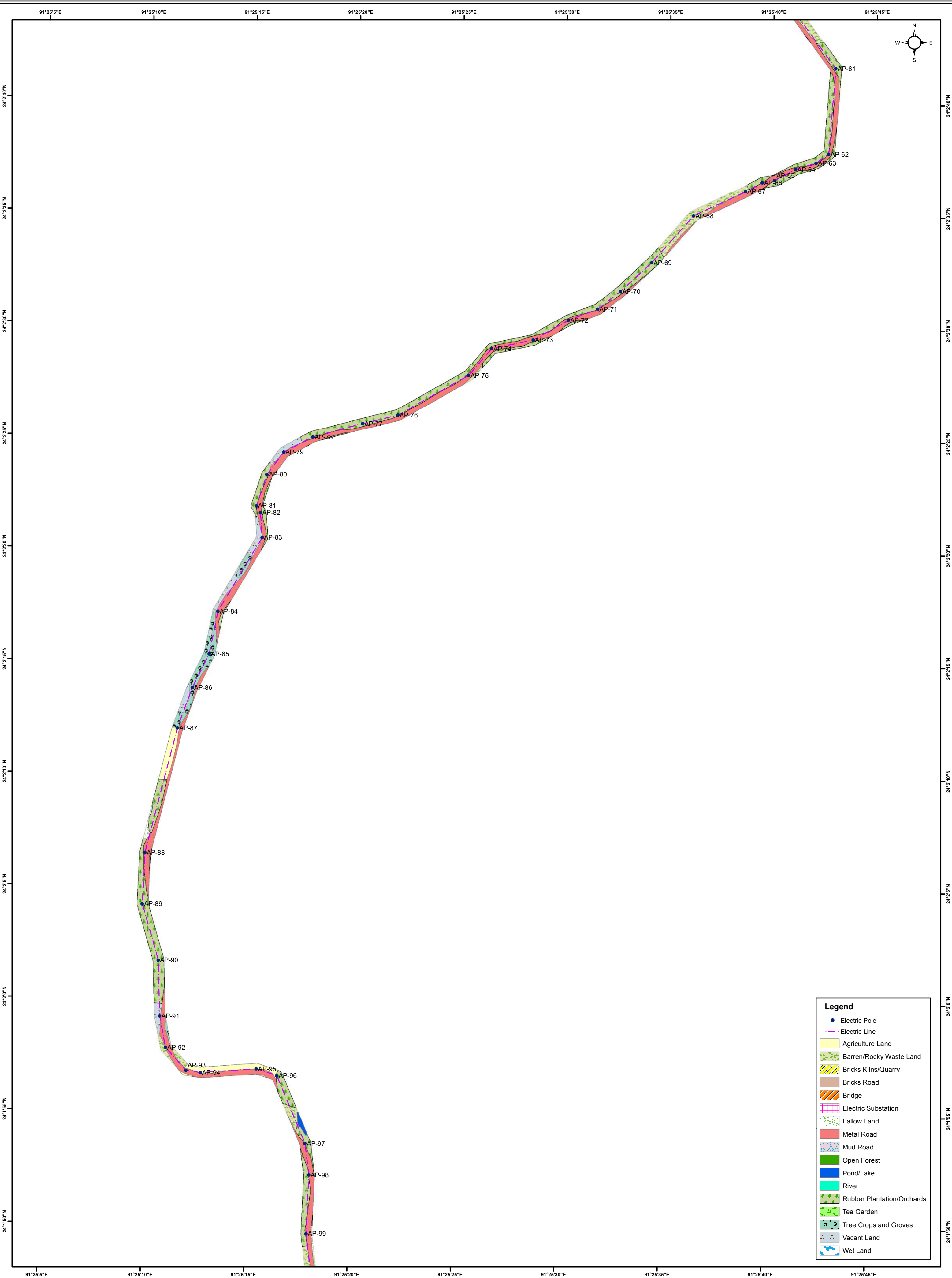
24°4'10"N 24°4'5"N 24°4'0"N 24°3'55"N 24°3'50"N 24°3'45"N 24°3'40"N 24°3'35"N 24°3'30"N 24°3'25"N 24°3'20"N

LAND USE/LAND COVER DETAILS OF 33/11 KV HEZAMARA TO SIMNA LINE
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



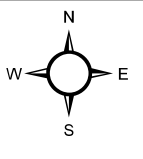
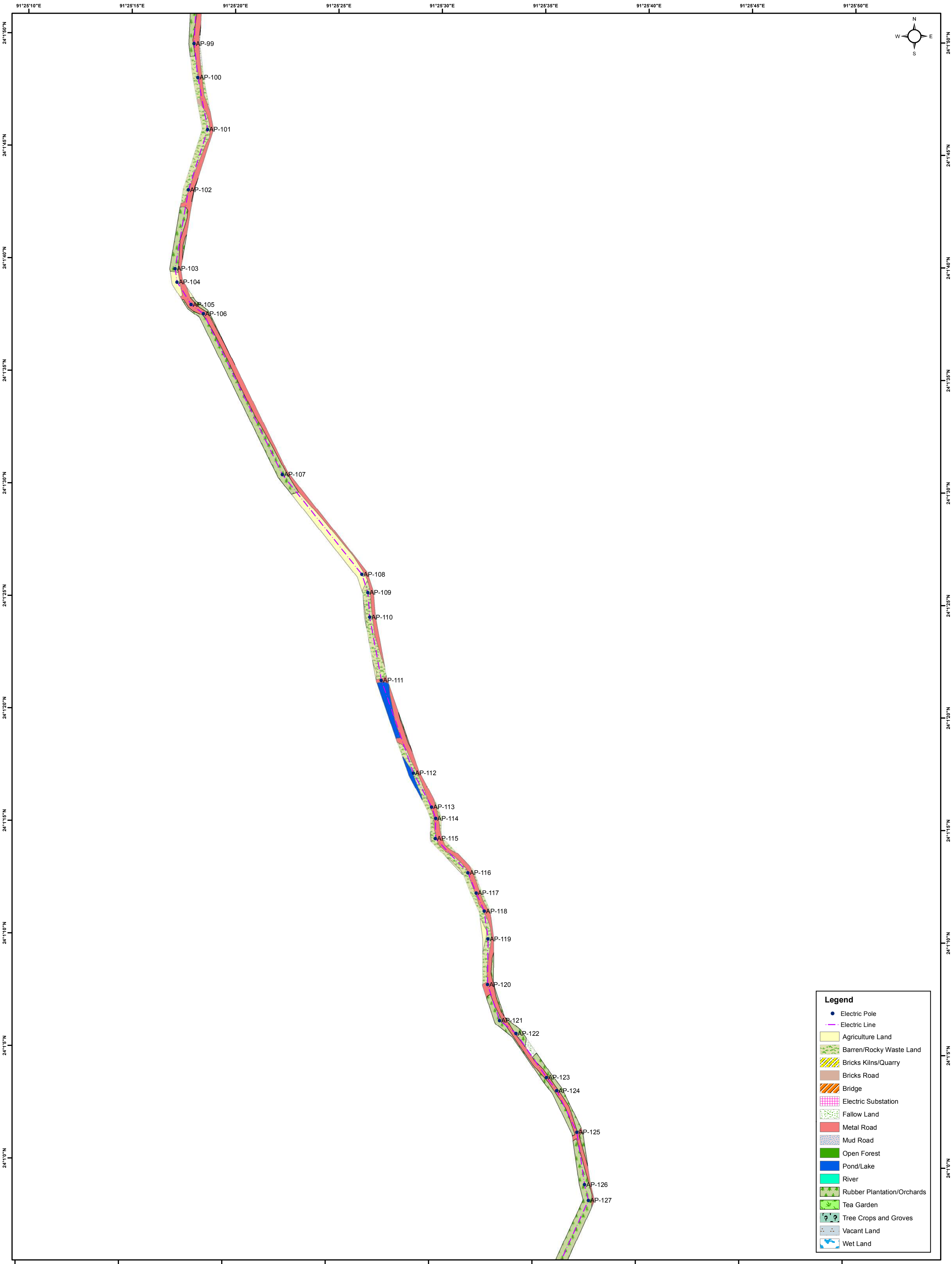
Legend	
●	Electric Pole
—	Electric Line
■	Agriculture Land
■	Barren/Rocky Waste Land
■	Bricks Kilns/Quarry
■	Bricks Road
■	Bridge
■	Electric Substation
■	Fallow Land
■	Metal Road
■	Mud Road
■	Open Forest
■	Pond/Lake
■	River
■	Rubber Plantation/Orchards
■	Tea Garden
■	Tree Crops and Groves
■	Vacant Land
■	Wet Land

LAND USE/LAND COVER DETAILS OF 33/11 KV HEZAMARA TO SIMNA LINE
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



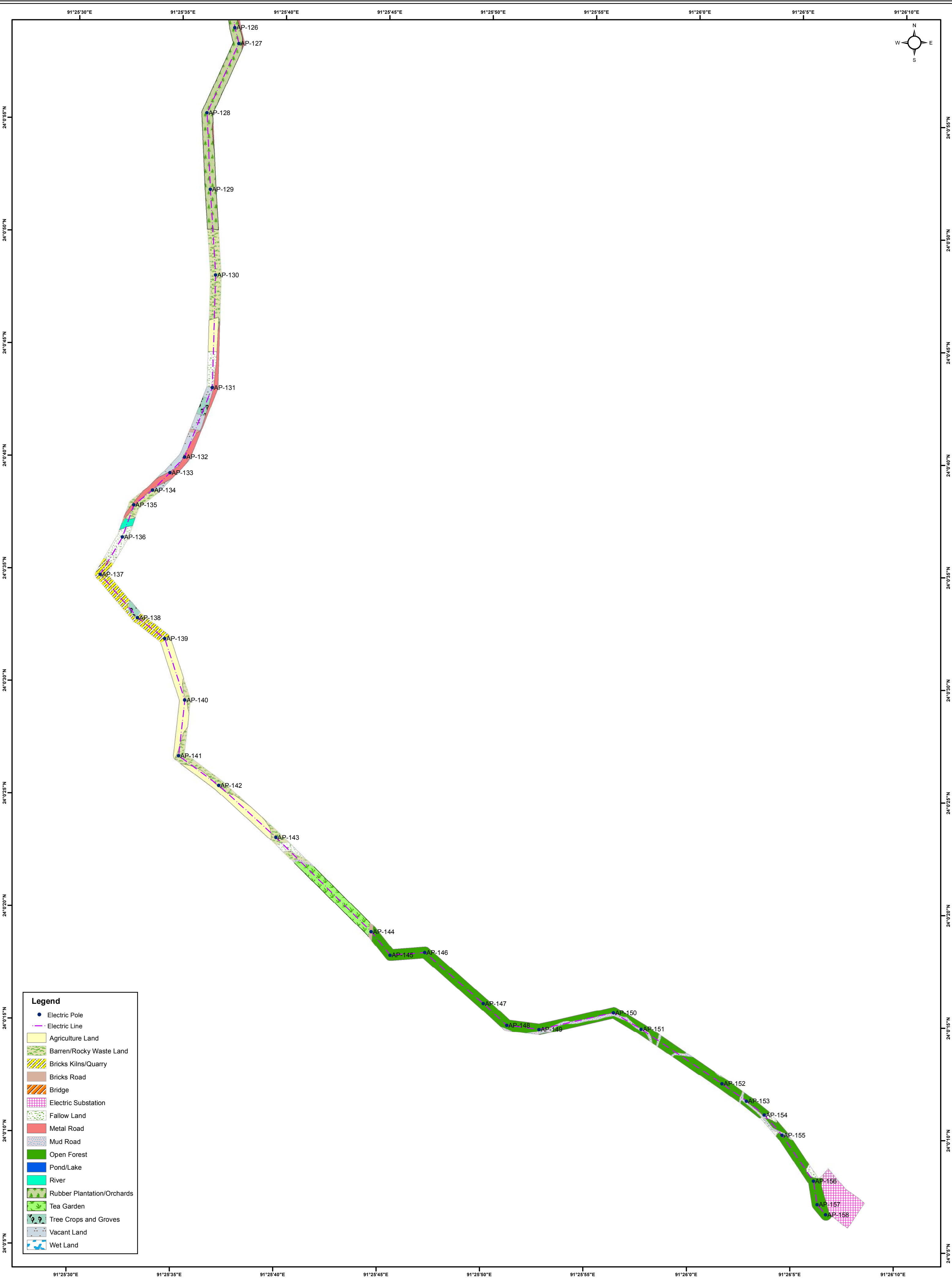
Legend	
●	Electric Pole
---	Electric Line
■	Agriculture Land
■	Barren/Rocky Waste Land
■	Bricks Kilns/Quarry
■	Bricks Road
■	Bridge
■	Electric Substation
■	Fallow Land
■	Metal Road
■	Mud Road
■	Open Forest
■	Pond/Lake
■	River
■	Rubber Plantation/Orchards
■	Tea Garden
■	Tree Crops and Groves
■	Vacant Land
■	Wet Land

LAND USE/LAND COVER DETAILS OF 33/11 KV HEZAMARA TO SIMNA LINE
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,

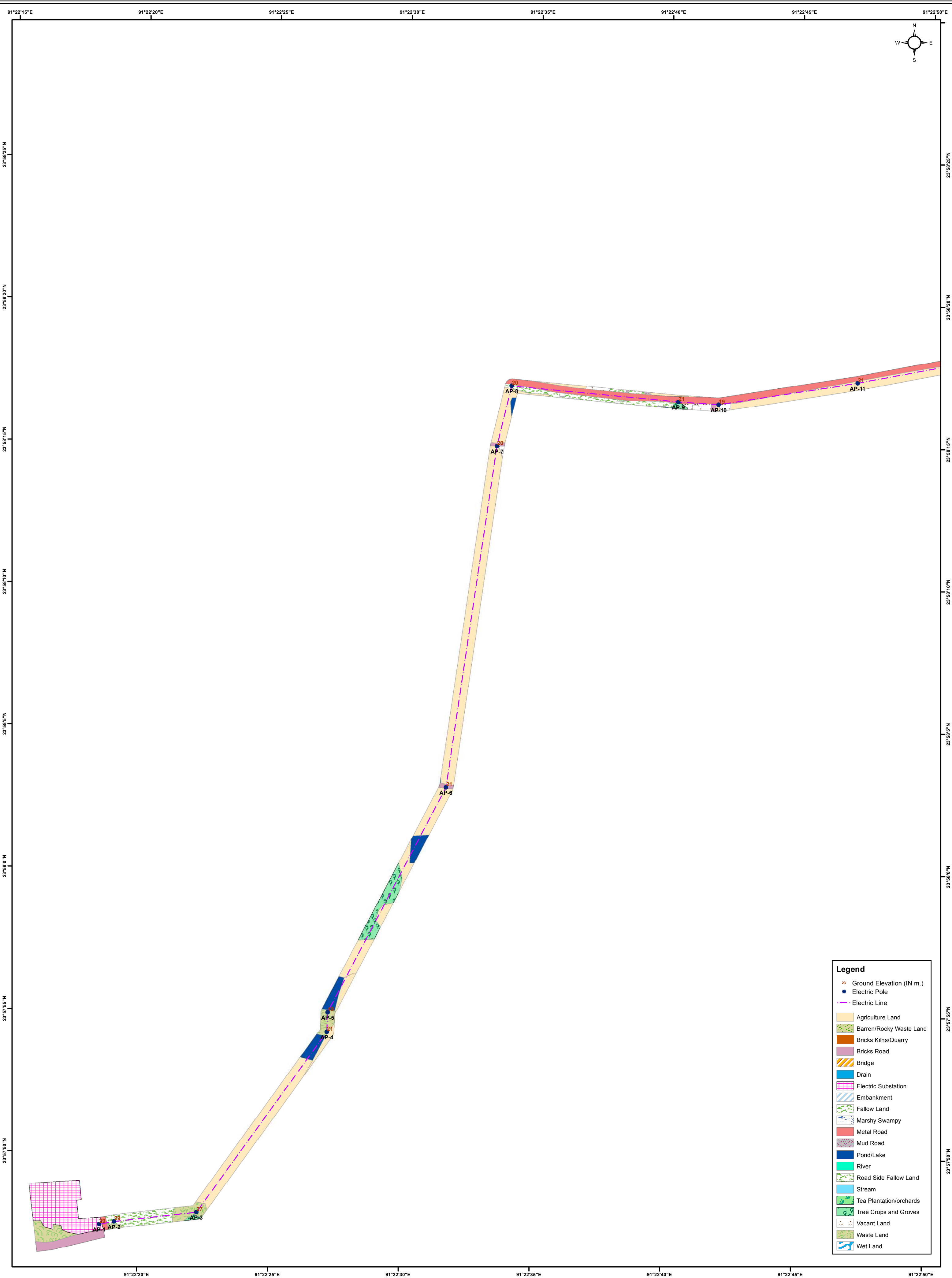


Legend	
●	Electric Pole
—	Electric Line
■	Agriculture Land
■	Barren/Rocky Waste Land
■	Bricks Kilns/Quarry
■	Bricks Road
■	Bridge
■	Electric Substation
■	Fallow Land
■	Metal Road
■	Mud Road
■	Open Forest
■	Pond/Lake
■	River
■	Rubber Plantation/Orchards
■	Tea Garden
■	Tree Crops and Groves
■	Vacant Land
■	Wet Land

LAND USE/LAND COVER DETAILS OF 33/11 KV HEZAMARA TO SIMNA LINE
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



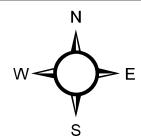
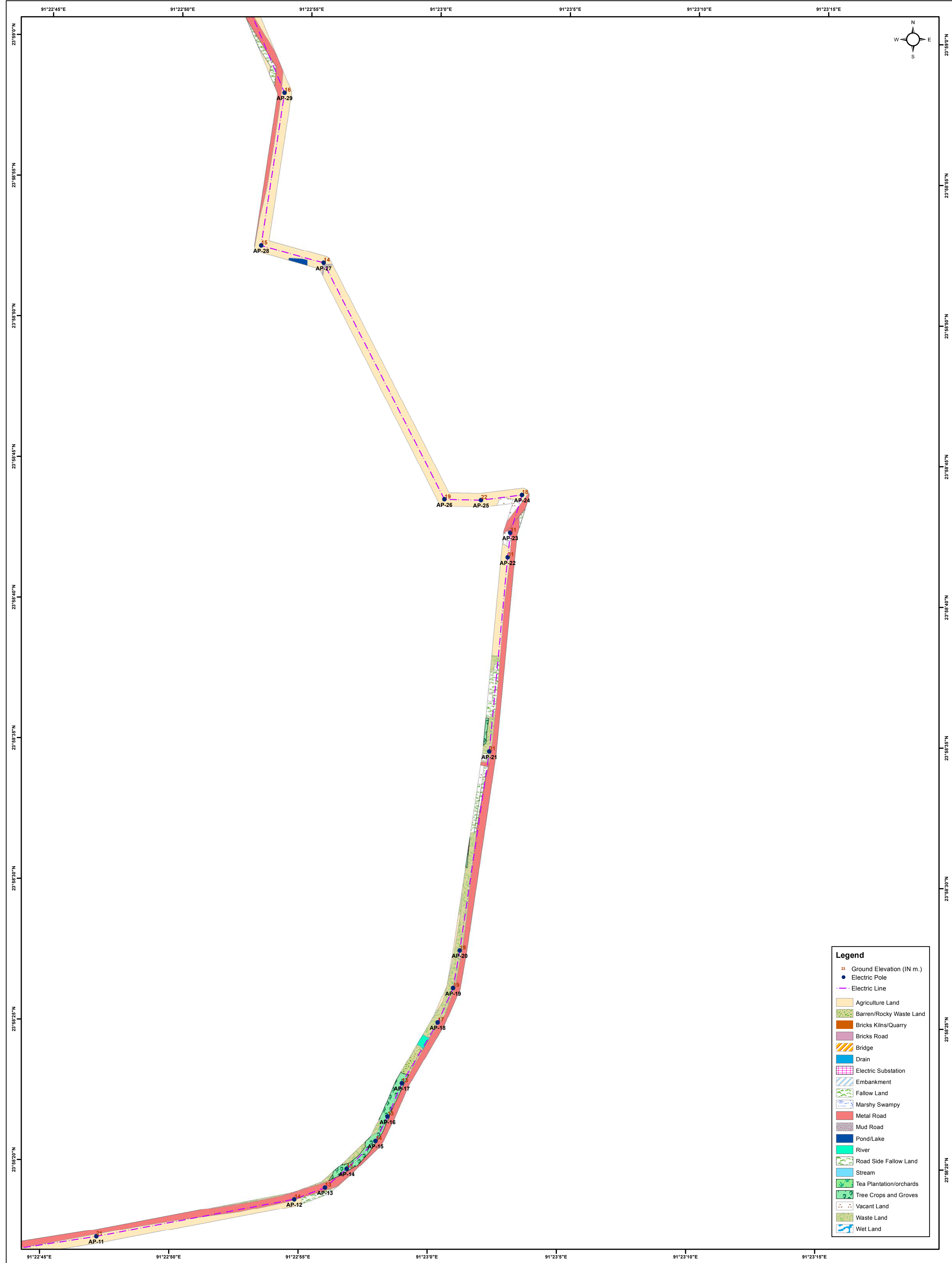
LAND USE/LAND COVER DETAILS OF TAPPING POINT ON MOHANPUR TO HEZAMARA EXISTING FEEDAR AT SIMNA
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



Legend

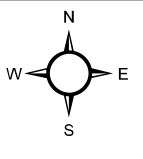
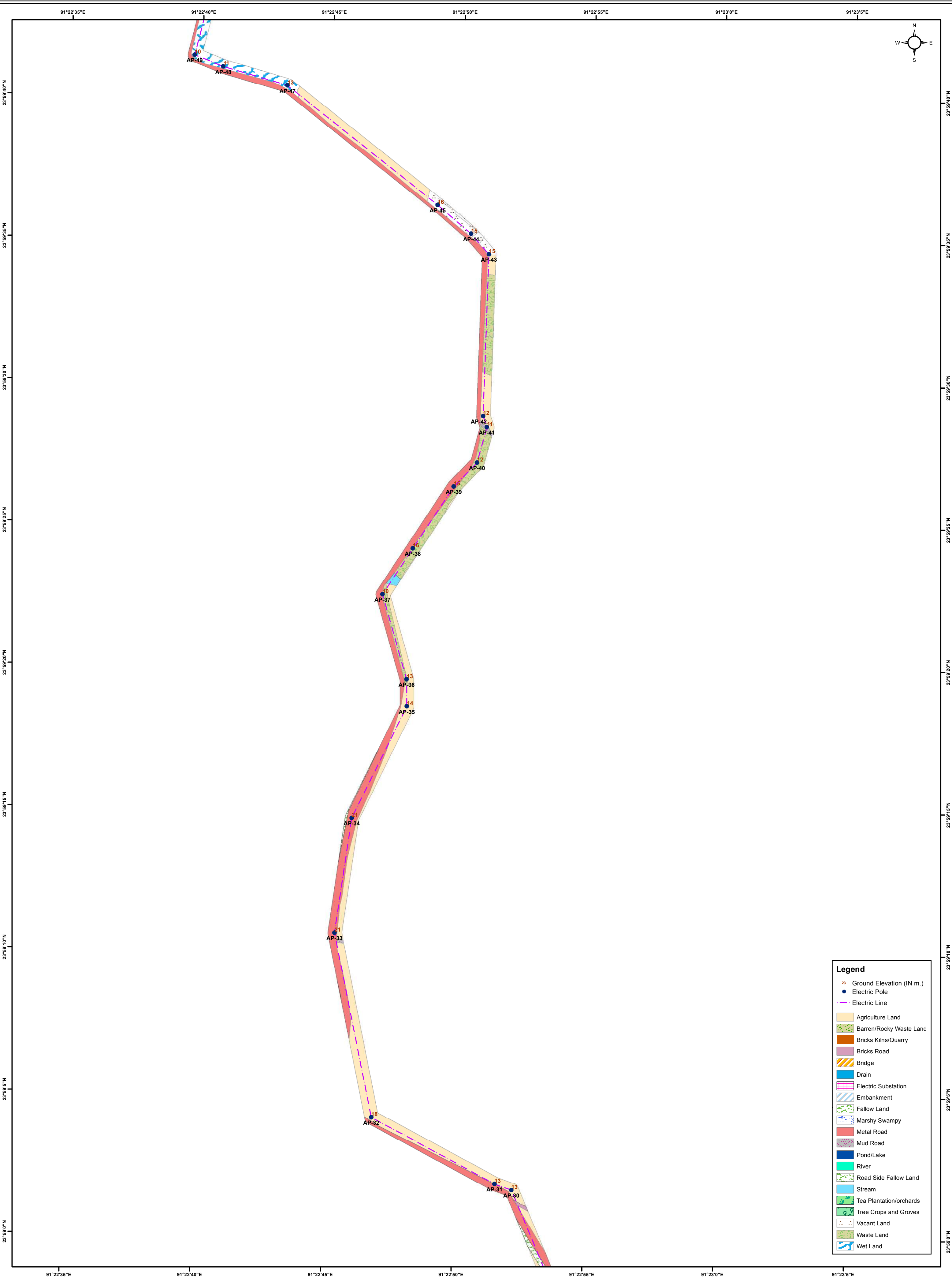
	Ground Elevation (IN m.)
	Electric Pole
	Electric Line
	Agriculture Land
	Barren/Rocky Waste Land
	Bricks Kilns/Quarry
	Bricks Road
	Bridge
	Drain
	Electric Substation
	Embankment
	Fallow Land
	Marshy Swampy
	Metal Road
	Mud Road
	Pond/Lake
	River
	Road Side Fallow Land
	Stream
	Tea Plantation/orchards
	Tree Crops and Groves
	Vacant Land
	Waste Land
	Wet Land

LAND USE/LAND COVER DETAILS OF TAPPING POINT ON MOHANPUR TO HEZAMARA EXISTING FEEDAR AT SIMNA
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



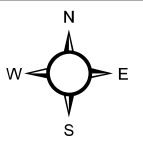
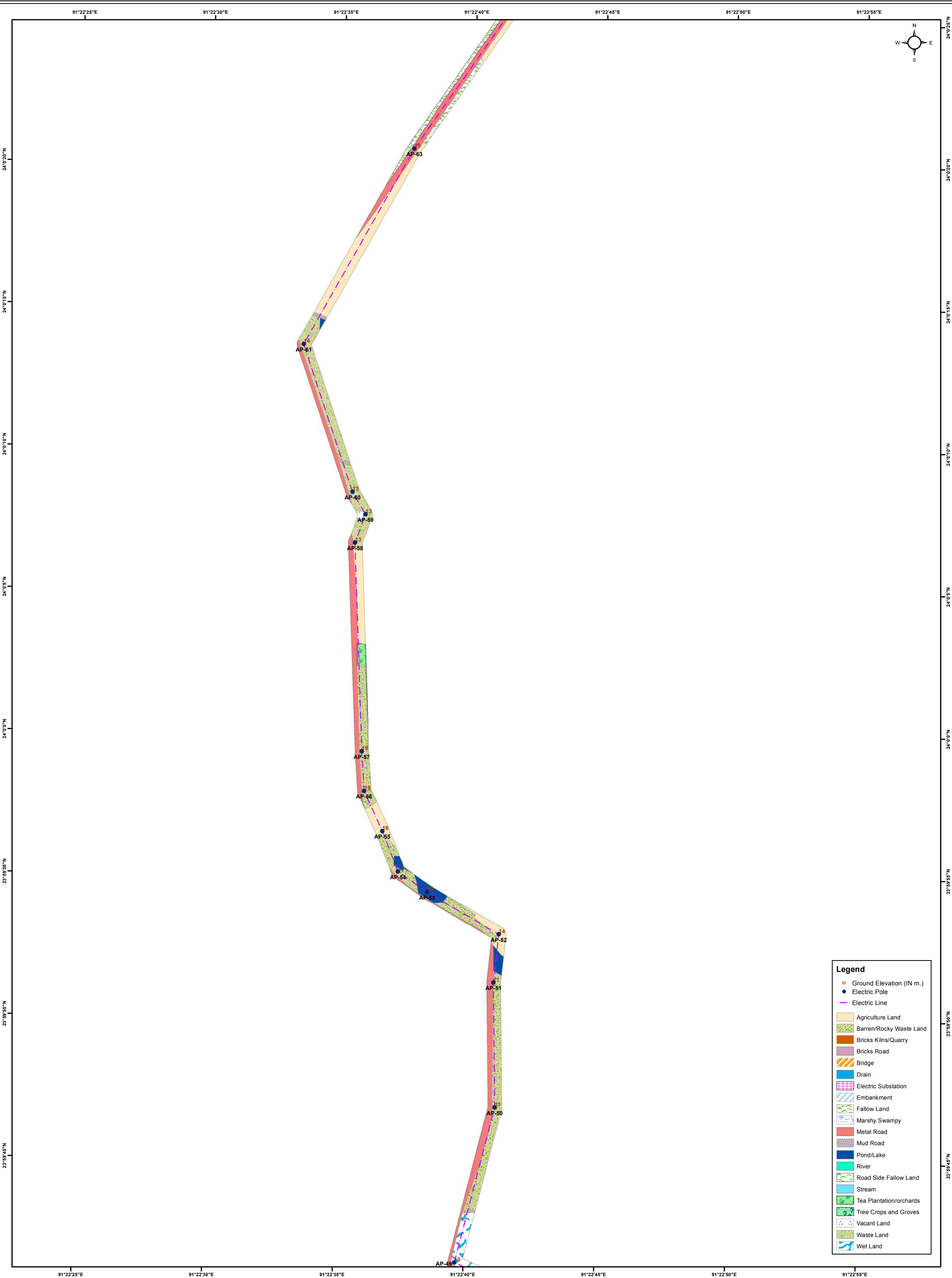
Legend	
	Ground Elevation (IN m.)
	Electric Pole
	Electric Line
	Agriculture Land
	Barren/Rocky Waste Land
	Bricks Kilns/Quarry
	Bricks Road
	Bridge
	Drain
	Electric Substation
	Embankment
	Fallow Land
	Marshy Swampy
	Metal Road
	Mud Road
	Pond/Lake
	River
	Road Side Fallow Land
	Stream
	Tea Plantation/orchards
	Tree Crops and Groves
	Vacant Land
	Waste Land
	Wet Land

LAND USE/LAND COVER DETAILS OF TAPPING POINT ON MOHANPUR TO HEZAMARA EXISTING FEEDAR AT SIMNA
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



Legend	
	Ground Elevation (IN m.)
	Electric Pole
	Electric Line
	Agriculture Land
	Barren/Rocky Waste Land
	Bricks Kilns/Quarry
	Bricks Road
	Bridge
	Drain
	Electric Substation
	Embankment
	Fallow Land
	Marshy Swampy
	Metal Road
	Mud Road
	Pond/Lake
	River
	Road Side Fallow Land
	Tea Plantation/orchards
	Tree Crops and Groves
	Vacant Land
	Waste Land
	Wet Land

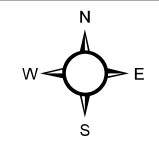
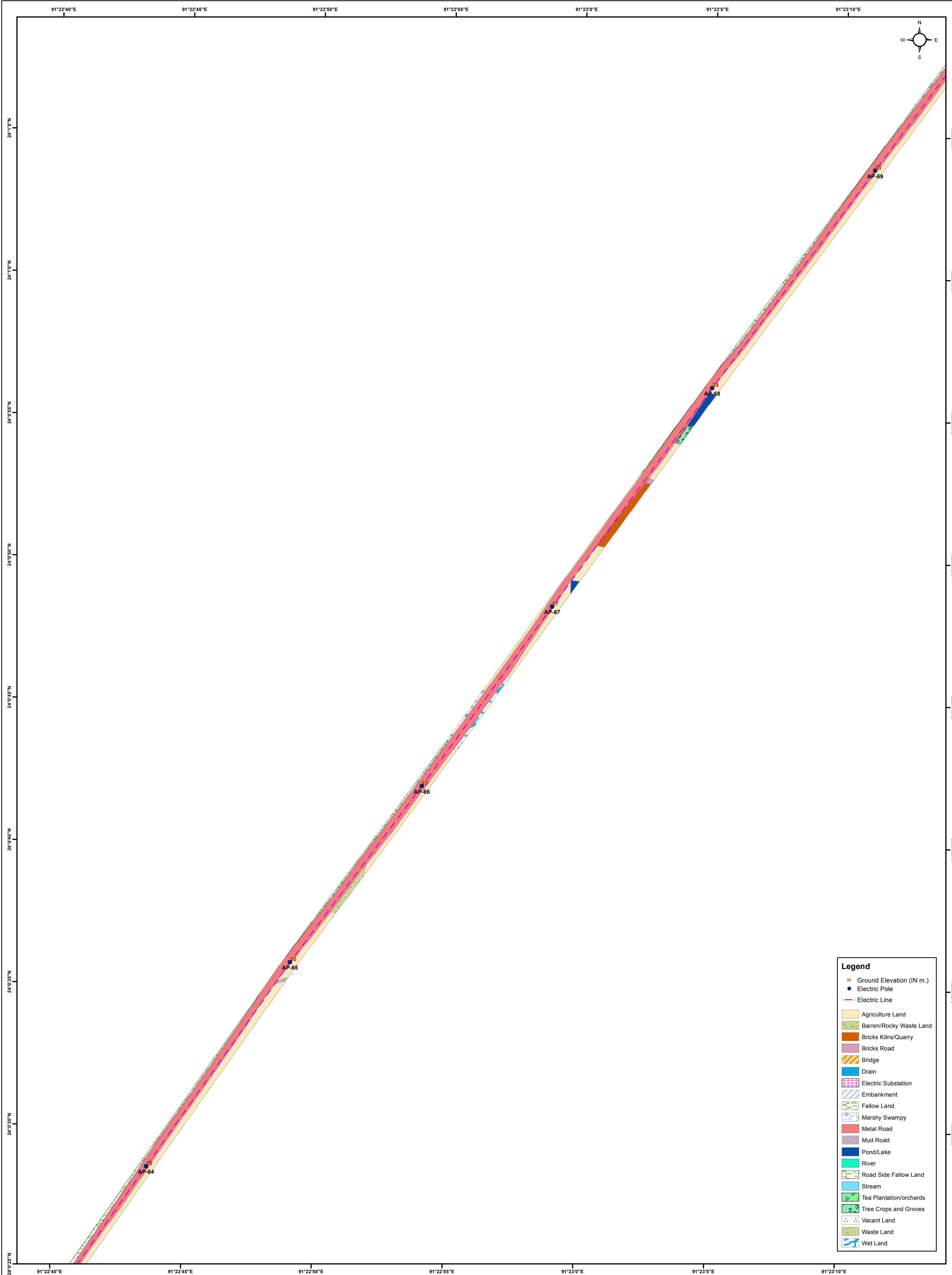
LAND USE/LAND COVER DETAILS OF TAPPING POINT ON MOHANPUR TO HEZAMARA EXISTING FEEDAR AT SIMNA
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



Legend

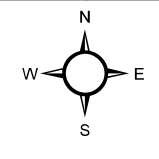
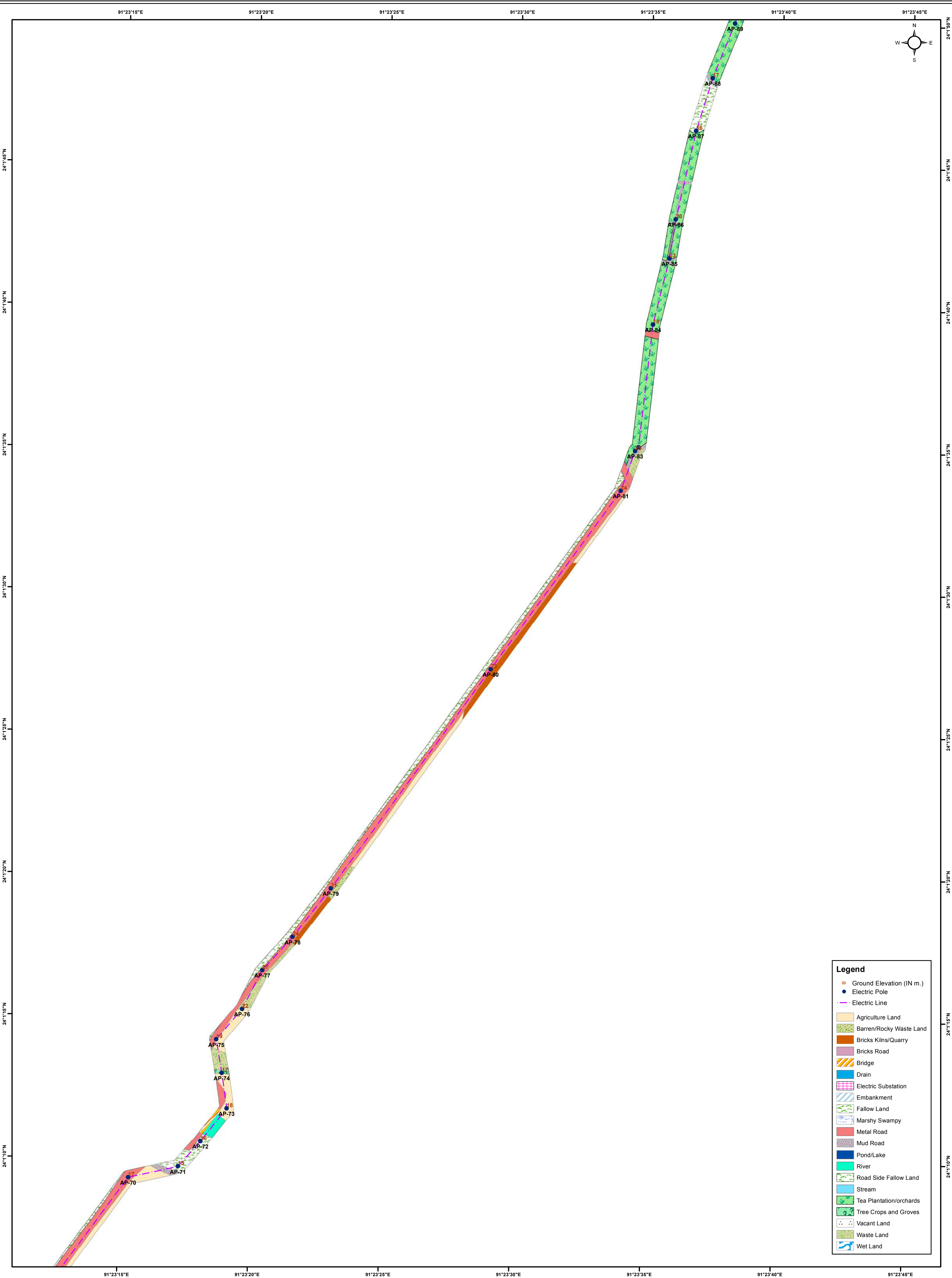
	Ground Elevation (IN m.)
	Electric Pole
	Electric Line
	Agriculture Land
	Barren/Rocky Waste Land
	Bricks Kilns/Quarry
	Bricks Road
	Bridge
	Drain
	Electric Substation
	Embankment
	Fallow Land
	Marshy Swampy
	Metal Road
	Mud Road
	Pond/Lake
	River
	Road Side Fallow Land
	Stream
	Tea Plantation/orchards
	Tree Crops and Groves
	Vacant Land
	Waste Land
	Wet Land

LAND USE/LAND COVER DETAILS OF TAPPING POINT ON MOHANPUR TO HEZAMARA EXISTING FEEDAR AT SIMNA
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



Legend	
	Ground Elevation (IN m.)
	Electric Pole
	Electric Line
	Agriculture Land
	Barren/Rocky Waste Land
	Bricks Kilns/Quarry
	Bricks Road
	Bridge
	Drain
	Electric Substation
	Embankment
	Fallow Land
	Marshy Swampy
	Metal Road
	Mud Road
	Pond/Lake
	River
	Road Side Fallow Land
	Stream
	Tea Plantation/orchards
	Tree Crops and Groves
	Vacant Land
	Waste Land
	Wet Land

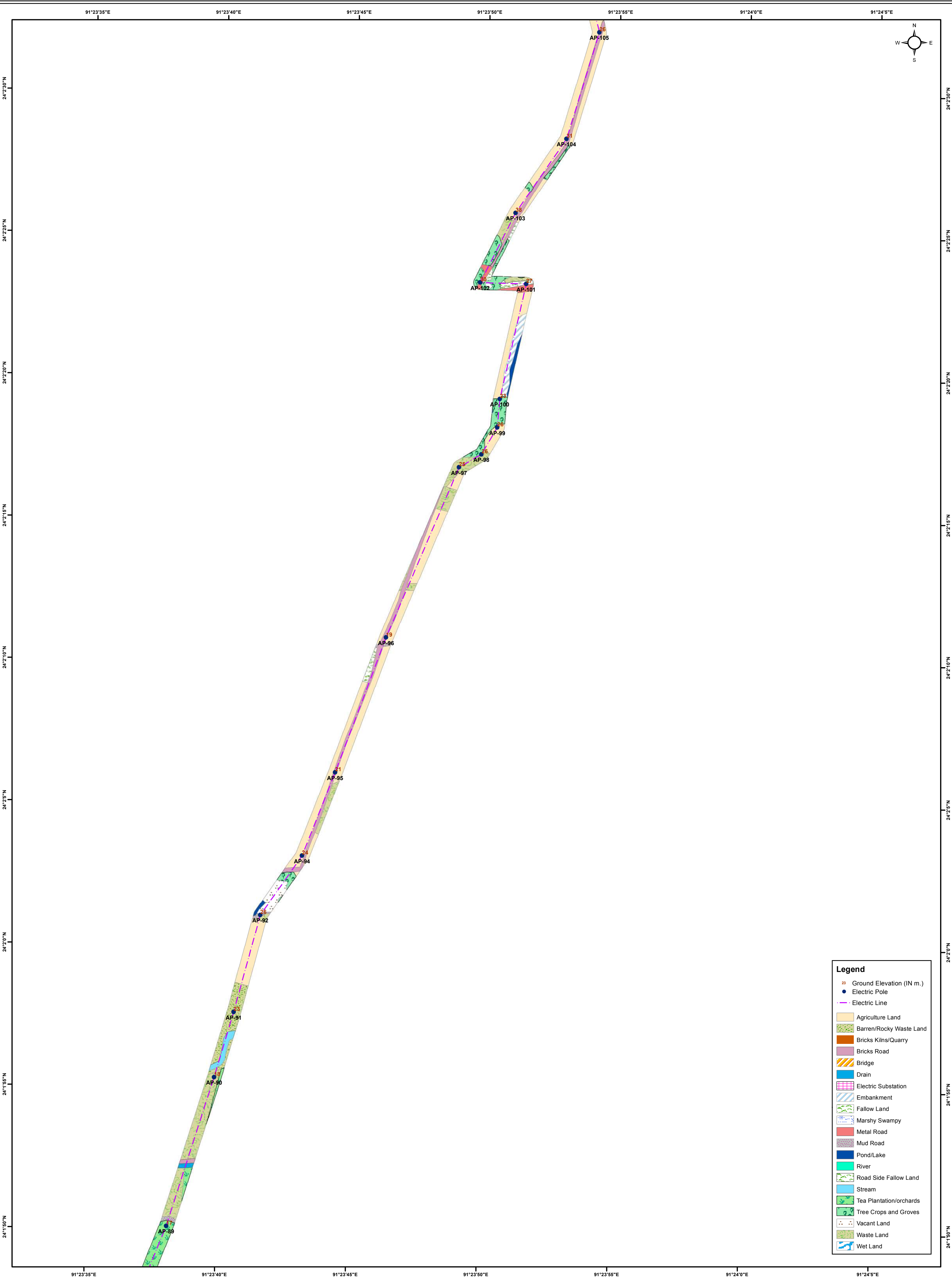
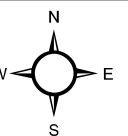
LAND USE/LAND COVER DETAILS OF TAPPING POINT ON MOHANPUR TO HEZAMARA EXISTING FEEDAR AT SIMNA
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



Legend

	Ground Elevation (IN m.)
	Electric Pole
	Electric Line
	Agriculture Land
	Barren/Rocky Waste Land
	Bricks Kilns/Quarry
	Bricks Road
	Bridge
	Drain
	Electric Substation
	Embankment
	Fallow Land
	Marshy Swampy
	Metal Road
	Mud Road
	Pond/Lake
	River
	Road Side Fallow Land
	Stream
	Tea Plantation/orchards
	Tree Crops and Groves
	Vacant Land
	Waste Land
	Wet Land

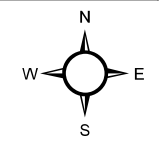
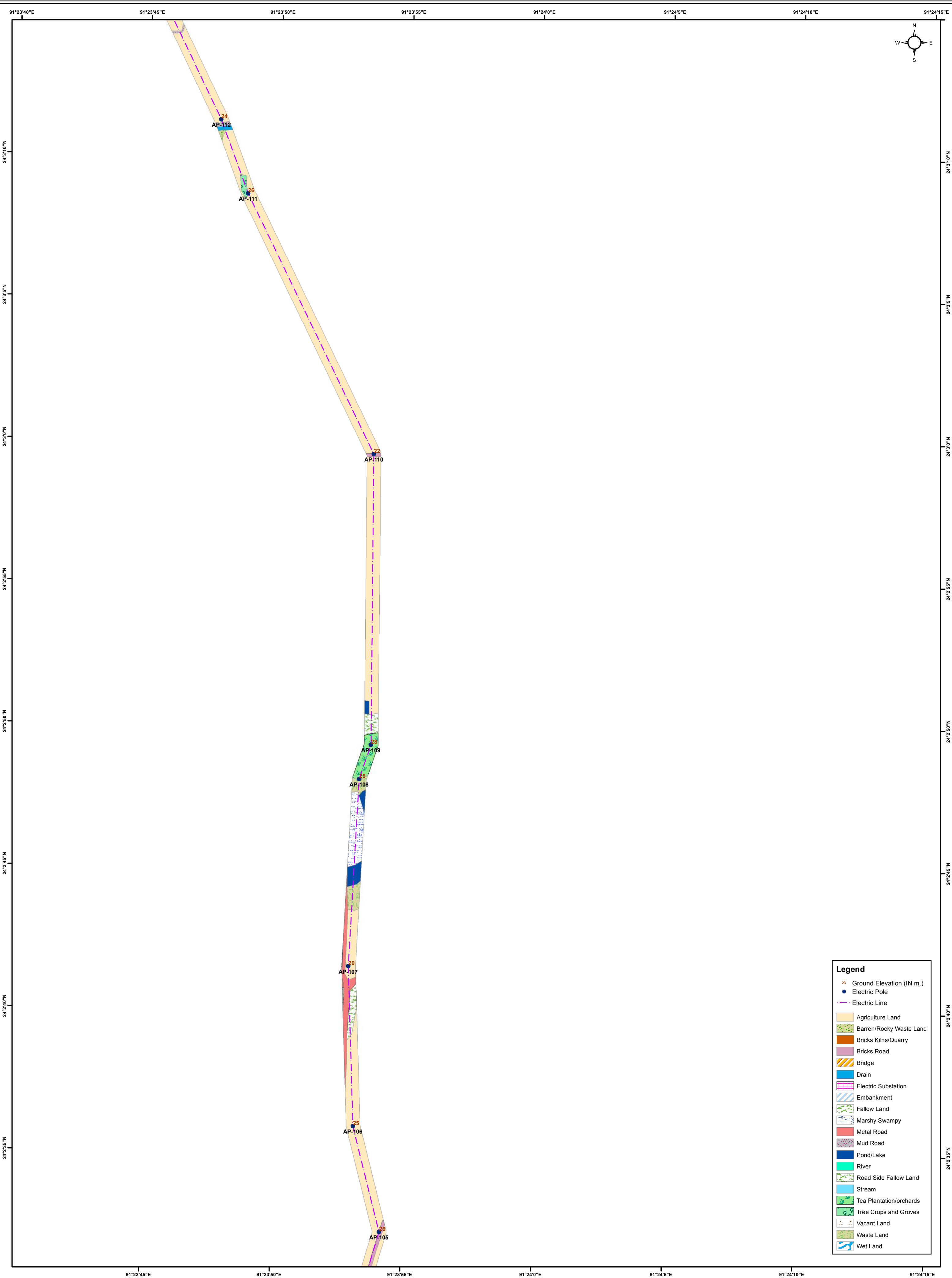
LAND USE/LAND COVER DETAILS OF TAPPING POINT ON MOHANPUR TO HEZAMARA EXISTING FEEDAR AT SIMNA
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



Legend

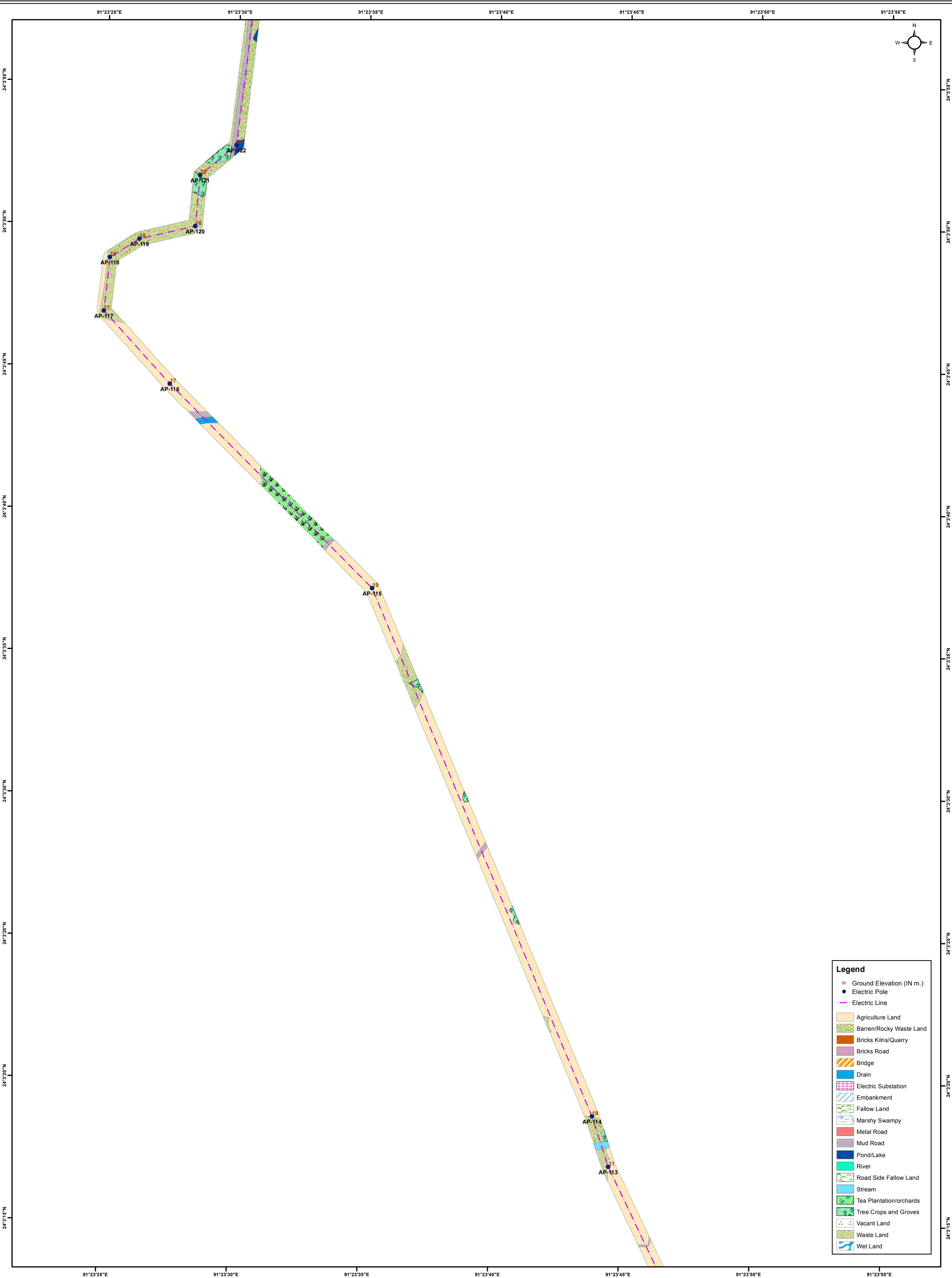
	Ground Elevation (IN m.)
	Electric Pole
	Electric Line
	Agriculture Land
	Barren/Rocky Waste Land
	Bricks Kilns/Quarry
	Bricks Road
	Bridge
	Drain
	Electric Substation
	Embankment
	Fallow Land
	Marshy Swampy
	Metal Road
	Mud Road
	Pond/Lake
	River
	Road Side Fallow Land
	Stream
	Tea Plantation/orchards
	Tree Crops and Groves
	Vacant Land
	Waste Land
	Wet Land

LAND USE/LAND COVER DETAILS OF TAPPING POINT ON MOHANPUR TO HEZAMARA EXISTING FEEDAR AT SIMNA
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



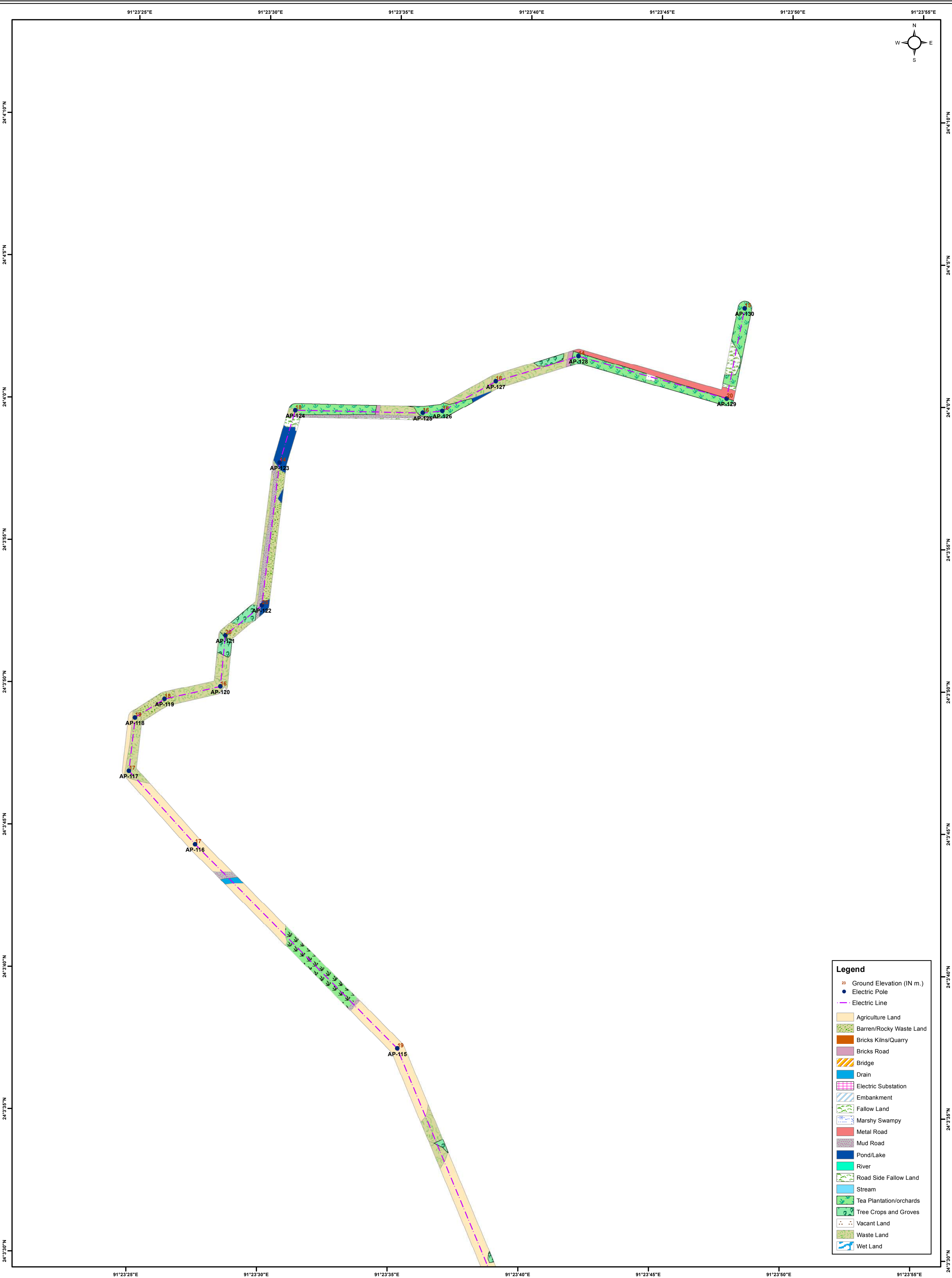
Legend	
	Ground Elevation (IN m.)
	Electric Pole
	Electric Line
	Agriculture Land
	Barren/Rocky Waste Land
	Bricks Kilns/Quarry
	Bricks Road
	Bridge
	Drain
	Electric Substation
	Embankment
	Fallow Land
	Marshy Swampy
	Metal Road
	Mud Road
	Pond/Lake
	River
	Road Side Fallow Land
	Stream
	Tea Plantation/orchards
	Tree Crops and Groves
	Vacant Land
	Waste Land
	Wet Land

LAND USE/LAND COVER DETAILS OF TAPPING POINT ON MOHANPUR TO HEZAMARA EXISTING FEEDAR AT SIMNA
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



- Legend**
- Ground Elevation (IN m.)
 - Electric Pole
 - Electric Line
 - Agriculture Land
 - Barren/Rocky Waste Land
 - Bricks Kilns/Quarry
 - Bricks Road
 - Bridge
 - Drain
 - Electric Substation
 - Embankment
 - Fallow Land
 - Marshy Swampy
 - Metal Road
 - Mud Road
 - Pond/Lake
 - River
 - Road Side Fallow Land
 - Stream
 - Tea Plantation/orchards
 - Tree Crops and Groves
 - Vacant Land
 - Waste Land
 - Wet Land

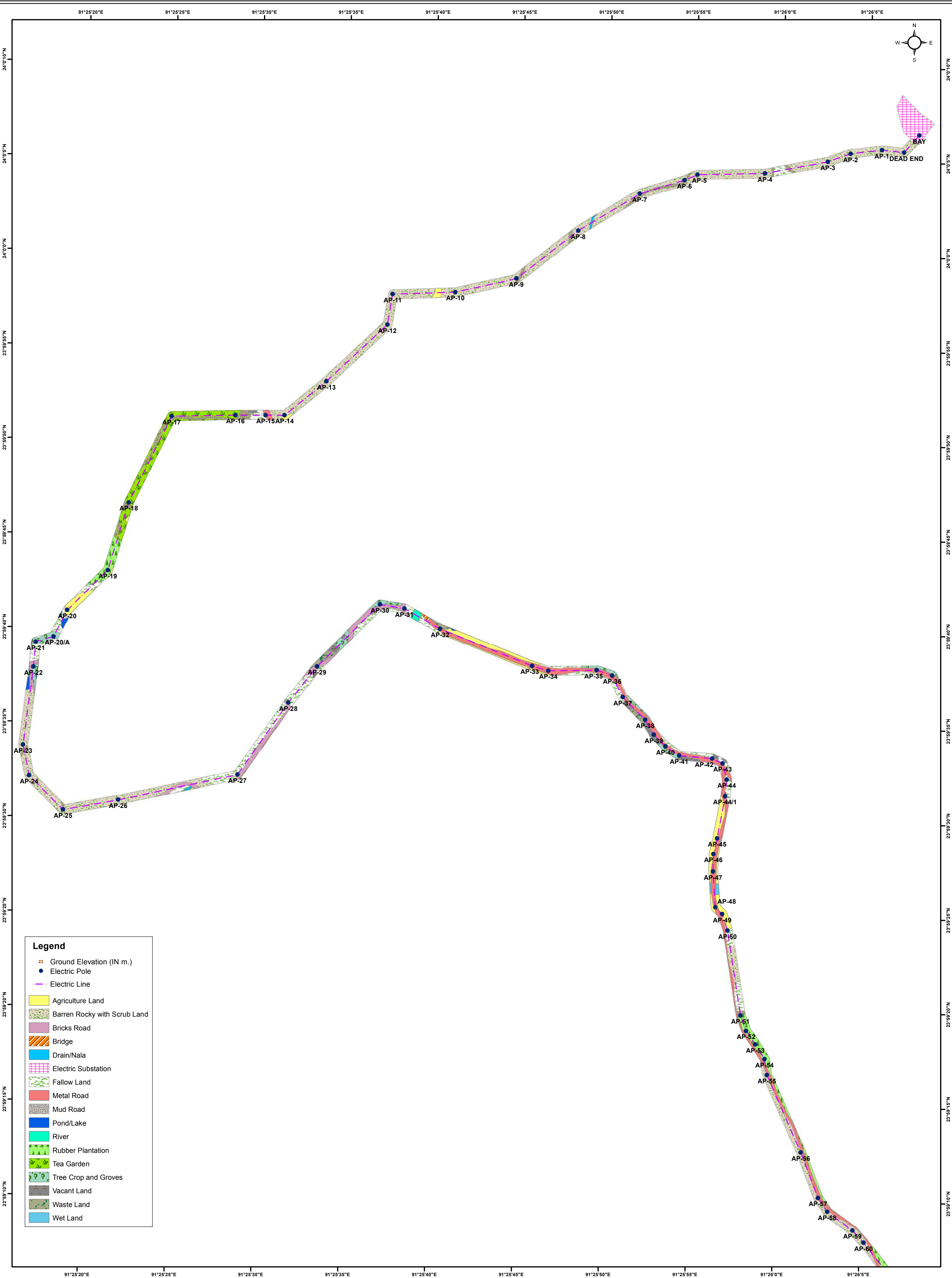
LAND USE/LAND COVER DETAILS OF TAPPING POINT ON MOHANPUR TO HEZAMARA EXISTING FEEDAR AT SIMNA
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



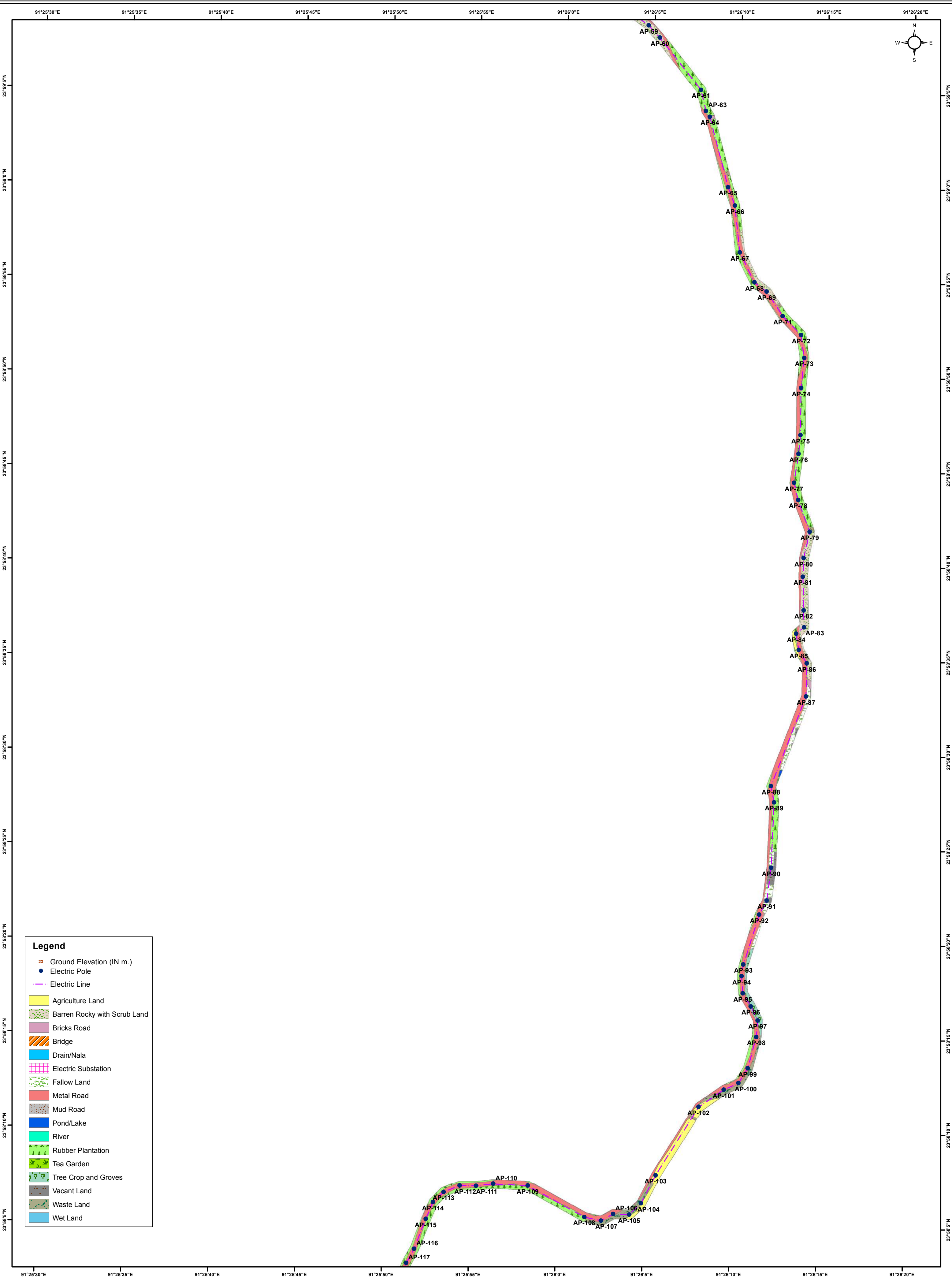
Legend

	Ground Elevation (IN m.)
	Electric Pole
	Electric Line
	Agriculture Land
	Barren/Rocky Waste Land
	Bricks Kilns/Quarry
	Bricks Road
	Bridge
	Drain
	Electric Substation
	Embankment
	Fallow Land
	Marshy Swampy
	Metal Road
	Mud Road
	Pond/Lake
	River
	Road Side Fallow Land
	Stream
	Tea Plantation/orchards
	Tree Crops and Groves
	Vacant Land
	Waste Land
	Wet Land

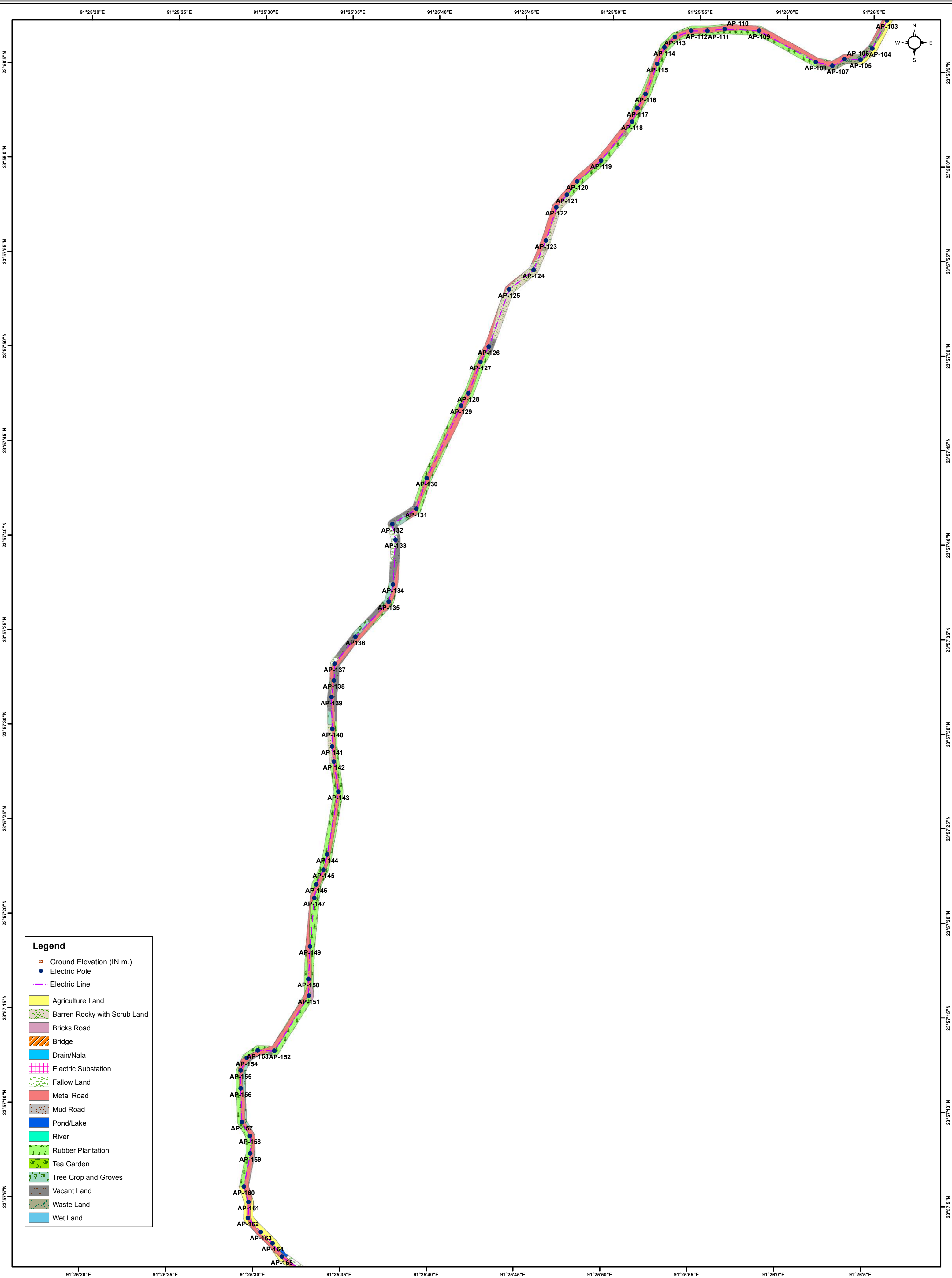
LAND USE/LAND COVER DETAILS OF HEZAMARA EXISTING 33/11 KV S/S TO BARKATHAL
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



LAND USE/LAND COVER DETAILS OF HEZAMARA EXISTING 33/11 KV S/S TO BARKATHAL
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



LAND USE/LAND COVER DETAILS OF HEZAMARA EXISTING 33/11 KV S/S TO BARKATHAL
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,

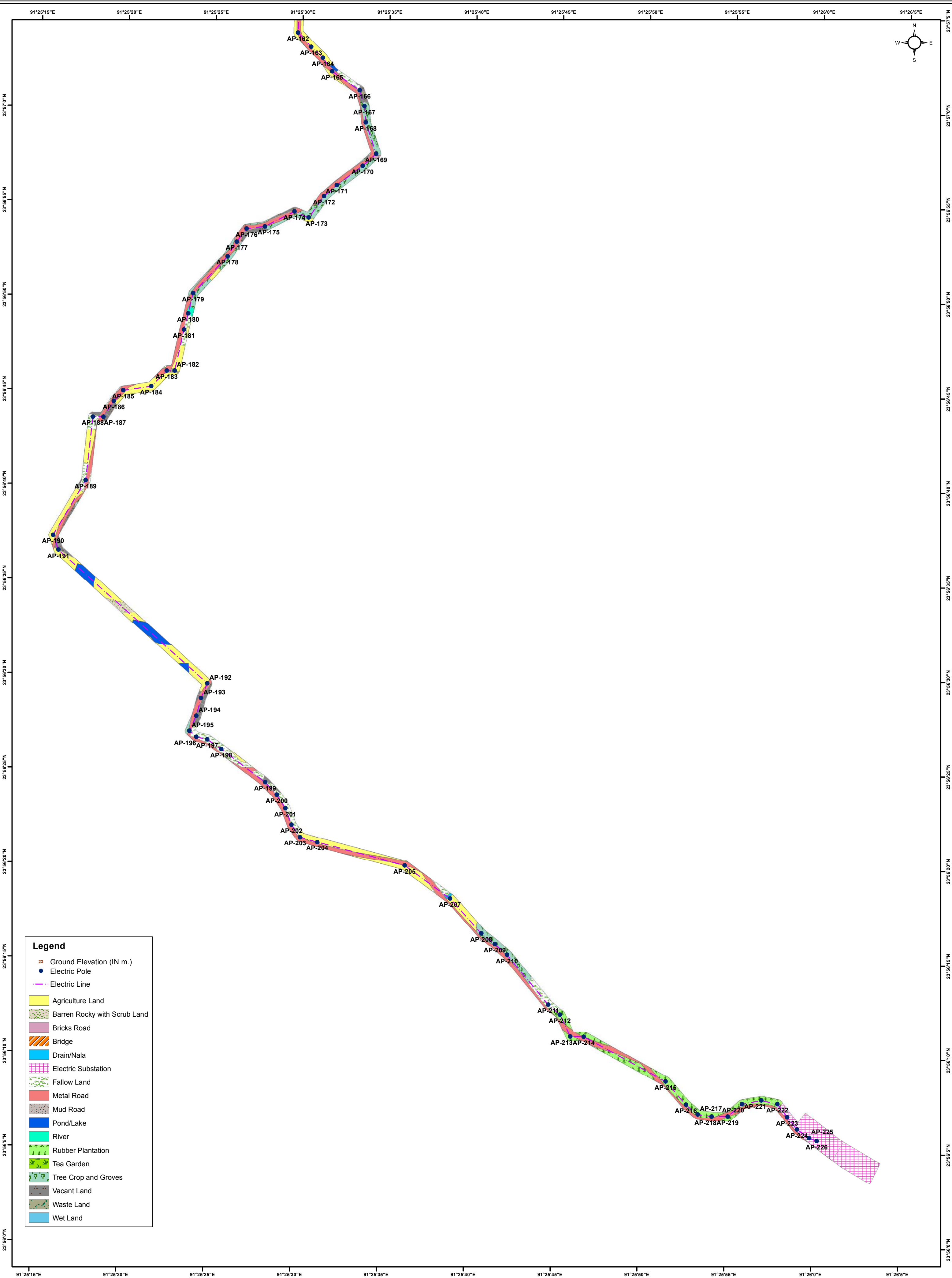


Legend

- 23 Ground Elevation (IN m.)
- Electric Pole
- Electric Line
- Agriculture Land
- Barren Rocky with Scrub Land
- Bricks Road
- Bridge
- Drain/Nala
- Electric Substation
- Fallow Land
- Metal Road
- Mud Road
- Pond/Lake
- River
- Rubber Plantation
- Tea Garden
- Tree Crop and Groves
- Vacant Land
- Waste Land
- Wet Land

LAND USE/LAND COVER DETAILS OF HEZAMARA EXISTING 33/11 KV S/S TO BARKATHAL

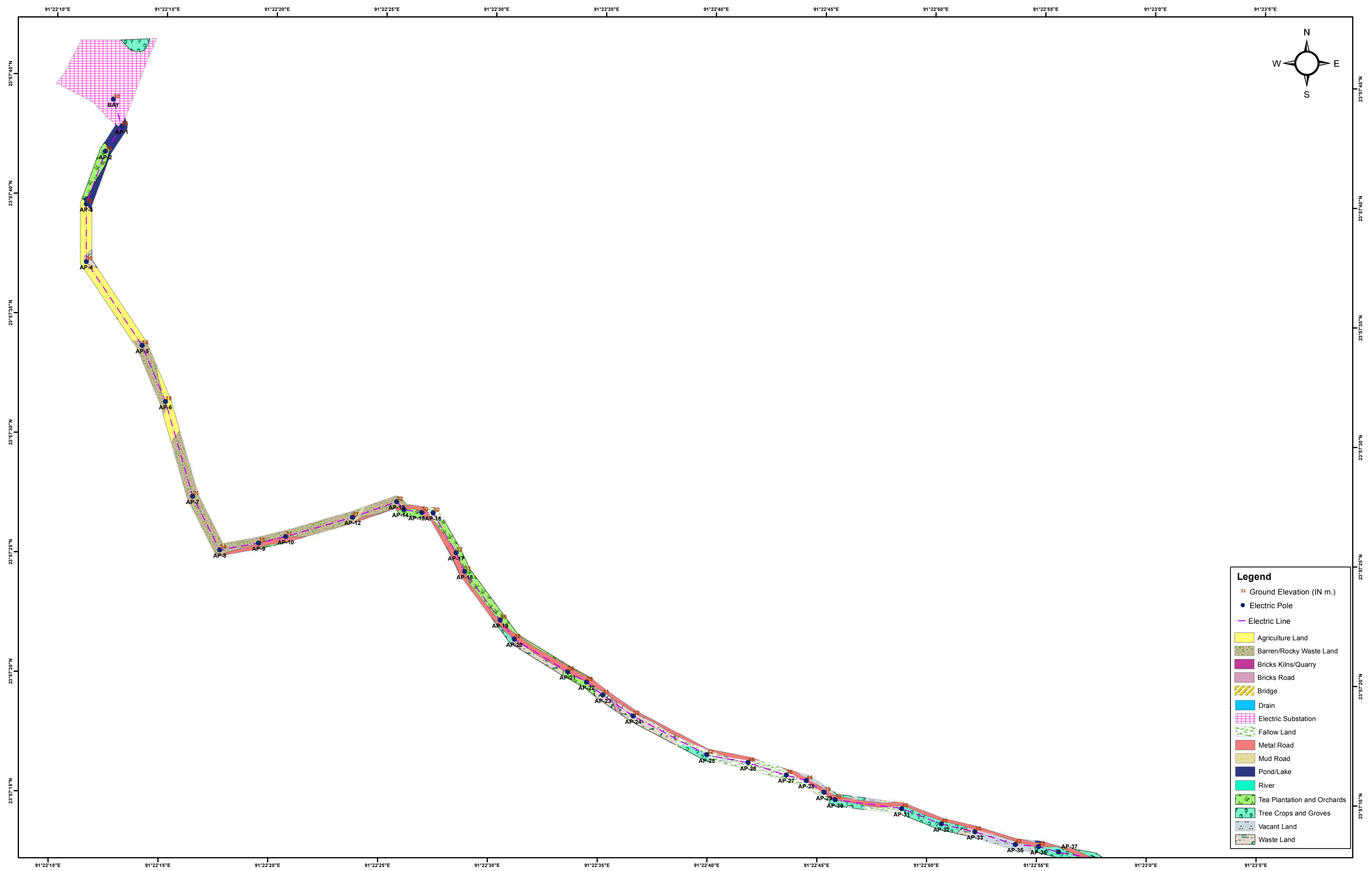
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



Legend

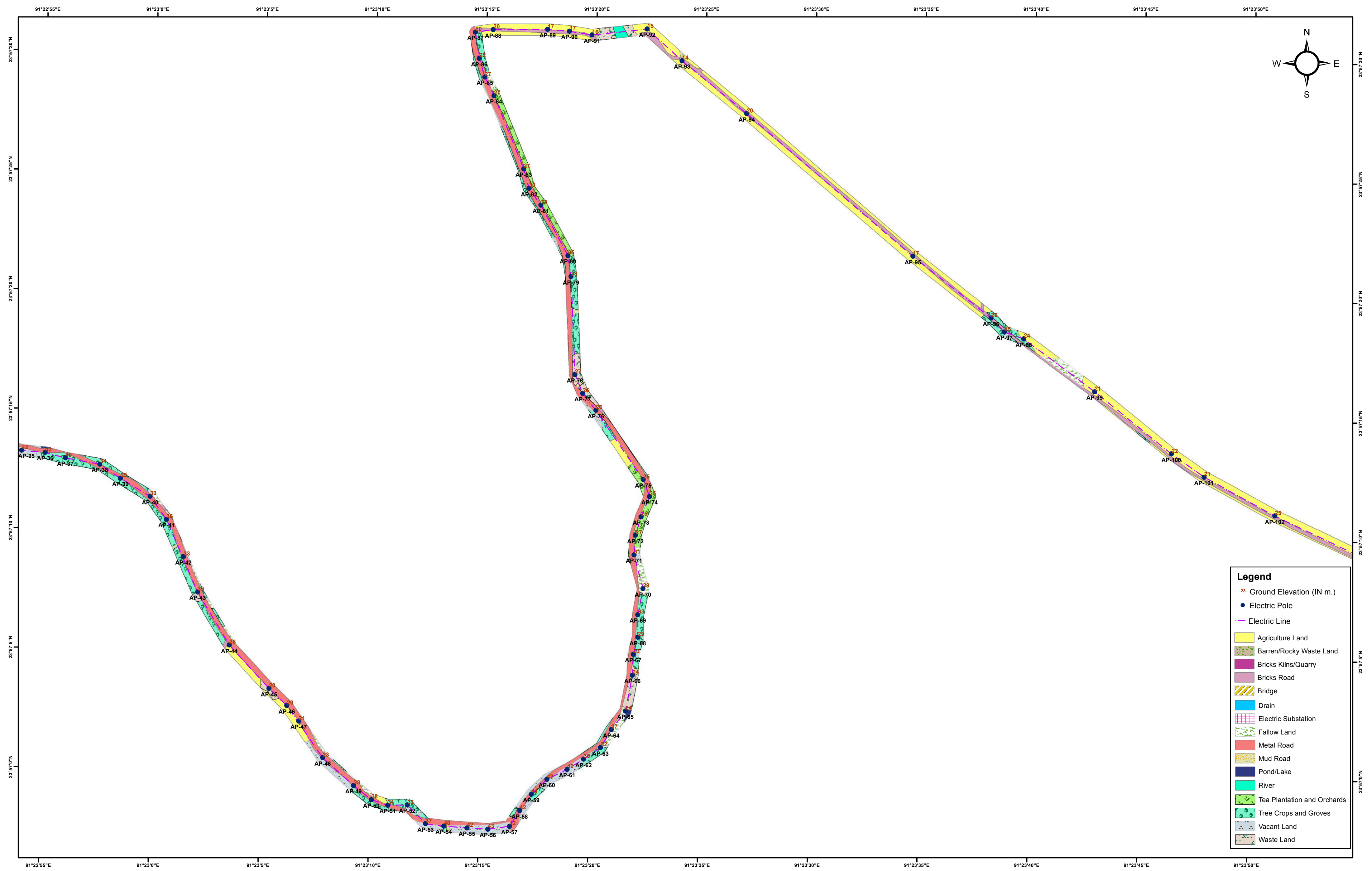
- 23 Ground Elevation (IN m.)
- Electric Pole
- Electric Line
- Agriculture Land
- Barren Rocky with Scrub Land
- Bricks Road
- Bridge
- Drain/Nala
- Electric Substation
- Fallow Land
- Metal Road
- Mud Road
- Pond/Lake
- River
- Rubber Plantation
- Tea Garden
- Tree Crop and Groves
- Vacant Land
- Waste Land
- Wet Land

LAND USE/LAND COVER DETAILS OF MOHANPUR 132/33 KV S/S TO BARKHATAL LINE
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



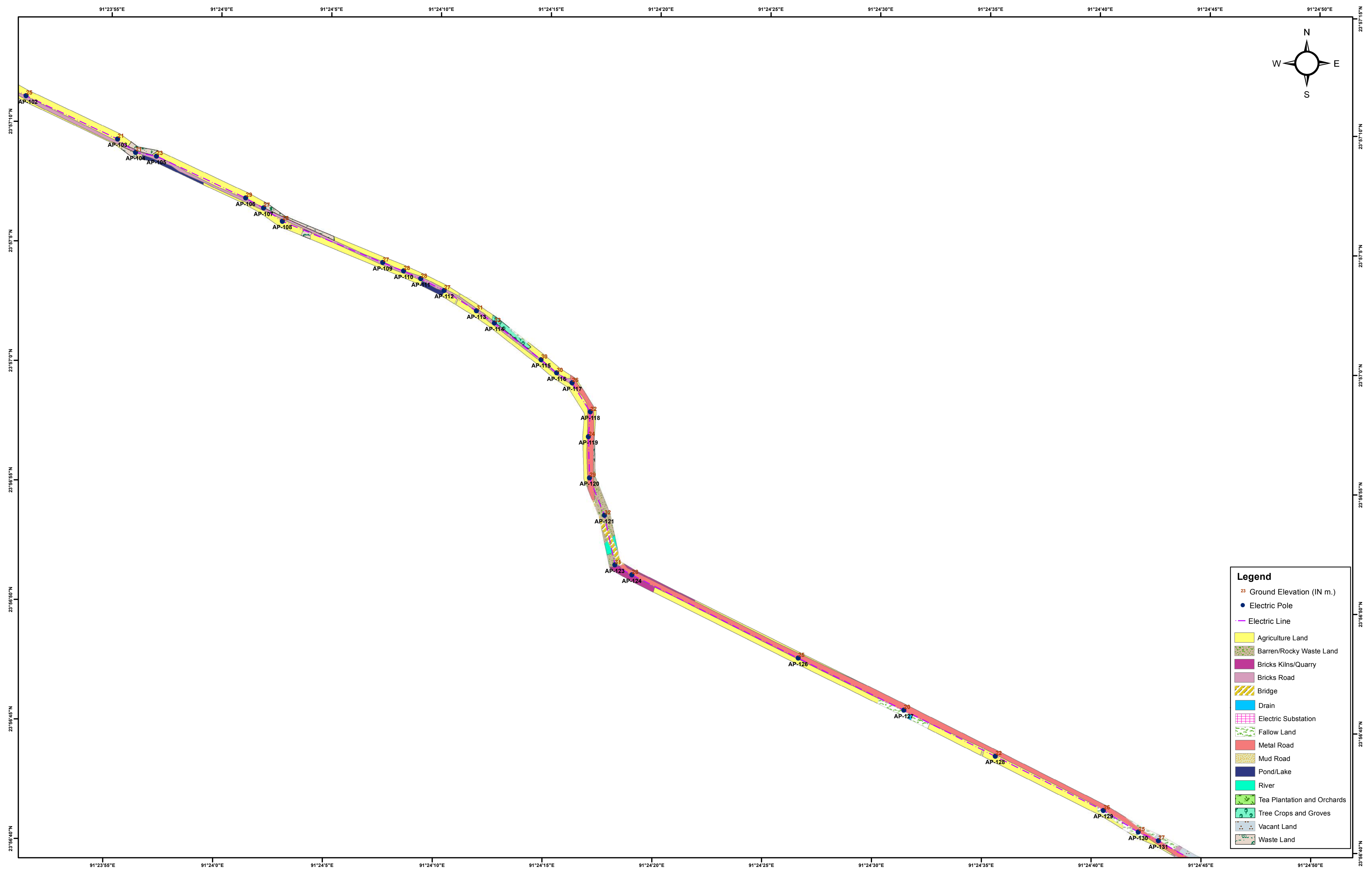
- Legend**
- 23 Ground Elevation (IN m.)
 - Electric Pole
 - Electric Line
 - Agriculture Land
 - Barren/Rocky Waste Land
 - Bricks Kilns/Quarry
 - Bricks Road
 - Bridge
 - Drain
 - Electric Substation
 - Fallow Land
 - Metal Road
 - Mud Road
 - Pond/Lake
 - River
 - Tea Plantation and Orchards
 - Tree Crops and Groves
 - Vacant Land
 - Waste Land

LAND USE/LAND COVER DETAILS OF MOHANPUR 132/33 KV S/S TO BARKHATAL LINE
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



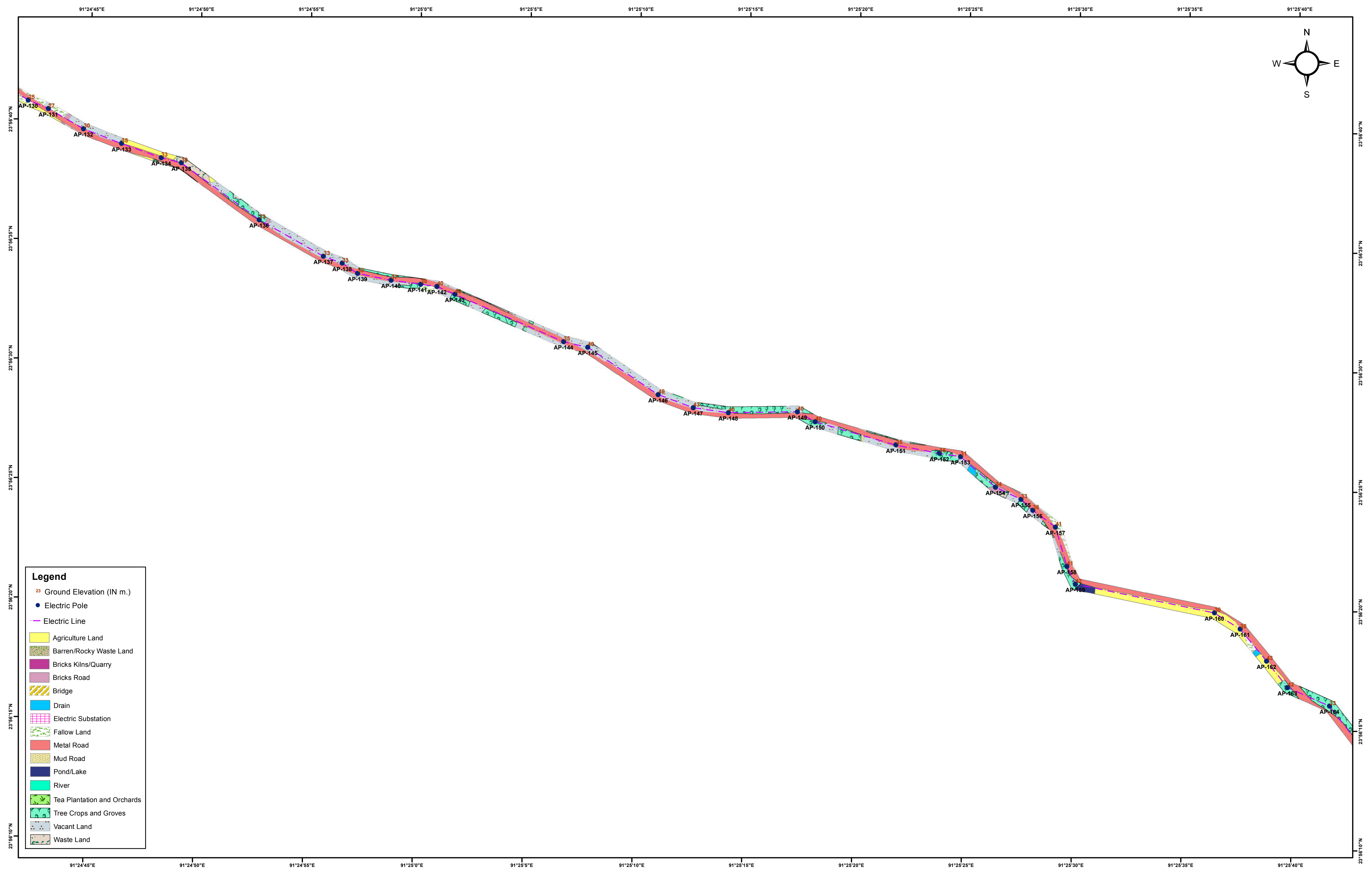
- Legend**
- Ground Elevation (IN m.)
 - Electric Pole
 - Electric Line
 - Agriculture Land
 - Barren/Rocky Waste Land
 - Bricks Kilns/Quarry
 - Bricks Road
 - Bridge
 - Drain
 - Electric Substation
 - Fallow Land
 - Metal Road
 - Mud Road
 - Pond/Lake
 - River
 - Tea Plantation and Orchards
 - Tree Crops and Groves
 - Vacant Land
 - Waste Land

LAND USE/LAND COVER DETAILS OF MOHANPUR 132/33 KV S/S TO BARKHATAL LINE
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,

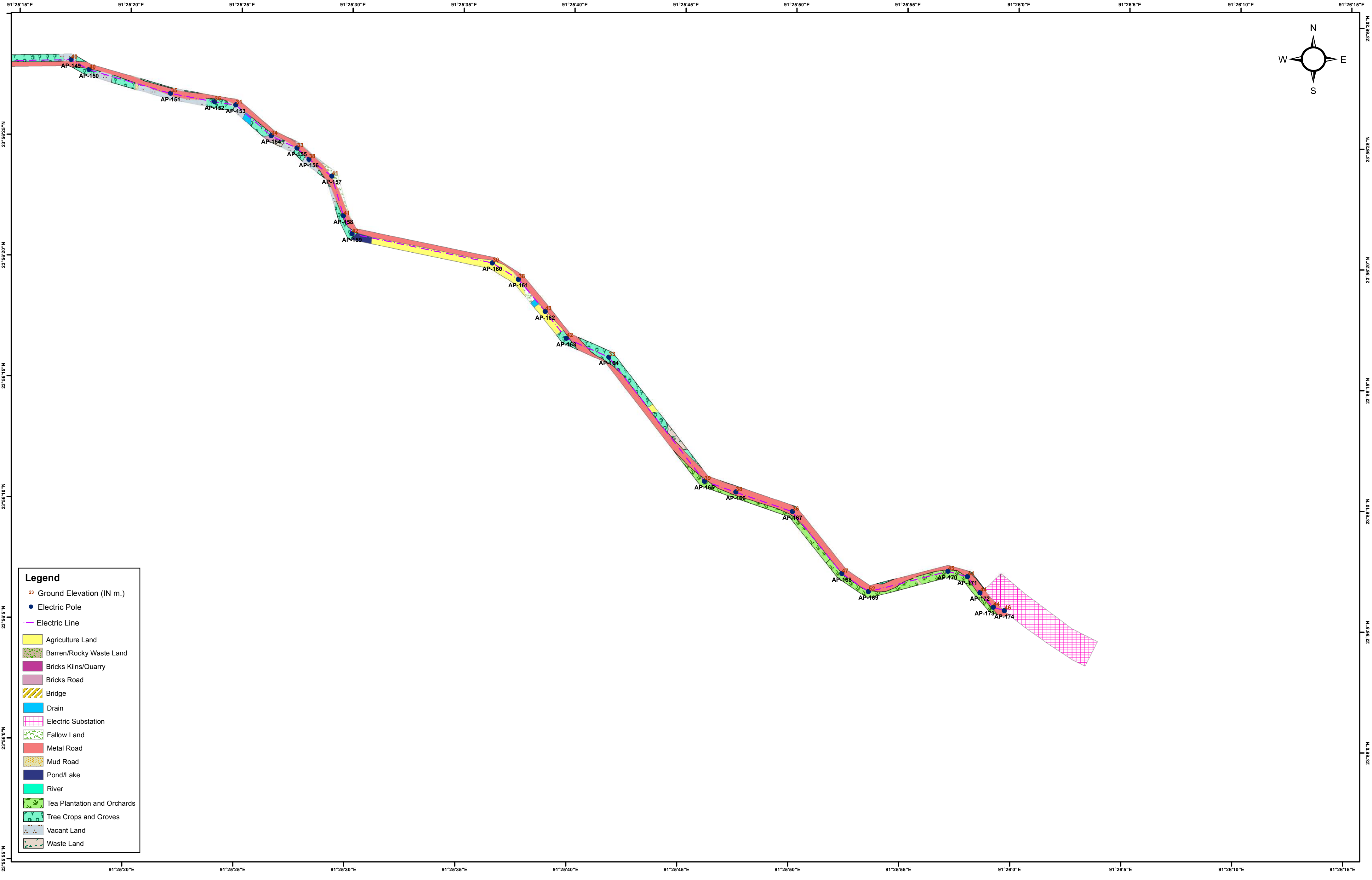


- Legend**
- 23 Ground Elevation (IN m.)
 - Electric Pole
 - Electric Line
 - Agriculture Land
 - Barren/Rocky Waste Land
 - Bricks Kilns/Quarry
 - Bricks Road
 - Bridge
 - Drain
 - Electric Substation
 - Fallow Land
 - Metal Road
 - Mud Road
 - Pond/Lake
 - River
 - Tea Plantation and Orchards
 - Tree Crops and Groves
 - Vacant Land
 - Waste Land

LAND USE/LAND COVER DETAILS OF MOHANPUR 132/33 KV S/S TO BARKHATAL LINE
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,

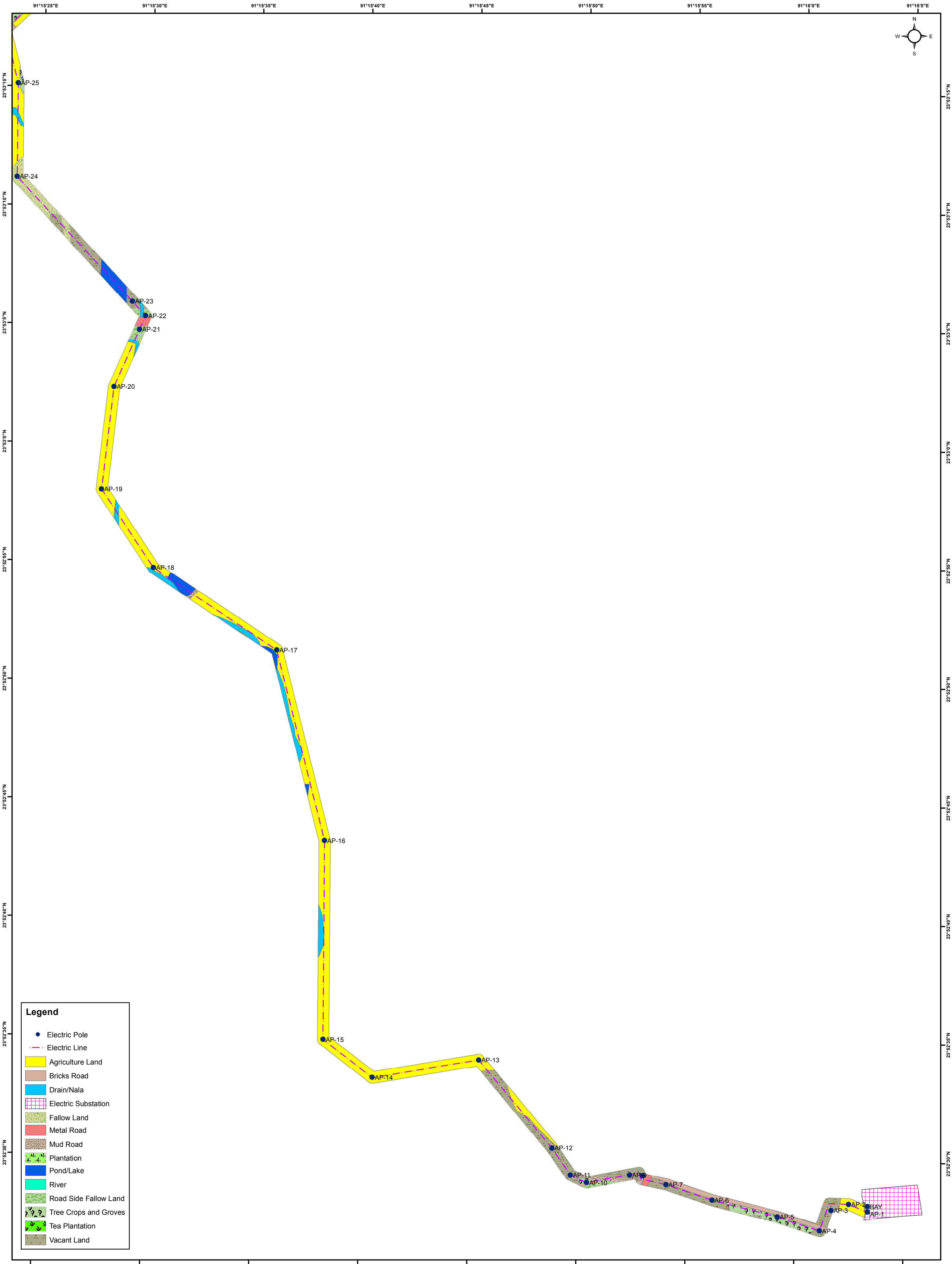
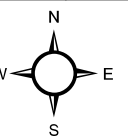


LAND USE/LAND COVER DETAILS OF MOHANPUR 132/33 KV S/S TO BARKHATAL LINE
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



- Legend**
- 23 Ground Elevation (IN m.)
 - Electric Pole
 - Electric Line
 - Agriculture Land
 - Barren/Rocky Waste Land
 - Bricks Kilns/Quarry
 - Bricks Road
 - Bridge
 - Drain
 - Electric Substation
 - Fallow Land
 - Metal Road
 - Mud Road
 - Pond/Lake
 - River
 - Tea Plantation and Orchards
 - Tree Crops and Groves
 - Vacant Land
 - Waste Land

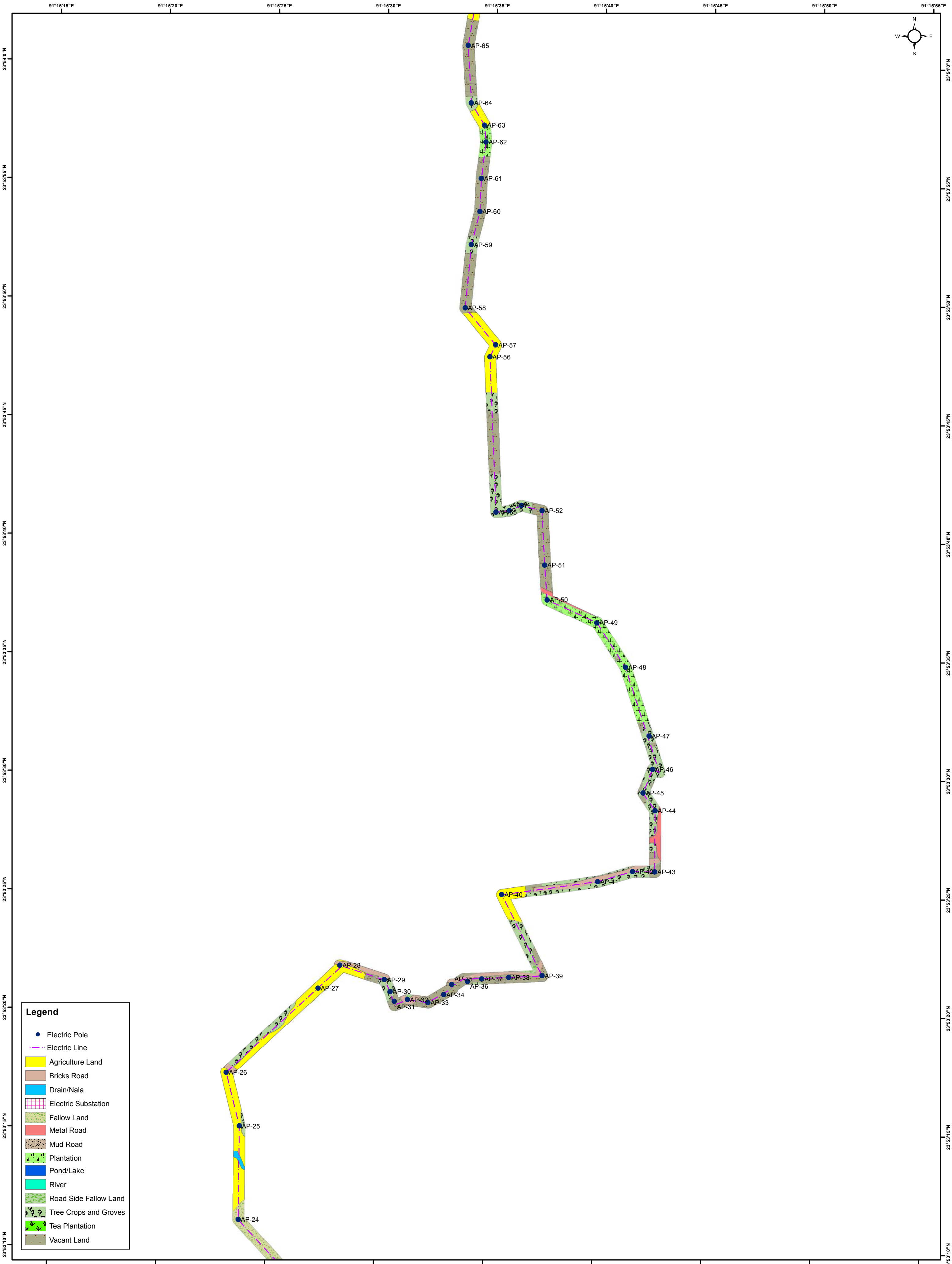
LAND USE/LAND COVER DETAILS OF 33 KV LINE BAMUTIA (NEW) -DURJOYNAGAR EXISTING SUBSTATION
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



Legend

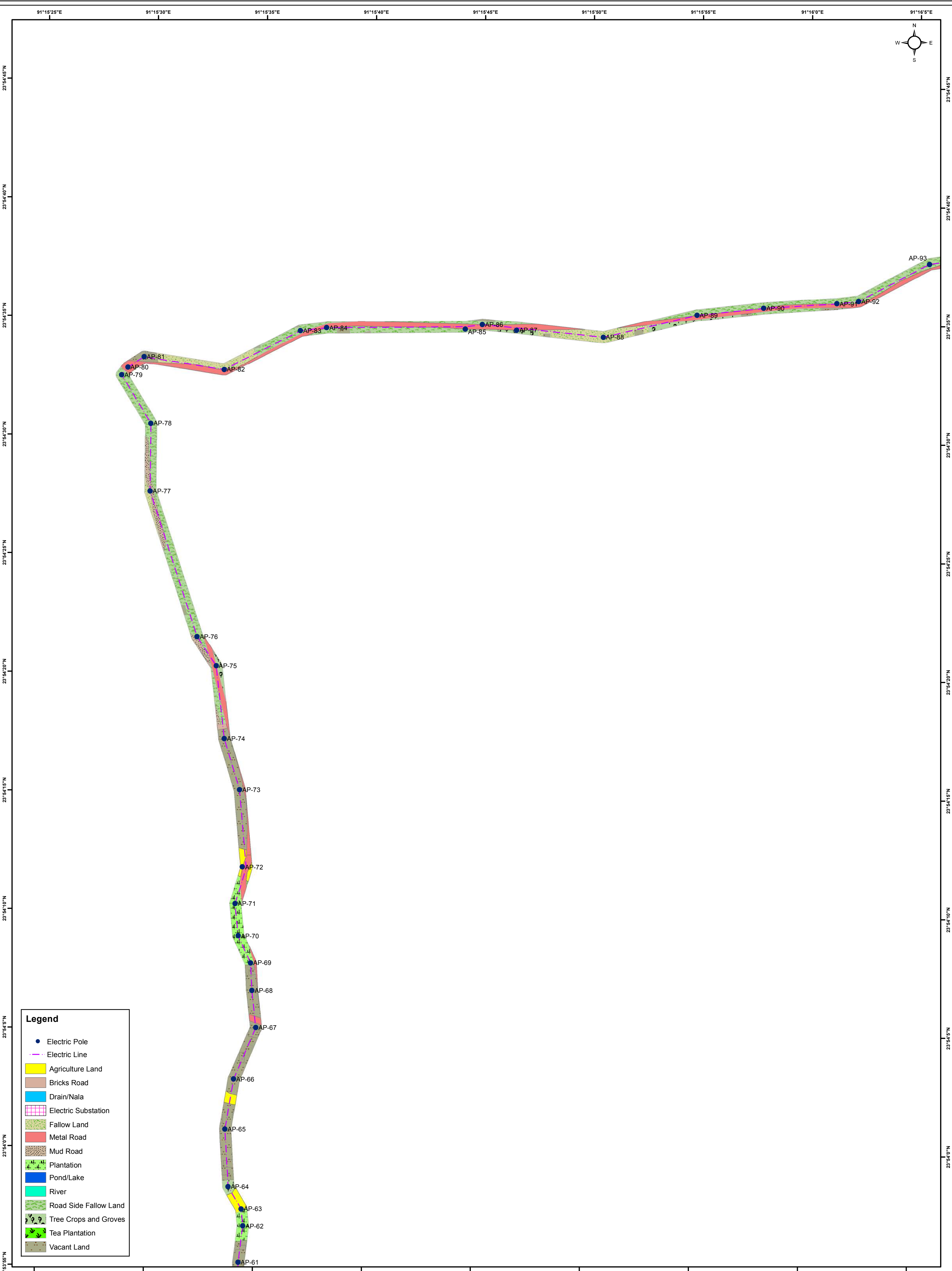
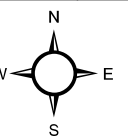
- Electric Pole
- - - Electric Line
- Agriculture Land
- Bricks Road
- Drain/Nala
- Electric Substation
- Fallow Land
- Metal Road
- Mud Road
- Plantation
- Pond/Lake
- River
- Road Side Fallow Land
- Tree Crops and Groves
- Tea Plantation
- Vacant Land

LAND USE/LAND COVER DETAILS OF 33 KV LINE BAMUTIA (NEW) -DURJOYNAGAR EXISTING SUBSTATION
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



- Legend**
- Electric Pole
 - - - Electric Line
 - Agriculture Land
 - Bricks Road
 - Drain/Nala
 - Electric Substation
 - Fallow Land
 - Metal Road
 - Mud Road
 - Plantation
 - Pond/Lake
 - River
 - Road Side Fallow Land
 - Tree Crops and Groves
 - Tea Plantation
 - Vacant Land

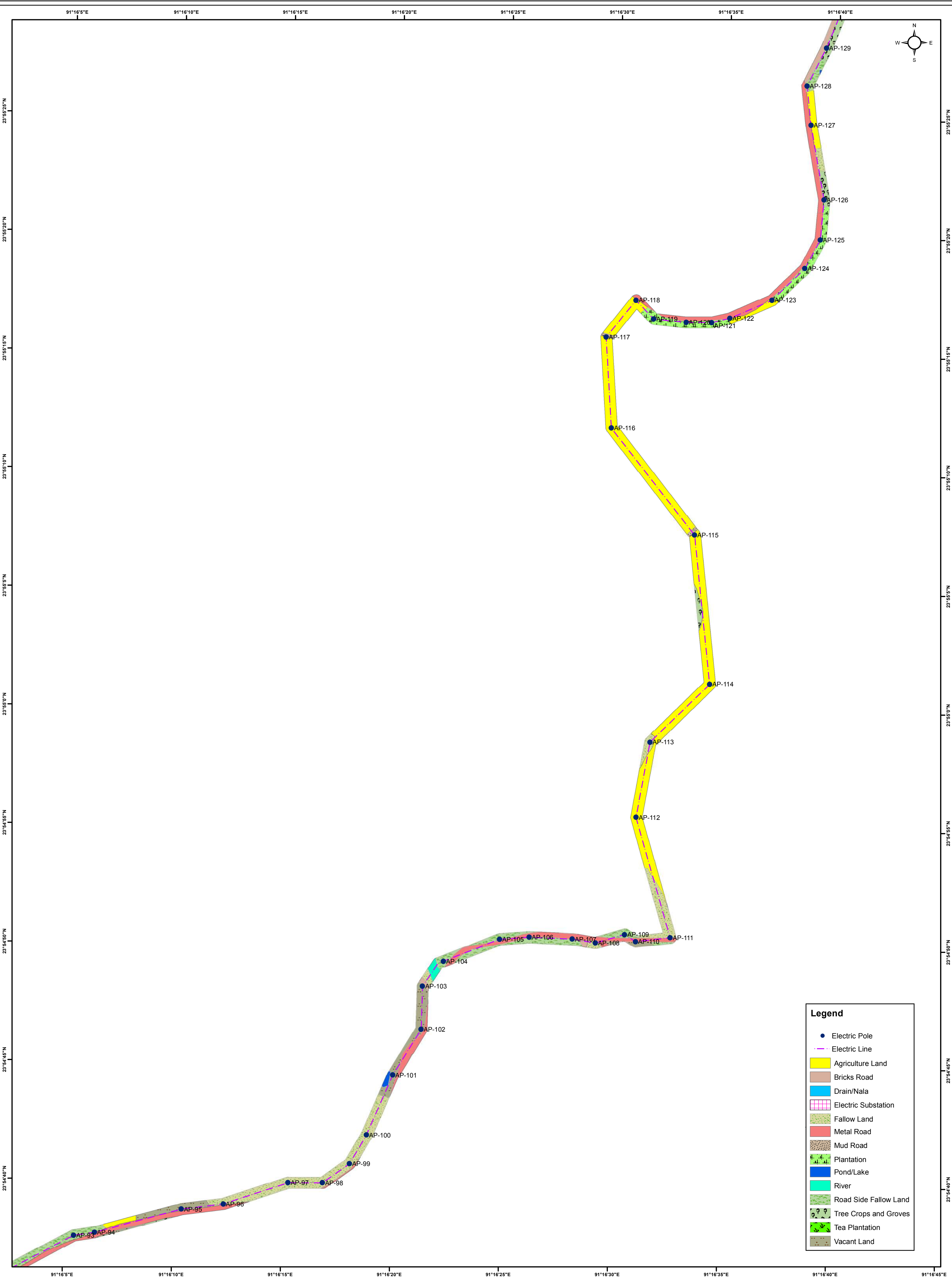
LAND USE/LAND COVER DETAILS OF 33 KV LINE BAMUTIA (NEW) -DURJOYNAGAR EXISTING SUBSTATION
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



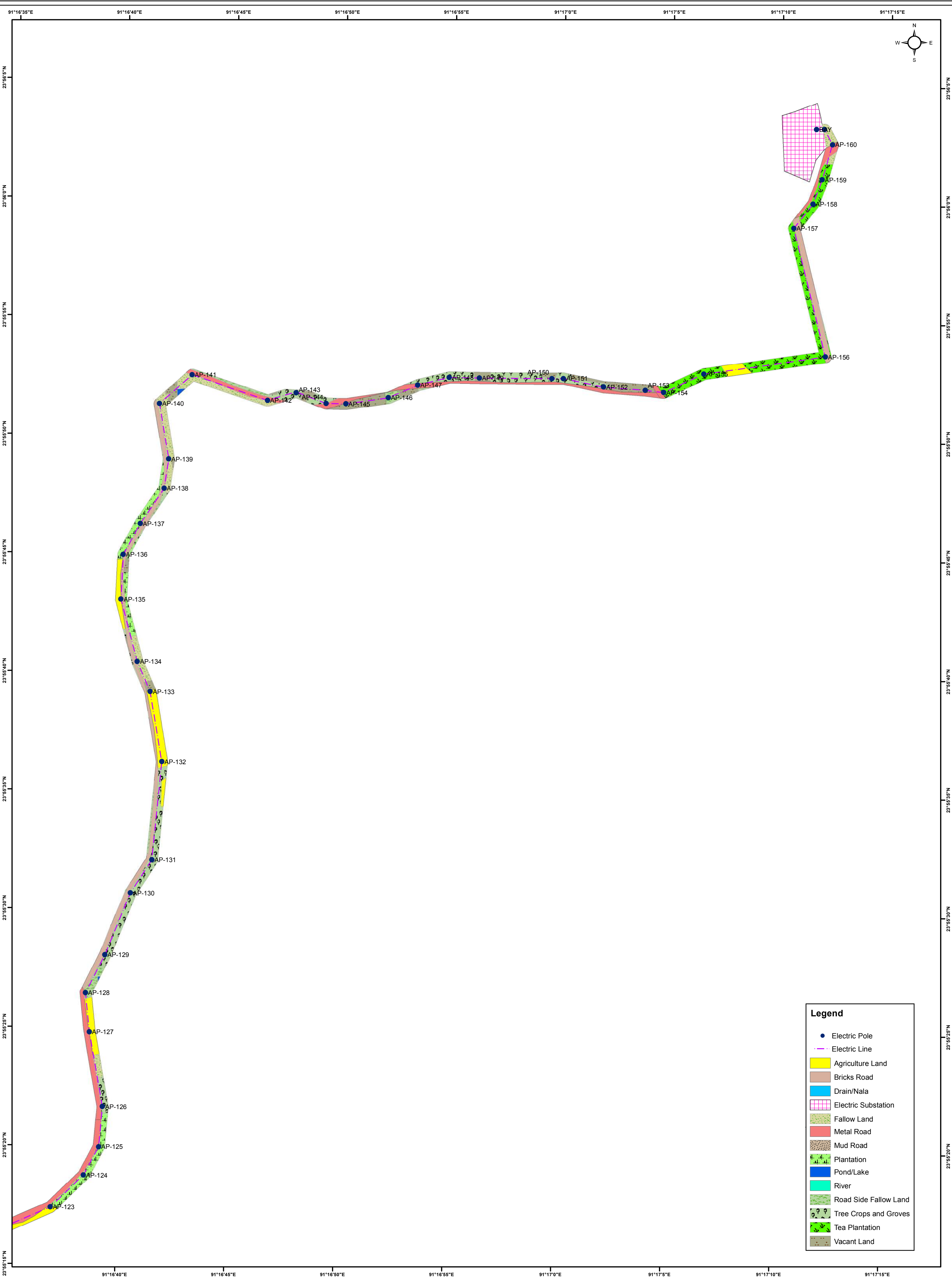
Legend

- Electric Pole
- Electric Line
- Agriculture Land
- Bricks Road
- Drain/Nala
- Electric Substation
- Fallow Land
- Metal Road
- Mud Road
- Plantation
- Pond/Lake
- River
- Road Side Fallow Land
- Tree Crops and Groves
- Tea Plantation
- Vacant Land

LAND USE/LAND COVER DETAILS OF 33 KV LINE BAMUTIA (NEW) -DURJOYNAGAR EXISTING SUBSTATION
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



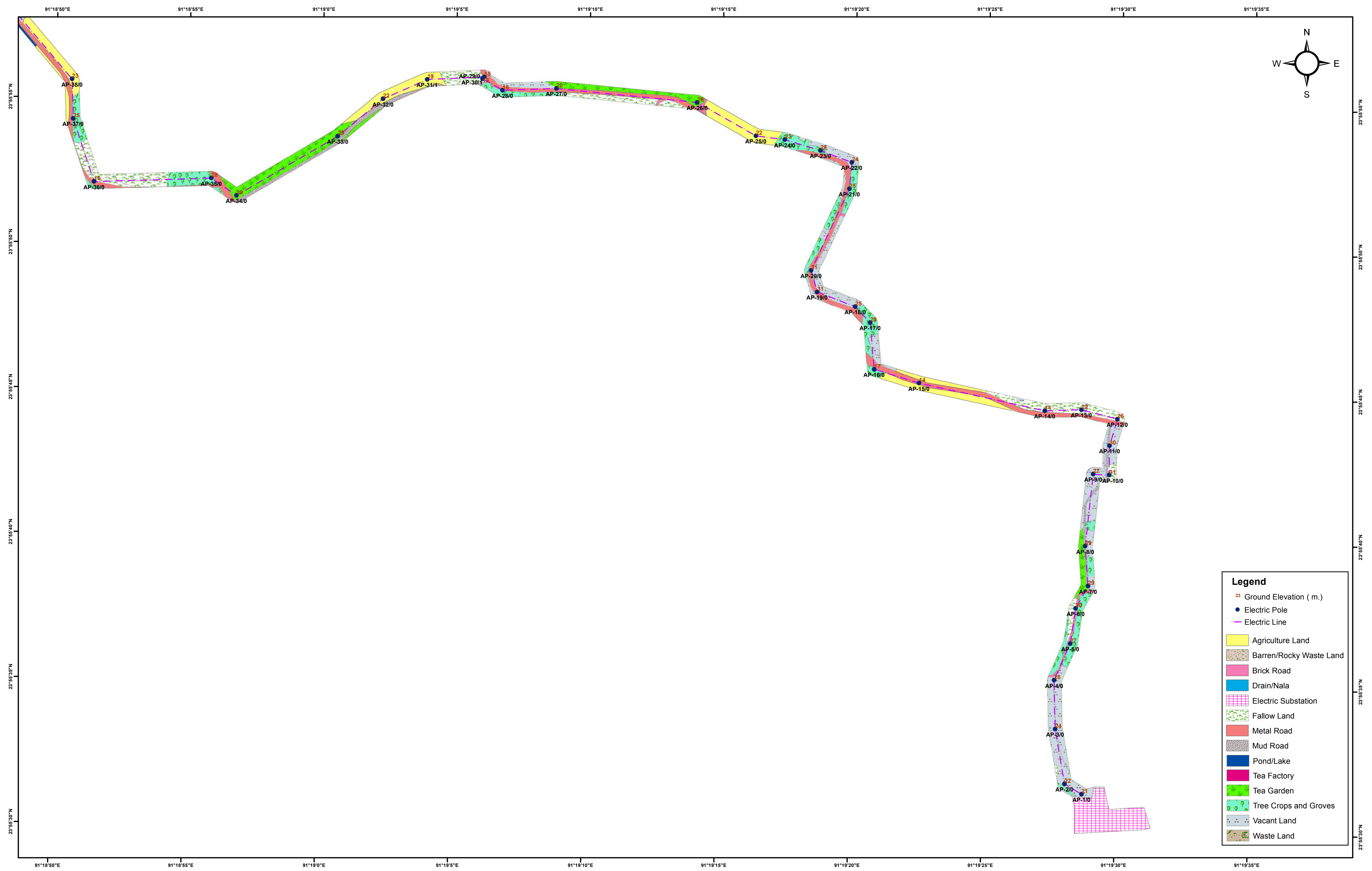
LAND USE/LAND COVER DETAILS OF 33 KV LINE BAMUTIA (NEW) -DURJOYNAGAR EXISTING SUBSTATION
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



Legend

- Electric Pole
- Electric Line
- Agriculture Land
- Bricks Road
- Drain/Nala
- Electric Substation
- Fallow Land
- Metal Road
- Mud Road
- Plantation
- Pond/Lake
- River
- Road Side Fallow Land
- Tree Crops and Groves
- Tea Plantation
- Vacant Land

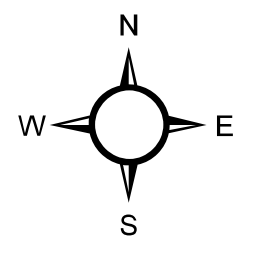
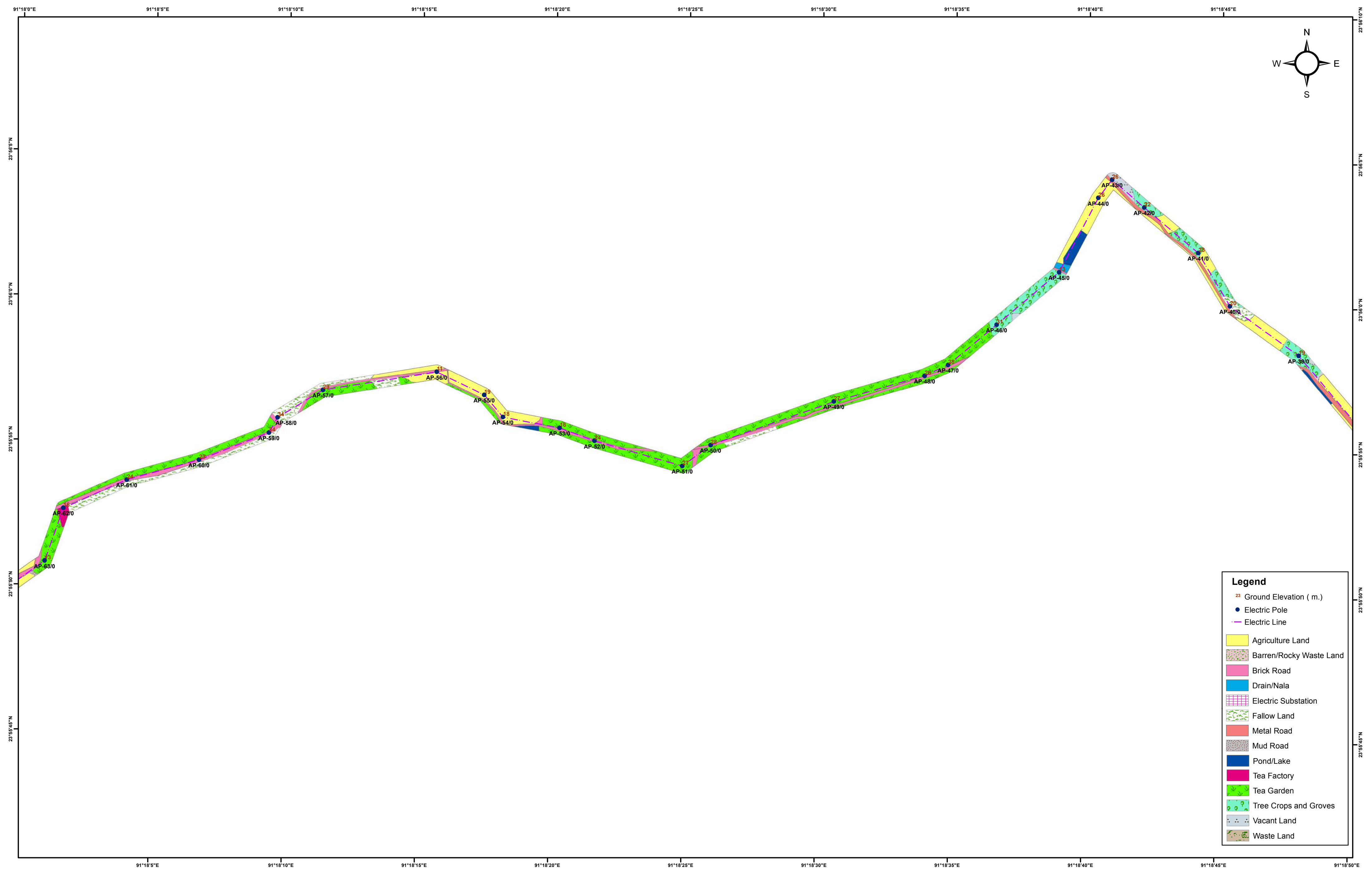
LAND USE/LAND COVER DETAILS OF PROPOSED 33/11 KV S/S LEMBUCHERRA S/S TO BAMUTIA
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



Legend

- 23 Ground Elevation (m.)
- Electric Pole
- Electric Line
- Agriculture Land
- Barren/Rocky Waste Land
- Brick Road
- Drain/Nala
- Electric Substation
- Fallow Land
- Metal Road
- Mud Road
- Pond/Lake
- Tea Factory
- Tea Garden
- Tree Crops and Groves
- Vacant Land
- Waste Land

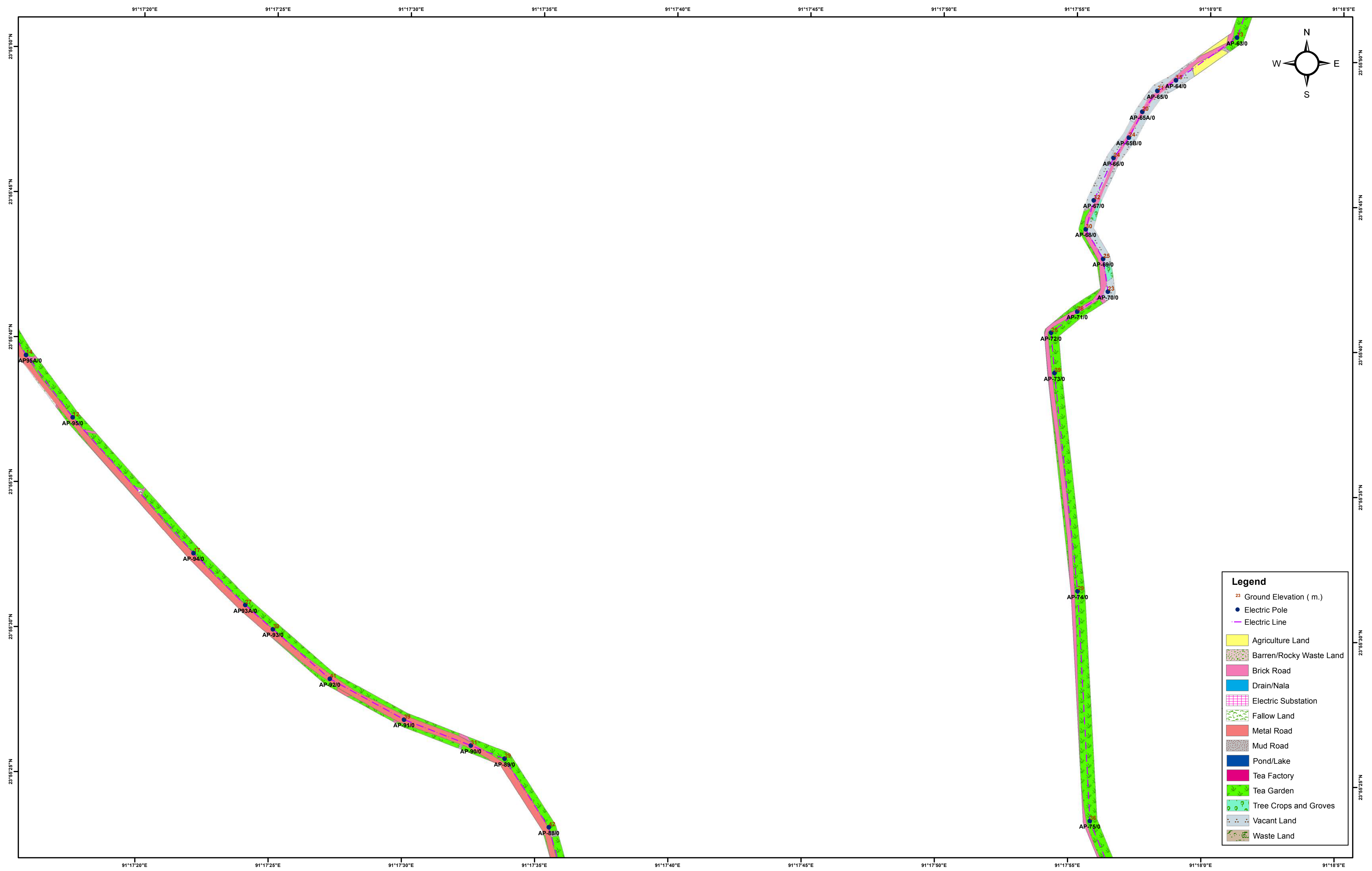
LAND USE/LAND COVER DETAILS OF PROPOSED 33/11 KV S/S LEMBUCHERRA S/S TO BAMUTIA
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



Legend

- 23 Ground Elevation (m.)
- Electric Pole
- Electric Line
- Agriculture Land
- Barren/Rocky Waste Land
- Brick Road
- Drain/Nala
- Electric Substation
- Fallow Land
- Metal Road
- Mud Road
- Pond/Lake
- Tea Factory
- Tea Garden
- Tree Crops and Groves
- Vacant Land
- Waste Land

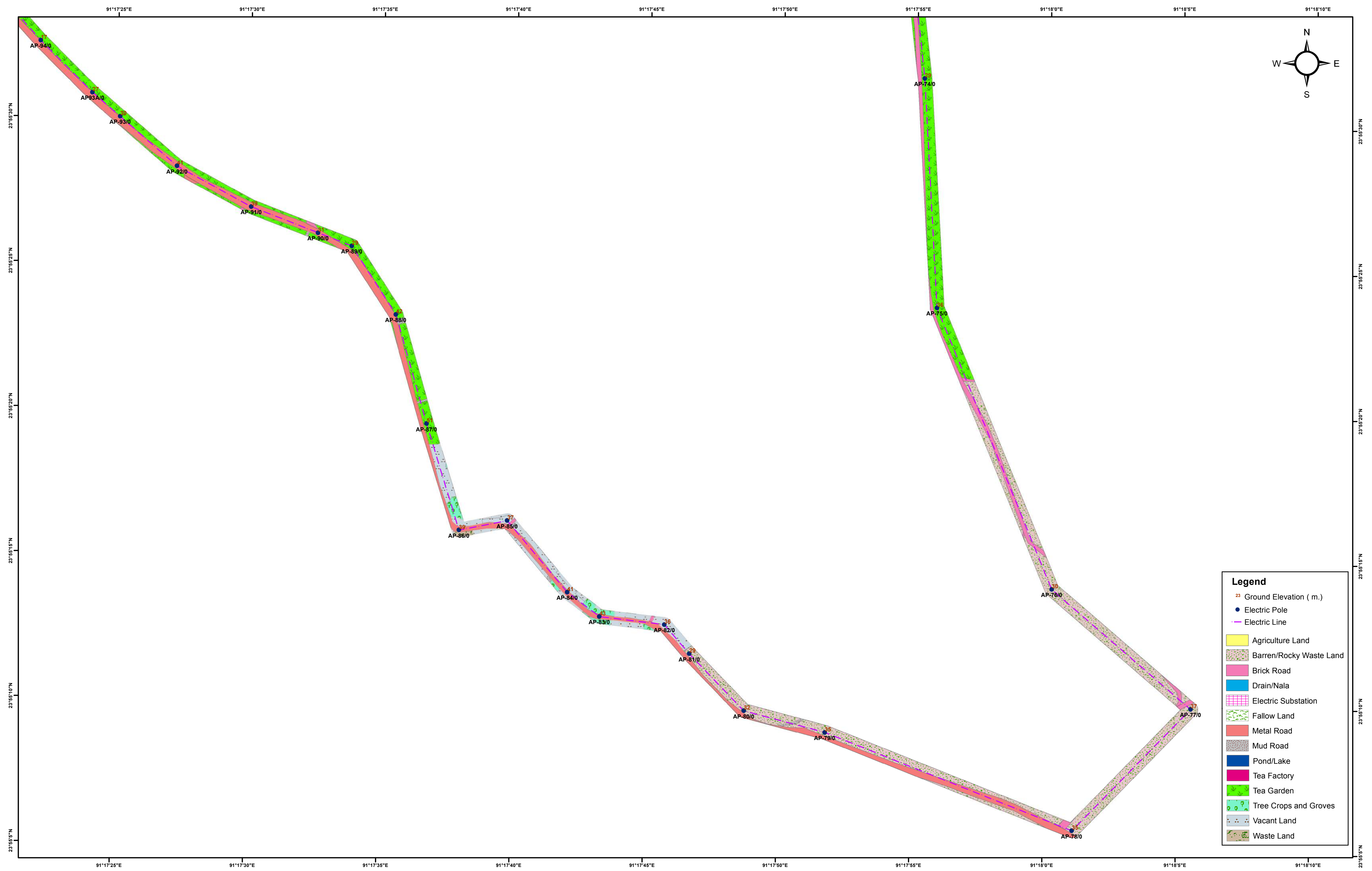
LAND USE/LAND COVER DETAILS OF PROPOSED 33/11 KV S/S LEMBUCHERRA S/S TO BAMUTIA
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



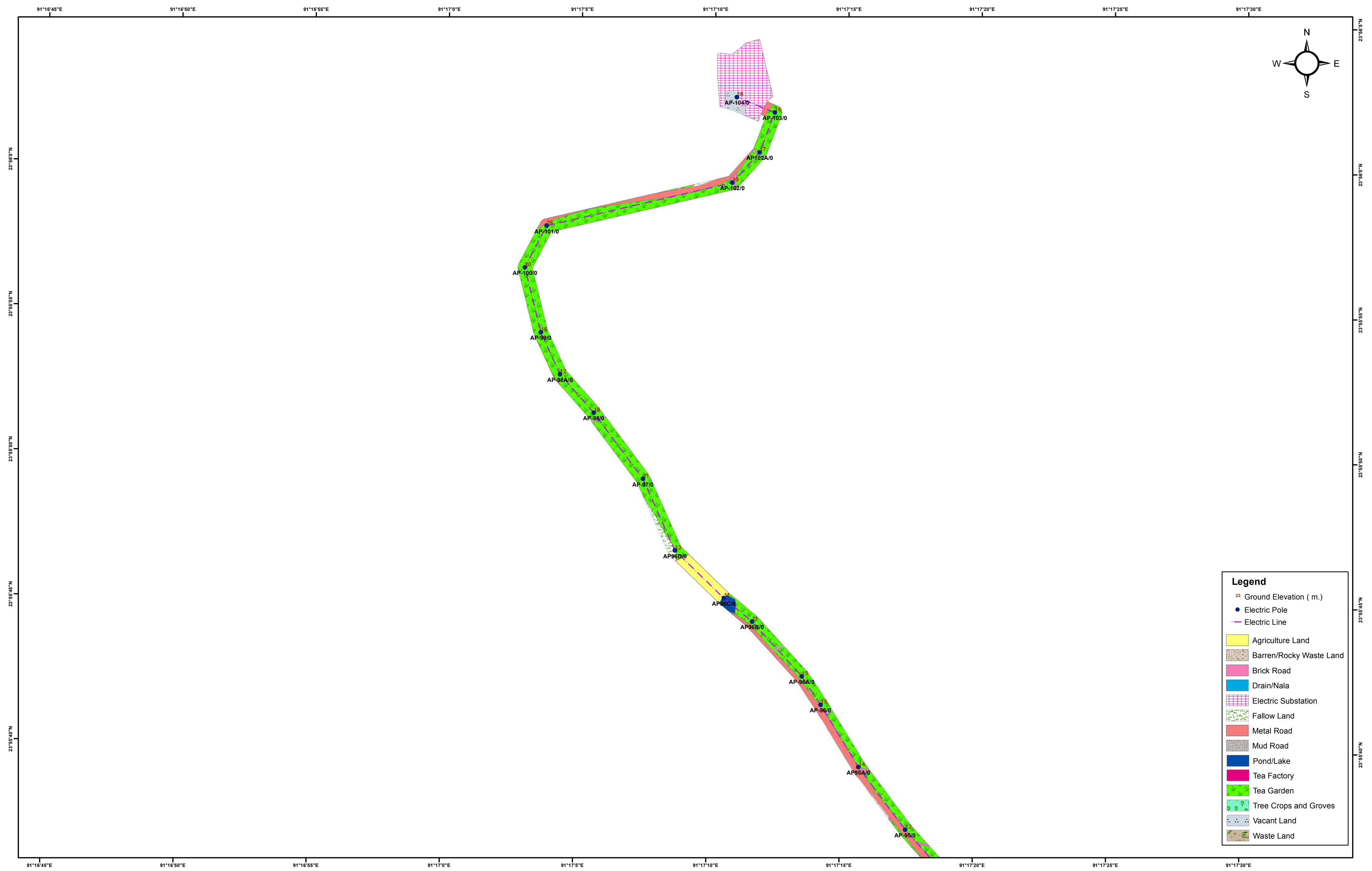
Legend

- 23 Ground Elevation (m.)
- Electric Pole
- Electric Line
- Agriculture Land
- Barren/Rocky Waste Land
- Brick Road
- Drain/Nala
- Electric Substation
- Fallow Land
- Metal Road
- Mud Road
- Pond/Lake
- Tea Factory
- Tea Garden
- Tree Crops and Groves
- Vacant Land
- Waste Land

LAND USE/LAND COVER DETAILS OF PROPOSED 33/11 KV S/S LEMBUCHERRA S/S TO BAMUTIA
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,

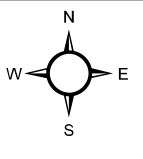
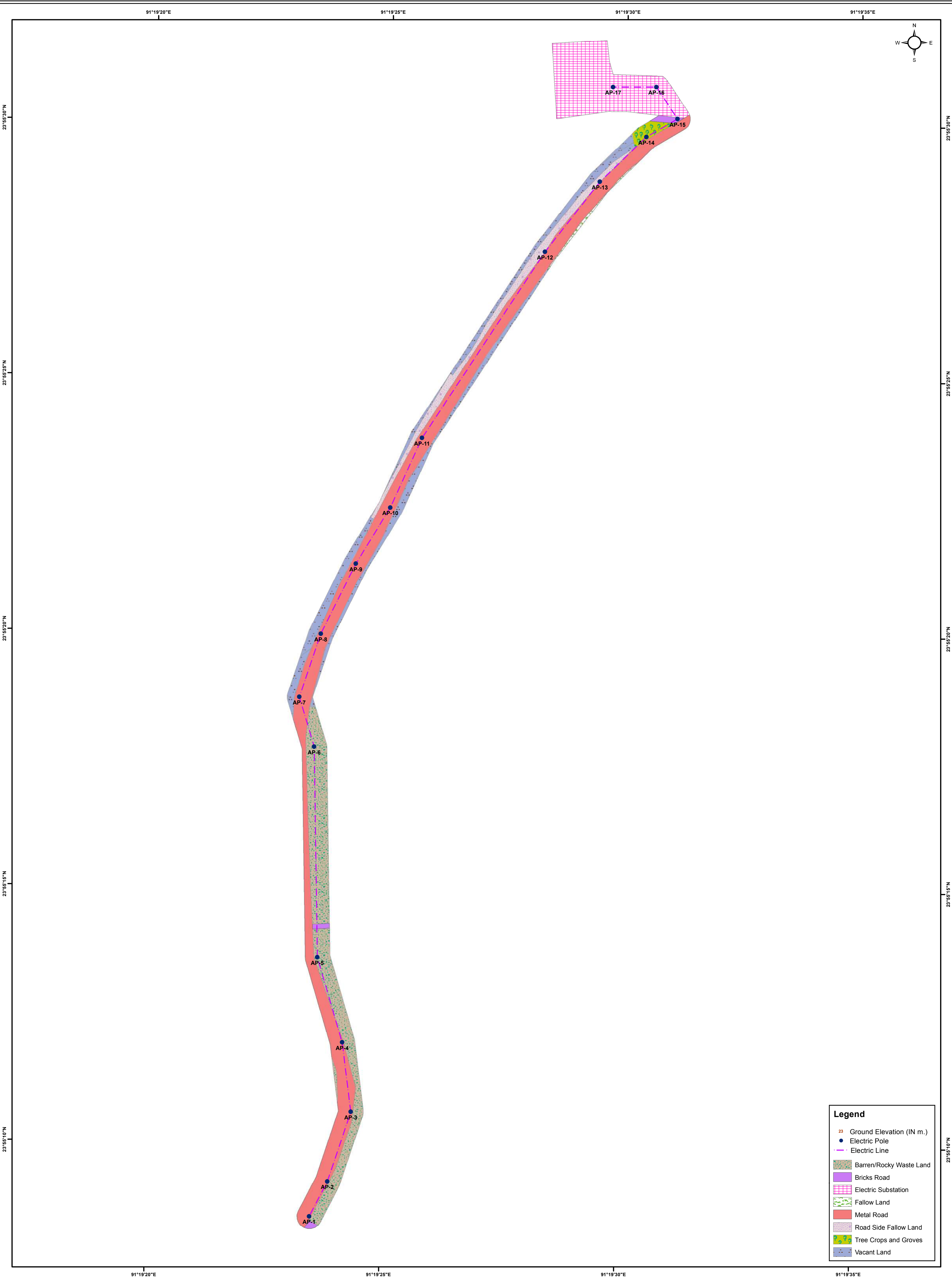


LAND USE/LAND COVER DETAILS OF PROPOSED 33/11 KV S/S LEMBUCHERRA S/S TO BAMUTIA
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



Legend	
23	Ground Elevation (m.)
●	Electric Pole
---	Electric Line
	Agriculture Land
	Barren/Rocky Waste Land
	Brick Road
	Drain/Nala
	Electric Substation
	Follow Land
	Metal Road
	Mud Road
	Pond/Lake
	Tea Factory
	Tea Garden
	Tree Crops and Groves
	Vacant Land
	Waste Land

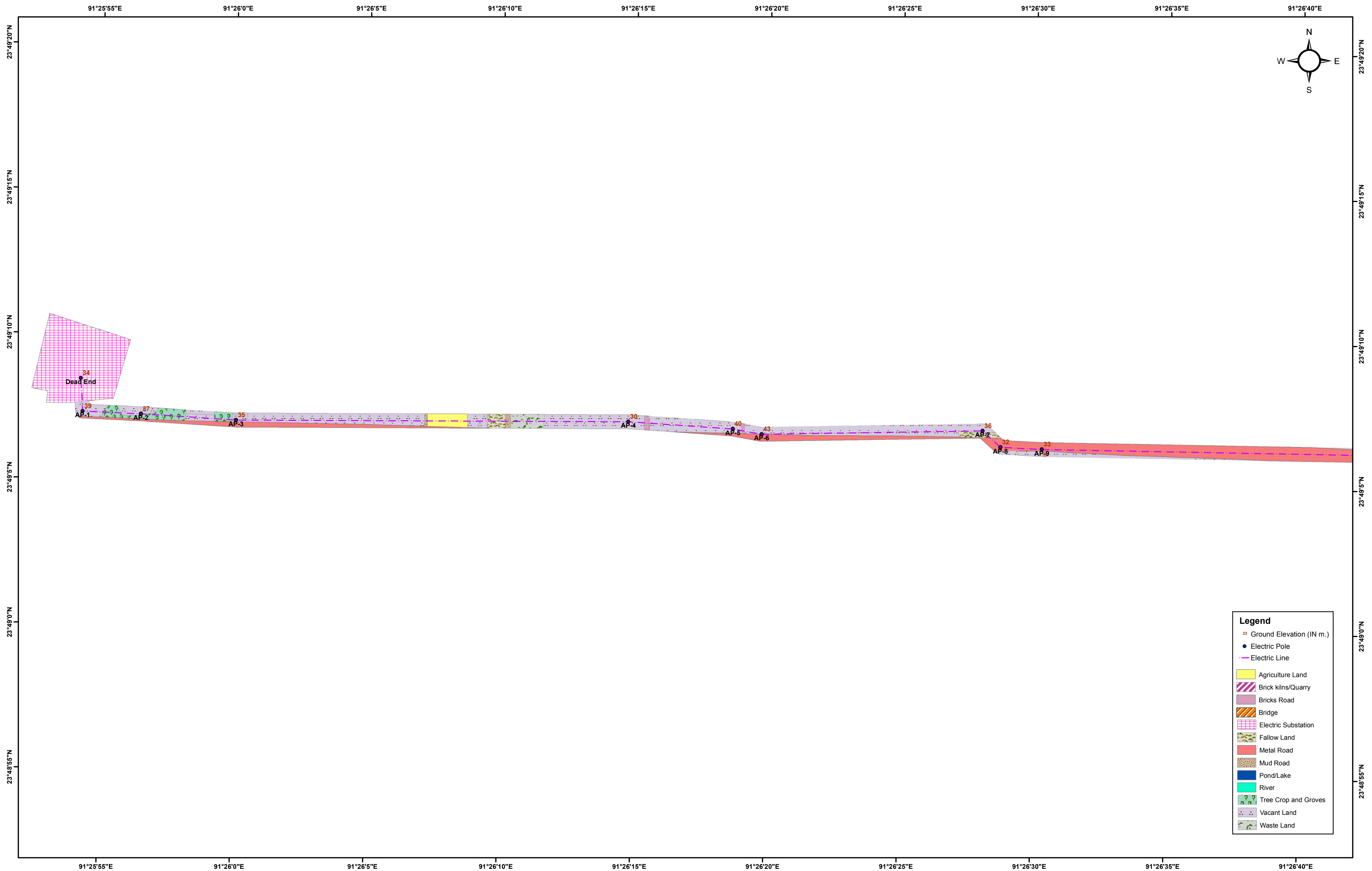
LAND USE/LAND COVER DETAILS OF LILO OF EX 33 KV AGARTALA TO MOHANPUR LINE AT LEMBUCHERRA
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



Legend

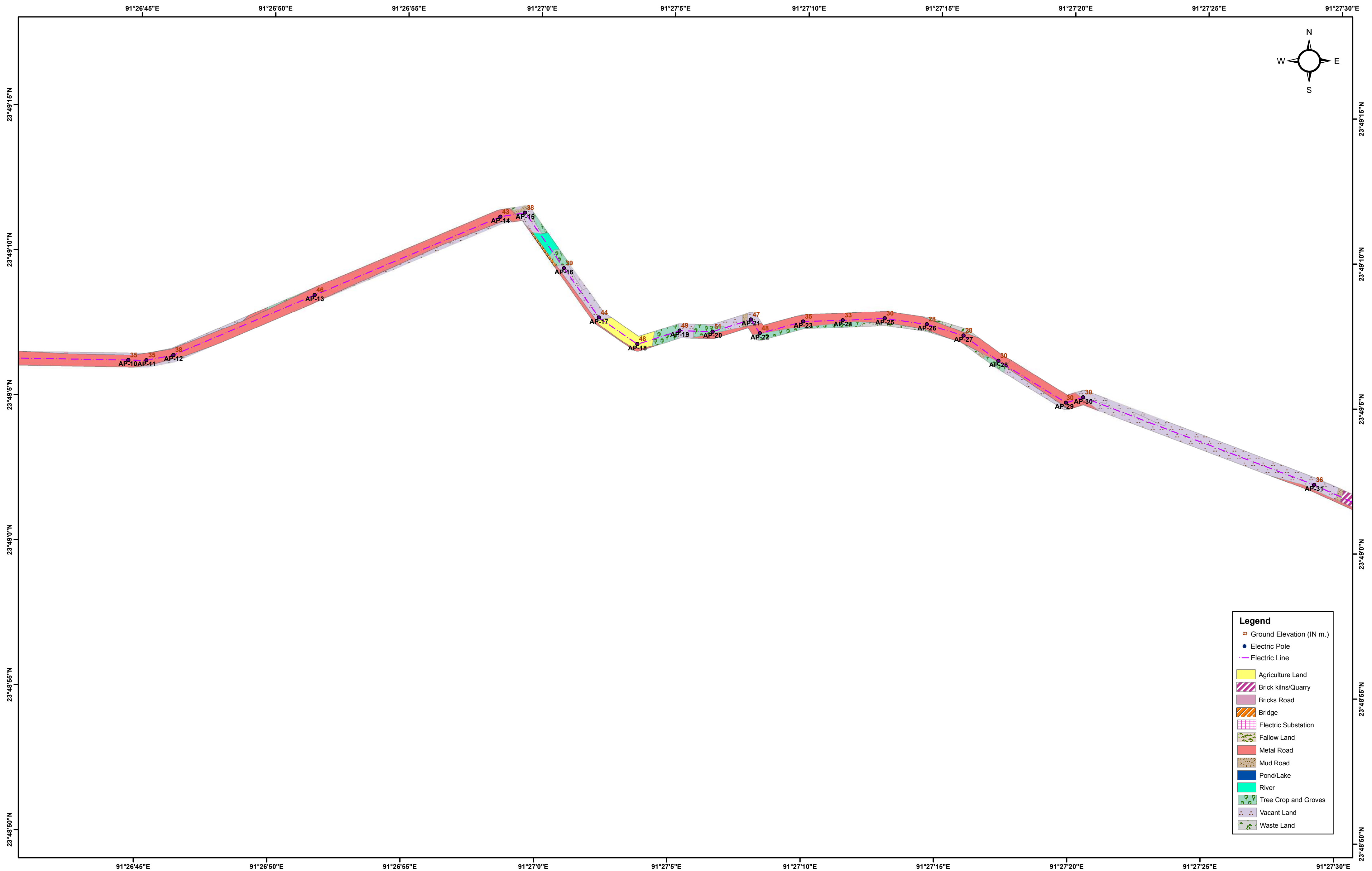
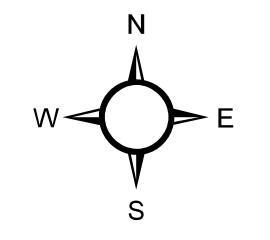
23	Ground Elevation (IN m.)
●	Electric Pole
---	Electric Line
 	Barren/Rocky Waste Land
 	Bricks Road
 	Electric Substation
 	Fallow Land
 	Metal Road
 	Road Side Fallow Land
 	Tree Crops and Groves
 	Vacant Land

LAND USE/LAND COVER DETAILS OF JIRANIA EXISTING 132/33 KV S/S TO CHAMPAKNAGAR 33 KV LINE
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



- Legend**
- 23 Ground Elevation (IN m.)
 - Electric Pole
 - Electric Line
 - Agriculture Land
 - Brick kilns/Quarry
 - Bricks Road
 - Bridge
 - Electric Substation
 - Fallow Land
 - Metal Road
 - Mud Road
 - Pond/Lake
 - River
 - Tree Crop and Groves
 - Vacant Land
 - Waste Land

LAND USE/LAND COVER DETAILS OF JIRANIA EXISTING 132/33 KV S/S TO CHAMPAKNAGAR 33 KV LINE
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



- Legend**
- 23 Ground Elevation (IN m.)
 - Electric Pole
 - Electric Line
 - Agriculture Land
 - Brick kilns/Quarry
 - Bricks Road
 - Bridge
 - Electric Substation
 - Fallow Land
 - Metal Road
 - Mud Road
 - Pond/Lake
 - River
 - Tree Crop and Groves
 - Vacant Land
 - Waste Land

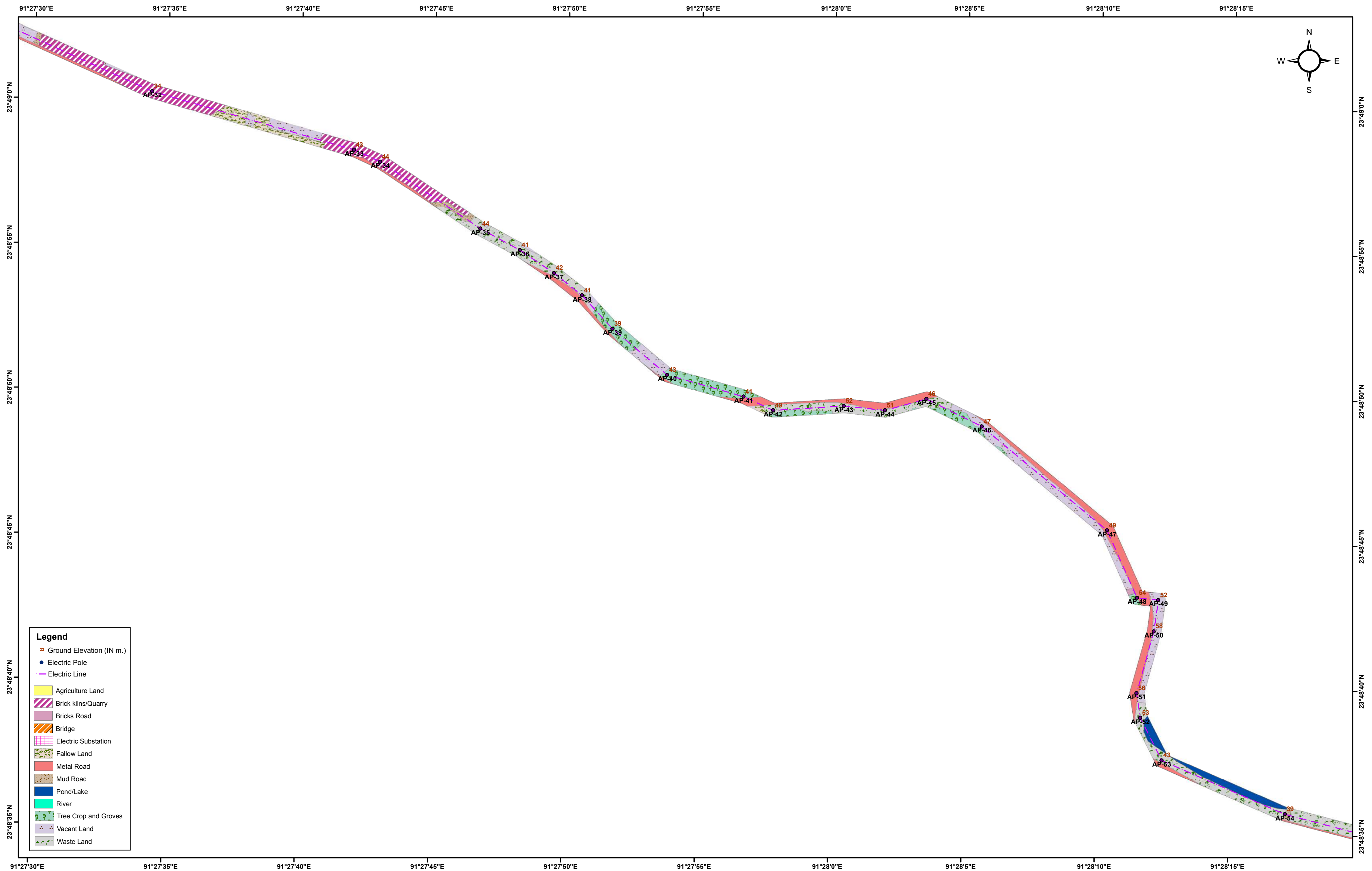
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23°48'50"N
23°49'0"N
23°49'5"N
23°49'10"N
23°49'15"N

23°48'50"N
23°49'0"N
23°49'5"N
23°49'10"N
23°49'15"N

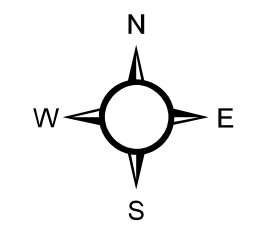
91°26'45"E 91°26'50"E 91°26'55"E 91°27'0"E 91°27'5"E 91°27'10"E 91°27'15"E 91°27'20"E 91°27'25"E 91°27'30"E

LAND USE/LAND COVER DETAILS OF JIRANIA EXISTING 132/33 KV S/S TO CHAMPAKNAGAR 33 KV LINE
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



Legend

- Ground Elevation (IN m.)
- Electric Pole
- Electric Line
- Agriculture Land
- Brick kilns/Quarry
- Bricks Road
- Bridge
- Electric Substation
- Fallow Land
- Metal Road
- Mud Road
- Pond/Lake
- River
- Tree Crop and Groves
- Vacant Land
- Waste Land

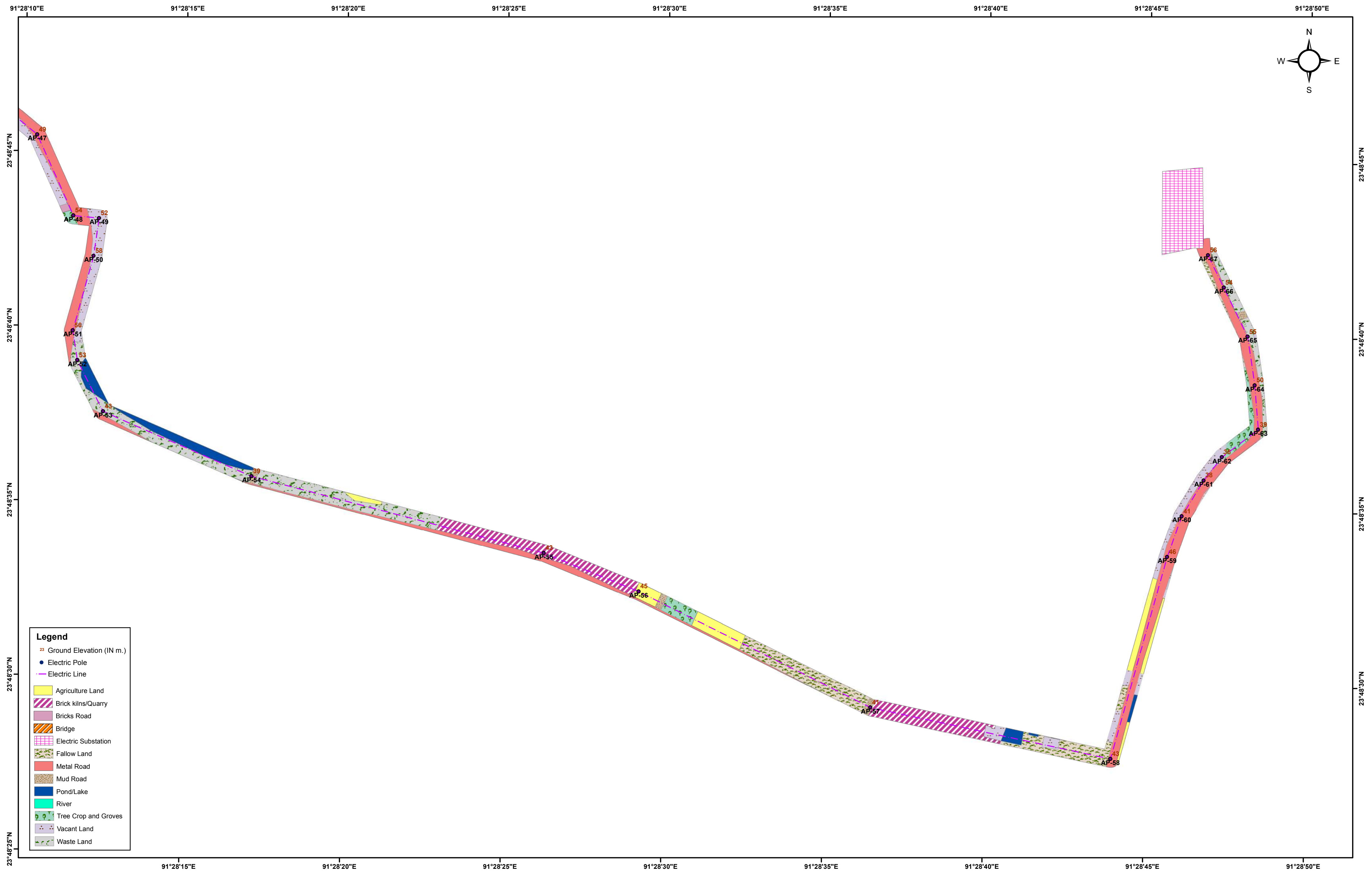


23°48'00"N
23°48'55"N
23°48'50"N
23°48'45"N
23°48'40"N
23°48'35"N

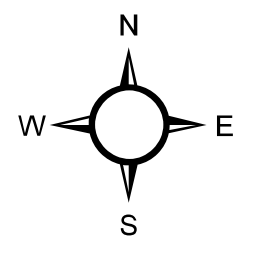
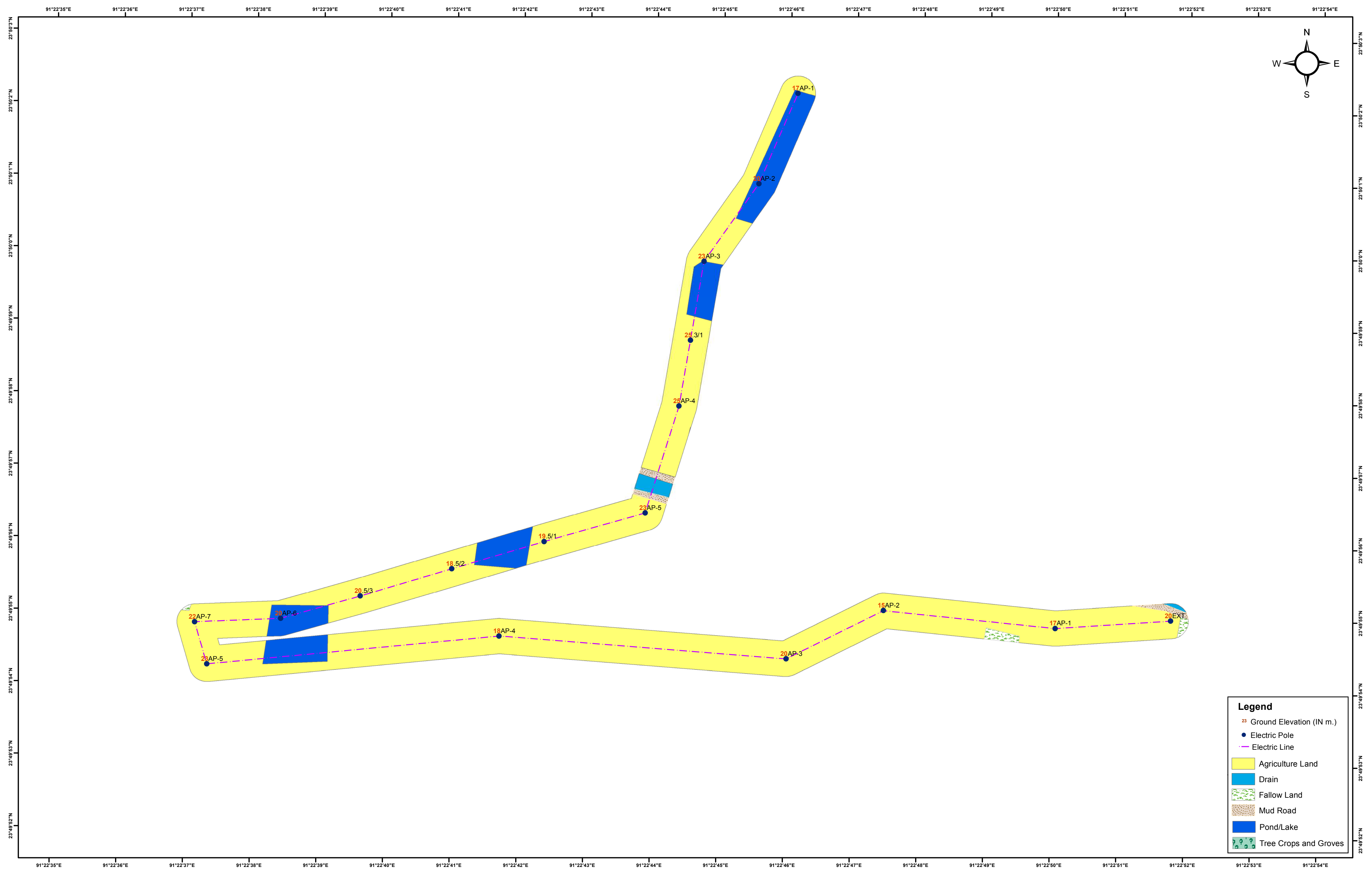
91°27'30"E
91°27'35"E
91°27'40"E
91°27'45"E
91°27'50"E
91°27'55"E
91°28'0"E
91°28'5"E
91°28'10"E
91°28'15"E

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LAND USE/LAND COVER DETAILS OF JIRANIA EXISTING 132/33 KV S/S TO CHAMPAKNAGAR 33 KV LINE
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,

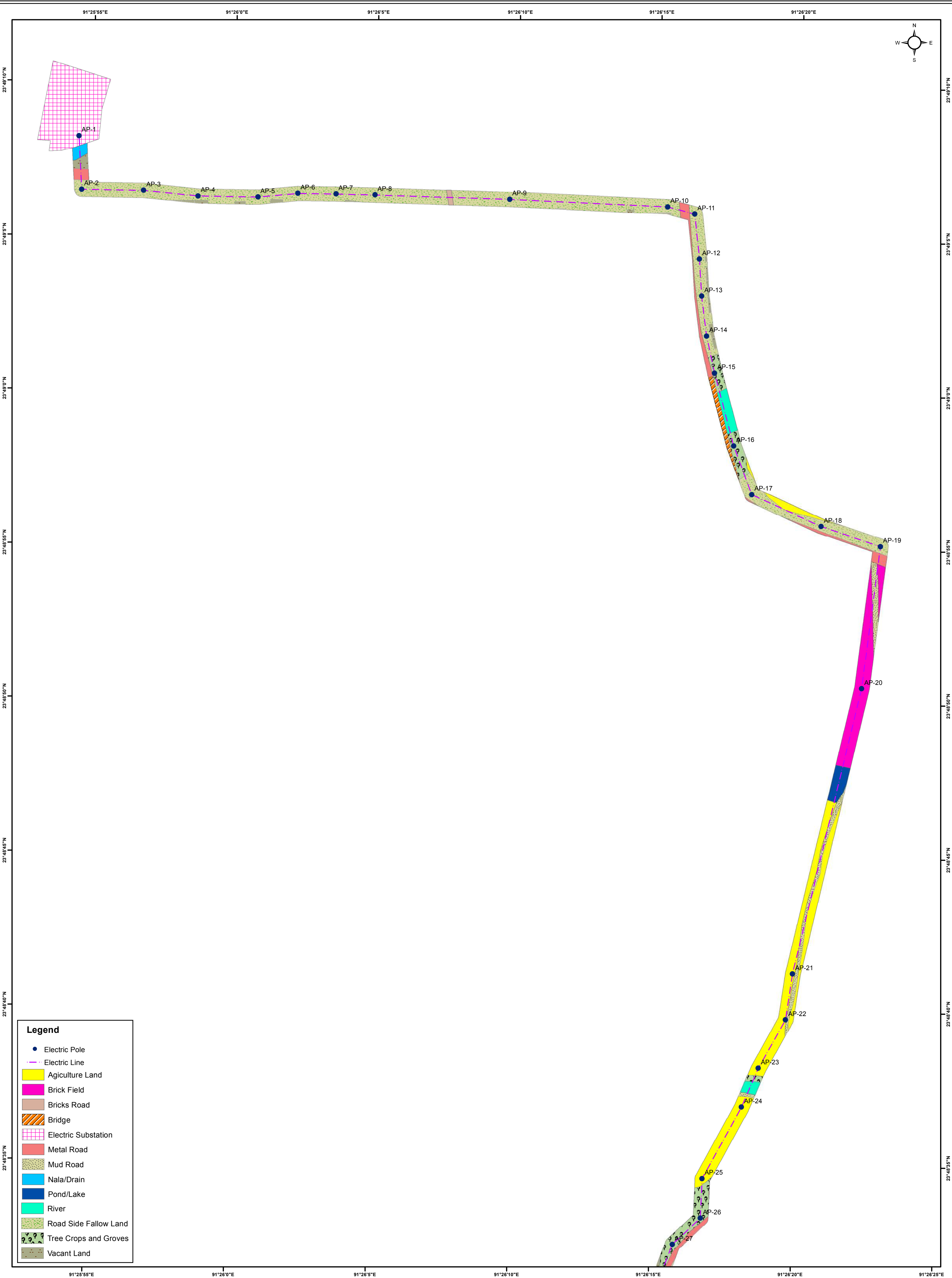


LAND USE/LAND COVER DETAILS OF LILO OF EXT KHAYERPUR-JIRANIA TO RANIRBAZAR
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



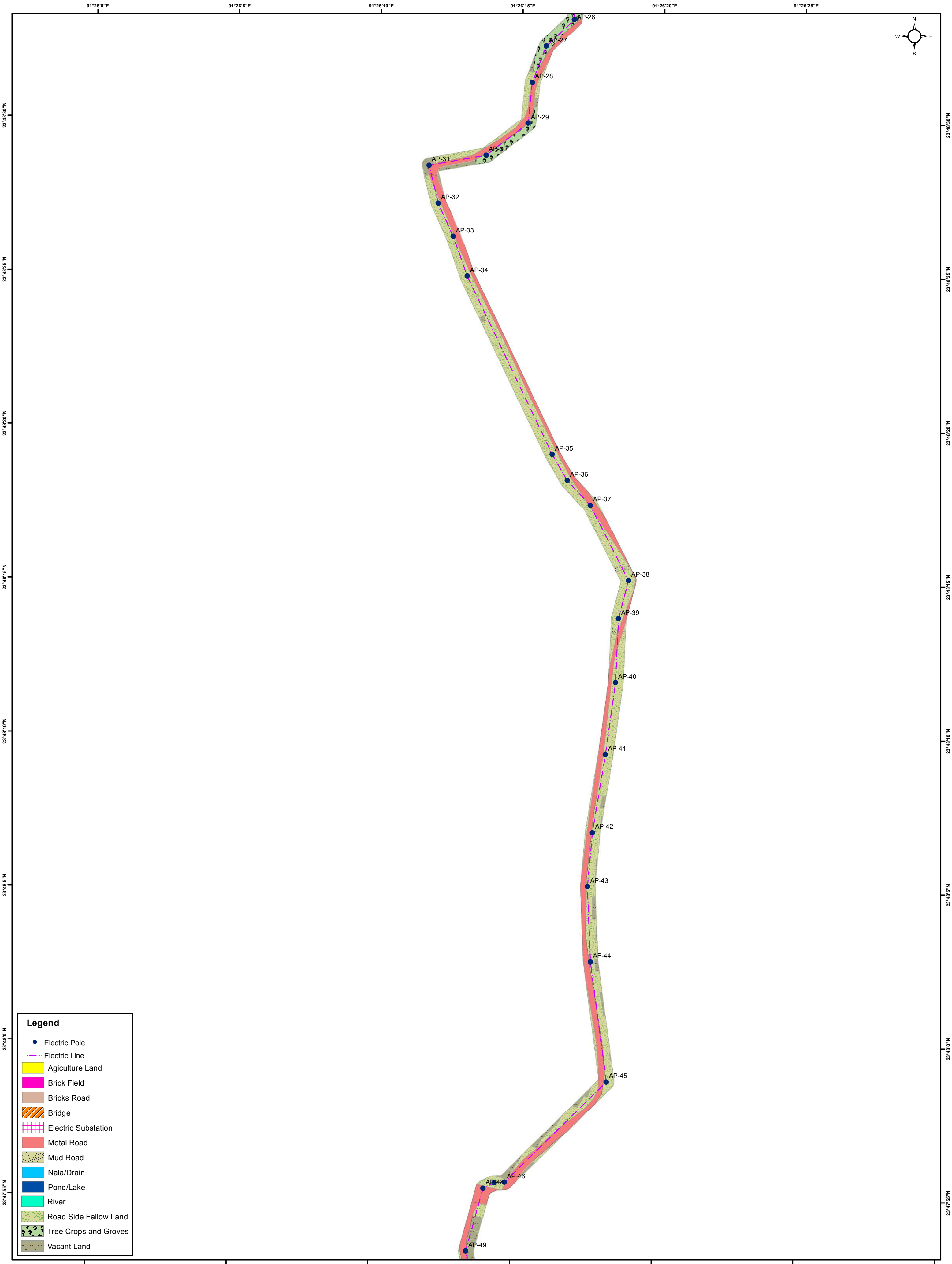
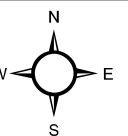
- Legend**
- 23 Ground Elevation (IN m.)
 - Electric Pole
 - Electric Line
 - Agriculture Land
 - Drain
 - Fallow Land
 - Mud Road
 - Pond/Lake
 - Tree Crops and Groves

LAND USE/LAND COVER DETAILS OF 33 KV LINE FROM ADC HEAD QTR (NEW) - JIRANIA SUBSTATION
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



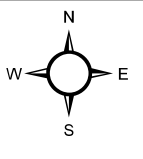
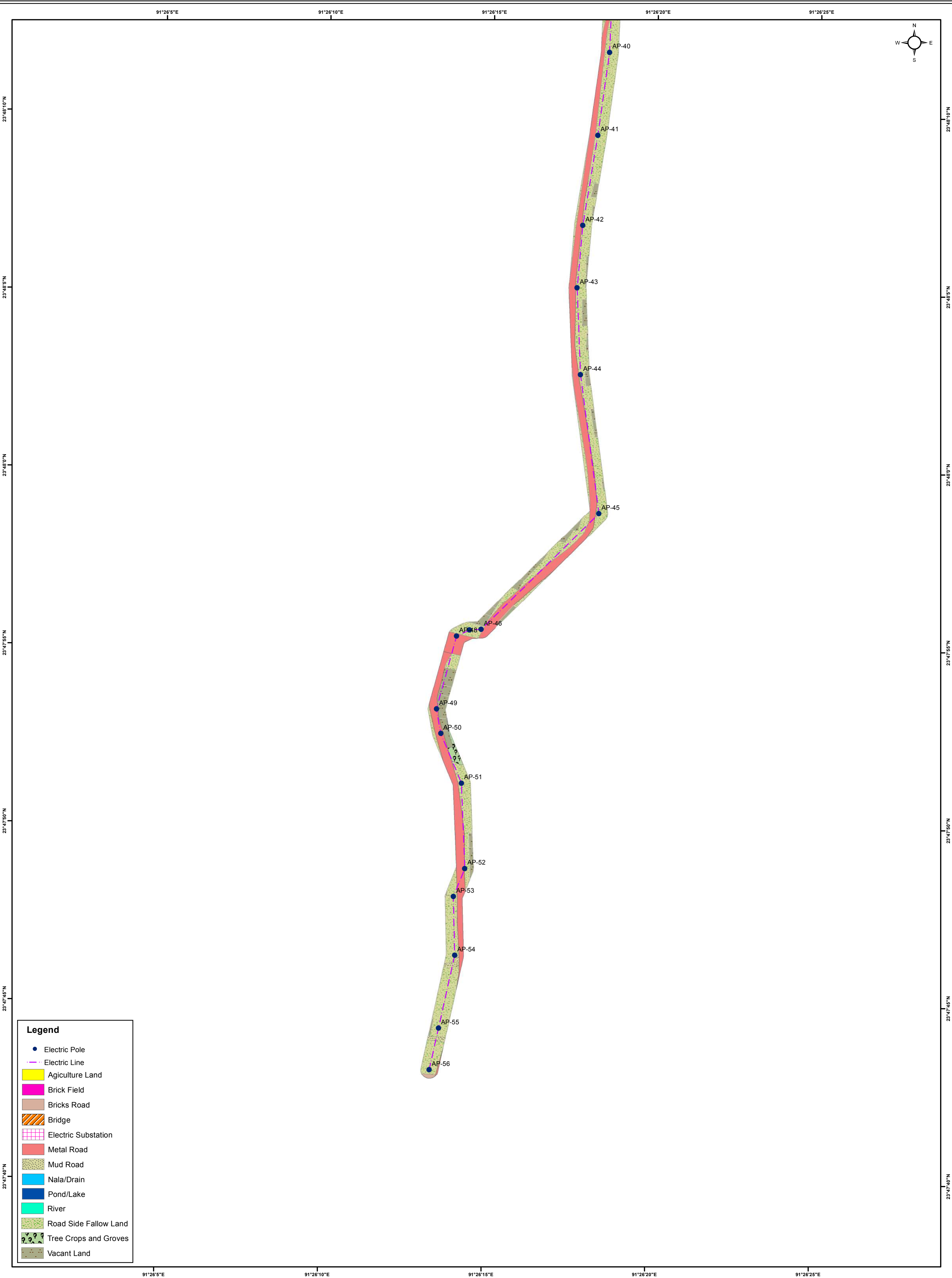
- Legend**
- Electric Pole
 - - - Electric Line
 - Agriculture Land
 - Brick Field
 - Bricks Road
 - Bridge
 - Electric Substation
 - Metal Road
 - Mud Road
 - Nala/Drain
 - Pond/Lake
 - River
 - Road Side Fallow Land
 - Tree Crops and Groves
 - Vacant Land

LAND USE/LAND COVER DETAILS OF 33 KV LINE FROM ADC HEAD QTR (NEW) - JIRANIA SUBSTATION
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



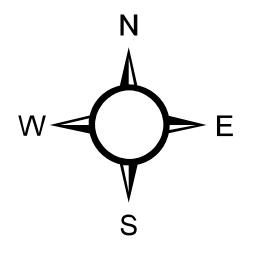
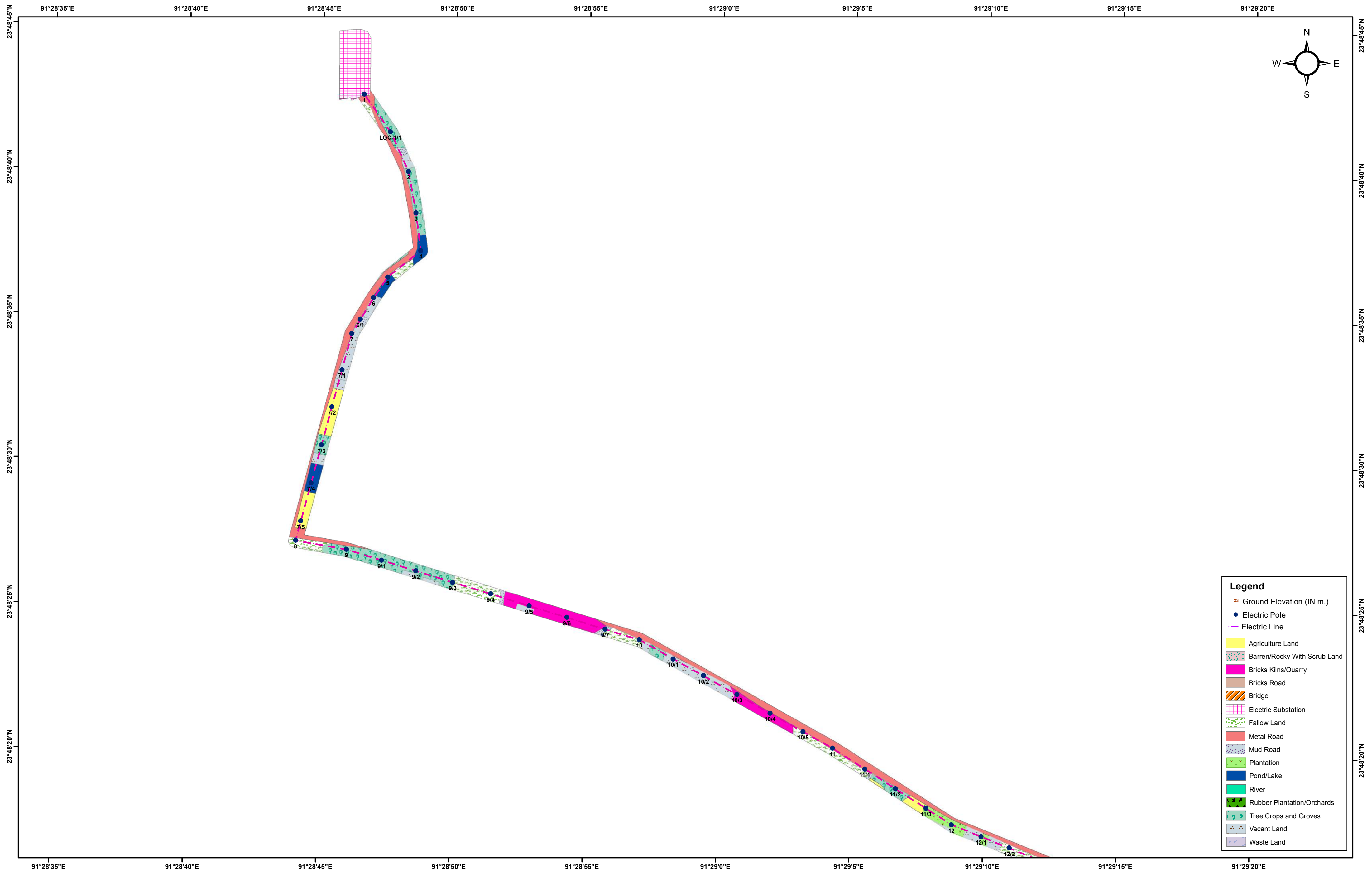
Legend	
●	Electric Pole
—	Electric Line
	Agriculture Land
	Brick Field
	Bricks Road
	Bridge
	Electric Substation
	Metal Road
	Mud Road
	Nala/Drain
	Pond/Lake
	River
	Road Side Fallow Land
	Tree Crops and Groves
	Vacant Land

LAND USE/LAND COVER DETAILS OF 33 KV LINE FROM ADC HEAD QTR (NEW) - JIRANIA SUBSTATION
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



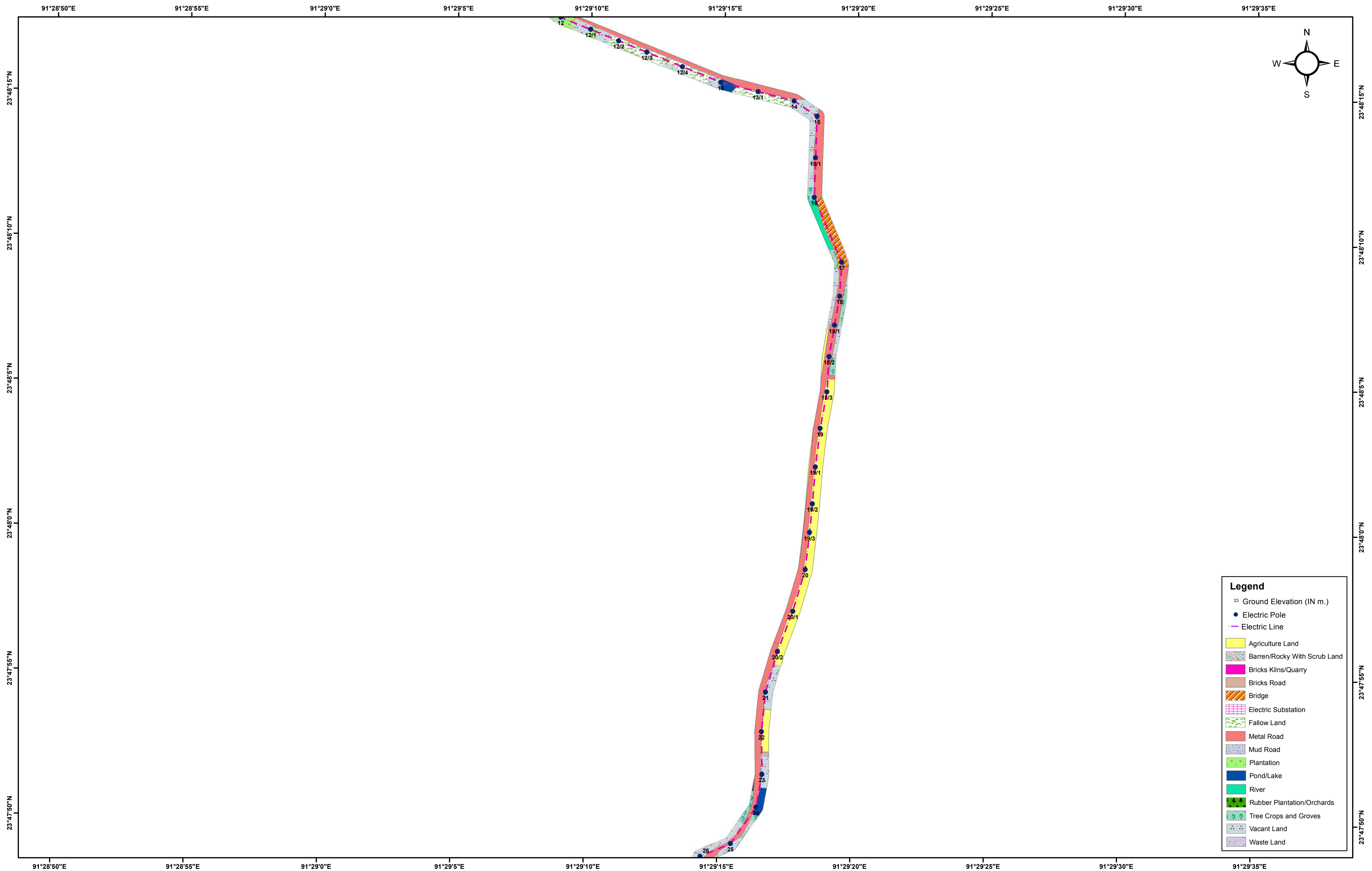
Legend	
●	Electric Pole
- - -	Electric Line
■ (Yellow)	Agriculture Land
■ (Pink)	Brick Field
■ (Brown)	Bricks Road
■ (Diagonal Lines)	Bridge
■ (Grid Pattern)	Electric Substation
■ (Red)	Metal Road
■ (Dotted)	Mud Road
■ (Blue)	Nala/Drain
■ (Dark Blue)	Pond/Lake
■ (Cyan)	River
■ (Light Green)	Road Side Fallow Land
■ (Dark Green)	Tree Crops and Groves
■ (Grey)	Vacant Land

LAND USE/LAND COVER DETAILS OF CHAMPAKNAGAR TO ADC HEAD QTR
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



- Legend**
- 23 Ground Elevation (IN m.)
 - Electric Pole
 - Electric Line
 - Agriculture Land
 - Barren/Rocky With Scrub Land
 - Bricks Kilns/Quarry
 - Bricks Road
 - Bridge
 - Electric Substation
 - Fallow Land
 - Metal Road
 - Mud Road
 - Plantation
 - Pond/Lake
 - River
 - Rubber Plantation/Orchards
 - Tree Crops and Groves
 - Vacant Land
 - Waste Land

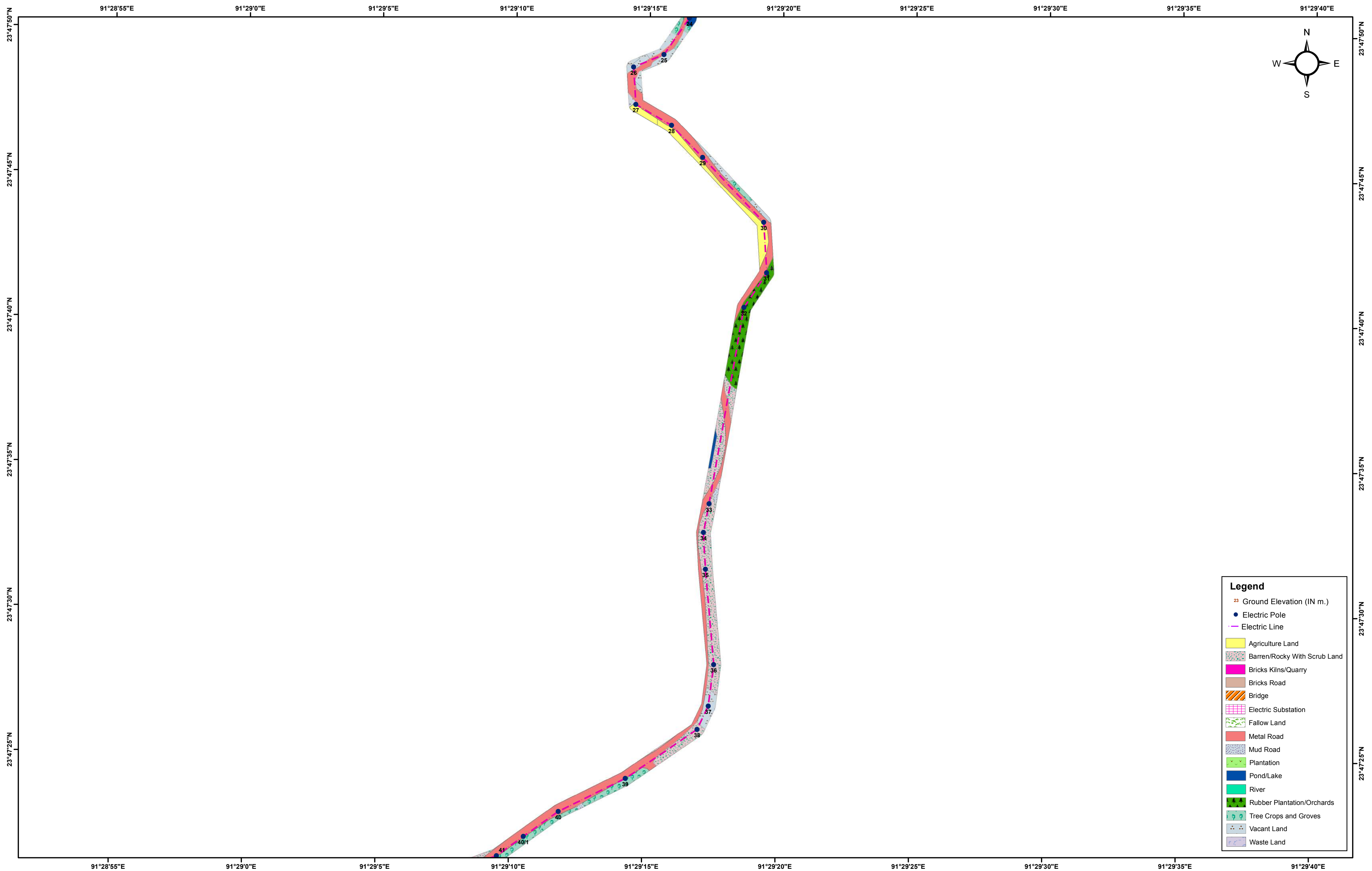
LAND USE/LAND COVER DETAILS OF CHAMPAKNAGAR TO ADC HEAD QTR
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



Legend

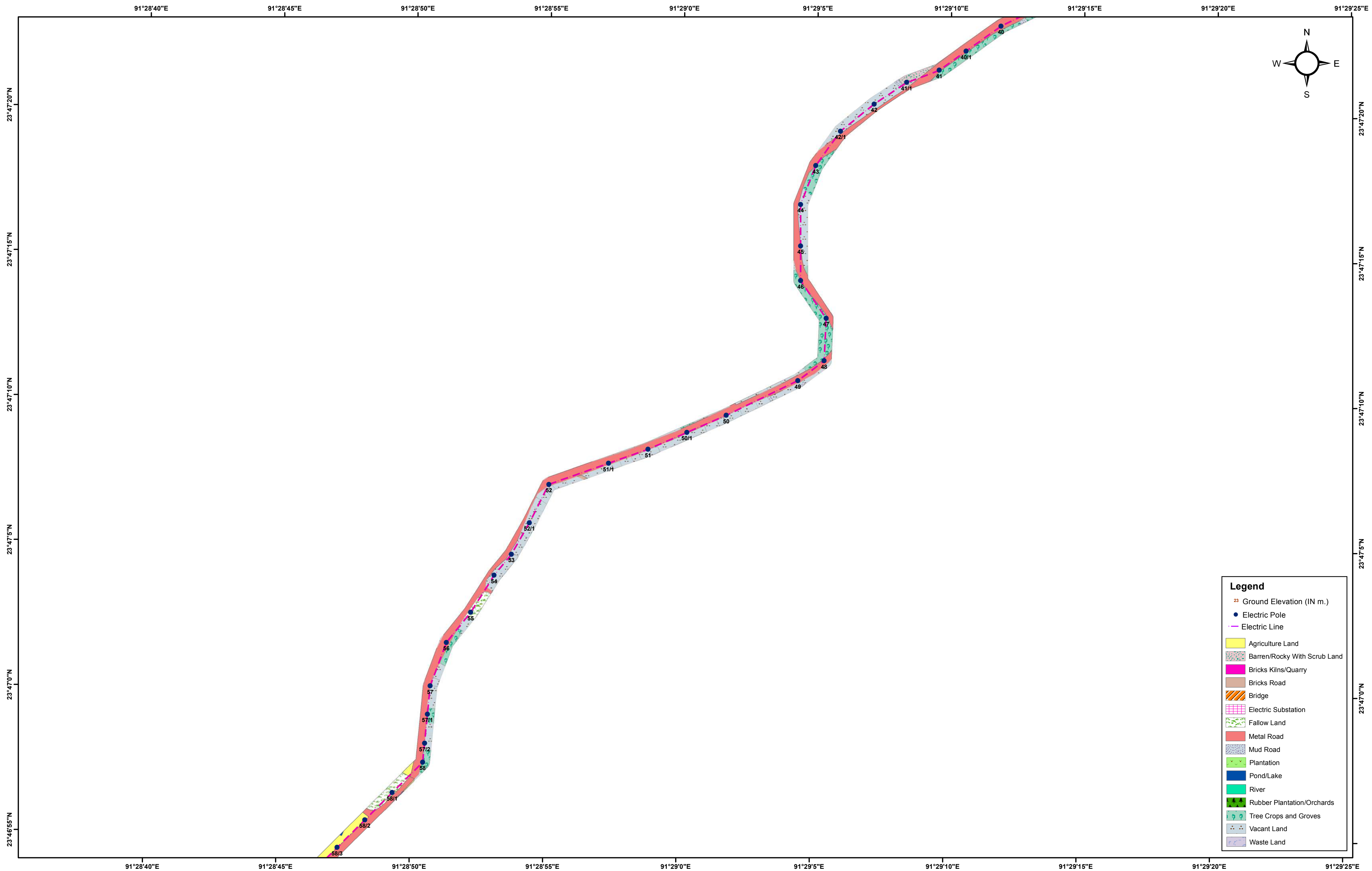
	Ground Elevation (IN m.)
	Electric Pole
	Electric Line
	Agriculture Land
	Barren/Rocky With Scrub Land
	Bricks Kilns/Quarry
	Bricks Road
	Bridge
	Electric Substation
	Fallow Land
	Metal Road
	Mud Road
	Plantation
	Pond/Lake
	River
	Rubber Plantation/Orchards
	Tree Crops and Groves
	Vacant Land
	Waste Land

LAND USE/LAND COVER DETAILS OF CHAMPAKNAGAR TO ADC HEAD QTR
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



- Legend**
- 23 Ground Elevation (IN m.)
 - Electric Pole
 - - - Electric Line
 - Agriculture Land
 - Barren/Rocky With Scrub Land
 - Bricks Kilns/Quarry
 - Bricks Road
 - Bridge
 - Electric Substation
 - Fallow Land
 - Metal Road
 - Mud Road
 - Plantation
 - Pond/Lake
 - River
 - Rubber Plantation/Orchards
 - Tree Crops and Groves
 - Vacant Land
 - Waste Land

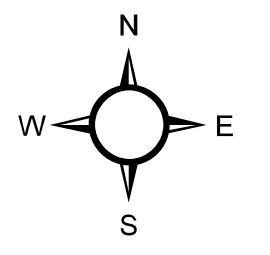
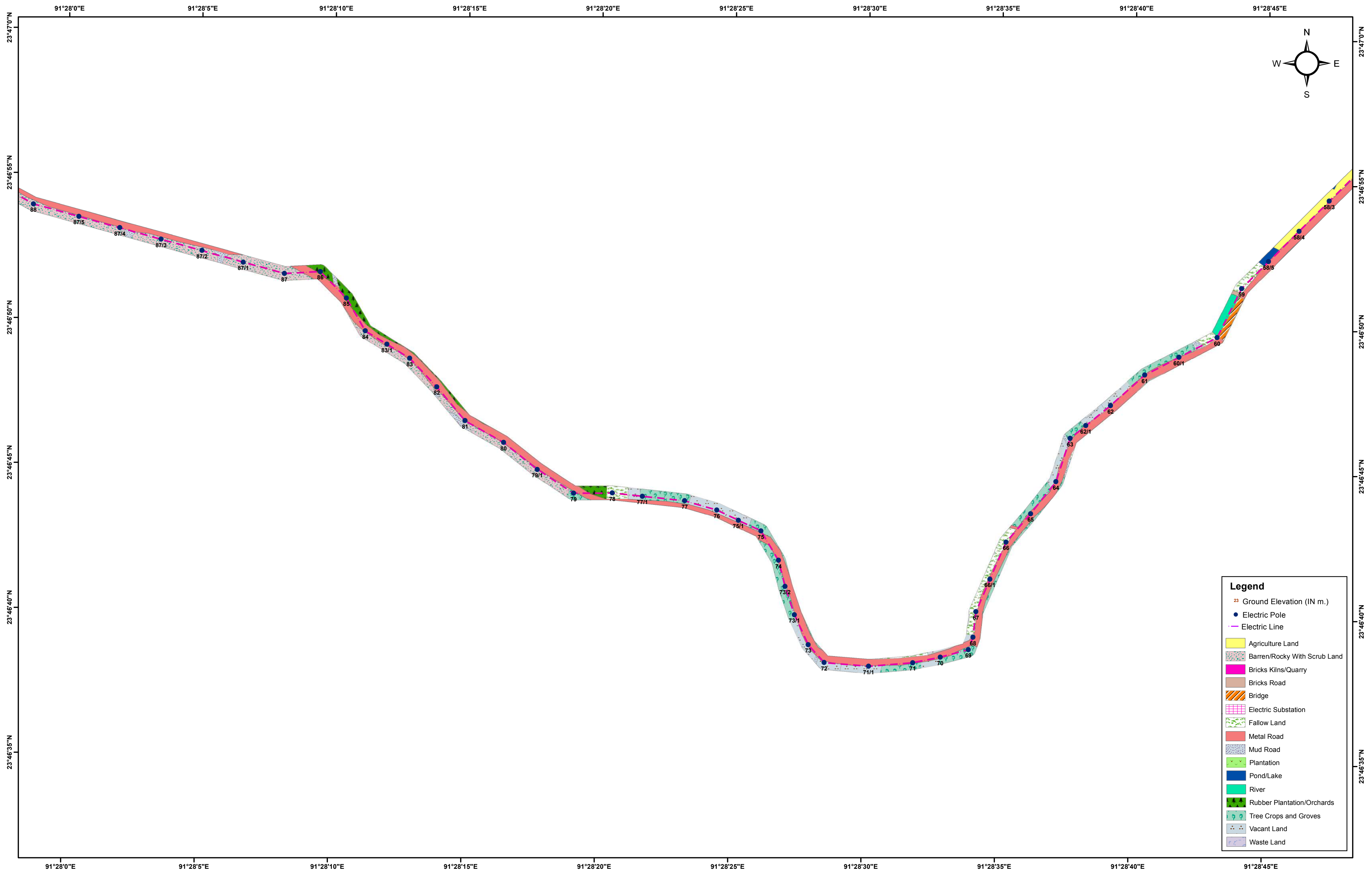
LAND USE/LAND COVER DETAILS OF CHAMPAKNAGAR TO ADC HEAD QTR
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



Legend

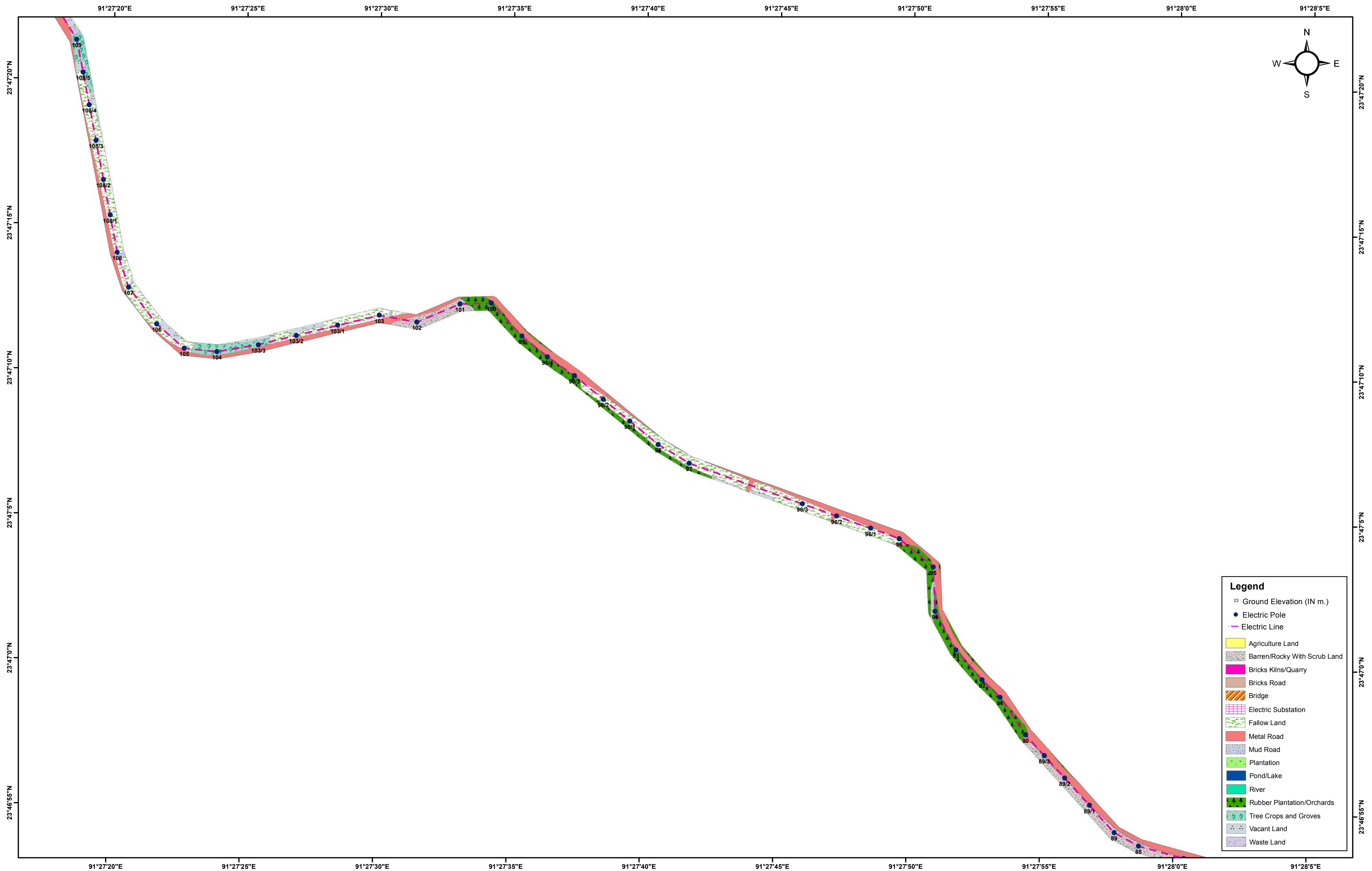
- Ground Elevation (IN m.)
- Electric Pole
- Electric Line
- Agriculture Land
- Barren/Rocky With Scrub Land
- Bricks Kilns/Quarry
- Bricks Road
- Bridge
- Electric Substation
- Fallow Land
- Metal Road
- Mud Road
- Plantation
- Pond/Lake
- River
- Rubber Plantation/Orchards
- Tree Crops and Groves
- Vacant Land
- Waste Land

LAND USE/LAND COVER DETAILS OF CHAMPAKNAGAR TO ADC HEAD QTR
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



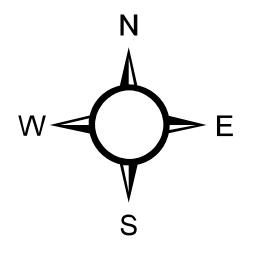
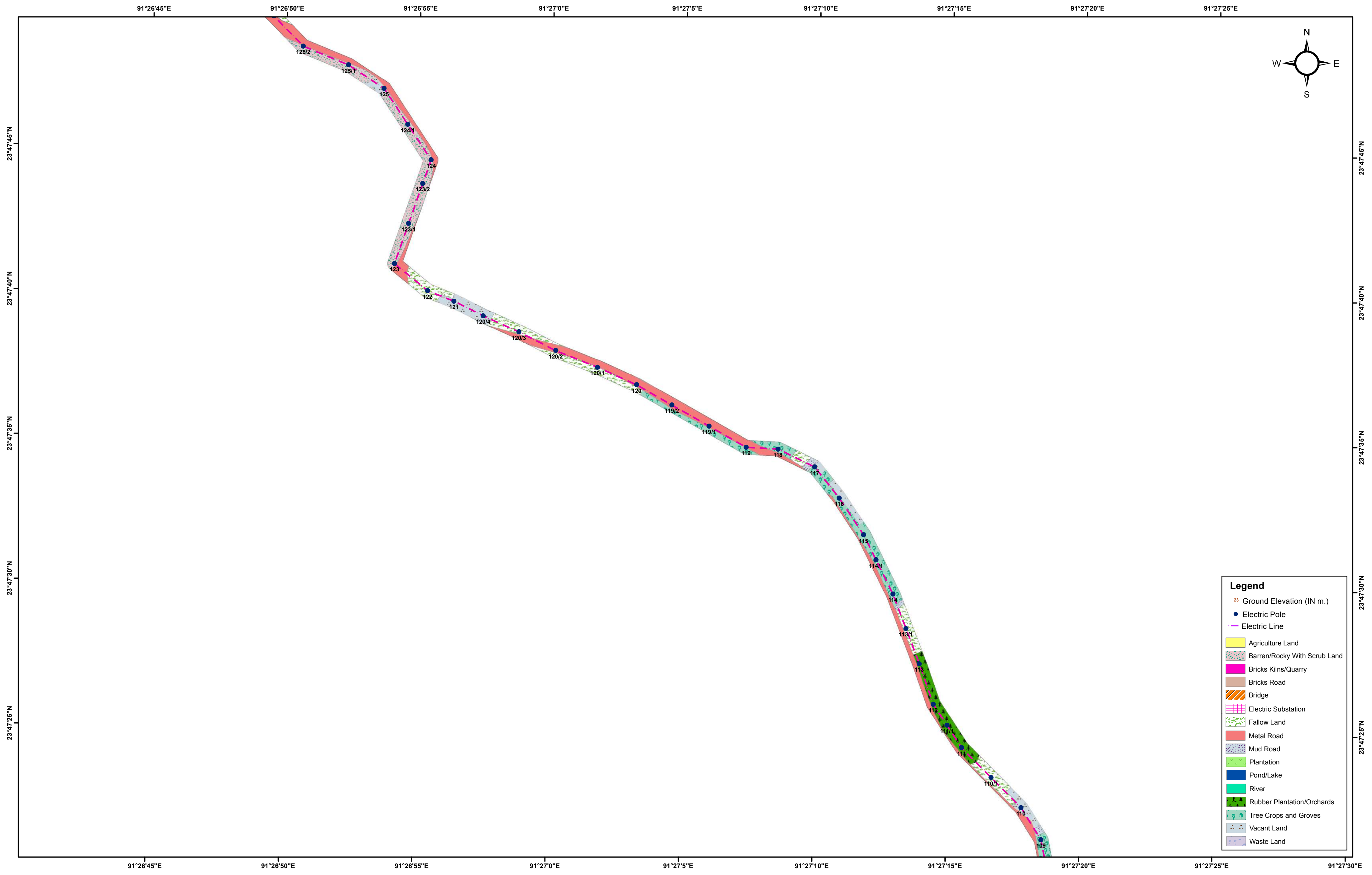
- Legend**
- Ground Elevation (IN m.)
 - Electric Pole
 - Electric Line
 - Agriculture Land
 - Barren/Rocky With Scrub Land
 - Bricks Kilns/Quarry
 - Bricks Road
 - Bridge
 - Electric Substation
 - Fallow Land
 - Metal Road
 - Mud Road
 - Plantation
 - Pond/Lake
 - River
 - Rubber Plantation/Orchards
 - Tree Crops and Groves
 - Vacant Land
 - Waste Land

LAND USE/LAND COVER DETAILS OF CHAMPAKNAGAR TO ADC HEAD QTR
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



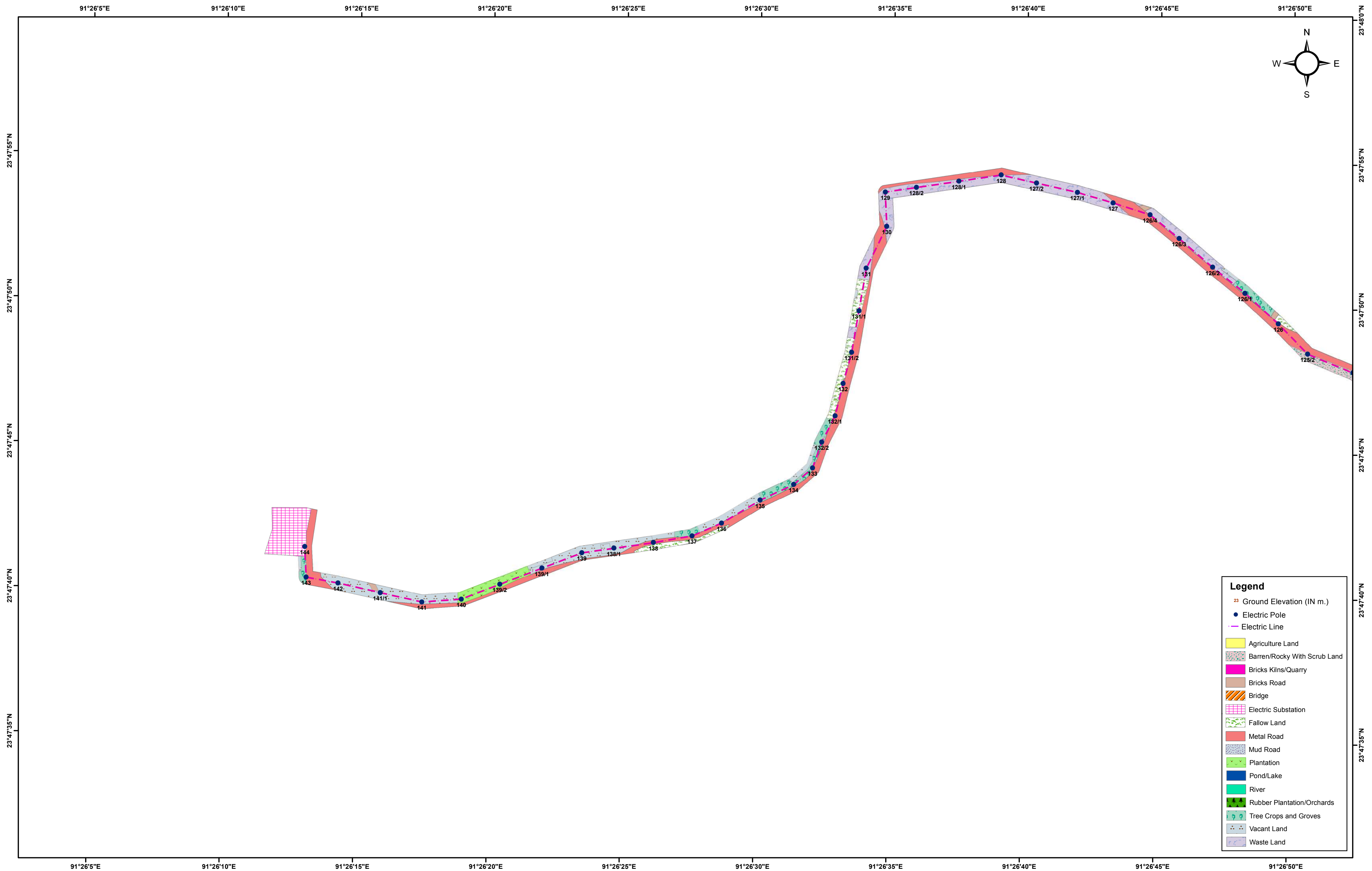
- Legend**
- Ground Elevation (IN m.)
 - Electric Pole
 - Electric Line
 - Agriculture Land
 - Barren/Rocky With Scrub Land
 - Bricks Kilns/Quarry
 - Bricks Road
 - Bridge
 - Electric Substation
 - Fallow Land
 - Metal Road
 - Mud Road
 - Plantation
 - Pond/Lake
 - River
 - Rubber Plantation/Orchards
 - Tree Crops and Groves
 - Vacant Land
 - Waste Land

LAND USE/LAND COVER DETAILS OF CHAMPAKNAGAR TO ADC HEAD QTR
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



- Legend**
- Ground Elevation (IN m.)
 - Electric Pole
 - Electric Line
 - Agriculture Land
 - Barren/Rocky With Scrub Land
 - Bricks Kilns/Quarry
 - Bricks Road
 - Bridge
 - Electric Substation
 - Fallow Land
 - Metal Road
 - Mud Road
 - Plantation
 - Pond/Lake
 - River
 - Rubber Plantation/Orchards
 - Tree Crops and Groves
 - Vacant Land
 - Waste Land

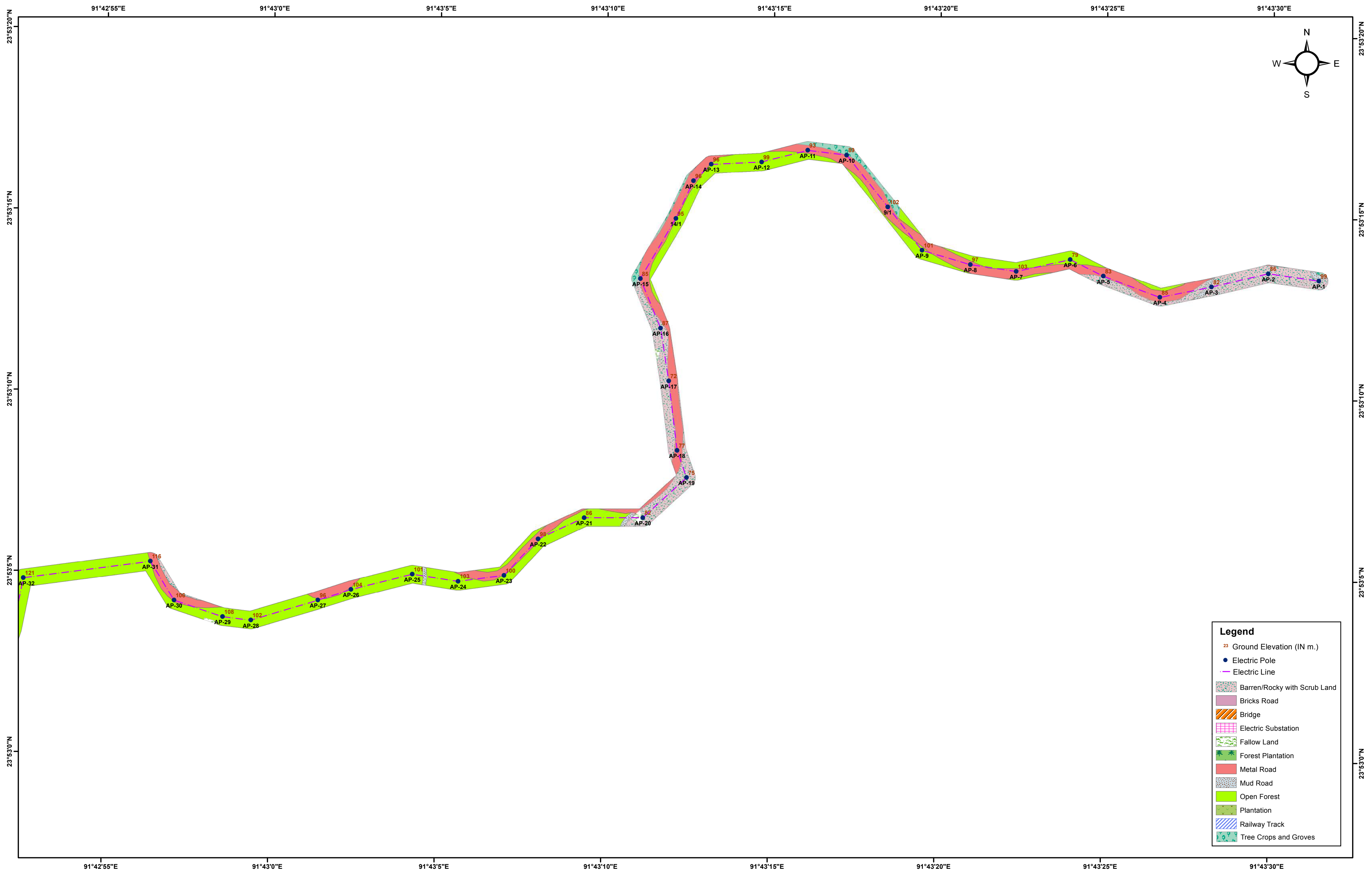
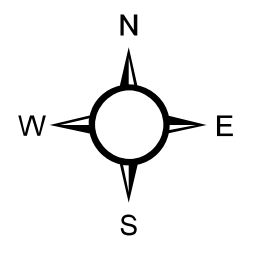
LAND USE/LAND COVER DETAILS OF CHAMPAKNAGAR TO ADC HEAD QTR
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



Legend

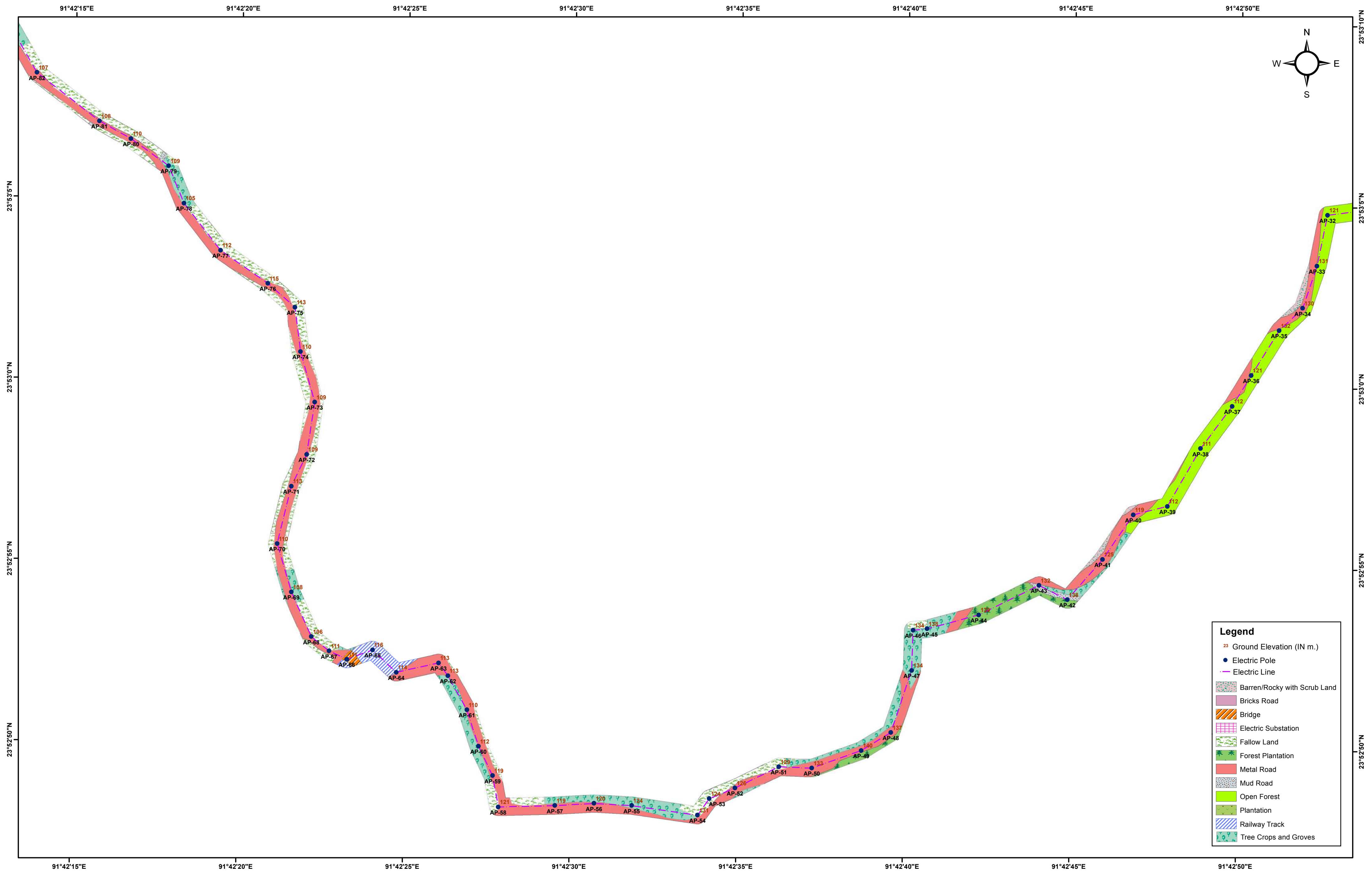
	Ground Elevation (IN m.)
	Electric Pole
	Electric Line
	Agriculture Land
	Barren/Rocky With Scrub Land
	Bricks Kilns/Quarry
	Bricks Road
	Bridge
	Electric Substation
	Fallow Land
	Metal Road
	Mud Road
	Plantation
	Pond/Lake
	River
	Rubber Plantation/Orchards
	Tree Crops and Groves
	Vacant Land
	Waste Land

LAND USE/LAND COVER DETAILS OF LILO OF EXISTING AMBASSA-TELLAMURA LINE TO MUNGIKAMI, LINE IN FROM AMBASSA
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



Legend	
23	Ground Elevation (IN m.)
●	Electric Pole
—	Electric Line
▨	Barren/Rocky with Scrub Land
▨	Bricks Road
▨	Bridge
▨	Electric Substation
▨	Fallow Land
▨	Forest Plantation
▨	Metal Road
▨	Mud Road
▨	Open Forest
▨	Plantation
▨	Railway Track
▨	Tree Crops and Groves

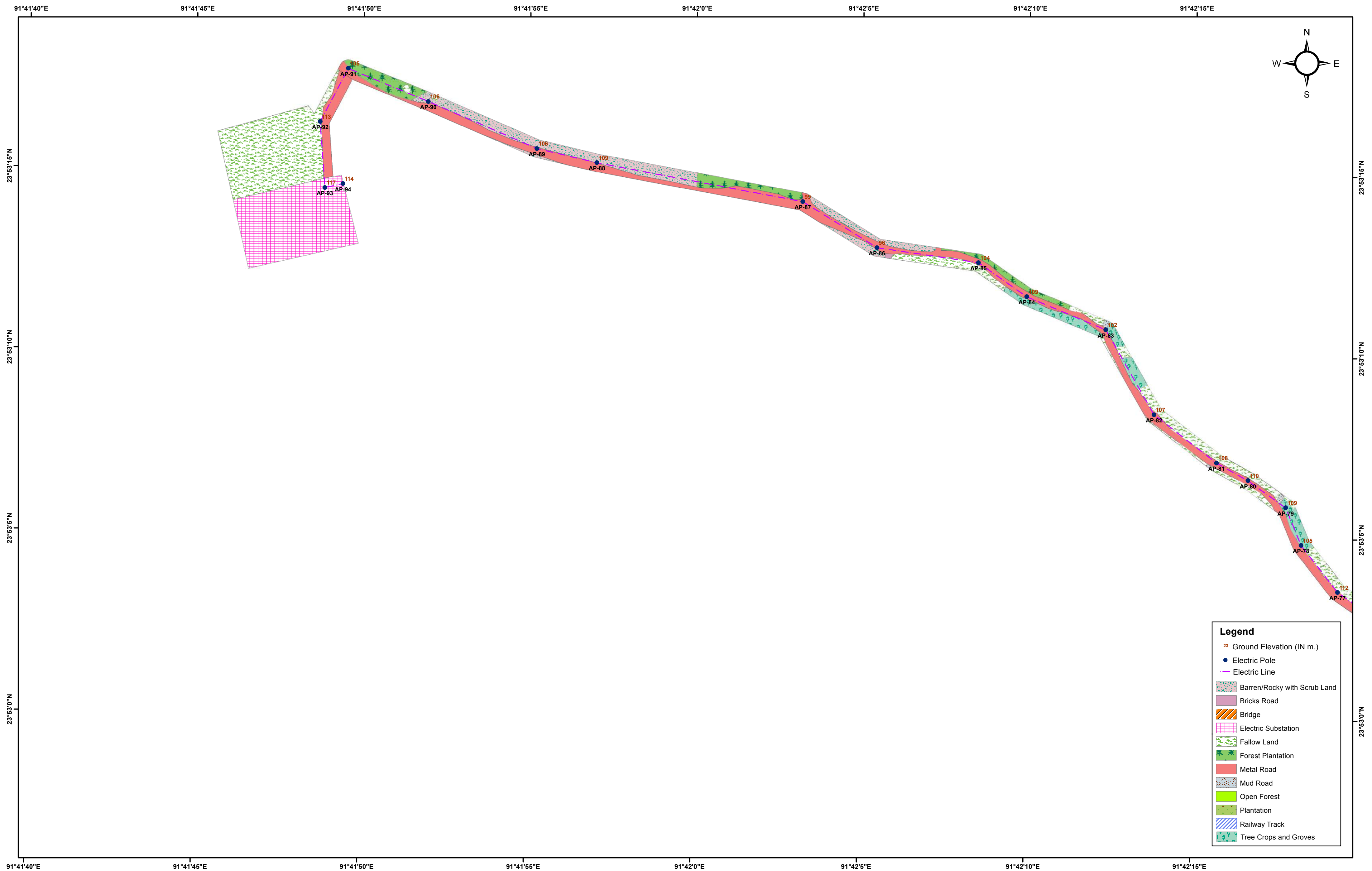
LAND USE/LAND COVER DETAILS OF LILO OF EXISTING AMBASSA-TELLAMURA LINE TO MUNGIKAMI, LINE IN FROM AMBASSA
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



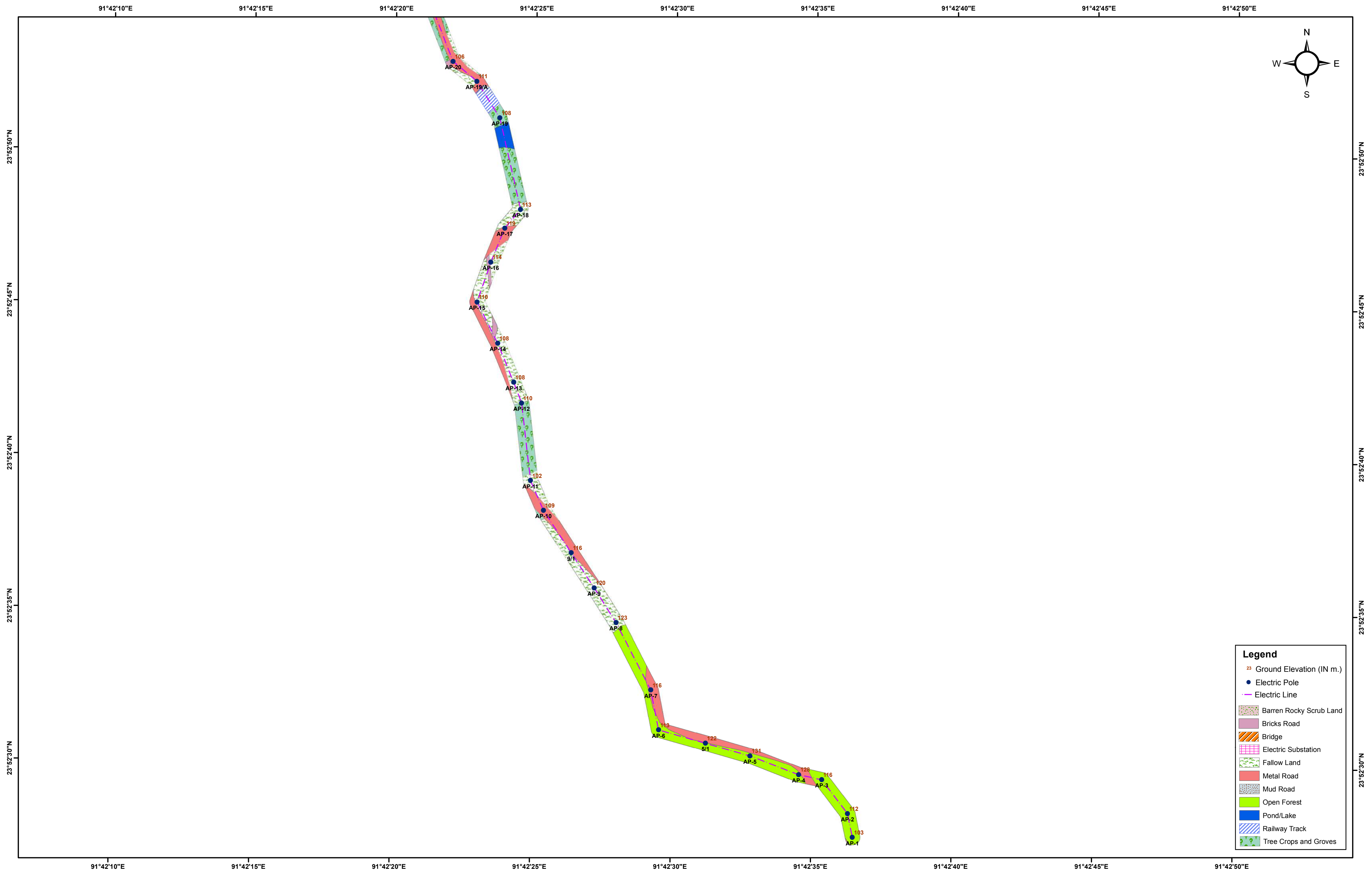
Legend

- 23 Ground Elevation (IN m.)
- Electric Pole
- Electric Line
- Barren/Rocky with Scrub Land
- Bricks Road
- Bridge
- Electric Substation
- Fallow Land
- Forest Plantation
- Metal Road
- Mud Road
- Open Forest
- Plantation
- Railway Track
- Tree Crops and Groves

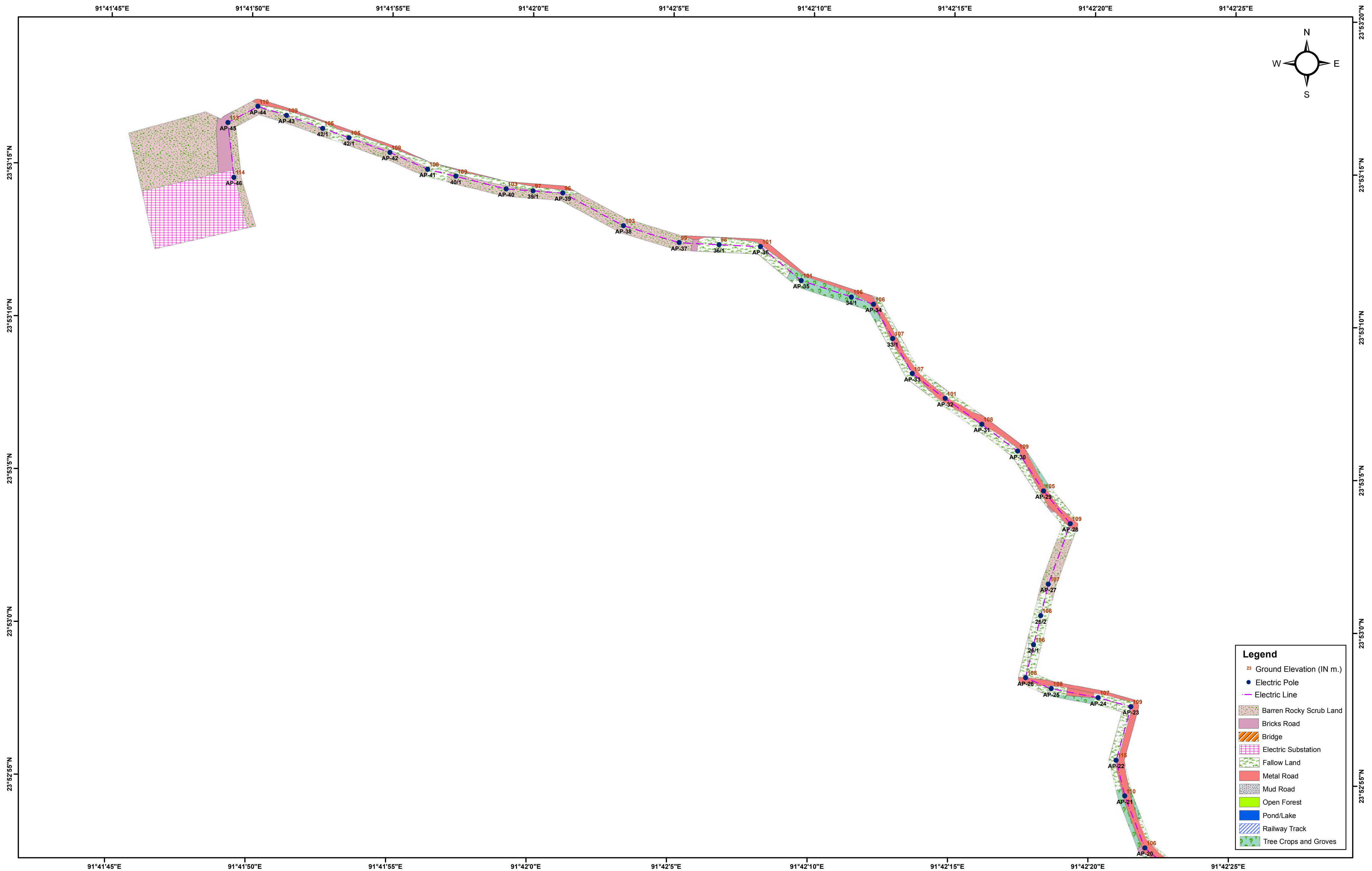
LAND USE/LAND COVER DETAILS OF LILO OF EXISTING AMBASSA-TELLAMURA LINE TO MUNGIKAKAMI, LINE IN FROM AMBASSA
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



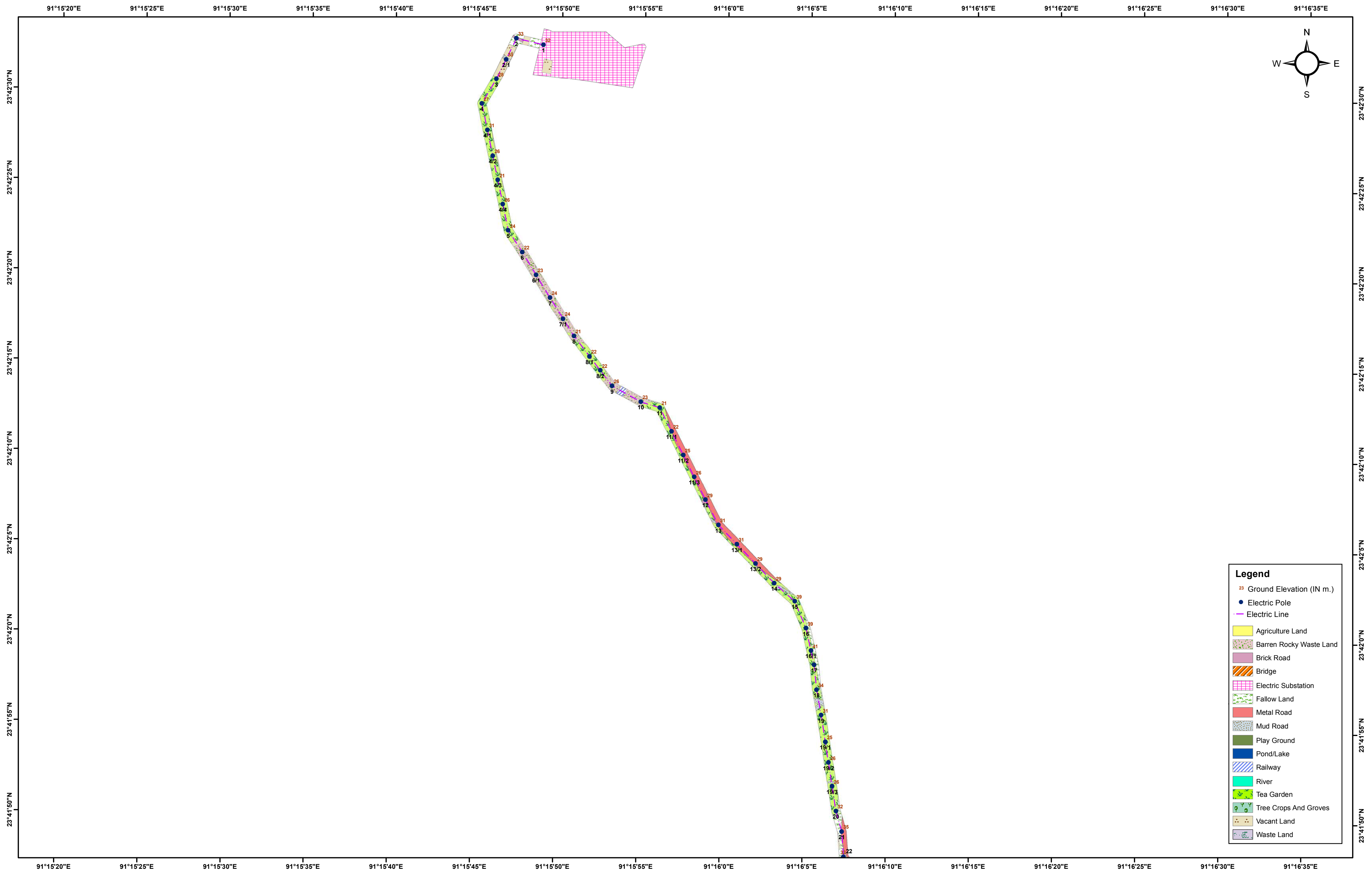
LAND USE/LAND COVER DETAILS OF LILO OF EXISTING AMBASSA-TELLAMURA LINE TO MUNGIKAMI, LINE OUT TO TELIAMURA
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



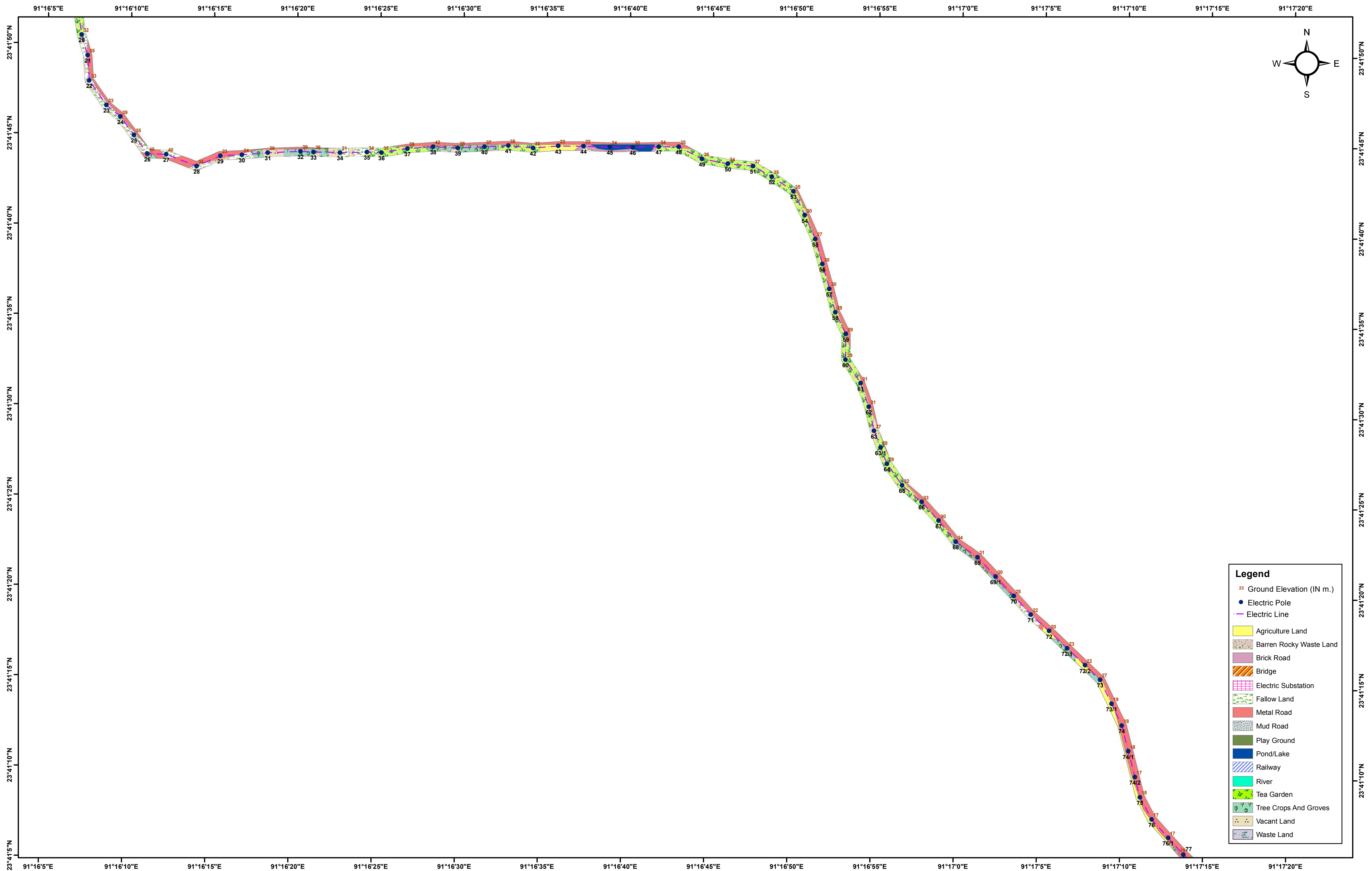
LAND USE/LAND COVER DETAILS OF LILO OF EXISTING AMBASSA-TELLAMURA LINE TO MUNGIKAMI, LINE OUT TO TELIAMURA
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



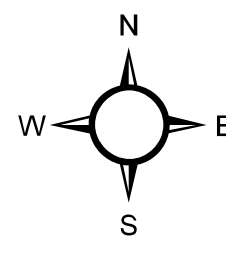
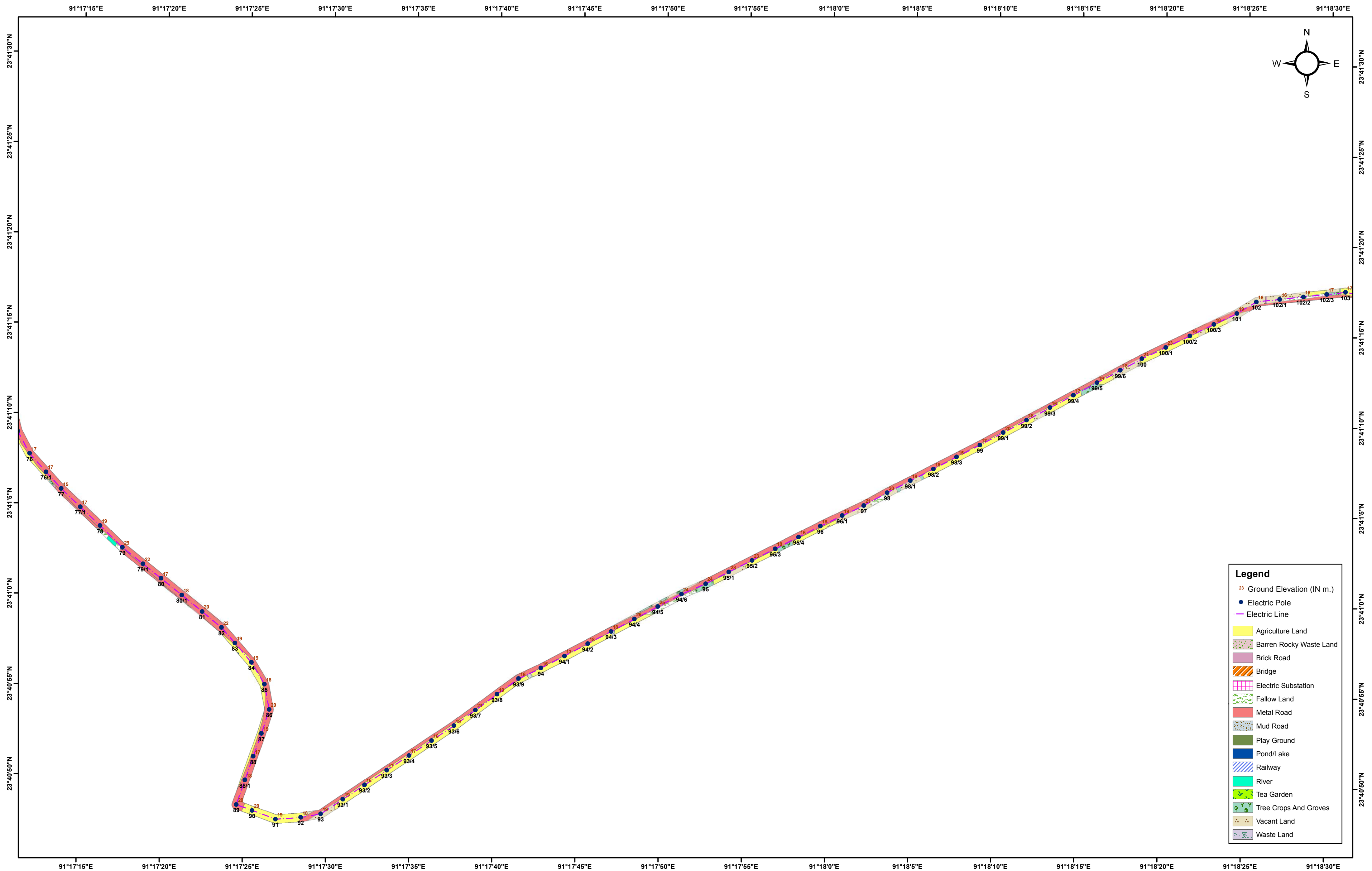
LAND USE/LAND COVER DETAILS OF PROPOSED 132/33 KV GOKULNAGAR S/S TO PROPOSED 33/11 KV GOLAGHATI S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



LAND USE/LAND COVER DETAILS OF PROPOSED 132/33 KV GOKULNAGAR S/S TO PROPOSED 33/11 KV GOLAGHATI S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,

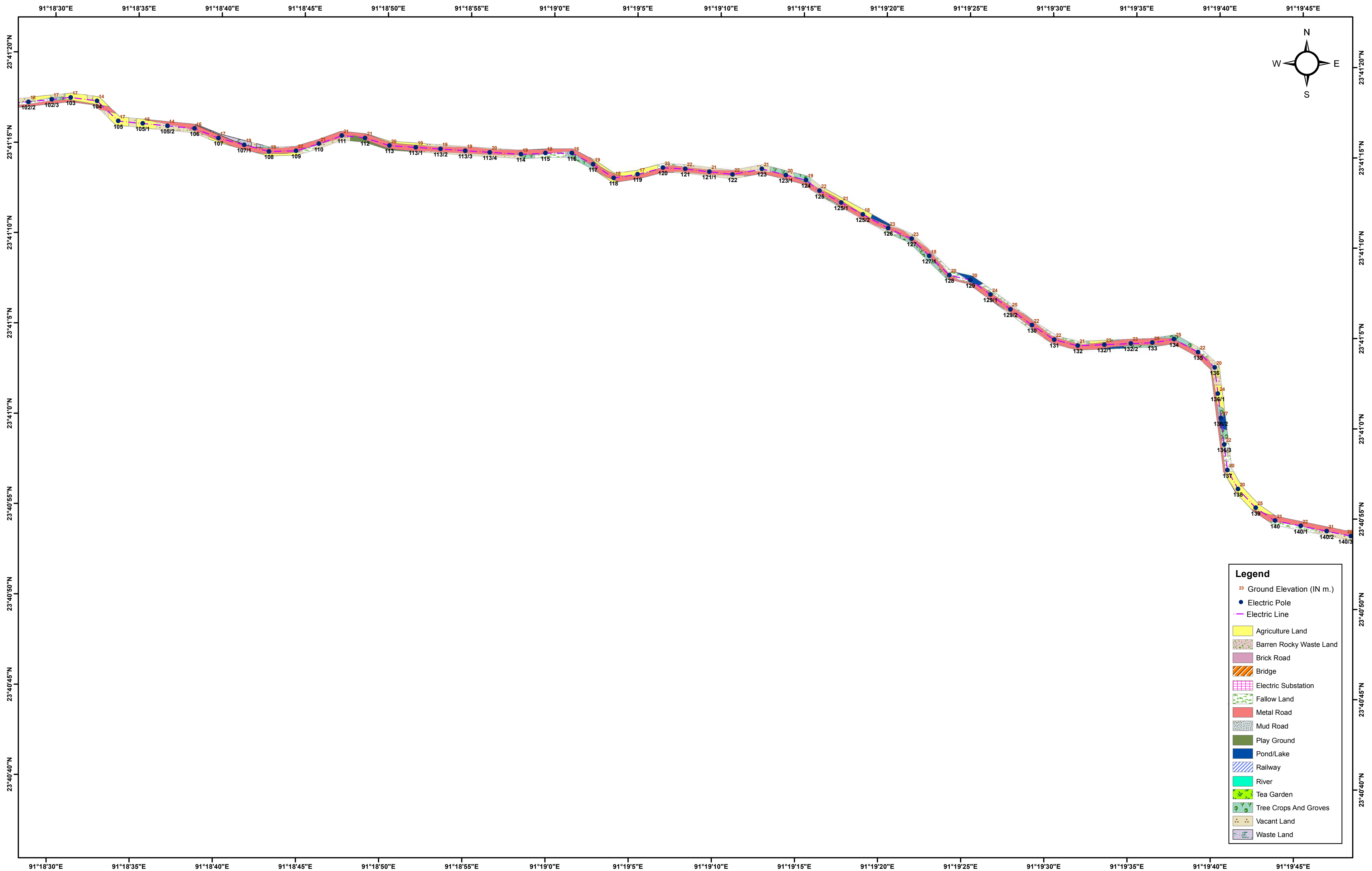


LAND USE/LAND COVER DETAILS OF PROPOSED 132/33 KV GOKULNAGAR S/S TO PROPOSED 33/11 KV GOLAGHATI S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



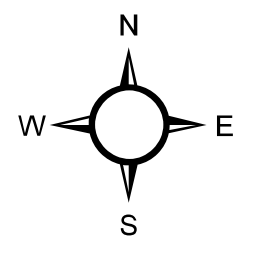
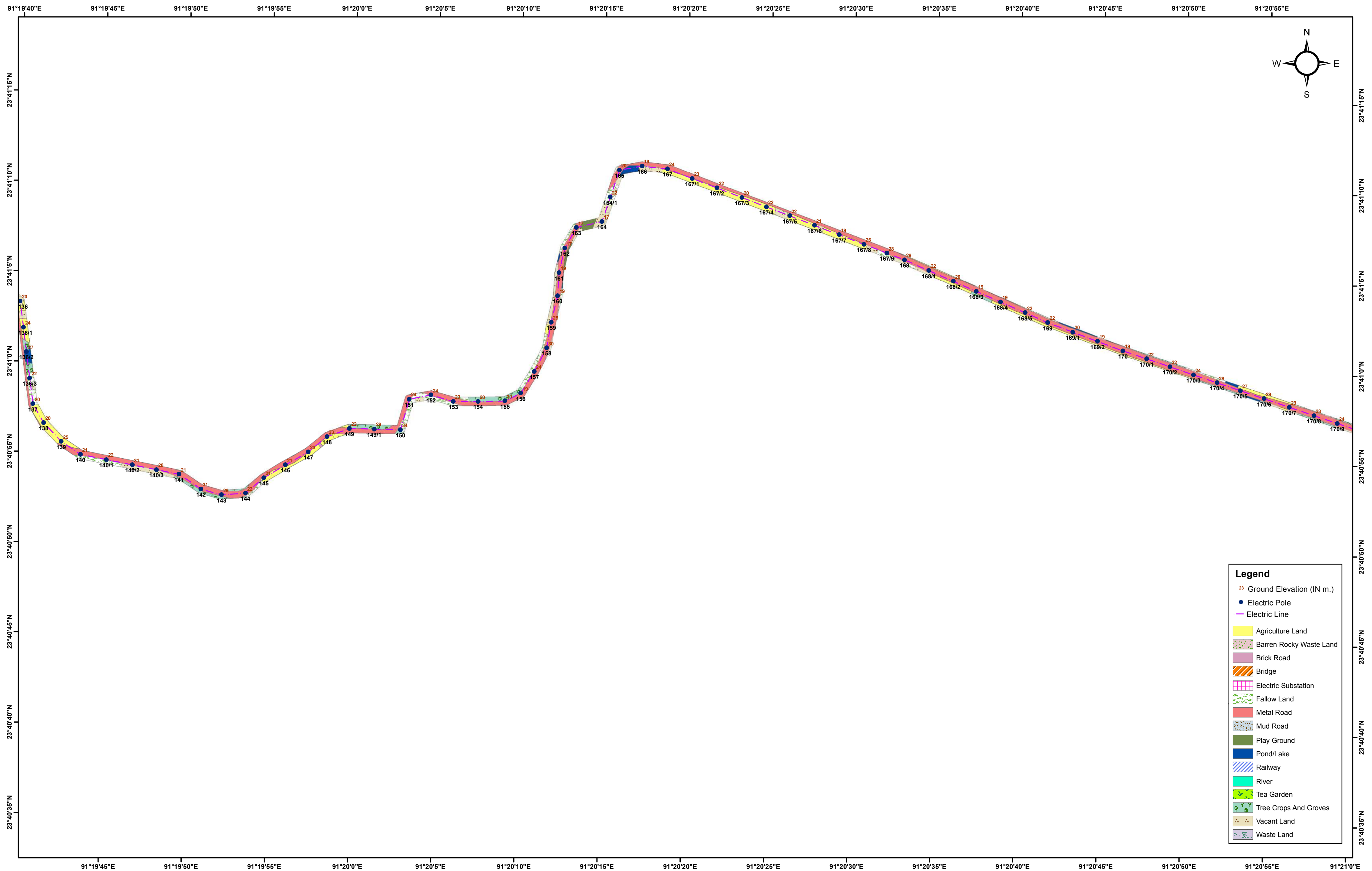
- Legend**
- 23 Ground Elevation (IN m.)
 - Electric Pole
 - Electric Line
 - Agriculture Land
 - Barren Rocky Waste Land
 - Brick Road
 - Bridge
 - Electric Substation
 - Fallow Land
 - Metal Road
 - Mud Road
 - Play Ground
 - Pond/Lake
 - Railway
 - River
 - Tea Garden
 - Tree Crops And Groves
 - Vacant Land
 - Waste Land

LAND USE/LAND COVER DETAILS OF PROPOSED 132/33 KV GOKULNAGAR S/S TO PROPOSED 33/11 KV GOLAGHATI S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



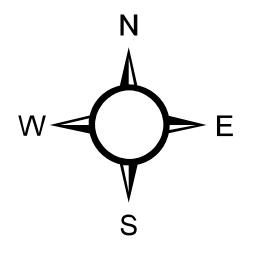
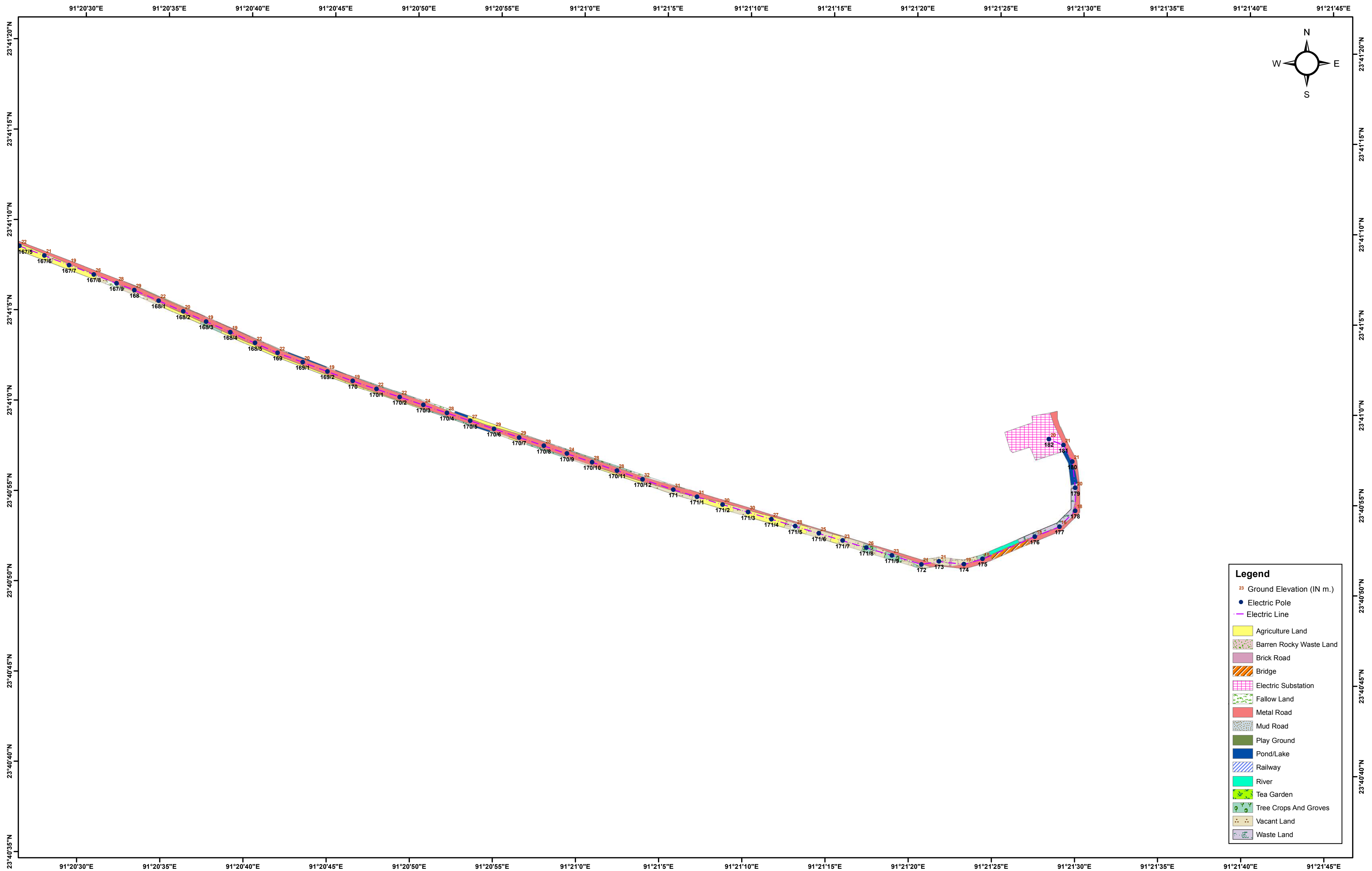
- Legend**
- 23 Ground Elevation (IN m.)
 - Electric Pole
 - Electric Line
 - Agriculture Land
 - Barren Rocky Waste Land
 - Brick Road
 - Bridge
 - Electric Substation
 - Fallow Land
 - Metal Road
 - Mud Road
 - Play Ground
 - Pond/Lake
 - Railway
 - River
 - Tea Garden
 - Tree Crops And Groves
 - Vacant Land
 - Waste Land

LAND USE/LAND COVER DETAILS OF PROPOSED 132/33 KV GOKULNAGAR S/S TO PROPOSED 33/11 KV GOLAGHATI S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



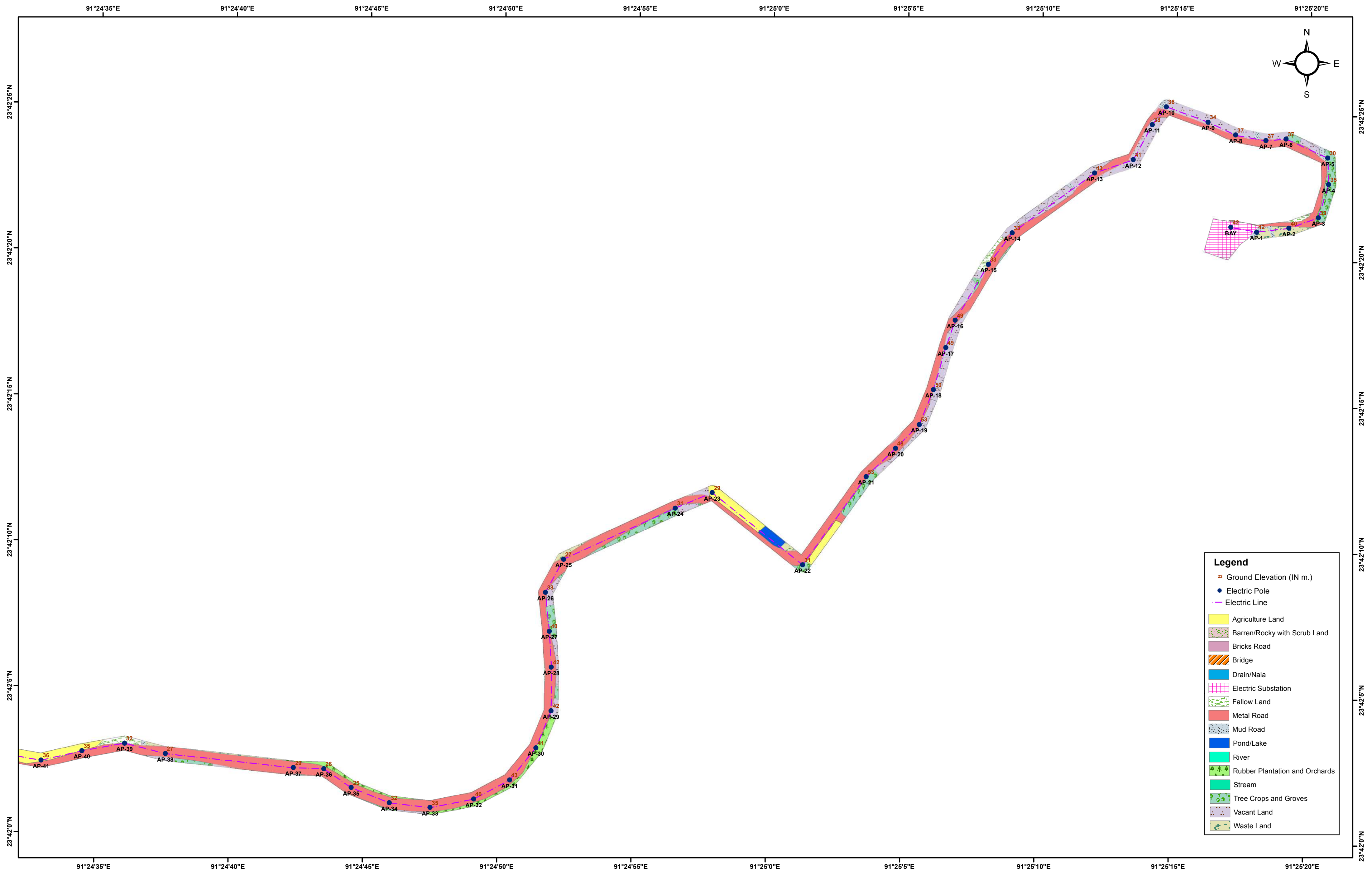
- Legend**
- 23 Ground Elevation (IN m.)
 - Electric Pole
 - Electric Line
 - Agriculture Land
 - Barren Rocky Waste Land
 - Brick Road
 - Bridge
 - Electric Substation
 - Fallow Land
 - Metal Road
 - Mud Road
 - Play Ground
 - Pond/Lake
 - Railway
 - River
 - Tea Garden
 - Tree Crops And Groves
 - Vacant Land
 - Waste Land

LAND USE/LAND COVER DETAILS OF PROPOSED 132/33 KV GOKULNAGAR S/S TO PROPOSED 33/11 KV GOLAGHATI S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



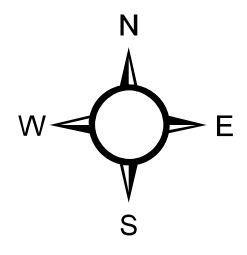
- Legend**
- 23 Ground Elevation (IN m.)
 - Electric Pole
 - Electric Line
 - Agriculture Land
 - Barren Rocky Waste Land
 - Brick Road
 - Bridge
 - Electric Substation
 - Fallow Land
 - Metal Road
 - Mud Road
 - Play Ground
 - Pond/Lake
 - Railway
 - River
 - Tea Garden
 - Tree Crops And Groves
 - Vacant Land
 - Waste Land

LAND USE/LAND COVER DETAILS OF EXISTING 33/11 KV TAKARJALA S/S TO PROPOSED 33/11 KV GOLAGHAT
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,

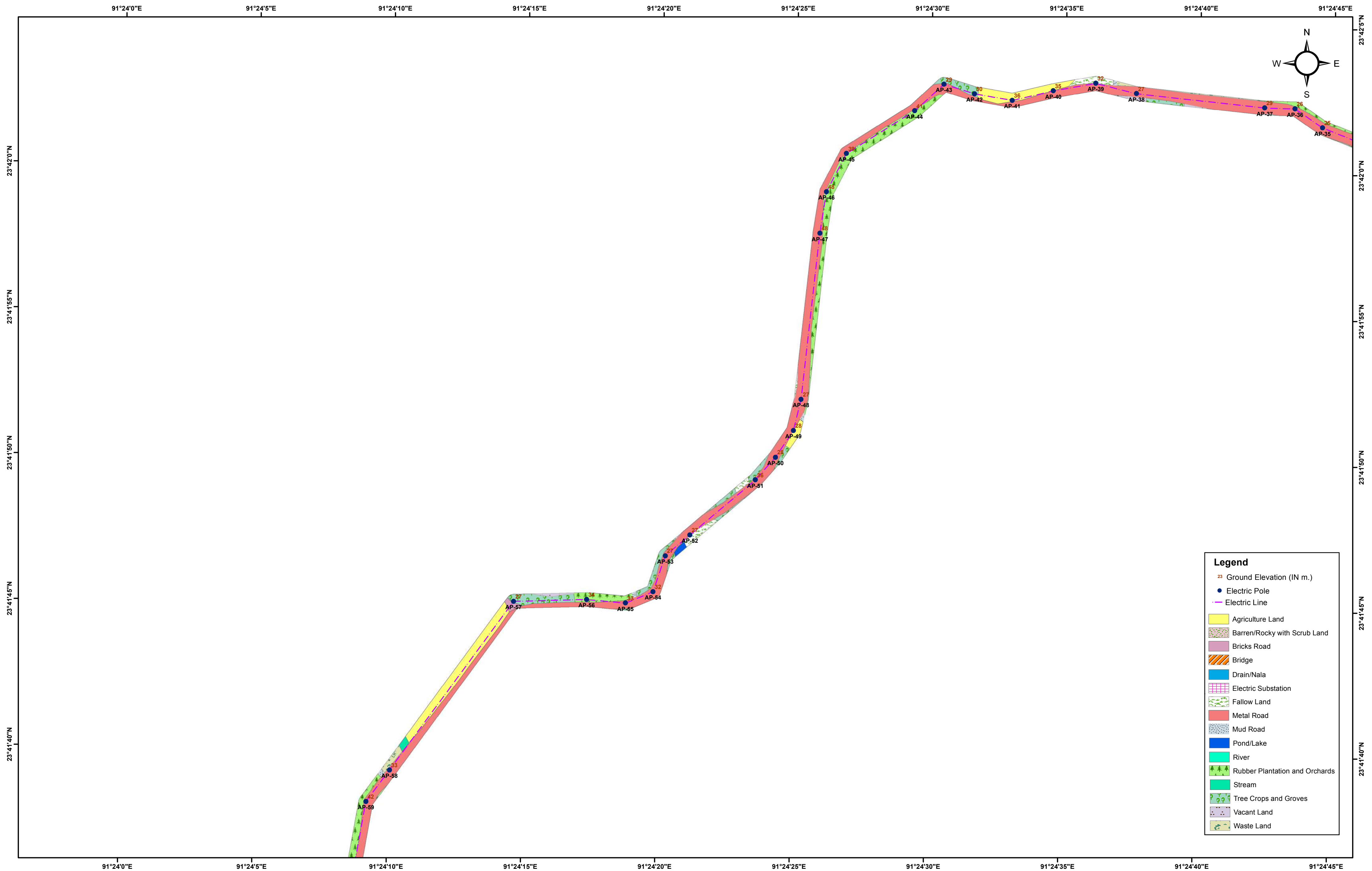


Legend

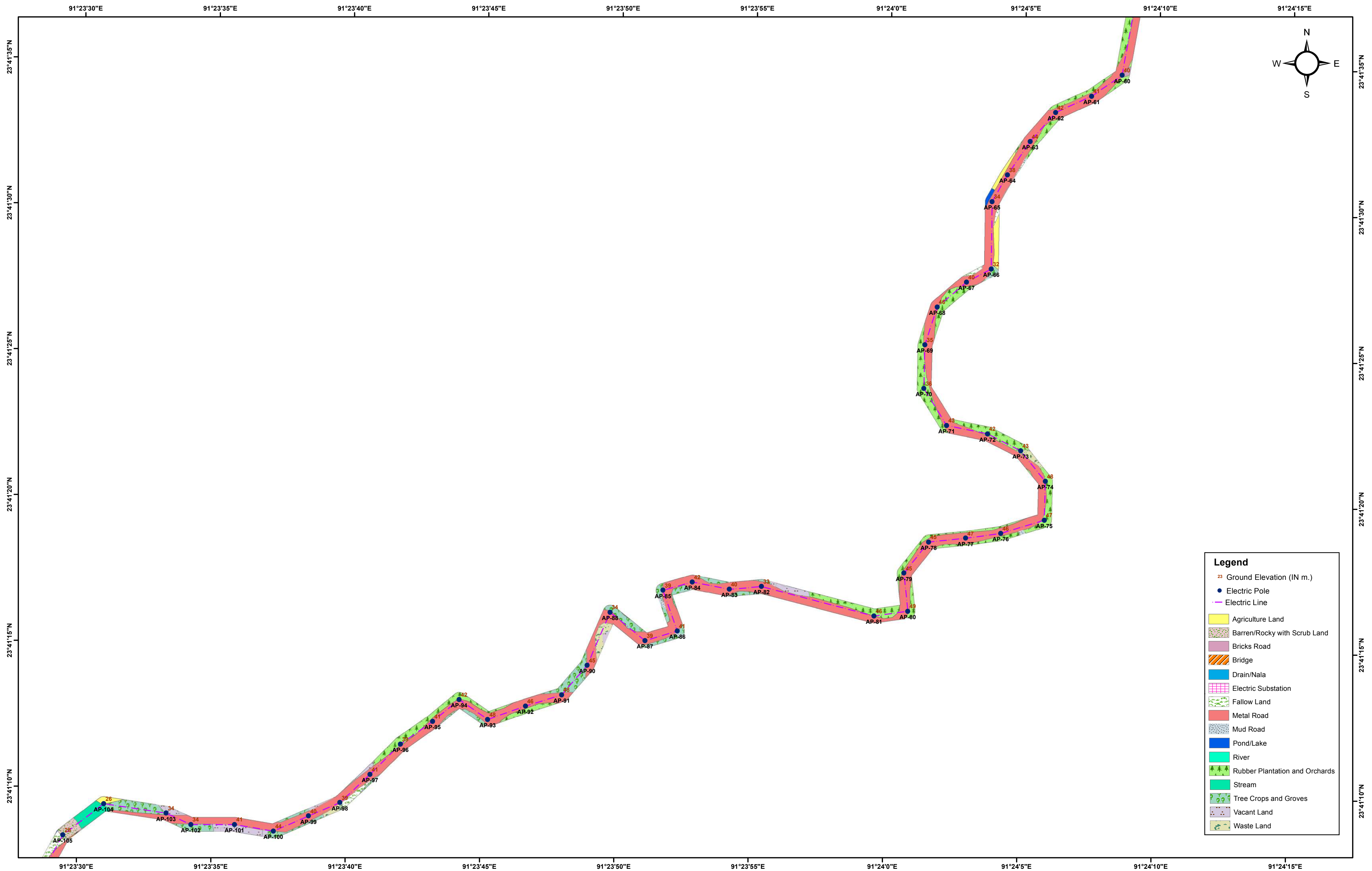
- Ground Elevation (IN m.)
- Electric Pole
- Electric Line
- Agriculture Land
- Barren/Rocky with Scrub Land
- Bricks Road
- Bridge
- Drain/Nala
- Electric Substation
- Fallow Land
- Metal Road
- Mud Road
- Pond/Lake
- River
- Rubber Plantation and Orchards
- Stream
- Tree Crops and Groves
- Vacant Land
- Waste Land



LAND USE/LAND COVER DETAILS OF EXISTING 33/11 KV TAKARJALA S/S TO PROPOSED 33/11 KV GOLAGHAT
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,

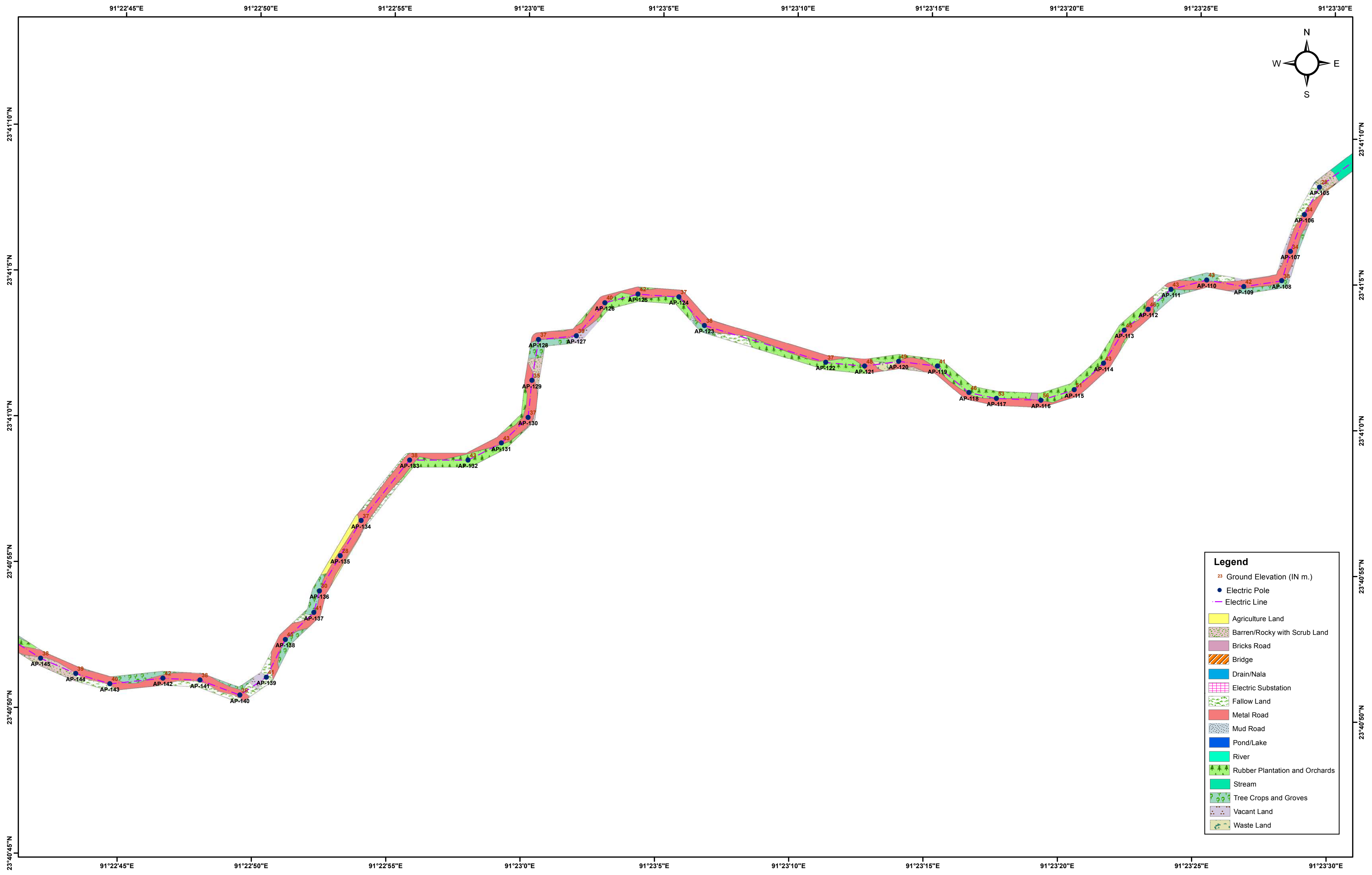


LAND USE/LAND COVER DETAILS OF EXISTING 33/11 KV TAKARJALA S/S TO PROPOSED 33/11 KV GOLAGHAT
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,

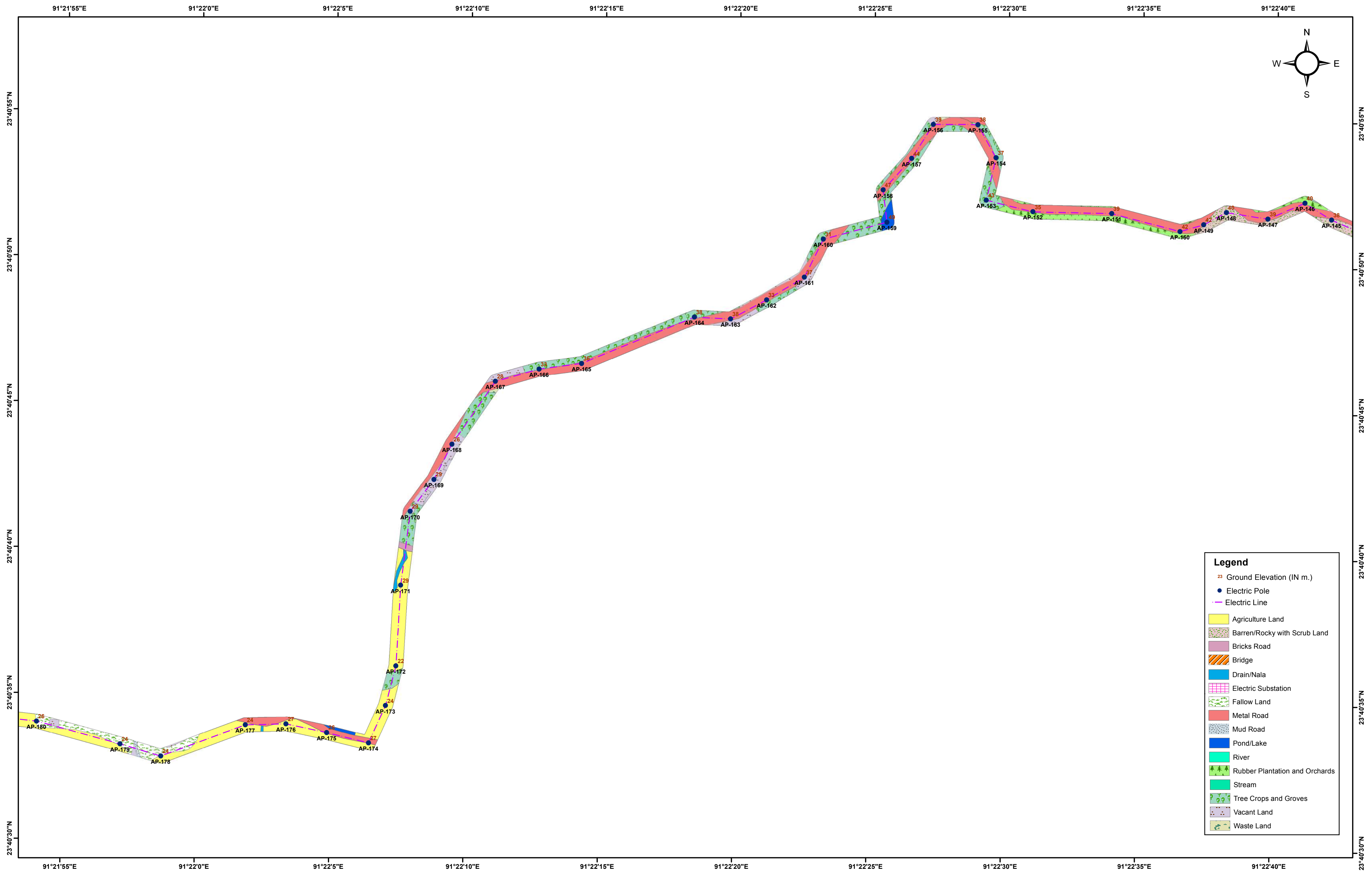


Legend	
23	Ground Elevation (IN m.)
●	Electric Pole
—	Electric Line
■	Agriculture Land
■	Barren/Rocky with Scrub Land
■	Bricks Road
■	Bridge
■	Drain/Nala
■	Electric Substation
■	Fallow Land
■	Metal Road
■	Mud Road
■	Pond/Lake
■	River
■	Rubber Plantation and Orchards
■	Stream
■	Tree Crops and Groves
■	Vacant Land
■	Waste Land

LAND USE/LAND COVER DETAILS OF EXISTING 33/11 KV TAKARJALA S/S TO PROPOSED 33/11 KV GOLAGHAT
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



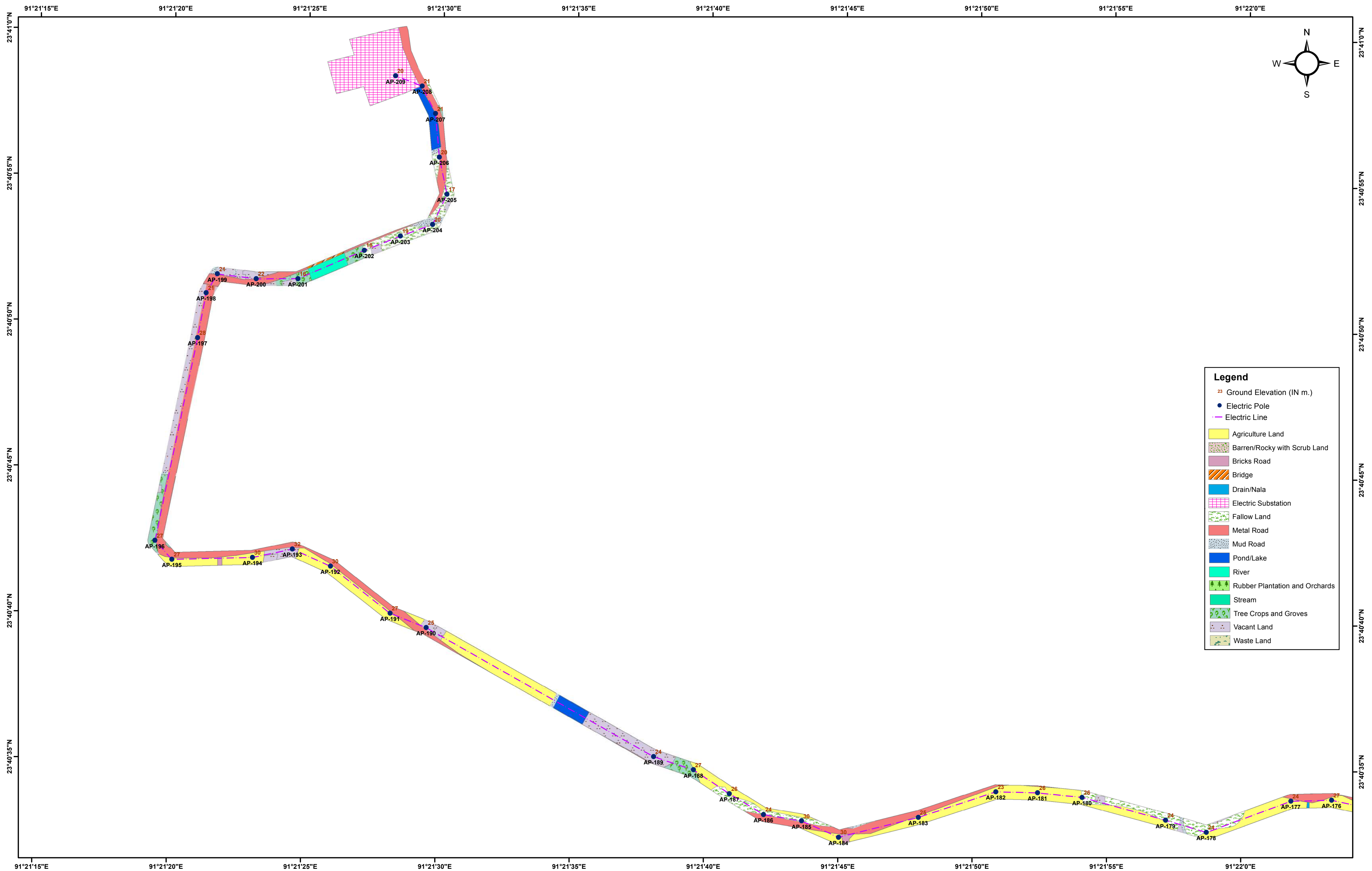
LAND USE/LAND COVER DETAILS OF EXISTING 33/11 KV TAKARJALA S/S TO PROPOSED 33/11 KV GOLAGHAT
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



Legend

- 23 Ground Elevation (IN m.)
- Electric Pole
- Electric Line
- Agriculture Land
- Barren/Rocky with Scrub Land
- Bricks Road
- Bridge
- Drain/Nala
- Electric Substation
- Fallow Land
- Metal Road
- Mud Road
- Pond/Lake
- River
- Rubber Plantation and Orchards
- Stream
- Tree Crops and Groves
- Vacant Land
- Waste Land

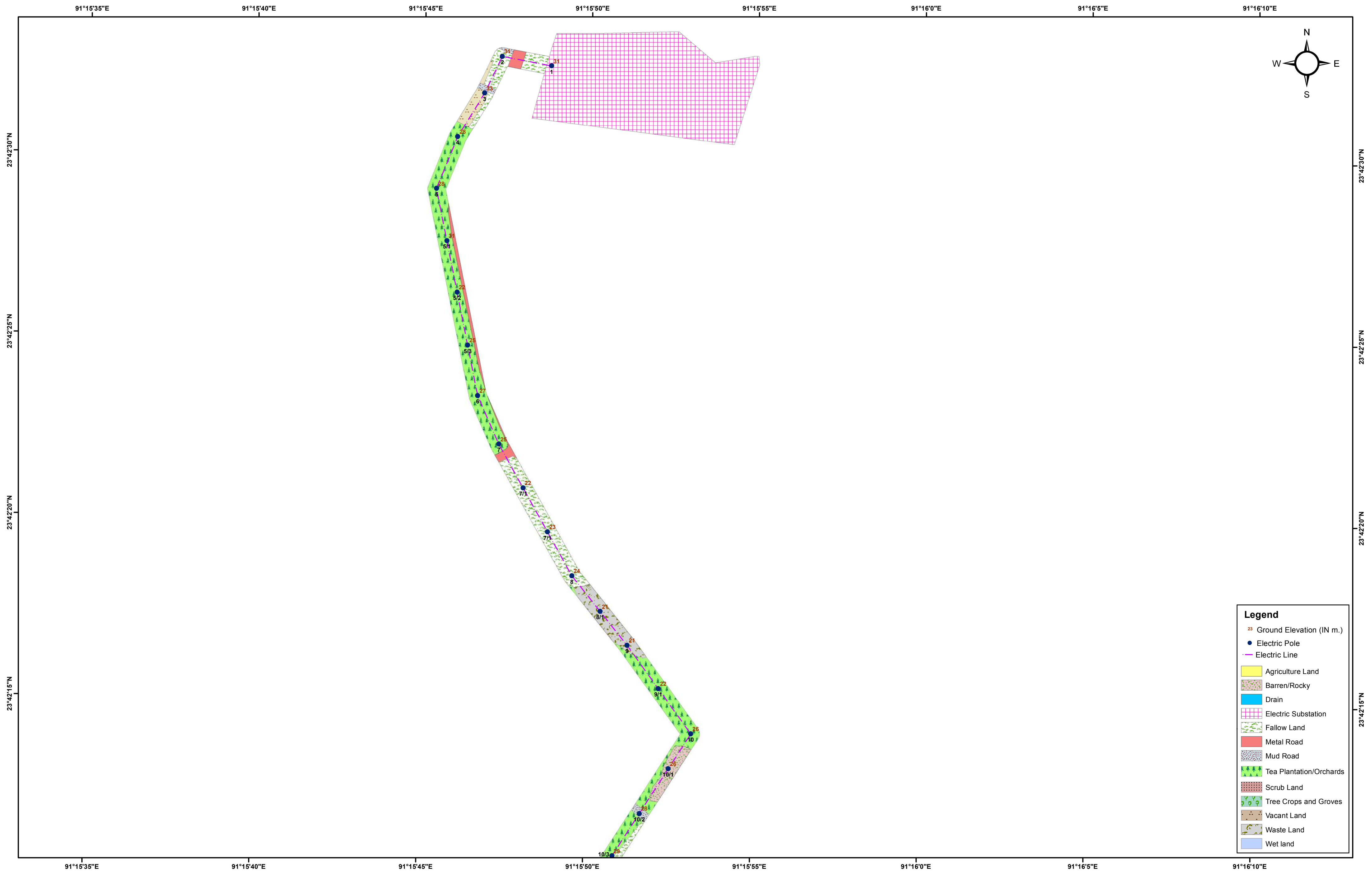
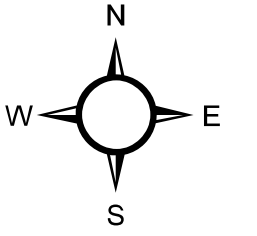
LAND USE/LAND COVER DETAILS OF EXISTING 33/11 KV TAKARJALA S/S TO PROPOSED 33/11 KV GOLAGHAT
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



Legend

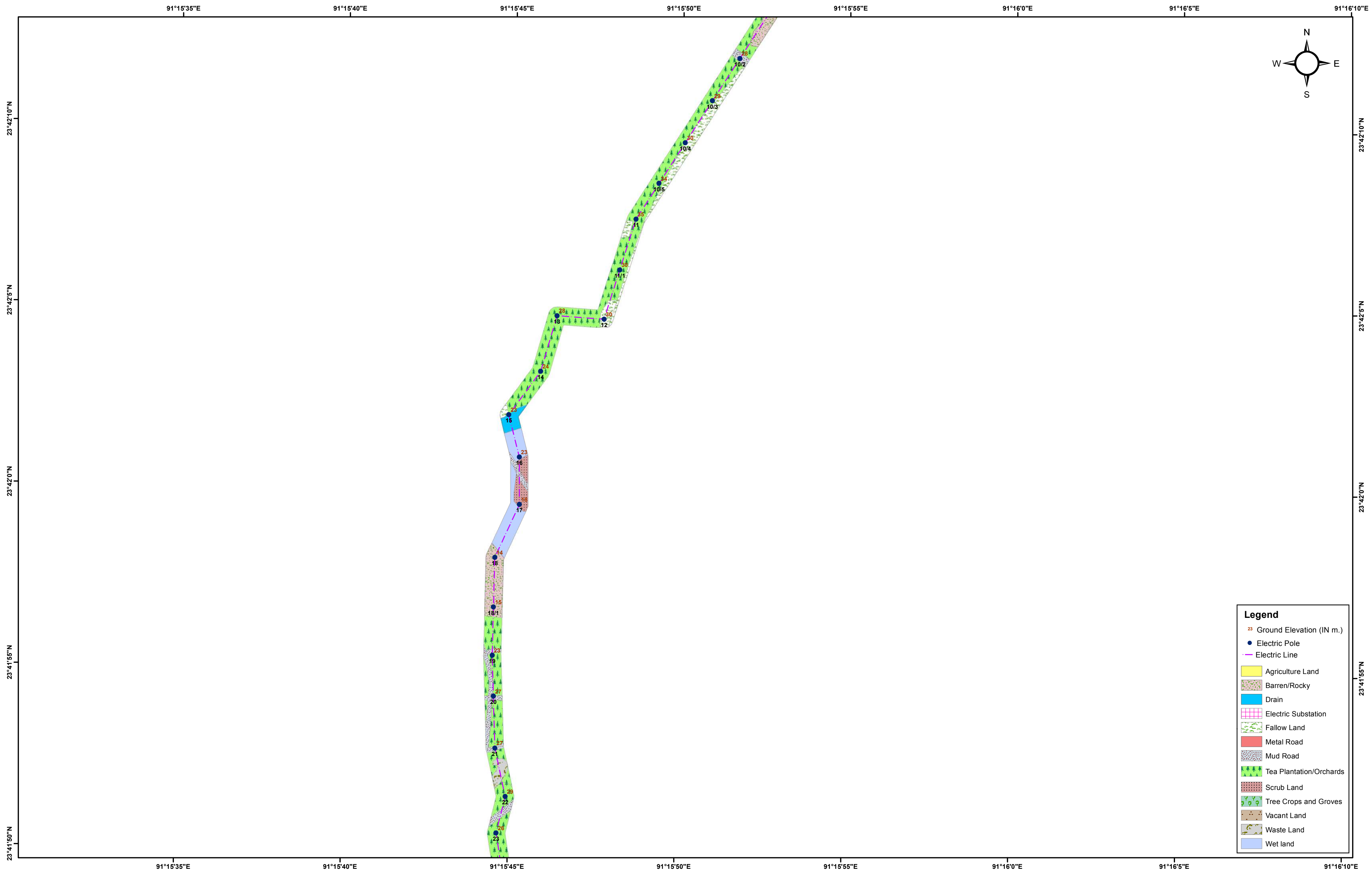
- 23 Ground Elevation (IN m.)
- Electric Pole
- Electric Line
- Agriculture Land
- Barren/Rocky with Scrub Land
- Bricks Road
- Bridge
- Drain/Nala
- Electric Substation
- Fallow Land
- Metal Road
- Mud Road
- Pond/Lake
- River
- Rubber Plantation and Orchards
- Stream
- Tree Crops and Groves
- Vacant Land
- Waste Land

LAND USE/LAND COVER DETAILS OF PROPOSED EXISTING 132/33 KV GOKULNAGAR S/S TO PROPOSED 33/11 KV DURGANAGAR S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



Legend	
²³	Ground Elevation (IN m.)
●	Electric Pole
—	Electric Line
[Yellow]	Agriculture Land
[Dotted]	Barren/Rocky
[Blue]	Drain
[Pink Grid]	Electric Substation
[Green]	Fallow Land
[Red]	Metal Road
[Grey]	Mud Road
[Green Trees]	Tea Plantation/Orchards
[Brown]	Scrub Land
[Green]	Tree Crops and Groves
[Light Green]	Vacant Land
[Light Blue]	Waste Land
[Blue]	Wet land

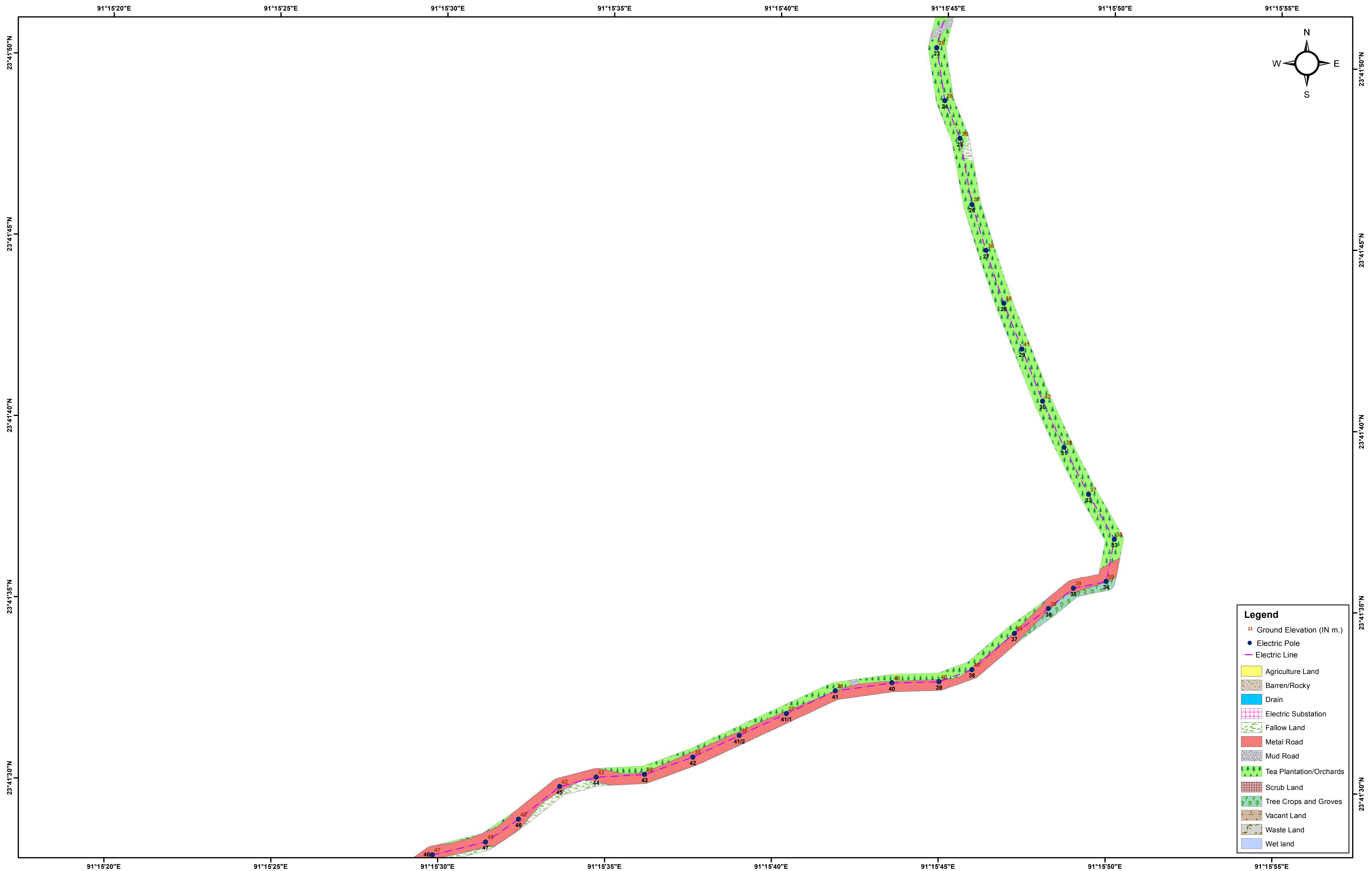
LAND USE/LAND COVER DETAILS OF PROPOSED EXISTING 132/33 KV GOKULNAGAR S/S TO PROPOSED 33/11 KV DURGANAGAR S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



Legend

23	Ground Elevation (IN m.)
●	Electric Pole
---	Electric Line
[Yellow]	Agriculture Land
[Stippled]	Barren/Rocky
[Blue]	Drain
[Pink Grid]	Electric Substation
[Green]	Fallow Land
[Red]	Metal Road
[Grey]	Mud Road
[Green Trees]	Tea Plantation/Orchards
[Brown]	Scrub Land
[Green Trees]	Tree Crops and Groves
[Brown]	Vacant Land
[Light Green]	Waste Land
[Light Blue]	Wet land

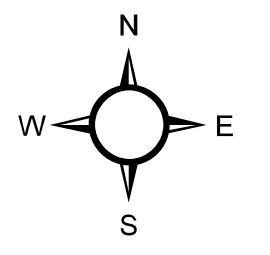
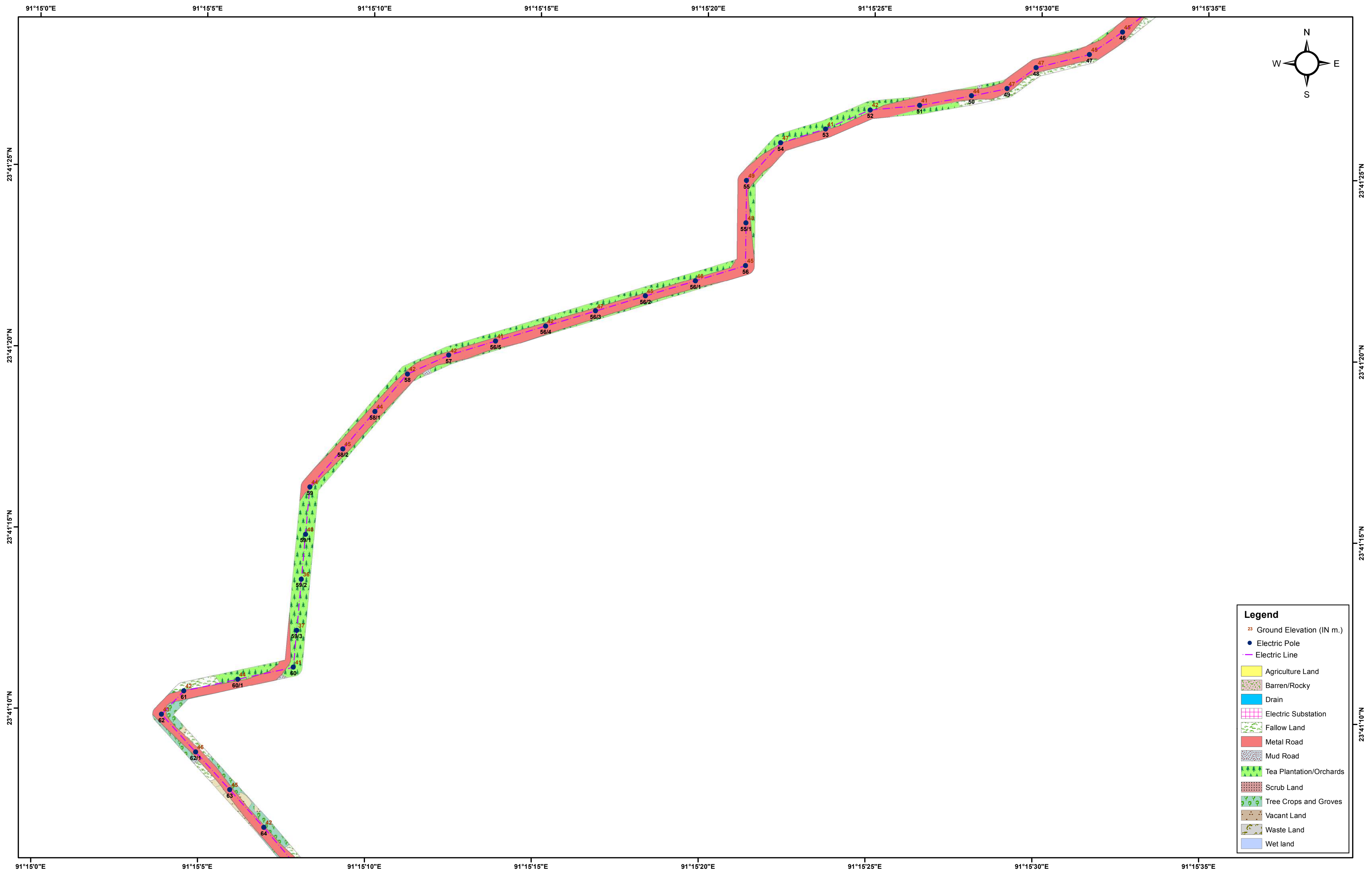
LAND USE/LAND COVER DETAILS OF PROPOSED EXISTING 132/33 KV GOKULNAGAR S/S TO PROPOSED 33/11 KV DURGANAGAR S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



Legend

23	Ground Elevation (IN m.)
●	Electric Pole
—	Electric Line
■	Agriculture Land
■	Barren/Rocky
■	Drain
■	Electric Substation
■	Fallow Land
■	Metal Road
■	Mud Road
■	Tea Plantation/Orchards
■	Scrub Land
■	Tree Crops and Groves
■	Vacant Land
■	Waste Land
■	Wet land

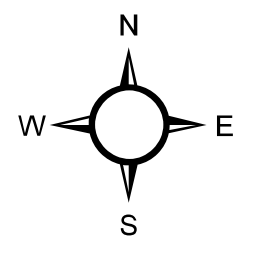
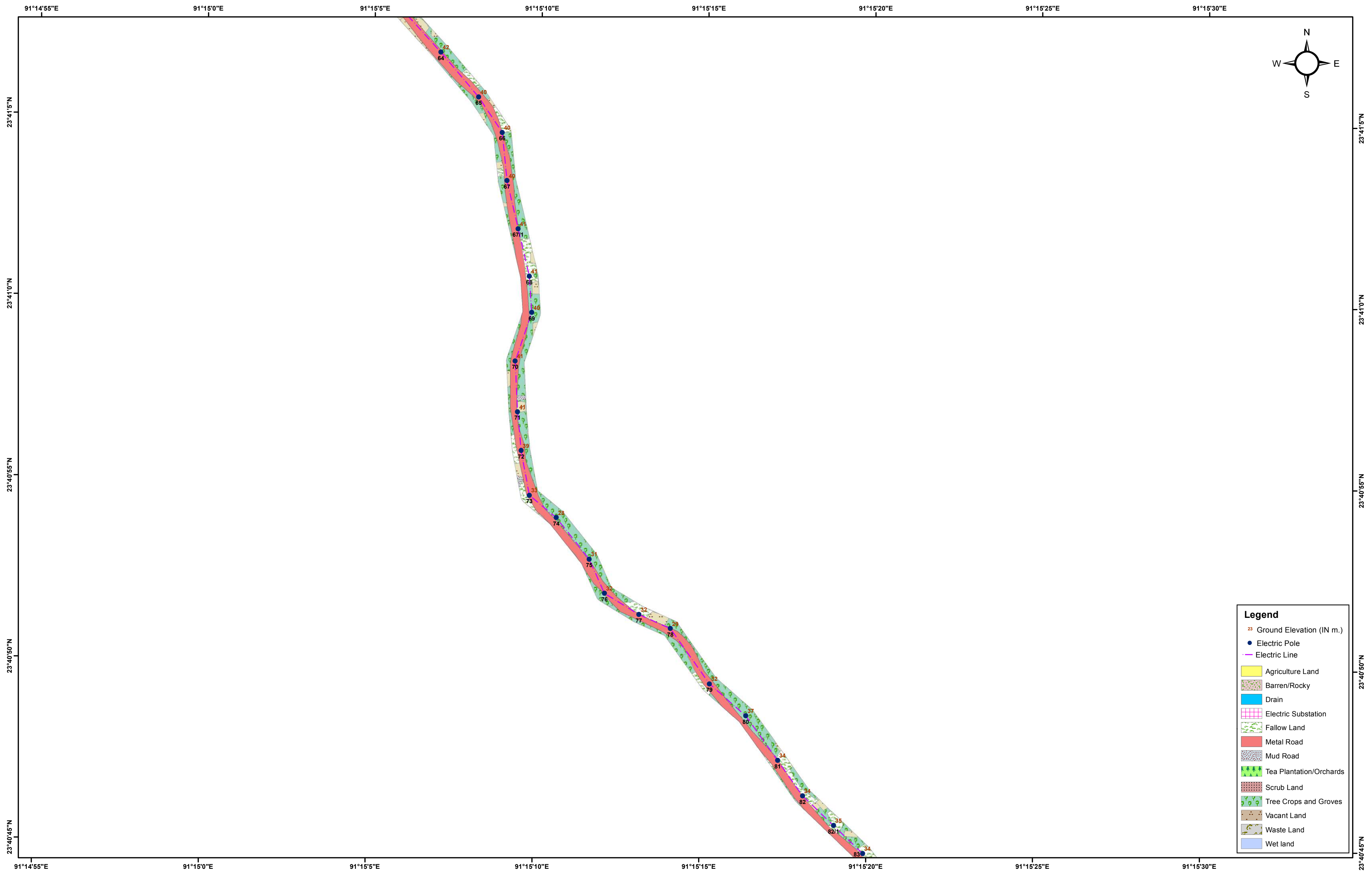
LAND USE/LAND COVER DETAILS OF PROPOSED EXISTING 132/33 KV GOKULNAGAR S/S TO PROPOSED 33/11 KV DURGANAGAR S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



Legend

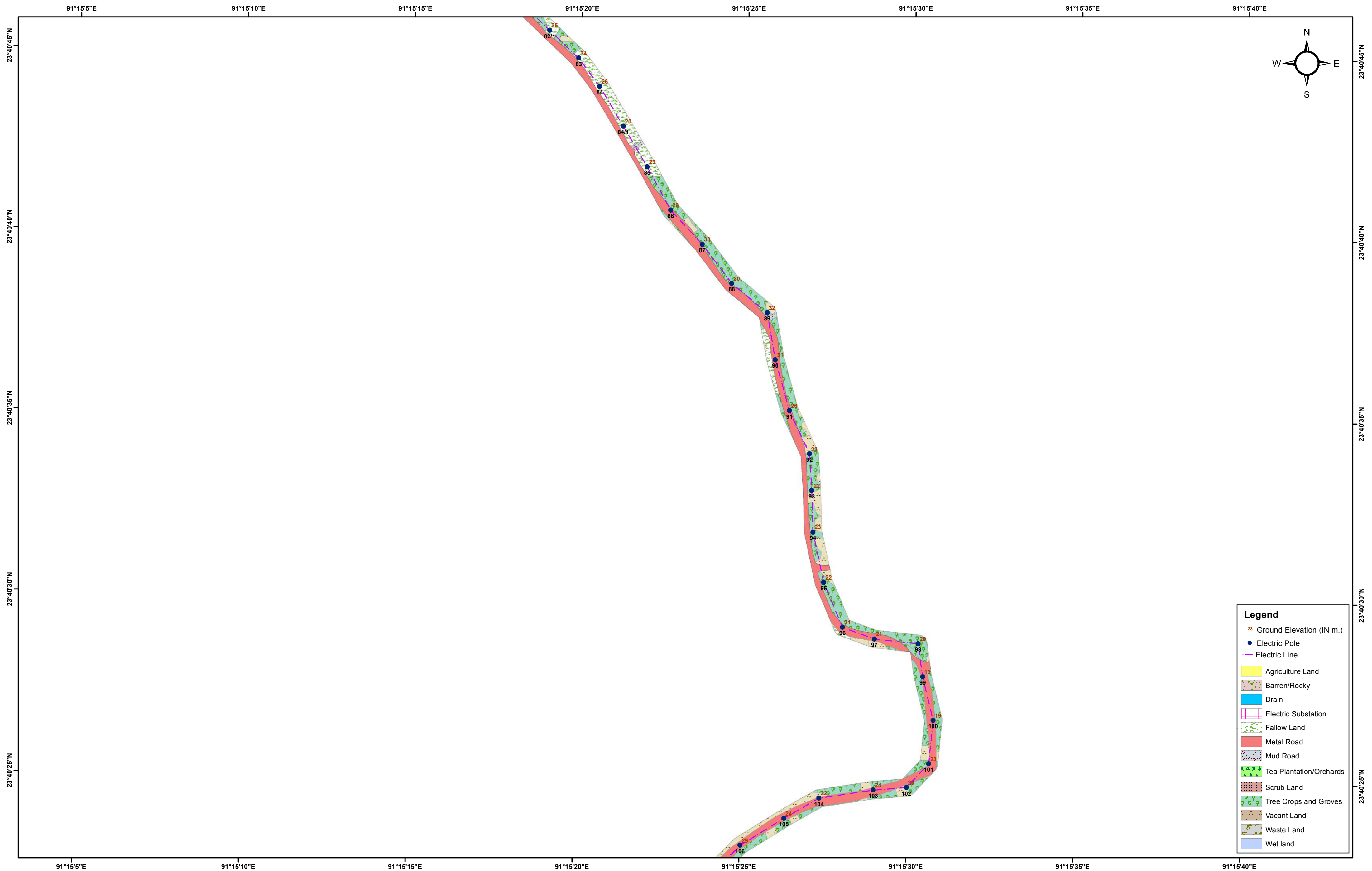
- 23 Ground Elevation (IN m.)
- Electric Pole
- Electric Line
- Agriculture Land
- Barren/Rocky
- Drain
- Electric Substation
- Fallow Land
- Metal Road
- Mud Road
- Tea Plantation/Orchards
- Scrub Land
- Tree Crops and Groves
- Vacant Land
- Waste Land
- Wet land

LAND USE/LAND COVER DETAILS OF PROPOSED EXISTING 132/33 KV GOKULNAGAR S/S TO PROPOSED 33/11 KV DURGANAGAR S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



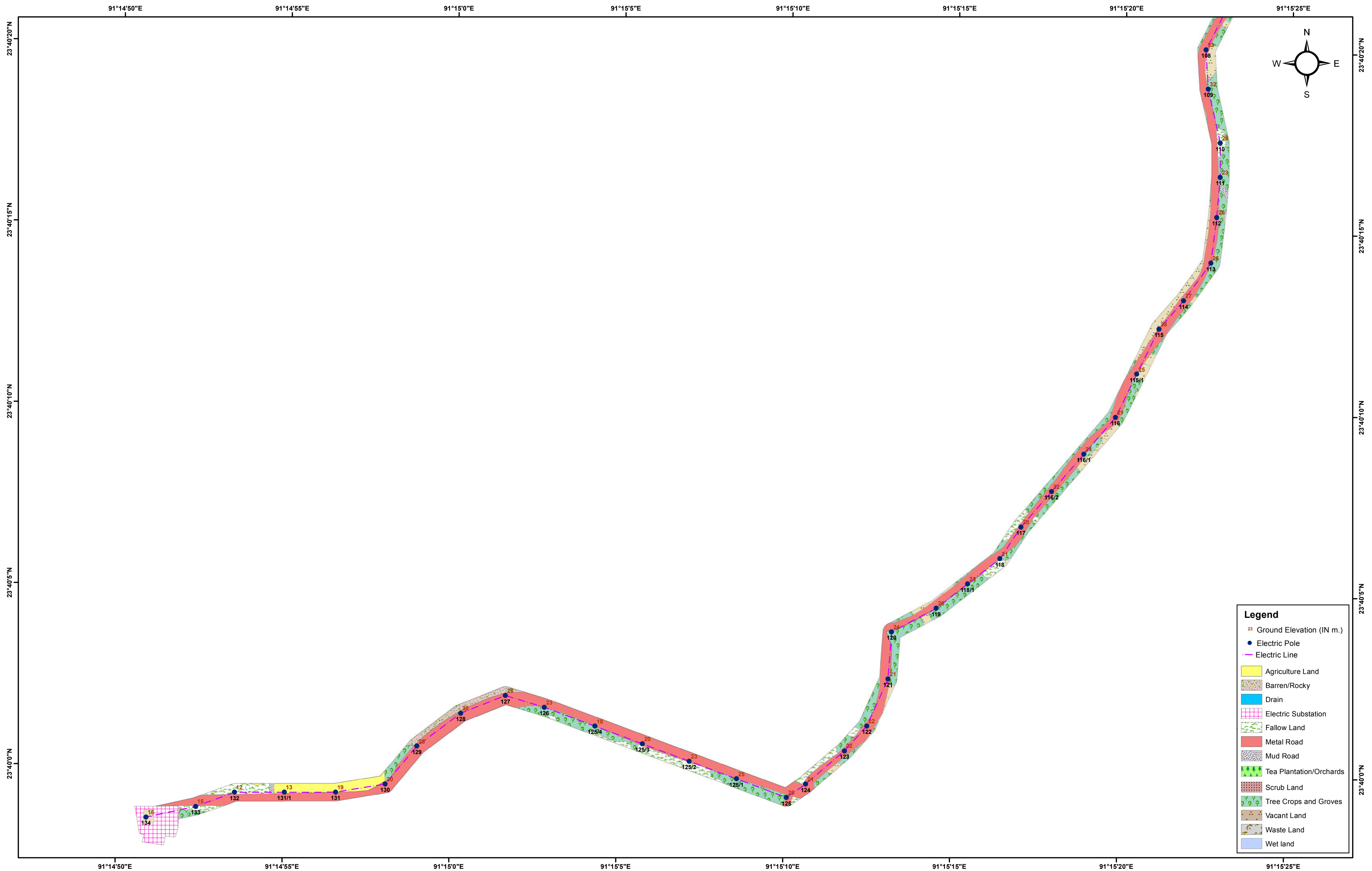
Legend	
23	Ground Elevation (IN m.)
●	Electric Pole
—	Electric Line
■	Agriculture Land
■	Barren/Rocky
■	Drain
■	Electric Substation
■	Fallow Land
■	Metal Road
■	Mud Road
■	Tea Plantation/Orchards
■	Scrub Land
■	Tree Crops and Groves
■	Vacant Land
■	Waste Land
■	Wet land

LAND USE/LAND COVER DETAILS OF PROPOSED EXISTING 132/33 KV GOKULNAGAR S/S TO PROPOSED 33/11 KV DURGANAGAR S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,

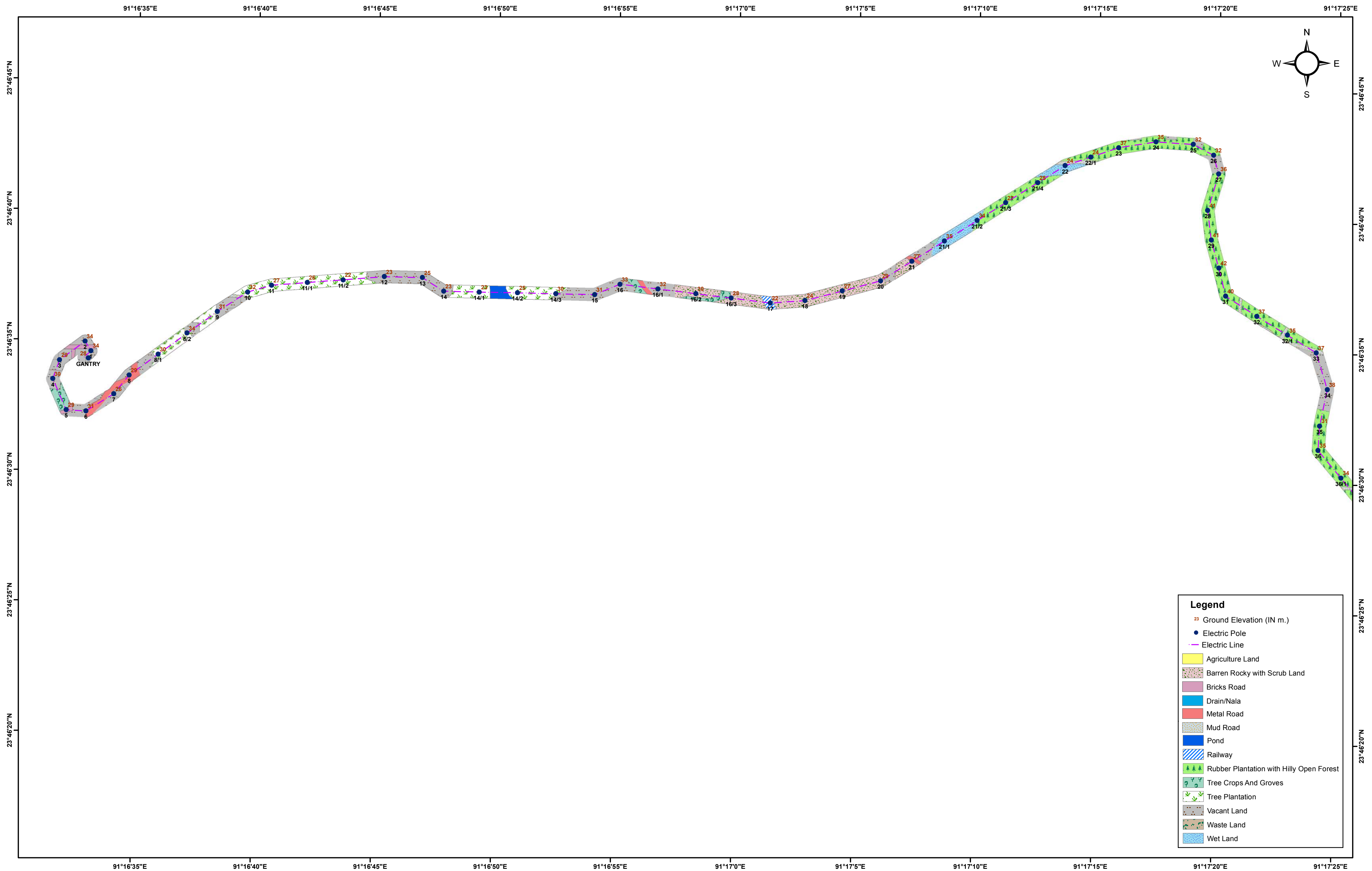


- Legend**
- 23 Ground Elevation (IN m.)
 - Electric Pole
 - Electric Line
 - Agriculture Land
 - Barren/Rocky
 - Drain
 - Electric Substation
 - Fallow Land
 - Metal Road
 - Mud Road
 - Tea Plantation/Orchards
 - Scrub Land
 - Tree Crops and Groves
 - Vacant Land
 - Waste Land
 - Wet land

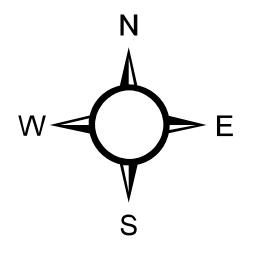
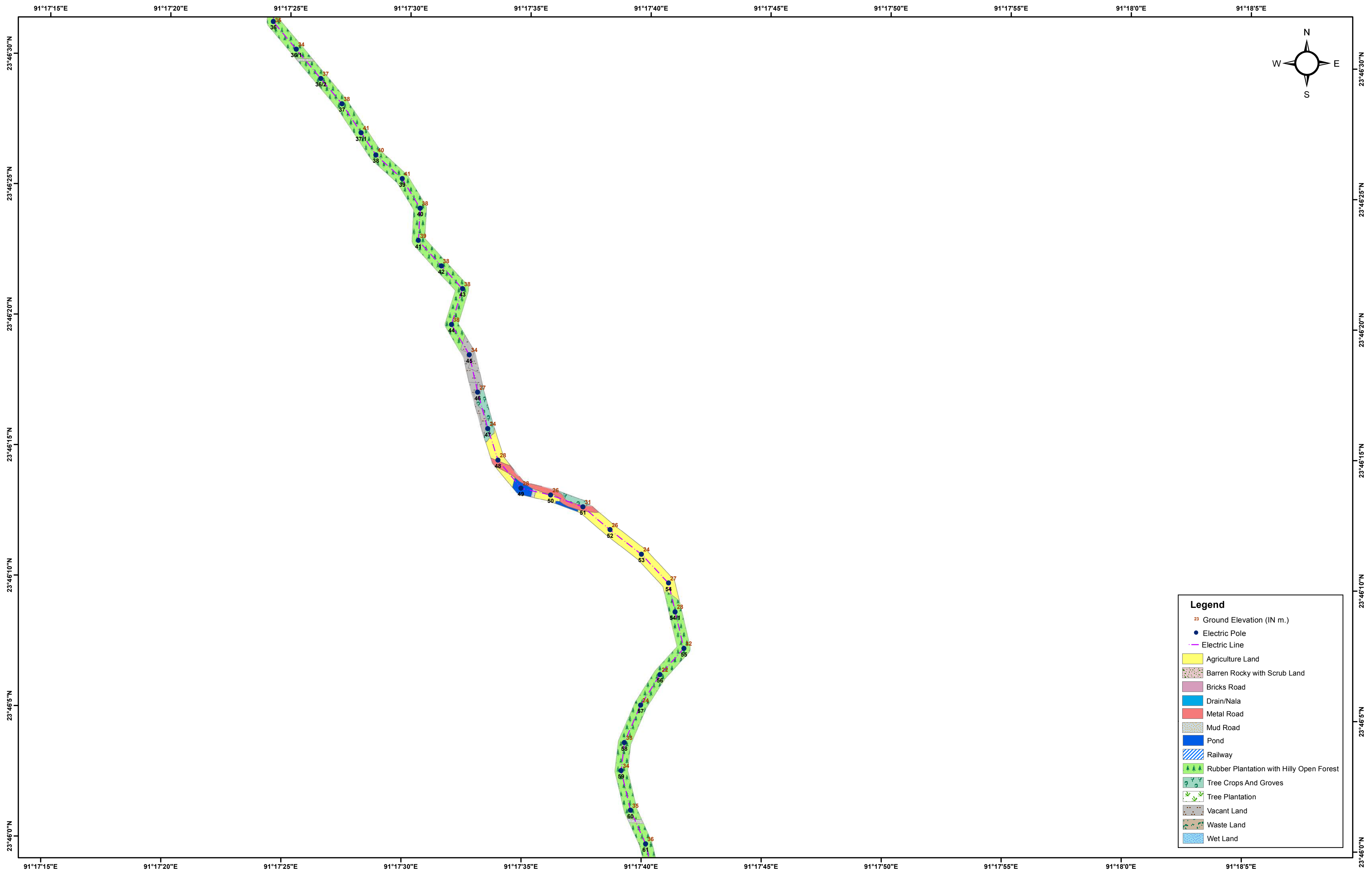
LAND USE/LAND COVER DETAILS OF PROPOSED EXISTING 132/33 KV GOKULNAGAR S/S TO PROPOSED 33/11 KV DURGANAGAR S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



LAND USE/LAND COVER DETAILS OF EXISTING 33/11 KV MADHUPUR S/S TO PROPOSED 33/11 KV DURGANAGAR S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,

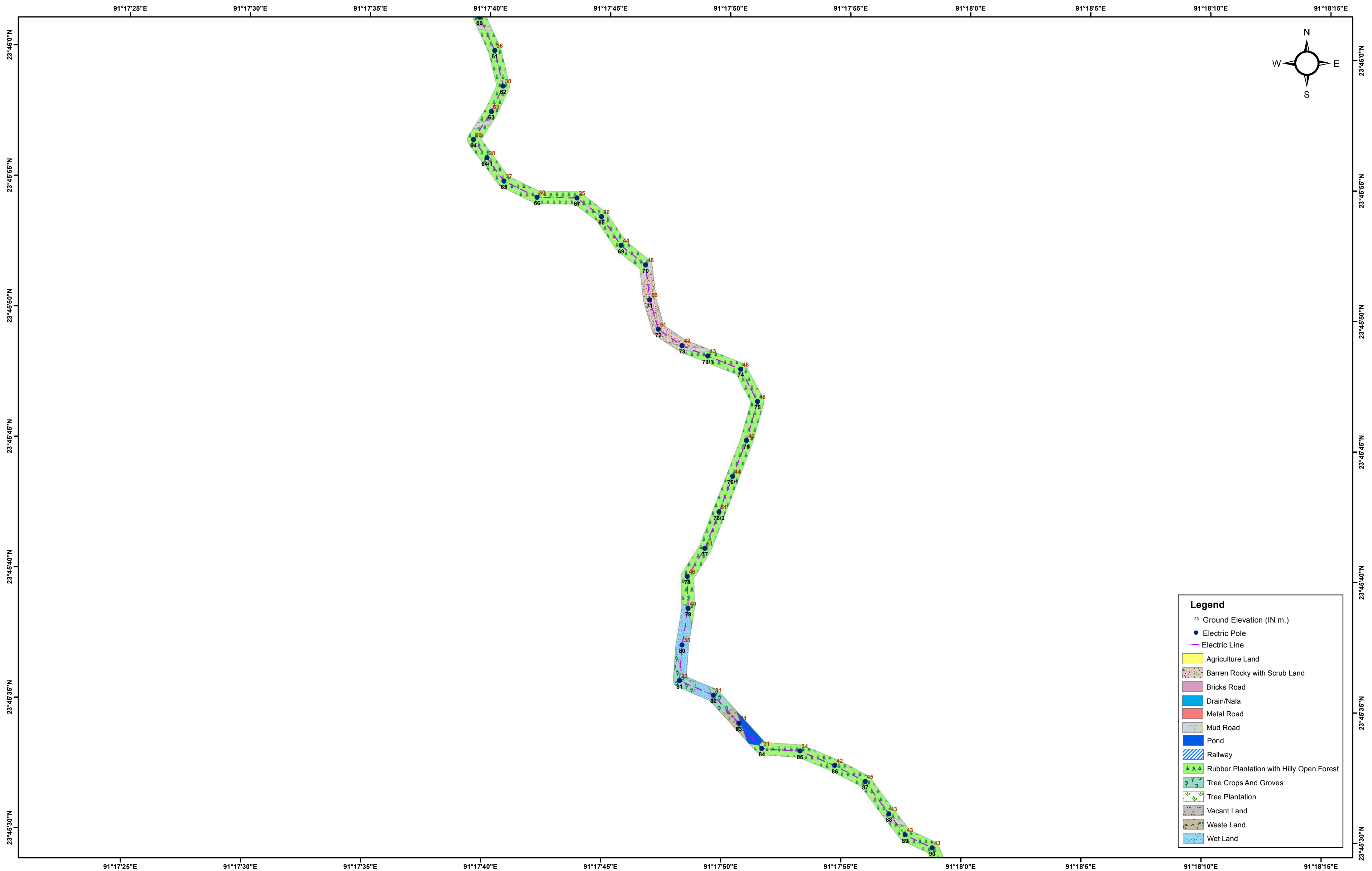


LAND USE/LAND COVER DETAILS OF EXISTING 33/11 KV MADHUPUR S/S TO PROPOSED 33/11 KV DURGANAGAR S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,

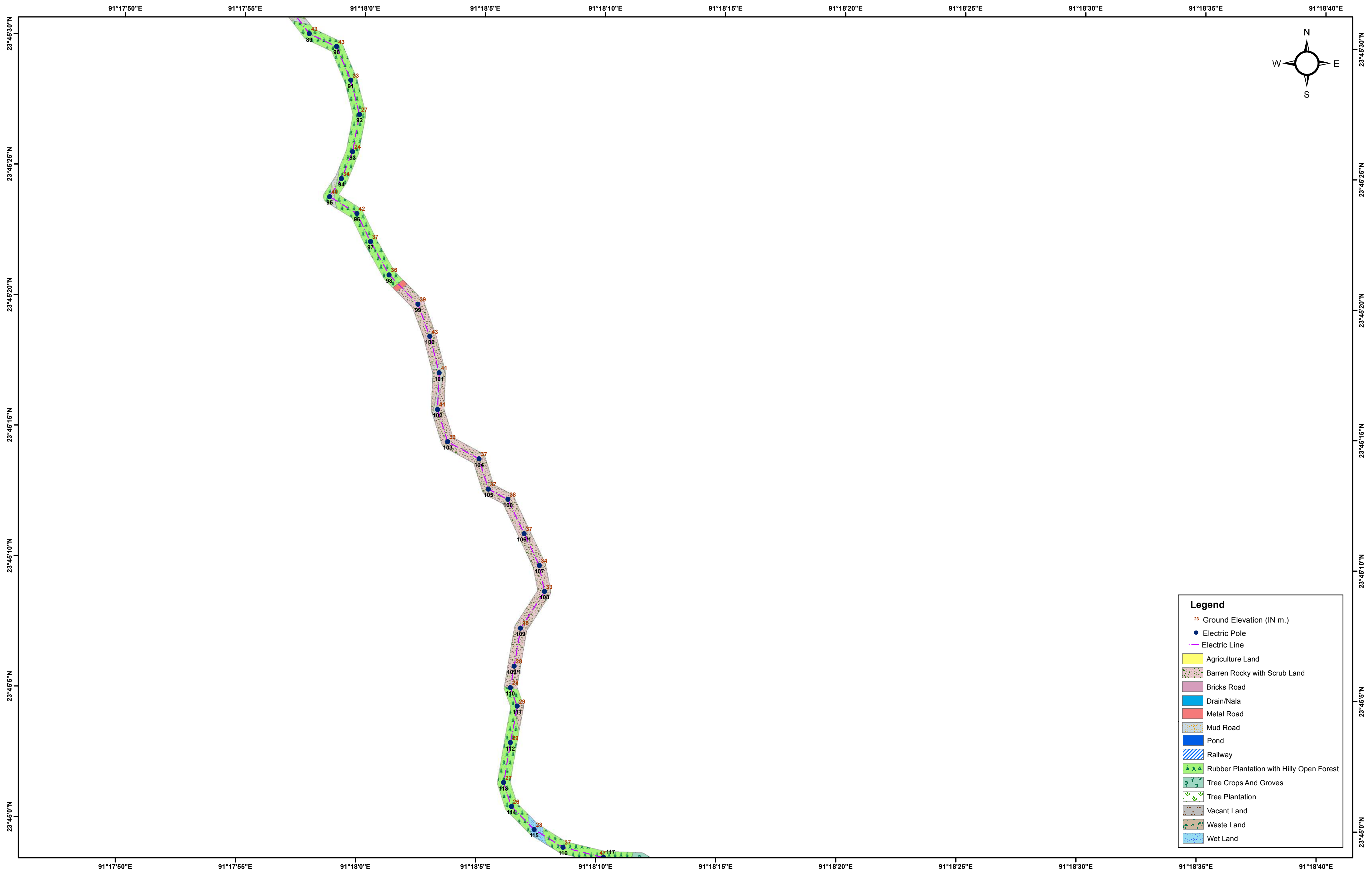


- Legend**
- 23 Ground Elevation (IN m.)
 - Electric Pole
 - Electric Line
 - Agriculture Land
 - Barren Rocky with Scrub Land
 - Bricks Road
 - Drain/Nala
 - Metal Road
 - Mud Road
 - Pond
 - Railway
 - Rubber Plantation with Hilly Open Forest
 - Tree Crops And Groves
 - Tree Plantation
 - Vacant Land
 - Waste Land
 - Wet Land

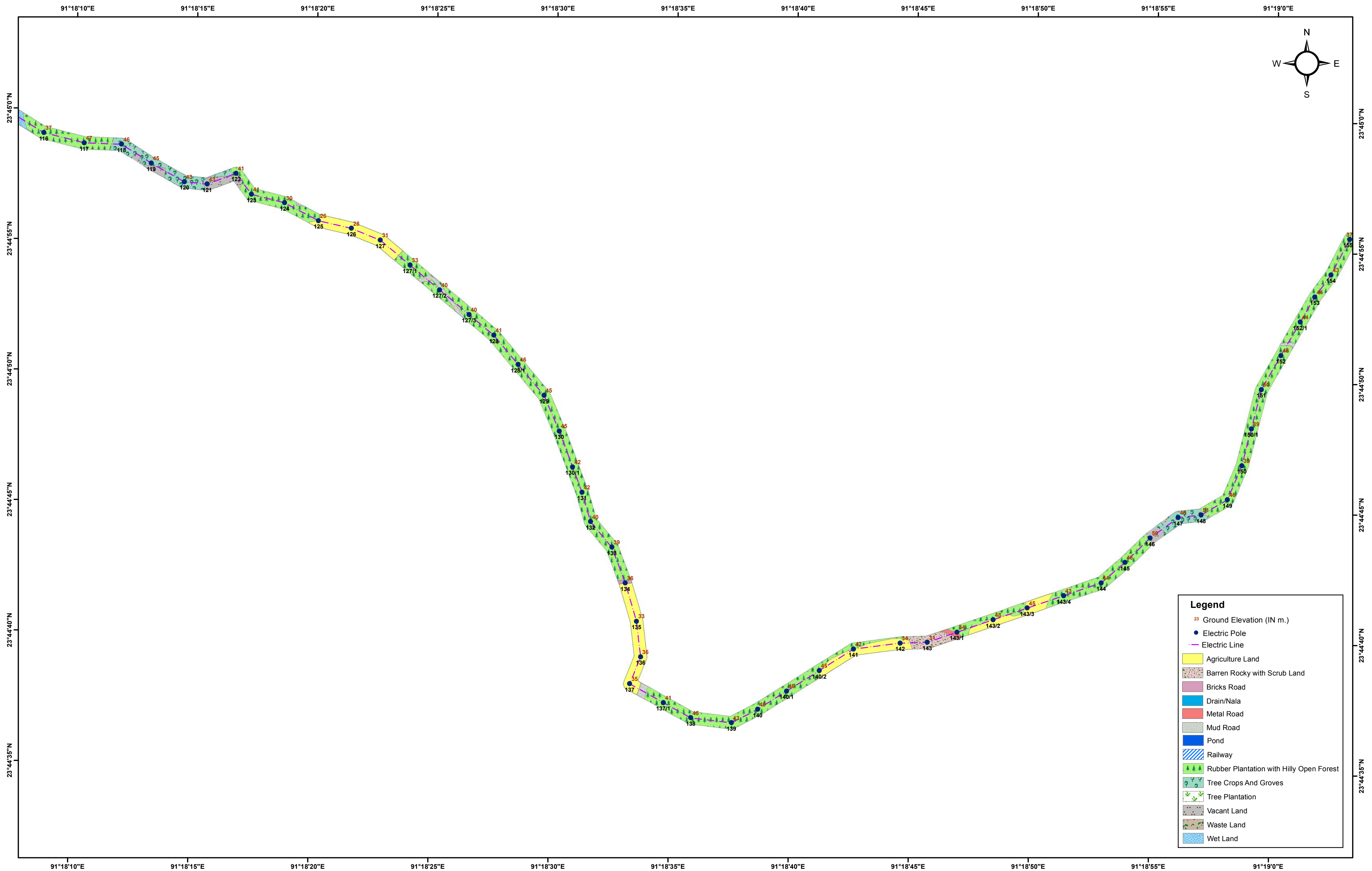
LAND USE/LAND COVER DETAILS OF EXISTING 33/11 KV MADHUPUR S/S TO PROPOSED 33/11 KV DURGANAGAR S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



LAND USE/LAND COVER DETAILS OF EXISTING 33/11 KV MADHUPUR S/S TO PROPOSED 33/11 KV DURGANAGAR S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



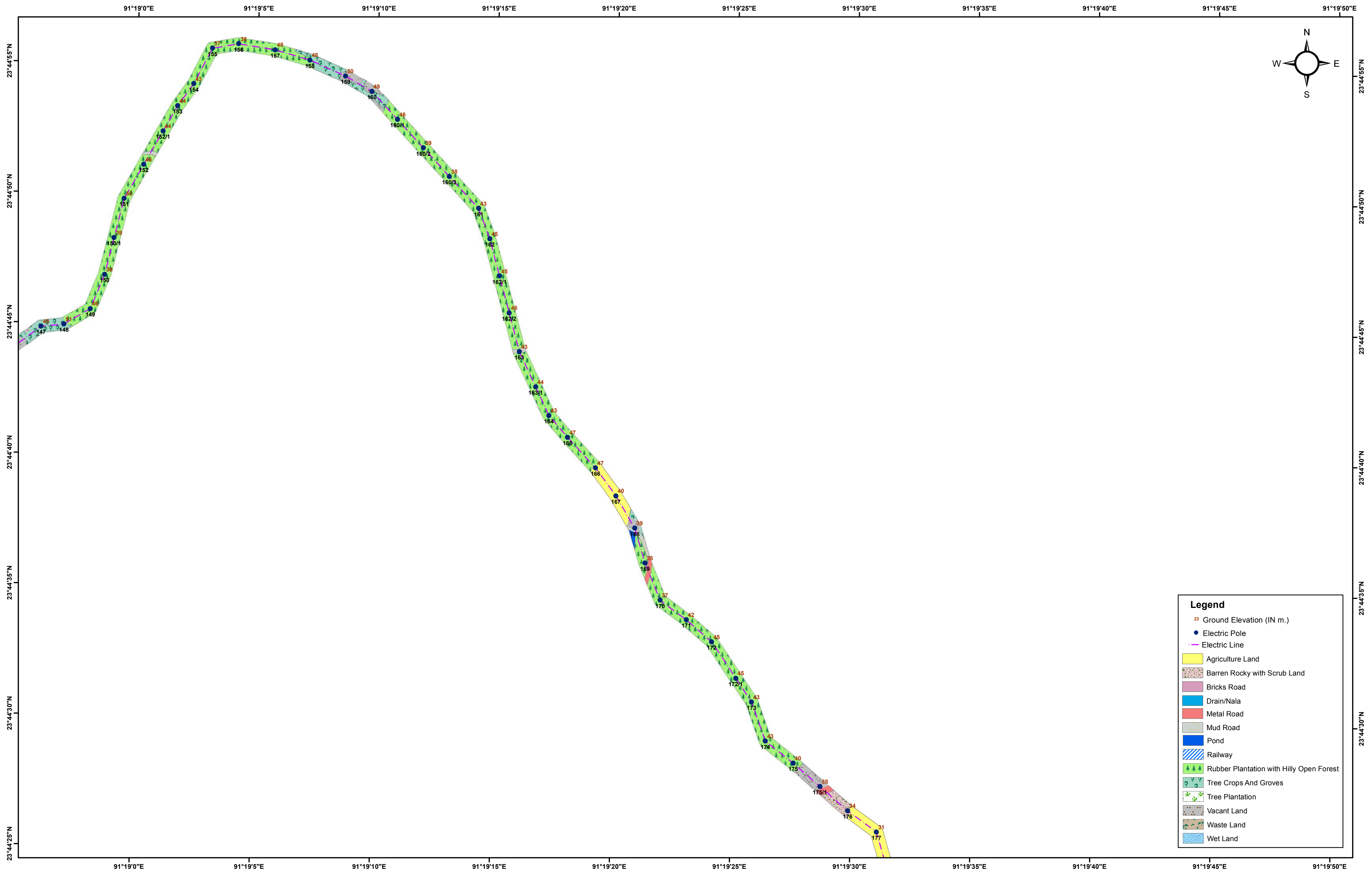
LAND USE/LAND COVER DETAILS OF EXISTING 33/11 KV MADHUPUR S/S TO PROPOSED 33/11 KV DURGANAGAR S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



Legend

- 23 Ground Elevation (IN m.)
- Electric Pole
- Electric Line
- Agriculture Land
- Barren Rocky with Scrub Land
- Bricks Road
- Drain/Nala
- Metal Road
- Mud Road
- Pond
- Railway
- Rubber Plantation with Hilly Open Forest
- Tree Crops And Groves
- Tree Plantation
- Vacant Land
- Waste Land
- Wet Land

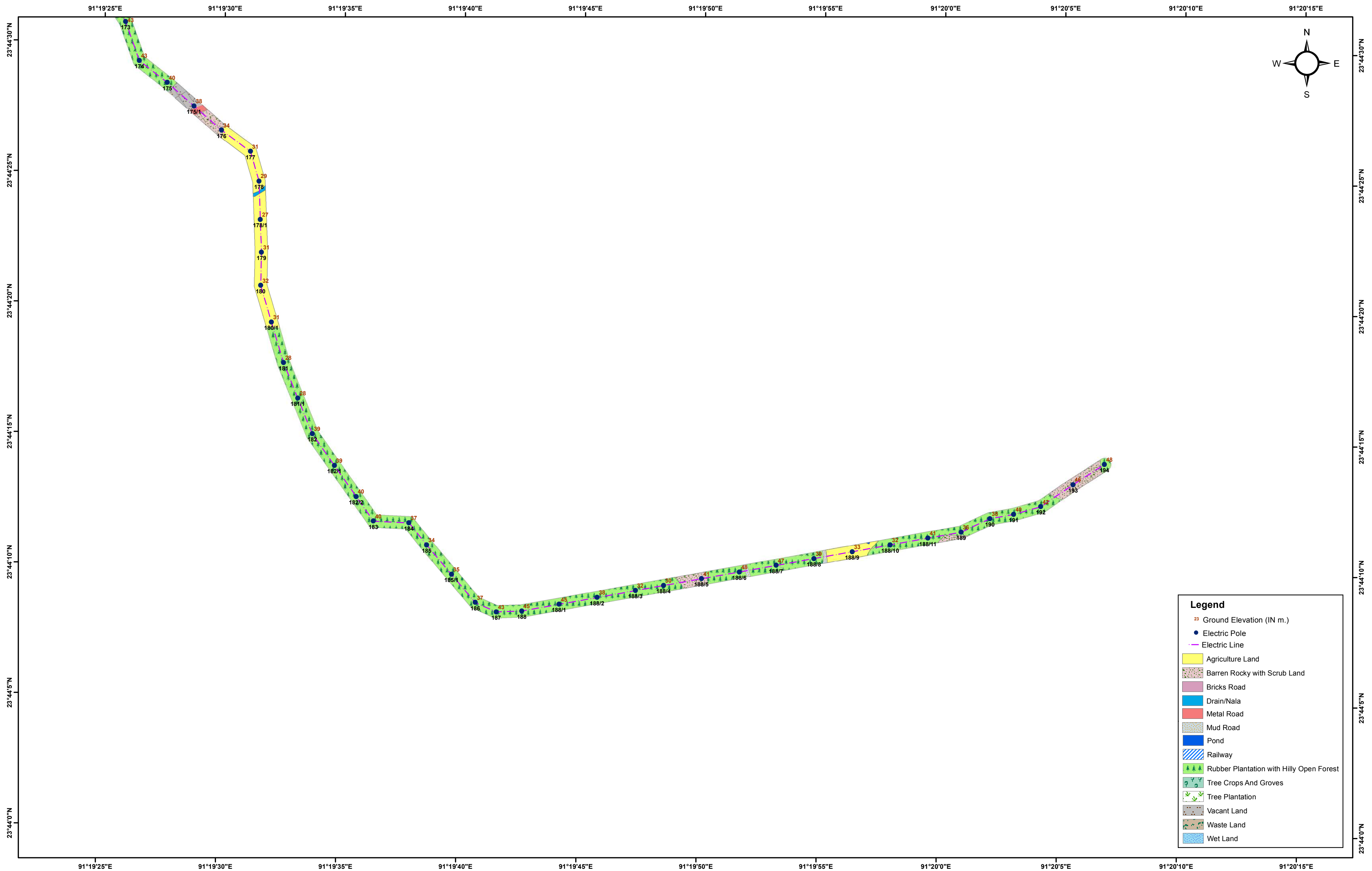
LAND USE/LAND COVER DETAILS OF EXISTING 33/11 KV MADHUPUR S/S TO PROPOSED 33/11 KV DURGANAGAR S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



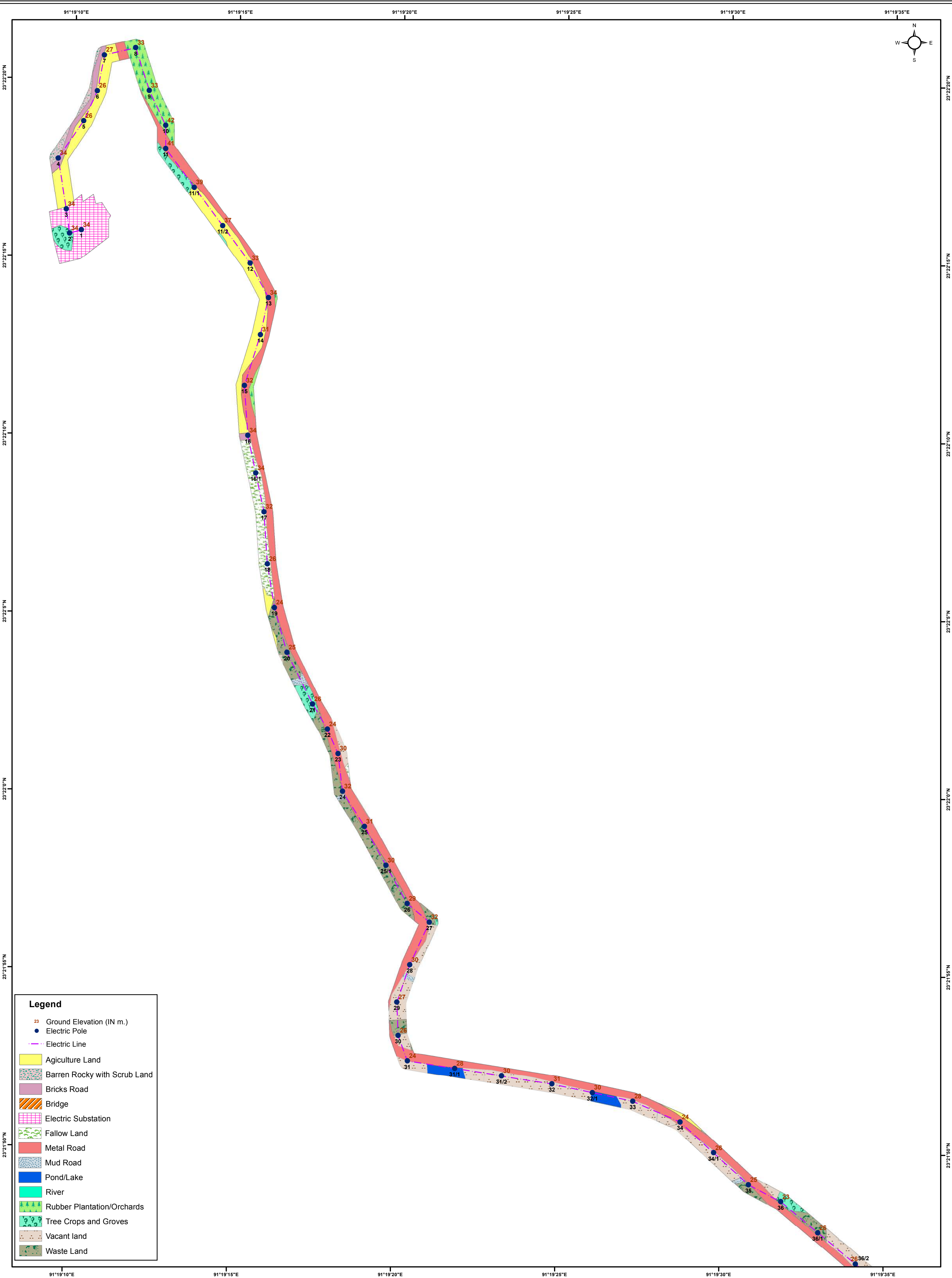
Legend

- 23 Ground Elevation (IN m.)
- Electric Pole
- Electric Line
- Agriculture Land
- Barren Rocky with Scrub Land
- Bricks Road
- Drain/Nala
- Metal Road
- Mud Road
- Pond
- Railway
- Rubber Plantation with Hilly Open Forest
- Tree Crops And Groves
- Tree Plantation
- Vacant Land
- Waste Land
- Wet Land

LAND USE/LAND COVER DETAILS OF EXISTING 33/11 KV MADHUPUR S/S TO PROPOSED 33/11 KV DURGANAGAR S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



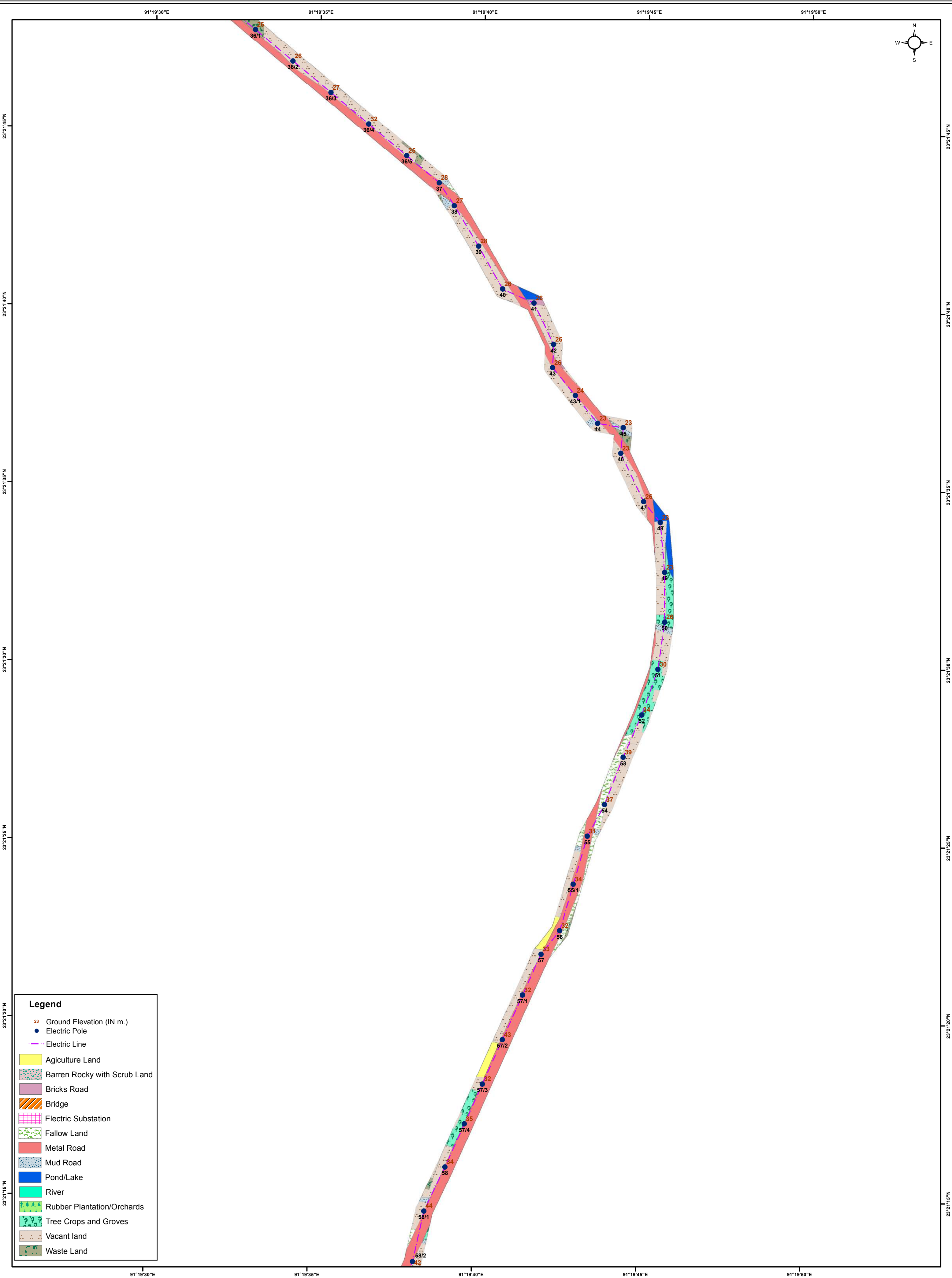
LAND USE/LAND COVER DETAILS OF EXISTING 33/11KV KATHALIA S/S TO PROPOSED 33/11 KV NIDAYA S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



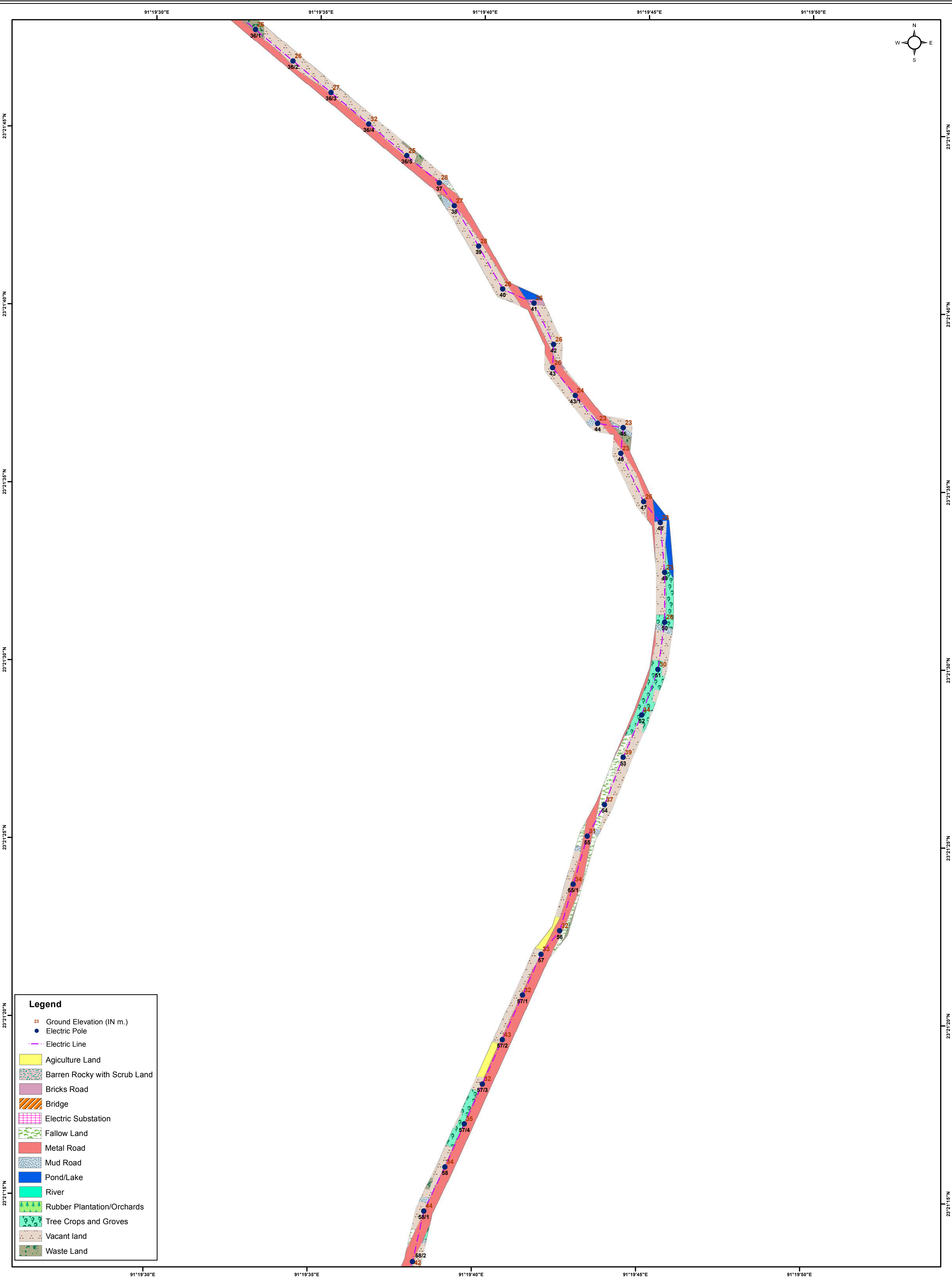
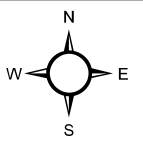
Legend

- 23 Ground Elevation (IN m.)
- Electric Pole
- - - Electric Line
- Agriculture Land
- Barren Rocky with Scrub Land
- Bricks Road
- Bridge
- Electric Substation
- Fallow Land
- Metal Road
- Mud Road
- Pond/Lake
- River
- Rubber Plantation/Orchards
- Tree Crops and Groves
- Vacant land
- Waste Land

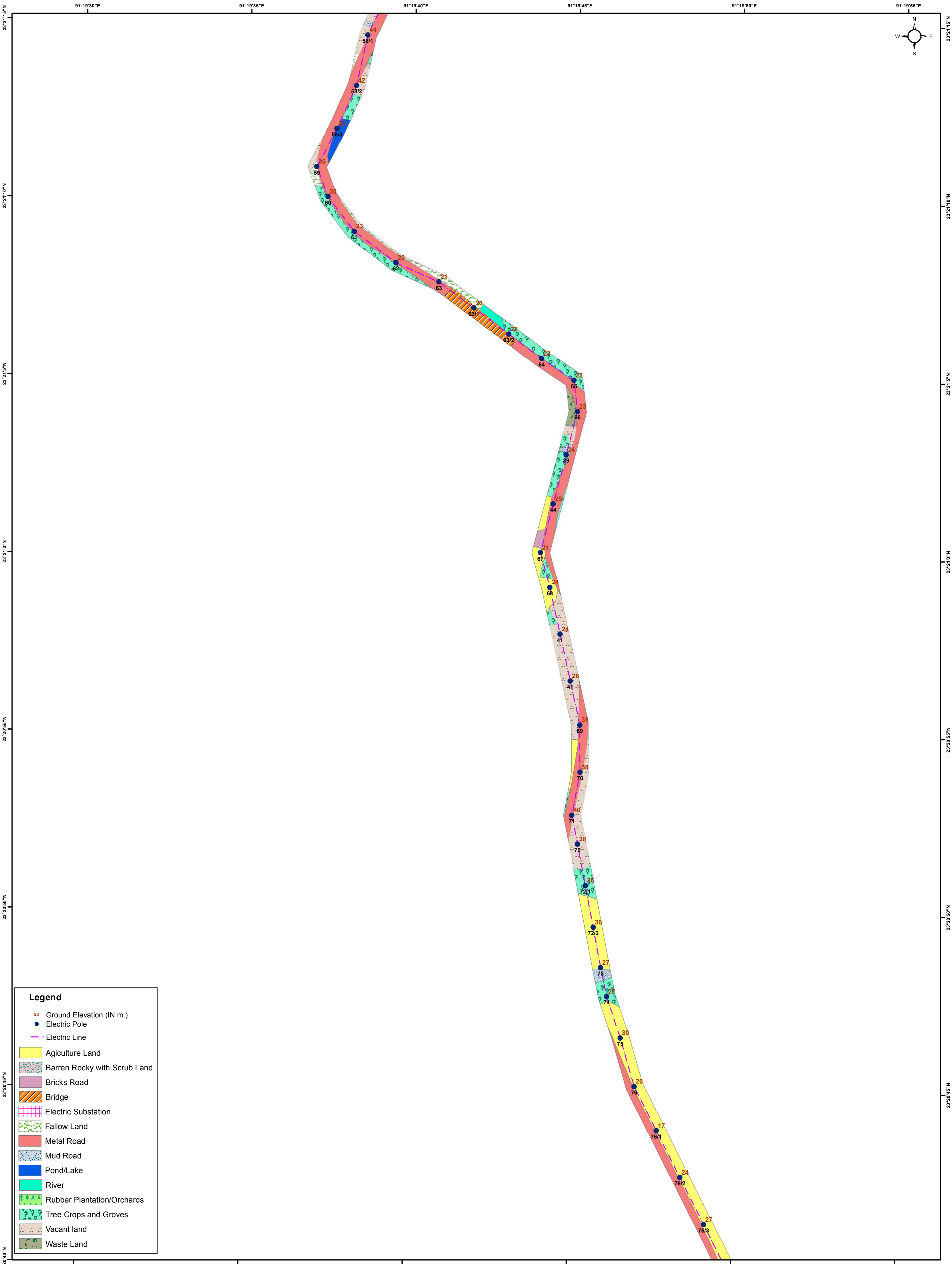
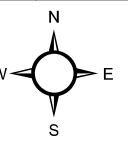
LAND USE/LAND COVER DETAILS OF EXISTING 33/11KV KATHALIA S/S TO PROPOSED 33/11 KV NIDAYA S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



- Legend**
- 23 Ground Elevation (IN m.)
 - Electric Pole
 - Electric Line
 - Agiculture Land
 - Barren Rocky with Scrub Land
 - Bricks Road
 - Bridge
 - Electric Substation
 - Fallow Land
 - Metal Road
 - Mud Road
 - Pond/Lake
 - River
 - Rubber Plantation/Orchards
 - Tree Crops and Groves
 - Vacant land
 - Waste Land



LAND USE/LAND COVER DETAILS OF EXISTING 33/11KV KATHALIA S/S TO PROPOSED 33/11 KV NIDAYA S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



Legend

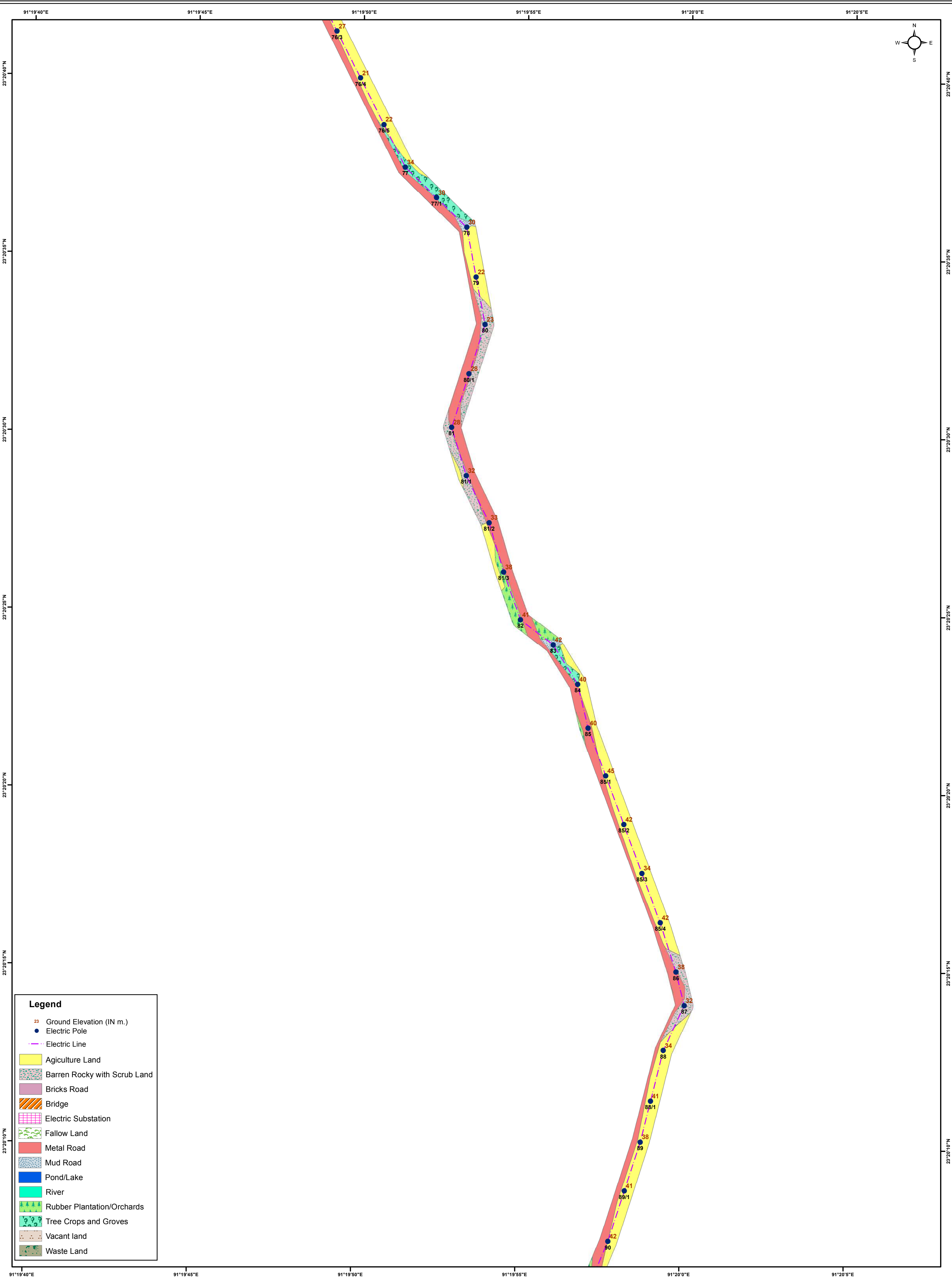
- 23 Ground Elevation (IN m.)
- Electric Pole
- Electric Line
- Agriculture Land
- Barren Rocky with Scrub Land
- Bricks Road
- Bridge
- Electric Substation
- Fallow Land
- Metal Road
- Mud Road
- Pond/Lake
- River
- Rubber Plantation/Orchards
- Tree Crops and Groves
- Vacant land
- Waste Land

23°21'15"N
23°21'10"N
23°21'05"N
23°21'00"N
23°20'55"N
23°20'50"N
23°20'45"N
23°20'40"N

23°21'15"N
23°21'10"N
23°21'05"N
23°21'00"N
23°20'55"N
23°20'50"N
23°20'45"N
23°20'40"N

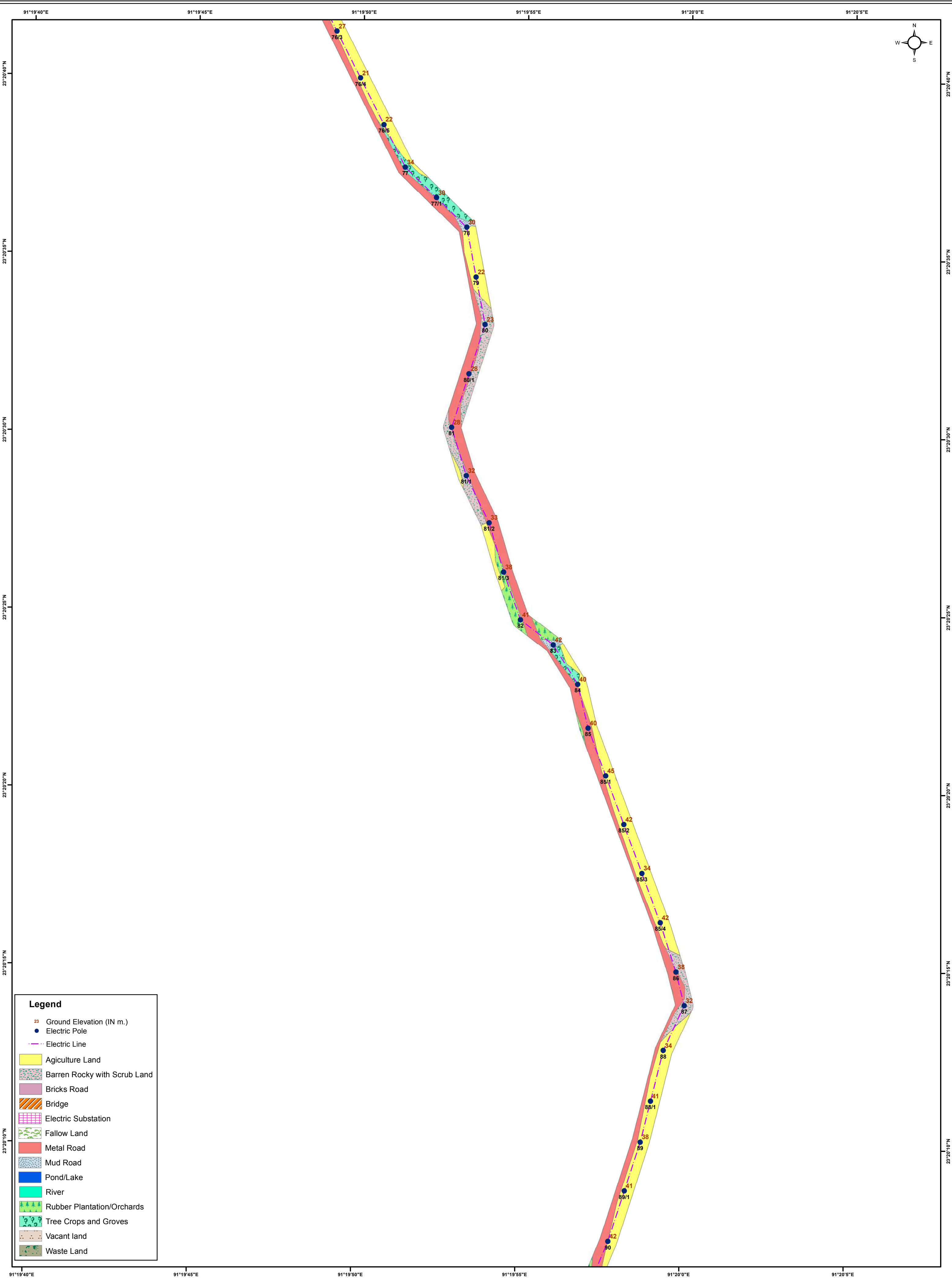
91°19'30"E 91°19'35"E 91°19'40"E 91°19'45"E 91°19'50"E 91°19'55"E

LAND USE/LAND COVER DETAILS OF EXISTING 33/11KV KATHALIA S/S TO PROPOSED 33/11 KV NIDAYA S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,

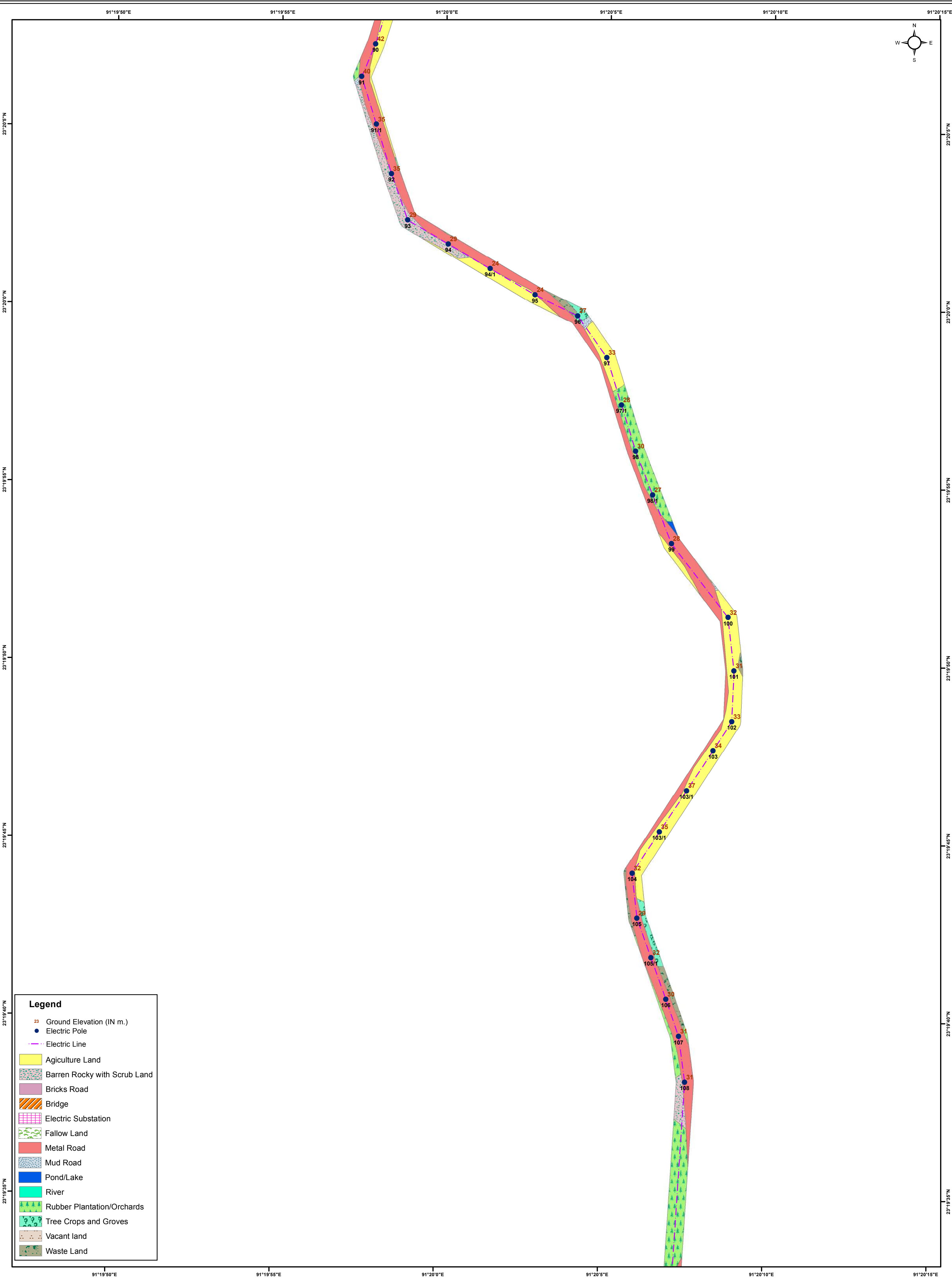


Legend

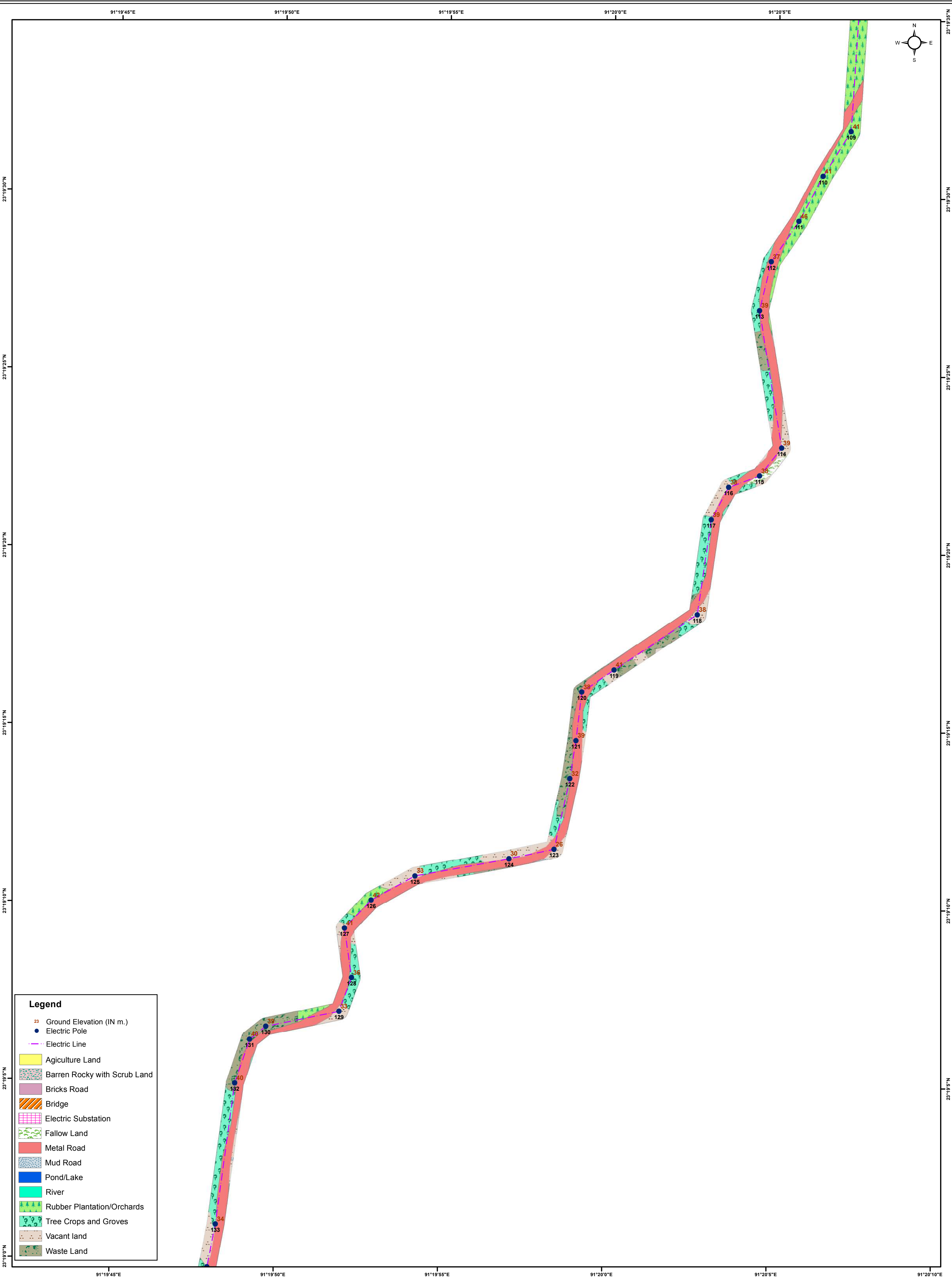
- 23 Ground Elevation (IN m.)
- Electric Pole
- Electric Line
- Agriculture Land
- Barren Rocky with Scrub Land
- Bricks Road
- Bridge
- Electric Substation
- Fallow Land
- Metal Road
- Mud Road
- Pond/Lake
- River
- Rubber Plantation/Orchards
- Tree Crops and Groves
- Vacant land
- Waste Land



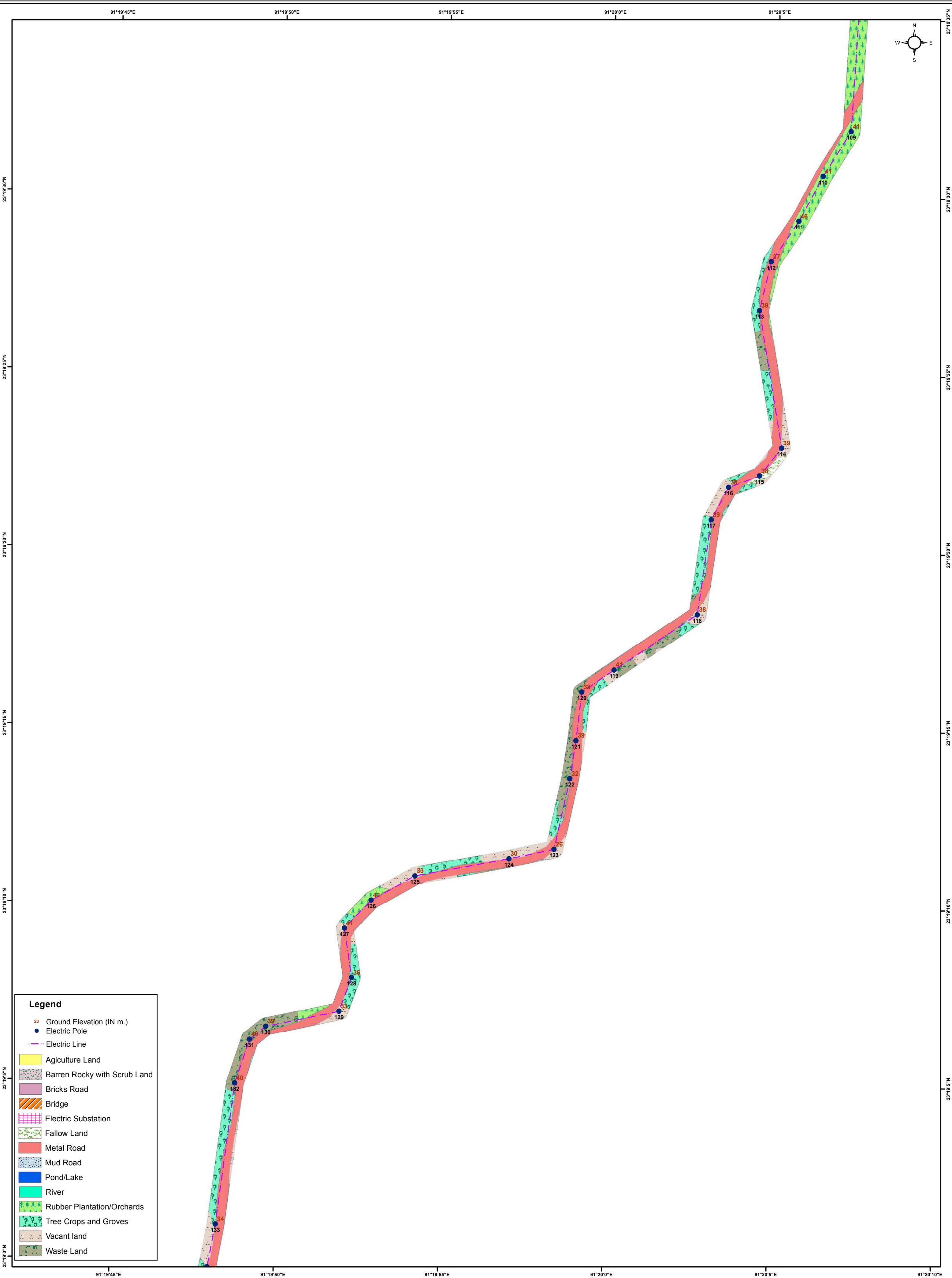
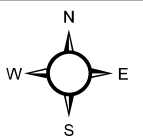
LAND USE/LAND COVER DETAILS OF EXISTING 33/11KV KATHALIA S/S TO PROPOSED 33/11 KV NIDAYA S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



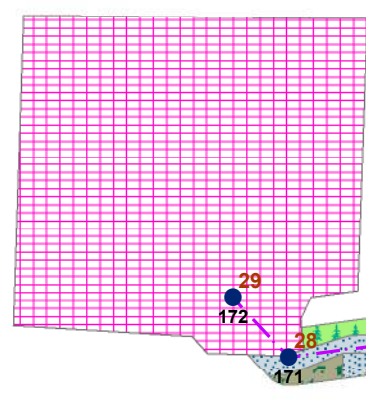
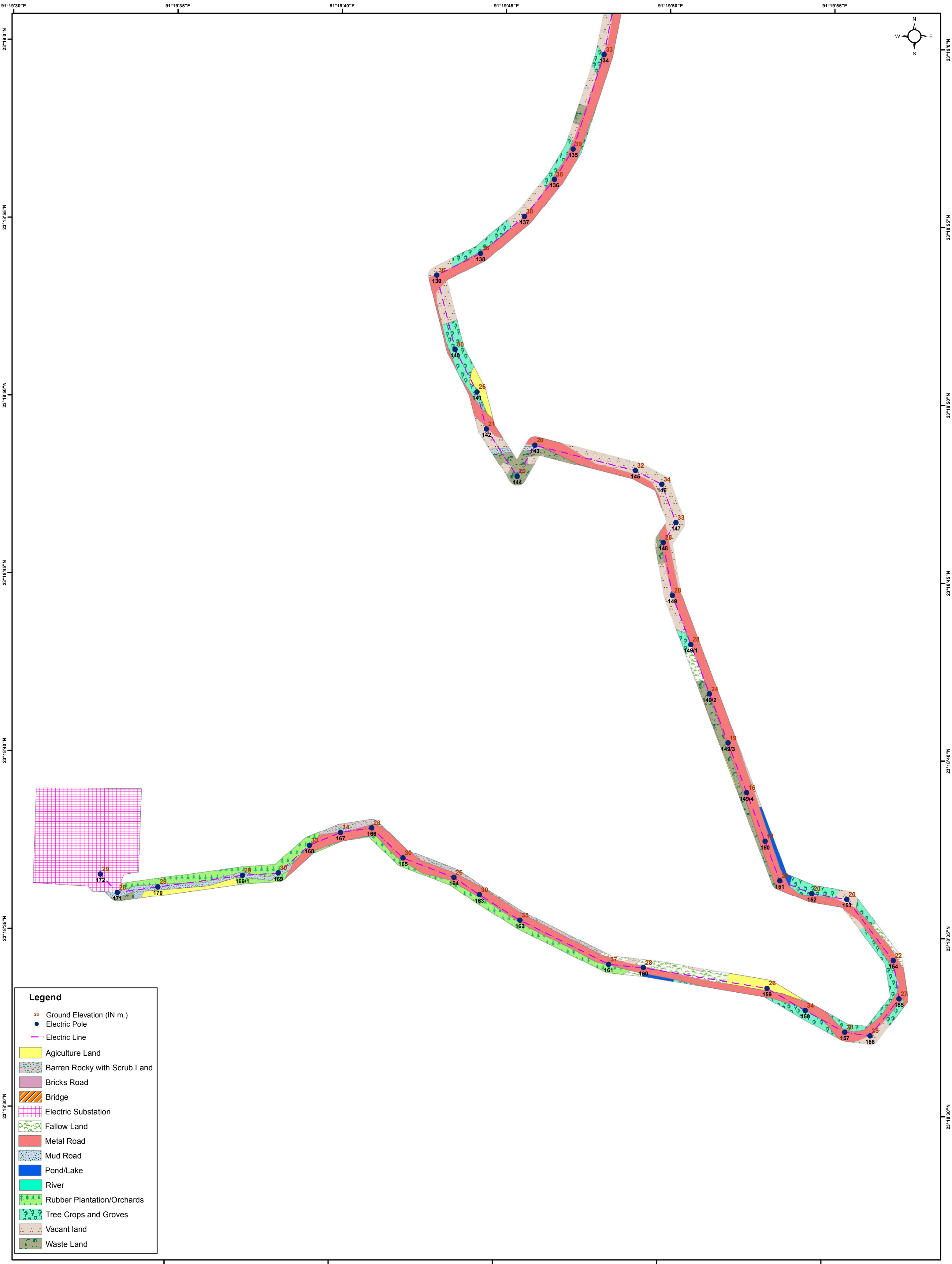
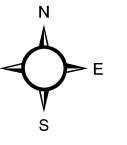
LAND USE/LAND COVER DETAILS OF EXISTING 33/11KV KATHALIA S/S TO PROPOSED 33/11 KV NIDAYA S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



- Legend**
- 23 Ground Elevation (IN m.)
 - Electric Pole
 - Electric Line
 - Agriculture Land
 - Barren Rocky with Scrub Land
 - Bricks Road
 - Bridge
 - Electric Substation
 - Fallow Land
 - Metal Road
 - Mud Road
 - Pond/Lake
 - River
 - Rubber Plantation/Orchards
 - Tree Crops and Groves
 - Vacant land
 - Waste Land



LAND USE/LAND COVER DETAILS OF EXISTING 33/11KV KATHALIA S/S TO PROPOSED 33/11 KV NIDAYA S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



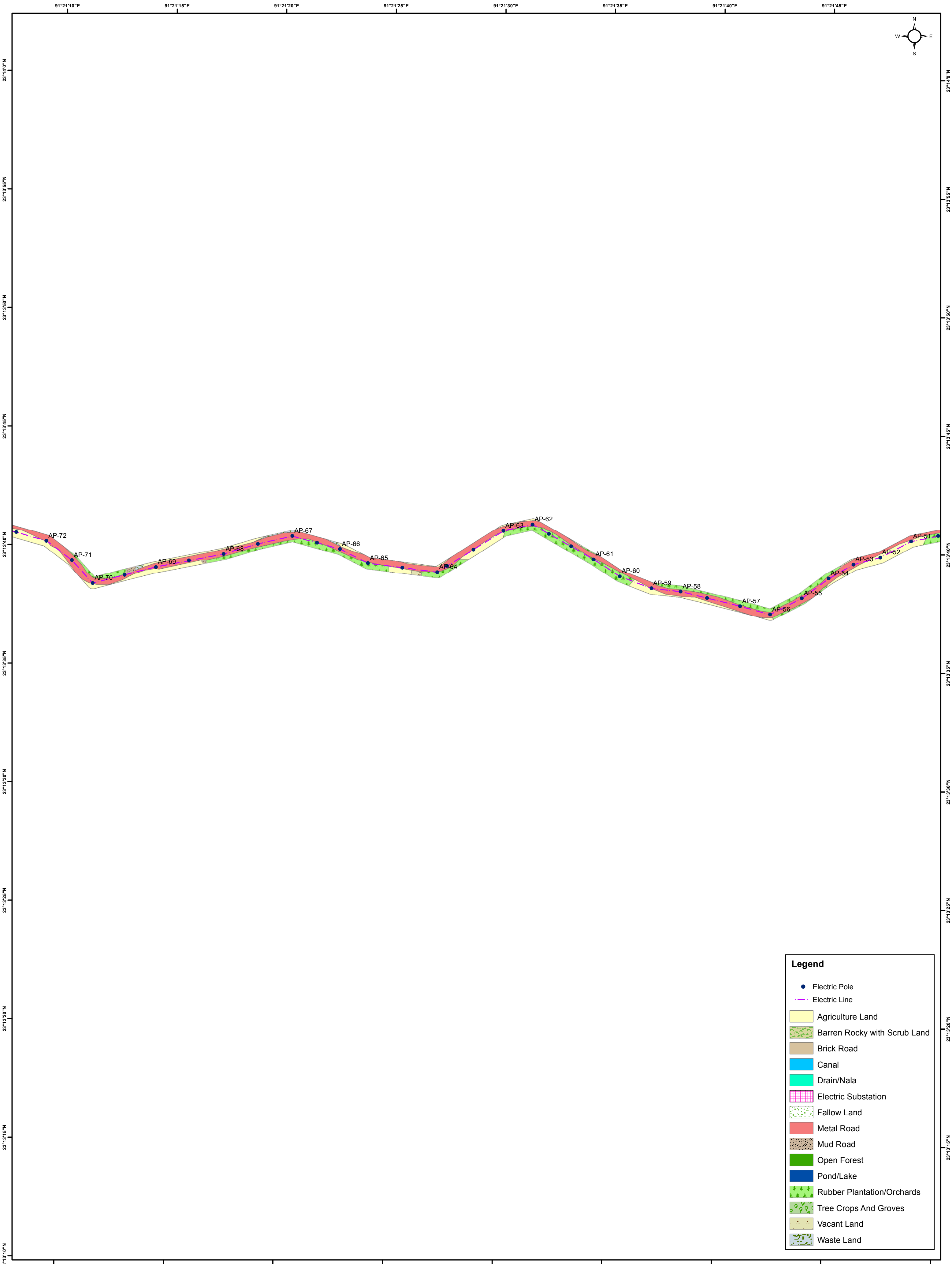
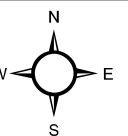
- Legend**
- 23 Ground Elevation (IN m.)
 - Electric Pole
 - Electric Line
 - Agriculture Land
 - Barren Rocky with Scrub Land
 - Bricks Road
 - Bridge
 - Electric Substation
 - Fallow Land
 - Metal Road
 - Mud Road
 - Pond/Lake
 - River
 - Rubber Plantation/Orchards
 - Tree Crops and Groves
 - Vacant land
 - Waste Land

23°19'00"N
23°18'55"N
23°18'50"N
23°18'45"N
23°18'40"N
23°18'35"N
23°18'30"N

23°19'00"N
23°18'55"N
23°18'50"N
23°18'45"N
23°18'40"N
23°18'35"N
23°18'30"N

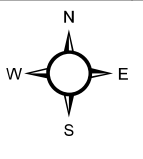
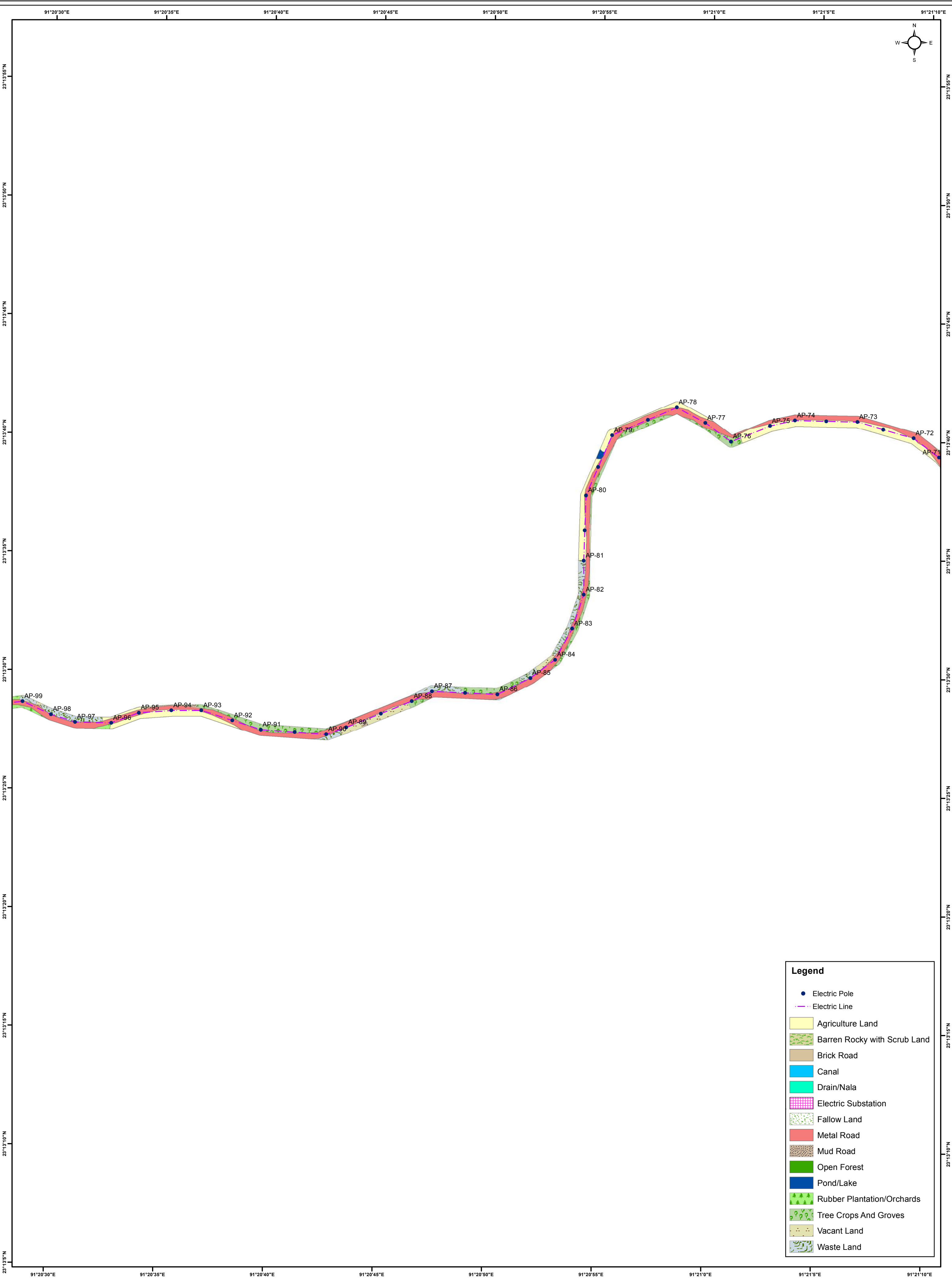
91°19'30"E 91°19'35"E 91°19'40"E 91°19'45"E 91°19'50"E 91°19'55"E

LAND USE/LAND COVER DETAILS OF 33/11 KV RAJNAGAR S/S TO PROPOSED 33/11 KV NIDAYA S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



Legend	
●	Electric Pole
—	Electric Line
	Agriculture Land
	Barren Rocky with Scrub Land
	Brick Road
	Canal
	Drain/Nala
	Electric Substation
	Fallow Land
	Metal Road
	Mud Road
	Open Forest
	Pond/Lake
	Rubber Plantation/Orchards
	Tree Crops And Groves
	Vacant Land
	Waste Land

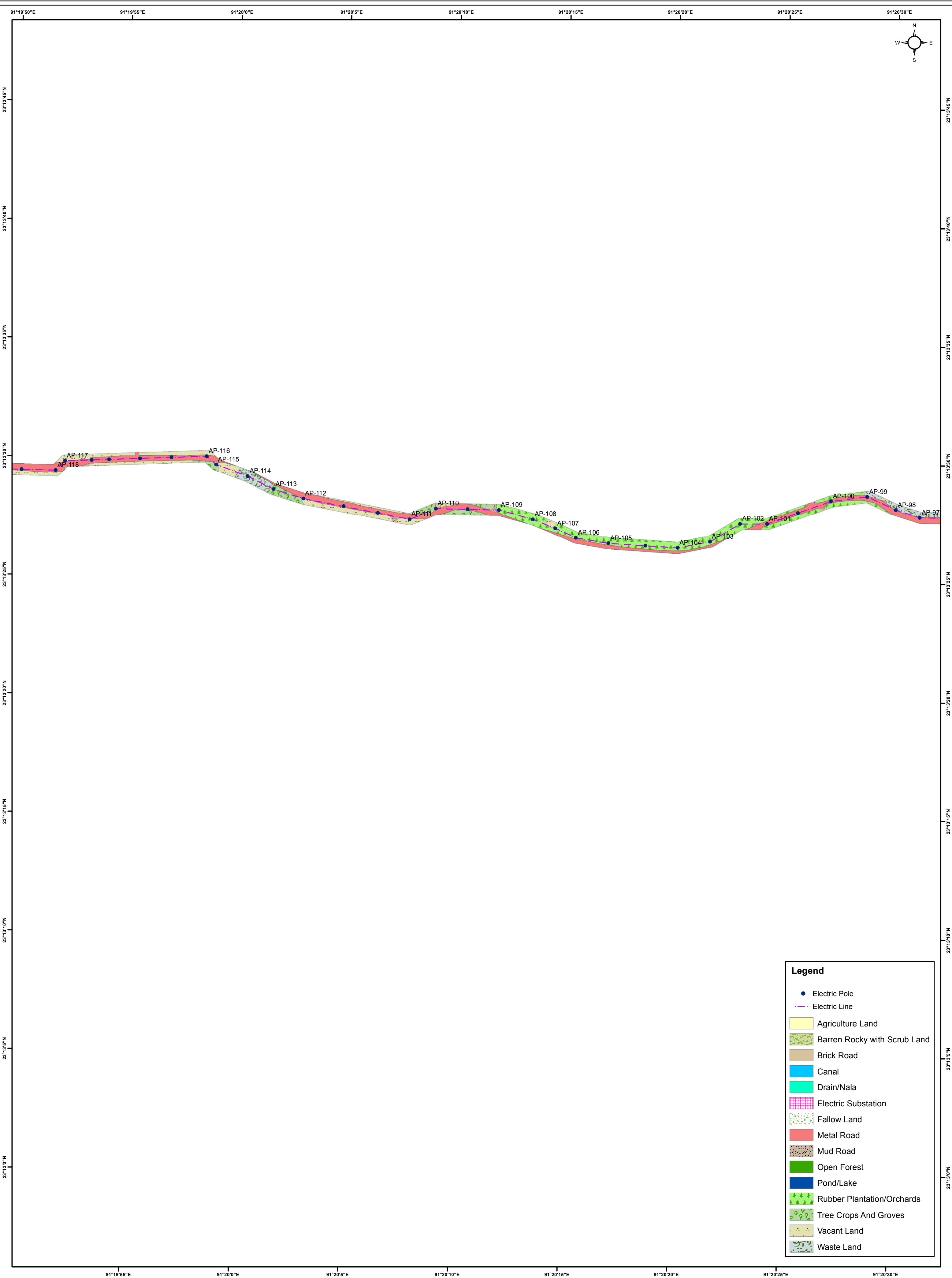
LAND USE/LAND COVER DETAILS OF 33/11 KV RAJNAGAR S/S TO PROPOSED 33/11 KV NIDAYA S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



Legend

- Electric Pole
- - - Electric Line
- Agriculture Land
- Barren Rocky with Scrub Land
- Brick Road
- Canal
- Drain/Nala
- Electric Substation
- Fallow Land
- Metal Road
- Mud Road
- Open Forest
- Pond/Lake
- Rubber Plantation/Orchards
- Tree Crops And Groves
- Vacant Land
- Waste Land

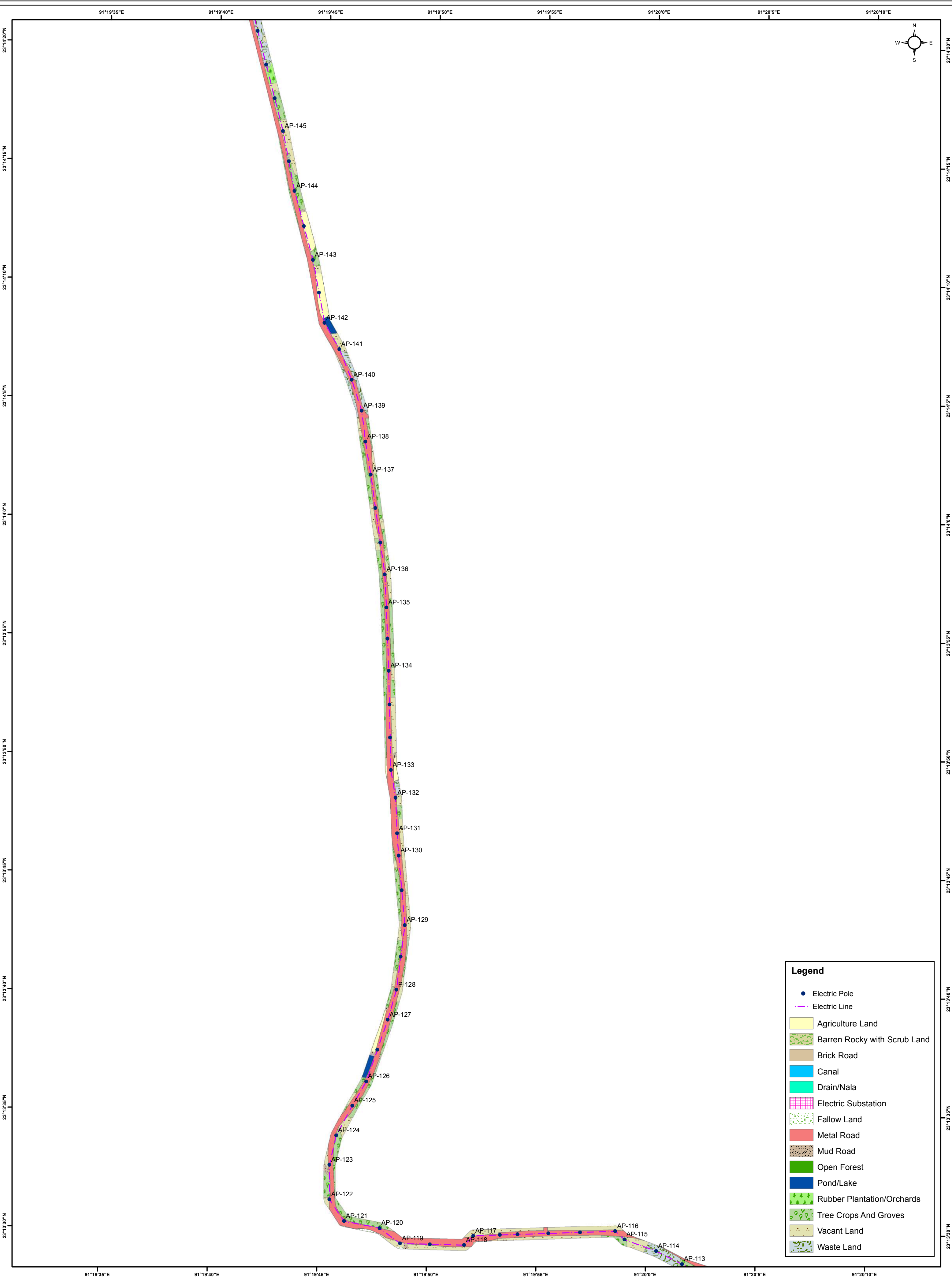
LAND USE/LAND COVER DETAILS OF 33/11 KV RAJNAGAR S/S TO PROPOSED 33/11 KV NIDAYA S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



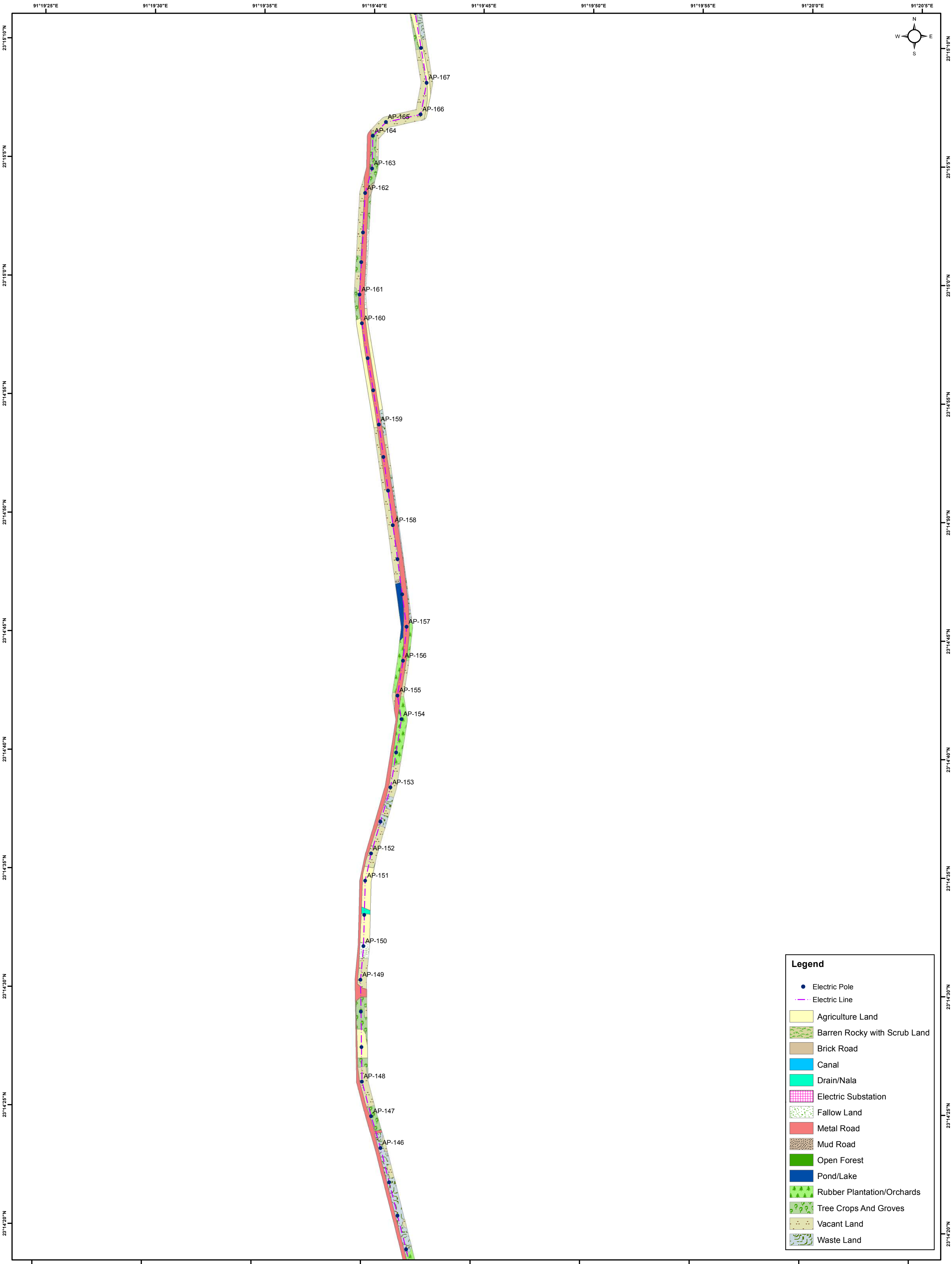
Legend

- Electric Pole
- Electric Line
- Agriculture Land
- Barren Rocky with Scrub Land
- Brick Road
- Canal
- Drain/Nala
- Electric Substation
- Fallow Land
- Metal Road
- Mud Road
- Open Forest
- Pond/Lake
- Rubber Plantation/Orchards
- Tree Crops And Groves
- Vacant Land
- Waste Land

LAND USE/LAND COVER DETAILS OF 33/11 KV RAJNAGAR S/S TO PROPOSED 33/11 KV NIDAYA S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



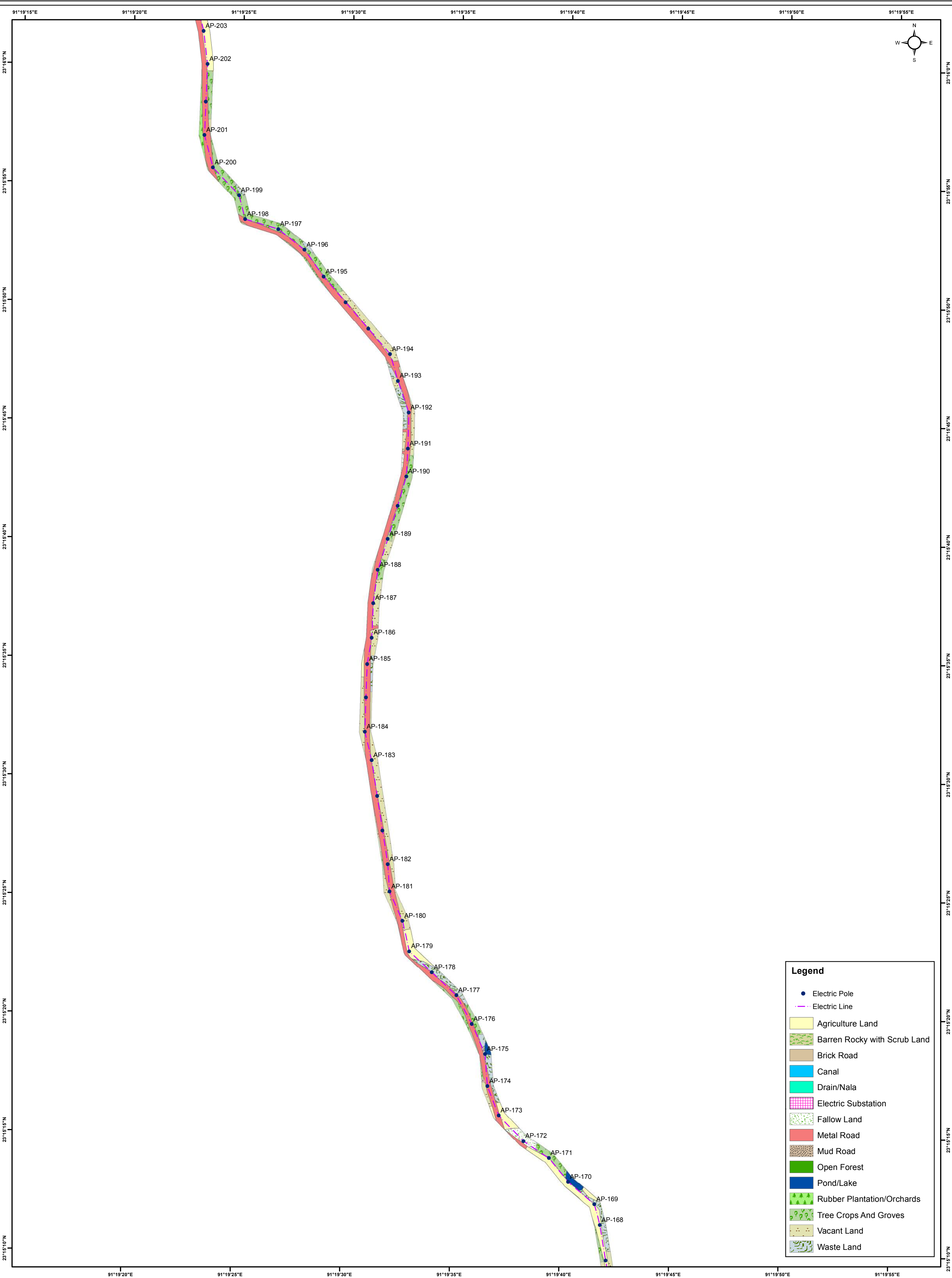
LAND USE/LAND COVER DETAILS OF 33/11 KV RAJNAGAR S/S TO PROPOSED 33/11 KV NIDAYA S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



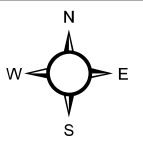
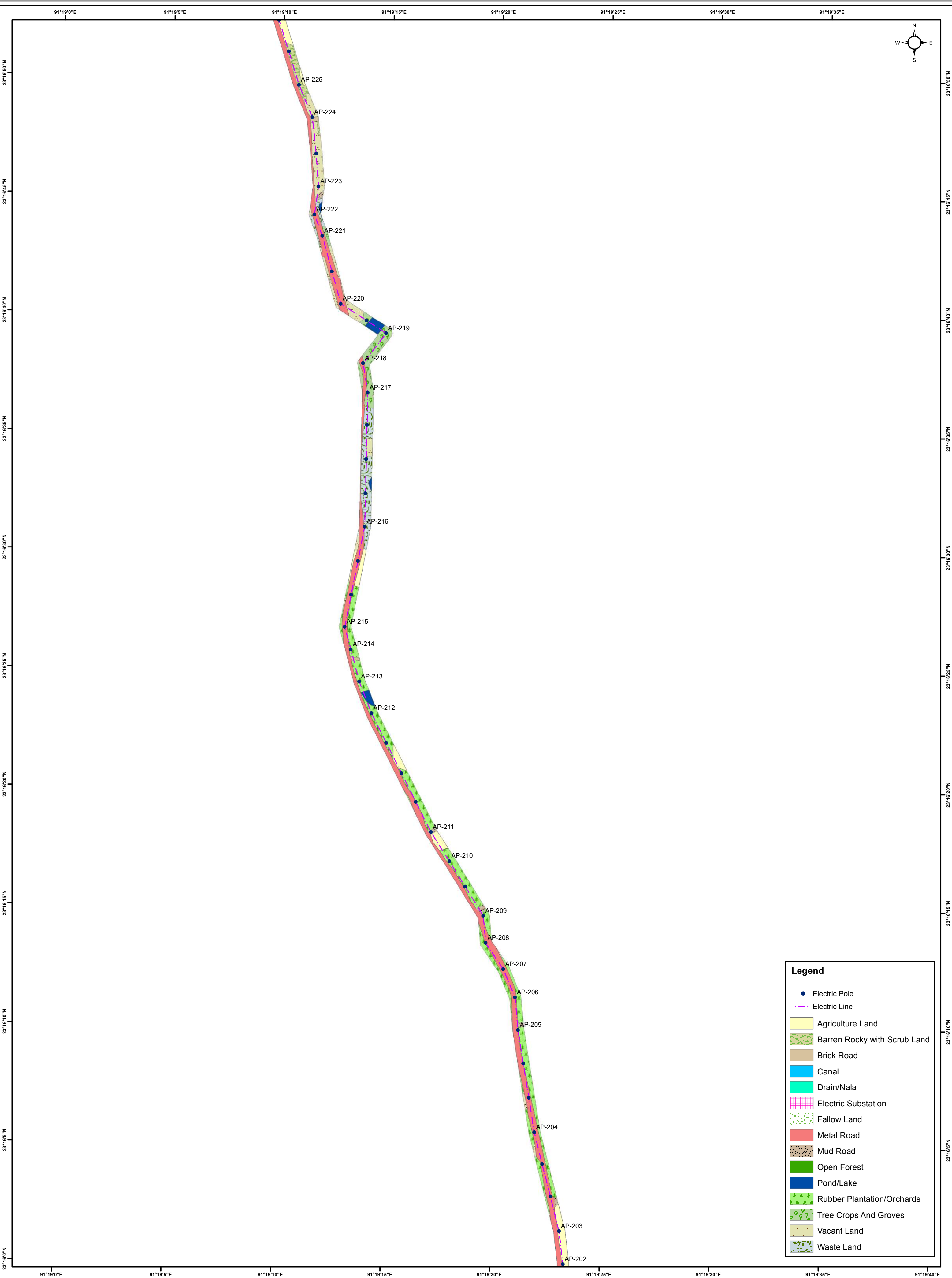
Legend

- Electric Pole
- Electric Line
- Agriculture Land
- Barren Rocky with Scrub Land
- Brick Road
- Canal
- Drain/Nala
- Electric Substation
- Fallow Land
- Metal Road
- Mud Road
- Open Forest
- Pond/Lake
- Rubber Plantation/Orchards
- Tree Crops And Groves
- Vacant Land
- Waste Land

LAND USE/LAND COVER DETAILS OF 33/11 KV RAJNAGAR S/S TO PROPOSED 33/11 KV NIDAYA S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,

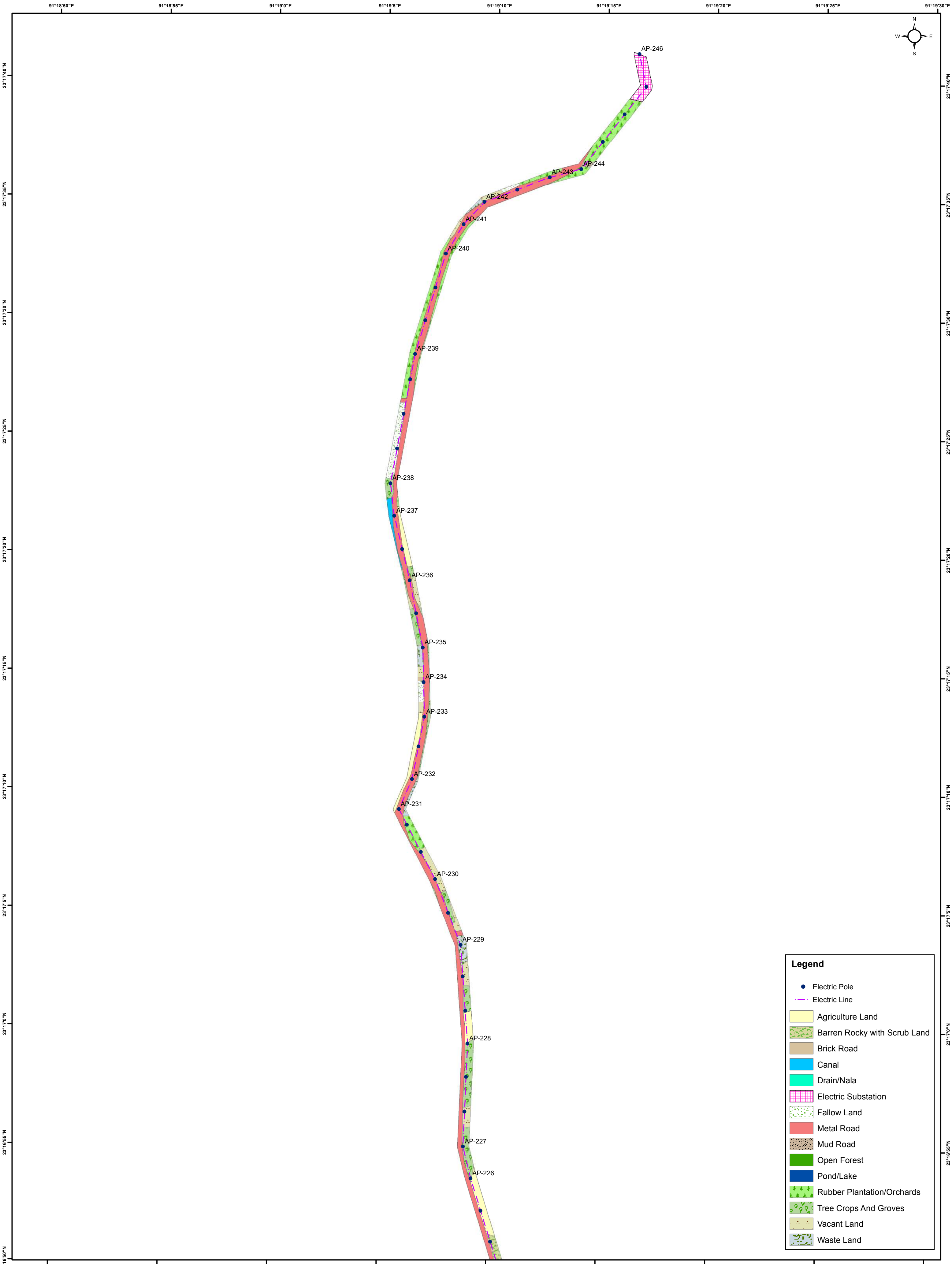
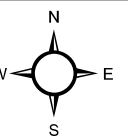


LAND USE/LAND COVER DETAILS OF 33/11 KV RAJNAGAR S/S TO PROPOSED 33/11 KV NIDAYA S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



Legend	
●	Electric Pole
—	Electric Line
■	Agriculture Land
■	Barren Rocky with Scrub Land
■	Brick Road
■	Canal
■	Drain/Nala
■	Electric Substation
■	Fallow Land
■	Metal Road
■	Mud Road
■	Open Forest
■	Pond/Lake
■	Rubber Plantation/Orchards
■	Tree Crops And Groves
■	Vacant Land
■	Waste Land

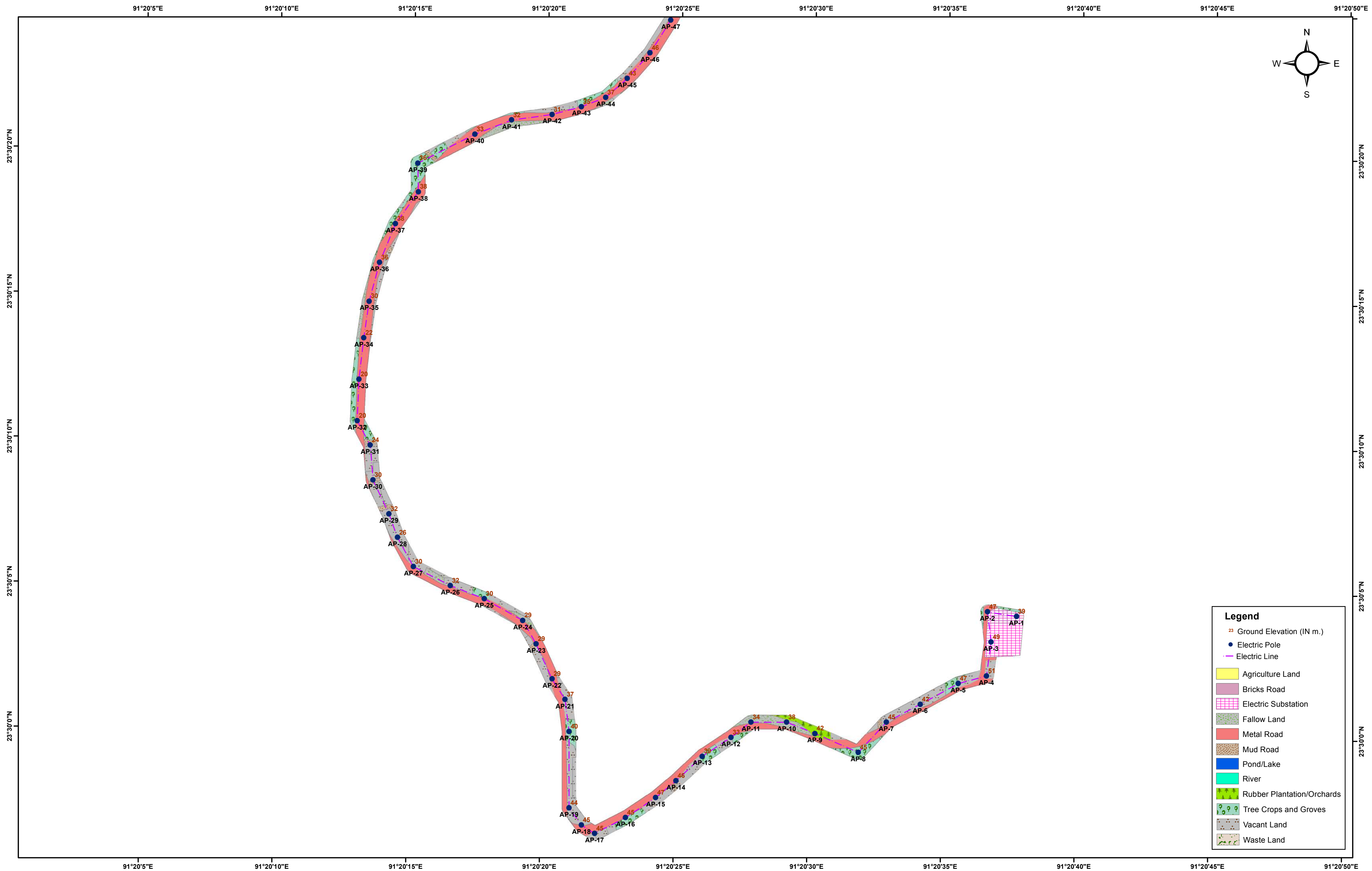
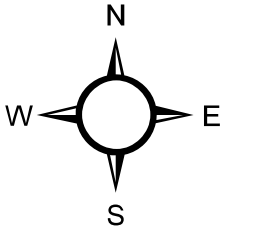
LAND USE/LAND COVER DETAILS OF 33/11 KV RAJNAGAR S/S TO PROPOSED 33/11 KV NIDAYA S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED (NERPSIP)
PREPARED BY GREEN CIRCLE INC,



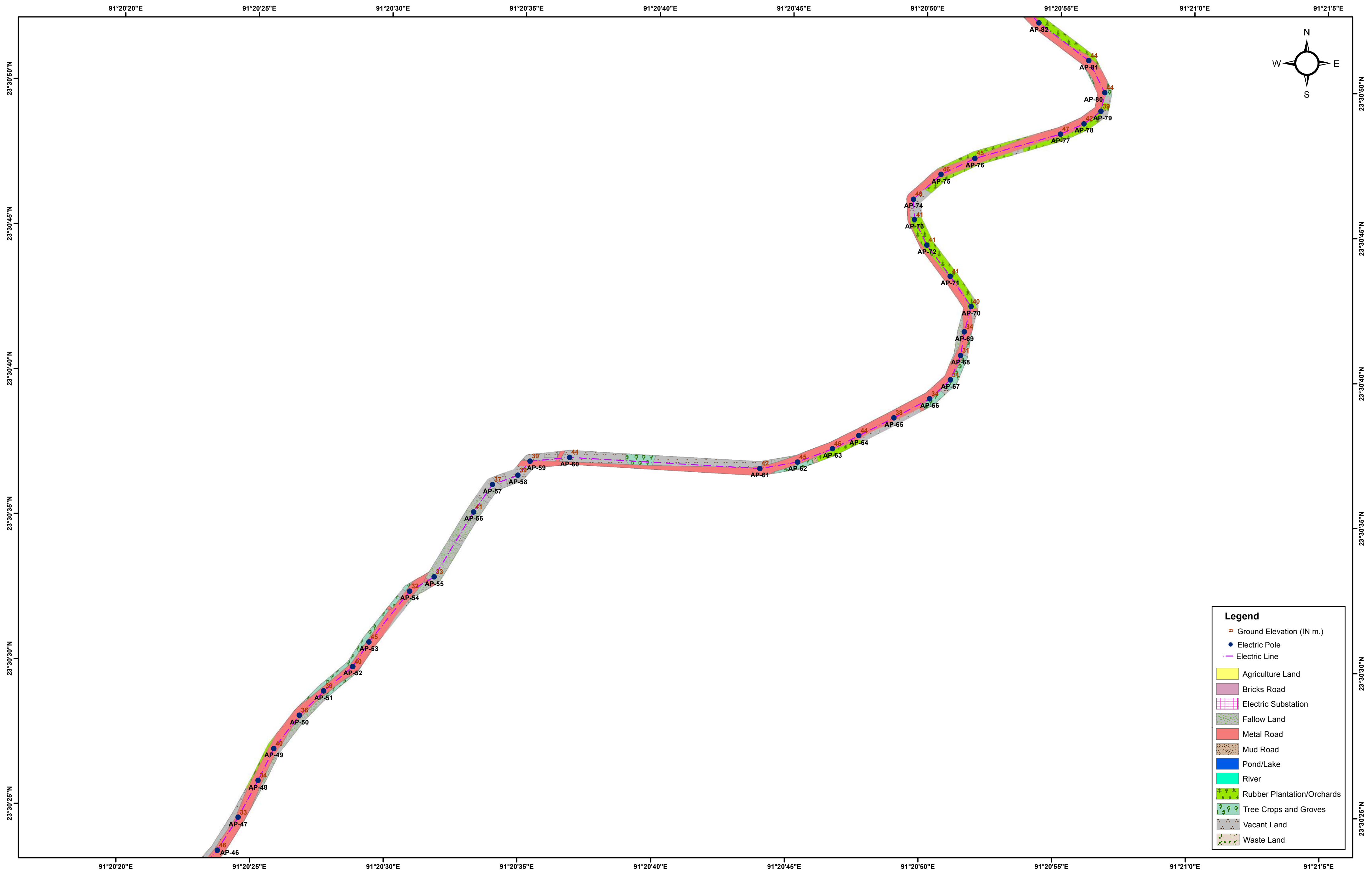
Legend

- Electric Pole
- Electric Line
- Agriculture Land
- Barren Rocky with Scrub Land
- Brick Road
- Canal
- Drain/Nala
- Electric Substation
- Fallow Land
- Metal Road
- Mud Road
- Open Forest
- Pond/Lake
- Rubber Plantation/Orchards
- Tree Crops And Groves
- Vacant Land
- Waste Land

LAND USE/LAND COVER DETAILS OF EXISTING 33/11 KV MELAGARH S/S TO PROPOSED 33/11 NALCHAR S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



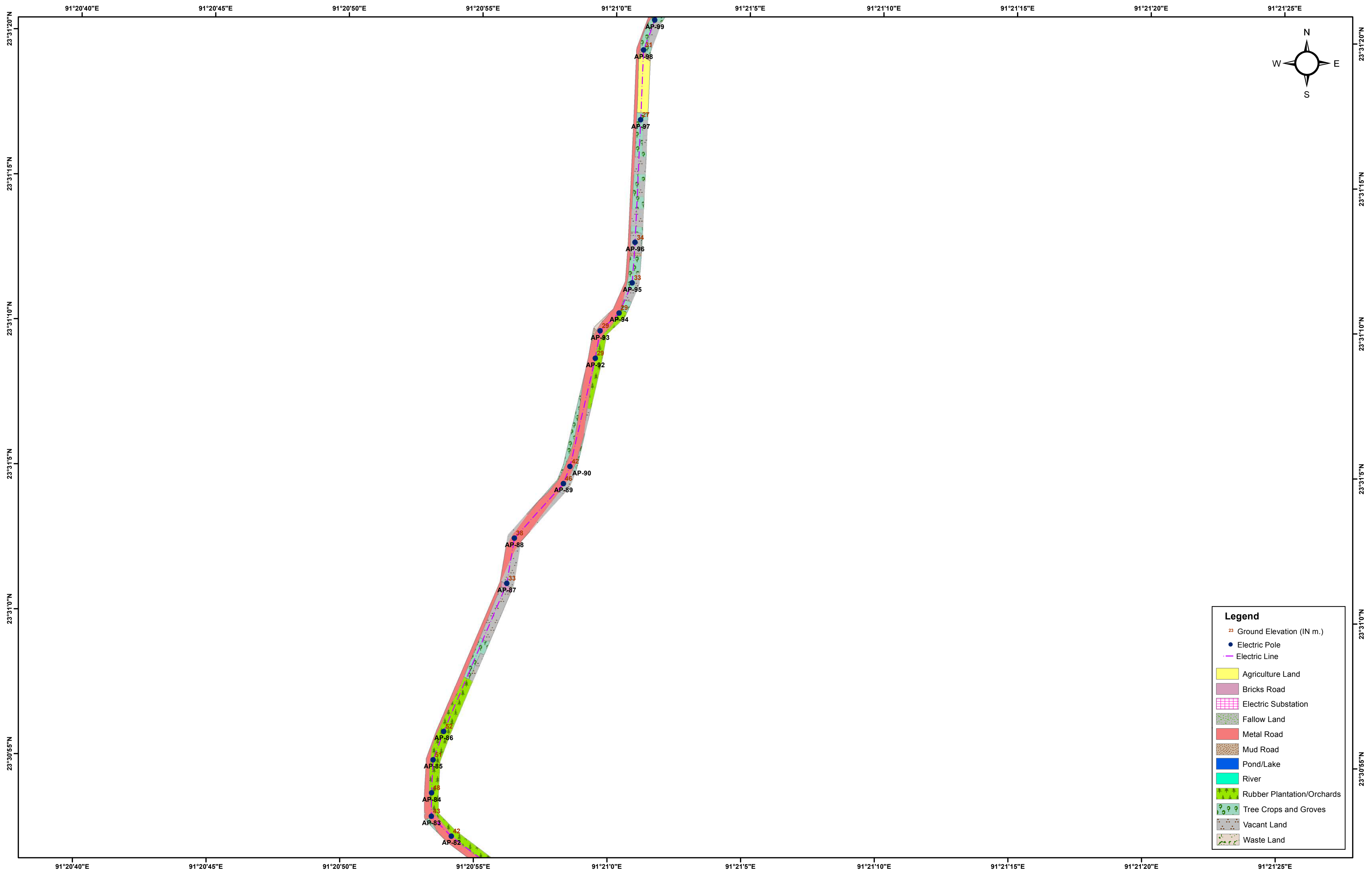
LAND USE/LAND COVER DETAILS OF EXISTING 33/11 KV MELAGARH S/S TO PROPOSED 33/11 NALCHAR S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



Legend

- Ground Elevation (IN m.)
- Electric Pole
- Electric Line
- Agriculture Land
- Bricks Road
- Electric Substation
- Fallow Land
- Metal Road
- Mud Road
- Pond/Lake
- River
- Rubber Plantation/Orchards
- Tree Crops and Groves
- Vacant Land
- Waste Land

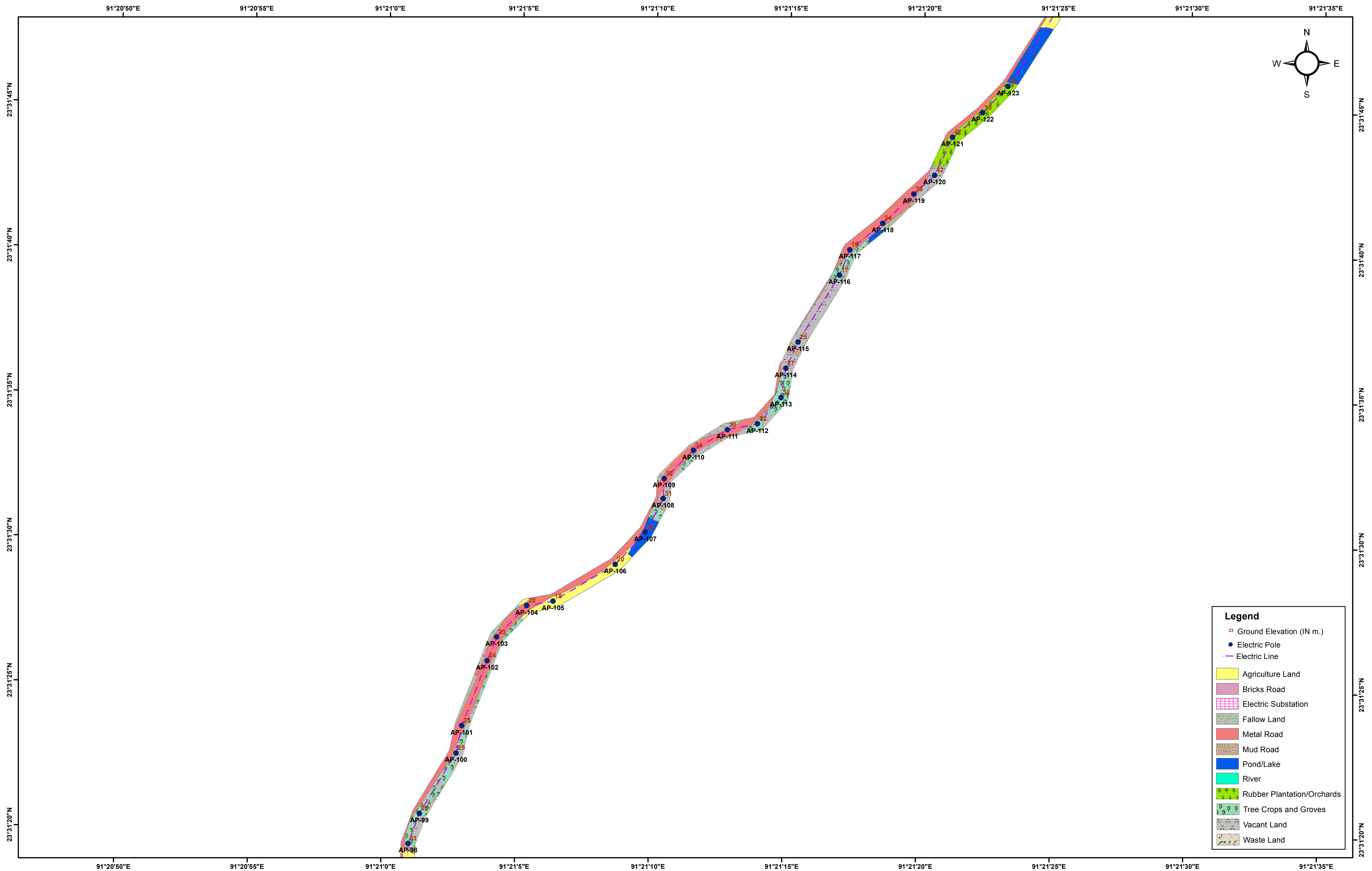
LAND USE/LAND COVER DETAILS OF EXISTING 33/11 KV MELAGARH S/S TO PROPOSED 33/11 NALCHAR S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



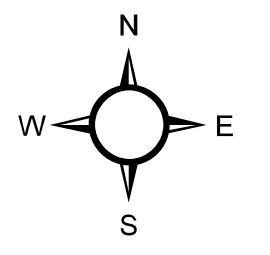
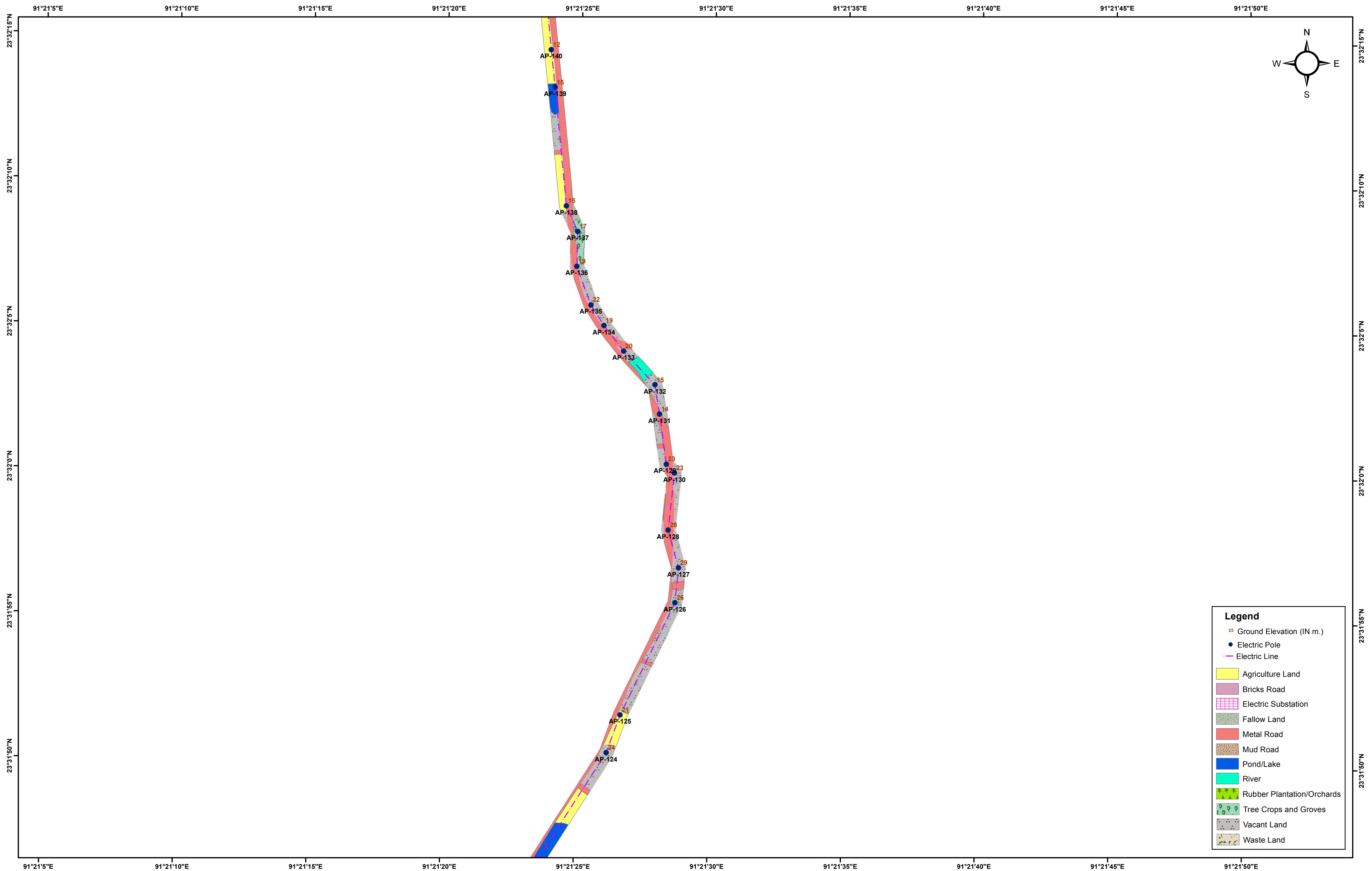
Legend

- Ground Elevation (IN m.)
- Electric Pole
- Electric Line
- Agriculture Land
- Bricks Road
- Electric Substation
- Fallow Land
- Metal Road
- Mud Road
- Pond/Lake
- River
- Rubber Plantation/Orchards
- Tree Crops and Groves
- Vacant Land
- Waste Land

LAND USE/LAND COVER DETAILS OF EXISTING 33/11 KV MELAGARH S/S TO PROPOSED 33/11 NALCHAR S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,

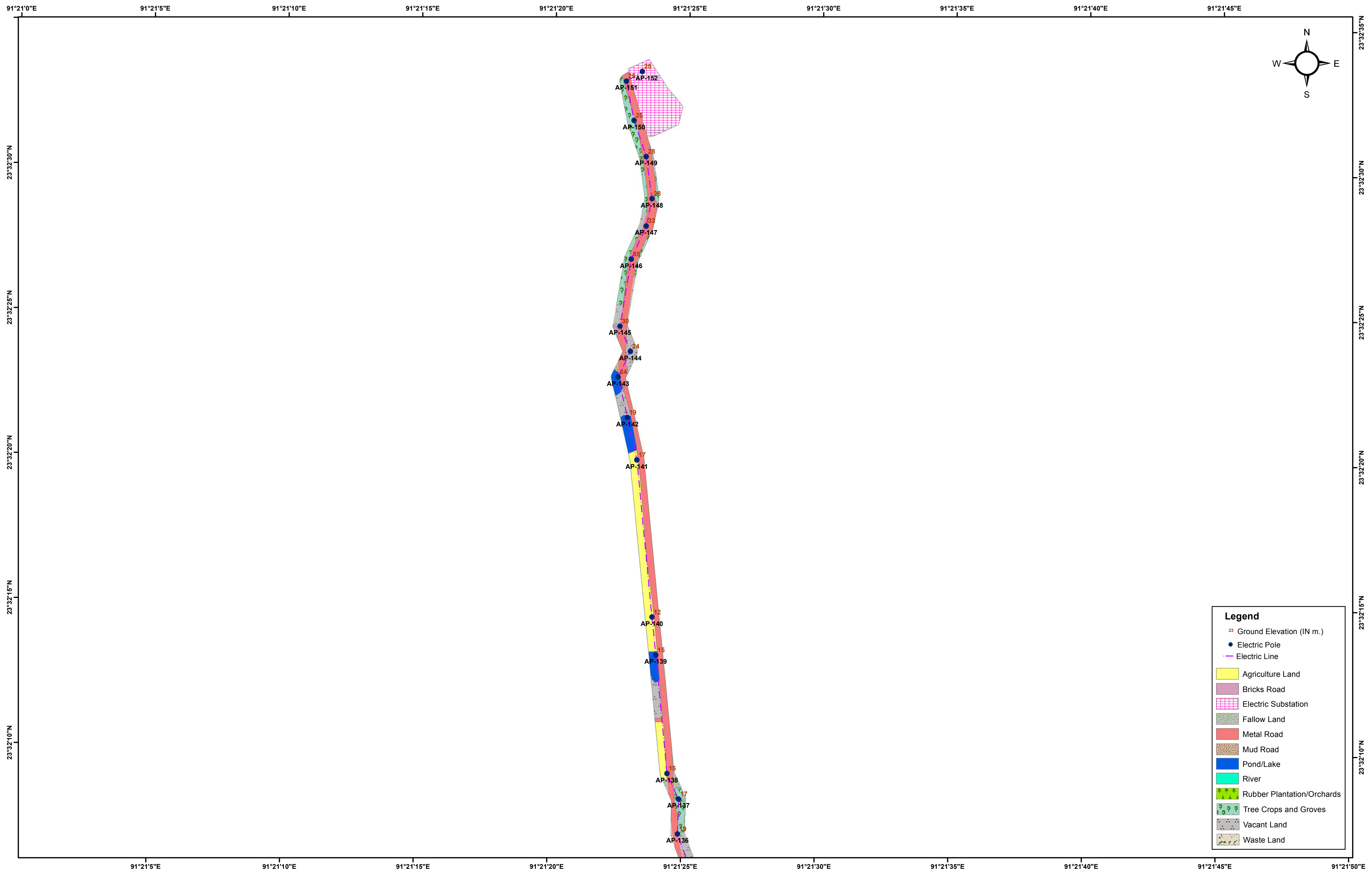
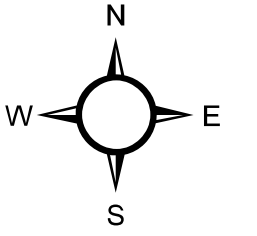


LAND USE/LAND COVER DETAILS OF EXISTING 33/11 KV MELAGARH S/S TO PROPOSED 33/11 NALCHAR S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



- Legend**
- 23 Ground Elevation (IN m.)
 - Electric Pole
 - Electric Line
 - Agriculture Land
 - Bricks Road
 - Electric Substation
 - Fallow Land
 - Metal Road
 - Mud Road
 - Pond/Lake
 - River
 - Rubber Plantation/Orchards
 - Tree Crops and Groves
 - Vacant Land
 - Waste Land

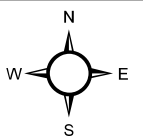
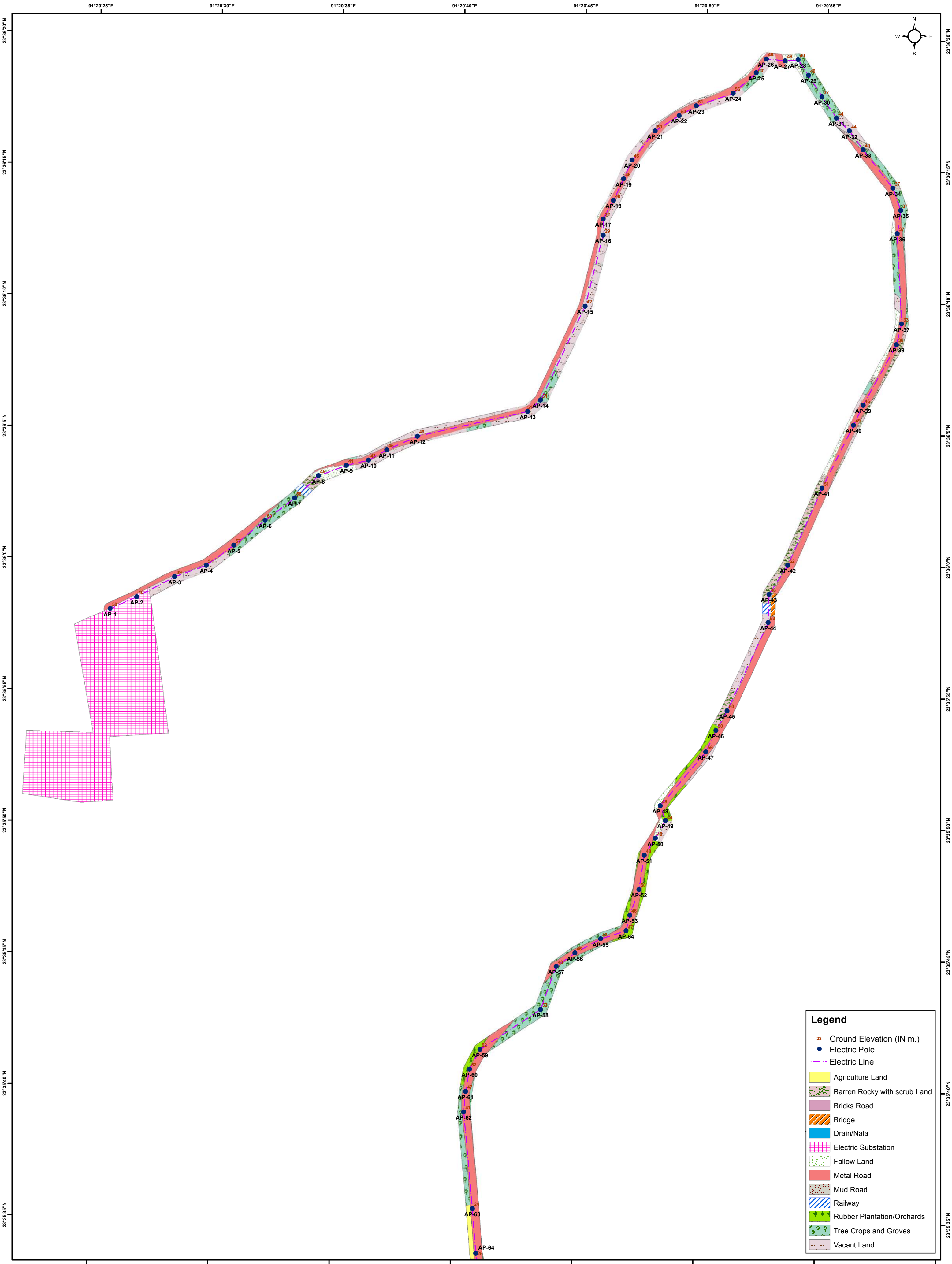
LAND USE/LAND COVER DETAILS OF EXISTING 33/11 KV MELAGARH S/S TO PROPOSED 33/11 NALCHAR S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



Legend

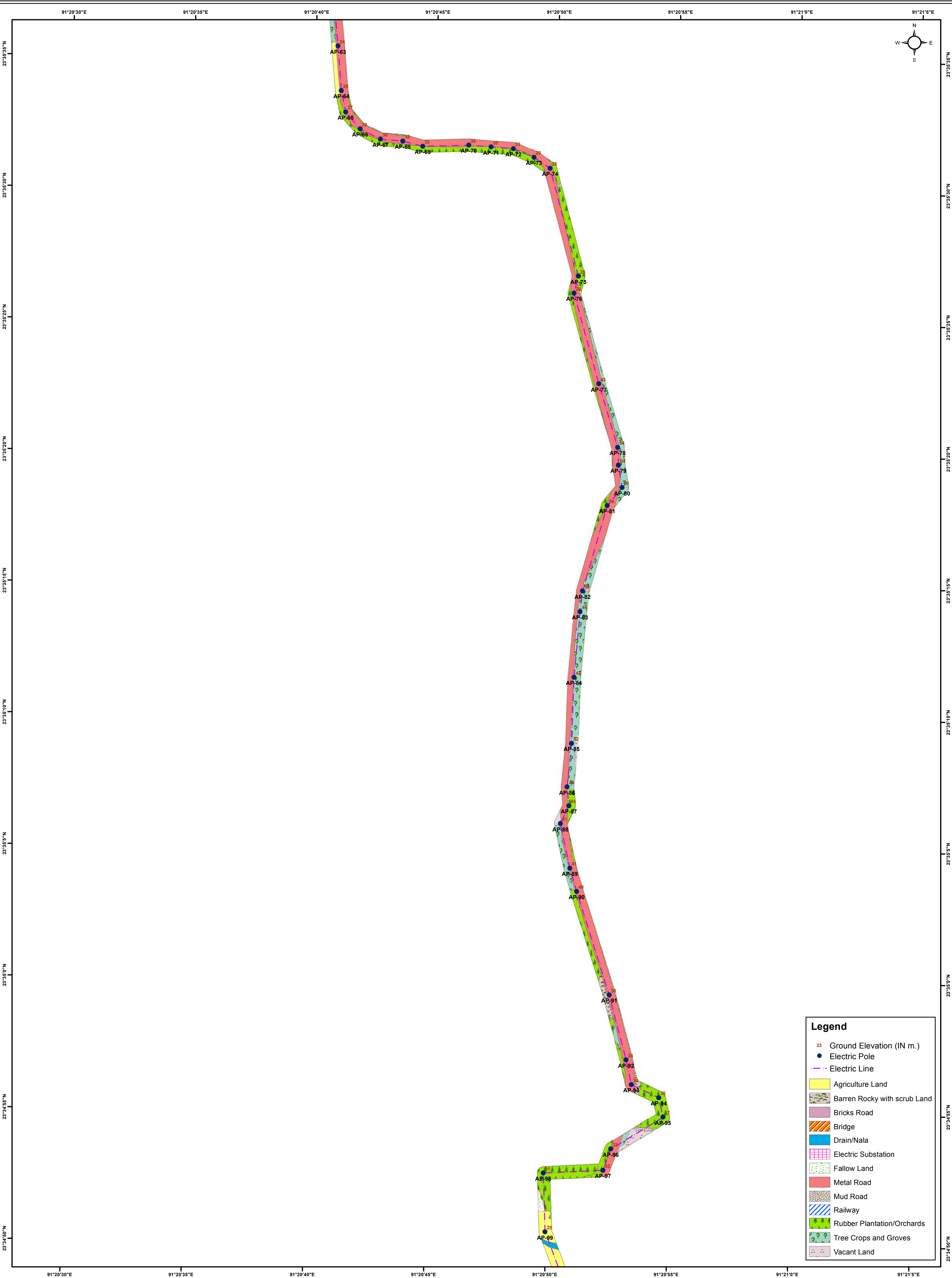
- 23 Ground Elevation (IN m.)
- Electric Pole
- Electric Line
- Agriculture Land
- Bricks Road
- Electric Substation
- Fallow Land
- Metal Road
- Mud Road
- Pond/Lake
- River
- Rubber Plantation/Orchards
- Tree Crops and Groves
- Vacant Land
- Waste Land

LAND USE/LAND COVER DETAILS OF EXISTING 33/11 KV BISHRAMGANJ S/S TO PROPOSED 33/11 KV NALCHAR S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



Legend	
23	Ground Elevation (IN m.)
●	Electric Pole
—	Electric Line
[Yellow]	Agriculture Land
[Green]	Barren Rocky with scrub Land
[Purple]	Bricks Road
[Orange]	Bridge
[Blue]	Drain/Nala
[Pink]	Electric Substation
[Light Green]	Fallow Land
[Red]	Metal Road
[Brown]	Mud Road
[Blue/White]	Railway
[Dark Green]	Rubber Plantation/Orchards
[Light Green]	Tree Crops and Groves
[White]	Vacant Land

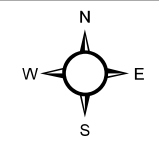
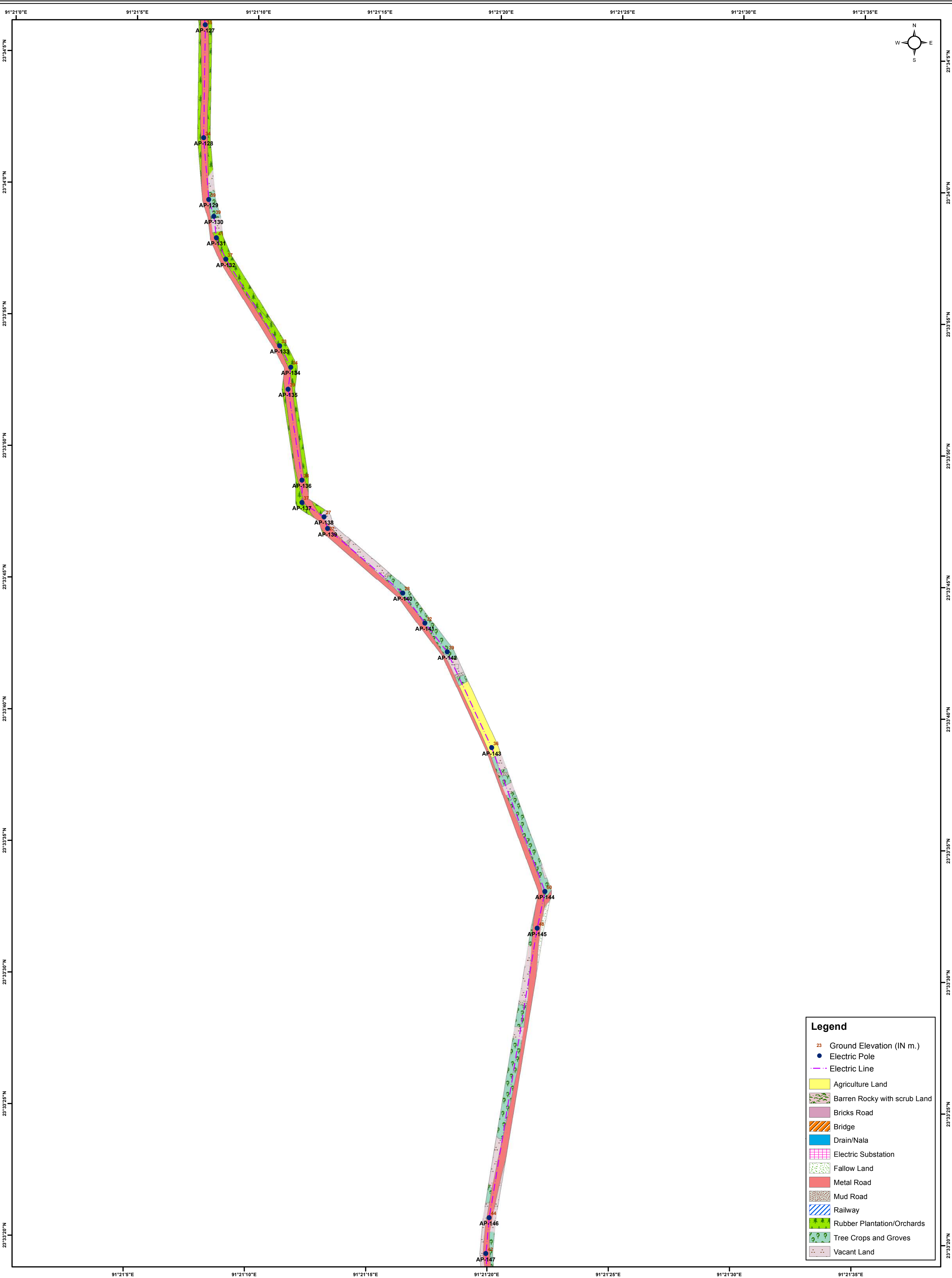
LAND USE/LAND COVER DETAILS OF EXISTING 33/11 KV BISHRAMGANJ S/S TO PROPOSED 33/11 KV NALCHAR S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



LAND USE/LAND COVER DETAILS OF EXISTING 33/11 KV BISHRAMGANJ S/S TO PROPOSED 33/11 KV NALCHAR S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,

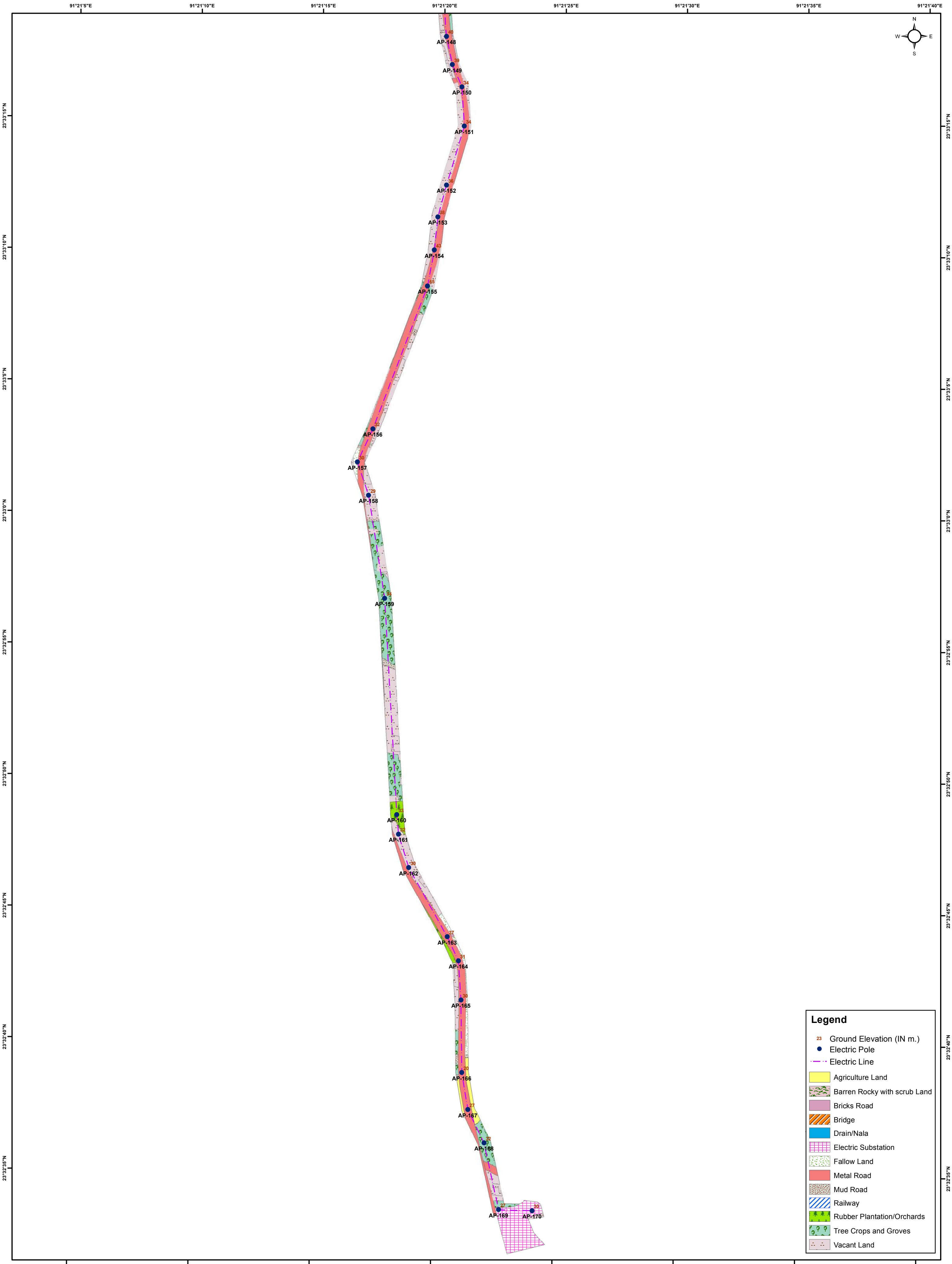


LAND USE/LAND COVER DETAILS OF EXISTING 33/11 KV BISHRAMGANJ S/S TO PROPOSED 33/11 KV NALCHAR S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



Legend	
23	Ground Elevation (IN m.)
●	Electric Pole
---	Electric Line
■	Agriculture Land
■	Barren Rocky with scrub Land
■	Bricks Road
■	Bridge
■	Drain/Nala
■	Electric Substation
■	Fallow Land
■	Metal Road
■	Mud Road
■	Railway
■	Rubber Plantation/Orchards
■	Tree Crops and Groves
■	Vacant Land

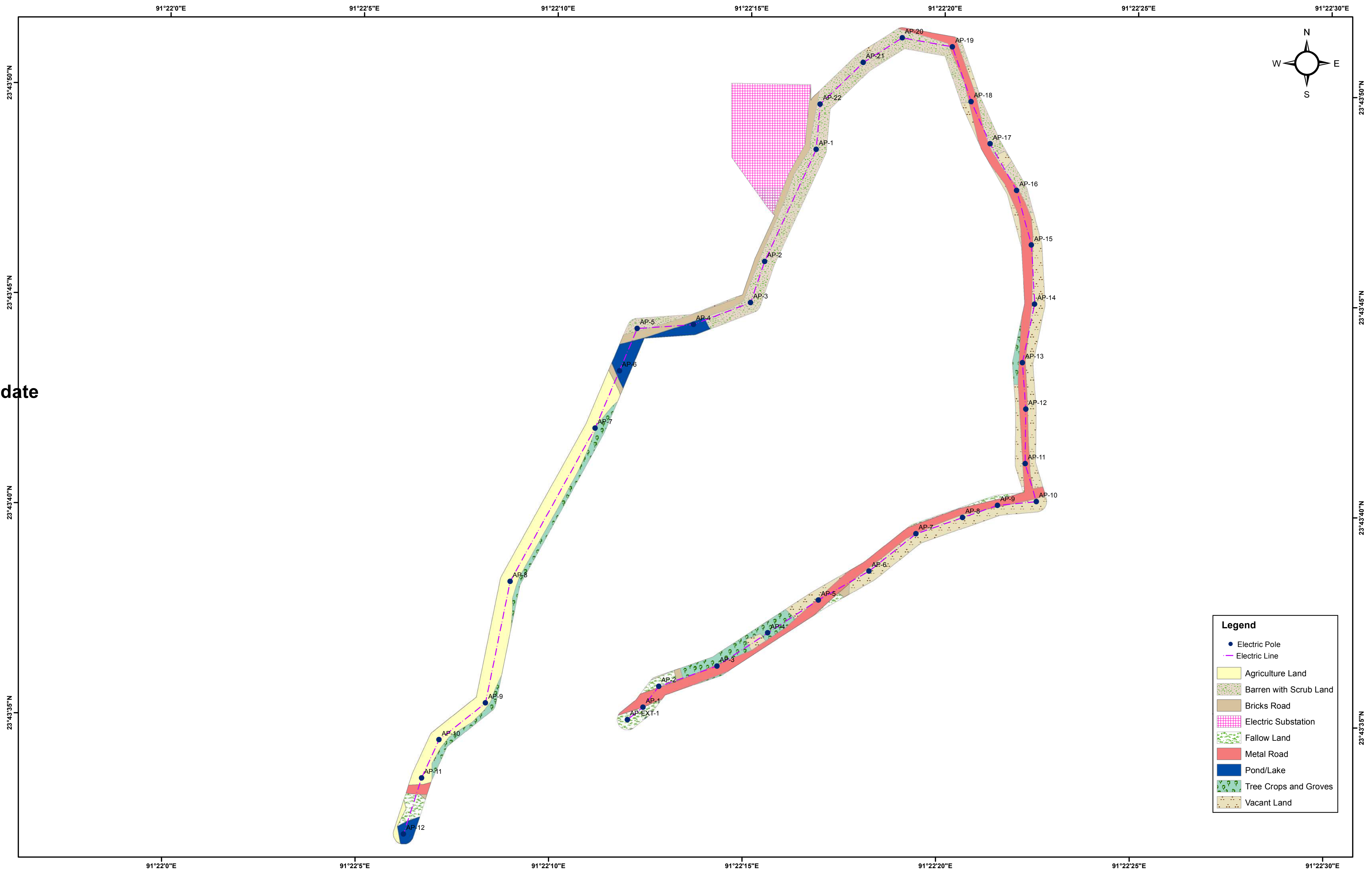
LAND USE/LAND COVER DETAILS OF EXISTING 33/11 KV BISHRAMGANJ S/S TO PROPOSED 33/11 KV NALCHAR S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



Legend

- 23 Ground Elevation (IN m.)
- Electric Pole
- Electric Line
- Agriculture Land
- Barren Rocky with scrub Land
- Bricks Road
- Bridge
- Drain/Nala
- Electric Substation
- Fallow Land
- Metal Road
- Mud Road
- Railway
- Rubber Plantation/Orchards
- Tree Crops and Groves
- Vacant Land

LAND USE/LAND COVER DETAILS OF LILO EXISTING 33 KV SURAJMANI NAGAR TO TAKARJOLA AT PROPOSED 33 KV GABARDI S/S
CLIENT :- POWER GRID CORPORATION OF INDIA LIMITED
PREPARED BY GREEN CIRCLE INC,



update

Annexure B2

AP_NO	EP_NO	Ground Elevation of EP	EP Fall in Feature	Rocks Type	Rock Structure	Landslide Study	Flodd Study	Type of Agend for Hazard
AP-5	5/0	32	Rubber Plantation/Orchards	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	High to Moderate	None	Earthquake, Wind storm and Moderate Landslide
AP-6	6/0	30	Vacant Land	Sandstone/ pebble bed/ conglomerate	Alluvial Younger Shallow	High to Moderate	None	Earthquake, Wind storm and Moderate Landslide
AP-7	7/0	26	Agriculture Land	Sandstone/ pebble bed/ conglomerate	Alluvial Younger Shallow	High to Moderate	None	Earthquake, Wind storm and Moderate Landslide
AP-8	8/0	34	Tree Crops and Groves	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	High to Moderate	None	Earthquake, Wind storm and Moderate Landslide
AP-9	9/0	41	Rubber Plantation/Orchards	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	High to Moderate	None	Earthquake, Wind storm and Moderate Landslide
AP-10	10/0	22	Agriculture Land	Sandstone/ pebble bed/ conglomerate	Valley Fill -êřÇô Shallow	High to Moderate	Low Flood Prone	Earthquake, Wind storm and Flood
AP-11	11/0	36	Rubber Plantation/Orchards	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	High to Moderate	None	Earthquake, Wind storm and Moderate Landslide
AP-12	12/0	42	Barren/Rocky Waste Land	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	High to Moderate	None	Earthquake, Wind storm and Moderate Landslide
AP-14	14/0	44	Rubber Plantation/Orchards	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	High to Moderate	None	Earthquake, Wind storm and Moderate Landslide
14/1	14/1	41	Rubber Plantation/Orchards	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	High to Moderate	None	Earthquake, Wind storm and Moderate Landslide
14/2	14/2	43	Rubber Plantation/Orchards	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	High to Moderate	None	Earthquake, Wind storm and Moderate Landslide
AP-15	15/0	35	Rubber Plantation/Orchards	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	High to Moderate	None	Earthquake, Wind storm and Moderate Landslide
AP-16	16/0	30	Agriculture Land	Sandstone/ pebble bed/ conglomerate	Valley Fill -êřÇô Shallow	High to Moderate	None	Earthquake, Wind storm and Moderate Landslide
AP-18	18/0	43	Agriculture Land	Sandstone/ pebble bed/ conglomerate	Valley Fill -êřÇô Shallow	High to Moderate	None	Earthquake, Wind storm and Moderate Landslide
.18/1	.18/1	48	Rubber Plantation/Orchards	Sandstone/ pebble bed/ conglomerate	Valley Fill -êřÇô Shallow	High to Moderate	None	Earthquake, Wind storm and Moderate Landslide
AP-20	19/0	46	Rubber Plantation/Orchards	Sandstone/ pebble bed/ conglomerate	Valley Fill -êřÇô Shallow	High to Moderate	None	Earthquake, Wind storm and Moderate Landslide
AP-21	20/0	51	Rubber Plantation/Orchards	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	High to Moderate	None	Earthquake, Wind storm and Moderate Landslide
AP-22	21/0	47	Rubber Plantation/Orchards	Shale with sandstone/ limestone bands	Structural Hills-Highly Dissected	High to Moderate	None	Earthquake, Wind storm and Moderate Landslide
AP-23/0	23/0	57	Open Forest	Shale with sandstone/ limestone bands	Structural Hills-Highly Dissected	High to Moderate	None	Earthquake, Wind storm and Moderate Landslide
AP-24/0	24/G	33	Fallow Land	Shale with sandstone/ limestone bands	Structural Hills-Highly Dissected	High to Moderate	None	Earthquake, Wind storm and Moderate Landslide
AP-25/0	25/0	23	Agriculture Land	Shale with sandstone/ limestone bands	Valley Fill -êřÇô Shallow	High to Moderate	Low Flood Prone	Earthquake, Wind storm and Flood
AP-26/0	26/0	41	Agriculture Land	Shale with sandstone/ limestone bands	Structural Hills-Highly Dissected	High to Moderate	None	Earthquake, Wind storm and Moderate Landslide
AP-31/0	31/0	24	Agriculture Land	Shaly Sandstone	Fracture/Fault Line Valley	Low	None	Earthquake, Wind storm and Moderate Landslide
AP-32/0	32/0	35	Rubber Plantation/Orchards	Shaly Sandstone	Denudational Hills-Less dissected	Low	None	Earthquake, Wind storm and Moderate Landslide
AP-33/0	33/0	35	Rubber Plantation/Orchards	Shaly Sandstone	Denudational Hills-Less dissected	Low	None	Earthquake, Wind storm and Moderate Landslide
AP-34/0	34/0	31	Rubber Plantation/Orchards	Shaly Sandstone	Denudational Hills-Less dissected	Low	None	Earthquake, Wind storm and Moderate Landslide
AP-35/0	35/0	24	Agriculture Land	Shaly Sandstone	Fracture/Fault Line Valley	Low	Low Flood Prone	Earthquake, Wind storm and Moderate Landslide
AP-36/0	36/0	20	Fallow Land	Shaly Sandstone	Denudational Hills-Less dissected	Low	None	Earthquake, Wind storm and Moderate Landslide
AP-37/0	37/0	21	Agriculture Land	Shaly Sandstone	Fracture/Fault Line Valley	Low	Low Flood Prone	Earthquake, Wind storm and Flood
AP-38/0	38/0	24	Agriculture Land	Shaly Sandstone	Alluvial Younger Shallow	Low	Low Flood Prone	Earthquake, Wind storm and Flood
AP-39/0	39/0	22	Agriculture Land	Shaly Sandstone	Alluvial Younger Shallow	Low	Low Flood Prone	Earthquake, Wind storm and Flood
AP-40/0	40/0	17	Agriculture Land	Shaly Sandstone	Alluvial Younger Shallow	Low	Low Flood Prone	Earthquake, Wind storm and Flood
AP-41/0	41/0	18	Agriculture Land	Shaly Sandstone	Alluvial Younger Shallow	Low	None	Earthquake, Wind storm and Moderate Landslide
AP-44	44/0	37	Rubber Plantation/Orchards	Shaly Sandstone	Denudational Hills-Less dissected	Low	None	Earthquake, Wind storm and Moderate Landslide
44/1	44/1	30	Rubber Plantation/Orchards	Shaly Sandstone	Denudational Hills-Less dissected	Low	None	Earthquake, Wind storm and Moderate Landslide
AP-45	45/0	19	Agriculture Land	Shaly Sandstone	Fracture/Fault Line Valley	Low	Low Flood Prone	Earthquake, Wind storm and Flood
AP-47	47/0	40	Pond/Lake	Shaly Sandstone	Fracture/Fault Line Valley	Low	None	Earthquake, Wind storm and Moderate Landslide
AP-48	48/0	62	Rubber Plantation/Orchards	Shaly Sandstone	Fracture/Fault Line Valley	Low	None	Earthquake, Wind storm and Moderate Landslide
AP-49	49/0	44	Rubber Plantation/Orchards	Shaly Sandstone	Denudational Hills-Less dissected	Low	None	Earthquake, Wind storm and Moderate Landslide
AP-50	50/0	53	Rubber Plantation/Orchards	Shaly Sandstone	Denudational Hills-Less dissected	Low	None	Earthquake, Wind storm and Moderate Landslide
AP-51	51/0	53	Rubber Plantation/Orchards	Shaly Sandstone	Denudational Hills-Less dissected	Low	None	Earthquake, Wind storm and Moderate Landslide
AP-53	53/0	63	Rubber Plantation/Orchards	Shaly Sandstone	Denudational Hills-Less dissected	High to Moderate	None	Earthquake, Wind storm and Moderate Landslide
53/1	53/1	56	Rubber Plantation/Orchards	Shaly Sandstone	Denudational Hills-Less dissected	High to Moderate	None	Earthquake, Wind storm and Moderate Landslide
53/2	53/2	71	Rubber Plantation/Orchards	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	High to Moderate	None	Earthquake, Wind storm and Moderate Landslide
53/3	53/3	66	Fallow Land	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	High to Moderate	None	Earthquake, Wind storm and Moderate Landslide
53/4	53/4	80	Open Forest	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	High to Moderate	None	Earthquake, Wind storm and Moderate Landslide
53/5	53/5	79	Open Forest	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	High to Moderate	None	Earthquake, Wind storm and Moderate Landslide
AP-54	54/0	75	Rubber Plantation/Orchards	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	High to Moderate	None	Earthquake, Wind storm and Moderate Landslide
AP-55	55/0	47	Rubber Plantation/Orchards	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	High to Moderate	None	Earthquake, Wind storm and Moderate Landslide
55/1	55/1	47	Agriculture Land	Sandstone/ pebble bed/ conglomerate	Valley Fill -êřÇô Shallow	Low	None	Earthquake, Wind storm and Moderate Landslide
AP-56	56/0	56	Rubber Plantation/Orchards	Sandstone/ pebble bed/ conglomerate	Valley Fill -êřÇô Shallow	Low	None	Earthquake, Wind storm and Moderate Landslide

Annexure B3

AP_NO	Ground Elevation of EP	EP Fall in Feature	Rock_Type	Rock_Type2	Landslide Study	Flood Study	Hazard Type
EXT TOWER	14	Agriculture Land	Shaly Sandstone	Alluvial Younger Shallow	None	Low Flood Prone	Earthquake, Wind Storm and Flood
AP-01	16	Agriculture Land	Shaly Sandstone	Alluvial Younger Shallow	None	Low Flood Prone	Earthquake, Wind Storm and Flood
AP-02	15	Agriculture Land	Shaly Sandstone	Alluvial Younger Shallow	None	Low Flood Prone	Earthquake, Wind Storm and Flood
AP-03	22	Rubber Plantation	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
AP-04	21	Rubber Plantation	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
AP-05	24	Rubber Plantation	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
AP-06	24	Barren Rocky Waste land	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
AP-07	31	Rubber Plantation	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
AP-08	25	Barren Rocky Waste land	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
AP-09	22	Barren Rocky Waste land	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
AP-10	21	Rubber Plantation	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
AP-11	38	Rubber Plantation	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
AP-12	22	Rubber Plantation	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
AP-13	34	Rubber Plantation	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
AP-14	37	Residential House	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
GANTRY	24	Electric Substation	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm

Annexure B4

AP_NO	LOC_NO	Ground Elevation of EP	EP Fall In Feature	Rock_Type	Rock Type2	Landslide Study	Flood Study	Agents Of Hazard
Gantry	Gantry	25	Electric Substation	Shaly Sandstone	Denudational Hills-Less dissected	Low Land Slide	None	Earthquake & Wind
AP-5	5/0	26	Rubber Plantation/Orchards	Shaly Sandstone	Denudational Hills-Less dissected	Low Land Slide	None	Earthquake & Wind
AP-4	4/0	32	Rubber Plantation/Orchards	Shaly Sandstone	Fracture/Fault Line Valley	Low Land Slide	None	Earthquake & Wind
AP-3	3/0	18	Agriculture Land	Shaly Sandstone	Denudational Hills-Less dissected	Low Land Slide	None	Earthquake & Wind
AP-2	2/0	30	Tree Crops and Groves	Shaly Sandstone	Fracture/Fault Line Valley	Low Land Slide	None	Earthquake & Wind
AP-1	1/0	18	Agriculture Land	Shaly Sandstone	Fracture/Fault Line Valley	Low Land Slide	None	Earthquake & Wind
Ext Tower 51		26	Agriculture Land	Shaly Sandstone	Fracture/Fault Line Valley	Low Land Slide	None	Earthquake & Wind
Ext Tower 52		16	Agriculture Land	Shaly Sandstone	Fracture/Fault Line Valley	Low Land Slide	None	Earthquake & Wind
Ext Tower 50		28	Rubber Plantation/Orchards	Shaly Sandstone	Denudational Hills-Less dissected	Low Land Slide	None	Earthquake & Wind
Ext Tower 49		22	Rubber Plantation/Orchards	Shaly Sandstone	Denudational Hills-Less dissected	Low Land Slide	None	Earthquake & Wind

AP-60		19	Metal Road	Alluvium-sand/ silt & clay alternating beds	Valley Fill	-érÇðModerate	Flood Prone Area	Very Low Landslide Area	Eartquake, Wind and Flood
AP-61		22	Metal Road	Alluvium-sand/ silt & clay alternating beds	Valley Fill	-érÇðModerate	Flood Prone Area	Very Low Landslide Area	Eartquake, Wind and Flood
AP-62		19	Metal Road	Alluvium-sand/ silt & clay alternating beds	Valley Fill	-érÇðModerate	Flood Prone Area	Very Low Landslide Area	Eartquake, Wind and Flood
AP-63		25	Metal Road	Alluvium-sand/ silt & clay alternating beds	Valley Fill	-érÇðModerate	Flood Prone Area	Very Low Landslide Area	Eartquake, Wind and Flood
AP-64		27	Vacant Land	Alluvium-sand/ silt & clay alternating beds	Valley Fill	-érÇðModerate	Non Flood Prone	Very Low Landslide Area	Eartquake, Wind and Flood
AP-65		27	Metal Road	Alluvium-sand/ silt & clay alternating beds	Valley Fill	-érÇðModerate	Non Flood Prone	Very Low Landslide Area	Eartquake, Wind and Flood
AP-66		26	Vacant Land	Alluvium-sand/ silt & clay alternating beds	Valley Fill	-érÇðModerate	Non Flood Prone	Very Low Landslide Area	Eartquake, Wind and Flood
AP-67		25	Metal Road	Alluvium-sand/ silt & clay alternating beds	Valley Fill	-érÇðModerate	Non Flood Prone	Very Low Landslide Area	Eartquake, Wind and Flood
AP-68		39	Metal Road	Alluvium-sand/ silt & clay alternating beds	Valley Fill	-érÇðModerate	Non Flood Prone	Very Low Landslide Area	Eartquake, Wind and Flood
AP-69		46	Metal Road	Alluvium-sand/ silt & clay alternating beds	Valley Fill	-érÇðModerate	Non Flood Prone	Very Low Landslide Area	Eartquake, Wind and Flood
AP-70		45	Vacant Land	Alluvium-sand/ silt & clay alternating beds	Valley Fill	-érÇðModerate	Non Flood Prone	Very Low Landslide Area	Eartquake, Wind and Flood
AP-71		39	Vacant Land	Alluvium-sand/ silt & clay alternating beds	Valley Fill	-érÇðModerate	Non Flood Prone	Very Low Landslide Area	Eartquake, Wind and Flood
AP-72		33	Tree Crops and Groves	Alluvium-sand/ silt & clay alternating beds	Valley Fill	-érÇðModerate	Non Flood Prone	Very Low Landslide Area	Eartquake, Wind and Flood
AP-73		27	Metal Road	Alluvium-sand/ silt & clay alternating beds	Valley Fill	-érÇðModerate	Non Flood Prone	Very Low Landslide Area	Eartquake, Wind and Flood
AP-74		19	Tree Crops and Groves	Alluvium-sand/ silt & clay alternating beds	Valley Fill	-érÇðModerate	Non Flood Prone	Very Low Landslide Area	Eartquake, Wind and Flood
AP-75		26	Tree Crops and Groves	Alluvium-sand/ silt & clay alternating beds	Valley Fill	-érÇðModerate	Non Flood Prone	Very Low Landslide Area	Eartquake, Wind and Flood
AP-76		24	Metal Road	Alluvium-sand/ silt & clay alternating beds	Valley Fill	-érÇðModerate	Non Flood Prone	Very Low Landslide Area	Eartquake, Wind and Flood
AP-77		28	Metal Road	Alluvium-sand/ silt & clay alternating beds	Valley Fill	-érÇðModerate	Non Flood Prone	Very Low Landslide Area	Eartquake, Wind and Flood
AP-78		32	Vacant Land	Alluvium-sand/ silt & clay alternating beds	Valley Fill	-érÇðModerate	Non Flood Prone	Very Low Landslide Area	Eartquake, Wind and Flood
AP-79		29	Metal Road	Alluvium-sand/ silt & clay alternating beds	Valley Fill	-érÇðModerate	Non Flood Prone	Very Low Landslide Area	Eartquake, Wind and Flood
AP-80		30	Metal Road	Alluvium-sand/ silt & clay alternating beds	Valley Fill	-érÇðModerate	Non Flood Prone	Very Low Landslide Area	Eartquake, Wind and Flood
AP-81		27	Vacant Land	Alluvium-sand/ silt & clay alternating beds	Valley Fill	-érÇðModerate	Non Flood Prone	Very Low Landslide Area	Eartquake, Wind and Flood
AP-82		22	Metal Road	Alluvium-sand/ silt & clay alternating beds	Valley Fill	-érÇðModerate	Non Flood Prone	Very Low Landslide Area	Eartquake, Wind and Flood
AP-83		18	Electric Substation	Alluvium-sand/ silt & clay alternating beds	Valley Fill	-érÇðModerate	Non Flood Prone	Very Low Landslide Area	Eartquake, Wind and Flood
AP-54		21	Tree Crops and Groves	Alluvium-sand/ silt & clay alternating beds	Valley Fill	-érÇðModerate	Flood Prone Area	Very Low Landslide Area	Eartquake, Wind and Flood
AP-17		28	Barren/Rocky	Shaly Sandstone	Denudational Hills-Less dissected		Non Flood Prone	Moderate Landslide Area	Eartquake, Wind and Moderate Landslide

AP-128	14	Shaly Sandstone	Denudational Hills-Less dissected	Tea Plantation/orchards	Very Low Landslide	Very Low Flood Prone	Earthquake And Wind
AP-129	20	Shaly Sandstone	Denudational Hills-Less dissected	Tea Plantation/orchards	Very Low Landslide	Very Low Flood Prone	Earthquake And Wind
AP-130	15	Shaly Sandstone	Denudational Hills-Less dissected	Tea Plantation/orchards	Very Low Landslide	Very Low Flood Prone	Earthquake And Wind

Annexure B13

AP_NO	LOC_NO	Ground Elevation Of EP	EP Fall in Feature	Rock_Type	Rock Formation	Landslide Study	Flood Study	Agents Of Hazard
AP-1	AP-1	39	Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Very Low	None	Earthquake and Wind
AP-2	AP-2	39	Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Very Low	None	Earthquake and Wind
AP-3	AP-3	31	Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Very Low	None	Earthquake and Wind
AP-4	AP-4	27	Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Very Low	None	Earthquake and Wind
AP-5	AP-5	34	Barren/Rocky Waste Land	Shaly Sandstone	Denudational Hills-Less dissected	Very Low	None	Earthquake and Wind
AP-6	AP-6	35	Barren/Rocky Waste Land	Shaly Sandstone	Denudational Hills-Less dissected	Very Low	None	Earthquake and Wind
AP-7	AP-7	37	Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Very Low	None	Earthquake and Wind
AP-8	AP-8	44	Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Very Low	None	Earthquake and Wind
AP-9	AP-9	42	Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Very Low	None	Earthquake and Wind
AP-10	AP-10	39	Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Very Low	None	Earthquake and Wind
AP-11	AP-11	41	Road Side Fallow Land	Shaly Sandstone	Denudational Hills-Less dissected	Very Low	None	Earthquake and Wind
AP-12	AP-12	38	Road Side Fallow Land	Shaly Sandstone	Denudational Hills-Less dissected	Very Low	None	Earthquake and Wind
AP-13	AP-13	26	Road Side Fallow Land	Shaly Sandstone	Denudational Hills-Less dissected	Very Low	None	Earthquake and Wind
AP-14	AP-14	24	Tree Crops and Groves	Shaly Sandstone	Denudational Hills-Less dissected	Very Low	None	Earthquake and Wind
AP-15	AP-15	24	Bricks Road	Shaly Sandstone	Denudational Hills-Less dissected	Very Low	None	Earthquake and Wind
AP-16	AP-16	27	Electric Substation	Shaly Sandstone	Denudational Hills-Less dissected	Very Low	None	Earthquake and Wind
AP-17	AP-17	25	Electric Substation	Shaly Sandstone	Denudational Hills-Less dissected	Very Low	None	Earthquake and Wind

Annexure B15

AP_NO	Pole_NO	Ground Elevation Of EP	EP Fall in Feature	Landslide Study	Flood Study	Agents Of hazard	Rock Formation
AP-1	AP-1	17	Pond/Lake	None	High Flood Prone Area	Earthquake, Wind Storm and High Flood	Alluvial Younger Shallow
AP-2	AP-2	20	Pond/Lake	None	High Flood Prone Area	Earthquake, Wind Storm and High Flood	Alluvial Younger Shallow
AP-3	AP-3	23	Agriculture Land	None	High Flood Prone Area	Earthquake, Wind Storm and High Flood	Alluvial Younger Shallow
.3/1	.3/1	25	Agriculture Land	None	High Flood Prone Area	Earthquake, Wind Storm and High Flood	Alluvial Younger Shallow
AP-4	AP-4	25	Agriculture Land	None	High Flood Prone Area	Earthquake, Wind Storm and High Flood	Alluvial Younger Shallow
AP-5	AP-5	23	Agriculture Land	None	High Flood Prone Area	Earthquake, Wind Storm and High Flood	Alluvial Younger Shallow
.5/1	.5/1	19	Agriculture Land	None	High Flood Prone Area	Earthquake, Wind Storm and High Flood	Alluvial Younger Shallow
.5/2	.5/2	18	Agriculture Land	None	High Flood Prone Area	Earthquake, Wind Storm and High Flood	Alluvial Younger Shallow
.5/3	.5/3	20	Agriculture Land	None	High Flood Prone Area	Earthquake, Wind Storm and High Flood	Alluvial Younger Shallow
AP-6	AP-6	20	Pond/Lake	None	High Flood Prone Area	Earthquake, Wind Storm and High Flood	Alluvial Younger Shallow
AP-7	AP-7	22	Agriculture Land	None	High Flood Prone Area	Earthquake, Wind Storm and High Flood	Alluvial Younger Shallow
	EXT	20	Agriculture Land	None	High Flood Prone Area	Earthquake, Wind Storm and High Flood	Alluvial Younger Shallow
AP-01	AP-1	17	Agriculture Land	None	High Flood Prone Area	Earthquake, Wind Storm and High Flood	Alluvial Younger Shallow
AP-02	AP-2	15	Agriculture Land	None	High Flood Prone Area	Earthquake, Wind Storm and High Flood	Alluvial Younger Shallow
AP-03	AP-3	20	Agriculture Land	None	High Flood Prone Area	Earthquake, Wind Storm and High Flood	Alluvial Younger Shallow
AP-05	AP-4	18	Agriculture Land	None	High Flood Prone Area	Earthquake, Wind Storm and High Flood	Alluvial Younger Shallow
AP-07	AP-5	23	Agriculture Land	None	High Flood Prone Area	Earthquake, Wind Storm and High Flood	Alluvial Younger Shallow

Annexure B17

AP_Pole_No	POLE_NO	Ground Elevation of EP	EP Fall in Feature	Rock_Type	Rock Type2	Landslide Study	Flood Study	Agents of Hazard
AP-1	1		55 Electric Substation	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	None	None	Earthquake, Wind Storm
AP-1	LOC-1/1		54 Tree Crops and Groves	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	None	None	Earthquake, Wind Storm
AP-2	2		55 Tree Crops and Groves	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	None	None	Earthquake, Wind Storm
AP-3	3		50 Tree Crops and Groves	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	None	None	Earthquake, Wind Storm
AP-4	4		39 Pond/Lake	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
AP-5	5		37 Metal Road	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
AP-6	6		38 Comercial Buiding	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
AP-7	7		46 Metal Road	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
AP-8	8		42 Fallow Land	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
AP-9	9		40 Tree Crops and Groves	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
AP-10	10		38 Fallow Land	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
AP-11	11		40 Metal Road	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
AP-12	12		40 Plantation	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
AP-13	13		46 Vacant Land	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
AP-14	14		49 Vacant Land	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
AP-15	15		48 Vacant Land	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
AP-16	16		54 Tree Crops and Groves	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
AP-17	17		52 Bridge	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
AP-18	18		52 Metal Road	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
AP-19	19		41 Agriculture Land	Shaly Sandstone	Alluvial Younger Shallow	None	Medium Flood Prone	Earthquake, Wind Storm & Flood
AP-20	20		42 Agriculture Land	Shaly Sandstone	Alluvial Younger Shallow	None	Medium Flood Prone	Earthquake, Wind Storm & Flood
AP-21	21		43 Vacant Land	Shaly Sandstone	Alluvial Younger Shallow	None	Medium Flood Prone	Earthquake, Wind Storm & Flood
AP-22	22		42 Metal Road	Shaly Sandstone	Alluvial Younger Shallow	None	Medium Flood Prone	Earthquake, Wind Storm & Flood
AP-23	23		44 Vacant Land	Shaly Sandstone	Alluvial Younger Shallow	None	Medium Flood Prone	Earthquake, Wind Storm
AP-24	24		47 Pond/Lake	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	None	None	Earthquake, Wind Storm
AP-25	25		45 Vacant Land	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	None	None	Earthquake, Wind Storm
AP-26	26		44 Vacant Land	Sandstone/ pebble bed/ conglomerate	Valley Fill -érÇô Shallow	None	None	Earthquake, Wind Storm
AP-27	27		44 Agriculture Land	Sandstone/ pebble bed/ conglomerate	Valley Fill -érÇô Shallow	None	None	Earthquake, Wind Storm
AP-28	28		47 Metal Road	Sandstone/ pebble bed/ conglomerate	Valley Fill -érÇô Shallow	None	None	Earthquake, Wind Storm
AP-29	29		51 Metal Road	Sandstone/ pebble bed/ conglomerate	Valley Fill -érÇô Shallow	None	None	Earthquake, Wind Storm & Moderate Landslide
AP-30	30		47 Metal Road	Sandstone/ pebble bed/ conglomerate	Valley Fill -érÇô Shallow	Moderate	None	Earthquake, Wind Storm & Moderate Landslide
AP-31	31		48 Rubber Plantation/Orchards	Sandstone/ pebble bed/ conglomerate	Valley Fill -érÇô Shallow	Moderate	None	Earthquake, Wind Storm & Moderate Landslide
AP-32	32		49 Rubber Plantation/Orchards	Sandstone/ pebble bed/ conglomerate	Valley Fill -érÇô Shallow	Moderate	None	Earthquake, Wind Storm & Moderate Landslide
AP-33	33		53 Barren/Rocky With Scrub Land	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Moderate	None	Earthquake, Wind Storm & Moderate Landslide
AP-34	34		50 Barren/Rocky With Scrub Land	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Moderate	None	Earthquake, Wind Storm & Moderate Landslide
AP-35	35		59 Barren/Rocky With Scrub Land	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Moderate	None	Earthquake, Wind Storm & Moderate Landslide
AP-36	36		69 Barren/Rocky With Scrub Land	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Moderate	None	Earthquake, Wind Storm & Moderate Landslide
AP-37	37		73 Comercial Buiding	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Moderate	None	Earthquake, Wind Storm & Moderate Landslide
AP-38	38		76 Barren/Rocky With Scrub Land	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Moderate	None	Earthquake, Wind Storm & Moderate Landslide
AP-39	39		76 Tree Crops and Groves	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Moderate	None	Earthquake, Wind Storm & Moderate Landslide
AP-40	40		77 Metal Road	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Moderate	None	Earthquake, Wind Storm & Moderate Landslide
AP-41	41		76 Metal Road	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Moderate	None	Earthquake, Wind Storm & Moderate Landslide
AP-43	43		73 Tree Crops and Groves	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Moderate	None	Earthquake, Wind Storm & Moderate Landslide
AP-44	44		66 Vacant Land	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Moderate	None	Earthquake, Wind Storm & Moderate Landslide
AP-45	45		67 Vacant Land	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	None	None	Earthquake, Wind Storm & Moderate Landslide
AP-46	46		64 Metal Road	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	None	None	Earthquake, Wind Storm & Moderate Landslide
AP-47	47		63 Tree Crops and Groves	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	None	None	Earthquake, Wind Storm & Moderate Landslide
AP-48	48		60 Metal Road	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	None	None	Earthquake, Wind Storm & Moderate Landslide
AP-49	49		62 Metal Road	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	None	None	Earthquake, Wind Storm & Moderate Landslide
AP-50	50		67 Metal Road	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	None	None	Earthquake, Wind Storm & Moderate Landslide
AP-51	51		68 Metal Road	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	None	None	Earthquake, Wind Storm & Moderate Landslide
AP-52	52		63 Metal Road	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	None	None	Earthquake, Wind Storm
AP-53	53		68 Vacant Land	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	None	None	Earthquake, Wind Storm
AP-54	54		63 Vacant Land	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	None	None	Earthquake, Wind Storm
AP-55	55		53 Fallow Land	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	None	None	Earthquake, Wind Storm
AP-56	56		52 Metal Road	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	None	None	Earthquake, Wind Storm

AP-115	115	50	Tree Crops and Groves	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
AP-116	116	53	Tree Crops and Groves	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
AP-117	117	62	Vacant Land	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
AP-118	118	60	Tree Crops and Groves	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
AP-119	119	58	Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
AP-120	120	54	Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
AP-121	121	48	Vacant Land	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
AP-122	122	49	Fallow Land	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
AP-123	123	55	Barren/Rocky With Scrub Land	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
AP-124	124	55	Barren/Rocky With Scrub Land	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
AP-125	125	56	Vacant Land	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
AP-126	126	51	Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
AP-127	127	42	Waste Land	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
AP-128	128	41	Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
AP-129	129	39	Waste Land	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
AP-130	130	37	Waste Land	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
AP-131	131	39	Waste Land	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
AP-132	132	48	Fallow Land	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
AP-133	133	63	Tree Crops and Groves	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
AP-134	134	63	Tree Crops and Groves	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
AP-135	135	54	Vacant Land	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
AP-136	136	52	Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
AP-137	137	48	Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
AP-138	138	46	Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
AP-139	139	48	Vacant Land	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
AP-140	140	41	Plantation	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
AP-141	141	46	Vacant Land	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
AP-142	142	39	Vacant Land	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
AP-143	143	41	Tree Crops and Groves	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
AP-144	144	36	Electric Substation	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
	6/1	42	Mud Road	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
	7/1	40	Vacant Land	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
	7/2	36	Agriculture Land	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
	7/3	38	Tree Crops and Groves	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
	7/4	42	Pond/Lake	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
	7/5	43	Agriculture Land	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
	9/1	49	Tree Crops and Groves	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
	9/2	48	Tree Crops and Groves	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
	9/3	50	Tree Crops and Groves	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
	9/4	42	Fallow Land	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
	9/5	42	Bricks Kilns/Quarry	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
	9/6	36	Bricks Kilns/Quarry	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
	9/7	36	Mud Road	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
	10/1	40	Vacant Land	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
	10/2	39	Vacant Land	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
	10/3	38	Bricks Kilns/Quarry	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
	10/4	37	Bricks Kilns/Quarry	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
	10/5	41	Fallow Land	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
	11/1	36	Metal Road	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
	11/2	37	Tree Crops and Groves	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
	11/3	37	Plantation	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
	12/1	44	Vacant Land	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
	12/2	46	Fallow Land	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
	12/3	43	Fallow Land	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
	12/4	42	Fallow Land	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
	13/1	49	Fallow Land	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
	15/1	53	Metal Road	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm
	18/1	52	Metal Road	Shaly Sandstone	Alluvial Younger Shallow	None	None	Earthquake, Wind Storm

119/1	58 Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
119/2	54 Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
120/1	54 Fallow Land	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
120/2	50 Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
120/3	48 Fallow Land	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
120/4	48 Vacant Land	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
123/1	56 Barren/Rocky With Scrub Land	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
123/2	56 Barren/Rocky With Scrub Land	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
124/1	54 Barren/Rocky With Scrub Land	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
125/1	54 Barren/Rocky With Scrub Land	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
125/2	51 Barren/Rocky With Scrub Land	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
126/1	51 Tree Crops and Groves	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
126/2	50 Waste Land	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
126/3	45 Waste Land	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
126/4	42 Waste Land	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
127/1	42 Waste Land	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
127/2	42 Waste Land	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
128/1	37 Waste Land	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
128/2	36 Waste Land	Shaly Sandstone	Denudational Hills-Less dissected	Moderate	None	Earthquake, Wind Storm
131/1	43 Fallow Land	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
131/2	51 Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
132/1	54 Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
132/2	61 Tree Crops and Groves	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
138/1	47 Vacant Land	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
139/1	39 Vacant Land	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
139/2	41 Plantation	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm
141/1	43 Vacant Land	Shaly Sandstone	Denudational Hills-Less dissected	None	None	Earthquake, Wind Storm

AP-42	42/1	0				Low Landslide	None	Earthquake, Wind Storm and Landslide
AP-42	42/2	0				Low Landslide	None	Earthquake, Wind Storm and Landslide
AP-43	AP-43	109	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Fallow Land	Low Landslide	None	Earthquake, Wind Storm and Landslide
AP-44	AP-44	110	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Barren Rocky Scrub Land	Low Landslide	None	Earthquake, Wind Storm and Landslide
AP-45	AP-45	113	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Bricks Road	Low Landslide	None	Earthquake, Wind Storm and Landslide
AP-46	AP-46	114	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Electric Substation	Low Landslide	None	Earthquake, Wind Storm and Landslide
5/1		122	Shale with sandstone/ limestone bands	Structural Hills-Highly Dissected	Open Forest	Low Landslide	None	Earthquake, Wind Storm and Landslide
9/1		116	Shale with sandstone/ limestone bands	Structural Hills-Highly Dissected	Vacant Land	Low Landslide	None	Earthquake, Wind Storm and Landslide
26/1		106	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Vacant Land	Low Landslide	None	Earthquake, Wind Storm and Landslide
26/2		106	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Vacant Land	Low Landslide	None	Earthquake, Wind Storm and Landslide
33/1		107	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Vacant Land	Low Landslide	None	Earthquake, Wind Storm and Landslide
34/1		106	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Tree Crops and Groves	Low Landslide	None	Earthquake, Wind Storm and Landslide
36/1		98	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Fallow Land	Low Landslide	None	Earthquake, Wind Storm and Landslide
39/1		97	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Barren Rocky Scrub Land	Low Landslide	None	Earthquake, Wind Storm and Landslide
40/1		109	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Barren Rocky Scrub Land	Low Landslide	None	Earthquake, Wind Storm and Landslide
42/1		105	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Fallow Land	Low Landslide	None	Earthquake, Wind Storm and Landslide
42/1		105	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Fallow Land	Low Landslide	None	Earthquake, Wind Storm and Landslide

Annexure B20

AP_NO	LOC_NO	EP Fall In Feature	Ground Elevation of EP	Rock_Type	Rock Type2	Landslide Study	Flood Study	Agents Of Hazard
AP-1	1	Electric Substation	32	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-2	2	Brick Road	33	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-3	3	Tea Garden	28	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-4	4	Tea Garden	27	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-5	5	Tea Garden	24	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-6	6	Barren Rocky Waste Land	22	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-7	7	Barren Rocky Waste Land	24	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-8	8	Barren Rocky Waste Land	21	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-9	9	Barren Rocky Waste Land	26	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-10	10	Barren Rocky Waste Land	23	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-11	11	Tea Garden	21	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-12	12	Metal Road	29	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-13	13	Metal Road	31	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-14	14	Tea Garden	29	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-15	15	Tea Garden	39	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-16	16	Tea Garden	39	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-17	17	Tea Garden	41	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-19	19	Tea Garden	31	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-20	20	Tea Garden	32	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-21	21	Metal Road	35	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-22	22	Mud Road	33	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-23	23	Fallow Land	33	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-24	24	Fallow Land	39	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-25	25	Fallow Land	35	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-26	26	Metal Road	40	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-27	27	Fallow Land	40	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-28	28	Fallow Land	34	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-30	30	Fallow Land	24	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-31	31	Vacant Land	26	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-32	32	Tree Crops And Groves	39	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-33	33	Tree Crops And Groves	36	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-34	34	Fallow Land	31	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-35	35	Fallow Land	34	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-36	36	Tea Garden	35	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-37	37	Tea Garden	39	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-38	38	Tree Crops And Groves	42	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-39	39	Tree Crops And Groves	38	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-40	40	Tree Crops And Groves	37	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-41	41	Tea Garden	35	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-42	42	Tea Garden	32	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-43	43	Agriculture Land	23	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-44	44	Brick Road	22	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-45	45	Pond/Lake	24	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-46	46	Pond/Lake	30	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide
AP-47	47	Tea Garden	34	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	None	Earthquake, Wind Storm & Low Landslide

41/1	37 Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	No Flood Prone Area	Earthquake, Wind, Low Landslide
41/2	36 Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	No Flood Prone Area	Earthquake, Wind, Low Landslide
55/1	48 Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	No Flood Prone Area	Earthquake, Wind, Low Landslide
56/1	46 Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	No Flood Prone Area	Earthquake, Wind, Low Landslide
56/2	45 Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	No Flood Prone Area	Earthquake, Wind, Low Landslide
56/3	47 Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	No Flood Prone Area	Earthquake, Wind, Low Landslide
56/4	42 Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	No Flood Prone Area	Earthquake, Wind, Low Landslide
56/5	41 Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	No Flood Prone Area	Earthquake, Wind, Low Landslide
58/1	44 Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	No Flood Prone Area	Earthquake, Wind, Low Landslide
58/2	45 Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	No Flood Prone Area	Earthquake, Wind, Low Landslide
59/1	40 Plantation/Orchards	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	No Flood Prone Area	Earthquake, Wind, Low Landslide
59/2	36 Plantation/Orchards	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	No Flood Prone Area	Earthquake, Wind, Low Landslide
59/3	37 Plantation/Orchards	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	No Flood Prone Area	Earthquake, Wind, Low Landslide
60/1	44 Plantation/Orchards	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	No Flood Prone Area	Earthquake, Wind, Low Landslide
62/1	46 Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	No Flood Prone Area	Earthquake, Wind, Low Landslide
67/1	41 Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	No Flood Prone Area	Earthquake, Wind, Low Landslide
82/1	35 Fallow Land	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	No Flood Prone Area	Earthquake, Wind, Low Landslide
84/1	20 Fallow Land	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	No Flood Prone Area	Earthquake, Wind, Low Landslide
106/1	32 Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	No Flood Prone Area	Earthquake, Wind, Low Landslide
115/1	25 Vacant Land	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	No Flood Prone Area	Earthquake, Wind, Low Landslide
116/1	24 Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	No Flood Prone Area	Earthquake, Wind, Low Landslide
116/2	32 Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	No Flood Prone Area	Earthquake, Wind, Low Landslide
118/1	21 Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	No Flood Prone Area	Earthquake, Wind, Low Landslide
125	20 Tree Crops and Groves	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	No Flood Prone Area	Earthquake, Wind, Low Landslide
125/1	25 Tree Crops and Groves	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	No Flood Prone Area	Earthquake, Wind, Low Landslide
125/2	23 Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	No Flood Prone Area	Earthquake, Wind, Low Landslide
125/3	20 Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	No Flood Prone Area	Earthquake, Wind, Low Landslide
125/4	18 Tree Crops and Groves	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	No Flood Prone Area	Earthquake, Wind, Low Landslide
131/1	13 Agriculture Land	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low	Low Flood Prone Area	Earthquake, Wind, Medium Landslide and Low flood

85/2	42	Agriculture Land	Sandstone/ pebble	Structural Hills-Moderately dissected	Moderate to Low Landslide	None	Earthquake, Wind Storm and Landslide
85/3	34	Agriculture Land	Sandstone/ pebble	Structural Hills-Moderately dissected	Moderate to Low Landslide	None	Earthquake, Wind Storm and Landslide
85/4	42	Agriculture Land	Sandstone/ pebble	Structural Hills-Moderately dissected	Moderate to Low Landslide	None	Earthquake, Wind Storm and Landslide
88/1	41	Agriculture Land	Shaly Sandstone	Fracture/Fault Line Valley	Moderate to Low Landslide	None	Earthquake, Wind Storm and Landslide
89/1	41	Agriculture Land	Shaly Sandstone	Fracture/Fault Line Valley	Moderate to Low Landslide	None	Earthquake, Wind Storm and Landslide
91/1	35	Metal Road	Shaly Sandstone	Fracture/Fault Line Valley	Moderate to Low Landslide	None	Earthquake, Wind Storm and Landslide
94/1	24	Metal Road	Shaly Sandstone	Fracture/Fault Line Valley	Moderate to Low Landslide	None	Earthquake, Wind Storm and Landslide
97/1	28	Rubber Plantation/Orchards	Shaly Sandstone	Fracture/Fault Line Valley	Moderate to Low Landslide	None	Earthquake, Wind Storm and Landslide
98/1	27	Rubber Plantation/Orchards	Shaly Sandstone	Fracture/Fault Line Valley	Moderate to Low Landslide	None	Earthquake, Wind Storm and Landslide
103/1	37	Agriculture Land	Shaly Sandstone	Fracture/Fault Line Valley	Moderate to Low Landslide	None	Earthquake, Wind Storm and Landslide
103/1	35	Agriculture Land	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low Landslide	None	Earthquake, Wind Storm and Landslide
105/1	32	Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Moderate to Low Landslide	None	Earthquake, Wind Storm and Landslide
149/1	28	Metal Road	Shaly Sandstone	Fracture/Fault Line Valley	Moderate to Low Landslide	None	Earthquake, Wind Storm and Landslide
149/2	24	Metal Road	Shaly Sandstone	Fracture/Fault Line Valley	Moderate to Low Landslide	None	Earthquake, Wind Storm and Landslide
149/3	19	Metal Road	Shaly Sandstone	Fracture/Fault Line Valley	Moderate to Low Landslide	None	Earthquake, Wind Storm and Landslide
149/4	16	Metal Road	Shaly Sandstone	Fracture/Fault Line Valley	Moderate to Low Landslide	None	Earthquake, Wind Storm and Landslide
150	18	Metal Road	Shaly Sandstone	Fracture/Fault Line Valley	Moderate to Low Landslide	None	Earthquake, Wind Storm and Landslide

AP-126	26	Vacant Land	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Low Landslide	None	Earthquake, Wind Storm, Low Land Slide
AP-127	29	Vacant Land	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Low Landslide	None	Earthquake, Wind Storm, Low Land Slide
AP-128	28	Metal Road	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Low Landslide	None	Earthquake, Wind Storm, Low Land Slide
AP-129	23	Metal Road	Sandstone	Alluvial Younger Shallow	Low Landslide	None	Earthquake, Wind Storm, Low Land Slide
AP-130	23	Vacant Land	Sandstone	Alluvial Younger Shallow	Low Landslide	None	Earthquake, Wind Storm, Low Land Slide
AP-131	14	Metal Road	Sandstone	Alluvial Younger Shallow	Low Landslide	None	Earthquake, Wind Storm, Low Land Slide
AP-132	15	Vacant Land	Sandstone	Alluvial Younger Shallow	Low Landslide	None	Earthquake, Wind Storm, Low Land Slide
AP-133	20	Vacant Land	Sandstone	Alluvial Younger Shallow	Low Landslide	None	Earthquake, Wind Storm, Low Land Slide
AP-134	19	Vacant Land	Sandstone	Alluvial Younger Shallow	Low Landslide	None	Earthquake, Wind Storm, Low Land Slide
AP-135	22	Vacant Land	Sandstone	Alluvial Younger Shallow	Low Landslide	None	Earthquake, Wind Storm, Low Land Slide
AP-136	19	Metal Road	Sandstone	Alluvial Younger Shallow	Low Landslide	None	Earthquake, Wind Storm, Low Land Slide
AP-137	17	Tree Crops and Groves	Sandstone	Alluvial Younger Shallow	Low Landslide	Low Flood Area	Earthquake, Wind Storm, Low Land Slide and low FI*
AP-138	15	Metal Road	Sandstone	Alluvial Younger Shallow	Low Landslide	Low Flood Area	Earthquake, Wind Storm, Low Land Slide and low FI*
AP-139	15	Vacant Land	Sandstone	Alluvial Younger Shallow	Low Landslide	Low Flood Area	Earthquake, Wind Storm, Low Land Slide and low FI*
AP-140	12	Agriculture Land	Sandstone	Alluvial Younger Shallow	Low Landslide	Low Flood Area	Earthquake, Wind Storm, Low Land Slide and low FI*
AP-141	17	Agriculture Land	Sandstone	Alluvial Younger Shallow	Low Landslide	Low Flood Area	Earthquake, Wind Storm, Low Land Slide and low FI*
AP-142	19	Vacant Land	Sandstone	Alluvial Younger Shallow	Low Landslide	Low Flood Area	Earthquake, Wind Storm, Low Land Slide and low FI*
AP-143	24	Vacant Land	Sandstone	Alluvial Younger Shallow	Low Landslide	Low Flood Area	Earthquake, Wind Storm, Low Land Slide and low FI*
AP-144	24	Vacant Land	Sandstone	Alluvial Younger Shallow	Low Landslide	Low Flood Area	Earthquake, Wind Storm, Low Land Slide and low FI*
AP-145	30	Metal Road	Sandstone	Alluvial Younger Shallow	Low Landslide	Low Flood Area	Earthquake, Wind Storm, Low Land Slide and low FI*
AP-146	35	Metal Road	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Low Landslide	None	Earthquake, Wind Storm, Low Land Slide
AP-147	33	Metal Road	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Low Landslide	None	Earthquake, Wind Storm, Low Land Slide
AP-148	28	Metal Road	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Low Landslide	None	Earthquake, Wind Storm, Low Land Slide
AP-149	28	Metal Road	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Low Landslide	None	Earthquake, Wind Storm, Low Land Slide
AP-150	25	Tree Crops and Groves	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Low Landslide	None	Earthquake, Wind Storm, Low Land Slide
AP-151	25	Metal Road	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Low Landslide	None	Earthquake, Wind Storm, Low Land Slide
AP-152	25	Electric Substation	Sandstone/ pebble bed/ conglomerate	Structural Hills-Moderately dissected	Low Landslide	None	Earthquake, Wind Storm, Low Land Slide

Annexure B28

AP_NO	LOC_NO	Grund Elevation of EP	EP Fall in Feature	Rock_Type	Rock_Type2	Landslide	Flood	Hazard
	EXT-1	40	Fallow Land	Shaly Sandstone	Alluvial Younger Shallow	Very Low	None	Earthquake and Wind Storm
1	1	39	Fallow Land	Shaly Sandstone	Alluvial Younger Shallow	Very Low	None	Earthquake and Wind Storm
2	2	41	Fallow Land	Shaly Sandstone	Alluvial Younger Shallow	Very Low	None	Earthquake and Wind Storm
3	3	35	Metal Road	Shaly Sandstone	Alluvial Younger Shallow	Very Low	None	Earthquake and Wind Storm
4	4	32	Tree Crops and Groves	Shaly Sandstone	Alluvial Younger Shallow	Very Low	None	Earthquake and Wind Storm
5	5	35	Metal Road	Shaly Sandstone	Alluvial Younger Shallow	Very Low	None	Earthquake and Wind Storm
6	6	34	Vacant Land	Shaly Sandstone	Alluvial Younger Shallow	Very Low	None	Earthquake and Wind Storm
7	7	32	Vacant Land	Shaly Sandstone	Alluvial Younger Shallow	Very Low	None	Earthquake and Wind Storm
8	8	40	Vacant Land	Shaly Sandstone	Alluvial Younger Shallow	Very Low	None	Earthquake and Wind Storm
9	9	43	Metal Road	Shaly Sandstone	Alluvial Younger Shallow	Very Low	None	Earthquake and Wind Storm
10	10	44	Vacant Land	Shaly Sandstone	Alluvial Younger Shallow	Very Low	None	Earthquake and Wind Storm
11	11	48	Metal Road	Shaly Sandstone	Alluvial Younger Shallow	Very Low	None	Earthquake and Wind Storm
12	12	45	Metal Road	Shaly Sandstone	Alluvial Younger Shallow	Very Low	None	Earthquake and Wind Storm
13	13	41	Metal Road	Shaly Sandstone	Alluvial Younger Shallow	Very Low	None	Earthquake and Wind Storm
14	14	37	Vacant Land	Shaly Sandstone	Alluvial Younger Shallow	Very Low	None	Earthquake and Wind Storm
15	15	38	Metal Road	Shaly Sandstone	Alluvial Younger Shallow	Very Low	None	Earthquake and Wind Storm
16	16	40	Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Very Low	None	Earthquake and Wind Storm
17	17	41	Barren with Scrub Land	Shaly Sandstone	Denudational Hills-Less dissected	Very Low	None	Earthquake and Wind Storm
18	18	41	Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Very Low	None	Earthquake and Wind Storm
19	19	45	Metal Road	Shaly Sandstone	Denudational Hills-Less dissected	Very Low	None	Earthquake and Wind Storm
20	20	51	Barren with Scrub Land	Shaly Sandstone	Denudational Hills-Less dissected	Very Low	None	Earthquake and Wind Storm
21	21	52	Barren with Scrub Land	Shaly Sandstone	Denudational Hills-Less dissected	Very Low	None	Earthquake and Wind Storm
22	22	46	Barren with Scrub Land	Shaly Sandstone	Denudational Hills-Less dissected	Very Low	None	Earthquake and Wind Storm
AP-1	AP-1	47	Barren with Scrub Land	Shaly Sandstone	Denudational Hills-Less dissected	Very Low	None	Earthquake and Wind Storm
AP-2	AP-2	51	Barren with Scrub Land	Shaly Sandstone	Denudational Hills-Less dissected	Very Low	None	Earthquake and Wind Storm
AP-3	AP-3	50	Barren with Scrub Land	Shaly Sandstone	Denudational Hills-Less dissected	Very Low	None	Earthquake and Wind Storm
AP-4	AP-4	42	Vacant Land	Shaly Sandstone	Denudational Hills-Less dissected	Very Low	None	Earthquake and Wind Storm
AP-5	AP-5	43	Barren with Scrub Land	Shaly Sandstone	Denudational Hills-Less dissected	Very Low	None	Earthquake and Wind Storm
AP-6	AP-6	41	Vacant Land	Shaly Sandstone	Denudational Hills-Less dissected	Very Low	None	Earthquake and Wind Storm
AP-7	AP-7	41	Agriculture Land	Alluvium-sand/ silt & clay alternating beds	Valley Fill -féřÇô Shallow	Very Low	None	Earthquake and Wind Storm
AP-8	AP-8	50	Agriculture Land	Shaly Sandstone	Alluvial Younger Shallow	Very Low	None	Earthquake and Wind Storm
AP-9	AP-9	44	Agriculture Land	Shaly Sandstone	Alluvial Younger Shallow	Very Low	None	Earthquake and Wind Storm
AP-10	AP-10	42	Agriculture Land	Shaly Sandstone	Alluvial Younger Shallow	Very Low	None	Earthquake and Wind Storm
AP-11	AP-11	42	Agriculture Land	Shaly Sandstone	Alluvial Younger Shallow	Very Low	None	Earthquake and Wind Storm
AP-12	AP-12	30	Vacant Land	Shaly Sandstone	Alluvial Younger Shallow	Very Low	None	Earthquake and Wind Storm

Appendix



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura


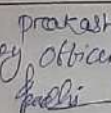

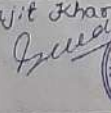

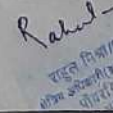
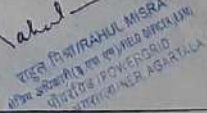


Appendix A

Environmental Monitoring Reports / Baseline Data

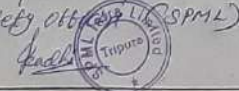
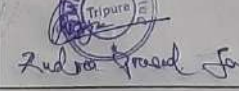
A. Noise levels at S/S Locations

Noise Level: Gokulnagar S/S, December 2020


 C/O: Power Grid Corporation of India Limited Noise Test Report						
(132/33/11)KV Sub-Station:- <u>Gokulnagar</u>					Month:- <u>December - 2020</u>	
SLNo.	Noise Reading					Remarks
Week	Area Without Machines	Total Average Reading	Area With Light Machines	Total Average Reading	Area with Heavy Machines	
1ST	51.2	50.43 db	57.9	61.20 db	---	
	49.4		61.3		---	
	50.7		64.4		---	
2ND	---		---		---	
	---		---		---	
	---		---		---	
3RD	---		---		---	
	---		---		---	
	---		---		---	
4TH	51.3	52.76 db	59.9	57.13 db	79.4	82.20 db
	52.9		61.4		82.9	
	54.1		50.1		84.3	
Reading Taken BY:			Site Incharge		Power Grid Review	
<u>Tyoti Prakash</u> Safety Officer  			<u>Sujit Jha</u>  		<u>Rahul</u>  	

The noise level assumed is below the maximum allowable which is 90 db for site in the working area.

Noise Level: Mohanpur S/S, December 2020

SPML Engineering Life							Remarks
C/O: Power Grid Corporation of India Limited							
Noise Test Report							
(132/33/11)KV Sub-Station: <u>Mohanpur</u>					Month: <u>December - 2020</u>		
S.No.	Noise Reading						Remarks
Week	Area Without Machines	Total Average Reading	Area With Light Machines	Total Average Reading	Area With Heavy Machines	Total Average Reading	
1ST	54.05	51.39 db	57.05	54.37 db	-		The noise level observed is below the maximum allowable limit which is 90db for this worky area.
	49.08		54.03		-		
	51.04		52.05		-		
2ND	-		-		-		
	-		-		-		
	-		-		-		
3RD	-		-		-		
	-		-		-		
	-		-		-		
4TH	48.04	52.76db	51.02	55.46db	57.07	62.28DB	
	52.01		54.09		61.02		
	57.08		60.03		67.09		
Reading Taken BY:			Site Incharge		Power Grid Review		
Eijol Prakash Padhi Safety Officer (SPML) 			 Rudra Prasad Jena		Rahul TGT (P) RAHUL MISHRA MEMBER IN CHARGE POWER GRID DISTRICT POWER GRID SEPAAHJALA DISTRICT		

Noise Levels: Gokulnagar, Mohanpur, Ravindra Nagar



राष्ट्रीय प्रौद्योगिकी संस्थान अगरतला
NATIONAL INSTITUTE OF TECHNOLOGY AGARTALA
CIVIL ENGINEERING DEPARTMENT

Phone No: (0381) 2346630, 2348522 Fax No: (0381) 2346360

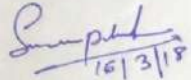
Job No: C- 177/ 17

Test Report of Noise level

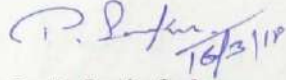
Name of Client: PGCIL
 Sites : Gokulnagar, Rabindranagar & Mohanpur.
 Date of Test : 22/11/2017

Table 1: Results


SITE NAME	AREA WITH HEAVY MACHINES	AREA WITH LIGHT MACHNES	AREA WITHOUT MACHNES
GOKUL NAGAR	88.56 dB	81.96 dB	69.60 dB
RABINDRA NAGAR	85.00 dB	73.73 dB	67.76 dB
MOHANPUR	79.30 dB	67.66 dB	65.00 dB



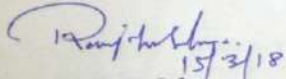
Dr. S.K.Pal
(Associate Professor, CE Deptt)



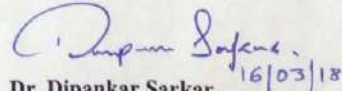
Dr. Partha Pratim Sarkar
(Asstt. Professor, CE Deptt)



Dr. Joyanta Pal
(Asstt. Professor, CE Deptt)



Dr. Rajib Saha
(Asstt. Professor, CE Deptt)




Dr. Dipankar Sarkar
(Asstt. Professor, CE Deptt)

National Institute of Technology Agartala
Barjala, Jirania, West Tripura, PIN- 799046

B. Water Quality at S/S Locations

Water Quality Reports:



MATERIAL TESTING LABORATORY & QUALITY MANAGEMENT CENTRE

TEST RESULTS OF WATER SAMPLE (RABINDRANAGAR)

Source : Sand Filter water I/Mark : NEAGT/NERPSIP-350/water/3
 Date of sampling : 25.11.17 Period of testing : 27.11.17 to 29.11.17

Physical Parameters:

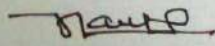
Sl. No.	Characteristic	Method of test	Results	Drinking water specification as per IS 10500 :2012
1.	Colour	IS 3025 (Pt- 4)	Nil	5
2.	pH	IS 3025 (Pt- 11)	6.7	6.5 - 8.5
3.	Taste	IS 3025 (Pt- 7 & 8)	Unobjectionable	Agrecable
4.	Smell	IS 3025 (Pt- 5)	Nil	Agreeable
5.	Total solids	IS 3025 (Pt- 16)	48 mg/l	500 mg/l
6.	Suspended Solid	IS 3025 (Pt- 16)	22 mg/l	-
7.	Dissolved solids	IS 3025 (Pt- 16)	26 mg/l	-

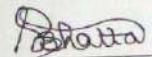
Chemical Parameters

Sl. No.	Characteristic	Method of test	Results	Drinking water specification as per IS 10500 :2012
1	Alkalinity	IS 3025 (Pt - 23)	38 mg/l as CaCO ₃	200 mg/l, Max
2	Acidity	IS 3025 (Pt - 22)	34 mg/l as CaCO ₃	-
3	Chloride	IS 3025 (Pt - 32)	42 mg/l as CaCO ₃	250 mg/l, Max
4	Hardness	IS 3025 (Pt - 21)	52 mg/l as CaCO ₃	200 mg/l, Max
5	Fluoride	IS 3025 (Pt - 60)	0.5 mg/l	1.0 mg/l, Max
6	Nitrate	IS 3025 (Pt - 34)	Nil	45 mg/l, Max
7	Iron	IS 3025 (Pt - 53)	0.1 mg/l	0.3 mg/l, Max
8	Sulphate	IS 3025 (Pt - 24)	Trace	200 mg/l, Max

Inference: Water is suitable for drinking purpose. It is advised to use small dose of lime to increase pH value.

-----End of report-----


Authorized Signatory
 Authorized Signatory
 Material Testing Laboratory &
 Quality Management Centre


Testing Officer
 Testing Officer
 MTL & QMC

Page 4 of 4

MTL & QMC, Sib-bari Road, Athalbasti, P.O. Ghungoor (SMC), Silchar-788 014, Dist. Cachar, Assam
 Tel & Fax : 03842-224572 :: M : 9435503592 :: e-mail: ms.nikhileshpaul@rediffmail.com

MATERIAL TESTING LABORATORY & QUALITY MANAGEMENT CENTRE



TEST RESULTS OF WATER SAMPLE (GOKULNAGAR)

Source : Sand Filter water

I/Mark : NEAGT/NERPSIP-350/water/2

Date of sampling : 25.11.17

Period of testing : 27.11.17 to 29.11.17

Physical Parameters:

Sl. No.	Characteristic	Method of test	Results	Drinking water specification as per IS 10500 :2012
1.	Colour	IS 3025 (Pt- 4)	Nil	5
2.	pH	IS 3025 (Pt- 11)	6.5	6.5 - 8.5
3.	Taste	IS 3025 (Pt- 7 & 8)	Unobjectionable	Agreeable
4.	Smell	IS 3025 (Pt- 5)	Nil	Agreeable
5.	Total solids	IS 3025 (Pt- 16)	46 mg/l	500 mg/l
6.	Suspended Solid	IS 3025 (Pt- 16)	21 mg/l	-
7.	Dissolved solids	IS 3025 (Pt- 16)	25 mg/l	-

Chemical Parameters

Sl. No.	Characteristic	Method of test	Results	Drinking water specification as per IS 10500 :2012
1	Alkalinity	IS 3025 (Pt - 23)	42 mg/l as CaCO ₃	200 mg/l, Max
2	Acidity	IS 3025 (Pt - 22)	30 mg/l as CaCO ₃	-
3	Chloride	IS 3025 (Pt - 32)	35 mg/l as CaCO ₃	250 mg/l, Max
4	Hardness	IS 3025 (Pt - 21)	46 mg/l as CaCO ₃	200 mg/l, Max
5	Fluoride	IS 3025 (Pt - 60)	0.5 mg/l	1.0 mg/l, Max
6	Nitrate	IS 3025 (Pt - 34)	Nil	45 mg/l, Max
7	Iron	IS 3025 (Pt - 53)	0.1 mg/l	0.3 mg/l, Max
8	Sulphate	IS 3025 (Pt - 24)	Trace	200 mg/l, Max

Inference: Water is suitable for drinking purpose. It is advised to use small dose of lime to increase pH value.

(Signature)
Testing Officer
Testing Officer
MTL & QMC

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MATERIAL TESTING LABORATORY & QUALITY MANAGEMENT CENTRE

TEST RESULTS OF WATER SAMPLE (MOHANPUR S/S)

Source : Sand Filter water

I/Mark : NEAGT/NERPSIP-350/water/1

Date of sampling : 25.11.17

Period of testing : 27.11.17 to 29.11.17

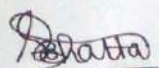
Physical Parameters:

Sl. No.	Characteristic	Method of test	Results	Drinking water specification as per IS 10500 :2012
1.	Colour	IS 3025 (Pt- 4)	Nil	5
2.	pH	IS 3025 (Pt- 11)	6.6	6.5 - 8.5
3.	Taste	IS 3025 (Pt- 7 & 8)	Nil	Agreeable
4.	Smell	IS 3025 (Pt- 5)	Nil	Agreeable
5.	Total solids	IS 3025 (Pt- 16)	42 mg/l	500 mg/l
6.	Suspended Solid	IS 3025 (Pt- 16)	20 mg/l	-
7.	Dissolved solids	IS 3025 (Pt- 16)	22 mg/l	-

Chemical Parameters

Sl. No.	Characteristic	Method of test	Results	Drinking water specification as per IS 10500 :2012
1	Alkalinity	IS 3025 (Pt - 23)	46 mg/l as CaCO ₃	200 mg/l, Max
2	Acidity	IS 3025 (Pt - 22)	36 mg/l as CaCO ₃	-
3	Chloride	IS 3025 (Pt - 32)	45 mg/l as CaCO ₃	250 mg/l, Max
4	Hardness	IS 3025 (Pt - 21)	48 mg/l as CaCO ₃	200 mg/l, Max
5	Fluoride	IS 3025 (Pt - 60)	0.1 mg/l	1.0 mg/l, Max
6	Nitrate	IS 3025 (Pt - 34)	Nil	45 mg/l, Max
7	Iron	IS 3025 (Pt - 53)	0.14 mg/l	0.3 mg/l, Max
8	Sulphate	IS 3025 (Pt - 24)	Trace	200 mg/l, Max

Inference: Water is suitable for drinking purpose. It is advised to use small dose of lime to increase pH value.


Testing Officer
**Testing Officer
MTL & QMC**

Page 2 of 4

MATERIAL TESTING LABORATORY & QUALITY MANAGEMENT CENTRE



TEST RESULTS OF WATER SAMPLE (BELONIA S/S)

Source: Work site

I/Mark: NEAGT/NERPSIP-3000/water/1

Date of sampling: 08.01.18

Period of testing: 09.01.18 to 12.01.18

Physical Parameters:

Sl. No.	Characteristic	Method of test	Results	Drinking water specification as per IS 10500 :2012
1.	Colour	IS 3025 (Pt- 4)	Nil	5
2.	pH	IS 3025 (Pt- 11)	6.4	6.5 - 8.5
3.	Taste	IS 3025 (Pt- 7 & 8)	Nil	Agreeable
4.	Smell	IS 3025 (Pt- 5)	Nil	Agreeable
5.	Total solids	IS 3025 (Pt- 16)	44 mg/l	500 mg/l
6.	Suspended Solid	IS 3025 (Pt- 16)	24 mg/l	-
7.	Dissolved solids	IS 3025 (Pt- 16)	20 mg/l	-

Chemical Parameters

Sl. No.	Characteristic	Method of test	Results	Drinking water specification as per IS 10500 :2012
1	Alkalinity	IS 3025 (Pt - 23)	48 mg/l as CaCO ₃	200 mg/l, Max
2	Acidity	IS 3025 (Pt - 22)	34 mg/l as CaCO ₃	-
3	Chloride	IS 3025 (Pt - 32)	42 mg/l as CaCO ₃	250 mg/l, Max
4	Hardness	IS 3025 (Pt - 21)	45 mg/l as CaCO ₃	200 mg/l, Max
5	Fluoride	IS 3025 (Pt - 60)	0.2 mg/l	1.0 mg/l, Max
6	Nitrate	IS 3025 (Pt - 34)	Nil	45 mg/l, Max
7	Iron	IS 3025 (Pt - 53)	0.12 mg/l	0.3 mg/l, Max
8	Sulphate	IS 3025 (Pt - 24)	Trace	200 mg/l, Max

Inference: Water is suitable for drinking purpose. It is advised to use small dose of lime to increase pH value.


Testing Officer
Testing Officer
MTL & QMC

Page 2 of 3

C. Soils in Project Districts

Soil Unit	Description	Taxonomic Classification	Area (in'000 ha)	Area (%)
1	Deep, somewhat excessively drained, loamy skeletal soils on very steeply sloping side slopes of high relief structural hills having loamy surface with very severe erosion hazard	Loamy skeletal Typic Dystrochrepts Fine loamy Typic Dystrochrepts	32.9	3.1
	Associated with: Deep to very deep, well drained, fine loamy soils on steeply sloping ridges with severe erosion hazard			
2	Deep to very deep, somewhat excessively drained, fine loamy skeletal soils on steeply sloping hill summits having loamy surface with severe erosion hazard	Fine loamy Typic Udorthents Fine loamy Typic Dystrochrepts	42.6	4.1
	Associated with: Deep, somewhat excessively drained, fine loamy soils on side slopes of high relief structural hill with severe erosion hazard and slight stoniness			
3	Deep, well drained, loamy skeletal soils on steeply sloping side slopes of high relief structural hills having loamy surface with very severe erosion hazard and moderate stoniness	Loamy skeletal Typic Dystrochrepts Fine loamy Typic Haplumbrepts Fragmental Lithic Udorthents	10.9	1.0
	Associated with: Deep to very deep well drained, fine loamy soils on moderately steeply sloping hill summit with severe erosion hazard and slight stoniness			
4	Deep to very deep, well drained, fine loamy soils on moderately dissected side slopes of ridges having loamy surface with severe erosion hazard	Fine loamy Typic Hapludults Fine loamy Umbric Dystrochrepts	63.1	6.0
	Associated with: Deep, somewhat excessively drained, fine loamy soils on moderately steeply sloping ridge top with moderate erosion hazard and slight stoniness			
5	Very deep, excessively drained, Coarse loamy soils on the slopes of moderately sloping medium relief having loamy surface with severe erosion hazard	Coarse loamy Typic Udorthents Loamy over sandy Typic Dystrochrepts Fine Loamy Typic Dystrochrepts	20.2	1.9
	Associated with: Deep, well drained, loamy over sandy soils on moderately sloping side slopes of the hills with moderate erosion hazard			
6	Deep, well drained, fine loamy soils on the side slopes of parallel ridges, moderately steeply sloping having loamy surface with severe erosion hazard	Fine Typic Dystrochrepts Coarse loamy over sandy Typic Udorthents Fine loamy Typic Hapludults	58.8	5.6
	Associated with: Deep, well drained, coarse loamy over sandy soils on steeply sloping side slopes of the hills with moderate erosion hazard			
7	Very deep, well drained, fine loamy soils on the moderately steeply sloping hill top having loamy surface with severe erosion hazard	Fine loamy Typic Dystrochrepts Fragmental lithic Udorthents Fine loamy Typic Haplumbrepts	39.6	3.8
	Associated with: shallow, well drained, fragmental soils very steeply sloping parallel ridges, with severe erosion hazard and severe stoniness			
8	Deep to very deep, excessively drained, fine loamy soils on the moderately sloping side slopes of medium relief parallel ridges having loamy surface with severe erosion hazard and slight stoniness	Fine loamy Typic Dystrochrepts Fine loamy Typic Haplumbrepts	23.4	2.2

Soil Unit	Description	Taxonomic Classification	Area (in'000 ha)	Area (%)
	Associated with: Deep, well drained, fine loamy soils on moderately sloping side slopes of the hills with moderate erosion hazard	Coarse loamy Typic Udorthents		
9	Deep, somewhat excessively drained, fine loamy soils on the steeply sloping hill top having loamy surface with severe erosion hazard Associated with: moderately Deep, excessively drained, coarse loamy soils on steeply sloping side slopes of the hills with severe erosion hazard and slight stoniness	Fine loamy Typic Dystrochrepts Coarse loamy Typic Udorthents Fine loamy Typic Hapludults	10.2	1.0
10	Deep to very deep, well drained, fine loamy soils on the moderately steeply sloping hill top having loamy surface with moderate erosion hazard Associated with: Deep, well drained, fine loamy soils on gently sloping side slopes with moderate erosion hazard	Fine Typic Dystrochrepts Fine loamy Typic Dystrochrepts Fine loamy Typic Paleudults	31.2	3.0
11	Very deep, somewhat excessively drained, coarse loamy soils on moderately steeply sloping hill slopes having loamy surface with severe erosion hazard Associated with: very Deep, well drained, fine loamy soils on moderately sloping hill top with moderate erosion hazard	Fine loamy Typic Udorthents Fine Loamy Typic Haplumbrepts Fine Loamy Umbric Dystrochrepts	3.6	0.4
12	Very deep, well drained, loamy skeletal soils on the steeply sloping sides of ridges having loamy surface with moderate erosion hazard and moderate stoniness Associated with: Deep, well drained, fine loamy soils moderately sloping sides slopes with moderate erosion hazard	Loamy skeletal Umbric Dystrochrepts Fine loamy Typic Dystrochrepts	24.4	2.3
13	Moderately Deep, somewhat excessively drained, coarse loamy soils on the moderately steeply sloping side slopes of ridges having loamy surface with severe erosion hazard Associated with: Deep, well drained, fine loamy soils on moderately sloping hill tops with moderate erosion hazard	Coarse loamy Typic Udorthents Fine loamy Umbric Dystrochrepts Fine loamy Typic Dystrochrepts	16.5	1.6
14	Deep to very deep, well drained, fine loamy soils on the moderately steeply sloping side slopes of low relief hills having loamy surface with severe erosion hazard Associated with: Deep, somewhat excessively drained, coarse loamy soils on moderately sloping ridge tops with severe erosion hazard	Fine Typic Dystrochrepts Coarse loamy Typic Udorthents Fine Loamy Umbric Dystrochrepts	0.7	0.1
15	Deep, well drained, fine loamy soils on moderately sloping flat topped denudation hills having clay loam surface with moderate erosion hazard Associated with: Deep, well drained, fine loamy soils on gently sloping flat topped denudation hills having clay loam surface with moderate erosion hazard	Fine loamy Typic Kandiudalts Fine loamy Typic Dystrochrepts Fine Loamy Umbric Dystrochrepts	51.7	5.0
16	Deep, well drained, fine loamy soils on moderately to gently sloping flat topped denudation hills having clay loam surface with moderate erosion hazard	Fine loamy Typic Kandiudalts Fine loamy	25.4	2.4

Soil Unit	Description	Taxonomic Classification	Area (in'000 ha)	Area (%)
	Associated with: Deep, imperfectly drained, fine loamy soils on gently sloping hill top with moderate erosion hazard	Aquic Dystrochrepts Fine Typic Dystrochrepts		
17	Deep, well drained, coarse loamy soils on gently sloping low-lying residual hills having sandy loam surface with moderate erosion hazard	Coarse loamy Typic Dystrochrepts Fine loamy Typic Hapludults Clay Loamy Skeletal typic Dystrochrepts	7.9	0.8
	Associated with: very Deep, well drained, fine loamy soils on moderately sloping low-lying residual hills with moderate erosion hazard			
18	Deep, well drained, fine loamy soils on moderately sloping low-lying residual hills having clay loamy surface with moderate erosion hazard	Fine loamy Typic Dystrochrepts Coarse loamy Aquic Udorthents Fine Loamy Aquic Dystrochrepts	4.8	0.5
	Associated with: very Deep, imperfectly drained, coarse loamy soils on gently sloping narrow interhall basin under poor to moderate cultivation of paddy			
19	Deep, moderately well drained, fine loamy soils on gently to moderately sloping undulating plains with low mounds having clay loam surface with moderate erosion hazard	Fine loamy Typic Dystrochrepts Fine loamy Typic Epiaquepts Coarse loamy Typic Dystrochrepts	39.2	3.7
	Associated with: moderately shallow, poorly to imperfectly drained, fine loamy soils on very gently sloping narrow valleys with slight flooding hazard and slight erosion hazard			
20	Deep, well drained, fine loamy soils on gently to moderately sloping undulating plains with low mounds having loamy surface with moderate erosion hazard	Fine Typic Dystrochrepts Coarse loamy over sandy Typic Dystrochrepts Fine loamy Typic Hapludults	6.0	0.6
	Associated with: very deep, well drained, coarse loamy over sandy soils on side slopes of moderately sloping low mounds with moderate erosion hazard			
21	Deep, moderately well drained, fine loamy soils on gently sloping undulating plains with low mounds having loamy surface with moderate erosion hazard	Fine loamy Typic Dystrochrepts Fine Loamy Aquic Dystrochrepts Fine Loamy Oxyaquic Dystrochrepts	130.0	12.4
	Associated with: deep to very deep, poorly or imperfectly drained, fine loamy soils with slight erosion hazard			
22	Deep, moderately well drained, fine loamy soils on gently to moderately sloping undulating plains with low mounds having loamy surface with moderate erosion hazard	Fine loamy Typic Dystrochrepts Fine Loamy Oxyaquic Dystrochrepts Course Loamy Typic Udorthents	12.0	1.0
	Associated with: Deep to very deep, imperfectly drained, fine loamy soils with slight erosion hazard			
23	Moderately deep, well drained, fine loamy soils on moderately sloping undulating plains with low mounds having loamy surface with moderate erosion hazard	Fine loamy Typic Kandiodalts Fine silty over sandy loamy Aquic Dystrochrepts Course Loamy Typic Udorthents	9.0	0.8
	Associated with: Deep to very deep, imperfectly to poorly drained, fine silty over sandy soils with slight erosion hazard			
24	Very Deep, well drained, fine loamy soils on gently sloping low lands having loamy surface with moderate erosion hazard	Fine Loamy Oxyaquic Dystrochrepts Fine Loamy Aquic Udorthents	1.9	0.2
	Associated with: very deep, poorly drained, fine loamy soils with slight erosion hazard			

Soil Unit	Description	Taxonomic Classification	Area (in'000 ha)	Area (%)
25	Very Deep, moderately well drained, fine loamy soils on gently sloping low mounds having loamy surface with moderate erosion hazard	Fine loamy Typic Kandiodalts Fine loamy	3.5	0.3
	Associated with: very deep, poorly drained, fine loamy soils on gently sloping low mounds with moderate erosion hazard	Umbric Dystrochrepts Fine Loamy Typic Udorthents		
26	Deep, moderately well drained, clayey soils on upland of gently to very gently sloping interhall valleys having fine loamy surface with moderate to slight erosion hazard	Fine Typic Dystrochrepts Fine Loamy Aquic Dystrochrepts	26.6	2.5
	Associated with: very deep, imperfectly drained, fine loamy soils on very gently sloping narrow interhall valleys with slight erosion hazard	Fine Loamy Typic Epiaquepts		
27	Very Deep, well drained, fine loamy soils on the upland of gently to very gently sloping interhill valleys having clay loamy surface with moderate erosion hazard	Fine loamy Typic Haplumbrepts Fine Loamy Dystrochrepts	19.2	1.8
	Associated with: very deep, well drained, fine loamy soils on gently sloping interhill valleys with moderate erosion hazard			
28	Deep, well drained, fine loamy soils on upland of gently to very gently sloping interhill valleys having coarse loamy surface with moderate to slight erosion hazard	Fine loamy Fluventic Umbric Haplumbrepts Fine silty Epiaquepts	8.3	0.8
	Associated with: very deep, poorly drained, fine silty soils on very gently sloping narrow interhill valleys with occasional flooding hazard and slight erosion hazard			
29	Deep, well drained, fine loamy soils on upland of gently to very gently sloping interhall valleys having fine loamy surface with moderate erosion hazard	Fine loamy Typic Dystrochrepts Coarse loamy Typic Dystrochrepts	86.2	8.2
	Associated with: very deep, well drained, coarse loamy soils on the upland of gently sloping interhill with moderate erosion hazard	Fine loamy Typic Hapludults		
30	Deep, well drained, fine loamy soils on upland of gently to very gently sloping interhill valleys having clay loam surface with moderate erosion hazard	Fine loamy Typic Dystrochrepts Coarse loamy Typic Dystrochrepts	6.8	0.7
	Associated with: very deep, well drained, coarse loamy soils on the gently sloping interhill valleys with moderate erosion hazard	Coarse loamy Typic Udorthents		
31	Deep, well drained, fine loamy soils on upland of gently to very gently sloping interhill valleys having clay loam surface with moderate erosion hazard	Fine loamy Typic Dystrochrepts Coarse loamy Typic Dystrochrepts	10.4	1.0
	Associated with: very deep, well drained, coarse loamy soils on the gently sloping interhill valleys with moderate erosion hazard	Coarse loamy Typic Hapludults		
32	Deep, poorly to imperfectly drained, coarse loamy soils on gently to very gently sloping interhill valleys having sandy loam surface with moderate erosion hazard	Coarse loamy Aquic Udorthents Fine loamy Typic Dystrochrepts	1.5	0.1
	Associated with: very deep, well drained, clayey soils on the upland of gently sloping interhill valleys with moderate erosion hazard			
33	Deep, imperfectly drained, coarse loamy soils on gently to moderately gently sloping interhill valleys	Fine loamy Aeric Dystrochrepts	1.0	0.1

Soil Unit	Description	Taxonomic Classification	Area (in'000 ha)	Area (%)
	having sandy loam surface with moderate erosion hazard and occasional flooding hazard	Fine loamy Aquic Dystrochrepts		
	Associated with: very deep, poorly drained, fine loamy soils on gently sloping interhill valleys with slight erosion hazard and occasional flooding hazard			
34	Moderately Deep, imperfectly drained, fine loamy soils on gently sloping interhill valleys having clay loam surface with slight erosion hazard and occasional flooding hazard	Fine loamy Aquic Dystrochrepts Coarse loamy Fluventic Dystrochrepts	7.4	0.7
	Associated with: very deep, moderately well drained, coarse loamy soils on gently sloping interhill valleys with slight erosion hazard and occasional flooding hazard			
35	Deep, imperfectly to poorly drained, fine loamy soils on very gently sloping alluvial plain having loamy surface with moderate to severe flooding hazard and slight erosion hazard	Fine Aericep Epiaquepts Fine Loamy Typic Epiaquepts	12.1	1.1
	Associated with: very deep, very poorly drained, fine loamy soils on gently sloping alluvial plain having loamy surface with moderate to severe flooding hazard			
36	Deep, imperfectly to poorly drained, fine loamy soils on very gently sloping alluvial plain having loamy surface with moderate to severe flooding hazard and slight erosion hazard	Fine Aericep Epiaquepts Fine Loamy Typic Epiaquepts Sandy Over Loamy Typic Epiaquepts	29.7	2.8
	Associated with: very deep, very poorly drained, fine loamy soils on gently sloping alluvial plain having loamy surface with moderate to severe flooding hazard			
37	Very Deep, imperfectly drained, clayey soils developed on very gently sloping alluvial plain having silty clay surface with moderate flooding hazard and slight erosion hazard	Fine loamy Aquic Dystrochrepts Fine Typic Epiaquepts	1.9	0.2
	Associated with: very deep, very poorly drained, clayey soils on very gently sloping alluvial plain with moderate flood hazard			
38	Very Deep, imperfectly drained, coarse loamy developed on gently sloping alluvial plain having sandy loam surface with occasional flooding hazard and slight erosion hazard	Coarse Loamy Aericep Epiaquepts Fine Loamy Aquic Dystrochrepts Typic Udipsamments	1.0	0.1
	Associated with: very deep, imperfectly drained, fine loamy soils on gently sloping alluvial plain with occasional flooding hazard			
39	Deep, very poorly drained, clayey soils on gently sloping floodplain having silty clay surface with severe to very severe flooding hazard and slight erosion hazard	Fine Loamy Typic Epiaquepts Fine Loamy over Sandy Typic Epiaquepts	13.2	1.2
	Associated with: very deep, imperfectly drained, fine silty soils on very gently sloping flood plain with severe to very severe flooding hazard and slight erosion hazard			
40	Very Deep, very poorly drained, clayey soils on very gently sloping floodplain having clay loam surface with severe flooding hazard and very slight erosion hazard	Fine Typic Epiaquepts Fine Loamy Typic Epiaquepts	32.6	3.1

Soil Unit	Description	Taxonomic Classification	Area (in'000 ha)	Area (%)
	Associated with: very deep, poorly to very poorly drained, fine loamy soils	Coarse loamy over Sandy Typic Fluvaquentic Dystrochrepts		
41	Very Deep, moderately well to imperfectly drained, fine loamy soils on very gently sloping floodplain having clay loam surface with moderate flooding hazard and very slight erosion hazard	Fine Aquic Dystrochrepts Fine Oxyaquic Dystrochrepts	72.9	7.0
	Associated with: very deep, moderately well drained, clayey soils on very gently sloping flood plain with occasional flooding hazard	Fine Aquic Dystrochrepts		
42	Very peep, poorly to very poorly drained, fine loamy soils on very gently sloping floodplain having clay loam surface with moderate to severe flooding hazard and very slight erosion hazard	Fine Typic Epiaquepts Fine Loamy Aeric Epiaquepts	35.9	3.5
	Associated with: very deep, poorly drained, fine loamy soils on very gently sloping flood plain with moderate to very severe flooding hazard and slight erosion hazard			
43	Very Deep, moderately well to imperfectly drained, fine loamy soils on very gently sloping floodplain having clay loam surface with moderate flooding hazard and very slight erosion hazard	Fine loamy Typic Haplumbrepts Fine Loamy Pachic Haplumbrepts	7.5	0.8
	Associated with: very deep, moderately well drained, clayey soils on very gently sloping flood plain with occasional flooding hazard	Fine Typic Dystrochrepts		

D. Vegetation Profile – Project Area

Sr. No.	Name of plant Species	Family	Conservation status IUCN (2020.1)
1.	<i>Hevea brasiliensis</i>	Euphorbiaceae	Least Concern
2.	<i>Shorea robusta</i>	Dipterocarpaceae	Least Concern
3.	<i>Pterospermum acerifolium</i>	Malvaceae	Least Concern
4.	<i>Acacia auriculiformis</i>	Fabaceae	Least Concern
5.	<i>Mangifera indica</i>	Anacardiaceae	Least Concern
6.	<i>Borassus flabellifer</i>	Arecaceae	Least Concern
7.	<i>Bambusa vulgaris</i>	Poaceae	Least Concern
8.	<i>Cassia fistula</i>	Fabaceae	Least Concern
9.	<i>Areca catechu</i>	Arecaceae	Not Evaluated
10.	<i>Gmelina arborea</i>	Lamiaceae	Least Concern
11.	<i>Melia azedarach</i>	Meliaceae	Least Concern
12.	<i>Kumara plicatilis</i>	Aloaeae	Least Concern
13.	<i>Terminalia bellirica</i>	Combretaceae	Not Evaluated
14.	<i>Nauclea diderrichii</i>	Rubiaceae	Least Concern
15.	<i>Diospyros melanoxylon</i>	Ebenaceae	Least Concern
16.	<i>Tectona grandis</i>	Lamiaceae	Least Concern
17.	<i>Abrus Precatorius</i>	Fabaceae	Least Concern
18.	<i>Quercus semecarpifolia</i>	Fagaceae	Not Evaluated
19.	<i>Vitex penduncularis</i>	Lamiaceae	Least Concern
20.	<i>Mesua ferrea</i>	Calophyllaceae	Least Concern
21.	<i>Chukrasia tabularis</i>	Meliaceae	Least Concern
22.	<i>Tamarindus indica</i>	Fabaceae	Least Concern
23.	<i>Elaeocarpus serratus</i>	Elaeocarpaceae	Low Risk-Least Concerned
24.	<i>Pistacia integerrima</i>	Anacardiaceae	Least Concern
25.	<i>Couroupita guianensis</i>	Lecythidaceae	Least Concern
26.	<i>Eucalyptus umbra</i>	Myrtaceae	Least Concern
27.	<i>Erythrina crista-galli</i>	Fabaceae	Least Concern
28.	<i>Ziziphus jujuba</i>	Rhamnaceae	Least Concern
29.	<i>Cedrus deodara</i>	Pinaceae	Least Concern
30.	<i>Alstonia scholaris</i>	Apocynaceae	Least Concern
31.	<i>Citrus indica</i>	Rutaceae	Least Concern
32.	<i>Cocos nucifera</i>	Arecaceae	Not evaluated
33.	<i>Artocarpus heterophyllus</i>	Moraceae	Least Concern
34.	<i>Albizia lebbeck</i>	Fabaceae	Least Concern
35.	<i>Pterocarpus marsupium</i>	Fabaceae	Vulnerable
36.	<i>Syzygium cumini</i>	Myrtaceae	Least Concern
37.	<i>Holoptelea integrifolia</i>	Ulmaceae	Least Concern
38.	<i>Ficus racemosa</i>	Moraceae	Least Concern
39.	<i>Psidium guajava</i>	Myrtaceae	Least Concern
40.	<i>Aegle marmelos</i>	Rutaceae	Near Threatened
41.	<i>Carica papaya</i>	Caricaceae	Least Concern
42.	<i>Azadirachta indica</i>	Meliaceae	Least Concern
43.	<i>Dillenia indica</i>	Dilleniaceae	Least Concern
44.	<i>Musa paradisiacal</i>	Musaceae	Least Concern
45.	<i>Ficus religiosa</i>	Moraceae	Least Concern
46.	<i>Anacardium occidentale</i>	Anacardiaceae	Least Concern
47.	<i>Delonix regia</i>	Fabaceae	Least Concern
48.	<i>Manilkara zapota</i>	Sapotaceae	Least concern
49.	<i>Alstonia scholaris</i>	Apocynaceae	Least concern
50.	<i>Coffee senna</i>	Fabaceae	Not Evaluated
51.	<i>Neolamarckia cadamba</i>	Rubiaceae	Least concern
52.	<i>Vaccinium spp.</i>	Ericaceae	Least Concern
53.	<i>Moringa oleifera</i>	Moringaceae	Least concern

Sr. No.	Name of plant Species	Family	Conservation status IUCN (2020.1)
54.	<i>Bombax ceiba</i>	Malvaceae	Least Concern
55.	<i>Erythrina indica</i>	Fabaceae	Least Concern
56.	<i>Cinnamomum glanduliferum</i>	Lauraceae	Least concern
57.	<i>Aphanamixis polystachya</i>	Meliaceae	Least concern
58.	<i>Actinodaphne angustifolia</i>	Lauraceae	Least concern
59.	<i>Terminalia chebula</i>	Combretaceae.	Least concern
60.	<i>Albizia Procera</i>	Fabaceae	Least concern
61.	<i>Lagerstroemia speciosa</i>	Lythraceae	Least concern
62.	<i>Dysoxylum binectarderum</i>	Meliaceae	Least concern
63.	<i>Michelia champaca</i>	Magnoliaceae	Least concern
64.	<i>Aquilaria malacensis</i>	Thymelaeaceae	Least concern
65.	<i>Holigarna caustic</i>	Anacardiaceae	Least concern
66.	<i>Bambusa pallida</i>	Fabaceae	Least concern
67.	<i>Syzygium cumini</i>	Myrtaceae	Least concern
68.	<i>Phlogacanthus thrsiflorus</i>	Acanthaceae	Least concern
69.	<i>Phrynium capitatum</i>	Marantaceae	-
70.	<i>Calamus leptospadix</i>	Arecaceae	Not known
71.	<i>Apostasia wallichii</i>	Orchidaceae	Not known
72.	<i>Zeuxine strateumatica</i>	Orchidaceae	Not known
73.	<i>Mesua ferra</i>	Calophyllaceae	Not known
74.	<i>Dysoxylem binectariferum</i>	Meliaceae	Least concern
75.	<i>Artocarpus hirsuta</i>	Moraceae	Least concern
76.	<i>Cryptocarya amygdalina</i>	Lauraceae	Least concern
77.	<i>Gmelina arborea</i>	Lamiaceae	Least concern
78.	<i>Schima wallichii</i>	Theaceae	Least concern
79.	<i>Chukrasis tabularis</i>	Meliaceae	Least concern
80.	<i>Albizia chiensis</i>	Fabaceae	Least concern
81.	<i>Mallotus phillippensis</i>	Euphorbiaceae	Least concern
82.	<i>Phyllanthus emblica</i>	Phyllanthaceae	Least concern
83.	<i>Dalbergia stipulacea</i>	Fabaceae	Least concern
84.	<i>Stephania glandulifera</i>	Menispermaceae	Least concern
85.	<i>Osbeckia chinesis</i>	Melastomataceae	Least concern
86.	<i>Clerodendrum viscosum</i>	Lamiaceae	Least concern
87.	<i>Desmodium heterocarpon</i>	Fabaceae	Least concern
88.	<i>Sweetinia Mahagony</i>	Meliaceae	Near Threatened
89.	<i>Lantana camara</i>	Verbenaceae	Not Evaluated



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



Appendix B

Public Consultation and PAP Meeting

DETAILS OF PUBLIC CONSULTATION MEETING

Name of Line/s	
132kV & 33kV Lines associated with 132/33/11kV Gokulnagar (New) S/S under NERPSIP-Tripura.	
132kV Line	LILO of Surjamaninagar - Rokhia Line at Gokulnagar
33kV Lines	Tapping of Madhupur - Jangalia Line at Gokulnagar
	Gokulnagar – Golaghati Line
	Gokulnagar – Durganagar Line
Place of Meeting	
Rastarmatha, Gokulnagar	
Date of Meeting	
08.11.2017	
People present in the meeting	
10 - 15 Nos. local villagers (Attendance Sheet Enclosed)	
Type of Meeting	
Informal	
Points addressed to the villagers	
Officials from POWERGRID, detailed the concern villagers about the importance & necessity of the ongoing World Bank funded ' <i>North Eastern Region Power System Improvement Project</i> ' (NERPSIP). Environment & Social issues associated with the project & mitigation measures which would be taken against the particular issue, were also briefly discussed in the meeting.	
Response from Public	
Villagers also responded & raised concern about:	
<ol style="list-style-type: none"> 1. Employment of the Local People; & 2. Compensation Policy applicable 	
Conclusion	
<p>However, all the villagers have unanimously agreed to the necessity & importance of the ongoing North Eastern Region Power System Improvement Project & assured their co-operation in implementing the project.</p> <p>Specific to the questions raised by the villagers, POWERGRID officials answered & ensured:</p> <ol style="list-style-type: none"> 1. That the local people would be engaged for the project as per their skills/expertise. 2. That the compensation would be given to the affected people as per the guidelines of the State. 	

ATTENDANCE SHEET - PUBLIC CONSULTATION MEETING

Public Consultation Meeting

Lines associated with 132KV Gokulnagar S/S

Venue: Rastarmatha Gokulnagar

Date: 08/11/2017

ATTENDANCE

<u>Sr. No.</u>	<u>Name</u>	<u>Signature</u>
1.	Gopal Saha.	गोपाल साहा
2.	Prabir Sarkar	প্রবীর সরকার
3.	Rakesh Debmath	রাকেশ দেবমথ
4.	Biswomath Das.	বিস্বজিত দাস
5.	Sanjit Naama.	সঞ্জিত নামা
6.	Baidyamath Majumdar.	বিদ্যমথ মজুমদার
7.	Samit Das.	সমিত দাস
8.	Rajib Deb.	রাজিব দেব
9.	Bapi Deb.	বাপি দেব
10.	Sankar Debmath.	সংকর দেবমথ
11.	Bhabash Deb	ভবজ দেব
12.	Suman Debmath.	সুমন দেবমথ
13.	Sovma Debmath.	সোভা দেবমথ

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ATTENDANCE

14.	Subrata Madhu	-	Subrata Madhu
15.	Kenshik Chakraborty	-	Kenshik Chakraborty
16.	Rahul Mitter	-	Rahul Mitter
17.	Ashwas Sarkar	-	Ashwas Sarkar
18.	Chinmoy San	-	Chinmoy San

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PHOTOGRAPHS OF PUBLIC CONSULTATION MEETING





Name of Line/s	
132kV & 33kV Lines associated with 132/33/11kV Mohanpur (New) S/S under NERPSIP-Tripura.	
132kV Line	LILO of Agartala (79 Tilla) - Dhalabil Line at Mohanpur
33kV Lines	Tapping point on Mohanpur - Hezamara Line to Simna
	Mohanpur - Barkathal Line
	LILO of existing Agartala - Mohanpur Line at Lembucherra
Place of Meeting	
Mohanpur	
Date of Meeting	
16.11.2017	
People present in the meeting	
15 - 17 Nos. local villagers (Attendance Sheet Enclosed)	
Type of Meeting	
Informal	
Points addressed to the villagers	
Officials from POWERGRID, detailed the concern villagers about the importance & necessity of the ongoing World Bank funded 'North Eastern Region Power System Improvement Project' (NERPSIP). Environment & Social issues associated with the project & mitigation measures which would be taken against the particular issue, were also briefly discussed in the meeting.	
Response from Public	
Villagers also responded & raised concern about:	
<ol style="list-style-type: none"> 3. Employment of the Local People; & 4. Compensation Policy applicable 	
Conclusion	
<p>However, all the villagers have unanimously agreed to the necessity & importance of the ongoing North Eastern Region Power System Improvement Project & assured their co-operation in implementing the project.</p> <p>Specific to the questions raised by the villagers, POWERGRID officials answered & ensured:</p> <ol style="list-style-type: none"> 3. That the local people would be engaged for the project as per their skills/expertise. 4. That the compensation would be given to the affected people as per the guidelines of the State. 	

ATTENDANCE



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



SHEET OF

PUBLIC CONSULTATION MEETING

Public Consultation Meeting

Lines associated with 132 kV Mohanpur S/S

Venue: Mohanpur

Date: 16.11.2017

Attendance

Sl. No.	Name	Signature
1.	Amal Karmaikar	অমল কারমািকার
2.	Sudeb Deb Nath	সুদেব দেবনাথ
3.	Niranjana Das	NIRANJANA DAS
4.	Tinku Deb Nath	তিনকু দেবনাথ
5.	Amar Deb	অমর দেব
6.	Suman Das	সুমন দাস
7.	Babul Tanti	বাবুল তান্তি
8.	Raju Deb	Raju Deb
9.	Swarpan Tanti	স্বরণ তান্তি
10.	Krishna Sarkar	Krishna Sarkar
11.	Goutam Das	গৌতম দাস
12.	Susem Das	সুসেম দাস
13.	Namita Das	Namita Das
14.	Badal Paul	বদাল পাল
15.	Pintu Sarkar	পিন্টু সর্কার
16.	Sugar Deb	সুগার দেব
17.	Mamik Ghosh	Mamik Ghosh
18.	Uttam Debnath	উত্তম দেবনাথ

Public Consultation Meeting Attendance

- 19. Debasree Nath
- 20. Rahul Misra
- 21. Kaushik Chakrabarty

স্বাক্ষর
Rahul
Chakrabarty



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



PHOTOGRAPHS OF PUBLIC CONSULTATION MEETING







FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



PAP Meeting

Sr. No.	Village Name	Date	Person Attended
1	Agartala	28 Feb 2019	1
2	Dhalabil	29 Feb 2019	1
3	Mohanpur	29 Feb 2019	3
4	Champaknagar	29 Feb 2019	4



Agartala



Dhalabil



Mohanpur



Champaknagar



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



Public Consultations with POWERGRID

PROJECT SUMMARY



In order to strengthen the power scenario of the North Eastern States including Tripura, the Government of India with the financial assistance of the WORLD BANK, has formulated the North Eastern Region Power System Improvement Project (NERPSIP) which envisages in construction of new power Sub-stations, Transmission & Distribution lines and simultaneously augmentation/expansion of the existing Sub-stations and Transmission lines.

The NERPSIP in the state of Tripura broadly aims at:-

- Load enhancement of the transmission and distribution network of Tripura as well as reducing the transmission and distribution (T & D) loss.
- To adequately address the demand side management for ensuring adequate supply of electricity.

For implementation of project under North Eastern Region Power System Improvement Project (NERPSIP) construction of different 132 kV substation and transmission & distribution line have been planned to be taken up in this area. For construction of transmission line under this project, any damage caused will be compensated as per the Government norms.

We hope that implementation of the North Eastern Power System Improvement Project (NERPSIP) in the state of Tripura will definitely contribute in the socio-economic development of the state.

TRIPURA STATE ELECTRICITY CORPORATION LTD
(A Government of Tripura Enterprise)

প্রকল্পের সারমর্ম



ত্রিপুরা সহ উত্তর-পূর্ব রাজ্যগুলির বিদ্যুৎ ব্যবস্থার উন্নতির জন্য ভারত সরকার-বিশ্বব্যাঙ্কের আর্থিক সহায়তায় উত্তর-পূর্ব ক্ষেত্র বিদ্যুৎ ব্যবস্থা উন্নতিকরণ প্রকল্প (NERPSIP) গঠন করেছে, যার মূল উদ্দেশ্য হল নতুন বিদ্যুৎ সাবস্টেশন, নতুন বিদ্যুৎ পরিবাহী ও বন্টন লাইন তৈরী করা এবং পাশাপাশি বর্তমান সাবস্টেশন এবং লাইনগুলির ক্ষমতা বৃদ্ধি ও সম্প্রসারণ করা।

উত্তর-পূর্ব ক্ষেত্র বিদ্যুৎ ব্যবস্থা উন্নতিকরণ প্রকল্প (NERPSIP) ত্রিপুরাতে আনার উদ্দেশ্য হল :-

- বিদ্যুৎ পরিবাহী ও বন্টন লাইনের ক্ষমতা বৃদ্ধি করা তথা পরিবাহী ও বন্টন ব্যবস্থা অপচয় হ্রাস করা।
- চাহিদার উপযোগী বিদ্যুৎ যোগান দেওয়া।

উত্তর-পূর্ব ক্ষেত্র বিদ্যুৎ ব্যবস্থা উন্নতিকরণ প্রকল্পের (NERPSIP) অধীনে ত্রিপুরা রাজ্যের প্রকল্প গুলি বাস্তবায়নের লক্ষ্যে এই এলাকায় ১৩২ কেভি সাবস্টেশন, বিদ্যুৎ পরিবাহী ও বন্টন লাইন তৈরী করার উদ্দেশ্য নেওয়া হয়েছে। এই প্রকল্পটি বাস্তবায়নে সরকারী নিয়ম অনুযায়ী নির্ধারিত ক্ষতিপূরণ প্রদান করা হবে।

আমরা আশা করি ত্রিপুরার সামাজিক ও অর্থনৈতিক উন্নয়নে উত্তর-পূর্ব ক্ষেত্র বিদ্যুৎ ব্যবস্থা উন্নতিকরণ প্রকল্প (NERPSIP) অনন্য অবদান রাখবে।

ত্রিপুরা রাজ্য বিদ্যুৎ নিগম লিমিটেড
(ত্রিপুরা সরকারের অধিনস্ত একটি সংস্থা)



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



DETAILS OF PUBLIC CONSULTATION MEETING/জন মত্বনা সভার বিবরণ

Subject/ বিষয়
Construction of 132 kV Rabindranagar- Belonia Line ,132kV Rokhia - Rabindranagar Line & associated distribution lines(with financial assistance of WORLD BANK) under NERPSIP Project NERPSIP প্রকল্পের আওতায় (বিশ্ব ব্যাংকের আর্থিক সহায়তায়) 132kV রবীন্দ্রনগর – বীলোনিয়া, 132kV রুখিয়া - রবীন্দ্রনগর পরিবাহী লাইন এবং সংযুক্ত বন্টন লাইন নির্মাণ
Place of Meeting/সভার স্থান
Kathalia RD Block(BDO Office Conference Hall)/ কার্ঠালিয়া ব্লক (BDO অফিস কনফারেন্স হল)
Date of Meeting/সভার তারিখ
30.08.2014 / ৩০.০৮.২০১৪
Name of the dignitary present in the meeting/ সভায় উপস্থিত মর্যাদাপূর্ণ ব্যক্তিদের নাম
A. Tripura Government/ ত্রিপুরা সরকার 1) Sh. Jayanta Bhattacharjee, BDO 2) Sh. Shaymal Chaka, Sonamora, MLA 3) Sh. Abdul Karim, Chairman 4) Sh. Ashok Chakraborty, Vice-Chairman 5) Sh. Narhari Tripura, BSE Chairman
B. TSECL Officials/ TSECL কর্মকর্তারা 1. Sh. Ratan Das, DGM,TSECL
C. POWERGRID Officials/ পাওয়ার গ্রিড কর্মকর্তারা 1. Sh. N. Dube, DGM, POWERGRID 2. Sh. D.N.Brahma, Chief Manager, POWERGRID 3. Sh. Uttam Debnath, Sr. Engineer, POWERGRID
People present in the meeting/ সভায় উপস্থিত জনসাধারণ
100-150 nos. of local village and some common public .(Attendance Sheet Enclosed) 100-150 জন স্থানীয় গ্রাম এবং কিছু সাধারণ পাবলিক (উপস্থিত ব্যক্তিবর্গের সাক্ষর)

Point addressed to the people/ আনা সাধারণের উদ্দেশ্য ভাসন:
A brief of the NORTH EASTERN REGION POWER SYSTEM IMPLEMENTATION PROJECT(NERPSIP) under the world bank assistance has been deliberated at the beginning of the meeting by Sh. Rattan Das, DGM,TSECL. Importance & necessity of the project, necessity for upgradation of existing transmission & distribution network, various environment & Social issues associated with the project have been briefly discussed and appraised to the public present in the meeting. আলোচনা সভার শুরুতে TSECL এর ডেপুটি জেনারেল ম্যানেজার শ্রী রতন দাস মহাশয় বিশ্ব ব্যাংকের আর্থিক সহায়তায় উত্তর পূর্ব ক্ষেত্র বিদ্যৎ ব্যবস্থা উন্নতিকরণ প্রকল্প(NERPSIP) সম্বন্ধে জনসাধারণের উদ্দেশ্যে সংক্ষিপ্ত ভাষণ দিলেন। তাছাড়া প্রকল্পের প্রয়োজনীয়তা ও গুরুত্ব, বিদ্যৎ পরিবাহী লাইন এবং বন্টন লাইন এর ক্ষমতা বৃদ্ধির প্রয়োজনীয়তা, প্রকল্পের সঙ্গে যুক্ত বিভিন্ন পরিবেশ ও সামাজিক বিসয়, সম্বন্ধে সংক্ষিপ্ত জানামুল্লা উত্থাপন করলেন উপস্থিত জনসাধারণের উদ্দেশ্যে।
Response from Public/ আনা সাধারণের থেকে প্রতিক্রিয়া
Representatives from the public also responded and raised various concerns about the project. The various issues raised by public are summarised as below:- ✓ Whether these lines are safe for the nearby dwellers without any problems of electrocution while working in the fields ✓ What is compensation policy for the standing crops damaged and compensation for the land occupied by the tower footings ✓ What about employment for local people and procedure for same ✓ What is the width of ROW for cutting trees? How much compensation for the trees will be given and when. জনসাধারণের পক্ষ্য থেকেও প্রতিনিধিরা প্রতিক্রিয়া এবং প্রকল্প সম্পর্কে বিভিন্ন উদ্বেগ উত্থাপিত করলেন। জনসাধারণ দ্বারা উত্থাপিত কিছু গুরুত্বপূর্ণ বিষয় নীচের সংক্ষিপ্ত করা হলো :- ➤ এই লাইন এর জন্য নিকটবর্তী গ্রামবাসীরা তাদের জমিতে কাজ করার সময় তরিতাহত হয়ে কোনো ক্ষতিগ্রস্ত হবে কিনা ? ➤ ক্ষতিগ্রস্ত ফসলের ক্ষতিপূরণের জন্য ক্ষতিপূরণ নিয়ম কি হবে এবং টাওয়ার বানানোর জন্য যে জমি লাগবে তার ক্ষতিপূরণের কি নিয়ম হবে ? ➤ এই প্রকল্পের জন্য স্থানীয় মানুষ এর কর্মসংস্থান এবং নিয়োগ নীতির কি নিয়ম হবে ? ➤ লাইন বানানোর সময় গাছ কাটার করিডোর/প্রস্থ কি হবে ? কখন এবং কি পরিমাণ ক্ষতিপূরণ দেওয়া হবে গাছের জন্য ?



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



Conclusion/ উপসংহার

However all the public present have unanimously agreed to the necessity and importance of the project and assured their co-operation during the implementation of the project.

In answer to the question of people officials of TSECL/POWERGRID response like

- Sufficient electrical clearance will be maintained while construction of these line and hence no electrocution while working in the field.
- For damaged crops,trees sufficient compensation will be given as per the rate provided by district revenue authority. Further no land will be accrued while constructing the tower but sufficient surface compensation will be provided.
- Local people will be engaged during the construction of line and the engagement will be as per their skill.
- The width of ROW of cutting trees will be 27 M and sufficient compensation will be given as per the rate provided by district revenue authority during the construction.

The meeting has been concluded with a request to all public for their support in completion of the project.

তবে সবশেষে উপস্থিত জনসাধারণ সর্বসম্মতিক্রমে প্রকল্পের প্রয়োজনীয়তা এবং গুরুত্ব নিয়ে একমত প্রকাশ করেছেন এবং প্রকল্প বাস্তবায়ন সময় তাদের সহযোগিতা নিশ্চিত করেছেন।

জনসাধারণের প্রশ্নের উত্তরে পর্বেগরিদ/ ভিসেল কর্মকর্তারা বলেন

- বিদ্যৎ পরিবাহী লাইন এবং বন্টন লাইন নির্মাণের সময় যথেষ্ট বৈদ্যুতিক ব্যবধান রক্ষণাবেক্ষণ করা হবে যাতে বিদ্যৎ পরিবাহী লাইন এবং বন্টন লাইন কাছাকাছি বা নিকটবর্তী মাঠে কাজ করা লোকদের কোনো তারিতাহতের সম্ভাবনা না থাকে।
- ক্ষতিগ্রস্ত ফসলের ও গাছ এর জন্য জেলা রাজস্ব কর্তৃপক্ষ দ্বারা উপলব্ধ হার অনুযায়ী ক্ষতিপূরণ দেওয়া হবে। টাওয়ার বানানোর জন্য কোনো জমি অধিগ্রহণ করা হবে না কিন্তু টাওয়ার বানানোর ফলে যে গাছ বা ফসল ক্ষতি হবে তার ক্ষতি পূরণ দেওয়া হবে
- প্রকল্পের কাজের রূপায়নের সময় গ্রামের তথা স্থানীয় কারিগর/ শ্রমিক দের তাদের যুগ্যতা অনুযায়ী নিয়োগ করা হবে
- লাইন বানানোর সময় গাছ কাটার প্রস্থ হবে ২৭ মিটার এবং ক্ষতিগ্রস্ত গাছ এর জন্য জেলা রাজস্ব কর্তৃপক্ষ দ্বারা উপলব্ধ হার অনুযায়ী ক্ষতিপূরণ দেওয়া হবে।

প্রকল্প বাস্তবায়নে জনসাধারণের সহযোগিতার অনুরোধের সঙ্গে সভা সমাপ্তির ঘোষণা করা হয়েছে



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



TRIPURA STATE ELECTRICITY CORPORATION LTD
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**Public Consultation Meeting
ATTENDANCE SHEET**

Construction of 132 kV Rabindranagar- Belonia Line, 132kV
Name of Line:- Rokhia - Rabindranagar Line & associated distribution line

Date: 30.08.2014 Venue: Kathalia R.D Block

Sl. no.	Name of the Present Villager	Name of Village/Address	Work/Profession	Signature
1	Swapan K. Debbar	Rokhia	Private Agency	[Signature]
2	Masum Mia	K.K. Nagar	Agriculture	Masum Mia
3	Abdul Mannan	Sonapur	Business	[Signature]
4	Tapaswini K.	Nidaya	Business	[Signature]
5	Atikul Islam	Bejimatia	Business	[Signature]
6	5949294	Sonapur	Farmer	5949294
7	Rafiqul Islam	Sonapur	Fishing	Rafiqul Islam
8	Hare Krishna Paul	Dhan Pui	Small Farmer	[Signature]
9	ALI KUL SHAM	[Address]	Labour	[Signature]
10	Aradhina	Sonapur	Labour	[Signature]
11	Ujjwal Majumdar	Ujjwal Majumdar	Tutor	[Signature]

TRIPURA STATE ELECTRICITY CORPORATION LTD
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**Public Consultation Meeting
ATTENDANCE SHEET**

Construction of 132 kV Rabindranagar- Belonia Line, 132kV
Name of Line:- Rokhia - Rabindranagar Line & associated distribution lines

Date: 30.08.2014 Venue: Kathalia R.D Block

Sl. no.	Name of the Present Villager	Name of Village/Address	Work/Profession	Signature
12	Bimal Suddas	Kathalia	Farmer	[Signature]
13	Abashim Das	Nirvaypur	Farmer	[Signature]
14	Abul Kalam	K.K. Nagar	Farmer	Abul Kalam
15	Subhad Ch. Pal	K.K. Nagar	Farmer	[Signature]
16	Sanjay Naha	Nidaya	Farmer	[Signature]
17	[Name]	[Address]	[Profession]	[Signature]
18	Maniktar Das	Uttarpokhara	Farmer	[Signature]
19	[Name]	[Address]	[Profession]	[Signature]
20	Kumal Pal	[Address]	up-pradhan	[Signature]
21	[Name]	Nidaya	Farmer	[Signature]
22	[Name]	Katelekhele	Farmer	[Signature]



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



TRIPURA STATE ELECTRICITY CORPORATION LTD
(A GOVERNMENT OF TRIPURA ENTERPRISE)



Public Consultation Meeting
ATTENDANCE SHEET

Name of Line:- Construction of 132 kV Rabindranagar- Belonia Line, 132kV
Rokhia - Rabindranagar Line & associated distribution lines

Date: 30.08.2014

Venue: Kathalia R.D. Block

Sl. no.	Name of the Present Villager	Name of Village/Address	Work/Profession	Signature
23	Jeharji Hossain	Kalapaniya	Business	Jeharji Hossain
24	Hari Mohan Debbarth	Driduaia	Farmer	Hari Mohan
25	Jegadish Debbarth	Manai Pathra	Vice Chairman A.D.C	Jegadish
26	Maul Kishan	Rabindranagar	Cultivation	Maul Kishan
27	Chitra Kanti Das	Sovapur	Farmer	Chitra Kanti
28	Matija Khowar	Sadh palapur	Home wife	Matija Khowar
29	Manjira Begam	Jatrapur	H/ware	Manjira Begam
30	Elvina Mia	Jatrapur	S-GS	Elvina
31	Malkani Das	Bhabani Pur	Farmer	Malkani Das
32	Shambhu Das	Bhabani Pur	Farmer	Shambhu Das
33	Jogalmani Das	Thali Bar	Farmer	Jogalmani Das

TRIPURA STATE ELECTRICITY CORPORATION LTD
(A GOVERNMENT OF TRIPURA ENTERPRISE)



Public Consultation Meeting
ATTENDANCE SHEET

Name of Line:- Construction of 132 kV Rabindranagar- Belonia Line, 132kV
Rokhia - Rabindranagar Line & associated distribution lines

Date: 30.08.2014

Venue: Kathalia R.D. Block

Sl. no.	Name of the Present Villager	Name of Village/Address	Work/Profession	Signature
34	Swagata Das	V/Maheshpur	H/W	Swagata Das
35	Komal Das	Katakhal	Farmer	Komal Das
36	Pabon Sree Das	Manipathar	Farmer	Pabon Sree Das
37	Ranga Lami Das	Kali Kala	Farmer	Ranga Lami Das
38	Dhonykoni Das	Jogalmani Pur #2 village Kali Kala	H/W	Dhonykoni Das
39	Rita Das (Pati)	Maranchaka	H/W	Rita Das
40	Manjira Begam	Dhoni Pur	H/W	Manjira Begam
41	Jasmin Sultana	Bijimara	Z/P member	Jasmin Sultana
42	Sandeep Das	V/Paharpur	H/W	Sandeep Das
43	Soma Das	V/Maheshpur	H/W	Soma Das
44	Shakti Malla	V/Maheshpur	H/W	Shakti Malla

TRIPURA STATE ELECTRICITY CORPORATION LTD
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**Public Consultation Meeting
ATTENDANCE SHEET**

Construction of 132 kV Rabindranagar- Belonia Line, 132kV
Rokhia - Rabindranagar Line & associated distribution lines

Name of Line:-

Date: 30.08.2014

Venue: Kathalia R.D. Block

Sl. no.	Name of the Present Villager	Name of Village/Address	Work/Profession	Signature
41	Chhabi Das P. Sanyal	Dejuma P. Sami hi		Chhabi Das
46	Ratna Rani Bhowmik	Barnagar	prophet	Ratna Rani Bhowmik
49	Kakali Rani Shit	Serafura	Teacher	Kakali Rani Shit
48	Musada Begam	কলকুড়া		Musada Begam
49	Rupa Begam	Katania		Rupa Begam
50	Nimona Begam	Kalapania		Nimona Begam
51	Apu Majumdar	Rabindra Nagar		Apu Majumdar
52	Manika Begam	Rabindra nagar		Manika Begam





FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



PUBLIC CONSULTATION MEETING AT KATHALIA BLOCK ON 29/10/2014





FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



Appendix C

TOWER SCHEDULE



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



POWER GRID CORPORATION OF INDIA LTD.
 LINE OF BUKHAMNAGAR TO ROKHIA 132KV LINE AT GOKULNAGAR
 EXECUTED BY M/S. EMC LIMITED, KOLKATA

DETAILED SURVEY REPORT

Sl.No	LOCATION NO	Type of Tower	Angle of Deviation	Span Length (m)	Cumulative length in KM	Reduced Level (m)	C.P. Down	Crest after C.P. down	ADJ. SPAN (m)	Wind Span (m)	Hot Weight Span (m)			Cold Weight Span (m)			GPS COORDINATE		VILLAGE NAME	REMARKS
											Left	Right	Total	Left	Right	Total	NORTHING	EASTING		
1	EXT TOWER	DB	45	20	0	17.13														
2	AP 01	DB	0	22 26 44 RT	20	17.13		222	136.00	500	112	350	114	385	21 42 51.77"	92 16 29.62"	BIRRAM NAGAR			
3	AP 02	DC	0	30 48 59 LT	212	16.52		456	238.00	300	100	300	84	95	188	21 42 45.20"	92 16 18.20"	BIRRAM NAGAR	DD TYPE USED FOR 20. Start Span at 0 on 1 side.	
4	AP 03	DB	0	09 15 38 LT	244	15.84	3.00	28.64	421	280.50	128	42	125	149	21 43 11.60"	92 16 28.30"	BIRRAM NAGAR	11 41, 114, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000		

EMC LIMITED (ABHIJIT DEY) PROJECT IN CHARGE
 Checked by: [Signature] 11/1/18
 FOR POWER GRID RECOMMENDED BY: [Signature] 11/1/18
 APPROVED BY: [Signature] 11/1/18

132 kV D/C Rokhia - Rabinranagar transmission line Check Survey Report

Sl.N	AP No.	Loc No.	TOWER TYPE	Reduced Level (M)	CP Down	Angle of Deviation	Span in Metre	Sum of Adjacent Span(M)	Wind Span (M)	Cum. Length (m)	Length of Section	Weight Span						CIP'S COORDS.		Crossing Details	Remarks	Village Name
												HOT			COLD			E	N			
1	AP-02	02/0	DC-0	26.34	0	24°18'10"LT	302	581	340.5	0	0	147	317	0	145	145	91°11'46.20"	23°36'54.40"				Mankyanagar
2		02/1	DB-0	26.07	0		307	609	301.5	302	155	165	260	157	74	231	91°11'54.39"	23°35'45.30"				
3	AP-03	03/0	DB-6	29.21	0	10°47'23"RT	362	669	334.5	609	202	35	210	233	-57	176	91°11'41.40"	23°35'36.70"	Pond(2)			Mankyanagar
4		03/1	DC-9	35.31	0			913	436.5	921	322	280	616	268	288	587	91°11'50.87"	23°36'25.18"		Tower type change due to sum of adjacent span		
5	AP-04	04/0	DB-0	61.02	1	06°15'03"LT	551	551	275.5	1372	261	0	261	262	0	252	91°11'54.59"	23°36'07.74"	Pond	1 no. tower removed		Mankyanagar

FOR EMC LIMITED
 SURVEYED BY: [Signature] FOR EMC LIMITED (SUBBRATA GANGULY) SENIOR SURVEYOR
 CHECKED BY: [Signature] FOR EMC LIMITED (ABHIJIT DEY) PROJECT MANAGER
 SUBMITTED BY: [Signature] FOR EMC LIMITED
 CHECKED BY: [Signature] Sridipati FE (celed) FOR POWER GRID
 FOR POWER GRID RECOMMENDED BY: [Signature] FOR POWER GRID
 APPROVED BY: [Signature] FOR POWER GRID



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



POWER GRID CORPORATION INDIA PVT. LIMITED
ROKHIA TO RABINDRA NAGAR 132 KV D/C TRANSMISSION LINE
EMC LIMITED
DETAILED SURVEY FOR THE SECTION - AP-4/0 TO AP-6/0 (1.564 KM)

Sl. No.	AP NO.	LOCATI ON NO.	TOWER TYPE	Angle of Deviation	Span Length (m)	Section Length (m)	Reduced Level (m)	ADJ. SPAN (m)	Wind Span (m)	Hot Weight Span (m)			Cold Weight Span (m)			GPS COORDINATE		REMARKS
										Left	Right	Total	Left	Right	Total	Latitude	Longitude	
1	AP-4/0	4/0	DB+0	02°05'48" (LT)	283.00		45.35	283.00	141.50									
2		4/1	DB+0				50.06	697.00	348.50	167.00	221.00	388.00	185.00	232.00	417.00	23°38'07.74"	91°11'54.55"	VILL-UTTAR KAMAL CHARA
3		4/2	DB+3		414.00		43.24	661.00	330.50	193.00	161.00	354.00	182.00	189.00	311.00			
4		4/3	DB+3		247.00													
5	AP-5/0	5/0	DC+9	47°38'49" (RT)	276.00		37.27	523.00	261.50	86.00	227.00	313.00	68.00	202.00	350.00			
6	AP-6/0	6/0	DB+9	00°00'00"	354.00		1220.00	15.55	620.00	316.00	49.00	178.00	227.00	-16.00	182.00	23°35'20.00"	91°12'07.33"	POHJ-METAL ROAD
							344.00	14.27	344.00	172.00	166.00	166.00	182.00	160.00	23°35'20.37"	91°12'01.25"	VILL-UTTAR KAMAL CHARA	
																		VILL-UTTAR KAMAL CHARA

EMC LIMITED

SURVEYED BY: [Signature]
CHECKED BY: [Signature]
SUBMITTED BY: [Signature]

FOR EMC LIMITED (SUBRATA GANGULY) SENIOR SURVEYOR
FOR EMC LIMITED (ABHIJIT DEY) PROJECT MANAGER

POWER GRID CORPORATION INDIA PVT. LIMITED

CHECKED BY: [Signature]
RECOMMENDED BY: [Signature]
APPROVED BY: [Signature]

FEAR (check) 2/07/19

APPROVED BY: [Signature]
Sd/- [Signature] / H. N. NAIK
Sd/- [Signature] / Dept. Manager
POWERGRID
ROKHIA-RABINDRANAGAR

132 Kv D/C ROKHIA - ROBINDRANAGAR TRANSMISSION LINE.

CHECK SURVEY REPORT

Sl. No.	AP No.	Loc. No.	TOWER TYPE	Reduced Level (m)	CP Down	Angle of Deviation	Span in Meter	Dist. of Adjacent Span (m)	Wind Span (m)	Class. Length (m)	Length of Section	HOT Weight Span			COLD Weight Span			GPS COORDS.		Crossing Details	Remarks	Village Name
												Left	Right	Total	Left	Right	Total	E	N			
1	AP-0	0/0	DD+0	25.43	0	81°04'01" (LT)	270	135.0	0			0	146	146	0	152	152	81°04'01.25"	23°38'20.37"		Tower type/Extn. Can be change during detail survey of preceding span	Banaria
2		4/1	DA+0	24.86	0		270	135.0	270			124	142	266	118	146	264	81°04'01.42"	23°38'16.68"		Tower type change due to having available weight span	
3	AP-2	2/0	DD+0	25.66	0	81°22'31" (RT)	270	135.0	540	640	128	153	281	124	138	262	151	170	319.00"	23°39'03.00"		
4		7/1	DB+0	24.48	0		353	176.5	353.0	353.0	353.0	195	306	215	221	436	331	1133.53"	23°34'14.09"		M. Road, T1 Ka, Nala	
5	AP-8	8/0	DD+0	23.65	0	49°22'17" (LT)	366	183.0	1200	666	117	130	237	92	79	171	161	1146.36"	23°34'46.39"		LT line, M. Road, Nala (C)	Kalanchoara
6	AP-9	9/0	DD+0	22.44	0	42°06'02" (LT)	266	133.0	1472	266	166	0	166	45	0	45	81°12'47.50"	23°34'07.70"		Extn. tower due to maintain clearance from LT line	Kalanchoara	
7	AP-10A	10A/0	DD+0	30.99	0	81°04'01" (LT)	251	125.5	0			0	135	135	0	141	141	81°04'13.42"	23°38'17.30"		Tower type/Extn. Can be change during detail survey of preceding span	Kalanchoara
8	AP-11	11/0	DA+0	29.7	0		251	125.5	251			116	148	262	118	100	263	81°04'17.73"	23°38'16.54"		Foot Track	
9	AP-12	12A/0	DA+0	40.08	0		260	130.0	519			122	113	236	115	108	221	81°04'22.02"	23°38'02.84"		Ditch	
10	AP-13	13A/0	DA+0	48.51	0		256	128.0	739			127	110	246	111	103	215	81°04'27.35"	23°37'56.20"			
11	AP-14	14A/0	DA+0	42.79	0		385	192.5	979			101	205	306	115	260	455	81°04'31.41"	23°37'50.15"		Tar Road	
12	AP-15	15/0	DC+0	23.86	0	20°00'00" (RT)	399	199.5	1264	1394	90	14	170	35	40	65	81°04'28.03"	23°37'50.64"			Arundapur	
13	AP-16	16/0	DD+0	37.81	0	81°04'01" (LT)	308	154.0	1672	308	224	0	224	266	0	218	81°04'23.19"	23°37'29.43"			Arundapur	

EMC LIMITED

SURVEYED BY: [Signature]
CHECKED BY: [Signature]
SUBMITTED BY: [Signature]

FOR EMC LIMITED (SUBRATA GANGULY) SENIOR SURVEYOR
FOR EMC LIMITED (ABHIJIT DEY) PROJECT MANAGER

Checked by: [Signature]
FEAR (check) 2/07/19

APPROVED BY: [Signature]
Sd/- [Signature] / H. N. NAIK
Sd/- [Signature] / Dept. Manager
POWERGRID
ROKHIA-RABINDRANAGAR




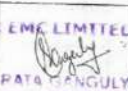
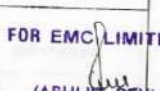
FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



POWER GRID CORPORATION INDIA PVT. LIMITED
ROKHIA TO RABINDRA NAGAR 132 KV D/C TRANSMISSION LINE
EMC LIMITED
DETAILED SURVEY FOR THE SECTION - AP-12/0 TO AP-16/0 (1.249 KM)

Sl. No.	AP NO.	LOCATION NO.	TOWER TYPE	Angle of Deviation	Span Length (m)	Section Length (m)	Reduced Level (m)	ADJ. SPAN (m)	Wind Span (m)	Hot Weight Span (m)			Cold Weight Span (m)			GPS COORDINATE		REMARKS
										Left	Right	Total	Left	Right	Total	Latitude	Longitude	
1	AP-12/0	12/0	DB+0	08°33'57"LT			30.22	114.00	57.00	148.00	148.00	148.00	213.00	213.00	23°33'29.43"	91°12'39.19"	VILL-ANANDAPUR	
2	AP-12A/0	12A/0	DD+3	44°48'52"LT	114.00	114.00	20.64	258.00	129.00	-34.00	-14.00	-48.00	-99.00	-76.00	-177.00	23°33'25.80"	91°12'40.00"	HOUSE SH. LT LINE
3	AP-12B/0	12B/0	DC+0	25°49'08"RT	144.00	144.00	31.50	250.00	125.00	150.00	235.00	363.00	220.00	366.00	580.00	23°33'23.10"	91°12'44.20"	VILL-ANANDAPUR
4	AP-13/0	13/0	DC+0	25°18'25"LT	106.00	106.00	19.25	179.00	89.50	-129.00	45.00	-84.00	-260.00	51.00	-201.00	23°33'20.16"	91°12'46.03"	LT LINE, BRICK ROAD, 11 KV LINE, METAL ROAD, CANEL
5	AP-14/0	14/0	DD+0	52°36'52"RT	73.00	73.00	18.87	263.00	131.50	28.00	47.00	75.00	22.00	13.00	35.00	23°33'16.75"	91°12'48.27"	VILL-ANANDAPUR
6	AP-15/0	15/0	DC+6	25°31'20"LT	190.00	190.00	18.64	598.00	299.00	143.00	196.00	329.00	177.00	174.00	351.00	23°33'12.70"	91°12'48.44"	POND, LT LINE, METAL ROAD
7		15/1	DB+3		408.00	408.00				222.00	55.00	277.00	234.00	17.00	251.00			BRICK ROAD, CART TRACK
8	AP-16/0	16/0	DC+3	00°00'00"	214.00	214.00	26.22	622.00	311.00	158.00		159.00	197.00	197.00	197.00	23°32'54.75"	91°12'58.54"	VILL-KAMALNAGAR

EMC LIMITED

SURVEYED BY	CHECKED BY	SUBMITTED BY
		
FOR EMC LIMITED	FOR EMC LIMITED	FOR EMC LIMITED
	SUBPATA GANGULY SENIOR SURVEYOR	(ARJUN DEBNATH) PROJECT MANAGER

POWER GRID CORPORATION INDIA PVT. LIMITED

CHECKED BY	RECOMMENDED BY	APPROVED BY
		
		Mr. N. N. Naik / N. N. Naik S.P. Nayak / Dept. Manager POWERGRID / POWERGRID RABINDRANAGAR / RABINDRANAGAR


**POWER GRID CORPORATION INDIA PVT. LIMITED
ROKHIA TO RABINDRA NAGAR 132 KV D/C TRANSMISSION LINE
EMC LIMITED
DETAILED SURVEY FOR THE SECTION - AP-27A/0 TO GANTRY (2.778 KM)**

Sl. No.	AP NO.	LOCATIO N NO.	TOWER TYPE	Angle of Deviation	Span Length (m)	Section Length (m)	Reduced Level (m)	ADJ. SPAN (m)	Wind Span (m)	Hot Weight Span (m)			Cold Weight Span (m)			GPS COORDINATE		REMARKS
										Left	Right	Total	Left	Right	Total	latitude	Longitude	
1	AP-27A/0	27A/0	DB+9		325.00		17.04											VILL- SRIMANTA PUR
2	AP-28/0	28/0	DB+9	38°49'35" (LT)	329.00	19.60	701.00	350.50	177.00	201.00	378.00	186.00	212.00	398.00	23°28'31.66"	91°15'28.32"		GRAVEYAR, 2NOS POND, METAL ROAD, 11KV LINE, 33 KV LINE (33 KV LINE PROPOSE TO DIVERT)
3	AP-29/0	29/0	DD+6	43°26'08" (LT)	372.00	18.97	489.00	244.50	171.00	98.00	229.00	160.00	57.00	217.00	23°26'12.50"	91°15'40.20"		VILL- SRIMANTA PUR METAL ROAD LT LINE 11KV LINE GOMATI RIVER
4	AP-30/0	30/0	DB+6	11°12'51" (RT)	292.00	117.00	19.04	409.00	204.50	56.00	152.00	211.00	60.00	157.00	23°26'12.70"	91°15'44.60"		VILL- SRIMANTA PUR 66 KV LINE
5	AP-31/0	31/0	DD+6	35°05'05" (RT)	260.00	252.00	17.86	552.00	276.00	140.00	133.00	273.00	136.00	135.00	23°28'11.21"	91°15'54.41"		VILL- SRIMANTA PUR 11KV LINE, METAL ROAD
6	AP-32/0	32/0	DC+8	18°52'46" (RT)	288.00	260.00	17.37	548.00	274.00	127.00	122.00	249.00	126.00	106.00	23°28'54.21"	91°16'03.95"		VILL- SOVAPUR GAS PIPELINE, LT LINE, METAL ROAD
7	AP-33/0	33/0	DD+9	48°57'38" (RT)	275.00	563.00	17.09	530.00	165.00	130.00	4.00	126.00	124.00	27.00	23°27'48.91"	91°16'09.66"		VILL- SOVAPUR POND
8	AP-34/0	34/0	DD+6	44°48'32" (LT)	247.00	55.00	21.19	302.00	151.00	59.00	136.00	195.00	62.00	148.00	23°27'47.50"	91°16'9.20"		11 KV LINE, SH VILL- RABINDRA NAGAR 66 KV LINE
9	AP-35/0	35/0	DB+9	47°01'37" (LT)	208.00		25.26	453.00	227.50	111.00	34.00	145.00	102.00	-17.00	23°27'29.82"	91°16'21.32"		VILL- RABINDRA NAGAR 2NOS POND, METAL ROAD, LT LINE
10	AP-36/0	36/0	DD+9	48°40'18" (RT)	154.00	154.00	30.19	229.00	114.50	125.00	208.00	333.00	199.00	332.00	23°27'32.17"	91°16'20.52"		LT LINE, 11 KV LINE, POND, CART TRACK VILL- RABINDRA NAGAR
11	AP-37/0	37/0	DD+6	54°30'02" (RT)	75.00	75.00	25.03	122.00	61.00	-133.00	70.00	-63.00	-297.00	103.00	23°27'29.82"	91°16'21.32"		SHOS 11 KV LINE, 66 KV LINE, BOUNDARY VILL- RABINDRA NAGAR 2NOS BOUNDARY, 33 KV LINE VILL- RABINDRA NAGAR

A. SEN *Abhijit* *Devi*

Sl. No.	AP NO.	LOCATIO N NO.	TOWER TYPE	Angle of Deviation	Span Length (m)	Section Length (m)	Reduced Level (m)	ADJ. SPAN (m)	Wind Span (m)	Hot Weight Span (m)			Cold Weight Span (m)			GPS COORDINATE		REMARKS
										Left	Right	Total	Left	Right	Total	latitude	Longitude	
15	AP-38/0	38/0	DD+0	39°09'00" (RT)	47.00	47.00	29.65	76.00	38.00	-23.00	-118.00	-141.00	-86.00	-214.00	-270.00	23°27'28.71"	91°16'20.55"	33 KV LINE, 132 KV LINE, 11 KV LINE
16	AP-38/0	39/0	DD+0	28°33'00" (RT)	29.00	29.00	32.10	59.00	29.50	147.00	239.00	386.00	243.00	400.00	343.00	23°27'28.71"	91°16'20.55"	VILL- RABINDRA NAGAR
17	GANTRY	GANTRY	GANTRY		30.00	30.00	27.83	30.00	15.00	-209.00		-209.00	-370.00		-370.00	23°27'28.54"	91°16'18.55"	VILL- RABINDRA NAGAR 66 KV LINE, BOUNDARY VILL- RABINDRA NAGAR

EMC LIMITED

SURVEYED BY	CHECKED BY	SUBMITTED BY
 A. SEN	<i>Abhijit</i> (SUBRATA GANGULY) SENIOR SURVEYOR	<i>Devi</i> (ABHJIT DEY) PROJECT MANAGER



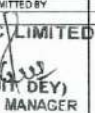
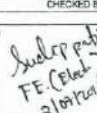
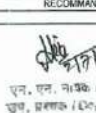
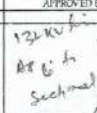
POWER GRID CORPORATION INDIA PVT. LIMITED

CHECKED BY	RECOMMENDED BY	APPROVED BY
<i>Sudip</i> 1 E (Electrical) PGCIL	<i>Abhijit</i> 70 (Electrical)	<i>Devi</i> SP. MANAGER / N. N. MANAGER Dypt. Manager POWERGRID RABINDRANAGAR

132 Kv D/C RABINDRANAGAR - BELONIA TRANSMISSION LINE
Check Survey Report.

Sl. No.	AP No.	TOWER No.	TOWER TYPE	Reduced Level (MSL)	C ₁ Down	Angle of Deviation	Span in Metre	Sum of Adjacent Span (M)	Wind Span (M)	Cum. Length (m)	Length of Section	Weight Span						GPS COORDS.		Crossing Details	Remarks	Village Name
												HOT			COLD			E	N			
												Left	Right	Total	Left	Right	Total					
1	AP-3	5/0	DC+6	80.72	0	15°36'27"11	208	203	60	0	0	0	102	102	0	102	102	91°16'35.51"	23°27'15.20"	Mud road, LT line		Kalapania
2	AP-4	6/0	DD+6	80.7	0	50°34'39"11	117	300	160.0	283	203	101	-100	-85	101	-100	91°16'38.23"	23°27'38.54"	Mud road, LT line	Tower type change due to change of angle at site	Kalapania	
3	AP-7	7/0	DD+18	77.12	1	11°31'40"11	149	286	143.0	320	117	267	88	353	595	87	485	91°16'42.11"	23°27'07.51"	132 Kv D/C line	Tower type change for suitable position	Kalapania
4	AP-4	8/0	DD+9	85.50	4	31°09'07"81	143	312	155.0	487	169	83	-3	79	82	-41	31	91°16'18.00"	23°27'07.20"	Pond	Tower type change for suitable position	Kalapania
5	AP-9	8/0	DD+6	96.85	3	52°45'51"91	320	482	211.0	633	143	186	278	423	194	344	338	91°16'12.20"	23°27'04.20"	LT line, Tar road, LT line		Kalapania
6	AP-10	10/0	DB+5	75.87	0	14°44'31"81	348	685	342.5	971	329	63	128	193	350	100	490	91°16'16.70"	23°26'54.80"	LT line, Tar Road		Kalapania
7	AP-11	11/0	DC+0	88.42	0	20°06'48"17	130	476	238.0	1317	346	218	-43	178	245	-193	141	91°16'08.37"	23°26'43.07"	LT Line, Mud road		Kalapania
8	AP-12	12/0	DC+0	95.91	0	13°47'41"87	297	190	65.0	1447	130	170	0	170	236	0	356	91°17'01.30"	23°26'58.60"			Kalapania
9	AP-14	14/0	DD+0	92.09	0	5°34'49"17	207	297	148.5	0	0	132	132	0	132	122	91°17'48.59"	23°26'46.00"			Lakshmi	
10		14/1	DB+0	95.29	0		202	599	299.5	297	297	165	-111	276	175	98	278	91°17'47.18"	23°26'47.60"			
11		14/2	DB+0	98.49	0		202	656	328.0	599		151	181	343	161	187	351	91°18'26.23"	23°26'48.50"			
12	AP-15	15/0	DB+0	98.29	0	00°30'25"87	391	553	276.5	953	650.00	203	240	323	307	470	407	91°18'20.10"	23°26'53.00"			Induria
13	AP-16	16/0	DB+0	78.83	0	61°00'57"17	150	199	79.5	1112	159.00	-160	0	-160	-311	0	-311	91°18'25.70"	23°26'53.10"	LT line(2), M. Road		Induria


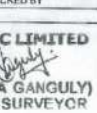
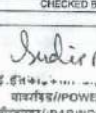
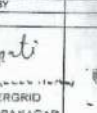
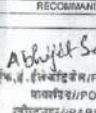
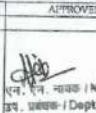
hold check

SURVEYED BY  FOR EMC LIMITED (SUBRATA GANGULY) SENIOR SURVEYOR	CHECKED BY  FOR EMC LIMITED (ABHIJIT DEY) PROJECT MANAGER	SUBMITTED BY  FOR EMC LIMITED (ABHIJIT DEY) PROJECT MANAGER	CHECKED BY  Sudipanti FE (E&T) 21/01/2024	FOR POWER GRID RECOMMENDED BY  एन. एन. नाइक / N. N. NAIK 374, प्रबन्ध / Dept. Manager पावरग्रिड / POWERGRID खोवै / RABINDRANAGAR	APPROVED BY  132 Kv line case AP 6 to AP 9 Sectional profile attached
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132 Kv line case
AP 6 to AP 9
Sectional profile
attached



132 Kv D/C RABINDRANAGAR - BELONIA TRANSMISSION LINE
Check Survey Report.

Sl. No.	TOWER No.	TOWER TYPE	Reduced Level (MSL)	C ₁ Down	Angle of Deviation	Span in Metre	Sum of Adjacent Span (M)	Wind Span (M)	Cum. Length (m)	Length of Section	Weight Span						GPS COORDS.		Crossing Details	Remarks	Village Name
											HOT			COLD			E	N			
											Left	Right	Total	Left	Right	Total					
18/0	DC+6	78.25	0	18°42'59"87	319	318	0.0	0	0	163	163	0	168	168	91°18'40.70"	23°23'58.30"	2 recs. LT line, Pond		Induria		
18/1	DB+3	79.9	0		268	378	269.0	313		147	117	264	142	126	248	91°18'53.68"	23°28'01.49"		Tower type change due to size of Adj. span	Induria	
19/0	DC+0	87.44	2	15°02'14"91	297	965	282.5	578	578	131	71	222	102	22	194	91°19'01.10"	23°28'04.30"			Induria	
20/0	DB+0	99.12	1	06°28'48"17	224	521	260.5	875	297	225	88	31.5	273	74	349	91°18'51.80"	23°28'05.10"			Induria	
21/0	DC+0	101.51	0.5	17°29'02"81	224	224	0.0	1096	224	155	0	135	130	0	150	91°20'28.30"	23°28'06.30"			Induria	

SURVEYED BY  FOR EMC LIMITED (SUBRATA GANGULY) SENIOR SURVEYOR	CHECKED BY  FOR EMC LIMITED (ABHIJIT DEY) PROJECT MANAGER	SUBMITTED BY  FOR EMC LIMITED (ABHIJIT DEY) PROJECT MANAGER	CHECKED BY  Sudipanti पावरग्रिड / POWERGRID खोवै / RABINDRANAGAR	FOR POWER GRID RECOMMENDED BY  ए. ए. शर्मा / E. ELECTRICAL पावरग्रिड / POWERGRID खोवै / RABINDRANAGAR	APPROVED BY  एन. एन. नाइक / N. N. NAIK 374, प्रबन्ध / Dept. Manager पावरग्रिड / POWERGRID खोवै / RABINDRANAGAR
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**POWER GRID CORPORATION INDIA PVT. LIMITED
RABINDRA NAGAR TO BELONIA 132 KV D/C TRANSMISSION LINE
EMC LIMITED
DETAILED SURVEY FOR THE SECTION - AP-23/0 TO AP-26/0 (1.183 KM)**

Sl. No.	AP NO.	LOCATION N.NO.	TOWER TYPE	EXT	Angle of Deviation	Span Length (m)	Section Length (m)	Reduced Level (m)	ADJ. SPAN (m)	Wind Span (m)	Hot Weight Span (m)			Cold Weight Span (m)			GPS COORDINATE		REMARKS
											Left	Right	Total	Left	Right	Total	Latitude	Longitude	
1	AP-23/0	23/0	DB+0	0	00°00'00"(-)	215.00		63.25	253.00	127.50	180.00	180.00	180.00	218.00	218.00	218.00	23°29'53.62"	91°22'01.22"	VILL-TAIRANDAL
2		23/1	DB+8	8		255.00		48.74	520.00	260.00	75.00	192.00	267.00	37.00	230.00	270.00			ELECTRICAL CABLE LINE
3	AP-24/0	24/0	DB+0	0	14°37'07" (9°)	233.00	570.00	44.64	498.00	349.00	73.00	198.00	281.00	23.00	240.00	296.00	23°29'54.91"	91°22'01.48"	CART TRACK, 2X0.5 LT. LINE, 11 KV LINE METAL ROAD, NALA
4	AP-25/0	25/0	DB+3	3	12°38'51" (L)	430.00		32.04	563.00	331.50	45.00	138.00	134.00	7.00	32.00	25.00	23°28'36.50"	91°22'29.53"	VILL-TAIRANDAL NALA, POND, LT LINE
6	AP-26/0	26/0	DB+1	3	00°00'00"(-)			60.04	430.00	215.00	321.00		321.00	308.00	308.00	23°29'54.30"	91°22'44.70"	VILL-TAIRANDAL	

EMC LIMITED			POWER GRID CORPORATION INDIA PVT. LIMITED		
SURVEYED BY	CHECKED BY	SUBMITTED BY	CHECKED BY	RECOMMENDED BY	APPROVED BY
	FOR EMC LIMITED (SUBRATA GANGULY) SENIOR SURVEYOR	FOR EMC LIMITED (ABHIJIT DEY) PROJECT MANAGER	Jadipati	Baha	
			স্বাক্ষর/POWERGRID রবীন্দ্রনাথ/রবীন্দ্রনাগর	স্বাক্ষর/POWERGRID রবীন্দ্রনাথ/রবীন্দ্রনাগর	এম. এন. মৌক (M. N. Moul) এম. মৌক / Dept. Manager পুলবিজ / POWERGRID রবীন্দ্রনাথ / RABINDRANAGAR

132 Kv D/C RABINDRANAGAR - BELONIA TRANSMISSION LINE
Check Survey Report.

Sl. No.	AP No.	Loc. No.	Tower Type	Height (m)	CP (m)	Angle of Deviation	Span in Meter	Sum of Adjacent Spans (m)	Wind Span (m)	Clim. Length (m)	Length of Section	HEAT			COLD			GPS COORDINATE		Crossing Details	Remarks	Village Name	
												Left	Right	Total	Left	Right	Total	E	N				
1	AP-24	44/0	DB+0	123.55	0	00°00'00"	209	391	132.0	0	132.0	0	0	0	0	0	0	0	23°29'54.91"	91°22'01.48"	LT line to Road		GARIB
2		44/1	DB+8	186.2	0		363	367	293.5	374	363	143	227	371	143	308	411	23°29'53.62"	91°22'01.22"		Both towers are electric line LT line		GARIB
3	AP-25	45/0	DB+3	103.24	0	12°38'51"	363	363	283.5	367	363	136	0	136	107	0	107	23°28'36.50"	91°22'29.53"	11 (11KV) NALA, LT line, Tar Road		GARIB	
4	AP-27	47/0	DB+4	198.33	0	12°38'51"	239	239	206.5	367	239	0	367	107	0	107	107	23°29'54.30"	91°22'44.70"		Span between due to low post		GARIB
5	AP-26	48/0	DB+0	123.55	0	00°00'00"	215	215	215.0	0	215	0	0	0	0	0	0	23°29'54.30"	91°22'44.70"				GARIB

EMC LIMITED			POWER GRID CORPORATION INDIA PVT. LIMITED		
SURVEYED BY	CHECKED BY	SUBMITTED BY	CHECKED BY	RECOMMENDED BY	APPROVED BY
FOR EMC LIMITED GOBINDA PATRA SURVEYOR	FOR EMC LIMITED (SUBRATA GANGULY) SENIOR SURVEYOR	FOR EMC LIMITED (ABHIJIT DEY) PROJECT MANAGER	Jadipati	Baha	
			স্বাক্ষর/POWERGRID রবীন্দ্রনাথ/রবীন্দ্রনাগর	স্বাক্ষর/POWERGRID রবীন্দ্রনাথ/রবীন্দ্রনাগর	এম. এন. মৌক (M. N. Moul) এম. মৌক / Dept. Manager পুলবিজ / POWERGRID রবীন্দ্রনাথ / RABINDRANAGAR

AP-25 A 02/28
অনুমোদিত
২৩/১/১৫
২৩/১/১৫



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



POWER GRID CORPORATION INDIA PVT. LIMITED
RABINDRA NAGAR TO BELONIA 132 KV D/C TRANSMISSION LINE
EMC LIMITED
DETAILED SURVEY FOR THE SECTION - AP-31/0 TO AP-41 /0 (2.406 KM)

SL No.	AP NO.	LOCATIO N NO.	TOWER TYPE	EXT	Angle of Deviation	Span Length (m)	Section Length (m)	Reduced Level (m)	ADJ. SPAN (m)	Wind Span (m)	Hot Weight Span (m)			Cold Weight Span (m)			GPS COORDINATE		REMARKS
											Left	Right	Total	Left	Right	Total	latitude	Longitude	
1	AP-31/0	31/0	DB+C	0		305.00		26.86		162.50		47.00	47.00		26.00	26.00	23°25'58.70"	91°29'25.87"	VILL- JITENDRANAGAR LT LINE, CART TRACK
2	AP-32/0	32/0	DB+6	6	69°52'11" (LT)	222.00		41.36	527.00	263.50	268.00	97.00	355.00	334.00	85.00	419.00	23°25'34.60"	91°28'36.60"	VILL- JITENDRANAGAR BRICK ROAD, 11 KV LINE
3	AP-33/0	33/0	DD+9	9	42°54'20" (LT)	375.00	222.00	39.88	597.00	298.50	125.00	196.00	204.00	137.00	156.00	233.00	23°25'32.80"	91°28'43.20"	VILL- JITENDRANAGAR CART TRACK, POND
4	AP-34/0	34/0	DD+9	9	31°11'27" (RT)	309.00	375.00	44.30	584.00	342.00	205.00	276.00	482.00	219.00	93.00	682.00	23°25'58.61"	91°29'54.74"	VILL- JITENDRANAGAR 2NOS POND, LT LINE
5	AP-35/0	35/0	DC+3	3	23°40'56" (RT)	221.00	309.00	26.45	530.00	265.00	33.00	100.00	133.00	-54.00	92.00	38.00	23°25'38.10"	91°28'05.67"	VILL- TULAMURA 2NOS CART TRACK, POND
6	AP-36/0	36/0	DC+8	8	25°05'16" (LT)	192.00	221.00	24.95	413.00	206.60	121.00	101.00	222.00	120.00	104.00	233.00	23°25'36.59"	91°28'12.64"	VILL- TULAMURA 11KV-LT LINE BRICK ROAD
7	AP-37/0	37/0	DD+6	6	49°33'33" (LT)	235.00	192.00	24.38	427.00	213.50	91.00	159.00	250.00	88.00	189.00	277.00	23°25'34.75"	91°28'19.48"	11KV-LT LINE, METAL ROAD, 11 KV LINE
8	AP-38/0	38/0	DD+0	0	49°58'26" (RT)	185.00	235.00	24.18	420.00	210.00	76.00	68.00	144.00	40.00	50.00	96.00	23°25'40.42"	91°28'25.02"	VILL- TULAMURA NALA, 11 KV LINE
9	AP-39/0	39/0	DC+3	3	17°12'57" (RT)	152.00	185.00	24.10	337.00	186.60	117.00	72.00	109.00	135.00	70.00	205.00	23°25'40.30"	91°28'31.50"	VILL- TULAMURA
10	AP-40/0	40/0	DD+3	3	8°24'35" (LT)	210.00	152.00	24.44	362.00	181.00	80.00	127.00	207.00	82.00	142.00	224.00	23°25'38.70"	91°28'36.50"	VILL- TULAMURA FOOT PATH, 2NOS LT LINE, CANAL
11	AP-41/0	41/0	DB+0	0		210.00	210.00	24.56	210.00	135.00	83.00		83.00	68.00	68.00	68.00	23°25'37.40"	91°28'43.80"	VILL- TULAMURA

EMC LIMITED

SURVEYED BY	CHECKED BY	SUBMITTED BY
	FOR EMC LIMITED (SUBRATA GANGULY) SENIOR SURVEYOR	FOR EMC LIMITED (ABHIJIT DEY) PROJECT MANAGER

POWER GRID CORPORATION INDIA PVT. LIMITED

CHECKED BY	RECOMMENDED BY	APPROVED BY
FOR POWER GRID SUDIP PAL RABINDRANAGAR	FOR POWER GRID SUDIP PAL RABINDRANAGAR	FOR POWER GRID SUDIP PAL RABINDRANAGAR

132 Kv D/C Rabindranagar - Belonia transmission line
Check Survey Report

Sl No	AP No	Loc No	TOWER TYPE	Pole Height (m)	CP Down	Angle of Deviation	Span in Meter	Sum of adjacent spans (m)	Wind Span (m)	Cant. Length (m)	Length of Section	Weight Span			GPS COORDS.		Crossing Details	Remarks	Village Name		
												Left	Right	Total	E	N					
1	AP-26	26/0	DB+0	107.04	1	095°12'21.7"	133	145	174.5	0	133	0	64	64	0	128	91°28'15.4"	23°25'53.2"	LT LINE, POND	GABRE	
2	AP-29	29/0	DD+3	107.88	1.5	305°36'47"	108	148	224.0	1.50	199	70	39	134	28	26	106	91°28'13.8"	23°25'54.7"	FR. VILLAGE RAVALI LT LINE	GABRE
3	AP-30	30/0	DB+3	118.72	1.5	26°44'27.7"	237	146	273.0	4.38	309	251	108	122	283	157	435	91°28'10.7"	23°25'52.8"	KALUHA RAVALI POND	GABRE
4	AP-31	31/0	DB+0	119.25	1	0°59'53.8"	287	146	198.5	6.63	297	51	3	99	86	2	68	91°28'08.0"	23°25'51.9"		GABRE

EMC LIMITED

SURVEYED BY	CHECKED BY	SUBMITTED BY	CHECKED BY	RECOMMENDED BY	APPROVED BY
	FOR EMC LIMITED (SUBRATA GANGULY) SENIOR SURVEYOR	FOR EMC LIMITED (ABHIJIT DEY) PROJECT IN CHARGE	FOR POWER GRID ABHIJIT DEY RABINDRANAGAR	FOR POWER GRID SUDIP PAL RABINDRANAGAR	FOR POWER GRID SUDIP PAL RABINDRANAGAR



FEAR for T&D subprojects in West Tripura, South Tripura, Khowai & Sepahijala District under NERPSIP in Tripura



132 Kv D/C Robindranagar - Belonia transmission line Check Survey Report

Sl. No.	M.No.	Loc. No.	D/C No.	Pole/Line No.	CP Dist.	Angle in Decade	Span in Meter	Sum of Adjacent Spans (M)	Wind Span (M)	Cross Length (m)	Length of Section	Weight Span			GPS COORDINATE			Crossing Details	Remarks	Village Name	
												Left	Right	Total	Left	Right	Total				X
1	AP-53	119-0	DD-9	171-36	90	125.400	211	608	1336	232	377	242	999	213	210	420	89°52'53.1"	22°23'16.9"			GURU
2	119-1	119-0	126-3	0			246	700	1323	478	214	137	130	241	128	369	89°51'28.89"	22°25'19.31"			
3	119-2	119-1	131-1	0			249	617	1093	977	193	121	248	111	128	239	89°51'58.52"	22°23'59.81"			
4	119-3	119-2	131-1	0			321	288	1340	1751	191	125	332	214	128	439	89°51'52.87"	22°25'02.31"			
5	119-4	119-3	131-1	0			310	602	1050	1017	189	121	312	198	128	416	89°51'52.87"	22°25'02.31"			
6	119-5	119-4	131-1	0			310	602	1050	1017	189	121	312	198	128	416	89°51'52.87"	22°25'02.31"			
7	AP-54	141-0	DD-9	142-04	0.5	100°42'11"	311	722	1404	2003	305	141	410	212	210	422	89°51'56.4"	22°25'02.4"		At Per Site Location Tower is 40 m higher than the angle of deviation angle.	B. BARUA
8	AP-55	141-0	DD-9	141-36	0.5	100°39'43"	310	644	1220	1537	111	147	300	141	128	269	89°52'42.2"	22°25'02.4"			BARBARA
9	141-1	141-0	141-36	0			310	644	1220	1537	111	147	300	141	128	269	89°52'42.2"	22°25'02.4"			
10	AP-56	141-0	DD-9	141-36	1	100°38'11"	310	511	1050	1017	189	121	312	198	128	416	89°52'42.2"	22°25'02.4"			BARBARA

SUBMITTED BY FOR EMC LIMITED SUBRATA GANGULY SENIOR SURVEYOR	FOR EMC LIMITED FOR EMC LIMITED (ABHIJIT DEY) PROJECT IN-CHARGE	CHECKED BY Abhijit Saha F.E (Etc), Powergrid	FOR POWER GRID RECOMMENDED BY Sudipta Paul F.E (Etc), Powergrid
APPROVED BY M. N. HAQ Sr. Supt. / Dist. Manager POWERGRID ROBINDRANAGAR			

LILO OF AGARTALA (79 TILLA) - DHALAHIL (KHOWAI) 132 KV S/C LINE AT MOHANPUR (HEZAMARA) LDDP IN Detail (RE) Survey Tower Schedule

Sl. No.	AP No.	Loc. No.	Type of Tower	Angle of Deviation	Span in Meter	Section Length	Cross Dist (M)	Reduce Level	Weight Span (H)			Weight Span (C)			Sum of Adjacent Span	Wind Span	Crossing Details/Remarks	NORTHING	EASTING	Village Name
									Left	Right	Total	Left	Right	Total						
1	EXISTING TOWER NO 49	EXISTING TOWER NO 49	DC-06		345			36.94	209.1	209.1	234.1	234.1								
2	EXISTING TOWER NO 38	DA-08	90°00'00"		252	349	31.402	135.9	178.1	316.0	114.9	215.7	330.6	601.0	300.5					
3	AP 1A	AP 1A/0	DD-08	90°00'00"	30	601	601	26.05	23.9	5.3	79.2	36.3	1.9	38.2	136.0					
4	AP 1	AP 1/0	DD-08	21°57'27" L	20	621	26.11	14.7	14.7	18.1	18.1									

FOR PGCL

PREPARED BY: T. MARGHA

* Re-submission

LILO OF AGARTALA (79 TILLA) - DHALAHIL (KHOWAI) 132 KV S/C LINE AT MOHANPUR (HEZAMARA) LDDP OUT Detail (RE) Survey Tower Schedule

Sl. No.	AP No.	Loc. No.	Type of Tower	Angle of Deviation	Span in Meter	Section Length	Cross Dist (M)	Reduce Level	Weight Span (H)			Weight Span (C)			Sum of Adjacent Span	Wind Span	Crossing Details/Remarks	CO-ORDINATE		Village Name
									Left	Right	Total	Left	Right	Total				NORTHING	EASTING	
1	EXISTING TOWER NO 52	DA-06			330			27.81	174.3	174.3	191.9	191.9								
2	EXISTING TOWER NO 39	DD-03	11°00'00" L		50	300	26.162	125.7	122.8	248.4	103.1	193.4	301.5	300.0	175.0					
3	AP 1A	AP 1A/0	DD-08	90°00'00"	20	350	350	26.05	27.9	3.3	67.5	14.4	1.9	141.6	70.0	35.0				
4	AP 1	AP 1/0	DD-08	21°57'27" L	20	370	26.11	14.7	14.7	18.1	18.1									

FOR PGCL

PREPARED BY: T. MARGHA

* Re-submission

LILO OF AGARTALA (79 THLA) - DHALAJIL (KHOWAI) 132 KV S/C LINE AT MOHANPUR (HEZAMARA) Detail RE ₂ Survey Tower Schedule																					
Sl No.	AP No.	Loc. No.	Type of Tower	Angle of Deviation	Span in Meter	Section Length	Lanes (No. of)	Radius (m)	Weight Span(H)			Weight Span(C)			Sum of Adjacent Span	Wind Span	Crossing Details/Remarks	CO-ORDINATE		Village Name	
									Left	Right	Total	Left	Right	Total				NORTHING	EASTING		
1	1A	16/78	DDH-00	30°00'00"	30			36.65		5.3	5.3		1.9	1.9			29°52'47.70"	91°22'42.34"			
2	1	1/0	DC-00	21°52'27"	L	375	20	20	35.11	14.2	146.5	161.2	18.1	116.8	134.9	395.0	192.5		29°52'33.87"	91°22'41.15"	
3	2	2/0	DC-09	17°33'14"	L	360	375	395	36.91	228.5	194.8	423.4	258.2	205.6	463.8	735.0	367.5	Mat road	29°52'33.80"	91°22'38.00"	
4	3	3/0	DD-09	56°14'12"	R	252	360	755	36.51	165.2	151.8	316.9	154.4	170.4	324.9	612.0	306.0	LT Line, HV Line, Metal Exam	29°52'33.27"	91°22'15.75"	
5	4	4/0	DD-03	99°54'	R	153	252	1002	38.374	100.2	39.7	139.9	81.6	12.4	93.9	407.5	203.5	11KV Line	29°52'33.20"	91°22'09.26"	
6	5	5/0	DD-00	11°17'48"	R	62	153	11.62	31.805	115.3	72.9	188.2	142.6	103.1	245.7	217.0	106.5	Rubber Pileation	29°52'42.76"	91°22'10.53"	
7	GAN GANT	DD-00	6°23'57"	R	62	42	1224	38.853									29°52'44.51"	91°22'41.19"			
FOR EMC LIMBED															FOR PGCL						
PREPARED BY		SUBMITTED BY			CHECKED BY			RECOMMENDED BY			APPROVED BY										

* Co-ordinate wrongly noted. Requested EMC to submit fresh.